

The
DISSTON
SAW, TOOL & FILE
BOOK



The
DISSTON
SAW, TOOL, AND
FILE BOOK

An illustrated book of information concern-
ing the selection, care, and use of
saws, tools, and files.



HENRY DISSTON & SONS, INC.
PHILADELPHIA, U. S. A.

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A companion book, "The Disston Lumberman's Handbook," tells how to properly care for and operate band saws, circular saws, and other saws, tools, and files designed for use with power equipment in saw-mills, wood-working shops, factories, etc. It will be sent upon request to anyone interested in this kind of equipment.

INTRODUCTION

THE growth and success of any industry depend largely upon the policies of its founders. In proportion as the breadth of opportunities for the future is recognized so does an enterprise develop on broad lines or narrow. No product can make a reputation and build up any sizable sale for itself unless it be of really high quality. And conversely, very seldom does a good article fail to create a demand for itself.

Henry Disston knew all that, over eighty years ago, when he founded the Disston Saw Works. Although there was a strong prejudice against American made tools, he knew that his product would be good enough to overcome that feeling. His first demand was for flawless steel. In order to be positive of that, to be sure that it always ran true to specifications, he built his own steel mill. Then he sought better treatment, especially in regard to temper. Finally he must have the most expert workmanship and finish.

Bringing all operations from the making of the steel to the finished article under his personal supervision gave Henry Disston his quality product. He never allowed the standard to fall. The Disston brand has continually been the guarantee of a good tool.

And as he believed and practiced, so have his sons and grandsons. The House of Disston will always support a statement of Henry Disston's: "If you want a saw, it is best to get one with a name on it that has a reputation. A man who has made a reputation for his goods knows its value as well as its cost, and will maintain it."

In the following pages we have attempted to explain the uses of different types of saws. Too often an amateur saw-user expects a rip saw to cut across the grain successfully, or makes some other natural mistake. It is not lack of intelligence that causes these errors, but lack of information. Many men do not even know that there is a difference between cross-cut and rip saws.

However, it is human nature for a man, who has bought a saw he didn't want, to feel a little disgruntled; for him to feel that he has been badly treated, or that the saw is not a good one.

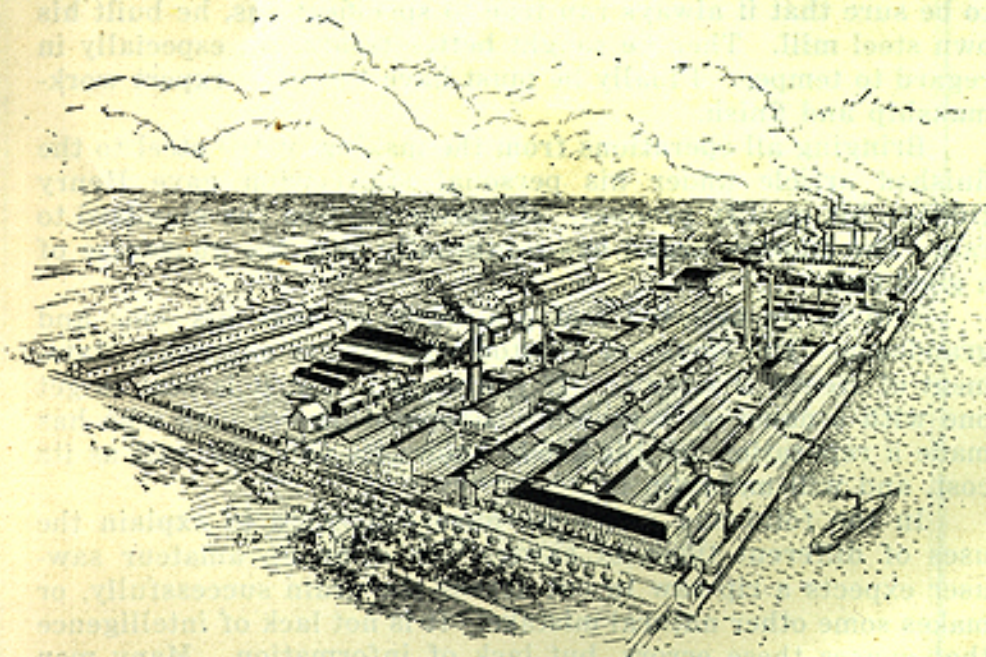
The aim of this book is to offset that possibility.

We have given a brief description of what the different types of saws are for—whether for cabinet making or building a coal bin.

Furthermore, the demand for an article of instruction on saw filing has been demonstrated to us not only by personal inquiry and letter, but also by the return of fine quality saws from users who pronounced them defective and rendered them useless, through lack of knowledge of how to keep them in order. These conditions have led us to include instructions for the setting, filing, and general care of saws.

This information if carefully followed, should assist in keeping a saw in proper working condition. It is based on long, practical experience in manufacturing, on a study of actual conditions, and on working tests of saws in the hands of users.

There is also a brief story, "How a Saw Cuts," which is included because it has proved to be of great interest to those who have seen it.



THE DISSTON FACTORY

68 BUILDINGS

65 ACRES

3600 EMPLOYEES

WHAT TYPE OF SAW TO USE

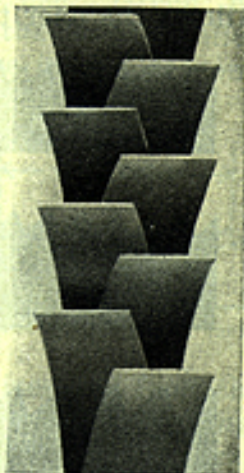
In the following, we will attempt to give general rules to be followed in selecting a saw. These rules must be varied according to your individual tastes and requirements but we feel that a general explanation of the reasons for, and uses of, the various types of saws will be valuable, especially to the inexperienced user.

Cross-cut or Rip Saw.



Tooth edge of saw
for cross-cutting

Hand saws are divided into two main classes—the cross-cut saw for cutting, across the grain of the wood and the rip saw for ripping or cutting with the grain. The difference between these two classes of hand saws is in the shape of the teeth; one being designed to cut across the grain with an action similar to a number of small knife blades, and the other for ripping apart when cutting parallel to the grain



Tooth edge of saw
for ripping

with an action like that of many chisels. A more complete explanation of these operations is given under the heading, "How a Saw Cuts," on page 42. This is the first choice to be made in selecting a saw; your decision depends on the kind of cutting to be done.

Skew-Back or Straight-Back. The terms skew-back and straight-back refer entirely to the shape of the back of the blade. The skew-back blade is cut on a curved line at the back as is illustrated in the D-8 saw, on page 9, while the straight-back blade, as the name implies, is cut on a straight line from butt to point. The advantage of one over the other is almost entirely a matter of personal preference. The skew-back blade is slightly lighter in weight. A straight back gives the blade more "body" or stiffness. Therefore, men who use an especially heavy thrust pressure sometimes prefer the straight-back saw.

What "Point" to Use. "Points to the inch" is a term used in determining the number of teeth in the cutting edge of a saw.

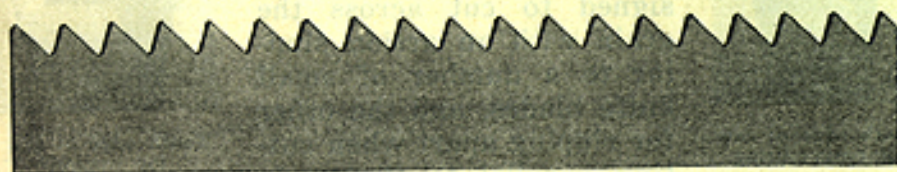
In measuring the number of teeth in a saw, the cutting edge is measured from point of tooth to point of tooth and we speak of the saw as having so many "points to the inch"—meaning so many tooth-points to the inch. In measuring a saw blade in this way, you will find that the saw always has one more point to the inch than complete teeth in that inch. In a Disston Rip Saw the points to the inch are graduated so that the teeth at the point of the saw are finer than those at the butt—this allows the user to start the saw in the cut easily.



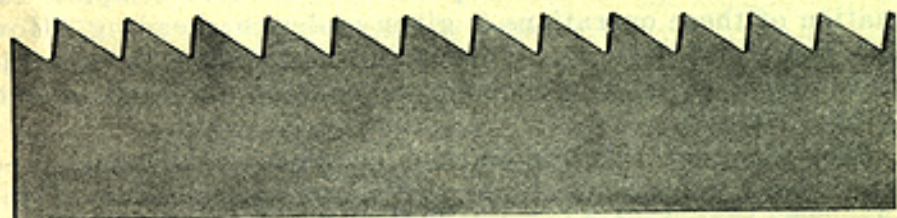
Section of 11 point saw for cross-cutting



Section of 8 point saw for cross-cutting



Section of 6 point saw for cross-cutting



Section of 4½ point saw for ripping

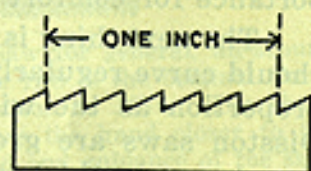
The points to the inch in hand saws, either rip or cross-cut, indicate the degree of smoothness or coarseness of the cut that that particular saw will make. This smoothness or coarseness of cut is regulated entirely by the size and set of the teeth. A saw with big teeth, 5 points to the inch, for example, will make a coarser cut than a saw with small teeth, say 11 points to the inch.

In determining what point of saw will best answer your requirements, remember that a saw with a few tooth-points to the

inch (say 6 or 7) will cut fast and make a comparatively rough or coarse cut—these points are commonly used for ordinary construction work and similar rough sawing. The saws with many tooth-points to the inch (9, 10, or 11) will make smooth, even cuts and are used mostly for interior finishing, furniture making, etc.

The degree of seasoning in the wood to be cut must be considered also, in determining what point to use. Green, wet wood requires a coarse saw (few points to the inch), while a fine tooth-point saw can be used to advantage in dry, seasoned lumber.

Hand saws for cross-cutting are made in sizes varying from 5 to 11 tooth-points to the inch. The 7, 8, or 9 point saws, which are medium, are in the greatest demand and are most satisfactory for ordinary work.



Tooth points to the inch

In rip saws for ordinary work, 5, 5½, or 6 points to the inch are the standard sizes and from this basis they are purchased with fewer points when fast, rough cutting is desired and with more points when careful, accurate cutting is necessary.

Length of Saw to be Used. The length of a rip or cross-cut hand saw is always measured by the length of the cutting edge. For instance, a 26-inch saw means a saw measuring 26 inches long on the cutting edge of the blade. There seems to be a general impression among the inexperienced that all hand saws for cross-cutting are 26 inches long and all rip saws 28 inches long. This is not a fact. Both cross-cut and rip saws are made in a variety of lengths. The terms "cross-cut" and "rip" refer to the shape and style of the teeth only and not to the length of the saw.

Rip saws are regularly made in a variety of lengths—22, 24, 26, and 28 inches. The carpenter ordinarily buys a rip saw either 26 or 28 inches in length and for the ordinary user one of these two lengths usually is found to be the most satisfactory.

Cross-cut saws are made in lengths ranging 16, 18, 20, 22, 24, 26, and 28 inches. The most popular length is 26 inches.

Cross-cut saws, 24 inches and less in length, are termed panel saws. Panel saws are exactly like cross-cut saws in

every respect except the length of the blade and the number of teeth. Panel saws usually have finer teeth than full size hand saws.

Various types of saws are used in the manufacture of furniture, cabinet making, and in general construction work. The different styles, designed for particular work, are illustrated and fully described in the accompanying pages.

Testing a Saw by "Feel." The first point to be observed in the selection of a saw is to see that it "hangs" right. Grasp it by the handle and hold it in position for working, to see if the handle fits the hand properly. These are points of great importance for comfort and utility.

The next thing is to try the blade by bending it slightly. It should curve regularly and evenly from the point to the butt, in proportion as the width and thickness of the saw vary. All Disston saws are ground by special Disston methods so that they taper in thickness from the tooth edge to the back and from the handle to the point. The tooth edge is of even thickness from end to end. It is this special taper grinding that gives the exceptional balance and stiffness to the Disston saws.

The thinner you can get a stiff saw the better; it makes a smaller kerf and takes less muscle to drive. This principle applies to the well-ground saw. There is less friction on a narrow, thin saw than on a wide one.

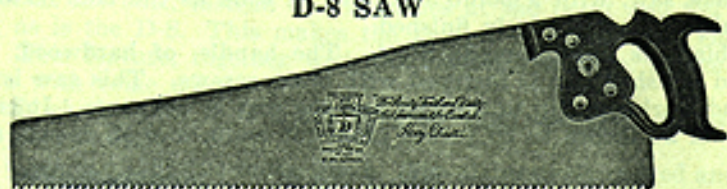
See that it is well set and sharpened and has a good crowning breast, which means a curved or "crowned" cutting edge, being widest near the center of the saw.

A Saw for General Use. For a hand saw of the greatest utility to the average user, we suggest the Disston D-8 (which is of good quality for average use, as is fully explained on page 9) 26-inch, 8 point saw. The D-8 is a skew-back pattern, which is the choice of the majority of carpenters and wood-workers. A 24-inch saw is also a convenient length that is becoming increasingly popular with all classes of saw users. A 24-inch saw will fit in any standard size tool chest. Eight points to the inch is a medium point, being neither too fine nor too coarse, and is recommended for its general utility in ordinary work such as laying floors, repairing porches, fences, doors, etc.

DESCRIPTION OF STANDARD SAWS AND TOOLS

HAND SAWS

D-8 SAW



This is the best and most popular Disston Saw for general, all-around work. It is "the saw most carpenters use." The D-8 is the original skew-back saw originated and patented by Henry Disston in 1874. The shape of the blade and the position of the handle place the hand closer to the work, and, therefore, give the user better command and guidance of the saw, allow him to make a full stroke, and give more power to his cutting strokes.

When introduced, this saw created a demand which has constantly increased until now there are more Disston D-8 Saws in use than any other one type. It is medium in price. The blade is of the famous Disston-made Steel, taper ground. The handle is of apple-wood, nicely polished, and is fitted to the blade with five brass screws. The D-8 is regularly made in lengths from 16 inches to 28 inches cross-cut teeth; and 22 inches to 28 inches rip teeth.

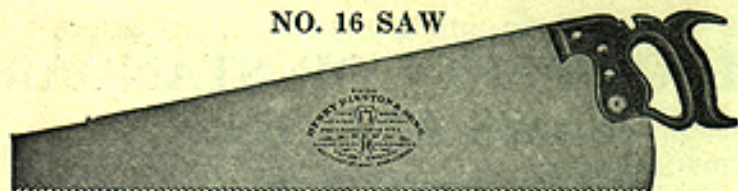
D-115 SAW



This is the finest product of the Disston Saw Works and, we believe, the best practical hand saw in material, workmanship, and finish that can be made. Carpenters and saw users who want a tool of unusual efficiency and beauty are users of this saw. We have made it as good in quality and beautiful in appearance as we can in a practical tool. The handle is of genuine rosewood, beautifully carved and polished; the five screws which fasten the handle to the blade are of brass, nickel-plated. Careful workmanship has produced a remarkable finish on the blade. The blade, which is of Disston-made Steel, has special workmanship through all the processes—hardening, tempering, setting, and filing. Altogether, it is a tool worthy of its place at the head of the line of Disston Quality Saws. It is made in lengths from 20 inches to 26 inches cross-cut teeth, and 26 inches rip teeth. The special care and workmanship in this saw naturally make its cost higher than that of an ordinary tool.

The D-15 Saw is exactly like the D-115 except that the blade is straight-back. Made cross-cut teeth, 24 inches and 26 inches; rip, 26 inches.

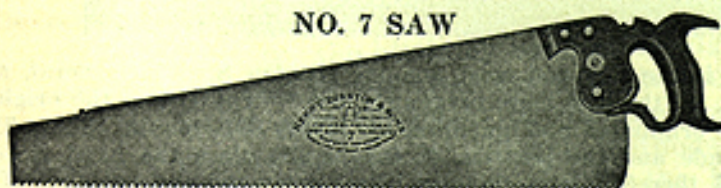
NO. 16 SAW



The Disston No. 16 Hand Saw is made to suit those who prefer a straight-back saw, with a point not quite as wide as the D-8. This saw is substantially built and nicely finished.

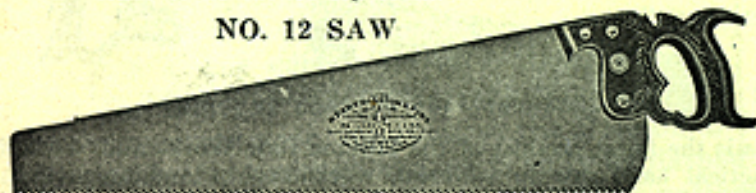
The blade is Disston-made Steel. The handle, of hardwood, is nicely carved and polished and is fastened with brass screws. This saw is equal in quality and workmanship to the D-8 and the cost is the same. It is made in lengths from 20 inches to 26 inches cross-cut teeth, and 26 inches rip teeth.

NO. 7 SAW



It is upon this saw, perhaps more than any other, that Henry Disston built his early reputation as a maker of good saws. The blade of this saw has a straight back. This gives more "body" or stiffness to the blade, and for that reason this saw is preferred by some users who exert a very strong thrust pressure in sawing. The blade is of Disston-made Steel and is securely fastened in the well-polished beech handle by four brass screws. This saw, while being of the best materials, is not as highly finished as is the D-8, and is, therefore, somewhat lower in cost. It is fully warranted, as are all Disston Saws. It is made in lengths from 16 inches to 28 inches cross-cut teeth, and 22 inches to 28 inches rip teeth.

NO. 12 SAW



Many carpenters and saw users who take pride in having exceptionally well-made and well-finished tools, are users of this saw. The No. 12 has a straight-back, full-width blade of Disston-made Steel. This blade is extra tempered and will hold its cutting edge longer than the ordinary saw. It is ground one gauge thinner than other hand saws, for special clearance, and therefore requires little set. The handle is made of selected apple-wood and is carefully carved and polished. This saw is of the best Disston material and workmanship and is very attractively finished. Its cost is slightly higher than any of the saws so far mentioned, except the D-115 and D-15. It is made in lengths from 18 inches to 28 inches cross-cut teeth, and 24, 26, and 28 inches rip teeth.

No. 112. The Disston No. 112 Saw is exactly like the No. 12 except that it is made skew-back. Sizes: Cross-cut, 20 inches to 26 inches; rip, 26 inches.

D-20 SAW



The D-20 saw is made particularly for those who prefer a narrow width blade. This blade, skew-back in design, is $1\frac{3}{4}$ inches wide at the point and $6\frac{1}{4}$ inches at the butt, instead of $2\frac{3}{4}$ inches at the point and $6\frac{3}{4}$ inches at the butt, as is the D-8. This makes the D-20 a very light and easy saw to operate. This feature, together with the comfortable grip, makes the D-20 a favorite with some users.

The finish, because it is a grade better than the D-8, makes this saw slightly higher in cost.

The blade is of Disston-made Steel. The attractively carved and polished handle is of selected apple-wood and is fastened to the blade by brass screws.

The D-20 is made in lengths from 20 inches to 26 inches cross-cut teeth, and 26 inches rip teeth.

D-23. This is exactly like the D-20, except that the blade is of straight-back design and that the rip saw is made 24 inches and 26 inches.

NO. 120 ACME SAW



The Disston No. 120 Acme Saw is not an ordinary type of hand saw and should not be used for ordinary work. It is designed for sawing dry, seasoned lumber **only**, and cannot be used successfully for general work. It is a fast, smooth-cutting saw for fine cabinet work, sawing mitres, etc. It will cut a joint sufficiently smooth to glue without planing, and is very popular with those doing extremely accurate sawing. It must be kept properly sharpened and should **not be set**. The Disston six-inch cant safe-back File is made expressly for filing this saw.

The No. 120 Saw is very high in temper. The blade is specially ground for clearance and the teeth require no set. The cost of the No. 120 is slightly more than the No. 12 in the regular hand saws. It is made in lengths from 20 inches to 26 inches cross-cut teeth, and 26 inches rip teeth.

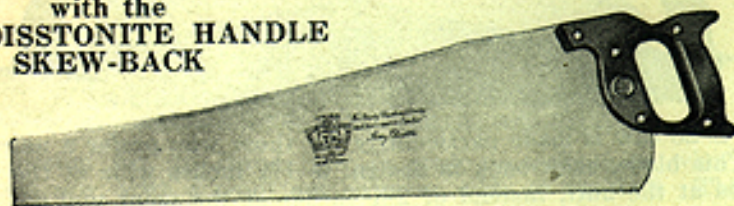
AMERICAN BOY SAW



This New "American Boy" saw is made in one size only—a 20-inch blade, 9 points to the inch. It is made either straight-back or skew-back.

The blade is made of the famous Disston-made Steel. The large, roomy handle is of beech-wood, stained flemish oak, full carved and polished; carving filled in with green, fastened to blade with three nickel-plated screws. Each American boy's kit should contain this saw.

THE NEW D-18
with the
NEW DISSTONITE HANDLE
SKEW-BACK



THE DISSTON D-18 HAND SAW

The Disston D-18 Hand Saw is a new departure in saw making especially as affecting the handle. For centuries saw handles have been made of wood, but Disston, after years of experimenting, has developed a new handle—"The Disstonite Handle" on the Disston D-18 saw.

Because of the great strength of the Disstonite Handle, and because of the absence of grain, it embodies certain features of design that give added comfort to the hand and arm in sawing.

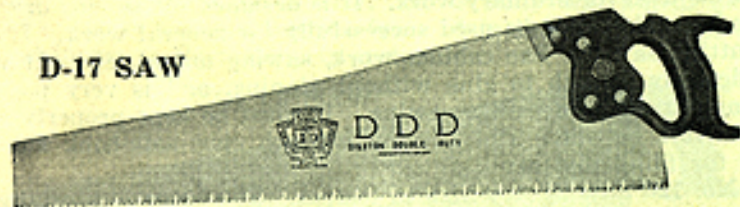
The Disstonite Handle is not affected by extremes of temperatures—either hot or cold. It is impervious to the action of perspiration from the hand and to water, oil, and steam. This is another advantage that the saw-user is quick to appreciate.

The blade is of Disston-made Steel, of skew-back design. It is tempered, ground, and polished by special Disston methods. The high polish of the blade in combination with the warm brown of the Disstonite handle forms a saw of both beauty and utility which attracts everyone.

It is made in the following size:

Cross-cut, 26 inches; rip, 26 inches

D-17 SAW



The most efficient saw ever made for double duty work—that is, both cross-cut and rip sawing with the same tool. It is very popular for fast, rough sawing in general construction work of all kinds—studding up houses, shoring for sewers, making forms for concrete buildings, railroad work, farm use, etc. The D-17 can be used for cross-cutting, ripping, or sawing diagonally across the grain.

The combination of teeth in the saw—alternating sections of five regular cross-cutting and two ripping teeth, separated by deep gullets for clearance, insures easy running and fast cutting in rough work. The saw is easily kept in order as the teeth are sharpened just as are ordinary cross-cut and rip teeth. It is occasionally necessary to deepen the gullets between the sections of teeth, and for this purpose we recommend the 4-inch Disston Mill File with two round edges.

The D-17 is of the same quality and finish as the D-8, but costs slightly more because of the special tooth-edge. Made in 26-inch length only.

NO. 4 MITRE BOX SAW



Accuracy is the prime essential of the mitre box saw, which is used for sawing mitres for all kinds of work—picture frames, moulding, cabinet work, pattern making, etc. Disston Saws have long been recognized as the standard for this work by prominent makers of mitre boxes. Every one of these saws is tested in a mitre box, to insure accuracy, before it leaves the factory.

Extra care is exercised in making these saws so they will run true and cut a smooth, accurate joint.

To prevent the "butt" or "heel" from catching in the work when the saw is used in a mitre box, this type of saw is made so that the cutting edge is two inches shorter than the entire blade. Because of the nature of the work to be done, the blade is made quite thin (19 gauge or about 3/64 of an inch), but is reinforced for stiffness by having the upper edge inserted in a metal back. It is a fine toothed saw, being usually 11 points to the inch.

The blade is of Disston-made Steel, the handle of apple-wood, fastened with brass screws. The back is of blued steel. This saw is made in 20 to 32 inch lengths, the blade being 4, 5 and 6 inches wide under the back.

NO. 3 BACK SAW

BACK THREE INCHES SHORTER
THAN TOOTH EDGE



ESPECIALLY ADAPTED FOR HARDWOOD
FLOOR LAYING

Mechanics for some time have felt the need of a back saw which would cut close to walls in laying hardwood floors. Disston has met this need in their No. 3 Back Saw, by cutting the blade at an angle which makes the tooth edge three inches longer than the back. Results—neater and faster work.

Blade—The blade is manufactured from Disston-made steel; 14 inches long, and has 13 teeth to the inch.

Back—The back is made of blued steel and is three inches shorter than the tooth edge.

Handle—The handle is made of apple-wood, has 3 brass screws, varnished edges, and a comfortable grip.

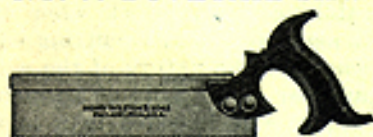
NO. 4 BACK SAW



The Disston No. 4 Back Saw, while smaller in size, is similar in quality and pattern to the mitre box saw, but is square on both ends and can be used without a mitre box, for cutting fine joints on small work or stock of small dimensions.

The sizes range from 8 inches with narrow blades and fine teeth to 18 inches with the wider blades and coarser teeth—the 12 inch, a popular size, being 3 inches under back and with teeth 14 points to the inch.

NO. 70 DOVETAIL SAW



This is another style of saw for fine and accurate work—dovetailing. The extremely thin (26 gauge) blade, of Disston-made Steel, is $1\frac{1}{2}$ inches wide under the back. The back is made of steel, brass-plated.

The handle is of hardwood, with an open grip and with polished edges.

The No. 70 is made in sizes 6 to 12 inches with teeth 17 points to the inch.

PATTERN MAKERS' SAW



Some classes of small, accurate work in pattern and cabinet making necessitate the use of small saws with extra thin blades and very fine teeth—for which purpose this saw is made. The teeth are of special shape. The open handle is of hardwood. The blade is of Disston-made Steel, tempered and polished, $7\frac{1}{2}$ by $1\frac{1}{4}$ inches, 21 gauge, toothed 15 points to the inch.

NO. 68 DOVETAIL SAW



This is still another style of saw for dovetailing. The No. 68 has a straight handle. See illustration.

The No. 71 Dovetail saw is the same as No. 68 except that the handle is offset to permit work on a flat surface. With this saw the user may cut with the blade flush to the board in a floor or wall.

STAIR BUILDERS' SAW



This special saw is for trenching out stringers, making slots in stair treads or risers, and similar work. The blade is of Disston-made Steel and is adjustable in the back so that an even, accurate cut of specified depth can be made. The blade is removable so that the owner may use the same handle with new blades.

It is furnished with a beech handle with varnished edges and brass screws. The blade is 6 inches by $1\frac{5}{8}$ inches.

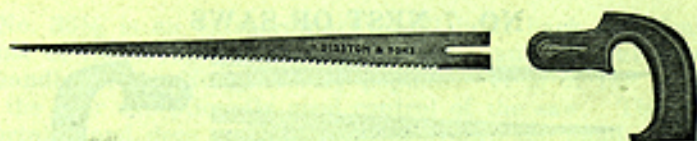
NO. 2 COMPASS SAW



The narrow tapering blade in this saw permits its use in cutting circles, ovals, curves, etc., in boards after the start has been made by the use of an auger or brace and bit. It is also used for starting the cut in laid flooring, siding, and similar work for the insertion of a hand saw.

The blade is of Disston-made Steel, and of a special temper to allow for the twisting and turning necessitated by the nature of the work. The handle is of hardwood, fitted with brass screws. The saw is made in 10 to 18 inch lengths.

NO. 4 COMPASS SAW—INTERCHANGEABLE



This saw is the same as the No. 2 compass saw except that the handle is of beech and the blade is slotted so that it may be removed and changed easily. When in place the blade is securely locked by a lever device on the handle. This gives in one tool, a compass saw with a large or small, wide or narrow blade—which ever is best suited for a particular piece of work. The No. 4 compass saw is made in 10 to 20 inch lengths.

NO. 5 KEYHOLE SAW



In making a keyhole, first bore a hole. Then use one of these small tapered saws and cut to the shape desired. The No. 5 is made for this work and for light, irregular sawing of a similar nature.

The handle is of iron with a white-metal finish. The blade may be adjusted to any length by sliding it back into the handle, or it may be pushed through the handle, and the butt of the blade used as a screw-driver.

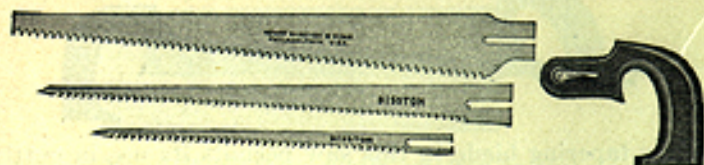
The blade, 7 inches long, is of Disston-made Steel, especially tempered for the work. It is held firmly in the handle by a knurled headed screw.

NO. 95 KEYHOLE SAW



This keyhole saw is preferred by some on account of the style of the handle, which is round, made of hardwood, polished, with nickel-plated ferrules. The handle is slotted clear through, permitting the adjustment of the blade for the length of cutting edge desired. This feature also allows for the blade to slide into the handle, which permits of carrying the saw in the pocket conveniently. Moreover, this means protection for the blade. The blade, of Disston-made Steel, specially tempered, is 10 inches long, ground to a thin-back, and is held in place firmly by means of a steel grip inside the handle. This grip is tightened by a set screw on the handle.

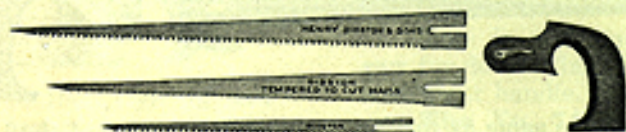
NO. 3 NEST OF SAWS



This is a nest or combination of saws for general use. The handle is of beech, with varnished edges, and is equipped with a special adjustable lever tightener. There are three Disston-made Steel Blades of special temper—a 10 inch keyhole saw blade, a 14 inch compass saw blade, and a 16 inch pruning saw blade.

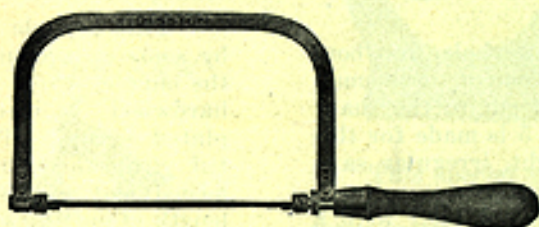
The lever tightener is adjustable to take in different thicknesses of blades. The convenience of this set of saws can readily be appreciated.

NO. 7 NEST OF SAWS



This nest of saws is most commonly used by plumbers. It consists of a beech handle and three blades—a 14 inch plumbers' compass saw blade tempered to cut wood in which nails are embedded, lead pipe, and that class of work encountered in the ordinary course of plumbing; a 16 inch regular compass saw blade, and a 10 inch keyhole saw blade. This nest, like the No. 3, is a combination to permit the user to do the kinds of work mentioned, with only one tool.

NO. 10 COPING SAW



A coping saw is used for cutting on curved lines in such work as shaping the ends of moulding for joints, for narrow scroll work, making shelf brackets, wood toys, etc.

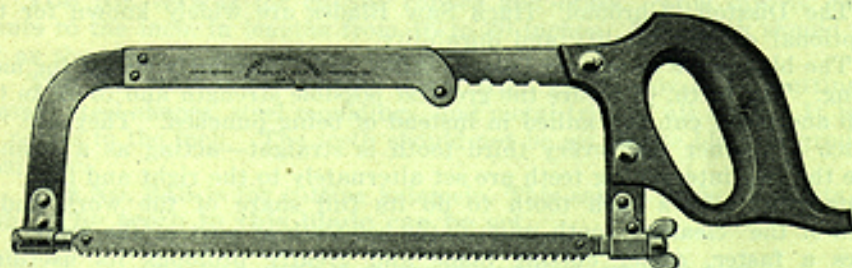
The No. 10 is a well-made coping saw and is much stronger and more efficient than the ordinary wire-back style. The blade is controlled or adjusted for sawing sharp corners or angles by two knurled stretchers, and is easily inserted or removed.

The hardwood handle is polished and fitted with a heavy nickel-plated steel ferrule. The frame is of Disston-made Steel, nickel-plated, $\frac{3}{8}$ of an inch wide by $\frac{3}{16}$ of an inch thick and is $4\frac{1}{2}$ inches deep from the tooth-

edge of the blade to the inside of the back. The length of the blade is 6½ inches from pin to pin.

Extra blades, fitted with pins for the No. 10 coping saw may be purchased separately.

NO. 36½ HACK SAW EXTENSION FRAME

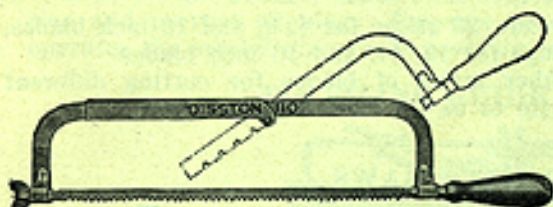


The No. 36½ is an extraordinarily well built hack saw frame, widely used because of its strength, ease of adjustment, and efficient service.

The handle on the No. 36½ is very popular. It is of the hand-saw type and gives the user exceptionally good control of the saw. The grip is large and comfortable and does not slip from or cramp the hand. It is made of nicely finished hardwood.

The nickel-plated steel frame is adjustable by half inches for blades 8 to 12 inches long. The sockets are secured by rivets. The stretchers, which hold the blade rigidly in place, are reversible for sawing straight or sideways and will not fall out while readjusting blade. The frames are sold without blades.

NO. 110 HACK SAW ADJUSTABLE FRAME



This is an excellent adjustable hack saw frame for general all-around use in cutting metal, and can be adjusted for blades from 8 to 12 inches long.

The frame is of nicked steel. The hardwood handle is black. The riveted sockets are reversible so that the blade can be turned to cut sideways. The stretchers will not fall out while readjusting.

NO. 10 PLUMBERS' SAW

This saw is made particularly for use in making repairs where it is necessary to cut through joists, rafters, flooring, and the like in which nails may be embedded—also for cutting soil pipe, gas pipe, etc. The blade is of Disston-made Steel, specially tempered and toothed for this work.



The hardwood handle is nicely carved and polished. It may be adjusted to various positions most convenient for each piece of work. The lengths vary from 16 to 24 inches.

CHROMOL HACK SAW BLADES FOR HAND USE



The Disston "Chromol" Hack Saw Blades are widely known for their exceptional cutting quality and durability.

The blades are of special Disston Alloy Steel peculiarly suited for metal-cutting. The teeth, to insure the greatest possible strength and to make them sharp and clean cut, are milled in instead of being punched. They are "set" in such a manner that every third tooth is straight—acting as a cleaner—while the two intervening teeth are set alternately to the right and left. This arrangement allows each tooth to do its full share of the work and the action of the "cleaner" tooth relieves the set teeth of part of the wear. This makes a faster, easier cutting blade and greatly prolongs its usefulness.

Disston Chromol Blades are hardened throughout by a Disston process which renders them hard and tough without being brittle.

The lengths, measured from the center of one hole to the center of the other hole range from 8 to 18 inches.

For cutting the various classes of material we recommend blades, for hand frame use, of the following number of "points to the inch."

Soft steel, cast iron, etc., and all general work—16 points or 15 teeth to the inch.

Steel, light angle iron, and hard metals—18 points or 17 teeth to the inch.

Brass, copper, drill rods, iron pipe, and sheet metal—24 points or 23 teeth to the inch.

Tubing and metal thinner than 22 gauge—32 points or 31 teeth to the inch.

The stock sizes are $\frac{1}{2}$ inch wide, 23 gauge for 8, 9, and 10 inch blades, and $\frac{9}{16}$ of an inch wide, 23 gauge for 12, 14, and 16 inch blades.

We manufacture various other styles of blades for cutting different metals by hand or machine. Write to us for further information.

HAND HACK SAWS

NO. 340



The hand hack saw is made especially for the use of structural iron workers and others in places, and on work, where the framed hack saw cannot be used because of the limitation of the depth of the cut that can be made with the hack saw frame.

The hand hack saw, being longer on the cutting edge, allows for a much longer cutting stroke and is therefore preferred where much cutting is to be done.

The blade, of Disston-made Steel, is given a special high temper; it is hollow ground for clearance, and **requires no set**. It is made 12 points to inch and in lengths from 16 to 30 inches. **Do not set the teeth; an attempt to do so may break them.**

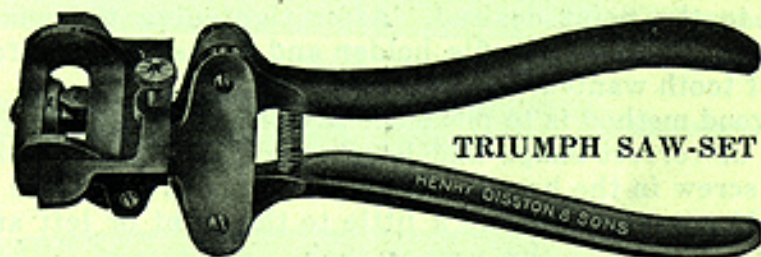
This same style of saw is specially made for cutting various metals, as follows:

The No. 341 is for cutting copper and brass. This saw is made 10 points to the inch, in lengths from 16 to 30 inches. The teeth should not be set as the blade is ground for clearance.

The No. 342 is for cutting metal trim. This saw is for cutting light pressed steel shapes, steel mouldings, and metal trim of all kinds. It is made 16 points to the inch. The teeth should not be set as the blade is ground for clearance.

The No. 343 is for cutting kalamein. This saw is made 11 points to the inch. The teeth in this blade can be set.

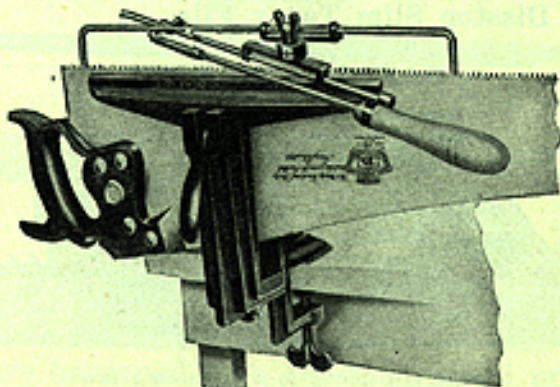
SAW SHARPENING TOOLS



TRIUMPH SAW-SET

This tool operates by the use of two plungers. Pressure on the lower lever forces one plunger against the body of the saw to hold it rigidly in position and prevent slipping. Pressure on the upper lever at the same time operates the second plunger to press against and set the tooth.

D-3 FILING GUIDE AND CLAMP



There is no reason why any person, with a little practice, should not be able to resharpen a saw, if he has proper instructions and exercises ordinary care in following them.

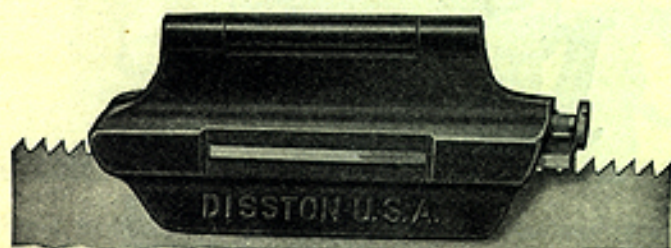
The Disston D-3 Filing Guide and Clamp is specially designed to assist those not skilled to file a saw correctly. By means of the file holder and sliding arrangement the file can be adjusted to any position required and so held during the entire operation of filing. Thus every tooth will be filed at the same angle without that variation so difficult to overcome in filing by hand alone. It is made to file both cross-cut or rip saws. The length of the jaw is 12½ inches.

This illustration shows a saw and the guide in the proper position for filing. There are three marks on the lower hub of the swivel attachment, and one mark on the upper. One of the three marks shows when the file is in position for filing one side of the teeth of a cross-cut saw, and another when it is in position for filing the other side. The third, or center mark, shows when the file is in position for filing rip saws. To obtain the correct position, loosen the wing-nut and move the guide around to the point desired. After tightening the wing-nut, loosen the screw in the file holder and adjust the file for the shape of tooth wanted.

A good method is to place the saw in the clamp, then select a tooth of correct shape and let the file down into it; tighten the set screw in the handle, then file a tooth to see if the shape suits. If not, turn the file a little to the right or left and try another tooth until the proper shape is obtained. Then file every other tooth. When one side is filed, reverse saw and attachment and file the other teeth.

For rip saws, place the file at right angles with the saw, noting the center mark as mentioned above, and file every tooth. Always keep the file as nearly horizontal as possible. Use a 5½ in Disston Slim Taper File.

HANSAW JOINTER



Hand saw jointer in position on a saw

As noted in the section "How to Sharpen a Saw" beginning on page 32, when the teeth of a saw become irregular in size, it is absolutely necessary to dress them down until all are of an equal height. This should be done before attempting to re-set or sharpen.

To facilitate this work and insure evenness we fully recommend the Disston Hand Saw Jointer.

It is made of iron, japanned. It is hinged to open for positioning on the saw and adjusting the file, which is securely locked in place by a screw.

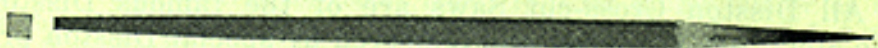
FILES



SLIM TAPER



TAPER



SQUARE



BLUNT BAND



MILL



FLAT BASTARD



HALF ROUND



ROUND



HALF ROUND WOOD RASP

Files. For accurately sharpening well-tempered saws, carefully made files of good cutting quality are prime essentials.

Disston Files are of Disston-made Steel, with well-formed teeth. They are hardened by a Disston special process.

We use over 35,000 dozen files annually in our own handle department, saw works, and machine shops. This enables us to watch and maintain a high standard of quality and efficiency.

Information regarding files suitable for sharpening hand saws will be found on page 36 under the heading "Necessary Equipment."

CROSS-CUT SAWS

Cross-cut saws are made primarily for cutting down, or "felling" trees, and for cutting the fallen trunk into logs of desired size—an operation called "bucking." They are made in different styles to cut the various kinds of timber easily and quickly.

All Disston Cross-cut Saws are of the famous Disston-made Steel; are hardened and tempered by special Disston processes and are finished with the same fine workmanship that has made the Disston Hand Saw "the saw most carpenters use."

Disston Cross-cut Saws are taper ground—that is, are ground so that they are of the same thickness along the entire cutting edge and then taper, on lines parallel to the cutting edge, to a thin back. This gives maximum amount of clearance for the blade without sacrificing any necessary weight, stiffness, or elasticity.


Disston High-Grade Cross-cut Saws, some styles of which are illustrated, are becoming increasingly popular because they are easy running and fast cutting saws of great durability.

The Suwanee, Virginian, Beaver, Buzz, and Cedar Savage One-Man are all high-grade saws. They are made for use where speed and ease in operation are essential. For anyone with much sawing to do, these saws will be very satisfactory. Whether the "four-cutter" or "two-cutter" type is to be used, is largely a matter of individual preference and is a question that can best be answered by your local hardware man.

All high-grade cross-cut saws are made with a "raker-tooth." The raker tooth is set between each group (either two or four) of scoring teeth and looks like a chisel. The scoring teeth cut a groove at the sides of the cut and this raker tooth planes out the material from the center. That is why "saw-dust" made with Disston High-Grade Cross-cut Saws looks like shavings.


The regular cross-cut saws, of which No. 1 Tenon Tooth is an example, are the old type of saw and are used for ordinary sawing where speed and exceptional durability are not such important factors.

NO. 495 SUWANEE CROSS-CUT SAW



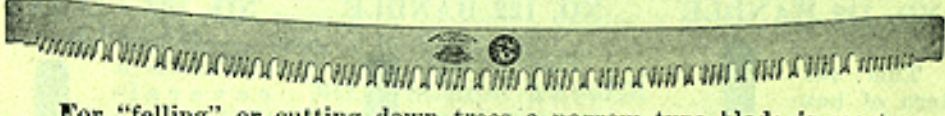
The Disston Suwanee Cross-cut Saw is of the highest grade of the cross-cut saws made by Disston. In material, workmanship, and design it represents the best. It is largely used by experienced lumbermen because of its exceptional speed in operation, and durability. The Suwanee is most commonly used for "bucking" or cutting fallen timber to lengths—a wide type blade being preferred by many for this work, although it is and can be successfully used for "felling" or cutting down standing timber. The Suwanee is a "four cutter with raker tooth" type. It is six gauges thinner on the back than on the tooth edge. It is made in lengths from 5 to 8 feet and longer if required.

NO. 289 VIRGINIA CROSS-CUT SAW




This saw is exactly like the Suwanee in design and is made for the same purpose. It is made to meet the demand from those users who prefer the "two cutter" type. It is six gauges thinner on the back than on the tooth edge and is of the same quality and cost as the Suwanee. It is made in lengths from 5 to 8 feet and longer if required.

NO. 494 BEAVER (HOLLOW BACK) CROSS-CUT SAW



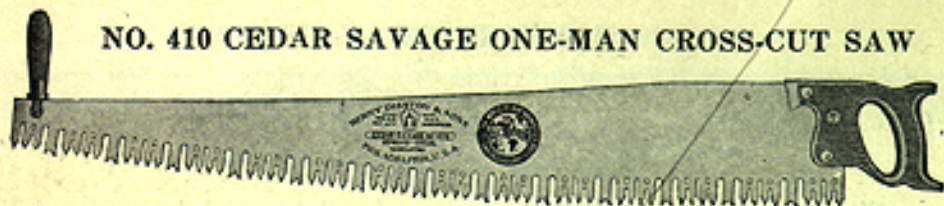
For "felling" or cutting down trees a narrow type blade is most commonly used, because it is easier to operate in this work than a wider blade. The Beaver of the same good quality as the Suwanee and Virginian, is made primarily for "felling" although it can be used for other work. It is a "four-cutter" with raker tooth; the blade is narrow, cut with a curved or "hollow" back, and ground three gauges thinner on the back than on the cutting edge. This saw is made in lengths from 4 to 8 feet and longer if required.

NO. 470 BUZZ CROSS-CUT SAW



The Buzz, of the same quality of material and workmanship as the saws described above, is a blade intermediate between the wide (the Suwanee and Virginian) and the narrow Beaver types and is used for both "bucking" and "felling" where the trees to be cut are small. The Buzz is similar in quality and price to the Beaver. It is made in lengths 4 to 8 feet and longer if required.

NO. 410 CEDAR SAVAGE ONE-MAN CROSS-CUT SAW



The Disston Cedar Savage One-man Cross-cut Saw is especially adapted for cutting cedar. It is designed to be used by one man, although it can be fitted with an auxiliary handle for two men's use. It is made of the same quality Disston-made Steel as Disston Hand Saws. The blade is narrower than the regular one-man cross-cut saw (of which Disston makes a complete line) and, being ground to a taper, affords the necessary clearance with the least amount of set.

This is a "four-cutter" saw. The teeth are deep with special shaped undercut and ample gullet room. It is fitted with a large handle with two horns, made of selected, thoroughly seasoned hardwood. The grip is extra large, suitable for a gloved hand. This saw is made in lengths 3 to 6 feet.

NO. 1 TENON TOOTH CROSS-CUT SAW

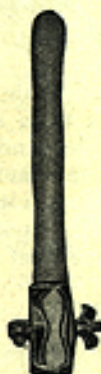


This style of cross-cut saw is perhaps the oldest form in use. It is still used by a great many for bridge work, framing, and ordinary two-man sawing where one tool must do many kinds of work.

HANDLES FOR CROSS-CUT SAWS

NO. 119 HANDLE

This pattern of handle is made to be fastened on the edge of the saw and is preferred by some users. The handle, 13½ inches long and 1¾ inches in diameter, is made of carefully selected, thoroughly seasoned hardwood; shaped for an easy, comfortable grip; and fitted with heavy malleable iron castings, and a strong threaded bolt with a wing nut.



NO. 122 HANDLE

This is the best and strongest loop handle made. It is easily and quickly adjusted to, or removed from, the saw. This handle has a very easy and comfortable grip. It is made of carefully selected, thoroughly seasoned hardwood, well-fitted with malleable iron castings.



NO. 103 CLIMAX HANDLE

This is a reversible handle for holding the cross-cut saw in a horizontal or perpendicular position. It is similar in style to the No. 119. The difference is that the castings are of lighter weight, with malleable iron bolt and nut. This handle is made 13½ inches long and 1¾ inches in diameter.



SCREW-DRIVERS

NO. 38 SCREW DRIVER



Automobilists, mechanics, and all workers who subject their screw-drivers to great strains will find this a very satisfactory tool.

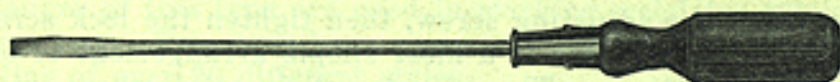
The blade, of Disston-made Steel, is especially hardened and tempered throughout; it is subjected to severe "crow-bar" or pry tests and tests for toughness of the point before leaving our factory.

The handle is of hardwood, black finish, and the shape provides a firm grip. The ferrule is extra long and heavy and nickel-plated. The blade is fastened in the handle by a special arrangement of spines which absolutely prevents turning in the handle.

It is made in sizes from 3 to 12 inches.

In all screw-drivers, length is measured by length of blade only.

NO. 31 SCREW-DRIVER



This is a special screw-driver for the use of cabinet makers and others requiring a light tool. It has a round steel blade, $\frac{3}{16}$ of an inch in diameter, carefully hardened and tempered, finished bright, black hardwood handle.

The tang of this screw-driver is driven into the handle, and a rivet, headed on both ends, extends through ferrule, handle, and tang. This prevents the blade from turning in the socket, making a strong, durable driver.

The sizes range from 2 to 12 inches.

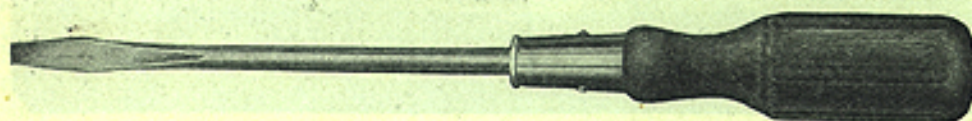
NO. 9 SCREW-DRIVER



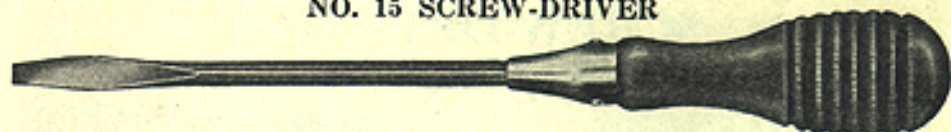
In the No. 9 screw-driver, the blade extends through the handle and is capped on the end (as shown in the illustration). In addition to this, a rivet extends through the handle, ferrule, and blade to prevent the blade from turning in the handle. This construction gives a very strong, durable tool.

The handle has rubberoid finish. The blade, of Disston-made Steel, is carefully hardened and tempered and has a polished finish. This screw-driver is made in sizes from 3 to 12 inches.

NO. 30 SCREW-DRIVER



NO. 15 SCREW-DRIVER



The round blades in the Nos. 30 and 15 screw-drivers are of Disston-made Steel, forged to shape, carefully hardened and tempered.

The tang is securely fastened in the handle and a rivet extending through ferrule, handle, and tang is headed on both ends. This prevents the blade from turning in the socket, making a strong, durable screw-driver.

Both of the drivers are made in sizes from 2 to 12 inches.

PLUMB AND LEVELS

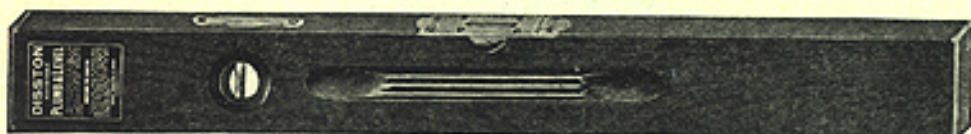
Disston Plumb and Levels have achieved an enviable reputation for excellence in workmanship and design. They are all made of carefully aired and kiln dried hardwood stock.

The Disston Plumb and Level Adjustment is the most simple and positive on the market.

The removal of two small screws gives immediate access to the working parts. Loosen the lock screw, true up the bubble by turning the adjusting screw, then tighten the lock screw—the job is done. This is a most simple arrangement to offset possible variations. The adjustment is solid when set and there are no springs to allow annoying inaccuracy. Moreover, this adjustment cannot rust fast, because the screws work directly into the wood.

The Disston line includes levels for all uses. The following are three representative styles.

NO. 16 PLUMB AND LEVEL (ADJUSTABLE)



This is a well-finished and very popular tool at a medium price. The No. 16 is fitted with the Disston Adjustment described above. The stock is of thoroughly seasoned hardwood, stained and polished. This level has the arch top plate over the level glass, two side views, the Disston Corrugated Grip, and is reinforced with solid and very heavy brass ends for protection against breaking or chipping in case of accident. It is made in 26 to 30 inch lengths.

NO. 9 PLUMB AND LEVEL (NON-ADJUSTABLE)



This is a good, practical, non-adjustable level made of plain hardwood stock at a moderate price. The No. 9 has an arch top plate over the level glass. It has two side views and is fitted with the Disston Corrugated Grip—a special grip that gives an unusually comfortable and secure hold on the level. It is made 24 to 30 inch lengths.

NO. 24 PLUMB AND LEVEL (ADJUSTABLE)

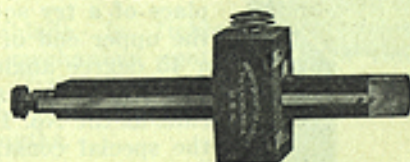


This is a well-made level, of hardwood stock, stained and highly polished. The No. 24 has the Disston Adjustment, Corrugated Grip, Arch Top Plate, Improved Duplex Side Views and solid brass ends—a carefully made and highly finished tool. The No. 24 is higher in finish than the No. 16 and, therefore, slightly higher in cost.

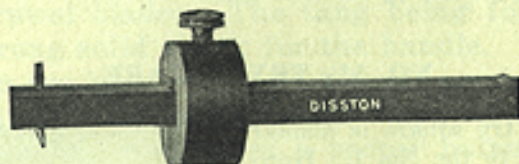
GAUGES

Gauges of this type are used in marking wood for cutting mortises, etc. Two popular gauges are shown from a complete line of over 20 different styles.

NO. 93 GAUGE



This gauge is made for those who desire fine tools. The material, workmanship, and finish are of the best quality. The gauge is of genuine rosewood stock, highly polished. The screw slide, head, and stem are protected with brass strips. The No. 93 is fitted with a brass thumb screw for tightening.



NO. 83 MARKING GAUGE

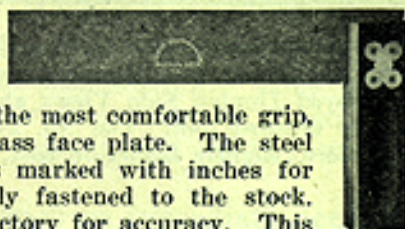
Heavy spur of tempered steel cuts a clean groove. Will not follow grain of wood. Oval head allows close work. Knurled screwhead gives positive lock, but prevents overtightening of screw or splitting of head. Made of cherry wood inlaid with two brass strips. Screw in stem prevents removal of head. Not graduated unless specified. Made specially for school shops.

TRY SQUARES AND BEVELS

The chief requirements of this class of tools, which are used for marking angles for sawing, etc., are accuracy and durability. All Disston Try Squares and Bevels are carefully made of good materials and tested for accuracy.

NO. 1 TRY SQUARE

Try squares are made for measuring and marking right angles. This is the kind of tool used in marking a board for a "square" end. The No. 1 try square has a genuine rosewood stock hollowed for the most comfortable grip, nicely polished, and fitted with a heavy brass face plate. The steel blade is tempered; has a blued finish; is marked with inches for measuring; and is accurately and securely fastened to the stock. Every No. 1 try square is tested at the factory for accuracy. This tool is made in sizes from 3 to 18 inches.



NO. 10 MITRE SQUARE



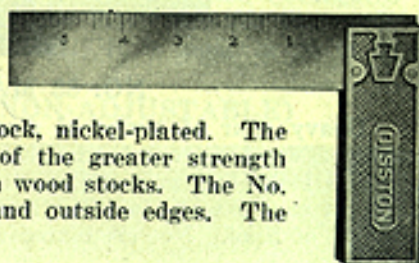
A mitre square can be used in place of a try square and, in addition, the upper end of the stock is cut with a 45 degree angle for marking mitres. The No. 10 is made of the same materials as the No. 1 try square above and the special construction absolutely insures accuracy and strength. The blade is a solid, "L" shaped piece of steel. One arm of the blade extends through

a slot in the stock—flush with the back—and is fastened there with heavy brass rivets. This makes the stock and blade practically a one-piece tool.

The sizes vary from 4½ to 12 inches.

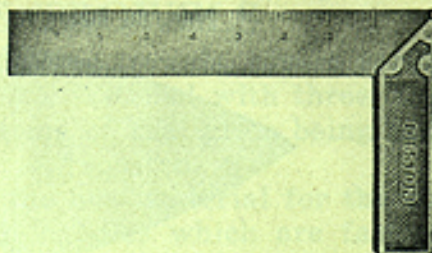
NO. 5½ TRY SQUARE

The No. 5½ try square is similar in design and use to the No. 1. However, the No. 5½ is made with a steel blade, tempered and marked in eighth inches for measuring, and has an iron stock, nickel-plated. The iron stock is preferred by some because of the greater strength and durability of the tools than those with wood stocks. The No. 5½ is true for marking on both inside and outside edges. The sizes range from 2 to 12 inches.

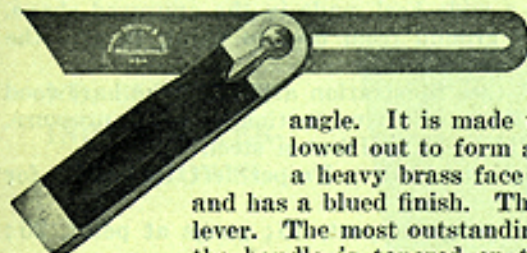


NO. 11 MITRE SQUARE

This square is of the same style and construction as the No. 5½ except that the upper end of the stock is cut at a 45 degree angle for use in mitering work. This is made in sizes from 2 to 12 inches.



NO. 2 BEVEL



The No. 2 bevel is an adjustable tool that can be set for marking a bevel at any desired angle. It is made with a genuine rosewood stock, hollowed out to form a comfortable grip. It is fitted with a heavy brass face plate. The steel blade is tempered and has a blued finish. The blade is set or released by a brass lever. The most outstanding feature of the No. 2 bevel is that the handle is tapered on the side which holds the tightening lever. This allows the tool to lie flat on either side. This bevel is made in lengths from 6 to 14 inches.



NO. 3 BEVEL

The No. 3 bevel has a nickel-plated iron stock; steel blade. The blade is tightened or released by a patented mechanism controlled by a thumb-screw at the butt of the stock. A quarter turn of this screw absolutely locks the blade in place. The No. 3 is made in 6, 8, and 10 inch lengths.

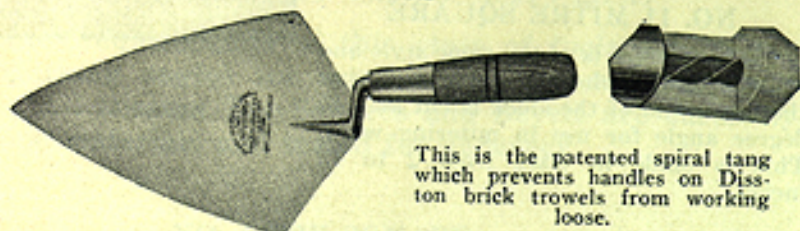
BRICK TROWELS

Each Disston Brick and Pointing Trowel is made of a single piece of Disston-made Steel, of a quality especially adapted for trowel blades. The tang being forged from one end gives a strong solid shank for the handle.

The blades are highly tempered, taper-ground, and possess the requisite springs. The posts are made straight, (at right angle to the blade) which gives a proper balance to the tool. The handles, turned to form, give an easy, comfortable grip. They are reinforced with a strong ferrule and fastened on the tang by a special method to prevent them from coming loose.

While but few trowels are illustrated here the Disston line is complete and meets the requirements of the various users in all sections.

NO. 36 BRICK TROWEL



This is the patented spiral tang which prevents handles on Disston brick trowels from working loose.

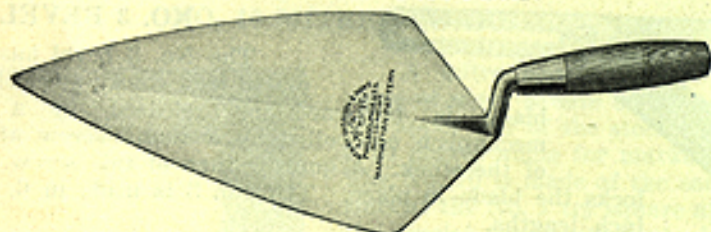
The No. 36 Brick Trowel has a wide heel made in the approved shape. Blade of Disston made steel, taper ground from heel to point, to give the desired flexibility.

The steel tang is spiral shaped (see illustration above). The hardwood handle is forced on to this tang with a revolving motion at great pressure. Blade and tang made from one solid piece of Disston steel.

Trowel post at true right angle to blade. Proper left to handle for easy work.

Sizes: 9, 9½, 10, 10½ inches; gauge at post, 15; gauge at point, 25; height of post, 1½ inch.

NO. 30 BRICK TROWEL MANHATTAN PATTERN

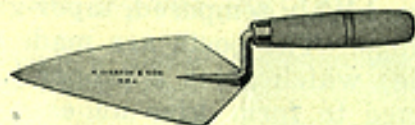


The No. 30 trowel has a wide heel and one edge more rounding than the other—a style preferred in some sections.

This trowel is made in lengths of half inches from 9½ to 12 inches, measured on the blade from the point to the heel of the post.

POINTING TROWELS

NO. 15 POINTING TROWEL



For the pointing or shaping of the bond or mortar between the bricks or stones of a wall the No. 15 pointing trowel is the shape most generally used.

It is well made in every particular, with a solid forged shank. It is firmly handled-up and is strong and durable.

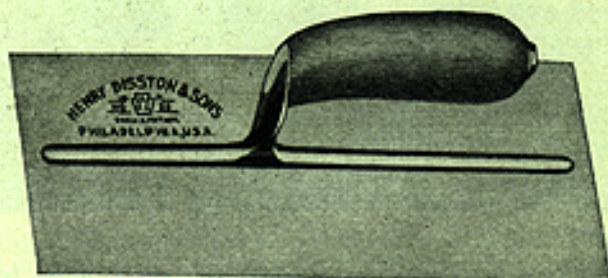
The lengths are in half inches from 4 to 6½ inches, measured on the blade from the point to the heel of the post.

PLASTERING TROWELS

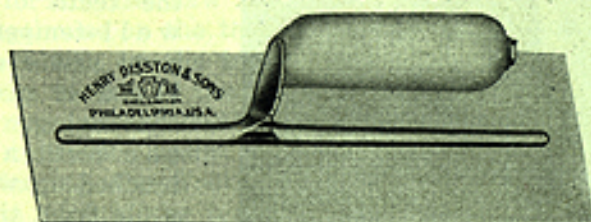
The full Disston line of plastering trowels, covers various patterns, short and long mountings, fastened with three, four, five, or ten rivets to the blade, some of the latter being made extra thin and specially ground as required.

The mountings are made of the best material for the purpose—malleable iron—fitted with handles which are fastened by an improved method and which are not liable to come loose.

NO. 38 FINISHING PLASTERING TROWEL



Manufactured from the highest grade Disston-made Steel, tempered by our improved method; accurately ground blades, extra thin, 24 gauge, slightly concave. Extra long mounting, fastened to the blade with ten rivets. The handle is specially shaped and formed to fit the hand.



NO. 28 PLASTERING TROWEL

This is representative of a group of thin bladed trowels, with special design of mounting, some having a reinforced post, with polished wood handle or leather grip handle, and others with extra thin blades.

No. 28, illustrated, possesses an accurately ground thin blade, fastened to an extra long mounting by ten rivets. The upright forms a shield for the protection of the hand. A long tang extends through the handle which is securely fastened by a hexagon barrel-nut. The end of the polished wood handle is beveled to act as a thumb-rest.

The blades vary in size from 10x4½ inches to 12x5 inches.

This group of plastering trowels represents the most efficient and highest type of trowels ever placed on the market.

In addition to brick, pointing, and plastering trowels the Disston line—a complete line of trowels—includes trowels of special strength and durability for cementers' use, circle or cove trowels, corner trowels for the inside or outside of corners, garden trowels, etc.

HOW TO SHARPEN A SAW

A Disston Saw is a fine tool, accurately made by master-craftsmen and will give a life-time of service if properly handled. Use it as a fine tool should be used. When necessary to set and file it, follow these directions carefully.

Before starting work, read ALL the directions. Then, as you work, read them step by step.

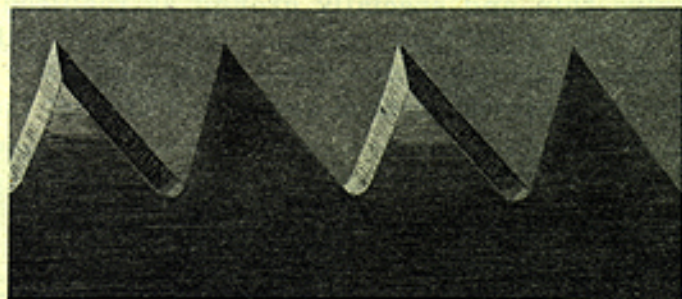


Fig. 1—Side view of cross-cut teeth

Examine the tooth-edge of your saw to see if the teeth are uniform in size and shape and to see that they are properly "set."

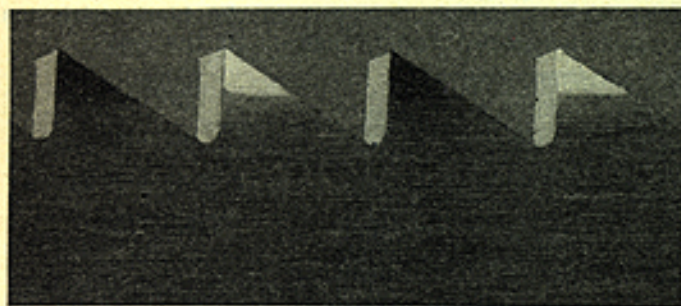


Fig. 2—Side view of rip saw teeth

It is not necessary to reset the teeth of a well-tempered hand saw every time it needs sharpening. If the teeth are touched up with a file from time to time as the saw is used (on the same principle as stropping a razor) the saw will run longer and better, and sufficient set will remain to enable the saw to clear itself. The proper amount of set is shown in Fig. 3.



Fig. 3—Looking from the back of a saw. This shows how the teeth, when set, extend beyond the edge of the blade

Now study the shape of the teeth. Teeth of saws for cross-cutting should be shaped like those in Fig. 1; teeth of saws for ripping like those in Fig. 2, above. A saw cannot give good service unless the teeth are even (of the same size and regular) and properly shaped.

If the teeth are uneven, it is necessary to "joint the saw" and "shape the teeth" in accordance with the instructions below:

JOINTING

(To be done only when the teeth are uneven or incorrectly shaped, as explained above). Unless the teeth are regular in size and shape the set can never be regular and it is useless to attempt to regulate them without "jointing" until all are of equal height.

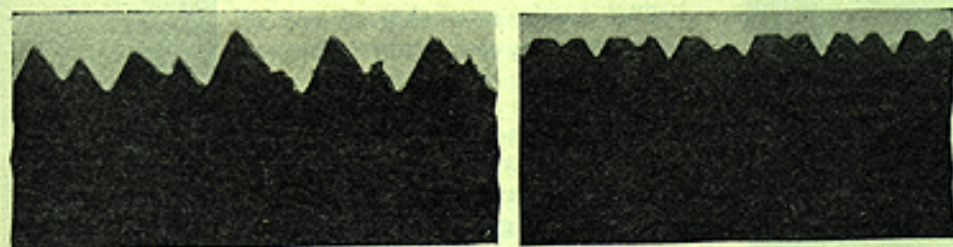


Fig. 4—The above are photographic reproductions of the actual condition of some saws returned to us and are typical of the manner in which many saws are used and abused. It is best to have saws, such as these, retooled at the factory

TO JOINT A SAW

Place the saw in a clamp, handle to the right. Lay a mill file lengthwise on the teeth. Pass it lightly back and forth the length of the blade, on the tops of the teeth, until the file touches the top of every tooth. If the teeth of your saw are very uneven, it is best not to make all the teeth the same height the first time they are "Jointed." In this case "Joint" only the highest teeth first, then "Shape" (see "Shaping the Teeth," below) the teeth that have been "Jointed," then "Joint" the teeth a second time, passing the file along the tops of all the teeth until it touches every tooth. The teeth then will be of equal height. Do not allow the file to tip to one side or the other.

The Disston Hand Saw Jointer, described on page 20, is made to help you do this work more accurately. This tool holds the file and is so made that it holds it squarely on the tooth edges. This eliminates any chance of tipping the file to one side or the other and so rounding the points of the teeth.

SHAPING THE TEETH

(To be done only when the saw has been "Jointed.") After jointing, all teeth must be filed to the correct shape. The gullets must be of equal depth. The fronts and backs of the teeth must have the proper shape. The teeth must be uniform in size. (See page 32, Figs. 1 and 2 for shape. Disregard bevel, which will be taken care of later.) To do this, place the file well down in the gullet and file straight across the saw, at right angles to the blade (under no conditions hold the

file at any other angle.) If the teeth you are filing are of unequal size, press the file against the teeth having the largest tops, until you reach the center of the flat top made by "jointing."

Then move the file to the next gullet, and file until the rest of the top disappears and the tooth has been brought up to a point. Make no effort to bevel the teeth at this time.

The teeth, now shaped and of an even height, are ready to be set.

SETTING THE TEETH

As mentioned before, you need not reset the teeth of a well-tempered hand saw every time the teeth need a light sharpening. If it was not necessary to "Joint" and "Shape the Teeth," examine the saw to see if the teeth have the proper amount of set indicated in Figs. 3 (page 32), 5 and 6 (this page). If they do, the saw is ready for filing.

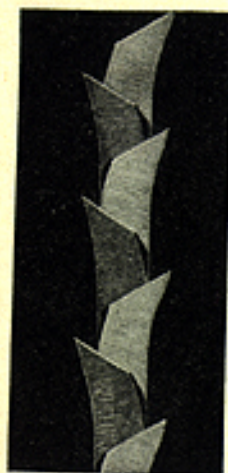


Fig. 5
End view cross-cut teeth

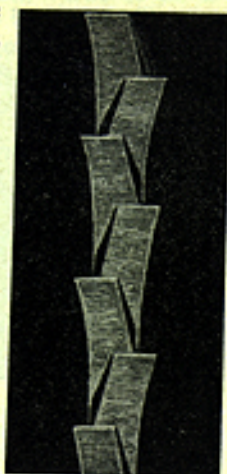


Fig. 6
End view rip teeth

If they do not, set them in accordance with the following instructions:

Note—It is always necessary to set the teeth when you have "Jointed" and "Shaped the Teeth" of your saw.

The teeth of a hand saw should be set before filing to avoid injury to the cutting edges.

Purpose of Set. The purpose of setting the teeth of saws, that is, springing over the upper part of each tooth (not more than the half of the tooth nearest the point), one to the right, the next to the left, and so on alternately throughout the entire tooth edge, is to make the saw cut a kerf slightly wider than the thickness of the blade. This gives clearance and prevents friction which would cause the saw to bind and pull hard in the cut.

Depth of Set. Whether the saw is fine or coarse, the depth of the set should not go, at the most, lower than half the length of the tooth. This is important. If deeper than this it is sure to spring, crimp, or crack the blade, if it does not break out the teeth.

A properly ground saw requires very little set, for the blade, being of uniform thickness along the entire tooth-edge, tapers thinner to the back and also tapers from butt to point, which provides a measure of the clearance necessary for easy running.

Soft, wet woods require more set and coarser teeth than dry, hard woods. For fine work on dry woods only, either hard or soft, it is best to have a saw with fine teeth and little set.

Setting with Hammer and Anvil. Setting can be done by the use of a special anvil, which has a slightly beveled edge over which the teeth extend. The points of the teeth, extending over this beveled edge, are given the set by striking each a quick blow with a light hammer, the force of which springs the point the depth of the bevel on the face of the anvil. The further over the bevel the point extends, the greater, of course, will be the depth of set. A highly tempered saw may require several blows as it may break if you attempt to set the teeth with too heavy a blow.

Setting by this method requires considerable skill and only by practice can the weight of the blow required be determined. This method is not recommended for the amateur.

Setting with Sawset. The general practice, outside of a saw factory, is to set the teeth with the use of what is termed the spring set—bending over the point of tooth by pressure with a special tool known as a sawset. Many so called sawsets are impractical; they give too deep a set, or the pressure is improperly applied. Recognizing this difficulty years ago, Disston invented and produced the Triumph Sawset and fully recommend it as a tool that will do this work properly. The Triumph Sawset is illustrated and described on page 19.

FILING THE TEETH

There are quite a number of shapes of teeth, varying in angle, bevel, etc., each adapted for special work such as cutting dry seasoned lumber, wet green lumber, soft woods, hard woods, etc., but the purpose of this article is to treat only on the setting and filing, or sharp-

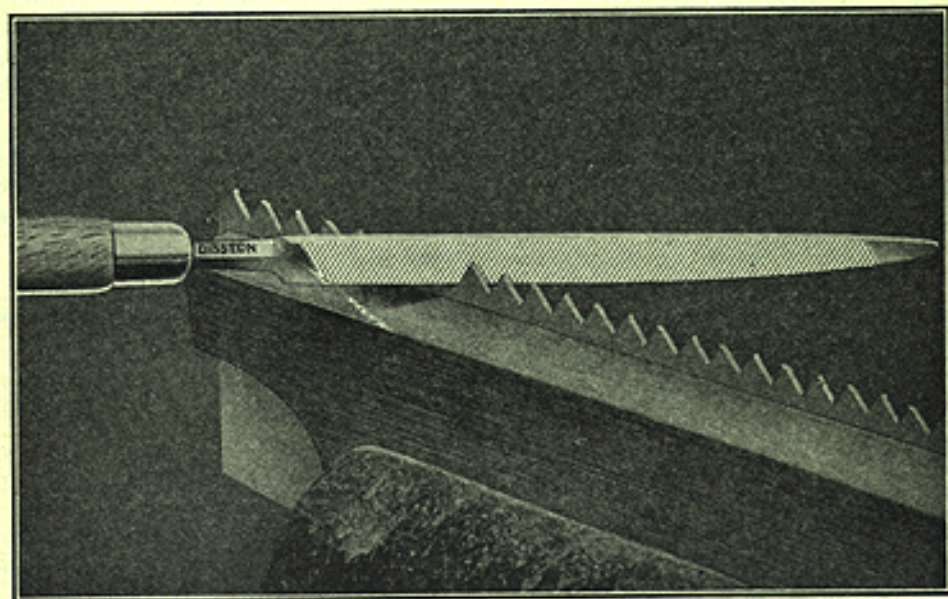


Fig. 7.—File in position near point of saw

ening, of those hand saws ordinarily used, the teeth of which are alike, whether large or small. Everyone but the experienced saw user who knows from experience just what angles and bevels he prefers, should follow these rules exactly for best results.

Necessary Equipment. The only equipment necessary consists of a clamp and file. The clamp should be sufficiently strong to hold the blade firm enough to prevent chattering, and one in which the blade can be placed and tightened easily and quickly. The top of the clamp should be on line with the operator's elbows, to give the best working position.

Disston Taper Files should be used, sizes varying with the fineness of the teeth. The table below indicates the particular style of file to be used on the different point rip and cross-cut teeth.

	5	and 5½	pt. Cross-cut	6	in. reg. taper file
6, 7, 8	"	9	"	"	4½ " " "
	10	"	11	"	" 5½ " slim " "
4½, 5, 5½	"	6	" Rip	4½	" reg. " "
4 pt. rip and coarser,	6 in. regular taper file.				

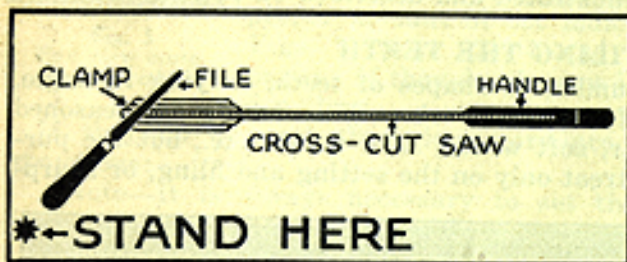


Fig. 8—First position for filing hand saws for cross-cutting

To determine the "point" of a saw, count the number of tooth points to the inch, measuring one inch from the point of any tooth. Note that there is always one more point to the inch than there are complete teeth to the inch.

Place the saw in filing clamp with handle at right. The bottom of the gullets should be ¼ in. above the jaws of the clamp. If more of the blade projects the file will "chatter" or "screech." This dulls the file quickly.

It will assist you to file a saw properly, if at the start, you pass a file lightly down the tops of the teeth (just as instructed under "Jointing" page 33) to form a very small flat top on each tooth. The purpose of this is to

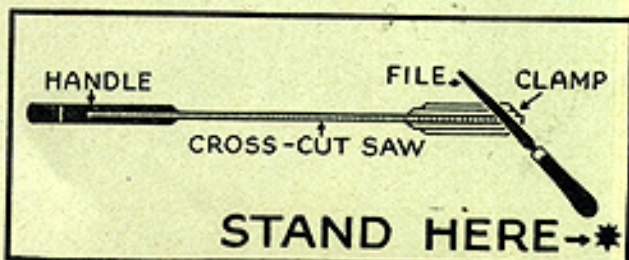


Fig. 9—Second position for filing cross-cut saws

provide a guide for filing. It does, however, again even up the teeth—which was the main purpose of “Jointing” explained on page 33. Now, file the teeth as instructed in the following paragraphs.

Stand at First Position, Fig. 8. Start at the point. Pick out the first tooth that is set toward you. Place file in the gullet to the left of this tooth. Hold file directly across the blade. Then swing the file handle toward the left for about 45 degrees (half of a right angle). Correct angle is shown in Fig. 8.

Hold the file level and at angle shown in Fig. 8. Do not allow it to tip upward or downward. Be sure the file sets down well into the gullet. Let it find its own bearing against the teeth it touches. It will help the beginner if he will first observe the shape and bevel of some of the unused teeth that can most always be found near the handle-end of a saw. If these teeth are shaped as they left the factory, they will serve as a guide.

The file should cut on the push stroke. It files the tooth to the left and the tooth to the right at the same time. File the teeth until you cut away one-half of the flat tops you made on the teeth as a guide, then lift the file from the gullet. Skip the next gullet to the right, and place the file in the second gullet toward the handle. Repeat the filing operation on the two teeth the file now touches, being careful to file at the same angle as before. Continue this way, placing the file in every second gullet, till you reach the handle-end of the saw.

Study Fig. 9 before you go further. Turn the saw around in the clamp, handle to the left. Take Second Position, Fig. 9. Place the file in the gullet to the right of the first tooth set toward you. (This is the first of the gullets you skipped when filing the other side of the saw.) Turn file handle 45 degrees toward right, this time. Now file until you cut away the other half of the flat top made on the teeth as a guide, and the teeth are sharpened to a point. Continue this, placing file in every second gullet, till you reach the handle of the saw.

FILING HAND SAWS FOR RIPPING

With one exception, this method is exactly the same as that given for Cross-cut Saws.

This exception is that rip saws are filed with the file held straight across the saw, at a right angle to the blade. Some mechanics, however, prefer to file a slight bevel in rip saws.

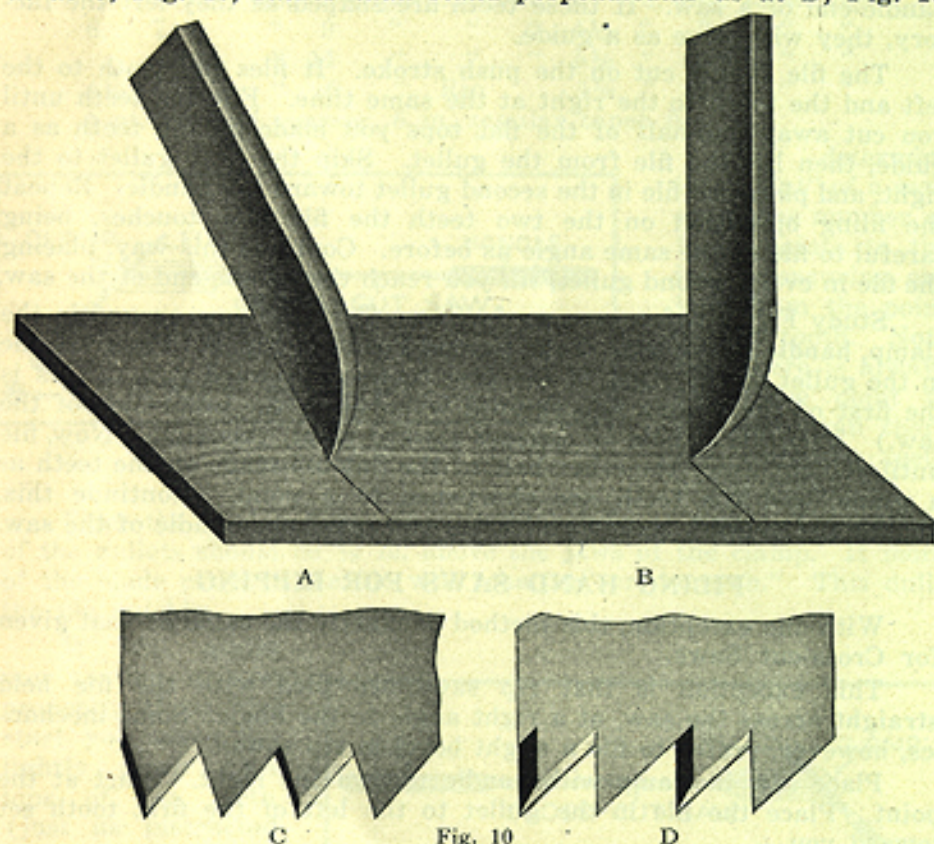
Place saw in clamp with handle toward the right. Start at the point. Place the file in the gullet to the left of the first tooth set toward you.

Continue placing file in every second gullet and filing straight across. When handle of saw is reached in this way, turn saw around in the clamp. Start at point again, placing file in first gullet skipped when filing from other side. Continue again in every second gullet till handle-end of saw is reached.

THE SHAPE OF SAW TEETH PROPER ANGLE OF TEETH

Some additional information about the angle of the teeth in saws for cross-cutting may be of use. The angle of the tooth is one of the most important features and too much care cannot be taken to have the correct angle for the duty required.

To illustrate this, the accompanying picture represents a board, across which we wish to make a deep mark with the point of a knife. Suppose we hold the knife nearly perpendicular as at B, Fig. 10. It is evident that it will push harder and will not cut as smoothly as if it were inclined forward as at A, Fig. 10. It follows, then, that the cutting edge of the cross-cut saw should be at an acute angle as at C, Fig. 10, rather than stand perpendicular as at D, Fig. 10.



Too much angle and too heavy a set are very common faults, not only detrimental to good work but ruinous to the saw. When a saw has a large amount of hook or pitch, as at D, Fig. 10, it often takes hold so keenly that frequently it "hangs up" suddenly in the thrust—the result, a kinked or broken blade. When there is too much set,

the strain caused by the additional and unnecessary amount of set is out of proportion to the strength of the blade, and teeth are sometimes broken. The most common angle used is 60 degrees, though this may be varied a little more or less to advantage as the user becomes more expert. In filing saws for cross-cutting, the file is held at an angle, and, therefore the teeth are sharpened on an angle. We speak of this angle on the front and back of the teeth as "bevel."

BEVEL OF THE POINT

The proper amount of bevel to give the teeth is very important, for if there is too much bevel the point will score so deeply that the fibres severed from the main body will not crumble out as cut, but must be removed by continued rasping. In the cut below, B indicates the tooth and C the bevel on the point. The illustration, Fig. 11, shows—a tooth (enlarged) of a cross-cut saw with the same amount of bevel front and back. This saw is best suited for work in soft woods where rapid, rather than fine, work is required.

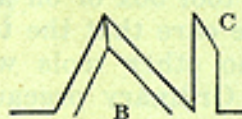


Fig. 11

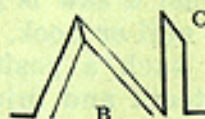


Fig. 12

Fig. 12 shows a tooth (enlarged) of a saw for medium hardwoods. This tooth has less bevel on the back which gives a shorter bevel to the point as at C.

It will be seen from these illustrations that the bevel on the front of the teeth is about the same, but the bevel of the point looking the length of the saw is quite different, depending upon the difference in the angles of the backs of the teeth. Here again, experience will indicate what is best. For the beginner, we recommend that the instructions given under "Filing the Teeth" be followed exactly.

HOW TO CARE FOR SAWS, TOOLS, AND FILES

Although the preceding pages cover the most important questions in connection with the care of a saw—that is, they tell how to sharpen a saw—there are a few other things that a tool user should know.

Moisture against a steel face, unless that face is well protected, means almost immediate rust. In order to keep a saw blade in the most perfect working condition, it must be entirely smooth on either side. Rust means pitting and, therefore, a rough surface. When you finish using a saw, rub it down with an oiled rag. Sperm oil is the best for this. In case the saw has been slightly rusted it is well to rub the blade down first with fine emery cloth and then apply the oil.

Another important thing is the way edge tools are put away. Whether a saw is placed in a tool box or on a shelf, or hung from a nail or hook, always take care that the tooth edge is placed in such a position that no other tools will knock against the teeth and injure them. Ordinary precaution will protect the teeth so that they will stand up a normal length of time.

The manner in which tools are placed on the bench when not in actual use is extremely important. These tools should always be placed with the cutting edges away from the person using them. An axe or hatchet should never be left standing on the floor where the foot may accidentally strike it. A saw should never be hung from a bench where the teeth can scratch a leg or knee.

When you are thru using a tool lay it down carefully. Do not drop it. A file, for instance, is an edge tool. Its teeth, to give the greatest efficiency, are very hard. When a man carelessly throws a file across his bench he is liable to break off the edges of several teeth. A good tool deserves good treatment and the more care you give it the better service it will give you.

Common sense will lay down for you most of the necessary rules for caring for your tools. Keep them in good working order, in a clean container or neatly arranged on hooks, and keep them in a dry place. If these instructions are followed out there should be no question of the tools losing their efficiency except as they wear out from old age.

All Disston Saws, Tools, and Files are guaranteed to be perfect in workmanship and material. But it is not to be expected that we can make a tool that will do good work when it is not properly used and cared for.

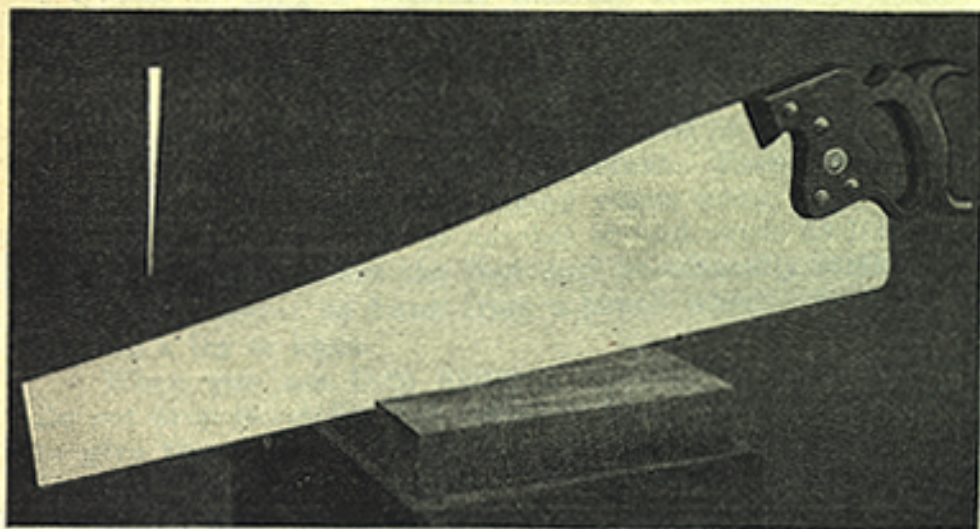
Nearly every day we hear from someone who has used one of our saws 20, 30, and up to 50 and 60 years. On the other hand, some saws, after being used for a few months, are returned to us as defective when they are perfect as far as workmanship and material are concerned, but have been made useless through abuse or lack of ordinary care.

Our main interest, naturally, is to have all our products give the maximum amount of service. Any saw or tool that is not absolutely up to Disston standard, we are only too glad to replace. But we ask the same consideration from the users of our products. Give them ordinary care; use them as they are intended to be used—and we know that the result will more than repay anyone for the little additional effort that is necessary.

HOW A SAW CUTS

An Explanation of the Construction and Operation of Hand Saws. Why cannot a board be cut by a blade with a knife edge when such a blade is used in the same manner as a saw?

Of course we understand that an instrument of this kind will sever exceedingly thin stock. But when it comes to a board of ordinary thickness, the knife edge will merely score to a certain depth. This depth depends upon the length of the bevel. The thicker portion of the beveled edge, coming in contact with the sides of the scoring, prevents the blade from entering further. The blade merely glides back and forth. If additional pressure is applied in an effort to force the cutting edge further into the work, the friction becomes so great that the blade will be jammed or wedged in the board. The reason for this is, that there is no displacement of wood to allow the cutting edge to reach more of the wood continuously, or to allow the back of the blade to slide without binding.

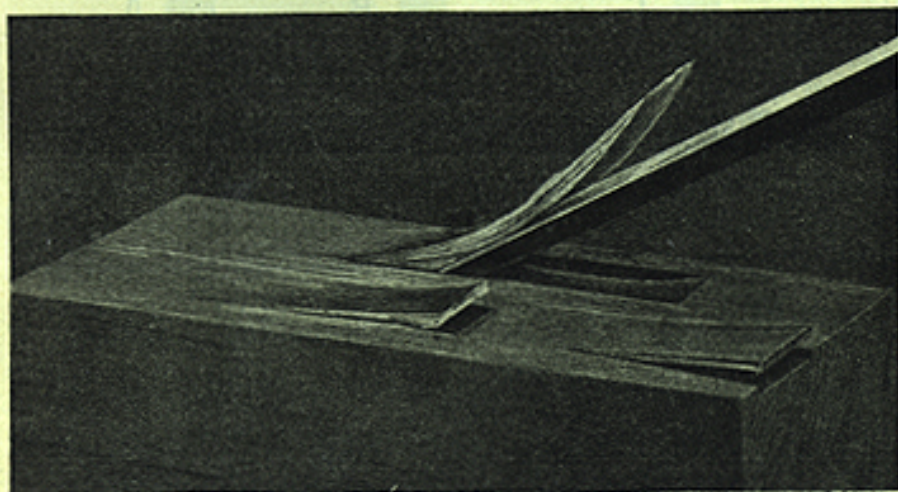


A knife edge with no means for clearance becomes bound or wedged in the wood

Saw Action Similar to that of Chisel. The nearest approach to the cutting action of a saw is the action of a chisel. However, instead of cutting out small pieces of wood like sawdust, the chisel separates and removes a long shaving, by what may be appropriately termed "paring" or "slitting." Its comparatively broad sharp edge separates the fibres of wood

lengthwise with the grain and does not cut on the sides. The wedge-shaped end merely raises the shaving or chip and the chisel, pushed ahead, tears the fibre at the sides. The angle at which the chisel is held, the amount of bevel on the cutting edge, the pressure exerted, and the hardness of the stock are factors which govern the thickness of the shaving.

The actions of both the knife and the chisel are employed in the cutting done by a cross-cut saw. A cross-cut saw moves successive pieces of material, not long shavings but small particles called sawdust, by scoring, cutting, and tearing.



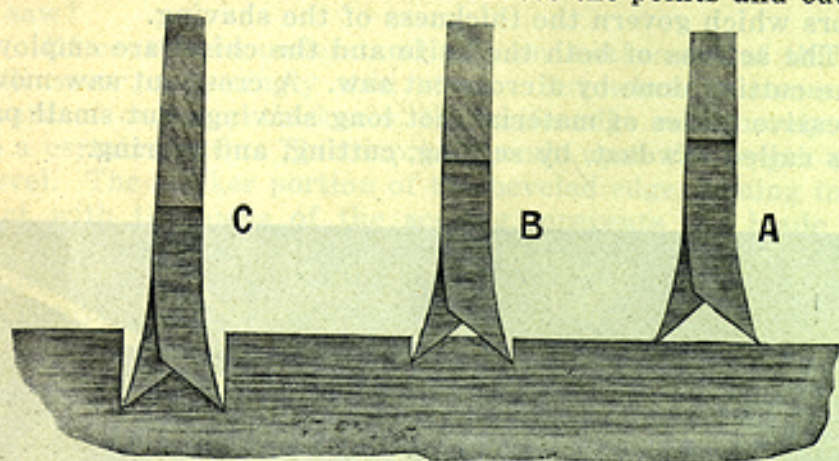
How a chisel cuts

The similarity comes to the rip saw in that its teeth are practically a series of small chisels.

The hand saw for cross grain cutting possesses practically V-shaped teeth. The teeth are set or bent over slightly to clear the body of the blade in the kerf. Although the back of each tooth is beveled as is the front, it is the outside edge of the front of the point that does the cutting.

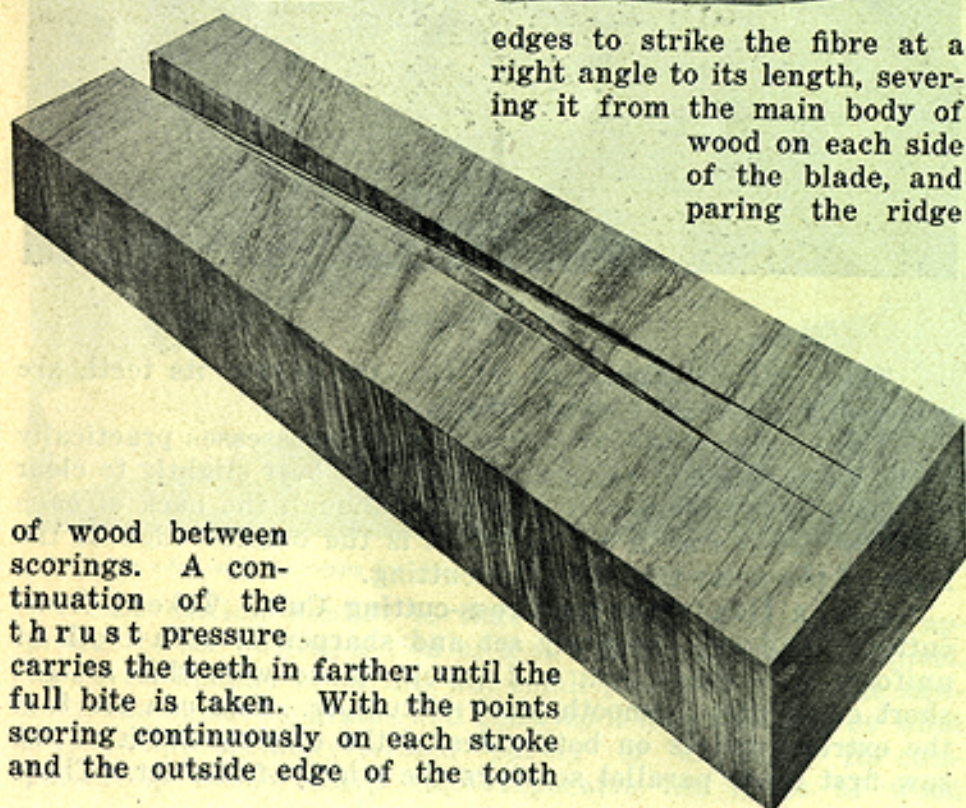
How a Hand Saw for Cross-cutting Cuts. Take a cross-cutting hand saw, properly set and sharpened, each tooth of uniform size, shape, set, and bevel. Make with this a light short cut across a smooth piece of lumber. One can see that the extreme points on both sides of the cutting width of the saw first made parallel scorings the width of the set. These

scorings are similar to the fine cutting of a knife across the face of the wood, thus starting the cut. Then as pressure is applied, the teeth enter deeper and deeper, gradually bringing into action the cutting edge on the outside front of the points. The forward motion of the blade causes the points and cutting



edges to strike the fibre at a right angle to its length, severing it from the main body of wood on each side of the blade, and paring the ridge

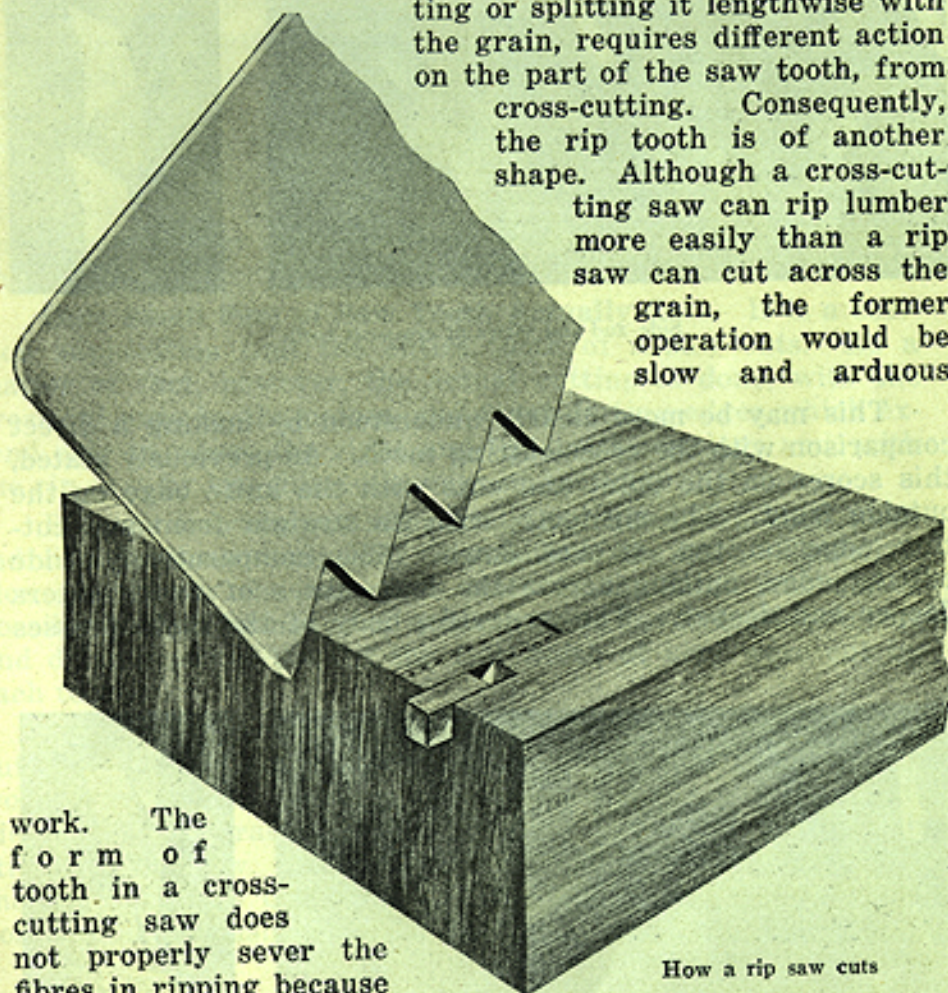
of wood between scorings. A continuation of the thrust pressure carries the teeth in farther until the full bite is taken. With the points scoring continuously on each stroke and the outside edge of the tooth



cutting, the beveled front edge of each tooth performs its duty, chisel-like, of crumbling up and dislodging the upper portion of wood left between the cutters. At each thrust of the saw the pieces of wood are carried out of the kerf in the throats or gullets between the teeth, until finally the board is completely divided.

How a Rip Saw Cuts.

The ripping of lumber, that is cutting or splitting it lengthwise with the grain, requires different action on the part of the saw tooth, from cross-cutting. Consequently, the rip tooth is of another shape. Although a cross-cutting saw can rip lumber more easily than a rip saw can cut across the grain, the former operation would be slow and arduous

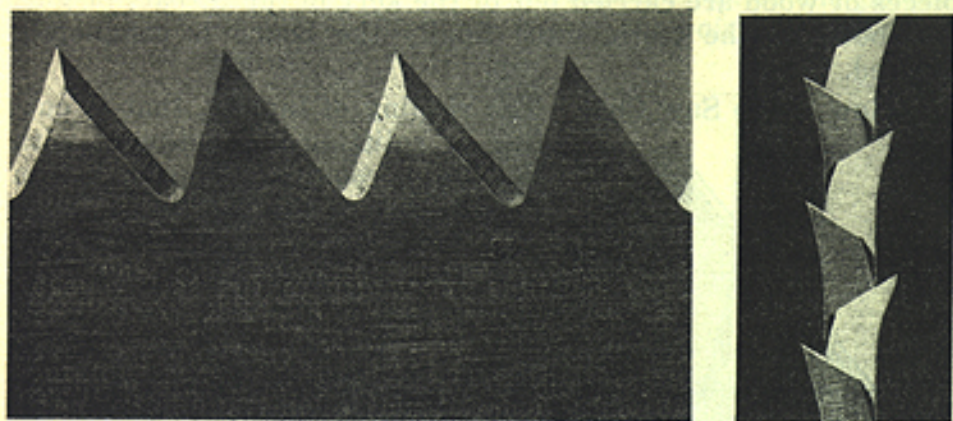


How a rip saw cuts

work. The form of tooth in a cross-cutting saw does not properly sever the fibres in ripping because the line of the cutting edge runs with the fibre instead of across it. This being the case the saw cannot cut freely nor entirely clear itself in the kerf.

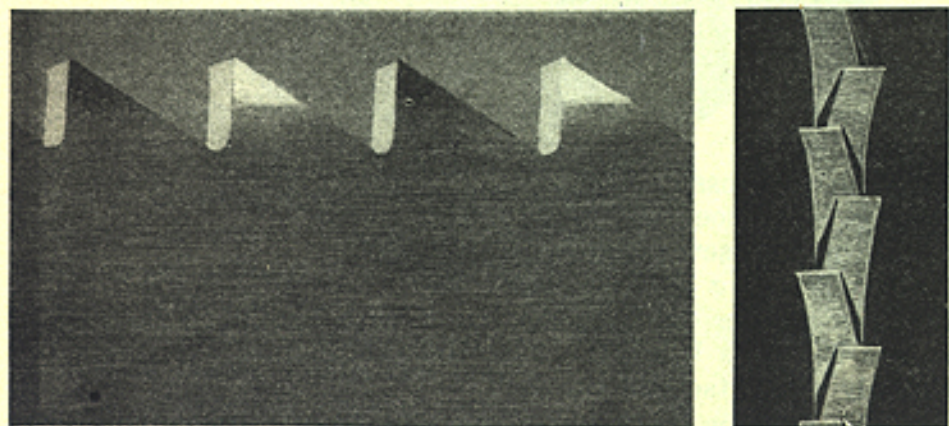
The rip saw tooth has a straight front. Its cutting edge strikes at practically a right angle to the fibre of the wood, but

severs it only at one place—the front of the tooth wedging out the piece of wood.



Side and end views of cross-cut teeth

This may be more clearly understood by making a direct comparison with the cross-cutting tooth. As previously stated, this scores on the point and cuts with the knife edge on the outside front. The rip tooth, with its straight front and cutting edge on top, strokes down. The comparatively wide cutting edge, cutting across the long fibres of wood, enters deeper and deeper. The wedgelike body of the tooth presses



Side and end views of rip saw teeth

against the partially severed piece of wood until, unable to stand the strain, the fibres on the sides and bottom of the small section tear apart. Piece after piece, each successive tooth cutting its portion of half the width of the kerf, is thus separated from the main body of the board and carried out in the gullets of the teeth at each thrust of the saw. In this manner, the rip saw practically chisels out the kerf in small sections, leading to a complete division of the board.

On a cross-cutting saw the pointed teeth, set alternately to right and left, leave a shallow groove, which runs along the cutting edge from butt to point. This groove is deep enough to allow a needle to slide in it. This is not true with the rip saw. It will be noticed, on glancing down the cutting edge of the rip saw, that the square topped teeth extend entirely across and beyond either side of the blade. The inside of the tooth on the right barely overlaps the inside of the tooth on the left.

Only Small Part of Saw Tooth Actually Cuts. It is a common supposition that the entire tooth of a saw cuts. As a matter of fact, however, the actual cutting is done, with the cross-cut saw, by the points, and front cutting edges which extend only to where the right and left teeth overlay; and, with the rip saw, by the chisel-like edge of the teeth.

Because they are set alternately right and left, each tooth individually severs only half the width of the kerf. This division of duty by the numerous teeth in the hand saw makes possible the performance of quicker work, involving less effort and driving power than if the full width of kerf were cut by each tooth.

So it will seem that, no matter what sort of a saw, the cutting edge of each tooth makes an incision across the long wood fibre. Then the base of the tooth plows out the small pieces thus separated. This is done continuously with each stroke of the saw. The saw enters farther with each thrust, the kerf becomes deeper, until a complete separation of the board is accomplished.

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