SIMONDS GUIDE

WARRANTED

The Simonds Saw

WORKS

FITCHBURG, MASS. CHICAGO, ILL.

U.S.A.

UNEQUALED IN QUALITY AND UNIFORMITY

BRANCH HOUSES

NEW YORK, NEW ORLEANS, PORTLAND, ORE.

SEATTLE, WASH. SAN FRANCISCO, CAL.

LONDON, ENGLAND.

for CARPENTERS

Wallace C Walker
1926

SIMONDS GUIDE
for CARPENTERS

A book of useful rules and illustrations gathered from different sources. Entirely revised.

SIMONDS MFG. CO.

Fitchburg, Mass.
Chicago, Ill.
Lockport, N. Y.
New York, N. Y.
New Orleans, La.
Portland, Ore.
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Seattle, Wash.
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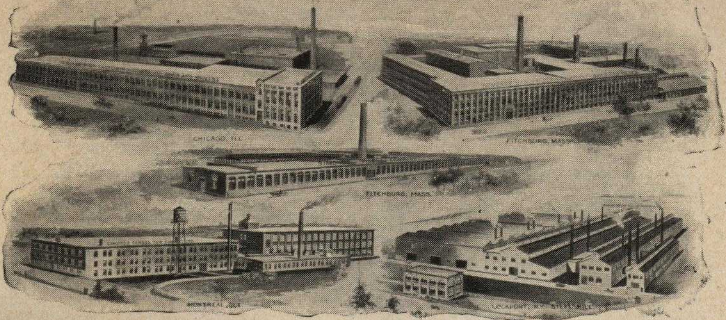


The four factories of the Simonds Manufacturing Company: two at Fitchburg, Mass., one at Chicago, Ill., one at Montreal, Que., and the Simonds Steel Plant at Lockport, N. Y.

INTRODUCTION

IN presenting this "Simonds Guide for Carpenters," we desire to provide for you a handy reference book of rules and other information that is usually hard to remember and yet must be had when it is wanted. As a book of value to Carpenters, we know of no other publication containing the practical information to be found in these pages.

But, first, last, and all the time, our object is to direct your attention to Simonds Saws illustrated in this book; and to create an interest which will result in a trial of a Simonds Saw. We are positive the quality is superior and a trial is all we want to win your confidence.

Very truly yours,

SIMONDS MFG. CO.

Ask Your Hardware Dealer

for

SIMONDS

Pronounced Si-monds

HAND SAWS

Regardless of its cost
This book should not be lost;
Remember its location
For it contains valuable information.

SOME POINTS FOR CARPENTERS

Rafter and stair sketches on the following pages.

A few directions here in framing rafter and stair stringers.

These instructions are good for any mechanic to know.

There are four principles or elements that apply to all trades: The point, line, superfice, and cube. Appreciation of the plumb, square and level is assumed and without knowing their application and importance one will never become a good mechanic.

A **Point** is that which has position without length, breadth, or thickness.

A **Line** is that which has length without breadth, or thickness.

Superfice is that which has length and breadth, without thickness.

A **Solid** or **Cube** is that which has length, breadth, and thickness.

It is absolutely necessary to realize the importance of these mechanical elements and implements, for their proper application and use makes your work right.

In making a pencil or chalk-line mark, always remember that the center of the mark is the Line.

Keep your tools in shape to enable you to cut to the mark. (Split the Line.) To do this a saw must be properly fitted; in other words, properly filed.

It takes but little time
To file a Simonds Saw
To split the Line;
Other saws may do it, too,
But Simonds Saws
Will do it true.

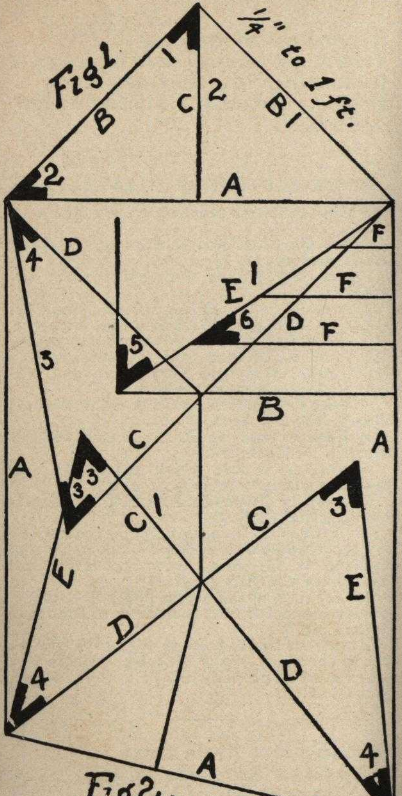
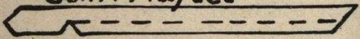


Fig 2.
Com. Rafter



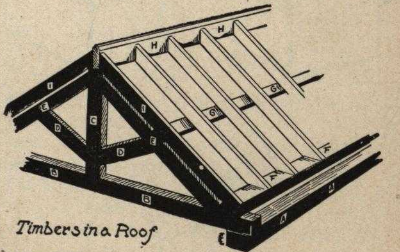
Rafters and Their Cuts

On the opposite page you will find a drawing and if you will study it just a little you will find how easy it is to get all the length of rafters for any pitch or any shape building. Everything in the drawing, Gable End, Hips, Jacks, is lying down flat. A A A A is the outside plate line. B B B is the common rafter of a square pitch roof. C C C is the rise. D D D D is the run of hips or valleys. E E E E is the lengths of hips or valleys. F F F is the jacks and length of them just as they lay.

No. 1 is the top cut of the common rafter. No. 2 is the bottom cut. No. 3 is the down top cut of hips or valleys. No. 4 is the bottom or plate cut. No. 5 is the side or bevel cut for hips or valleys. No. 6 is the side of bevel cut of jack. Of course, the down cut for jack is always the same as the common rafter.

B 1 is the common rafter laid down. E 1 is hip or valley laid down. F F F is the jack; that is, how to get the lengths and cuts. C 1 is the rise, same as C. Fig. 2 is a common rafter. The dotted line is where to measure and get your length from.

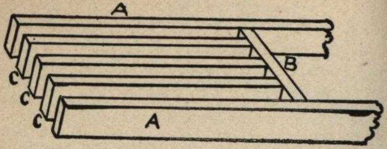
The sketch is drawn to scale, ¼" to one foot.



Timbers in a Roof

AA WALL PLATE
BB TIE BEAM
C KING POST
DD STRUTS
EE PRINCIPAL RAFTERS

FF POLE PLATE
GG PURLIN
HH RIDGE PIECE
II COMMON RAFTERS



Timbers with Header
AA Timbers B Header CCC Tail Beams

Some Terms that It Would Be Well to Learn

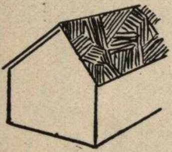
"Rise" the height required for the pitch of the roof.

"Run" the horizontal distance covered.

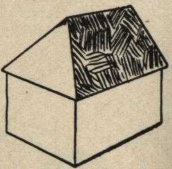
"Hip Roof" a roof having sloping ends and sloping sides, the "Hip Rafter" being the rafter which extends from the wall plate to the ridge in the angle of the hip roof.

"Valley" the place of meeting of two slopes of the roof running in different directions.

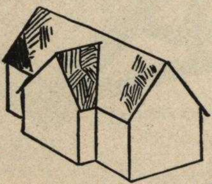
"Jack Rafters" shorter rafters used in constructing hip and valley roofs.



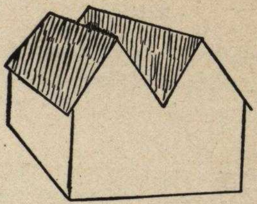
Gable Roof



Hip Roof



Valley Roof



M Roof

Rafters

Lengths and Cuts in figures, for Hips, Valleys, Jacks, and Common Rafters. 4" rise to the foot.

Width of Building in feet	Length of Common Rafters		Length of Hip and Valley Rt's	
	feet	inches	feet	inches
10	5	03 1/4	7	03 1/12
12	6	03 7/8	8	08 1/2
14	7	04 1/2	10	01 11/12
16	8	05 2/12	11	07 4/12
18	9	05 10/12	13	00 3/4
20	10	06 1/2	14	06 2/12
22	11	07 1/8	15	11 7/12
24	12	07 3/4	17	05
26	13	08 5/12	18	10 5/12
28	14	09 1/12	20	03 10/12

The first long Jack is 2 feet 1¼ inches shorter than the common rafter for 2 feet centers. The plumb or down cut for Hips and Valleys, 4 inches x 16½ inches on the 4 inch side of square. The bevel or side cut is 12 inches x 12 inches. The plumb, or down cut, for common and jack rafters is 4 inches x 12 inches cut on the 4 inch side of square. The bevel or side cut for jack is 12 inches x 12 inches.

Simonds Saws are the Best.

Lengths and cuts in figures for Hips, Valleys, Jacks and Common Rafters. 6 inch rise to the foot.

Width of Building in feet	Length of Common Rafters		Length of Hips and Valley Rt's	
	Feet	Inches	Feet	Inches
10	5	07 1/12	7	06
12	6	08 1/2	9	00
14	7	09 11/12	10	06
16	8	11 4/12	12	00
18	10	00 3/4	13	06
20	11	02 2/12	15	00
22	12	08 10/12	16	06
24	13	10 8/12	18	00
26	14	06 5/12	19	06
28	15	07 10/12	21	00

The first long Jack is 2 feet 2⅞ inches shorter than the Common Rafter for 2 feet centers. The plumb or down cuts for Hips and Valleys is 6 inches x 17 inches on the 6 inch side of square. The bevel or side cut is 12 inches x 13½ inches cut on the 12 inch side of square. The plumb or down cut for Common and Jack rafters is 6 inches x 12 inches cut on the 6 inch side of square. The bevel or side cut for Jacks is 12 inches x 13½ inches cut on the 13½ inch side of square.

Simonds Saws Satisfy.

Rafters

Lengths and cuts in figures for Hips Valleys, Jacks, and Common Rafters. 8 inch rise to the foot.

Width of Building in feet	Length of Common Rafters		Length of Hips and Valley Rt's	
	Feet	Inches	Feet	Inches
10	6	00 1/12	7	09 3/4
12	7	02 1/2	9	04 1/2
14	8	04 11/12	10	11 1/4
16	9	07 3/8	12	06
18	10	09 10/12	14	00 3/4
20	12	00 1/4	15	07 1/2
22	13	02 5/8	17	02 1/4
24	14	05 1/12	18	09
26	15	07 1/2	20	03 3/4
28	16	09 11/12	21	10 1/2

The first long Jack is 2 feet 4⅞ inches shorter than the Common Rafter for 2 feet centers. The plumb or down cut for Hips and Valleys is 8 inches x 17 inches cut on the 8 inch side of square. The bevel or side cut is 12 inches x 14½ inches cut on the 12 inch side. The plumb or down cut for Common and Jack Rafters is 8 inches x 12 inches cut on the 8 inch side of square. The bevel or side cut for Jack is 10 inches x 12 inches cut on the 10 inch side of square.

Cut bevels and levels with Simonds Saws.

Rafters

Lengths and cuts in figures for Hips, Valleys, Jacks, and Common Rafters. 10 inch rise to the foot.

Width of Building in feet	Length of Common Rafters		Length of Hips and Valley Rt's	
	Feet	Inches	Feet	Inches
10	6	06 1/8	8	02 4/12
12	7	09 3/4	9	10
14	9	01 4/12	11	05 8/12
16	10	04 11/12	13	01 4/12
18	11	08 7/12	14	09
20	13	00 1/4	16	04 8/12
22	14	08 10/12	18	00 4/12
24	15	07 5/12	19	08
26	16	11 1/2	21	01 8/12
28	18	02 8/12	22	04 4/12

The first long Jack is 2 feet 7¼ inches shorter than the Common Rafter for 2 feet centers. The plumb or down cut for Hips and Valleys is 10 inches x 17 inches cut on the 10 inch side of square. The bevel or side cut is 9½ inches x 12 inches cut on the 12 inch side. The plumb or down cut of Common and Jack rafters is 10 inches x 12 inches cut on the 10 inch side of square. The bevel or side cut of Jack is 9½ inches x 12 inches cut on the 12 inch side of square.

Long cuts and Bevel cuts are all easy cuts with a Simonds Saw.

Rafters

Lengths and cuts in figures for Hips, Valleys, Jacks and Common Rafters. 12 inch rise to the foot.

Width of Building in feet	Length of Common Rafters		Length of Hips and Valley Rt's	
	Feet	Inches	Feet	Inches
10	7	00 7/8	8	07 3/4
12	8	05 10/12	10	04 1/2
14	9	10 3/4	12	01 1/4
16	11	03 3/4	13	10
18	12	08 3/4	15	06 3/4
20	14	08 11/12	17	03 1/2
22	15	06 8/12	19	00 1/4
24	16	11 3/4	20	09
26	18	04 5/8	22	05 3/4
28	19	09 7/12	24	02 1/2

The first long Jack is 2 feet 10 inches shorter than the Common Rafter for 2 feet centers. The plumb or down cut for Hips and Valleys is 12 inches x 17 inches cut on the 12 inch side of square. The bevel or side cut is 9 inches x 12 inches cut on the 12 inch side. The plumb or down cut for Common and Jack rafters is 12 inches x 12 inches. The bevel or side cut of Jack is 8½ inches x 12 inches cut on the 12 inch side.

HAND SAW SETTING AND FILING

The First Step

Joint the saw, slightly crowning in the center, with an 8-inch flat file. Then file the teeth to a uniform size, but don't file them to a point.

Setting a Saw

Set the saw, using a hammer set, with light blows, not striking hard or smashing the teeth.

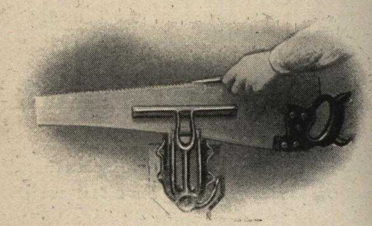


Fig. 1

The teeth should be set a little more than you wish them when done, to allow side dressing. Run the flat file lightly over each side of the saw teeth so as to bring them into line. Now see if all the teeth are dull (blunt). If any are sharp, joint it once more, as in Fig. 1. The saw is now ready to file.

To File for All-Round Work and Fast Cutting

Fasten the saw clamp to an 8-inch x 2-inch plank, secured to a north window, for the best light is none too good. The top of the clamp should be level with the armpit, in either sitting or standing position, though the latter is preferable.

Place the saw in the clamp, with the handle to the left, and file from the heel to the toe of the saw. The pitch of the file is shown in Figs. 2 and 5. In going over the saw in this position do not file the teeth to a point, but still file deep enough to leave the points

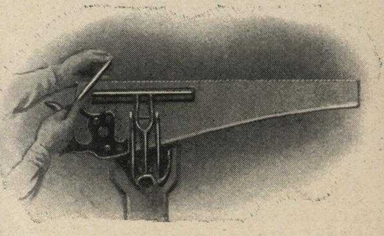


Fig. 2

equal distances apart, after the saw is filed from the other side. If one tooth is larger than the others, don't roll the file over to file more off the large tooth, but keep the file in the same position as to pitch, and crowd against the large tooth and bear lightly on the other till the large tooth is down like the others.

Grasp the handle of your file firmly as shown in Fig. 2, with the thumb up (not the back of the hand up), and hold it securely till you have filed across the clamp. After the saw has been moved for another part to be filed, place the file in the last tooth filed with the thumb of the left hand on the top of the file above the saw, as shown in Fig. 2. Press on the file in different ways till it fills the space, thus getting the angle the same as you have just used it, and go on as before till you have filed across the saw.

Place the saw in the clamp with the handle to the right. Filing this side last brings the filer directly in front of the clamp, squarely facing the saw, and gives the only position to see the points of all the teeth and the file, at the same time. File the teeth to a sharp point only.

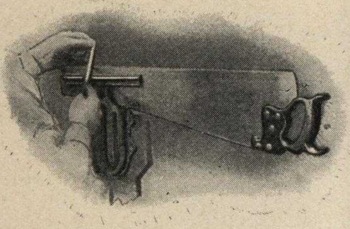


Fig. 3

Begin this time filing from toe toward the heel, as shown in Fig. 3. Hold the file with the pitch and bevel the same as on the other side. To prove you have the same pitch and bevel, sight over the teeth, as shown in Fig. 4.

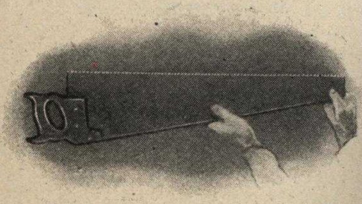


Fig. 4

and see if the groove is in the center. If not in the center, change the pitch and bevel till it does show in the center, and keep the file in that position across the saw. The teeth on both sides must be of equal length.

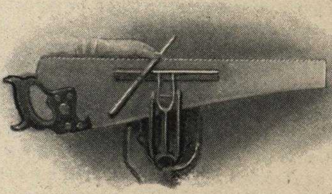


Fig. 5

Side Dressing

Now place the saw on a straight board and then run the flat file over the side of the part from the toe to the heel, one run of the file on each side of the saw. Try the saw and see how it cuts. If the set is too wide, another run of the file on each side, or perhaps two, may be required to reduce the set to the width required.

It will be seen that a part of the sides of the teeth are flat. For the next two or three filings, no setting of the saw will be required (unless it has been run upon a nail), but side-dress the teeth with a hard oilstone, instead of the file, to take off the wire edge and smooth them.

It will be seen that the bevel of the teeth will be on the front or cutting edge, where it should be, and the back of the teeth will be nearly square across, and there will be a long lance point on each tooth.

NOTE.—All saws, when they leave the Simonds factory, have the proper hook. That is to say, the shape of the teeth is proper. The rip saw is nearly straight (plumb) up-and-down the front of the teeth. The cross-cut saw has the front of the teeth sloping well back from the root of the tooth to its point. Keep the teeth in that shape.

Filing for Mitre and Bevel Cutting

To file a saw for bevel cutting and mitre-box use, all the foregoing instructions are to be carried out except one. That one is in relation to the pitch of the file. It should be held as directed, but the end of the handle should be about 2 inches lower than the point of the file, or about 2 inches fall in the foot. This pitch must be made without rolling the file. If properly carried out it will change the depth of the teeth. The bevel on the front gives a bevel to the back and reduces the lance point to a blunter and stronger point and is better for joinery work, but not so good for rough carpentry and framing.
(*Wipe your saw dry and oil with sperm oil.*)

To File a Rip Saw

A rip saw should be filed square (straight) across the front of the teeth, with the handle of the file lowered from 2 inches to 3 inches, giving a bevel on the top of the teeth. A thick blade requires more bevel than a thin one.

Hints as to Care

OIL YOUR SAW.—Always keep on hand a can of sperm oil, also a piece of fine emery cloth. Scour your saw clean, wipe it dry and oil it. It will require less set and cut fast and with less labor.

To Straighten a Bent Saw.—Don't try to straighten a crooked saw on an anvil with a hammer. If you do, every blow will stretch the saw and ruin it for good work. Use a mallet on the anvil, or better, use a block of timber cut off straight and planed smooth, and hammer the crooks and kinks out of the saw on the *planed end* of the block.

Files to Use.—The best files to use are:

For all 4, 5, 6, 7 and 8 point saws, a 6-inch Simonds slim taper file.

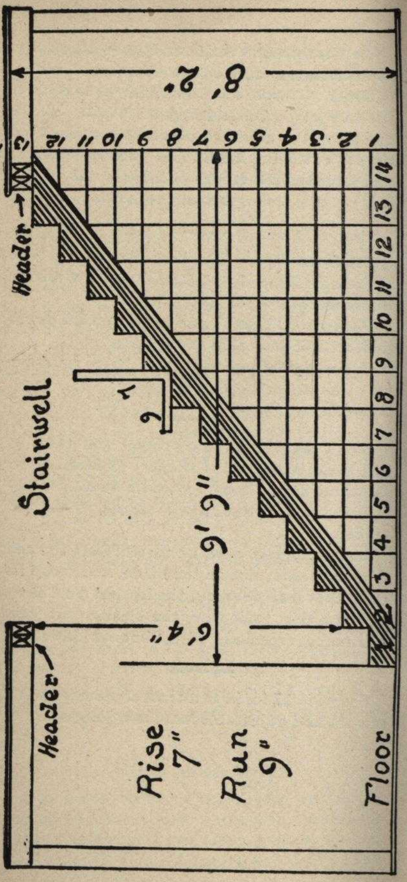
For 9, 10, 12-point and all fine-point saws, a Simonds 5-inch slim taper file.

Use a good file handle and have your file set straight in the handle.

Don't slam your saw around and twist it and bend it all out of shape. It is made to saw straight. Remember that a hand saw has a spring temper and, like a spring, it can be kinked.

In setting your saw, be careful that the set is on the tooth, not on the blade, and, keep in mind that on fine work, the less set you have on your thin back saw, the cleaner cut you will make, especially with Simonds Saws.

See page 57 for illustrations of reversed lever saw set and adjustable hand saw jointer.


Stairwell
Header
Header
Rise 7"
Run 9"
Floor
8' 2"
9' 9"
6' 4"

Stairs

How to get the Rise, and Run, and the size of well.

First, get your rise by measuring from the top of first floor to the top of the second floor. In the sketch on the opposite page this is 8 feet 2 inches over all. 8 feet 2 inches is 98 inches. Now, you want your stair rise about 7 inches so you say 7 in 98, 14 times; so you have 14 rises. Got to have 14 treads and want tread about 9 inches wide; so, say 9 times 14 is 126 inches. The top floor makes one tread, so all you need is 9 times 13 or 117 inches. That is for the run of your stairs. The whole run for these stairs is 9 feet 9 inches. But one tread at the head of the stairs is the floor and there is one less at the bottom (see sketch) so the stair-well is only 108 inches or 9 feet between headers.

Compass

Your watch is a compass. Place in the palm of your hand. Turn it till the hour hand points at the sun. Then the South is just half-way between the hour hand and 12 o'clock.

Facts for Builders

1,000 shingles, laid 4 inches to the weather, will cover 100 square feet of surface, and 5 lbs. of shingle nails will fasten them on. As 16-inch shingles are laid 5 inches to the weather, 1,000 shingles (4 bunches) will lay 125 square feet.

"Show me a man who has never made a mistake, and I will show you one who has never tried anything."

One fifth more siding and flooring is needed than the number of square feet of surface to be covered, because of the lap in the siding and matching.

1,000 laths will cover 70 yards of surface, and 11 lbs. of lath nails will nail them on. Eight bushels of good time, 16 bushels of sand, and one bushel of hair, will make enough good mortar to plaster 100 square yards.

A cord of stone, three bushels of lime, and a cubic yard of sand, will lay 100 cubic feet of wall.

Five courses of brick will lay 1 foot in height on a chimney. 6 bricks in a course will make a flue of 4 inches wide and 12 inches long, and 8 bricks in a course will make a flue 8 inches wide and 16 inches long.

Cement, one bushel, and sand, two bushels, will cover 3½ square yards one inch thick; 4½ square yards, ¾ inch thick; 6¾ square yards, ½ inch thick. One bushel cement and one of sand will cover 2¼ square yards one inch thick: 3 square yards, ¾ inch thick; and 4½ square yards, ½ inch thick.

Chimneys.

Size of Chim'y	Flue	Sized Flue	Number of Bricks per foot
16 x 16	1	8 x 8	30
16 x 24	1	8 x 16	40
16 x 28	2	8 x 8	50
16 x 40	3	8 x 8	70
16 x 52	4	8 x 8	90
20 x 20	1	12 x 12	40

Nails required per M feet of:—

Shingles	3½ to 5 lb. of	4 d
Laths	6½ " "	3 d
Clapboard	18 " "	6 d
Boarding	20 " "	8 d
Studding	3 " "	8 d
Furring	45 " "	8 d
Inside Finish	30 " "	8 d
Top Floor match	30 " "	8 d
" " square edge	30 " "	8 d

Average Number of Nails per Pound.

Size, Penny	Length, Inches	Com. Wire	Fin. Wire
3	1¼	566	805
4	1½	317	583
5	1¾	270	500
6	2	182	308
7	2¼	160	236
8	2½	105	187
9	2¾	96	171
10	3	68	120
12	3¼	63	112
14	3½	49	90
20	4	31	62
30	4½	24	
40	5	17	
50	5½	13	
60	6	10	

Concrete

For tanks and cisterns, the mixture should be:

1 part Portland Cement

2 parts Sand

3 parts Gravel or Crushed Stone that will pass a ¼ inch sieve.

For tank or cistern, make the inside bottom smaller than the top, 2 inches or so.

Concrete

For cellar floors the mixture should be:

1 part pure Portland Cement

2 parts clean sharp Sand,

4 parts small clean broken Stone or Gravel.

Cement Topping

For cellar floor:

1 part Portland Cement

3 parts clean sharp Sand

Well troweled.

Rich mixture:

1 part Cement

2 parts Sand

4 parts Stone

Medium mixture

1 part Cement

2½ parts Sand

5 parts Stone

Ordinary mixture

1 part Cement

3 parts Sand

6 parts Stone

Lean mixture

1 part Cement

4 parts Sand

8 parts Stone

Bricks to Crush

Bricks weigh 112 lbs. per cubic foot and will crush at 450 lbs. per square inch. Therefore, a column 12 x 12 inches, 580 feet high, would crush under its own weight.

Brick Piers
Weight They Will Carry in Tons

Inch Square Pier	Height in feet of Pier		
	6	8	10
6 x 6	2	1½	1
6 x 8	3	2½	2
8 x 8	4	3½	3
8 x 12	5	4½	5
12 x 12	6	5½	5½
12 x 16	7	6	5
16 x 16	9	8	7

Number of Bricks Required to Construct any Building

(Reckoning 7 bricks to each superficial foot.)

Superficial feet of Wall	Number of Bricks to thickness					
	4 in.	8 in.	12 in.	16 in.	20 in.	24 in.
1	8	15	23	30	38	45
2	15	30	45	60	75	90
3	23	45	68	90	113	135
4	30	60	90	120	150	180
5	38	75	113	150	188	225
6	45	90	135	180	225	270
7	53	105	158	210	263	315
8	60	120	180	240	300	360
9	68	135	203	270	338	405
10	75	150	225	300	375	450
20	150	300	450	600	750	900
30	225	450	675	900	1,125	1,350
40	300	600	900	1,200	1,500	1,800
50	375	750	1,125	1,500	1,875	2,250
60	450	900	1,350	1,800	2,250	2,700
70	525	1,050	1,575	2,100	2,625	3,150
80	600	1,200	1,800	2,400	3,000	3,600
90	675	1,350	2,025	2,700	3,375	4,050
100	750	1,500	2,250	3,000	3,750	4,500

Safe Load in Tons

That a 6″, 8″, and 12″ Steel I Beam will carry

Span in feet	TONS		
	6″ I Beam	8″ I Beam	12″ I Beam
10	4	7½	18
12	3¼	6¼	16
14	2¾	5½	14
16	2½	4¾	12
18	2	4¼	10½
20		3¾	9½
22			8

Hard Pine Beams and Girders

What they will Carry in Tons

Size	Length in feet						
	6	8	10	12	14	16	18
2 x 6	1	¾					
3 x 6	1½	1	¾	½			
4 x 6	2	1½	1¼	1	½		
6 x 6	3	2½	2	1½	1	½	
8 x 8	5½	5	4½	3	2½	2	1

Load in Tons

That Common Gas-Pipe Posts will carry

Size of Pipe in inches	Length of Pipe in feet				
	8	9	10	12	14
2	4	3	2	1	
3	8	7	6	5	4
4	12	10	8	6	5
5	16	14	12	10	8
6	20	18	16	14	12
7	24	22	20	18	16
8	28	24	22	20	18

Load in Tons
That a Yellow Pine Post Will Carry

Size inches	Length in feet					
	8	10	12	14	16	18
4 x 4	4	3	2	1		
5 x 5	5	4	3	2	1	
6 x 6	6	5	4	3	2	1
7 x 7	7	6	5	4	3	2
8 x 8	8	7	6	5	4	3
9 x 9	9	8	7	6	5	4

Bins and Boxes for Grain

A box 9 x 9 inches, 6½ inches deep, one peck.

A box 12 x 12 inches, 7½ inches deep, ½ bushel.

A box 14 x 14 inches, 11 inches deep, 1 bushel.

A box 30 x 30 inches, 12 inches deep, 5 bushel.

A box 3 x 4 feet, 25 inches deep, 20 bushel.

A box 3 x 5 feet, 30 inches deep, 30 bushel.

Bins and Boxes for Apples and Potatoes.

Box or bin 2 x 3 feet, 16 inches deep, 5 bushel.

Box or bin 3 x 4 feet, 24 inches deep, 15 bushel.

Box or bin 3 x 4 feet, 32 inches deep, 20 bushel.

Box or bin, 3½ x 5 feet, 32¾ inches deep, 30 bushel.

Bins for Coal

A bin 4 x 4½ feet, 2 feet deep, one ton.

A bin 4 x 6 will hold a ton for every 18 inches high, 6 x 6 feet will hold a ton for every 12 inches of depth.

Painters' Department

The best way to find the tints that will blend with each other, when you paint your house, is to find a pansy with colors that suit your taste. Use the dominant color in the flower for the sidings, the next prominent color for the corner boards, cornice, etc., and the high-color tints for the panels, brackets, ornamental shingles, carvings, etc.

If you use fairly good judgment the building will look well colored from any flower you select.

When through with the paint brush, work it out on a board till it is as free from paint and as clean as you can get it, and then put it away to dry.

To soften the brush to use again, immerse in boiled oil to the top of the bristles, heat it and work the brush in the hot oil till it is soft.

To soften putty on an old window, to remove a broken light of glass, rub an iron rod, heated white, along it.

Walnut Stain for Wood

Water, 1 gallon; Vandyke brown, 10 ounces; bichromate of potash, 1 ounce; washing soda, 6 ounces; boil 10 minutes. Immerse the article or apply with a brush, as desired.

To Ebonize Wood

Mix lampblack with good French polish and apply in the usual way. The lampblack may be collected on a piece of tin held over a kerosene lamp or a lighted candle.

How to Gild Small Steel Tools

Pour some of the ethereal solution of gold into a glass dish and dip into it the blade of the tool, or a new penknife, razor, lancet, etc. Withdraw the instrument and allow the ether to evaporate.

The blade will then be found covered with a beautiful coat of gilt. The tools may be moistened with a clean rag or a small piece of very dry sponge, dipped in the ether, and the same effect will be produced.

Gold Bronze for Furniture

Mix copal varnish with gold-colored bronze powder. This is made from bisulphate of tin.

Hard Drying Putty

Mix dry white lead with Japan and rubbing varnish, equal parts, to the proper consistency; beating it with a small mallet to bruise the lump. Keep it when not in use in water to prevent it drying.

Mixings:

Red and Black	Brown
Red and Yellow	Orange
White and Brown	Chestnut
White, Blue and Lake	Purple
Blue and Lead	Pearl
White and Carmine	Pink
Indigo and Lamp Black	Silver Gray
White and Lamp Black	Lead
Black and Venetian Red	Chocolate
White and Yellow	Straw
White and Green	Bright Green

To find how much paint is required for a given surface, divide the square feet by 200 for two coats. The answer will be in gallons. A gallon will cover 300 square feet old work and 350 square feet new work, approximately.

Facts for Painters

The cost of painting is estimated by the yard and depends on number of coats, quality of material and workmanship, and condition of surface to be covered. It is impossible to give a rule that will apply in all cases. The following is an approximate rule: Divide the number of square feet of surface by 200, the result will be the number of gallons of liquid paint required to give two coats; or, divide by 18 and the result will be the number of pounds of pure ground white lead required to give three coats.

A pound of paint covers 4 sq. yds. the first coat; or 6 sq. yds. each coat following.

A gallon of tar and a pound of pitch covers 12 sq. yds. the first coat; or 17 sq. yds. each coat following.

Allow for regular size blinds about 9 lbs. of lead and 1 gal. oil per dozen blinds. This is a fair day's work for one man.

Lumber Table

Showing the Number of Feet Board Measure

Size in Inches	Length, Feet							
	10	12	14	16	18	20	22	24
1 x 2	1⅔	2	2⅓	2⅔	3	3⅓	3⅔	4
1 x 3	2½	3	3½	4	4½	5	5½	6
1 x 4	3⅓	4	4⅔	5⅓	6	6⅔	7⅓	8
1 x 5	4⅙	5	5⅚	6⅔	7½	8⅓	9⅙	10
1 x 6	5	6	7	8	9	10	11	12
1 x 7	5⅚	7	8⅙	9⅓	10½	11⅔	12⅚	14
1 x 8	6⅔	8	9⅓	10⅔	12	13⅓	14⅔	16
1 x 10	8⅓	10	11⅔	13⅓	15	16⅔	18⅓	20
1 x 12	10	12	14	16	18	20	22	24
1 x 14	11⅔	14	16⅓	18⅔	21	23⅓	25⅔	28
1 x 16	13⅓	16	18⅔	21⅓	24	26⅔	29⅓	32
1 x 18	15	18	21	24	27	30	33	36
1 x 20	16⅔	20	23⅓	26⅔	30	33⅓	36⅔	40
1¼ x 4	4⅙	5	5⅚	6⅔	7½	8⅓	9⅙	10
1¼ x 6	6¼	7½	8¾	10	11¼	12½	13¾	15
1¼ x 8	8⅓	10	11⅔	13⅓	15	16⅔	18⅓	20
1¼ x 10	10 5/12	12½	14 7/12	16⅔	18¾	20⅝	22 11/12	25
1¼ x 12	12½	15	17½	20	22½	25	27½	30
1½ x 4	5	6	7	8	9	10	11	12
1½ x 6	7½	9	10½	12	13½	15	16½	18
1½ x 8	10	12	14	16	18	20	22	24
1½ x 10	12½	15	17½	20	22½	25	27½	30
1½ x 12	15	18	21	24	27	30	33	36
2 x 4	6⅔	8	9⅓	10⅔	12	13⅓	14⅔	16
2 x 6	10	12	14	16	18	20	22	24
2 x 8	13⅓	16	18⅔	21⅓	24	26⅔	29⅓	32
2 x 10	16⅔	20	23⅓	26⅔	30	33⅓	36⅔	40
2 x 12	20	24	28	32	36	40	44	48

Tables Convenient for Taking Inside Dimensions

A box 24 x 24 x 14.7 inches will hold a barrel of 31½ gallons.

A box 15 x 14 x 11 inches will hold 10 gallons.

A box 8¼ x 7 x 4 inches will hold a gallon.

A box 4 x 4 x 3.6 inches will hold a quart.

A box 24 x 28 x 16 inches will hold five bushels.

A box 16 x 12 x 11.2 inches will hold a bushel.

A box 12 x 11.2 x 8 inches will hold a half-bushel.

A box 7 x 6.4 x 12 inches will hold a peck.

A box 8.4 x 8 x 4 inches will hold a half-peck, or four dry quarts.

A box 6 x 5 3–5 x 4 inches will hold a half-gallon.

A box 4 x 4 x 2.1 inches will hold a pint.

Estimates of Materials

3½ barrels of lime will do 100 square yards plastering, two coats.

2 barrels of lime will do 100 square yards plastering, one coat.

1½ bushels of hair will do 100 square yards plastering.

1¼ yards of good sand will do 100 square yards plastering.

⅓ barrel of plaster (stucco) will hard-finish 100 square yards plastering.

1 barrel of lime will lay 1,000 bricks. It takes good lime to do it.

2 barrels of lime will lay 1 cord rubble stone.

½ barrel of lime will lay 1 perch rubble stone (estimate ¼ cord to perch).

To every barrel of lime estimate about ⅝ yards of good sand for plastering and brick work.

Wood Measure

To find the contents of cord wood: multiply the length, width and height together and divide the product by 1.8.

How many cords in a pile of wood 4 feet wide, 5 feet high, and 24 feet long? 4 × 5 × 24 = 480 (cubic feet) ÷ 128 = 3¾ cords.

To find the circumference of a circle: multiply the diameter by 3.1416.

To find the area of a circle: multiply the square of the diameter by .7854.

To find the surface of a globe: multiply the square of the diameter by 3.1416.

To find the solidity of a globe: multiply the cube of the diameter by .5236.

The U. S. Standard gallon measures 231 cubic inches and contains 8⅓ lbs. of distilled water.

A cubic foot of water weighs 62½ lbs. (salt water, 64.3 lbs.) and contains 1,728 cubic inches, or nearly 7½ gallons U. S. Standard.

To evaporate one cubic foot of water requires the consumption of 7½ lbs. of ordinary coal; or about 1 lb. of coal to 1 gallon of water.

The average consumption of coal for steam boilers is 12 pounds per hour for each square foot of grate.

The U. S. Standard bushel measures 2,150.42 cubic inches, or nearly 1¼ cubic feet.

Twenty-eight bushels (of 5 pecks) or 43.56 cubic feet of coal = 1 ton, 2,240 lbs.

One cubic foot of anthracite coal weighs about 53 lbs.

One cubic foot of bituminous coal weighs about 47 to 50 lbs.

One ton of coal is equivalent to two cords of wood for steam purposes.

WEIGHTS AND MEASURES

Troy Weight.

24 grains = 1 pwt.	12 ounces = 1 pound.
20 pwts. = 1 ounce.	

Used for weighing gold, silver and jewels.

Apothecaries' Weight.

20 grains = 1 scruple.	8 drams = 1 ounce.
3 scruples = 1 dram.	12 ounces = 1 pound.

The ounce and pound in this are the same as in Troy weight.

Avoirdupois Weight.

$27\frac{11}{32}$ grains = 1 dram	4 quarters = 1 cwt.
16 drams = 1 ounce.	2,000 lbs. = 1 short ton.
16 ounces = 1 pound.	2,240 lbs. = 1 long ton.
25 pounds = 1 quarter.	

Dry Measure.

2 pints = 1 quart.	4 pecks = 1 bushel.
8 quarts = 1 peck.	36 bushels = 1 chaldron.

Liquid Measure.

4 gills = 1 pint.	$31\frac{1}{2}$ gallons = 1 bbl.,
2 pints = 1 quart.	2 bbls = 1 hogshead.
4 quarts = 1 gallon.	

Time Measure.

60 seconds = 1 minute	24 hours = 1 day.
60 minutes = 1 hour.	7 days = 1 week.

28, 29, 30 or 31 days = 1 calendar month (30 days = 1 month in computing interest).

365 days = 1 year.	366 days = 1 leap year.

Circular Measure.

60 seconds = 1 minute.	30 degrees = 1 sign.
60 minutes = 1 degree	90 degrees = 1 quad't

4 quadrants = 12 signs, or 360 degrees = 1 circle.

Long Measure.

12 inches = 1 foot.	40 rods = 1 furlong.
3 feet = 1 yard.	8 furlongs = 1 sta. mile.
$5\frac{1}{2}$ yards = 1 rod.	3 miles = 1 league.

Cloth Measure.

$2\frac{1}{4}$ inches = 1 nail. 4 quarters = 1 yard.
4 nails = 1 quarter.

Mariners' Measure.

6 feet = 1 fathom. 5,280 feet = 1 sta. mi.
120fathoms = 1cab.le'th 6,085 feet = 1naut.mi.
$7\frac{1}{2}$ cable lengths = 1 mile.

Miscellaneous.

3 inches = 1 palm. 18 inches = 1 cubit.
4 inches = 1 hand 21.8 in. = 1 Bible cubit.
6 inches = 1 span. $2\frac{1}{2}$ ft. = 1 military pace.

Square Measure.

144 sq. in. = 1 sq. foot 40 sq. rods = 1 rood.
9 sq. feet = 1 sq. yd. 4 roods = 1 acre.
$30\frac{1}{4}$ sq. yds = 1sq. rod. 640 acres = 1 sq. mile.

Surveyors' Measure.

7.92 inches = 1 link. 4 rods = 1 chain.
25 links = 1 rod.
10 square chains or 160 square rods = 1 acre.
640 acres = 1 sq. mile.
36 sq. miles (6 miles sq.) = 1 township.

Cubic Measure.

1,728 cub. in. = 1 cub. ft 128 c. ft. = 1 cord (wd)
27 cub. ft. = 1 cub. yd. 40 c. ft. = 1 ton (shpg)
2,150.42 cu. inches = 1 standard bushel.
268.8 cubic inches = 1 standard gallon.
1 cubic foot = about four-fifths of a bushel.

For looking in deep and dark places, all that is necessary is a small mirror. Throw a reflection by using the sun or a good lamp-light and you can look into a gun barrel, small tube, a well or cistern, and also see the bottom of rivers and ponds. You can improve the means of looking into deep or dark places by scratching a small oval hole in the silvering so you can look through the glass at this point.

If you want your business done, go; if not, send.

A dull man bores you.
A sharp man skins you.

Don't tell us of your strength, education, money, or genius. What we want to know is — What are you doing with it?

Good nature is good business.

Be sure you are wrong, and then back up.
The man who holds his temper also holds the trump card.

It doesn't help some men to get swear words out of their systems because they fill right up again.

Mr. Carpenter:

Did it ever occur to you that if your Boss pays you 50c. per hour and you earn only 52c. for him, 2c. more per hour than he pays you, that you are not a very good man for him to keep? You have got to earn for him at least 10c. per hour, and the more you earn for him the better for you. And, the main tool that you use, and it must be good, is your Saw. A sheet-iron saw will not increase your pay.

The man who owns a full set of high-grade Simonds Hand and Rip Saws wins the confidence of the Boss because he knows how to appreciate good tools.

A good liniment for old sores, sprains, bruises, etc., but not for fresh cuts or internal use, may be compounded of the following ingredients:

Tincture of opium, ½ ounce; tincture of camphor, ½ ounce; chloroform, ½ ounce; arnica, 3 ounces; glycerine, 1 ounce.

In case of a sprain, bathe the injured part in as hot water as you can till the swelling is considerably or wholly reduced; thoroughly dry the injured place and apply the liniment with the hand till it feels greasy. Repeat the treatment three times daily, if a severe injury, and your wound will speedily become healed.

DROWNING. — Send for doctor, blankets and dry clothing. Take off wet clothes from upper part of body. Lay patient on his back, with his head on a folded coat for cushion. Draw tongue out of mouth and hold it there. A second person kneels at patient's head and takes hold of both his arms just below the elbows. He then draws them upward over the patient's head, and holds them in that position until he counts two; this draws air into the lungs. He then lowers arms to side again and presses them firmly inwards, holding them there until he has again counted two; this forces air out of the lungs. Go on doing this until doctor arrives or until patient breathes naturally. As soon as he does so, rub the limbs in an upward direction with the dry hands, or, better still, with hot flannels. Put patient to bed between blankets, surrounded with hot water bottles. May give him wine or brandy when quite sensible.

RUPTURE, OR "BREAK OF THE BODY." — Try and push it back with flat hand; keep man on his back. Cold, wet cloths laid **over** rupture will, perhaps, aid its return.

Broken Rib. — Causes intense pain when patient breathes; bind roller towel firmly around chest, fastening with pins, or sewing.

Broken Collar-Bone. — Bend arm over front of chest; place it in a sling; bind it in that position by scarf going around chest, outside sling.

Dog Bites. — Tie a handkerchief or a cord tightly around limb above wound; suck the wound.

Flesh Wounds. — Uncover wound; wash it with clean water; wring out a clean handkerchief, or some lint, in cold water, and lay it over the wound. Then bind in position with handkerchief.

Fainting. — From heat, exhaustion, or loss of blood. Keep head low; undo clothing about neck; plenty of fresh air; dash cold water on face and chest; smelling salts, carefully used; a little brandy when sensibility has returned, excepting in cases of sunstroke, and where means have not been taken to prevent further bleeding.

Insensibility. — From blows or wounds on the head. Send at once for doctor or take patient to hospital, keeping him on his back with head raised; undo clothing around neck; do not give brandy.

Insensibility. — From being buried in falls of earth, or breathing foul gas; proceed as in drowning.

Fits. — 1. If snoring and face flushed, undo clothing round neck, keep head raised, and dash cold water on top of head; hot water bottles to feet. Send for doctor; do not give brandy.

2. If foaming at mouth and convulsed, undo clothing, apply smelling salts, and prevent patient hurting himself until conscious again.

Useful Suggestions in Cases of Accident to Mechanics

Bleeding. — If blood spurts from wound, an artery is divided; bind limb tightly above wound with India-rubber tubing, strap, handkerchief or scarf, or bend the limb forcibly at next joint above wound or press flat hand or stone where blood is flowing. If blood flows freely, but does not spurt, a vein is divided; then apply same measures as in case of wounded artery, but below the wound. If scalp wounded, make a pad of cloth or waste, and bandage very tightly over wound with folded pocket handkerchief.

Burns or Scalds. — Apply lint, cotton, wool or waste soaked in oil and lime water, and bind the same on with handkerchief. If necessary to remove clothes, cut them off by running knife or scissors along seams.

Broken Leg. — Pull on leg steadily and firmly until it is of same length as sound one. Roll up a coat or empty sack into form of a cushion, carefully place leg upon it, then bind the two together with scarfs or handkerchiefs. Do not lift patient from the ground until stretcher is close at hand. Take great pains, by careful lifting, to prevent broken bone coming through skin.

Broken Thigh. — Take hold of ankle and, by steady traction, pull limb to same length as sound one; another person must then tie knees together, and afterward the ankles. Both limbs should then be laid over a sack of straw or folded coat, so as to bend the knees. Patient should on no account be moved until stretcher or cart is close at hand.

Broken Arm. — Pull arm to length of sound one. Apply two splints, one outside and the other inside, binding them firmly on with pocket handkerchiefs. The best splints are made by folding newspapers to necessary length, binding them above and below seat of fracture; anything hard and light of suitable size would act equally well; for instance, wood, pasteboard, twigs, leather, etc.

SIMONDS HAND SAWS

OUR WARRANTY

The Simonds Hand Saws are guaranteed in temper, quality of steel and workmanship throughout, to be as perfect goods as human skill, best material, and a knowledge of manipulating steel dating back to 1832, can produce.

If a Simonds Hand Saw is found defective in any particular, it will be exchanged by the dealer from whom it was purchased.

The carpenter runs absolutely no risk when buying a Simonds Hand Saw.

The one point which above all others makes Simonds Saws famous is that they are **Made of Simonds Steel;** and Simonds Steel is the highest grade of Saw Steel made, and is used only by the Simonds Manufacturing Co. and the Simonds Canada Saw Co., Limited.

Simonds Improved Process of Tempering guarantees a uniformity throughout the entire saw which enables it to do faster and better cutting.

Know that the saws you buy are made of Simonds Steel.

The superiority of the appearance of Simonds Handles is due to the fact that they are made of thoroughly seasoned, selected applewood, nicely carved and polished on sides and edges to a brilliant finish. This is appreciated by the Carpenter who takes pride in having saws that not only are the best but also present the best appearance.

Brass screws are used in Simonds Handles, each screw actually gripping the steel blade and holding the handle firmly in the correct position.

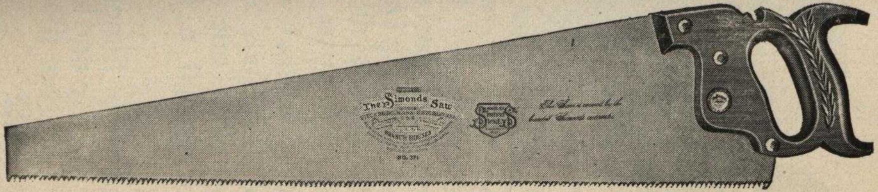
Simonds Blades are ground to an even gauge all along the tooth edge and uniformly thinner on the back, thus making a light-running saw that does not bind in the kerf, holds its cutting edge, and saws true, and has an easy, comfortable, "hang" that pleases the Carpenter who wants to do careful work.

You know you are buying right when you buy saws made of Simonds Steel, saws that are absolutely guaranteed as are all hand saws bearing the Si-monds manufacturer's brand mark.

Uncle Si Says:

"Saws are a lot like folks. Some are too cranky to have around, while others are always good-natured and willing and never get tight or balk when half through a job. What I said last suits a SIMONDS SAW to a T. You will be glad when you get one working for you. It's got as many good points as a porcupine.

"Drop in any time you're near a Dealer's store, and see the Simonds Saw."



SIMONDS NO. 371 STRAIGHT BACK NARROW SHIP SAW

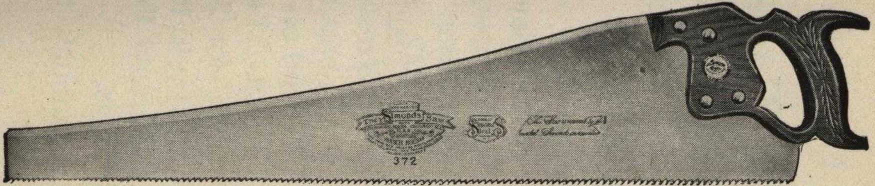
Made from Simonds saw steel. Taper ground blade. Carved apple wood handle. A distinctive high-grade saw.

Uncle Si Says:

"I'm a Carpenter, so I'm not supposed to know a whole lot about steel. I do know there's good steel and bad steel and it doesn't take me long to tell the difference in the tools I use.

"I know a fellow who took an old Simonds Saw, chopped a piece out of it and made himself a fine razor.

"The reason a Simonds Saw holds its edge and lasts so long is because there's better steel in it."



SIMONDS NO. 372 SKEW BACK NARROW SHIP OR FINISHING SAW

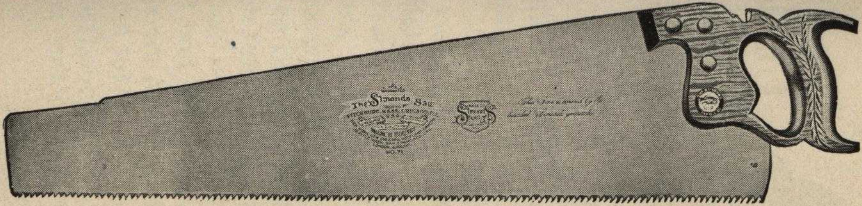
Simonds special crucible steel. Patented temper. Taper ground. Carved apple wood handle. A leader among Simonds Saw Steel products.

Uncle Si Says:

"Speaking of birthdays, the Simonds Saw Company has had ten more than I and I was born in 1842.

"When a tool is the result of 87 straight years' experience, you can depend on it that it's a **good** tool. I've been using saws for 57 years and I want you to try the one that I've found the best,—the Simonds.

"Be curious enough to look them over."

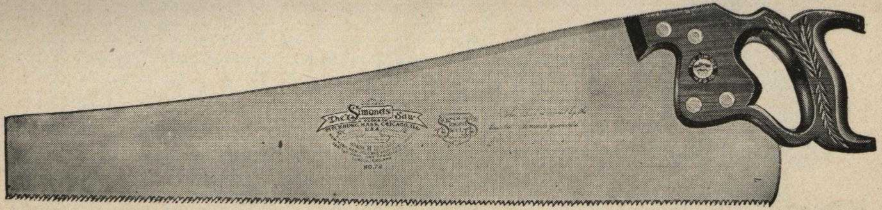


SIMONDS NO. 71 STRAIGHT BACK

Above the average in quality and appearance. A Blue Ribbon saw. Accurately ground and tapered. Apple wood handle. Absolutely guaranteed.

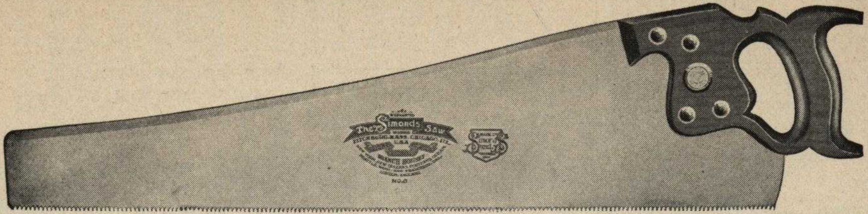
Uncle Si Says:

"I read on a blotter the other day that a genius is a man who takes infinite pains. If that's so, then the makers of Simonds Saws are certainly geniuses. To begin with, they're so particular about their steel that they operate their own steel plant, so as to get the best and toughest steel possible. When you get a Simonds Saw, you'll find the teeth as sharp as a needle, and they'll do an awful lot of cutting before they need filing. You know the store that sells Simonds Saws."



SIMONDS NO. 72 SKEW BACK

A Blue Ribbon saw. Simonds saw steel. Simonds patented temper. Accurately ground and tapered. Highly polished and carved apple wood handle. A most reliable saw.

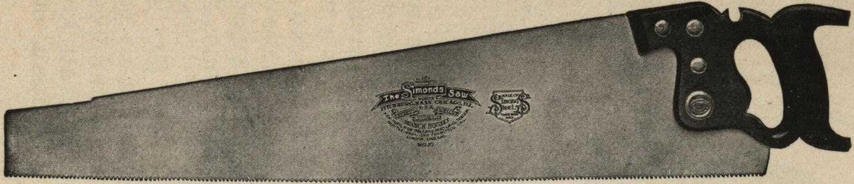


SIMONDS NO. 8 SKEW BACK

A full taper ground Simonds steel blade with polished apple wood handle. The most popular shape and hang of any saw on the market. Absolutely guaranteed.

Uncle Si Says:

"There's a guarantee that goes with every Simonds Saw that I like to read over now and then. It goes this way: 'If at any time the user of a Simonds Saw finds anything wrong with it, he's got a new saw coming or can have his money returned. You're the man that's got to be satisfied. You can't own a Simonds Saw and be dissatisfied.' Pretty plain English, isn't it? But then the Simonds is so good that it can stand a strong guarantee like that. You know where they sell them, don't you?"

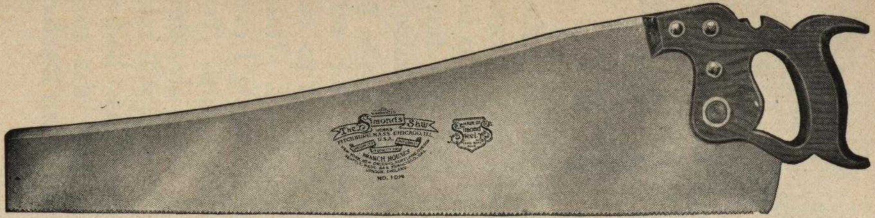


SIMONDS NO. 10 MEDIUM WIDTH, STRAIGHT BACK

Warranted special crucible steel. Simonds patented temper. Polished beech handle. A moderately priced saw covered by the broadest Simonds warranty as to quality and workmanship.

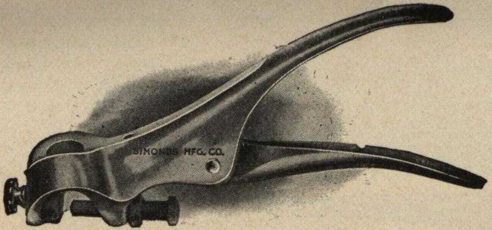
Uncle Si Says:

"If my brother carpenters knew as much about Simonds Saws as I do, I'm ready to bet almost anything they'd have one mighty soon. Because a Simonds certainly does go through a board fast and straight; it was made to cut, not to develop biceps. Then, too,—it beats anything I ever saw for staying sharp. You don't have to file it so often. I hope you fellows will take my advice, and at least **look** at the Simonds Saw the next time you're near your Dealer's store."



SIMONDS NO. 10½ SKEW BACK

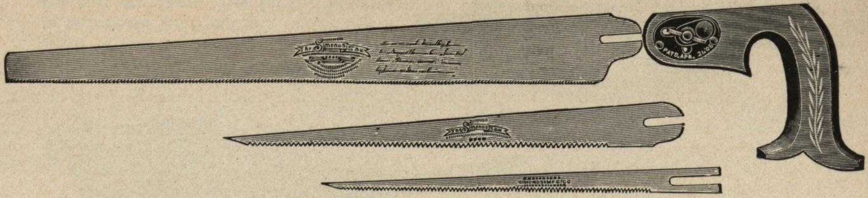
Warranted special crucible steel. Simonds patented temper. Taper ground blade. Polished beech handle. Simonds warranty covers this saw. An excellent saw for the home tool kit or for the young carpenter.



NO. 339
HAND SAW JOINTER

A good hand saw jointer is an essential part of every saw filer's outfit. Adjustable to any thickness of saw blade and may be used with any common file.

A Simonds Reversed Lever Saw Set makes a fine tool for the accurate setting of fine tooth saws and is a favorite with the best saw filers. Ask for the Simonds No. 331.



No. 83. Simonds Plumbers' Nest of Saws with Metal Cutting Blade and Patented Adjustable Handle. Complete, including Handle, 10-inch Keyhole Blade, 12-inch Compass Blade, and 18-inch Nail-Cutting Blade. For cutting old boards containing nails. Every contractor needs a set.

Why Hack Saw Blades do Not Break

Of course the old style all-hard blades do break, but the newest development in this line is The Simonds Hard Edge non-breaking blade. It is hardened well below the base of the cutting teeth and therefore cuts metal easily. The softer back permits bending without breaking.

Try these Blades. Ask Your Dealer.

Simonds Files

Are made in all styles and sizes for shop or mill use.

Standard high-grade files.

Carpenters should ask for Simonds slim taper Hand Saw files.

(See page 19)

SIMONDS DOCKING SAW

A fast rough-work cutter. Every carpenter ought to have one for house-framing, elevator or scale building work. On big cutting it will cut three times as fast as any Hand Saw. 4½ points to the inch. Taper ground 30″ long. Metal handle.

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SIMONDS MANUFACTURING COMPANY,

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17th Street and Western Avenue,
Chicago, Ill.

90 West Broadway,
New York City.

420 Canal Street,
New Orleans, La.

209 Madison Avenue,
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85 First Street,
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12-14 Natoma Street,
San Francisco, California.

402 Occidental Avenue,
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SIMONDS CANADA SAW CO., LIMITED,

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