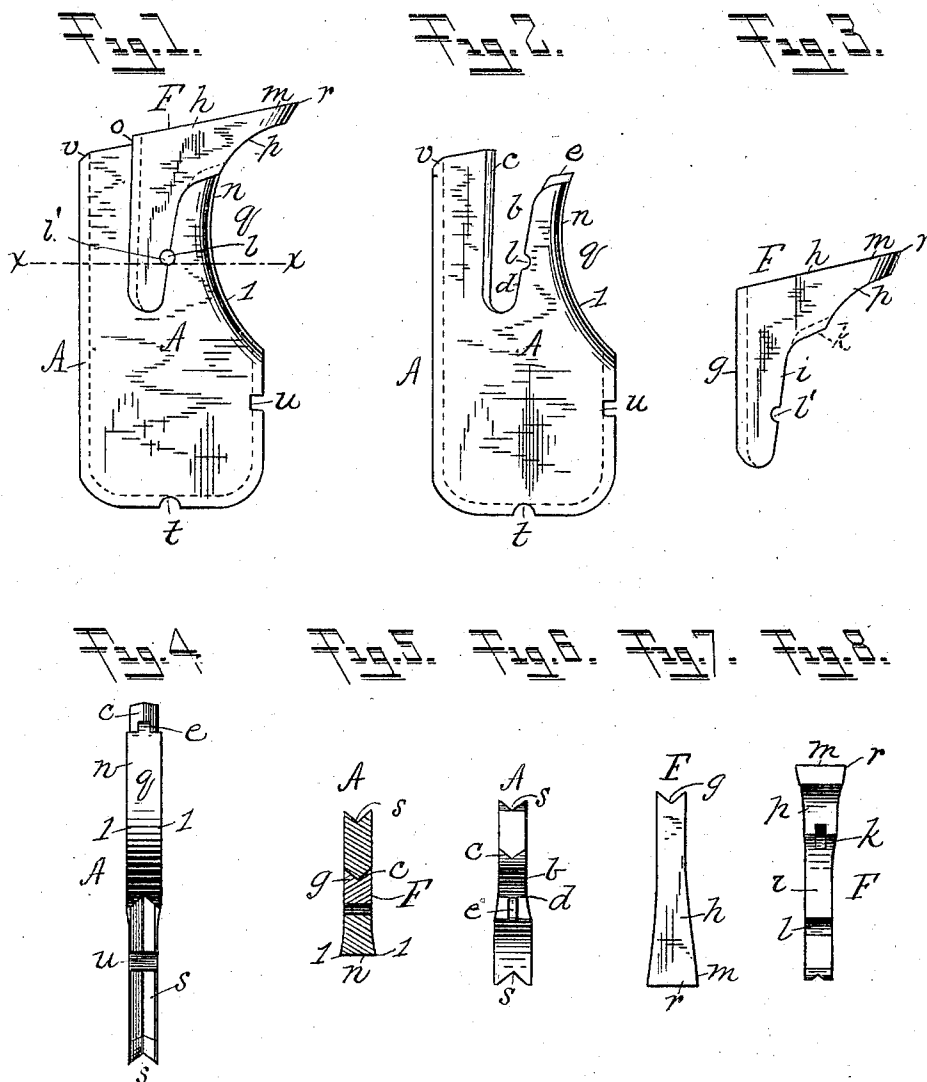


(No Model.)

F. MILLER.
INSERTIBLE SAW TOOTH

No. 342,029.

Patented May 18, 1886.



Attest.
Will T. Norton.
D. P. Caw

Inventor
Frederick Miller.

by John J. Halsted
Att'y.

UNITED STATES PATENT OFFICE.

FREDERICK MILLER, OF MENDOCINO, CALIFORNIA.

INSERTIBLE SAW-TOOTH.

SPECIFICATION forming part of Letters Patent No. 342,029, dated May 18, 1886.

Application filed December 4, 1885. Serial No. 184,740. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK MILLER, of Mendocino, in the county of Mendocino and State of California, have invented certain new and useful Improvements in Saw-Teeth and their Holders; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

My invention relates to that class of saws, but more particularly to circular saws, in which the bit-holder is removably inserted in the saw-plate or main body of the saw, and in which the bits or teeth are removably inserted in the holder; and it consists in several peculiarities of construction, which will clearly appear from the following description and from the drawings, and having for their main objects, simplicity in the manufacture, strength of structure, and efficiency when the saw is in operation.

In the drawings, Figure 1 shows in elevation a holder and the bit inserted therein, both made in accordance with my invention; Fig. 2, an elevation of the holder; Fig. 3, an elevation of the bit or tooth detached; Fig. 4, a front edge view of the holder; Fig. 5, a cross-section of the holder and bit through the line *xx* of Fig. 1; Fig. 6, a top view of the holder; Fig. 7, a top view of the bit, and Fig. 8 a front edge view of the bit detached.

The holder *A* has in its top a nearly vertical deep-curved recess or socket, *b*, having at one of its sides a V-shaped or equivalent projection or rib, *c*, and its other side, *d*, is plain, but is provided at its top with a rib or tongue, *e*, projecting upward.

The bit *F* has its rear edge, *g*, and its top edge, *h*, meeting at an obtuse angle, and this straight edge *g* is grooved to fit the rib or projection *c* on the holder, and its opposite edge, *i*, is plain or ungrooved, to adapt it to the side or edge *d* of the holder, and at the portion which comes immediately over the tongue *e* of the holder it is provided with a mortise, *k*, adapted to receive the nib or tongue *e*, this connection of this nib with the mortise *k* holding the bit against any lat-

eral displacement or play, and any suitable pin placed in a hole, *ll*, which is made partly of a notch in the holder and partly of a corresponding notch in the bit, serving to lock the two firmly together when they are placed in the saw-plate ready for use. This half-notch is purposely made at the front edge of the bit, so that any tendency of the impact or thrust on the bit when the saw is at work, which otherwise would tend to lift it or loosen it from its socket, is the better resisted and prevented, because the greater the thrust the more is the bit pressed against its locking-pin and against the forward part of the holder.

The cutting portion *m* of the bit extends forward, as shown, considerably beyond the forward portion, *n*, of the upper part of the holder, and at its top surface rises at its rear end a little distance above the top of the holder, as shown at *o*, and the front of the bit has a concave form, as seen at *p*, and which concave is continuous with a spacious concave, *q*, made in the front of the holder, this concave extending down, as shown, to a low point in the holder. The thickness or breadth of the bit gradually increases from its rear to its extreme front or cutting edge, *r*, as plainly appears in Fig. 7, and to accord with this thickness at the point of junction of the curve *p* with the concave or curve *q* of the holder the holder is enlarged in thickness on both sides or edges of such curve, thus forming slight ribs *1* at such edges. The curve *q*, it will be seen, is formed by cutting away a considerable part of the front of the holder, this curve extending back into such holder.

It will be observed that the continuous concave line formed by the curve *q* on the removable holder and the curve *p* on the removable bit has no convex part or swell, but is as a whole in a line closely resembling a half ellipse or oval, and that its upper end terminates near to the cutting end of the removable bit. A straight face extends from this upper terminus of the curve *p* of the bit, meeting the top face of the bit in such a plane as to constitute therewith a stout, strong chisel-edge. It will be further observed that this bit is of increasing breadth and strength from its lower rounded end to its point of junction with the upper terminus of curve *q* of the holder, and has no right-angled weak point

at which the cutting or chisel edge part is likely to break off from its inserted stock or shank. Its greatest strength is from 1 to 2, just where it is most needed.

5 The forward extension, *m r*, affords a full, free opportunity for the cutting-edge to take hold of the material to be sawed. The diminishing thickness from its front to its rear (see Fig. 7) precludes all liability of binding tightly
10 in such material. The upward extension, *o*, beyond the holder gives a clearance and prevents clogging at any part behind such point *o*. The merging of the curves *p* and *q* of the two parts into one continuous deep and long
15 curve prevents any obstruction and gives ample clearance at the forward or advancing edges of the bit and of the holder, and the swells or ribs *l l* impart to the holder a thickness at the concave *q* coinciding with the thickness of
20 the concave *p* at the part where the bit and holder are held by the nib *e* and mortise *k*, and the reduced or lesser thickness back of these ribs *i* affords clearance for the main body of the holder, as also for the main body of the
25 bit.

The holder has a V-shaped or other appropriate groove, *s*, extending partly around it, made in its rear edge, in its bottom edge, and in the straight part of its front edge. It is
30 also provided with notches *t u* in its bottom and side edges, to receive pins or keys for securing it to the saw-plate having corresponding notches. The rear top corner of the holder is beveled off, as seen at *v*, that it may not
35 strike the wood in the kerf or saw-cut.

It will readily be seen that the long line of bearing or support which the straight back *g* has against the back wall of the deep socket *b*, together with the somewhat tapering form
40 of the shank of the bit, in conjunction with the length and strength of such shank, all serve to give the bit great resisting-power and great firmness of hold in its holder, and that the impact or blow caused by the tooth in suddenly
45 entering the material is widely distributed.

The socket *b* in the holder, it will be observed, is made in a direction or line about radial of the circular saw in which the holders are to be inserted, and its two sides diverge
50 upward slightly away from each other. The shank of the bit is correspondingly shaped, and consequently very strong transversely.

It will be seen that when a circular saw hav-

ing my improved holders and bits is put into action, the pressure or force is divided between the holder and the bit, and is not taken
55 by the bit alone. In case of accident to the bit, it can be easily replaced by another one without moving the holder, or the holder can be replaced by another, if injured in any way. 60
No springs or delicate pieces likely to be injured or broken are used, nor any keys or slides to occupy part of the recess or socket-space *b*, and which to that extent must lessen the size and strength of the bit. My bit fills
65 all the recess. The bit has no weak place or angle at which it is likely to break off, and it is supported at its back to a height or distance much greater than at its front.

I claim—

1. In combination with an insertible saw-tooth holder having a deep and gradually-widened recess in its top and a transverse notch, *l*, in the forward side of such recess, the tooth or bit *F*, as made of gradually-increasing width
75 from its bottom upward, and having in its cutting end the forward concave, *p*, terminating in a chisel-edge and insertible in and conforming to such widened recess, and having a notch, *l'*, in its forward edge, corresponding with notch
80 *l*, the bit projecting at its rear above the top of the holder, all substantially as set forth.

2. The removable holder having the top socket, *b*, and having the described concave *q* continuous with the described concave *p* of the
85 bit, and provided with the nib *e*, in combination with the close-fitting bit adapted for said socket, and provided with a mortise, *k*, at its front, as shown and described, adapted to receive such nib, and having the concave *p*, all
90 substantially as set forth.

3. The described combined removable bit-holder and removable bit, consisting of the holder *A*, having the inwardly-curved concave *q*, as described, and having the deep top
95 socket, *b*, groove *s*, notch *l*, and projecting nib *e*, and of the bit *F*, having the curve *p*, forming a continuous curve with the curve *q* in the body of the holder, and having the grooved edge *g*, notch *l'*, and mortise *k*, and projecting
100 above the top of the holder, as set forth.

FREDERICK MILLER.

Witnesses:

S. M. SMITH,
R. C. BUNNER.