

(No Model.)

C. C. TAINTOR.
SAW SET.

No. 475,359.

Patented May 24, 1892.

Fig. 5.



Fig. 6.

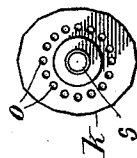
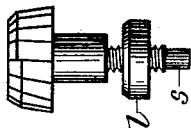


Fig. 7.

Fig. 2.

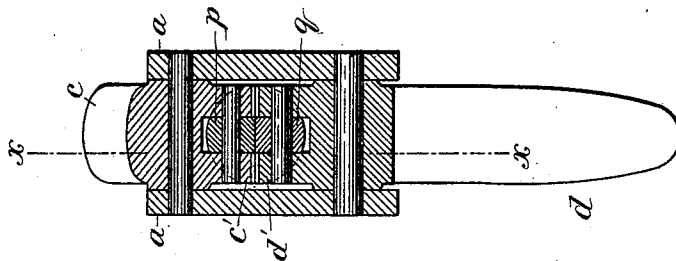


Fig. 1.

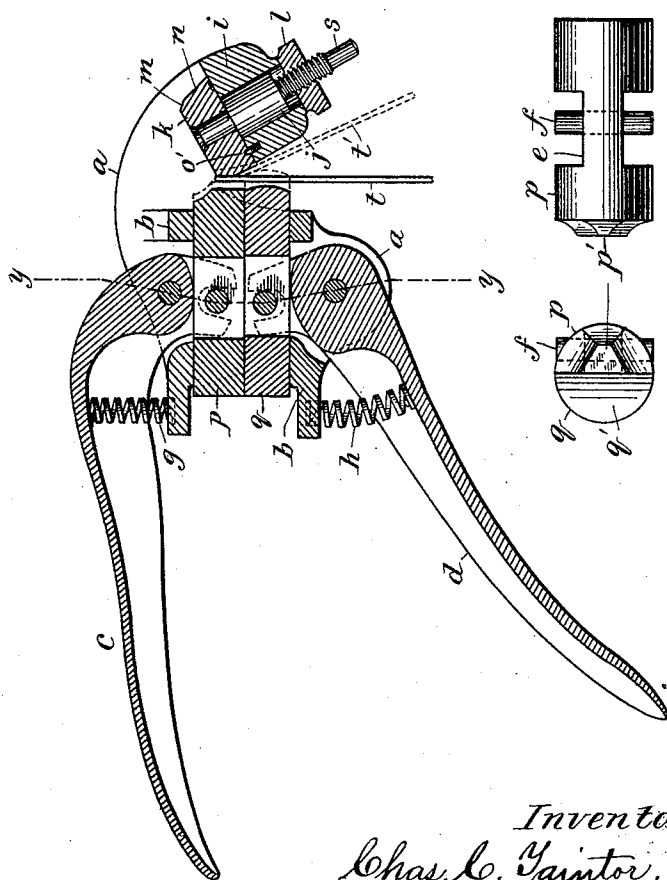


Fig. 4.

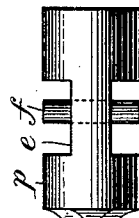
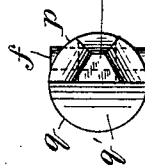


Fig. 3.



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Crawford Miller, Atty.

UNITED STATES PATENT OFFICE.

CHARLES C. TAINTOR, OF ELIZABETH, NEW JERSEY, ASSIGNOR TO THE
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SAW-SET.

SPECIFICATION forming part of Letters Patent No. 475,359, dated May 24, 1892.

Application filed January 28, 1892. Serial No. 419,556. (No model.)

To all whom it may concern:

Be it known that I, CHARLES C. TAINTOR, a citizen of the United States, residing at Elizabeth, Union county, New Jersey, have
5 invented certain new and useful Improvements in Positive Saw-Sets, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

10 The object of this invention is to furnish a convenient means in a single saw-set of bending saw-teeth at many different angles; and the invention consists, partly, in a substantially circular die formed with a series of
15 varying facets around one corner and provided with means for adjusting it readily with any of the said facets opposite the setting-punch; and it also consists in a special construction and arrangement for the setting-punch, the bending-punch, and the handles
20 for operating the same.

In the annexed drawings, Figure 1 is a longitudinal section taken partly through the center of the die and partly through the section-plane *x x* in Fig. 2, the parts being shown
25 in section where hatched. Fig. 2 is a transverse section of the saw-set on line *y y* in Fig. 1. Fig. 3 is an end view of both the punches, and Fig. 4 a plan of the setting-punch. Fig. 5 is a plan, and Fig. 6 a side
30 view, of the setting-die. Fig. 7 shows the under side of the die.

The head of the punch consists in side cheeks *a*, connected by cross-bars *b*, in the
35 center of which circular holes are formed to admit the setting-punch and bending-punch, which are formed each of semi-cylindrical cross-section, as shown in Figs. 2 and 3. A setting-lever *c* and punch-lever *d* are pivoted
40 between the cheeks *a* and provided with forked jaws *c'* and *d'*, which are fitted into notches *e*, formed in the opposite sides of the punches. The jaws are slotted at the ends, and a pin *f* is inserted transversely through
45 each of the punches to fit such slots. The setting-punch *p* is formed with a triangular face *p'*, and the bending-punch *q* is rounded transversely, as shown at *q'* in Fig. 3. Levers are pressed normally outward by springs
50 *g* and *h*, inserted between the inner sides of the levers and seats upon the rear cross-bars

b. The springs serve normally to hold the levers expanded and the punches retracted, as shown in Fig. 1. The front of the head is provided with a bearing *i*, inclined at an
55 angle of about fifty-five degrees with the movement of the punches, and a spindle *j* is fitted in the bearing, with the die *k* secured upon its upper end and clamped in place by a nut *l*, applied to a thread upon the outer
60 end of the spindle. The die is nearly round, with an irregular outline produced by the formation upon its upper corner of sixteen bevel seats or facets *m*, against which the
65 tooth of the saw may be jammed by the punch *p*. The upperside of the die, as shown in Fig. 5, is divided by two cross-lines into quadrants, lettered, respectively, A B C D, and division-marks are inserted in each quadrant
70 corresponding with the facets upon such quadrants, and numbered, respectively 1 2 3 4.

With the construction shown the die provides facets for bending four different lengths of saw-teeth, and the sides of the die extending from the base of each facet to its lower
75 edge are beveled at different angles to form bending-seats *n*, so as to bend any of such teeth at four different angles. To prevent the projection of any of the longer facets by the side of a short facet and an interference
80 with the punch operating upon the short facet, the longest facets are arranged upon two opposite sides of the die and the shortest facets are arranged upon the two intervening
85 sides, and the facets of intermediate length are distributed in the quadrants between such sides. The under side of the die, which rests upon the top of the bearing *i*, is formed
90 with sixteen holes *o* to fit the point of a pin *o'*, which is inserted in the seat, and any of the facets is thus held in the proper relation to the punch, the die being readily turned by slackening the nut *l* and raising the die from the pin to rotate it in the desired direction
95 by a projection *s* upon the end of the spindle *j*.

All the facets are formed at the same angle with the spindle and parallel with the face of the setting-punch, while the bending-seats *n* are at different angles therewith. The variation in the angles of the bending-seats permits the bending-punch *q* to throw
100 the saw-blade into a greater or less angle

with the facet, and thus sets the tooth at the required angle.

The cheeks *a* of the head are notched upon the under side in a line with the top corner of each facet, so as to adjust the teeth of the saw readily into the desired position for setting the teeth, as shown by the section of the saw-blade *t* in Fig. 1.

The pressure of the operator's fingers upon the levers *c* and *d* operates to force the punch forward, the setting-punch *p* being arrested when the tooth is pressed upon the facet *m*, while the bending-punch continues its movement until the saw is forced into contact with the adjacent seat *n*, as indicated by the dotted lines *t'* in Fig. 1.

The spring *g*, which retracts the setting-punch, is or may be made of less strength than the spring for the bending-lever *d*, and the setting-punch thus moves first, bringing the saw-tooth to a bearing upon the facet before the saw-blade is pushed against the seat *n* to bend the tooth, or the opposite relation may be secured. It is, however, immaterial which of the punches is operated first, as the continued movement of the levers serves in any case to force both the punches firmly toward the opposite seats *m* and *n* upon the setting-die. The final pressure of the levers serves to positively bend the tooth at the desired angle, and thus secures great uniformity in the bending of the teeth. The entire construction is very simple and inexpensive, while it affords the means of setting saw-teeth of many different sizes at all the different angles which are likely to be required in practice.

Each quadrant distinguished by the letter A, B, C, or D contains a group of facets which are formed of the same length, and thereby adapted to fit teeth of the same length, while the seats *n*, adjacent to these facets, are formed at different angles therewith, by which construction teeth of the same length may be set at different angles. Each group of facets as thus constructed would be adapted to bend teeth of nearly equal length, but to bend the same at four different angles. The material part of the invention consists in indicating the groups by separate reference-letters A B C D and the different facets in each group and the seats *n* connected therewith by other distinguishing marks, as the numbers 1 2 3 4. The number of teeth upon the setting-die is obviously immaterial, and the number shown in the drawings is selected merely to show a practical construction which affords a large range adapted to set many sizes of teeth with the same tool.

It has been stated that the pressure of the saw-plate against the seat *n* by the bending-punch secures the positive setting of each tooth at the same angle, and it will also be seen that when a saw is set upon a particular one of the facets it is easy to preserve a record of such facet by the use of the letter and number corresponding therewith, and

the same or another saw may thus be reset at any time with precisely the same angle. Where the angle of the saw-tooth is determined by the setting of an adjustable screw in any portion of the saw-set, it is obvious that the operator may fail, in resetting the saw, to secure the same adjustment twice in succession, especially after the lapse of considerable time. It has been common in many styles of saw-sets to use a setting-punch only and to bend the saw-blade in a greater or less degree by the movement of such punch; but in the construction of such punches the saw-blade is not forced positively against a bending-seat like that lettered *n* herein, and it has therefore been possible by the accidental lifting or moving of the handle of the punch to wrench the saw-tooth after it is set and to bend it in a greater degree than is desired. By such accidental movements saw-teeth have often been overstrained or broken, and with such an appliance it is obviously difficult to bend all the teeth uniformly.

The liability to break the saw-teeth or to injure the metal at the angle where it is bent is especially aggravated where a sharp corner is formed upon the setting-die at such point. With the setting-die shown herein the seat *n* is formed at precisely the desired angle with the facet *m*, and the saw-blade and the tooth being both pressed against the requisite surfaces the tooth is set at exactly the desired angle and cannot by any carelessness be overstrained or set at a different angle.

It will be readily seen that should the operator, when commencing to set a saw bend the teeth at an improper angle he may readily readjust the setting-die and bend such teeth over again positively at the proper angle.

It is obvious that the positive bending of the saw-tooth is effected by the operation of a setting-punch upon a die having a facet with a bending-seat adjacent thereto, and I have therefore claimed such punches, with the handles for actuating them, in connection with any die having such characteristics.

Having thus set forth the nature of my invention, what I claim herein is—

1. A saw-set provided with a circularly-adjustable setting-die having a series of facets *m* of different lengths and at the same angle with the axis of the die and a series of adjacent bending-seats *n* at different angles with the said facets, as herein set forth.

2. A saw-set provided with a circularly-adjustable setting-die having facets *m*, with adjacent seats *n*, constructed and arranged as described, and the top of the die being divided by lines into spaces corresponding with the groups of facets, letters inserted between such lines to distinguish the groups, and similar series of numbers inserted between such lines over the facets in each group, substantially as herein set forth.

3. A saw-set provided with a circularly-adjustable setting-die having a series of facets *m* of different lengths and at the same angle

with the axis of the die, the saw-set being formed with a seat to sustain the die adjustably and the under side of the die being provided with a series of holes corresponding
5 with the said facets, and a pin being projected from the seat to fit the said holes and the die having means for turning it and securing it when adjusted, substantially as set forth.

4. In a saw-set, the combination, with an
10 adjustable die adapted for bending saw-teeth at different angles, of a suitable setting-punch and a bending-punch movable parallel to one another toward the die, and separate handles for simultaneously actuating the punches, as
15 herein set forth.

5. In a saw-set, the combination, with an adjustable die adapted for bending saw-teeth at different angles, of a suitable setting-punch and a bending-punch movable parallel to one
20 another toward the die, separate handles for

actuating the punches, and springs of different strength applied to the handles to secure the movement of one punch in advance of the other, as herein set forth.

6. The combination, in a saw-set, of a cir- 25
cular die having a series of facets around its upper corner and a series of bending-seats of different inclinations upon the edge of the die adjacent to the facets, a setting-punch and bending-punch movable parallel with one an- 30
other toward the said facets and bending-seats, and means for actuating the punches, substantially as set forth.

In testimony whereof I have hereunto set
my hand in the presence of two subscribing 35
witnesses.

CHARLES C. TAINTOR.

Witnesses:

THOMAS S. CRANE,
L. LEE.