

(No Model.)

2 Sheets—Sheet 1.

S. A. CLARK.
DIE FOR MAKING TURN BUCKLES.

No. 435,033.

Patented Aug. 26, 1890.

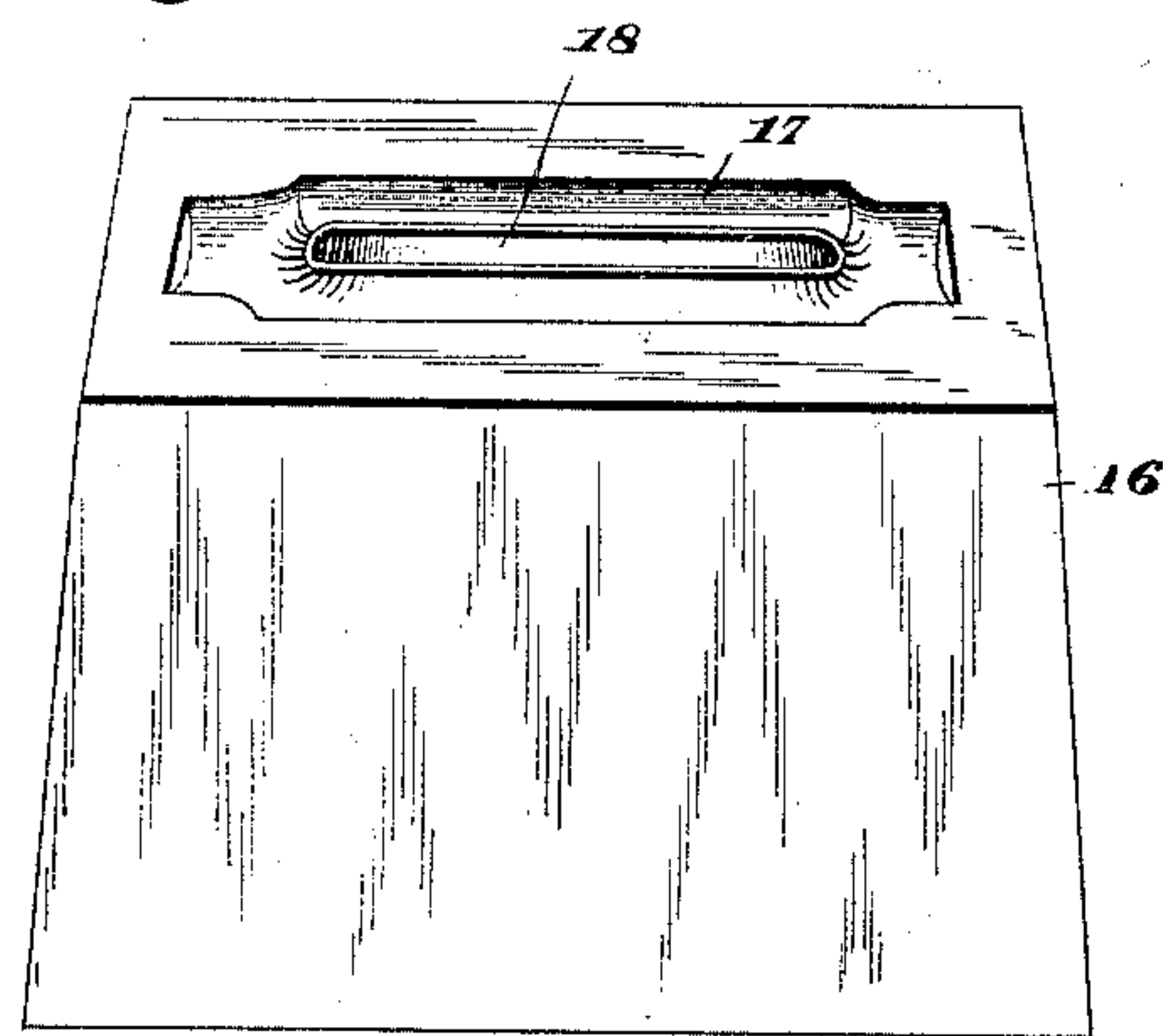
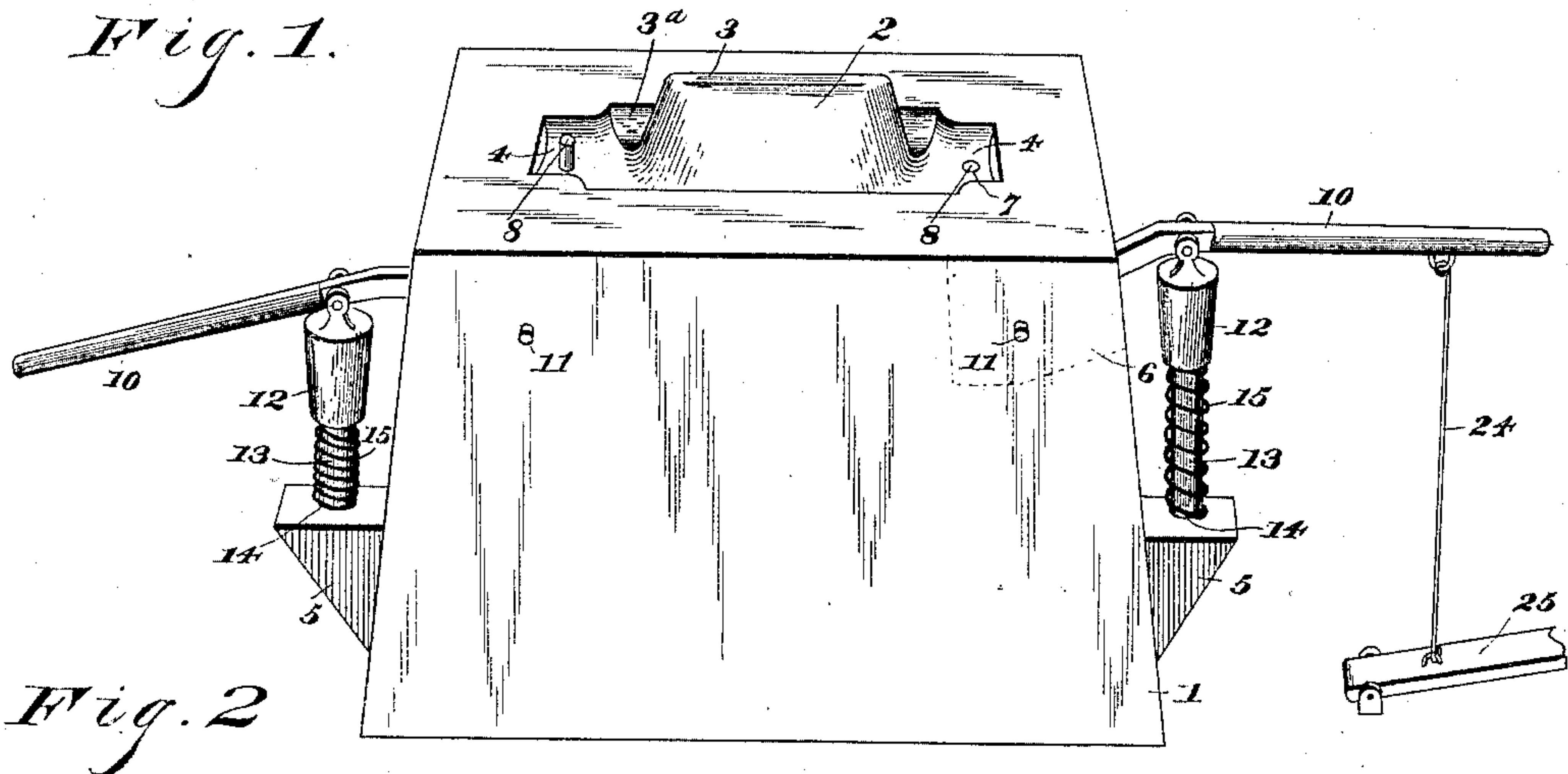


Fig. 3.

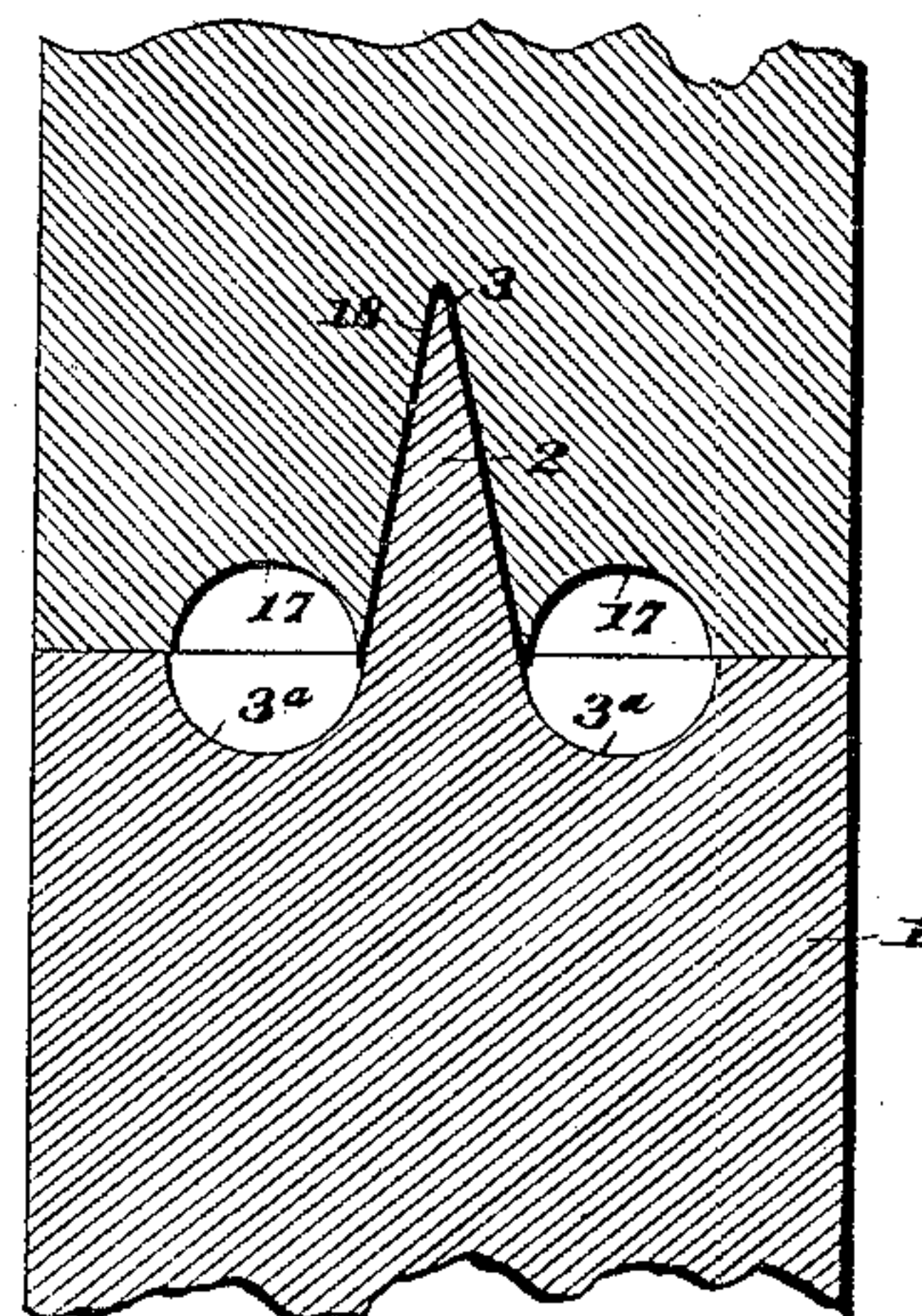
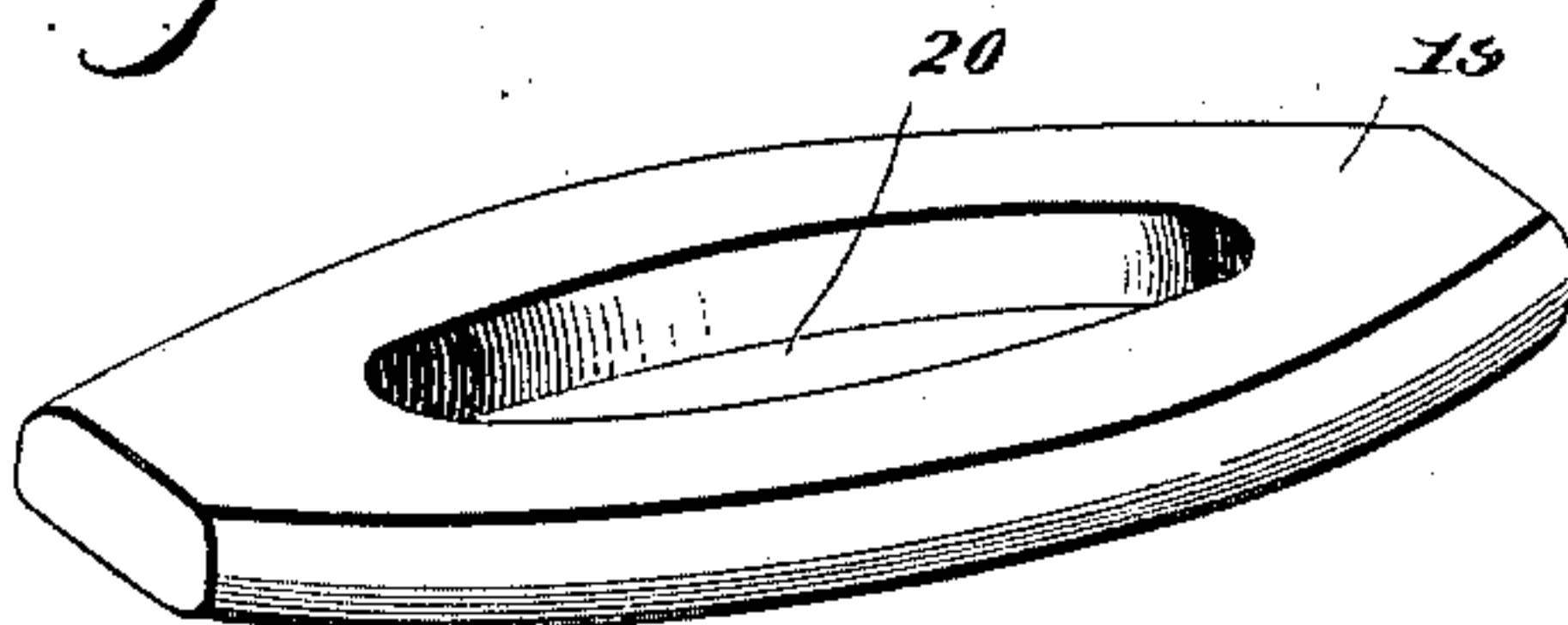


Fig. 5.



Witnesses,

J. M. Whitcomb

Wm. Bagger

Inventor,

Stephen A. Clark

By his Attorneys

C. A. Snow & Co.

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Fig. 4.

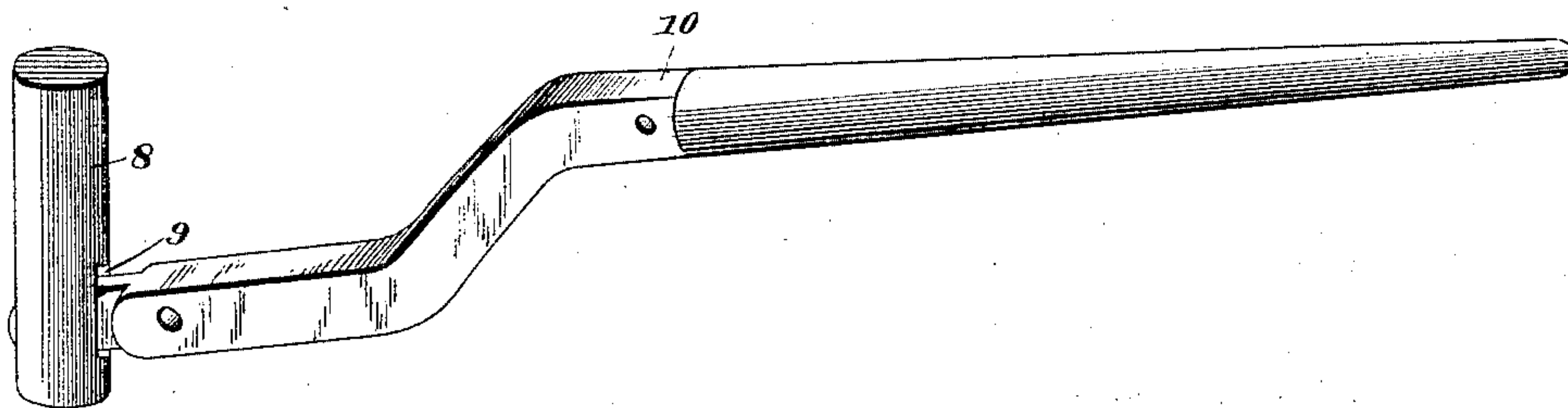


Fig. 6.

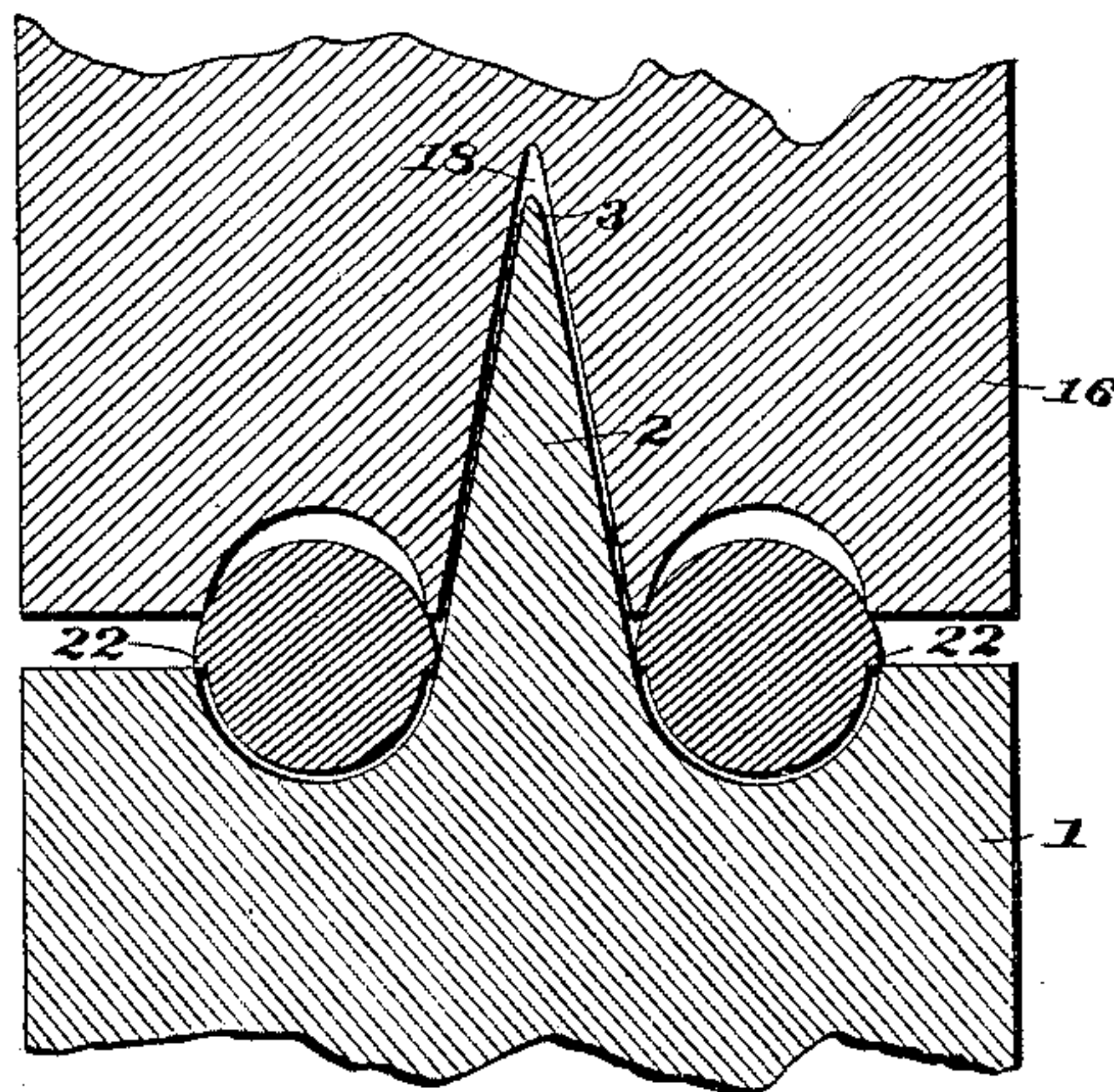
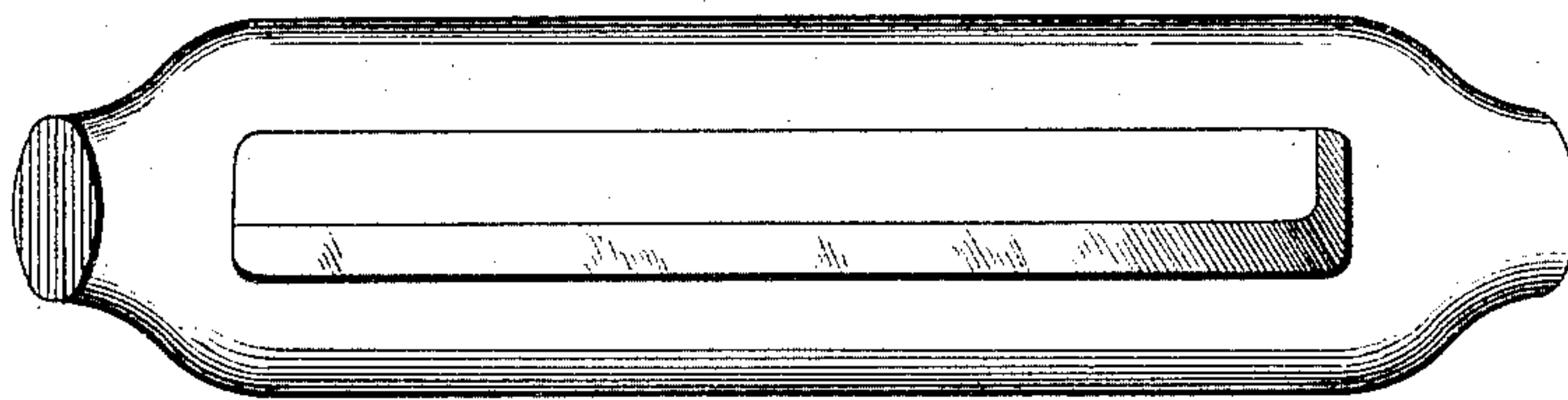


Fig. 7.



Witnesses,

J. M. Withered,

Wm. Baggers

Inventor,

Stephen A. Clark,

By his Attorneys

C. A. Snow & Co.

UNITED STATES PATENT OFFICE.

STEPHEN A. CLARK, OF TERRE HAUTE, INDIANA.

DIE FOR MAKING TURN-BUCKLES.

SPECIFICATION forming part of Letters Patent No. 435,033, dated August 26, 1890.

Application filed October 16, 1889. Serial No. 327,148. (No model.)

To all whom it may concern:

Be it known that I, STEPHEN A. CLARK, a citizen of the United States, residing at Terre Haute, in the county of Vigo and State of Indiana, have invented a new and useful Die for Manufacturing Turn-Buckles, of which the following is a specification.

This invention relates to dies for manufacturing turn-buckles; and it has for its object to provide a die of this class, and by means of which the link or buckle may be constructed from a longitudinally-slotted block or blank without wearing, and by means of which the forging may be easily and conveniently manipulated and operated upon with the best results.

The invention consists in the improved construction, arrangement, and combination of parts, which will be hereinafter fully described, and particularly pointed out in the claims.

In the drawings hereto annexed, Figure 1 is a perspective view of the lower or bottom die. Fig. 2 is a perspective view showing the top die in an inverted position. Fig. 3 is a vertical sectional view showing the dies placed together in position for operation. Fig. 4 is a perspective view of one of the levers and one of the vertically-sliding pins detached from the die. Fig. 5 is a perspective view showing the blank from which the turn-buckle is manufactured. Fig. 6 is a transverse sectional view of the die with the blank in position after having been once operated upon and inverted. Fig. 7 is a perspective view showing one of the turn-buckles manufactured by means of my improved die.

Like numerals of reference indicate like parts in all the figures.

1 designates the lower or bottom die, which is provided in its upper side with an annular recess, which is of the outline or configuration which the turn-buckle or link is desired to have. The inner wall of said groove or recess is formed by a mandrel 2, the walls of which are beveled or inclined and which extends vertically above the face of the die 1, the upper edge of said mandrel forming a sharp ridge 3. The ends of the groove or recess 2 are enlarged, as shown at 4, to form the ends of the turn-buckle. Lugs or brackets 5 extend laterally from the ends

of the bottom die 1, and the said die is provided at its ends with recesses 6, communicating with vertical openings 7, extending downwardly from the enlarged ends 4 of the recess in the face of the die. In the vertical openings 7 are placed vertically-sliding pins 8, the lower ends of which are provided with slots 9 to receive the inner ends of levers 10, which are mounted pivotally in the recesses 6 of the die upon transverse pins 11. It will be seen that by operating the said levers the pins or furrowers 8 may be moved vertically in an upward or downward direction, as may be required. To the levers 10 are pivotally connected the caps 12, having downwardly-extending rods 13, which are guided in vertical perforations 14 in the lugs or brackets 5. Springs 15 are coiled around the rods 13 and press upwardly against the caps 12, thereby forcing the outer ends of the levers 10 in an upward direction, and consequently retaining the vertically-sliding pins or furrowers 8 normally in a lowered position.

16 designates the top die, which is provided in its face with a groove or recess 17 of the outline of the turn-buckle or link, which is to be constructed, but which is much shallower than the corresponding recess 2 in the face of the bottom die 1. The top die 16 is also provided in its face with a centrally-located vertical recess 18, to receive the portion of the mandrel 3 which projects above the face of the bottom die 1.

The blank from which my improved turn-buckle or link is manufactured is cut from a bar of either round or square wrought-iron of suitable length, and is shown at 19 in the drawings. The said blank having been cut of the proper size, is provided with a longitudinal slot 20, which may be formed in any suitable press or punching machine, and in the act of forming which the metal on each side of said slot is upset or forced in an upward direction, while the metal at the ends of the blank and at the ends of said slot remains undisturbed. While the upper die is in a raised position the blank 19 is arranged upon the upper end of the mandrel, which is beveled or wedge-shaped, as already described, so that it will readily enter the slot 20. The top die is then forced downwardly by one or more blows of the hammer, thus

forcing the blank which has been previously heated to the desired point in a downward direction and into the recess 2, which forms the die proper. The top die is now lifted, 5 when by manipulating the levers 10 the vertically-sliding pins or followers 8 will be forced in an upward direction, thus lifting the forging out of the die and enabling it to be grasped with the tongs and reversed. The 10 top die is now again lowered and subjected to one or more blows of the hammer, thus driving the forging back into the die and smoothing or shaping the burr 22, which has been left around its circumference owing to 15 the unequal sizes of the recesses in the bottom and top dies and completing the forging. When the forging has been completed, the levers 10 may be again manipulated, so as to force the link or turn-buckle in an upward 20 direction and out of the die, from which it may then be removed in the usual manner with the tongs.

By my improved method of manufacturing turn-buckles and similar links the said 25 links or buckles are made jointless or weldless and will therefore be found to be possessed of superior strength. The ends of the link, which in a turn-buckle should be much heavier than the remainder of the link, may 30 readily be made so by properly regulating the length of the slot 20 in the blank from which the device is formed. The method of manufacturing is very simple and may be easily carried into effect. When desired, one of 35 the hand-levers 10 which is nearest to the operator may be connected by pivoted rods 24 with a foot-lever 25, by means of which it may be conveniently operated, the other hand-lever 10 being manipulated by the operator's 40 assistant.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a die for manufacturing links or turn-buckles, the herein-described bottom die having a suitably-formed annular recess, the inner walls of which are formed by an upwardly-extending mandrel having inclined sides and a sharp upper edge, substantially as set forth. 45 50

2. A die for manufacturing links or turn-buckles, having an annular recess, a central upwardly-extending wedge-shaped mandrel, and vertically-sliding pins or followers, substantially as set forth. 55

3. In a die for manufacturing turn-buckles, the combination, with the bottom die having an annular groove or recess, of the vertically-sliding pins or followers and the outwardly-extending levers for manipulating the same, 60 substantially as set forth.

4. The bottom die having the annular recess and the centrally-located mandrel extending above the face of said die, in combination with the vertically-sliding pins or followers, the operating-levers, and springs arranged to force the outer ends of said levers in an upward direction, substantially as set forth. 65

5. In a die for manufacturing turn-buckles, 70 the combination, with the bottom die having an annular groove or recess and a centrally-located wedge-shaped mandrel extending above its face and having a sharp upper edge, of the top die having a corresponding annular groove or recess, and a centrally-located 75 recess to receive the upper end of the mandrel, substantially as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in 80 presence of two witnesses.

STEPHEN A. CLARK.

Witnesses:

HARRY HARRELL,
RICHARD DAHLEN.