

W. L. NEWSHAM.

Machines for Forming Ferrules.

No. 134,092.

Patented Dec. 17, 1872.

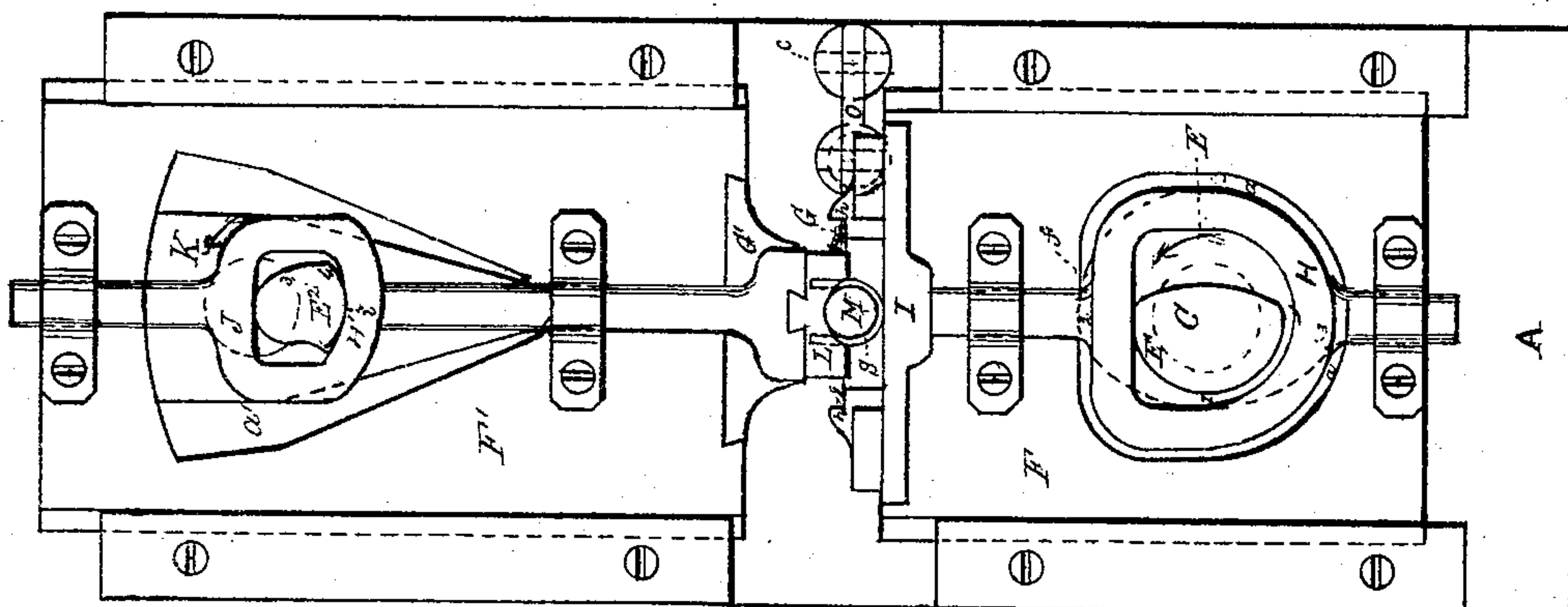


FIG. 2

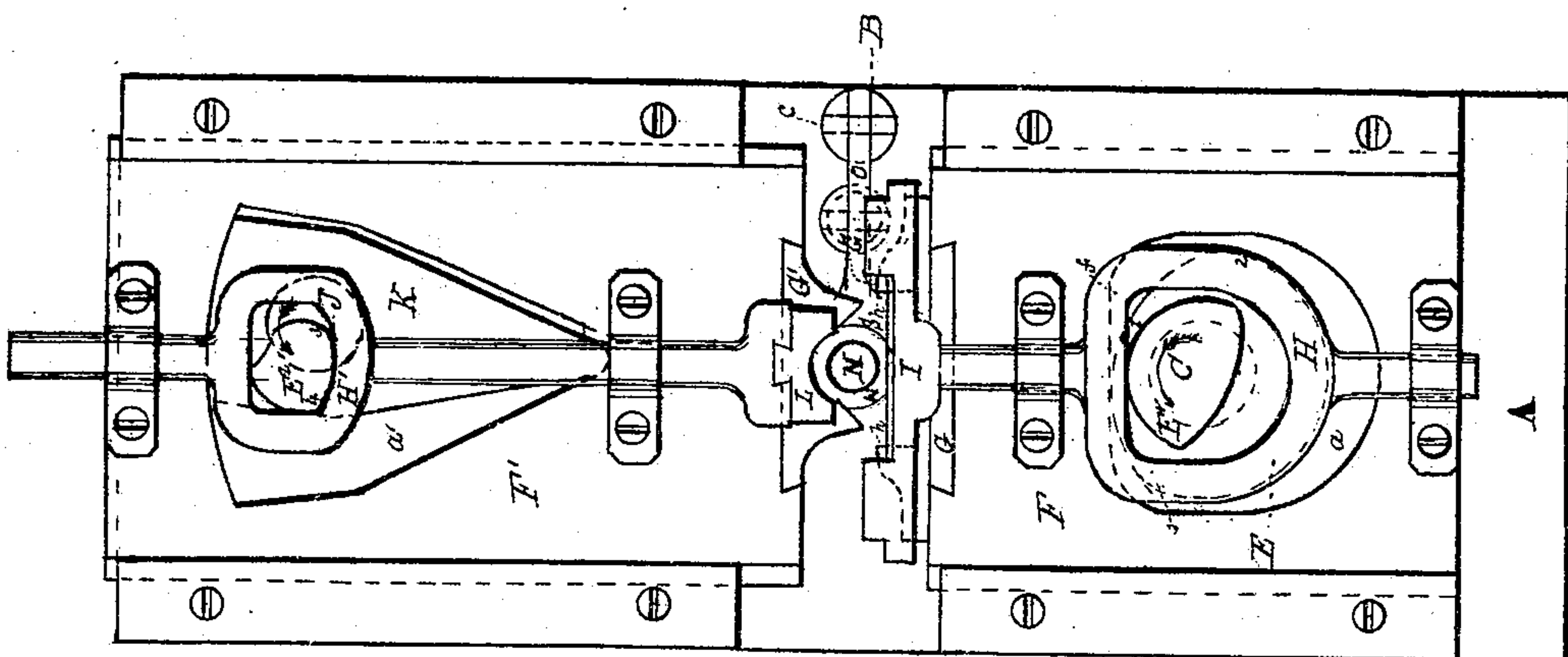


FIG. 1

WITNESSES.

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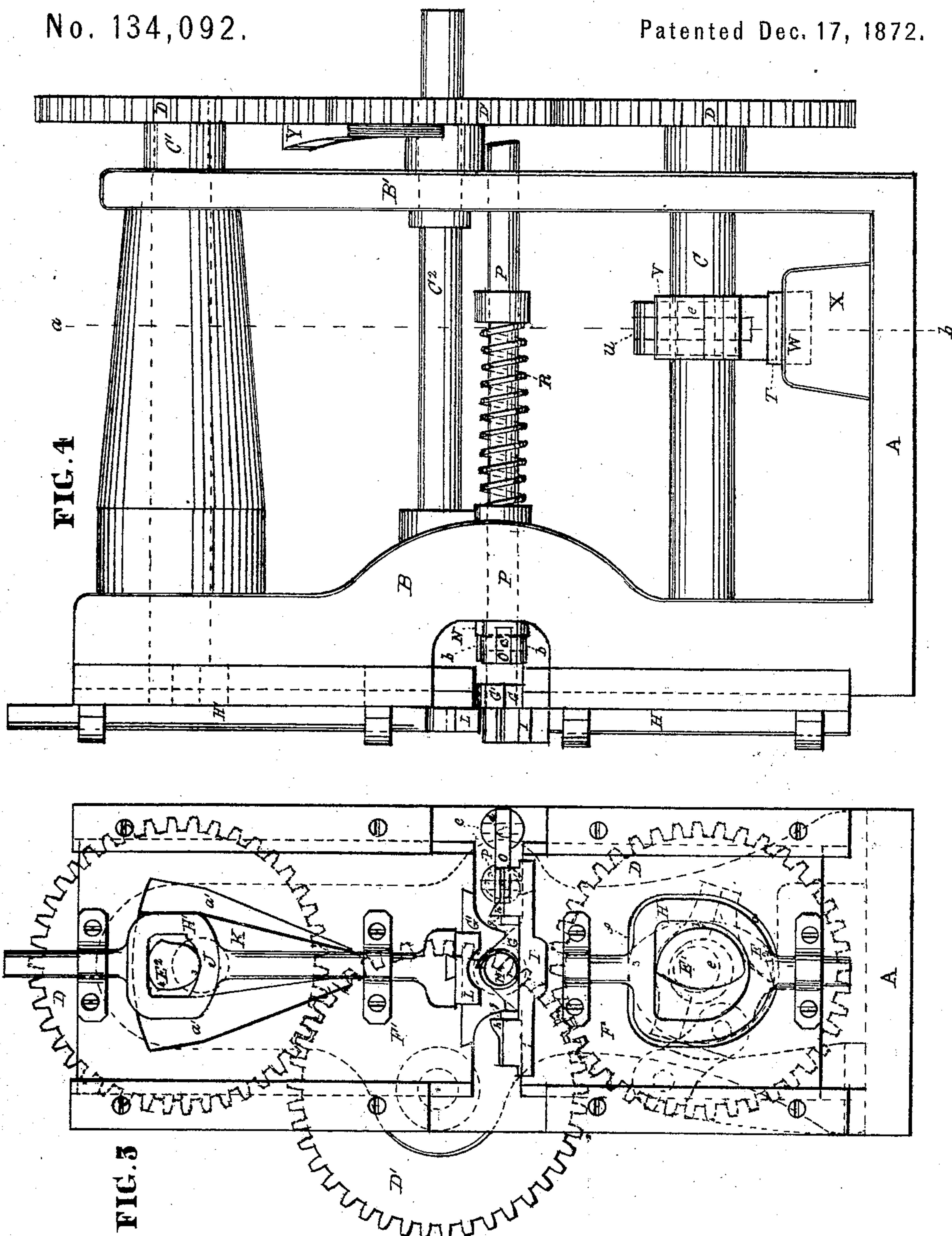
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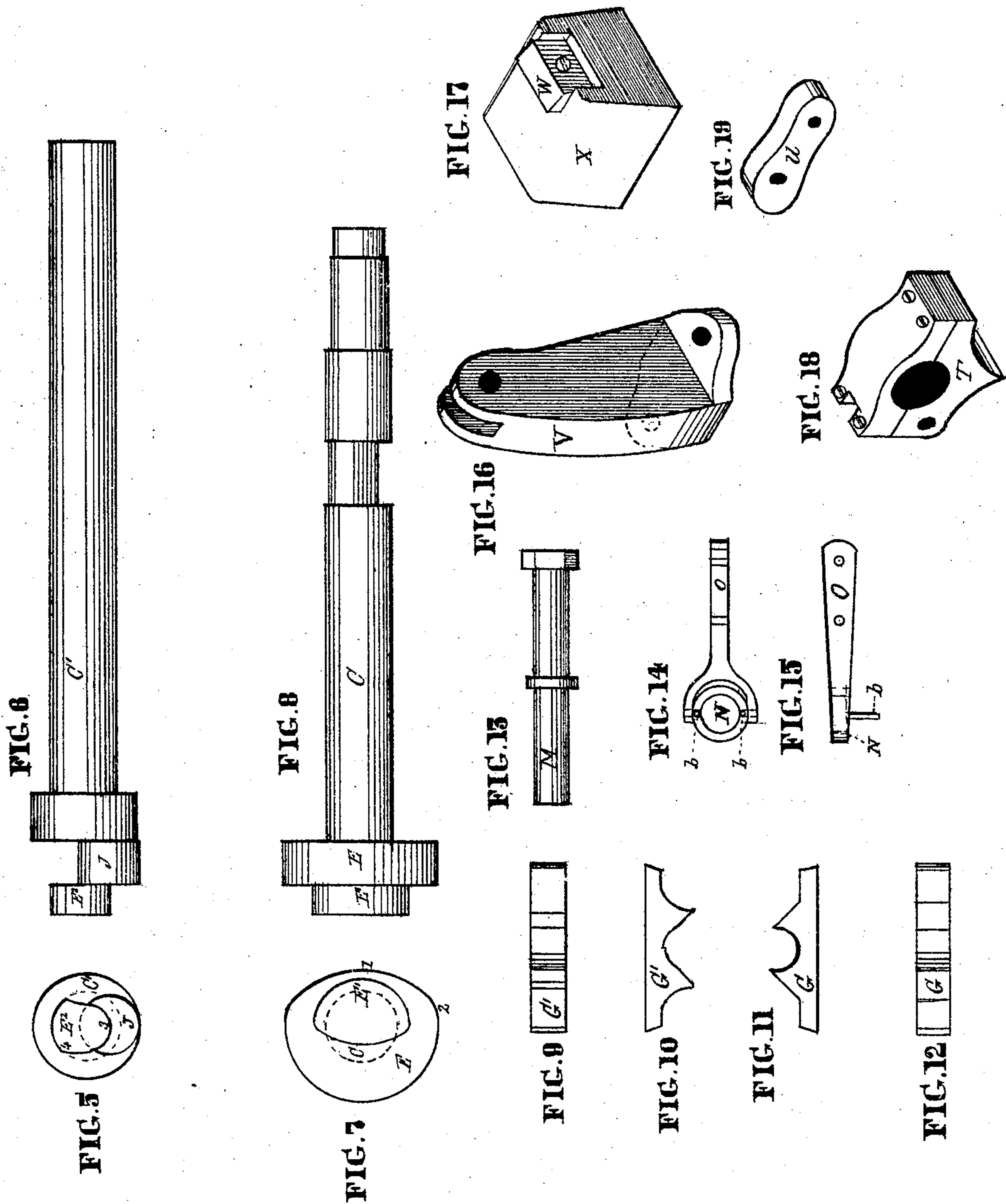
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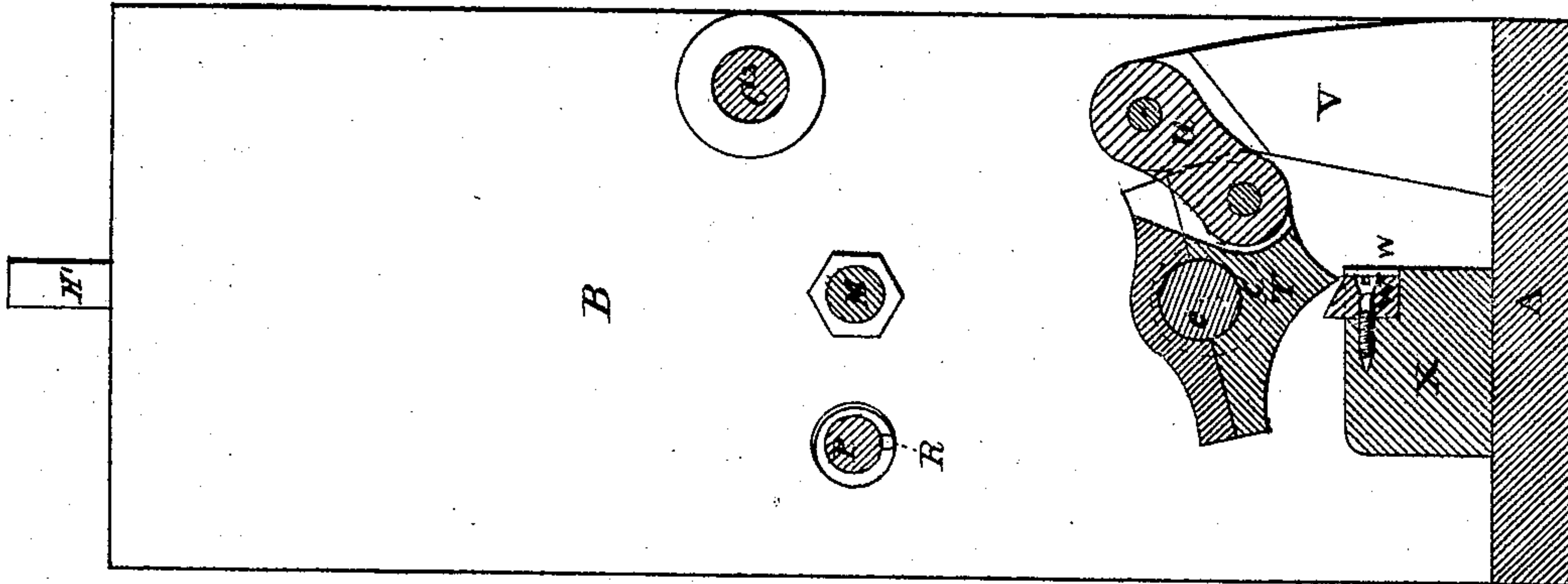


FIG. 20

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IMPROVEMENT IN MACHINES FOR FORMING FERRULES.

Specification forming part of Letters Patent No. 134,092, dated December 17, 1872.

To all whom it may concern:

Be it known that I, WILLIAM L. NEWSHAM, of the city of Philadelphia, in the State of Pennsylvania, have invented certain Improvements in Machines for Shearing and Bending Metal Tube-Sockets, of which the following is a specification:

My invention, in the first place, consists of a pair of dies connected with suitable slides, one of which is operated by means of a cam and the other by a crank, or other suitable mechanism. In the second place, it consists of a table which has an upward movement so as to present the skelp at a convenient height to be transferred to the dies, and then a downward movement so as to be out of the way of the delivery of the bent skelp, the movements being given by means of a cam-wheel on a revolving shaft. The invention, in the third place, consists of a reciprocating clamp for supporting the mandrel on which the skelp is pressed at the opposite side to the lowest die while it is giving the first pressure to the skelp. After this pressure is completed the clamp is withdrawn out of the way of the delivery of the bent skelp. The invention, in the fourth place, consists of a stripper, which has a forward motion imparted to it, to discharge the socket from the mandrel by means of a cam on one of the gear-wheels connected with the revolving shafts, which operate the dies, as hereinafter described. In the fifth place, the invention consists of an oscillating shear operated by a crank, with which the said shaft is provided, in such a manner as to scarf the skelp in proper length and of a suitable curve for welding.

Figure 1 is a front elevation of the machine when the dies are spread apart to receive the skelp S. Fig. 2 is a like view when the lower die G has pressed the skelp against the lower side of the mandrel M. Fig. 3, Sheet No. 2, is a like view when the upper die G' has completed the pressure. Fig. 4 is a side elevation of the machine. Figs. 5 and 6, Sheet No. 3, are views at right angles with each other of the shaft C', provided with a crank wrist-pin, J, and cam-wheel E². Figs. 7 and 8 are like views of the shaft C and cam-wheels E and E¹. Fig. 9 is a face view of the upper die G'. Fig. 10 is a side elevation of the same. Fig.

11 is a side elevation of the lower die G. Fig. 12 is a face view of the same. Fig. 13 is a side view of the mandrel M. Figs. 14 and 15 are views, at right angles to each other, of the stripper N and oscillating lever O. Fig. 16 is an isometrical view of the shear-standard V. Fig. 17 is a like view of the stationary skelp-shear W and pedestal X. Fig. 18 is a like view of the oscillating shear T. Fig. 19 is a like view of the link U. Fig. 20 is a vertical section of the machine at the line *a b* of Fig. 4.

Like letters in all the figures indicate the same parts.

A is the bed-plate of the machine, and B B' the housings. C and C' are revolving shafts for operating the dies, connected by means of the gear-wheels D D and the intermediate wheel D' on the shaft C². The power is applied by means of a pulley, or otherwise, on the shaft C². The lower shaft C, shown in detail in Figs. 7 and 8, is provided at its front end with a cam-wheel, E, for giving a reciprocating movement to the slide F, the upper projecting edge of the recess *a* resting on the edge of the cam-wheel. The shaft is provided at its upper end with the lower die G and the cam E¹, for giving a like movement to the sliding yoke H, which has on its upper end a horizontal bar, I, on which the skelp is placed ready for being transferred to the dies. The upper shaft C', shown in detail in Figs. 5 and 6, is provided at its front end with a crank wrist-pin, J, for operating the slide F', having the upper die G' connected at its lower end, the said wrist-pin operating through the intermediate idler K in the opening *a'* of the slide, as seen in Figs. 1, 2, and 3. The cam-wheel E² is connected with the sliding yoke H' for operating the clamp L on its lower end for a support to the mandrel M during the pressure of the lower die G. The upper die G' is represented in detail in Figs. 9 and 10, and the lower die G in Figs. 11 and 12.

On the mandrel M, which is represented in detail in Fig. 13, and back of the dies G and G', is a stripper, N, having projecting pins *b b*, which bear against the bent skelp to discharge the socket from the mandrel as it is forced forward by the lever O, which is hung on the fulcrum-pin *c* in the slotted projection

d, as seen in Figs. 3 and 4, the lever being operated by means of the sliding rod P, which is forced forward by means of the cam Y on the inner side of the gear-wheel D'. The rod is returned back into the position seen in Fig. 4, by means of the spring R.

The stripper N and actuating-lever O are represented in detail in Figs. 14 and 15.

The skelp S is cut ready for the operation of the dies by means of the oscillating shear T hung on the crank wrist-pin *e* of the shaft C, and one end of the connecting-link U, the other end of which has a joint connection with the standard V, shown in detail in Fig. 16. The stationary shear W is connected with the pedestal X, shown in detail in Fig. 17. A proper bevel curve for welding is given to the ends of the skelps by means of the oscillating movement of the shear T.

The operation of the machine is as follows: The shaft C and C' being rotated in the direction of the arrows while the die G is in its downward position, seen in Fig. 1—it being caused to descend by the eccentric part, from the point 1 to the point 2, of the cam-wheel E passing under the part *f* of the slide F—the skelp S is transferred from the horizontal bar I of the sliding yoke H, and placed with its ends resting in the rabbets *g g* of the lugs *h h* on the upper edge of the slide F ready to receive the pressure of the lower die. Then, by the action of the cam-wheel E², the yoke H' is brought into its downward position, seen in Fig. 2, so as to hold the clamp L against the upper side of the mandrel M, to sustain the upward pressure of the die G. The clamp is held in that position while the cam from the point 3 to the point 4 is passing over the part *i* of the slide H'; and the first pressure is given to the skelp while the cam-wheel E, from the point 2 to the point 3, is passing under the part *f* of the slide F, so as to curve the middle part of the skelp S to fit the mandrel M, as represented. Then, by the action of the crank wrist-pin J upon the idler K, the upper die is caused to descend and bend the ends of the skelp S, as seen in Fig. 2, thus completing the bending operation ready for welding, the lower die G being held against the skelp du-

ring the operation of the upper die, while the concentric part, from the point 2 to the point 3 of the cam-wheel E, is passing under the part *f* of the slide F. When the dies are spread apart into the position they assume in Fig. 1, the cam Y on the shaft C² strikes the rear end of the shaft P and forces the shaft forward, whereby the stripper N is caused to slide on the mandrel M and discharge the bent skelp from the mandrel, as may be understood by Fig. 4. When the cam leaves the end of the shaft the spring R returns it to its former position.

The skelps are cut to their required length by the shears above described, the crank-connection of the shear T with the shaft C, and its link-connection with the standard V giving a curve motion to the cutting-edge of the shear T, and causing it to scarf the edge of the skelp the proper curve for welding.

I claim as my invention—

1. The combination of the upper die G' with the slide F', lower die G, and mandrel M, the said slide being operated by means of the crank wrist-pin J or other suitable mechanism, substantially in the manner and for the purpose set forth.

2. The horizontal bar I for supporting the nubent skelp S, in combination with the dies G and G', substantially as described.

3. The clamp L, in combination with the slide H', mandrel M, and lower die G, the said clamp having a reciprocating movement imparted to it, substantially in the manner and for the purpose specified.

4. The arrangement set forth of the stripper N, mandrel M, lever O, rod P, and cam Y for discharging the finished skelp from the mandrel, substantially as described.

5. The oscillating shear T, in combination with the crank wrist-pin *e* of the shaft C, the connecting-link U, standard V, and stationary shear W for cutting the skelps the required length and giving their ends the requisite scarf for welding, substantially as set forth.

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Witnesses:

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