

(No Model.)

A. W. MORGAN.  
BIT STOCK.

No. 361,227.

Patented Apr. 12, 1887.

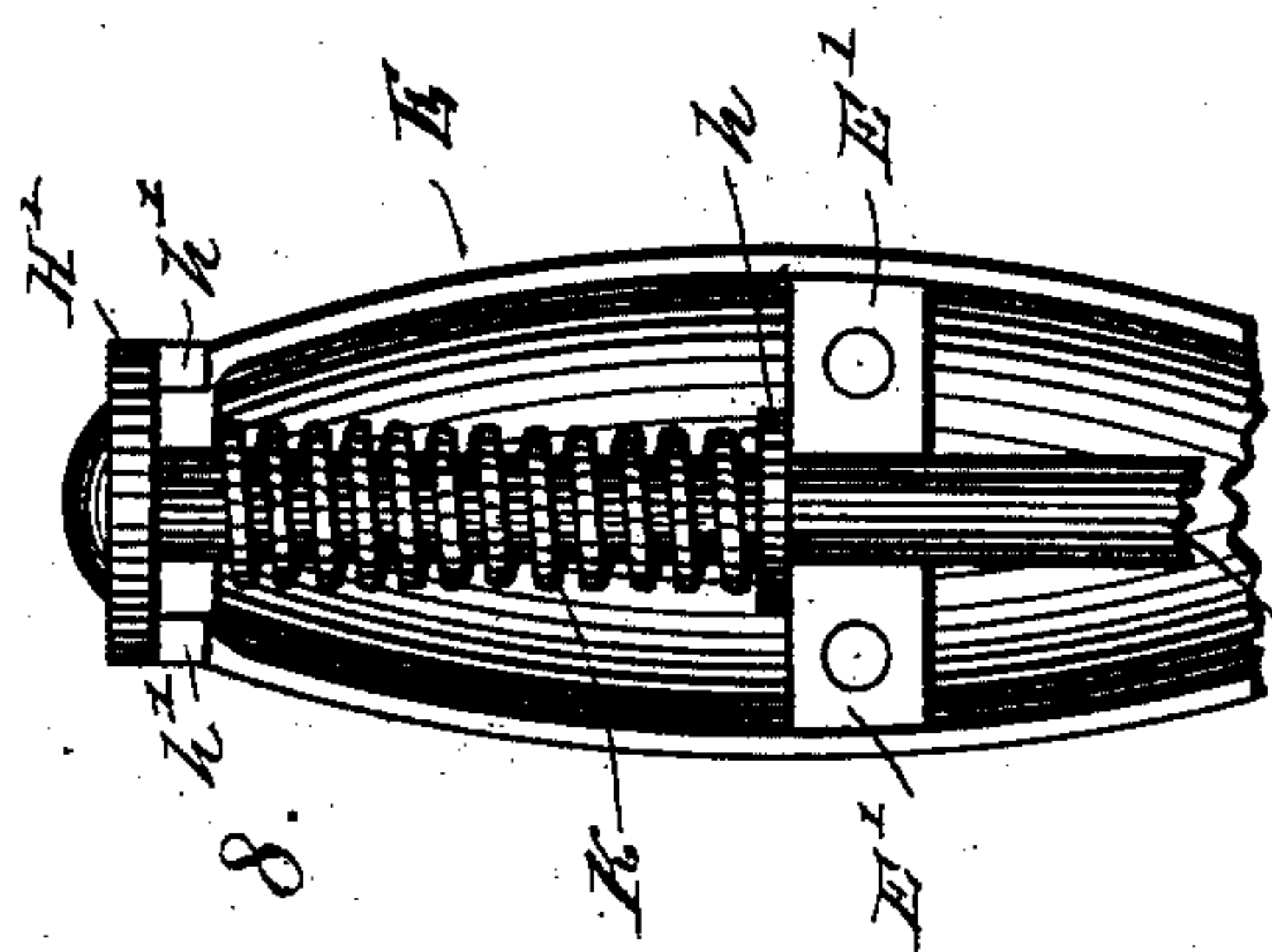


Fig. 8.

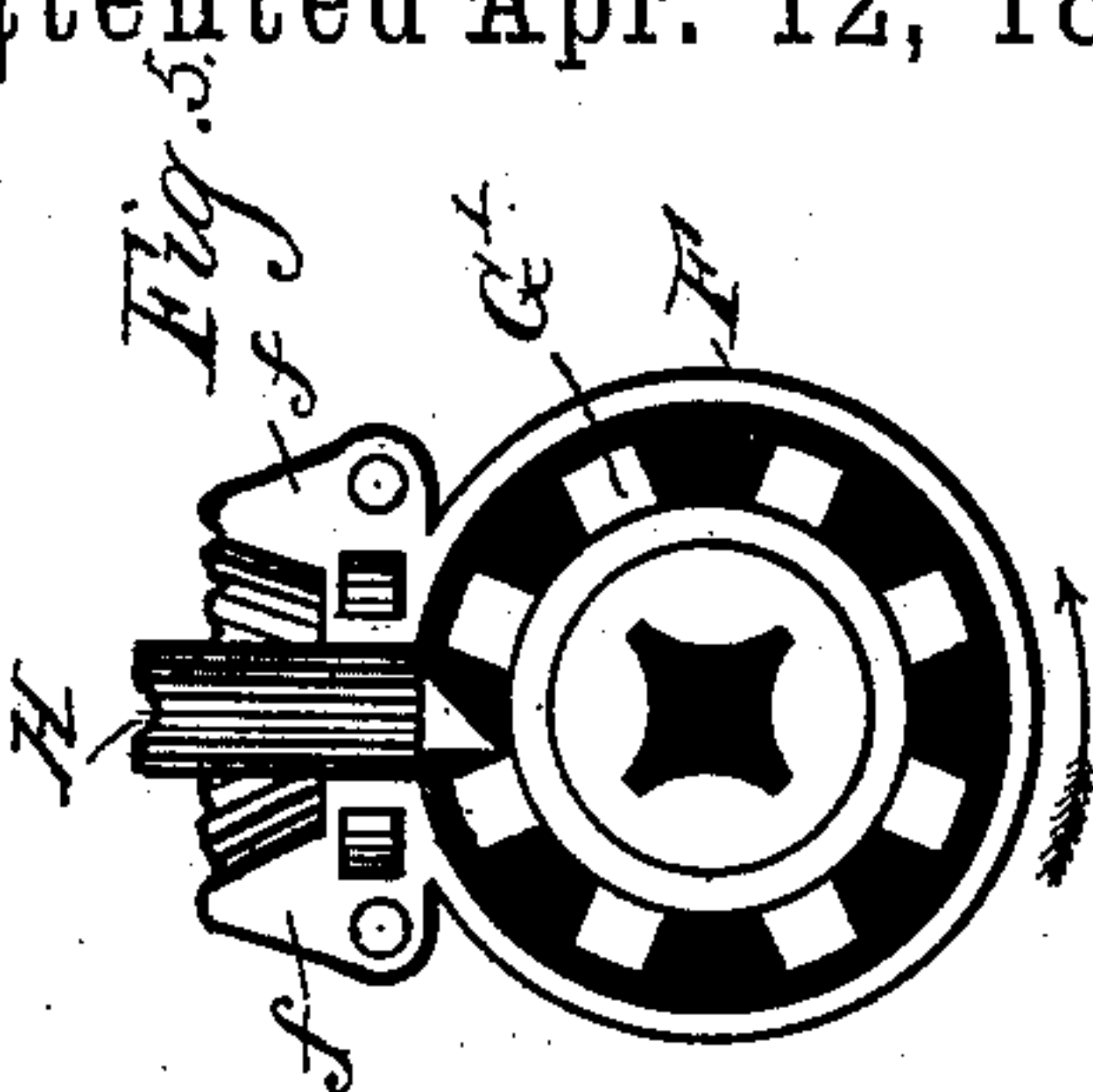
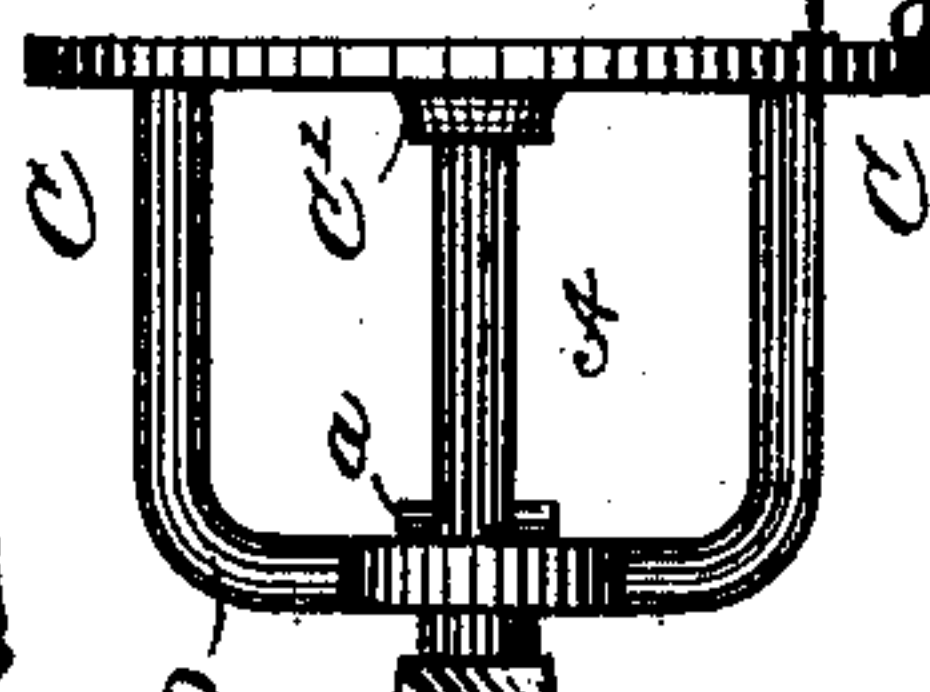


Fig. 5.5.

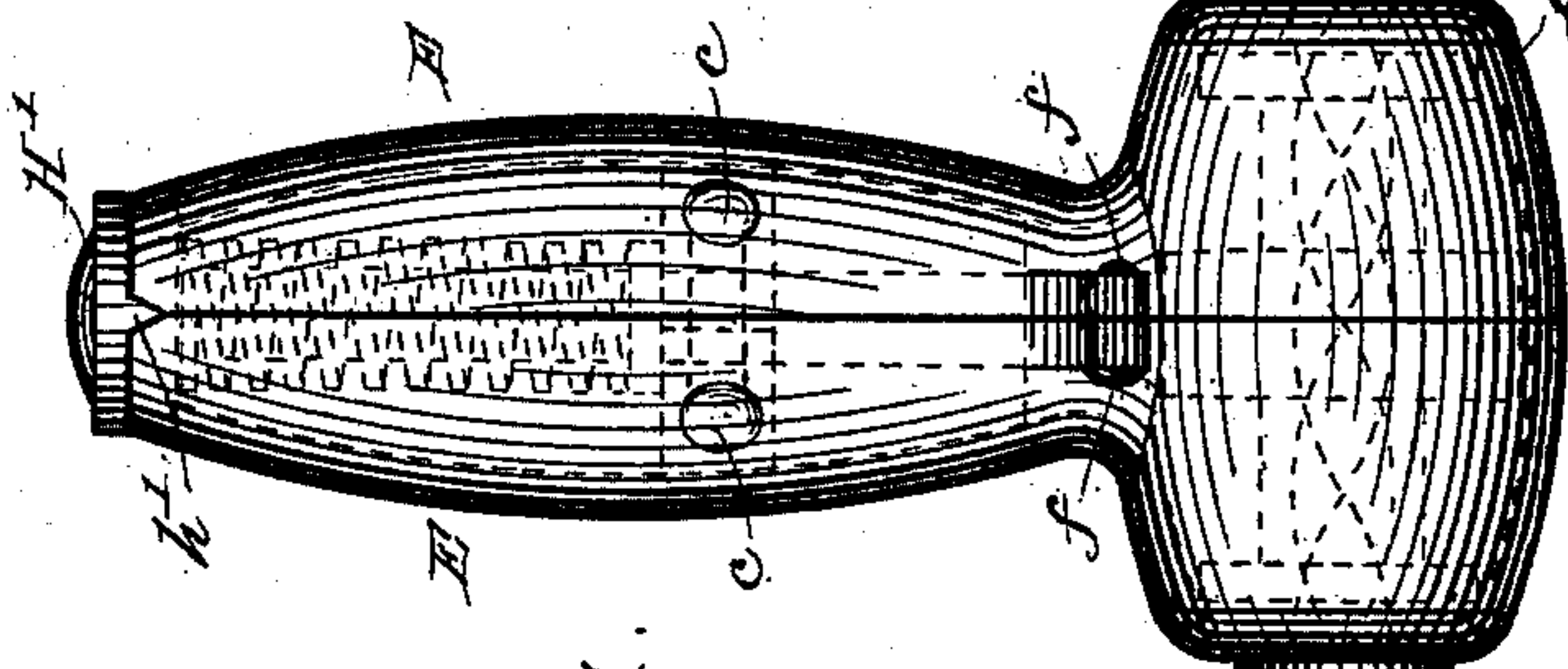


Fig. 1.

Fig. 4.

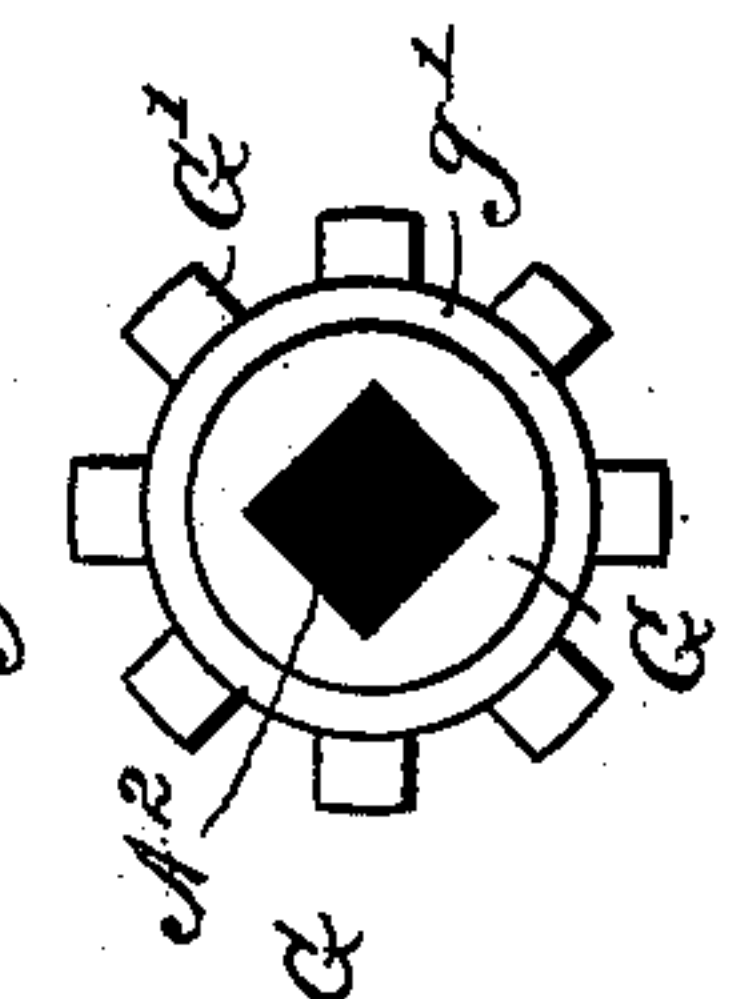


Fig. 2.

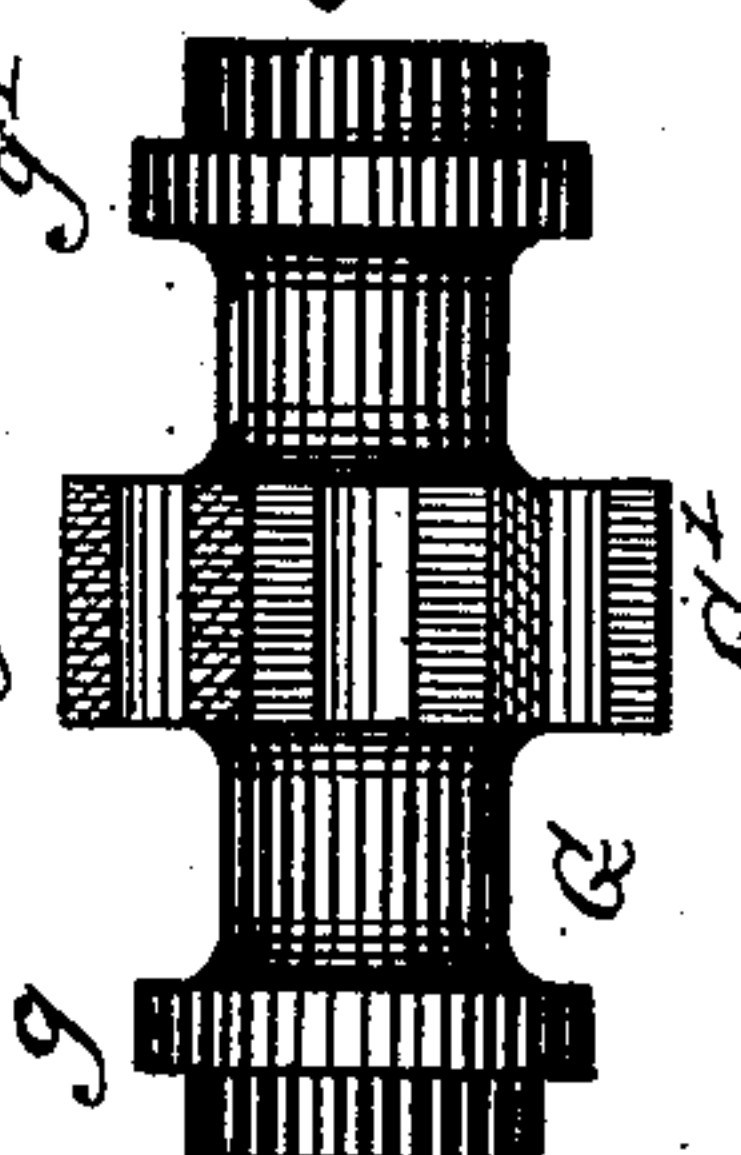


Fig. 3.

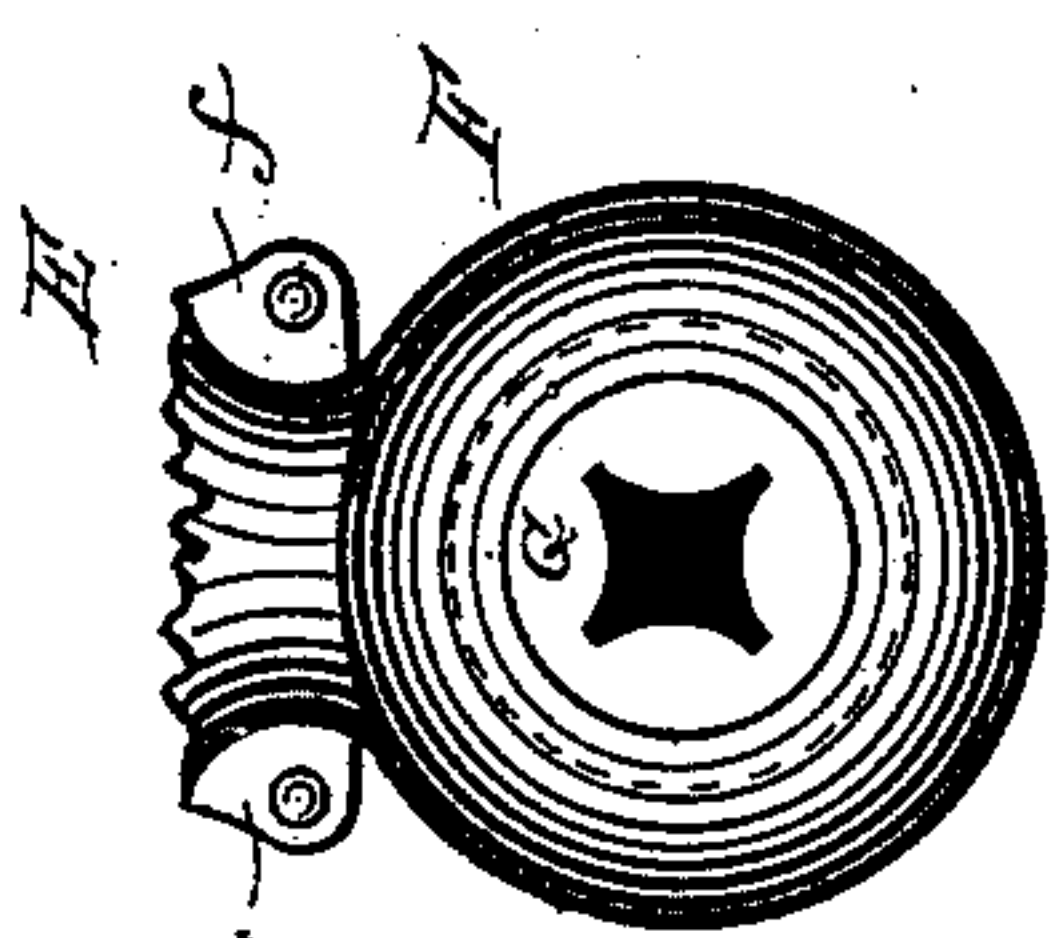
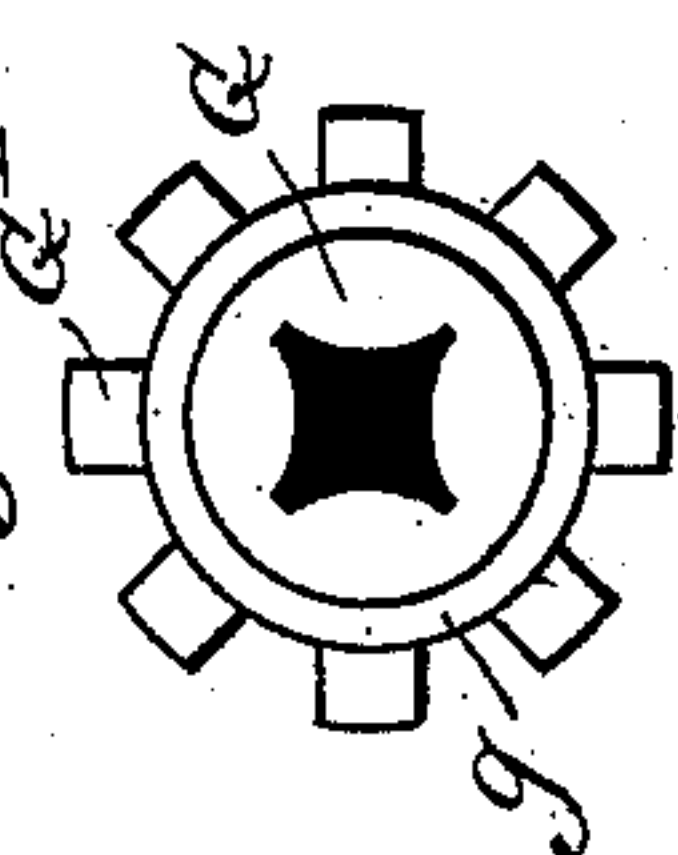


Fig. 6.



Fig. 9.

WITNESSES

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# UNITED STATES PATENT OFFICE.

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## BIT-STOCK.

SPECIFICATION forming part of Letters Patent No. 361,227, dated April 12, 1887.

Application filed March 13, 1886. Serial No. 195,113. (No model.)

*To all whom it may concern:*

Be it known that I, ALFRED WHITE MORGAN, a citizen of the United States, residing at Washington, in the District of Columbia, have  
5 invented certain new and useful Improvements in Bit-Stocks; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make  
10 and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

The object of this improvement is a reversible mechanical movement that can be provided with a suitable bit and efficiently applied to driving screws in or withdrawing the same from wood or other material, or that may be provided with suitable jaws and used  
20 as a wrench for applying nuts to or withdrawing them from bolts, or that may be provided with an auger and used for boring holes in wood, or with suitable bits and used for drilling holes in metal either in the manner of a  
25 ratchet mechanism or as a reversible movement. These results are attainable by the means illustrated in the drawings herewith filed as part hereof, in which the same letters of reference denote the same parts in the different views.

Figure 1 is a side elevation representing a device embodying the features of my improvement. Fig. 2 is a side elevation representing one of the parts detached. Fig. 3 is an end  
35 view of the same. Fig. 4 is an end elevation representing a modification of the same. Figs. 5, 6, 7, and 8 are sectional detail representations more fully illustrating the construction and relation of the parts. Fig. 9 is a sectional side elevation representing a modification of one of the parts.

The spirally-grooved spindle or driving-shaft A is provided at one end with an ordinary bit-clutching device, B B' B<sup>2</sup>, and at the  
45 opposite end with a bearing-plate, C, articulated to the spindle by means of a stirrup or frame, D, having an eye, *d*, which fits over a rounded part of and bears on a shoulder formed on the spindle, to which the frame D is  
50 secured by a pin, *a*, inserted into a perfora-

tion made in the spindle immediately adjacent to the frame D, as shown. The end of the rounded part of the spindle is adapted by a suitable finish to enter a corresponding socket, C', of the bearing-plate, for the double purpose  
55 of forming an additional bearing for the plate C and securing its proper relative position with the spindle.

The angular casing is made of two distinct parts, E F E F, secured to each other by  
60 means of exterior lugs and rivets at *f* and interior lugs and rivets. (Indicated at *c*, Figs. 1 and 7, and E', Fig. 8.)

The casing E F is provided inside its part F with a cylinder, G, conforming at its ends  
65 to the body of the spindle A and adapted to slide thereon. The cylinder G is provided with shoulders *g g'* and an intermediate ratchet or recessed projection, G', for purposes hereinafter explained. The casing E F is also provided with an adjustable pawl-bolt, H, hav-  
70 ing an end adapted to engage or clear the cylinder-projection G', a shoulder, *h*, and a head, H', having projections *h'*, arranged to fit equidistant corresponding recesses in the ends of  
75 the casing parts E. The spiral spring K is arranged to bear against the ends of the parts E, as shown in Fig. 8, and against the shoulder *h* of the pawl-bolt H and automatically actuate the latter toward the projection G' of  
80 the cylinder G.

The casing E F, pawl-bolt H H', and cylinder G *g g' G'* form a handle for operating the spindle or shaft A. By moving the casing E  
85 F toward either end of the spindle, the parts F will be made to engage with the shoulders *g* or *g'* of the cylinder G, and, by forcing the ends of the same through the spiral grooves of the spindle, cause the latter to turn in a direction controlled by the adjustment of the  
90 pawl-bolt, as hereinafter explained.

When the movement is toward the part C, the part F will bear on the shoulder *g* of the cylinder G, and on its shoulder *g'* when the  
95 movement is toward the bit end of the spindle. The pawl-bolt is adjusted to control the motion of the spindle in either direction desired by raising the projections *h'* of the bolt-head out of the recesses in the ends of the parts E F and changing them to different recesses,  
100



thereby changing the relative position of the inclined end of the pawl-bolt to the ratchet or recessed projection G' of the cylinder G.

When the bolt H H' is adjusted as shown in Figs. 5 and 8, and the movement of the cylinder G is toward the bearing-plate C, the bolt will act as a ratchet and allow the cylinder to turn in the parts E F, and the spindle A will remain stationary. When the movement is toward the bit end of the spindle, the bolt will act as a pawl, and, by engaging and locking the position of the cylinder and preventing it from turning, cause the spindle to rotate in the direction indicated by the arrow in Fig. 5, which is the proper movement for driving screws or applying nuts to bolts. By raising the bolt-head and turning the bolt half a revolution and setting the bolt-head extensions h' in the corresponding recesses in the ends of the parts E, the bolt will act as a pawl and prevent the cylinder from turning when the movement of the parts is toward the plate C, and as a ratchet when the movement is toward the bit end, and thus cause the spindle to rotate in the opposite direction to that indicated by the arrow in Fig. 5, which is the movement necessary for withdrawing screws or removing bolts from nuts.

By adjusting the pawl-bolt H so that the projections h' of its head H' will come in the recesses in the ends of the parts E that are intermediate of those shown in Figs. 1, 7, and 8, the perpendicular sides of the end of the pawl-bolt will be presented to the ratchet-projection G' of the cylinder G, and thus prevent it from revolving in either direction on the spindle A, which will be rotated in both directions by the movement of the operating-handle to and fro on the spindle. This is the proper adjustment for using the mechanism as a reversible movement for drilling holes in metal.

By a suitable adjustment of the bolt, as previously explained, the operating-handle may be used as a ratchet-lever for starting nuts or screws that are tight in their places from rust or other causes. When the part F is set against the bit-clutching mechanism, the shoulder B will prevent the turning of the cylinder G on the spindle. After the screw or nut is started, the upward movement of the operating-handle will give the proper movement for withdrawing screws or nuts, or, with the reverse adjustment, for driving screws or nuts. The operating-handle may be used as a lever for tightening screws or nuts by bearing down

on the same when in the position stated, to prevent the upward movement of the parts on the spindle A.

The mechanism may be efficiently applied to driving or withdrawing screws in corners, or where it would be entirely impracticable to use an ordinary bit and brace or a ratchet brace and bit.

By moving the operating-handle against the bit-clutching mechanism, and providing the latter with a left-hand drill-bit, the device can be used as a ratchet-drill for cutting holes in metal; and by moving the operating-handle to the opposite end of the spindle, against the stirrup D, the device can be used as a ratchet-drill with an ordinary drill-bit, provided that a proper motion of the parts is secured by a suitable adjustment of the pawl-bolt, as hereinbefore set forth.

Referring to the modifications shown in Figs. 4 and 9, A' is a shaft having four spiral sides. G G' g' is a cylinder, made in all respects like that shown in Fig. 2, excepting that it is provided at its ends with an interior conformation to the sides of the shaft A'. By providing the shaft A' with bearing-plate C and bit-clutching mechanism, as shown in Fig. 1, and providing the casing E F and pawl-bolt H H' with the modified cylinder shown in Fig. 4, the parts will apply as an operating-handle to driving the shaft A', as set forth for the spindle or shaft A, and the application to each other of the parts so constructed will give substantially, and to all intents and purposes, the same mechanism as that more fully set forth in the other figures and herein described.

Having explained the features of my improvement, what I claim as new, and desire to secure by Letters Patent, is—

The combination, with a spirally-grooved spindle, of the operating-handle consisting of a casing containing a cylinder having internal conformation to fit the grooves of the spindle and having a ratchet on its outside and a reversible pawl, and mechanism, substantially as described, whereby the pawl may be locked in position to engage the ratchet-teeth when the spindle is turned in either direction or in both directions, substantially as described, for the purposes set forth.

In testimony whereof I affix my signature in presence of two witnesses.

ALFRED WHITE MORGAN.

Witnesses:

THOMAS E. MORGAN,  
NATHAN BICKFORD.