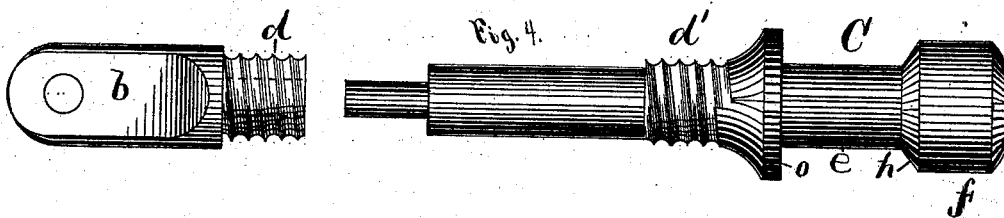
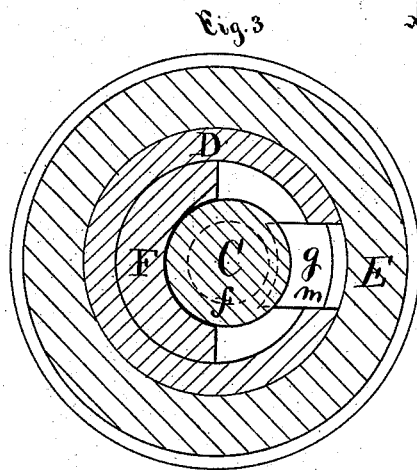
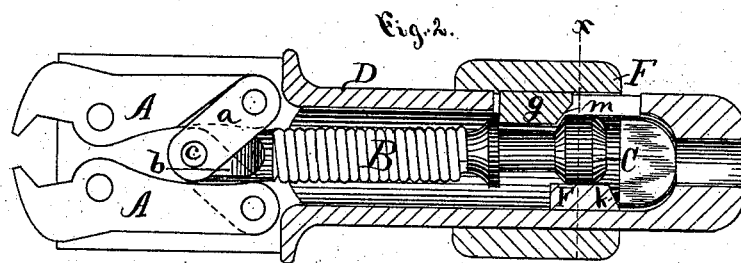
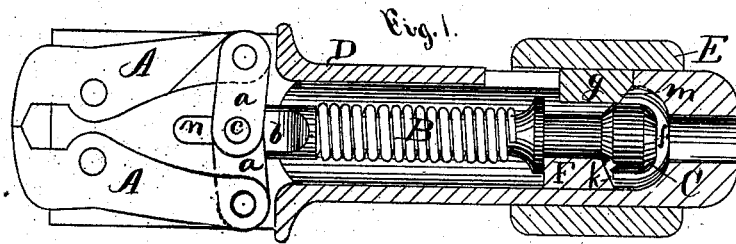


C. GLOVER.
Screw-Machine Chuck.

No. 214,818.

Patented April 29, 1879.



Witnessed.
A. B. Thomson.
A. H. Eddy.

Inventor,
Charles Glover
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UNITED STATES PATENT OFFICE.

CHARLES GLOVER, OF HARTFORD, CONNECTICUT.

IMPROVEMENT IN SCREW-MACHINE CHUCKS.

Specification forming part of Letters Patent No. **214,818**, dated April 29, 1879; application filed January 17, 1879.

To all whom it may concern:

Be it known that I, CHARLES GLOVER, of Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Holding-Chucks for Screw-Machines, of which the following is a specification.

In the accompanying drawings, Figure 1 is an axial section, partly in elevation, of a chuck and spindle which embody my invention. Fig. 2 is a like view of the same, but represented with the jaws opened instead of closed. Fig. 3 is a transverse section of the same on line *xx* of Fig. 2; and Fig. 4 is a side elevation of detached parts of the same, which parts receive the ends of the spring for closing the jaws.

A A designate lever-jaws for gripping the screw, said levers having links *aa* at the rear end, which form a toggle-joint for closing the jaws, all of which are old.

My invention relates to the manner of and mechanism for operating these jaws.

To the toggle-joint I connect a divided spring draw-rod, composed of front end, *b*, spring B, and tail-piece C. The front end, *b*, is jointed at one end by pin *c* to the meeting ends of the links *aa*, and provided at its opposite end with a screw-threaded shank, *d*, Fig. 4, to receive one end of the spring B. This thread I prefer to form with a round-bottomed groove, about the same width as the diameter of the wire which forms the spring. The tail-piece is also provided with a like threaded shank, *d'*, Fig. 4, to receive the other end of the spring, and with a reduced neck, *e*, head *f*, an inclined or beveled shoulder, *h*, and at the opposite end of the neck with a shoulder, *o*.

The chuck-spindle D is hollowed or chambered out, and within the chamber, upon one side, near the tail-piece, there is a stationary box, F, longitudinally grooved, so as to admit the head *f* of the tail-piece C, and with a beveled shoulder, *k*, on the outer end. The opposite side of the spindle D is longitudinally slotted, and within said slot there is a sliding block, *g*, also longitudinally grooved, and provided with a beveled shoulder, *m*, and secured firmly to the shipper-ring E. This ring may be grooved on its outside to connect it with a

forked shipping-lever; or any other ordinary mechanism may be employed to move it longitudinally on the spindle.

The ends of the pin *c* of the toggle-joint project outside of the links and enter longitudinal slots *n*, Fig. 1, to guide that end of the toggle-joint and keep the jaws central, while the other end of the divided spring draw-rod is free to be thrown to one side of the axis of the spindle without throwing the jaws out of true. The spring is stiff enough to open and close the jaws A A, when they are free from obstructions, by moving the tail-piece longitudinally without bringing into action the elasticity of the spring, the divided spring draw-rod operating until the jaws are closed, the same as though it were a solid rod.

When the shipper is thrown forward, as shown in Fig. 2, the front end of the sliding block, acting against the shoulder *o* of the tail-piece, throws it forward, the head *f* riding over the beveled shoulder *k* of the stationary box, and resting in the groove thereof, as shown in Fig. 2, where it should be observed that the tail-piece is thrown to one side of the axis of the spindle.

When a screw has been placed between the jaws of the holding-chuck, the shipper-ring is thrown forward, and the beveled shoulder *m* of the sliding block *g* comes in contact with the beveled shoulder *h* of the tail-piece, which beveled shoulders have a tendency to throw the tail-piece sidewise; but the head, resting in the box F, cannot be moved to one side at that point; therefore it is drawn backward, carrying the front end, *b*, with it, until the jaws gripe the screw-blank firmly. The spring then comes into action, and allows the tail-piece to move on with the shipper until the head *f* passes the box F, and the tail-piece, under the pressure on the beveled shoulders *m* and *h*, is thrown into axial line with the spindle, and over the shoulder *k* of the box F, as shown in Fig. 1.

The inside of the sliding block is so grooved that when the tail-piece is axially located in the spindle the block may pass along by the side of the head *f* and hold it engaged with the box E, as shown also in said Fig. 1, thereby locking the tail-piece in place and removing all strain of the spring from the shipper,

although at the same time the spring is exerting more force upon the jaws than when at any other point. Upon moving the shipper back toward the jaws the sliding block passes off from the head of the tail-piece and releases it, when the force of the spring bearing the beveled shoulders *m* and *k* together will throw the head sidewise and draw it into the box toward the jaws. The front end of the sliding block then strikes against the shoulder *o* of the tail-piece and forces the jaws fully open, as shown in Fig. 2.

The rear end of the spindle has a central opening in it, and the end of the round tail-piece is slotted, so that a screw-driver can be inserted and the tail-piece screwed farther into or out of the end of the spring, to make the jaws exert a greater or less pressure upon the object gripped, as may be desired. The tail-piece is made round for the purpose of this adjustment; but if desired to adjust the spring by other means, then the tail-piece and inner faces or grooves of the sliding block *g* and box *F* may be flattened or made in other forms and shouldered, substantially as shown, and still operate the jaws in the manner described.

If desired, an open coiled spring might be employed, and arranged to close the jaws under compression instead of expansion of the coils, by throwing the joint of the toggle back of the jaws and changing the position of the head and bevels at the tail-piece.

This divided spring draw-rod and its operating mechanism may be employed with any kind of chuck that can be operated by or through a longitudinal movement of the rod.

The advantages of my invention are, that the shipper and jaws work free and easy, because there is no strain of the spring upon them, except when the jaws are nearly closed. The power of the spring is brought to bear the strongest upon the jaws when they are at the point where the firmest gripe is required. When the jaws are gripping the hardest all pressure of the spring is removed from the shipper, whereby it is more easily operated and controlled. The parts are very firmly, cheaply, and compactly put together, and the

spring is very conveniently adjusted so as to exert more or less pressure upon the jaws.

I claim as my invention—

1. In combination with a holding-chuck, the spring draw-rod consisting of the front end and tail-piece, with spring between, and mechanism for operating said rod, the whole combined and operating to bear the spring against the jaws with the greatest force when they are closed, substantially as described, and for the purpose specified.

2. In a chuck-operating mechanism having a draw-rod in two parts, the front end, *b*, bearing threaded shank *d*, and the tail-piece *C*, bearing a like shank, *d'*, in combination with the helical spring screwed upon said shanks, substantially as described, and for the purpose specified.

3. The combination of a holding-chuck, the divided spring draw-rod, having the shouldered and headed tail-piece, chambered spindle, having the stationary and shouldered box *F*, and the shipper-ring with attached sliding and shouldered block, all operating substantially as described, and for the purpose specified.

4. In a chuck-operating mechanism, the divided spring draw-rod, the ends of which are connected by a spring screwed upon threaded shanks, and the headed tail-piece of which draw-rod is slotted, as described, mechanism for operating said draw-rod, and the spindle chambered and opened at the end to expose said slotted head for adjusting the spring, substantially as described, and for the purpose specified.

5. The lever-jaws *A A* and links *a a*, in combination with the divided spring draw-rod, mechanism for operating said rod both endwise and sidewise, the pin *c*, with projecting ends, and the spindle slotted to receive and guide the ends of said pin, substantially as described, and for the purpose specified.

CHARLES GLOVER.

Witnesses:

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JAMES SHEPARD.