(Model.)

F. L. FRENCH.

SPRING JAW WRENCH.

No. 307,186. Patented Oct. 28, 1884.

Fig. 1.

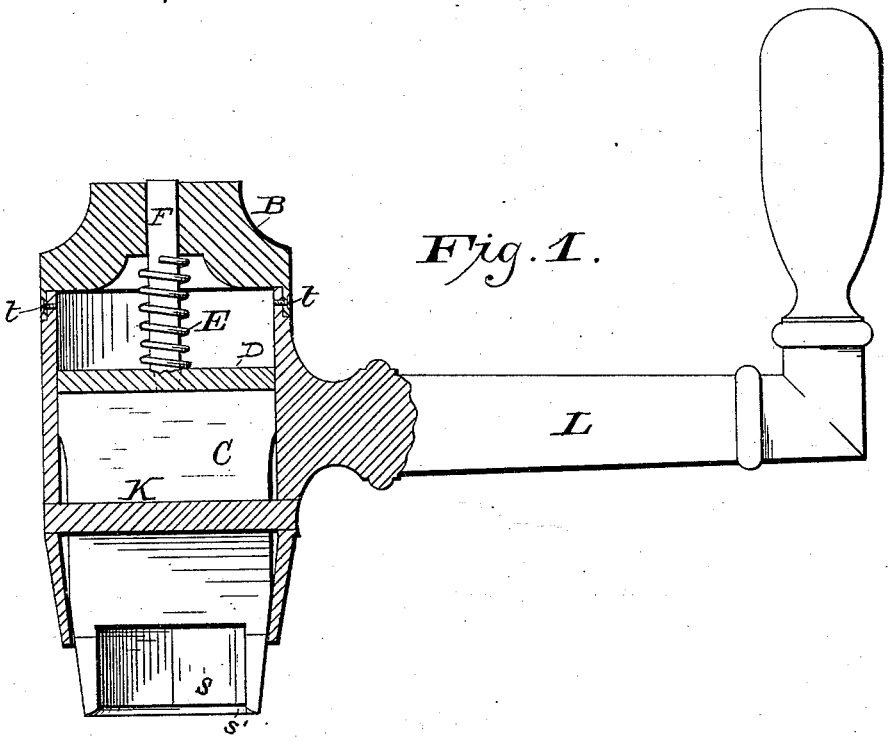


Fig. 2.

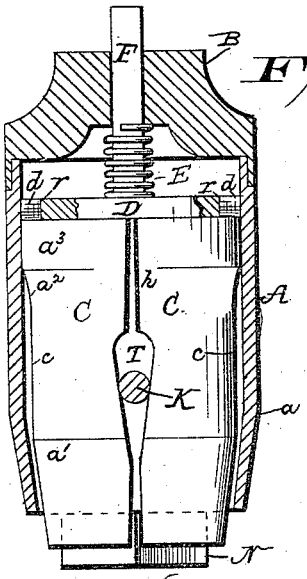
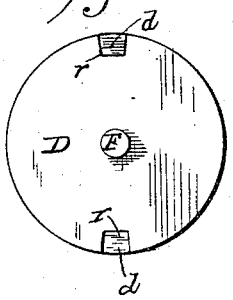


Fig. 3.



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UNITED STATES PATENT OFFICE.

FRANK L. FRENCH, OF MERIDEN, NEW HAMPSHIRE.

SPRING-JAW WRENCH.

SPECIFICATION forming part of Letters Patent No. 307,186, dated October 28, 1884.

Application filed June 9, 1884. (Model.)

To all whom it may concern:

Be it known that I, FRANK L. FRENCH, a citizen of the United States, residing at Meriden, in the county of Sullivan and State of New Hampshire, have invented certain new and useful Improvements in a Spring-Jaw Wrench; 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 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 my invention is to provide a self-adjustable spring-jaw wrench, one which will engage with nuts of different sizes by simply pressing the jaws upon them, and only requiring the use of one hand in applying or operating the wrench.

The nature of my invention mainly consists in arranging within a cylindrical casing having a removable cap and an inward-tapering lower portion, two spreading and vertically-moving jaws of peculiar shape, somewhat loosely attached to a sliding disk by a tongue-and-groove joint, said disk carrying a spindle freely moving through the cap of the casing when the coiled spring about it is compressed by the rising disk, said spring returning the parts to a normal position when the jaws are removed from the nut.

My invention further consists in details of construction described below, and pointed out in the claims.

In the drawings, Figure 1 is a vertical section, the spindle, spring, and crank being shown in side elevation, the latter slightly broken away. Fig. 2 is a transverse vertical section of the casing without the crank, showing inclosed in side elevation the position of the parts when the jaws engage with a nut, the disk being partly broken away to show the connection with it of the tongue or jaws. Fig. 3 is a plan view of the spindle, disk, and the tongue-and-groove joint uniting the jaws and disk.

Like letters refer to like parts.

The casing A is cylindrical mainly; but below the point *a* it tapers inward slightly to conform to the contour of the lower part of the jaws, giving them support, and acting as a stop when they are pushed down by the spring. The cap B of the casing fits snugly by means of a flange-joint, through which passes the countersunk fastening-screws *t t*, and has an opening corresponding to the spindle F to give the latter free play. The casing is preferably provided with a right-angled crank, L, in order to operate the wrench in different positions with convenience and strength. It will be seen, however, that the wrench may often be used without the crank; also, that it need not necessarily be cast integral with the casing.

C C represents the jaws. They are comparatively thick, so as to nearly fill the bore of the casing, yet being shaped so as to give the necessary play.

In Fig. 2 the jaws are seen face to face and joined to the disk D′. Each jaw has at the bottom a triangular socket, *s*, and when these are brought together they form the usual square nut-socket, which is, however, beveled off at the bottom or lips, (see *s′*, Fig. 1,) so that a nut larger than the socket will slip in easier as the jaws spread. Below the point a' the jaws taper inwardly to conform to the shape of the lower part of the casing above mentioned. Between the points a' and a^2 the outer surface of each jaw is cut away somewhat, or grooved, (see *c*, Fig. 2,) thus allowing them to descend quite a distance without interfering with the taper of the casing, and giving room for spreading. Above the point a^2 the jaws terminate in a semicircular solid portion, together forming a ring or outer flange, a^3, of considerable width, and practically filling the bore of the casing, giving steadiness as the jaws move up and down. On the top of the jaws and integral with them is a tongue, *d*, which fits in a groove, *r*, in the periphery of the disk, (see Figs. 2 and 3,) forming a joint, each opposite to the other. Said joint being slightly dovetail, the jaws and disk will not fall apart, and the spread of the jaws will not injure the joint.

To facilitate spreading, the upper portion of the inner faces of the jaws are slightly cut away. (See *h*, Fig. 2.) Below this cutaway there is a wedge-shaped opening, T, with a round head. The taper of this opening is

downward—that is, the large end of the wedge is upward. In this the transverse rod K, which passes through the bore of the casing, plays, giving strength or leverage to the jaws and assisting them to spread as they move up. When they are spread, the whole opening between them is bellows-shaped; but when they are in a normal position the only opening is that for rod K. The sliding disk D rests upon the upper ends of the jaws, being united with them by the tongue-and-groove joint above described. From the center of the disk the vertical spindle extends through the cap of the casing, and about it is placed a spiral spring, E, the ends of which bear, respectively, against the disk and cap. The spring tends to limit the vertical play of the jaws and assists in closing them; but its special purpose is, by pressing on the disk, to push out the jaws from the casing when removed from the nut. As the spindle passes through the cap the jaws can rise a considerable distance and spread to engage with nuts of varying sizes.

The operation of the wrench will be fully understood from the above, and it will be seen to be strong, simple, and effective. If it is necessary to remove the parts in the casing, it can easily be done by taking off the cap and pushing on the lower end of the jaws.

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

1. The jaws C C, having the wedge-shaped opening T between their inner faces, combined with the sliding disk D, spindle F, spring E, and casing A, having the transverse rod K, and cap B, whereby the jaws are self-adjusting as they are pushed in, as set forth.

2. The casing A, provided with the right-angled crank L, cap B, and rod K, combined with the jaws C C, disk D, spring E, between the cap and disk, and the spindle F, as set forth.

3. The combination of the jaws C C, having an integral tongue, d, with the disk D, having grooves $r\ r$ in its periphery, and the spindle F, the spring E about the spindle, and casing A, having cap B, as set forth.

4. The jaws C C, having a nut-socket, s, with beveled lip s', an inward-tapering portion below a', a central grooved portion between a' and a^2, a projecting semi-annular ring above a^2, a vertical tongue, d, and an inner face cut away, as shown and described, combined with the disk D, having grooves $r\ r$, and spindle F, the spring E, and casing A, having rod K, and cap B, as set forth.

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

FRANK L. FRENCH.

Witnesses:
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