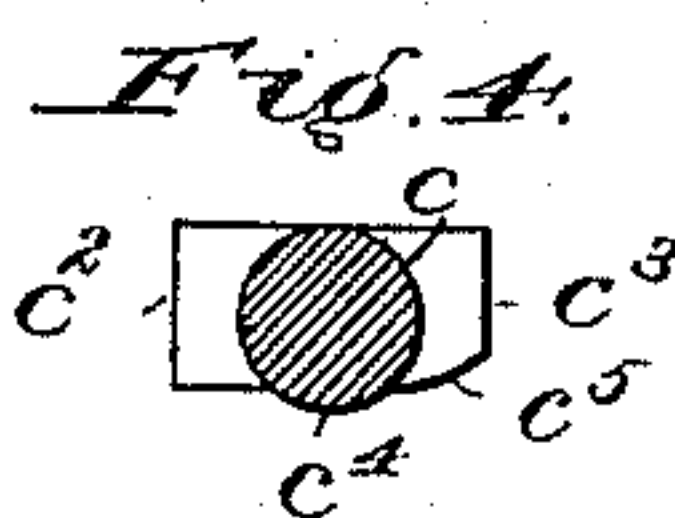
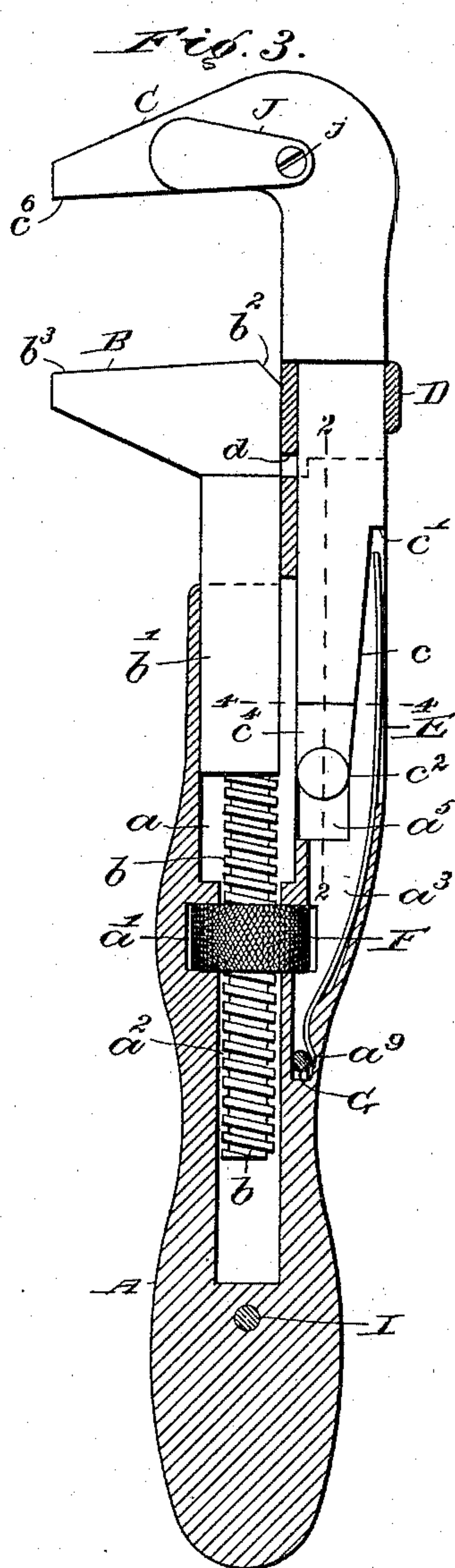
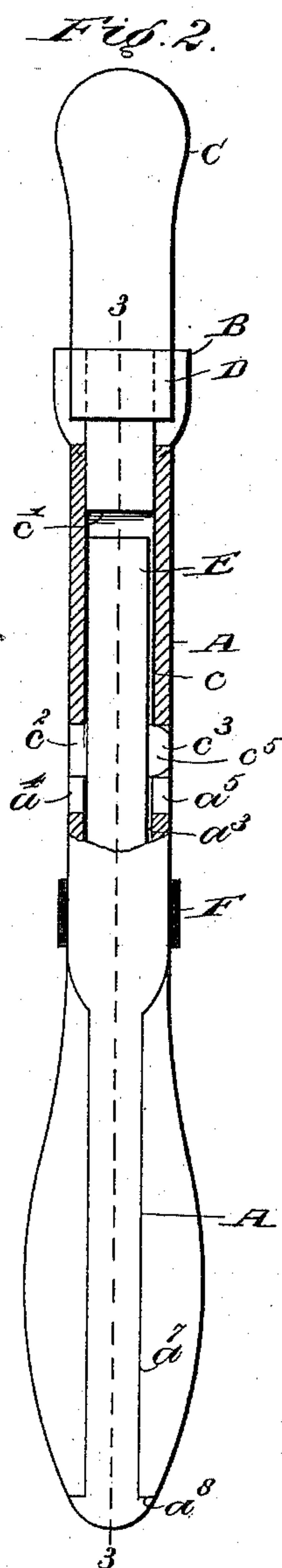
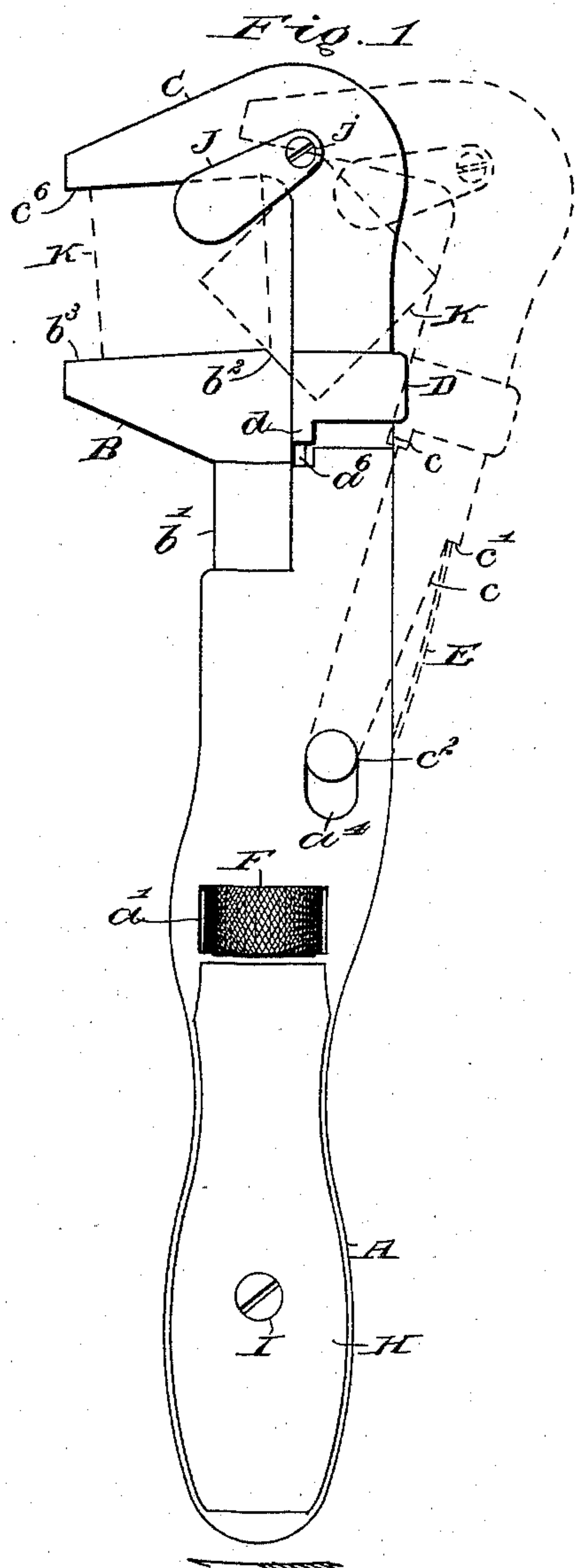


(No Model.)

C. F. JOHNSON.
WRENCH.

No. 584,591.

Patented June 15, 1897.



Witnesses—
Grace E. Hibbert.
Kirkley Hyde.

Inventor-
Chester F. Johnson,
By Albert M. Moore,
His Attorney.

UNITED STATES PATENT OFFICE.

CHESTER F. JOHNSON, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO FRED-
ERIC ALLEN WHITING, OF FRAMINGHAM, MASSACHUSETTS.

WRENCH.

SPECIFICATION forming part of Letters Patent No. 584,591, dated June 15, 1897.

Application filed March 19, 1896. Serial No. 583,888. (No model.)

To all whom it may concern:

Be it known that I, CHESTER F. JOHNSON, a citizen of the United States, residing at Boston, in the county of Suffolk and Commonwealth of Massachusetts, have invented a certain new and useful Improvement in Wrenches, of which the following is a specification.

My invention relates to wrenches in which the distance of the jaws from each other is adjustable, to enable the wrench to fit nuts and bolts of different sizes.

Said invention consists in the devices and combinations hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a side elevation of a wrench provided with my improvement, showing in full lines the wrench in normal position applied to the head of a lag screw or bolt with the button resting on said head, said head being represented as a dotted square at the left of said Fig. 1, showing also in dotted lines the swinging jaw in the position it takes during the middle portion of the reverse motion of the wrench, turning on the head of a lag-screw represented as another dotted square, having one diagonal nearly parallel with the grasping-face of said inner jaw; Fig. 2, a rear view of said wrench, the stock being partly in section on the line 2 2 in Fig. 3; Fig. 3, a side elevation of said wrench, the stock and slide being in section on the line 3 3 in Fig. 2; and Fig. 4, a horizontal cross-section of the upper or swinging jaw on the line 4 4 in Fig. 3.

The stock A is of metal, provided with a longitudinal socket a to receive the shank b' of the inner or lower jaw B, said socket having flat walls or being rectangular in cross-section to prevent the correspondingly-shaped shank b' from turning in said stock. The lower part b of the shank b' is cylindrical and screw-threaded and passes through and is engaged by a milled nut F, arranged in and projecting on both sides of the stock A from a slot a' in said stock, the socket a being preferably reduced at a^2 below said nut. On turning the nut F by the thumb and finger the lower jaw is raised and lowered in the usual manner.

The stock A is provided with a longitudinal opening a^3 in the back thereof to receive the

shank c or lower portion of the outer jaw C, the lower end of which shank c is provided with lateral ears $c^2 c^3$, which enter slots $a^4 a^5$, arranged in opposite sides of said stock and leading into said longitudinal opening a^3 , the shank c being rounded at c^4 just above said ears, as best shown in Fig. 4, so that the shank c , being first turned at right angles to the back of the stock A with the ears $c^2 c^3$ parallel with the screw b , may be inserted in the opening a^3 and given a quarter of a revolution about its own axis until said ears enter the slots $a^4 a^5$, respectively. To enable this to be done without giving an undue length to the slots $a^4 a^5$, one, a^5 , of said slots may be straight across the bottom, as shown in Fig. 3, and the corresponding ear c^3 may be beveled (c^5) on the back, as shown in Fig. 4, so that when the shank c is inserted in the opening a^3 with said beveled ear down and turned said beveled ear is carried upward into said slot a^5 and just clears the straight lower end of said slot.

The longitudinal opening a^3 terminates at its lower end in a narrow downwardly-expanding slot which passes entirely through the handle part of the stock A and receives the lower end of a leaf-spring E, retained in place in said slot by a wedge or pin G, driven transversely through said slot and filling the space between said spring and the front side of said slot, the upper end of said spring pressing upon the back of the shank c just below a shoulder c' on said shank, thus normally holding the upper jaw in the position shown in Fig. 3, but allowing said upper jaw to swing back into the position shown by dotted lines in Fig. 1 and limiting this backward movement by the striking of said shoulder c' against the upper end of said spring.

The handle or lower part of the stock A of the wrench is provided with palm-pieces H in the usual manner, said palm-pieces being retained on said handle by a screw I, passing through both of said pieces H and through said handle.

A button J is pivoted at j on said outer jaw C and is held in any desired position by friction thereon, being turned into the position shown in Fig. 3 when not in use, or, when in use, over the space between the jaws B C, as

shown in Fig. 1, to prevent the jaws from slipping down below the head of a vertical bolt or below a nut turning on a vertical bolt, the dotted rectangles K in Fig. 1 indicating
5 such a bolt-head or nut.

The operative or gripping surfaces $b^3 c^6$ of the jaws B C are parallel with each other and may be at right angles to the axis of the stock A; but I prefer to incline them downward,
10 as shown, so that when the wrench is used in the proper manner by drawing the handle or lower end of the stock A in the direction of the arrow at the bottom of Fig. 1 the strain on the jaws is less than if these gripping-sur-
15 faces $b^3 c^6$ were at right angles to the shanks of said jaws and the liability of the jaws slipping from the nut is lessened, because the hooking of the outer jaw B draws it onto the nut, and the inclination of the inner jaw C
20 causes the corner of a slipping nut K to crowd the opposite corner more firmly against the outer jaw.

The rear end of the gripping-face b^3 of the lower jaw is cut away at b^2 to allow the cor-
25 ner of the nut or bolt-head K to pry the jaws apart on a reverse movement of the wrench and to permit the wrench to have such a reverse movement without turning the work backward.

30 A slide D is movable on the shank c of the upper jaw C and is provided with a lip d , which may be made to engage notches a^6 in the stock A and prevent the swinging of said jaw C and making said jaw for the time being
35 rigid with said stock. The slide D is held in or out of engagement with the notches a^6 by friction on said shank c .

I claim as my invention—

1. The combination of the stock, having a
40 socket and having a longitudinal opening in

the back thereof, a sliding jaw, arranged in said socket, and a swinging jaw, having a shank provided with lateral ears, the combined width of said shank and ears being
45 greater than the width of said opening and said shank being rounded just above said ears, to allow said shank and ears to be placed in said opening and to be turned, to cause said ears to enter slots, with which said stock
50 is provided and which lead into said opening.

2. The combination of the stock, having a socket and having a longitudinal opening in the back thereof, a sliding jaw, arranged in said socket, a swinging jaw, having a shank
55 provided with lateral ears, the combined width of said shank and ears being greater than the width of said opening and said shank being rounded just above said ears, to allow said shank and ears to be placed in said opening
60 and to be turned to cause said ears to enter slots, with which said stock is provided and which lead into said opening, and a leaf-spring, normally holding said shank of said
65 swinging jaw in said opening and limiting its outward movement by striking a shoulder, with which said shank is provided.

3. The combination of the stock, provided with notches, the swinging jaw and a slide, movable with and on said swinging jaw and adapted to engage said notches, to hold said
70 swinging jaw rigid with said stock, as and for the purpose specified.

In witness whereof I have signed this specification, in the presence of two attesting witnesses, this 14th day of March, A. D. 1896.

CHESTER F. JOHNSON.

Witnesses:

ALBERT M. MOORE,
WILLIAM HANNAFORD.