

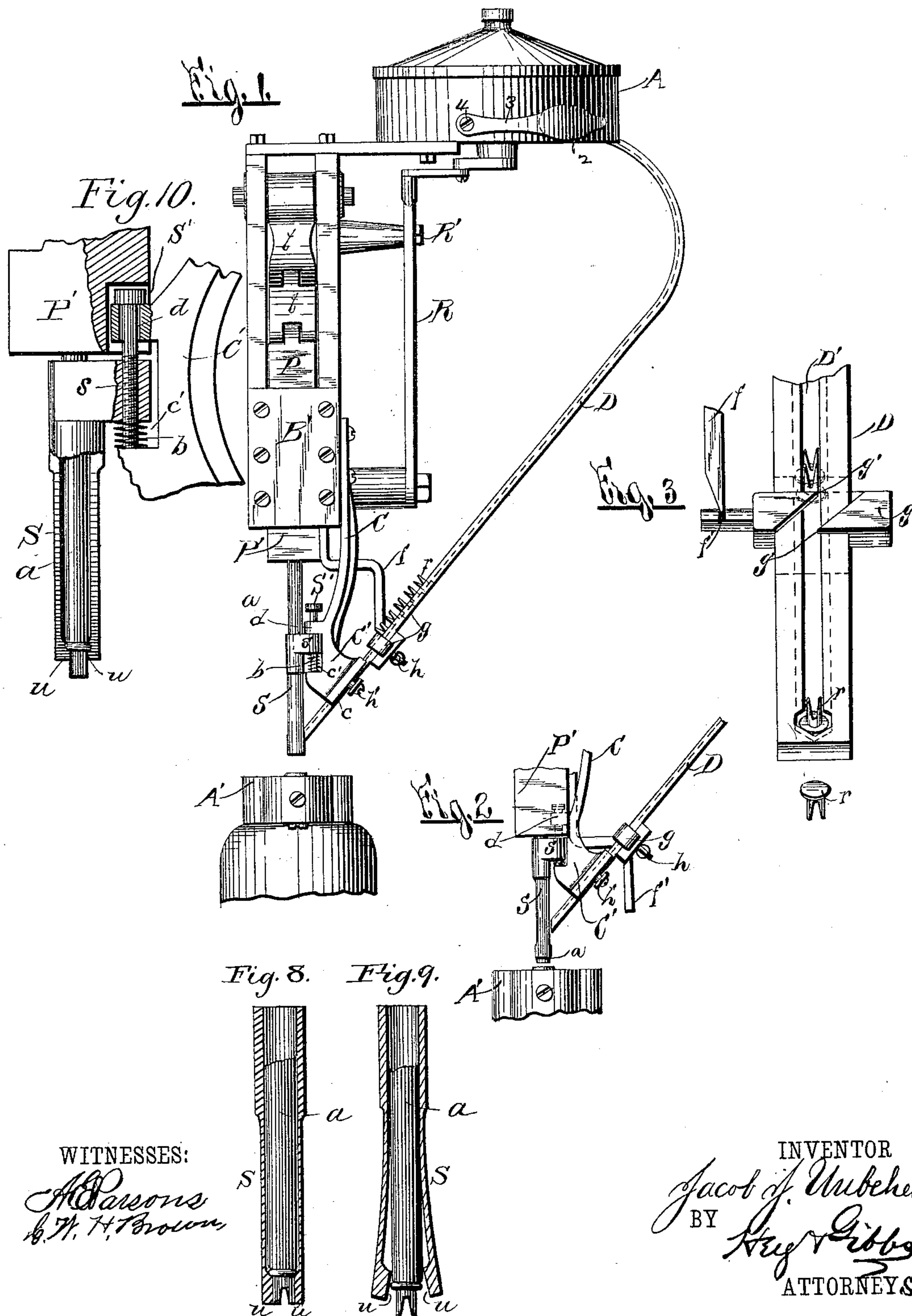
(No Model.)

2 Sheets—Sheet 1.

J. J. UNBEHEND.
RIVETING MACHINE.

No. 405,929.

Patented June 25, 1889.



WITNESSES:

A. Parsons
W. H. Brown

INVENTOR

Jacob J. Unbehend
BY *Wm. Gibbs*
ATTORNEYS.

(No Model.)

2 Sheets—Sheet 2.

J. J. UNBEHEND.
RIVETING MACHINE.

No. 405,929.

Patented June 25, 1889.

Fig. 4.

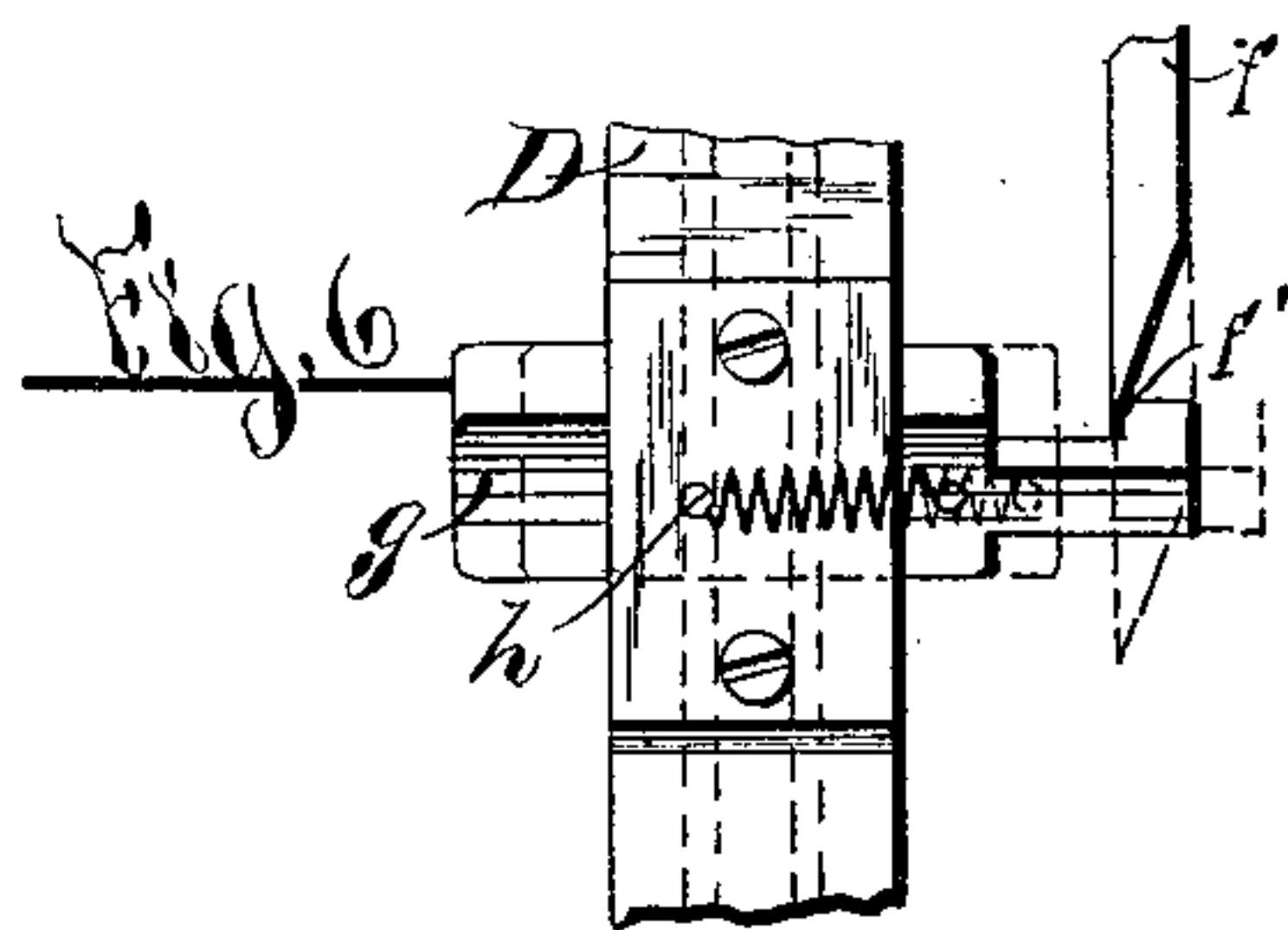
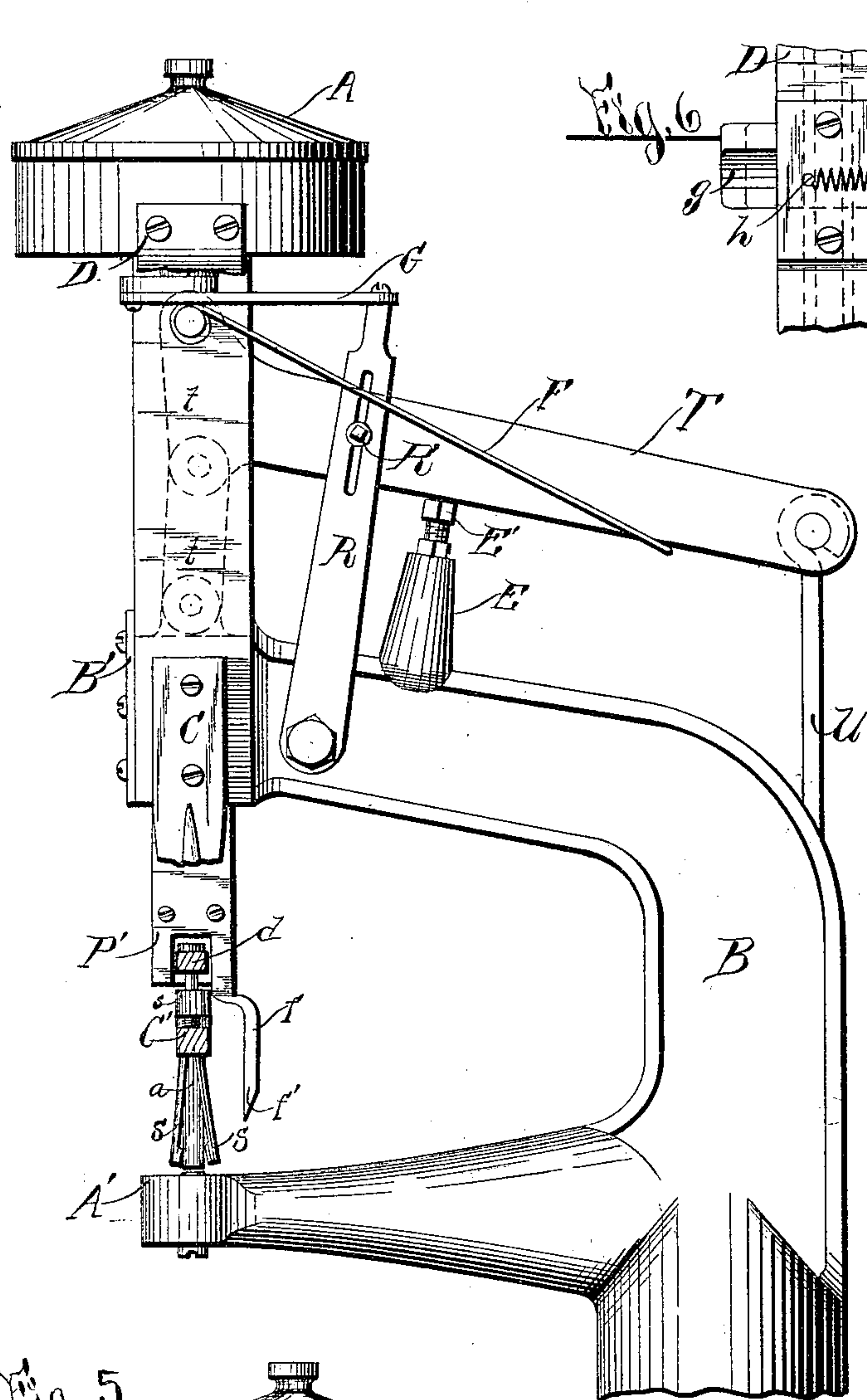
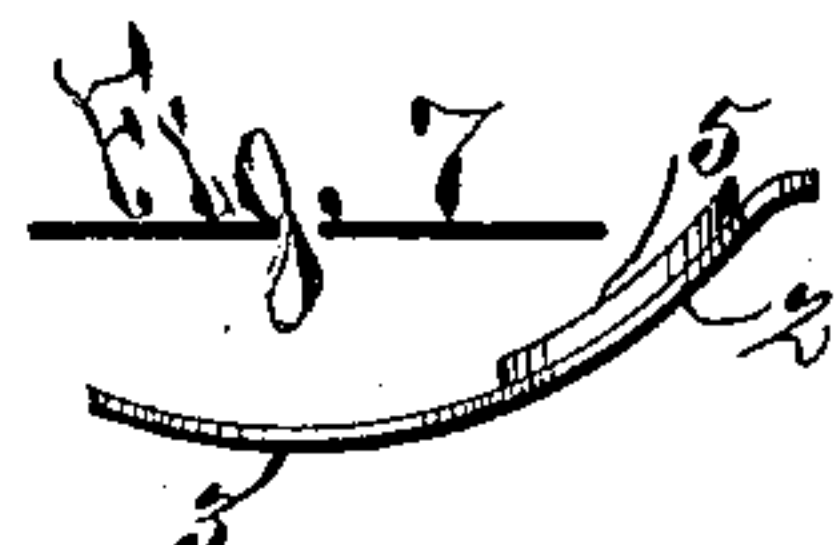
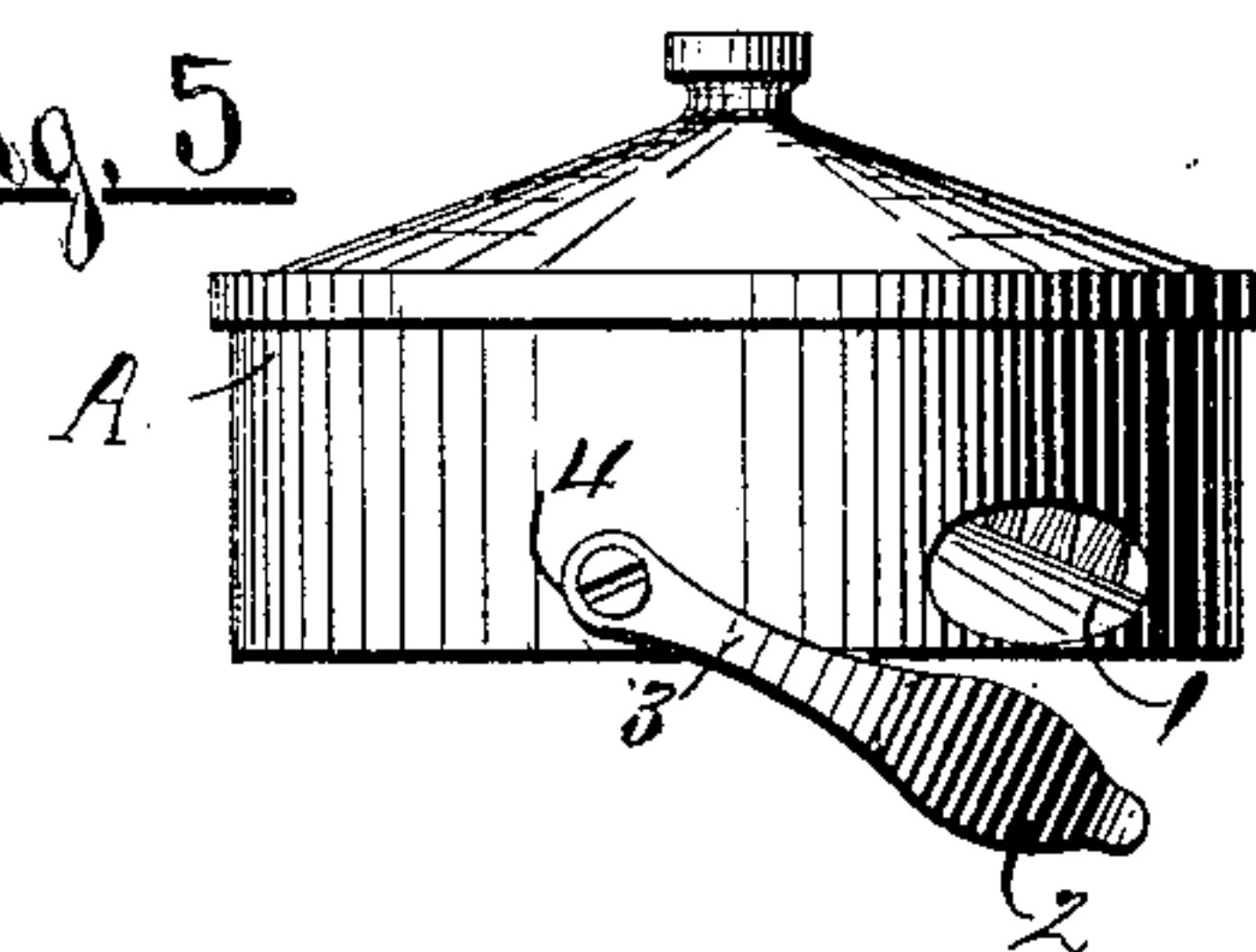


Fig. 5.



WITNESSES:

H. Parsons,
G. H. Brown,

INVENTOR

Jacob J. Unbehend
BY *Wm. G. Gibbs*

ATTORNEYS.

UNITED STATES PATENT OFFICE.

JACOB J. UNBEHEND, OF SYRACUSE, NEW YORK, ASSIGNOR TO JUDSON
L. THOMSON & CO., OF SAME PLACE.

RIVETING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 405,929, dated June 25, 1889.

Application filed June 8, 1887. Serial No. 240,585. (No model.)

To all whom it may concern:

Be it known that I, JACOB J. UNBEHEND, of Syracuse, in the county of Onondaga, in the State of New York, have invented new and
5 useful Improvements in Riveting-Machines, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to an improvement
10 in riveting-machines of that class described in the patent granted to myself and Judson L. Thomson on the 31st day of May, 1887, No. 363,921; and it consists in certain novel peculiarities of the construction and arrange-
15 ment of the same, substantially as will be hereinafter more fully set forth and claimed.

In order to enable others skilled in the art to which my invention pertains to make and use the same, I will now proceed to describe
20 its construction and use, referring to the accompanying drawings, in which—

Figure 1 is a detached front elevation of the feed mechanism of a riveting-machine, with my invention applied thereto, illustrating more particularly the supporting device
25 for movably sustaining the spring discharge-valve, which is illustrated in its normal position. Fig. 2 is a view of the forcing-punch in a position for driving home a rivet, with the movably-supported spring discharge-
30 valve in close proximity to the article into which the rivet is to be inserted. Fig. 3 is an enlarged detached detail of the cut-off mechanism for feeding out the rivets consecu-
35 tively. Fig. 4 is an enlarged side view of my improved riveting-machine, with the forcing-punch in a position to drive home a rivet. Fig. 5 is a view of the rivet hopper or receptacle. Fig. 6 is a detached view of the cut-
40 off mechanism. Fig. 7 is a detached edge view of the spring-gate for closing the opening in the side of the feed-receptacle. Fig. 8 is a sectional view of the spring discharge-valve, showing the forcing-punch bearing on the rivet before the latter is forced out of the
45 valve. Fig. 9 is a like view at the time the rivet is forced out, and Fig. 10 is an enlarged view of the adjusting device which limits the vertical movement of the spring discharge-
50 valve.

A represents the feed-receptacle, which may be constructed in any desirable manner for the purpose intended; but I preferably provide the receptacle with the opening 1 in the side thereof, which is closed by the spring-cap
55 2, having the shank 3 pivoted to the receptacle A by the screw 4. The cap 2 is provided with the projecting pad 5, which fits into the opening 1 and sets flush with the interior of the receptacle.
60

The object of providing the opening 1 is to remove the rivets in case it is desired to run a different size of rivets. It will be observed that the bottom of the opening 1 coincides
65 with the bottom of the hopper or receptacle A, and that the rivets can be readily removed from the hopper through the opening without difficulty.

B is the bracket upon which the upright B', carrying the clinching mechanism, is mounted,
70 and is substantially the same in construction and operation as that illustrated and described in the above-mentioned patent.

C is a bracket secured to the upright standard B', as best shown in Figs. 1 and 4. The
75 bracket C is provided with a portion C', having a flange c, to which the feed-conveyer D is secured by screw at h'. The portion C' has a cut-out c', and the spring discharge-valve S is located in the cut-out c' on the screw or
80 stud S'. The discharge-valve has an offset s, which is provided with an orifice through which the screw or stud S' passes, and the spring discharge-valve has a sliding movement vertically on the said screw or stud, as
85 will be presently explained.

The bracket C has a shoulder d, which is drilled for the passage of the screw or stud S', and the said shoulder d serves as a stop to
90 limit the extreme upward movement of the spring discharge-valve S, while the upper face of the shoulder d serves to stop the screw or stud S' in its downward movement, thus limiting the extent of downward movement of the spring discharge-valve.
95

The spring discharge-valve S is constructed of spring metal, preferably as described in the aforesaid patent of myself and Judson L. Thomson; but for the purposes of my present
100 invention I do not restrict myself to such

construction, since the spring discharge-valve may be made in two pieces or more without affecting the principle of my invention. It will be seen, by reference more particularly to Figs. 9 and 10, that this valve or rivet-guide S is a cylinder lying normally around the plunger *a*, which moves through it, and the lower end of this cylindrical guide is split up for a suitable distance to form spring-jaws, having the internal shoulders or lips *u u*, on which the head of the rivet is received and held till the plunger descends upon it, when the plunger and guide move together till resting on the work, when the stop on the guide causes it to pause, while the plunger continues, forcing the rivet home and out of the spring-jaws of the guide, as will be clearly seen in the figures of the drawings above referred to.

The exit end of the spring discharge-valve is provided with lips or enlargements *u u*, Figs. 8, 9, and 10, which serve to arrest the rivet in its descent through the spring discharge-valve until the forcing-punch *a* has forced the spring discharge-valve downward on its guide-screw *S'*, when the cut-out *c'* of the bracket *C C'* and the lips *u u* or enlargements also serve to guide the rivet accurately into the article which it is desired to rivet, as explained in the previous application hereinbefore referred to. A spiral *b* in the cut-out *c'* is provided to restore the spring discharge-valve *S* to its normal position after the riveting operation has been completed.

It will be observed that when the rivet drops into the spring discharge-valve it is carried downward by the forcing-punch in its descent, and the spring discharge-valve is carried with the rivet on its movable support in the bracket *C C'* until the spring discharge-valve reaches its limit of downward movement, when the forcing-punch *a* forces the rivet downward until the rivet comes between the enlargements *u u*, or at least until the head of the rivet takes against the top of the enlargements, when the continued descent of the forcing-punch *a* forces the rivet out, thereby spreading the arms of the discharge-valve *S*, as best shown in Fig. 9. This discharge of the rivet from the spring discharge-valve takes place when the exit end of the spring discharge-valve is brought in suitable proximity to the article into which the rivet is to be inserted, and this position is determined by adjusting the downward movement of the spring discharge-valve by the stud or screw *S'*, and in bringing the riveting-block and shoe-holder *A'* into suitable position underneath the forcing-punch to guide the rivet to the desired place.

Where a single set of spring discharge-valves are used, as in Fig. 1, as previously stated, the feed-conveyer *D* is secured to the bracket *C C'* by the screw *h'*, and a feed mechanism for cutting off the feed from the hop-

per, like that illustrated in Figs. 3 and 6, may be employed.

It will be observed that the depending finger *f*, secured to the plunger-head *P'* and descending therewith, is provided with a wedge-shaped point *f'*, which passes through a slot in the sliding gate *g*, Fig. 3. The said sliding gate *g* is provided with the points *g' g'*, arranged oppositely in relation to each other, so that as one point *g'* is withdrawn from the conveyer-passage *D'* the other point *g'* closes the said passage; hence but one rivet at a time is fed out. In other words, the discharge-gate is similar to what is known as the "powder-flask feed," and the same forms no part of my present invention, except as used in the combination of elements. A spiral *h* serves to retract the slide *g* when the finger *f* is raised with the forcing-punch *a*.

It will be observed that I employ mechanism for oscillating the feeding devices in the feed-receptacle *A*, as best illustrated in Fig. 4, in which the lever-connection *G*, the oscillating lever *R*, and the main lever *T* are actuated by a treadle connected to the connecting-rod *U*, as in the before-mentioned patent, and that a bail-spring *F* restores the toggle-lever *T* to its normal position when pressure is released on the treadle, and that I also provide a stop *E*, mounted on the bracket *B*, with a screw-bolt *E'*, by means of which the descent of the toggle-lever *T* may be adjusted to regulate the descent of the forcing-punch *a*, which is a very desirable adjunct in adjusting the action of the parts.

The operation of my invention will be readily understood from the foregoing and by reference to the drawings. It will be observed that in the construction illustrated in Fig. 1 the rivets are inserted in the hopper *A* and are fed out of the hopper and to the spring discharge-valve through the medium of the feed-conveyer *D*, the cut-off mechanism *g*, and the spring discharge-valve *S*, and that the rivet *r* is guided to the article into which it is to be inserted by the downward movement of the spring discharge-valve on its movable support until it arrives in the proper place to be forced into the article, when the stoppage of the spring discharge-valve causes the forcing-punch *a* to force the rivet through the enlargements in the exit of the discharge-valve and into the article, when the clinching operation is accomplished in the same manner as with the mechanism described in the before-mentioned previous application. Immediately when the forcing-punch is retracted the spring discharge-valve resumes its normal condition, owing to the upward pressure of the spiral *b*. The adjustment of the vertical movement of the spring discharge-valve *S* is accomplished by means of the stud or screw *S'*.

It will be observed that the essential feature resides in guiding the rivet to the article into which it is to be inserted to secure accu-

racy, and the desired result is accomplished by so constructing and arranging the spring discharge-valve as to have it movable on its support and in operating the same with the forcing-punch in the manner described.

I do not restrict myself to the construction of the parts illustrated and described herein, since the same may be varied indefinitely without departing from the principle of my invention.

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

1. In a rivet-inserting machine, the combination, with the reciprocating plunger and a hollow barrel-like rivet-guide always surrounding said plunger and having its lower end split and formed with internal shoulders, of an offset on the hollow guide, a headed screw in said offset, a supporting-bracket

through which the screw slides, and a spiral spring to return the guide to position after the descending plunger has pressed it down and forced the rivet out of its split end, substantially as and for the purpose set forth.

2. The upright B' , bracket $C C'$, having cut-out c' , and shoulder d , the screw S' , passing through said shoulder and through lug s on valve S , the discharge-valve S , and spiral b , substantially as and for the purpose set forth.

In testimony whereof I have hereunto signed my name, in the presence of two attesting witnesses, at Syracuse, in the county of Onondaga, in the State of New York, this 19th day of May, 1887.

JACOB J. UNBEHEND.

Witnesses:

FREDERICK H. GIBBS,
E. C. CANNON.