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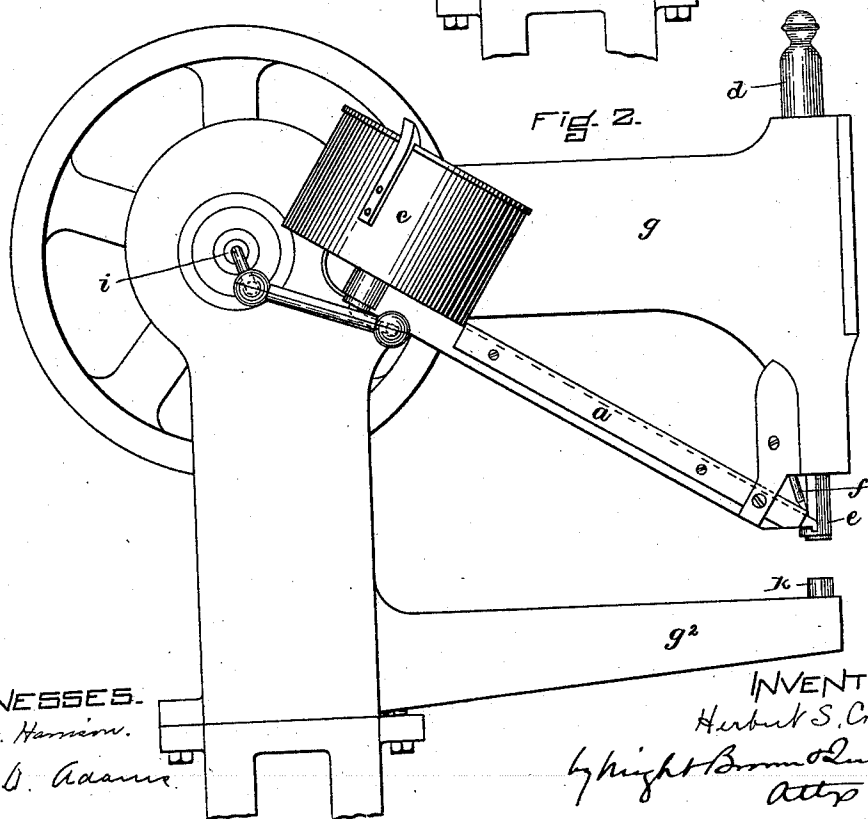
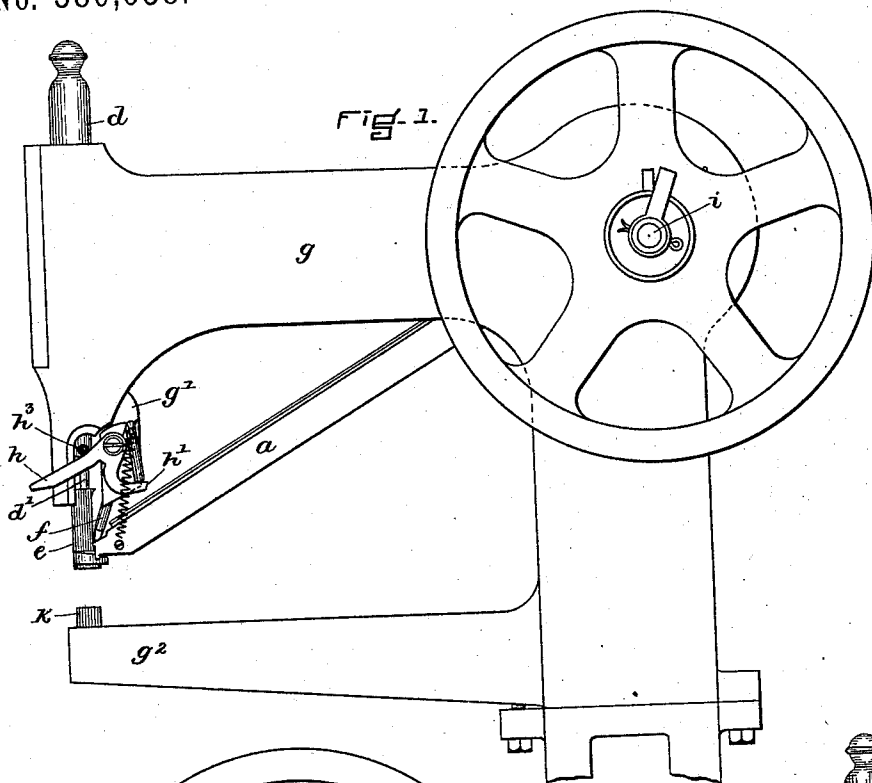
3 Sheets—Sheet 1.

H. S. CROMBIE.

MACHINE FOR SETTING METALLIC FASTENINGS, &c.

No. 580,638.

Patented Apr. 13, 1897.



WITNESSES.

A. D. Harrison.

A. B. Adams.

INVENTOR,

Herbert S. Crombie

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Atty

(No Model.)

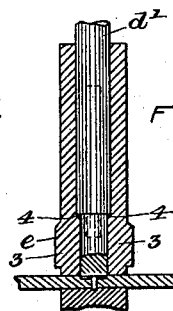
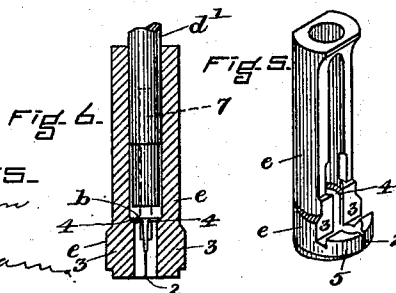
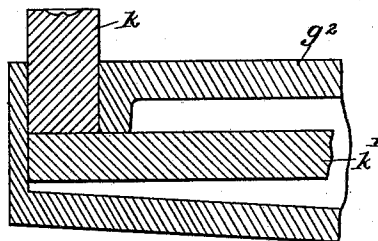
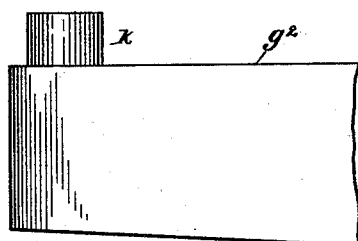
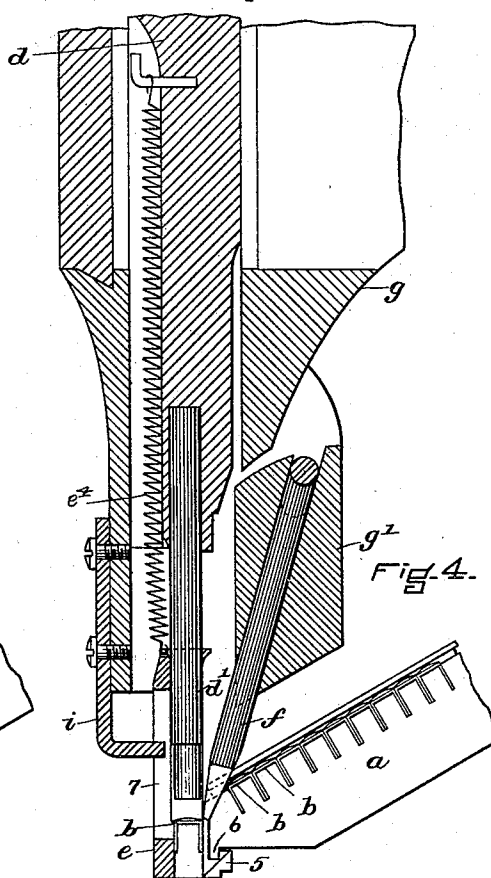
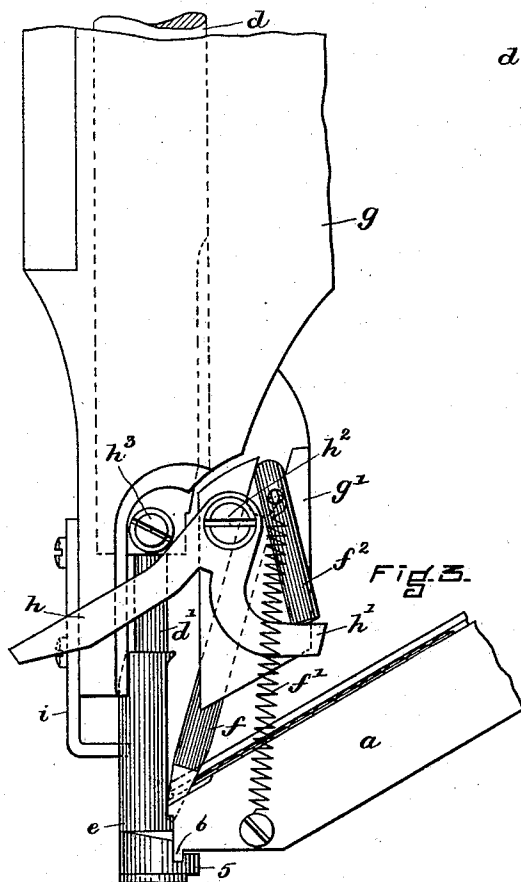
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WITNESSES.

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(No Model.)

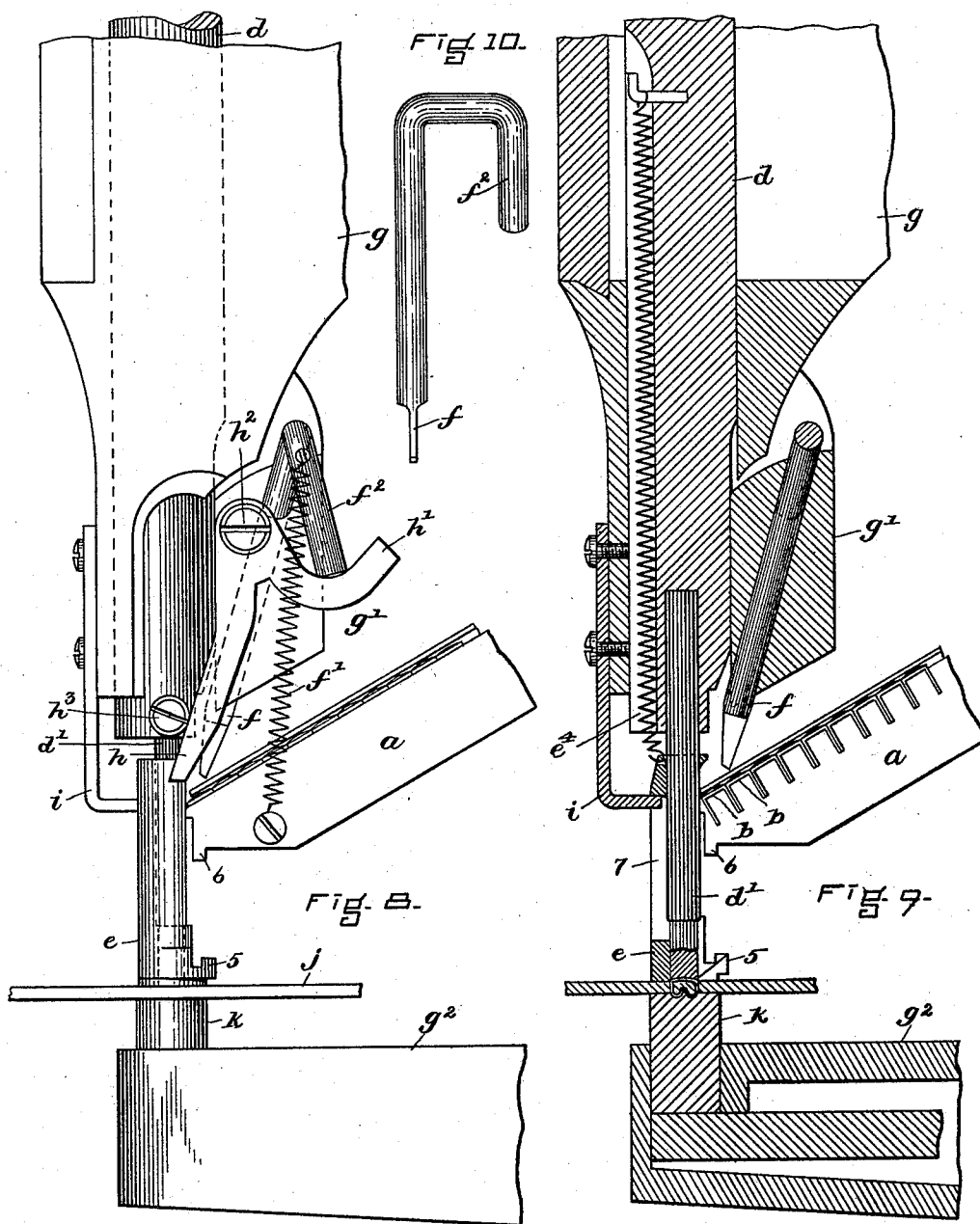
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WITNESSES.

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UNITED STATES PATENT OFFICE.

HERBERT S. CROMBIE, OF BOSTON, MASSACHUSETTS, ASSIGNOR OF ONE-HALF
TO THEOPHILUS KING, TRUSTEE, OF SAME PLACE.

MACHINE FOR SETTING METALLIC FASTENINGS, &c.

SPECIFICATION forming part of Letters Patent No. 580,638, dated April 13, 1897.

Application filed March 2, 1896. Serial No. 581,456. (No model.)

To all whom it may concern:

Be it known that I, HERBERT S. CROMBIE, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Machines for Setting Metallic Fastenings, &c., of which the following is a specification.

This invention relates to machines for inserting and clenching or setting metallic fastening devices, such as pronged rivets, and employing a reciprocating driver, a chute which conducts the fastening devices to the driver, and a holder which receives the fastening devices one at a time from the chute and holds them in position to be forced by the driver into the article in which they are to be set.

The invention has for its object to provide improved means for transferring the fastening devices with accuracy and certainty from the chute to the holder; and it consists in the improvements which I will now proceed to describe and claim.

Of the accompanying drawings, forming a part of this specification, Figures 1 and 2 represent side elevations of a rivet-setting machine embodying my invention. Fig. 3 represents a side elevation of a portion of the machine on a larger scale, showing the position of the parts when the device is raised. Fig. 4 represents a sectional view of the position of the machine shown in Fig. 3, the parts being in the same position. Fig. 5 represents a perspective view, and Figs. 6 and 7 sectional views, of the rivet-holder. Figs. 8 and 9 represent views similar to Figs. 3 and 4, showing the position of the parts when the driver is depressed. Fig. 10 represents a perspective view of the picker detached.

In the drawings, *a* represents an inclined chute formed to conduct a row of rivets *b* downwardly from an elevated hopper or reservoir *c*.

d represents a driver-bar which is movable vertically in a guide in the fixed overhanging arm *g*, said driver-bar being reciprocated by the driving-shaft *i* and suitable intermediate mechanism contained in said arm. To the driver-bar is affixed a driver *d'*, which moves across the delivering end of the chute and is so arranged that when elevated it will

permit the transfer from the chute of the lowest rivet therein into a holder *e*, that is movable upon the driver, said holder projecting below the driver when the latter is elevated, as shown in Fig. 4. The lower portion of the holder is divided by a vertical slot 2, Figs. 5 and 6, which converts the said portion into yielding jaws 3 3, the inner sides of which have shoulders 4 4, Fig. 6, formed to hold the rivet by its head below the driver and adapted to be spread by the rivet to permit the ejection of the latter by the descent of the driver. When the driver is raised, the holder *e* is held yieldingly by a spring *e'* against the lower end of the chute, as shown in Figs. 1, 2, 3, and 4, the holder having a grooved shoulder 5, which engages a projection 6 on the chute. When the driver descends, it strikes the head of a rivet *b* in the holder and depresses the rivet and holder together until the lower end of the holder strikes the piece *j*, into which the rivet is to be inserted, the said piece bearing on the clenching-die *k*. The holder is thus arrested, and the continued downward movement of the driver causes the jaws of the holder to yield, the rivet being forced between them until its prongs have penetrated the piece *j* and have been clenching upon the die *k*, as shown in Figs. 7 and 9.

The clenching-die is yieldingly supported by the free end of a short spring *k'*, contained in a hollow fixed arm *g'*.

i represents a finger or guide attached to the arm *g* and projecting into a slot 7 in the rivet-holder *e* as a means for guiding said holder in its vertical movements.

f represents a dog or picker which is movable in an inclined guide formed in a bracket *g'*, affixed to the arm *g*, and is pressed downwardly by a spring *f'*, affixed at one end to said picker and at its other end to the chute, said picker being adapted, as hereinafter described, to transfer the lowest rivet in the chute to the holder after each ascent of the driver.

h h' represent a two-armed lever pivoted at *h*² to the bracket *g'*, the arm *h'* bearing against the lower end of an arm *f*², which is formed on and projects downwardly from the upper end of said picker, while the arm *h* stands in

the path of a stud h^3 , projecting from the driver-bar. The spring f' presses the arm f^2 downwardly against the arm h' and holds the lever $h h'$ in the position shown in Figs. 1 and 3 when the driver is raised, the arm h projecting under the stud h^3 , so that when the driver-bar descends the stud will strike said arm and force it to the position shown in Fig. 8, thus causing the arm h' to raise or retract the picker and permit the column of rivets to move forward until the lowest rivet bears against the depressed driver, as shown in Fig. 9.

When the driver-bar is rising, the stud h^3 in rising or receding permits the lever $h h'$ to be moved by the force of the spring f toward the position shown in Fig. 3, the arm h' at the same time permitting the picker f to be projected by the spring f' and bear yieldingly upon the lowest rivet before the driver rises above the lower end of the chute, the said rivet being thus engaged by the picker and first pressed thereby against the ascending driver and then into the sleeve e after the driver has risen above the chute, the picker then descending to the position shown in Fig. 4, so that it obstructs the column of rivets, thus acting as a cut-off. It will be seen therefore that the spring-pressed picker constitutes a simple and effective means for transferring the lowest rivet from the chute to the sleeve or holder when the driver is raised and for regulating the descent of the column of rivets, the two-armed lever and its operating-stud on the driver-bar constituting a simple, compact, and durable connection between the driver-bar and picker, whereby the picker is raised when the driver is descending and is thus prepared to engage and transfer the next rivet. Hence I do not limit myself to the described form and construction of the picker, nor to the specific means here shown for raising or retracting the picker, nor to the use of said picker and its operating devices in a machine constructed to set fastening devices of the particular form here shown—viz., two-pronged rivets—as the picker and its retracting means may be of any other suitable construction, and the picker may be formed to transfer various devices, such as lacing-hooks and lacing-studs, from a chute to a holder.

What I claim, and desire to secure by Letters Patent, is—

1. In a machine of the character specified,

the combination with a driver, a holder, and a chute, of a fixed guide adjacent to the chute, a dog or picker fitted to slide longitudinally in said guide and held thereby in an inclined position relatively to the chute, a picker-depressing spring arranged to yieldingly force the picker downwardly toward the chute and holder, and a picker-raising device arranged to be actuated by the descent of the driver-bar, the guide being arranged to cause the separation of the picker from the chute and its entrance into the chute at a predetermined point.

2. In a machine of the character specified, the combination with a driver, a holder, and a chute, of a fixed guide adjacent to the chute, a dog or picker fitted to slide longitudinally in said guide and held thereby in an inclined position relatively to the chute, a spring which normally presses the picker downwardly toward the chute and holder, and a picker-displacing lever loosely engaged with the picker and arranged to be moved to raise the picker by the driver-bar when the latter is descending, the said lever yielding and permitting the picker to be depressed by its spring when the driver-bar is ascending.

3. In a machine of the character specified, the combination with a driver, a holder, and a chute, of a fixed guide adjacent to the chute, a dog or picker fitted to slide longitudinally in said guide and held thereby in an inclined position relatively to the chute, said picker having a laterally-projecting arm, a spring which normally presses the picker downwardly toward the holder and chute, a lever pivoted to a fixed support and having an arm bearing loosely on the arm of the picker and another arm located adjacent to the driver-bar, and a stud or projection on the driver-bar arranged to act on the last-mentioned arm when the driver is descending, whereby the lever is caused to retract the picker during the descent of the driver, and to release the picker during the ascent of the driver.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 29th day of February, A. D. 1896.

HERBERT S. CROMBIE.

Witnesses:

E. BATCHELDER,
A. D. HARRISON.