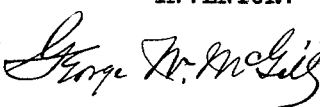


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# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN STAPLE-INSERTING MACHINES.

Specification forming part of Letters Patent No. **220,932**, dated October 28, 1879; application filed June 7, 1879.

*To all whom it may concern:*

Be it known that I, GEORGE W. MCGILL, of the city and county of New York, in the State of New York, have invented certain new and useful Improvements in the Construction of the Staple-Inserting Machine patented to me by United States Letters Patent No. 212,316, dated February 18, 1879, of which the following is a full description.

The object of this invention is to effect the insertion and clinching of metallic staples in sheets of paper, pamphlets, straw-board, leather, woollens, &c., by one continuous and instantaneous operation or movement of the device.

This improved machine has two arms, hinged together in the rear of the staple-inserting mechanism, which is embraced in two jaws that may be pressed together, and separated by vibrating said arms upon the hinge or pivot which connects them, and in a supplemental jaw intermediate between said principal jaws, as hereinafter more fully described.

The lower jaw forms an anvil, on which the staples are clinched, which anvil is constructed in the same manner as that shown and described in my said Patent No. 212,316 of February 18, 1879.

The upper jaw carries a feathered plunger for driving the staples, embraced by a grooved supplemental jaw or case, in the grooves of which the feathers of the plunger move, as hereinafter more particularly described.

In the accompanying drawings, Figure 1 represents a side view of my machine. Fig. 2 is a similar view of the same, having a part of its front portion partially in section.

A is the upper jaw; B, the lower, and A' and B' the handles. C is a supplemental jaw, the free end of which is provided with the staple-holding case C'; and D is a plunger, adapted to move vertically in the case C'. E is a spring adapted to hold the jaws A and C apart when pressure is removed therefrom. F represents the anvil front of the jaw B, having a longitudinal channel or depression, *f*, Fig. 6, and transverse groove *e*, in which is inserted the clinching-blade *e'*.

Fig. 3 is an end or front view of the machine or implement, showing several sheets of paper, *g*, between the jaws of the same, and in the act of being stapled or bound. Fig. 4 is a

perspective view of the plunger D. Fig. 5 is a perspective view of the supplemental jaw C, separate. Fig. 6 is a similar view of the jaw B. Fig. 7 is a similar view of the jaw A. Fig. 8 is a bottom view of the supplemental jaw C, with the plunger D inserted in the case C', and a face view of the plunger, separate.

The supplemental jaw C, case C', and plunger D, in connection with the upper jaw, A, form the staple-inserting mechanism; and the jaw B, with its anvil F, channel *f*, transverse groove *e*, and clinching-blade *e'*, the staple-clinching mechanism.

The front or free end of the supplemental jaw C is provided with the open case C', in which the plunger D moves vertically, the feathers *d d* on the sides of the same occupying corresponding vertical staple-guiding grooves *d' d'*, formed in the inner opposite sides of the case C'.

The plunger D is provided with the shoulders 3 3, neck *d*<sup>2</sup>, and head *d*<sup>3</sup>. Its neck *d*<sup>2</sup> is inserted in the vertical slot *a*, formed in the front end of the jaw A, by means of which jaw it is raised and lowered in its seat in the case C', the object of this arrangement being to allow the plunger-neck to slide longitudinally in the slot *a*, and its body portion to move vertically in its seat in the case C', while the device is being operated, the longitudinal sliding movement of its neck being necessary to secure the vertical movement of its body, the latter movement being necessary to properly drive the staples from the staple-guiding grooves *d d* in the case C' through the articles being bound.

After being so inserted in the jaw A and case C', the ring end C'' of the latter is inserted in the annular chamber *b*, mortised in the inner portion of the circular joint of the jaws A and B, and all three secured by the pivot 7.

The joint-chamber *b* is left open in front at 1 to receive the neck 2 of the ring end C'' of the supplemental jaw, and this opening is of a length to limit the movement of the said jaw and prevent it separating itself from the plunger D when the jaws are opened.

The spiral spring E, inserted between the jaw A and the supplemental jaw C, is to hold the same apart, and thereby lift the plunger in its seat in the case C', when the jaws are

opened to admit the insertion of a staple in the guiding-grooves  $d' d'$  of the said case.

The operation of the device thus constructed is as follows: The jaws being opened and a staple inserted in the guiding-grooves  $d' d'$  of the case  $C'$ , with its shanks pointing outward, the goods to be stapled are placed between the jaws, and the jaws closed by squeezing their handles together. This movement causes the front end of the upper jaw to press down on the shoulders 3 3 of the plunger, and the plunger to consequently descend in its seat in the case  $C'$ , and by means of its feathers  $d d$  force the staple out of the guiding-grooves  $d' d'$ , driving the staple-shanks through the articles between its jaws and into the transverse groove  $e$  in the anvil-front  $F$  of the jaw  $B$ , where they are bent together and clinched up against the under side of the articles being stapled by the form of the clinching-blade  $e'$  inserted in said groove, as shown in Fig. 3 of the drawings.

The face of the plunger  $D$  is provided with a cross-groove, 4, to cause the bottom of its feathers  $d d$  to rest upon the shoulders of the staple inserted in the device, to prevent the downward bowing of the staple-head while the same is being inserted as a binder, as hereinbefore described.

The office of the channel or depression  $f$  in the anvil  $F$  is to adapt the anvil to receive below its top surface the foot of the plunger  $D$  and the portion of the articles being stapled, to assist in clinching the staple-legs up snug against the under side of such articles, as is fully described in my before-mentioned patent of February 18, 1879.

The inner surface of case  $C'$  is constructed similarly to the inner surface of the case  $D$  of my said patent, and for similar purposes—to wit, to admit of the device inserting staples having heads wider than their shanks, as represented in Figs. 10 and 11 of the drawings, and patented to me by United States Letters Patent No. 214,166, dated April 8, 1879.

Fig. 9 represents several sheets of leather bound by a staple as herein described, and Fig. 12 represents a wire staple adapted to be inserted by this device.

I do not claim herein the staple-inserting mechanism adapted to receive and insert a staple having its head or body portion wider than its shanks; nor do I claim the herein-described staple-clinching mechanism, consisting of the anvil  $F$ , provided with the channel  $f$ , transverse groove  $e$ , and clinching-blade  $e'$ , the same having been patented to me by United States Letters Patent No. 212,316, dated February 18, 1879, hereinbefore referred to; but

What I do claim as new in this application, and desire to secure by Letters Patent, is—

1. In combination with a pair of hinged arms provided with inserting and clinching jaws  $A$  and  $B$ , a feathered plunger to drive the staple, an anvil to clinch the same, a supplemental jaw attached to the upper or driving jaw by a spring, and provided with grooves to receive, hold, and guide a staple, in which grooves the feathers of the plunger fit and move, all constructed and combined to operate substantially as described.

2. The jaw  $A A'$ , with slot  $a$ , plunger  $D$ , with feathers  $d d$ , shoulders 3 3, and groove 4, supplemental jaw  $C$ , having one of its ends provided with the hinging-ring  $C''$  and the neck 2, and its other end with the case  $C'$ , having staple-guiding grooves  $d' d'$ , in combination with the jaw  $B B'$ , having its front end furnished with staple-clinching mechanism consisting of the anvil  $F$ , with sunken channel  $f$ , transverse groove  $e$ , and clinching-blade  $e'$ , all constructed and arranged to operate substantially as described.

3. In a staple-inserting device constructed to operate substantially as described, the annular chamber  $b$ , formed in the joint of the vibrating jaws to receive the hinging-ring  $C''$  of the supplemental jaw  $C$ , with an opening in front at 1 of a size to receive the neck 2 of said jaw and allow its case  $C'$  to vibrate on the plunger  $D$  without clearing the same, substantially as and for the purposes described.

4. In a staple-inserting device constructed to operate substantially as described, the jaw  $A$ , having its front end slotted at  $a$  to receive the neck  $d^2$  of the plunger  $D$ , to admit of the plunger moving vertically in the case  $C'$  on the device being operated, substantially as and for the purposes described.

5. The plunger  $D$ , having the shoulders 3 3, neck  $d^2$ , and head  $d^3$ , to admit of its being raised and lowered vertically in the case  $C'$  by the jaw  $A$ , substantially as and for the purposes described.

6. In a staple-inserting device constructed to operate substantially as described, the combination of the intermediate jaw  $C$ , plunger  $D$ , and spring  $E$ , arranged in such manner that the plunger  $D$  is automatically raised in the case  $C'$  on pressure being removed from the handles of the jaws, substantially as and for the purposes described.

In testimony that I claim the foregoing as my invention I herewith affix my signature in the presence of two witnesses.

GEORGE W. MCGILL.

Witnesses:

HARRY MCGILL,  
M. H. MCGILL.