

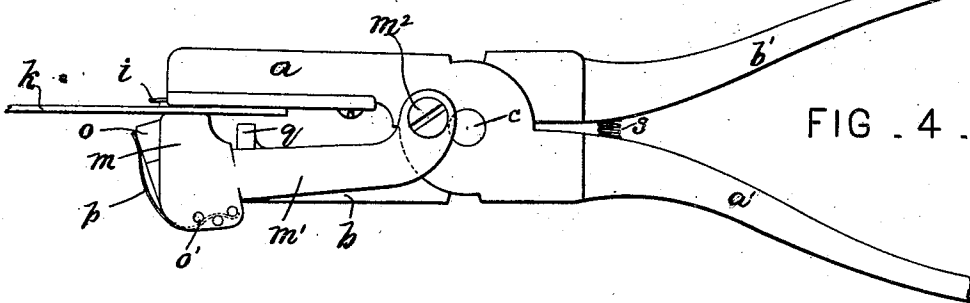
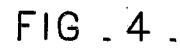
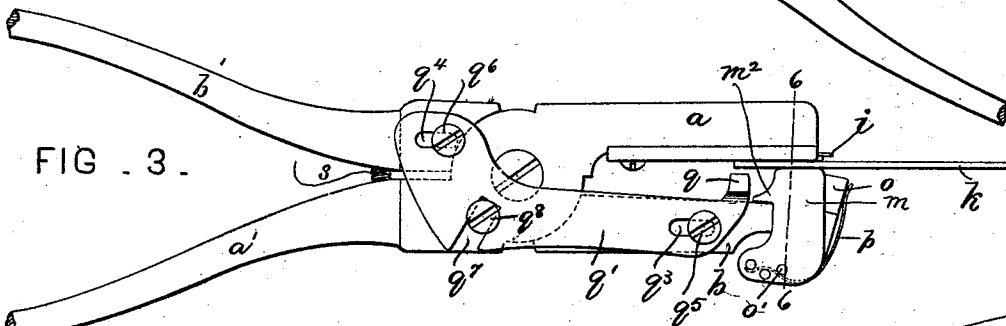
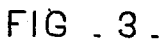
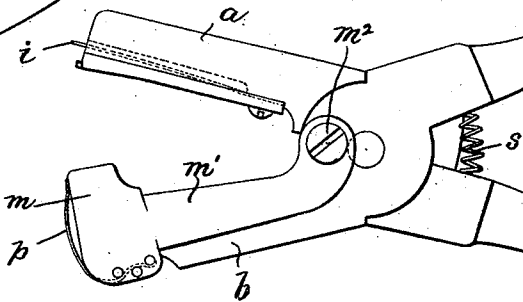
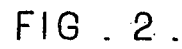
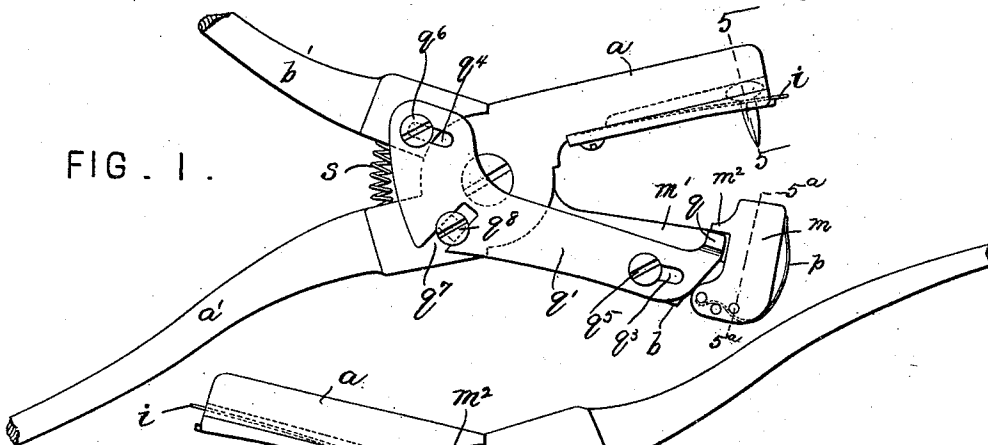
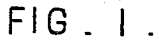
(No Model.)

2 Sheets—Sheet 1.

J. MATHISON.
BUTTON SETTING TOOL.

No. 479,824.

Patented Aug. 2, 1892.



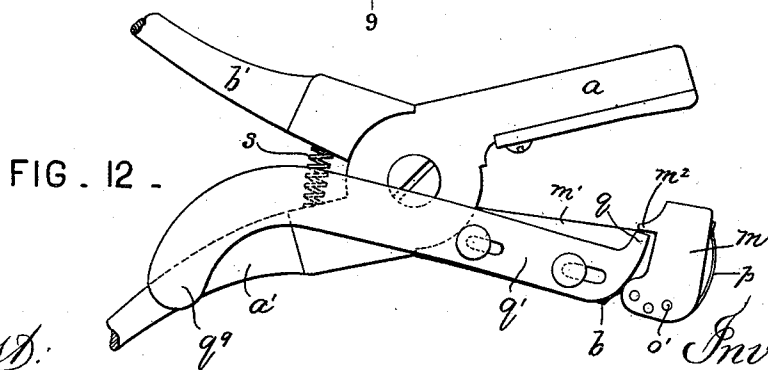
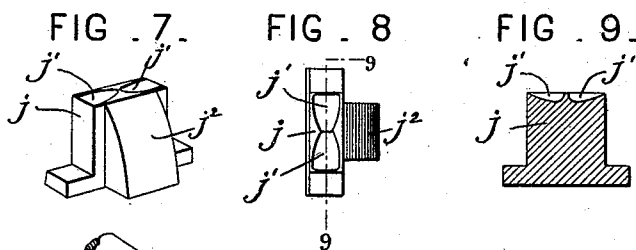
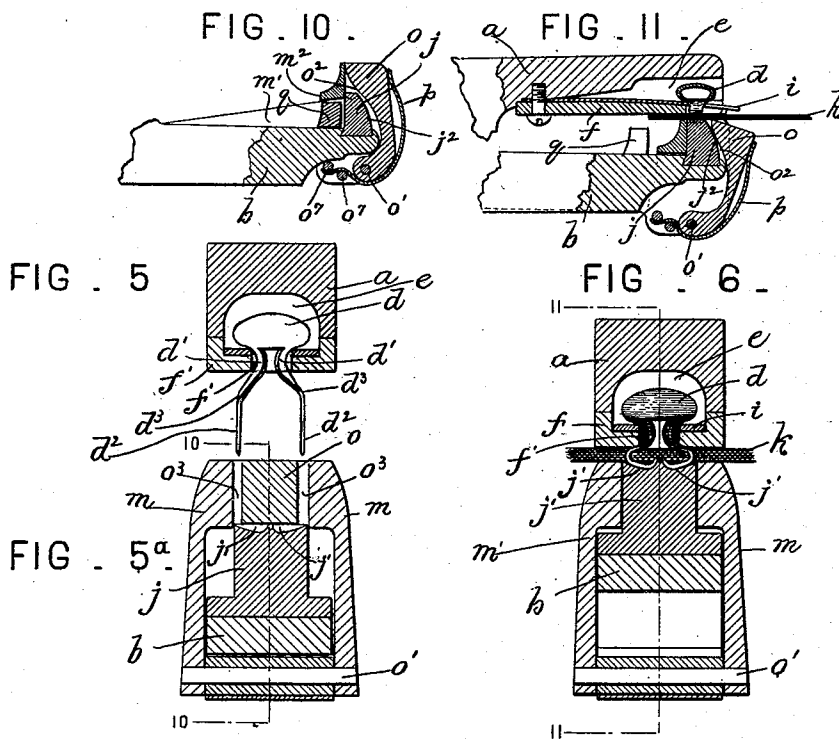
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J. MATHISON.
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Attest:
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UNITED STATES PATENT OFFICE.

JOSEPH MATHISON, OF SOMERVILLE, MASSACHUSETTS.

BUTTON-SETTING TOOL.

SPECIFICATION forming part of Letters Patent No. 479,824, dated August 2, 1892.

Application filed July 13, 1891. Serial No. 399,288. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH MATHISON, of Somerville, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Tools for Setting or Attaching Pronged Buttons, of which the following is a specification.

This invention has for its object to provide a hand-operated tool or device for forcing through a piece of leather or other like material the prongs of a peculiar button invented by me and clinching or turning said prongs inwardly on the innerside of said piece. The said button is made of a single piece of sheet metal and comprises a rounded head, a shank made in two parts, formed by bending and shaping two arms formed integral with the head and at opposite sides thereof, and prongs formed on the said arms and projecting downwardly from the shank, said prongs standing parallel with each other before the attachment of the button.

The invention consists in the several improvements hereinafter described relating to an implement for grasping the shank of the button, forcing the prongs thereof through the material to which the button is to be attached, and turning or clinching the prongs at the under side of said piece of material, all of which I will now proceed to describe.

In the accompanying drawings, forming a part of this specification, Figure 1 represents a side elevation of a tool embodying my invention, the jaws or members of the tool being opened or separated. Fig. 2 represents an elevation of the side opposite that shown in Fig. 1. Fig. 3 represents a side elevation of the tool, showing the jaws closed and in the position they occupy at the completion of the prong-clinching operation. Fig. 4 represents a view of the side opposite that shown in Fig. 3. Fig. 5 represents a section on line 5 5 of Fig. 1. Fig. 5^a represents a section on line 5^a 5^a of Fig. 1. Fig. 6 represents a section on line 6 6 of Fig. 3. Fig. 7 represents a perspective view of the prong-clinching die. Fig. 8 represents a top view of said die. Fig. 9 represents a section on line 9 9 of Fig. 8. Fig. 10 represents a section on line 10 10 of Fig. 5^a. Fig. 11 represents a section on line 11 11 of Fig. 6. Fig. 12 represents a side view showing modification.

The same letters of reference indicate the same parts in all the figures.

In the drawings, *a* and *b* represent two arms 55 or jaws, which are pivotally connected at *c*, and are provided, respectively, with handles *a'* and *b'*, the handle *a'* being formed on or attached to the jaw *a*, while the handle *b'* is formed on or attached to the jaw *b*. Said handles are formed to be grasped and operated like the handles of eyeleting-tools, pinchers, &c., the arrangement being such that when said handles are moved toward each other the jaws *a* and *b* will be also moved toward 65 each other and caused to co-operate in a manner hereinafter described.

The button which my improved tool is intended to set or attach is composed of a rounded head *d*, a shank composed of two 70 sides *d'* *d'*, formed integral with the head and bent under the same, and parallel prongs *d''* *d''*, formed on the shank sides *d'*, but offset from the latter by shoulders *d'''* *d'''*. The jaw *a* is provided with a cavity *e* of sufficient size 75 to receive the head *d* of the button and has affixed to its under side a plate *f*, containing a slot *f'* of sufficient width to receive the shank composed of the sides *d'* *d'*. When the button is inserted in the cavity *e*, the 80 shank is received by the slot *f'* and the prongs *d''* and shoulders *d'''* project below the jaw *a* and plate *f*. A spring *i*, which is slotted to receive the button-shank, is located in the cavity *e*, said spring being formed to press 85 upwardly against the under side of the button-head, and thus hold the shoulders *d'''* *d'''* firmly against the under side of the plate *f*. The spring *i* is affixed at its inner end to the jaw *a*, its outer end being free to rise and 90 fall and containing the slot which receives the button-shank, so that when the button-head is inserted in the cavity *e* its shank will simultaneously enter the slots in the plate *f* and spring *i*, the free end of the spring being 95 depressed by the operator in inserting the button to permit the head to pass into the cavity *e* above the spring.

The jaw *b* is provided with a clinching-die *j*. (Shown clearly in Figs. 7, 8, and 9.) Said 100 die is a block projecting upwardly from the jaw *b* and is provided in its upper face with concavities *j'* *j'*, formed and arranged to come in contact with the ends of the prongs of the

button when the jaws are moved toward each other, said concavities curling the ends of the prongs inwardly and causing them to gradually turn upward against the under side of the piece *k*, to which the button is attached by the tool.

When the jaws are separated, as shown in Figs. 1 and 2, the clinching-die *j* is covered by a casing which comprises two side pieces *m m*, affixed to an arm *m'*, which is pivotally connected at *m*² with the enlarged hub that connects the jaw *a* with its handle *a'* and a swinging arm *o*, which is pivoted at *o'* to the side pieces *m m* and is formed so that its upper end when in its normal position projects over the clinching-die *j*, said arm *o* having an inclined inner side *o*², which is arranged to slide upon and be displaced by a cam or curved projection *j*² on the clinching-die *j*.

The arm *o* is pressed inwardly by a spring *p*, bearing against its outer side, said spring when the jaws *a* and *b* are separated holding the upper end of the arm *o* over the upper end of the die *j*, as shown in Fig. 10.

When the arm *o* is in the position shown in Figs. 1, 2, and 10, its upper end is flush with the upper edges of the side pieces *m m*, and the upper ends of said parts collectively form a flat bed or support for the piece *k*, the arm *o* being provided with slots *o*³ *o*³, Fig. 5^a, in its opposite sides, arranged to coincide with and receive the prongs of the button, said slots being directly over the outer ends of the concavities *j'* of the clinching-die, as shown in Fig. 5^a.

The side pieces *m m* are provided with projections *m*², which when the jaws *a b* are separated are supported by a movable stop or block *q*, which is adapted to slide upon the lower jaw *b* and when moved forward under the projections *m*² supports the casing composed of the side pieces *m m* and arm *o*, so that they cannot move independently of the jaw *b*; but when said stop is moved to the position shown in Fig. 3 it is withdrawn from under the projections *m*² and makes said casing free to be depressed independently of the jaw *b*, as presently described. When the said casing is supported by the stop *q*, as shown in Fig. 1, and the jaws *a b* are moved toward each other, the casing constitutes an unyielding support for the piece *k*, so that the button-prongs, projecting downwardly from the jaw *a*, will be readily forced through the piece *k* by the closing movement of the jaws. After the prongs have passed through the piece *k* and have entered the slots *o*³ *o*³ the stop *q* is withdrawn to the position shown in Fig. 3, the withdrawal being preferably by the automatic means hereinafter described, so that the casing, composed of the side pieces *m m* and arm *o*, at once becomes yielding and is caused to yield upon the pressure of the upper end of said casing against the piece *k*, the latter being now in contact with the under side of the jaw *a*. The result of the yielding move-

ment of said casing is to depress the upper ends of the side pieces *m m* below the upper end of the clinching-die *j* and at the same time cause the inclined inner side of the arm *o* to move outwardly by riding down the cam *j*² on the clinching-die, as shown in Fig. 11, the upper end of the clinching-die being thus uncovered and free to be pressed upwardly against the prongs of the button and to press said prongs closely against the under side of the piece *k*.

It will be seen that the casing when rigidly supported in position above the clinching-block insures the passage of the prongs of the button through the material without bending or crippling said prongs, there being nothing directly opposing the points of the prongs under the material, so that they pass freely into the slots *o*³ *o*³ and complete their entrance into the material before they come in contact with the clinching-block. It will also be seen that the sides of the slots *o*³ *o*³ when the casing is in its elevated position guide the prongs in their downward movement, so that they are not liable to be displaced in any direction until their points meet the clinching-die.

The block *o* is normally pressed inwardly to the position shown in Figs. 1, 2, and 10 by means of a spring *p*, one end of which is engaged with studs *o*⁷ *o*⁷, secured to the side pieces *m m*, the other end bearing on the outer side of the arm *o* near its upper end. When the arm *o* is displaced, as shown in Fig. 11, the pressure of the spring *p* tends to restore said arm to the position shown in Fig. 10, and in so doing causes the casing, of which it forms a part, to move upwardly by the sliding of the inclined inner side of the arm *o* upon the cam *j*² of the clinching-die, so that when the jaws *a* and *b* are separated the casing rises automatically to its elevated position over the clinching-die.

The stop *q* is shown in Figs. 1 and 3 as formed on an arm *q'*, which has near its ends slots *q*³ *q*⁴, extending in the same direction and receiving studs or screws *q*⁵ *q*⁶, attached, respectively, to the jaw *b* and to the handle *b'* thereof. At a point between the slots *q*³ and *q*⁴ the arm *q'* is provided with a diagonal slot *q*⁷, which receives the stud or screw *q*⁸, affixed to the hub of the jaw *a*. The described arrangement of the slots and studs causes the arm *q'* to occupy the position shown in Fig. 1 when the jaws *a* and *b* are separated and to be retracted, as shown in Fig. 3, when the said jaws are closed, so that the stop *q* is automatically operated and caused to support the casing over the clinching-die when the jaws *a b* are opened and to release said casing when the jaws in closing bring the jaw *a* and the upper surface of the casing into contact with the button-piece *k*.

In Fig. 12 I have shown the arm *q'* as curved at its rear end to form a handle *q*⁹, instead of being connected with the handle *a'*, as shown in Figs. 1 and 3. In the modification shown in Fig. 12 the arm *q'* is moved to make the

stop *q* operative and inoperative by the hand of the operator.

The jaws *a* and *b* are normally separated by means of a spring *s*, interposed between the handles *a'* and *b'*.

The operation is as follows: The operator first places the button in the cavity *e* of the upper jaw, the head of the button being placed above the spring *i* and its shank inserted in the slot in said spring and in the slot in the plate *f*. The button-piece *k* is placed on the supporting-surface of the casing over the clinching-die, said casing being rigidly supported by the stop *q*. The handles *a'* and *b'* are then pressed toward each other, thus causing the prongs of the button to penetrate the piece *k* and pass into the slots *o³ o³* in the casing covering the clinching-die. When the prongs have entered said slots and the shoulders *d³* at the lower end of the button-shank have reached a bearing on the piece *k*, the stop *q* is withdrawn, so that the casing yields and permits the button-prongs to be rolled inwardly or clinched upon the clinching-die, as shown in Fig. 6, the points of the prongs being turned upwardly into the piece *k*. This completes the operation of attaching the button, which is removed from the jaw *a* by pulling the piece *k* outwardly.

I claim—

1. The combination, with a button-holding plunger or jaw, of the opposing or lower jaw having a prong-clinching die opposing said plunger, a casing consisting of the two side pieces *m m* and the swinging arm *o*, pivoted at its lower end, which casing normally covers the upper face and outer sides of the said die and is provided with two prong-receiving slots, handles *a' b'*, and a reciprocating stop operated in conjunction with the handles *a' b'* and adapted to lock the said casing and prevent its yielding movement, as set forth.

2. The combination, with a button-holding jaw or plunger, of an opposing or lower jaw

having a prong-clinching die, a casing which normally covers the upper face and outer sides of the said die, the upper portion of the said casing being provided with two prong-receiving slots, handles *a' b'*, and a movable stop operated in conjunction with the handles *a' b'* and consisting of the arm *q'*, movably supported by the lower jaw and the handle *b'* and having an upwardly-turned end *q* and adapted to lock said casing to the jaw and prevent its yielding movement, as set forth.

3. The combination, with a button-holding jaw, of an opposing or lower jaw having a yieldingly-connected prong-clinching die, a casing which normally covers said die and is provided with prong-receiving slots over the die, a movable stop adapted to lock said casing to the jaw and prevent its yielding movement, an arm supporting said stop and having a sliding connection with the lower jaw, and a stud or projection connected with the upper jaw and engaged with said arm, whereby the stop is automatically moved by the opening and closing of the jaws, as set forth.

4. The combination, with a button-holding jaw, of a lower jaw having the clinching-die rigidly affixed to it, combined with the independently-movable die-covering casing comprising an arm, such as *m'*, pivotally connected with said jaw, side pieces affixed to said arm and located at opposite sides of the block, said pieces having prong-receiving slots, and an arm, such as *o*, pivoted to the arm *m'* and pressed by a spring into the space between the side pieces, as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 8th day of July, A. D. 1891.

JOSEPH MATHISON.

Witnesses:

C. F. BROWN,
A. D. HARRISON.