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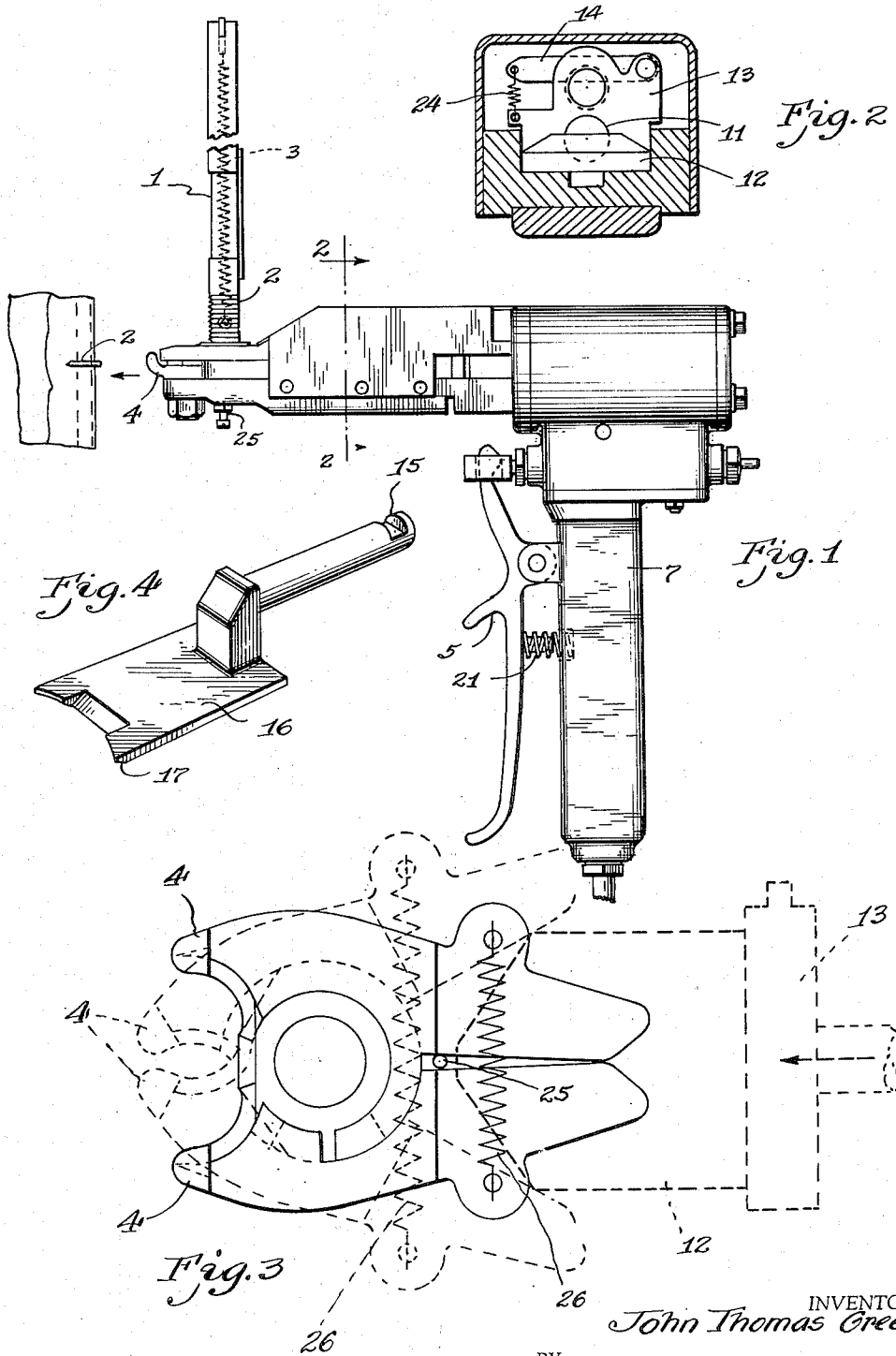
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2,205,690

HOG RING CLINCHING TOOL

Filed May 24, 1939

4 Sheets-Sheet 1



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Fig. 5

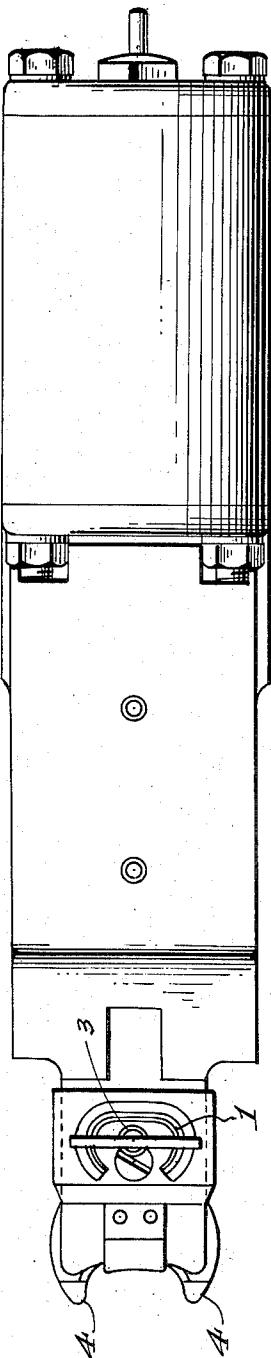
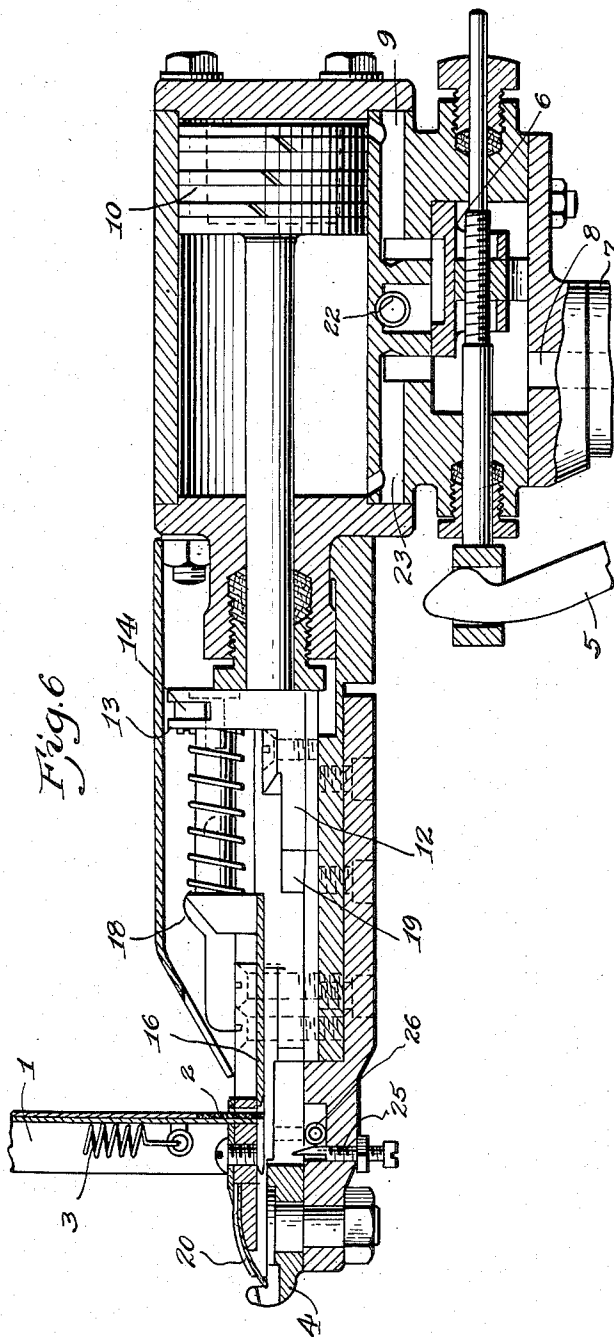


Fig. 6



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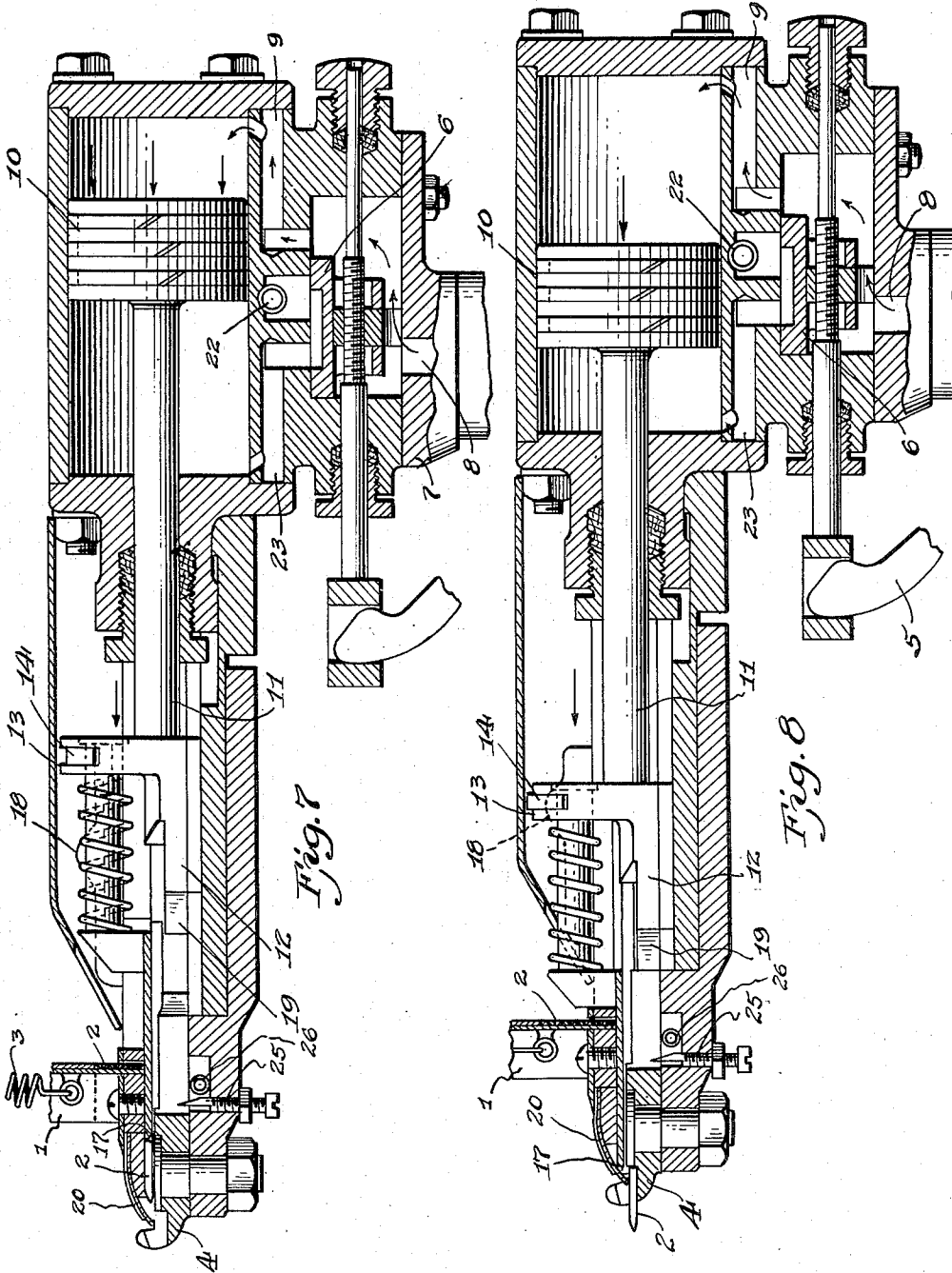
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HOG RING CLINCHING TOOL

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4 Sheets-Sheet 3



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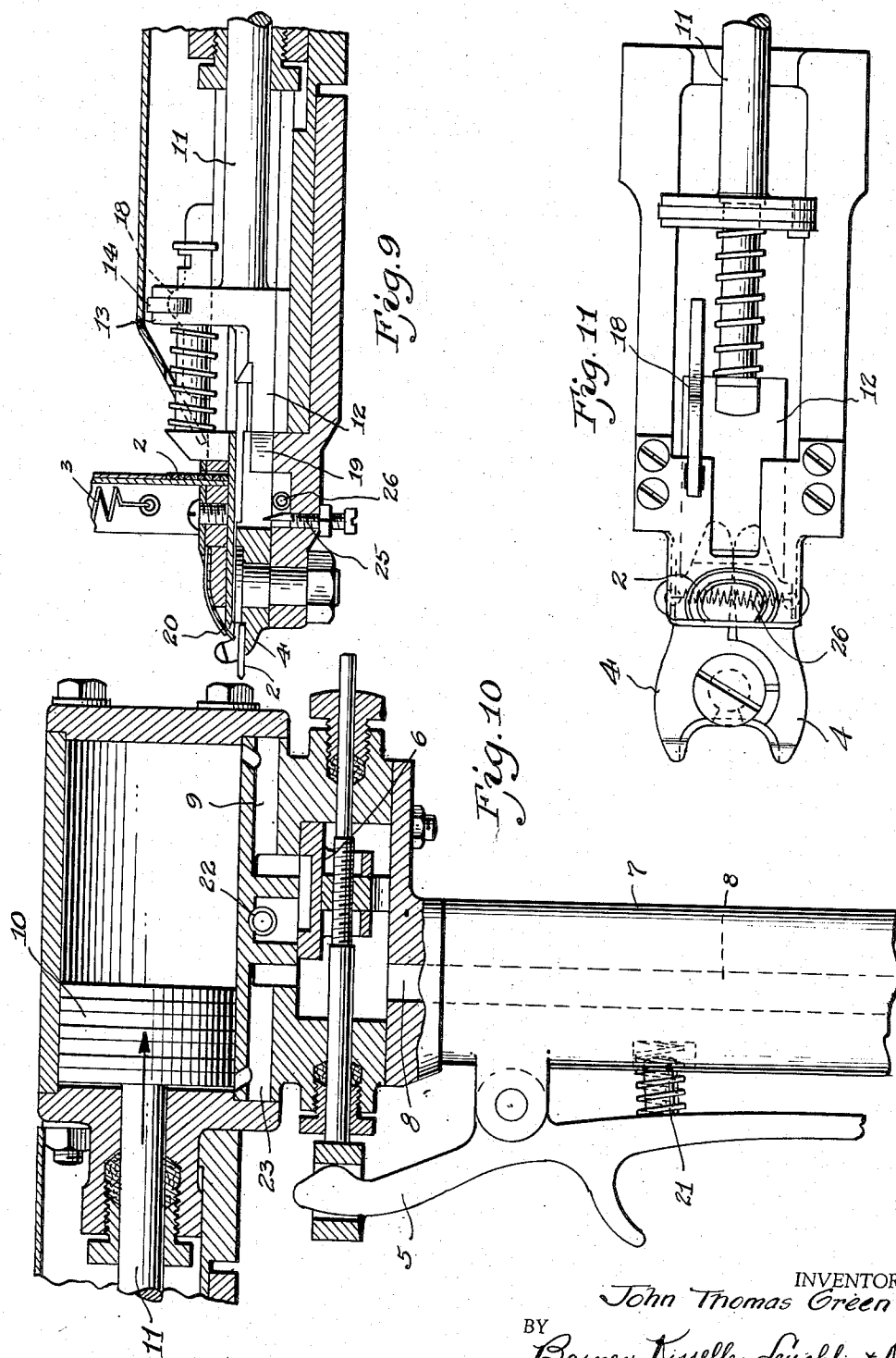
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HOG RING CLINCHING TOOL

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4 Sheets-Sheet 4



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UNITED STATES PATENT OFFICE

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HOG RING CLINCHING TOOL

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Application May 24, 1939, Serial No. 275,345

7 Claims. (Cl. 140—55)

This invention relates to a tool for clinching fasteners or staples and particularly so-called hog rings. The idea is to use the tool in connection with fastening springs in a spring assembly or upholstery to seat cushions, etc.

It has for its object a tool of the magazine type which is power-operated, preferably fluid-operated.

In the drawings:

Fig. 1 is an elevation of the tool.

Fig. 2 is a section on the line 2—2 of Fig. 1.

Fig. 3 is an enlarged view of the jaws showing them opened and closed.

Fig. 4 is a perspective of the feeder or pusher.

Fig. 5 is a plan view of the tool.

Fig. 6 is a longitudinal section of the same showing the tool inactive.

Fig. 7 is a similar view showing the tool with the parts midway of the stroke.

Fig. 8 is a similar view showing the parts when the staple has been fed into the jaws.

Fig. 9 is a similar view showing the parts at the limit of the operating movement.

Fig. 10 shows the parts after the trigger valve has been released and the piston is ready to return to its normal position.

Fig. 11 is a plan view of the tool with part of the casing removed.

1 is a magazine in which are contained fasteners 2 which are urged into the machine by means of the spring 3. Preferably, the hog rings are secured together by paraffine or other adhesive material to form a stick, which is placed in the magazine. The trigger 5 controls a slide valve 6. When the trigger is pressed up against the handle 7, it slides the slide valve to the left, as shown in Fig. 7, and air comes from supply conduit 8 through passageway 9, and to the right of piston 10. This drives the piston rod 11 to the left carrying with it the slide 12 and the upright 13 on which pivots a key 14 (Fig. 2). This key 14 engages in a notch 15 in the feeder or push slide 16 (Fig. 4).

As shown in Fig. 7, this takes a hog ring 2 out from under the stack and pushes it toward the jaws which are open. As it reaches the position shown in Fig. 8, the beveled edge 17 forces the ring down into the jaws 4 (Fig. 8) against the resistance of the retaining spring 20. At this point, key 14 rides up cam 18 and this releases the key from the notch 15 in the pusher and disconnects the pusher from the slide. Slide 12 continues to move forward and the beveled faces 19 strike between the inner ends of the jaws (Fig. 3) and spread the inner ends of the jaws,

thereby closing the outer ends of the jaws, as shown in the dotted lines of Fig. 3, and thereby doing the clinching.

When the trigger is released, the spring 21 turns the trigger clockwise causing slide valve 6 to travel to the right, exhausting the air to the right of the piston 10 through the exhaust port 22 and causing the compressed fluid to travel through passage 23 to the left of piston 10. This causes piston 10, rod 11 and slide 12 to return to initial position. The key 14 drops back into notch 15 and causes push slide 16 to return to the initial position at the right. The spring 24 urges key 14 into notch 15. A stop pin 25 is used to stop the jaws 4 at the center position to which they are drawn by spring 26.

I claim:

1. In a fastener clinching machine, the combination of means for feeding a succession of U-like fasteners or open rings, a pair of jaws, 20 a pusher for pushing the fasteners successively into the open jaws, a reciprocating member arranged to strike the jaws and close them, the said reciprocating member adapted to move the pusher to push the open fastener into the jaws, 25 and means for separating the two members after the open ring has been pushed into the jaws and before the reciprocating member has contacted the jaws to close them.

2. In a fastener clinching machine, the combination of means for feeding a succession of U-like fasteners or open rings, a pair of jaws, 30 a pusher for pushing the fasteners successively into the open jaws, a reciprocating member arranged to strike between the jaws for closing them, the said reciprocating member adapted to move the pusher to push the open fastener into the jaws, means for separating the two members after the open ring has been pushed into the jaws and before the reciprocating member has contacted the jaws to close them and fluid-operated means for reciprocating the reciprocating member. 35

3. In a fastener clinching machine, the combination of means for feeding a succession of U-like fasteners or open rings, a pair of jaws, 45 a pusher for pushing the fasteners successively into the open jaws, a reciprocating member for closing the jaws, the said reciprocating member adapted to move the pusher to push the open fastener into the jaws, the two members separating after the open ring has been pushed into the jaws and before the reciprocating member has contacted the jaws to close them, a key for causing the reciprocating member and the 55

pusher to move together and means for releasing the key and separating the members after the ring has been pushed into the jaws but before the slide has contacted the jaws to close them.

- 5 4. In a fastener clinching machine, the combination of means for feeding a succession of U-like fasteners or open rings, a pair of jaws, a pusher for pushing the fasteners successively into the open jaws, a reciprocating member for closing the jaws, the said reciprocating member adapted to move the pusher to push the open fastener into the jaws, the two members separating after the open ring has been pushed into the jaws and before the reciprocating member has contacted the jaws to close them, a key for causing the reciprocating member and the pusher to move together and a cam for releasing the key and separating the members after the ring has been pushed into the jaws but before the slide has contacted the jaws to close them.

- 20 5. In a machine for applying fasteners, a magazine for feeding a stack of fasteners, a pusher and reciprocating jaw-operating slide arranged to be reciprocated as a unit for part of the distance and to be switched apart before the completion of the stroke of the jaw-operating slide and a pair of pivoted jaws operated by said slide when a fastener has been pushed by said pusher into the open jaws and power means for reciprocating the said jaw-operating slide and the pusher.

6. In a machine for applying fasteners, a magazine for feeding a stack of fasteners, a pusher and reciprocating jaw-operating slide arranged to be reciprocated as a unit for part of the distance and to be switched apart before the completion of the stroke of the jaw-operating slide and a pair of pivoted jaws operated by said slide when a fastener has been pushed into the open jaws by said pusher and power means for reciprocating the said jaw-operating slide and the pusher, comprising a fluid-operated piston and a slide valve operated by a trigger for turning the fluid from one end to the other of the piston.

7. In a machine for applying fasteners, a magazine for feeding a stack of fasteners, a pusher and reciprocating jaw-operating slide arranged to be reciprocated as a unit for part of the distance and to be switched apart before the completion of the stroke of the jaw-operating slide and a pair of pivoted jaws operated by said slide when a fastener has been pushed into the open jaws by the pusher and power means for reciprocating the said jaw-operating slide and the pusher and a pivoted key and a stationary cam for tying the slide and the pusher together for part of the way and switching the key out of engagement with the pusher to release the pusher and permit the jaw-operating slide to go on to spread the inner end of the jaws and clinch the outer end of the jaws.

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