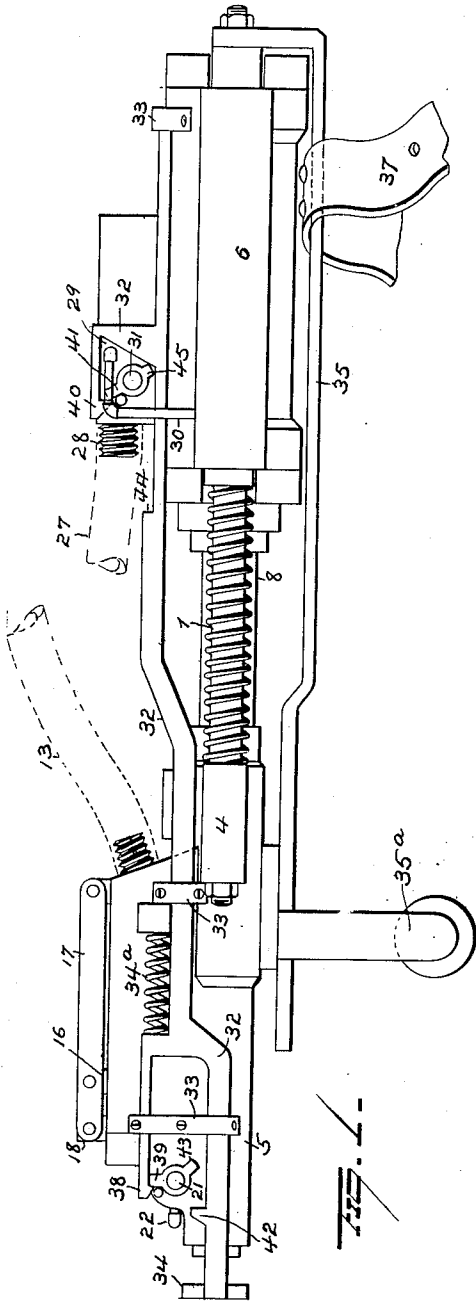


S. B. STEWART.
PNEUMATIC NAIL DRIVER.
APPLICATION FILED JULY 10, 1906.

902,620.

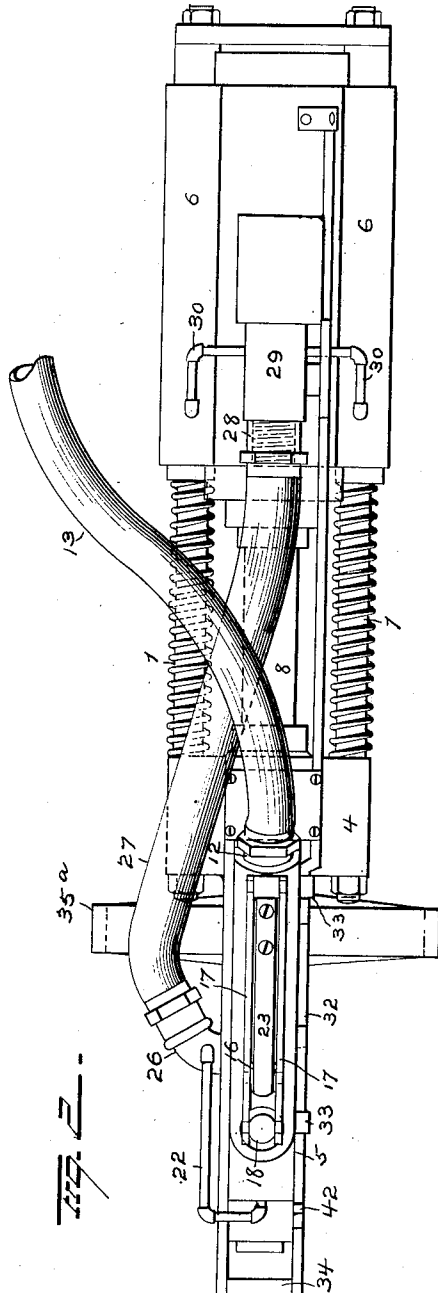
Patented Nov. 3, 1908.

3 SHEETS—SHEET 1.



WITNESSES

E. Nottingham
G. F. Downing



INVENTOR

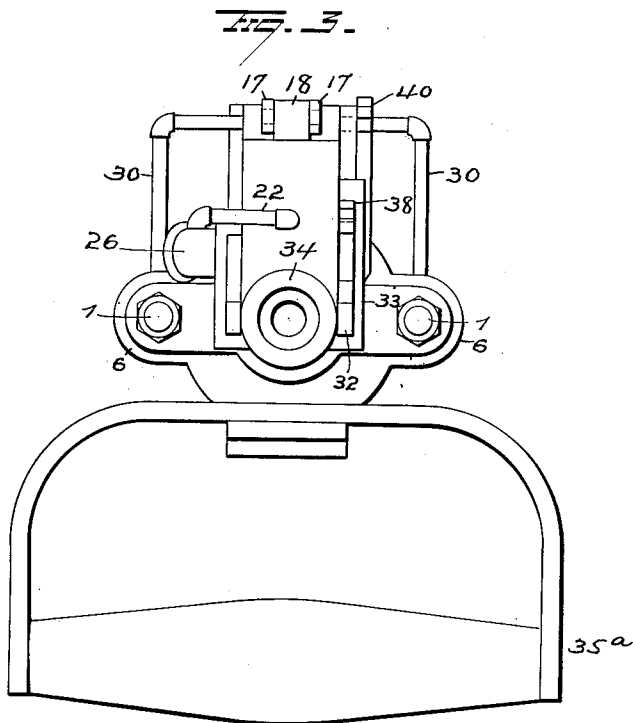
S. B. Stewart
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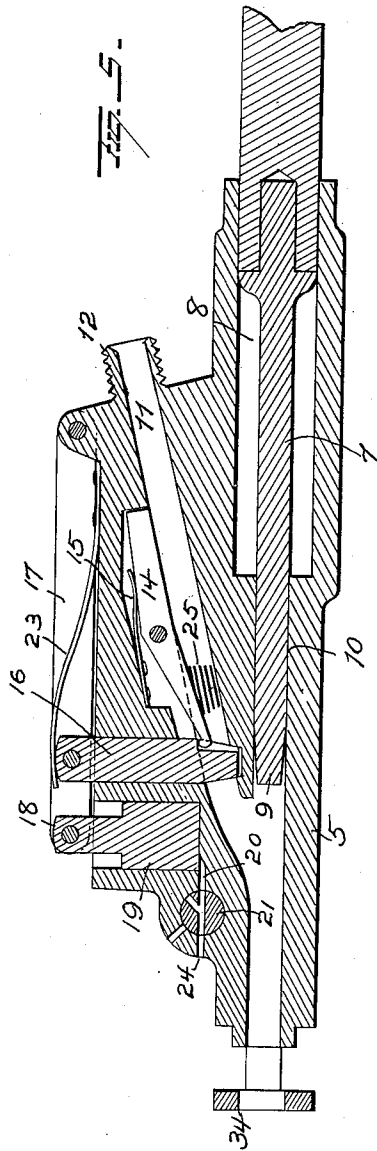
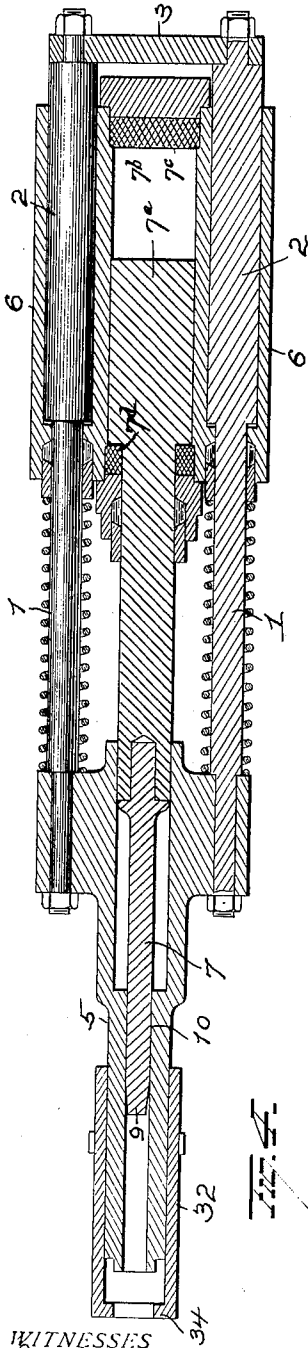
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3 SHEETS—SHEET 3.



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INVENTOR

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UNITED STATES PATENT OFFICE.

SCOTT B. STEWART, OF AUGUSTA, MAINE.

PNEUMATIC NAIL-DRIVER.

No. 902,620.

Specification of Letters Patent.

Patented Nov. 3, 1908.

Application filed July 10, 1906. Serial No. 325,509.

To all whom it may concern:

Be it known that I, SCOTT B. STEWART, a resident of Augusta, in the county of Kennebec and State of Maine, have invented certain new and useful Improvements in Pneumatic Nail-Drivers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in pneumatic nail drivers, the object of the invention being to provide improved means for feeding the nails into position in advance of a pneumatic hammer to drive them, and the invention consists in certain novel features of construction and combinations and arrangements of parts as will be more fully hereinafter described and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in side elevation illustrating my improvements. Fig. 2 is a top plan view. Fig. 3 is an end elevation. Fig. 4 is a view in longitudinal section, and Fig. 5 is an enlarged view in longitudinal section of the nose portion of the apparatus.

1, 1, represent parallel rods, having pistons 2, 2, thereon, and connected at their rear ends, by a cross bar 3, and at their forward ends, these rods 1, 1, are secured to the cross head 4 on the nose portion 5 of the machine or apparatus.

Mounted on the pistons 2, 2, are cylinders 6, 6, carrying the hammer 7, and movable on the pistons by the pressure of air or other fluid, as will more fully hereinafter appear. The rear portion of the hammer is provided with a head 7^a disposed in the space 7^b between the cylinders 6, 6, and at respective ends of the space 7^b, cushions 7^c, 7^d are located so as to engage the head 7^a. The space 7^b is longer than the head 7^a so that the cylinders will move a short distance before the head 7^a is engaged by the cushion 7^c, and hence there will be a "hammer action" between the driving cylinders and the head 7^a of the hammer 7. The forward end of the hammer 7 is movable in a guide channel 8 in the nose 5, and carries a contracted nail driving plunger 9 at its forward end, movable in a channel or throat 10 in the nose.

The nose portion of the machine, which is shown in section, in Fig. 5, is provided with

a passage 11, having a nipple 12 at its outer end, for the attachment of an air tube or hose 13 for forcing the nails, by the current of air, into the passage 11. The internal diameter of this tube 13 is just sufficient to permit the free passage of one nail at a time, the point of the rear nail resting against the head of the nail in front, and the nails are prevented from any retrograde movement by means of catches or dogs in the tube.

In the upper portion of passage 11, is a dog 14, pivoted between its ends, and provided with a spring 15 exerting downward pressure on this end of the dog, and the forward end of the dog is held depressed by a plunger 16, which also extends across the passage 11 and prevents the movement of a nail into channel 10 in front of plunger 9, until the proper time. The plunger 16 also serves as a valve to close communication between the channel 11 and the throat 10. The upper end of the plunger 16 is connected with a pivoted arm 17, the latter being connected at its free end to the end of a stem 18 on a piston 19. Piston 19 is located in a chamber in the nose 5, and an air duct 20 communicates with the bottom of this chamber.

A three-way valve 21 is located in the duct or passage 20, and a small pipe 22 connects the duct 20 with a nozzle or coupling 26, so that when the valve 21 is opened, by mechanism to be hereinafter explained, air will flow from said nozzle or coupling, through pipe 22 raise piston 19 and plunger 16, and when the valve is returned to its former position, a spring 23 will depress plunger 16 and piston 19 and eject the air below piston 19 through an exhaust port 24 with which the three-way valve 21 communicates.

The air from passage 11 escapes through a grating 25 in said passage to the nozzle 26, the latter being connected by a hose 27 with a nozzle 28 on an air chamber 29 at the cylinder end of the machine, and this air chamber 29 is connected by small pipes 30 with cylinders 6, 6, to direct the air thereinto between the ends of the cylinders being pistons 2, 2, to drive the hammer forward. A valve 31, similar to valve 21, is located in air chamber 29 to control the passage of air to the cylinders, and this valve 31, and the valve 21, are controlled by a trip frame 32, which will now be explained.

The trip frame 32 is mounted to slide in suitable guides 33 on the machine, and is pro-

vided at its forward end with an angular ring 34 in advance of the discharge end of the nose 5, and is normally held projected forward by springs 34^a.

5 A bar 35 is secured to the rear end of the machine, extends beneath the same, and has a handle 35^a secured thereto, and a strap or band 37 may be passed around this bar 35 and the operator's arm or body, to assist him
10 in properly holding the machine.

When the machine is placed in position for operation and the angular ring 34 pressed against the place where a nail is to be driven, the trip frame 32 will be forced rearward (or
15 the machine proper moved forward) to compel a catch 38 on a spring arm of the trip frame, to engage a trip arm 39 on valve 21, and a catch 40 on a spring arm of said frame 32 to engage a trip arm 41 on valve 31, and
20 open both valves. Air will raise piston 19 and plunger 16, to permit a nail to be moved forward into channel or throat 10, and the rear end of dog 14 will engage the head of the next nail and prevent its forward movement.
25 A lug 42 will engage another arm 43 on valve 21 to shut off the passage of air to the piston 19, permitting the piston and plunger 16 to be forced down by the spring 23 to compel the parts in the nose to assume their former positions. The hammer will be operated by the
30 air to drive the nail in channel or throat 10, and as the hammer reaches its forward end of stroke, an arm 45 on valve 31 (which valve will be carried forward with the cylinders 6 without moving the frame 32) will strike a
35 shoulder 44 on trip frame 32 and effect a closing of said valve 31. Springs 46 will return the hammer to its former set position.

When the hammer is removed from the
40 work, the spring arms having the catchers 35 and 40 will, in the downward movement of the frame 32, snap over the ends of trip arms 39 and 41 respectively, the trip arms being held against movement by stops.

45 A great many slight changes might be made in the general form and arrangement of the parts described without departing from my invention, and hence, I do not restrict myself to the precise details set forth
50 but consider myself at liberty to make such slight changes and alterations as fairly fall within the spirit and scope of my invention.

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

1. In a nail driving machine, the combination with a hammer and a member having a feed channel, of a plunger for obstructing said channel, means for moving said plunger
60 to permit the passage of a nail, a pivoted device movable in one direction by the plunger, and means for moving said pivoted device in the other direction to engage the head of a nail when the plunger is moved to unobstruct
65 the feed channel.

2. In a nail driving machine, the combination with a hammer and a member having a feed channel, a plunger for obstructing said channel, means for moving said plunger to permit the passage of a nail and a dog pivotally supported adjacent to said channel and rearwardly of said plunger, one end of said dog engaging the plunger so as to be moved in one direction thereby, and a spring for moving the other end of said dog into the feed channel when the plunger is moved to unobstruct said channel.

3. In a nail driving machine, the combination with a hammer and a member having a feed channel, of a plunger for obstructing the feed channel, a pneumatic device connected with the plunger for moving it in a direction to unobstruct the feed channel, a spring for moving the plunger in the other direction, a dog pivoted between its ends behind said plunger and having one end connected with said plunger, and a spring for moving the other end of said dog into the feed channel when the plunger is moved to unobstruct the latter.

4. In an apparatus of the character described, the combination with a pneumatic hammer, and pneumatically-operated means for feeding nails to a point in front of the hammer, a valve for the pneumatic hammer and a valve for the feeding means, of an actuator common to said valves but normally disconnected therefrom, and contact devices on said actuator and valves for tripping the latter in timed relation to effect the feed and driving of a nail, substantially as described.

5. In an apparatus of the character described, the combination with a hammer, of a nose portion in which the hammer plunger moves, a nail channel directing nails through the nose to a point in front of the plunger, a pivoted dog in said channel, a plunger across the channel closing the same and holding the dog out of the way of the nails, said dog moving into the path of nail heads when the plunger is raised to release the first nail, and pneumatic means for operating the plunger and the hammer.

6. In an apparatus of the character described, the combination with a pneumatic hammer, and a valve for regulating the passage of air thereto, of pneumatic feeding means for directing nails in position in front of the hammer, a valve for regulating the passage of air to operate the feeding means, an actuator frame movable on the apparatus, and devices on the actuator frame to move the said valves, but normally disconnected therefrom.

7. In a machine of the character described, the combination with a pneumatic hammer, and a valve for regulating the passage of air thereto, of pneumatic feeding means for directing nails in position in front of the hammer

mer, a valve for regulating the passage of air
to operate the feeding means, an actuator
frame movable on the machine frame and
projecting beyond the forward end thereof,
5 and devices on the actuator frame to move
said valves but normally disconnected there-
from.

In testimony whereof, I have signed this
specification in the presence of two subscrib-
ing witnesses.

SCOTT B. STEWART.

Witnesses:

LEWIS SELBING,
Mrs. S. A. BARNES.