C. F. McDONALD.

SAFETY DEVICE FOR PNEUMATIC HAMMERS.

APPLICATION FILED JULY 17, 1913.

1,101,464.

Patented June 23, 1914.

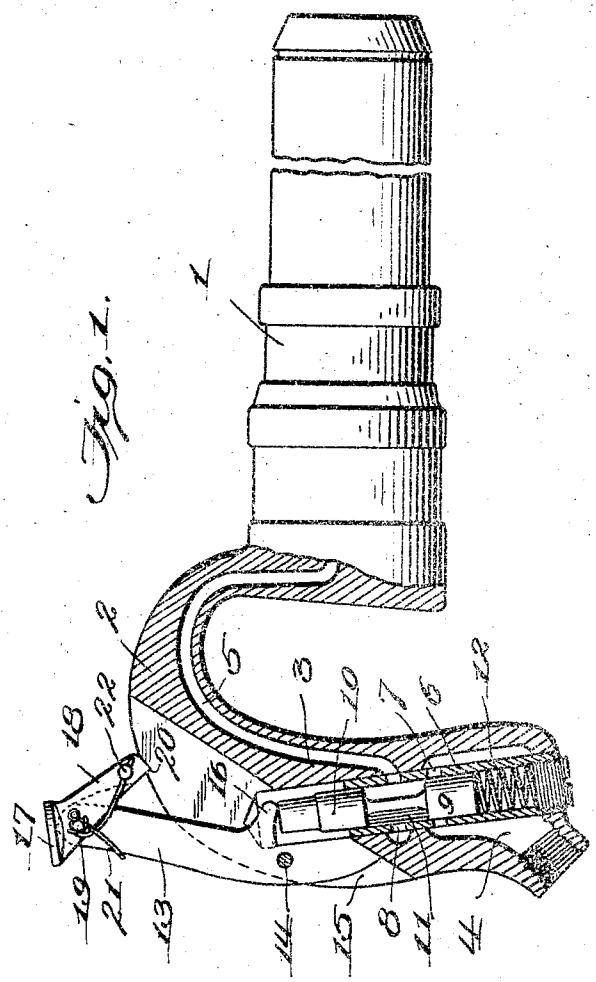


Fig. 1.

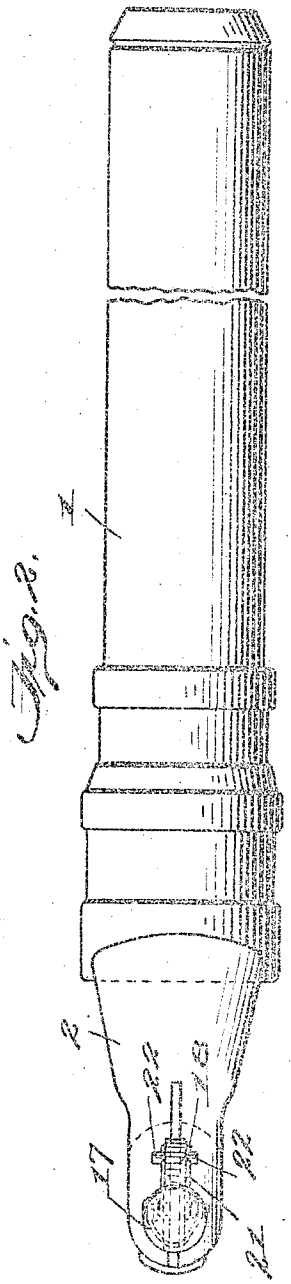


Fig. 2.

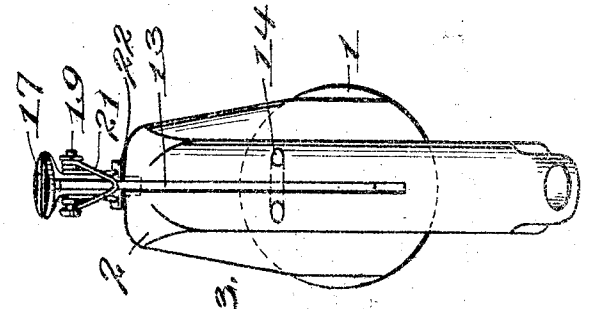


Fig. 3.

Witnesses:

Inventor

Charles F. McDonald

By James L. Norris

Attorney

UNITED STATES PATENT OFFICE.

CHARLES F. McDONALD, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO JOHN B. MUNTZ, OF PHILADELPHIA, PENNSYLVANIA.

SAFETY DEVICE FOR PNEUMATIC HAMMERS.

1,101,464. Specification of Letters Patent. Patented June 23, 1914.

Application filed July 17, 1913. Serial No. 779,594.

To all whom it may concern:

Be it known that I, CHARLES F. McDONALD, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented new and useful Improvements in Safety Devices for Pneumatic Hammers, of which the following is a specification.

This invention relates to improvements in pneumatic hammers, and the primary object of the invention is to provide a safety device which will prevent opening of the throttle of the hammer except when manipulated by the hand of the operator, that is to say, the throttle-operating lever cannot be accidentally operated by the striking of the foot or any other object against the same while the hammer is lying upon a scaffold or other support, experience having shown that hammers as heretofore constructed, when started, accidentally caused the rivet-set or other tool used in the end thereof to be discharged from the hammer with serious consequences to the operator or to persons working in the vicinity.

The automatic safety device provided by the present invention is very simple in its construction, it is capable of being applied readily to hammers of the types now generally used, and it is capable of being manipulated with facility by the operator.

To these and other ends, the invention consists in certain improvements, and combinations and arrangements of parts, all as will be hereinafter more fully described, the novel features being pointed out particularly in the claims at the end of the specification.

In the accompanying drawing:—Figure 1 is a view, partly in section, of a pneumatic hammer provided with an automatic safety device embodying the present invention; Fig. 2 is a top plan view of the hammer as shown in Fig. 1; Fig. 3 is an end view of the hammer looking toward the handle end thereof.

Similar parts are designated by the same reference characters in the several views.

The present invention is applicable generally to pneumatic hammers of the types now in use and in the present instance it is shown in connection with a hammer of the well known type which embodies a barrel or cylinder 1 which contains the reciprocatory piston and a handle 2, the latter having a grip portion 3 to be engaged by the hand of the operator whereby the hammer is held in proper position during its operation. The handle portion of the hammer has an inlet connection 4 through which the motive fluid is supplied and a passageway 5 through which the motive fluid flows to the reciprocatory piston of the hammer. It is common to provide a throttle valve to control the operation of the hammer by governing the flow of motive fluid from the inlet 4 to the passage 5. In the present instance a bushing 6 is fitted into the grip portion of the handle, this bushing having ports 7 through which the motive fluid is adapted to flow from the inlet 4 to the interior of the bushing, and the bushing is also provided with ports 8 through which the motive fluid is adapted to flow from the inside of the bushing outwardly and into the passageway 5 leading to the piston. The valve in the construction shown is adapted to move axially within the bushing, it having heads or pistons 9 and 10 which fit closely within the bushing and an intermediate fluted portion 11 which, when the valve is moved in one direction, will extend between the ports 7 and 8 and thereby establish communication between them whereby motive fluid may flow from the inlet 4 to the passageway 5. Normally, however, the lower head or piston 9 on the valve will lap over and close the ports 7, thereby preventing the flow of motive fluid from the inlet 4 into the bushing. A compression spring 12 is provided to operate on the lower end of the valve and thereby maintain it in normally closed position. The valve is operated by a member adapted to be manipulated by the thumb of the operator while the grip portion of the handle is grasped by the hand. In the present instance, this valve-operating member is in the form of a lever 13 which is pivoted at 14 in a slot 15 formed in the grip portion of the handle, the lever having a projection 16 which is adapted to bear upon the upper end of the throttle valve whereby when the upper end of the lever 13 is pushed forwardly by the thumb of the operator's hand the throttle valve will be moved downwardly

against the compression of the spring 12 and the motive fluid will then be admitted to the piston of the tool. The construction just described is commonly used upon pneumatic tools of this type.

The present invention provides an automatic safety device which will prevent operation of the lever or member 13 to open the throttle valve except when the tool is grasped by the hand of the operator and said lever or member is unlocked or released. This automatic safety device in the present instance embodies a thumb-piece 17 which is attached to a pair of arms 18, the latter straddling the upper or free end of the lever or member 13 and being pivoted thereto by the pin 19. The arms 18 are adapted to engage in notches 20 formed in the adjacent portion of the handle when the throttle is in closed position, and a spring is provided which operates to normally retain the safety device in locked engagement with the notches 20. In the construction shown, a spring 21 is employed which has its intermediate portion bearing against the rear edge of the lever or member 13, its arms are coiled about the pivot pin 19, and the ends of the spring extend through a pin 22 arranged near the free ends of the arms 18, the spring acting in a direction to draw the safety device into position to engage the notches 20. The automatic safety device constitutes in effect a trigger which must be released by the thumb of the operator before the throttle-operating lever or member can be actuated. In order to start the hammer into operation, it is only necessary for the operator to grasp the grip portion of the handle in the usual way and to press the thumb forwardly against the thumb-piece 17 of the trigger, the latter being then tilted in a direction to disengage the arms 18 from the notches 20 whereupon the lever or member 13 can be moved forwardly to open the throttle in the usual way. When, however, the throttle is closed, the spring will operate automatically to engage the trigger in the notches 20 and to retain the trigger in this position, the throttle-operating lever or member 13 at this time being locked from operation and the throttle cannot be opened by the striking of any object against it.

I claim as my invention:—

1. The combination with a pneumatic hammer having a throttle valve and a controlling member therefor, of a trigger carried by said member for preventing operation thereof and for actuating said member when released.

2. The combination with a pneumatic hammer having a throttle-operating member, and a trigger carried by said member and normally operative to prevent valve-opening movement thereof, said trigger constituting means for actuating said member when released.

3. The combination with a pneumatic hammer having a throttle-operating member, and a safety device carried by said member and operative automatically to prevent operation thereof, said device having a thumb-piece for releasing it and for operating said member.

4. The combination with a pneumatic hammer having a throttle-operating lever, of a trigger pivoted thereon and having a portion to engage the hammer handle to lock said lever from operation, a spring for normally holding the trigger in locked position, and a thumb-piece for releasing the trigger and operating the lever.

5. The combination with a pneumatic hammer provided with a handle having a notch therein and a throttle-operating member, of a trigger of yoke-shape straddling and pivoted on said member, and a spring operative on said trigger to engage it in said notch on the handle, the trigger having a thumb-piece which when depressed disengages the trigger from said notch and moves said member into throttle-opening position.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

CHARLES F. McDONALD.

Witnesses:
WILLIAM JOHNSTON,
JOHN A. COYLE.