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[54] **SAFETY AIR GUN**
1 Claim, 5 Drawing Figs.

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295, 525, 526, 299, 498, 518, 597; 222/402.22

[56] **References Cited**

UNITED STATES PATENTS

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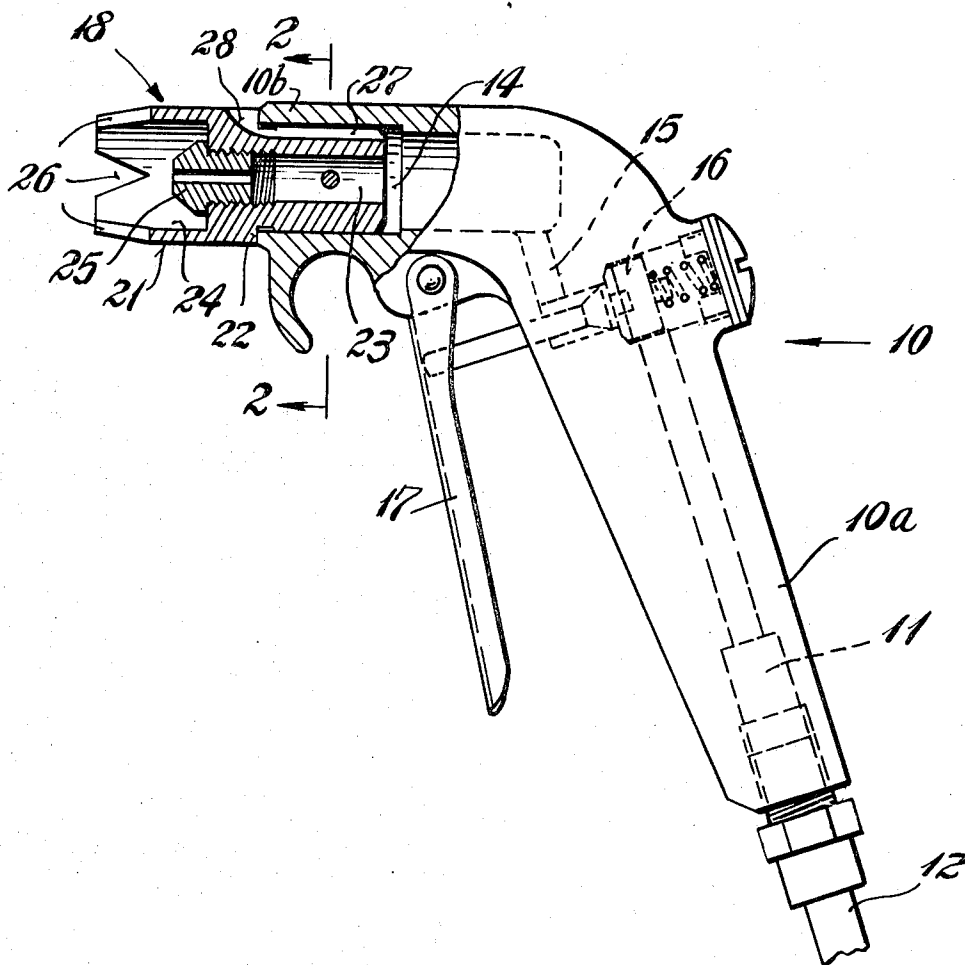
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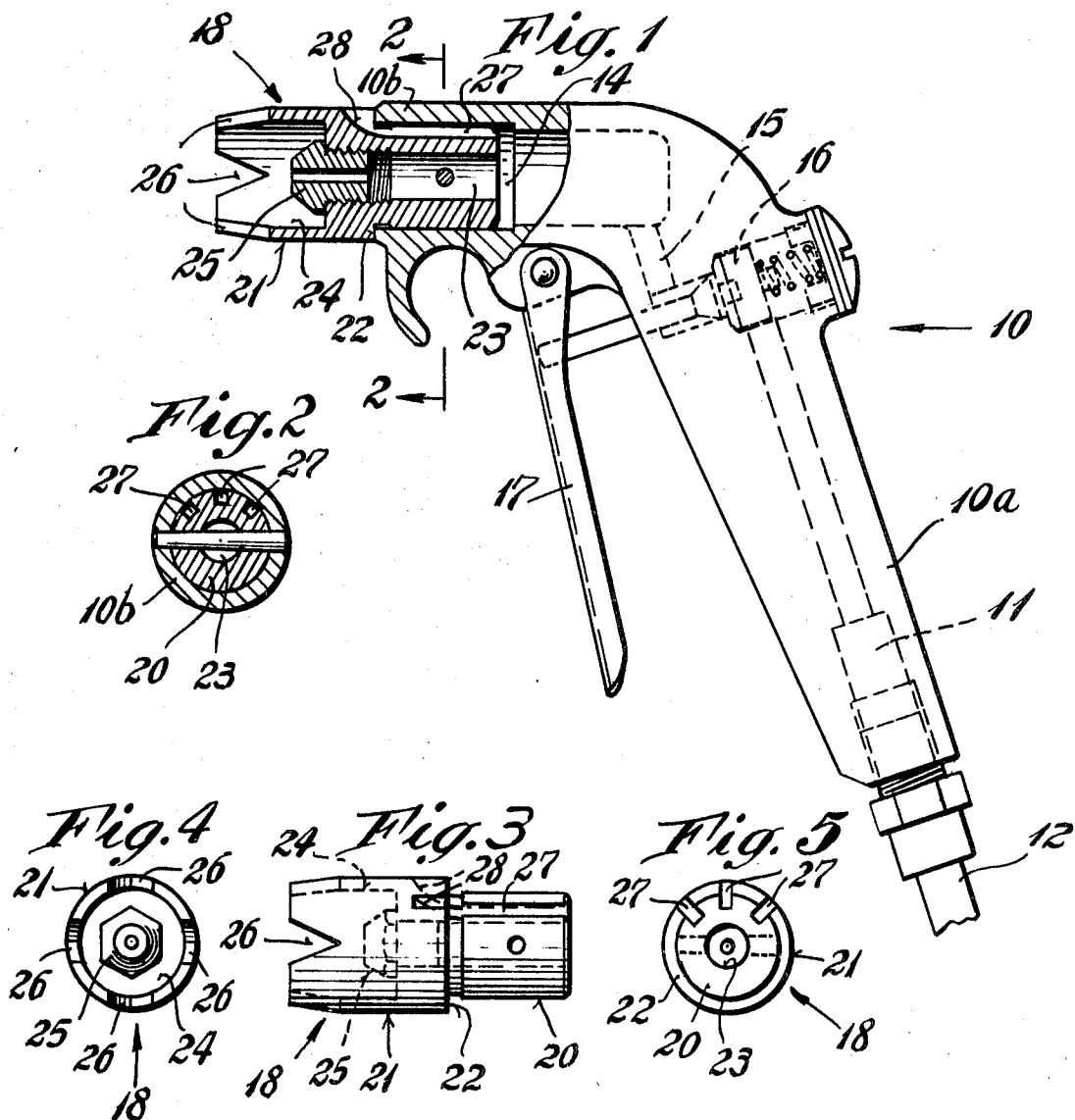
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ABSTRACT: A safety air gun having a nozzle unit which protects the nozzle tip against direct contact, has pressure-reducing vents in its end surface to produce a safe pressure thereat and provides a protective air curtain or screen extending therefrom to protect against flyback.





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SAFETY AIR GUN

The present invention is an improvement over U.S. Pat No. 2,917,244. In the patented construction the nozzle tip is exposed and direct contact thereof with the user's skin may cause serious injury. Also, the device provides a swirling shield of greater pressure than at the nozzle tip to move the chips and the like forwardly.

In accordance with the present invention the nozzle unit on the safety air gun is formed with a sleeve which surrounds the nozzle tip and prevents direct contact therewith and has vent notches in the end of the sleeve to reduce the air pressure at the end of the unit to a safe value.

Further, the nozzle unit has channels extending from the outlet chamber of the gun to receive air therefrom, which channels have outwardly curved end portions for directing the air laterally to form a safety curtain to protect the user from the flyback particles.

Other features and advantages of the invention will be apparent from the specification and claims when considered in connection with the accompanying drawing in which:

FIG. 1 is a side view, partly in section, of the invention.

FIG. 2 is a sectional view taken along line 2-2 of FIG. 1.

FIG. 3 is a side view of the nozzle unit.

FIG. 4 is an end view of FIG. 3 looking from the left.

FIG. 5 is an end view of FIG. 3 looking from the right.

As shown in the drawings, a housing 10 is provided with an inlet passage 11 to be connected by a hose 12 to a suitable source of air under pressure (not shown). The housing has an outlet chamber 14 to be connected by passage 15 to the inlet passage 11 through a manually operated valve 16. Preferably, the housing 10 is pistol shaped with inlet passage 11 in the grip portion 10a, the outlet chamber in the barrel portion 10b and the valve actuated by a manually actuated trigger 17. The outlet chamber 14 opens on the end of the body and receives a nozzle unit 18 therein.

As shown, the nozzle unit 18 is a sleeve having the outer surface of the inner end 20 engaging the walls of the outlet chamber and an enlarged outer end 21 forming a shoulder 22 about midway of the unit engaging the end of the housing.

The sleeve has a rear bore 23 communicating with the outlet chamber and an enlarged forward bore 24 extending to the end of the sleeve. The rear bore carries a nozzle tip 25 threaded therein and projecting into the enlarged bore 24 and which reduces the pressure of the air feeding through the device.

The forward end 21 of the sleeve projects beyond the nozzle tip and prevents accidental direct contact with the air under pressure emerging from the tip. The end of the sleeve is provided with a plurality of vent notches 26 which terminate outwardly of the tip and which act to further reduce the pressure at the end of the unit to a safe value.

Further, the inner end 20 of the sleeve is provided with a

plurality of axially extending channels 27, preferably parallel to each other and to the axis of the nozzle unit, with each channel communicating with the outlet chamber and extending into the enlarged outer end and terminating in an outwardly curved end surface 28. These channels tend to reduce the air pressure in the outlet chamber 14 and the curved end surfaces of the channels direct the air outwardly of the gun. As illustrated, the preferred arrangement has a plurality of channels 27 disposed on the top of the end member (FIG. 5) so that the air from the outlet chamber which is deflected outwardly forms an air screen or barrier to protect the user from flyback particles.

For example, air at about 100 p.s.i. is fed to the inlet passage. This air is reduced to about 60 p.s.i. as it goes into the large outlet chamber. The longitudinal passages 27 further reduce the pressure in the outlet chamber. The air, as it passes through the nozzle tip from the outlet chamber, goes into the enlarged bore 24 of the nozzle unit providing the required velocity which is effective as a cleaning medium. The vent notches in the forward end of the unit further reduce the pressure to a substantial degree so that it is a safe pressure at the end of the unit.

From the foregoing it will be seen that the safety of the air gun is enhanced by the construction of the present invention wherein the nozzle tip is protected from direct contact by the forwardly projecting outer end of the sleeve, the air pressure is reduced in successive steps so as to provide a velocity which is sufficiently strong to clean and yet be of a safe value is present at the outer end of the nozzle unit, and an air screen is provided to protect the user.

Variations and modifications may be made within the scope of the invention and portions of the improvements may be used without others.

I claim:

1. In a safety air gun having a housing, an air inlet port to be connected to a supply of air under pressure, said housing having an outlet chamber and a manually actuated valve disposed between the inlet port and outlet chamber to control the flow of air therebetween, and a nozzle unit secured in the outlet chamber to direct air therefrom, the improvement wherein said nozzle unit comprises a sleeve having an inner end secured in the outlet chamber and an enlarged outer end forming a shoulder engaging the end of the housing, said inner end having a bore carrying a nozzle tip opening into an enlarged bore in said enlarged outer end of the sleeve, the outer end of the sleeve having a plurality of venting notches extending inwardly and terminating outwardly of said tip, and said sleeve having a plurality of longitudinal parallel slots on the upper surface of the inner end terminating in an outwardly curved surface in the enlarged outer end to receive air from the outlet chamber with the curved surfaces directing the air outwardly from the sleeve to form a protective air barrier against flyback particles.