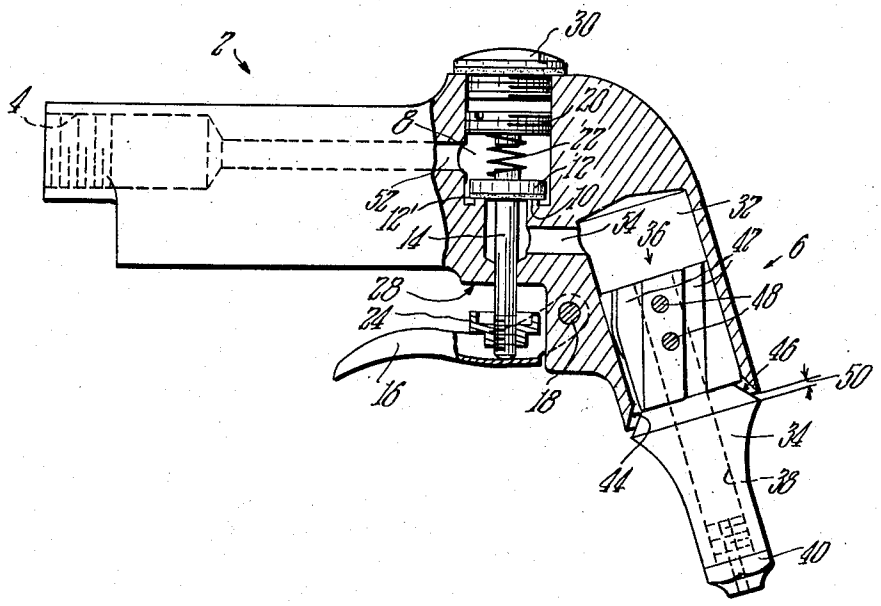
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AIR GUN

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INVENTOR.
Linus A. Gavin
BY Frederick H. Tachman.
Rossi Rossi, Attys.

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AIR GUN

Linus A. Gavin, Longmeadow, Mass., and Frederick H. Jackman, Waterbury, Conn.

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This invention relates to new and useful improvements in air guns such as used by mechanics and others for blowing chips, turnings and the like from machined work and from holes and cavities therein.

The principal objects of the invention are directed to the provision of means in an air gun of the type disclosed in U. S. Letters Patent No. 2,320,964 of June 1, 1943 to facilitate the delivery of a jet of air at predetermined pressures within a range of pressures in combination with means for projecting a conical swirling stream of air forwardly around the air jet to prevent chips and turnings dislodged by the air jet from striking the operator.

Piping for compressed air is common in machine shops and the like and for one reason or another, in a certain department or location, thereof, it may be desired that the air from the jet not exceed a certain predetermined pressure. As an example, the prevailing air pressure may be one hundred pounds per square inch while it may be desired that the usable air pressure not exceed seventy-five pounds as a maximum.

To that end, according to one feature of the invention, internal means is provided in the air gun hereof which is adjustable to limit the opening movement of the air valve thereby to limit the air jet pressure to the predetermined maximum.

According to another feature of the invention, external manually adjustable means is provided to enable the operator of the gun to vary the jet pressure within a range up to the predetermined seventy-five pound maximum.

As a further feature of the invention, means is provided for providing a swirling conical air stream which is projected forwardly around the air jet as a safeguard to prevent chips, turnings and the like from striking the operator. The swirling conical air stream is an advantage as protection for the operator.

The novel features of the invention will be disclosed in the present preferred form thereof in connection with the accompanying drawings wherein;

The figure is a combined side elevational and longitudinal sectional view of an air gun embodying the novel features of the invention.

Referring now to the drawings more in detail the invention will be fully described.

A gun body is represented by **2** which has a grip end provided with an inlet **4** for connection to the flexible hose of a compressed air line. The outlet or discharge end of the body is represented by **6**.

A well or cavity **8** is provided intermediate the opposite ends of the gun which has a valve seat **10** formed therein, as shown.

A valve **12** has a resilient seat **12'** and a lower stem **14** reciprocable in the body. In its closed position, the valve seat **12'** rests on the seat **10**, as shown in the drawing.

A trigger **16** of usual form is pivoted at **18** to the body and the lower end of the stem **14** normally rests thereon.

As the trigger is operated, the valve **12** is elevated from off its seat to an open position above the seat.

The upper portion of the well is threaded and an internal valve stop **20**, in screw threaded engagement therewith, may be screwed up or down for adjustment. A spring **22** between the stop **20** and valve **12** urges said valve onto its seat when the trigger **16** is released.

An external manually engageable stop **24** is adjustably screw threaded on the lower end of the stem **14** and its upper side is adapted to abut a shelf **28** on the lower side of the body to limit upward movement of the stem and valve.

A closure cap **30** is in threaded engagement with the upper end of the well to close and seal the same, in the operation of the gun.

The outlet end of the gun is provided with a bore **32** and a main nozzle **34** has a body **36** disposed in said bore. The nozzle and body are provided with an air outlet passageway **38** in the lower end of which is screwed a jet **40** having an orifice, as shown, of a desired and predetermined area.

The body **36** of the main nozzle is provided with plural air grooves **42** thereabout and the inner periphery of the body outlet and main nozzle are formed with angularly related annular surfaces **44** and **46**, which are spaced apart.

The body **36** of the main nozzle is secured in the bore **32** by pins **48** therethrough, as shown, to provide an annular outlet **50** for the desired width or thickness of conical air stream therefrom.

A passageway **52** provided in the body extends from the air inlet **4** to the well **8** above the valve **12** and a second passageway **54** extends from the well **8** below said valve **12** to the bore **32**. Air entering the inlet of the gun will be discharged from the jet **40** and annular outlet **50** when the valve is elevated to upper open position by the trigger.

The surfaces **44** and **46** may be varied and related as desired to provide the angle of the cone of air discharged from the outlet **50**. The part **36** is pinned in the body in such a way as to provide the desired width of opening **50** and thereby the width of conical air stream.

The internal stop **20** may be adjusted to limit opening movement of the valve by the trigger and thereby limit the air pressure discharged by the jet **40** to a maximum. On release of the trigger the spring **24** urges the valve onto its seat to cut off the flow of air.

The external stop **24** may be manually adjusted so as to limit upward opening of the stem and valve and thereby provide a desired pressure at the jet which may be relatively less than the maximum. Or the stop **24** may be adjusted so that the valve abuts the stop **20** to obtain the maximum pressure from the jet member **40**.

Thus air pressure at the jet may be a predetermined maximum by adjustment of the internal stop or less than maximum by manual adjustment of the external stop. In other words the manual adjustment may be inoperative so that pressure is controlled by the internal stop or pressure may be under the control of the external stop, all as may be desired.

The grooves **42** of the nozzle body **36** may be of various widths and they may be disposed at any desired angle relative to the longitudinal axis of the body. There may be as many grooves as desired so that with said angular grooves the desired swirling of the conical air stream may result.

Various changes and modification may be made in the form of the device without departing from the spirit and scope of the invention and it is desired therefore to be limited, if at all, by the appended claims rather than by the foregoing disclosure.

What it is desired to claim and secure by Letters Patent of the United States is:

1. An air gun comprising in combination, a body having an air inlet and discharge jet means and a well provided with a valve seat, said body having air passageways from said inlet to said well above said seat and from said well below said seat to said jet means, a valve engageable with said seat in closed position thereof having a stem extending through said body, spring means urging said valve towards said seat, a trigger operable to act on and elevate said stem to move said valve from said seat, stop means adjustable in said well engageable by said valve in upper position thereof, and a stop member independently adjustable on said stem externally of the body and adapted to abut said body as said stem is elevated by said trigger.

2. The combination in an air gun of, a body having an outlet end provided with a bore, a nozzle member having an inner elongated body fixed in said bore and an air jet in the outer end thereof, said nozzle body provided with circumferentially spaced air grooves on the

outer side thereof disposed angularly relative to the longitudinal axis thereof for swirling air to an annular outlet, said body of the nozzle member and outlet end of the bore of the body being formed and related to provide an annular relatively narrow outlet for receiving air from said grooves and for discharging air.

3. An air gun set forth in claim 2 wherein said nozzle body and outlet end of the base of the body at said annular outlet are formed with relatively spaced and continuous angularly related faces for forming swirling air therefrom into a cone thereof around said air jet.

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