Oct. 22, 1963 T. PENKOFF 3,107,861

AIR NOZZLE

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Fig. 1.

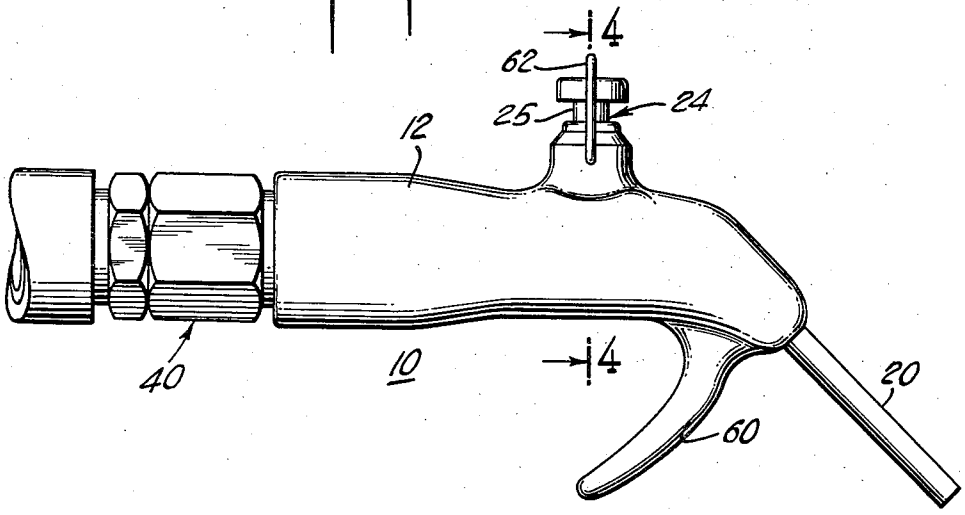


Fig. 4.

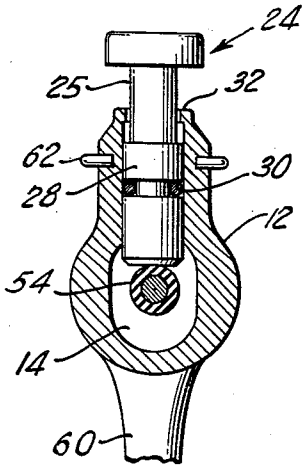
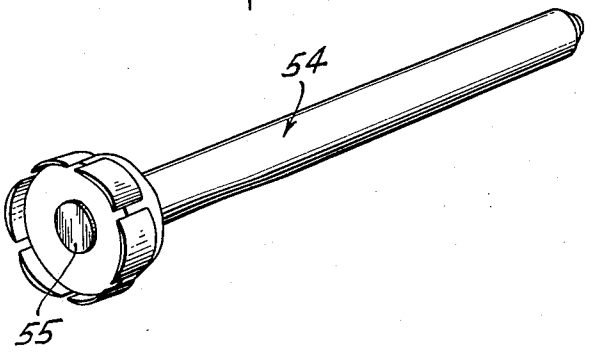


Fig. 5.



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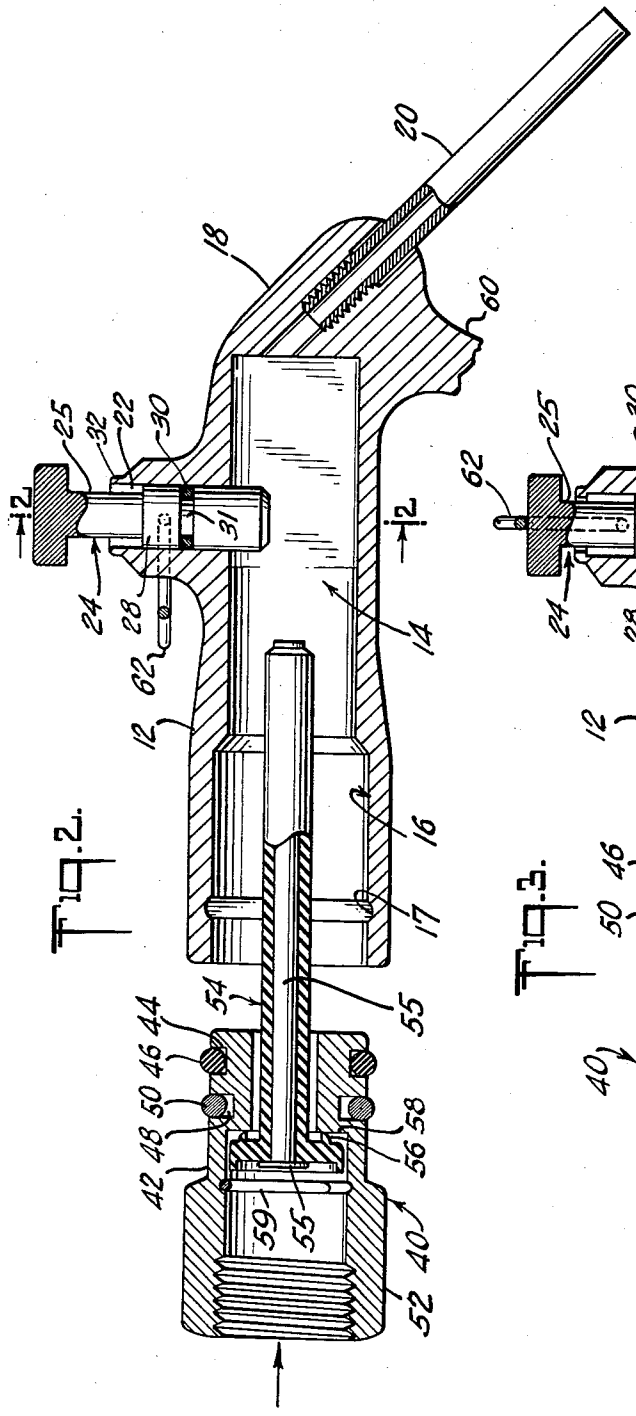


FIG. 2.

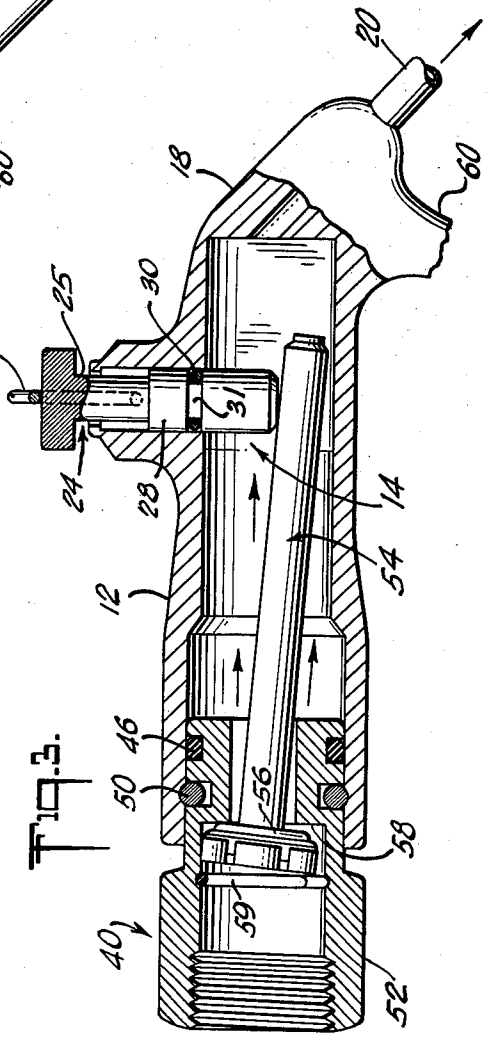


FIG. 3.

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AIR NOZZLE

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1 Claim. (Cl. 239—577)

This invention relates to a nozzle for air hoses.

An object of this invention is to provide an improved push-button air nozzle which is simple and rugged in construction and reliable in operation.

Another object is to provide such a nozzle which can be manufactured economically on a mass-production basis.

These and other objects will in part be understood from and in part pointed out in the following description.

One of the handiest tools in a machine shop or garage, is an air hose and nozzle for blowing dirt and the like off a workpiece. Now, the nozzle should be easy to control with one hand, and of course it must be able to stand rough use. The present invention provides an improved nozzle of this kind.

A nozzle provided according to the invention includes a body portion made from a one-piece casting. The internal design of the body is such that it can be cast at very low cost and so that only a minimum amount of machining is required to finish it. A push-button type of valve is then fitted into the body. The parts of this valve are in themselves also very simple and are arranged so that they can be permanently assembled in the body with practically no effort. Thus the cost of making this nozzle is kept very low, yet it is highly effective and virtually indestructable.

A better understanding of the invention together with a fuller appreciation of its many advantages will best be gained from the following description given in connection with the accompanying drawings wherein:

FIGURE 1 is a side view of an air nozzle embodying features of the invention;

FIGURE 2 is an enlarged longitudinal section view of the nozzle, with parts partly exploded;

FIGURE 3 is a view similar to FIGURE 2 but showing it fully assembled and with its push-button valve fully open;

FIGURE 4 is a cross-section taken as indicated by lines 4—4 in FIGURE 1; and

FIGURE 5 is a perspective view of the air valve stem.

The nozzle **10** seen in FIGURES 1–4 includes a body **12** designed so that it can easily be cast. Advantageously it is made of aluminum and is formed with a large central bore **14**. The rear part of this bore is machined to give a smooth cylindrical surface **16** and a shallow retaining groove **17**; the forward portion of the bore is left "as cast." Drilled obliquely through the front end of body **12** into bore **14** is an exit hole **18** into which is threaded a thin metal tube **20**. This tube may be replaced by another of different size, length or shape depending upon the requirements of the job where nozzle **10** is to be used.

Extending transversely through body **12** into the forward end of bore **14** is a smaller opening **22** which is formed in casting the body and which is thereafter machined to have a smooth cylindrical wall. Inserted into opening **22** is a one-piece push-button plug **24**. This plug has a necked-down upper part **25** and a flat top. The lower part **28** of the plug closely fits opening **22** and carries an O-ring gasket **30** around a waist groove **31** to provide an air seal. As seen in FIGURE 2, the upper edge of body **12** surrounding opening **22** is a thin, upstanding annular lip **32**. This lip is an integral part of body **12** and is formed during casting and machining of it. This lip, as seen in FIGURE 3, after assembly of push-button **24** is cammed in by squeezing it with a tool, such as pliers. The plug is thereafter held captive within body **12**, though free to slide up and down for the length of portion **25**.

As seen in FIGURE 2 in exploded relation to body **12**, a connector plug **40** is adapted to fit into the machined rear end of bore **14**. The forward end **42** of connected plug **40** is machined to fit snugly within the machined end **16** of the bore. This forward end has a groove **44** which carries an air-sealing gasket **46**, and a second groove **48** which loosely carries a snap ring **50**. When the connector plug is pressed into body **12**, as seen in FIGURE 3, this ring snaps into groove **17** thereby permanently fastening the parts together. However, the connector plug is free to turn within the body. Thus when an air hose, seen in dotted lines in FIGURE 1, is screwed into the threaded rear end of connector plug **40**, the hose does not twist against nozzle **10**.

As seen in FIGURES 2 and 3, connector plug **40** has an axial opening **52** into which is inserted a valve stem **54**. The latter, see also FIGURE 5, is moulded of resilient plastic, such as plasticized vinyl or polyethylene, and has a metal reenforcing core **55**, advantageously an ordinary nail. Underneath the cap-like end of valve stem **54** is an annular lip **56** which, as seen in FIGURE 2, seats flush against shoulder **58** within the connector plug. As seen in FIGURE 3, deflection of the forward end of the valve stem, by downward displacement of push-button plug **24**, unseats lip **56** from flush contact with shoulder **58**. This permits air to flow through the nozzle. The amount of deflection of the valve stem determines the amount of air flow, very fine control of the flow is thus easily obtained. When the push button is released, normal air pressure pushes the valve stem flush against shoulder **58**, as seen in FIGURE 2, and stops air flow through the nozzle. The valve stem is kept from falling from the nozzle, when there is no air pressure, by a snap ring **59** placed in the rear of connector **40**.

As seen in FIGURE 1, the forward end of the nozzle body has an integral, curved hook **60** extending down and back. This hook not only serves as a means for hanging up the nozzle when not in use, but the hook also is a finger guard and support when the nozzle is being used. In order to hold push-button **24** down without having to keep a finger on it, there is provided a wire loop **62** which is free to swing down to release the push-button, or which can be snapped over its top as shown in FIGURE 1.

The above description of the invention is intended in illustration and not in limitation of the invention. Various changes my occur to those skilled in the art and these may be made without departing from the spirit or scope of the invention as set forth.

I claim:

An improved air nozzle comprising a rigid one-piece body portion having a large central bore and a transverse opening communicating therewith, a push button slidably mounted in said opening and extending into said bore, a separate connector plug extending into said bore and connected to said body portion and having a passage therethrough communicating with said bore, said connector plug being free to swivel relative to said body portion and to receive an air hose, a valve device including a valve stem retained in said connector plug to control the opening between said passage and said bore, the forward end of said valve step projecting into said bore in line with and transversely of said push button, said connector plug comprising a hose-receiving portion, a valve carrying portion extending into said bore, a snap ring securing said valve carrying portion in said bore, a fluid seal between said valve carrying portion

and said body portion within said bore and a snap ring in said passage between said valve device and the hose receiving end of said connector preventing the displacement of said valve device from said connector.

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