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J. A. JENSEN

2,006,833

HOSE NOZZLE

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FIG. I.

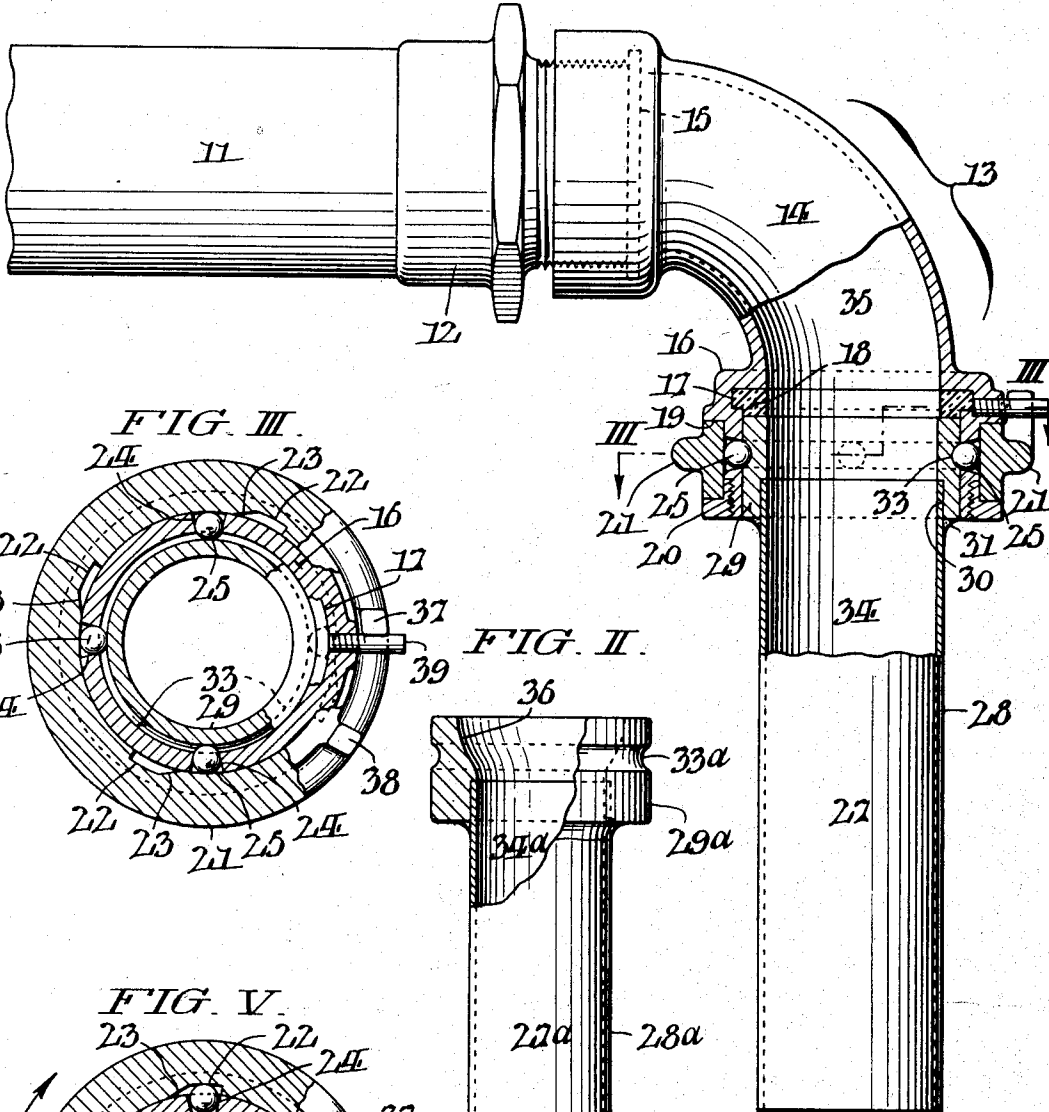


FIG. III.

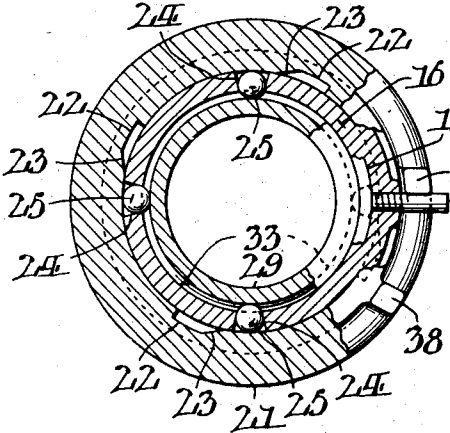


FIG. II.

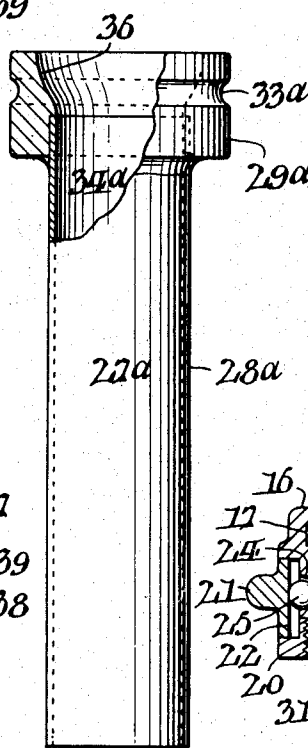


FIG. V.

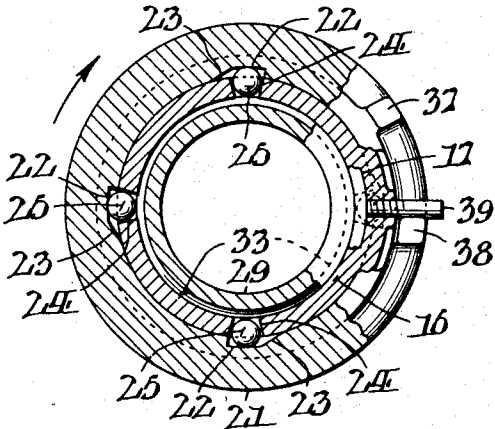
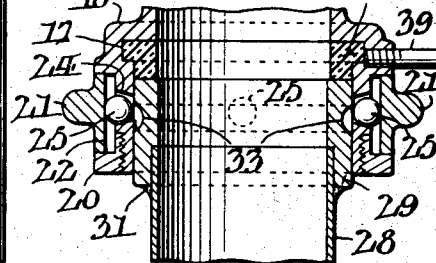


FIG. IV.



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UNITED STATES PATENT OFFICE

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HOSE NOZZLE

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2 Claims. (Cl. 285—96)

This invention relates to hose nozzles; and it has more particular reference to nozzles for the drain hoses of vehicles such as are ordinarily used in the delivery of gasoline, oils and other liquid commodities.

The filling openings of underground gasoline storage tanks of road service stations vary considerably in diameter so that tips of different sizes are ordinarily supplied for use with the nozzles on the hoses of the delivery vehicles. heretofore, reducing nipples were relied upon as a means for effecting interchange of the nozzle tips; and accordingly the operation of interchanging the nipples was not only tedious in its accomplishment, but entailed the use of wrenches or other special tools. In order to avoid this effort and trouble, the drivers of the delivery vehicles would invariably keep the smallest nozzle nipple as a permanent fixture on the hose since it could be used universally, and this choice was made notwithstanding great loss in time in charging tanks whereof the filling openings were capable of taking larger or even full size nozzles.

Considered from the broadest aspect, my invention is directed toward overcoming the above recited drawbacks, that is to say: it has for its primary object the provision of a simple and inexpensive nozzle for the drain hoses of gasoline delivery vehicles and the like, with tips which can be interchanged with the utmost facility and quickness, and without requiring the aid of any tools whatever.

An advantage of my novel hose nozzle is that it positively ensures quick attachment and detachment of the nozzle tips by partial rotation of one of the parts only.

Other objects and attendant advantages of this invention will be manifest from the following detailed description of the accompanying drawing wherein Fig. I is a fragmentary view partly in side elevation and partly in section showing my improved hose nozzle in one of the forms in which it may be embodied.

Fig. II shows a nozzle tip having a tubular discharge prolongation of a smaller diameter, capable of being interchanged with the nozzle tip shown in association with the nozzle in Fig. I.

Fig. III is a staggered horizontal section taken as indicated by the arrows III—III in Fig. I.

Fig. IV is a fragmentary sectional view of a portion of Fig. I with the parts differently positioned; and,

Fig. V is a view similar to Fig. III with the parts differently positioned.

Referring first to the embodiment of my in-

vention shown in Figs. I-V of these illustrations, the numeral 11 designates a flexible hose such as is used on vehicles employed in the delivery of gasoline, oils and other liquid commodities, the same being fitted at its end with a threaded nipple 12. My improved hose nozzle which is comprehensively indicated at 13 comprises a body member in the form of an elbow 14 which, as shown in Fig. I, screws onto the threaded nipple 12 with interposition of a compressible ring washer 15 to prevent leakage around the juncture. The mouth end of the elbow 13 is enlarged as at 16 and formed internally with a circumferential groove 17 for lodgment of the peripheral flange of an annular gasket 18. In practice, this gasket 18 is made from a soft resilient material which is resistive to erosion by the liquid commodities being carried. The enlarged mouth end 16 of the body member 14 is circumferentially recessed at 19; and a flanged annulus 20 screwed onto said mouth end forms, in conjunction with the recess 19, a perimetric groove around said mouth. Rotatably retained within this perimetric groove is a wedge ring 21, which, as shown in Fig. III, is formed internally thereof with a circumferential series of recesses 22 having cam slopes or inclines 23. The wall of the mouth end 16 of the elbow 14 is moreover formed with radial openings 24 corresponding in number to the recesses 22 in the wedge ring 21, each such opening lodging a ball 25. As shown in Fig. III, the openings 24 are tapered to retain the balls 25 while limiting inward radial movement thereof.

For interchangeable use with the body member 14 of the nozzle I provide a number of tips whereof there are two shown for the purposes of exemplification in the present instance, one designated 27 in Fig. I and another designated 27a in Fig. II, the nozzle 27a differing from the nozzle 27 in that it has a tubular prolongation 28a which is smaller in diameter than the tubular prolongation 28 of said nozzle 27, and also in a detail which will be later described. Referring again to Fig. I it will be observed that the nozzle tip 27 has a head 29 which is counter-bored as at 30 to receive the prolongation 28, the latter being in practice cut from tubing of alloy bronze or other suitable non-corrosive metal capable of withstanding rough usage. After assembling of the parts of the tip 27, they are permanently secured together by soldering or welding preferably at 31 immediately beneath the head 29, which latter is provided with a rounded circumferential groove 33. The diame-

ter of the bore 34 of the tubular prolongation 28 of the nozzle tip 27, it will be observed, corresponds exactly to the diameter of the passage 35 in the elbow 14, so that the maximum discharge flow is had with said tip.

The head 29a of the substitutable nozzle tip 27a has an external diameter corresponding to that of the tip 27 so as to fit, like the latter, into the mouth 16 of the nozzle elbow 14, and it is similarly provided with a circumferential groove 33a. The head 29a of the nozzle tip 27a is however rounded interiorly at 36 for smooth emergence of the bore 34a of the prolongation 28a with the passage 35 of the elbow 14 and minimization of the impedance to fluid flow through the nozzle.

In attaching the nozzle tip 27, for example, the wedge ring 21 is turned to the position shown in Fig. V to register its recesses 22 with the openings 24 in the wall of the elbow mouth 16 and to permit the balls 25 to retire into said recesses. Thereupon, the head end 29 of the tip 27 is inserted into the elbow mouth 16 as shown in Fig. IV until its end abuts the gasket 18, the allocation of the circumferential groove 33 of said head being such that in this position of the tip 27, the groove 33 is slightly below the level of the radial openings 24 in the wall of the elbow enlarged mouth end 16. With the nozzle tip 27 placed as just explained, the wedge ring 21 is turned clockwise, or as indicated by the arrow in Fig. V, to the position shown in Fig. III, with the result that by action of the inclines or slopes 23 of the recesses 22, the balls 25 are thrust inward of the openings 24 in the wall of the elbow 14 and forced into the circumferential groove 33 of the head 29 of the nozzle tip 27. As a consequence of the attendant wedging action between the balls 25 and the groove 33, the tip 27 will be lifted until said balls and groove are in exact alignment vertically, as in Fig. I, with attendant compression of the resilient gasket 18 to form a fluid-tight seal between the nozzle parts, and with concurrent locking together of said parts. In order to limit the extent of rotation of the wedge ring 21 the latter is provided, as shown in Figs. I, III, IV and V with a pair of spaced upward lugs 37, 38 for cooperation with a lateral stud

projection 39 on the elbow mouth end 16 of the nozzle 14. Removal of the nozzle tip 27 can obviously be effected by a reversal of the procedure which has just been described and which holds as well for the attachment and removal of the substitutable tip 27a.

From the foregoing it will be seen that the interchangeable nozzle tips are quickly attachable and detachable through a partial rotation of one part relative to the other.

Having thus described my invention, I claim:

1. In a hose nozzle, a hollow fitting having one end adapted for connection to the hose and its other or mouth end enlarged and formed with an internal groove, a peripherally-flanged annular gasket in the groove, said mouth end being exteriorly reduced and provided with a series of circumferentially-spaced inwardly-tapering radial openings; balls freely seated in said tapered-openings; a nozzle tip with an enlarged head, insertable in the fitting mouth end until its head abuts the gasket, and having an exterior surrounding groove which in such position of the parts is partially out of registration with the tapered openings; a wedge ring rotatably-embracing the exterior reduction of the fitting mouth end, a flanged annulus secured in the fitting mouth to define with its exterior reduction a perimetric-groove restraining axial-movement of the wedge ring, and circumferential-recesses with cam inclines in the wedge ring correspondingly-spaced with respect to the mouth end tapered-openings; said wedge ring, when turned to a limited degree in one direction, causing the cam inclines to advance the balls radially-inward with concurrent non-rotative axial urge of the tip head surrounding groove into registration therewith, whereby said tip is locked in position and the gasket aforesaid compressed to form a fluid-tight juncture, and when reversely turned serving to release the tip for removal.

2. The combination of claim 1 wherein the wedge ring rotary-movement is limited by spaced longitudinally-directed lugs on said ring coacting with a radial projection from the fitting mouth.

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