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OIL FILLING NOZZLE AND COUPLING

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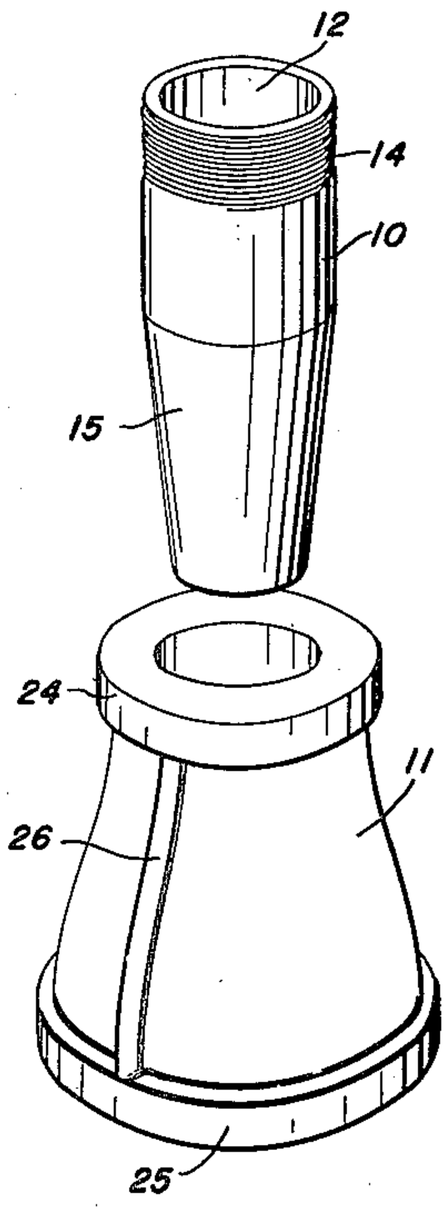


FIG. 1.


FIG. 6.

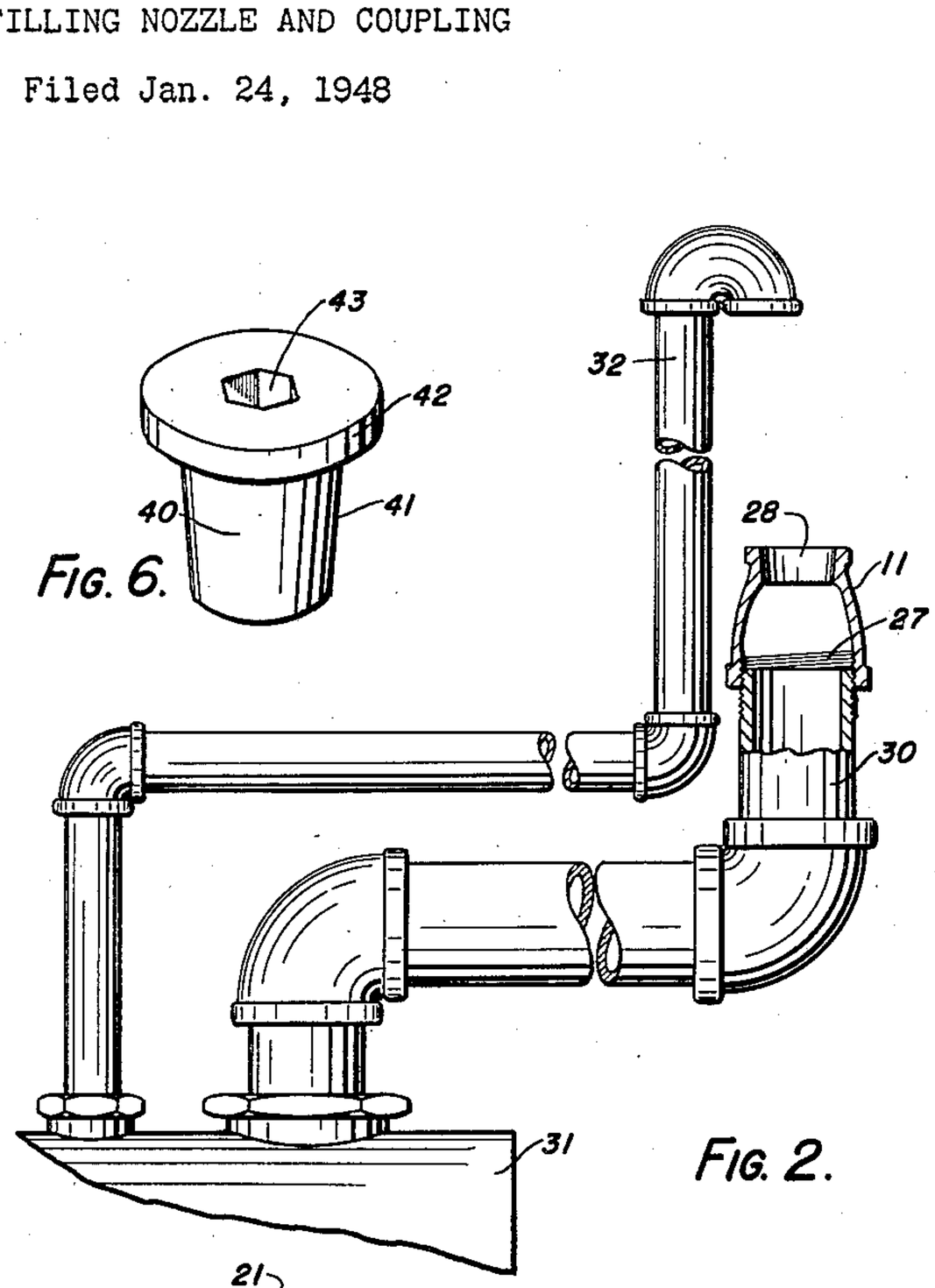


FIG. 2.

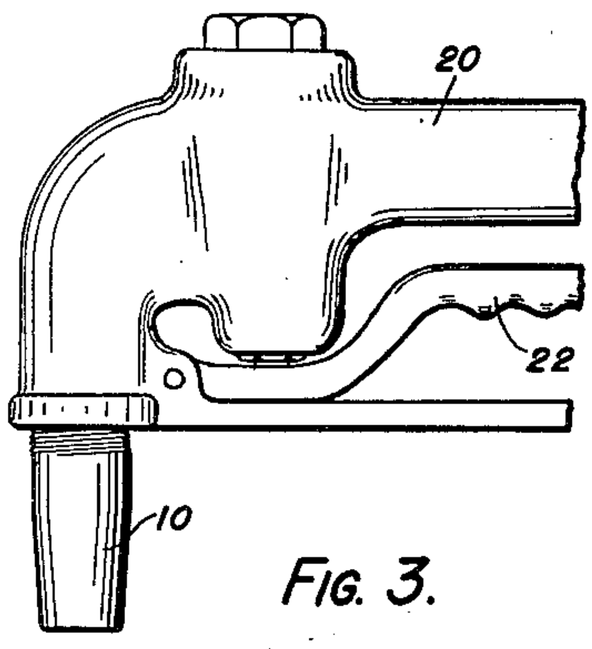


FIG. 3.

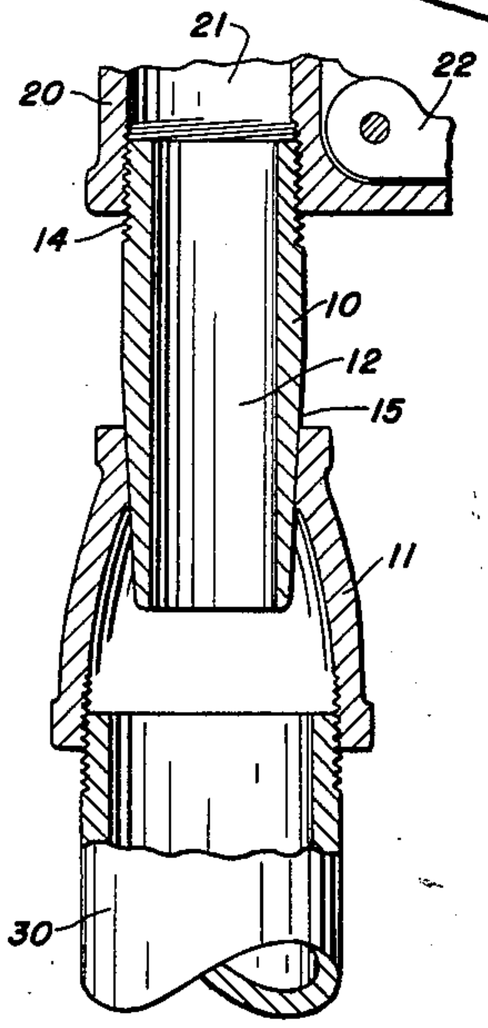


FIG. 4.




FIG. 5.

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## OIL FILLING NOZZLE AND COUPLING

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1 Claim. (Cl. 285—183)

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The present invention relates to apparatus for filling fuel oil tanks.

Conventional practice is to put the fuel oil tank within the building and to run a fill-pipe to the outside of the building to a point where it is accessible to the driver of the fuel oil delivery truck so that he can fill the tank without having to enter the building. A vent-pipe is also run from the tank to the outside of the building.

The fill-pipe is ordinarily capped and to fill the tank the driver must remove the cap. The vent-pipe, however, is left open.

A heavy rain storm will often drive dirt into the open end of the vent-pipe, clogging it. Leaves will blow into it. It is not uncommon, too, for caterpillars to build their cocoons in a vent-pipe and for wasps and similar insects to make their nests there, closing up the pipe.

Fill nozzles are conventionally made with a cylindrical barrel that is threaded at its tip and that may either be shoved into the fill-pipe or connected to the fill-pipe by a threaded union. Connection of the nozzle with the fill-pipe by a threaded union is a difficult job particularly in freezing weather, so ordinarily the nozzle is just shoved into the fill-pipe.

The delivery-truck driver has ordinarily no means of knowing from outdoors how much oil there is in the tank. When the vent-pipe is closed, the air in the tank cannot escape and, as oil is run into the tank, will be compressed. If the fill-nozzle has simply been shoved into the fill-pipe, this air-pressure may build up sufficiently to blow back and force the nozzle out of the fill-pipe, spilling oil all over the surrounding ground or pavement. If the fill-nozzle has been connected to the fill-pipe by a union, the air pressure has been known to build up to such an extent as to blow out the ends of the oil tank. In any event, the entrapped compressed air will prevent the tank from being filled to capacity and the delivery man will have to make many more trips than should be necessary.

One object of the present invention is to provide a set of fittings for use in filling an oil tank which will permit of connecting the fill-nozzle with the fill-pipe quickly and simply by just threading a fitting onto the fill-pipe and shoving the nozzle into the fitting.

Another object of the invention is to provide a set of fittings of the character described which, while having only one threaded connection and being, therefore, easy to connect, will provide as complete a seal as would be obtained with a union.

Still another object of the invention is to provide a set of fittings, one of which may be permanently attached to the fill-pipe of an oil tank, to be closed, when not in use, by a removable plug, and the other of which is secured to the delivery hose to constitute the fill-nozzle thereof, the latter being simply shoved into the first-named fitting, when the plug is removed from the first-named fitting, to connect the filling-hose to the tank.

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A further object of the invention is to provide a set of fittings of the character described which, while providing a complete seal between nozzle and fill-pipe, will at the same time be safe to use.

Another object of the invention is to provide a set of fittings of the character described which will have some of the functions of a relief valve in case air should be entrapped in the oil tank and will partially release the connection of nozzle with fill-pipe before the pressure in the tank can build up to an excessive degree.

Another object of the invention is to provide a set of fittings of the character described which will be so easy to use that they will be used constantly by the driver with the result that they will help keep the vent-pipe open.

Still another object of the invention is to provide a set of fittings of the character described which will enable the driver to know from the outside just by sound whether the tank, to which he is supplying oil, is filled or not.

Another object of the invention is to provide a set of fittings of the character described which will in use enable the driver to fiill a tank faster and to fill more tanks per day.

A still further object of the invention is to provide a set of fittings of the character described which will be simple to make and of reasonable cost.

Other objects of the invention will be apparent hereinafter from the specification and from the recital of the appended claim.

In the drawings:

Fig. 1 is a perspective view showing the two cooperating members of a set of fittings made according to one embodiment of this invention;

Fig. 2 is a fragmentary view of an oil tank with fill and vent pipes and showing the female member of the set of fittings connected to the vent-pipe;

Fig. 3 is a fragmentary view of a conventional fill gun with the male member of the set of fittings secured thereto;

Fig. 4 is a fragmentary sectional view showing the set of fittings in position of use;

Fig. 5 is a sectional view showing a modified construction of female fitting; and

Fig. 6 is a perspective view of the removable plug, which may be used to seal a female fitting when the fitting is permanently connected to the fill-pipe of an oil tank.

Referring now to the drawings by numerals of reference, 10 and 11 denote, respectively, the two members of a set of fittings made according to one embodiment of this invention.

The member 10 comprises a hollow fitting having a cylindrical bore 12 which is threaded externally at one end, as indicated at 14, and is formed with a smooth, external conical surface 15 that converges toward its other end. The member 10 is adapted to be threaded into the delivery port 21 of the gun 20 of the delivery hose of an oil truck in place of the conventional filler nozzle; and the member 10 is adapted to constitute the nozzle of the gun. The member 10 is preferably made of brass or a similar metal.

The fitting 11 is also hollow. It may be cast from malleable iron and formed, as shown, to be somewhat larger in diameter at its base than at its top. It may be provided externally with peripheral reinforcing ribs or collars 24 and 25, respectively, at top and bottom, and with longitudinal or axially-extending reinforcing ribs 26. It is threaded internally at its lower end as denoted at 27. At its upper end it is formed internally with a tapered bore portion 28 that is conical and whose cone angle or taper is the same as the cone angle or taper of the external surface 15 of fitting 10.

In use, the delivery man threads fitting 10 into his hose-gun in place of the conventional nozzle; and fitting 10 may remain permanently connected to the hose-gun. When the delivery man reaches a house where he is to deliver oil, he may remove the cap (not shown) from the fill-pipe 30 of the oil tank and thread the fitting 11 onto the open end of the fill-pipe. Then he shoves the nozzle 10 into the tapered bore 28 of the fitting 11. Then his pump, having been started, he can deliver oil into the household tank 31 by pressing on the trigger 22 of the delivery gun.

Because the internal taper of the bore 28 of the fitting 11 is the same as the external taper of the nozzle 10, the nozzle 10 can be wrung into the fitting 11 so that the connection between the two is air-tight. If the vent-pipe 32 of the tank is clogged, the air entrapped in the tank 31 will be compressed as oil runs into the tank through fill-pipe 30; and the pressure of this air will tend to blow the foreign matter out of the vent-pipe and clear the pipe. If the vent-pipe should be so badly clogged, however, that is cannot be cleared under a safe air-pressure, then the pressure of the entrapped air will raise the nozzle piece 10 off its seat in the fitting 11 and the air pressure will be released.

In practice, I use about 3½° taper on surfaces 28 and 15 and I have found that if the air pressure in the oil tank exceeds seven pounds, the nozzle will be raised off its seat releasing the pressure. Thus, the tapered nozzle acts like a safety valve, lifting under pressure to prevent building up an excessive pressure in the tank. There is no danger, then, when fittings made according to the present invention are used, of blowing the sides out of the oil tank.

Further than this, the fixtures of this invention mitigate the possibility of oil being blown back in the fill-pipe under air pressure over the



lawn or sidewalk because the nozzle 10 is lifted by pressure, relieving the excess pressure. With conventional type nozzles the nozzle is not lifted by excess air pressure; the oil is simply blown past the nozzle.

As a matter of fact, though, use of the fittings of the present invention tends to insure that the vent-line is kept clean and, therefore, to eliminate possibility of creation of excessive air-pressures in the oil tank. If the nozzle 10 is raised off its seat, the delivery man will notice that it is bobbing up and down, and know that the vent-pipe is clogged. He will then clean out the vent-pipe. Thereafter, there will be little chance for the vent-pipe to close up, because in his delivery visits to the house, the delivery man will be using the fittings of the present invention and the pressure built up in the tank because of presence of any foreign matter in the vent-pipe will tend to blow that matter out before it becomes too solidly packed. The trouble with the ordinary union is that it is to difficult to thread it onto both the fill-pipe and the standard nozzle, particularly in bad weather; and as a result, the delivery man neglects its use. When he does come to use it, the vent-pipe may be so badly clogged that any ordinary air-pressure may not blow it clean. Then there is danger because the union does not have any relief valve. My fittings are so easy and convenient to use, that the delivery man can easily be trained to use them constantly, and in this way the vent-pipe never gets a chance to clog hard.

One other advantage that results from the use of my fittings is that the delivery man can tell how the tank is filling up by just listening to the flow of oil into it. This is a great advantage because the tank 31 itself and any liquid level gauge on it are both customarily indoors and only vent-pipe 32 and fill-pipe 30 extend outdoors. Because of the sealed connection between nozzle 10 and fitting 11, however, oil running into the tank through the fill-pipe can be heard outdoors; and by listening the delivery man can determine when the tank is filled.

Still another advantage of use of the fittings of the present invention is that tanks can be filled faster. Use of the fittings tends to keep the vent-pipes clean as above described. There is no air entrapped in the tank, therefore, and no air-pressure resistance to filling of the tank, so filling is a quicker, easier job. It has been found in actual practice that a delivery man can fill a considerable number more tanks per day than when conventional apparatus is employed.

Because the vent-pipes are kept open by use of my fittings, moreover, the oil burner operates better and performs a more satisfactory job of heating.

Where the fill-pipe has an internal thread as indicated at 30′ in Fig. 5, there may be a nipple 35 secured to fitting 11. This nipple is threaded at both ends as denoted at 36 and 37. One end is adapted to be threaded into the fitting 11 and the other end into the fill-pipe 30′.

To avoid loss of time, the delivery man may be supplied with a set of fittings comprising two or more couplings 11, one of which may have a nipple 35 threaded therein and permanently connected thereto. Thus, the delivery man does not have to assemble the fitting on the job. He can have one coupling 11 for a fill-pipe with an external thread such as shown in Fig. 1 and another coupling comprising a fitting 11 and attached nipple 35 for an internally threaded fill-pipe such

as shown in Fig. 5. Of course the couplings may be supplied in different sizes, also, as required for different diameters of fill-pipes, but in all cases it is desirable to keep the same size and taper of bore portion 28 so that any of the couplings can be used with the same nozzle piece 10.

As a means of further expediting deliveries, the fitting 11 or, in proper case, nipple 35 and fitting 11 may be left permanently attached to the fill-pipe of a tank. In this case, to prevent entry of dirt or other foreign matter into the tank, the bore 28 of the fitting may be sealed between deliveries by a plug such as shown at 40 in Fig. 6. This plug has a conical portion 41, which is adapted to seat in the bore 28 of fitting 11 and which is of the same cone angle as the bore 28, a flange 42, which is adapted to seat against the outer face of the fitting 11, and a hexagonal or other suitably shaped socket 43 for the reception of a wrench. The plug can be wrung into the fitting 11 so that the connection between the two is air-tight. When the delivery man comes to deliver oil, all that he needs to do is to remove the plug with his wrench and shove the nozzle 10 of his gun home into the fitting 11. It takes but a second's time to remove the plug and connect the nozzle, and it takes but a second's time to remove the nozzle and replace the plug again when the delivery is completed.

It will be further understood that while the invention has been described in connection with particular embodiments thereof, it is capable of further modification, and this application is intended to cover any variations, uses, or adaptations of the invention following, in general, the principles of the invention and including such departures from the present disclosure as come within known or customary practice in the art to which the invention relates and as may be applied to the essential features hereinbefore set forth and as fall within the scope of the invention or the limits of the appended claims.



Having thus described my invention, what I claim is:

In combination, a nozzle-piece for the delivery gun of the filling hose of an oil delivery truck, and a coupling adapted to be secured to the fill pipe of an oil storage tank, said nozzle piece being a rigid metal part having a smooth bore extending therethrough and having a smooth conical external surface which tapers toward the mouth of said nozzle piece, and said coupling being a rigid metal part having a bore extending therethrough, a portion of which is smooth and conical and complementary to the conical external surface of said nozzle piece to form a seat therefor, the conical surface of said nozzle piece tapering to a diameter which is less than the smallest diameter of the conical portion of the bore of the coupling, whereby said nozzle piece, when seated in said bore, projects inwardly beyond the inner end of the conical portion of said bore.

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