July 18, 1939. J. F. KOMAR 2,166,300

METHOD OF MAKING SPRAY NOZZLES

Filed Aug. 15, 1936

Fig. 1.

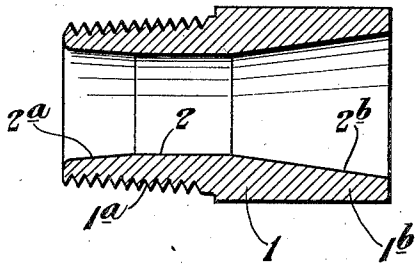


Fig. 2.

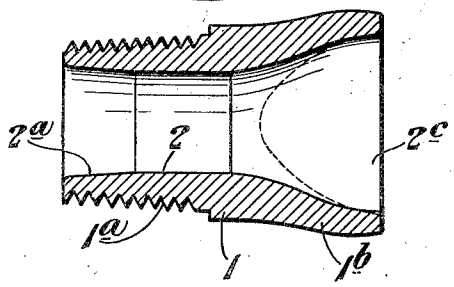


Fig. 3.

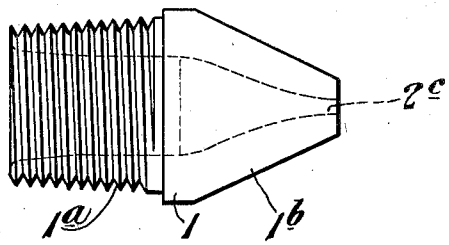


Fig. 4.

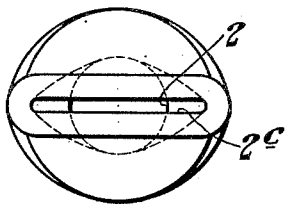
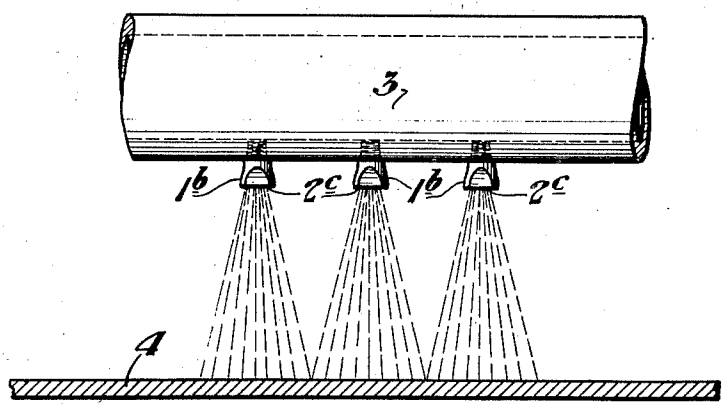


Fig. 5.



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METHOD OF MAKING SPRAY NOZZLES

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Application August 15, 1936, Serial No. 96,293

3 Claims. (Cl. 29—157)

This invention relates to spray nozzles and is particularly concerned with the type used in connection with the hot-rolling of steel to wash scale from the work to prevent certain defects in the finished product. Nozzles used for this purpose handle water under relatively high pressure and are, of course, subjected to considerable heat.

Ordinarily these nozzles are complicated in that they are assemblies and, consequently, frequently fail to perform satisfactorily. The present invention is intended to provide nozzles which are simpler and more reliable. Fundamentally, this is accomplished by making a complete spray nozzle entirely from a single solid metal blank.

A specific example of the invention is illustrated by the accompanying drawing, in which:

Figure 1 is a longitudinal section of an unfinished nozzle.

Figure 2 is a similar section of a finished nozzle.

Figure 3 is a side view of this nozzle.

Figure 4 is an end view of the same.

Figure 5 schematically shows several of such nozzles in use.

The metal blank is preferably in the form of a solid cylinder, and a hole is bored axially through this cylinder. The end portions of this hole are then flared by machining the inside of the blank, and one end portion of the outside of the blank is threaded to provide a means for connecting the nozzle with the usual pressure water header. Accordingly, Figure 1 shows a cylindrical blank 1 through which a hole 2 has been axially bored. One end portion has been slightly reduced and provided with pipe threads 1^a, while a portion of the hole 2 beneath these threads has a flare 2^a. This flare is to provide an easy entrance for the fluid. The part of the hole within the remaining portion 1^b of the blank has a flare 2^b extending almost throughout the length of this portion.

To finish the nozzle the part 1^b of the blank 1 is heated to a proper temperature and forged so as to gradually flatten it towards its end. The forging is done with a gage template held in the portion 1^b while diametrically opposite sides of this portion are compressed. This procedure results in a definitely dimensioned slot or fluid orifice 2^c. The nozzle is now in finished form except that it may be heat-treated, if required.

It is obvious that the finished nozzle consists of a single integral piece of metal having an end adapted for connection with fluid supply means and a fluid passage that initially tapers and finally flattens to a slot opening. Due to the taper 2^b this slot opening provides an orifice of less area than the cylindrical portion of the hole 2 which is allowed to remain, whereby a proper spray effect results.

In Figure 5, three of the nozzles are shown screwed into a water header 3 and in the act of spraying scale from hot water, which, it may be assumed, is being reduced by a rolling mill. The spray produced is flat and of the proper velocity to produce the results desired, providing water is supplied to the header 3 at the proper pressure. There is nothing about the nozzles to get out of order, nor can they be easily damaged by accidental blows. Furthermore, their manufacturing cost is reasonable.

Although the principles of the present invention have been disclosed by way of a specific example in accordance with the patent statutes, the scope of the invention is not to be limited to this example, except as defined by the appended claims. Thus, the two flares 2^a and 2^b may be made to meet so that the hole 2 will not have a cylindrical portion. If this is done the flare 2^b may be made longer than the flare 2^a since it has been found that this produces a superior spray.

I claim:

1. A method of making a spray nozzle, including boring a hole axially through a solid cylindrical metal blank, machining the inside of said blank to flare an end portion of said hole and flattening the adjacent end portion of said blank so as to flatten said portion of said hole and form the opening to the latter into a slot.

2. A method of making a spray nozzle, including boring a hole axially through a solid cylindrical metal blank, machining the inside of said blank to flare an end portion of said hole, and flattening the adjacent end portion of said blank by hot-forging so as to flatten said portion of said hole and form the opening to the latter into a slot.

3. A method of making a spray nozzle, including boring a hole axially through a solid cylindrical metal blank, machining the inside of said blank to flare an end portion of said hole, and flattening the adjacent end portion of said blank by hot-forging so as to flatten said portion of said hole and form the opening to the latter into a slot, a gage template being held in said end portion of said hole during said hot-forging to provide said slot with definite dimensions.

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