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1,496,635

H. W. HIGLEY

WATER BLADE NOZZLE

Filed April 26, 1921

Fig. 1,

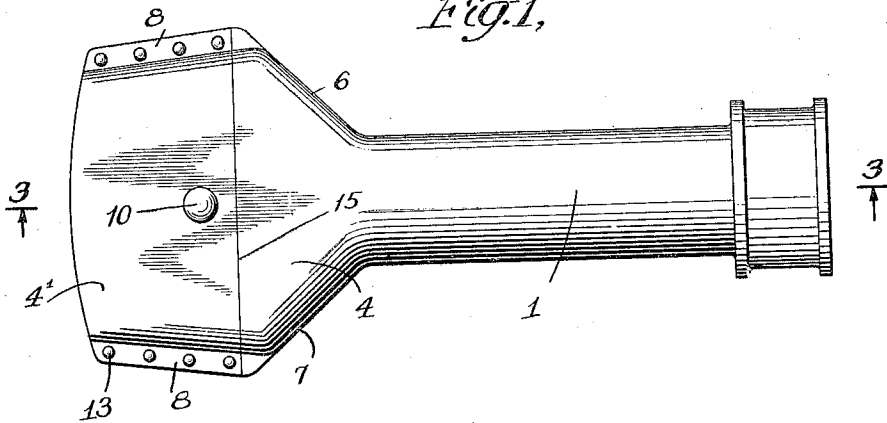


Fig. 2,

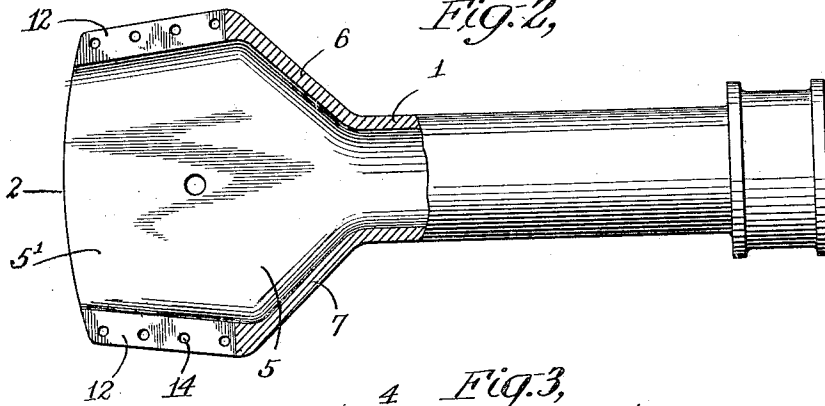


Fig. 3,

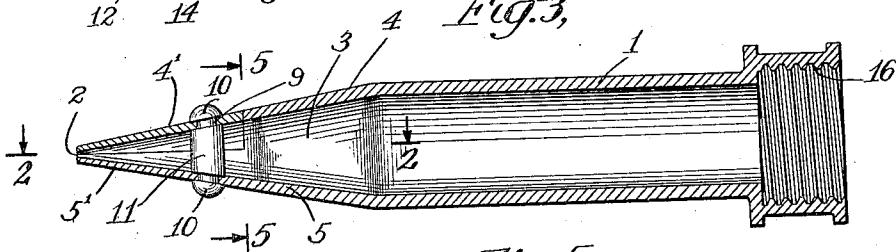


Fig. 4,

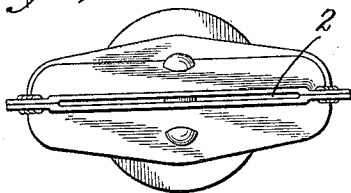
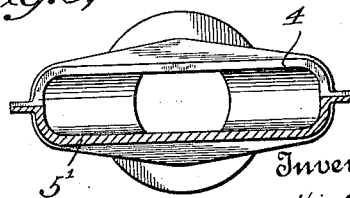


Fig. 5,



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UNITED STATES PATENT OFFICE.

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WATER BLADE NOZZLE.

Application filed April 26, 1921. Serial No. 464,636.

To all whom it may concern:

Be it known that I, HERMAN W. HIGLEY, a citizen of the United States, and resident of borough of Bronx, New York city, in the county of Bronx and State of New York, have invented certain new and useful Improvements in Water Blade Nozzles, of which the following is a specification.

The invention relates to water blade nozzles, by which term I mean to describe a nozzle construction by which water may be delivered in a flat, comparatively thin stream, of uniform width and thickness, under pressure.

The present invention may be considered as in some respects an improvement upon my Patent 1362533, dated December 14th, 1920, for a sanitary dish washer. The present invention is intended to provide an effective construction of the same character as that described in said patent, but which shall be particularly well adapted for use in a variety of fields.

I have found that the nozzle construction described in said patent may be used very effectively, particularly when made in larger sizes than those which were particularly contemplated in my said patent, for the purposes of washing automobiles or spraying gardens and the like, and also for washing streets and decks of vessels, etc. When nozzles of sufficient size are used the thin blade like stream under pressure may be used very effectively for removing snow or rubbish from the streets, the form of the stream enabling the same to cut through obstacles very effectively.

The objects of my invention are the provision of improved devices of the character described which may be operated efficiently for the various purposes referred to, and which may be simple and practical to manufacture. Other objects of the invention comprise various combinations of parts and details of construction as will be hereinafter more fully described in the following specification.

The nozzle construction may be produced by stamping the parts thereof from sheet metal or by casting the same, but when the casting construction is used certain difficulties are encountered; one of the objects of my invention is to overcome these difficulties. My invention also comprises a con-

struction which is effectively strengthened and braced so that it may be used with comparatively large nozzles for the delivery of a considerable body of water under pressure.

In order that the invention may be more clearly understood attention is hereby directed to the accompanied drawings, forming part of this application and illustrating one embodiment of my invention. In the drawings,

Fig. 1 represents a top plan view of a construction embodying my invention;

Fig. 2 is in part a section taken on line 2—2 of Fig. 3, and in part a plan view of the device shown in Fig. 1;

Fig. 3 is a section taken on line 3—3 of Fig. 1;

Fig. 4 is an end view of the device; and

Fig. 5 is a section taken on line 5—5 of Fig. 3.

Referring to the drawings, the construction illustrated is particularly adapted to be produced by a casting process. The construction comprises a tubular entrance portion 1 and a delivery portion terminating at the outlet opening 2. The delivery portion of the device encloses what may be termed a water chamber 3, the side walls 4 and 5 of which are inclined toward each other, these walls converging from the end of the tubular portion 1 to the outlet opening 2, with inclinations which are preferably uniform.

What I may term the end walls of water chamber 3 preferably diverge for a distance from the tubular portion 1 as is indicated at 6 and 7. Beyond the diverging portions, these end walls preferably converge somewhat, to the outlet opening 2, as is indicated at 8, 8. The outlet opening 2 is an elongated narrow opening from which a solid stream of water will flow under pressure, as described above.

With such a construction, when the device is used in comparatively large sizes and with water under considerable pressure, for washing streets, etc., I have found that the side walls 4 and 5 are likely to be deformed by the pressure of the water rushing through the same. Accordingly I preferably provide means for preventing movement of the side walls 4 and 5 away from their normal positions under the effect of pressure. This means must be so formed

and positioned as not to interfere with the form of the solid thin stream of water which is to be delivered from outlet 2.

I accomplish these objects by positioning a holding device some distance back from the outlet 2. Preferably this takes the form of a rivet 9, or the like, extending through the side walls 4 and 5 and provided with heads 10, 10, against the outer surfaces of walls 4 and 5. Also preferably a spacing member is positioned between walls 4 and 5, this being any suitable device adjacent to, or in connection with, rivet 9 for preventing movement of walls 4 and 5 towards each other. Preferably I use a spacer 11 in the form of a sleeve surrounding the shank of rivet 9, this sleeve having its end surfaces formed with suitable inclination so that they will bear against the inner surfaces of walls 4 and 5. By having rivet 9 and spacer 11 positioned some distance back from outlet 2, the stream of water which is divided by spacer 11 will have ample opportunity to come together again to form a solid stream at the outlet.

The device may be formed of two shells of pressed metal which may be secured together in the manner described in my said previous patent. Or the device may be cast and this construction is preferable for some uses.

When the device is cast the tubular portion 1 and the part of the water chamber portion which is bounded at the ends of the chamber by the diverging surfaces 6 and 7, may be cast in one piece. The entire blade of one of the sides of the water chamber, such as the side 5, may also be integral with this construction. That is to say, I propose to cast in one piece the tubular portion 1 of the device, the partial water chamber portion bounded by the end walls 6 and 7 and by parts of the side walls 4 and 5 and the forwardly extending blade portion 5¹ which extends forwardly from the ends of the diverging walls 6 and 7 to the outlet opening 2. This construction may be cast about a single core which may be withdrawn from the water chamber end of the construction after the metal has solidified.

It would, of course, not be possible to form the device complete as a single casing about a single core, because the core could not be withdrawn.

Having provided the casting described above, the device may be completed by the provision of a blade member 4¹ which is complementary to the blade portion 5¹ of the casting. This blade member 4¹ will have its end portions bent or formed into shape to engage against the flanges 12, 12, of the blade portion 5¹ of the casting. Blade member 4¹ may be mounted in position by securing its end edges upon flanges 12 by any suitable means such as rivets 13 which ex-

tend through openings 14 in flanges 12 and through corresponding openings in the end flanges of blade member 4¹. Blade member 4¹ will abut at its rear edge against the forward edge of the partial side wall 4 of the casting, the junction between these parts being indicated at 15. The two parts thus secured together may, of course, be welded or braced, or otherwise secured along the line 15, if desired. When the parts are so secured the upper, or side wall, of the chamber, indicated at 4 in Fig. 3, will be completed.

The tubular portion 1 may, of course, be provided with an internal screw thread 16 at its rear end for attachment to a hose, or the like, this screw thread being formed in the casting by any suitable process.

It should be understood that the invention is not strictly limited to the details of construction which have been particularly described, but is as broad as is indicated by the accompanying claims.

What I claim is:

1. A device of the character described, comprising a tubular entrance portion and a water chamber portion beyond the same, the latter having an elongated narrow outlet opening, and having side walls which converge in the direction of the flow of the water, and means for resisting movement of said walls, under pressure, towards or away from, each other, comprising a spacer between said walls positioned some distance back from the outlet opening and having end surfaces inclined to bear against said converging walls and holding means for preventing outward movement of said walls away from said spacer.

2. A device of the character described, comprising a tubular entrance portion and a water chamber portion beyond the same, the latter having an elongated narrow outlet opening, and having side walls which converge in the direction of the flow of the water, and end walls which diverge for a distance from the tubular portion and then converge somewhat towards the outlet opening, and means, positioned some distance back from the outlet opening, for resisting movement of said side walls, under pressure away from their normal positions.

3. A device of the character described, comprising a member having a tubular entrance portion and a partial water chamber portion beyond the same, with a blade portion extending beyond said chamber portion, a blade member complementary to said blade portion, secured to the latter to complete therewith and with said partial chamber portion a complete water chamber having an elongated narrow outlet opening between the ends of said blade portion and blade member, the side walls of said chamber converging from said tubular portion to

said outlet opening, the end walls of said partial water chamber portion diverging from said tubular portion and the end walls of the portion of said chamber formed by said blade portion and blade member converging to some extent towards said outlet opening, and means, positioned some distance back from the outlet opening, for resisting movement of said side walls, under pressure, away from their normal positions. 10

Signed at New York, in the county of New York and State of New York this 25th day of April A. D. 1921.

HERMAN W. HIGLEY.