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DISCHARGE OUTLET

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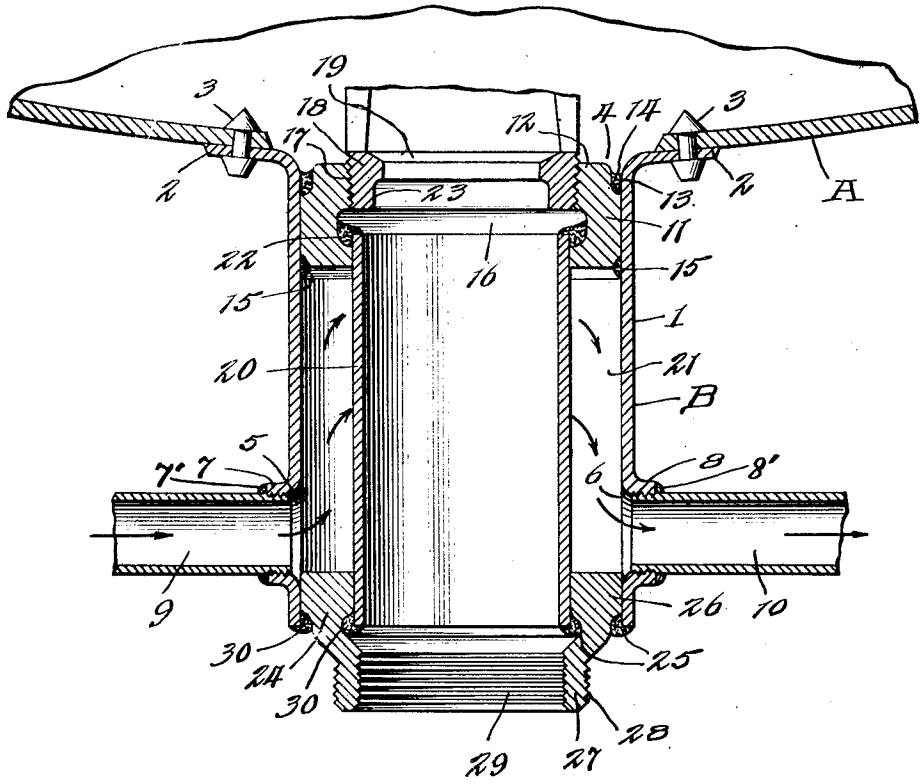

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DISCHARGE OUTLET.

Application filed July 14, 1927. Serial No. 205,796.

Reference is had to the accompanying drawings which illustrate the preferred form of the invention; though it is to be understood that the invention is not limited to the exact details of construction shown and described, as it is obvious that various modifications thereof within the scope of the claims will occur to persons skilled in the art.

In said drawings:

The figure is a vertical sectional view of the invention applied to a tank, a portion of the latter being shown.

This invention relates to discharge outlets and has particular reference to discharge outlets for car tanks which may be heated to facilitate the discharge of tank lading.

The main object of this invention is to provide a discharge outlet for tanks which is characterized by its lightness in contradistinction to the heavy outlets now in commercial use.

Another object of the invention is to provide a discharge outlet which, in the main, is formed of standard pipe.

A further object of the invention is to provide a discharge outlet which is formed of standard pipe connected to drop forgings or steel castings, the entire assembly being extremely strong and durable in operation.

A still further object of the invention is to provide a discharge outlet for car tanks which is formed of few parts and which is leak proof in operation, and which is extremely cheap to manufacture.

Other objects and advantages of this invention will be apparent from the following description taken in conjunction with the accompanying drawings, in which A indicates a portion of a tank to which the discharge outlet B of the present invention is secured.

The discharge outlet comprises an outer cylinder 1 which is preferably a section of standard steel pipe or other suitable material, and the upper end thereof is outwardly flanged as at 2 by which the cylinder 1 may be secured to the tank A through the medium of rivets 3 or the like, adjacent an opening 4 formed in the tank.

Near the lower end of the cylinder 1 are formed oppositely disposed inlet and outlet openings 5 and 6 respectively, surrounded by the internally threaded beads 7 and 8 to which are secured the inlet and outlet pipes 9 and 10 respectively. I preferably weld the pipes 9 and 10 to the beads 7 and 8 as illustrated at 7′ and 8′ respectively.

Positioned within the upper portion of the cylinder 1 is an annulus 11. This annulus is preferably a steel casting or drop forging and is provided with a reduced upper end 12 by means of a marginal recess 13, and said annulus is rigidly attached to the pipe section 1 by welding the same to the pipe section in the recess 13, as shown at 14. The annulus 11 is also welded to the cylinder 1 at its lower edge, as shown at 15. The weld 15 is by way of example, as if desired, suitable openings might be formed in the cylinder 1 intermediate the upper and lower faces of the annulus 11 and weld metal deposited in said openings whereby to connect the annulus 11 and the cylinder 1.

The inner wall of the annulus 11 is provided with an annular recess 16 and said wall above the recess is threaded as at 17 to secure a valve cage 18 having a valve seat 19.

The outlet of the present invention includes an inner cylinder or discharge pipe 20 which is preferably a section of standard pipe, and said inner cylinder defines a heating space 21 between the inner and outer cylinders. The connection of the pipe 20 to the annulus is clearly shown in the drawings, where it can be seen that the upper end of the pipe extends into the recess 16 formed in the annulus and said upper end is rigidly connected to the drop forged annulus 11 by welding the same to said annulus in the recess 16 therein, as clearly shown at 22. As shown particularly in the drawings, I preferably, although not necessarily, employ a pipe 20 of such size that the latter is circumferentially positioned outside of a vertical plane through the inner wall 23 of the valve cage 18 so that an uninterrupted discharge of material from the interior of the tank A through the valve cage and into the cylinder 20 will be effected, thus preventing clogging of the outlet at the upper portion thereof.

The lower end of the discharge outlet is

provided with a discharge nozzle of substantially ring shape, and said discharge nozzle is preferably a drop forging or steel casting, as desired, and the upper portion thereof is positioned between the inner and outer cylinders 1 and 20 at their lower ends and is secured to both cylinders by circumferential welds 25. The discharge nozzle provides with the annulus 11 and the cylinders 1 and 20, the heating space 21 heretofore mentioned, and said nozzle is of particular form, as clearly illustrated; having an enlarged head portion 26 the upper face of which serves as the bottom of the heating chamber, and said head portion functions as a spacer for the cylinders 1 and 20. The discharge nozzle is provided with a reduced lower end 27, preferably of less thickness than the head portion, and said reduced lower end is provided with external and internal threads 28 and 29 respectively, the external threads 28 serving to secure a closure cap, not shown, and the internal threads 29 serving to secure a pipe line, not shown, by which the lading in the tank may be directed to a suitable storage. It is to be noted that the reduced portion of the nozzle commences abruptly from the lower portion of the head 26, thereby providing, in effect, outer and inner annular recesses or grooves 30 for receiving the weld material 25 by which the nozzle is rigidly connected to the cylinders 1 and 20.

From the above description, it is believed that the invention will be fully apparent to those skilled in the art, but particular attention is directed to the fact that I have provided a discharge outlet which is formed in the main of standard pipe sections connected together by means of drop forgings or steel castings which are welded thereto; the resultant assemblage being much cheaper to manufacture than the discharge outlets now in commercial use.

The device of the present invention also provides an outlet of the character described in which inner and outer steel sections having the same co-efficient of expansion, are provided, which sections are united at the upper and lower ends thereof by castings or drop forgings welded to said sections to produce a unitary structure the walls of which are spaced to provide a heating chamber therebetween which is substantially leak proof, and the joints at which the sections are united being formed of weld material which will expand and contract with the expansion and contraction of the inner and outer sections whereby leakage from the space between the sections is eliminated. It will be apparent that devices such as shown herein which are formed of a one piece casting present the usual casting defects, such as blow holes or other defects which are not visible to the eye. These defects are not present in the device of the present invention, and in contradistinction to the difficulty in forming a satisfactory cast discharge outlet, the construction of the present invention is simplicity itself. The discharge outlet of the present invention is also considerably lighter than discharge outlets heretofore known, and due to the specific construction thereof, I have provided a discharge outlet which is entirely leak proof thus eliminating a disadvantage which is sometimes present in the usual and now commercially known discharge outlets formed of expensive castings; which castings often times are more or less porous permitting leakage of the heating medium therethrough and through the connections of the several parts thereof.

What is claimed is:

1. A discharge outlet for tanks comprising an outer steel pipe section for attachment to a tank, a cast annulus welded to said section in the upper end thereof and having an internal recess, an inner steel pipe section welded to the annulus at the recess therein, a discharge nozzle having a head portion arranged between the lower ends of the pipe sections and welded thereto, and inlet and outlet passages leading into the space between said cylinders.

2. A discharge outlet for tanks comprising spaced steel cylinders, means at the upper and lower ends of the cyliders and to which the latter are welded for providing a heating chamber between the cylinders, one of said means having a reduced end defining a discharge nozzle.

3. A discharge outlet for tanks comprising an outer steel pipe section and an inner steel pipe section, a casting welded to said inner and outer pipe sections at the upper ends thereof, and means connecting the lower ends of the pipe sections, said means comprising a head portion welded to said pipe sections and a reduced end portion providing a discharge nozzle.

4. A discharge outlet for tanks comprising an outer steel pipe section for attachment to a tank, an annular casting welded within the upper end of the pipe section, an inner steel pipe section welded within the annular casting and providing a cast discharge pipe, and a discharge nozzle having a head portion welded to said inner and outer pipe sections at the lower ends thereof.

5. A discharge outlet for tanks comprising spaced inner and outer steel pipe sections and means for connecting said pipe sections comprising annular castings welded to said pipe sections at their upper and lower ends.

6. A discharge outlet for tanks comprising spaced inner and outer pipe sections and means for connecting said pipe sections comprising annular castings welded to said pipe sections at their upper and lower ends, one of said annular castings having a reduced lower end forming a discharge nozzle.

7. A discharge outlet for tanks comprising spaced independent inner and outer steel pipe sections, means connecting said sections at the upper ends thereof, and means connecting the lower ends of the pipe sections comprising an annular casting having a head portion arranged between and welded to the ends of the pipe sections and a depending threaded end.

8. A welded discharge outlet for tanks comprising spaced steel pipe sections having castings interposed therebetween at the upper and lower ends thereof and welded thereto to provide a heating chamber, one of said castings protruding below the pipe sections to form a discharge nozzle.

9. A welded discharge outlet for tanks comprising spaced steel pipe sections having castings interposed therebetween at the upper and lower ends thereof and welded thereto to provide a heating chamber, one of said castings protruding below the pipe sections and having a reduced end to form a discharge nozzle.

10. A welded discharge outlet for tanks comprising an outer section of standard pipe having its upper end provided with an attaching flange, a tubular casting welded to the interior of the outer section adjacent the upper end thereof and provided with an internal shoulder, an inner section of standard pipe having its upper end positioned within the tubular casting and welded thereto, and a discharge nozzle interposed between the said pipe sections at the lower ends thereof and welded thereto to define with the cylinders and first mentioned casting a heating chamber.

11. In a welded discharge outlet for tanks, the combination with spaced steel pipe sections of a casting interposed therebetween at the upper ends thereof and welded thereto, and a discharge nozzle interposed between said sections at their lower ends and welded thereto, the discharge nozzle protruding beyond the lower ends of the pipe sections.

12. A welded discharge outlet for tanks comprising an outer section of standard steel pipe having its upper end formed with an attaching flange, a cylindrical casting positioned within the upper end of said outer section and provided with annular recesses in its upper and lower external edges and welded to said outer section in said recesses, an inner section of standard steel pipe welded to the inner surface of the casting, and a discharge nozzle welded to the inner and outer pipe sections at the lower ends thereof.

13. A welded discharge outlet for tanks comprising spaced steel pipe sections having cast spacing elements interposed therebetween at the upper and lower ends thereof and welded thereto to define a leak proof heating chamber.

14. A welded discharge outlet formed of independent spaced tubular sections having a similar co-efficient of expansion, and spacing elements interposed between said sections adjacent the upper and lower ends thereof and welded thereto to define a heating chamber, one of said elements protruding beyond the ends of said sections to form a discharge nozzle.

15. A welded discharge outlet formed of independent spaced tubular sections having a similar co-efficient of expansion, spacing elements interposed between said sections adjacent the upper and lower ends thereof and welded thereto to define a heating chamber, one of said elements protruding beyond the ends of said sections to form a discharge nozzle, and inlet and outlet passages leading respectively to and from the heating chamber.

16. A welded discharge outlet formed of independent concentrically arranged tubular steel sections having a similar co-efficient of expansion, and cast spacing elements interposed between said sections adjacent the upper and lower ends thereof and welded thereto to define a heating chamber, one of said elements protruding beyond the lower ends of said sections to form a discharge nozzle.

In witness whereof I have hereunto set my hand.

JOHN BEYER.