Sept. 10, 1929. J. BEYER 1,727,694

DISCHARGE OUTLET

Filed July 14, 1927

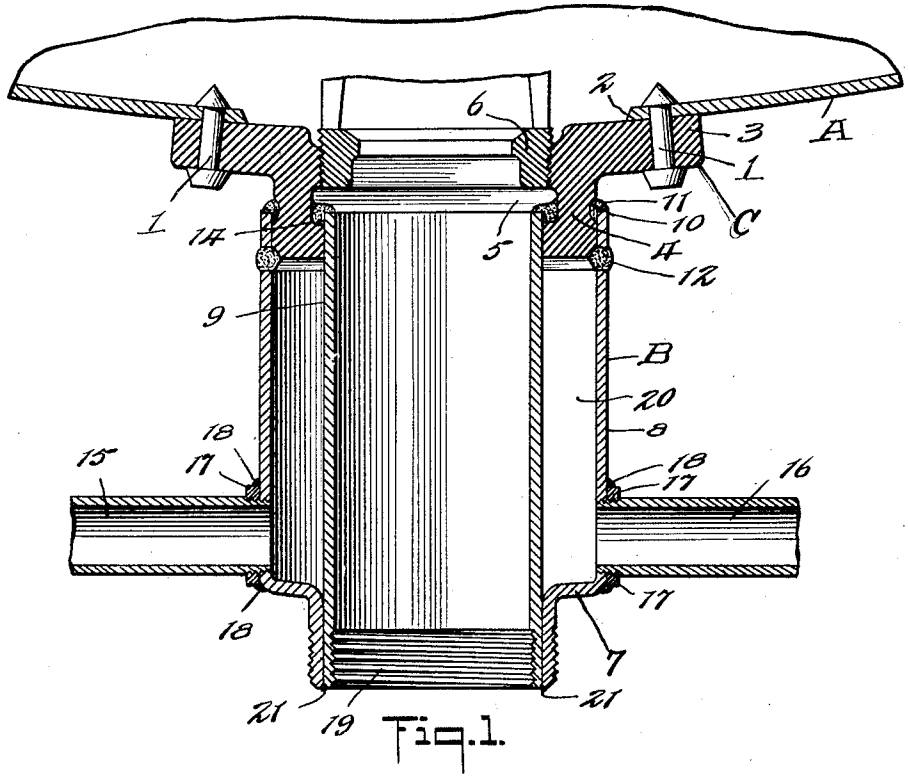

Fig. 1.

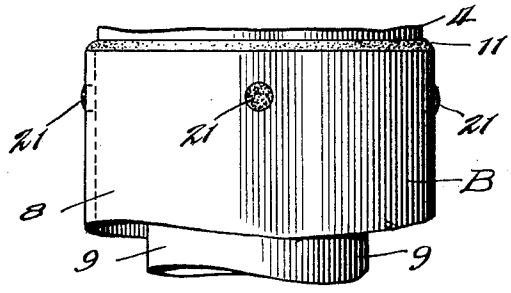

Fig. 2.

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Patented Sept. 10, 1929.

1,727,694

UNITED STATES PATENT OFFICE.

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DISCHARGE OUTLET.

Application filed July 14, 1927. Serial No. 205,797.

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:

Figure 1 is a vertical sectional view of the discharge outlet of the present invention, showing the same attached to a tank; and

Fig. 2 is a side elevation of a portion of the discharge outlet, showing a modified form of attaching means for the outer cylinder thereof.

This invention relates to discharge outlets for tanks, and refers more particularly to discharge outlets for car tanks which may be heated to facilitate the discharge of tank lading.

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

A further object of the invention is the provision of a discharge outlet formed, in the main, of standard steel pipe sections connected together at one end and attached to a tank by a casting or drop forging; the resultant assembly providing a device which is easy and inexpensive to manufacture, consists of few parts, and which in operation is strong, durable and leak proof.

Another object of the invention is the provision of a discharge outlet for tanks formed primarily of standard steel pipe sections, welded at their upper ends to an attaching casting or drop forging, and connected together at their lower ends by having one of the sections shrunk onto the other.

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 is secured the discharge outlet indicated generally at B.

Secured to the tank A by means of rivets 1 and adjacent an opening 2 formed in the tank, is an attaching casting or drop forging C, comprising a ring 3 having a depending annular flange 4, the latter having an inner annular recess 5 formed therein. The casting C is preferably internally threaded above the recess 5 to secure a valve cage 6 therein. The discharge outlet includes an outer cylinder 8 and an inner cylinder 9; said cylinders being preferably formed of sections of standard steel pipe or other suitable material, and the section 8 is preferably secured to the outer face of the casting C at the flange 4 thereof by welding the upper portion of the pipe section 8 to said flange at an annular recess 10 in the latter, as clearly shown at 11. The pipe section 8 is also attached to the flange 4 at the lower edge of the latter by welding the same to the flange as shown at 12, through spaced openings formed in the pipe section 8 just adjacent the lower edge of the flange 4 of the casting C. This last mentioned connection is merely by way of example, as obviously, openings may be formed in the upper end of the cylinder 8 above the lower edge of the flange 4, and said openings filled with weld metal 21 whereby to connect the cylinder 8 with the flange 4, as clearly shown in Fig. 2.

The inner cylinder or pipe section 9 is the discharge pipe, and the same is arranged concentrically with respect to the pipe section 8. The upper end of the pipe 9 extends within the annular recess 5 in the casting C and is secured to said casting at the recess by being welded thereto, as shown at 14.

The outer cylinder or pipe section 8 is provided near its lower end with oppositely arranged threaded openings which receive one end of inlet and outlet pipes 15 and 16 respectively. Each of these pipes 15 and 16 carry a nut 17 which is welded, as shown at 18, to the adjacent portion of the cylinder 8, thus providing a rigid connection for said pipes 15 and 16 with the cylinder 8.

The discharge nozzle of the present invention is formed by the lower ends of pipe sections 8 and 9, and the lower end of pipe 9 is internally threaded, as shown at 19, to provide an attaching means for a discharge line, not shown, for directing material discharged through the pipe 9 to a suitable storage.

The inner and outer pipe sections 8 and 9 define between them a heating chamber or space 20, and the lower end of the outer cylinder 8 is reduced in diameter to lie adjacent the lower end of the inner cylinder 9.

As clearly shown, the outer cylinder 8 has a portion 7 thereof turned in sharply at almost right angles to provide a bottom for the heating chamber 20, the remaining lower portion of the outer cylinder closely engaging the lower end of the inner cylinder 9. It has been found desirable to connect the adjacent extreme ends of the inner and outer cylinders or pipe sections by welding, as shown at 21; such welding being spot welds or a complete annular weld, as desired.

By spinning, I reduce the diameter of the lower end of the outer cylinder to the form shown in the drawings, and while the outer cylinder is in a heated condition, I insert the inner cylinder 9 in position, and the lower or reduced end of the outer cylinder will, upon cooling, shrink onto the lower end of the inner cylinder, as will be obvious, thus effecting a close and tight fitting connection of the lower ends of cylinders 8 and 9. The upper end of the inner cylinder 9 is then welded to the flange of the casting C, and pipes 15 and 16 then attached to the outer cylinder, whereupon the entire device may be attached to the tank by means of the rivets 1.

From the above description, it is believed that the invention will be fully apparent to those skilled in the art, but particular attention is called to the fact that I have provided a discharge outlet which is formed, in the main, of standard steel pipe sections connected to each other at their lower ends and connected to a drop forging or casting at their upper ends; the drop forging or casting having a depending attaching portion which is positioned between the cylinders, the construction thus effecting an inner cylinder or pipe section with a surrounding jacket, and between said inner cylinder and jacket a heating space is provided through which a heating medium may be circulated from the pipe 15. The discharge outlet of the present invention is considerably lighter than discharge outlets heretofore known, and due to the specific construction thereof, I have provided an 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 relatively 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 inner cylinder, an outer cylinder having a reduced lower end shrunk onto the inner cylinder, an attaching element to which the inner and outer cylinders are secured, and inlet and outlet pipes connected to the outer cylinder.

2. A discharge outlet for tanks comprising independent steel pipes forming inner and outer cylinders arranged in spaced relation, said outer cylinder having a reduced lower end secured to the inner cylinder, a supporting casting for attachment to a tank and provided with an attaching flange positioned between and secured to the upper ends of the inner and outer cylinders.

3. A discharge outlet for tanks comprising an annular supporting casting for attachment to a tank and having an attaching flange, an inner cylinder welded to the inner face of the casting, an outer cylinder welded to the outer face of the casting and having a reduced lower end secured to the lower end of the inner casting, said outer cylinder forming with the inner cylinder and supporting casting a heating chamber, and inlet and outlet passages leading respectively to and from the heating chamber.

4. A discharge outlet for tanks comprising a ring secured to the tank adjacent an opening therein, a depending attaching flange formed with said ring and having an annular recess in the inner wall thereof, a discharge pipe welded to said flange at the recess therein and an outer cylinder welded to the outer wall of said flange, and having a reduced lower end shrunk onto the discharge pipe.

5. In a discharge outlet for tanks comprising spaced inner and outer cylinders defining a heating chamber, a bottom closure for said heating chamber comprising a spun lower end of the outer cylinder shrunk onto the inner cylinder.

6. In a discharge outlet for tanks comprising spaced inner and outer cylinders defining a heating chamber, a bottom closure for said heating chamber comprising a spun lower end of the outer cylinder shrunk onto the inner cylinder and welded thereto.

7. A discharge outlet for tanks comprising spaced inner and outer cylinders connected at their lower ends to provide a discharge nozzle, and a casting for attachment to a tank, said casting having a portion thereof arranged between said cylinders at the upper ends thereof to which said cylinders are secured.

8. A discharge outlet for tanks comprising spaced cylinders connected together at their lower ends to provide a discharge nozzle, a casting for attachment to a tank, said casting having a depending attaching flange positioned between the cylinders at the upper ends thereof, and means connecting said cylinders to said flange.

9. A discharge outlet for tanks comprising spaced cylinders having a discharge nozzle at the lower ends thereof, a ring for attachment to a tank, a depending flange integral

with said ring and positioned between the upper ends of the cylinders, and means connecting the inner cylinder to the inner wall of the flange, said outer cylinder being attached to the outer wall of the flange.

10. A discharge outlet for tanks comprising an annular attaching casting, an outer steel pipe section secured to the casting, an inner steel pipe section secured within the casting, said outer pipe section having the lower end thereof reduced in diameter and connected to the lower end of the inner pipe section.

11. A discharge outlet for tanks comprising inner and outer steel pipe sections connected at their lower ends, and an annular casting having a depending attaching portion arranged between and secured to the upper ends of said inner and outer pipe sections.

12. A discharge outlet for tanks comprising spaced steel pipe sections and an annular casting having an attaching portion secured to the upper ends of said inner and outer pipe sections, said outer pipe section having a reduced spun lower end lying against and welded to the lower end of the inner pipe section.

13. In a discharge outlet having concentric pipe sections, a casting having a flange for securing the outlet to a tank and a depending attaching portion arranged between the pipe sections at their upper ends and secured thereto.

14. In a discharge outlet, concentric pipe sections and a casting for attachment to a tank, said casting having a laterally extending flange and an attaching flange formed integral with the laterally extending flange arranged between the pipe sections at their upper ends.

15. In a discharge outlet, concentric pipe sections and a casting for attachment to a tank, said casting having a laterally extending flange and an attaching flange formed integral with the laterally extending flange arranged between the pipe sections at their upper ends and welded thereto.

16. In a discharge outlet, a casting comprising an annulus for attachment to a tank, said annulus having an integral annular attaching flange, an outer cylinder secured around said flange, and an inner cylinder secured within the flange.

17. In a discharge outlet, a casting comprising an annular attaching portion having a depending annular flange formed therewith, and spaced steel pipe sections welded to the depending flange.

18. In a discharge outlet, a casting comprising an annular attaching portion for connection to a tank, and a depending annular flange, and steel pipe sections welded to the inner and outer walls of the flange respectively.

19. A device of the kind described comprising a welded discharge outlet having a supporting casting for attachment to a tank or the like and provided with a depending attaching flange, a steel pipe section welded to the inner surface of the flange, and an outer steel pipe section welded to the outer surface of the flange and provided with a reduced lower end shrunk onto the lower end of said inner pipe section.

20. A jacketed discharge outlet for tanks or the like formed of concentrically arranged inner and outer steel pipe sections the latter having its lower end shrunk onto said inner pipe sections, and an attaching casting positioned between the upper ends of said pipe sections and welded thereto.

21. A jacketed discharge outlet for tanks or the like formed of concentrically arranged inner and outer steel pipe sections the latter having its lower end shrunk onto said inner pipe section at the lower end thereof and welded thereto, and an attaching casting positioned between the upper ends of said pipe sections and welded thereto.

In witness whereof I have hereunto set my hand.

JOHN BEYER.