

L. L. GOODRICH, JR.
SPARK ARRESTER.
APPLICATION FILED MAR. 28, 1910.

973,775.

Patented Oct. 25, 1910.

Fig 1

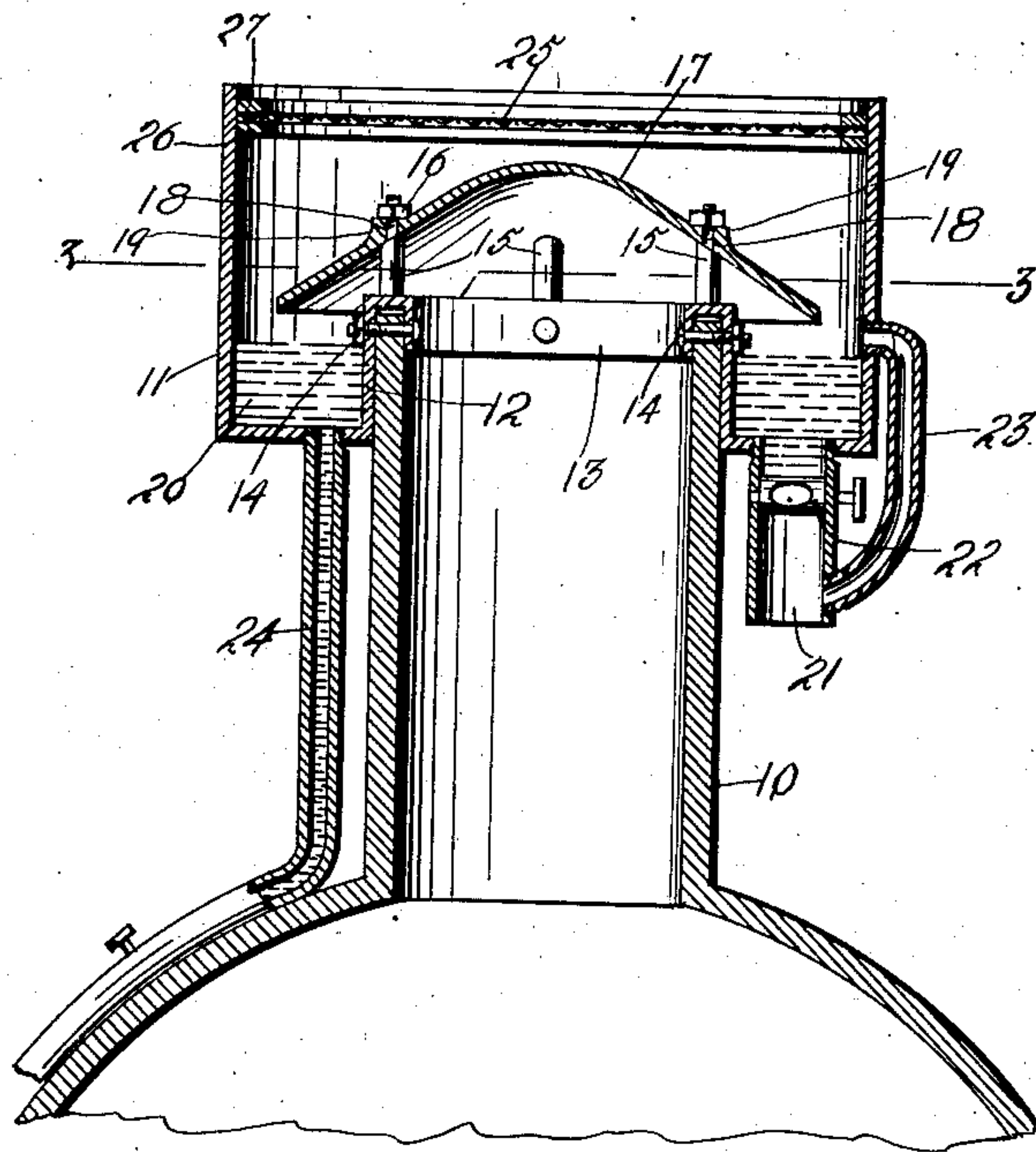


Fig 2

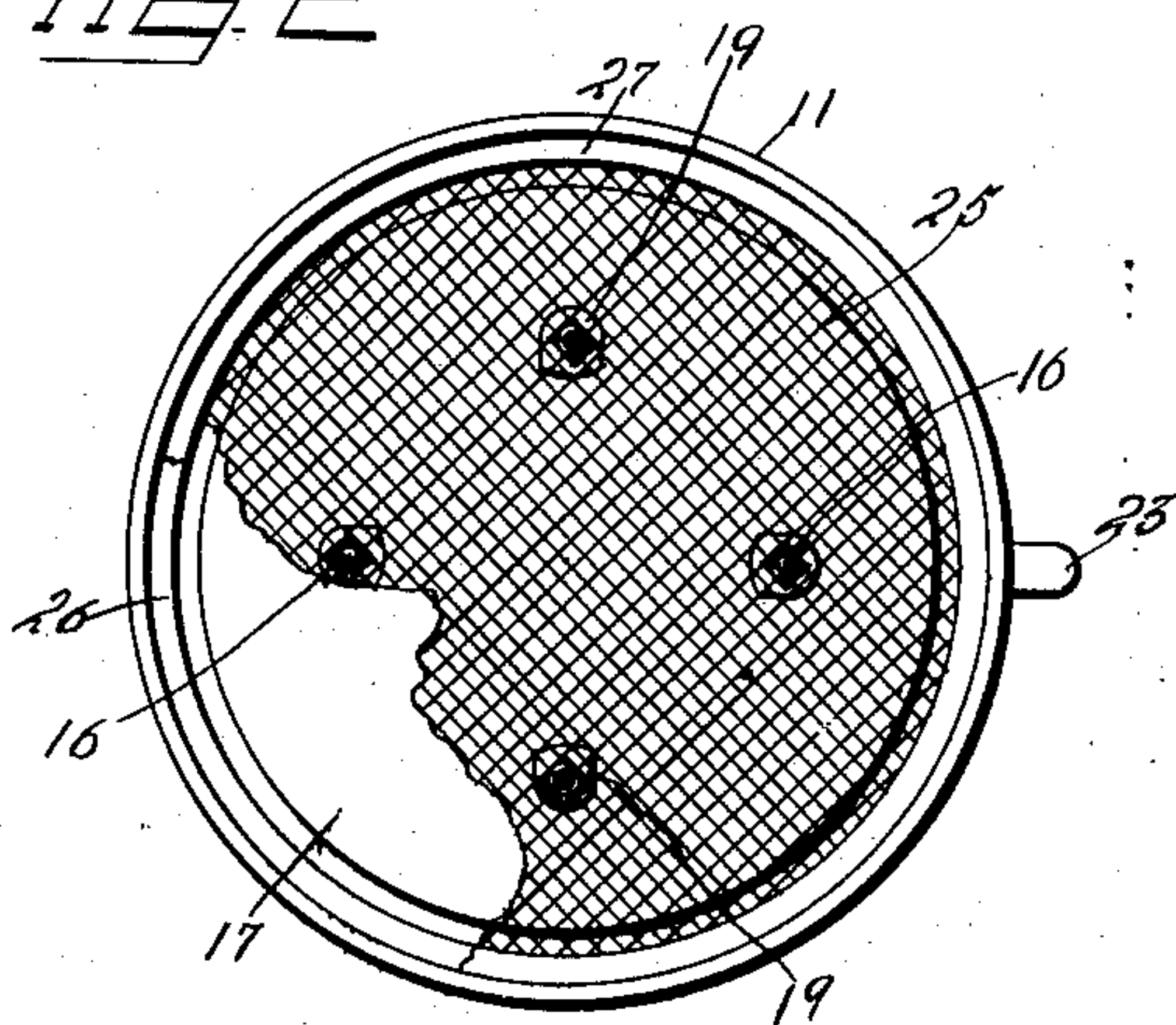
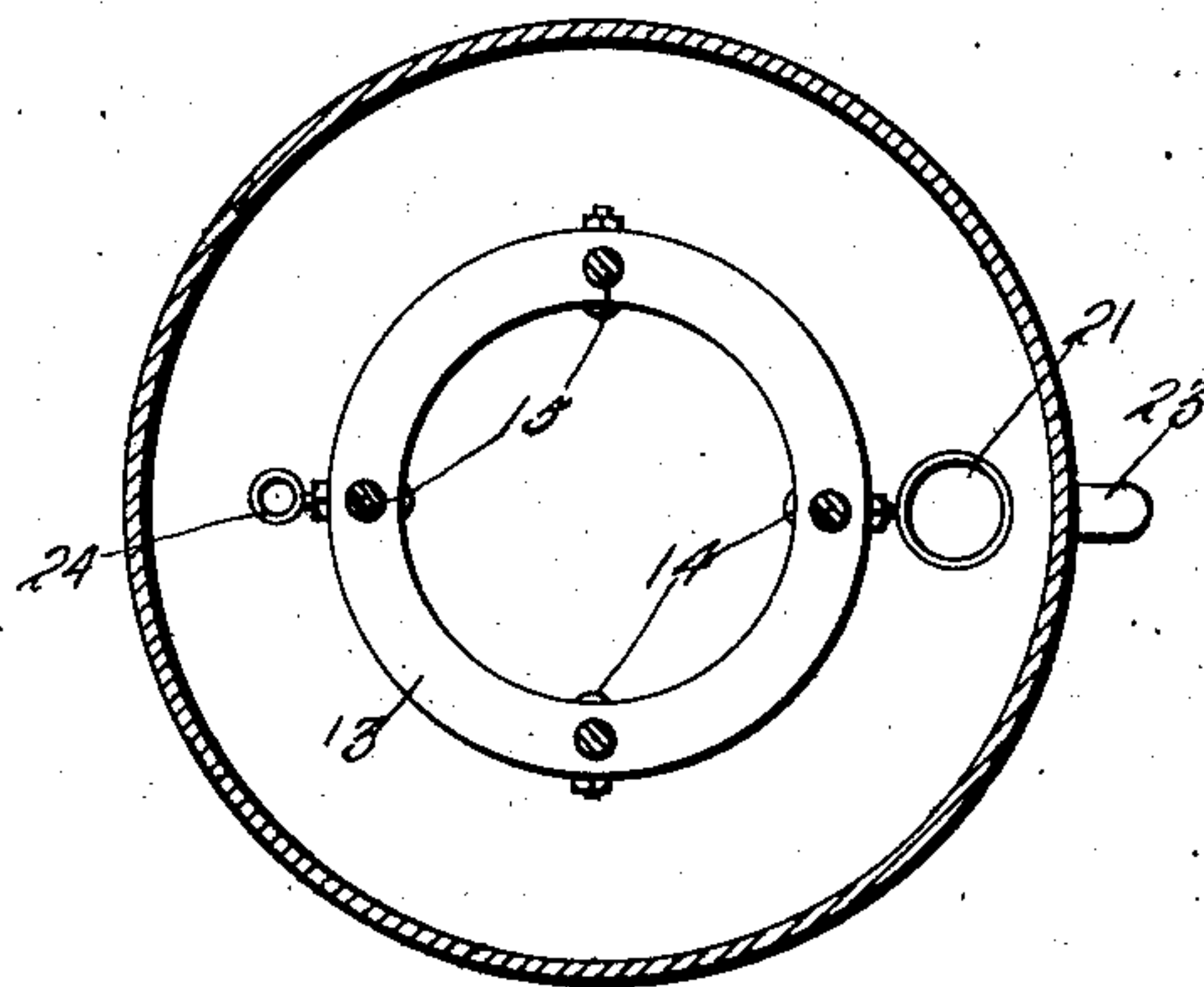


Fig 3



Witnesses
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SPARK-ARRESTER.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, LUMAN L. GOODRICH, Jr., a citizen of the United States, residing at San Antonio, in the county of Bexar, State of Texas, have invented certain new and useful Improvements in Spark-Arresters; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to spark arresters designed for use on factory, locomotive and domicile smoke stacks and has for an object to provide a simple and durable device of this character which will have novel means for extinguishing the glowing cinders without obstructing the passage of the smoke or impeding the draft of the stack.

Another object is to provide a device of this character which will have novel means for replenishing the water evaporating from the device and for preventing the overflow of the water into the smoke stack.

One of the disadvantages found in ordinary devices of this character is that the water in the device is quickly evaporated by the heated gases issuing from the smoke stack, and a further disadvantage is that the removal of ashes accumulating in the device is not readily effected. I obviate the former of these difficulties by providing an inlet port in the device through which the water enters and maintains the water level in the device, and the latter of the difficulties by providing a removable screen which permits of a scoop or similar tool being inserted to remove the ashes.

In the accompanying drawing forming part of this specification, Figure 1 is a longitudinal sectional view through the device showing the same applied to a locomotive smoke stack. Fig. 2 is a plan view of the device with portions broken away. Fig. 3 is a cross section on the line 3—3, Fig. 1, with the deflector removed.

The reference character 10 designates a locomotive smoke stack of the usual and well-known construction.

The spark arrester comprising the subject matter of this invention consists of a water jacket 11 formed from a metal cylinder from the bottom of which rises a tube 12 sufficient in size to snugly fit the outer periphery of the smoke stack and terminating below the medial horizontal diameter of the casing 11

in a hook like flange 13 which hooks over the top edge of the smoke stack. Through this flange 13 and the tube 12 alined openings are formed which aline with openings formed transversely in the smoke stack and cooperate therewith to receive securing bolts 14 which rigidly secure the device to the smoke stack and prevent its dislodgment due to the exhaust of steam under pressure into the smoke stack or like forced drafts.

Integral with the hook like flange 13 are a plurality of spaced vertical posts 15 the free ends of which are screw threaded and provided with nuts 16. These posts removably secure a deflector 17.

The deflector is formed from a single disk of metal, the disk being sufficient in size to present its outer circumference adjacent the inner walls of the casing 11. The disk is provided with a circular series of openings 18 which receive the spaced posts 15, a shoulder 19 surrounding each opening and having flat top faces against which the retaining nuts 16 bear to secure the deflector in position. It is now clear that the products of combustion rising from the smoke stack will impinge against the concave deflector and be directed downwardly and outwardly thereby to the sides of the casing 11, the glowing cinders carried by the draft being hurled downward into the bottom of the casing and the smoke passing freely upward along the inner walls of the casing to the atmosphere. The bottom of the casing is filled with water as shown at 20 to within a short distance of the marginal edge of the deflector which latter projects slightly below the horizontal plane of the top of the tube 12. It is clear that the pressure of the gases escaping from underneath the deflector will be sufficient to prevent water agitated by the swaying of the engine or like causes from being thrown over the edges of the hook like flange and into the smoke stack. To prevent the water level from rising sufficiently in the casing to overflow into the smoke stack, I provide a novel means which will be now described.

Threaded into the bottom of the casing 11 is an outlet pipe 21 in which is disposed a valve 22 of any preferred construction. When this valve is open, it permits of the contents of the casing being drained off through the outlet pipe 21. Threaded into the side of the casing 11 below the plane of the top of the tube 12 is one extremity of

a pipe 23, the opposite extremity of this pipe being threaded into the outlet pipe 21 below the valve 22. It is evident that when the water level in the casing rises to the height of the open end of the pipe 23, it will have a free passage through this pipe into the outlet pipe 21. This construction prevents the water in the casing rising sufficiently to overflow into the smoke stack.

Threaded into the bottom of the casing 11 preferably diametrically opposite to the outlet pipe 21 is one end of an inlet pipe 24 the opposite end of this pipe being threaded into any convenient water supply.

A valve is preferably disposed in this pipe so that the flow of the water through the pipe may be regulated by the operator. It is preferable to have a continuous flow of water through this pipe so that the water in the casing evaporated by the heated gases emerging from the smoke stack will be continuously replenished. Should the water flowing through this pipe be more than sufficient to maintain the level of the water in the casing below the top edge of the smoke stack, it is evident that this superfluous water will be drained off through the auxiliary outlet pipe 23.

Arranged in the casing 11 above the deflector is a circular screen 25 of sufficient small mesh to prevent cinders emerging from the stack which have escaped being hurled into the water by the deflector. This screen is removably secured in the casing in any preferred manner, a simple construction being to secure a circular flange 26 to the inner walls of the casing 11, this flange forming an abutment for the marginal edge of the screen. A ring 27 is snugly fitted into the casing above the screen member and serves as a clamping ring which is sufficient in weight to prevent the displacement of the screen by the exhaust from the smoke stack. This screen together with the deflector 17 may be removed from time to time to permit of the insertion of a scoop or similar tool whereby to remove the accumulated ashes from the bottom of the casing 11. It is clear

that should it not be convenient to remove the screen deflector that the valve in the outlet pipe 21 may be opened when the pressure in the inlet pipe 24 may be increased so that the cinders together with the water will be drained off through the outlet pipe after which the valve in the outlet pipe may be closed and the pressure in the inlet reduced to its normal pressure.

It is clear that for domiciles the casing 11 may not be provided with the inlet and auxiliary valve described but simply with the main outlet pipe 22 since water can be poured in through the screen and will be directed by the deflector to the bottom of the casing.

From the foregoing description taken in connection with the accompanying drawing it is thought the construction and operation of my invention will be easily understood without a more extended explanation, it being understood that various changes in the form, proportion and minor details of construction may be made within the scope of the appended claim.

What is claimed is:—

A spark arrester for application to smoke stacks, comprising a tank having a central tube rising from its bottom, said tube terminating at its upper end in a hook like flange, adapted to fit over the top edge of the smoke stack and to reinforce the same to withstand the weight of the device, a plurality of spaced standards rising from the shoulder of said flange, a concave deflector plate removably secured to the upper ends of said standards and having its periphery disposed below the shoulder of said flange, a removable screen mounted in the tank above the deflector plate, an inlet pipe, and an outlet pipe assembled with the tank.

In testimony whereof, I affix my signature, in presence of two witnesses.

LUMAN L. GOODRICH, JR.

Witnesses:

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