March 25, 1930. A. CLARKSON 1,752,231

STEAM CLEANER

Filed Oct. 3, 1928

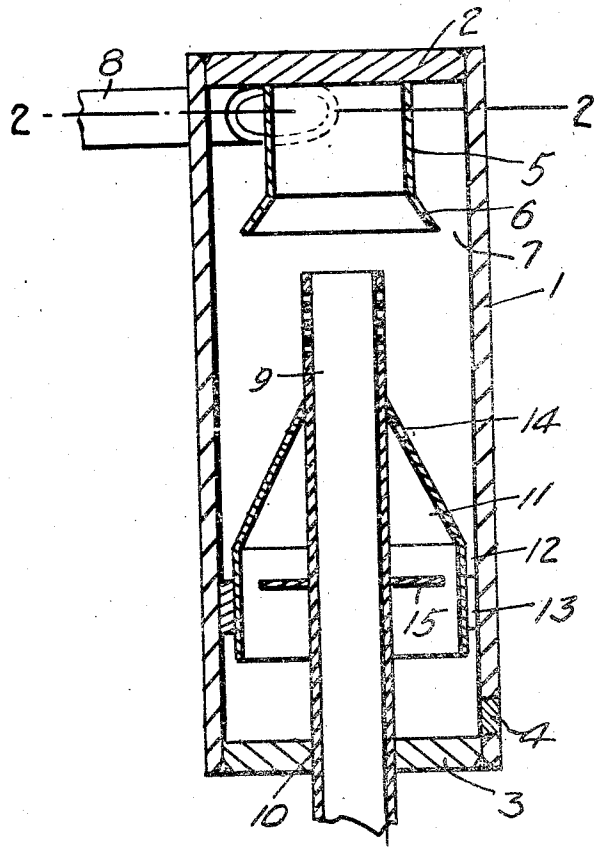


FIG. 1

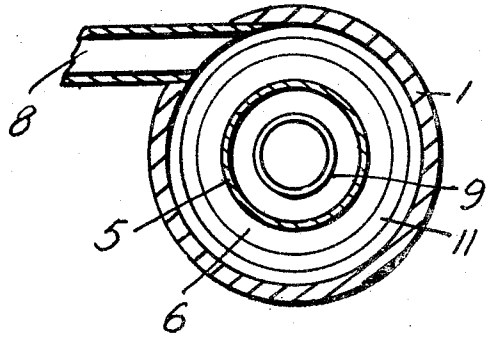


FIG. 2.

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UNITED STATES PATENT OFFICE

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STEAM CLEANER

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My invention relates to improvements in steam cleaners, and the object of the invention is to devise a simple means for removing particles of foreign matter from the steam so that such steam will be free therefrom as it passes to the engine preventing the detrimental effect thereof in the steam cylinders and other parts of the engine, and it consists essentially of the arrangement and construction of parts as hereinafter more particularly explained.

Fig. 1 is a sectional view through my steam cleaner.

Fig. 2 is a plan sectional view on line 2—2 Fig. 1.

In the drawings like characters of reference indicate corresponding parts in each figure.

1 indicates a cylindrical casing provided with upper and lower heads 2 and 3. 4 is a clean out orifice in the lower end of the cylinder casing 1.

5 is a cylindrical member which depends centrally from the head 2 and is provided at its lower end with an out turned annular inclined flange 6 forming a constricted annular opening 7 between the lower edge of the flange and the internal periphery of the casing 1. 8 is a feed inlet steam pipe leading tangentially into the casing 1 at its upper end. The steam is fed under pressure through the pipe 8 into the casing and travels around such casing between the internal periphery thereof and the exterior of the cylindrical member 5, the flange 6 tending to resist the downward passage of the steam so that a whirling action is provided forcing the steam outward against the interior periphery of the casing, the steam passing slowly down through the mouth 7.

By this action the foreign particles in the steam which are the heavier particles are carried outward by centrifugal action against the internal surface of the casing and fall downward by gravity, the main body of the steam passing through the mouth 7 is carried through the open end and perforated top of the vertical steam outlet pipe 9 which is secured in an orifice 10 formed in the lower head 3 of the casing in order to further resist the downward passage of the steam.

A hollow conical member 11 is carried by the outlet pipe 9 intermediately of the height thereof and of the height of the casing 1 so as to form a very small opening or passage between the periphery of such member and the internal periphery of the casing. Spacers 13 are provided to hold the member 11 in proper relation to the casing 1. 14 are perforations formed in the upper portion of the conical member 11, and 15 is an annular baffle flange carried by the pipe within the conical member 11. The steam which passes downward through the passage 12 and which serves also to carry the particles downward when it has passed through such mouth passes upward into the conical member 11 past the baffle plate 15 and through the orifice 14 into the main flow of steam passing outward into the upper end of the pipe 9.

The baffle plate 15 insures that no particles of foreign matter pass upward with this out flowing steam. The particles of foreign matter passing downward by gravity past the conical member 11 collect in the bottom of the casing 1 and are cleaned out periodically through the clean out orifice 4.

From this description it will be seen that I have devised a very simple device whereby all particles of foreign matter may be removed from live steam so as to render it more suitable for consumption.

What I claim as my invention is:—

1. A steam cleaner comprising a cylindrical casing having upper and lower heads, a steam inlet pipe leading tangentially into the upper end of the casing, a cylindrical member depending centrally from the upper casing head to form an annular interspace between itself and the wall of the casing and having an out turned lower edge portion forming a constricted annular steam outlet within the casing, a steam discharge outlet leading through the lower end of the casing, and means for baffling that portion of the steam with the descending particles of foreign matter to prevent the upward passage of such matter to the steam outlet.

2. A steam cleaner, comprising a cylin-

drical casing having upper and lower heads, a steam inlet pipe leading tangentially into the upper end of the casing, a cylindrical member supported centrally by the upper casing head to form an annular interspace between itself and the wall of the casing and having an out turned lower edge portion forming a constricted annular steam outlet within the casing, a steam discharge tube arranged axially within the casing and passing through the lower head thereof, and means carried by the tube for forming a constricted annular mouth between itself and the internal periphery of the casing and means for returning the steam passing outward through such restricted mouth with the foreign particles of matter back into the main flow of steam passing through the upper end of the discharge outlet.

3. A steam cleaner comprising a cylindrical casing having upper and lower heads, means for feeding the steam tangentially into the upper end of the casing to permit the foreign particles of matter contained in the steam to be carried out by centrifugal action against the inner periphery of the casing to pass downward and a steam discharge pipe extending centrally and longitudinally of the casing through the lower end thereof, a conical member carried by the steam discharge pipe intermediate of the height of the casing and forming an annular constricted outlet between itself and the wall of the casing through which the particles of foreign matter are adapted to fall, and means for returning the steam passing downward with such particles of foreign matter into the main steam flow to pass outward through the discharge.

4. A steam cleaner comprising a cylindrical casing having upper and lower heads, means for feeding the steam tangentially into the upper end of the casing to permit the foreign particles of matter contained in the steam to be carried out by centrifugal action against the inner periphery of the casing to pass downward and a steam discharge pipe extending centrally and longitudinally of the casing through the lower end thereof, a conical member carried by the steam discharge pipe intermediate of the height of the casing and forming an annular constricted outlet between itself and the wall of the casing through which the particles of foreign matter are adapted to fall and having perforations in the wall thereof adjacent its upper end.

5. A steam cleaner comprising a cylindrical casing having upper and lower heads, means for feeding the steam tangentially into the upper end of the casing to permit the foreign particles of matter contained in the steam to be carried out by centrifugal action against the inner periphery of the casing to pass downward and a steam discharge pipe extending centrally and longitudinally of the casing through the lower end thereof, a conical member carried by the steam discharge pipe intermediate of the height of the casing and forming an annular constricted outlet between itself and the wall of the casing through which the particles of foreign matter are adapted to fall and having perforations in the wall thereof adjacent its upper end, and an annular flange carried by the discharge pipe within the conical member.

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