W. J. McLEAN & J. L. McCAULEY.

OIL BURNER.

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1,039,569.

Patented Sept. 24, 1912.

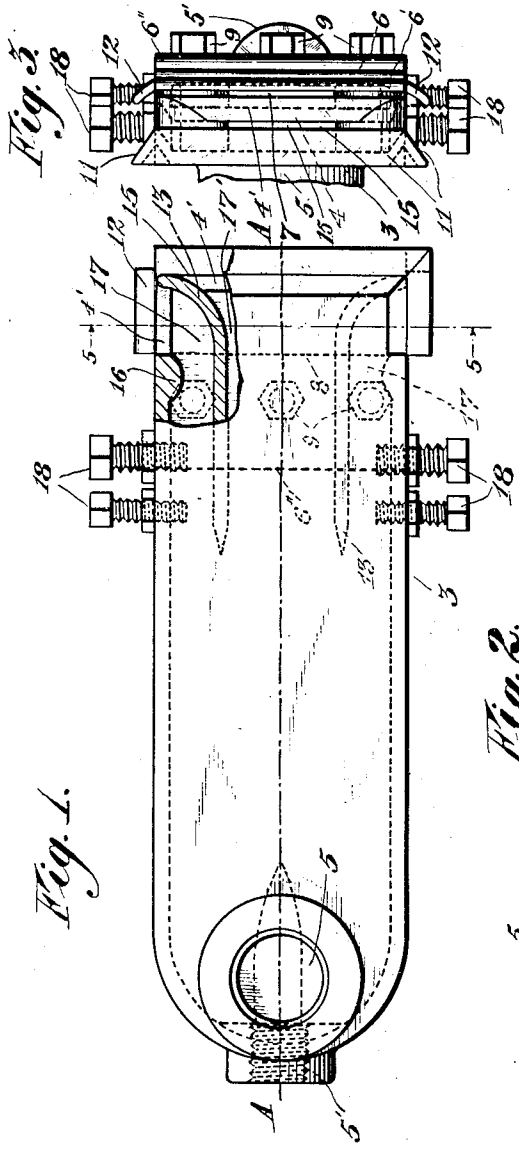

Fig. 1.

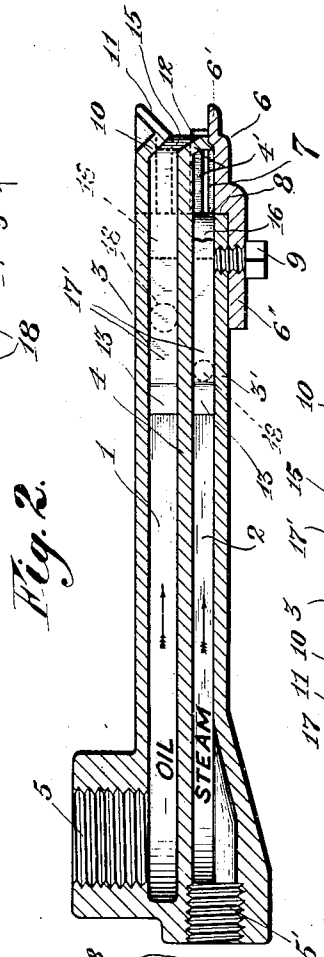

Fig. 2.

Fig. 3.

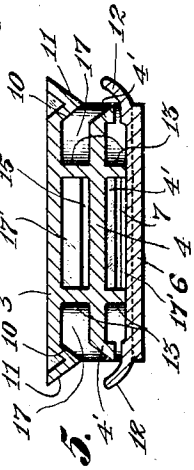

Fig. 5.

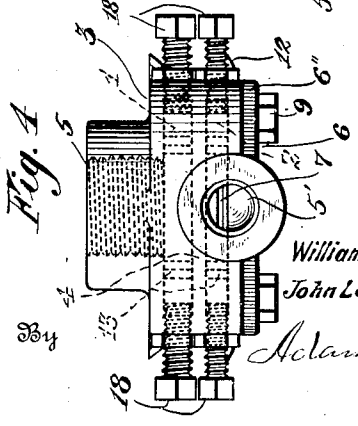

Fig. 4.

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UNITED STATES PATENT OFFICE.

WILLIAM J. McLEAN AND JOHN L. McCAULEY, OF BELLINGHAM, WASHINGTON.

OIL-BURNER.

1,039,569. Specification of Letters Patent. Patented Sept. 24, 1912.

Application filed March 27, 1911. Serial No. 617,222.

To all whom it may concern:

Be it known that we, WILLIAM J. McLEAN and JOHN L. McCAULEY, citizens of the United States, residing at Bellingham, in the county of Whatcom and State of Washington, have invented new and useful Improvements in Oil-Burners, of which the following is a specification.

Our invention relates to burners, having more particular reference to that type wherein the liquid fuel is atomized and delivered in the form of spray through the medium of an expansive fluid, and has for one of its objects the provision of a novel construction which is simple, durable and comparatively inexpensive to manufacture.

A further object consists in the provision of a burner wherein the combustible spray is directed for discharge both in forward and lateral directions.

Further our invention resides in a novel provision for regulating the size of the discharge opening for the expansive fluid.

Other objects will be set forth as our description progresses and those features of construction, arrangements and combinations of parts on which we desire protection, succinctly defined in our annexed claims.

Referring to the accompanying drawing wherein like numerals of reference indicate like parts throughout the several views: Figure 1 is a top plan of our burner, a portion of the upper wall thereof being broken away. Fig. 2 is a central longitudinal section thereof, a portion of the lower vertical partition being broken away. Fig. 3 is a front end elevation. Fig. 4 is a rear end elevation, and Fig. 5 is a cross section through the head end portion of the burner taken on line 5—5 of Fig. 1.

Referring to the drawing by numerals of reference, 1 and 2 indicate oil and steam passages respectively, these being conveniently provided, with the former above the latter, in a casing 3, divided by a horizontal or longitudinal partition 4, on opposite sides of which said casing is provided with threaded intake openings 5, 5′ adapted to receive pipes leading to suitable sources of supply of oil or other suitable liquid fuel and steam respectively. The forward end portion of partition 4 projects beyond the adjacent bottom wall 3′ of casing 3 and such projecting portion is turned downwardly at its free end and opposite side portions, as at 4′.

Reference numeral 6 indicates a removable end extension plate for wall 3′, the same at its outer edge portion being provided with a projecting lip 6′ which is slightly elevated with respect to the inwardly disposed portion of the plate and extends outwardly from a point directly beneath flange 4′, to thereby in conjunction with the latter define a narrow discharge slot or mouth 7, whose width can be varied in a manner to be now set forth.

Reference numeral 8 indicates a vertical shoulder provided on plate 6, this abutting the end of wall 3′ and adapted for vertical movement thereon as permitted upon the inward or outward adjustment of suitable screws 9, which latter project through apertures in a rearward extension 6″ of plate 6 and have screw threaded engagement in wall 3′.

The free edge portion of the upper wall of casing 3 is provided with a depression substantially V-shaped in cross section, providing a downwardly inclined deflector 10 which overlies flange 4′ to provide an outlet slot or mouth 15, and an outwardly disposed reversely inclined lip portion 11, which latter overlies lip 6′, as more clearly shown in Fig. 2.

Reference numeral 12 indicates upwardly inclined deflectors at the sides of the burners, these comprising extensions of plate 6.

Our invention is particularly designed for use in connection with the fire boxes of locomotives and stationary boilers and in constructing the burner as hereinbefore described, we have aimed to provide a construction in which the fuel is delivered not only in a forward direction, but also well to either side, thereby permitting of the burner having a wider field of action with a decrease in the length of such field, thus obviating injury by the flames to that wall of the fire box lying opposite the burner. In the furtherance of this object we have provided each of the passages 1 and 2 with a pair of vertical partitions 13, these being relatively spaced to provide outer and inner passages 17, 17′ respectively, and having their outer end portions curved in opposite directions and forming dividing walls at

the discharge end of the burner, extending to the discharge mouths 7 and 15 intermediate the front and side sections.

Reference numeral 16 indicates internal swells or bosses on the side walls of passages 1 and 2 adjacent the delivery ends of the latter, the same being curved and serving to prevent straight line movement of the fluid in a forward direction across the side sections of mouths 7 and 15. In the outer passages 17, valves, as 18 are provided, the same conveniently consisting of screws, which project through and have threaded engagement in the side walls of casing 3.

Having thus fully described our invention, what we claim as new and desire to secure by Letters Patent of the United States, is:—

1. A burner comprising a casing provided with a pair of passages having discharge mouths, said mouths having open side portions, and longitudinal partitions in the passages of said casing having end portions turned outwardly to deflect fluid through the side portions of said discharge mouths.

2. In a burner, a casing provided with a fluid passage having a discharge end, longitudinal partitions in said passage of the casing spaced to provide outer and intermediate channels, the portions of said partitions adjacent the discharge end of the passage being disposed to deflect the fluid in a lateral direction, and valve means in said casing for controlling the flow of fluid through the outer of said channels.

3. In a burner, a casing provided with a fluid passage, longitudinal partitions in said passage of the casing spaced to provide outer and intermediate channels, end portions of said partitions being angularly disposed to deflect the fluid in a lateral direction, and valves in the outer of said channels.

4. A burner comprising a casing having a top, bottom, spaced side walls and a discharge end, a horizontal longitudinal partition in said casing between the side walls, dividing the same into a pair of passages, the end portion of said partition at the discharge end of the casing being offset to provide a deflecting flange, and a plate removably secured to the bottom of said casing and projecting forwardly beneath the flange of said partition and providing in conjunction therewith a narrow discharge mouth for the adjacent passage.

5. A burner, comprising a casing, a horizontal partition in said casing dividing the same into a pair of passages, one of the end portions of said partition being offset to provide a deflecting flange, a plate projecting forwardly beneath the flange of said partition, said plate being provided with a shoulder abutting the end of the casing, and means removably securing said plate to said casing for permitting the adjustment of its said shoulder thereon, for the purpose specified.

6. A burner, comprising a casing, a horizontal partition in said casing dividing the same into upper and lower passages, the upper wall of said casing projecting beyond its lower wall, said partition having one of its end portions provided with a downdardly projecting flange, a plate forming an extension of the bottom wall of said casing projecting beneath the flange of said partition to provide a discharge mouth, the outer end portion of the upper wall of said casing being provided with a deflecting portion, directed toward said plate, and means adjustably securing said plate to said casing.

7. A burner, comprising a casing, a horizontal partition in said casing dividing the same into upper and lower passages having discharge mouths extending across one end and at the sides of the casing, the upper wall of said casing projecting beyond the lower wall thereof and having its projecting portion provided on its sides and end with a downwardly extending deflecting part, said partition having its end portion at the discharge mouths provided with a downwardly projecting flange underlying the deflecting part of said top wall of the casing, and a removable extension plate secured to the bottom wall of said casing and projecting beneath the flange of said partition.

8. A burner, comprising a casing provided with passages having discharge end portions, and longitudinal partitions, said partitions of the casing subdividing the passages adjacent their discharge end portions, the end portions of said partitions contiguous to the discharge end portions of the passages being directed in relatively opposite directions for effecting a lateral discharge of a portion of the fluid, said casing at points opposite the angularly disposed end portions of said partitions being formed with inwardly curved fluid deflecting bosses.

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