

No. 893,833.

PATENTED JULY 21, 1908.

J. H. BECKMAN.
BURNER.

APPLICATION FILED JUNE 17, 1907.

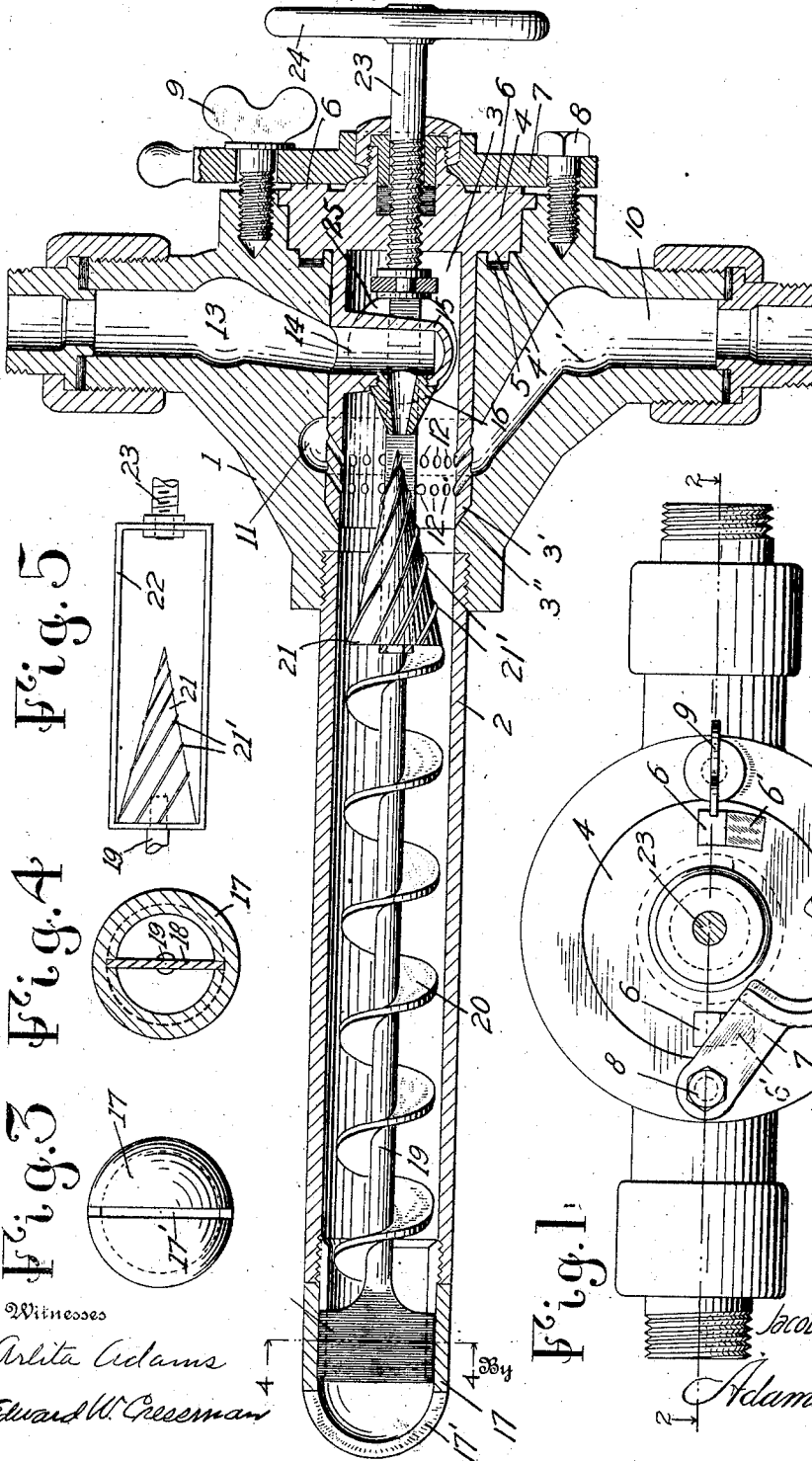


Fig. 2

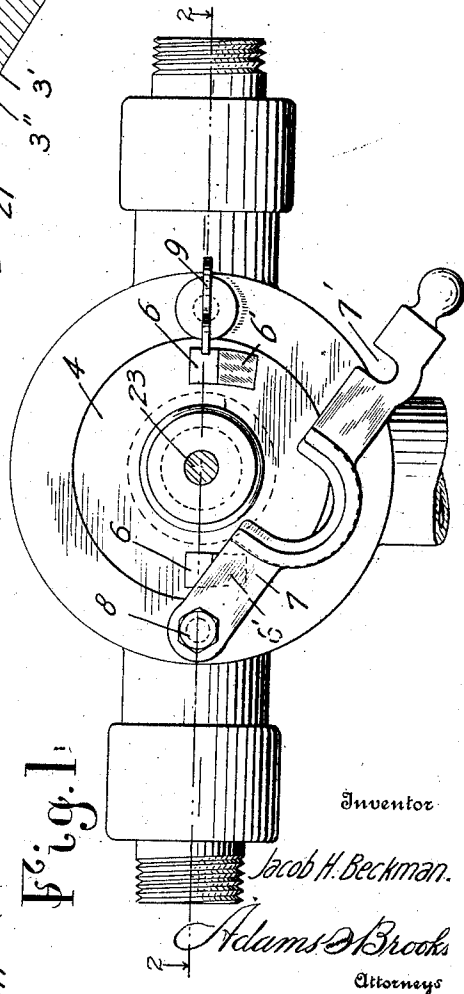


Fig. 3

Fig. 4

Fig. 5

Witnesses

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Fig. 1

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BURNER.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JACOB H. BECKMAN, a citizen of the United States of America, and a resident of the city of Seattle, in the county of King and State of Washington, have invented certain new and useful Improvements in Burners, of which the following is a specification.

My invention has for its primary object the provision of an improvement of the above type, which while being comparatively simple in construction, can be quickly cleaned when desired, readily controlled and operated in an efficient manner.

A further object is to provide atomizer means of novel construction, through the medium of which the oil, steam and air will be thoroughly mixed during their travel toward the point of ignition.

Further objects will be set forth as the description progresses, and those features of construction upon which I desire protection, succinctly defined in the appended claims.

Referring now to the accompanying drawing, in which like numerals of reference indicate like parts throughout the several views: Figure 1 is a rear end elevation of my invention, the securing means or arm for the removable shell being swung downwardly. Fig. 2 is a section taken on line 2—2 of Fig. 1. Fig. 3 is a detail view in front elevation of the nozzle. Fig. 4 is a section taken on line 4—4 of Fig. 2, and Fig. 5 is a detail fragmentary view showing the yoke connection between the atomizer and the adjusting screw.

The body of my improved device consists of a hollow casting 1 to the forward end of which is removably secured a tube 2.

Reference numeral 3 indicates a hollow shell, inserted into casting 1 from the rear side thereof, and provided with a head 4 whose projecting edge portion has bearing on a shoulder 1' of casting 1 and is provided with rib 4', projecting into a groove formed in said shoulder and engaged with a packing ring 5 arranged therein. On its outer face head 4 is provided with cam lugs 6, having inclined faces 6' adapted to be engaged by an arm 7 as the latter is swung upwardly on its pivot 8, so as to force shell 3 inwardly and cause its beveled inner edge portion 3' to be seated firmly against its seat 3". When arm 7 is elevated to a substantially horizontal position, it is secured by a screw 9, whose shank is received in a slot 7' of said arm, as is apparent.

Casting 1 is formed with an oil conduit 10 which extends inwardly and communicates with a comparatively broad and deep groove or channel 11; the latter extending entirely around shell 3 so as to permit of oil being fed through forwardly inclined ports or openings 12 of shell 3 in a uniform manner. Ports or openings 12 are arranged in rows extending entirely around the shell.

Reference numeral 13 indicates a steam conduit formed in casting 1, through which steam received as from a superheater (not shown), is fed to a conduit 14, formed in an inwardly projecting part 15 of shell 3. Conduit 14 is provided with an orifice having a discharge nipple 16 which is disposed substantially central in shell 3 and arranged to direct steam for discharge past the oil openings or ports 12.

Tube 2 is provided at its outer end with a nozzle 17 having a slot 17' through which the fuel is discharged, and a valve 18 is mounted for sliding in said nozzle, said valve being comparatively narrow and capable of being projected more or less into slot 17' of said nozzle to control the flow of the fuel. Valve 18 is fixed to a stem 19 arranged longitudinally in tube 2, the interior of which forms an atomizing chamber and a helical blade 20 extending rearwardly from said valve is also fixed to said stem, whereby upon adjustment of said valve, the blade 20 will also be adjusted, so that a uniform distance between said blade and the exposed portion of slot 17' will always be maintained. On the inner end of stem 19, a head 21 is secured. Head 21 is conical in form and is provided with external ribs 21' forming spiral grooves therebetween. The reduced end of head 21 is disposed directly in front of nipple 16.

The adjusting means for valve 18, spiral blade 20 and head 21 comprises a yoke 22 having one end bar connected to stem 19 forwardly of head 21 and its side bars extending on opposite sides of part 15, and an adjusting screw 23, having its inner end portion swiveled in the outer end bar of said yoke. Adjusting screw 23 is preferably provided on its outer end with a hand wheel 24.

In operation, oil fed under pressure, entering the atomizing chamber through ports 12, strikes the side of head 21 and is caught by the steam, which upon striking the pointed end portion of said head is thrown outwardly, as is obvious, and commingled with air sucked into the chamber through port 25.

As the oil, steam and air passes head 21, through the grooves 21' thereof, it is caused to whirl rapidly so as to insure of its being thoroughly mixed, then it travels about spiral blade 20 being kept in a whirling mass so as to keep the component parts in their mixed condition until it reaches the point of ignition.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent of the United States of America is:—

1. A burner provided with a chamber formed in its wall with oil passages, an atomizer arranged in said chamber comprising a tapered body formed with external grooves and having its reduced end disposed opposite the oil passages of said chamber whereby oil will be discharged against the side thereof, means for directing steam against the reduced end of said atomizer, a nozzle arranged to receive fuel from said chamber, and a valve for controlling the flow of fuel through said nozzle.

2. A burner provided with a chamber, an atomizer comprising a tapered body supported in said chamber, there being oil passages in the wall of said chamber arranged for directing oil as it enters said chamber against the side of said atomizer, a discharge means to the rear of said atomizer for directing steam for discharge directly against the reduced end portion thereof, a nozzle arranged to receive fuel from said chamber, and a valve for controlling the flow of fuel through said nozzle, for the purpose specified.

3. In a burner construction, a hollow body formed with a plurality of conduits, a shell arranged in said body and provided at its outer end with a head, an arm supported across the end of said body, and cam means engaged by said arm for securing said shell in position, said shell being formed with means communicating with the conduits of said body for admitting fluids therein, and atomizer means disposed in the path of the fluids flowing in said shell, for the purpose specified.

4. In a burner construction, a hollow body formed in its rear portion with a seat, said body being formed with conduits, a shell arranged in said body and provided at its rear end with a head having an outwardly projecting edge portion fitted in the seat of said body, said shell being formed with means communicating with the conduits of said body for permitting fluids flowing through said conduits to enter, means for mixing the fluids received in said shell, the head of said shell being formed with cam means, and an arm pivoted on said body arranged to engage the cam means on the head of said shell for securing said shell in position, as specified.

5. In a burner construction, a body provided with a mixing chamber, a nozzle connected to said body, a slide valve for controlling the flow of fluid through said burner, a helical blade in said chamber connected to said valve for movement therewith, and a tapered head secured to said blade formed on its exterior with spiral grooves.

6. In a burner construction, a hollow body formed on its interior with a groove and oil and steam conduits, the oil conduit communicating with said groove, said body being provided in its outer end portion with a shoulder, a removable shell arranged in said body and having a head engaged on the shoulder thereof, said shell being formed with conduits communicating with the groove in said body, means projecting into said shell to the rear of the conduits thereof, said means being formed with a conduit communicating with the steam conduit of said body and being formed with a discharge orifice, means engaged with the head of said shell for preventing displacement of the shell from said body, a nozzle arranged to receive fuel from said shell, and a valve for controlling the flow of fuel through said nozzle.

Signed at Seattle, Washington, this 6th day of June, 1907.

JACOB H. BECKMAN.

Witnesses:

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