

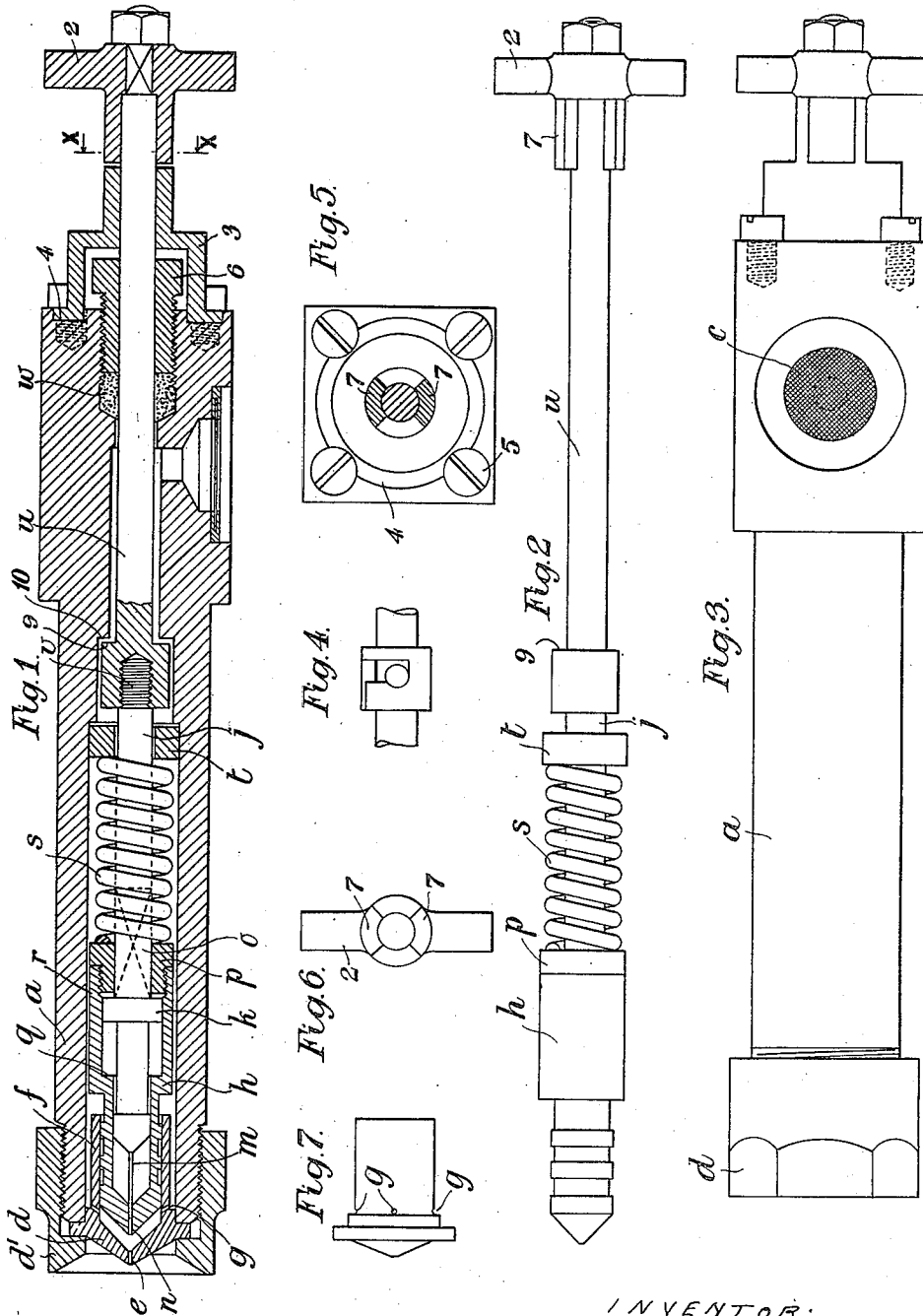
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J. S. GANDER.

APPARATUS FOR SPRAYING OIL FUEL OR OTHER LIQUIDS.

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UNITED STATES PATENT OFFICE.

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APPARATUS FOR SPRAYING OIL FUEL OR OTHER LIQUIDS.

Application filed June 2, 1921. Serial No. 474,319.

To all whom it may concern:

Be it known that I, JAMES SANDFORD GANDER, of 40, Claremont Road, Forest Gate, Essex, England, a subject of the King of Great Britain and Ireland, have invented certain new and useful Improvements in or Relating to Apparatus for Spraying Oil Fuel or Other Liquids, of which the following is a specification.

This invention relates to apparatus for spraying oil fuel or other liquids, and is particularly applicable to oil fuel burners.

Hitherto it has been necessary to dismantle apparatus of this kind for cleaning purposes and also to disconnect the source of supply. It is well known in oil burning apparatus that the orifice through which the liquid issues, tends to become choked by deposits or impurities.

The object of this invention is to provide an improved apparatus of this kind which will overcome these difficulties, and will enable the deposits or impurities to be removed from the faces of the atomising cones and from the orifice or orifices, through which the liquid issues without dismantling the apparatus or disconnecting it from the source of supply.

In apparatus for spraying oil fuel and other liquids made in accordance with this invention a tool is disposed within the apparatus provided with a scraping or grinding surface adapted to clean the inner surface of the nozzle and a piercing member adapted to clear the spraying orifice, the said tool being adapted to prevent the access of liquid to said spraying orifice when in the operative position.

The said piercing member is preferably mounted on a plunger within the casing, and the said scraping surface preferably forms part of a sleeve disposed between said plunger and said casing and is shaped so as to bear upon the inner surface of said nozzle.

Referring to the drawings filed herewith, which show one form of apparatus made in accordance with this invention:—

Fig. 1 is a sectional elevation of the apparatus;

Fig. 2 is a plan of the plunger;

Fig. 3 is a plan of the apparatus complete;

Figure 4 shows an alternative method of disconnecting the plunger rod;

Fig. 5 is a sectional end view on line X—X of Fig. 1; looking in the direction of the arrows;

Fig. 6 is an end view of Fig. 2;

Fig. 7 is a detailed view of the spraying nozzle.

Referring now to Fig. 1 *a* is a casing *b* an inlet for liquid provided with a filter gauze *c*. A spraying nozzle *d* is disposed at one end of the casing and is secured by a nut *d'*. *e* is a centrally disposed spraying orifice in the nozzle *d* which is further provided with a nozzle sleeve *f* having a plurality of orifices *g* (see Fig. 7). These orifices *g* are drilled obliquely in order to impart rotary motion to the liquid passing through them. In the nozzle sleeve *f* is disposed a plunger sleeve *h* on which is formed a grinding surface. The sleeve *h* is a loose fit in the nozzle sleeve and is adapted to slide axially and to be rotated therein. A plunger rod *j* having a collar *k* operates in the sleeve *h*. On the plunger rod *j* is a piercing member *m* which is normally sheathed in the aperture *n* disposed in axial alignment with the spraying orifice *e*. The plunger rod *j* is provided with a squared portion *o* which passes through the sleeve nipple *p*. Thus it will be seen that the plunger rod *j* is free to move axially in the sleeve *h* so far as the limit imposed by the collar *k* abutting against the shoulders *q* and *r* respectively, but the rotation of the plunger rod will cause the sleeve *h* to rotate also. A spring *s* is provided one end of which abuts on the nipple *p* and the other end on a washer *t*. The plunger *j* is provided with an extension *u* which may be screwed on to the rod *j* as shown at *v* or alternatively may be connected to the rod *j* by a bayonet joint as shown in Fig. 4. The rod *u* extends through one end of the casing, passes through a packing gland *w* and is provided with a T handle 2.

Between the end of the casing and the T handle is a distance piece 3 provided with a flange 4 which is for the purpose of being gripped by four set screws 5 but the arrange-

ment is such that the distance piece may be freely rotated by hand and is cut away at opposite sides to allow the gland nut 6 to be operated. The T handle 2 is provided with jaws 7 and the distance piece 3 is provided with jaws 8, the jaws 7 on the T handle fitting between the jaws 8 on the distance piece when the plunger rod is in the operative position. A shoulder 9 is formed on the rod *u* which abuts against a corresponding shoulder 10 in the casing, and limits the movement of the rod in the outward direction.

In operation when the coned surface behind the spraying orifice *e* becomes choked with deposits or the orifice itself becomes choked the handle 2 is turned so that the jaws 7 come opposite the spaces in the jaws 8 of the distance piece 3, the handle then moves inwards under the action of the spring *s* causing the sleeve *h* to move forward till the grinding surfaces thereon bears on the conical surface behind the orifice *e*.

The grinding surface of the sleeve *h* is so constructed as to coincide with the conical surface behind the orifice *e*. The handle is then rotated, causing the sleeve *h* to rotate also, and thus grind down the deposits. It will be noted that the sleeve *h* closes the orifices *g* during this process so that there is no necessity to shut off the supply of liquid, and no dirt, dislodged or stirred up during the scraping or rubbing process, can enter the orifices *g*.

On further pressing the handle inwards to the full extent allowed by the jaws 7 and 8 the piercing member *m* which has so far been sheathed in the aperture *n* of the sleeve *h*, will be caused to pass through the spraying orifice *e* thereby cleaning it. When the impurities and deposits have been removed the handle is withdrawn to the full back position and in this position the jaws 7 will have come out of engagement with the jaws 8 on the distance piece 3 and in order to retain them in position the handle is partially rotated till the jaws 7 and 8 come opposite one another.

With a device made in accordance with this invention deposits and impurities may be removed from the orifice and from the spraying nozzle without dismantling the apparatus or disconnecting it from the source of liquid supply. Further the operation can

be performed in a few seconds without even turning off the liquid.

What I claim and desire to secure by Letters Patent is:—

1. In apparatus for spraying oil fuel and other liquids, comprising a casing, a liquid spraying nozzle having a spraying orifice, a plurality of inlet orifices communicating with said spraying orifice and a liquid inlet to said casing, means for cleaning said spraying orifice and the interior of said liquid spraying nozzle in combination with means for closing the said oil inlet orifices to prevent dirt dislodged during the cleaning operation from getting into said oil inlet orifices.

2. In apparatus for spraying oil fuel and other liquids, comprising a casing, a liquid spraying nozzle having a spraying orifice, a plurality of inlet orifices communicating with said spraying orifice and a liquid inlet to said casing, the combination of a tool within the apparatus provided with a rubbing surface adapted to clean the interior of said spraying nozzle and a piercing member adapted to clear said spraying orifice, said rubbing surface forming part of a sleeve mounted in the casing and shaped to bear upon the interior of said spraying nozzle, said piercing member being mounted on a plunger within said sleeve.

3. Apparatus for spraying oil fuel and other liquids comprising a casing, a liquid spraying nozzle having a spraying orifice, a plurality of inlet orifices communicating with said spraying orifice, and a liquid inlet to said casing, a plunger rod operating in and passing out of said casing, a plunger sleeve on said plunger rod adapted to slide and be rotated in said spraying nozzle, a punch pin on said plunger rod adapted to be passed through an orifice in said plunger sleeve and through said spraying orifice, means for limiting the movement of said plunger rod with respect to the casing, means for limiting the movement of said plunger sleeve with respect to said plunger rod and means for preventing the access of dirt to said inlet orifices when said plunger sleeve and said plunger rod are in the operative position.

In testimony whereof I have signed my name to this specification.

JAMES SANDFORD GANDER.