

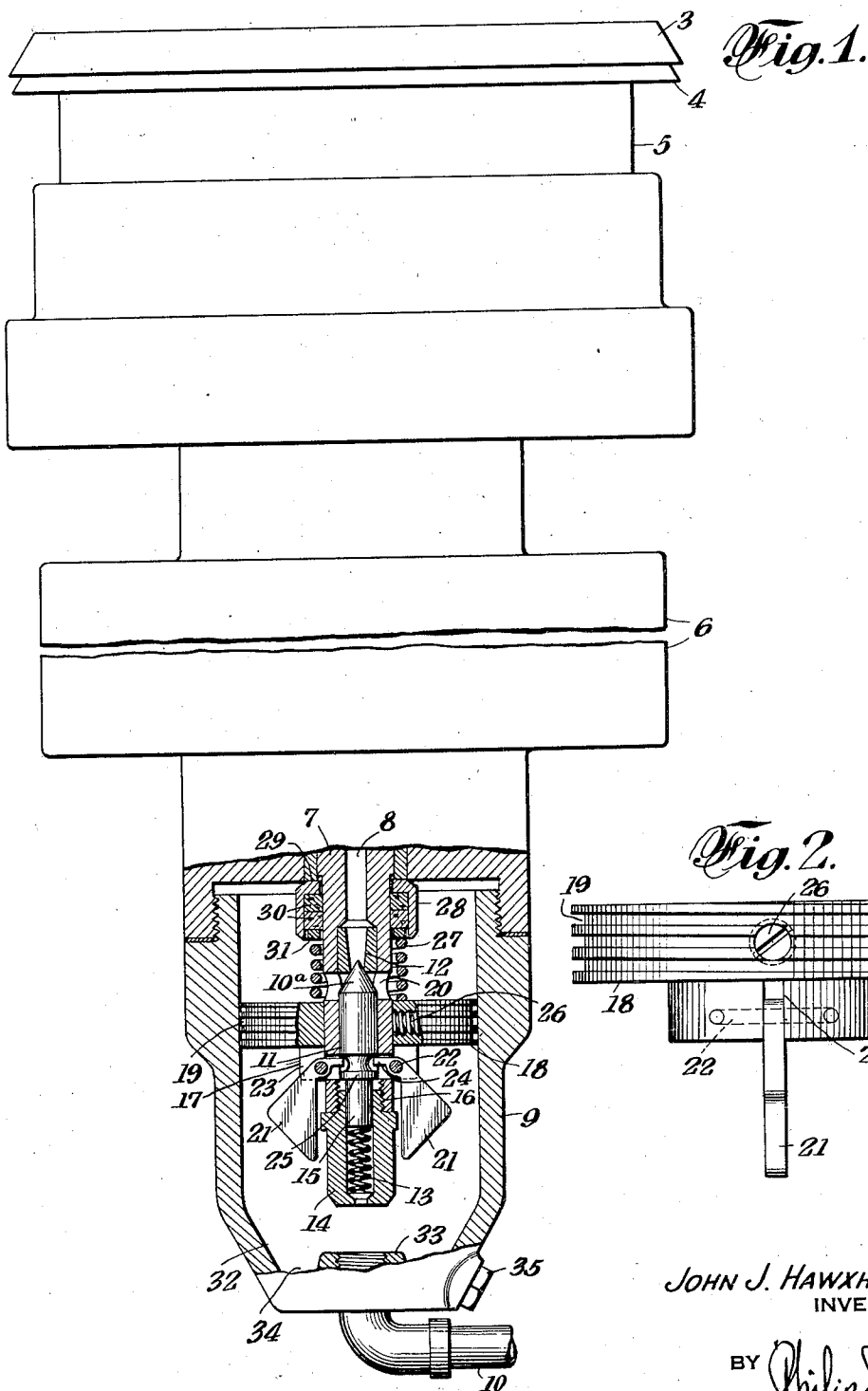
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OIL BURNER

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OIL BURNER

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7 Claims. (Cl. 103—40)

This invention relates to oil burners or ap-
paratus generally similar to that disclosed in
Patent No. 1,935,318 of November 14, 1933 (ap-
plication filed September 23, 1930, Ser. No.
483,779), of which the present invention is a
division.

Special objects of the invention are to provide
an automatic shut-off for the fuel, which can be
depended upon to close off the fuel flow when
the burner shuts down or if the motor stops un-
intentionally or loses proper operating speed and
to supply such a shut-off in a practical inexpen-
sive form, directly applicable to the motor.

Further objects of the invention are to com-
bine in a single unit, an automatic shut-off valve
and impeller readily attachable direct to the
motor shaft.

Other objects and the various novel features of
the invention by which the desired objects are
attained will appear in the course of the follow-
ing specification.

In the drawing accompanying and forming
part of this specification, one practical embod-
iment of the invention is illustrated and it is to
be understood that the structure may be mod-
ified with respect to this present illustration, all
within the true spirit and broad scope of the in-
vention.

Fig. 1 in the drawing is a broken outline ele-
vation of a burner structure, like that of the
patent above identified, with the valve and im-
peller mechanism at the lower end of the same
appearing in vertical section.

Fig. 2 is an enlarged side elevation of the im-
peller and governor valve unit.

In Fig. 1, only an outline of the upper portion
of the burner is indicated, comprising an atomizer
head made up of atomizer discs 3, 4, overstand-
ing a stationary burner head 5, at the top of an
electric motor 6.

The shaft of the motor is designated 7, extend-
ing vertically and having a passage 8, extending
upwardly therethrough as an oil supplying con-
duit to the atomizer head on the upper end of
the shaft.

The lower end of the tubular motor shaft is
surrounded and enclosed by a well or chamber
9, to which the oil supply piping 10 may be con-
nected.

Admission of oil to the hollow motor shaft is
controlled in the present invention by a self-
closing bevelled pointed valve 10a, slidingly po-
sitioned in the lower cylindrical guide portion 11
of the shaft and cooperating with a valve seat

bushing 12, seated up in the shaft ahead of the
cylindrical valve guiding part 11.

The valve is thrust upward to its seat by spring
13, engaging the lower end of the same and
housed within a cap 14, into the upper end of
which the stem portion 15, of the valve has a
free sliding fit.

For mounting purposes, the spring enclosing
and supporting cap 14 has a screw engagement at
16, in the lower end of the motor shaft 7. The
impeller 18 is shown as having an oil feeding
screw 19, in the rim of the same, cooperating
with the wall of the surrounding well to force
oil into the upper portion of the chamber where,
when the valve is retracted, it can pass through
side ports 20, up through the tubular shaft.

The retraction of the valve is effected auto-
matically by centrifugally operating weighted
levers 21, shown as pivoted at 22, in guide slots
23, cut in the hub 17 of the impeller, said levers
having angular extensions 24, at the upper ends
of the same for engaging shoulder 25 on the
valve.

The closing force of the automatic shut-off
valve is controlled by the strength of spring 13.
The weight of the centrifugally operating valve
retracting levers 21, may be fixed to open the
shut-off valve when the motor reaches a proper
operating speed and to permit automatic closure
of this valve when the motor falls below that
proper operating speed. Consequently, the oil
supply to the atomizer head will be automatically
shut off whenever the burner stops or drops be-
low a predetermined operating speed.

The impeller is shown as adjustably secured
over the lower tubular valve guiding portion of
the motor shaft by set screw 26 and in its proper
secured position on the shaft it operates to lift
the oil positively up through the hollow motor
shaft to the atomizer. The governor valve may
be set to close quickly and before the lift or pres-
sure created by the impeller, as it comes to rest
can force out any oil at the atomizer head. This
lifting action of the impeller also is desirable be-
cause of the fact that the centrifugal weights
have the effect of agitating or stirring up the oil
in the chamber and the impeller serves to cor-
rect this condition, definitely feeding the oil
through the inlet ports and up the hollow shaft.

The oil lifting impeller disc has an additional
purpose in the present disclosure and that is to
serve as an abutment for the spring 27, which
holds the cup 28, of the oil seal in rotative en-
gagement with the lower end bearing 29 of the
motor. This oil seal cup contains one or more

compressible washers 30, in sealing engagement with the shaft and an end compressing washer 31, directly engaged by the spring 27. The setting of the impeller disc on the motor shaft thus determines the tension of the oil seal spring and the impeller may therefore be adjusted one way or the other on the shaft for the purpose of properly setting the oil seal.

The oil supply well 9 is shown as tapered at its lower end as at 32, and the oil supply line is shown brought into the well through a hub portion 33, rising from the center of the well, thus providing in effect an annular trough or gutter 34, for collection of any solid matter which may be taken out on removal of the drain plug 35. It will be noted that the centrifugal weights are hung so that as they drop down with the motor shaft coming to rest, they may exert a lifting effect on the valve to close the same, which is desirable in case of weakening of the valve closing spring.

What is claimed is:

1. A device of the character disclosed, comprising in combination, a vertically disposed hollow shaft motor, a liquid supply well enclosing the lower end of said hollow shaft, the motor having a lower shaft bearing exposed to said supply well, an oil sealing ring surrounding said shaft and rotatably engaging the lower end of said shaft bearing, compressible packing carried by said ring and engaging the shaft, a spring surrounding the shaft and acting on said packing and ring, a centrifugally opening valve on the shaft below said sealing ring and spring and controlling entrance from said well to the lower end of the hollow motor shaft and a common support for said motor seal spring and said centrifugal valve mechanism having securing means by which the same may be adjustably secured on the shaft in position to properly mount the centrifugal valve and serving as an abutment for tensioning the motor seal spring.

2. A device of the character disclosed, comprising in combination, a vertically disposed hollow shaft motor, a liquid supply well enclosing the lower end of said hollow shaft, the motor having a lower shaft bearing exposed to said supply well, an oil sealing ring surrounding said shaft and rotatably engaging the lower end of said shaft bearing, compressible packing carried by said ring and engaging the shaft, a spring surrounding the shaft and acting on said packing and ring, a centrifugally opening valve on the shaft below said sealing ring and spring and controlling entrance from said well to the lower end of the hollow motor shaft and a common support for said motor seal spring and said centrifugal valve mechanism, said common support having securing means by which the same may be adjustably secured on the shaft in position to properly mount the centrifugal valve and as an abutment for tensioning the motor seal spring, said support consisting of a pump member for forcing liquid into the lower end of the hollow motor shaft under control of the centrifugally opening valve.

3. In apparatus of the character disclosed, the combination of a motor having an upright tubular shaft, an oil supply chamber enclosing the lower end of said shaft, said shaft having a valve seat in said lower end portion of the same, a movable valve element on said lower end portion of the shaft in cooperative relation to said valve seat and governor weight means within said oil supply chamber, carried by and rotating with

said motor shaft and connected with said valve element to effect opening movement of the same under influence of centrifugal force generated by rotation of the motor shaft and whereby said motor shaft will be effective to serve as an oil conduit only when the motor is actually in operation.

4. A device of the character disclosed, comprising in combination, a vertically disposed hollow shaft motor, a liquid supply well enclosing the lower end of said hollow shaft, the motor having a bearing surrounding the shaft and exposed to said supply well, an oil sealing ring surrounding said shaft and rotatably engaging the lower end of said bearing, compressible packing carried by said ring and engaging the shaft, a spring surrounding said shaft and operating to hold said sealing ring yieldingly and rotatably in sealing engagement with said bearing, a centrifugally opening valve on the shaft below said sealing ring and controlling entrance of liquid from said supply well into the lower end of said hollow motor shaft and pump means driven by said shaft for forcing liquid up through said hollow motor shaft under control of said centrifugally opening valve.

5. A device of the character disclosed, comprising in combination, a rotary tubular shaft forming a liquid conduit, a liquid supply well enclosing one end of said tubular shaft, a stationary sealing bearing about said shaft and exposed to said liquid supply well, an oil sealing ring surrounding said shaft and rotatably engaging the adjacent end of said stationary sealing bearing, compressible packing engaging said ring and carried by the shaft, a spring surrounding the shaft and operating to hold said oil sealing ring rotatably and yieldably engaged with said stationary sealing bearing, a centrifugally opening governor valve on the end of said tubular shaft and entirely within the liquid supply well and pump means operated by said tubular shaft for forcing liquid through the same under control of said centrifugally opening governor valve.

6. A device of the character disclosed, comprising in combination an upright tubular rotary shaft forming a liquid conduit, liquid supply connections to the lower end of said shaft and including a liquid supply well enclosing the lower end portion of said upright tubular shaft, pump means operated by said shaft for forcing liquid from said liquid supply well up through said upright tubular rotary shaft, a centrifugally opening governor valve on the lower end of said upright rotary tubular shaft located entirely within said enclosing liquid supply well for permitting liquid flow created by the pump up through the shaft during rotation of the latter and for automatically closing the lower end of the shaft to the liquid supply well upon the shaft slowing down or ceasing to rotate and a self-adjusting rotary seal between said tubular motor shaft and liquid supply well for holding liquid pumped to said well by said means and trapped by the closing of said governor valve.

7. A device of the character disclosed, comprising in combination a motor having an upright rotating tubular shaft forming a substantially vertical liquid conduit, a liquid supply chamber surrounding and enclosing the lower end portion of said tubular motor shaft, a stationary sealing bearing on said motor about that portion of the shaft projecting into said liquid supply chamber, an oil sealing ring, means adjustably mounting said ring in rotative sealing engagement with said stationary sealing bearing,

a valve carried by the shaft and controlling communication between said liquid supply chamber and the substantially vertically extending conduit in said motor shaft and centrifugal governor mechanism on the lower end portion of the shaft enclosed by and operating within said liquid sup-

ply chamber and connected with said valve to open the latter when the motor is operating and to close off communication between the liquid supply chamber and the motor shaft conduit when the motor is at rest.

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