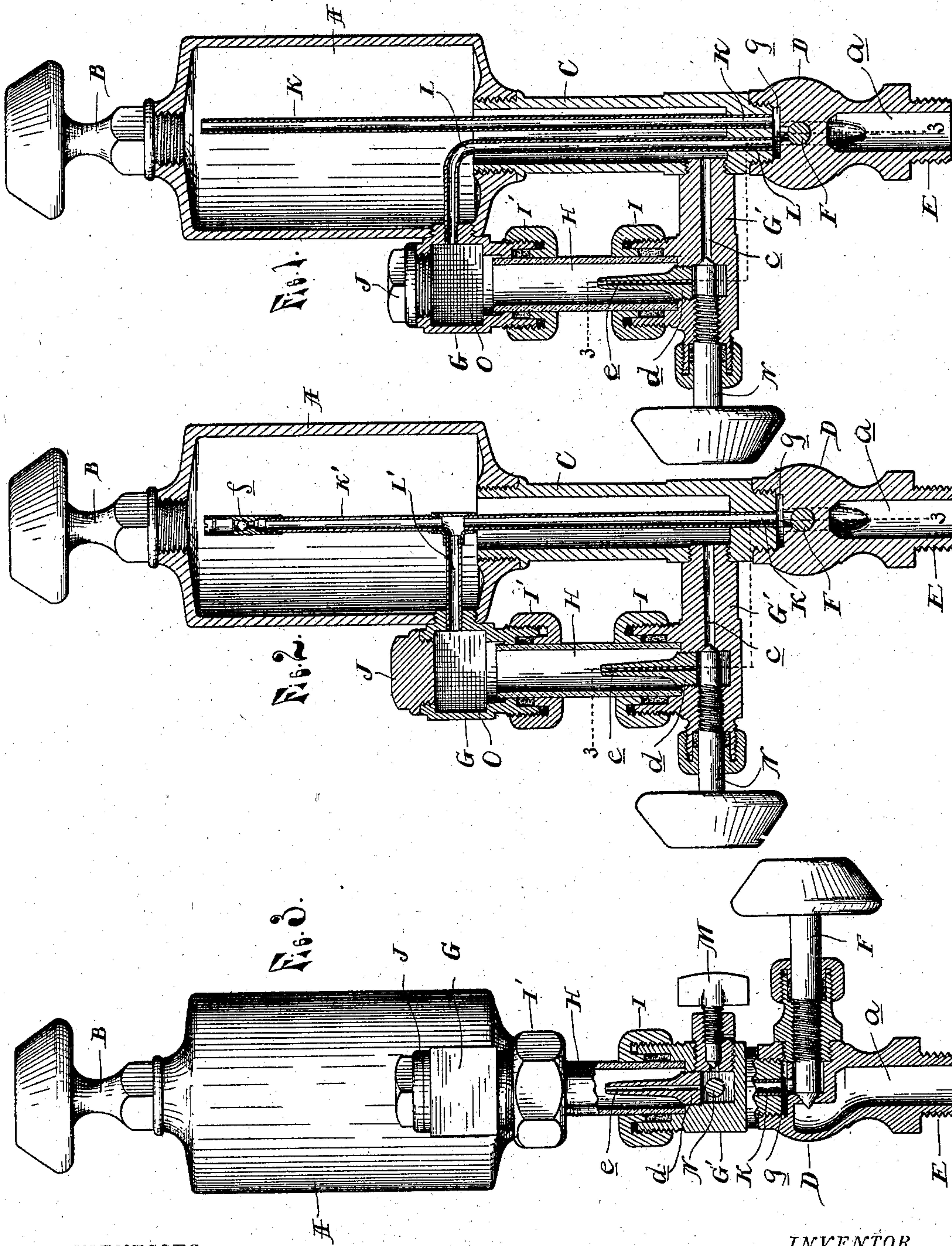


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H. MORNINGSTAR.
GAS ENGINE LUBRICATOR.
APPLICATION FILED NOV. 18, 1901.

NO MODEL.



WITNESSES.

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UNITED STATES PATENT OFFICE.

HARRY MORNINGSTAR, OF DETROIT, MICHIGAN.

GAS-ENGINE LUBRICATOR.

SPECIFICATION forming part of Letters Patent No. 719,836, dated February 3, 1903.

Application filed November 18, 1901. Serial No. 82,623. (No model.)

To all whom it may concern:

Be it known that I, HARRY MORNINGSTAR, a citizen of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Gas-Engine Lubricators, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to lubricators of the class particularly designed for lubricating the cylinder of gas or gasoline engines; and it is the particular object of my invention to construct a lubricator of this kind which is provided with a simple and efficient "up-
15 drop" sight-feed.

To this end my invention consists in the construction, arrangement, and operation of certain parts composing the sight-feed, all as
20 more fully hereinafter described, and shown in the accompanying drawings, in which—

Figures 1 and 2 are two vertical central sections of two lubricators of slightly-different construction, but both embodying my invention. Fig. 3 is a vertical cross-section on line
25 3 3 in Figs. 1 and 2, the plane of the section being at right angles to that of Figs. 1 and 2, the parts not in section being shown in elevation.

30 A is a cup provided on top with a fill-opening closed by a screw-plug B.

C is a hollow tubular leg screwed into the bottom of the cup and extending some distance below. It is closed at the bottom but
35 open on top, and thus forms a vertical downward extension of the oil-space in the cup.

D is a discharge-arm screwed to the lower end of the leg. It terminates in a screw-nipple E for securing the lubricator to the part
40 to be lubricated and has a discharge-passage *a* formed through it controlled by the valve F.

G G' are the lateral arms of a sight-fitting. The former is screwed into the wall of the cup near the bottom and is formed with a
45 chamber O and the latter is screwed into the leg, near the bottom thereof.

H is a glass tube vertically connecting the arms, the arms being formed with suitable stuffing-boxes I I' to form a tight connection
50 with the glass tube.

The lower arm G' is formed with a horizontal passage *c* and with a drop-nozzle *d*, pro-

jecting upwardly into the bottom of the sight-tube and forming a restricted passage *e*, connecting the sight-tube with the passage *c* 55 through the leg under control of a valve N in the passage *c*.

The upper arm G forms a chamber O and is provided with a fill-opening on top closed by a screw-plug J. 60

K is a pipe secured in the bottom of the leg C and extends upwardly through the leg and cup, terminating near the top of the cup below the filler-plug. This pipe may be either open on top, as shown in Fig. 1, which is the preferred construction, or it may be provided
65 with a check-valve *f*, opening into the cup, as shown in the modified form K' in Fig. 2. The bottoms of the pipes K K' are open and communicate with the discharge-passage *a*. 70

L is a pipe interiorly connecting the chamber O with the discharge-passage *a*. This pipe which leads from the arm G into the cup may be either connected into the pipe K', as shown in the modified form L' in Fig. 2, or
75 preferably it extends down into the leg and through the bottom thereof into communication with the passage *a*, as shown in Fig. 1, which is the preferred construction.

By providing a small chamber *g* in the socket of the discharge-arm the passage *a* in said fitting may be readily brought into communication with the pipes K and L, respectively. 80

M is a drainage-cock provided in the arm G' and serving to drain the cup and the leg thereof of its contents when desired. 85

In practice, the lubricator being connected to the engine-cylinder and the cup filled with the lubricant, the sight-tube H and chamber O are first filled with water up to the height where the pipe L branches off. As soon as the valves F and N are opened the feeding takes place, the oil flowing from the bottom of the leg through the passage *c*, drip-nozzle
90 *d*, and the water in the sight-tube and chamber O into the pipe L, from which it is conducted into the passage *a*. 95

In the preferred construction shown in Fig. 1, where the pipe K is open on top, the feed 100 is entirely by gravity, as every time an explosion takes place in the cylinder the pipe K admits the force of the explosion to bear upon the top of the oil in the cup, while the

pipe L admits it simultaneously into the chamber O on top of the water to counteract this pressure. The feed of the oil is thus entirely independent of the explosions in the cylinder, and the lubricant will operate as long as the valves are open till the oil in the cup becomes exhausted—that is, till it drops down to about the height of the water-level in the chamber O.

10 The modified construction shown in Fig. 2 operates the same as Fig. 1, provided the check-valve *f* is omitted. With this check-valve on the explosion has a direct influence upon the feeding, inasmuch as the check-
15 valve retains the pressure in the top of the cup, while it fluctuates in the chamber I the same as in the cylinder, thus causing an overpressure in the cup in the intervals between the explosions, and this overpressure may be
20 relied upon to accomplish the feeding wholly or in part. The application of the check-valve to the pipe K in Fig. 1 would make the operation of this form of lubricator analogous to that of Fig. 2.

25 What I claim as my invention is—

1. In a lubricator of the character described, the combination with the cup, of a hollow leg depending from the bottom of the oil-cup and communicating directly with and forming an
30 extension of the oil-space of the cup, a discharge-arm secured to the lower end of the leg having a passage through which the oil is discharged from the lubricator, a pipe extending from said passage upwardly through the
35 oil-space into the space of the cup above the oil, and a sight-feed having a glass tube located alongside the leg and substantially co-extensive therewith and provided with an oil-inlet leading from the bottom of the leg into
40 the bottom of said sight-tube and terminating in a drop-nozzle projecting vertically in the axis of the sight-tube and an oil-outlet leading from the top of the sight-tube at or about on a level with the bottom of the cup
45 into the discharge-arm, the upper end of said sight-tube being provided with a fill-opening for filling the tube with water.

2. In a lubricator of the character described, the combination with the cup, of a hollow leg
50 depending from the bottom of the cup and forming a part of the oil-space of the cup and

communicating directly therewith at its upper end, a discharge-arm at the lower end of said leg having a discharge-passage for the oil, a pipe secured in the bottom of the leg
55 and extending through the oil-space into the space above whereby said space is in direct communication with the passage in the discharge-arm through said pipe, and a sight-feed comprising a sight-tube on a level with
60 the leg and provided with a lower arm connecting it with the lower end of the leg and an upper arm attaching it to the cup near the bottom thereof, the lower arm formed with an oil-inlet from the leg into the lower
65 end of the sight-tube and terminating in an updrop-nozzle and the upper arm formed with a chamber above the sight-tube having a fill-opening on top and a pipe leading from the arm through the cup to a suitable junction with the passage in the discharge-arm.
70

3. In an updrop sight-feed lubricator, the combination with the cup, of a hollow leg depending from the bottom of the cup, closed at its bottom and opening at its top into the
75 cup to form a part of the oil-space of the cup, a discharge-arm at the lower end of said leg having a discharge-passage for the oil, a pipe communicating with the discharge-passage and extending up through the leg and oil-
80 space of the cup into the space above whereby said space is in communication with the discharge-passage through said pipe, and a sight-feed comprising a sight-tube on a level with the leg and provided with a lower arm
85 connecting it with the lower end of the leg and an upper arm attaching it to the cup near the bottom thereof, the lower arm formed with an oil-inlet from the leg into the lower end of the sight-tube and terminating in a
90 drop-nozzle and the upper arm formed with a chamber above the sight-tube having a fill-opening on top and a pipe leading from the arm and through the cup and leg to the discharge-passage in the discharge-arm.
95

In testimony whereof I affix my signature in presence of two witnesses.

HARRY MORNINGSTAR.

Witnesses:

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JOSEPH A. NOELKE.