

(No Model.)

2 Sheets—Sheet 1.

O. H. JEWELL.

LUBRICATOR.

No. 259,023.

Patented June 6, 1882.

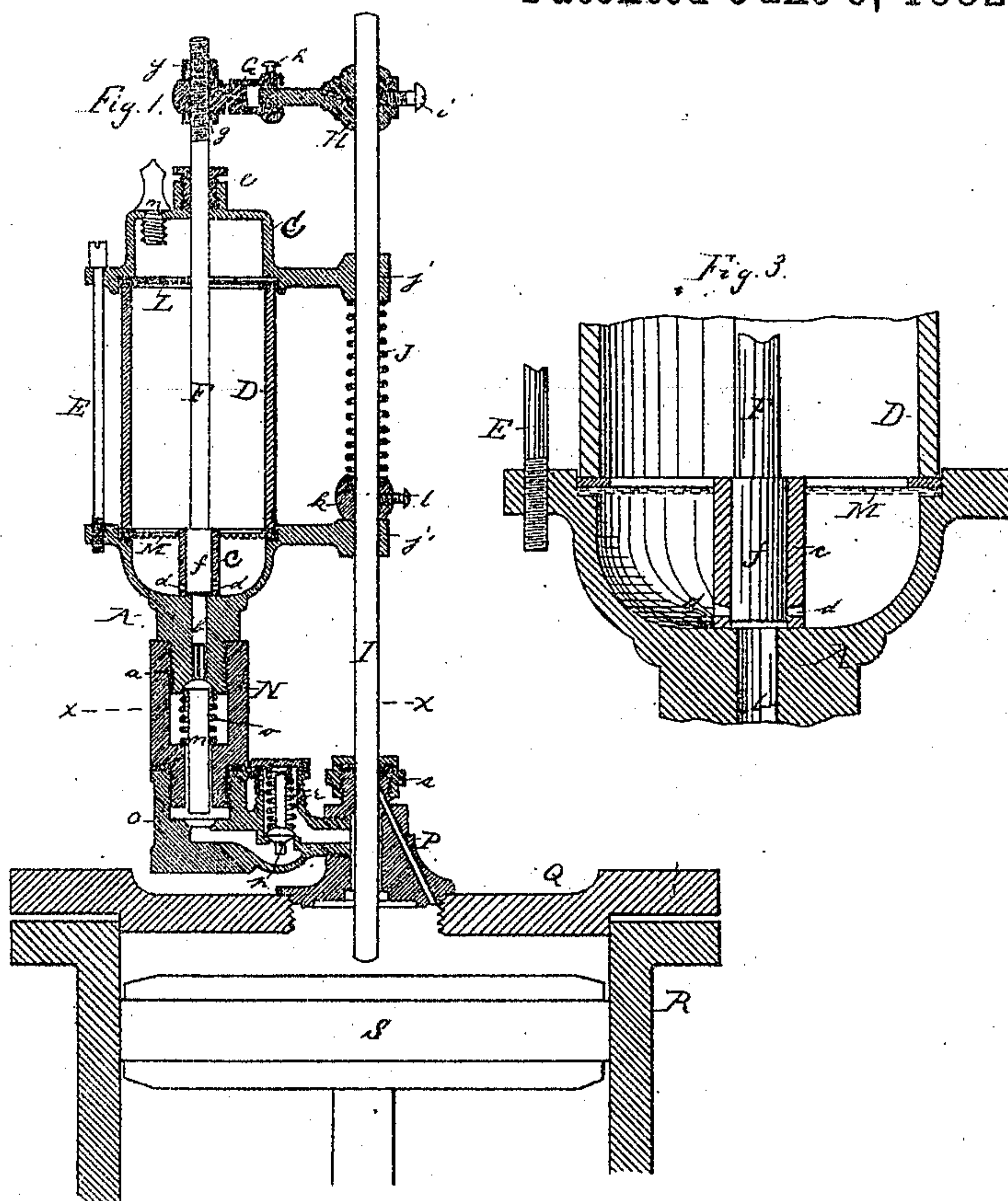
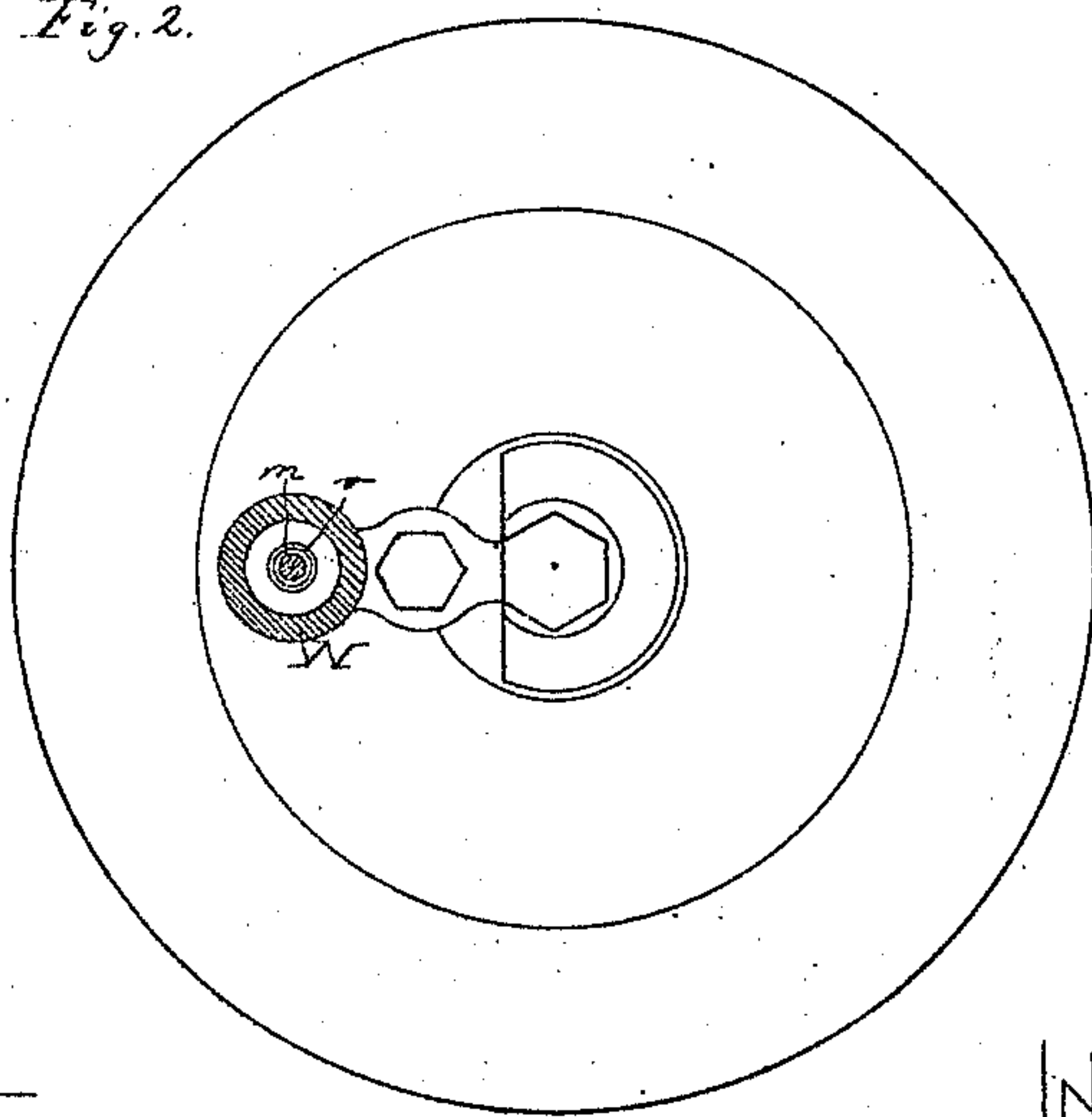


Fig. 2.



WITNESSES—
J. W. Husehagen
R. U. Adams

INVENTOR—
Omar H. Jewell
By Wm H. Lotz
attorney

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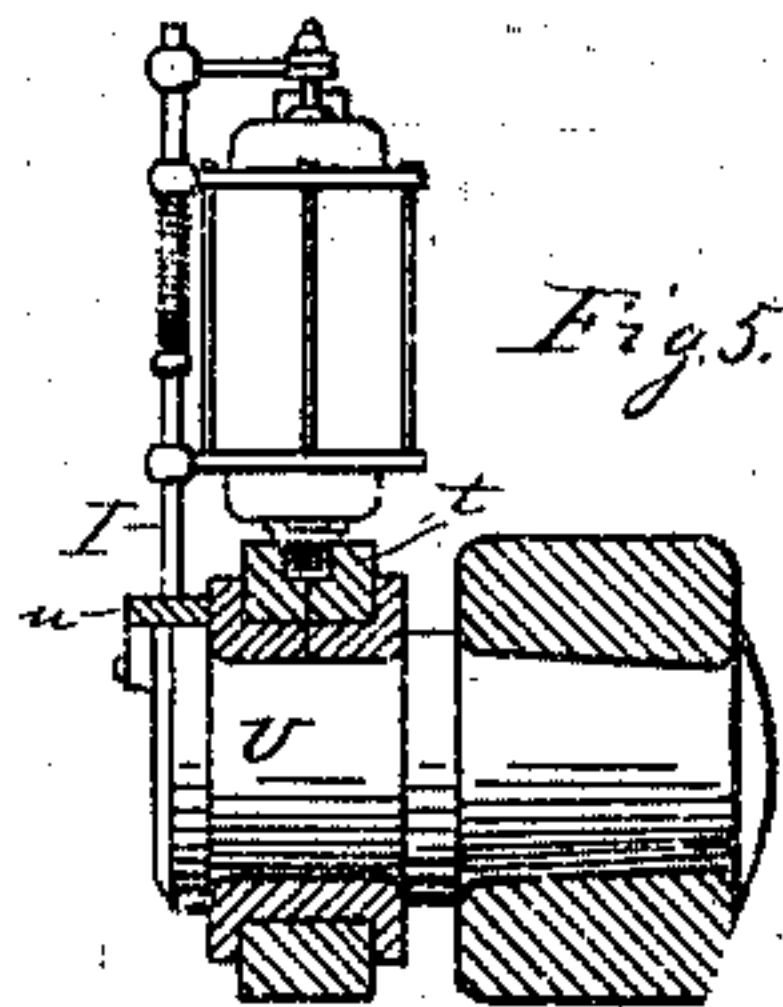


Fig. 5.

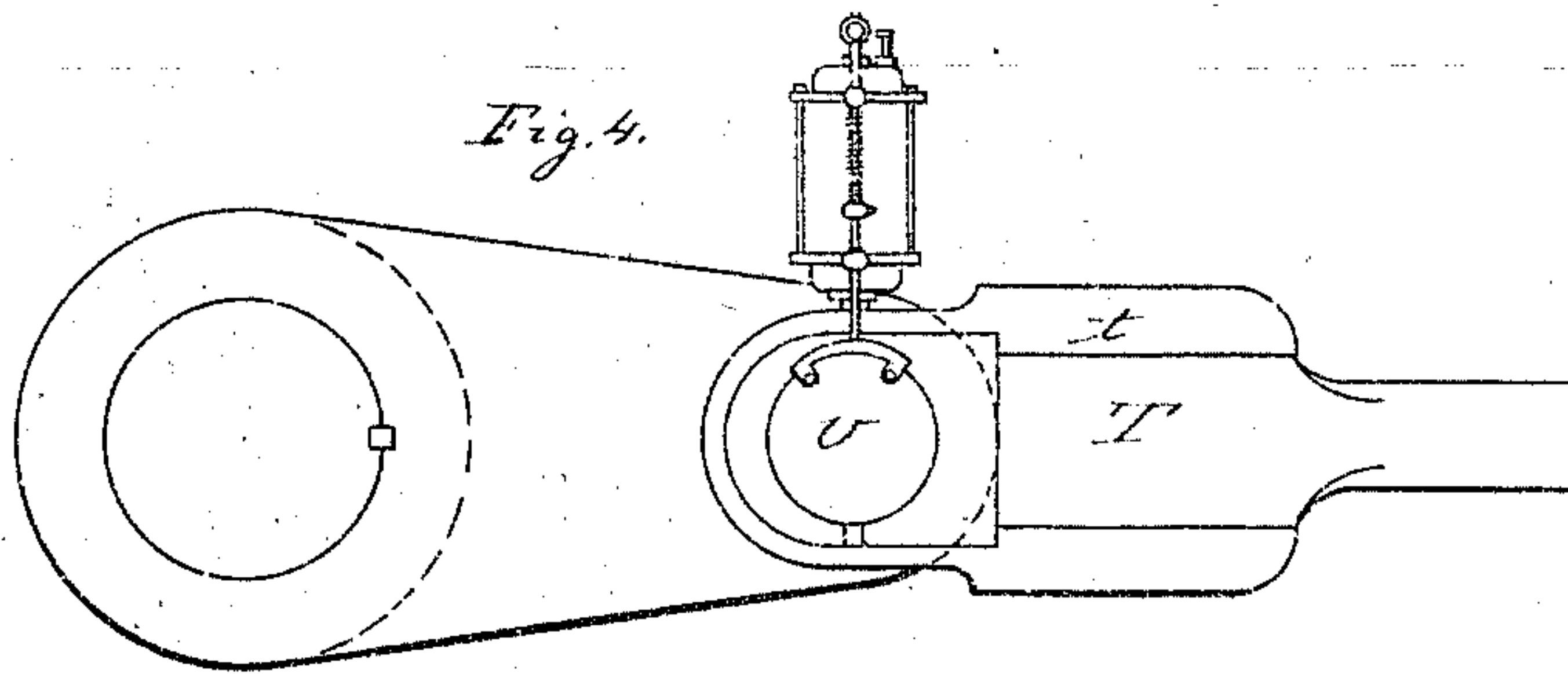


Fig. 4.

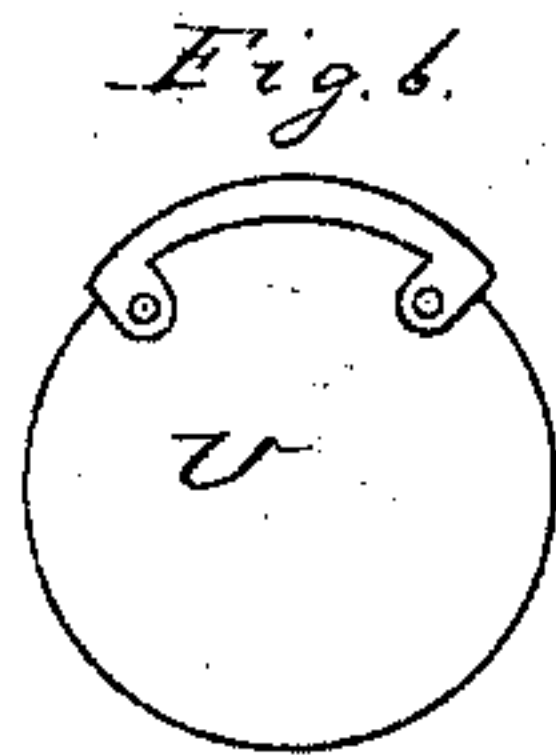


Fig. 6.

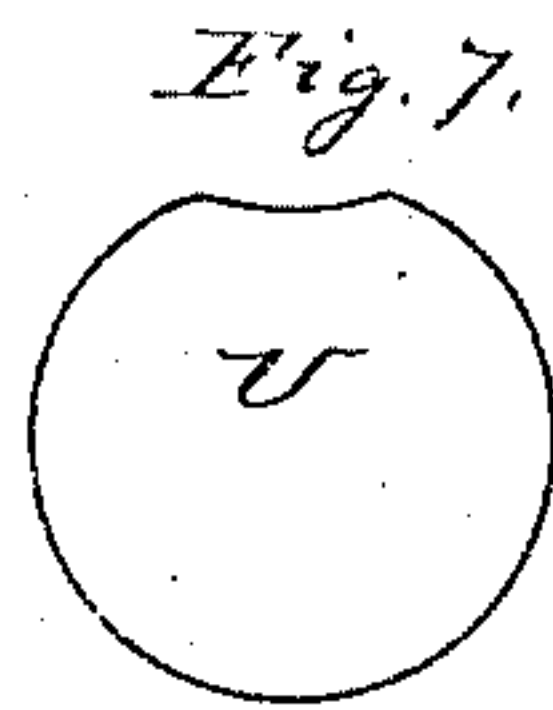


Fig. 7.

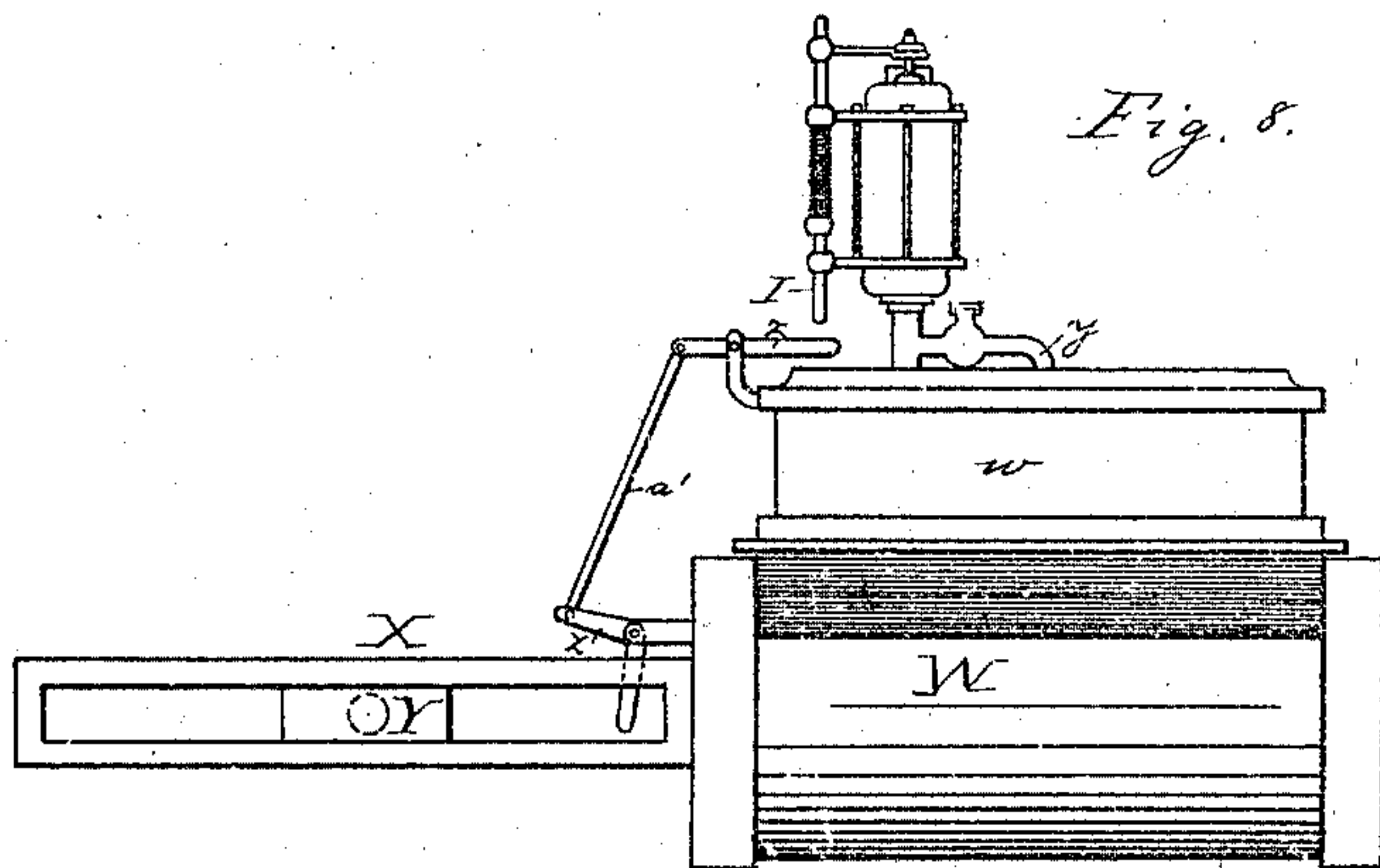


Fig. 8.

WITNESSES—

J. W. Kaschagen
F. W. Adams

INVENTOR—

Omar H. Jewell
By Wm H. Lotz
Attorney

UNITED STATES PATENT OFFICE.

OMAR H. JEWELL, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF TO
GEORGE A. STANNARD, OF SAME PLACE.

LUBRICATOR.

SPECIFICATION forming part of Letters Patent No. 259,023, dated June 6, 1882.

Application filed March 1, 1882. (No model.)

To all whom it may concern:

Be it known that I, OMAR H. JEWELL, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Lubricators; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to that class of lubricators actuated intermittently by a connection with a working part of a machine, so as to feed a limited amount of oil with each stroke of the engine or revolution of a shaft. Such lubricators heretofore, like the one described in Letters Patent of the United States No. 242,327, granted to me May 31, 1881, were provided with a valve that opened intermittently by the motion of a machinery part. Such an arrangement, however, has the disadvantage, first, that the machinery might stop just in the position when the valve is held open, when all oil will run out of the lubricator; and, second, that such a lubricator will not feed oil into a chamber filled with steam or compressed air.

Now, it is the object of my invention to produce a lubricator provided with a small plunger that is reciprocated in a cylinder and operates like a pump to force automatically, by the motion of the machinery, a certain quantity of oil with each stroke through one or several check-valves placed between this pump and the part or parts to be lubricated. Therefore my invention consists in the peculiar devices and combinations of devices employed by me for this purpose, as fully hereinafter described and specifically claimed.

In the accompanying drawings, Figure 1 represents a sectional view of my improved lubricator as attached to the head of an upright air-pump or steam-cylinder; Fig. 2, a sectional plan on line *x x* in Fig. 1; Fig. 3, an enlarged vertical section of the pump portion of the lubricator; Figs. 4 and 5, elevation and section of the crank and connecting-rod of an engine having my lubricator attached; Figs. 6 and 7, two devices of shaping the crank-pin heads for reciprocating the lubricator-plunger; and Fig. 8, an elevation of a locomotive-cylinder with

my lubricator attached for feeding oil into the steam-chest by the motions of the cross-head.

Like letters designate corresponding parts in all the figures.

A denotes the cup-shaped base of the lubricator, having a screw-threaded stem, *a*. A vertical oil-hole, *b*, extends centrally through the base A and screw-stem *a*, and is counter-sunk on its bottom end to form a seat for a conical check-valve. Above this oil-hole *b*, and concentric therewith, the base A has a tubular extension, *c*, which is bored to form the oil-pump cylinder, and this extension is perforated near its lower end by two small holes, *d*.

C is the cup-shaped cap of the lubricator, and D the glass tube clamped between the cap and base. This glass tube rests against packing-rings, and the base and cap are connected outside of the glass tube by screw-rods E.

F is the plunger-rod, which passes through a stuffing-box, *e*, in the top of cap C, down through the center of the lubricator, and its enlarged end *f* enters the tubular extension *c* of base A, and is turned to fit close therein and so as to form the plunger-head. The upper end of the plunger-rod above the stuffing-box is screw-threaded and passes through the inner end of a horizontal arm, G, being provided with adjusting or clamping nuts *g* above and below said arm. At the outer end of the arm G is formed a socket having a set-screw, *h*.

Another arm, H, is secured upon the operating-rod I by means of a set-screw, *i*, and its inner cylindrical end is inserted into the socket of arm G, and is secured in the desired position by the set-screw *h*. By this arrangement, as will be noticed, the length of arm-connection G H can be varied to accommodate it to the exact distance between the rods F and I.

The operating-rod I is guided by means of two eyes, *j j'*, which project from the cap and base. Below the eye *j* a spiral spring, J, is sleeved on the operating-rod I, and is held up against the eye *j* by a collar, *k*, secured adjustably upon the rod I by set-screws *l*. This spring forces the operating and plunger rods downwardly.

A thin metal diaphragm, L, is clamped in the upper joint of the lubricator, between the cap C and glass tube D, and prevents the

splashing of the oil into the cap, as would be the case when the lubricator is attached to the stub end of a connecting-rod, and a perforated diaphragm, M, is clamped in the lower joint 5 of the lubricator, and is to act as a strainer for the oil before such oil can enter the perforations *d* in tube *c*, so as to prevent these holes from being clogged by solid matter that might be contained in the oil.

10 The cap C has a screw-plug, *m*, which is removed when it is desired to fill the lubricator with oil. Through this screw-plug may be formed a small vent-opening for admitting air, so that the oil can flow from the lubricator, 15 and by reason of its connection with one side of the chamber above diaphragm L the oil will not be splashed through the same. The opening in the diaphragm L around the plunger-rod F has to be large enough so that the oil, 20 when poured in the filling-opening, will run down into the body of the lubricator.

The stem *a* of base A of the lubricator is screwed into a thimble, N, which forms the chamber for a conical check-valve, *n*, which is 25 pushed against its seat in the bottom of stem *a* by a spiral spring, *o*. This thimble N has a screw-neck to its bottom end, which enters a screw-threaded socket in the casing O of an auxiliary check-valve, *p*, that is held to its seat 30 by a spiral spring, *r*, and which will insure a perfect operation even if valve *n* should leak. The end of this valve-casing O is screw-threaded, and, as shown in Fig. 1, is coupled with a block, P, that is bored to form a guide for the 35 lower end of the operating-rod I, and is screwed into the head Q of a cylinder, R. The block P is provided with a stuffing-box, *s*, and the operating-rod projects into the cylinder sufficiently to be pushed upward by the piston S 40 when arriving at the end of its stroke. In this case an annular channel is formed around the operating-rod I, below the stuffing-box *s*, that communicates with the port in valve-casing O and with the interior of the cylinder. This de- 45 vice is particularly intended for the air-pumps on locomotives that work in connection with the air-brakes; but it may as well be used for upright steam or gas engines.

The piston S with each stroke will push the 50 operating-rod I upward, whereby the plunger *f* is raised in the cylindrical extension *e*, and a partial vacuum is created in the space between plunger *f* and the check-valve *n*, which will draw a certain amount of oil into said space 55 through perforations *d*. As soon as the operating-rod I is released again the spiral spring J will push it downward, and also the plunger *f*, which in its downward motion will close the perforations *d* and will force the oil through 60 the check-valves *n* and *p* into the cylinder.

In Figs. 4 and 5 the lubricator is secured into the upper portion of the strap *t* of a connecting-rod, T, the opening that receives it being extended through to the crank-pin U. To the 65 head of this crank-pin may either be secured a beveled lifting-plate, *v*, as shown in Fig. 6, or said head may be notched, as shown in Fig. 7.

The end of the operating-rod I being adjusted either to be lifted by the beveled plate *u* or to ride upon the periphery of the crank-pin head, 70 such rod I will be reciprocated with each revolution of the crank, when the plunger will force a small quantity of oil to the crank-pin.

In Fig. 8, W represents a locomotive-cylinder; *w*, the steam-chest on top of it; X, the 75 guides, and Y the cross-head.

My lubricator is secured upon one end of the steam-chest cover, with the oil-inlet into the center of the same through a goose-neck, *y*.

A bell-crank, Z, is pivoted over the guides 80 to the cylinder-head, and is connected to a lever, *z*, that is pivoted to the steam-chest cover by a connecting-rod, *a'*. The cross-head, when arriving at the end of its stroke, will strike 85 against one arm of the bell-crank Z, whereby the rear end of lever *z* will be lifted, which again will raise the operating-rod I and the plunger *f*, connected therewith, and thus, while the locomotive is running, the necessary amount 90 of oil will be forced from the lubricator into the steam-chest.

The great advantage gained by the above arrangement is that whenever the machine stops, no matter in what position, no oil will flow from the lubricator, and that when the 95 machine is running the supply of oil will be fed automatically in proportion to its speed.

This lubricator being thus reliable and economical, its construction is simple and its arrangements such that it cannot get out of 100 order, while any one of its parts is easily accessible for repair when it becomes necessary.

I have shown and described a few of many devices for attaching this lubricator to and 105 operating by parts of the machinery; and I do not wish to be restricted to the particular arrangements shown, since they are manifold, and may be different for every class or style of machinery. 110

What I claim is—

1. In a lubricator, the cylindrical base A, having vertical oil-hole *b*, extending centrally therethrough and through the screw-stem *a*, said base being countersunk on its bottom to 115 form a seat for a conical check-valve, and having tubular extension *e*, bored to form the oil-pump cylinder, and provided with perforations *d* near its lower end, the rod F, with plunger-head *f*, the check-valve *n*, with spring *o*, 120 and auxiliary valve *p*, with spring *r*, all constructed and arranged substantially as and for the purpose set forth.

2. A lubricator composed of base A, having cylinder *c*, with perforations *d*, screw-stem *a*, 125 and perforated diaphragm M, of glass tube D, cap C, with stuffing-box *e*, and screw-plug *m*, and of plunger-rod F and check-valve *n*, with spring *o*, thimble N, valve-casing O, check-valve *p*, and spring *r*, all constructed and arranged sub- 130 stantially as and for the purpose set forth.

3. A lubricator composed of base A, having cylinder *c*, with perforations *d*, screw-stem *a*, and perforated diaphragm M, of glass tube

D, cap C, with stuffing-box *e*, screw-plug *m*, and diaphragm L, and of plunger-rod F and check-valve *n*, with spring *o*, all constructed and arranged substantially as and for the purpose set forth.

4. In a lubricator, the plunger-rod F, passed through a stuffing-box, *e*, and having socketed arm G, in combination with the operating-rod I, guided in eyes *j j'*, having spring J, screw-collar *k*, and arm H, that enters the socket

in arm G, and is adjustably secured by set-screw *h*, all constructed and arranged substantially as and for the purpose set forth.

In testimony that I claim the foregoing as my invention I affix my signature in presence of two witnesses.

OMAR H. JEWELL.

Witnesses:

F. W. KASEHAGEN,
F. U. ADAMS.