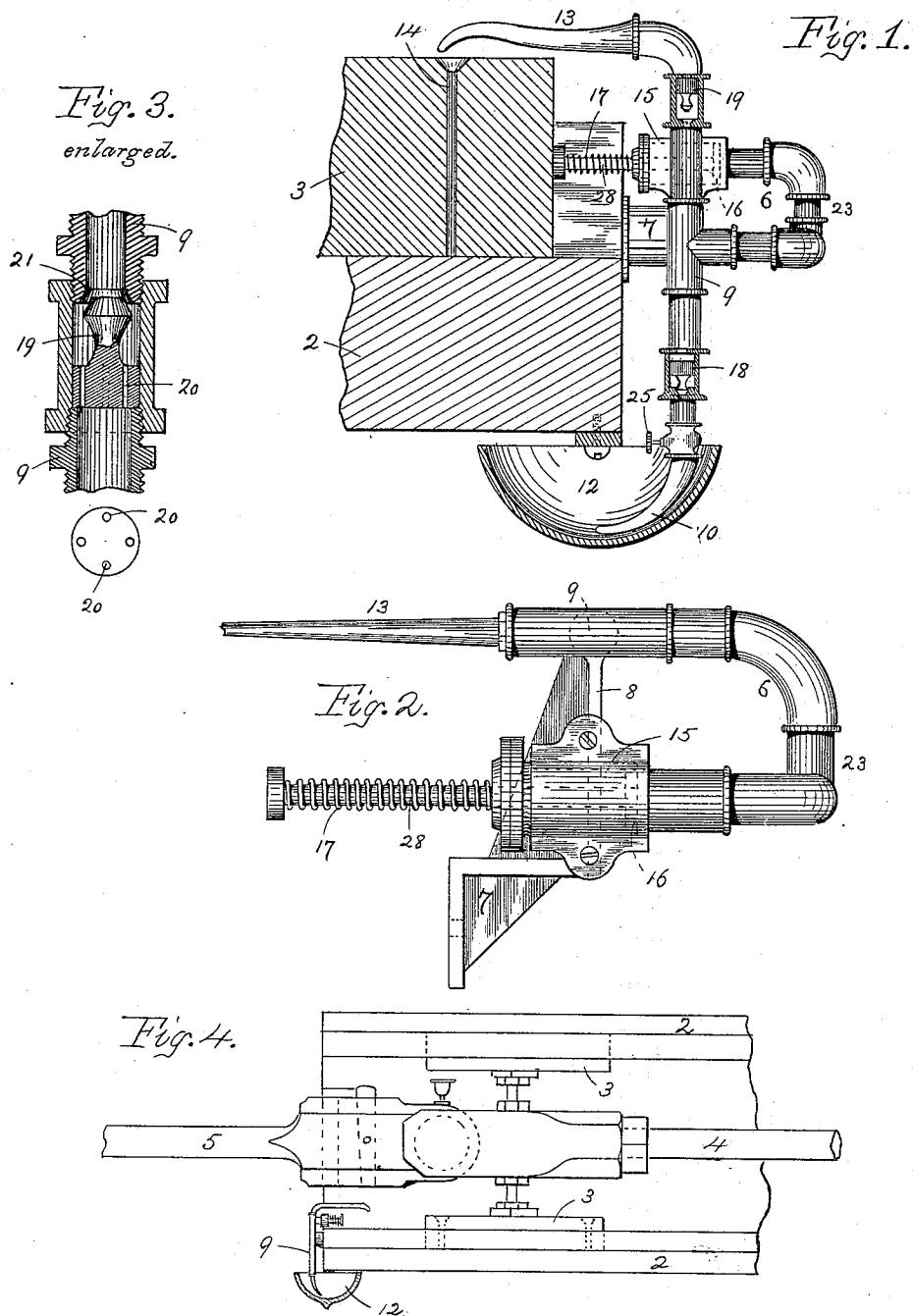


(No Model.)

A. KINNEY.
AUTOMATIC OILER.

No. 397,432.

Patented Feb. 5, 1889.



Witnesses.
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UNITED STATES PATENT OFFICE.

ARIEL KINNEY, OF LOWELL, MASSACHUSETTS.

AUTOMATIC OILER.

SPECIFICATION forming part of Letters Patent No. 397,432, dated February 5, 1889.

Application filed August 30, 1888. Serial No. 284,160. (No model.)

To all whom it may concern:

Be it known that I, ARIEL KINNEY, a citizen of the United States, residing at Lowell, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Automatic Oilers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

This invention relates to apparatus by which oils or other analogous substances are supplied automatically for lubricating purposes to the various moving parts of an engine or machine.

My invention in the present instance consists, primarily, in connection with an oil supply or reservoir of a feed-pipe provided with two valves, which are simultaneously operated—one to open, the other to close, or vice versa—by means of a spring-actuated plunger within a cylinder. An air-pipe connects said cylinder with the feed-pipe at a point thereon between said valves. The plunger is so positioned as to contact with and be thrust within the cylinder at each stroke of the engine, while its retreat-stroke is effected by means of a spring. One end of the feed-pipe rests in the oil-reservoir, while the opposite or delivery end is disposed in proximity to the feed-duct or that part of the engine to be lubricated. Thus at every revolution of the engine a proper quantity of oil may be applied to the cross-head block, cross-head pin, piston-rod, or, in fact, to any mechanical device where one part reciprocates upon or about another stationary and co-operating part.

In the present instance this automatic oiler is represented as applied to the "cross-head block," so called, of an engine and the accompanying drawings represent, in—

Figure 1, a side elevation of an automatic oiler embodying my invention, with a portion of the cross-head block and guide in vertical section. Fig. 2 is an end elevation. Fig. 3 is a longitudinal section of one of the check-valves. Fig. 4 is an elevation of an oiler in position.

In said drawings, 2 2 represent the parallel guides of a steam-engine with the slides or cross-head blocks at 3 3, the piston and connecting-rods, respectively, at 4 5. The oiler 6, as an entirety, is shown as fixed upon a bracket, 7, removably attached to some stationary part of the engine. Said bracket or standard is formed with an upright plate, 8. Upon the top of the latter rests a pipe, 9, in the present instance horizontally disposed as a fixture, and is termed the "feed-pipe." One end, 10, of the latter (the "suction end," so called) enters the reservoir 12 or drip-pan containing the lubricant, and is shown as bolted to one of the guides. The opposite or discharge end, 13, may be led to any point which requires to be oiled—in the present instance to the oil-duct 14 in the slide 3. (Shown in Fig. 1.) Laterally of the bracket 7, I have secured a cylinder, 15, which contains a plunger, 16, having an actuating-rod, 17, about which is a coiled spring, 28.

The longitudinal axes of the cylinder and rod 17 are so placed that the plunger and its rod reciprocate in parallelism with the cross-head. The end of the rod 17, exteriorly of the cylinder, is headed to retain the coiled spring thereon, and is further adapted to contact with the cross-head block prior to the extreme end movement of the latter.

Within the feed-pipe 9 are placed two valves, 18 19, respectively in the ends 10 13. Said valves are of the class termed "piston-valves," and are adapted to fit the pipe, the latter acting as a guide when they are reciprocated. Furthermore, ducts 20 are bored longitudinally therethrough to permit passage of the lubricant. The valve-seats 21 receive the reduced end portions of the valves. (See Fig. 3.) These valves operate alternately—when one is closed the other is open, the valve 18 closing when the plunger is moved by the cross-head block, while the valve 19 closes when the plunger is operated by the spring. A pipe, 23, which is termed the "air-pipe," connects the cylinder 15 with the feed-pipe 9 at a point between the valves. The action of these several component parts, which co-operate to form an automatic oiler embodying my invention, is as follows, presuming the several parts are in the relative positions shown in Fig. 1, with the oiler empty: The cross-head

block is now at the end of its travel and has thrust the plunger to its extreme limit within the cylinder 15, thus compressing the spring 17. In this position air within the pipe 23 is expelled. Upon retreat of the cross-head block and release of the plunger the latter is impelled by the action of the spring, and is thrust to the opposite end of the cylinder 15, the valve 19 closing upon its seat. By means of the suction thus formed oil is drawn up into the pipe 9 from the reservoir 12, the valve 18 opening to permit its entrance therein. Upon return movement of the cross-head block and its contact with the rod 17 the valve 18 now closes, while the valve 19 opens and permits the oil to be discharged through the end 13 into the oil-duct now opposite, this discharge being effected by the cross-head block thrusting the plunger the required distance in the cylinder.

The amount of oil to be delivered at each stroke is regulated by means of the valve 25.

There are several obvious advantages secured by the use of this automatic oiler. The oil may be used over and over. Lubrication is regular and constant. The feeder will always start itself, so long as the drip-cup or other source of supply with which it is connected contains oil. Conversely, said feeder will stop with the engine, and no valves are to be turned to shut off the supply. It is obvious by extending the delivery end of the feed-pipe various other parts of an engine can be effectually lubricated.

In lieu of having this oiler automatically operated by a reciprocating movement of the machine to which it is applied, the plunger may be actuated by means of clock mechan-

ism or by an electrical device, as circumstances require.

What I desire to claim is—

1. An automatic oiler composed of a cylinder, a plunger which reciprocates therein, an air-pipe extending from said cylinder to the feed-pipe, and a feed-pipe having two valves working oppositely to each other and arranged on opposite sides of the point of junction of said air-pipe with the feed-pipe, combined with an oil-reservoir which receives one end of said feed-pipe, the other end being directed to the spot where the oil is to be applied, and a cross-head or other moving part of the machine, which actuates the plunger, substantially as set forth.

2. In combination with a plunger, operated by the reciprocations of the machine to be lubricated, its inclosing-cylinder 15, and pipe 23 therefrom, the feed-pipe 9, and its valves 19 18, the valve 18 operating to close the passage to the oil-reservoir upon inward travel of the plunger and its rod for discharge of the lubricant, as herein specified.

3. The plunger 16, operated intermittently by its actuating-spring 28, the inclosing-cylinder 15, and pipe 23 therefrom to the feed-pipe, combined with the oil-reservoir 12, the feed-pipe 9, and its valves 18 19, the valve 19 operating to close upon outward movement of said plunger and its rod to fill the oiler with lubricating-fluid, substantially as described.

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

ARIEL KINNEY.

Witnesses:

H. E. LODGE,

FRANCIS C. STANWOOD.