No. 827,470. PATENTED JULY 31, 1906.

P. W. SHAWVER.

OIL CUP.

APPLICATION FILED SEPT. 3, 1904.

Fig. 1.

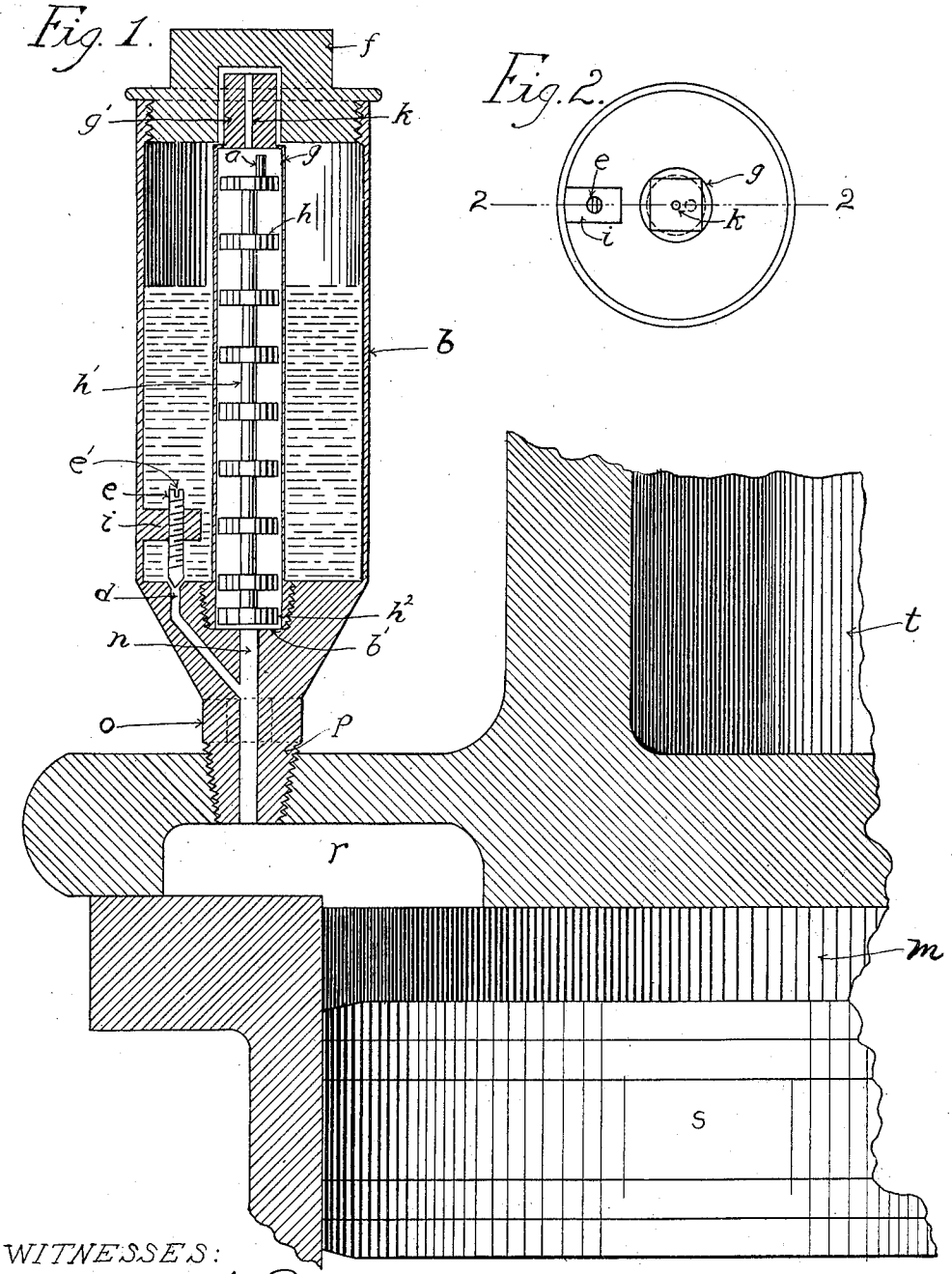

Fig. 2.

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OIL-CUP.

No. 827,470. Specification of Letters Patent. Patented July 31, 1906.

Application filed September 3, 1904. Serial No. 223,246.

To all whom it may concern:

Be it known that I, PAUL W. SHAWVER, a citizen of the United States, and a resident of Davenport, in the county of Scott and State of Iowa, have invented a new and Improved Oil-Cup, of which the following is a full, clear, and exact description.

This invention relates especially to a device for feeding heavy oils to the air-cylinders of air-compressors—such, for example, as the air-pumps of fluid-pressure brake apparatus.

The prime object of the invention is to insure a regular and completely-controllable feed of the lubricant; and to this end I provide certain novel means for keeping the heavy oil sufficiently warm to insure its easy flow and for applying to the lubricant in the cup a sufficient air-pressure to force the former out of the cup at the desired rate of feed.

The invention involves various other features of major or minor importance and all will be fully set forth hereinafter.

This specification is an exact description of one example of my invention, while the claims define the actual scope thereof.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in both views.

Figure 1 is a vertical sectional view of the invention on line 2 2 of Fig. 2, showing it in use; and Fig. 2 is a top view of the cup after the removal of the cap *f*.

The drawings represent the invention applied to an air-pump of the usual fluid-pressure brake system.

In the drawings, *t* indicates the center piece of the air-pump. *m* indicates the air-cylinder, in which latter works the piston *s*. Said cylinder *m* has a part forming a transverse passage *r* at its upper end, which communicates with passage *n* of the cup *b*. The top of the said cup *b* is provided with a cap *f*, which is secured to the upper end of the cup by being screwed thereon in the usual manner or by any other suitable method and has provided in its under side a space or cut-out portion adapted to receive the cap *g'* of the tube *g*, with sufficient space, however, between the inside of said cap *f* and the outside of the tube-head *g'* to allow air or other compressible medium to pass from the tube *g* through such space and into the oil-chamber, as hereinafter further explained.

Within the cup *b* is located a tube *g*, which screws centrally into the lower part of the cup *b* and communicates with the passage *n* of the cup *b*. The passage *n* and the tube *g* are arranged to form in the cup a passage adapted to receive the compressed air from the cylinder *m*, so as to communicate to the interior of the oil-cup the heat of said air.

g' indicates the upper portion of the tube *g*. This part *g'* is of solid metal, with the exception of the passage *k*, and is made of any convenient shape to fit a wrench adapted to screw it into the cup *b*.

k indicates a passage located centrally in the tube *g* and communicating with the interior of cup *b*. The passages *n* and *k* and the tube *g* form a passage leading from the cylinder *m* to the interior of cup *b*. The part *o* is a hexagon nut, by which the cup is screwed into the pump, and *p* is the threaded part of the cup, which connects the cup with the pump, both these parts being cast integral with the casing *b*. The lower extremity of the tube *g* is threaded to screw into the main body of cup *b*.

Within the tube *g* are located a number of baffles *h*, which serve to retard the passage of the compressed air through the tube *g*. Said baffles *h* are fitted very snugly into the tube *g*, which by so doing causes a friction between the molecules of air, thus causing the air to become more intensely heated as it is forced through the openings formed by the inner walls of the tube *g* and edges of the baffles *h*. Said baffles *h* being formed of one piece of metal are turned to make the connecting-stem *h'* and pin *a*. Said pin *a* is intended to keep the upper baffle from forming an air-tight seat between the upper baffle and the upper end of the tube *g*. The lower baffle h^2 is made to form a seat with the part *b'* of cup *b*. This is done to prevent the air from coming back through tube *g* on the down or suction stroke of the piston *s*, thus causing the air to be forced out of the cup through passage *d*, drawing the oil with it.

From the passage *n* a branch passage *d* extends, this passage forming virtually a continuation of the passage *n* and extending into the interior of the cup. The said branch *d* is commanded by a suitable valve *e*, which is threaded to engage with the boss *i*, which lat-

ter is a projection of the inner wall of cup *b*, being cast thereunto. Said valve *e* is provided at its upper end with a suitable slot *e'*, which is made to engage with a wrench or screw-driver by which valve *e* is adjusted.

In the operation of the oil-cup the parts are fitted, as shown in Fig. 1, and the valve *e* is adjusted to the desired amount. As the piston *s* moves toward the passage *r* a part of the air compressed by the piston *s* is forced through passage *n*, into tube *g*, through the opening *k*, into the interior part of the cup. That part of the air which passes through tube *g* serves to heat the interior of the oil-cup, as heretofore described, thus keeping the oil at the proper temperature. Said air also exerts a pressure on the body of oil, as will be understood. Upon the return stroke of the piston *s* the superior pressure in the upper part of the oil-cup will force a certain quantity of oil through passages *d* and *n* into the cylinder *m*. This operation continues with the operation of the piston *s*, and in this manner the cylinder is effectively lubricated.

Various changes in the form, proportions, and minor details of the invention may be resorted to at will without departing from the spirit and scope thereof. Hence I consider myself entitled to all such variations as may lie within the intent of my claims.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A lubricating-cup for motors, comprising an outer casing with means at its lower extremity whereby it may be connected with the port of a motor, its upper extremity constructed to have secured thereto a cover, a tube secured longitudinally within the cup, and having its upper end formed with a head having a central passage therethrough to provide an outlet from said tube, the space between the casing and tube forming an oil-chamber, said cup having a passage through its lower portion extending from the tube to the motor-port and a branch passage connecting the oil-chamber with the motor-port, a stem having upon it a series of baffles and movable longitudinally within said tube, and having valvular means for opening and closing the passage between the tube and motor-port, means for keeping the passage in the tube-head unobstructed, valvular means within the oil-chamber for regulating the admission of oil into the branch passage in the lower portion of the cup, and a removable cover secured to the upper portion of the casing, so formed as to provide a limited space between the outside of the tube-cap and said cover, for the purposes herein stated.

2. In a lubricator-cup for air-compressor cylinders, an oil-cup provided with means for securing it to a port in such cylinder, a tube secured within said oil-cup, its lower end forming a valve-seat, its upper end being formed with a head having a central passage to provide an outlet from said tube; a stem provided with a series of friction-baffles mounted thereon, placed within said tube and capable of longitudinal movement therein, the lower baffle acting as a valve on the valve-seat aforesaid, the upper baffle provided with a lug to prevent said baffle from closing the entry to the passage in the tube-head, the space between the outer casing and said tube, and surrounding the latter, constituting an oil-chamber, the lower portion of said oil-cup being provided with a passage to connect the port in the air-compressor cylinder with the tube in the oil-cup, so that air or other compressible medium may pass therethrough from said cylinder to said tube, and a branch passage connecting said oil-chamber with said first-named passage so that oil may flow from the oil-chamber into the port of the cylinder, a valve suitably secured within the oil-chamber to regulate the flow of oil from the oil-chamber into said branch passage, and a cover for said oil-cup removably secured to the top of the cup and of such form as to provide a limited space between the outside of the tube-head and said cover, all for the purposes stated.

3. In a lubricator-cup for motors, an oil-cup having its lower portion conical in form, provided with means at its lower extremity for connecting it with the port of such motor, and comprising an outer casing, the tube *g* secured longitudinally within the cup by screwing the same into the lower portion thereof, the valve-seat *b'*, stem *h'*, with a series of baffles *h* secured thereto, the lower baffle h^2 forming a valve in conjunction with the valve-seat *b'*, the stop-pin *a* secured to the upper baffle, the tube-head *g'* provided with the passage *k*, the connecting-passage *n* between the tube and motor-port, the branch passage *d*, the valve *e* secured within the oil-chamber, and the oil-cup cover *f* so formed as to provide a limited space between the outside of said tube-cap *g'* and said cup-cover, for the purposes stated and substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

PAUL W. SHAWVER.

Witnesses:

CHRISTEN J. PETERSON,

S. G. SUSEMIHL.