(No Model.) 2 Sheets—Sheet 1.

J. WELSH.

LUBRICATOR FOR DRILLING MACHINES.

No. 365,419. Patented June 28, 1887.

Fig. 2.

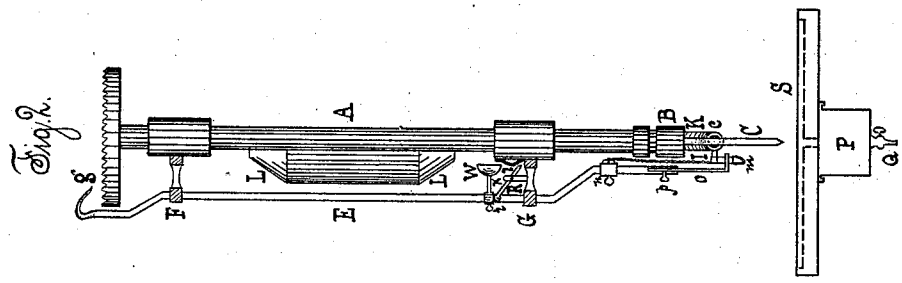
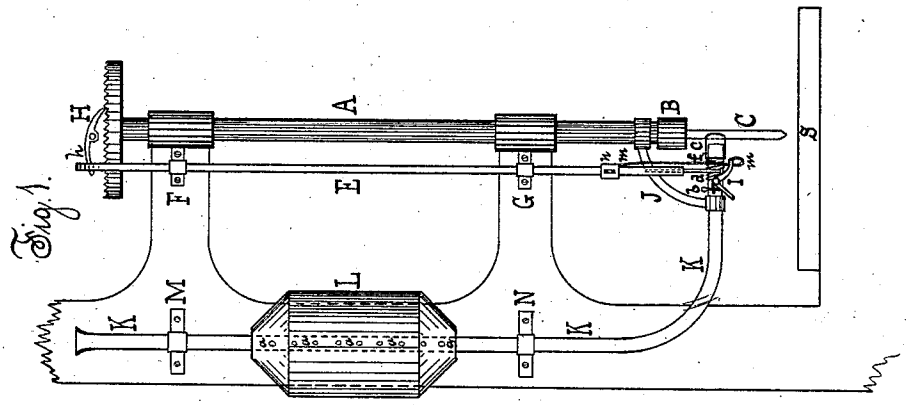


Fig. 1.



Witnesses:

Frank N. Hyatt

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Inventor:

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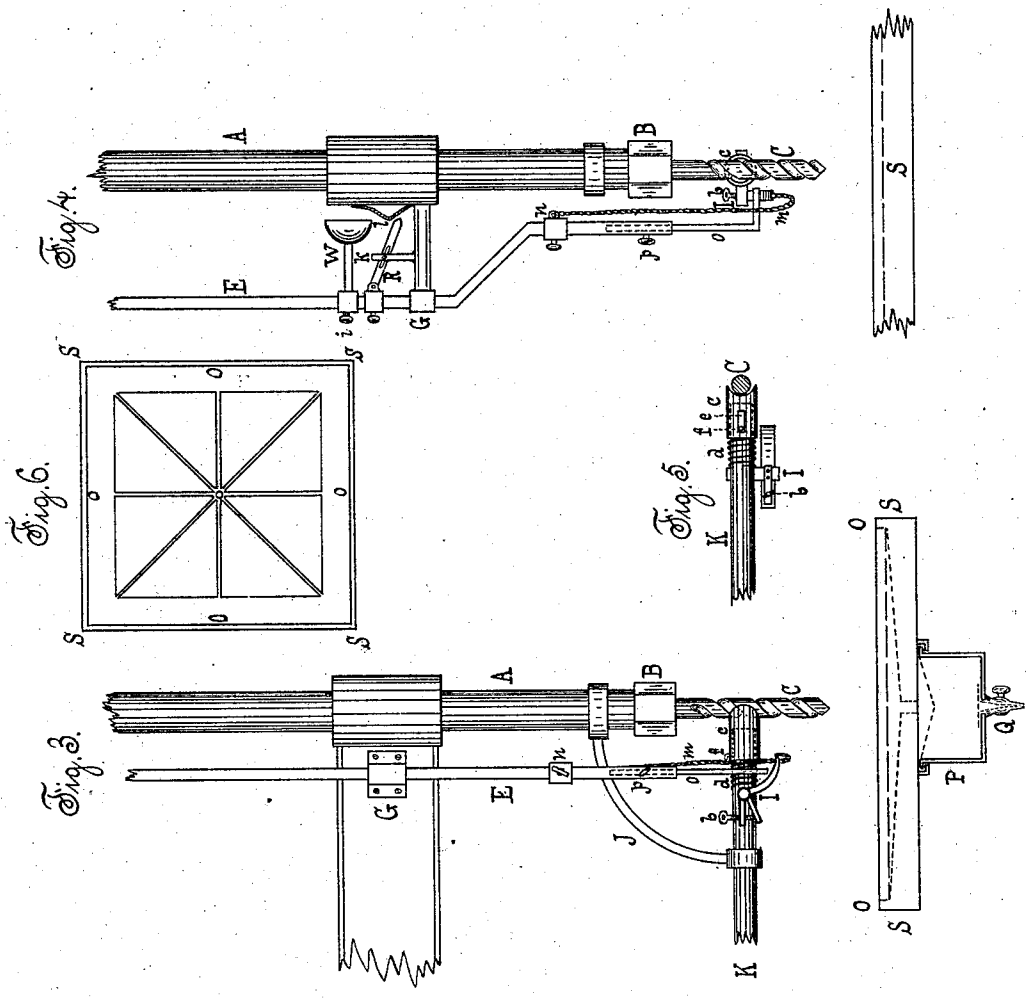
N. PETERS, Photo-Lithographer, Washington, D. C.

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Edmund D. J. Hennessy.

Frank St. Hyatt

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UNITED STATES PATENT OFFICE.

JAMES WELSH, OF NEW YORK, N. Y.

LUBRICATOR FOR DRILLING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 365,419, dated June 28, 1887.

Application filed October 14, 1886. Serial No. 216,208. (No model.)

To all whom it may concern:

Be it known that I, JAMES WELSH, a citizen of the United States, and a resident of the city, county, and State of New York, have invented a new and useful Automatic Lubricator or Oiler for Drilling and Similar Machinery, of which the following is a specification.

The chief objects of my invention are to furnish an apparatus which shall automatically lubricate drills with regulated quantities of the lubricant, and turn on and shut off the supply as such operation is begun and finished, and also give notice thereof, thereby leaving the operator free during the operation, and furnishing the lubricant just when and only when needed. These objects I attain by the apparatus illustrated by side and front views, respectively numbered Figures 1 and 2, wherein like letters of reference indicate corresponding parts throughout the views. Similar enlarged views of the parts below the middle of the apparatus are shown in Figs. 3 and 4, while Fig. 5 shows on same scale a plan of the means for supplying the lubricant to the drill, of whatever size. Fig. 6 is a plan of the surface of a table, showing surrounding ledge and sloping grooves converging to a cental aperture.

The supporting-frame will of course vary with the different makes of machines; but its general relative shape and position are indicated in the different views.

L is the reservoir for the lubricant, made in any shape to suit fancy or a particular position, and placed as close as practical to the upright shaft A, holding the drill C. As shown, and seemingly preferable, this reservoir is closed at both top and bottom, and through it extends a supply-pipe, K, opened internally to admit the lubricant—as by the holes *a a a*—which lubricant reaches the drill C, at a proper point at right angles thereto, by any convenient curve, such as shown. The reservoir and supply-pipe must be allowed perpendicular adjustment, as by guides M and N. Such construction allows the filling of the reservoir through the upward extension of the pipe. Toward the lower end of this pipe, and a short distance from the shank of the drill, is a double lever or elbow stop-cock, I, with an adjustable screw, *b*, regulating the flow of the lubricant, as much or little may be required, by pressure against the back arm of the lever. This lever stop-cock is turned on and off automatically by the feed-regulator as the drill begins and finishes its work, described more fully hereinafter.

On the end of the supply-pipe K, and next to the shank of the drill C, is a movable piece of pipe or tubing, *e*, having a grooved end fitting any sized shank, and kept pressed against such shank by a spiral spring, *d*, the extent of its movability being controlled by the slot *e* and pin or screw *f*, working therein. The chuck B on the end of the drill-shaft, being always larger than the shaft or the shank of the drill, forms a collar, and above this collar and around the shaft is a suitable place to put the brace J, running from the movable band around the shaft in any convenient curve to the supply-pipe, and serving to raise and lower the reservoir and supply-pipe at proper periods.

The automatic feed-regulator, spoken of above and adjustable to the particular thickness of any work in hand, consists of a rod, E, parallel with the drill-shaft A and suitably located at one side out of the way, kept in place and allowed motion upward and downward by guides, as F and G. The top of the rod is bent to form a hook, *g*, which catches, as it falls, the pawl or dog H, working on the ratchet-wheel, regulating the feed.

The pawl H is found in all self-feeding drilling-machines, and is variously mounted by different manufacturers, generally on an arm or elbow attached to an eccentric on the drill which gives the movement to the pawl necessary to work the adjacent ratchet-wheel. Its mounting and location are immaterial, as my apparatus can be adapted easily to any situation by any skilled mechanic. This pawl H is provided with a pin, *h*, coming under the hook *g*, and when pulled down by the hook, lifting the pawl up from its work and holding it there. About the center of this rod, and preferably placed upon one of the guides, is a lever, R, attached at *i* to the rod, and acting on a fixed point or fulcrum, *k*, with its free end chamfered or made V-shaped, preferably against an angular or V-shaped reverse-spring, *l*, on the frame of the machine. This particular construction prevents any

standing on the center. This lever and spring hold up the rod. E when raised, so that the hook *g* is above the pin *h*, allowing the pawl H to work the feed, and when the lever R has passed the apex of the reverse-spring *l* allows the rod to drop and the hook to catch up the pawl from its work. The rod E is connected with the front arm of the lever stop-cock I by a small chain, *m*, which can be lengthened or shortened by means of a set-screw, *n*, as the thickness of the work in hand varies. This chain serves to shut off the supply of lubricant when a hole is drilled, or just before, by pulling up the lever of the stop-cock, while the drill continues to work until the lever R has passed and is no longer held by the spring *l*, when the hook *g* operates on the pawl H, as described, allowing the drill to run on without boring farther. At the bottom of the rod E is a movable elbow, *o*, regulated by a set-screw, *p*, to press on the lever of the stop-cock I when the rod is thrown down, which opens the valve and turns on the feed.

The rod E is supported by the lever R, which bears against the lower side of the angle in the spring *l*. As the drill works down, the drill-shaft A gradually lowers, and at the same time and to the same extent therewith the reservoir L and supply-pipe K. When the lowering has reached the limit and taken up the slack of the chain *m*, which has been previously set or adjusted to the thickness of the particular work in hand, the lever stop-cock I is first shut off thereby and the supply of lubricant stopped, and then the continued downward drag of the weight of reservoir and supply-pipe mentioned draws the rod E down, so that the lever R is pulled upward past the apex of the angle of the V-shaped spring, whereupon the feed-pawl H is lifted in the fall by the hook *g* from its work, and the drill runs on without boring farther.

The quantity of lubricant supplied to the drill is to be regulated, as required, by the set-screw *b*, acting upon the short arm of the lever stop cock to open or close the orifice of the cock.

In getting ready to bore a new hole, the shaft A and connecting-reservoir L, supply-pipe K, and attachments are raised sufficiently to introduce the new piece of work, and as they are raised the elbow *o* strikes against the long arm of the lever stop-cock I, and thereby turns on the supply of lubricant. At the same time the rod E is thrown up and the hook *g* lifted from the pin *h*, which allows the pawl H to resume its work.

The lever R may also be used to ring a small bell, W, placed just above on the rod E, and adjustable by a set-screw, as shown, if preferred, so that when the rod E falls, after the lever R has passed the center of the spring *l*, it shall strike and sound the bell, thus notifying the operator audibly that the work is done.

To adapt the apparatus to hand-drills which are not self-feeding, the regulating-rod E and its attachments are omitted, and the reservoir L and supply-pipe K, connected with the drill-shaft A by the brace J, which, together with the self-adjusting means described for feeding the lubricant, and shown particularly in Fig. 5 and corresponding views, constitute an effective and useful apparatus.

The table S, upon which the work in hand rests, has a flat surface with an upward projecting flange or band, O, running around it, forming a holder for the wooden cushions used in drilling, and also catching surplus lubricant, which runs in suitable grooves provided in the surface and converging to a central hole into the holder P, having in the bottom a cock, Q, by which the lubricant can be drawn off and used again. In the top or bottom of this holder one or more filters may be placed advantageously.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. An automatic lubricator for drilling-machines, consisting of a movable reservoir with supply-pipe reaching the drill and connected with the drill-shaft, in combination with an upright movable rod and its described connections, whereby the supply of lubricant may be turned on and off and the feed of the drill regulated, in the manner and for the purposes substantially as specified.

2. The reservoir L and supply-pipe K, with automatically-adjustable mouth *c*, said supply-pipe moving in guides M N, and connected by brace J with drill-shaft A, together with the upright rod E, moving in guides F G, said rod supported in position by lever R, acting against angular spring *l*, and provided with hook *g* at top and elbow *o* at bottom, respectively, acting on pawl-pin *h* and long arm of lever stop-cock I, itself regulated by set-screw *b*, acting on its short arm, said rod E and long arm of lever stop-cock I connected by adjustable chain *m* and set-screw *n*, all combined in the manner and for the purposes substantially as specified.

3. The reservoir L and supply-pipe K, with automatically-adjustable mouth *c*, said supply-pipe moving in guides M N, and connected by brace J with drill-shaft A, all combined in the manner and for the purposes substantially as specified.

4. The bell W on adjustable arm *i*, in combination with the lever R, operating in the manner and for the purpose substantially as specified.

5. The work-table S, provided with centrally-converging grooves and a side rim, in combination with a removable cup, P, and cock Q, substantially as specified.

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Witnesses:
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