No. 785,612. PATENTED MAR. 21, 1905.

J. C. HAYWARD.

OILER.

APPLICATION FILED NOV. 18, 1904.

2 SHEETS—SHEET 1.

Fig. 1.

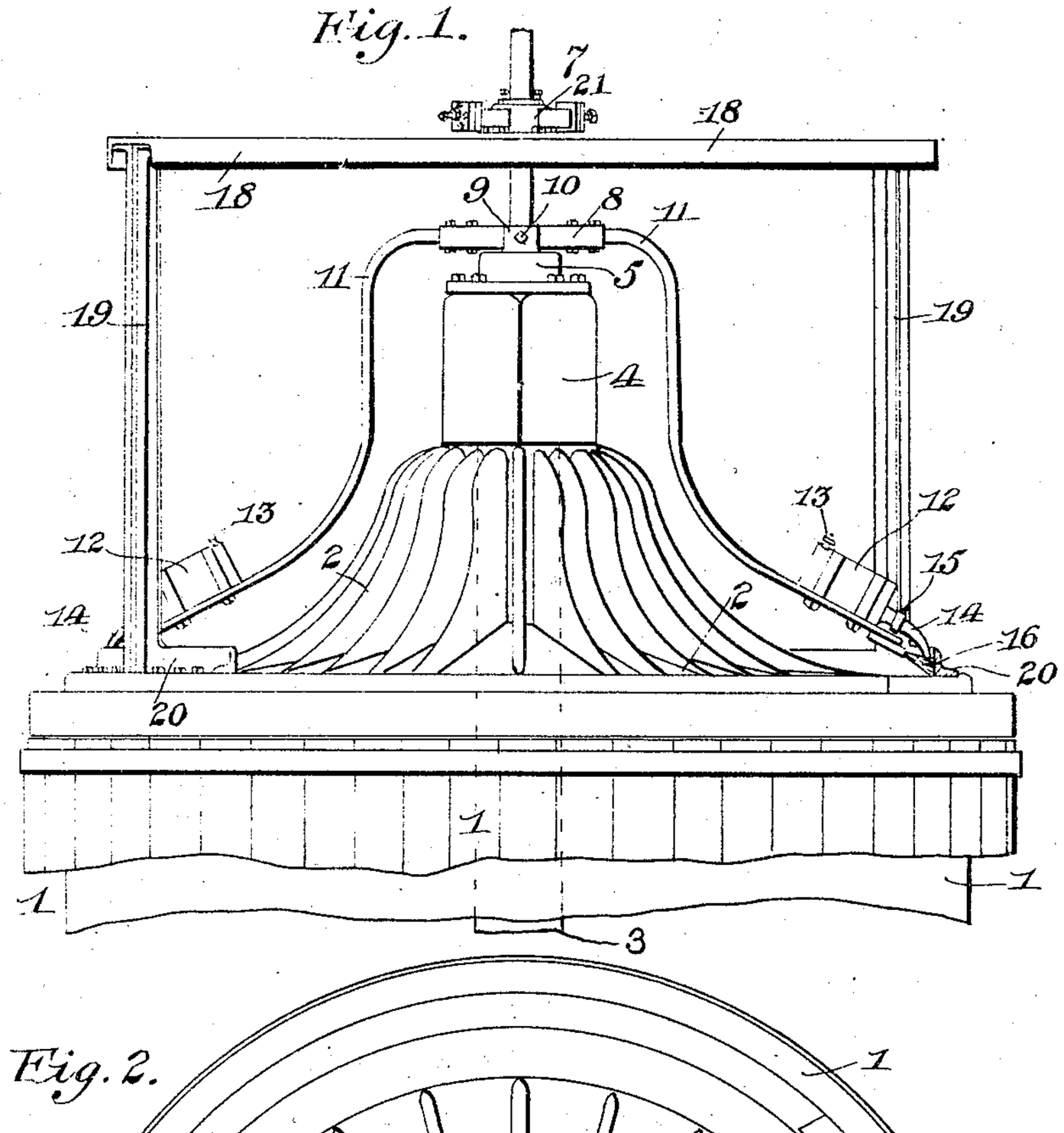

Fig. 2.

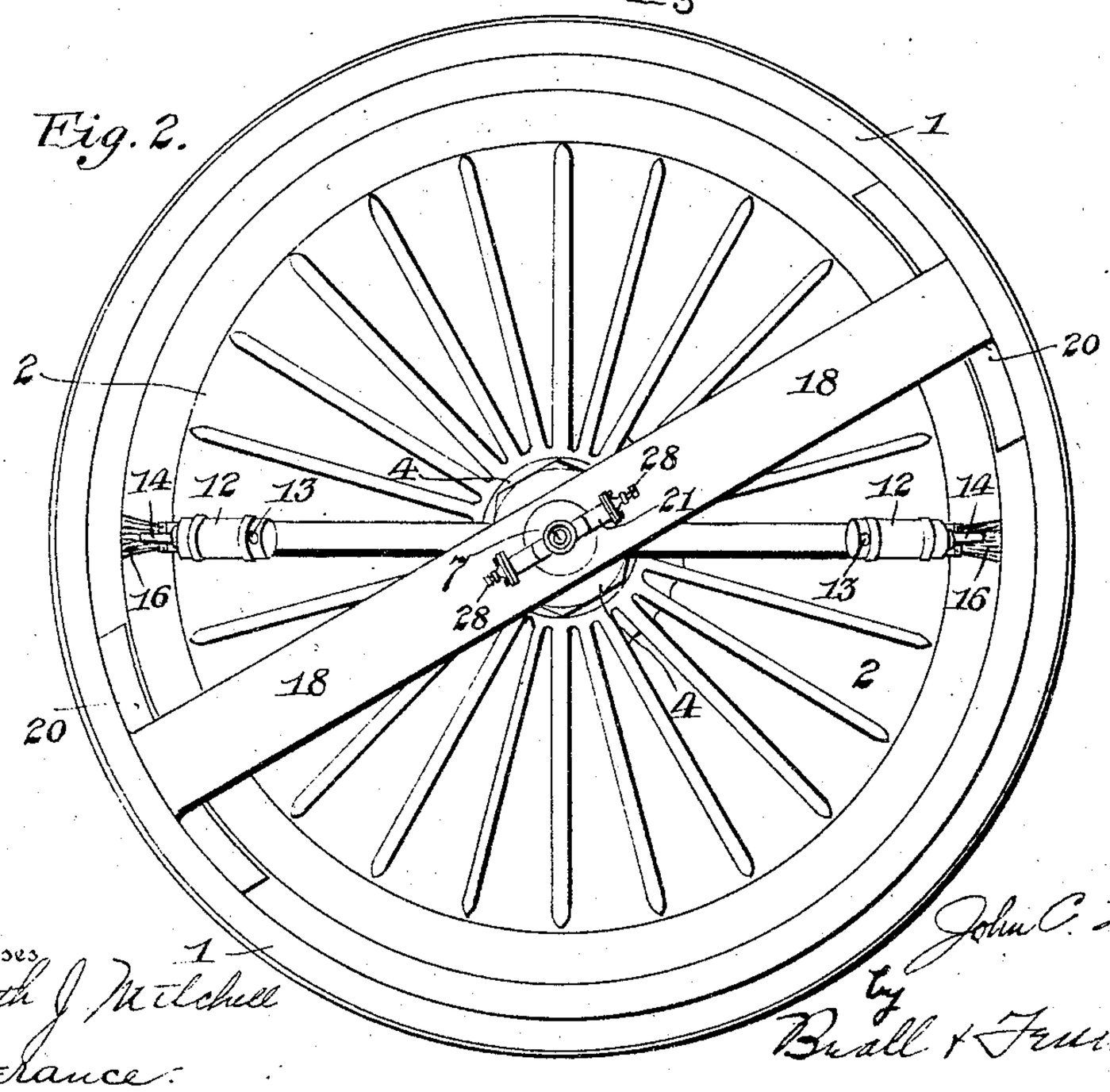

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Fig. 3.

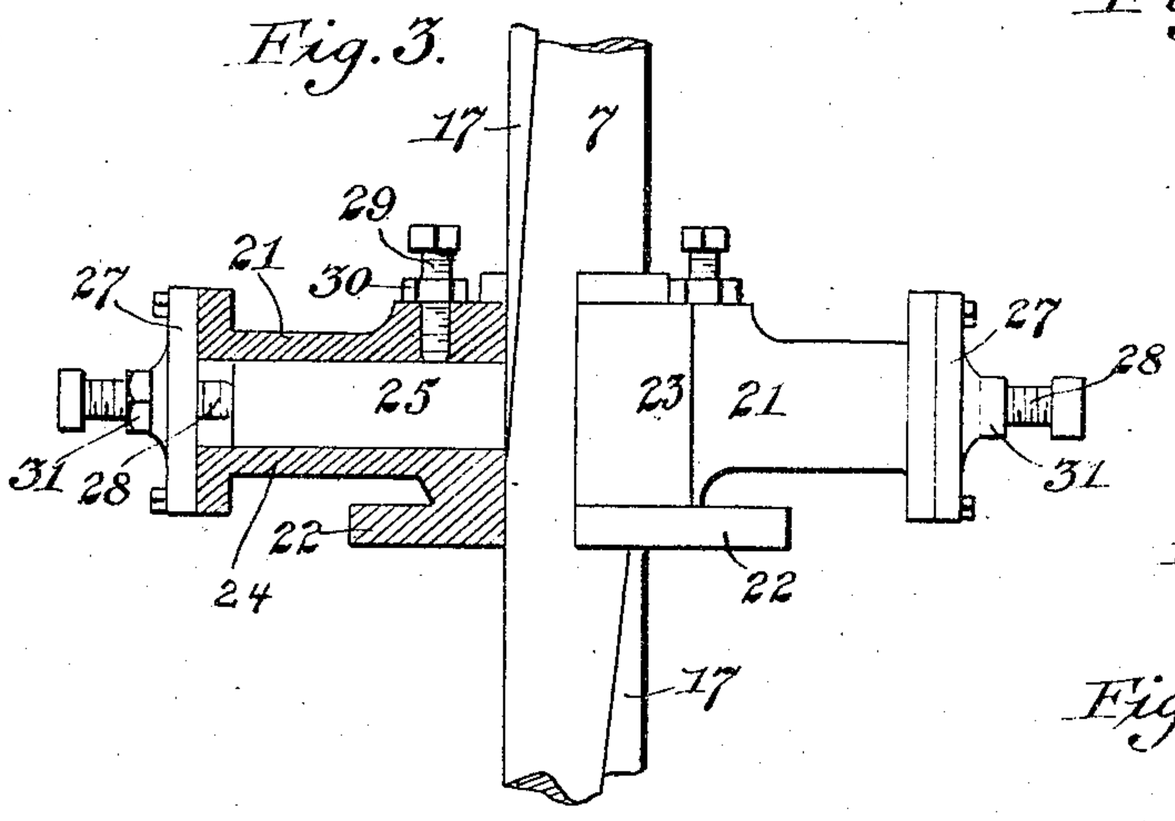


Fig. 4.

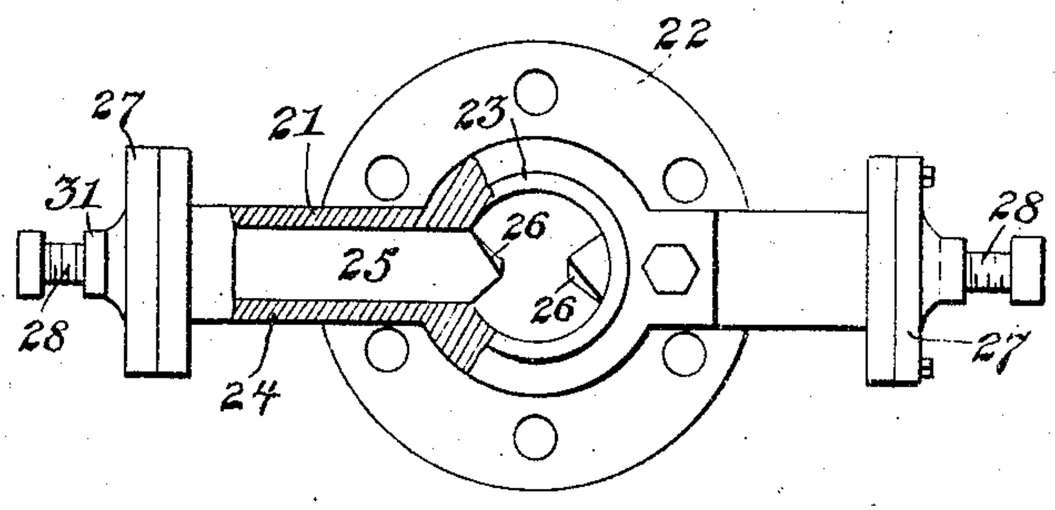


Fig. 5.

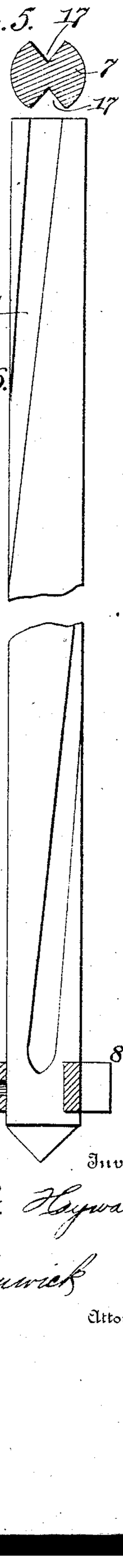
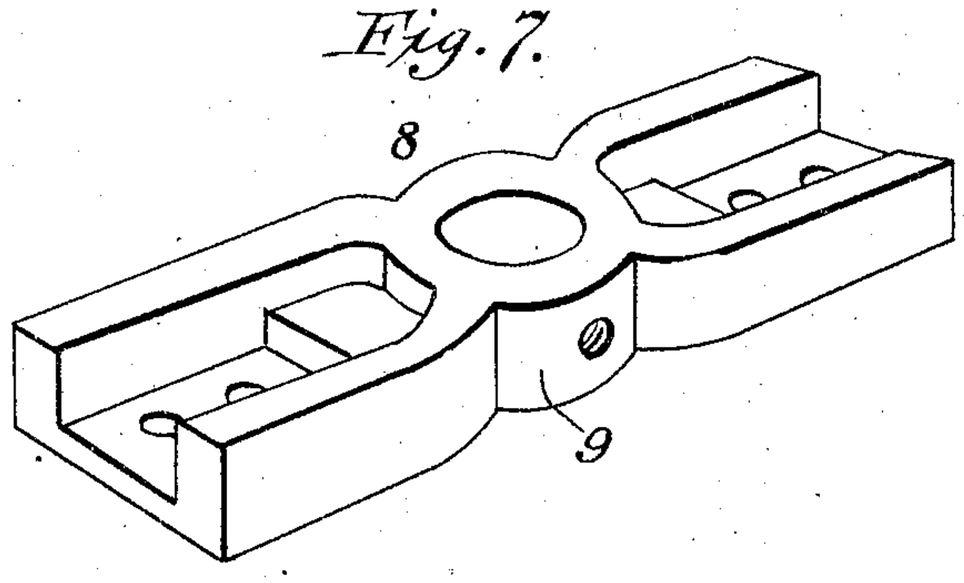


Fig. 6.

Fig. 7.



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UNITED STATES PATENT OFFICE.

JOHN CHARLES HAYWARD, OF SELMA, ALABAMA.

OILER.

SPECIFICATION forming part of Letters Patent No. 785,612, dated March 21, 1905.

Application filed November 18, 1904. Serial No. 233,349.

To all whom it may concern:

Be it known that I, JOHN CHARLES HAYWARD, a citizen of the United States, residing at Selma, in the county of Dallas and State of Alabama, have invented new and useful Improvements in Oilers, of which the following is a specification.

This invention relates to improvements in lubricating mechanism, and particularly to lubricating means which is designed for oiling the interior surfaces of cylinders.

It consists in certain novel constructions, combinations, and arrangements of parts, as will be fully described and claimed.

In the accompanying drawings, Figure 1 is a side elevation of a lubricating mechanism applied to a cylinder, a portion of the cylinder only being shown. Fig. 2 is a top plan view of the same. Fig. 3 is an enlarged detail view, partially in elevation and partially in section, showing the means for securing a rotary movement in the lubricator-applying means. Fig. 4 is a top plan view of the mechanism for engaging the spirally-grooved rod or shaft for turning the lubricating means, a portion of the same being shown in section. Fig. 5 is a transverse sectional view through the spirally-grooved rod. Fig. 6 is a side elevation of the lower end of said rod, the clamp for securing the lubricator to the said rod being shown in section. Fig. 7 is a detail view of a yoke or cross-head for holding the sweeps or arms which carry the lubricating-holders to the spirally-grooved rod.

The device forming the subject-matter of the present invention is designed to lubricate the inner surface of cylinder-walls and is movably mounted with respect to said walls, so that it may be moved out of the way of a piston operating in the cylinder. The device is also given a rotary movement, so as to engage a large portion of the cylinder-walls, if not the entire inner surface thereof. I have illustrated in the accompanying drawings a preferable construction of such a lubricating means, showing the same resting upon the upper end of a piston and capable of entering the cylinder, following the piston therein, and also so mounted as to be lifted from the cylinder by the return movement of the piston. The type of cylinder shown is that commonly employed in a compress mechanism and is a cylinder with one end open.

In the said drawings, 1 indicates a cylinder, and 2 a piston-head moving therein. The piston-rod 3 is secured to the piston-head by means of a large nut 4, which engages the piston-head, as shown in Fig. 1. Mounted upon the nut 4 is a foot-bearing or step 5, which supports the lower tapered end 6 of the rotating shaft 7. The shaft has clamped to it near its lower end a cross-head or sweep-supporting yoke 8. The cross-head or yoke 8 is formed with a central hub or sleeve 9, which fits upon the shaft 7, and one or more set-screws, as 10, passing through the wall of said hub, secure the yoke rigidly to the said shaft, so as to be turned therewith. The yoke is formed at its opposite ends with recesses, forming seats for the upper ends of sweeps 11. The lower ends of the sweeps extend downwardly to points near the piston 2. Secured to the lower ends of the sweeps are receptacles 12 for containing the lubricant which is to be applied to the cylinder. The receptacles 12 are formed with screw-capped openings 13, by which they may be filled, and extending from the lower end of each receptacle is a delivery-spout 14. Each spout is provided with a valve or stop-cock 15, by which the flow of oil through the spout may be controlled.

To the lower ends of the sweeps are secured lubricating applying devices, preferably brushes 16, which extend beneath the outlet ends of the spouts 14 and project sufficiently beyond the same to engage the walls of the cylinder 1. The lubricant is permitted to drip continually upon the brushes 16, so as to feed sufficient of the oil thereto for properly oiling the inner surface of the cylinder. As the piston reciprocates in the cylinder the lubricant will be evenly distributed over the inner surface of the cylinder by the brushes 16. In order to more perfectly apply the lubricant and more evenly spread the same upon the inner surface of the cylinder, I rotate the shaft 7, which carries the lubricating means. In the drawings I have illustrated a preferred manner of securing the rotation of the said

shaft 7. The shaft 7 is formed with spiral grooves 17, extending longitudinally thereof and upon opposite sides of the shaft with respect to each other. The grooves 17 are made comparatively deep, as shown in Fig. 5, so that the means which engages them for rotating the shaft may have a positive hold upon the said shaft. The device employed for engaging the grooves 17 and rotating the shaft is mounted upon a cross-bar 18, which is secured at its ends to the upper ends of uprights or standards 19. The said cross-bar 18 is preferably formed of channel-iron with the flanges turned downwardly. The standards 19, which support the channel-bars, are usually formed of angle-iron, and the lower ends may be turned to one side to form an attaching-base 20. The attaching-bases of each standard 19 are bolted or otherwise secured to the upper ends of the cylinder 1. In this manner the cross-bar 18 is rigidly supported upon the cylinder and forms a guide for the shaft 7, as well as a support for the means employed in rotating the shaft.

The means for turning the shaft, as shown in the drawings, consists of a casing 21, which is formed with a securing-flange 22, by which it may be bolted or otherwise secured to the bar 18. The central portion of the casing 1 is made with a bearing 23, which fits upon the shaft 7, and projecting radially therefrom are guide bearings or boxes 24, within which are mounted shaft engaging and actuating plugs or bolts 25. The bolts 25 are tapered at their inner ends 26, so as to fit closely in the groove 17, formed upon the shaft 7. The outer ends of the casing are closed by covers or heads 27, which carry adjusting feed-screws 28. The feed-screws 28 bear at their inner ends upon the ends of the bolts or plugs 25 and serve to hold them in engagement with the shaft 7. The engagement of the said bolts or plugs with the said shaft is a movable one, the screws 28 not being adjusted to such an extent as to prevent the said bolts from slipping easily within the groove 17. The casing 21 also carries set-screws 29, which bear upon the sides of the bolts 25 and hold them rigidly in their adjusted positions. These set-screws also carry jam-nuts 30 for preventing the turning of the set-screws. The adjusting-screws 28 may also be provided with binding-nuts, as 31, in order to prevent their turning when not being adjusted.

The shaft 7 rests upon the bearing in the stop or foot-support 5, and as the piston 2 rises the shaft will be forced to turn by reason of its engagement with the ends of the bolts 25, so that the brushes 6 will be carried around, spreading oil upon the inner surface of the cylinder. The brushes will thus not only have a reciprocating movement in the cylinder, but will be given a spiral movement, so as to reach all parts of the cylinder. When the piston 2 descends in the cylinder again, the shaft 7, resting upon the same, will descend, carrying with it its lubricating means and being rotated by the action of its spiral grooves upon the stationary bolts or plugs 25. While the mechanism above described is especially well adapted for compresses and similar mechanism, it will be apparent that it may be applied to the cylinders of other machines, and if the end of the shaft 7 is connected by a swiveled connection with the piston the mechanism might be arranged horizontally or in an inverted manner without departing from the spirit of the invention.

The receptacles 12 may be made large enough to hold a quantity of oil sufficient to lubricate the cylinder for a considerable length of time. The discharge of the oil can be perfectly controlled by setting the valves 15. Of course the receptacles 12 may be filled from time to time as required by removing the cap 13.

The plugs 25 may be made of softer metal than the shaft 7, if desired, so that the principal wear in the operation of the oiling device will be upon the said plugs, which can be fed forward from time to time to take up any lost motion. The plugs of course can also be renewed when they become too short to be serviceable by removing the caps 27 and inserting new ones.

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

1. A lubricating mechanism comprising an actuating member, lubricant-holders secured to the said actuating member, and means for causing the rotation of the actuating member but permitting of its reciprocation.

2. A lubricating mechanism comprising a reciprocating member and means having a sliding engagement therewith causing its rotation, arms carried thereby, and lubricating applying devices mounted upon the said arms.

3. A lubricating mechanism comprising a reciprocating and a fixed member engaging the shaft and causing its rotation as it reciprocates, lubricant-applying means carried by the said shaft and engaging the surface to be lubricated.

4. A lubricating mechanism comprising a reciprocating shaft having spiral grooves formed therein, lubricant-applying means connected with the said shaft, and stationary means engaging the grooves of the shaft for causing its rotation when it is reciprocated.

5. A lubricating mechanism comprising a rotatably-mounted shaft having actuating-grooves formed in its periphery, lubricant-applying means connected with the shaft and moved thereby, and stationary means engaging the grooves of the shaft for causing its rotation upon its movement longitudinally.

6. A lubricating mechanism comprising a shaft having spiral grooves formed therein, a bearing supporting the shaft upon a piston,

arms projecting from the said shaft, lubricant-applying means secured to the arms and capable of engaging the inner surface of the cylinder in which the piston moves, and means engaging the grooved shaft for rotating it when it is moved by the piston.

7. A lubricating mechanism comprising a shaft mounted upon a piston and having a movable engagement therewith, the said shaft having oppositely-arranged spiral grooves in its periphery, a yoke keyed to the shaft, arms projecting from the said yoke and extending to points near the surface of the cylinder to be lubricated, lubricating applying means carried by the said arm comprising receptacles, means for controlling the discharge from the same, and brushes arranged beneath the discharge-outlets for receiving the lubricant and spreading it upon the inner surface of the cylinder, and means engaging the spiral grooves of the shaft for causing its rotation when it is reciprocated.

8. A lubricating mechanism for a compress-cylinder comprising a shaft movably mounted upon the piston, arms keyed to the said shaft and projecting to points adjacent to the surface of the cylinder, lubricant-containing receptacles secured to the arms, nozzles in the end of the said receptacles, a valve or stop-cock for controlling the discharge of material from the nozzles, and spreading means for receiving the drip from the nozzles and applying it to the surface of the cylinder.

9. A lubricating mechanism for cylindrical surfaces comprising a reciprocating shaft, lubricating means carried thereby, an actuating means for the shaft comprising shaft-engaging points and stationary means for holding the same, the said shaft-engaging points engaging grooves formed in the shaft.

10. A reciprocating mechanism for cylindrical surfaces comprising a reciprocating and rotating shaft having spiral grooves formed in its periphery, means for engaging the grooves comprising bolts, a casing for holding the said bolts, and a rigid frame for supporting the bolts and holding them in proper position with relation to the shaft.

11. A lubricating mechanism for cylindrical surfaces comprising a reciprocating shaft having spiral grooves formed in its periphery, lubricating means connected with the said shaft and supported near the cylindrical surface to be lubricated, means for causing the rotation of the shaft comprising a casing surrounding the shaft and having compartments formed therein, shaft-engaging bolts mounted in the compartments, and means for holding the bolts stationary, the movement of the shaft with respect thereto causing the rotation of the said shaft.

12. A lubricating mechanism for cylindrical surfaces comprising a reciprocating and rotating shaft having actuating grooves in its surface, lubricating means connected rigidly with the shaft and extending to the cylindrical surface to be lubricated, a hollow casing surrounding the shaft and formed with radiating recesses or pockets, bolts mounted in the said pockets and projecting at their inner ends into the grooves of the shaft, nuts for adjusting said bolts, a cross-head supporting the said casing and standards rigidly mounted with respect to the cylindrical surfaces and connected with the said cross-head for holding it fixedly in place.

13. A lubricating means for a cylinder comprising a rigid frame mounted upon the end of the cylinder, a casing secured to the rigid frame, adjustable bolts mounted in the casing and having inwardly-projecting tapered ends, a shaft having V-shaped spiral grooves formed in its surface and engaging the tapered ends of the bolts, set-screws engaging the ends of the bolts for adjusting them longitudinally and set-screws engaging the sides of the bolts for clamping them in their adjusted positions, lubricating means secured to the shaft and extending to points adjacent to the inner surface of the cylinder, and means for connecting the shaft with a piston moving in the cylinder, the reciprocation of the shaft causing its rotation.

14. A lubricating mechanism for cylinders comprising a frame secured to the cylinder made up of angle-iron standards, and a channel-iron cross head or bar, adjustable means secured to the cross-head for engaging a lubricant-carrying shaft, a shaft passing through said adjustable means and provided with spiral grooves by which it may be rotated, radiating arms secured to the said shaft and lubricant-applying means secured to the ends of the arms and engaging the surface of the cylinder, and means for communicating motion from the piston of the cylinder to the said shaft.

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

JOHN CHARLES HAYWARD.

Witnesses:

A. KAYSER,

S. EAGLE.