

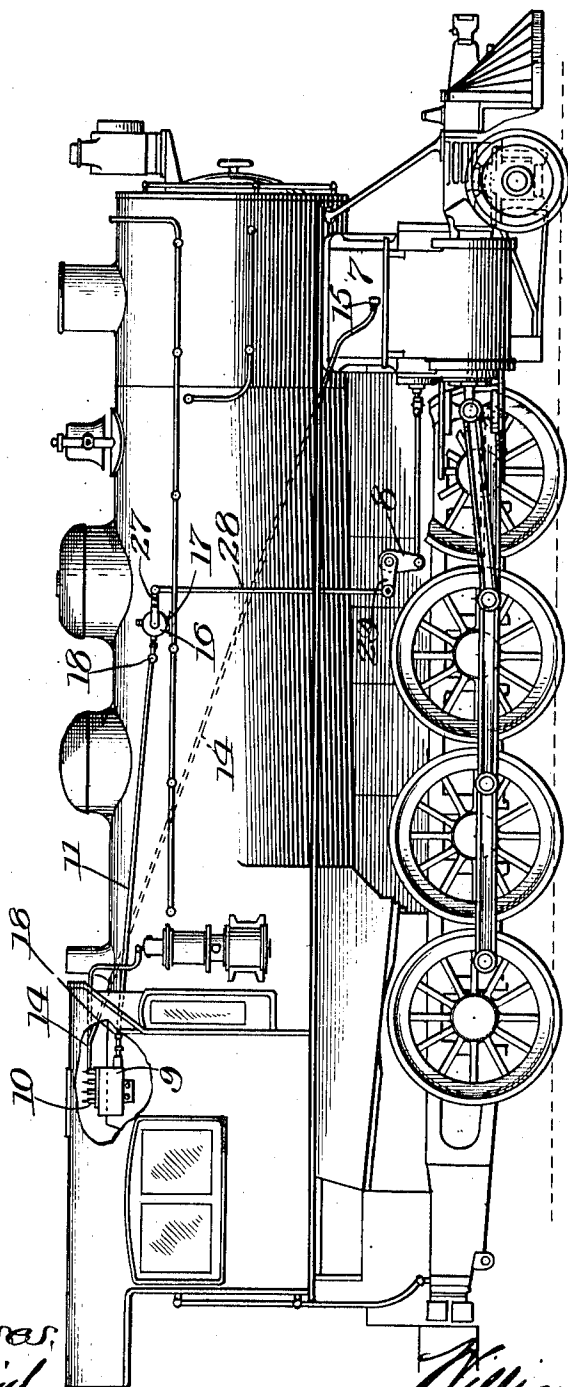
W. J. SCHLACKS.
LUBRICATING SYSTEM.
APPLICATION FILED NOV. 25, 1907.

984,303.

Patented Feb. 14, 1911.

3 SHEETS-SHEET 1.

Fig. 1.



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3 SHEETS—SHEET 2.

Fig. 3.

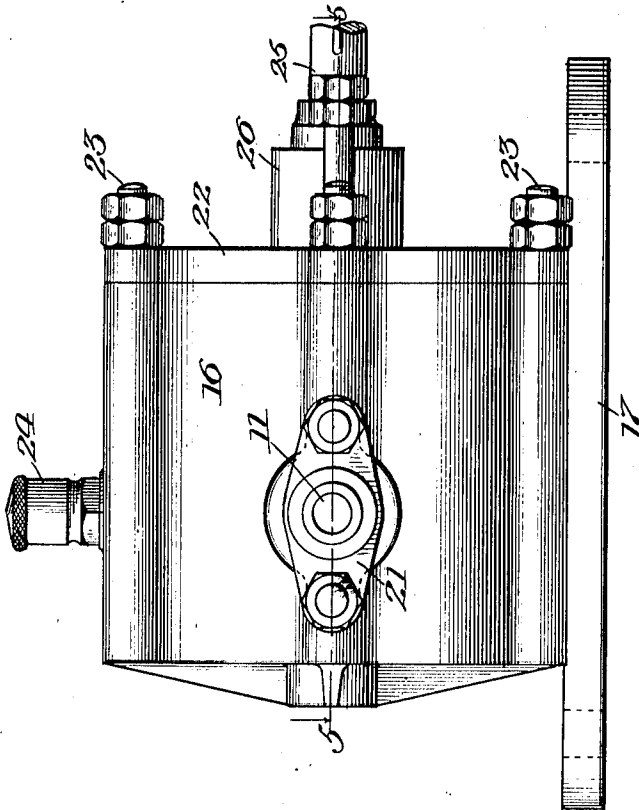
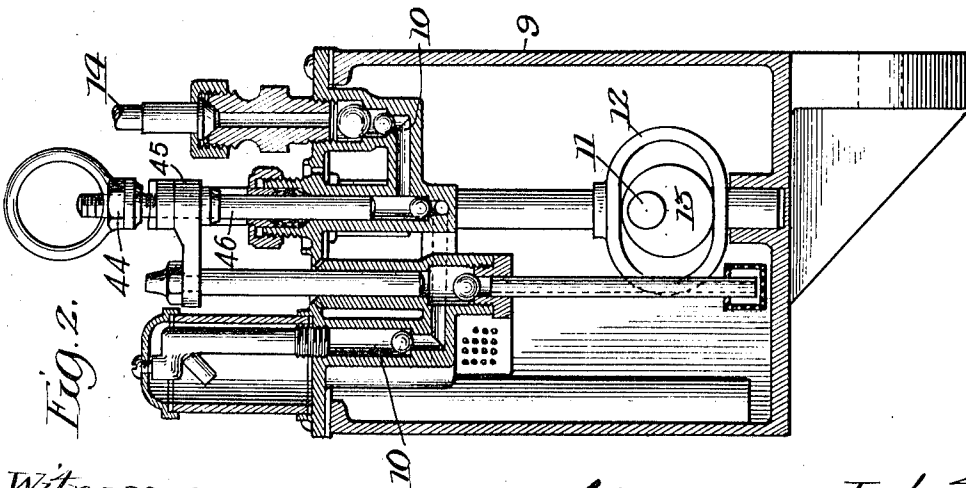


Fig. 2.



Witnesses

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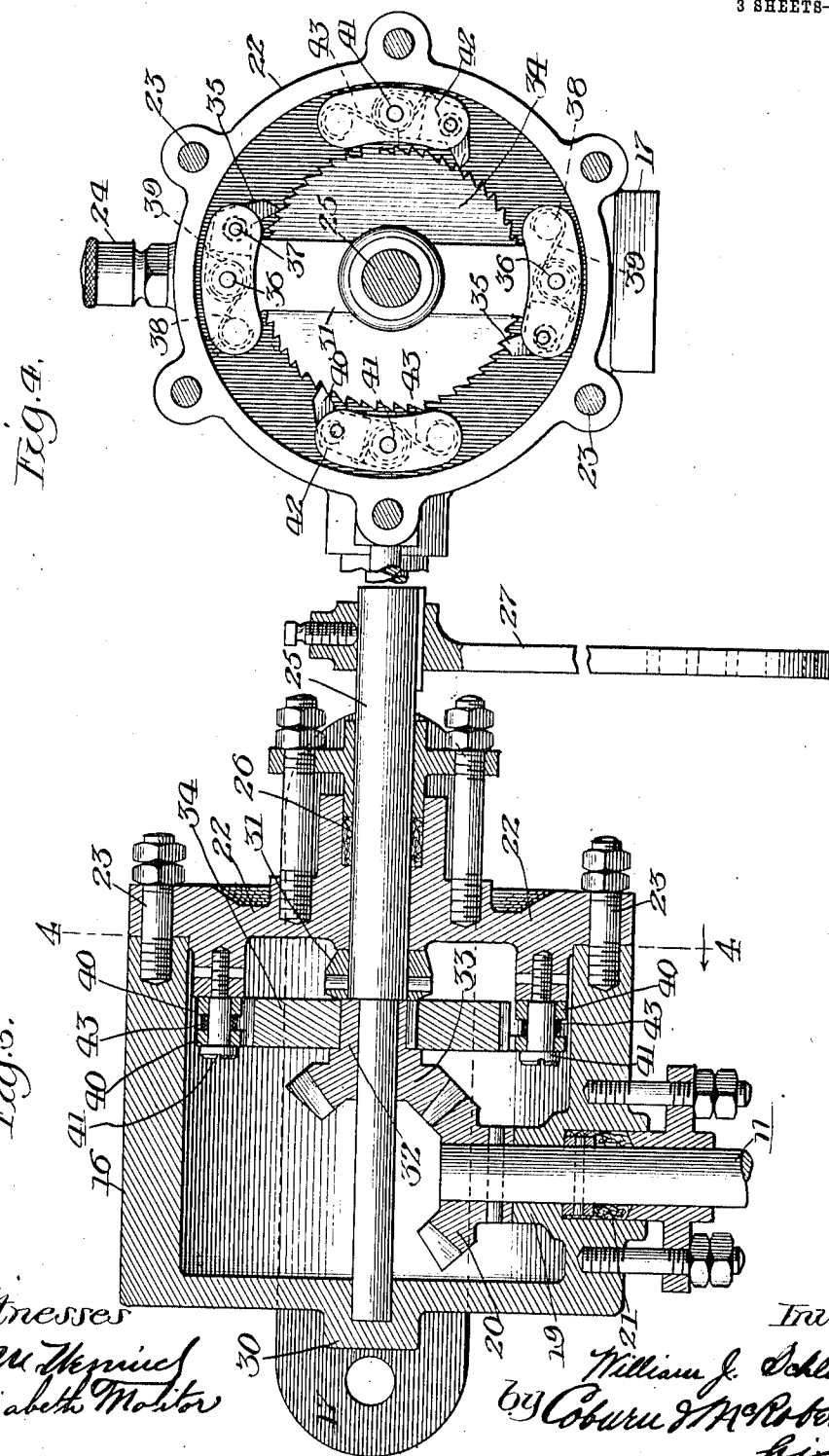
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

WILLIAM JOHN SCHLACKS, OF CHICAGO, ILLINOIS, ASSIGNOR TO McCORD & COMPANY,
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LUBRICATING SYSTEM.

984,303.

Specification of Letters Patent.

Patented Feb. 14, 1911.

Application filed November 25, 1907. Serial No. 403,621.

To all whom it may concern:

Be it known that I, WILLIAM J. SCHLACKS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Lubricating Systems, of which the following is a specification, reference being had therein to the accompanying drawings.

10 My invention relates to a lubricating system for locomotives and the like, and comprises as its essential parts a lubricating mechanism having a rotating shaft, and a mechanism intermediate the lubricating
15 mechanism and a moving part of the device to be lubricated, such as the rocker-arm of an engine, and adapted to transmit rotary movement to the shaft.

In the accompanying drawings, which
20 illustrate an embodiment of my present invention—Figure 1 is a side elevation of a locomotive equipped with my present lubricating system, the cab being broken away to show the oil pump located therein; Fig. 2
25 is a sectional view of one form of lubricating mechanism which may be employed; Fig. 3 is a front elevation of the transformer with the face plate removed; Fig. 4 is a vertical sectional view of the transformer on the line 4—4 of Fig. 5, and Fig. 5 is a horizontal
30 view of the transformer on line 5—5 of Fig. 3.

The locomotive shown is of the usual construction comprising among other things a boiler, cab, steam chest 7, and rocker-arm
35 8 of the steam-distributing mechanism.

The lubricating mechanism comprises an oil-reservoir 9, preferably mounted in the cab adjacent the engine controlling mechanism so as to be under the immediate observation and supervision of the engineer, and one or more force-feed pumps 10 of any
40 suitable construction mounted in the reservoir and adapted to be actuated by a drive shaft 11. These lubricating pumps are shown in Fig. 2, and in general construction and mode of operation are the same as the double-acting pumps disclosed by Letters
45 Patent of the United States No. 797,867, to I. A. Randel, dated August 22, 1905, to which reference is accordingly made for a detail description thereof, it being understood that any number of these, or other
50 suitable, pumps may be mounted in the reservoir, with their heads suitably connected

to actuating yokes 12 cooperating with cams or eccentrics 13 on the drive shaft. The reservoir is provided with a suitable supply opening, and the discharge pipes 14 lead through terminal checks 15 to the parts of
60 the engine to be lubricated.

The shaft 11 is journaled in suitable bearings in the reservoir and is held against longitudinal displacement by any suitable means, and extends through one end of the
65 reservoir into the casing of a transformer 16 suitably mounted by its base 17 upon the engine. In the embodiment shown the transformer is outside of and in front of the cab practically in horizontal alinement with
70 the oil reservoir, but it obviously may be set at different positions and elevations on the engine, and for this purpose the shaft 11 may have flexible portions or sections 18 to
75 accommodate itself to the different locations or elevations of the transformer. Obviously the shaft may be of the ordinary flexible type, but I prefer to construct it with joints or flexible sections as stated.

The casing of the transformer is provided
80 in its side wall with a bearing 19 for the shaft 11, which extends into the casing where it is provided with a bevel-gear 20, the bearing having a suitable stuffing-box 21. The casing is in the form of a cup or reservoir, and comprises a head 22 suitably secured in place by screws 23, and is provided
85 with a suitable filler 24 in its top. The head or closure has a central bearing for a cross-shaft 25 passing therethrough and provided with a suitable stuffing-box 26. The shaft 25 is provided on its outer end with any suitable means as the rocker-arm 27
90 adapted to be moved by any moving part or element of the engine to communicate rocking or reciprocating motion to the shaft; in the present embodiment the arm 27 is connected by a link 28 to an arm 29 which with
95 the rocker-arm 8 forms a bell-crank lever; either or both arms 8 and 27 may be provided with a series of holes shown in dotted lines in Fig. 5 so that the connection may be
100 adjusted to vary the throw or movement of the cross-shaft. The inner end of the shaft 25 is reduced and is seated in a bearing 30 in the opposite wall of the casing, and the shaft is held against longitudinal displacement by a suitable pawl-lever 31 pinned thereon and bearing against the inner face
105 of the head. The shaft 25 carries a sleeve

32 loosely mounted thereon adjacent the pawl-lever and provided with a bevel-gear 33 meshing with the gear 20. The shaft is held from longitudinal displacement by the 5 coöperation of the parts just described. The sleeve is provided with a ratchet wheel 34 splined thereto between the pawl-lever 31 and gear 33, the diameter of the wheel being somewhat less than the length of the pawl-lever. The rocking or reciprocating move- 10 ment of shaft 25 causes the pawl-lever to similarly move, and its motion is transmitted to the ratchet-wheel 34 by pawls 35 loosely mounted on pivots 36 on the pawl-lever and 15 extending into the plane of the ratchet wheel and engaging the teeth thereof. The ends of the pawl-lever are somewhat extended, and each extension is provided at one end with a stop-pin 37 passing through a rela- 20 tively larger opening in the associated pawl, and at the other end with a pin 38 to which one end of a spring 39 is secured, the spring being wound upon the associated pivot 36 and at its outer end engaging the pawl to 25 hold it in register with the teeth of the ratchet wheel.

One or more dogs 40 are provided to prevent backlash of the ratchet wheel, and preferably the dogs are mounted on pivots 41 on 30 the inner face of the head 22. They may be of any suitable form, and in the construction illustrated are counterparts of the pawls 35 being provided with similar openings to engage associated stop-pins 42 and held to 35 their work by springs 43.

The ratchet, pawl-lever, gear 33, pawls, dogs, and shaft 25 are all connected to the removable head 22, so that all of these parts form a unitary or self-contained structure 40 adapted to be assembled and disassembled with respect to the casing or support at one and the same time by one and the same operation, the gears 20 and 33 being placed in mesh when the inner end of the shaft is 45 seated in its bearing 30. The removable section or head forms a closure for the casing which preferably contains grease or lubricating oil for the operating parts, the stuffing-boxes for the shafts preventing leakage, and 50 the joint between the head and casing being oil-tight for this purpose.

The pawls are arranged a half tooth apart so that one pawl operates at a time, the dogs being similarly arranged and operative, and 55 a movement equal to one half of the pitch of the teeth is obtained from each movement of a pawl. By this construction larger and heavier teeth may be employed on the ratchet, thus reducing the wear and doubling the re- 60 sistance to the strain.

The transformer prevents the necessity of extending a reciprocating rod from a point where the power is taken to the lubricating mechanism. It also changes the recipro- 65 cating motion of the rocker-arm or other

parts of the steam-distributing mechanism to rotary motion of the pump-actuating shaft, and reduces the more or less extended throw or motion of the operating part to a simple rotation of the shaft. By employing 70 a separate transformer, as distinguished from a structure wherein this transformation is accomplished within the pumping mechanism itself, the latter is simplified and reduced to the least possible number of parts, 75 whereby the liability of the lubricating mechanism becoming deranged or inoperative is reduced to a minimum, and any trouble in the transforming devices may be readily remedied without in any manner dis- 80 turbing the lubricating mechanism; by reason of the unitary construction or organization of the transformer parts their assembly and dis-assembly are easily accomplished by the operator. Also, the best re- 85 sults are obtained by having the pumping mechanism located in proximity to the engine-controlling mechanism, as the engineer is thus enabled without leaving his place to observe and regulate the rate of feed of the 90 pumps, each of which is independently adjustable by a set-nut 44 which allows a greater or less lost-motion or sliding of the cross-head 45 on the pump-plunger 46 in a manner now well understood in the art, and 95 as it is desirable to economize in the size of the oil reservoir in order to occupy as little space as possible at the engineer's station, the independent transformer permits the oil reservoir to be so located while occupying 100 a minimum of space, and also affords more room for oil in the reservoir. The transformation of the motion is effected at a right angle, and this is important for the reason that as the pump-actuating shaft extends lon- 105 gitudinally of the engine the right-angled transformer places its rocker-arm parallel with the engine and so in appropriate position to receive its movement from the moving parts of the engine. 110

While the system is illustrated in connection with a locomotive, it is of course obvious that it may be used upon other forms of engines without departing from the invention, and while I have described by invention 115 with relation to a structure in which its various features may be embodied I do not limit myself to any such specific forms, as changes in details and constructions fall within the scope of my invention. 120

What I claim is:—

1. In a lubricating system for locomotives and the like, an oil distributing mechanism having one or more pumps, pipes leading from the pumps to the parts to be lubricated, 125 a transformer-casing mounted on the locomotive, a connecting shaft having bearings in the casing and reservoir, a rocker-arm on the transformer-casing, and means in the casing intermediate the arm and shaft to 130

transform the reciprocating movement of the former into rotary movement of the latter.

2. In a lubricating system for locomotives and the like, an oil distributing mechanism having one or more pumps, pipes leading from the pumps to the parts to be lubricated, a transformer-casing mounted on the locomotive, a shaft to operate the pumps having bearings in the casing and reservoir and having flexible portions, a rocker-arm on the transformer-casing, and means in the casing intermediate the arm and shaft to transform the reciprocating movement of the former into rotary movement of the latter.

3. In a lubricating system for locomotives, an oil reservoir in the locomotive cab and having one or more pumps, pipes leading from the pumps to the parts to be lubricated, a casing mounted outside the locomotive cab, a shaft having bearings in the casing and reservoir, connections in the reservoir between the shaft and pumps, a rocker-arm on the casing, and means in the casing to change the oscillations of the arm into rotation of the shaft.

4. In a lubricating system for locomotives, an oil reservoir in the locomotive cab and having one or more pumps, pipes leading from the pumps to the parts to be lubricated, a casing suitably supported on the locomotive in front of the cab, a shaft extending longitudinally of the locomotive into the casing and reservoir, connections in the reservoir between the shaft and pumps, a rock-shaft in the casing at a right angle to the first shaft, an actuating arm on the rock-shaft, and means in the casing to transmit motion from the rock shaft to the first shaft.

5. In a lubricating system for locomotives, an oil reservoir in the locomotive cab and having one or more pumps, pipes leading from the pumps to the parts to be lubricated, a casing suitably supported on the locomotive in front of the cab, a shaft extending longitudinally of the locomotive into the casing and reservoir, connections in the reservoir between the shaft and pumps, a cross-shaft in the casing, a rocker-arm on the cross-shaft, and means in the casing to transmit motion from the cross-shaft to the longitudinal shaft.

6. In a lubricating system, an oil distributing mechanism; an actuating shaft therefor; a transformer into which said shaft extends and providing a bearing therefor; a head on the transformer; a second shaft on the head and adapted to be assembled in co-operative relation with the first shaft when the head is secured in place.

7. In a lubricating system, an oil distributing mechanism; an actuating shaft therefor; a transformer into which said shaft extends; a bevel-gear on the shaft in the transformer; a head on the transformer; a shaft carried by the head and having a bevel-gear and connected ratchet-wheel loosely mounted thereon; and means connected to the last-named shaft to operate the wheel; said shaft, gear, wheel and operating means being carried by said head.

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

WILLIAM JOHN SCHLACKS.

Witnesses:

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J. McROBERTS.