

(No Model)

A. M. BUTLER.
LUBRICATING APPARATUS.

No. 584,623.

Patented June 15, 1897.

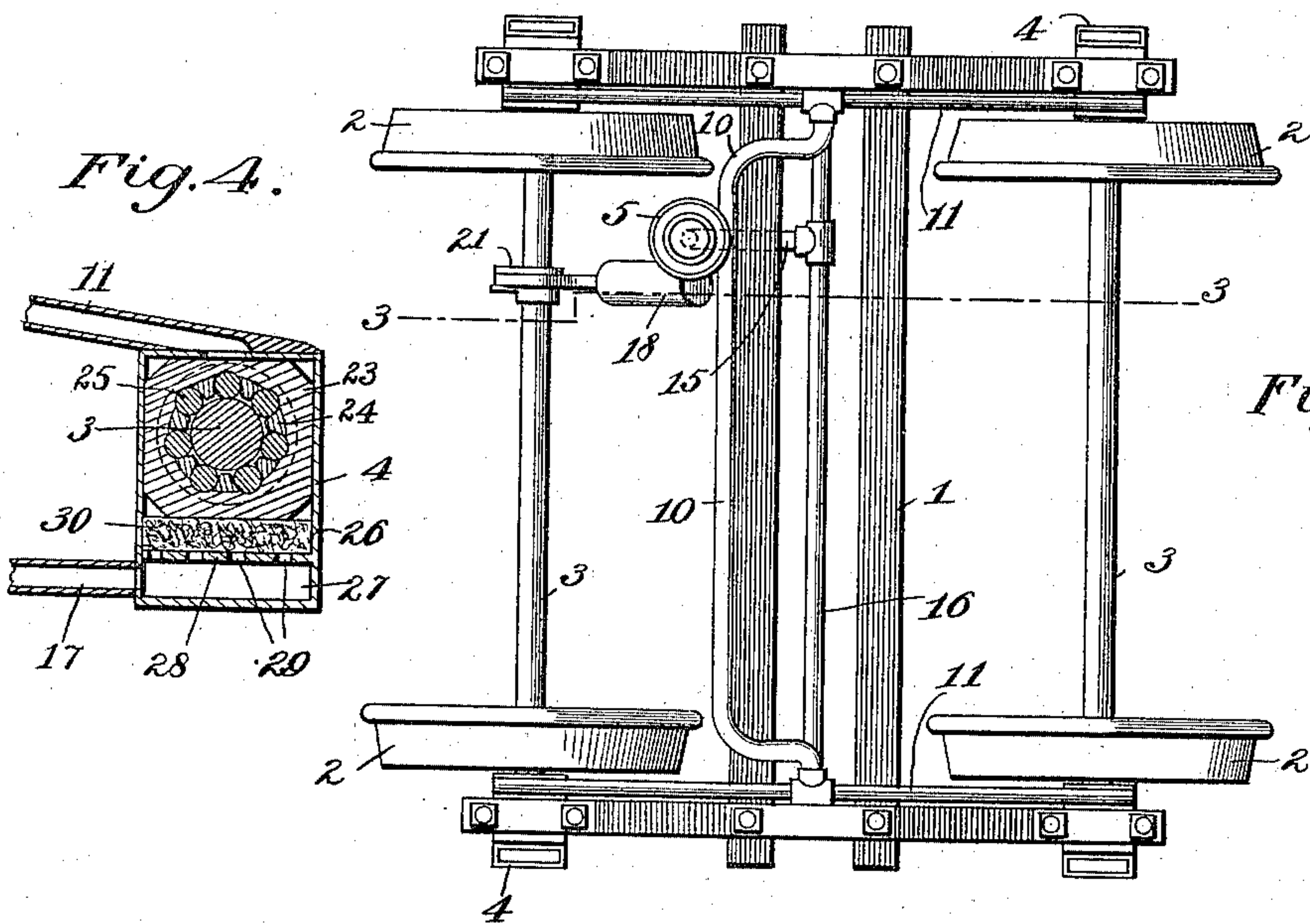


Fig. 4.

Fig. 1.

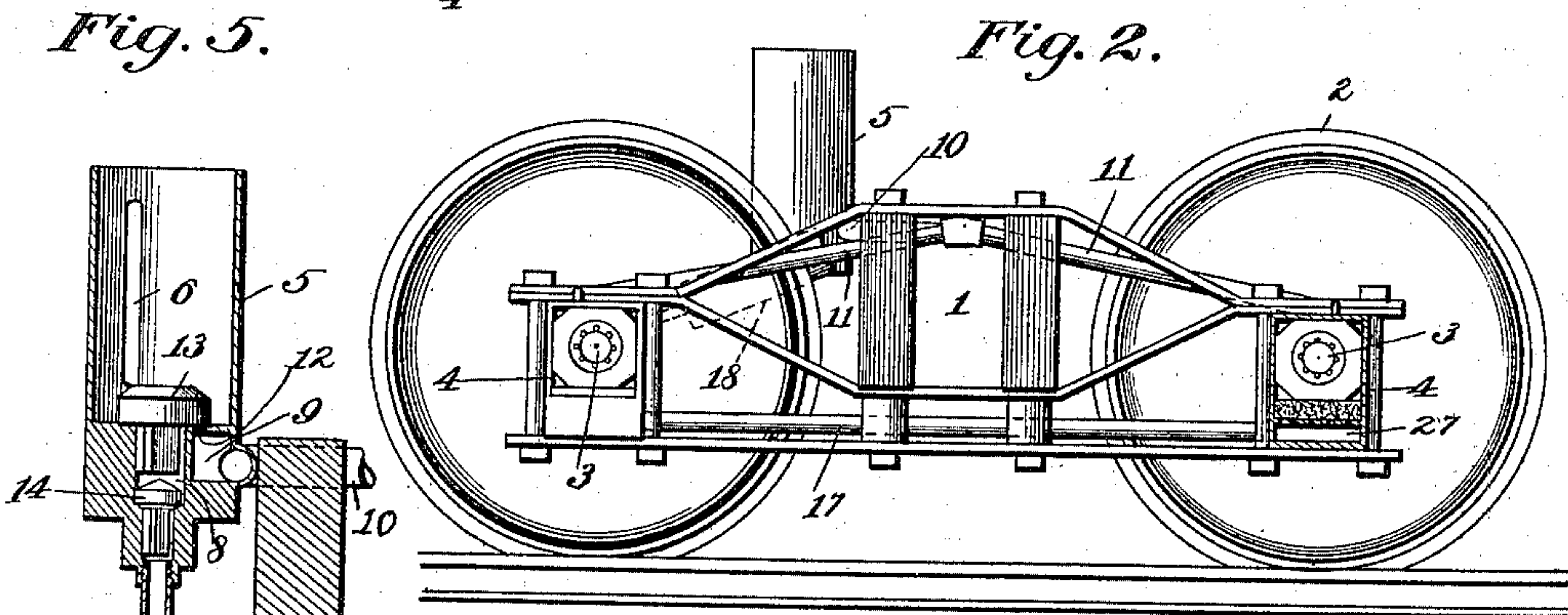


Fig. 5.

Fig. 2.

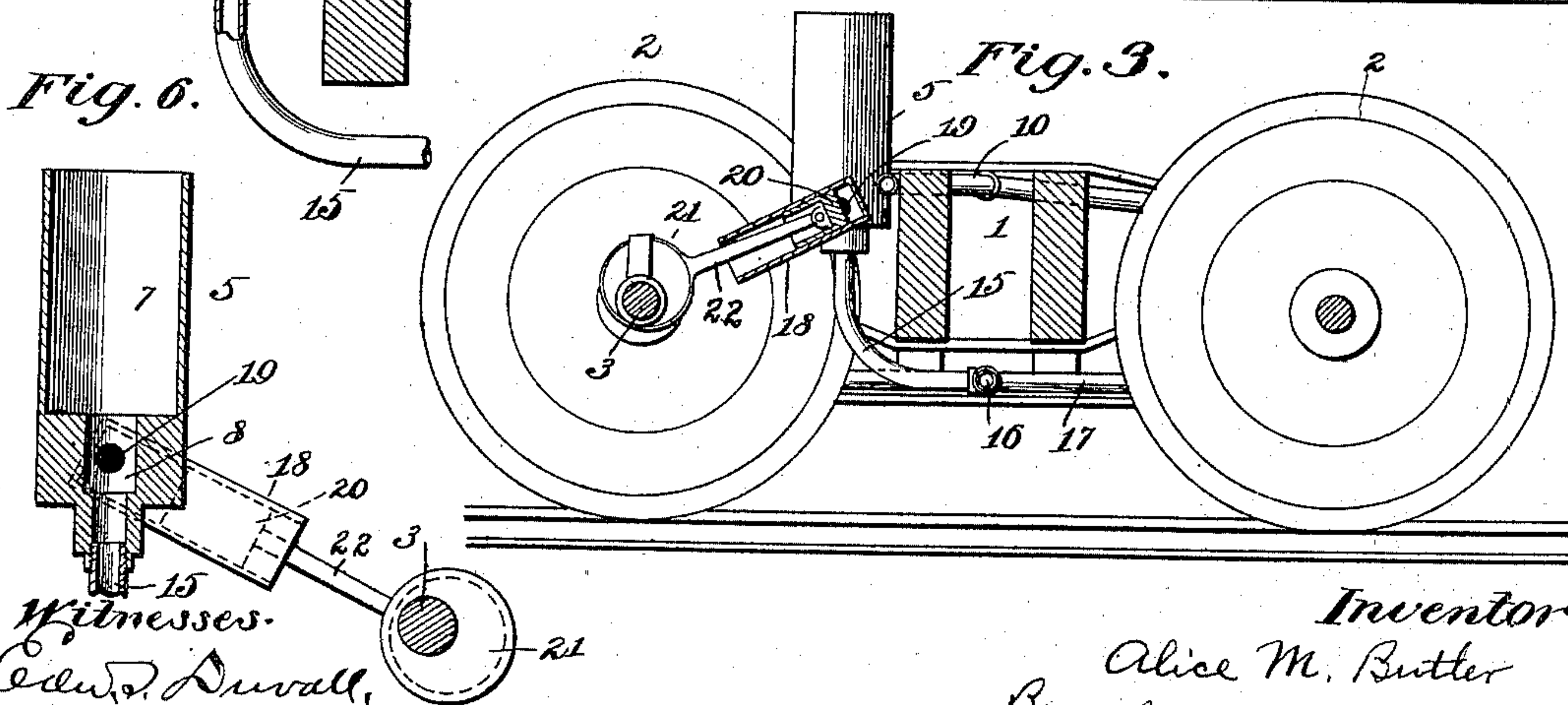


Fig. 6.

Fig. 3.

Witnesses.
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UNITED STATES PATENT OFFICE.

ALICE M. BUTLER, OF DES MOINES, IOWA.

LUBRICATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 584,623, dated June 15, 1897.

Application filed September 15, 1896. Serial No. 605,870. (No model.)

To all whom it may concern:

Be it known that I, ALICE M. BUTLER, a citizen of the United States, residing at Des Moines, in the county of Polk and State of Iowa, have invented certain new and useful Improvements in Lubricating Apparatus, of which the following is a specification.

My invention relates to devices for lubricating the journal-bearings of car-axles and similar devices, and has for its object primarily to provide an improved construction for the automatic supply of the lubricant to all the bearings of a truck or even all the bearings of a car from a single source of supply.

A further object of my invention is to render this supply in the form of a continuous circulation of the lubricant from and back to the supply-reservoir, thus dispensing with the necessity for employing waste or other absorbent material to hold said lubricant in the journal-boxes.

A still further object is to provide an improved construction of journal-box that will permit of the lubricant being strained or filtered after its passage through the rotating parts and before its return to the supply-reservoir.

These objects I accomplish in the manner and by the means hereinafter described and claimed, reference being had to the accompanying drawings, in which—

Figure 1 is a top plan view of a car-truck with my improved device attached thereto. Fig. 2 is a side elevation of the same. Fig. 3 is a vertical transverse section taken on the line 3-3, Fig. 1. Fig. 4 is a detail vertical sectional view of one of the journal-boxes. Fig. 5 is a detail vertical sectional view of the oil-reservoir, and Fig. 6 is a similar view looking from the opposite side and showing the connection therewith of the pump.

Similar numerals of reference denote corresponding parts in the several views.

In the said drawings the numeral 1 denotes the frame of an ordinary street-car truck, and 2 the wheels thereof, fixed on axles 3, that turn in journal-boxes 4, carried by the truck.

Mounted on the frame 1 is a lubricant-reservoir 5, having a glass sight-opening 6 in the side thereof and formed into an upper chamber 7 and a lower chamber 8, as shown.

Tapped into one side of said reservoir and communicating with an auxiliary chamber 9 therein is a pipe 10, communicating in turn with the pipes 11, that communicate with the tops of the journal-boxes 4, as clearly shown in Fig. 4. This auxiliary chamber 9 communicates with the upper chamber 7 of the reservoir 5 by means of an opening 12, which is normally closed by an upwardly-opening valve 13, controlling communication between the upper chamber 7 and lower chamber 8. A similar valve 14 controls the ingress of lubricant into chamber 8 from below, and running from the lower end of said chamber is a pipe 15, that is in turn tapped into pipe 16, which communicates through branch pipes 17 with the bottoms of the journal-boxes 4, as shown in Fig. 4.

Attached to the side of the reservoir 5 is a pump 18, communicating therewith through the orifice 19. The piston 20 of this pump is reciprocated by means of an eccentric 21, mounted on one of the axles 3 and engaged with the piston-rod 22.

I have illustrated in Fig. 4 a construction of journal-bearing suitable to be used with my improved construction, and which consists of a collar 23, accurately fitting into the journal-box 4 and centrally and longitudinally apertured to receive a cage 24, in which are located a series of roller-bearings 25, contacting with said collar and also with the end of the axle 3, which is adapted to be received centrally therein. The journal-box 4 is extended below said collar 23 and is divided into two chambers 26 and 27 by an intermediate horizontal partition 28, the latter being provided with a series of holes 29. The upper chamber 26 is completely filled with a mat 30, of felt or other material suitable for straining or filtering the lubricant as it percolates therethrough into the chamber 27. The pipe 17 communicates with this chamber 27, as clearly shown in Fig. 4.

From the above description the operation of my improved device will be understood to be as follows: The reservoir 5 being filled with lubricant and the car being at rest, no lubricant will be permitted to leave the reservoir by reason of the fact that the valve 13 will be in its closed position, thus closing the opening 12. As soon, however, as the car

moves the reciprocating movement imparted to the pump-piston 20 by the eccentric 21 will on the inward movement of said piston lift the valve 13 and permit the escape of the lubricant into the pipe 10, from whence it will pass down through the pipes 11 into the journal-bearings. This operation will be repeated at every inward movement of the piston 20. Each outward movement of said piston will, however, close the valve 13 and open valve 14. Now when the lubricant has passed the journal-bearings the surplus will percolate through the mat 30, the filtration of which will remove therefrom all foreign matter, and pass from thence through the holes 29 in the plate 28 and into the chamber 27, from whence it will be drawn by the suction of the pump 18 back through the pipes 17, 16, and 15 into the lower chamber 8 of the reservoir 5 and from thence forced by the action of the pump into the upper chamber 7 of the reservoir, where it is ready to be again fed to the journal-bearings, as hereinbefore described. The mats 30 in the journal-boxes may be readily removed and replaced by fresh ones from time to time. It will thus be seen that the combined force and suction action of the pump 18 will cause a steady flow of the lubricant through the system so long as the car is moving, said flow completely ceasing when the car stops.

While I have shown and described a particular form of journal-bearing, I do not wish to be understood as limiting myself to the use of such construction, as the same may be varied as desired and forms no part of my present invention. Moreover, it will be readily understood that all the trucks of a car may, if desired, be supplied with lubricant from a single reservoir, though it has been found best in practice to provide a separate system for each truck, as hereinbefore described. I wish it also to be understood that I do not limit myself to the application of my device to car-trucks, as the same may be applied to any form of rotating mechanism.

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

1. A mechanism for lubricating journal-bearings and the like, consisting of a supply-reservoir, pipe connections between the same and the bearings, a pump operated from the rotating parts of the mechanism to be lubricated, to return the lubricant to the supply-reservoir, and a valve in the supply-reservoir

controlling the supply of lubricant therefrom to the bearings and operated by the action of said pump, substantially as set forth.

2. In a mechanism for lubricating journal-bearings and the like, the combination with a supply-reservoir having an upper and a lower chamber, and pipe connections leading from the upper chamber to the bearings and from said bearings back to the lower chamber, of two upwardly-opening valves in the supply-reservoir controlling the admission of the lubricant to the two chambers respectively, and a pump communicating with the reservoir between the two valves and operated by the rotating parts of the mechanism to be lubricated, whereby the surplus lubricant is drawn into the lower chamber and forced therefrom into the upper chamber, substantially as set forth.

3. In a mechanism for lubricating journal-bearings and the like, the combination with a supply-reservoir having an upper and a lower chamber, and pipe connections leading from the upper chamber to the bearings and from said bearings back to the lower chamber, of an upwardly-opening valve between the return-pipe and the lower chamber, a similar valve between the lower and upper chambers and also controlling the supply of lubricant from the upper chamber to the bearings, and a pump communicating with the reservoir between the two valves and reciprocated by the rotating parts of the mechanism to be lubricated and operating to control the passage of the lubricant from the upper chamber and the return of the surplus through the lower chamber, substantially as set forth.

4. In a mechanism for lubricating journal-bearings and the like, the combination with a supply-reservoir, pipes leading therefrom to the bearings, and means for controlling the supply of lubricant, of a series of journal-boxes for holding said bearings, consisting each of an upper portion containing the bearing, a pad of filtering or straining material below said bearing, and a chamber below said pad to receive the filtered surplus lubricant, and pipes leading from said chambers back to the reservoir, substantially as set forth.

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

ALICE M. BUTLER.

Witnesses:

W. G. HAMLIN,
A. A. McLAUGHLIN.