No. 834,576. PATENTED OCT. 30, 1906.

H. A. HETTINGER & J. P. BATEMAN.

LUBRICATING MECHANISM.

APPLICATION FILED NOV. 22, 1905.

3 SHEETS—SHEET 1.

Fig. 1.

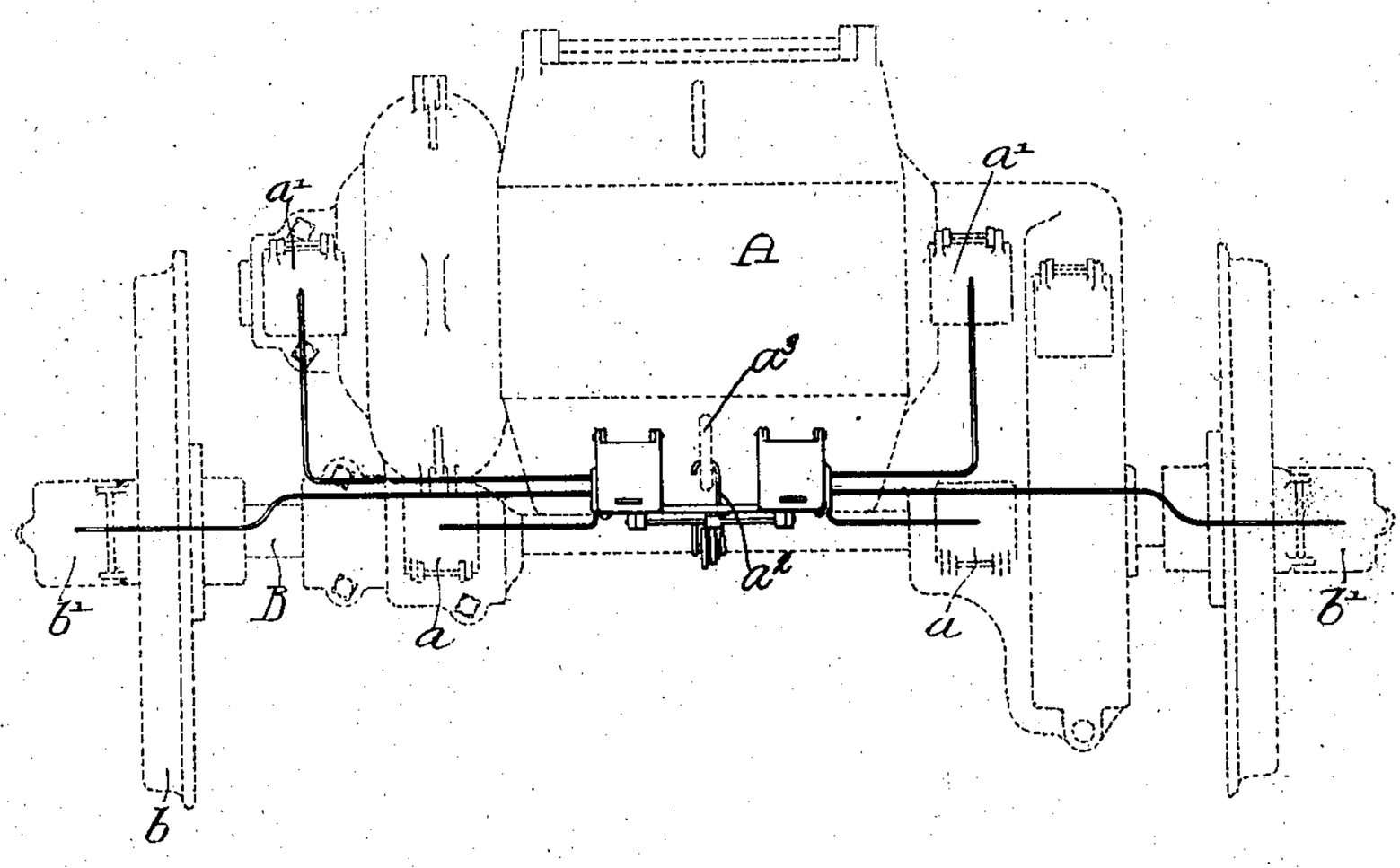
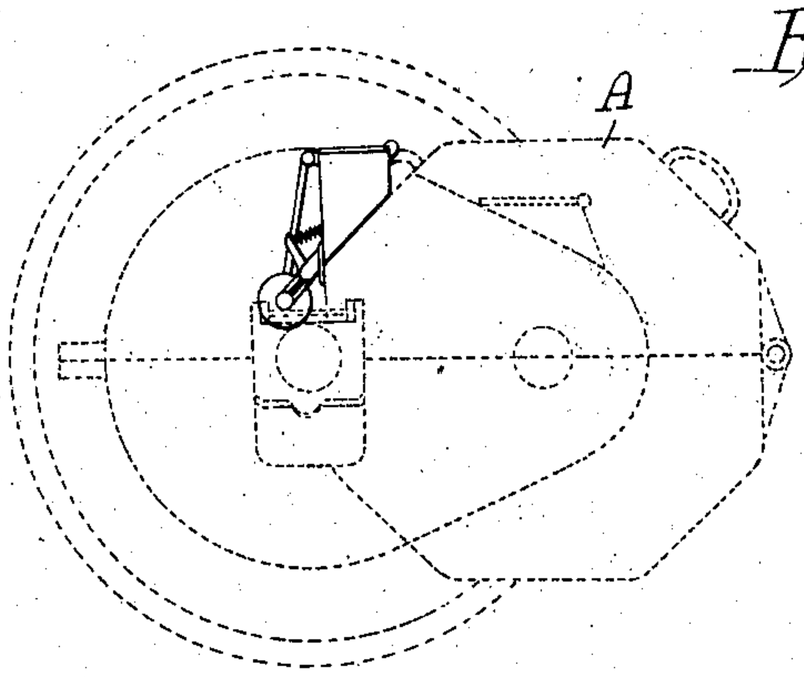


Fig. 2.



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3 SHEETS—SHEET 2.

Fig. 4.

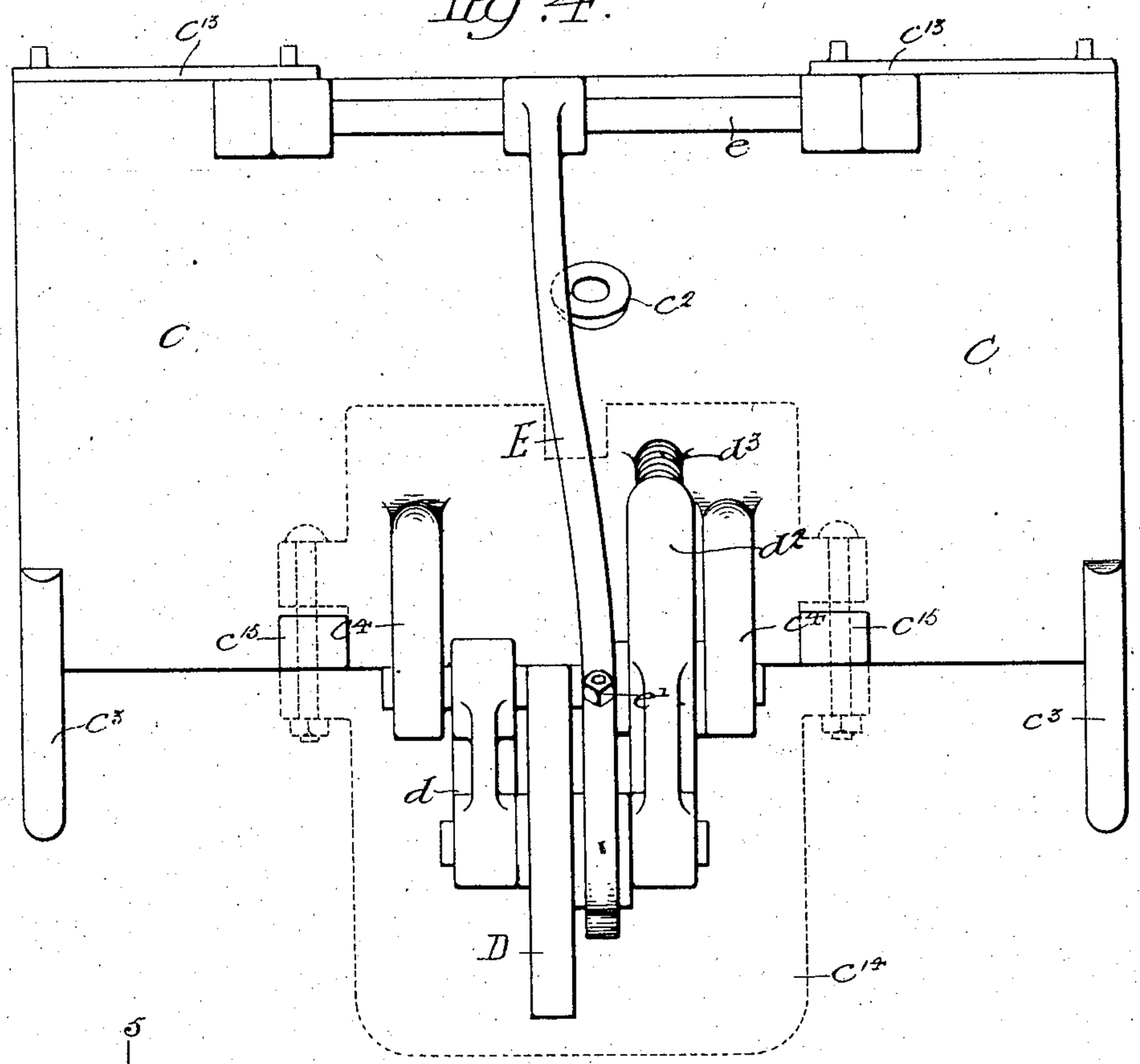
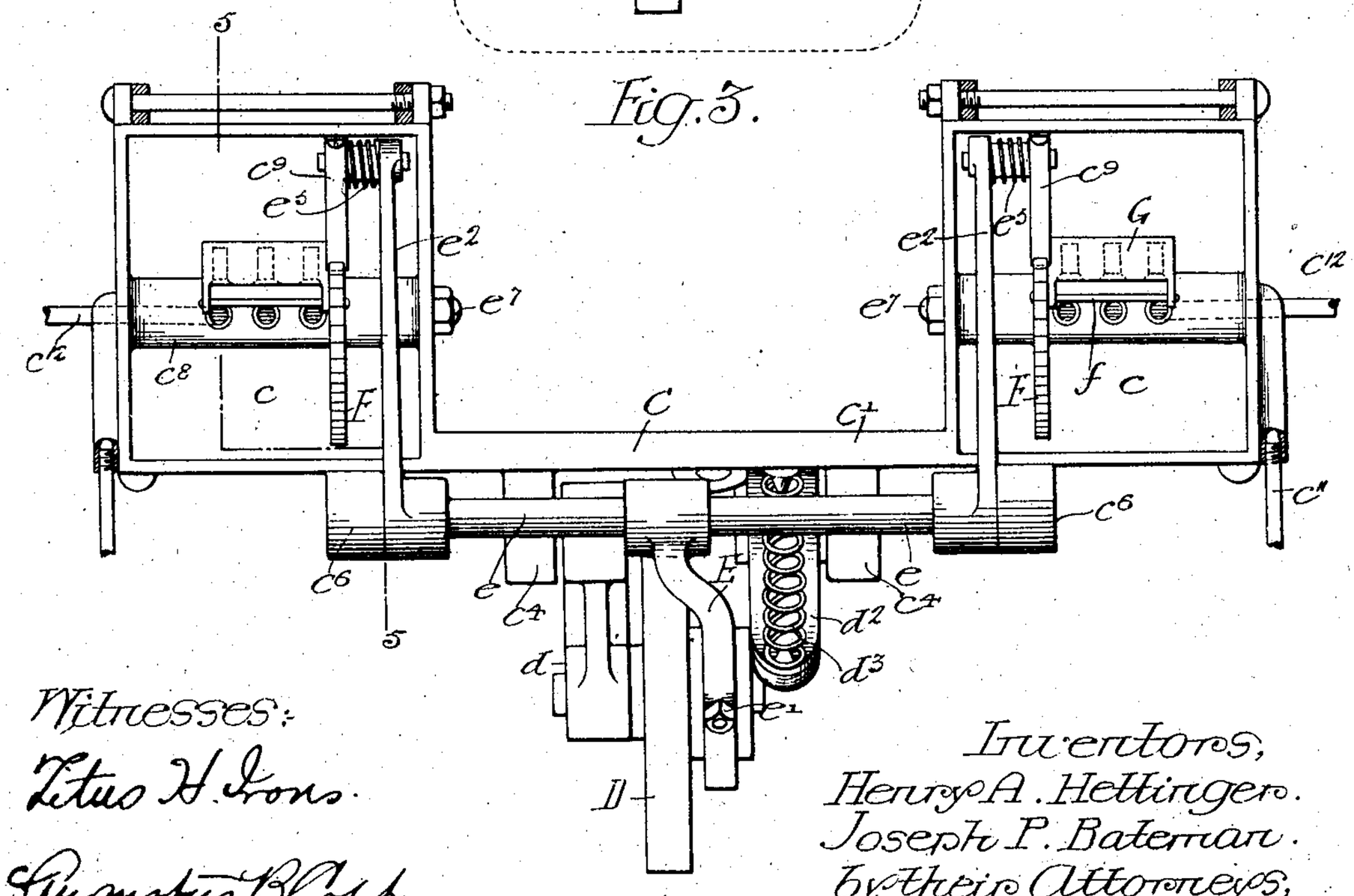


Fig. 5.



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3 SHEETS—SHEET 3.

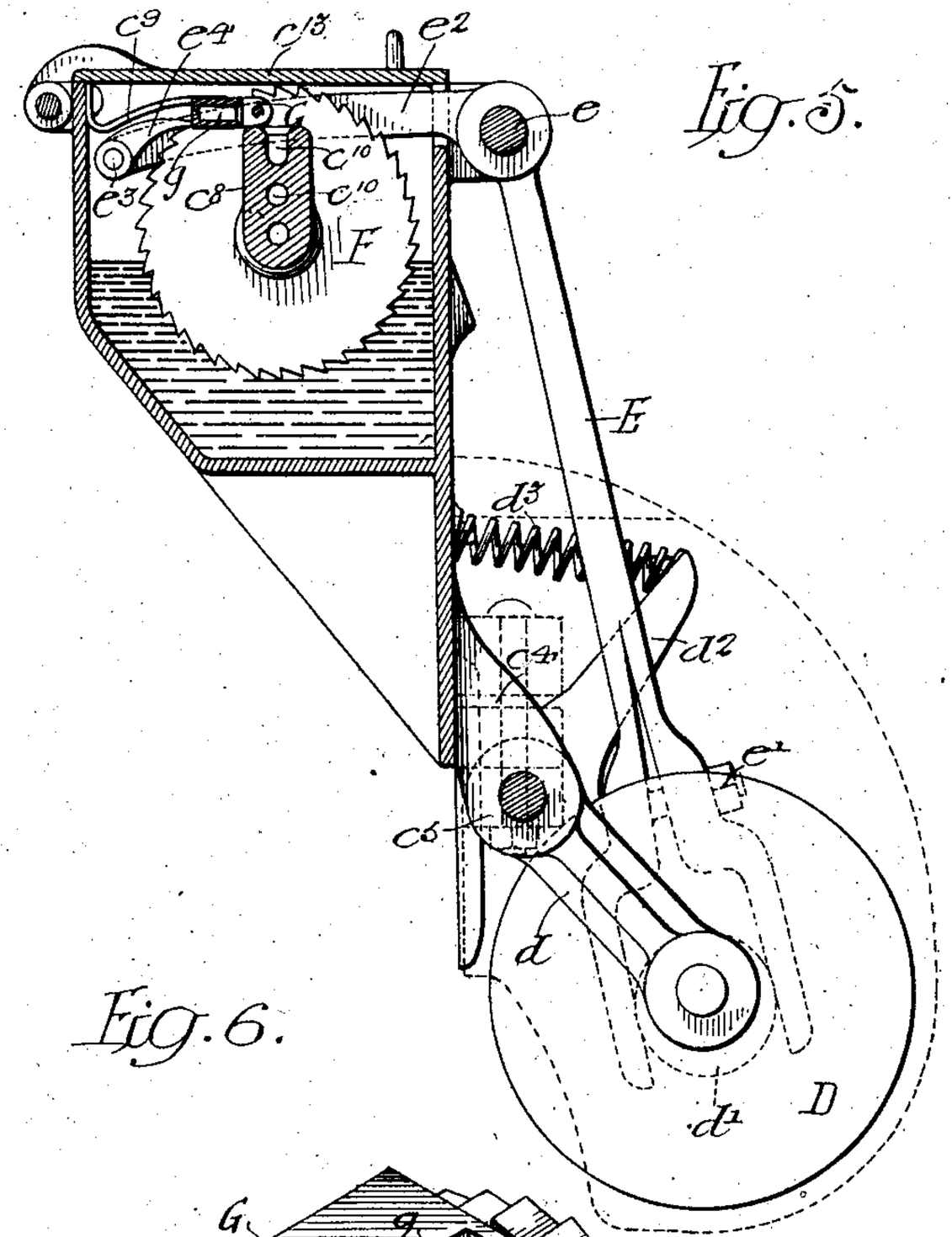


Fig. 5.

Fig. 6.

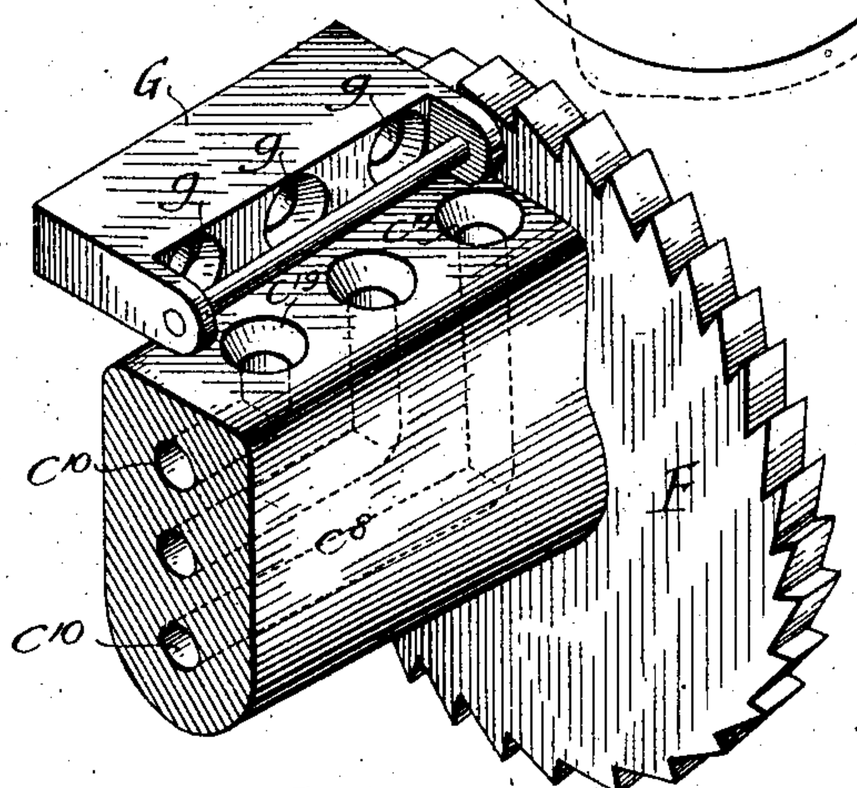
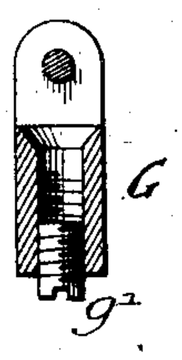


Fig. 7.



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UNITED STATES PATENT OFFICE.

HENRY A. HETTINGER AND JOSEPH P. BATEMAN, OF BRIDGETON, NEW JERSEY, ASSIGNORS OF ONE-THIRD TO JOSEPH B. SHARP, OF BRIDGETON, NEW JERSEY.

LUBRICATING MECHANISM.

No. 834,576. Specification of Letters Patent. Patented Oct. 30, 1906.

Application filed November 22, 1905. Serial No. 288,583.

To all whom it may concern:

Be it known that we, HENRY A. HETTINGER and JOSEPH P. BATEMAN, citizens of the United States, residing in Bridgeton, New Jersey, have invented certain Improvements in Lubricating Mechanism, of which the following is a specification.

One object of our invention is to provide a simple and positively-acting device for supplying lubricant to one or any number of bearings of a machine, the device illustrated being particularly designed for use in connection with the motor or motors and other mechanism commonly found on street-railway equipments.

Another object of the invention is to provide a device of the character noted which will require but little attention under operating conditions and which shall not be likely to get out of order.

It is further desired to so construct and arrange the device that it may be applied to existing car equipments without requiring additions or changes therein and which shall at the same time be of relatively inexpensive construction.

These objects we attain as hereinafter set forth, reference being had to the accompanying drawings, in which—

Figure 1 is a plan view of a car-axle and its driving-motor as found in a well-known type of car equipment, illustrating our invention as applied thereto. Fig. 2 is a side elevation of the motor and other portions of the equipment shown in Fig. 1, further illustrating the arrangement of our invention relatively thereto. Fig. 3 is a plan view of that form of our lubricating device shown in Figs. 1 and 2. Fig. 4 is a side elevation of the device shown in Fig. 3. Fig. 5 is a vertical section taken on the line 5 5, Fig. 3. Fig. 6 is a perspective view, on an enlarged scale, illustrating the detail construction and arrangement of the oil-feed bucket and its adjacent parts; and Fig. 7 is a vertical section of a special form of oil-bucket having means for adjusting its capacity.

In the above drawings, A represents a form of electric motor commonly used for propelling street-railway vehicles, which in the present instance is shown as operatively connected to a car-axle B, having wheels *b*. The axle bearings or boxes are shown at *b'*, and there are, in addition to these, two bearings *a*, whereby the motor-frame is partially supported from the axle B, as well as two bearings *a'*, wherein is supported the armature-shaft of the motor.

The oiling mechanism hereinafter described has been particularly devised to supply the above-noted bearings with lubricant, and while certain portions of it have been adapted to the particular type of motor in connection with which it is illustrated it is to be understood that it may, without departing from our invention, be employed to supply lubricant to the bearings of any other form of machine.

In the present instance our lubricating device consists of a casing C, consisting of two containers *c*, in the present instance of rectangular section and united by an integral plate *c'*.

As best shown in Figs. 2 and 5, the containers and their connecting-plate are arranged to fit upon the sloping portion of the frame of a motor A, to which the device is held by means of a hook-bolt a^2, designed to engage a lifting ring or eyebolt a^3, commonly found in motors of the type illustrated, and passing through a suitable boss c^2 in the casting C, to which it is held by a nut, as shown in Fig. 1. Downwardly-projecting lugs c^3 are preferably provided at the lower corners of the casting C for the purpose of engaging a vertical portion of the motor-frame to prevent possible movement of the lubricating device thereon.

A second pair of lugs is also provided on the casting C for the purpose of supporting a small shaft or spindle c^5, to which is fixed an arm *d*, carrying at its outer end a friction roller or wheel D, provided with an eccentric *d'*. Also fixed to the spindle c^5 is a second arm d^2, between the end of which and the body of the casting C is a spring d^3, whereby said arm d^2 is pressed outwardly, with the result that the friction roller or wheel D is pressed into engagement with the main shaft or axle B. A third pair of lugs c^6, preferably at the top of the casting C, provide bearings for a spindle or shaft *e*, to which is fixed a forked arm E, forming an eccentric-rod designed to be actuated by the eccentric *d'*. In the present instance this rod may be described as split at its lower end, so that its

two branches engage the eccentric d', and these branches are adjustable as to the distance between them by means of a bolt e'. There are also fixed to the spindle e two other arms e^2, one for each of the containers c, and each of these arms has at its end a pin or small spindle e^3, carrying a pawl e^4, pressed into engagement with the teeth of a ratchet-wheel F by means of a spiral spring e^5 on said pin.

The above-mentioned ratchet-wheels are carried upon bolts e^7, supported by portions c^8 of the casting C, which extend within each of the reservoirs c. Each of the ratchet-wheels F is prevented from moving backward by means of a flat spring c^9, suitably supported within the container, and has projecting from one of its faces or sides in a line substantially parallel to its axis of rotation a pin or spindle f, to which is hung an oil-carrying bucket G, which in the present instance consists of a piece of metal having in it three holes or recesses g.

In the same vertical plane as the holes or recesses g and transverse to the axis of rotation of the ratchet-wheel F a series of passages c^{10} are formed in a portion c^8 of the casting C, in the present instance extending through said portion in horizontal lines. One passage of each set opens on the side face of the casting C and has connected to it the pipe c^{11}, while the others of each set open, respectively, on the end faces of said casting and have connected to them pipes c^{12}. As shown in Fig. 1, these various pipes are connected to the bearings a, a', and b' of the armature-shaft and main axle.

Under operating conditions the friction roller or wheel D is pressed in engagement with the axle B, so that as this latter turns said roller is also turned, and with it the eccentric d'. Revolution of this latter gives, through the eccentric-rod E, an oscillatory movement to the spindle or shaft e, which in turn alternately raises and lowers the pawl-carrying end of the arms e^2 in each reservoir c. As a consequence the pawl e^4 on each arm being in engagement with the teeth of the ratchet-wheel F causes a partial revolution of this latter as the arm is raised and then as the arm is lowered moves idly over one or a number of the ratchet-teeth, while the ratchet itself is held from turning by means of the spring c^9. The continued periodic movement of the ratchet F causes the oil-bucket G to be dipped into the body of oil within the container C, so that it is filled with the same and afterward raised and turned to a substantially horizontal position as it is brought over the portion c^8 of the casting C within the container.

It will be noted that the shape of the bucket G is such that previous to its engagement with the upper part of this portion c^8 it tends to hang in a position such that liquid is retained in its recesses g, while as it passes over the top of this portion it is forced to assume a substantially horizontal position, thereby being made to discharge the liquid in its recesses into the corresponding passages c^{10}, as clearly shown in Fig. 6. By this means the bearings connected to the various passages c^{10} are periodically supplied with an amount of lubricant depending upon the capacity of the holes or recesses g, the rate of said supply being dependent upon the rate of rotation of the axle B.

If desired, the capacity of the buckets may be adjusted in any desired manner—for example, by means of a screw g', as shown in Fig. 7, which may be made to enter the bottoms of the recesses for varying distances, so that, if desired, one of the passages c^{10} may be supplied with a greater amount of lubricant, depending upon the requirements of the bearing to which it is connected. We preferably enlarge the mouths of the passages c^{10}, as well as the openings to the recesses in the bucket-piece G, to facilitate the entrance and discharge of the lubricant.

It is obvious that the number of recesses g, as well as the number of passages c^{10}, may be varied without in any way departing from our invention, so that the device will supply lubricant to any desired number of bearings. Covers c^{13} are preferably provided for the containers c.

We preferably provide a cover or casing c^{14} (shown in dotted lines in Figs. 4 and 5) for preventing access of dust or grit to the eccentric d' and its associated mechanism, this being held in place by pins which engage suitable lugs c^{15} on the casting C.

From the above description and the accompanying drawings it will be noted that our lubricating device may be applied to existing car equipments without requiring any change whatever in them, with the possible exception of the drilling of holes in the bearing-covers to permit of the entrance of the pipes c^{11} and c^{12}, it being further noted that the number of containers c, with their individual equipments, is altogether immaterial, since the operation of the device is the same whether one or a plurality of these be provided.

We claim as our invention—

1. Lubricating mechanism consisting of a frame, a container for lubricant, an oil-feeding device, a driving-shaft, a friction-roller in engagement with said shaft, an arm pivoted to the frame and serving to support said roller, with a second arm operatively connected to the first arm, a spring acting on said second arm to retain the friction-roller in engagement with the driving-shaft, and means for connecting the friction-roller with the oil-feeding device, substantially as described.

2. Lubricating mechanism consisting of a

frame, a container for lubricant, an oil-feeding device, a driving-shaft, a friction-roller in engagement with said shaft, an arm pivoted to the frame and serving to support said roller, a spring acting to retain the friction-roller in engagement with the driving-shaft, and means for connecting said roller with the oil-feeding device, substantially as described.

3. Lubricating mechanism consisting of a frame having a container, an oil-feeding device therefor, a spindle supported in bearings on said frame, an oscillatory arm for the oil-feeding device connected to the spindle, a forked arm also connected to said spindle, a friction-roller, an arm pivoted to the frame and carrying said roller, with an eccentric on the friction-roller in operative engagement with said forked arm, substantially as described.

4. A lubricating device consisting of a container, an oil-feeding device within said container having an outlet connected to a bearing to be lubricated, and mechanism extending into the container for operating said oil-feeding device, said mechanism including two arms connected together, of which one extends into the container, a ratchet-wheel having means for supplying oil from said container to the outlet, a pawl carried by the latter of the arms in engagement with the ratchet-wheel, a friction-roller, and an eccentric connected thereto, said second arm being forked and in engagement with said eccentric, substantially as described.

5. A lubricating device consisting of a frame including a plurality of containers connected by a plate, each of said containers having within it an oil-feeding device, a spindle having means for connecting it to said oil-feeding device, a lever pivoted to the frame carrying on one of its arms a friction-roller, a device connecting said friction-roller with said spindle and capable of oscillating the same when the friction-roller is turned, with means for maintaining the friction-roller in engagement with a driving-shaft, substantially as described.

6. Lubricating mechanism consisting of a casting having a plurality of containers, an oil-feeding device for each container, a spindle supported in bearings on said casting, an oscillatory arm for each oil-feeding device fixed to said spindle, a forked arm also fixed to the spindle, an arm pivoted to the casting, a friction-roller carried thereby, and an eccentric on the friction-roller operatively engaging said forked arm, substantially as described.

7. Lubricating mechanism consisting of a container for lubricant, a ratchet-wheel supported therein, a spring mounted within the container and engaging the teeth of the ratchet-wheel to prevent it from turning in both directions, operating mechanism for the ratchet-wheel consisting of an oscillatory arm extending into the container, a pawl carried on said arm and engaging the teeth of the ratchet-wheel, a spring acting on the pawl to maintain it in engagement with said wheel, a conductor or conductors entering the container and connected to a part or parts to be lubricated, with a rotary bucket operated by the ratchet-wheel for transferring the oil from the container to the conductor, substantially as described.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

HENRY A. HETTINGER.
JOSEPH P. BATEMAN.

Witnesses:
JOSEPH EDGAR STAUGER,
D. J. WATKINS.