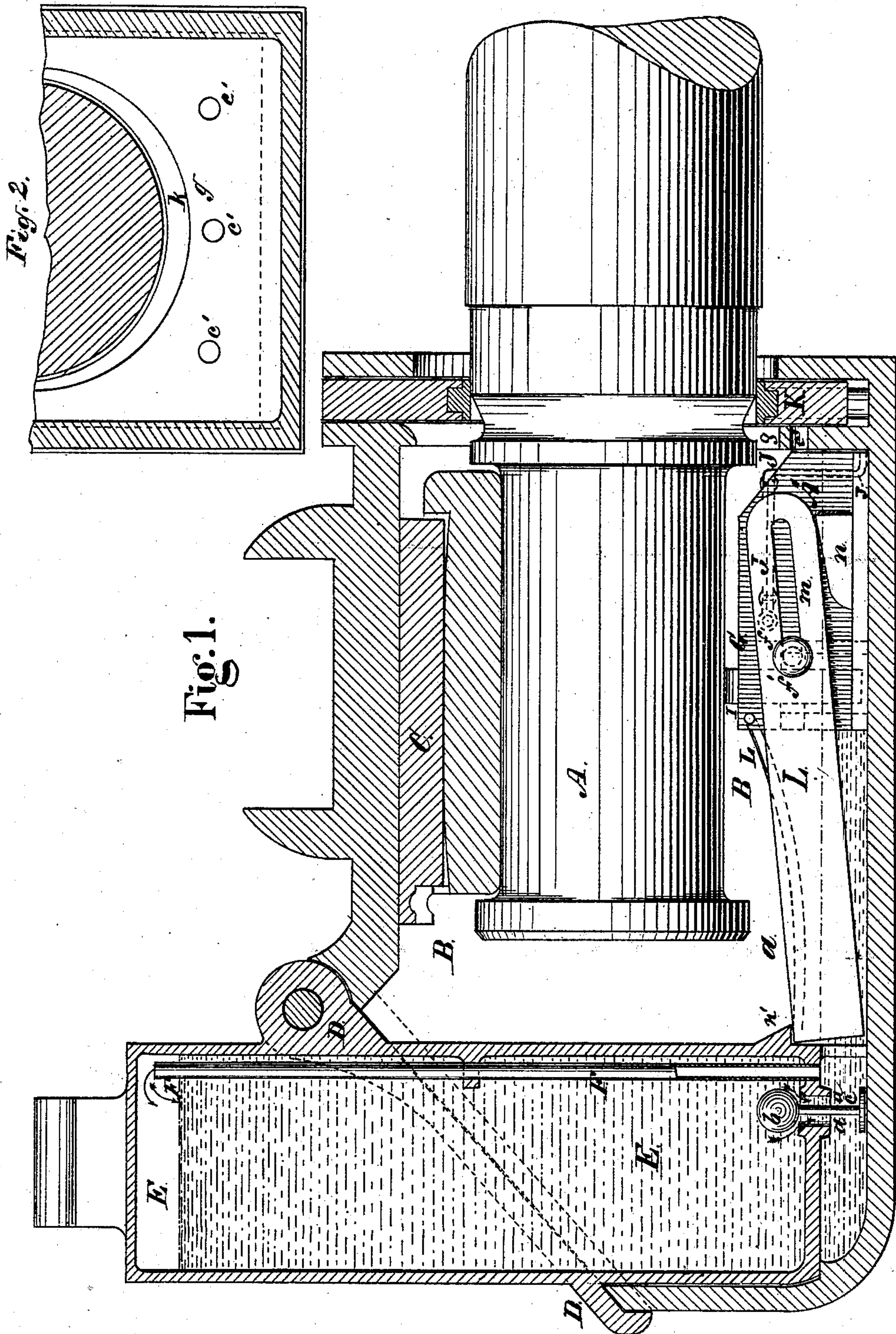


3 Sheets—Sheet 1.

R. & J. M. L. MACDONALD.
Car Axle Box.

No. 235,162.

Patented Dec. 7, 1880.



Witnesses:
Henry Eichling
J. Wells Jr

Inventors:
Ranald Macdonald
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By their Attorney
James A. Whitney

R. & J. M. L. MACDONALD.
Car Axle Box.

3 Sheets—Sheet 2.

No. 235,162.

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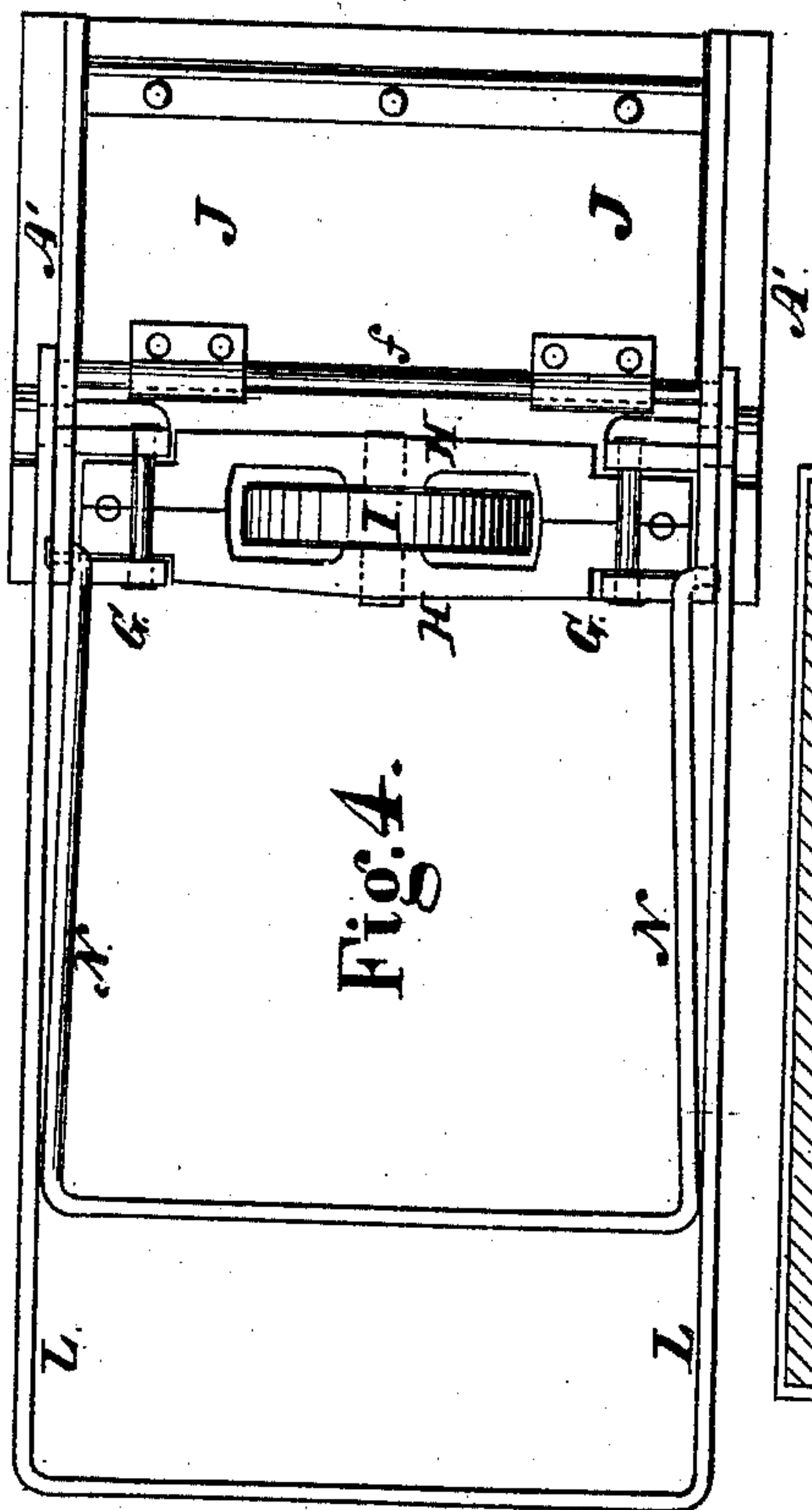


Fig. 4.

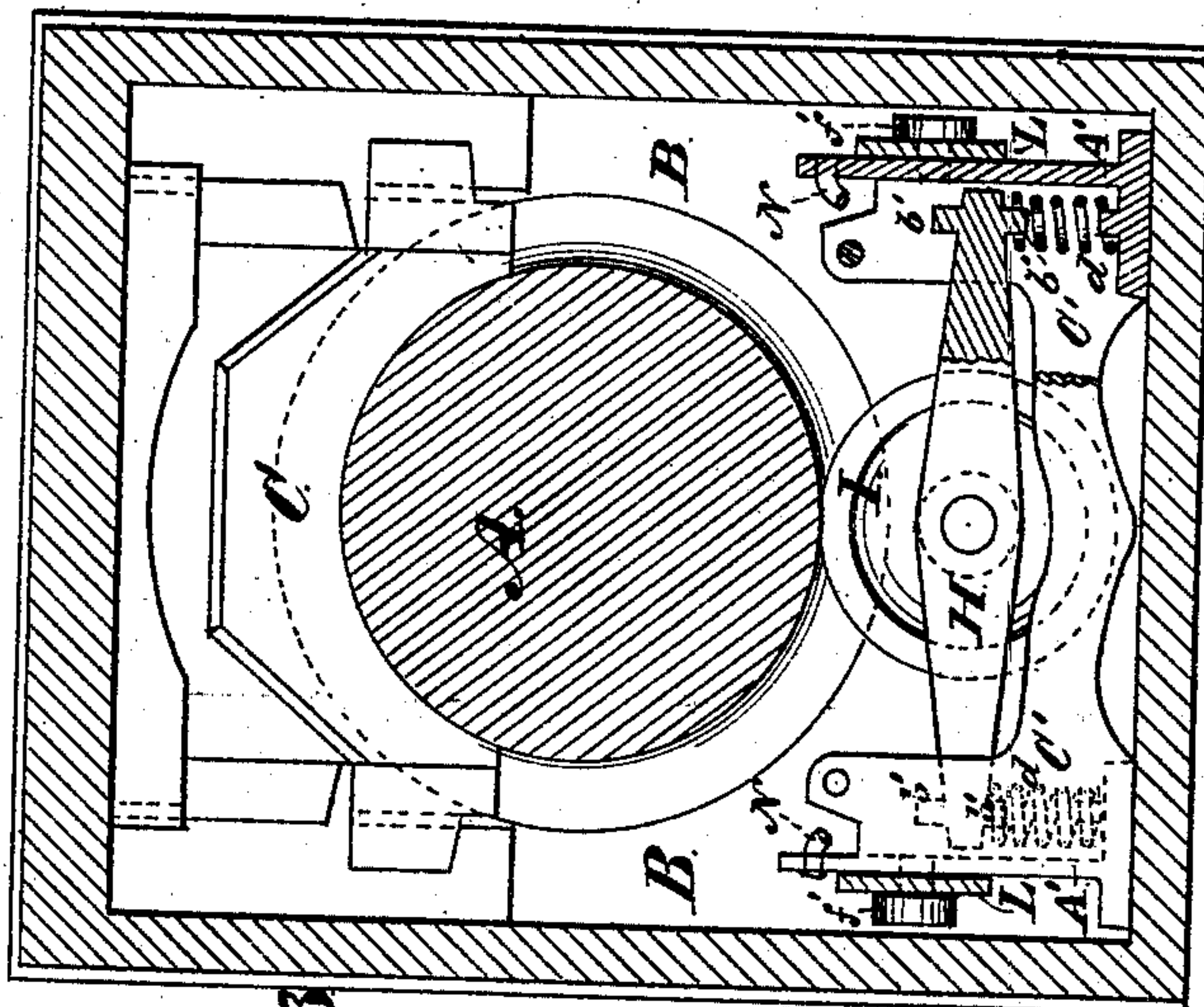


Fig. 3.

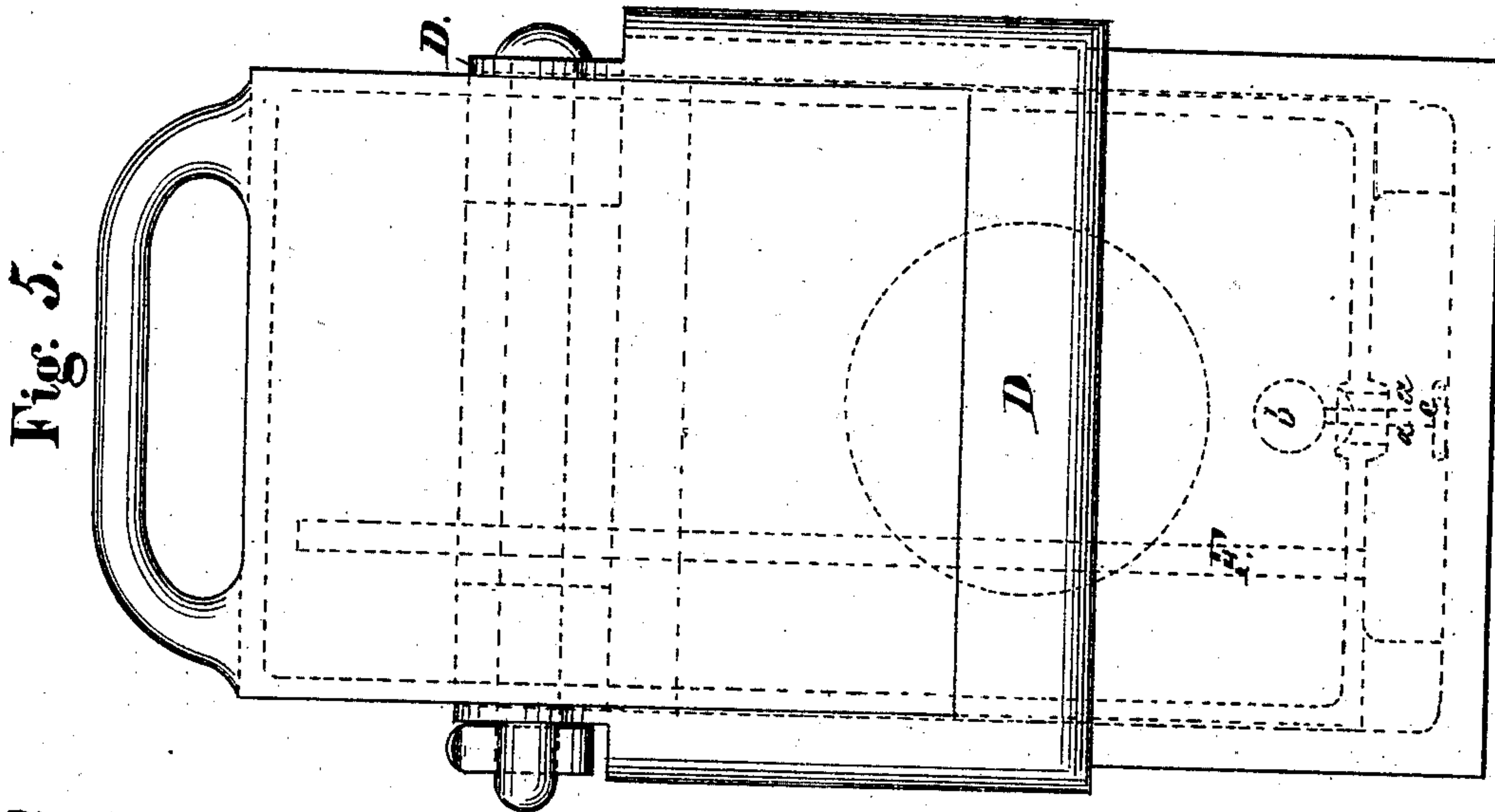


Fig. 5.

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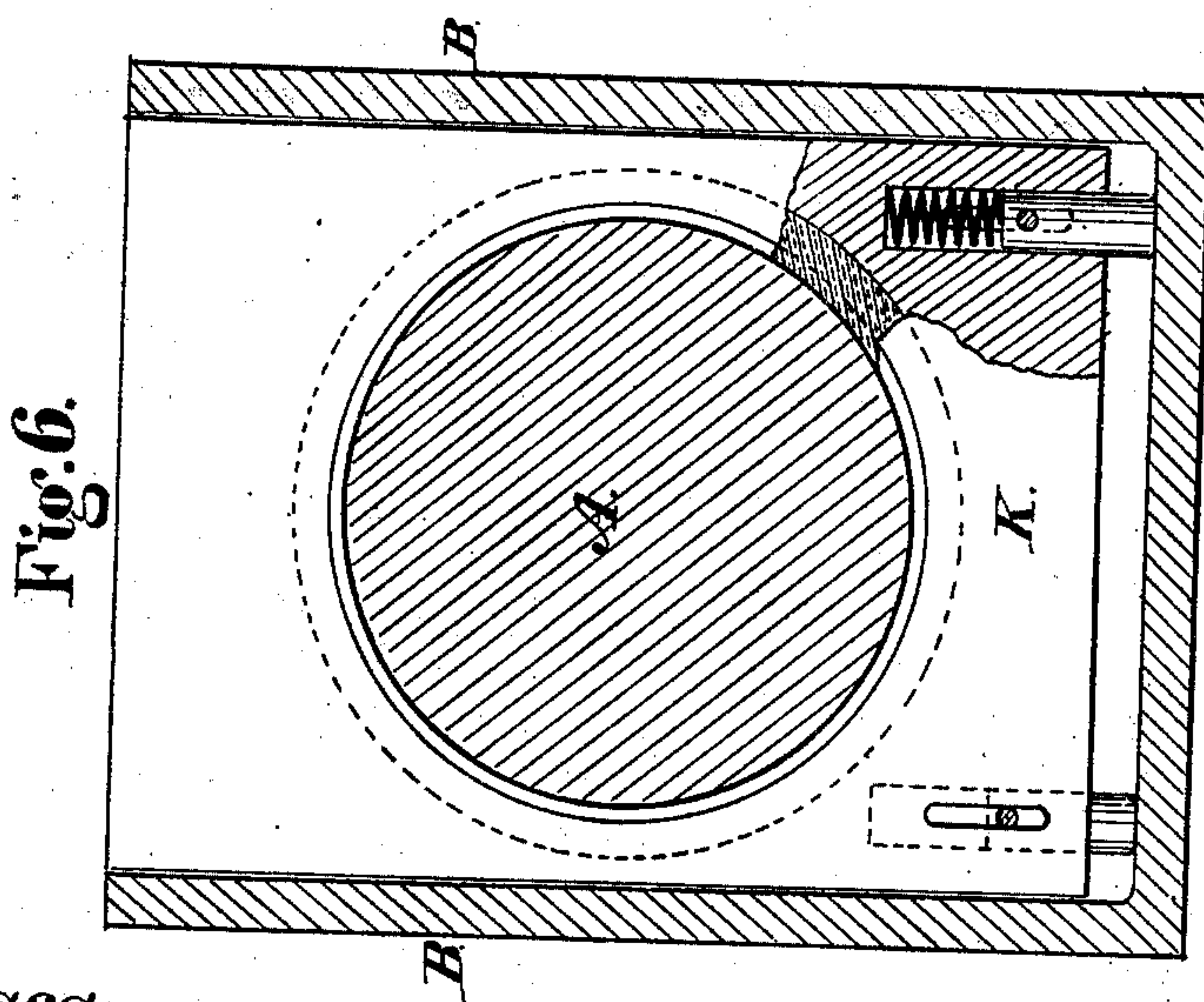
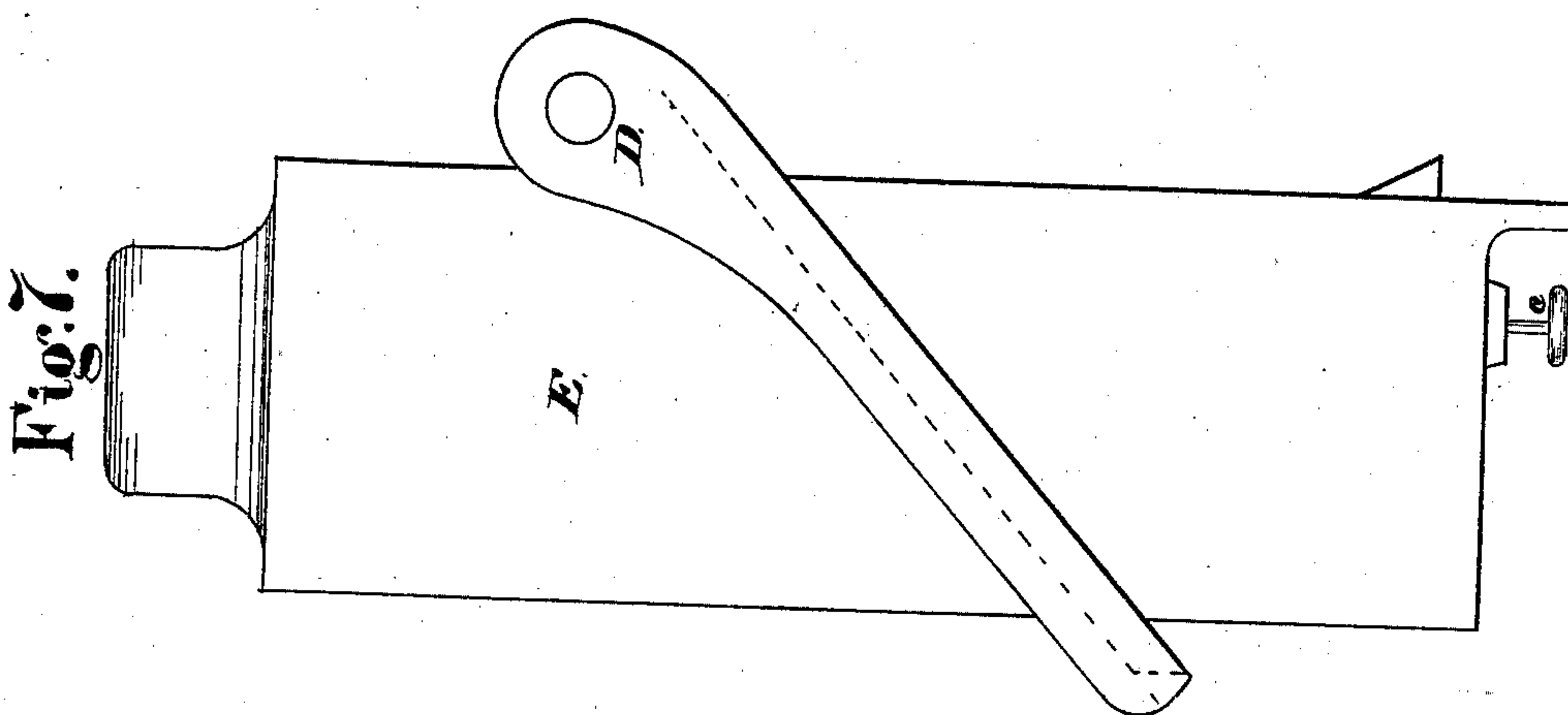
R. & J. M. L. MACDONALD.

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UNITED STATES PATENT OFFICE.

RANALD MACDONALD AND JOHN M. L. MACDONALD, OF BROOKLYN, N. Y.

CAR-AXLE BOX.

SPECIFICATION forming part of Letters Patent No. 235,162, dated December 7, 1880.

Application filed January 20, 1879.

To all whom it may concern:

Be it known that we, RANALD MACDONALD and JOHN M. L. MACDONALD, both of Brooklyn, in the county of Kings and State of New York, have invented certain Improvements in Lubricating Apparatus for Car-Axles, Shafting, &c., of which the following is a specification.

This invention is designed to supply oil or like lubricant from a suitable reservoir to the bearings or journals of car-axles, machine-shafts, &c.; and it comprises certain novel combinations of parts for supplying the lubricant to the journal-box, for controlling its diffusion to the bearing, for preventing its spreading away from the bearing to adjacent portions of the axle or shaft, and for insuring the easy and convenient application of the apparatus within axle-boxes of accepted patterns, shapes, and sizes.

Figure 1 is a vertical longitudinal section of a car-axle bearing or journal fitted with our invention. Figs. 2 and 3 are vertical transverse sectional views of the same. Fig. 4 is a plan view of certain portions of the lubricating apparatus. Fig. 5 is an end view of the axle-box. Figs. 6 and 7 are, respectively, sectional and side views of certain details included in the apparatus.

A is the journal of the axle, and B is the journal-box, both of these, except in the details hereinafter stated, being of ordinary construction, and consequently requiring no specific description. C is the bearing-block of the journal A. The cover D of box B is formed in one piece with the reservoir E, and fits in place to provide, as it were, a plug-stopper to the box, and is held in place by a bolt passed through lugs at the locality of the usual hinge, as shown in Fig. 1. In the bottom of this reservoir E is an opening, *a*, to which is provided a ball or other suitable valve, *b*, which valve is provided with a stem, *c*, that when the reservoir is pushed down into its place strikes the bottom of the box B and pushes the valve *b* upward to open the opening *a*, so that the lubricant is permitted to flow out from the reservoir into the lower part of the box B.

F is a pipe, placed within the reservoir E, its upper end opening near the top of said res-

ervoir, and its lower end opening into the bottom of the box B. When the quantity of lubricant in the bottom of the box gets so low that the lower end of the pipe F is unsealed air passes up through said pipe, and thereby permits the lubricant to flow through the opening *a* until the quantity of lubricant brought into the bottom of the box B again seals the aforesaid lower end of the pipe F, whereupon the lack of atmospheric pressure within the reservoir causes the flow of lubricant therefrom to cease. When, for any reason, it is desired to remove the reservoir—as, for example, to refill the same—the lifting of said reservoir permits the valve *b* to drop upon its seat, to close the opening *a*.

G is a metallic frame, composed of two vertical side plates, A', connected at their outer ends by a cross-piece, C', and provided at the sides adjacent to said cross-piece with vertically-arranged spiral springs *d*, as shown more fully in Fig. 3. H is the carrier of the feed-wheel I, and has at its end projections *b'*, which fit into the upper end of the spiral springs *d*, so as to be retained thereon with the flat periphery of the wheel I running in contact with the surface of the journal A in such wise that oil taken up by the said wheel from the bottom of the box B will be deposited by the revolution of the wheel upon the circumferential surface of the journal. It will be noted that the carrier is made reversible, so that, if required, it may, with the wheel I, be reversed in position.

Extending from one to the other of the side plates, A', is a pivot, *f*, which affords hinged or pivotal connection to an angular flap or apron, J, the form of which is more fully shown in dotted lines in Fig. 1. This apron, when the apparatus is in use, extends quite across the interior of the box B, between the side plates, and is calculated to prevent the splashing of the lubricant against the inner end or back of box B.

K is a spring-packing, having a bearing-surface of Babbitt metal, or other suitable soft metal, designed to keep out the dust and to prevent loss from evaporation of lubricant. The holes *c' c'* in the ledge *g* are designed to enable the lubricant which may escape, from

whatever cause, into the space designed for the bimetallic packing, to return to the bottom of the box.

L is a brace, formed by bending a piece of flat metal into the form more fully shown in the plan view, Fig. 4, the sides or lateral portions of said brace being each slotted, as indicated at *m* in Fig. 1, and connected to the adjacent side plate, *A'*, of the frame *G* by broad-headed pins *f'*. Each of said side plates has on its outermost side a shoulder, *n*, the upper surface of which is inclined or wedge-like, as represented in said Fig. 1. Attached to the top of the outer end of the frame *G* is a pivoted bail, *N*.

In order to enable the wheel *I* to be passed through the small space at *a* to bring said wheel into proper position and relation with the journal, the forward or outer end of the box *B* is of course opened, whereupon the brace *L* and bail *N* are grasped and so manipulated as to bring the wheel *I* into a position more or less nearly horizontal, so that it can be thrust under the outer end of the journal *A*, with the side plates straddling said journal, until the wheel be brought under the desired portion of the journal. This done, the bail is pushed inward and the brace drawn outward, so that, as each forms a fulcrum for the other, the wheel is brought to the desired upright or vertical position, and bearing upward against the circumferential surface of the journal, as described. During this manipulation of the device the apron *J* swings into such relation with the side plates of the frame *G* as to pass readily under the journal, and when the wheel is brought upright, as just explained, takes its hereinbefore-described position with reference to said wheel. This being done, the brace is pushed inward, (which is permitted by the slots *m*,) whereupon the inner ends of

said brace slide up on the wedge-like shoulders *n*, thereby forcing the outer end of the brace downward into the bottom of the box, whereupon the bail is also brought downward, with its outer extremity resting against the outer end of the box at the bottom thereof. The reservoir *E* being put in place, as hereinbefore described, a stud, *n'*, provided thereon, is brought down upon the outer end of the brace and prevents it from rising. It will be seen that not only is provision made for placing the parts in position, but that by the arrangement described the said parts are firmly held and retained in place.

What we claim as our invention is—

1. The combination of the slotted brace *L* and bail *N* with the frame *G*, carrying the feed-wheel *I*, and constructed with the wedge-like shoulders *n*, substantially as and for the purpose set forth.

2. The combination of the flap or apron *J* with the frame *G*, constructed as described, and carrying the feed-wheel *I*, substantially as and for the purpose set forth.

3. The combination of the reservoir *E*, having the pipe *F*, and opening *a*, having a suitable valve, with the feed-wheel *I*, axle *A*, and box *B*, substantially as and for the purpose set forth.

4. The combination of the reservoir *E*, the frame *G*, carrying the feed-wheel and having the side plates, *A'*, the hinged or pivoted apron *J*, the box *B*, and journal *A*, the whole constructed and arranged for joint operation substantially as and for the purpose set forth.

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