

No. 638,985.

Patented Dec. 12, 1899.

J. S. PATTEN.

LUBRICATOR AND WIPER FOR LOCOMOTIVE AXLES.

(Application filed Mar. 31, 1898.)

(No Model.)

3 Sheets—Sheet 1.

Fig. 1.

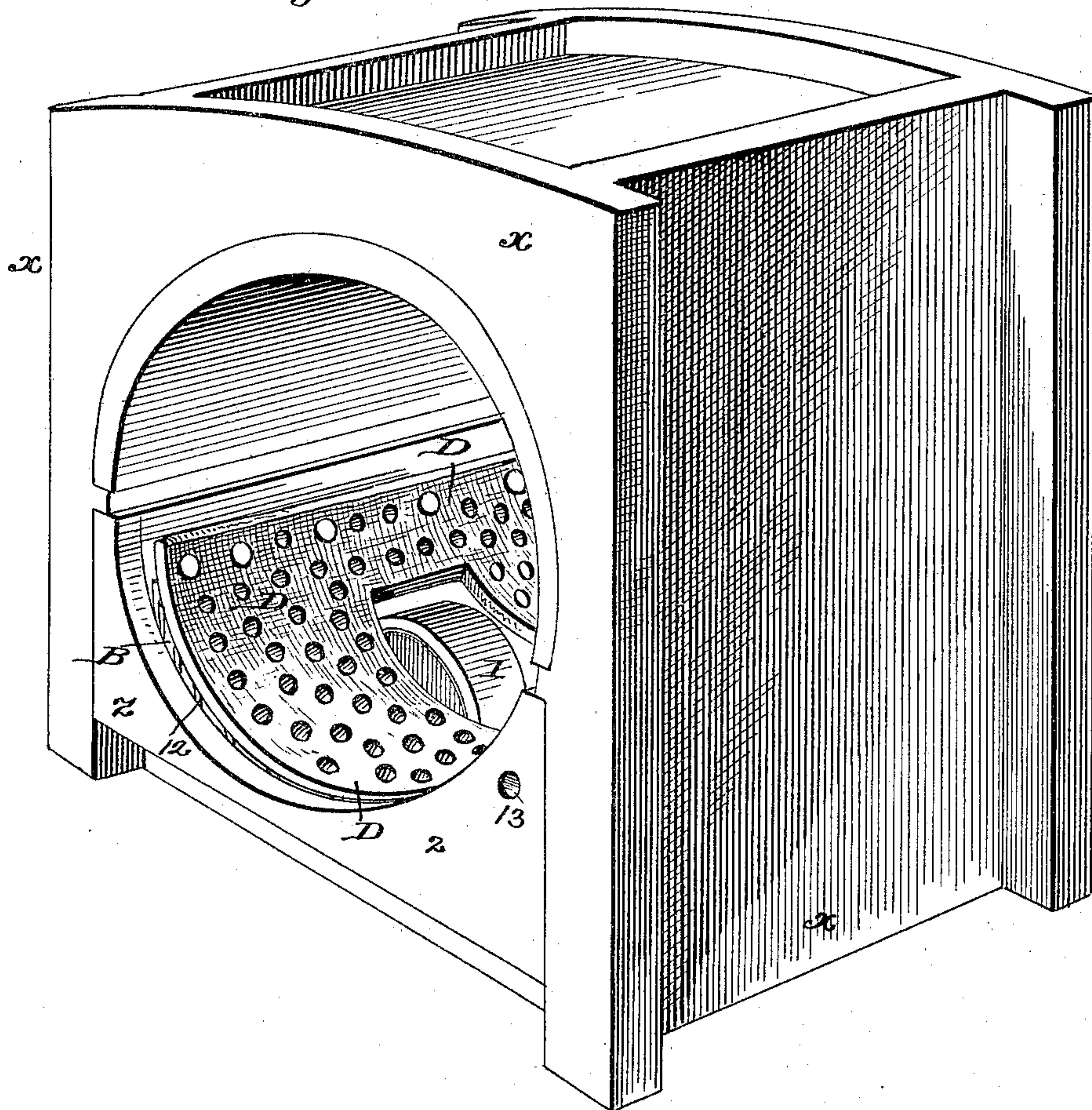
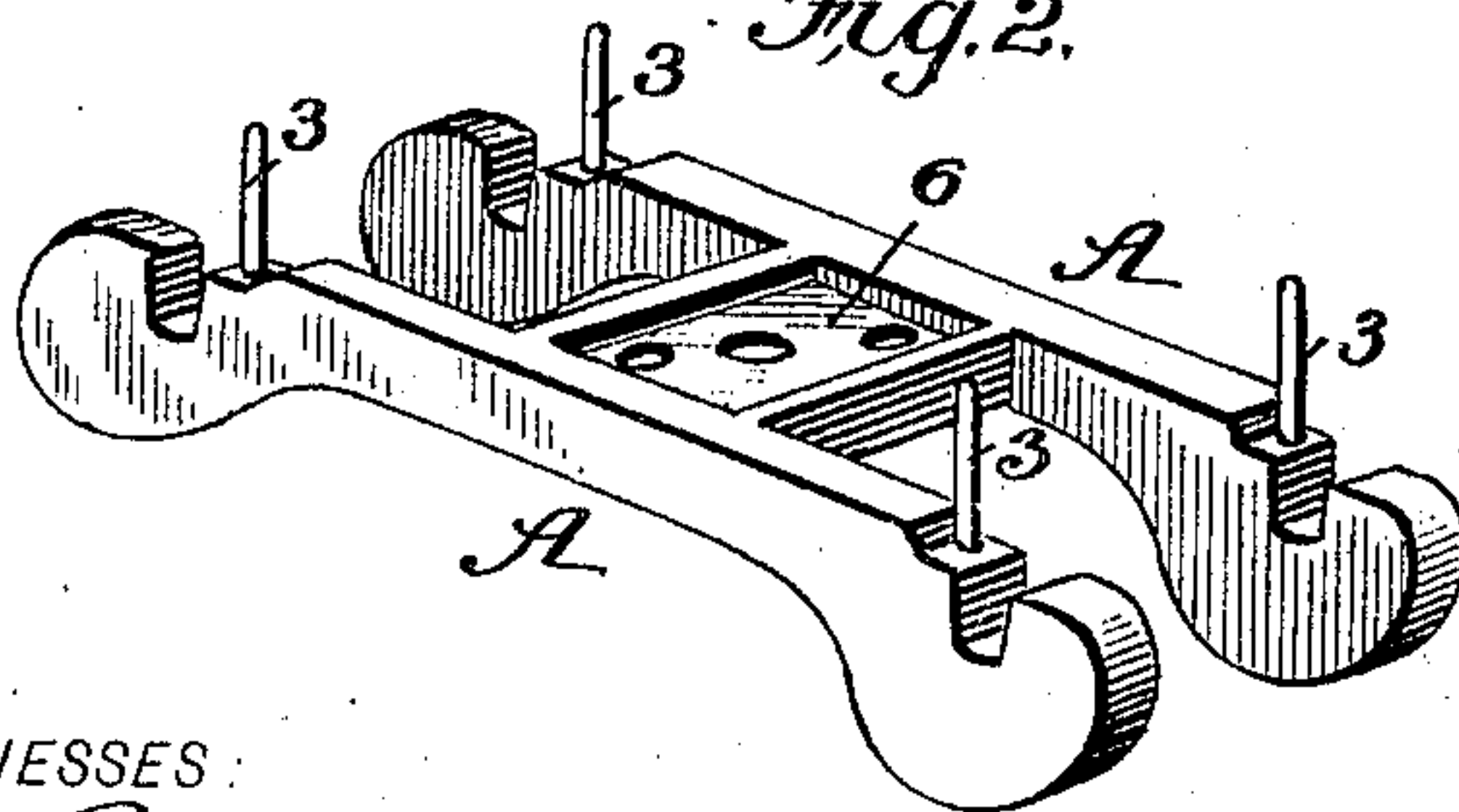


Fig. 2.



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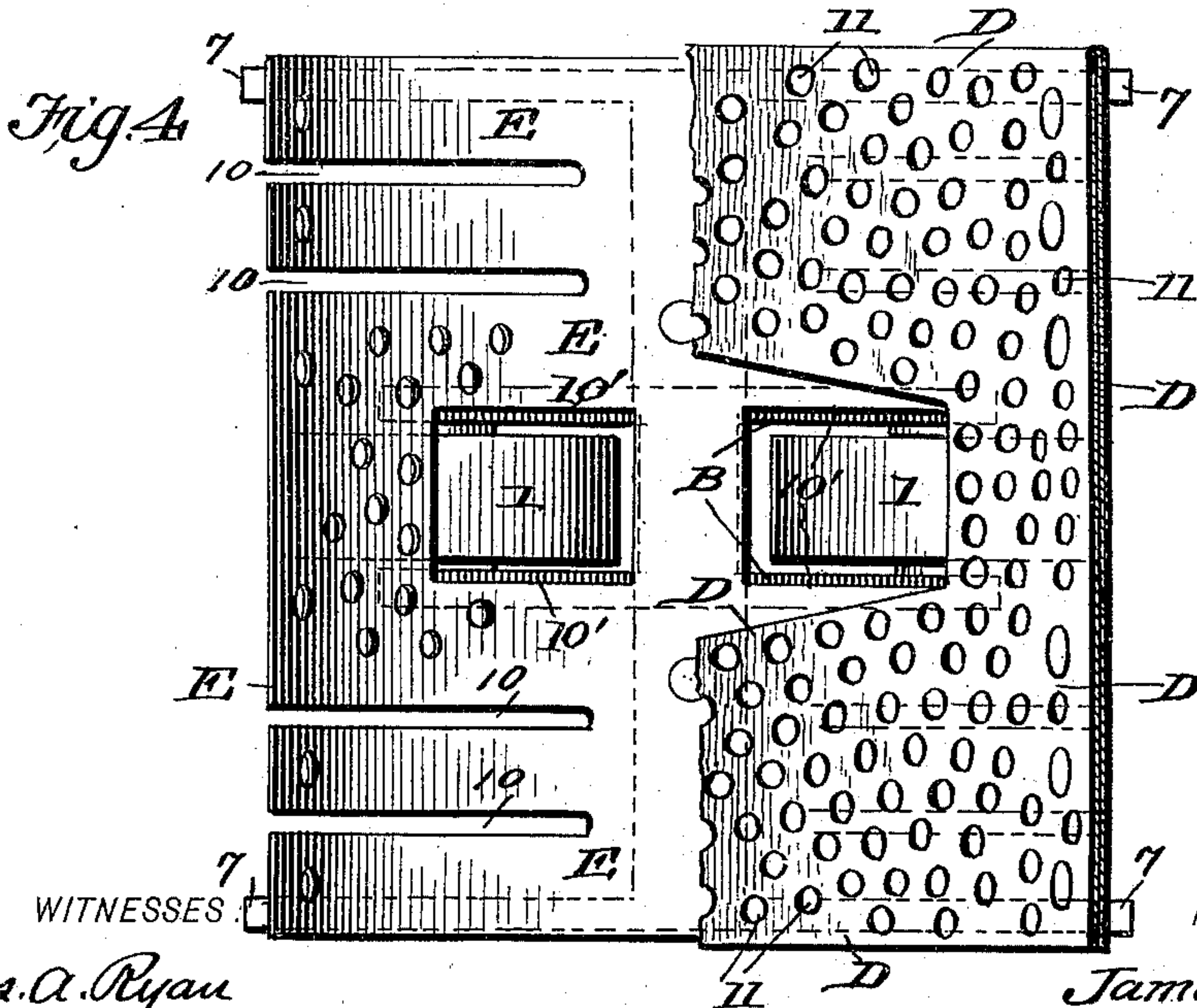
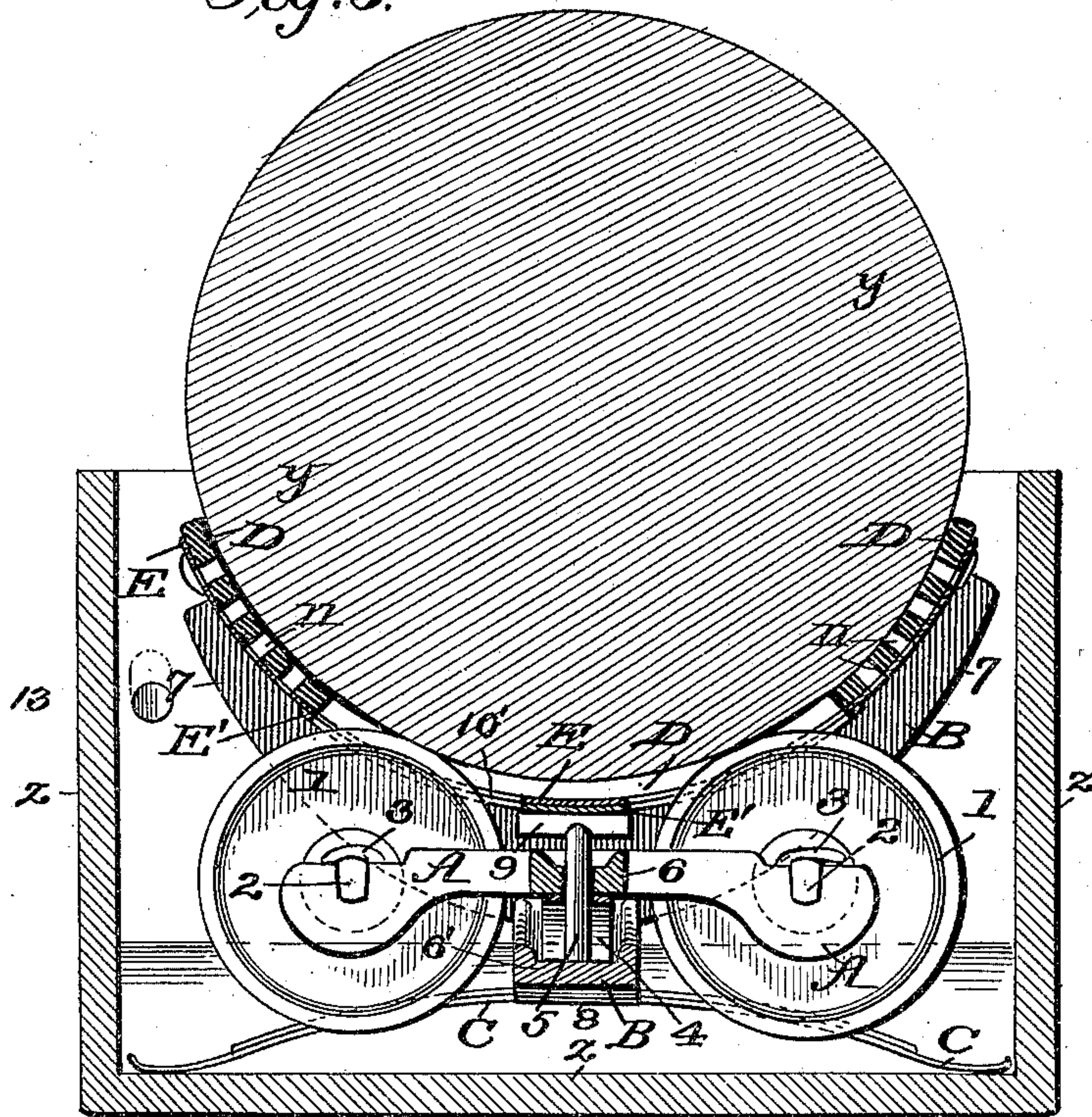
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3 Sheets—Sheet 2.

Fig. 3.



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Fig. 5.

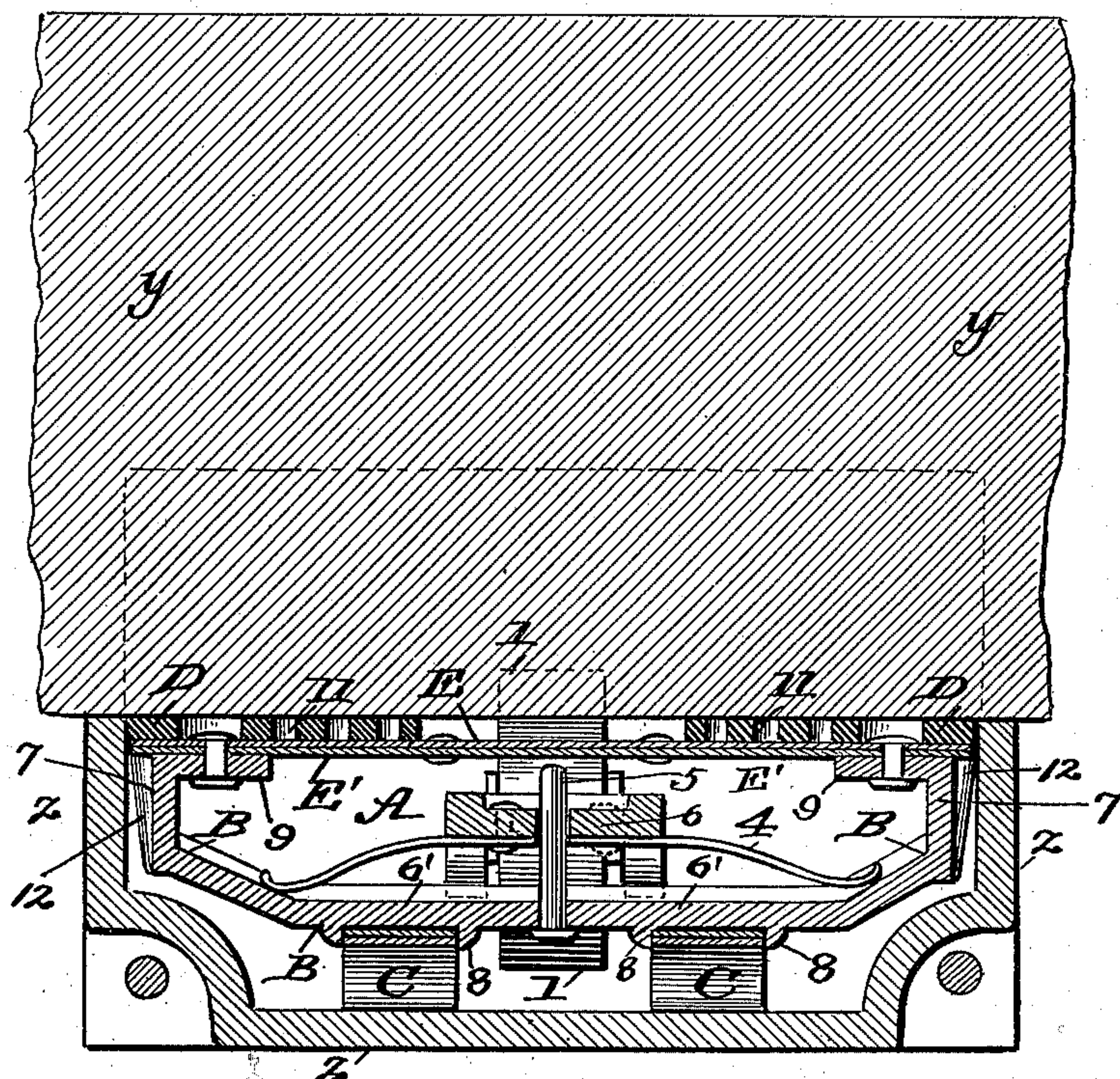
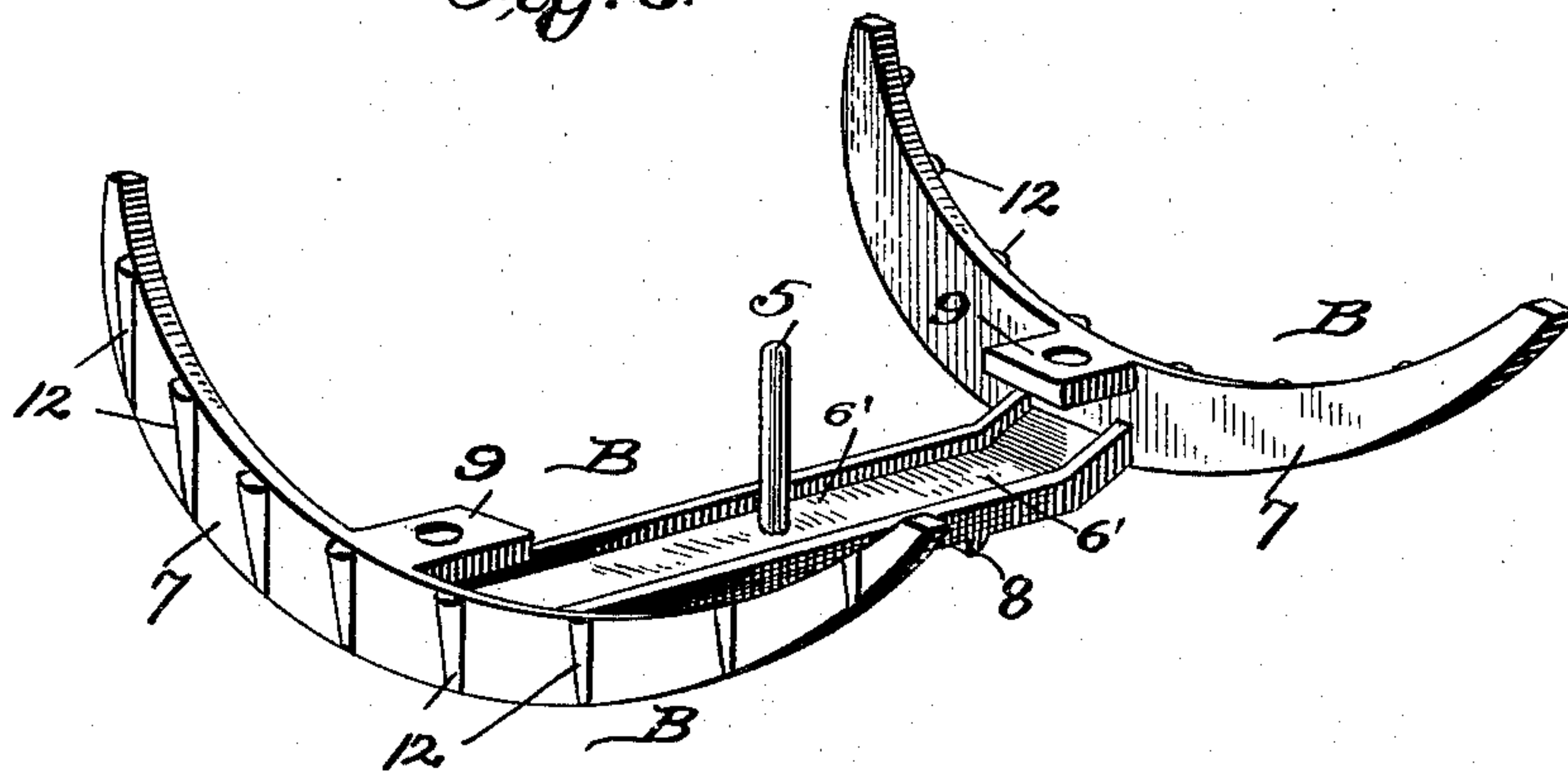


Fig. 6.



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# UNITED STATES PATENT OFFICE.

JAMES S. PATTEN, OF BALTIMORE, MARYLAND.

## LUBRICATOR AND WIPER FOR LOCOMOTIVE-AXLES.

SPECIFICATION forming part of Letters Patent No. 638,985, dated December 12, 1899.

Application filed March 31, 1898. Serial No. 675,893. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES S. PATTEN, of Baltimore, in the State of Maryland, have invented a new and Improved Lubricator and Wiper for Locomotive-Axles, of which the following is a specification.

I have developed the present invention in the course of many experiments and long-continued use of axle-lubricating apparatus on cars and locomotives in actual service.

The invention embodies some of the principles and general features of the former ones, but under such changes and modifications of construction and arrangement of parts as to form a new lubricator specially adapted for application to and use on the truck and driving-axles of locomotives.

The locomotive-lubricators in general use consist of metal boxes, called "cellars," which are secured to the under side of the axle-bearings, between the wheels, instead of exterior thereto, as in the case of car-axle lubricators. The means for conveying oil or other lubricant to the axle-journals is cotton-waste or other suitable fibrous material, which is packed in said boxes. The packing is saturated with oil, the waste of which is resupplied, day by day, from an ordinary oil-can; but at certain intervals—the length of which depends upon extent of use and other conditions—the packing requires to be removed and new packing substituted. This can only be effected by removing and replacing the box or cellar containing it, which operation involves considerable time and labor, and owing to the difficulty of access to the parts is ordinarily done in the roundhouse. My improved lubricator utilizes the box or cellar before described, but avoids the necessity of its frequent removal and replacement, since no waste or like material is employed. As in my previous inventions of this class, the lubricant is taken up and transferred to the axle-journal by means of rotating rollers, and these, together with a yielding wiper, which prevents the oil "creeping" along the journal, are contained in the cellar or box before referred to.

The construction, arrangement, and combination of parts are as hereinafter described.

In accompanying drawings, three sheets, Figure 1 is a perspective view showing my

improved lubricator in place in an ordinary locomotive-axle box. Fig. 2 is a perspective view of the roller-carrying frame. Fig. 3 is a vertical transverse section of the axle-journal, the cellar or oil-box, and my apparatus in due working position in the latter. Fig. 4 is a plan view, a portion being broken away, of my improved lubricator and wiper. Fig. 5 is a longitudinal section of the axle-journal and a portion of the axle-box. Fig. 6 is a perspective view of the frame of the lubricator.

$x$  indicates the axle-box, and  $y$  the locomotive-axle journal. The box is provided with the usual "brass" or bearing and contains the cellar  $z$  or oil-box, which is held detachably in place in the lower portion of the axle-box. Instead of the waste, which is usually placed in such cellar and kept saturated with oil, I employ the improved apparatus hereinafter described for transferring oil to the journal  $y$  and wiping off the surplus or portion not required for lubrication, so that escape and loss of the same are prevented. The said apparatus is composed, first, of rollers 1, journaled in a frame A, Fig. 2, which is in turn supported elastically on a larger or main frame B, having springs C attached, Figs. 3 and 5, which rest on the bottom of the cellar  $z$ , and, secondly, of a leather wiper D, attached to and supported by a concave spring E, secured upon said main frame B. The rollers 1, Fig. 3, are mounted loose on axle 2, which is held detachably in the notched arms of the frame A, and the latter has flexible prongs 3, which confine the axles in place, as shown in Fig. 3. This frame A, with the attached rollers 1, is arranged crosswise of the main frame B and supported thereon by a curved plate-spring 4, Fig. 5, and also guided in its vertical movement by means of a pin 5, fixed in the main frame B and working free through a hole in the central portion or web 6. The upturned ends of the aforesaid plate-spring 4 rest in a channel or guideway formed in the longitudinal bar 6' of the main frame B. Thus the rollers 1 are held at all times in due working contact with the axle-journal  $y$  and move with it vertically, as well as conform to its lateral or horizontal movement.

The main frame B is constructed of the parallel crescent-shaped end pieces 7, whose concave edges conform to the circle of the jour-



nal  $y$  and the channeled connecting-bar 6' before referred to. The under side of the bar 6' is provided with parallel transverse flanges or ribs 8, Fig. 5, between which are riveted the two curved plate-springs C, that support the entire apparatus in the cellar  $z$ .

Perforated lugs 9 project inward from the end pieces 7 and serve for attachment and support of the concave plate-spring E, whereon the wiper D is supported and secured—that is to say, the said spring E is constructed of a thin steel plate, which is riveted at the center of its ends to said lugs 9, while the leather wiper D is in turn riveted to the upper or side edges of the spring. The spring E is slitted at intervals 10, Fig. 4, from the side edges downward to a point near the longitudinal middle, thus forming a series of lateral parallel fingers whose elasticity is such as to enable them to hold the upper portions of the wiper D in easy yet uniformly close contact with the journal  $y$ . Openings or closed slots 10' are also provided in the spring E—one on each side of the center—for accommodation of the upper portion of the rollers 1. I preferably employ a reinforce or supplemental spring E', Figs. 3 and 5, the same being arranged beneath the other, E, and similarly riveted to the lugs 9 of the supporting-frame B. This reinforce E' extends over about half of the main spring E and stiffens and supports it along its entire central portion.

The spring E is normally so curved as to have less radius than the journal  $y$  in order to insure that it will always hold the upper portions of the wiper D pressed inward in close contact with the journal  $y$ .

The leather wiper D is cut out at the center to provide space for the rollers 1, and it is provided with numerous holes or perforations 11 at all other points. The spring E is also provided with similar and preferably coincident perforations, as shown in Fig. 3. These perforations have been found practically very important and, in fact, indispensable to perfect performance of the function of the wiper D, in that the circular edges of the same form so many scrapers for removing oil from the journal  $y$ , and the holes cannot become filled and clogged with foreign matter derived from the lubricant and from wear of the journal and, as well, from the wiper itself.

The outer sides of the crescents or end pieces 7 of the main frame B are provided with vertical ribs 12, which work in contact with the ends of the cellar  $z$  and provide due space for return into the latter of any oil that may pass over the ends of the wiper D. The said ribs are, however, cast larger than is necessary in use for the reason that oil-boxes or cellars vary somewhat in length, and by filing off the ribs more or less the frame B may be fitted with due accuracy to any particular cellar.

The lubricator requires no further attention after being put in place in the cellar  $z$  save a resupply of oil at long intervals, the escape, waste, and consumption of oil being compara-

tively slight, while the lubrication of the journal is constantly copious, so that there is a corresponding reduction of friction and heat.

The position of the eccentrics of a locomotive does not allow sufficient space for insertion of a tube in the end of a cellar, as in the case of the truck-boxes, and hence I provide a downwardly-inclined hole 13, Figs. 1 and 3, in the end of the cellar, the same being located to one side of its center and above the lowest point of the concave which accommodates the axle-journal. This location prevents oil wasting out, yet permits ready inspection of the interior of the cellar and convenient resupply of oil when required.

What I claim is—

1. The improved apparatus before described, comprising rollers for applying lubricant to an axle-journal, a frame carrying the same, a spring for supporting such roller-frame, a flexible wiper, a main frame upon which such spring and wiper are supported, and curved plate-springs attached to and supporting said main frame, substantially as shown and described.

2. The improvement before described, comprising a flexible wiper adapted to embrace the under portion of an axle-journal, the concave plate-spring attached to and supporting said wiper and having normally less radius than the journal, a frame attached to and supporting said spring at the center, and rollers journaled in the frame and working through slots provided in the said wiper and spring, substantially as shown and described.

3. The combination with an axle-journal and a suitable supporting-frame, of a concave plate-spring secured to the latter and a wiper composed of a plate or piece of duly flexible material, the same lying upon the spring and being adapted to embrace the under portion of the journal, the spring and its attached wiper being expanded and conforming to the journal by pressure, substantially as shown and described.

4. The combination, with a suitable supporting-frame, of a concave plate-spring secured thereto, and having lateral slots and fingers as described, of a wiper composed of a leather plate which is secured to such spring-fingers, and is thus adapted to embrace the under portion of an axle-journal, rollers arranged in openings or spaces in such spring and wiper, and a spring-supported frame carrying such rollers, substantially as shown and described.

5. The combination, with a wiper and a concave spring supporting the same, of a frame composed of crescent-shaped end portions and a connecting-bar, the said spring and wiper being secured to said frame at the longitudinal middle, whereby their side portions are left free to act on an axle-journal, as shown and described.

6. The frame having a central part provided with a guiding portion, a roller-carrying frame having a supporting-spring adapt-



ed to work on such guide, and a fixed vertical guide on which the roller-frame slides, as shown and described.

7. The combination, with the spring-supported frame adapted to be placed in an axle-box, and having a central horizontal bar, of rollers and a frame carrying the latter which is arranged crosswise of said bar, and a spring for supporting the roller-frame on the bar, substantially as shown and described.

8. As an improved article of manufacture,

the frame for supporting the lubricant applicator and wiper, the same being composed of parallel end pieces having concave upper edges, and a transverse connecting-bar, all constructed integrally, as shown and described.

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Witnesses:

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