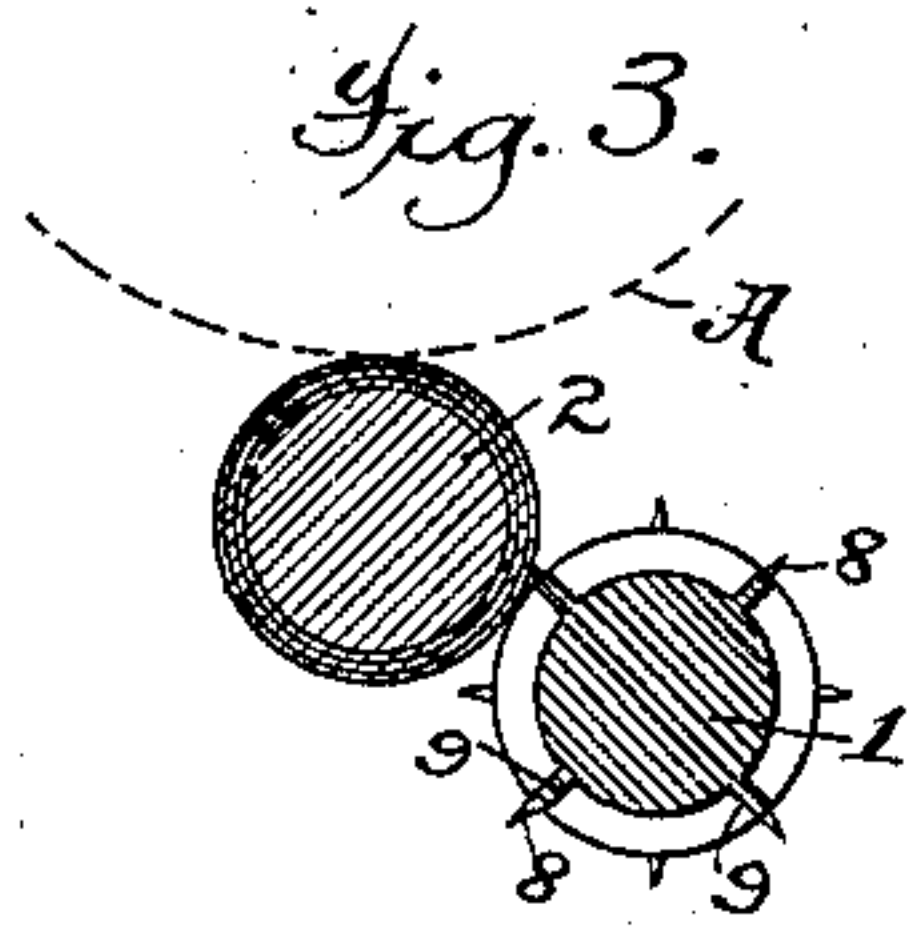
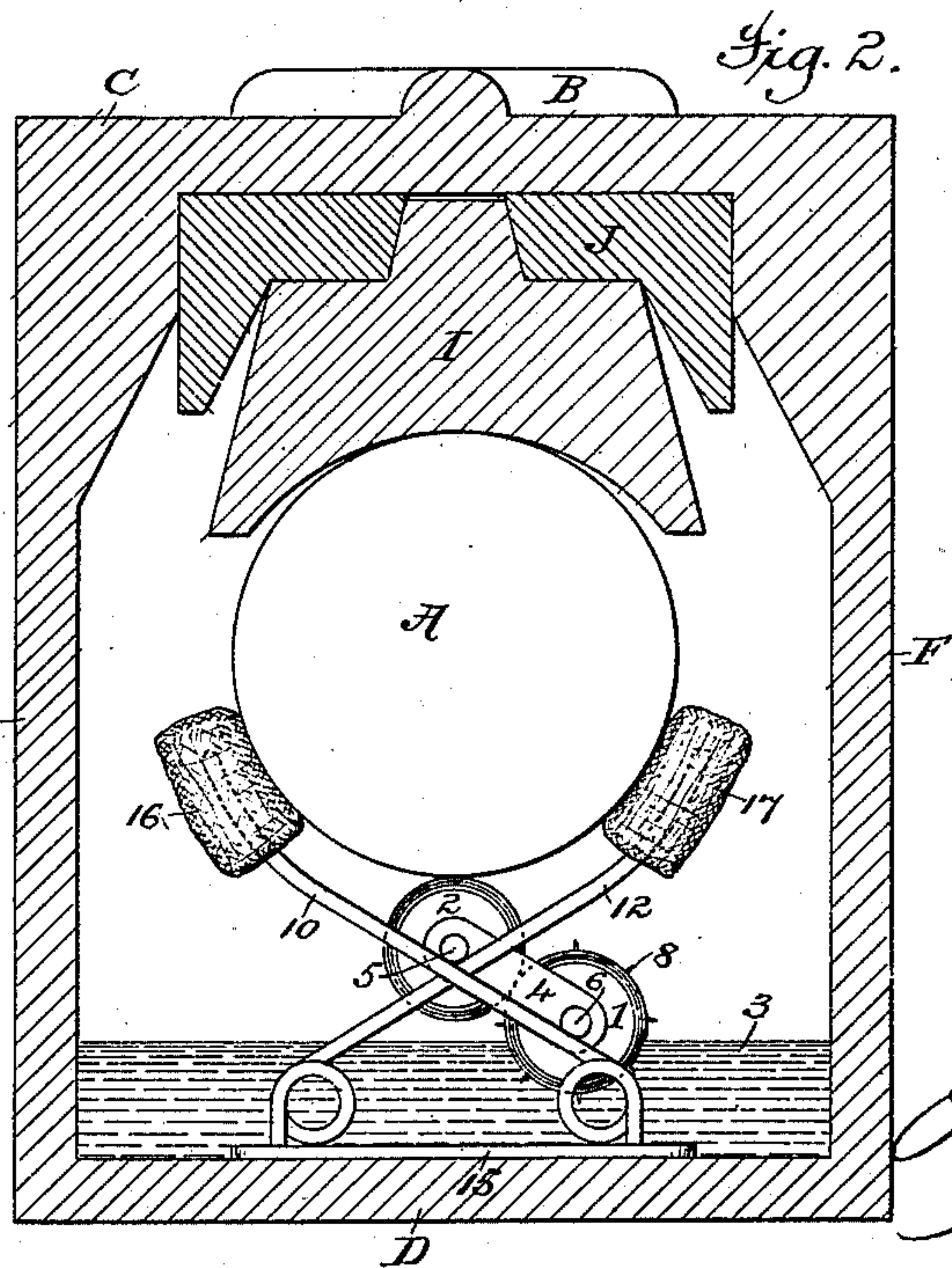
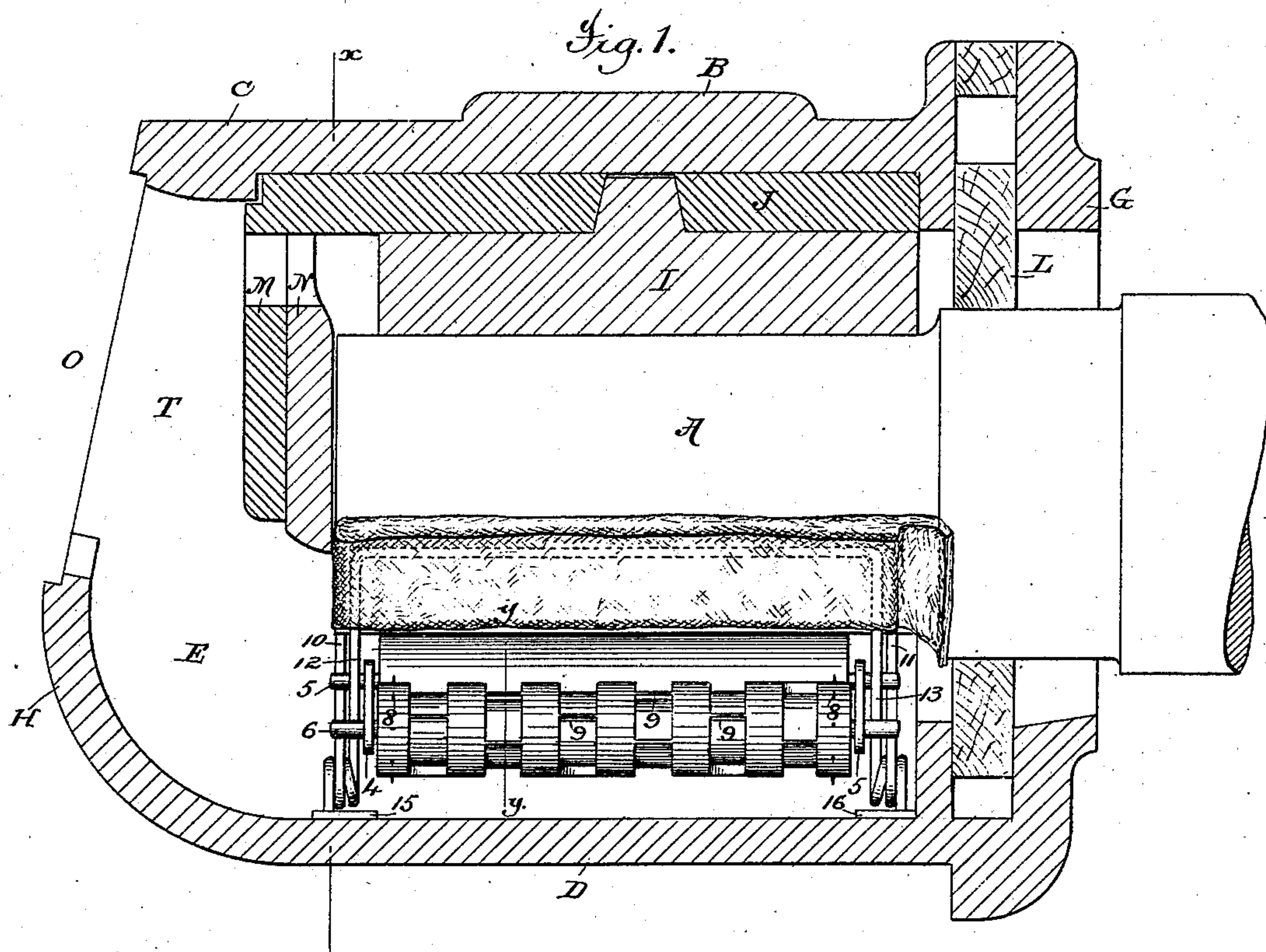


(No Model.)

J. D. GRAHAM.
CAR AXLE LUBRICATOR.

No. 310,941.

Patented Jan. 20, 1885.



Attest:

John D. Graham

James J. Kennedy

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UNITED STATES PATENT OFFICE.

JOHN D. GRAHAM, OF BROOKLYN, ASSIGNOR OF ONE-HALF TO SAMUEL I. KNIGHT, OF NEW YORK, N. Y.

CAR-AXLE LUBRICATOR.

SPECIFICATION forming part of Letters Patent No. 310,941, dated January 20, 1885.

Application filed February 25, 1884. (No model.)

To all whom it may concern:

Be it known that I, JOHN D. GRAHAM, a citizen of the United States, residing in the city of Brooklyn, county of Kings, and State of New York, have invented certain new and useful Improvements in Car-Axle Lubricators, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

It is the object of this invention to produce a simple, cheap, and effective device adapted to be combined with the journal-box of a car-axle and operate to conduct the oil in a regular even quantity onto the said axle and thus lubricate the same in the most perfect manner.

The invention consists in a novel structure of lubricating device adapted to be placed in the journal-box beneath the axle, which device embraces spring-seated rollers mounted in rolling contact, one of which bears upon the axle, while the other dips in the oil, said rollers being in some cases provided with means for driving one from the other, and with breakers or buckets for breaking up the lubricant when it is congealed, with which rollers are combined spring-seated distributing-pads, all of which will be more particularly hereinafter set forth.

The accompanying drawings illustrate the invention as applied practically, Figure 1 being a longitudinal sectional elevation of a car-axle box with the lubricating device and the axle in elevation. Fig. 2 is a transverse sectional elevation of the same on the line *x x* of Fig. 1, and Fig. 3 is a sectional elevation of the same on the line *y y* of Fig. 1.

The most common means employed for the lubrication of car-axles is the use of cotton waste saturated with the lubricant. This mode, as is well recognized, while effective is expensive, for the reason that it occasions great waste of the lubricant, and in consequence of having to be frequently renewed. The device embodying the present invention is, however, of a permanent character, and is so constructed as to economize the lubricant, as it simply acts to convey the clear oil up to the axle and enable any surplus quantity fed to the axle to be discharged into the oil-reservoir.

To enable the construction, application, and operation of the improved lubricating device to be readily understood, the common parts

with which it co-operates will first be explained. The axle A is provided at both ends with a box upon the equalizing-bar seat B of which the truck supporting the car has its bearing. This box is a metal structure, having top C, bottom D, sides E F, back G, and front H, within which is a cavity capable of receiving the axle and its bearings, and also providing a considerable space below the axle. The end of the axle A enters within the box, and is borne upon by a journal-bearing, I, centered in place by a stop-key, J, that rests in a seat provided for it in the under side of the top plate, C, of the box. The axle passes through a loose collar or dust-guard, L, that has vertical play in a recess cut in the back G of the box, and the plate of the stop-key J supports the stop-key M and stop-plate N that depend in front of the end of the axle. The front H of the box rises from the bottom D to a height sufficient to form an oil-reservoir in the bottom of the box beneath the axle, and it is provided with an opening, O, through which the interior may be examined, or the internal parts be removed and replaced, and through which this device is inserted. In such structure it will be observed that in consequence of the box being pressed downward the space below the axle may receive any means for conveying the oil or other lubricant deposited therein up to the axle, and as perfect lubrication depends upon a constant application of the lubricant to the axle, and is most effective when that supply is a thin film, it will be apparent that a device accomplishing these ends will be most advantageous.

The lubricating device involving the present invention consists of a fountain-roller, 1, and a distributing-roller, 2, clothed with felt or cloth, and mounted so as to revolve freely, the fountain-roller 1 dipping into the oil 3 held in the reservoir, and the distributing-roller 2 running in contact with the fountain-roller 1, and in contact with the under side of the axle A. These rollers have their axes tied together at either end by straps 4 5, so that they always maintain the same relation, and they are supported by gravity in one direction, by reason of their axes 5 6 resting upon the spring-arms 10 11, the axis 5 lying in the crotch of the spring-arms 10 12 and 11 13, while the axis 6 merely rests upon the spring-arms 10 11. These spring-

arms 10 12 and 11 13 rise, respectively, from opposite sides of feet 15 16, that rest upon the bottom D of the box, and cross each other, so as to protrude upward on opposite sides of the axle A, and they thus act to constantly press the rollers 1 2 upward. At their upper ends the spring-arms 10 11 are connected by longitudinal pieces that support a pad, 16, while the arms 12 13 are similarly connected and support a pad, 17. These pads are made of cloth, felt, or similar soft material, and by means of the resilient action of the spring-arms are constantly pressed against opposite surfaces of the axle A, and said pads extend inwardly far enough to cover the dust-guard bearing of the axle A. The rollers 1 2, where simply covered with felt, will operate advantageously, and as so made will first be considered with respect to the operation.

The reservoir being filled with oil to a sufficient depth to cause the roller 1 to dip therein, the operation is as follows: The spring-arms 10 11 12 13 pressing constantly upward, spread or contract according to the degree of vertical play caused to the axle A, always hold the pads 16 17 against the axle, and support the roller 2 in contact therewith, and the straps 4 5 likewise keep the rollers 1 2 in contact. The frictional contact of the roller 2 with the axle causes said roller 2 to revolve, and this roller in turn causes its fellow roller 1 to turn in the oil. The roller 1 consequently becomes saturated with the oil and conveys it to the surface of the roller 2, and the latter transfers it to the surface of the axle A, upon which it is evenly distributed in a thin film by the pad 16 or 17, the latter after a few revolutions becoming saturated until they can hold no more, and thereafter the oil drops from them into the reservoir, to be again fed to them as required. The construction is such that whatever grit or dirt may reach the interior of the box will gravitate to the bottom of the reservoir and remain there out of reach of the feeding-roller 1, which running above the bottom of the box can only feed clear oil, and whatever dirt or grit reaches the pads 16 17 will drop off the same with the surplus oil and descend to the bottom of the reservoir. The result is therefore a feed of clear oil and the constant application of the same in a thin film to the axle, without the creation of any undue friction from the application to the axle of carrying-pads having excessive dimensions, as is the case with a box stuffed with cotton waste as the vehicle for the lubricant, or a similar device enveloping the axle.

In order that friction alone may not be de-

pended upon to cause the roller 1 to be driven by the roller 2, the former or the latter may be provided with spurs 8, that project into the soft surface of the felly, and thus drive one positively from the other. Gearing of any kind may be applied to the same end.

Another feature of the invention consists in constructing the roller 1 with buckets or breakers 9, whereby the oil may be broken up when congealed, and in all cases a sufficient quantity of oil be raised and applied to the roller 2. One good form of this is shown in Fig. 1, where said roller is constructed in alternate sections, one section being felt-covered, and the next supplied with buckets 9; but the structure may be this or one consisting entirely of breakers or buckets, which, preferably, will be arranged in spiral rolls, so as to diminish the power necessary to rotate the roller 1.

What is claimed is—

1. As an article of manufacture, the car-axle-lubricating device consisting of rollers 1 2, tied together, supported in contact, and upheld by crossed spring-arms upon which their axes rest, so that one dips in the oil and the other bears upon the axle, substantially as described.

2. The combination, with the rollers 1 2, tied together by the straps 4, of the crossed spring-arms arranged to afford bearings that support the said rollers in different planes, whereby while both are elastically seated and run in contact one may dip into the oil and the other bear upon the axle, substantially as described.

3. In an axle-lubricating device, the combination, with the axle, of the rollers 1 2, geared together, held in rolling contact, and supported in different planes upon crossed springs, substantially as described.

4. The combination, with the axle, the crossed springs, and rollers supported in different planes thereby, of the lubricating-pads at the extremities of said springs, substantially as described.

5. In an axle-lubricating device, the combination, with the axle and means for applying the lubricant thereto, of a roller, as 1, provided with rigid breakers or buckets for breaking up the lubricant when congealed, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

JOHN D. GRAHAM.

Witnesses:

T. H. PALMER,
JAS. A. HOVEY.