

J. C. KING.
CAR-AXLE LUBRICATOR.

No. 179,798.

Patented July 11, 1876.

Fig. 3.

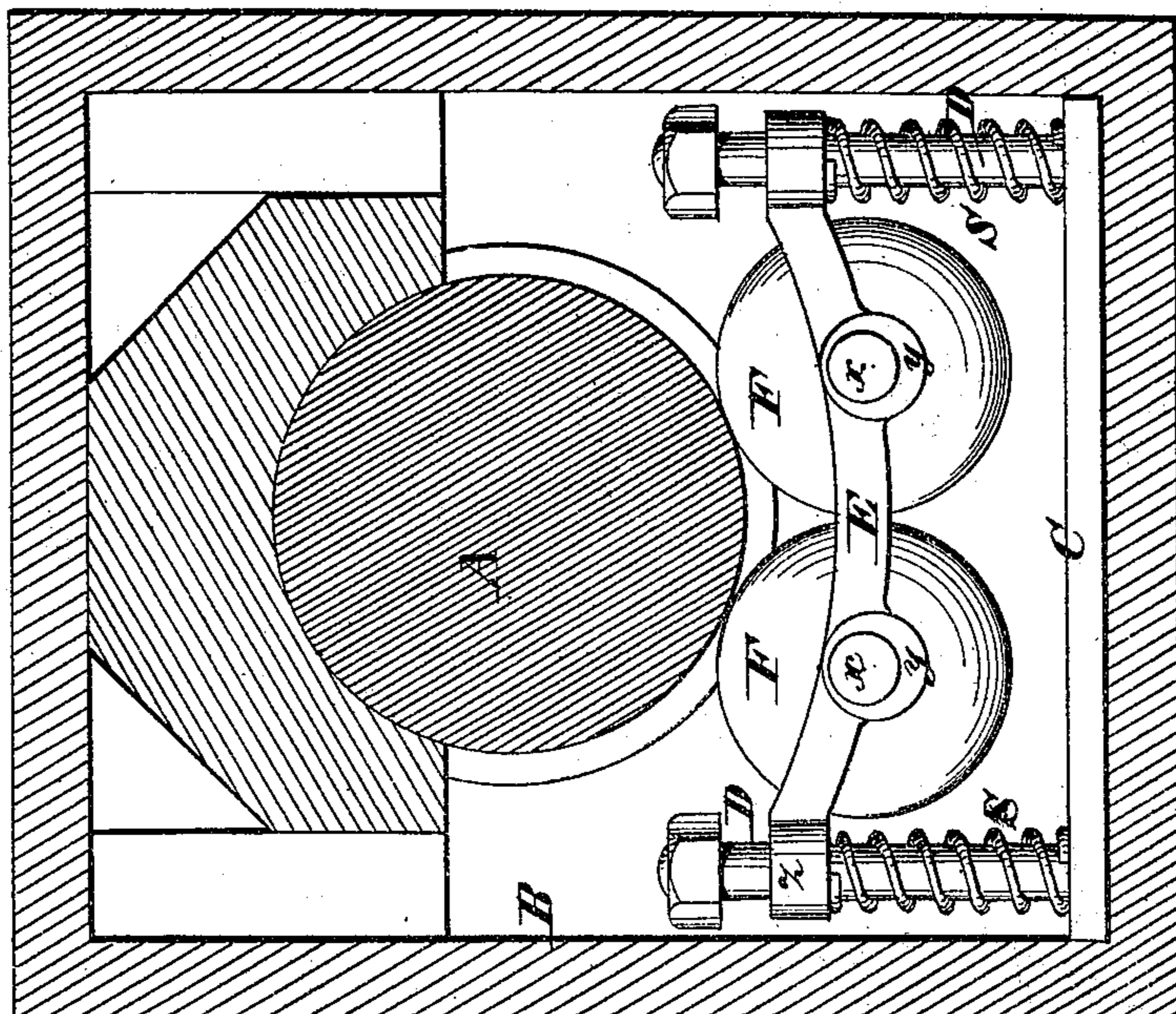


Fig. 1.

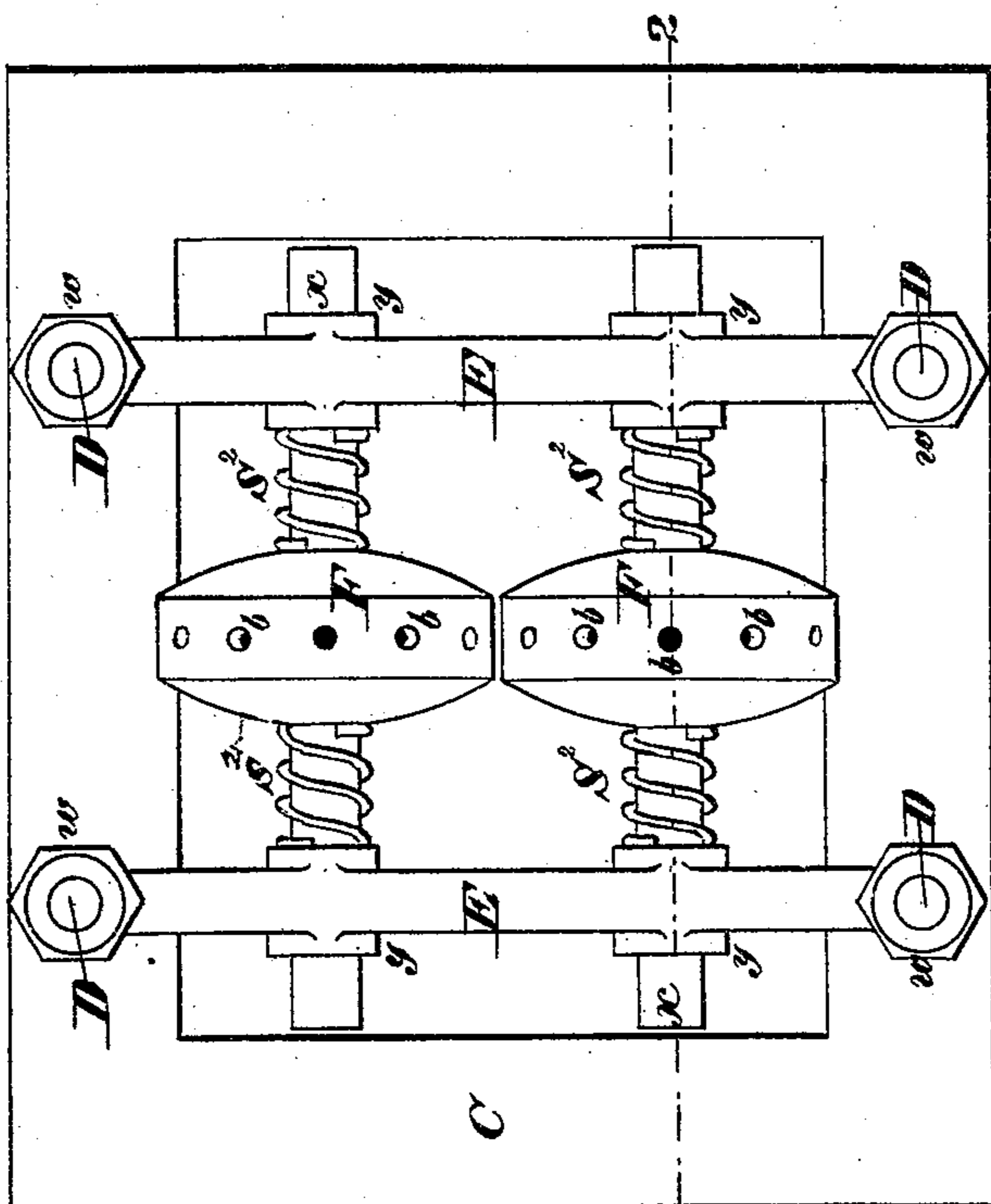
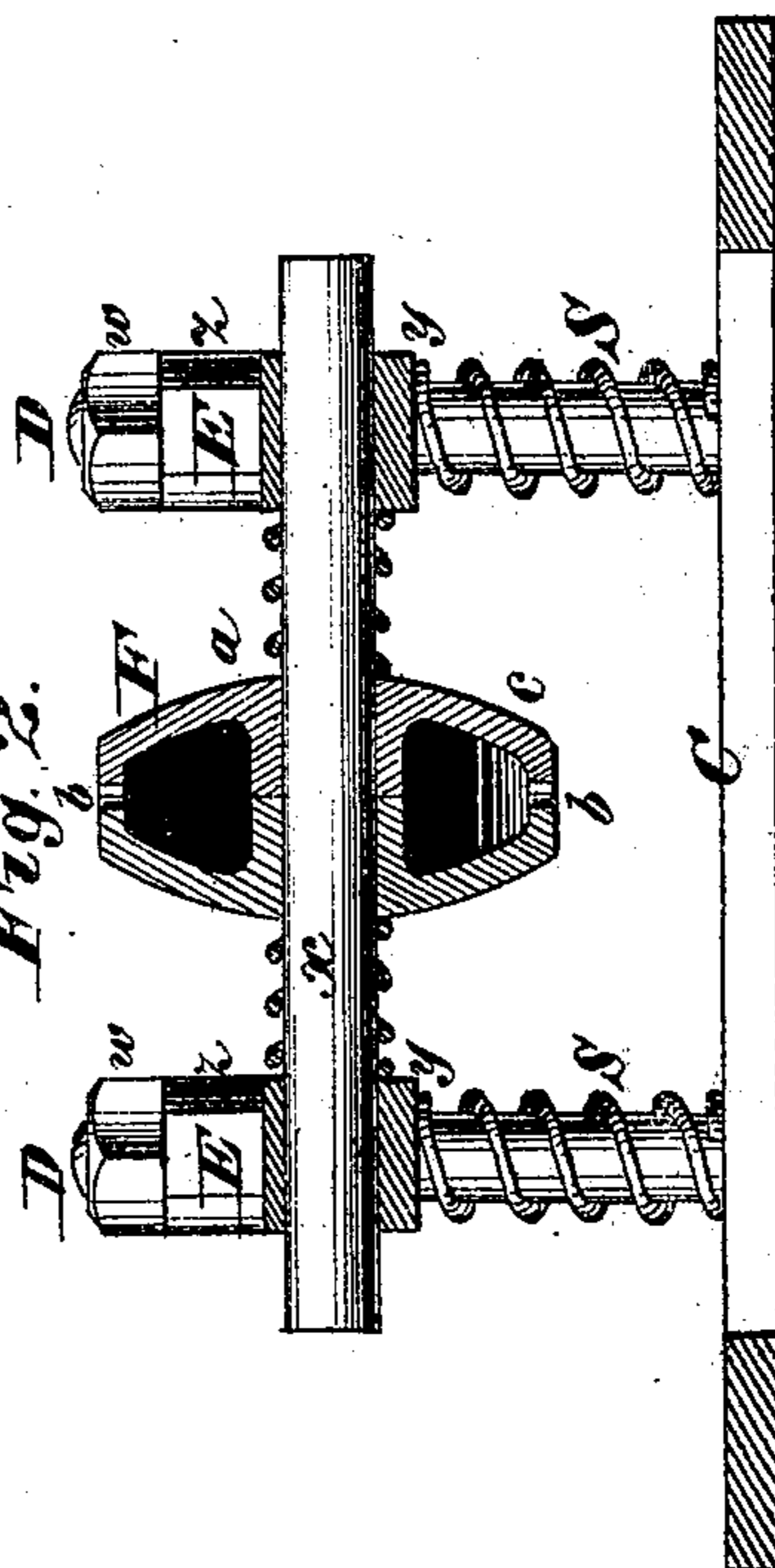


Fig. 2.



WITNESSES
Le Blond Burdett
A. H. Galt

INVENTOR
John C. King
By *Knight* Attorneys.

UNITED STATES PATENT OFFICE.

JOHN C. KING, OF BROOKLYN, E. D., ASSIGNOR OF ONE-HALF HIS RIGHT
TO LOUISA M. WOODWARD, OF TARRYTOWN, NEW YORK.

IMPROVEMENT IN CAR-AXLE LUBRICATORS.

Specification forming part of Letters Patent No. **179,798**, dated July 11, 1876; application filed
April 28, 1876.

To all whom it may concern:

Be it known that I, JOHN C. KING, a resident of Brooklyn, E. D., in the county of Kings and State of New York, have invented a new and useful Improvement in Car-Axle Lubricators, of which the following is a specification:

This invention relates to oil-feeding appliances for the axle-boxes of railway and street cars.

The first part of the invention consists in improved rotary feeders, (one or more,) operating by centrifugal force, as well as by surface contact, and each composed of two parts, forming together an annular oil-chamber and radial passages, and adapted to be united by their shafts.

The second part of the invention consists in horizontal springs parallel to the journal, operating in connection with shoulderless feeder-shafts, to adapt the feeder or feeders to yield to the longitudinal motions of the axle on curves, and to restore them to a central position, while, in combination with vertical springs and guide-rods at the corners of a rectangular frame, said parts operate also to accommodate the feeders to the separate oscillations of the axle and box, precluding any binding effect, and insuring the uninterrupted and efficient operation of the feeders, as hereinafter more fully set forth.

Figure 1 is a plan view of a car-axle lubricator illustrating this invention. Fig. 2 is a vertical section on the line 2 2, Fig. 1. Fig. 3 represents an end view of the lubricator in position within an axle-box.

Like letters of reference indicate corresponding parts in the several figures.

This improved lubricator is designed and adapted to be inserted in a common axle-box in place of the saturated "waste," which is still generally employed.

A flat rectangular base-frame, C, rests on the bottom of the box B beneath the axle A, as illustrated in Fig. 3. Four vertical guide rods or standards, D, erected on this frame are provided with spiral springs S, which rest on the frame. A pair of cross-bars, E, are constructed with horizontal rings *z* at their ends, to embrace the guide-rods above the

springs, and with intermediate journal-bearings *y y*, in which are mounted the horizontal shafts or spindles *x x* of a pair of rotary feeders, F. The upper ends of the guide-rods D are screw-threaded, and provided with retaining-nuts *w* above the cross-bars, to prevent the accidental separation of the parts when the lubricator is out of the box. As the wear in the feeder-bearings *y* is all at bottom, the original bore of each is made eccentric, as represented, with the principal thickness of metal beneath it. The feeder shafts or spindles *x* are constructed without shoulders, so as to slide endwise in their bearings, and are provided on each side of the feeders with spiral springs S², abutting at their outer ends against the inner ends of the bearings *y*. The rotary feeders are constructed with oil-cavities *c*, radial perforations *b*, extending outward therefrom through the periphery of each, and axial boxes *a*, fitted to the shafts or spindles *x*. Each feeder is made in two equal halves, so as to be cast without coring, the plane of division being vertical and transverse to the axis, as shown in Fig. 2. The feeders are driven tightly upon their shafts, by which the parts are united. To increase the efficiency of the feeders they are made of approximately spherical shape, as shown. The convex sides carry up a much larger quantity of oil than flat sides, while the oil-cavities are at the same time accommodated in connection with narrow peripheries. The latter have proved essential to the constant rotation of the feeder by the axle, as herein described, and thus, in turn, is essential to the successful operation of the feeders.

An axle-box provided with one of these lubricators is filled with oil above the feeder-shafts *y*. The oil penetrates immediately into the chambers *c* of the feeders, through the perforations *b*. When the car starts the axle gives rotary motion to the feeders, and causes them to discharge at top and sides the oil which they receive at bottom. They also carry up on their external surfaces a considerable quantity of the lubricant, which is thrown off tangentially, and also transferred by contact. An abundant supply of oil is thus carried to the journal, and that without

any admixture of fiber or other matter to offset its effect. The supply is also automatically adjusted to the demand, the discharge of the feeders being proportionate to the motion of the axle. The feeder-shafts are immersed in the lubricant. The horizontal springs S^2 tend to hold the feeders in central position, but yield readily when the axle carries the feeders endwise in turning curves, returning them afterward to normal position. The vertical springs S hold the feeders in constant contact with the journal, so as to insure their action, and they take up any wear which occurs in their direction. These springs will be given sufficient scope to provide for the maximum extent of wear in axle-boxes, which is usually half an inch. These springs S , as disposed in connection with the guide-rods D and cross-bars E , operate also to accommodate the lubricator to the separate oscillations of the axle and the truck-frame or car. The two sets of springs, in conjunction with the shoulderless shafts x and vertical guides D , so support the feeders and their journal-bearings as to preclude any binding effect, and to insure the uninterrupted and efficient operation of the feeders.

For the axle-boxes of street-cars and other small boxes, one feeder to a journal is considered sufficient. A single feeder-shaft, provided with two or more feeders, may be employed for some boxes, and it may be desirable for very large boxes to provide two or more feeders on each of the two feeder-shafts.

The shape of the base-frame and cross-bars may be modified, and the proportions of the parts will vary in lubricators for different styles of axle-boxes.

I claim as new in this my invention—

1. The improved rotary feeders F , one or more, constructed in parts, forming together annular oil-cavities c and radial perforations b , and united by the feeder-shafts x , as herein shown and described, for the purpose specified.

2. The horizontal springs S^2 , in combination with the shoulderless feeder-shafts x , one or more, and their bearings y , arranged and operating as specified, for the purpose set forth.

JOHN C. KING.

Witnesses:

ABNER C. THOMAS,
JAS. L. EWING.