

D. A. HOPKINS.
Car-Axle Box.

No. 34,636.

Patented Mar. 11, 1862.

Fig 3.

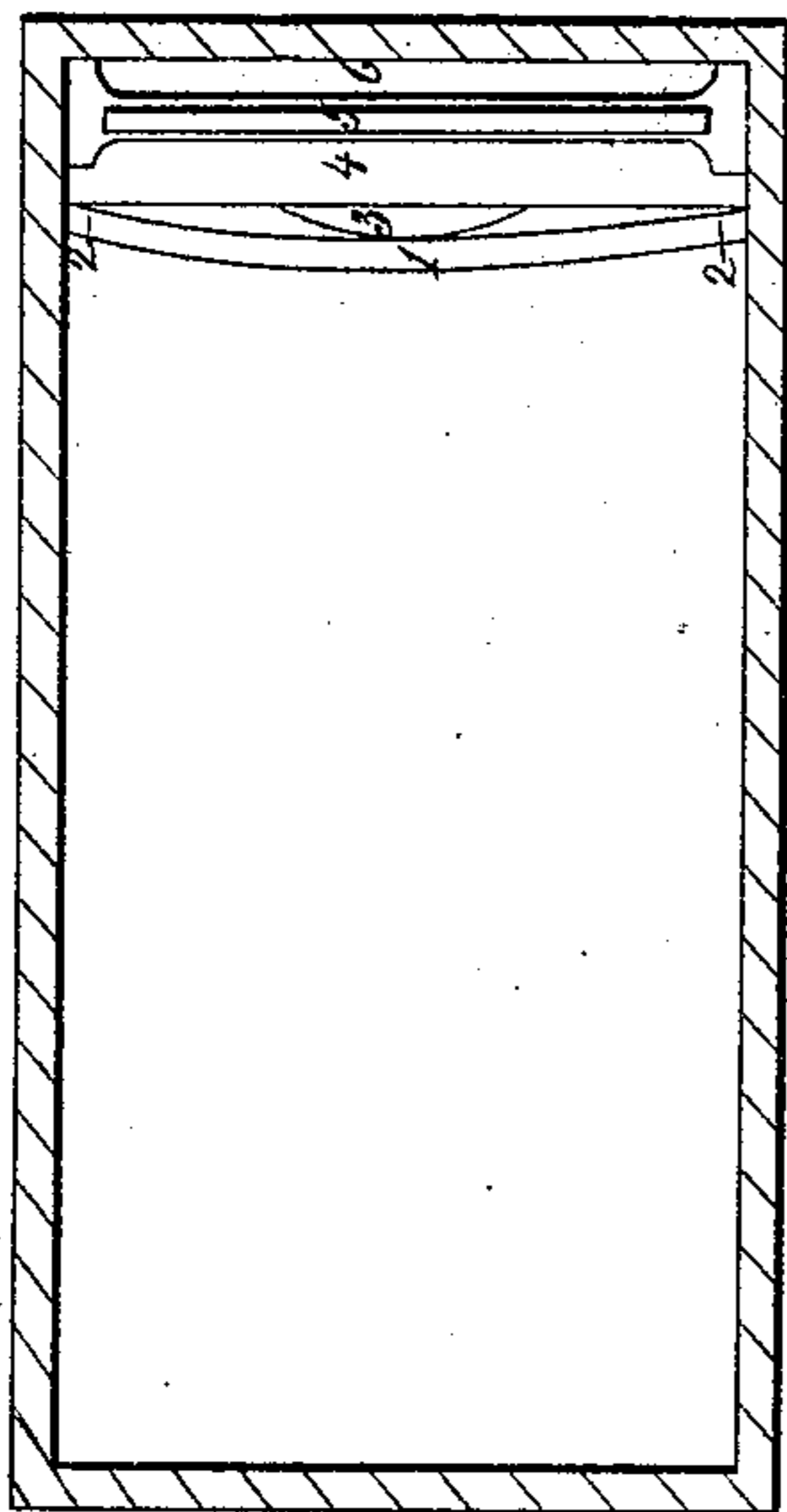


Fig 4

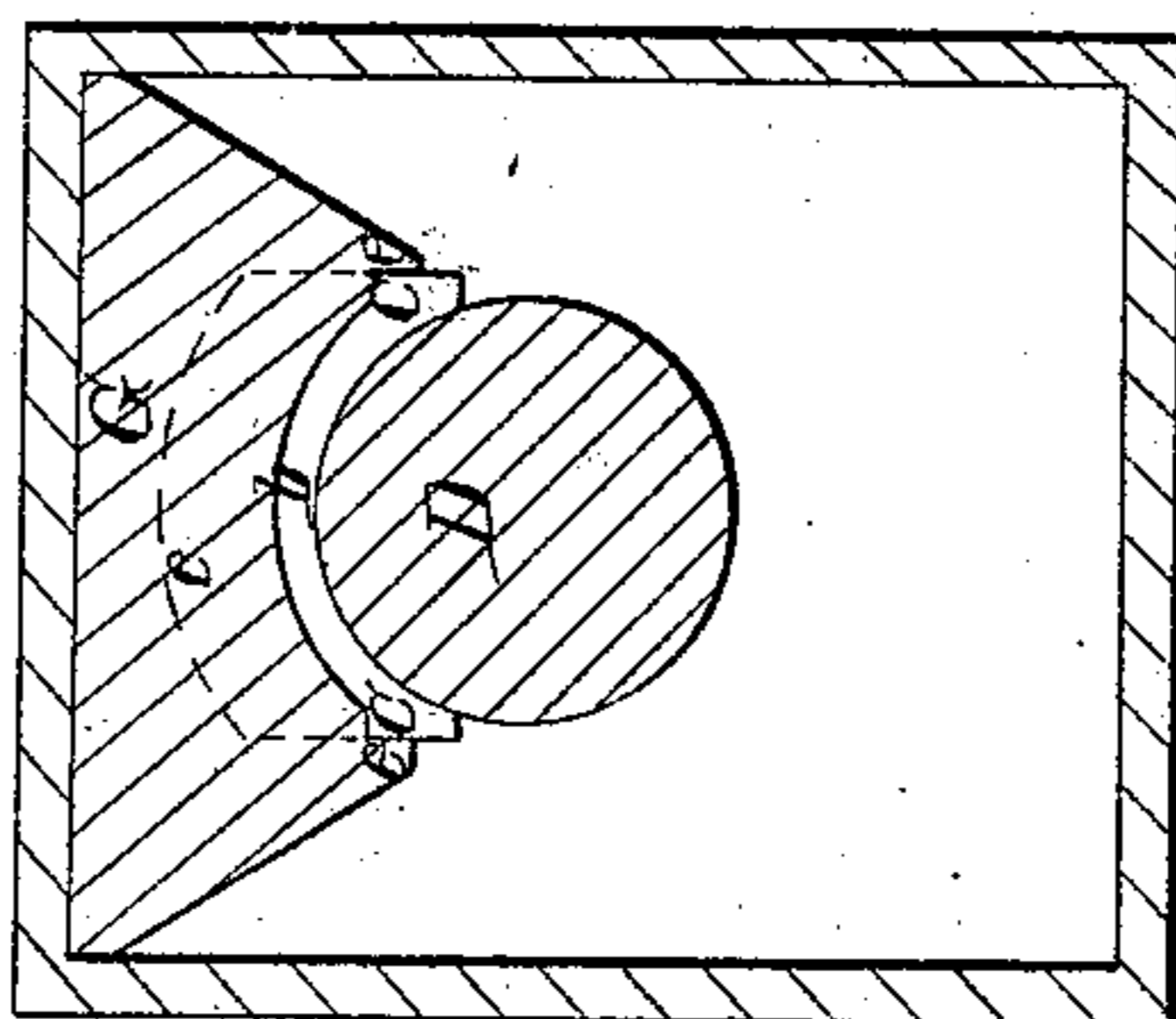


Fig 5

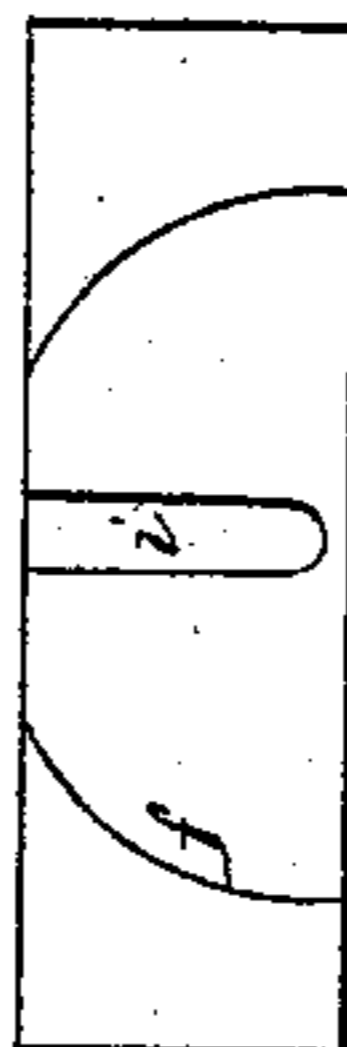


Fig 1

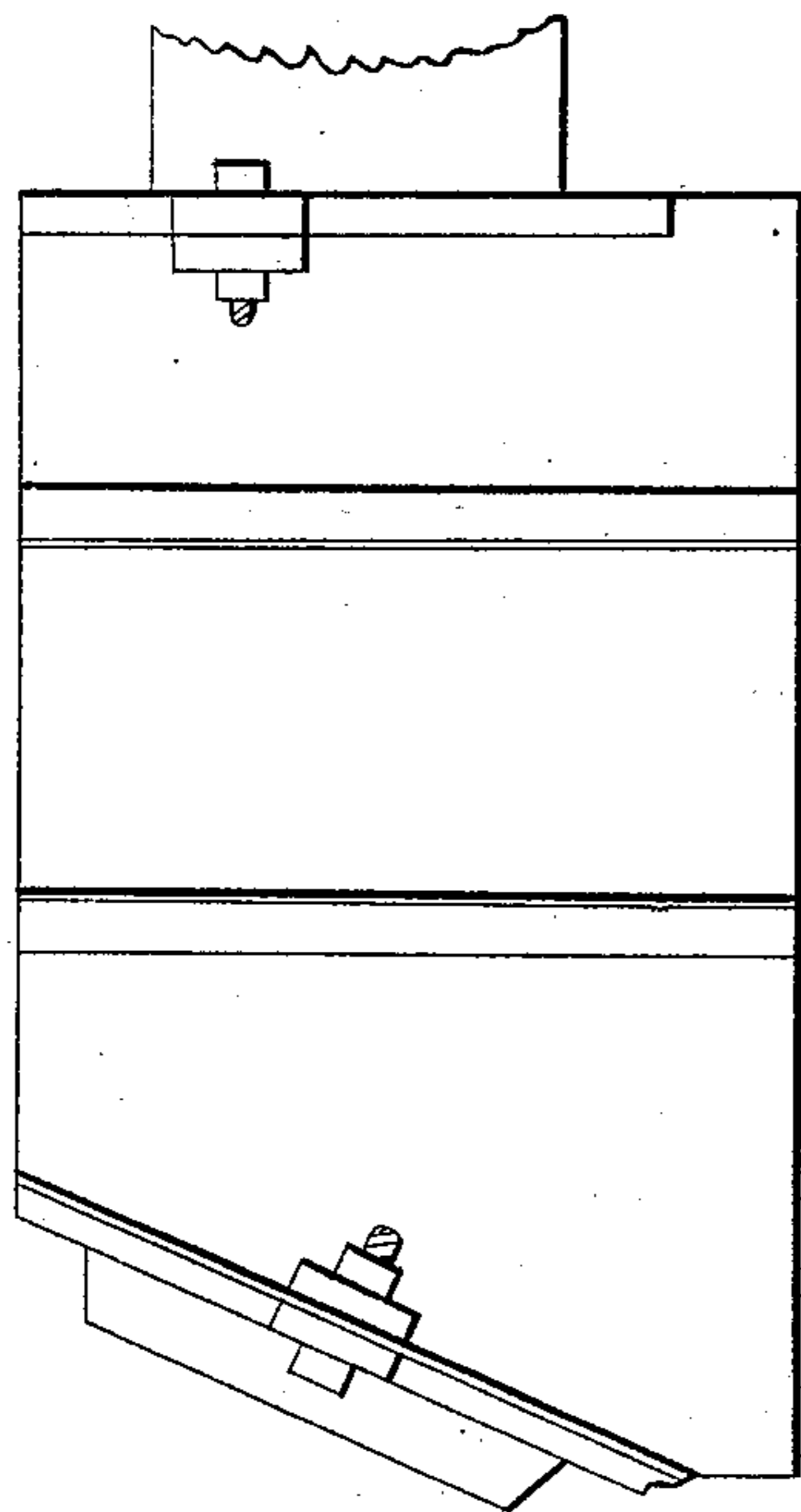
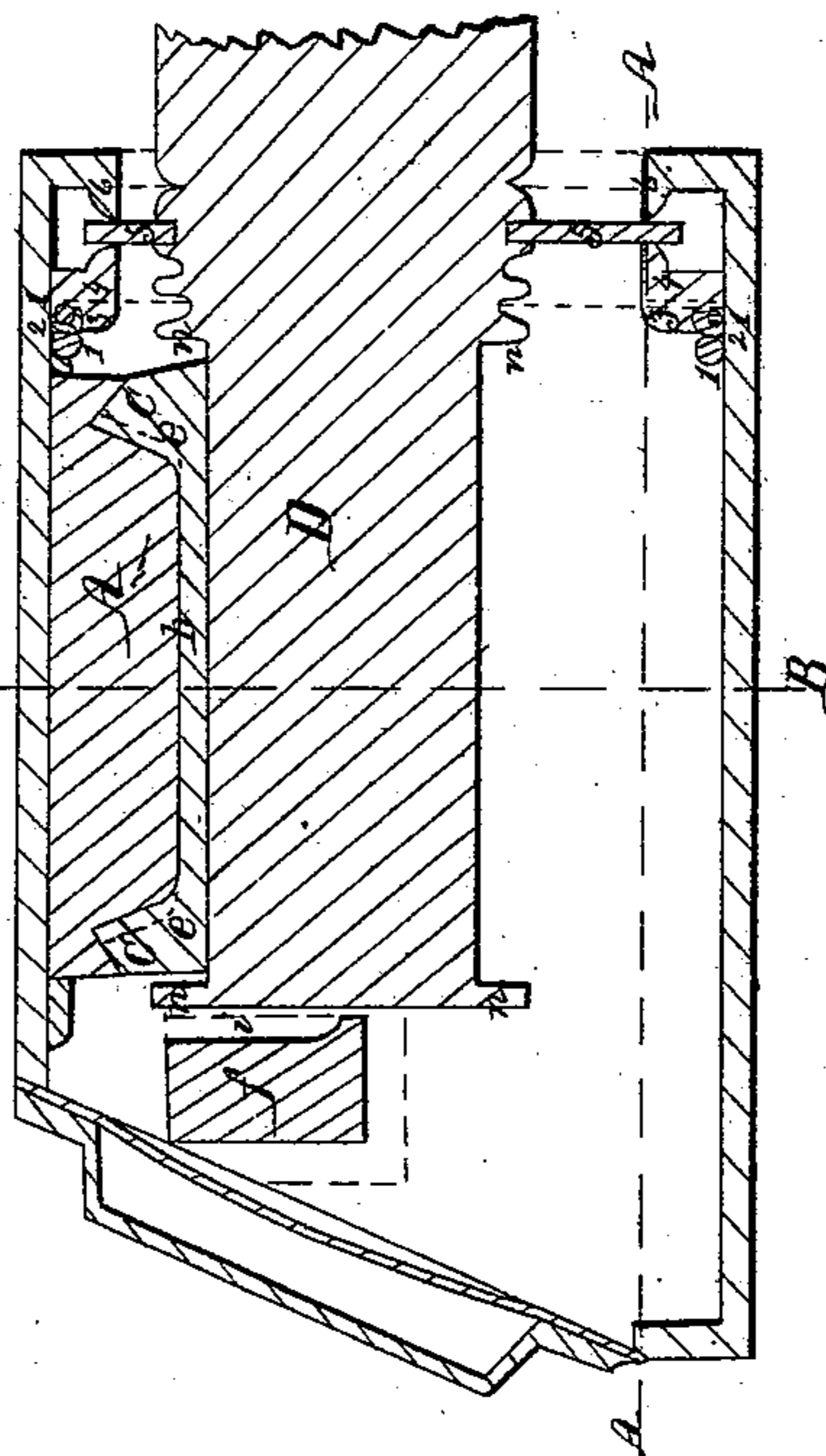


Fig 2



Witnesses.

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IMPROVEMENT IN RAILROAD-CAR JOURNAL-BOXES.

Specification forming part of Letters Patent No. 34,636, dated March 11, 1862.

To all whom it may concern:

Be it known that I, DAVID A. HOPKINS, of Brooklyn, in the county of Kings and State of New York, have invented certain Improvements in Journal-Boxes for Railroad-Cars, the construction and operation of which I have described in the following specification, and illustrated in its accompanying drawings, with sufficient clearness to enable competent and skillful workmen in the arts to which it pertains or is most nearly allied to make and use my invention.

My said invention consists in, first, the combination of springs with a movable plate which bears against the diaphragm used to exclude the dust from the interior of the box, holding it constantly but with only moderate force against the inner surface of the end of the box toward the wheel, thus at all times insuring the contact of the diaphragm and said inner surface and yet permitting the diaphragm to rise with the axle as the friction-plate is worn away, whereby dust is excluded from the interior of the box or housing and the lubricating substance retained therein to a greater extent than by methods usually employed; second, making the stop-bar, which is used to restrict the end play of the axle, with a groove located in that part of said bar next the end of the axle, said groove being so located and arranged in reference to the end of the axle as to run in a direction across its center, or nearly so, thereby securing a more effectual lubrication of the end of the axle than would be otherwise obtained, as will presently appear; third, constructing the friction-plate with a flange at each end thereof, said flanges being of such height as to present a sufficient bearing-surface for the collars of the axle until that part of said plate between the flanges is nearly or quite worn through, said plate being in all cases used in combination with a seat or support made separate and removable from the box or housing, the construction and combination of said plate and support being such that, while they may at once be separated when removed from the axle and box, they remain securely attached to each other when in use, without said plate being liable to be so broken before being worn through as to be unsafe for further service.

In the accompanying drawings, Figure 1 is

a side elevation of my improved journal-box. Fig. 2 is a vertical longitudinal section of the same, the plane of section being through the center of the axle, only part of which is here shown. Fig. 3 is a longitudinal horizontal section of the same, showing the interior of the bottom thereof, the point of section being indicated by red line A A in Fig. 2. Fig. 4 is a vertical transverse section of the same, showing the friction-plate and its seat or support in position upon the axle, that part of each crossed by red line B B in Fig. 2 being here shown. Fig. 5 is a horizontal longitudinal elevation of the stop-bar, showing the part thereof toward the axle when in use.

b is the friction-plate made of gun metal or other suitable material, and provided at the ends with flanges *c c* of such height that the collars *n n* of the journal or axle *D* shall only reach the top of said flanges when the part of said plate located between them shall be nearly or quite worn through, thus permitting the friction-plate to be nearly all worn away before the axle comes in contact with the seat in and to which said plate is secured.

a is a seat or support for the friction-plate and is made of cast-iron or other suitable material, cast separate from the box and removable therefrom, the back of said seat being of a form adapted to the interior of the top of the box, while the under side is made to receive and fit the back of the friction-plate, which is thereby prevented from breaking or yielding until it is worn through. The escape of the friction-plate from its proper position in the seat is effectually prevented by providing said plate with ledges *o o*, which fit into recesses in the seat made to receive them and by flanges *e e* upon the seat which partly inclose and take hold of the sides of said plate. The tendency of the friction-plate to turn with the journal, especially when the latter is not well lubricated, renders necessary in all cases the construction and combination of the friction-plate and its support in such a manner that the angle of resistance to turning of the friction-plate shall be greater than would be presented by making its back of octagon form with a corresponding form of the under side of the seat.

On the 23d of February, A. D. 1858, Letters Patent of the United States were granted to me for improvements in car-journal boxes,

in which the form of the friction-plate and removable seat were substantially the same as is herewith shown, except that the ends of the friction-plate were not provided with flanges as in this case for use upon journals having collars. Friction-plates with flanges for sustaining the wear of collars of journals on which they are used are generally employed on some parts of locomotive and other engines; but in such cases the seat for the friction-plate is formed in and constitutes a permanent part of the box, rendering it unfit for general use upon car-journals. My improvement in this case, therefore, consists only in providing the friction-plate with flanges at the ends thereof, as set forth, to serve as bearing-surfaces for the collars of the journal until that part of said plate between said flanges is nearly or entirely worn through, said plate being combined with a removable seat or support, constructed substantially as set forth, for the purpose of supporting the friction-plate and retaining it in place, said construction and combination of the friction-plate and support enabling me to arrange and place the friction metal mainly just where it is required for wearing purposes and have very little of it elsewhere. *f* is the stop-bar made of any suitable material commonly used therefor and kept in place in the box by any device usually employed for that purpose, the point of novelty in this case being the groove *i* made in the side of said bar, which is to be used next to the end of the axle or journal.

When an axle is revolving rapidly, any fluid upon its surface has a tendency to flow outwardly from the center in consequence of which the center, of the end of the axle is often deprived of the necessary lubricating substance. By employing a groove, substantially as shown, a portion of the oil upon the outer part of the end of the axle is scraped off while the axle and stop-bar are in contact, and, following the groove, is again fed to the end of the axle near its center, thereby effecting its proper lubrication. Although preferring a vertical groove, as shown, extending but little, if any, below the center of the end of the axle, I have reason to believe that a groove inclined at almost any angle from vertical to horizontal may be advantageously used.

D is the axle or journal made of such material as is generally employed for that purpose, and provided with a groove for receiving the edge of the diaphragm at the point where diaphragms are usually located.

6 is the end of the box or housing toward the wheel.

5 is the diaphragm made of leather or other suitable material.

4 is a movable plate extending around the

axle, and having bosses *3 3*, one below and the other above the axle.

2 2 are lugs, two of which are cast upon each side of the box, one at the bottom and the other at the top thereof, the form and position of said lugs being shown in red in Fig. 3.

1 1 are springs, made of straight bars of highly-elastic wire, extending across from side to side of the box, and kept in position by being placed in the rests or lugs *2 2* above named. Said springs being forced to assume a curved instead of straight course from side to side of the box by bosses *3 3* on the movable plate, as shown in Fig. 3, exert a constant but only moderate pressure upon movable plate *4*, which thereby keeps the diaphragm at all times against the inner surface of the end of the box. Spring-pressure for this purpose is especially valuable, because by using it the diaphragm, whether made of thick or thin material, is always kept in close contact with the interior of the end of the box, which is of first importance in excluding dust and retaining the lubricating substance while at the same time the diaphragm is not so firmly held (as with the Timms and other boxes where unyielding pressure is employed) as to prevent its upward movement with the journal as the friction-plate is worn away.

Almost any form of spring may be employed instead of that herewith shown, which I use only because of its simplicity and the facility with which it may be manufactured and applied. Nor is the application of the movable plate and spring-pressure to that part of the diaphragm above the center of the journal indispensable, since by their application to that part of the diaphragm below the center of the journal the ingress of dust into and the escape of oil from the box will be mainly prevented.

Having thus fully described the construction and operation of my said improvements in car-journal boxes, I claim only as my invention—

1. The combination of one or more springs, with a movable plate bearing against the whole or a part of the diaphragm, substantially as set forth, for the purposes stated.

2. The grooving of the stop-bar, substantially as shown and described, for the purpose set forth.

3. The construction of the friction-plate, with a flange at each end thereof, in combination with a removable seat or support when said plate and support are constructed and combined, substantially as shown and described, for the purposes stated.

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Witnesses:

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