

(No Model.)

3 Sheets—Sheet 1.

E. WHITING.

CAR AXLE BOX.

No. 274,159.

Patented Mar. 20, 1883.

Fig. 1.

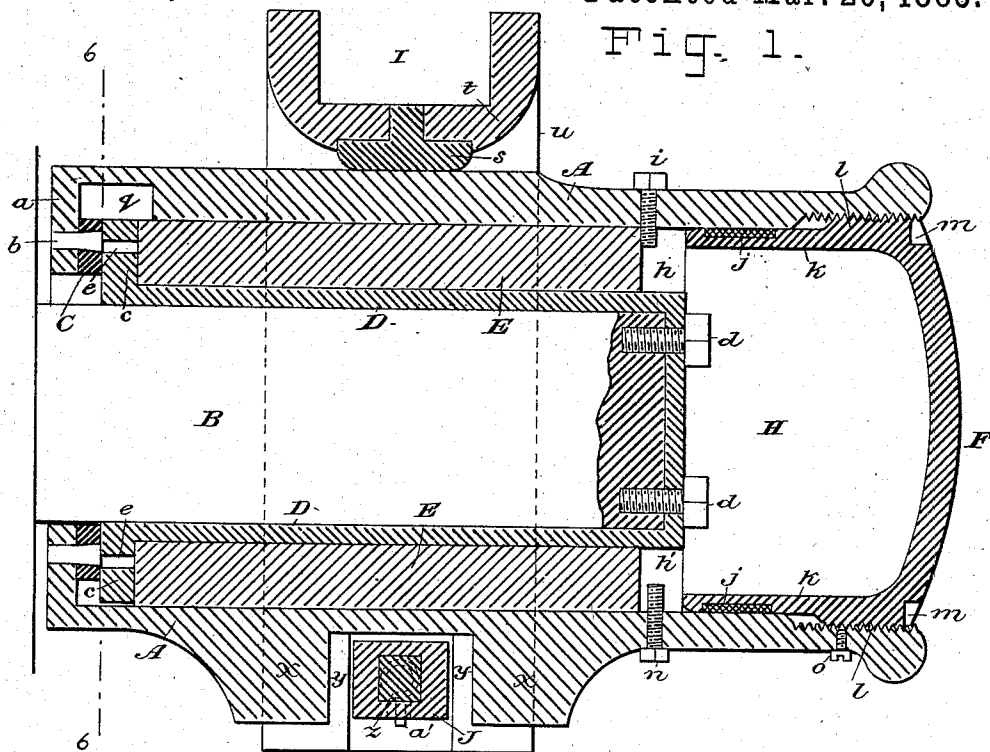
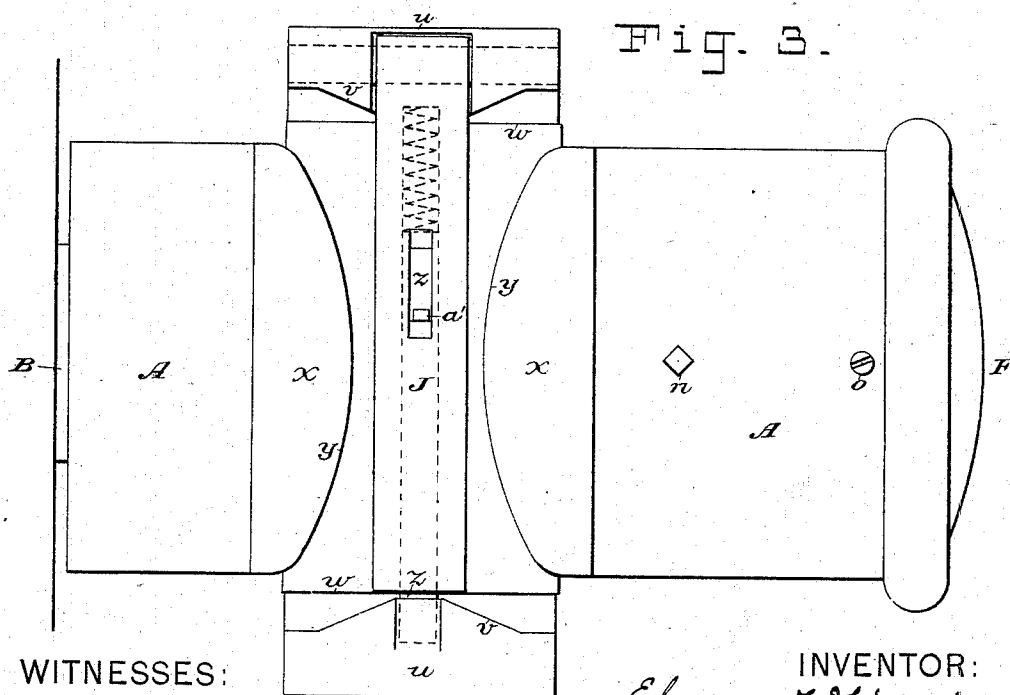


Fig. 3.



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Fig. 2.

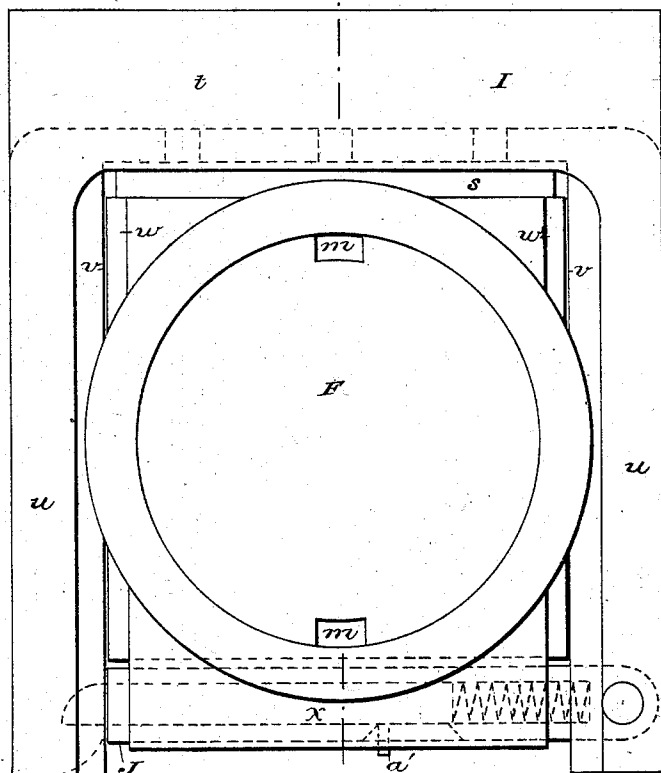
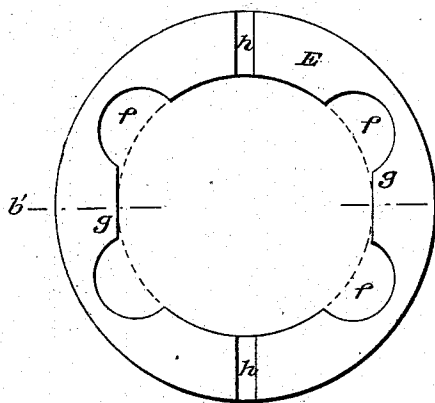
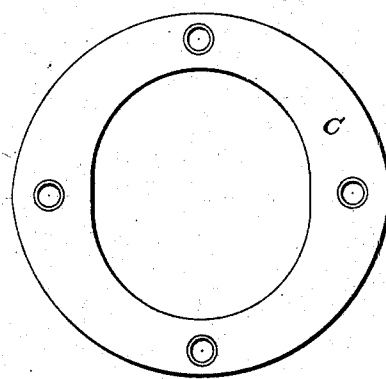


Fig. 4.

Fig. 5.



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(No Model.)

3 Sheets—Sheet 3.

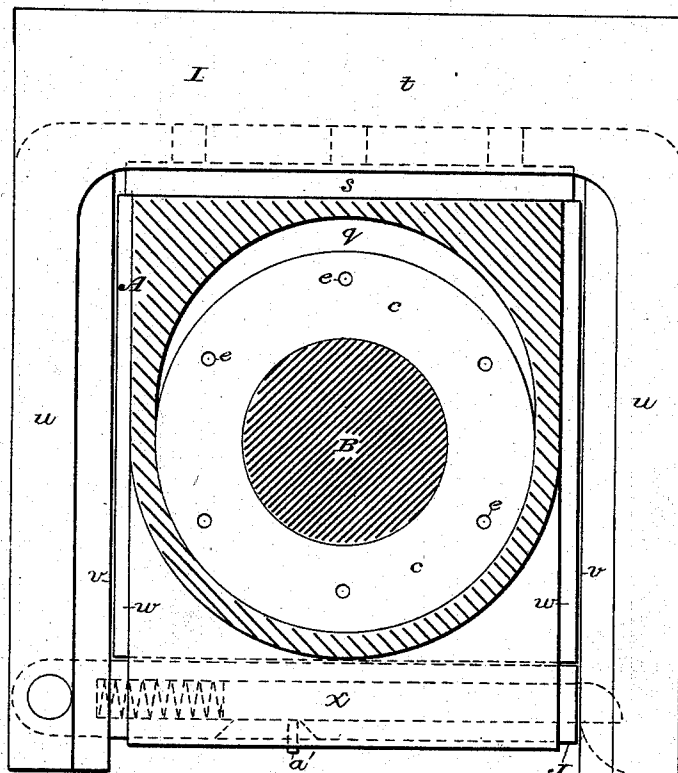
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Fig. 6.



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INVENTOR:

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UNITED STATES PATENT OFFICE.

ELEANOR WHITING, OF BROOKLYN, NEW YORK, ASSIGNOR OF ONE-HALF
TO JOSEPHINE MARY SMITH, OF SAME PLACE.

CAR-AXLE BOX.

SPECIFICATION forming part of Letters Patent No. 274,159, dated March 20, 1883.

Application filed January 29, 1883. (No model.)

To all whom it may concern:

Be it known that I, ELEANOR WHITING, a citizen of the United States, and a resident of Brooklyn, Kings county, New York, have invented certain new and useful Improvements in Car-Axle Boxes, of which the following is a specification.

My invention relates to that class of boxes for the axles of cars and similar vehicles, known as "self-oilers," the supply of oil for lubricating the journal being retained in the box, which is closed perfectly tight.

The novel characteristics of my invention relate in general to means whereby the button formed on the end of the axle-spindle and the usual dust-excluders are entirely avoided. The wearing-surface of the spindle or journal is also made readily removable, and the boxing or cap capable of being turned over when worn out on one side, so as to present a new wearing-surface. Other novel features exist in the peculiar construction of the shell or housing and other parts of the box, and in the saddle, all of which will be more particularly herein-after described.

In the drawings which serve to illustrate my invention, Figure 1 is a longitudinal vertical section of the box and its saddle in the plane of the line 1 1 in Fig. 2. Fig. 2 is a front elevation or end view of the box. Fig. 3 is a plan of the bottom of the box. Fig. 4 is an end view of the boxing. Fig. 5 is a view of the bearing washer or plate. Fig. 6 is a cross-section taken on line 6 6 in Fig. 1.

A represents the shell or housing of the box, which is cylindrical at its front or outer end, and provided with an inturned flange, *a*, at its inner end. Through the inner end of the shell the spindle or bearing end B of the car-axle enters.

On the inner face of flange *a* is secured, by screws or rivets *b b*, a bearing-plate, C, of brass or other suitable material. This plate is shown detached in Fig. 5, wherein it will be seen that the aperture in it is oblong, and that its body is wider at the sides than at the top and bottom. The purpose of this will be set forth hereinafter. The aperture at the inner end of the shell A, circumscribed by the flange *a*, has the same shape and is of the same size as the opening in this plate C.

On the spindle or bearing end of the axle is snugly fitted a thimble, D, preferably of hardened steel, and this thimble is truly turned or dressed. This thimble has a ring-like flange, *c*, and it is secured to the axle-spindle B by screws *d d*, which pass through its closed outer end into the end of the spindle, or by similar means. In the flange *c* are oil-holes *e*, as seen in Figs. 1 and 6.

E is the boxing, which is cylindrical in outline exteriorly, and arranged to slip into the shell A, which is cylindrical interiorly. The box is also nearly cylindrical interiorly, and is provided with oil-passages *f f*, (see Fig. 4,) in the nature of longitudinal flutes or grooves extending from end to end of the boxing. The thimble D fits into this boxing, as indicated by the dotted lines in Fig. 4, and the sides of the boxing are dressed out to form vertical planes at *g g*, which touch the sides of the thimble D tangentially, as shown. The boxing is provided at its front end with slots or recesses *h h'*, the upper one of which is engaged by a detent screw or pin, *i*, which passes through the shell A, and serves to keep the box from turning in the shell and with the axle.

F is a screw-cap or closing-cap for the end of the housing or shell. This cap is provided with a tubular part, *k*, which is exteriorly screw-threaded at *l*, and arranged to screw into the mouth of the housing to close the same. This tubular part *k* is also provided exteriorly with a packing-ring, *j*, which bears against the inner wall of the housing, as shown in Fig. 1, so as to form an oil-tight joint. When the cap F is screwed in, the inner end of the tubular part *k* impinges against the end of the boxing E, and by reaction on the housing causes the flange *c* on the thimble to be clamped snugly between the inner end of the boxing and the washer C. Thus all the parts are snugly drawn together, the wear on the end of the boxing being at any time taken up by screwing in the cap F. This cap may be provided with recesses or sockets *m m*, to receive the prongs of a forked wrench for screwing in the cap.

Having described the general construction of my box, I will now proceed to describe how it is put together.

The shell A, with the bearing washer or plate

C only attached to it, is slipped over the end of the axle-spindle B. The thimble D is now inserted through the open end of the shell and slipped over and secured to the spindle, as shown in Fig. 1. The boxing E is now inserted in the same way, and the screw or pin *i* inserted through the shell to assure the proper position of the boxing and prevent it from turning. The screw-cap F is now screwed in until it presses firmly upon the boxing, whereby the parts are drawn up snugly together, as shown in Fig. 1—that is to say, cap F presses on the boxing E—the boxing presses on the flange *c* of thimble D, and this flange presses on the bearing washer or plate C on the shell. It will readily be understood how, by screwing down the cap, any looseness may be taken up and all end play avoided.

The oil for lubrication is inserted at the hole stopped by screw *i*, or at a stoppered aperture provided for the purpose, as desired, and fills the well H, flowing back through the channels or flutes *f* in the boxing, and thus around the thimble or bearing-sleeve D. Oil flows through the holes *e* in the flange *c* on the thimble in amount sufficient to lubricate the face of the washer C. There will be a return flow or circulation of oil to some extent from the inner end of the box to the well H, and back again under the boxing E, as there will usually be a capillary space between said boxing and the shell.

As the boxing E wears away at the top, where it rests on the thimble or journal, the housing A will gradually settle down, and in order to permit it to do this without interfering with the flange *c* on the thimble D, I provide a recess, *g*, (see Figs. 1 and 6,) in the housing for the said flange to take into. After the boxing has been worn out on one side it may be turned over or inverted, when the screw *i* will take into the recess *h'*, instead of *h*, as shown in the drawings. When this side of the boxing becomes worn out in turn, the old boxing may be replaced by a new one. It is because of this movement or displacement of the shell or housing that we make the aperture in the ring or washer C and the inner end of the shell oblong, as shown, and it is also for this reason that the top and bottom sides of the washer C are made narrower than the face of the flange on the end of the thimble D.

In the drawings (see Fig. 1) the parts are represented as newly-fitted and unworn. If the washer C were made wider at the top than the flange *c*, it would project above said flange into the space *g*, and a shoulder might be formed on it by wear, and this shoulder would prevent the descent of the shell as the boxing wears away. I do not, however, limit myself to the particular external contour of the bearing-washer; nor do I limit myself to making it of any particular metal or attaching it in any particular way to the flange on the shell.

I will now describe the exterior surface of the shell or housing A and the peculiar construction of the saddle. At its middle, where

the saddle takes over it, the shell has a somewhat rectangular cross-section. The top *r* is a plane, and on this plane rests a bearing-plate, *s*, which is secured to the cross-bar *t* of the saddle I by means of tenons thereon, which pass up through or into said bar, as shown. The cheeks *u u* of the housing are beveled at *v v*, leaving a narrow plane surface, *z*, (see Fig. 3,) to impinge against plane-surfaced projections *w* on the housing, which stand out a little from the lateral faces of the housing where the saddle embraces it. The housing has a little lateral play between the cheeks of the saddle, and this play allows the box sufficient freedom for lateral oscillation.

To prevent the saddle I from lifting off the box, and also to prevent the latter from sliding too much in the saddle, I provide the shell of the box with two abutments or shoulders, *x x*, which extend across its under side or bottom, and have convex faces *y y*, as best shown in Fig. 3. Between the abutments *x* is arranged a latch-bar, J, hinged in one cheek *u* of the saddle, and provided with a spring latch or bolt, *z*, which is arranged to enter into and engage a latch-socket in the other cheek of the saddle. This latch is provided with a suitable spring to throw it out, as indicated in dotted lines, and a pin, *a'*, which plays in a slot in the latch-bar, for manipulating the latch. The space between the convex faces of the projections *x* on the shell is a little wider than the latch-bar, (see Figs. 1 and 3,) so as to allow a little longitudinal play of the axle-box, and the convex faces permit of some lateral oscillation or rocking in the saddle.

I dispense with any extraneous means for excluding dust and preventing the escape of oil from the box, as the only means of access to the box at its inner end is between the plate or washer C and the flange *c* on the thimble, and this joint will be kept perfectly tight and oiled, so that no dust can possibly get through; nor can oil escape thereat, partly owing to the tightness of the joint and partly to the centrifugal tendency of the rotating flange *c*, which will throw the oil outward.

The tubular part *k* of the cap F performs two functions. Its principal function is to serve as an intermediary between the cap proper and the boxing E, whereby the screwing down of the cap acts upon the boxing, and yet a space, H, is left for the oil. Its secondary function is to provide a packing, *j*, to prevent the oil from working out through the screw of the cap. Another form or arrangement of the packing might, however, be provided, or the tightness of the screw be relied on to prevent leakage. It is not absolutely necessary that the tubular part *k* be connected in any way to the cap F; but when constructed as described the unscrewing of the cap draws out the part *k*. If the part *k* be not connected with the cap, a packing between its outer end and the cap should be provided.

I make the boxing E double, as described, in order to get a more perfect bearing all around

on the flange *c* of the thimble, and for convenience also; but a bearing-cap or half-boxing might be used with good results. Such a half-boxing would be produced by simply splitting boxing E in a plane passing horizontally through its axis, as indicated by line *b' b'* in Fig. 4.

I employ a washer or plate, C, of brass, by preference, in order that its contact with the steel of the flange *c* may produce the minimum of friction, and also that it may be replaced readily when worn out; but it is obvious that this washer may be a part of the shell A, and not a separate attached part.

In order that the cap F may be screwed into the housing tightly, its outer periphery might be made polygonal, like a nut; but, to prevent it from being removed too readily by unauthorized persons, I prefer to provide it with the sockets *m m*, to receive the forks or prongs of a special wrench, as before stated.

A screw, *n*, may be arranged in the lower part of the housing, as shown in Figs. 1 and 3, to draw off the oil; but this is not necessary. I may also employ a set-screw, *o*, to hold the cap F in place, and this may be used in lieu of or together with the screw *l* for this purpose.

In lieu of employing a thimble with a flange at its end, the flange might be arranged at some intermediate point on the thimble; or, if it were desired to dispense with the thimble, the flange *c* might be in the nature of a collar secured directly to the axle-spindle.

Having thus described my invention, I claim—

1. An axle-box comprising a shell or housing provided with a cap to close its outer end and an abutting flange at its inner end, a thimble which fits over the axle and is secured thereto, and which is provided with a flange at its inner end arranged to abut against the flange on the housing, a boxing provided with internal grooves mounted on the axle-thimble and arranged to abut against the flange thereon at its inner end, means, substantially as described, for preventing the boxing from turning with the axle, and an intermediary part arranged between the outer end of the boxing and the cap proper, which closes the outer end of the housing, all arranged substantially as set forth.

2. The combination, with the housing and boxing of an axle-box, and the axle-spindle, of a thimble, D, arranged to fit snugly on the said spindle, but so as to be readily removable therefrom, said thimble being provided with a flange, *c*, adapted to be clamped between the boxing and the housing, and with means for securing said thimble removably to the spindle, substantially as set forth.

3. The combination, with the shell or hous-

ing constructed cylindrical interiorly, of the boxing E, arranged to be turned half-way around in the said housing when worn on one side, all constructed and arranged to operate substantially as set forth.

4. The combination, with the housing, of the screw-cap F with a tubular part, *k*, the boxing E, and the flanged thimble D, all constructed and arranged to operate substantially as set forth.

5. The combination, with the housing, the flanged thimble, and the boxing, of the cap F, provided with a packing, *j*, and said cap arranged to screw into the housing, and all arranged to operate substantially as set forth.

6. The combination, with the housing provided with a flange, *a*, and recess *q*, of the washer or plate C, constructed and shaped as shown, the boxing E, provided with flutes or grooves for the passage of the oil, and the thimble D, provided with a flange, *c*, having apertures *e*, all constructed and arranged to operate substantially as set forth.

7. A boxing, E, for an axle-box, constructed cylindrical exteriorly and nearly cylindrical interiorly, and provided with flutes or grooves *f* and plane vertical interior faces *g*, substantially as and for the purposes set forth.

8. The combination, with the housing having a plane surface on its top and convex-faced abutments *x x* on its bottom, of the saddle I, provided with a bearing-plate to rest upon the top of the housing, and a latch-bar, J, hinged in the saddle and arranged to engage the space between the abutments *x x* on the housing, substantially as and for the purposes set forth.

9. The combination, with the saddle I, provided with the latch-bar, and the bearing-plate *s*, of the housing provided with a plane top surface, with abutments *x x* on its bottom and with projecting faces *w* on its sides, substantially as and for the purposes set forth.

10. As a means for securing an axle-box in its saddle, whereby the saddle is prevented from lifting off the box and the latter is limited in its longitudinal movement in the saddle, a latch-bar hinged in one pendent cheek of the saddle, and provided with a sliding bolt or latch arranged to engage a latch-socket in the other cheek of the saddle, and said latch-bar arranged to engage a cross-recess in the bottom of the housing, substantially as herein set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

ELEANOR WHITING.

Witnesses:

HENRY CONNETT,
ARTHUR C. FRASER.