

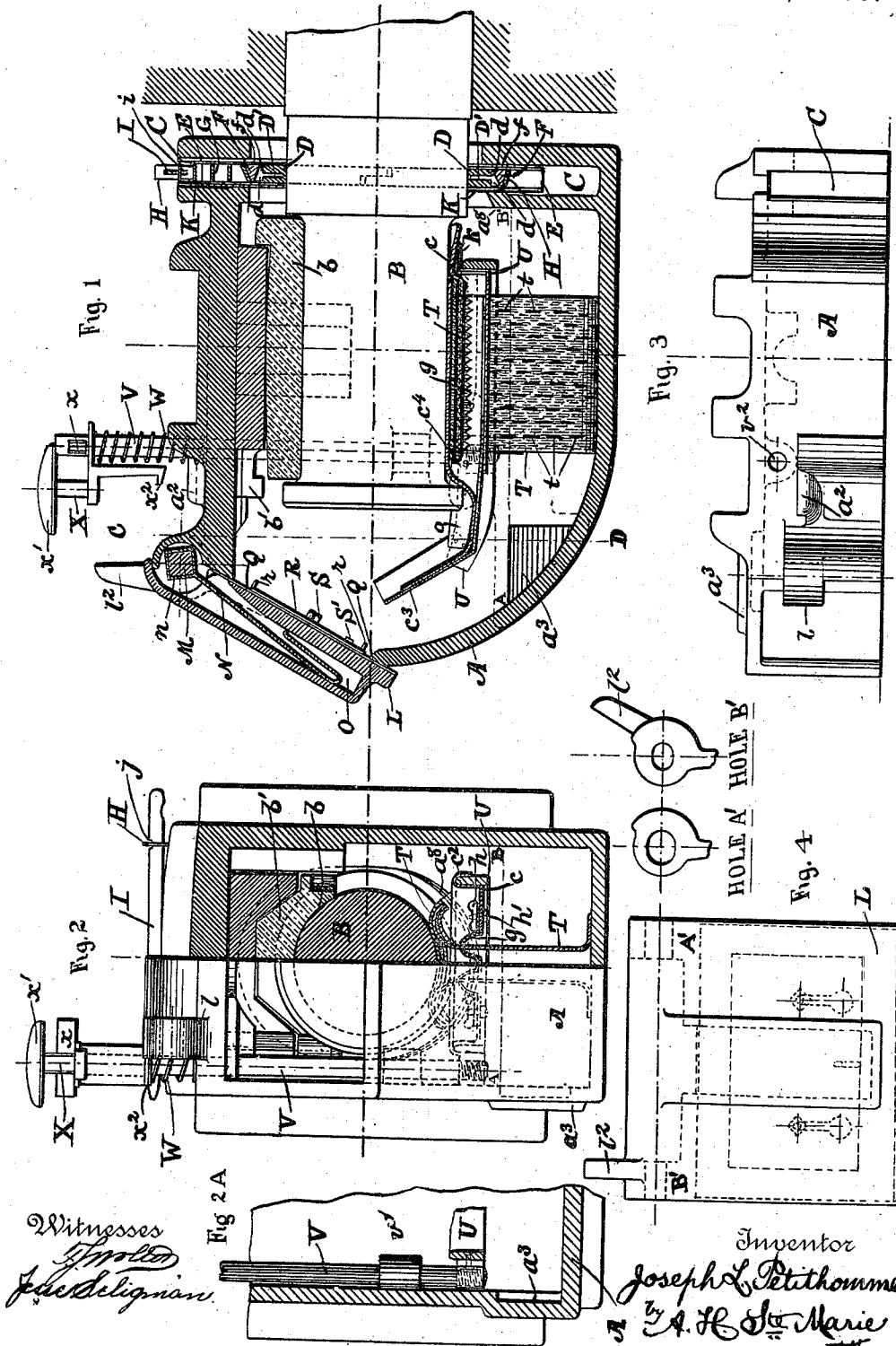
(No Model.)

J. L. PETITHOMME.  
CAR AXLE BOX.

4 Sheets—Sheet 1.

No. 573,417.

Patented Dec. 15, 1896.



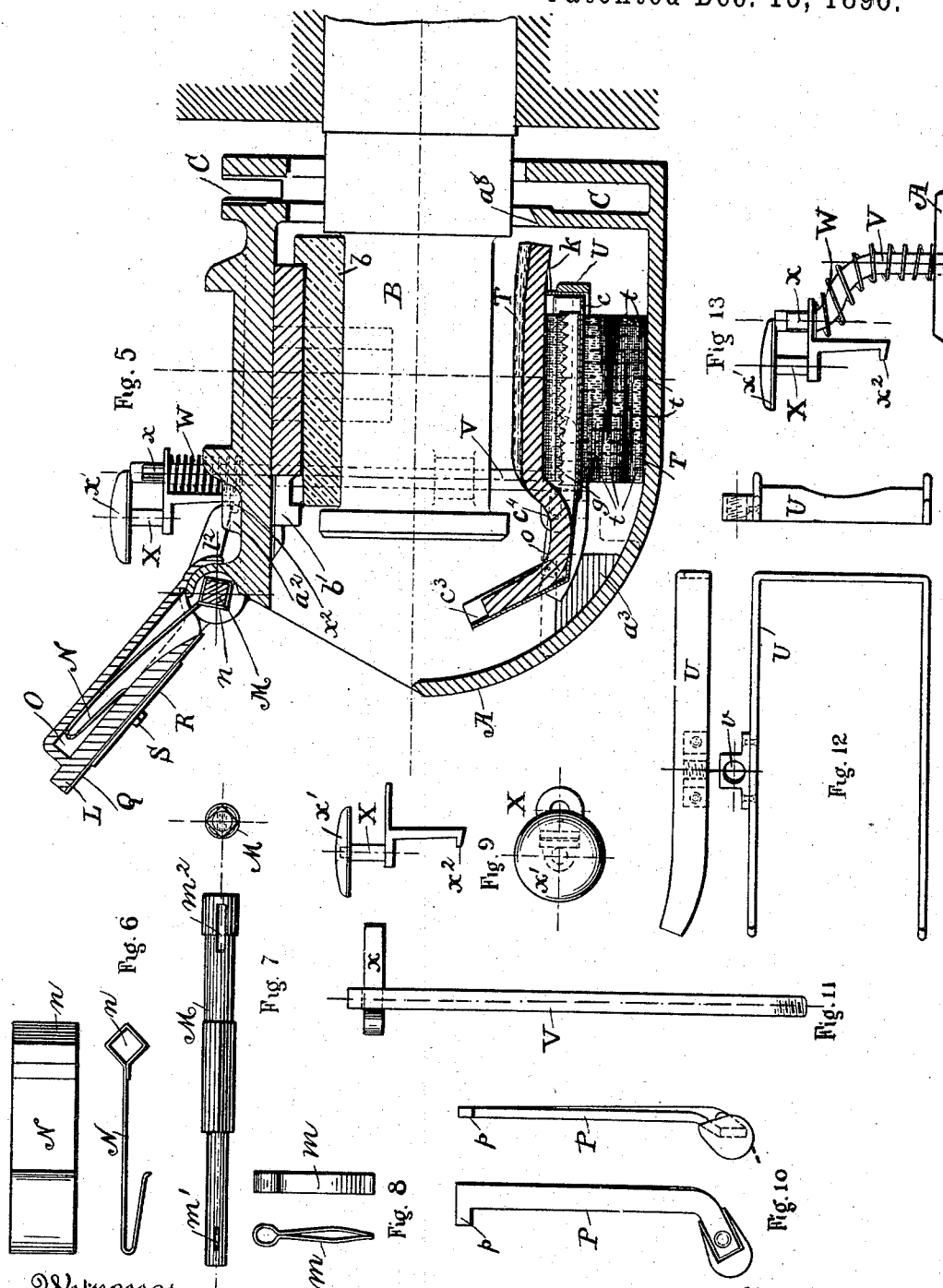
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4 Sheets—Sheet 2.

J. L. PETITHOMME.  
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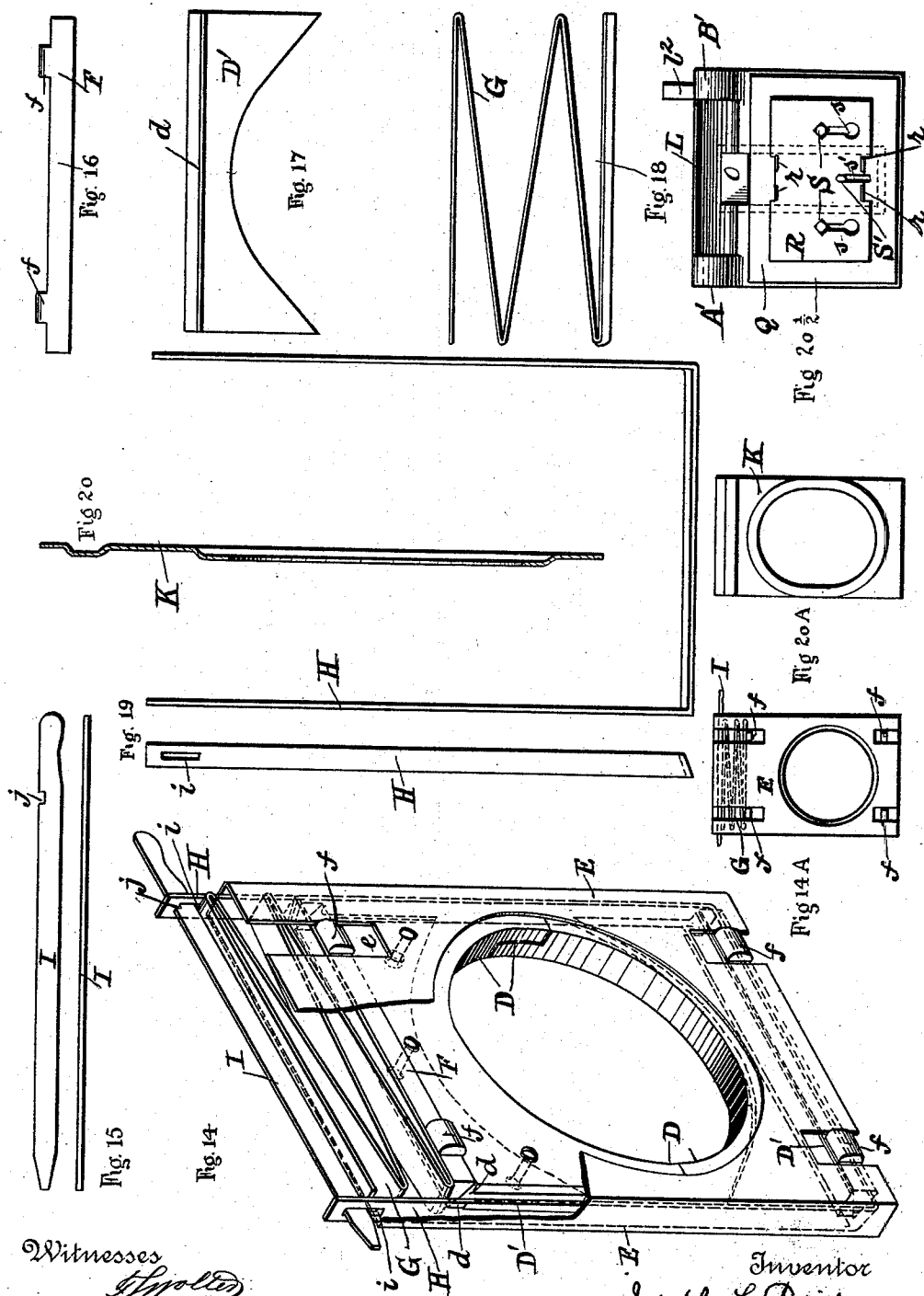
(No Model.)

J. L. PETITHOMME.  
CAR AXLE BOX.

4 Sheets—Sheet 3.

No. 573,417.

Patented Dec. 15, 1896.



Witnesses  
*Joseph L. Petithomme*  
*James Deligman.*

Inventor  
*Joseph L. Petithomme*  
By his Attorney  
*A. H. Ste Marie.*

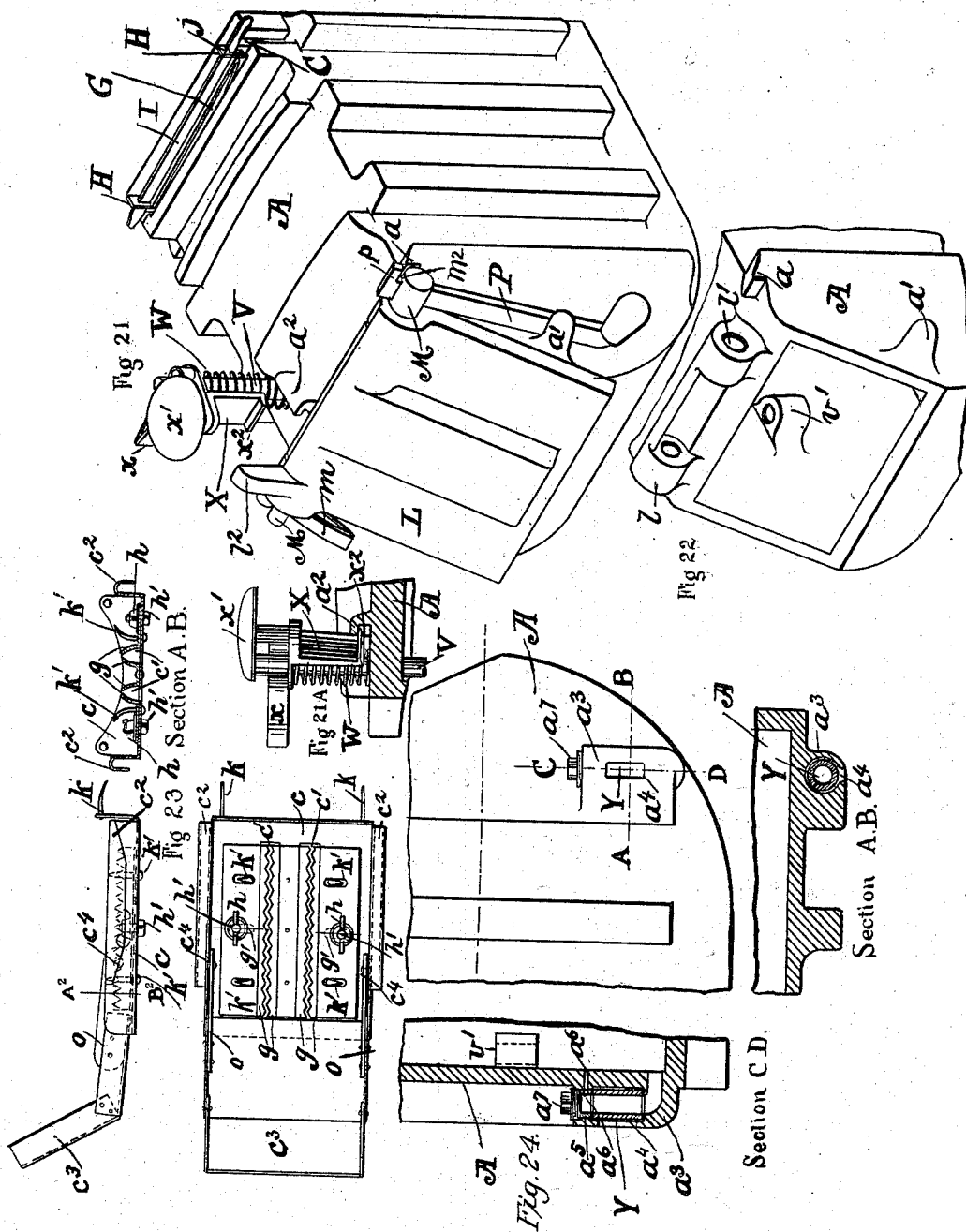
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J. L. PETITHOMME.  
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By his Attorney  
*A. H. Ste Marie.*

# UNITED STATES PATENT OFFICE.

JOSEPH L. PETITHOMME, OF OAKLAND, CALIFORNIA.

## CAR-AXLE BOX.

SPECIFICATION forming part of Letters Patent No. 573,417, dated December 15, 1896.

Application filed August 1, 1894. Serial No. 519,213. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH L. PETITHOMME, a citizen of the United States, residing at Oakland, in the county of Alameda and State of California, have invented certain new and useful Improvements in Car-Axle Boxes, of which the following is a specification.

This invention relates to the various parts of a car-axle box, comprising the dust-guard at the rear, the cover in front, a lubricating-brush of peculiar texture for the axle, an apparatus for moving the brush to and from the axle from the outside of the box, means of ascertaining when and how to oil, and generally improvements that tend to render the box oil-tight and dust-proof and facilitate its working.

Referring to the accompanying drawings, in four sheets, for a detailed description, Figure 1 is a longitudinal sectional elevation giving a general view of the several improvements devised by me. Fig. 2 is a front elevation of the same, one-half being in section and the cover of the box removed. Fig. 2<sup>A</sup> is a broken sectional view of the left side of the box, taken on the line C D, Fig. 1. Fig. 3 is a top view of the left half of the box, the lid removed. Fig. 4 is a top view of the lid or cover with details on the right. Fig. 5 is a view similar to Fig. 1, showing how the opening of the lid is utilized to remove the lubricating device from the car-axle. Fig. 6 shows a plan and side view of a spring employed for keeping the cover closed or open, as the case may be. Fig. 7 gives side and end views of a bolt used for hinging the cover to the box and with which said spring is connected. Fig. 8 represents a key or forelock for said bolt in face and edge views. Fig. 9 shows a plan and side view of a depressor that can be used instead of the cover for lowering the lubricating apparatus from the outside of the box. Fig. 10 gives edge and rear views of a hand-lever connected with the forelock-bolt. Fig. 11 is an elevation of a vertical rod to which the depressor is applied. Fig. 12 represents a plan, side elevation, and front view of a sled or frame forming part of the lubricating apparatus. Fig. 13 is a side view showing a slightly-modified form of the vertical rod represented at Fig. 11. Fig. 14 is a partly-broken rear perspective view of

the dust-guard. Fig. 14<sup>A</sup> is a rear view of the dust-guard on a reduced scale, showing a modification in the construction of the same. Fig. 15 shows side and edge views of a locking-bar used in the dust-guard. Fig. 16 is a side view of a wedge-shaped bar also used in the dust-guard. Fig. 17 is a face view of a metal plate forming part of a washer acted upon by said bar. Fig. 18 is a side view of a Z-spring upon which said locking-bar is brought to bear. Fig. 19 gives front and side views of a yoke adapted to hold the inner parts of the dust-guard together. Fig. 20 is a sectional elevation of an embossed packing applied to the face of the dust-guard. Fig. 20<sup>A</sup> is a face view, on a reduced scale, of the packing shown at Fig. 20. Fig. 20<sup>1</sup> is an under plan of the cover represented at Fig. 4, showing an improved mode of applying packing to the same. Fig. 21 is an isometrical view of the entire box with the cover closed. Fig. 21<sup>A</sup> is a detailed view illustrating the working of the depressor and vertical rod shown, respectively, at Figs. 9 and 11. Fig. 22 is a broken isometrical view of the box, the lid being removed. Fig. 23 represents in side elevation, section, and plan a tray used for holding the lubricating-brush. Fig. 24 illustrates one form of indicator connected with the box, the same being shown in elevation, vertical section, and horizontal section.

The letter A represents the body of the box, which is mounted in the usual manner upon the end of the axle B and is secured thereto by means of the bearing b and key b'. At the rear end of the box, where the axle enters, is formed an ordinary dust-guard recess or chamber C, wherein my improved dust-guard is fitted. This dust-guard consists of a washer composed of lap-jointed pieces of packing material, such as leather, cork, asbestos, vulcanized fiber, or other suitable substance D, stiffened by metal plates D' and closely embracing the collar of the axle. The metal plates are inserted into slits made in the ends of the packing-pieces and are preferably inclosed with them in a casing E. By preference, also, the upper part of the washer is riveted to the casing, as shown, and the lower part is left loose. Both the plates D' spread out at their extremities into lateral flanges d, that rest upon and cover up the ends of the

packing-pieces, and they are beveled outwardly. Upon these beveled outer surfaces of the plates are seated wedge-shaped bars F, which extend across the casing the same as the washer and are set with their edges pointed toward the interior of the box. These bars are provided at the back with projections or buttons *f*, passing through openings *e* in the casing E and bearing on the outer wall of the dust-guard chamber. Upon the upper bar is placed a spring G, composed of flat blades arranged in zigzag form, the lowermost of which is twisted from the others to set it on an incline and cause it to bear upon the inclined upper side of the bar.

The washer, bars, and spring above described are surrounded by a yoke H, the lower side of which is also turned on an incline to correspond with the under side of the lower bar and whose vertical sides run up along the inner walls of the casing. The parts contained within the yoke are clamped together by means of a locking-bar I, passed through slots *i* in the sides of the yoke and provided with a notch *j* at the upper edge, where the spring G throws it up into engagement with the upper border of one of said slots. The bar I is pointed at one end and provided with a handle at the other, as shown at Figs. 14 and 15. Over the face of the casing is applied a sheet of leather or other packing K, which is embossed annularly around the opening through which the axle passes, and transversely at the top, where it runs across the dust-guard chamber. The joint with the axle, it will be observed, is made by the packing-pieces aided by the metal plates, which lend them the desired stiffness and gradually close in around the axle as the packing-pieces wear away, combining with them in making a smooth, firm, and lasting joint.

The effect of the wedge-shaped bars, acted upon as they are by the spring and yoke, is to press the beveled metal plates and packing-pieces onto the axle and at the same time carry the whole dust-guard forward, so that a tight joint will be made also with the inner wall of the dust-guard chamber, the embossed packing bearing around the opening for the axle and across the entrance to the chamber in such a way as to make the box really oil-tight and dust-proof. The particular advantage of the embossed packing consists in that the bulging parts of the leather or other material of which it may be made, being more or less elastic in their nature, can be flattened so as to readily enter the dust-guard chamber and will afterward spring back in such a way as to fill the cavities in the inner wall of said chamber that result from the irregularities of the casting. The buttons on the back of the wedges further increase the effect by bearing against the outer wall of the dust-guard chamber and keeping the wedges well onto their seats. The use of the yoke enables one to regulate the pressure of the washer with only one spring, the action of which is felt by both

halves at the same time. The locking-bar regulates the tension of the spring within the yoke. The yoke may, however, be discarded and the casing made to fill its office, if cheapness of construction be desired, in which case the locking-bar can be passed through the sides of the casing instead of the yoke, as indicated at Fig. 14<sup>A</sup>. The wedges could also be dispensed with by turning round the spring and yoke or casing so they will bear directly on the washer, although this would not be considered a very efficient arrangement.

L is the lid or cover of the box. It is hinged to the upper part of the box by means of a bolt M passing through holes A' B' in the cover and lugs *l* on the box. The bolt M is of irregular form, being round at the ends and quadrangular or polygonal at the middle. One end of it is also smaller than the other, and the holes in the lugs and cover are made of corresponding sizes. The central angular portion of the bolt is used to hold a flat spring N, which is bent to form a quadrangular loop *n*, so that the bolt can go through it and will keep the spring straight within a suitable recess O, formed in the cover. A hand-lever P, which is used in connection with the bolt and spring for closing and opening the cover and has a lateral projection *p*, is attached to the bolt before the latter is inserted. This lever is passed through a slot *m*<sup>2</sup> of suitable width made in the big end of the bolt and is secured to it by the projection *p* lapping over the end, as shown at Fig. 21, when the bolt has been pushed through the cover, the lugs, and the spring-loop. The bolt is retained in position by a key or fore lock *m*, made of springy metal and passed through a slot *m'* at the small end of the bolt.

The lever P can move up and down and also sidewise within the slot *m*<sup>2</sup>, so that its upper end, which is provided with the projection *p*, may be hooked to a catch *a* on top of the box when the lid is opened, and its lower end may be passed behind another catch *a'* at the bottom when the lid is closed. If the lever be hooked to the upper catch *a*, it will, in connection with the bolt and spring, keep the cover open. If engaged by the lower catch *a'*, it will keep the cover closed, with the help of the same agencies. The joint of the cover with the box is rendered tight by means of a packing Q, made in sheet form and held in place by a metal plate R and bolts S. The packing and plate have slots *s*, enlarged at one end, that pass over the heads and around the shanks of the bolts, being kept in position by the latter. A stay or teat S', preferably cast with the lid and passing through straight slots *s'*, may be used in addition, if desired. The edges of the plate are cut and turned up at *r*, so as to afford a hold for the fingers when withdrawing the plate, in order to change the packing.

It will be noted that the above parts have been constructed with a view to expeditious-

ness in putting them together or taking them apart. For instance, three moves of the lever only are required to open the lid and fix it so it will stay open and the same number to close it and have it remain closed. The packing can be renovated in a very few moments by opening the cover and slipping back the plate, that covers it, so the slots therein can clear the heads of the bolts. The plate can then be removed easily and new packing substituted for the old one. A few moments more will allow one to change the spring by withdrawing the key and lever and pulling out the bolt. It has been demonstrated by actual test that either of these operations can be gone through in about twelve seconds, which is considered quick time even for a railroad appliance.

The oiling of the axle is effected through the agency of a lubricating-brush T, composed of any suitable material having a capillary action and arranged, preferably, in the form of wicks, which may be of any convenient thickness, as indicated in Figs. 1 and 5. These wicks dip into a body of oil below the line A B and then fold under the axle, as shown. Metallic threads  $t$  are run through or woven into them, in order to impart to them sufficient toughness and enable them to better resist wear. The brush is placed upon a tray  $c$ , which is somewhat wider than the axle and has longitudinal slots  $c'$ , through which the wicks dipping in the oil can pass. The latter are clamped by serrated plates  $g$ , the outer ones of which are slotted at  $g'$  and movable transversely across the tray under thumb-nuts  $h$  on bolts  $h'$ . The wicks that come in contact with the axle are laid flat in the tray, so as to increase the lubricating-surface as much as possible.

Small hooks or prongs  $k$  are provided at the rear end of the tray in order to keep down the brush when pushing it under the axle. Similar prongs  $k'$  are provided in the body of the tray, also to retain the wicks in position within it. These may be substituted altogether for the toothed plates, if desired. The prongs, as well as the plates, not only hold up the wicks to the axle, but gradually work through them, and, coming into contact with the axle, prevent the brush from becoming worn out too rapidly. The tray and brush thereon are carried by a light frame or sled U, open in front and supported from the lower end of a rod V. The tray has wings  $c^2$ , adapted to fit over and slide along the members of this sled, and the latter has an eye  $v$  at one side, to which the rod V is secured by a screw-thread connection. The rod runs vertically up one side of the box, passing through a guide  $v'$ , and coming out at the top through a hole  $v^2$ . It is kept normally raised by means of a spiral spring W, coiled around it and set between the upper surface of the box and the under side of a depressor X, which is placed upon the rod and kept under a key  $x$ . The rod V can be depressed to

lower down the sled, and consequently the tray and lubricating-brush, either by hand or through the medium of the box-lid, as preferred. If depressed by hand, it is done by bearing down on the pommel  $x'$ , provided for this purpose at the top of the depressor. To depress it by means of the box-lid simply requires the addition to the latter of an upwardly-projecting finger  $l^2$ , which, upon the cover being opened, is brought down upon a hook or catch  $x^2$  at the bottom of the depressor and forces it down. The lubricating apparatus will then be removed from the axle and kept down as long as the lid remains open, so that the brush can be inspected or overhauled with convenience, and, what is more important still, the oil poured into the tray can run clear back to the end of the brush under the axle. The same thing can be accomplished also when working the rod by hand and without the finger on the lid if the box be provided with a catch  $a^2$ , with which the hook  $x^2$  can be engaged by turning it round, as indicated at Fig. 21<sup>A</sup>.

In cases where a straight rod is not available, for instance, where the space between the top of the box and the upper part of the pedestal in which it is set or the truck-frame will not permit, I make use of a curved rod, as shown at Fig. 13, which answers the same purpose as that shown in the other figures. The oil poured into the box for purposes of lubrication is first led into the tray by means of a feed-channel  $c^3$ , in order that the brush may be well saturated with it all at once without waiting for the capillary action to draw it up to the axle from the bottom of the box. This channel is located under the cover in front, where the oil is introduced. It is composed, preferably, of sheet-iron bent in two at an obtuse angle, as shown, and is arranged to rest at its base on the fore part of the tray. Links  $o$ , rigidly secured to it at one end and pivoted to the tray at the other, as at  $c^4$ , hold it up in place. These links, it will be seen, support the feed-channel and at the same time allow it to be thrown up or bent over, when desired, so as to permit the tray to be withdrawn from the box without disarranging the axle and brasses thereover.

The level to which the oil is allowed to rise within the box is determined by the height of the lower half of the inner wall of the dust-guard chamber, that is to say, that part of it lying below the axle. Care should be taken always, when oiling the box, not to allow the oil to rise above that lowermost wall, as it would then overflow into the dust-guard chamber and could eventually find its way out of the box at the rear end; but for an oiler to guess with any degree of accuracy the height of the under wall, and consequently the proper quantity of oil to pour in, that is to say, not too much nor too little, is a very difficult thing, since the front opening covered by the lid through which the oil is introduced is so much higher than the opening for

the axle at the back that the latter cannot be seen, owing to the axle being in the way, and therefore one cannot see how high or how low the under wall reaches. Besides, a person employed in that capacity is ordinarily too busy to stop to make calculations in order to ascertain what quantity of oil would answer the purpose best, and unless ready means are afforded to determine in what volume it should be fed no care will be exercised and the box will be filled with oil in a haphazard way regardless of consequences. As a remedy for this I have devised the plan of indicating at the front part of the box the height of the lowermost wall at the back, at least approximately, thus showing at a glance what the highermost level of the oil should be, and thereby cutting off all excuse for not performing the work of oiling in a judicious manner. I therefore provide the fore part of the box with a side pocket  $a^3$ , the upper margin of which runs in a line striking a point about one-half inch below the opening at the rear. This does away with all guesswork. When oiling the box, the person in charge has only to watch the upper border of the pocket and see that the oil comes up to but does not rise above it or the line A B, and he is then sure that enough oil has been poured into the box and the latter will not overflow. The object in maintaining the oil-level below the line A B at some distance below the axle is to provide against the contingency of the oil reaching the axle-opening when the box is tilted to one side in going along a curve or otherwise traveling on a track that is not level. Another form of indicator is illustrated in Fig. 24, where the pocket  $a^3$  is shaped so as to inclose a glass tube Y, into which the oil rises, and provided with an opening  $a^4$  at the side through which this glass tube can be seen. It is obvious that with this form of indicating device one can judge from the outside of the box whether or not there is enough oil in it, and therefore when to begin or stop oiling. Over the glass tube is set a ring  $a^5$ , and through this ring and the inner wall of the pocket are bored air-holes  $a^6$ , which facilitate the flow of the oil in and out of the tube. The tube and ring are inserted through an opening at the top of the pocket, which is covered by a screw plug or stopper  $a^7$ .

The opening in the inner wall of the dust-guard chamber below the axle is beveled downwardly toward the interior of the box, as indicated at  $a^8$ , Figs. 1 and 5. This is done in order to lead the drippings from the axle into the box and by keeping the opening free from the same to prevent their running into the dust-guard chamber.

I claim—

1. A car-axle box provided with a dust-guard having an embossed packing, substantially as shown and described.
2. In a car-axle box, a washer composed of jointed packing and metal plate in combination with a spring bearing thereon and a yoke

clamped around the same, substantially as set forth.

3. In a car-axle box, a beveled divided washer in combination with a beveled spring and a partly-beveled yoke encircling the spring and washer, the beveled parts of said spring and yoke being adapted to bear on the beveled ends of said washer, substantially as set forth.

4. In a car-axle box, the combination of a lap-jointed washer having beveled ends, wedge-shaped bars bearing on said beveled ends, a spring having an inclined blade acting on one of said bars, and a yoke having a beveled end bearing on the other bar, said yoke bearing also at the opposite end upon said spring, substantially as described.

5. In a car-axle box, the combination of a dust-guard chamber, a lap-jointed washer therein having beveled ends, wedges on said beveled ends provided with projections bearing on one side of the dust-guard chamber, a beveled spring acting upon one of said wedges, a yoke beveled at one end acting upon the other wedge and encircling the said washer, spring, and wedges, and a casing for the same, substantially as described.

6. In a car-axle box, the combination of a lap-jointed washer, a yoke having slotted ends encircling said washer, and a spring-pressed pointed locking-bar passed through the slotted ends of said yoke, said bar having a handle and a notch whereby it is inserted and secured in the yoke.

7. In a car-axle box, the combination of a cover, an angular hinge-bolt therefor, a spring loosely fitted over said bolt and extending along said cover, a lever turning the bolt, and a catch whereby the cover can be kept open by engaging the upper end of said lever, substantially as described.

8. In a car-axle box, the combination of a cover, an angular hinge-bolt for the same, a spring bent around the angular portion of said bolt and extending along the cover, a lever secured to the bolt, and a catch whereby the cover can be kept closed by engaging the lower end of said lever, substantially as described.

9. In a car-axle box, the combination of a cover, an angular hinge-bolt therefor, a spring extending across the cover and having an angular loop fitted over said bolt, a lever adapted to turn the bolt, and catches whereby the cover can be either kept open or closed by engaging either one or the other end of said lever, substantially as described.

10. In a car-axle box, the combination of a cover having a downwardly-projecting bolt with a detachable packing having a slot with an enlargement adapted to pass over the head and straddle the shank of said bolt, substantially as described.

11. In a car-axle box, the combination of a cover, a bolt projecting from the under side thereof, a detachable packing having a slot with an enlargement adapted to pass over the

head and straddle the shank of said bolt, and a similarly-slotted removable plate bearing against said packing, substantially as described.

12. In a car-axle box, the combination of the axle, a lubricating-brush, a brush-holding rod located at one side and passing through the top of the box, a catch on the box, and a spring-controlled depressor connected with the upper part of said rod and having a hook adapted to engage said catch, substantially as described.

13. In a car-axle box, the combination of the axle, a lubricating-brush adapted to bear on the axle, a tray for said brush, a supporting sled or frame for said tray, a rod secured to said sled or frame, a spring normally holding up said rod, and a depressor for said spring.

14. In a car-axle box, the combination of the axle, a lubricating-brush composed of capillary material, and a tray for said brush having upwardly-projecting prongs holding up the capillary material and bearing with it on the axle, substantially as set forth.

15. In a car-axle box, the combination of the axle, a lubricating-brush composed of wicks, a slotted tray through which said wicks ascend to the axle, and toothed plates also pointed toward the axle and adapted to hold said wicks within said tray and likewise to gradually come into contact with the axle, substantially as described.

16. In a car-axle box, the combination of the axle, a lubricating-brush, a tray adapted to hold said brush to the axle, and an outwardly-projecting feed-channel hinged to said tray, substantially as described.

17. In a car-axle box, the combination of the axle, a lubricating-brush, a holder for said brush, and hooks or prongs projecting rearwardly from said holder whereby the brush is kept down in position when applied to the axle, substantially as described.

18. In a car-axle box, the combination of the axle, a lubricating-brush held up to the axle, a spring-controlled rod adapted to move said brush to and from the axle, a rotary depressor seated upon said rod, and a catch on the box adapted to be engaged by a hook on said depressor, substantially as described.

19. In a car-axle box, the combination of the axle, a lubricating-brush held up to the axle, a spring-controlled rod adapted to move said brush to and from the axle, a depressor for said rod, and a cover having a finger adapted to bear on said depressor.

20. The combination of the open-ended sled and the winged tray sliding and fitting over the same with the brush carried by the tray and the axle.

21. The combination with the box, of the cover, the hinge-bolt and spring working the cover, and the lever freely moving through the bolt, substantially as described.

22. In a car-axle box, the combination of a lateral pocket having an outer opening as  $\alpha^4$ , a glass tube inclosed in said pocket and re-

ceiving oil from the box therein, a ring seated upon said tube provided with an air-hole registering with a similar hole in the inner side of the pocket, and a plug covering said ring, substantially as shown and described.

23. The combination of the dust-guard chamber, the axle passing through the same, and the dust-guard covered by packing embossed annularly around the axle and transversely across the entrance to the chamber, substantially as described.

24. A car-axle box having an outwardly-projecting side pocket, as  $\alpha^3$ , under the cover in front, the upper line of which indicates approximately the height of the under wall at the back, substantially as and for the purpose set forth.

25. In a dust-guard for a car-axle box, the combination of a casing, a lap-jointed washer therein, a yoke surrounding said washer within said casing and having slotted ends projecting above the same, a spring bearing upon the washer, and a notched bar adapted to confine said washer and spring within said yoke, the said bar being passed through the slotted ends of the yoke and having an outwardly-projecting handle, substantially as described.

26. In a car-axle box, the combination of the axle, a slotted tray, a lubricating-brush, and plates having upwardly-pointed teeth adapted to hold up said brush through said tray and bear with the brush on the axle, the said tray being further provided with rearwardly-projecting prongs holding the brush in the tray in proper position with regard to the axle, substantially as described.

27. In a car-axle box, the combination of the axle, a lubricating-brush, a tray adapted to hold said brush to the axle, a feed-channel, and links flexibly connecting said channel with said tray, substantially as described.

28. In a car-axle box, the combination of the axle, a lubricating-brush, means for holding said brush and moving it to and from the axle, a depressor, and a cover adapted to work said depressor, substantially as described.

29. In a car-axle box, the combination of the axle, a lubricating-brush, means for holding said brush and moving it to and from the axle, a spring-pressed depressor, a cover adapted to work said depressor, a lever adapted to open and close said cover, and catches for said lever whereby the cover may be kept in a given position, substantially as described.

30. In a car-axle box, the combination of a cover, a hinge-bolt holding and adapted to move with said cover, the said bolt having a slotted end, a lever freely passing and moving through said slotted end and having a projection arranged to lap over the same, and catches whereby the lever is secured in position after opening or closing the cover, substantially as described.

31. A car-axle box provided with a side pocket at a point below and near the cover in its front part, said pocket having an un-

covered lateral aperture and a top opening covered by a suitable stopper, and a glass tube running from the mouth of the pocket to the stopped opening and showing through the lateral aperture, substantially as shown and described.

32. In a car-axle box, the combination of the axle, a lubricating-brush, a tray adapted to hold said brush under the axle, a feed-channel, and connecting-links adapted to rest

upon the forward part of said tray, said links being fastened to the feed-channel at one end and pivotally secured at the other end to the tray, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JOSEPH L. PETITHOMME. [L. S.]

Witnesses:

HENRY P. TRICOU,

A. H. STE. MARIE.