L. K. SMITH.

JOURNAL BOX.

APPLICATION FILED FEB. 2, 1912.

1,046,032.

Patented Dec. 3, 1912.

3 SHEETS—SHEET 1.

Fig. 2.

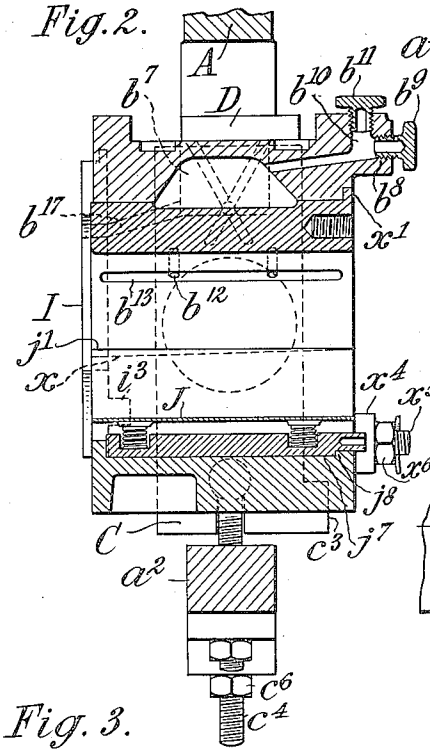



Fig. 1.

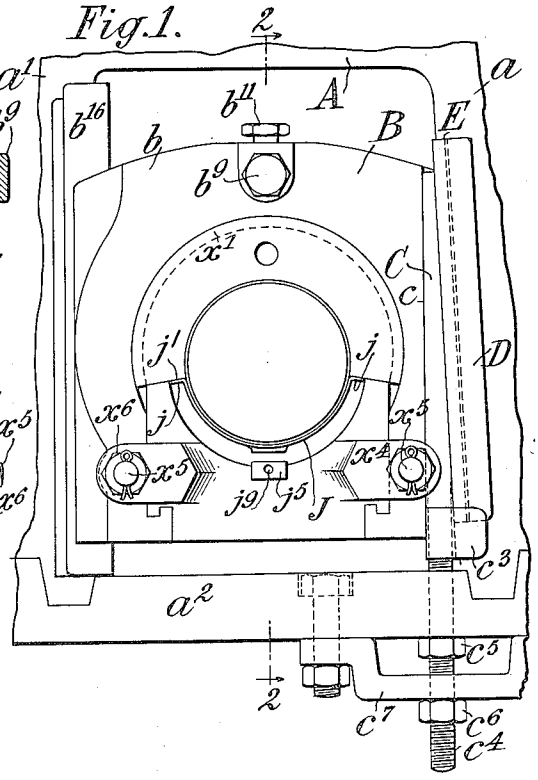



Fig. 3.

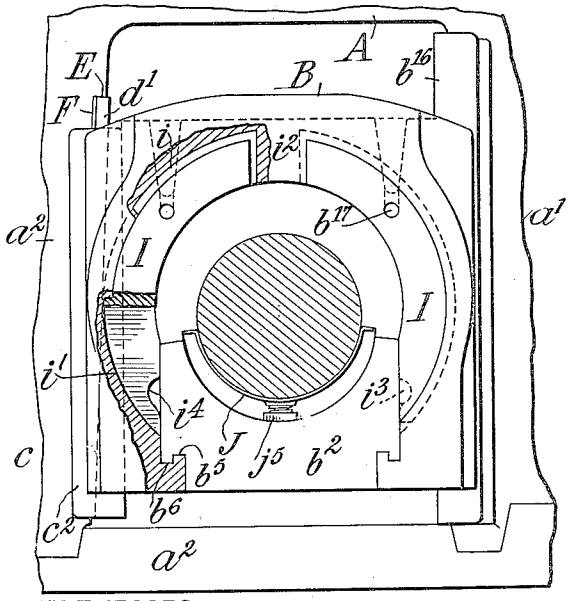



Fig. 6.

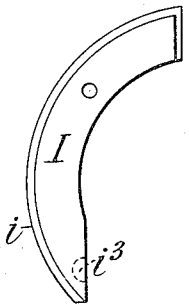



Fig. 7.

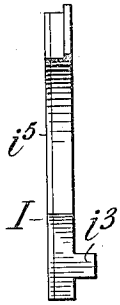
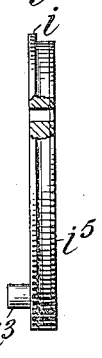



Fig. 8.




WITNESSES:

René Pruine

Fred White

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3 SHEETS—SHEET 2.

*Fig. 4.*

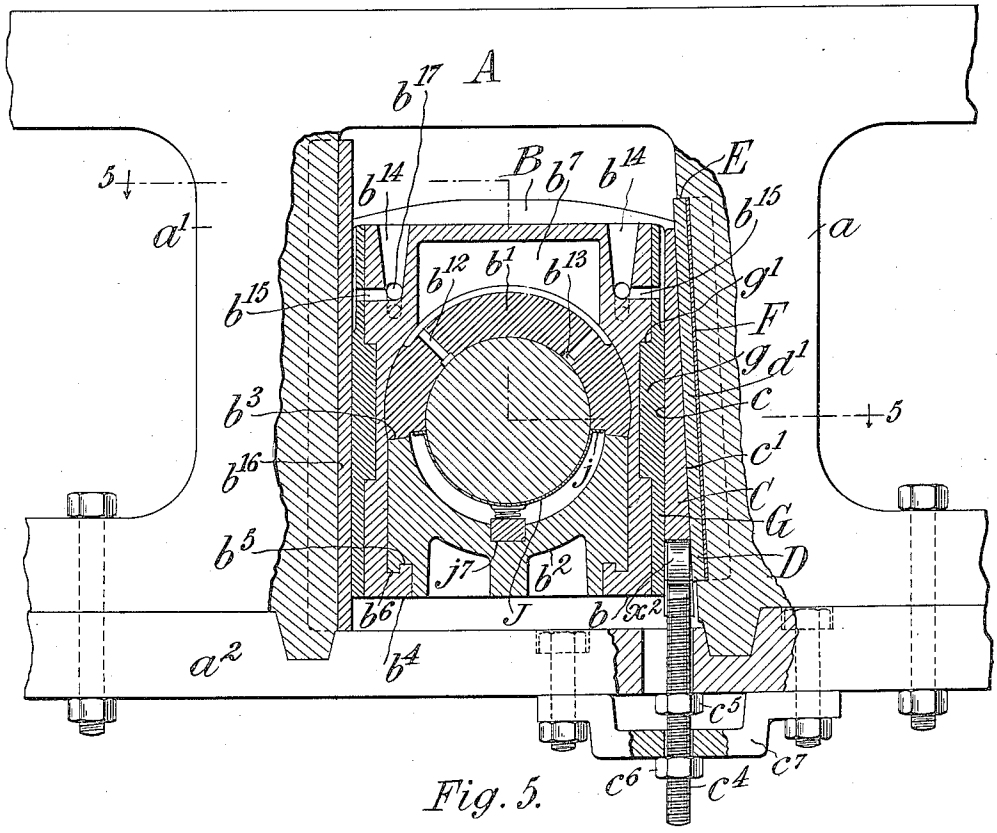
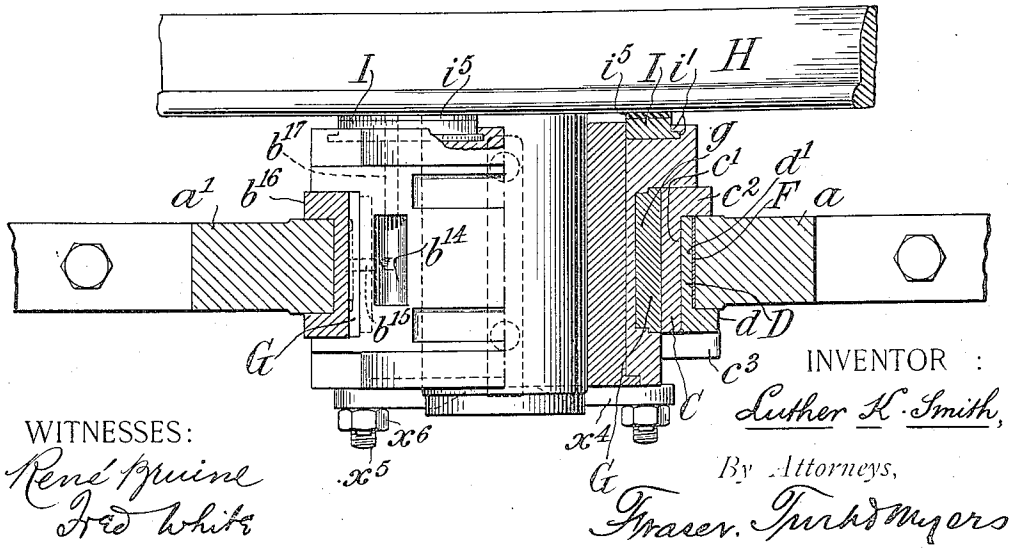



*Fig. 5.*

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3 SHEETS—SHEET 3.

Fig. 9.

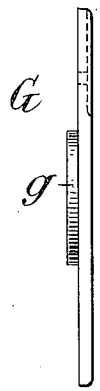



Fig. 10.

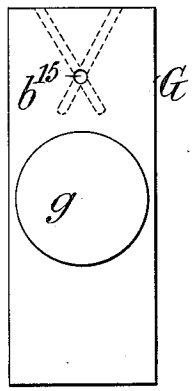



Fig. 11.

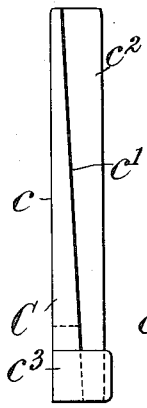



Fig. 12.

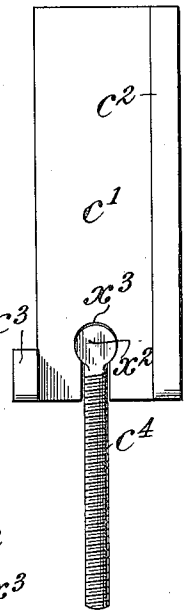



Fig. 14.


Fig. 15.

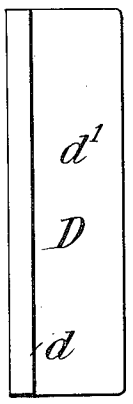



Fig. 17.

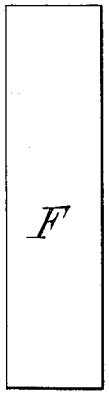



Fig. 18.

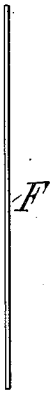



Fig. 13.

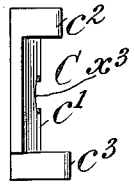



Fig. 16.

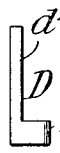



Fig. 19.

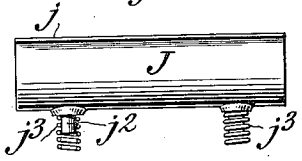



Fig. 20.

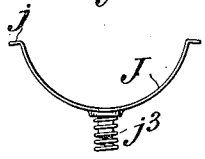



Fig. 21.

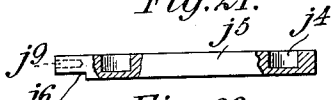



Fig. 22.

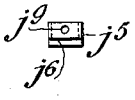
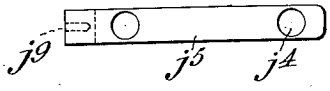



Fig. 23.

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WITNESSES:

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# UNITED STATES PATENT OFFICE.

LUTHER K. SMITH, OF MOBERLY, MISSOURI, ASSIGNOR TO AUGUSTUS CRANE BUZBY, OF PHILADELPHIA, PENNSYLVANIA.

## JOURNAL-BOX.

1,046,032. Specification of Letters Patent. Patented Dec. 3, 1912.

Application filed February 2, 1912. Serial No. 674,861.

*To all whom it may concern:*

Be it known that I, LUTHER K. SMITH, a citizen of the United States, residing in Moberly, in the county of Randolph and State of Missouri, have invented certain new and useful Improvements in Journal-Boxes, of which the following is a specification.

My invention relates to journal boxes especially adapted to the journals of locomotive driving wheels and other semi-heavy journals, and has for its object to produce new and improved means for taking up the wear between the journal box and the pedestal jaws and to hold the box against lateral movement. The said devices are illustrated in this application in connection with a journal bearing of the character of that illustrated in Patent No. 941,661, issued to me November 30th, 1909, but they are not confined in use to a journal bearing of this description.

My object is to provide a structure which shall be simple in construction and shall be economical and durable in use, and a most important object to be accomplished is that the parts mentioned which require adjustment and replacement in use may be so adjusted or replaced without dismantling a locomotive engine, if they are applied thereto, or sending the same to the repair shop, whereby usefulness of the engine is greatly increased.

In achieving the foregoing objects, my invention consists in the production of means for taking up the wear between the journal bearing and the pedestal jaws comprising a wedge which can be adjusted to compensate for such wear without dismantling the engine, in combination with a liner and means for holding the latter against displacement.

In the accompanying drawings illustrating a desirable form in which my invention may be embodied,—Figure 1 is a face view of a journal bearing embodying my invention. Fig. 2 is a vertical section thereof on the line 2—2, Fig. 1, looking toward the right. Fig. 3 is a rear elevation of the journal bearing, partly broken. Fig. 4 is a vertical transverse section of the journal bearing. Fig. 5 is a horizontal section on the line 5—5 of Fig. 4. Figs. 6, 7 and 8 are detail views of a hub liner forming part of my invention. Figs. 9 and 10 are detail views of a wearing face plate on the bearing. Figs. 11, 12 and 13 are detail views of a wear take-up wedge between the journal bearing and one of the pedestal jaws. Figs. 14, 15 and 16 are similar views of a wedge liner or plate. Figs. 17 and 18 are similar views of a sheet liner. Figs. 19 and 20 are similar views of the grease holder. Figs. 21, 22 and 23 are similar views of the grease holder key.

I have illustrated my invention as applied to a construction such as that shown in my said Patent No. 941,661, wherein the truck frame or pedestal A has jaws $a$ $a'$ which are connected at the bottom by a jaw binder $a^2$. Between the jaws $a$ $a'$, and adapted to slide vertically therein is mounted a journal box B. This comprises a body member $b$ which is of inverted U-shape open at the bottom, and is provided with a removable brass $b'$ and cellar block $b^2$. The lower edges of the brass are beveled transversely as indicated at $b^3$, and the upper edges of the cellar block are similarly beveled. The meeting edges of the brass and cellar block are also beveled longitudinally, as indicated by dotted line $x$ in Fig. 2, whereby the cellar block is adapted to lock the brass in place, as indicated in my said patent. Flanges $x'$ hold the brass in place against further movement forwardly. Body bolts $x^5$ pass through perforations in lugs $x^4$ on the cellar and receive nuts $x^6$ which hold the cellar in place. The body $b$ is provided at its lower edge with inwardly extending flanges $b^4$ upon the upper surface of which are ribs $b^5$ forming channels which are adapted to receive tongues $b^6$ upon the cellar block, whereby the cellar block is held in place and provides a brace to hold the sides of the body member together, and prevent its separating or breaking. The body member $b$ has a lubricant reservoir $b^7$ into which lubricant may be inserted through opening $b^8$ closed by a bolt $b^9$. Another opening $b^{10}$ is provided closed by a similar bolt $b^{11}$. Through this the air may escape while the lubricant is being inserted and these openings are adapted to permit the insertion of an instrument to ascertain

the amount of lubricant in the reservoir $b^7$. Channels $b^{12}$ conduct the lubricant from the reservoir $b^7$ to the bearing and to longitudinal distributing channels $b^{13}$. Reservoirs $b^{14}$ may receive lubricant and conduct the same through ports $b^{15}$ to lubricate shoe $b^{16}$ and the adjustable wearing devices on the opposite face which will be hereinafter described. The ports $b^{17}$, Figs. 2, 3 and 4, conduct lubricant from the reservoirs $b^{14}$ to the hub liners. The foregoing parts are described generally for a clearer understanding of the application of the inventions herewith presented, and form no part of the invention in this present application. I will now proceed to describe the particular points to which the claims are directed.

*Wear take-up wedge.*—I have provided means for holding the vertically movable journal box B against perceptible lateral movement. These means may be adjusted to take up the wear caused by friction, and to compensate therefor, so that notwithstanding such wear the journal box will at all times be held against lateral movement. Such means as illustrated comprise a plurality of separable members which may be readily mounted upon and removed from the pedestal jaw. As illustrated, the devices provided for this purpose comprise a wedge C illustrated in detail in Figs. 11, 12 and 13, and a plate D likewise illustrated in detail in Figs. 14, 15 and 16. The wedge C is formed with a plane face $c$ and with a tapered face $c'$. Upon one longitudinal edge thereof is formed a flange $c^2$ which extends throughout the length of the wedge and upon the opposite longitudinal edge is formed a short flange $c^3$. The plate D is provided upon one of its longitudinal edges with a flange $d$. The pedestal jaw $a$ is formed with a recess E upon its inner edge, and this recess is adapted to receive and snugly hold the plate D and prevent the said plate from moving up or down. A sheet liner F, Figs. 17 and 18, is provided which may be inserted between the plate D and the pedestal jaw $a$ to compensate for wear upon the sliding faces of the wedge C and the box wearing plate G when desired. The said plate G has a boss $g$ by which it is held in a recess $g'$ of the body portion $b$. A wedge bolt $c^4$ has an enlarged head $x^2$ which fits in a dove-tailed channel $x^3$ in said wedge C and forms the means whereby the wedge is adjusted up and down. This bolt passes through a hole in the binder $a^2$. Nuts $c^5$ $c^6$ are threaded upon the said bolt, one on each side of a yoke $c^7$ which is attached to the binder $a^2$ and serve to move the bolt up and down. In the use of my said adjustable wear take-up devices the wedge C is applied in position on the pedestal jaw, with the flange $c^2$ on the wheel side. The wedge is lowered until the flange $c^3$ is at its lowest point. The plate D is then inserted sidewise between the said wedge and the pedestal jaw $a$ in such manner that its body portion $d'$ will pass between the wedge face $c'$ and the inner face of the pedestal jaw, and its flange $d$ will engage the face of the pedestal jaw opposite the wheel and prevent the said plate from moving rearwardly. The wedge C is then forced upwardly by turning nut $c^5$ down until the flange $c^3$ passes above the said plate, whereupon the plate is securely held in position and prevented from moving forwardly by the said flange $c^2$, and from moving rearwardly by its flange $d$. The upper and lower walls of the pedestal recess E will prevent the movement of the said plate in a vertical direction. The said wedge C is preferably made of cast steel whereby the breaking of the flanges is obviated. The said wedge forms one of the wearing faces exposed to the friction caused by the vertical movement of the journal box. The other wearing face is the brass plate G which is held by its boss $g$ in the body portion $b$.

The sheet liner F is provided for use when required. To insert this the wedge C is forced down, the plate D or wedge liner is removed, and the sheet liner F is inserted in position between the plate D and the pedestal jaw. This sheet liner cannot work up or down on account of the recess E cut in the pedestal jaw, and it cannot work out against the wheel H, as it is held in place by the large flange $c^2$ on the wedge, and cannot work out toward the inside of the engine as the flange $d$ on the wedge liner or plate D prevents it. Thereby a frequent cause of objection to the use of such sheet liners due to their creeping out of place is obviated.

An important advantage achieved by the construction above described is that by its use the wedge can be forced down in a few minutes by one man without taking the wedge out of the pedestal jaw or dismantling any part of the engine. I am not aware of any other construction which will permit the wedge to be relined without taking the wedge out of the jaws. To accomplish this the frame binder $a^2$ must be removed. It will be perceived that by my invention removal of the frame binder is unnecessary.

*Hub liners.*—In Figs. 6, 7 and 8 I have illustrated an improved hub liner devised by me. This is in two parts, which are the same in construction with the exception that they are made right and left. One of such hub liners is illustrated in detail in said figures, and is there lettered I. Said hub liners are made substantially in the arc of a circle, and are provided with peripheral flanges $i$ which are received in correspond-

ing grooves $i'$ in the body B. At the upper portion the end of the said grooves is closed by the body at $i^2$ forming an abutment which limits the upward movement of the hub liners. Each hub liner is provided with an inwardly projecting stud $i^3$ which is received in a corresponding recess $i^4$ of the body (see Fig. 3). The cellar block $b^2$ when moved to its extreme forward adjustment passes beyond the said studs $i^3$ and holds the hub liners in place, Fig. 2. The brass $b'$ likewise overlaps the inner edge of the hub liners and assists in holding them in place, and forms a support therefor. The wearing face $i^5$ of the hub liner is formed of a plate of suitable bearing metal, such as tin, properly fixed thereto and this may be renewed when desired. Said hub liner possesses particular advantages in that the hub liner can be removed for the purpose of repairing or refacing the bearing face without taking the journal box off from the journal or out from under the engine. To remove the hub liner it is only necessary to pull the cellar block $b^2$ and the journal brass $b'$ out of the box far enough to clear the inside face of the liner and the studs $i^3$, whereupon the said hub liners may easily be removed by simply sliding them out of the grooves $i'$. It is not necessary to dismantle any part of the engine in order to accomplish this purpose.

The hub liner herein described and illustrated is not claimed in this application, but is claimed in a divisional application Serial No. 692,671 filed April 23, 1912.

*Grease holder.*—The said grease holder consists of a plate J which is curved transversely to correspond to the curvature of the journal. It is provided with longitudinal flanges $j$ which are adapted to slide freely under the projecting edges of the brass $b'$ as shown at $j'$ (Fig. 1). The object of the said over-hanging flanges is to catch all of the grease that comes from the top of the journal. The concave side of the said grease holder J is formed with the same curvature as the journal to cause a film of pure grease to be held against the journal at all times, and this also forms a dust guard preventing any foreign substances from getting on the journal. Upon the under side of the said grease holder J are formed two dowel pins $j^2$ which form a guide for two helical springs $j^3$ and serve to hold the said springs in place. The two springs have seats in recesses $j^4$ in a sliding key $j^5$. These springs serve to hold the grease holder against the journal and also hold the said grease holder key $j^5$ in the cellar block. The said key serves the purpose of holding the dust guard in place and of permitting its removal when desired. For this reason it has a shoulder $j^6$ on its under side. The said key is received in a recess $j^7$ in the cellar block, and the said recess $j^7$ has a corresponding shoulder $j^8$. The key is provided with an opening $j^9$ in its end to permit the insertion of a tool for the purpose of removing the same. When it is desired to remove the grease holder a tool is inserted in the opening $j^9$ and the said key is lifted, thereby clearing the shoulder $j^8$ and compressing the springs $j^3$, so that the dowels $j^2$ will pass into recesses $j^4$. Thereupon the key may easily be slid out of place, carrying with it the grease holder. The said parts are so adjusted preferably that the dowels shall at all times be contained within the recesses $j^4$ whereby the grease holder is held in proper position. The said grease holder presents an important advantage in that it does not touch the journal and thereby no friction ensues. Further that it preserves a thin film of pure grease between the journal and the sheet at all times, and that it is absolutely dust-proof. The said grease holder and dust guard is not claimed in this application but is claimed in a divisional application filed April 23, 1912, Serial No. 692,672.

While I have described with great particularity the detail features of construction of the said invention, it will be apparent that the invention is not in all things limited to such particular details or structural formation, and that equivalent devices may be employed and changes made therein within the limits of the appended claims.

What I claim is:—

1. The combination of a pedestal jaw, a journal box, means for adjusting same longitudinally to take up wear and for holding same in said adjusted position, a wear take-up wedge disposed next to the box, and a plate between the wedge and jaw.

2. The combination of a pedestal jaw, a journal box, a movable wedge between the jaw and box, means for adjusting same longitudinally to take up wear and for holding same in said adjusted position, a plate interposed between the wedge and jaw, and means for holding the plate against movement with the wedge.

3. The combination of a pedestal jaw, a journal box, a wedge between the jaw and box, means for adjusting same longitudinally to take up wear and for holding same in said adjusted position, and a plate between the jaw and wedge, said jaw having a recess for receiving the plate and holding the same against movement.

4. The combination of a pedestal jaw, a journal box, a wedge adjacent the box, a plate interposed between the wedge and jaw, and a filler disposed between the plate and jaw.

5. The combination of a pedestal jaw, a

journal box, a wedge adjacent the box, a plate interposed between the wedge and jaw, and a filler disposed between the plate and jaw, said jaw having a recess for receiving both the filler and plate.

6. The combination of a pedestal jaw, a journal box, a wedge between the jaw and box, a plate between the jaw and wedge, a filler between the plate and jaw, and means on the plate and wedge for preventing lateral displacement of the filler.

7. The combination of a pedestal jaw, a journal box, a wedge between the jaw and box, a plate between the jaw and wedge, a filler between the plate and jaw, and means on the plate and wedge for preventing lateral displacement of the filler, said jaw being recessed to receive the filler and plate.

8. The combination of a pedestal jaw, a journal box, a take-up wedge having a flange engaging the rear face of the jaw, means for adjusting same longitudinally to take up wear and for holding same in said adjusted position and a plate disposed between the jaw and wedge and having a flange engaging the front face of the jaw.

9. The combination of a pedestal jaw, a journal box, a take-up wedge having a flange engaging the rear face of the jaw, a plate disposed between the jaw and wedge and having a flange engaging the front face of the jaw, and means on the wedge to engage the plate for preventing lateral forward displacement.

10. The combination of a pedestal jaw, a journal box, a wedge disposed between the box and jaw and having means for engaging the rear face of the jaw, a plate disposed between the jaw and wedge and having means engaging the front face of the jaw, and a lug engaging the plate to prevent forward lateral displacement of the plate and disengageable from the plate by partial withdrawal of the wedge to permit forward lateral removal of the plate.

11. The combination of a pedestal jaw, a journal box, a wedge adjacent the latter, a plate between the wedge and jaw, a jaw-engaging flange on one edge of the wedge, a jaw-engaging flange on the opposite edge of the plate, and a lug on the edge of the wedge opposite from that having the flange and normally engaged with the flanged edge of the plate to prevent lateral displacement thereof.

12. The combination of a pedestal jaw, a journal box, a wedge adjacent the latter, a plate between the wedge and jaw, a jaw-engaging flange on one edge of the wedge, a jaw-engaging flange on the opposite edge of the plate, a lug on the edge of the wedge opposite from that having the flange and normally engaged with the flanged edge of the plate to prevent lateral displacement thereof, said jaw having a recess to receive the plate, and means for adjusting the wedge.

13. The combination of a pedestal jaw, a journal box, a wedge adjacent the latter, a plate between the wedge and jaw, a jaw-engaging flange on one edge of the wedge, a jaw-engaging flange on the opposite edge of the plate, a lug on the edge of the wedge opposite from that having the flange and normally engaged with the flanged edge of the plate to prevent lateral displacement thereof, said jaw having a recess to receive the plate, means for adjusting the wedge, and a filler in the recess behind the plate and between the flanges of the plate and wedge.

14. A wear take-up wedge having a flange at one edge and a lug at one end of the opposite edge extending in the same direction as the flange the effective length of said flange exceeding that of the lug.

15. A take-up wedge having a long laterally-extending flange at one edge and a short lug at the opposite edge adjacent the widest part of the wedge and extending from the same side thereof as the flange.

16. The combination with a jaw provided with a recess, of a plate disposed within said recess and held against movement therein, and a wedge slidably mounted upon said plate and means for adjusting said wedge longitudinally to take up wear.

17. The combination with a jaw, of a plate having engagement therewith and held against movement thereby and provided with a flange to engage one side of said jaw, and a wedge having slidable engagement with said plate and provided with a flange to engage the opposite side of said jaw and means for adjusting said wedge longitudinally to take up wear.

18. The combination with a jaw provided with a recess, of a plate to fit within said recess, a wedge having slidable engagement with said plate, and means connected with said wedge to prevent the lateral movement of said plate when the wedge is in its upper position and to permit such lateral movement of the plate when the wedge is in its lowermost position.

19. The combination with a jaw provided with a recess, of a plate to fit therein, a wedge to have slidable engagement with said plate, and means connected with the wedge to prevent the lateral movements of the plate and wedge when said wedge is in an upper position and to permit of such movements when said wedge is in its lowermost position.

20. The combination with a jaw having a recess formed therein, of a plate to fit within the recess and provided upon one longitudinal edge thereof with a flange adapted

to engage one side of said jaw, a wedge to have slidable engagement with said plate and provided upon one longitudinal edge thereof with a flange adapted to engage the opposite side of the jaw, and a flange connected with the lower end of the wedge and adapted to be moved into and out of engagement with said plate.

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

LUTHER K. SMITH.

Witnesses:
HUGO NATHAN,
W. E. LUTES.