

(No Model.)

J. A. SANFORD.
DEVICE FOR ADJUSTING JOURNAL BOXES.

No. 514,837.

Patented Feb. 13, 1894.

Fig. 1.

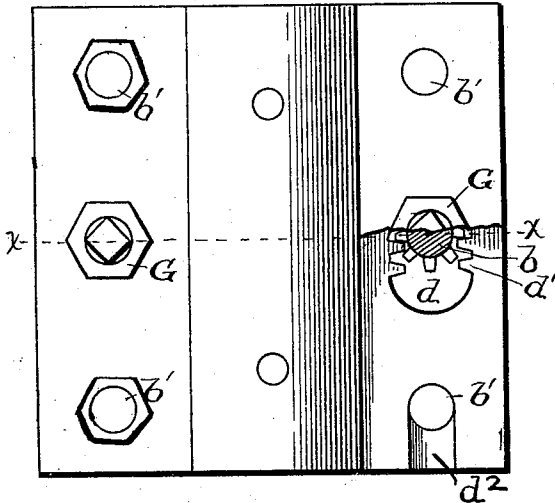


Fig. 4.

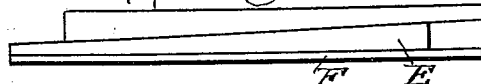


Fig. 5.

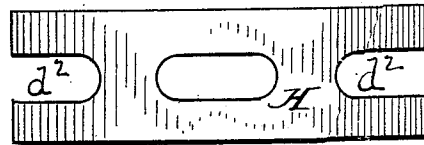


Fig. 6.

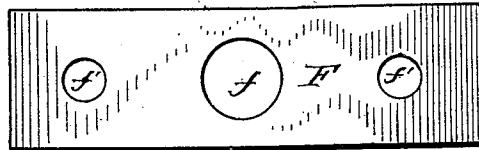


Fig. 2.

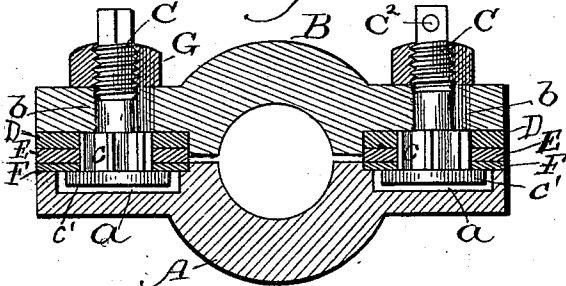


Fig. 7. Fig. 8. Fig. 9.

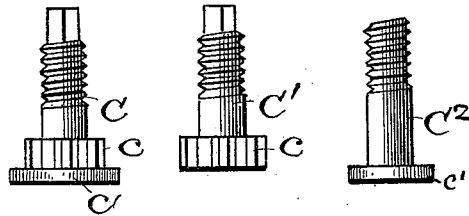


Fig. 3.

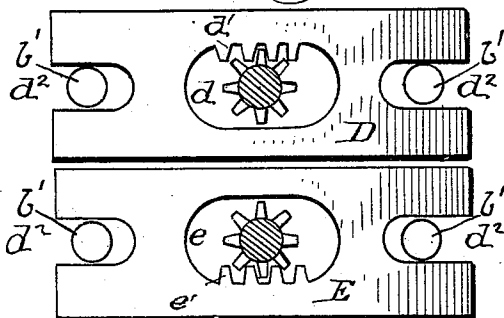
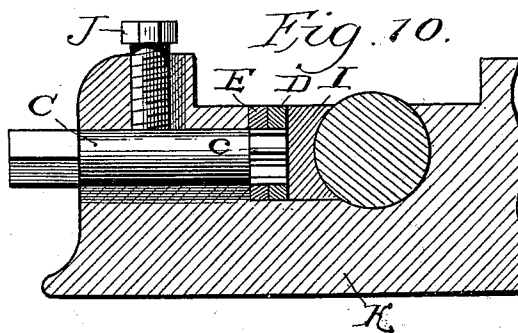


Fig. 10.



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JAMES A. SANFORD, OF LANSING, MICHIGAN.

DEVICE FOR ADJUSTING JOURNAL-BOXES.

SPECIFICATION forming part of Letters Patent No. 514,837, dated February 13, 1894.

Application filed October 10, 1892. Serial No. 448,477. (No model.)

To all whom it may concern:

Be it known that I, JAMES A. SANFORD, a citizen of the United States, residing at Lansing, in the county of Ingham and State of Michigan, have invented a new and useful Device for Adjusting Journal-Boxes and other Bearings, of which the following is a specification.

Figure 1, is a top or plan view, partially broken away, of a journal box having my invention applied thereto. Fig. 2, is a transverse section on line $x x$ Fig. 1. Fig. 3, is a plan view of the separating or adjusting devices detached. Fig. 4, is an edge view of the adjusting devices and a supplemental packing. Fig. 5, is a plan view of a modification. Fig. 6, is a plan view of the supplemental packing. Fig. 7, is an elevation of a spindle for shifting the adjusting devices. Fig. 8, is a modification of Fig. 7. Fig. 9, is a clamping bolt designed to be used with the modification shown in Fig. 5. Fig. 10, is a transverse section of a journal box showing another modification of one part of the invention.

Like reference letters indicate like parts in all the figures.

One part of my invention relates to the combination with a stationary and a movable part of a journal box, of two centrally slotted wedging adjusting plates, and a locking bolt or spindle of which one end is arranged within the slots, and means for locking the bolt, to prevent endwise movement of the slotted plates.

Another part of my invention relates to the combination with two box members which are upon opposite sides of the shaft opening of a separator interposed between the members, and means by which this separator is adjusted relatively to both of the box members.

Another part of my invention relates more particularly to the construction of a two part separator which has two plates, each of which is slotted and has cogs, in combination with a toothed spindle which engages with the cogged plates, for simultaneously moving the plates in opposite directions; this part of my invention being adapted for use in combination with two box members, whether the separator is interposed between two box mem-

bers which are upon opposite sides of the shaft opening, so that by adjusting the separator the box members can be moved away from each other, or is arranged to thrust one box member toward the other member and the shaft.

Other parts of my invention will be more particularly referred to in the claims hereof.

A is the lower half or base of an ordinary journal box except that each of its flanges or wing portions is provided about centrally with a sunken portion or recess, a .

B is the upper movable or cap part of the bearing, its wings or flanges being provided each with a circular opening or seat, b ; thus constituting an ordinary journal box having two members which are located upon different sides of the shaft opening or journal opening. With these parts I propose to combine a compound wedging separator to be described.

C, C, are spindles, preferably fitting closely within the seats, b , so as to turn freely therein, and provided at their lower ends with cogs or teeth, c , which form a sort of pinion or gear for each spindle. By preference I provide each spindle with a flange or shoulder, c' resembling the head of a bolt. The upper end of the spindle is either squared to receive a wrench or is provided with a hole, c^2 , to receive a pin for the purpose of turning the spindle, below which the spindle is screw-threaded.

One form of the separating and adjusting devices is shown in Fig. 3, wherein D is a wedge-shaped plate or bar having a central opening, d , with a row of teeth or cogs, d' , at one side thereof, each plate being further provided with open slots d^2 , to receive the ordinary bolts, b' , which are usually employed in journal boxes. The wedge-shaped plate E is a duplicate of the plate D, except that it is turned end for end so that its thick end lies upon the thin end of plate D, when the parts are in working position, and that the cogs, e' , are upon the opposite side of the central opening, e .

In order to increase the range of adjustment I propose to employ a supplemental packing plate, F, with a central opening, f , large enough to receive the pinion-like part of

the spindle, C, with openings, f' , at its ends to receive the bolts, b' , and by an examination of the drawings it will be seen that the presence of the bolts in the slot-like openings will counteract any tendency which might otherwise exist to twist the wedging plates about their centers; whereby said bolts are adapted to serve as guides for the plates.

Although the plate, F, when interposed between the two box-members serves as part of the separator by increasing or adding to the thickness of the wedging plates D, E, yet it is not an essential part thereof, because it really performs no function so far as the adjusting of the relative positions of the two box members is concerned; and, in fact, may be entirely omitted without in any manner affecting the character of the adjustment which is produced when either of the plates D or E is moved endwise; hence, when I refer to the separator as being in contact with, or engaging with, the box members I do not wish to be limited to including the plate F, because under some circumstances the plate E rests directly upon the lower member of the bearing. In applying these devices I propose to place the supplemental packing plate over the pinion of the spindle with its lower face resting upon the flange c' . I then place the wedge-shaped plate E upon the supplemental plate and the wedge-shaped plate D on top of plate E in about the position indicated in Fig. 4; that is to say, with their thick ends as near to each other as may be practicable when their teeth or cogs are in engagement with opposite sides of the pinion. I then thrust the spindles up through their seats b, b , in the cap of the box and screw the nuts G upon the threaded ends of the spindles, so that the adjusting devices, or separators, together with the supplemental packing plates are so connected with the cap that they can all be placed in position upon the base or stationary member A of the box, care being taken that the slots in the ends of the plates register with the bolts b' .

It is evident that the devices D, E, F, serve as separators interposed between the two members of the journal box so as to regulate the approach of one member toward the other member, in such manner that by moving either or both of the wedge-shape plates the distance between two box members which are upon different sides of the shaft opening can be regulated at will; that is to say, one box member can be positively moved away from another one and from the shaft, or the same member can be permitted to approach the other one and the shaft.

While for convenience in manipulation I prefer the form of spindle shown in Figs. 2 and 7, it is obvious that the flange c' may be omitted; in which case the other parts of the adjustable separator may be laid upon the lower or stationary member of the bearing with the spindles C' (Fig. 8) in proper mesh

after which the cap of the box may be placed in position and the nuts G, screwed on. Or the spindles may be put in place in the cap and the nuts G screwed on before the cap is put in place, care being taken that the plates D, E, are so placed that the teeth of the pinions will readily enter into mesh with the cogs d', e' , when the cap is put on.

In Fig. 5 I have shown a modification in which the cogs are omitted from the slotted wedge-shape plates; and I prefer to combine therewith an ordinary bolt C^2 , (Fig. 9) to secure the supplemental packing and the other members of the separator to the cap of the box. In this modification the wedge shape plates one or both of them, may be moved endwise, in either direction, by the use of any suitable implement; such, for instance, as a hammer and a set, particularly when rather close adjustments are required, in which case a very slight movement of the nuts upon the bolts, b' , together with a slight movement of either of the wedge plates will effect an accurate adjustment of the two members of the box relative to the inclosed shaft.

It will be understood from an examination of the drawings, particularly Figs. 1 and 3, that the engagement of the slotted ends of the wedge plates with the bolts b' will insure a proper engagement of the pinions with the cogs of the plates. And in the modification Fig. 5, the presence of the bolts within the slots will effectually prevent any displacement of the plates.

In Fig. 10, I have shown one part of my invention applied to a quarter box such as is frequently used on an engine bed K, in which the compound separator is turned up edgewise, the spindle C being horizontal, with a set-screw J to hold the spindle in its adjusted position. In this modification the pinion should be of an external diameter not larger than the body of the spindle, so that the pinion will pass through the hole in the bed plate in which the spindle is seated. The mode of operation of the wedging separator with one face in contact with a movable box member and another face always in contact with a stationary part of the pillow block, is closely analogous to the operation of the same device in the other figures, although the relative arrangement of the parts is different.

In Fig. 10 I have omitted the supplemental plate F which I prefer to use in the other constructions because it increases the range of adjustment of which the invention is capable; it being apparent that when the plate F is used and the wedge-shaped plates have been moved into a position the reverse of that shown in Fig. 4, to the limit of their throw, so that the cap of the box has been let down toward the base as much as is possible, the wedge-shaped plates may then be moved back into the position shown in Fig. 4, so that their combined thickness has been increased to an amount about equal to the thickness of plate,

F, which may then be omitted, and a farther letting down of the cap attained by again sliding the wedge-shaped plate endwise as was originally done to diminish their combined thickness.

It is obvious that where the required range of adjustment of the size of the shaft opening is comparatively slight, or in boxes or bearings in which the two members are united or joined to each other by a hinge or otherwise upon one side of the shaft opening, a separator will only be required upon the opposite side of the shaft opening; and as the separators are practically duplicates of each other, I prefer to refer to them, in some of the claims, in the singular.

I am aware that wedging, cam-shaped, and other shaped adjusting devices have been used for thrusting one or both box members toward each other and against the inclosed shaft; and that the bolts which hold two box members from being spread apart have been provided with collars or flanges which engage with the under surface of the upper box member, so that by turning the bolts backward, thus screwing them out of their seats in the lower box member, the size of the shaft opening could be varied; and after such adjustment had been effected the upper box member could be clamped against the adjusting collars by means of nuts screwed on the ends of the bolts which projected above the adjusted box member. In my invention after the distance between the box members, and therefore the size of the shaft opening, has been properly determined, then the separator may be clamped upon the lower box member and the upper box member clamped upon the separator by means of the ordinary bolts *b'*; or by means of any of the other clamping devices which are employed in journal boxes, and which need not therefore be specifically referred to.

While I have explained the best mode now known to me for carrying out my invention, I do not wish to be limited thereby; because many modifications will readily suggest themselves to those skilled in the art without departing from the spirit of my invention.

I claim—

1. In a journal box, the combination with two box members which are upon different sides of the shaft opening, of a separator interposed between said members, and means whereby it is adjustable relatively to both members of the journal box, and is adapted to move one member away from another member to increase the size of the shaft opening, substantially as set forth.

2. In a journal box, the combination with two box members which are upon different sides of the shaft opening, of a separator interposed between said members, and means whereby it is adjustable relatively to both members of the box and has one part engaging with one member and another part en-

gaging with another member, the two parts being adjustable toward and from each other, substantially as set forth.

3. In a journal box, the combination, with two members which are upon different sides of the shaft opening, of a compound wedge shaped separator the parts of which engage continuously with both members of the box and are movable longitudinally to the axis of the shaft opening, substantially as set forth.

4. In a journal box, the combination with two box members which are upon different sides of the shaft opening, of a separator interposed between said members, and means whereby it is adjustable relatively to both members of the box, and means carried by one member of the box for adjusting the separator to change the size of the shaft opening, substantially as set forth.

5. In a journal box, the combination with two box members which are upon different sides of the shaft opening, of an interposed separator which is adjustable relatively to both members of the journal box and which engages continuously with both members for changing the size of the shaft opening; and devices for clamping both members of the journal box into firm contact with opposite sides of the separator after one member of the box has been moved away from the other member, substantially as set forth.

6. In a journal box, the combination with two box members which are upon different sides of the shaft opening, of an interposed separator which is adjustable relatively to both members of the box and which is adapted to move one box member away from the journal, and a supplemental packing which is adapted to be removed to reduce the distance between the parts of the box, substantially as set forth.

7. In a journal box, the combination with two box members which are upon opposite sides of the shaft opening, of an interposed two part separator of which one part is movable relatively to the other to permit one box member to approach the journal without moving the journal, and devices for clamping the box members against both sides of the separator, substantially as set forth.

8. In a journal box, the combination with two box members which are upon opposite sides of the shaft opening, of an interposed separator adapted to move one box member away from the shaft, and a spindle arranged at a right angle to the path traveled by the separator for moving the separator, substantially as set forth.

9. In a journal box, the combination with two box members which are upon opposite sides of the shaft opening, of a wedging separator which is provided with a central slot one wall of the slot having teeth, and a toothed spindle engaging with the slotted separator for moving the latter, substantially as set forth.

10. In a journal box, the combination with

two box members of a wedging separator having two plates each slotted and provided with teeth, and a toothed spindle for simultaneously moving both plates in opposite directions, substantially as set forth.

11. In a journal box, the combination with two box members of a wedging separator having two parts provided with slots and a guide passing perpendicularly through the slots, substantially as set forth.

12. In a journal box, the combination with two box members of an interposed separator having two plates provided with slots, bolts for clamping the box members to the separator, and means carried by one of the box members for adjusting the separator to move one of the box members away from the journal, substantially as set forth.

13. In a journal box, the combination with two box members, of a separator centrally slotted and provided with teeth, a toothed spindle arranged in the slots and engaging with the teeth for adjusting the separator, substantially as set forth.

14. In a journal box, the combination with two box members, of a separator having two plates each slotted the upper plate having teeth upon one side of its slot and the lower

plate having teeth upon the opposite side of its slot, and a toothed spindle arranged in the slots for moving the plates simultaneously in opposite directions, substantially as set forth.

15. In a journal box having a movable member, the combination of a separator having two plates centrally slotted and movable relatively to each other and engaging simultaneously with both box members for separating said members, and a spindle mounted in the movable box member and provided with a flange for clamping the separator to the movable box member, substantially as set forth.

16. In a journal box the combination with a stationary part and a movable box member, of two wedging plates both of which are centrally slotted and are always in engagement with their respective parts of the bearing and a locking device one end of which is arranged in the slots for connecting the plates to the bearing and preventing their accidental endwise movement, substantially as set forth.

JAMES A. SANFORD.

Witnesses:

D. G. PALMER,
J. H. HANKS.