J. D. LOGAN.

DEVICE FOR LAYING OFF SHOES AND WEDGES.

APPLICATION FILED MAR. 20, 1915.

1,230,418.

Patented June 19, 1917.

2 SHEETS—SHEET 1.

Fig. 1.

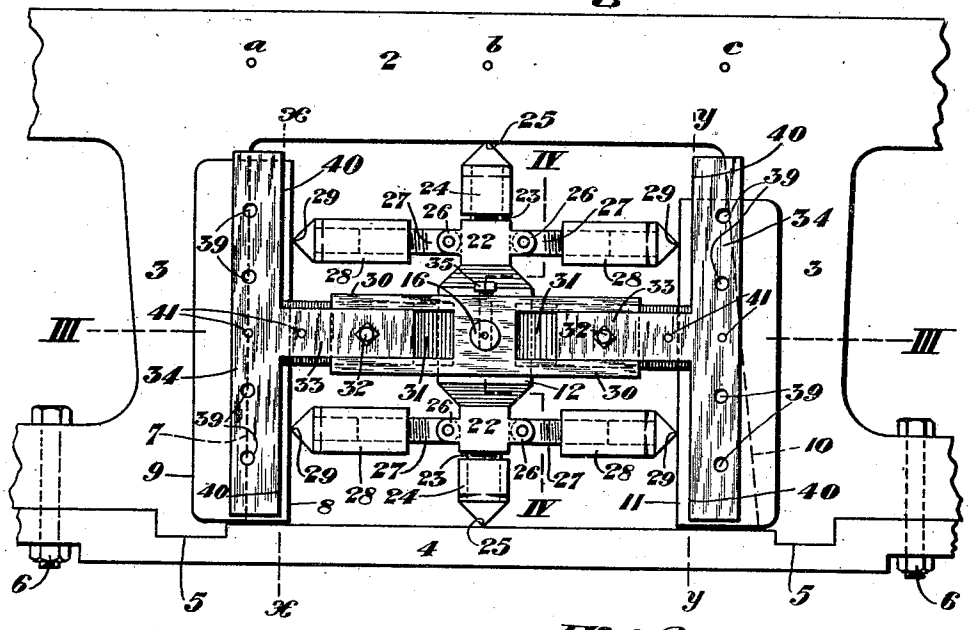
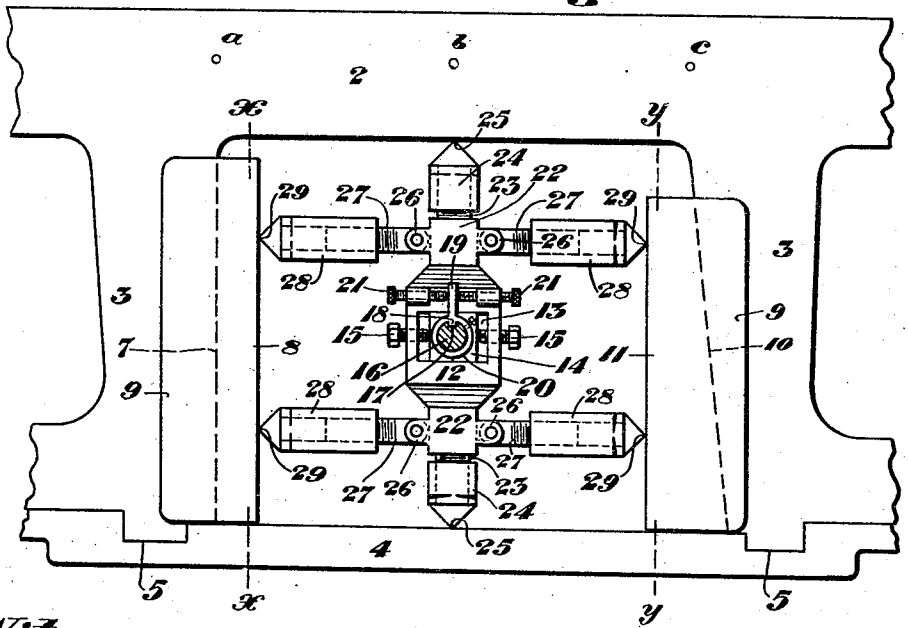


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

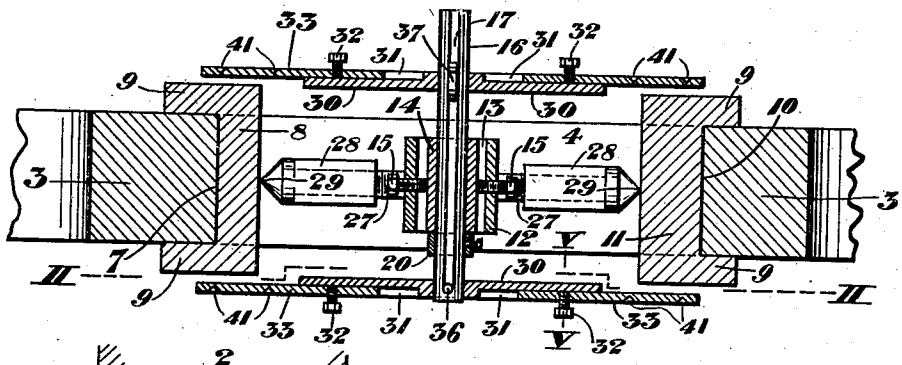


Fig. 4.

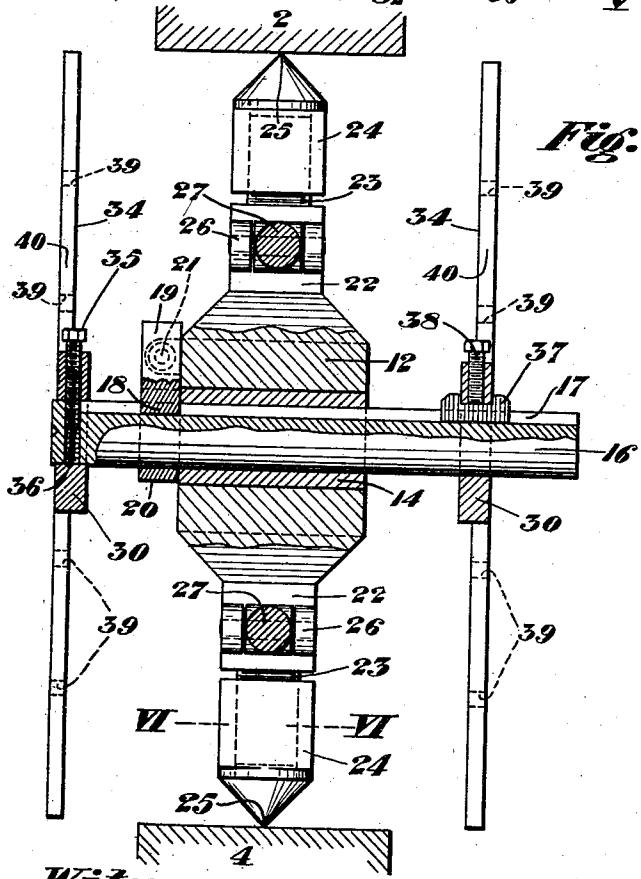
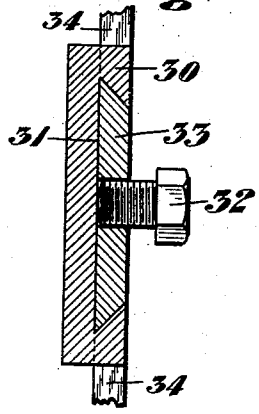


Fig. 5.



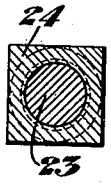


Fig. 6.

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UNITED STATES PATENT OFFICE.

JOSEPH D. LOGAN, OF DARRAGH, PENNSYLVANIA.

DEVICE FOR LAYING OFF SHOES AND WEDGES.

1,230,418. Specification of Letters Patent. Patented June 19, 1917.

Application filed March 20, 1915. Serial No. 15,946.

To all whom it may concern:

Be it known that I, JOSEPH D. LOGAN, a citizen of the United States, residing at Darragh, in the county of Westmoreland and State of Pennsylvania, have invented certain new and useful Improvements in Devices for Laying Off Shoes and Wedges, of which the following is a specification.

My invention has for its object to provide a mechanism for laying off shoes and wedges of locomotive journal boxes.

In the mounting of the journals of locomotives, it is very essential that the shoes and wedges between the frame and the bearing surrounding the journals shall be absolutely accurate, for the purpose of insuring correct alinement of the several parts with relation to the trackage of the wheels on the rails and the center line of the cylinder and piston rod.

Heretofore this work has been done by means of measurements and computations which frequently resulted in inaccuracies in the shoes and wedges, *i. e.*, their faces may not be absolutely parallel, or they may not be of the correct distance apart.

I found that the best practice is to lay off the lines on the shoes and wedges when the same are in position within the frame, after having been finished and fitted to the frame, but with the exterior portions still rough.

My invention is designed to provide a mechanism which will fixedly locate and hold the shoe and wedge in each of the frame openings, and to exactly locate the central position of the bearing corresponding to the axial center of the wheel journal; and then, by means of the attached laying-out frame, to positively fix the position of certain points on the face of the shoe and wedge, whereby the lines are found accurately defining the plane down to which the surplus metal must be removed.

The device is illustrated in the accompanying drawings, in which—

Figure 1 is a view showing the invention as applied to lay off the shoe and wedge in the manner intended.

Fig. 2 is a similar view, the front frame having been removed on the section line II. II. of Fig. 3.

Fig. 3 is a horizontal sectional view, taken on the line III. III. of Fig. 1.

Fig. 4 is a vertical sectional view, enlarged, indicated by the broken line IV. IV. of Fig. 1.

Fig. 5 is a transverse sectional view, enlarged, through one arm of the adjustable frame, indicated by the line V. V. of Fig. 3.

Fig. 6 is a cross sectional detail view, taken on the line VI. VI. of Fig. 4.

In the drawings, 2 represents one of the side frames of a locomotive having downwardly extending legs 3, 3, between which is mounted the journal bearing of the axle, of well-known construction. A lower connecting bar 4, having mortised engagement at 5 with the lower ends of legs 3, extends across underneath and connects with them, as by bolts 6.

The inner faces of legs 3 are surfaced to provide at one side a vertical flat face 7, against which the shoe 8 is set, having the usual side lips 9, 9. The confronting faces of the leg 3 and the shoe 8 are planed to a suitable fit, so that the shoe may be set up tightly against the leg, as in use.

On the other side, the inner face 10 of leg 3 is planed off at an angle to the vertical, to provide the wedging surface for the inner corresponding face of the wedge 11, which is otherwise of the same construction and fit as shoe 8.

For the purpose of providing a central bearing for the locating devices, by which the line-defining points are fixed on the faces of the shoe and wedge, I provide the centralizing device consisting of a hub 12 having a rectangular opening 13 at its transverse middle portion, in which is mounted an adjustable box 14, adapted to be set laterally to the desired position by means of temper screws 15, 15.

Box 14 is provided with a transverse cylindrical opening through which extends the cylindrical shaft or stem 16, having a key-way 17 along its upper portion. Into said key-way extends a projecting lug 18 of an arm 19, which, by ring 20, also embraces the shaft 16, said arm 19 extending upwardly between adjusting temper screws 21, 21.

By means of this construction, it will be seen that shaft 16 may be accurately adjusted upon proper adjustment of set screws 21, 21 so as to fixedly position it with its key-way centrally above, and to insure proper location of the templet frame member 30, hereinafter described, with relation to shaft 16 and the shoes and wedges.

Hub 12 is provided with upper and lower gudgeons 22, 22, beyond which extend threaded studs 23, upon which are threaded

the squared adjusting nuts 24, having centering points 25. These are adapted to be adjusted in one direction or the other, so as to position the center of the shaft 16, or the opening therefor, exactly in horizontal alinement with the engine cylinder centers. Such horizontal alinement may be easily ascertained by use of a spirit level and a horizontal cord laid across the legs 3 on the horizontal plane of the cylinder centers, or by corresponding previously ascertained marks on said legs.

At each side of gudgeons 22 are lugs 26, pivoted to which are the threaded bolt arms 27, upon which are threaded the squared nuts 28, having the terminal centers 29. By this means, the device may be very accurately positioned laterally in either direction, so as to locate the center of shaft 16, or the opening therefor, in coincidence with the vertical plane corresponding to the center of the axle journals at each side of the frame.

It will be understood, of course, that the centralization of the journal opening at opposite sides of the locomotive is to be coincident with the desired centralization of the journals themselves, so that my device as thus described and used insures the exact positioning of the parts.

At *a*, *b* and *c* are located indentations or punch holes in predetermined positions, the mark *b* corresponding to the vertical center line desired, and the marks *a* and *c* equidistant each side thereof, so that by the use of a tram the distances from *a* and *c* respectively to the center of shaft 16, being found to be equal, the work of adjustment by the tram may be checked.

When thus positioned, as shown in Fig. 2, it will be clearly evident that upon tightening of the nuts 24 and 28, the device will be fixedly held and the shoe and wedge each maintained in their desired operative position.

Assuming that it is desired to plane off the inner faces of the shoe and wedge to a desired depth, as indicated by the lines *x*, *x*, and *y*, *y*, respectively, which lines are to be defined by punch marks on the faces of the shoe and wedge, I now attach to each end of shaft 16, outwardly beyond the plane of the faces of the shoe and wedge, a frame consisting of an inner member 30 having in its oppositely extending arm portions recesses 31, preferably of dovetail form, as clearly shown in Fig. 5.

Slidably mounted in these recesses, and capable of being fixedly secured at varying positions therein by set screws 32, are the telescoping arms 33 terminating at each outer end in vertical arms 34, each preferably having parallel side edges, as shown.

Templet frame member 30 is provided with a device for fixedly positioning it on shaft 16, so that it will be positively horizontal.

Thus the member 30 at one side is provided with a set screw 35 engaging a threaded opening 36 in the end of the shaft, while the other member is provided with a sliding shoe 37 engaging key-way 17, and also engaging the hub of the member 30 itself, and fixedly tightened by a set screw 38. By this construction, it will be seen that the positions of members 30 on shaft 16 may be varied longitudinally, so as to position each member as desired with relation to the front and back faces of the shoe and wedge respectively.

The arms being thus mounted, it will be seen that arms 33 and vertical portions 34 will be maintained in absolutely horizontal and vertical positions, respectively and in unvarying relation to the other parts.

Each arm 34 is provided with a vertically arranged series of perforating punch holes 39, through which a punch may be inserted, whereby to mark the face of the shoe and wedge respectively, as will be readily understood.

Punch holes 39 in the arm 34 are in a line parallel to its edge. Marks on the wedge coincident with these holes will therefore locate a true vertical line on the wedge. The arm 34 being properly located laterally, these holes may be used as guides for making punch marks on the wedge for the purpose of fixing the line down to which the edge of the wedge is to be ground.

Indentations 41 are provided on the arms 33 and 34, and these are in alinement with the center of shaft 16. By measuring from the fixed point *b* on the vertical center line to the points 41, the correctness of the adjustment of the arms 33 and 34 may be tested.

By placing the device in position in the frame of the locomotive adapted to carry the journal housings, and adjusting the central shaft of the device to the exact central position desired to be occupied by the axle of the locomotive wheel, *i. e.*, in the horizontal line of the center of the engine cylinder, and then adjusting the arms 30 in exact horizontal position, the arms 34 will assume a perpendicular position with reference to the locomotive frame. Marks on the wedges and shoes made through holes 39 in the vertical arms will therefore locate a vertical line on said parts, which may then be removed and planed to said line with the assurance that when put back into place in the locomotive frame they will have been cut so as to furnish an accurate fitting to the housing for the engine's axle boxing.

It will be understood that two or more sets of the laying out device may be used, and that the work is thus rendered absolutely accurate, labor saving, and will prevent the liability to mistake or waste which

is quite usual with the present inaccurate method.

The advantages of the invention will be readily understood and appreciated by all those familiar with this class of work in locomotive building or repair. It greatly simplifies and accelerates the work and standardizes it, and the invention will be found to give highly satisfactory results.

Having described the invention, what I claim is:

1. A flat templet device for laying off shoes and wedges of locomotive journal boxes having a shaft arranged transversely to the plane of said device, means for centralizing the device in position in a locomotive frame with relation to the normal center of the journal to be mounted in said box, and arms mounted on said shaft provided with openings defining lines on the shoes and wedges parallel to the plane of the flat templet.

2. A flat templet device for laying off shoes and wedges of locomotive journal boxes comprising a central shaft arranged transversely to the plane of the device, means for centralizing the shaft in position in a locomotive frame with relation to the normal center of the journal to be mounted in said box, and arms mounted on said shaft having longitudinally adjustable portions provided with openings defining lines on the shoes and wedges parallel to the plane of the flat templet.

3. The combination with a locomotive journal box housing frame adapted to provide a mounting for shoes and wedges, of a flat templet device having adjustable bracing portions adapted to be set with relation to the locomotive frame and provided with a central shaft arranged transversely to the plane of the device, and marking frames mounted on said shaft.

4. In combination, a centralizing shaft, a hub therefor provided with extensible locating arms, and arms fixedly positioned with relation to said shaft and provided with adjustable templets having marking holes.

5. In combination, a shaft, a hub having devices whereby to locate and fix said shaft in the normal center of a locomotive journal box, and an adjustable templet mounted on the shaft in a plane at right angles to said center.

6. In combination, a centralizing shaft, a hub therefor provided with extensible locating arms, set screw mechanism for positioning the centralizing shaft with relation to the hub, templet-supporting arms mounted on the shaft, and templets adjustably mounted on said arms.

7. In a device of the class described, a shaft-supporting hub provided with adjusting and locating devices, a shaft extending transversely through said hub, means for adjusting the shaft within the hub, templet supporting arms mounted on the shaft, and templets adjustably mounted on said arms.

8. In a device of the class described, a hub member provided with adjusting and locating devices and a rectangular opening, a box slidably mounted in said opening having a shaft bearing, a splined shaft rotatably mounted in said bearing provided with a lateral arm in splined engagement therewith, adjusting set screws for said arm mounted in the hub member whereby the spline-connected arm and shaft may be rotatably adjusted, means for adjusting the shaft box within the hub member, and templet members mounted on the shaft.

9. In a device of the class described, a hub member provided with adjusting and locating devices and a rectangular opening, a box slidably mounted in said opening having a shaft bearing, a splined shaft rotatably mounted in said bearing provided with a lateral arm in splined engagement therewith, adjusting set screws for said arm mounted in the hub member, means for adjusting the shaft box within the hub member, and a templet member in splined engagement with the shaft and movable longitudinally thereof.

10. In a device of the class described, a hub member provided with adjusting and locating devices and a rectangular opening, a box slidably mounted in said opening having a shaft bearing, a splined shaft rotatably mounted in said bearing provided with a lateral arm in splined engagement therewith, adjusting set screws for said arm mounted in the hub member, means for adjusting the shaft box within the hub member, and a templet member in splined engagement with the shaft and movable longitudinally thereof having relatively adjustable templet portions.

11. In a device of the class described, a hub member provided with adjusting and locating devices and a rectangular opening, a box slidably mounted in said opening having a shaft bearing, a splined shaft rotatably mounted in said bearing provided with a lateral arm in splined engagement therewith, adjusting set screws for said arm mounted in the hub member, means for adjusting the shaft box within the hub member, and a templet member in splined engagement with the shaft and movable longitudinally thereof and provided with a securing set screw.

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

JOSEPH D. LOGAN.

Witnesses:
E. R. RUFF,
H. E. RUFF.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."