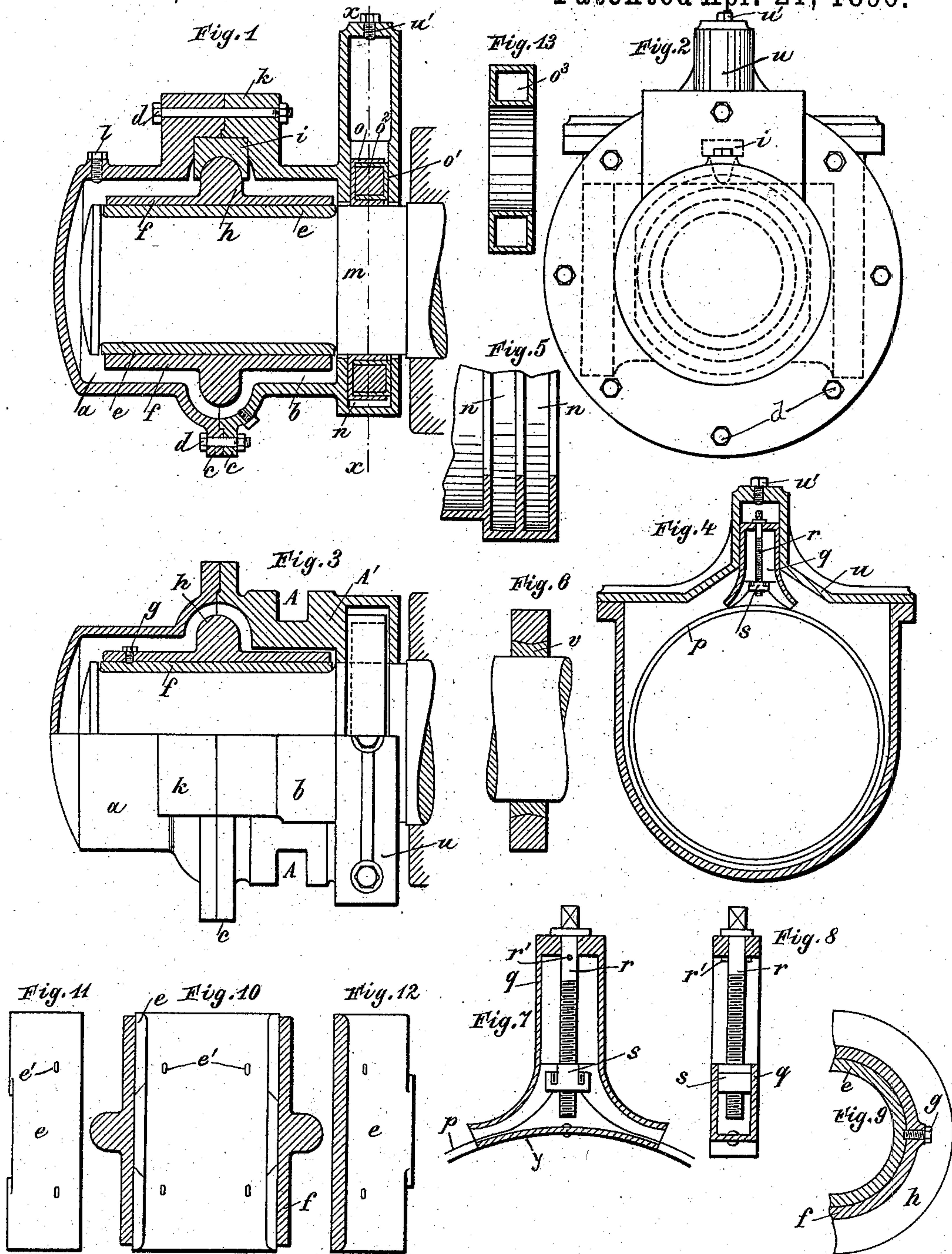


(No Model.)

J. KORBULY.
AXLE BOX FOR RAILWAY CARRIAGES.

No. 558,693.

Patented Apr. 21, 1896.



Witnesses:
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UNITED STATES PATENT OFFICE.

JOSEF KORBULY, OF BUDA-PESTH, AUSTRIA-HUNGARY.

AXLE-BOX FOR RAILWAY-CARRIAGES.

SPECIFICATION forming part of Letters Patent No. 558,693, dated April 21, 1896.

Application filed February 15, 1895. Serial No. 538,543. (No model.) Patented in Germany October 1, 1894, No. 77,316.

To all whom it may concern:

Be it known that I, JOSEF KORBULY, of Buda-Pesth, in the Empire of Austria-Hungary, have invented Improved Axle-Boxes for Railway-Carriages, (patented in Germany October 1, 1894, No. 77,316,) of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to axle-boxes of an improved construction offering the most important advantages, of which the following is a brief enumeration.

First, the journal of the axle is protected from the injurious effect of shocks or vibration; second, the bush of the bearing is made movable as readily as possible; third, the wear of the rolling or contact surfaces is reduced; fourth, special lubricating devices of any description—such as pads, wicks, or the like—may be dispensed with; fifth, the axle-journals are not liable to injury if the bearing should become heated while the carriage is in motion, and, sixth, the bearing is effectively protected from dust and impurities.

The invention will be best understood by reference to the accompanying drawings, in which—

Figure 1 is a vertical section of the improved axle-box. Fig. 2 is a front view thereof. Fig. 3 is a sectional plan or top view. Fig. 4 is a section on line xx , Fig. 1. Figs. 5 and 6 are views corresponding to part of Fig. 1 and illustrating other forms of the invention, and Figs. 7 to 13 are detail views.

The case of the bearing, which is so constructed as to accommodate railway-carriages of the usual construction, consists of the front a and back b . Both are connected over the center of the journal by vertical flanges c and screws d .

The bearing proper consists of two caps e , as shown in Fig. 9 in cross-section, while Fig. 10 is a view of the interior of the same, Fig. 11 a side view, and Fig. 12 a longitudinal section. These caps surround the journal completely and are sufficiently recessed or hollowed out to enable the journal to revolve in them with ease. On the outside they are turned slightly taper toward the end of the axle. After these caps have been placed upon the axle a compressing or tightening-sleeve f is passed over them, so that both caps are firmly retained in position. Screws g , Figs. 3 and 9, serve to prevent the tightening-sleeve

from turning and altering its position in relation to said caps. In the center of the sleeve is provided an annular rib or bead h , whereon a presser i is placed. The presser is embedded in the two halves a and b of the casing and is retained in place by them when they are screwed together. The pressure of the springs of the vehicle is exercised in the first place upon the upper enlargement k of the casing, and is transmitted hence to the presser i , the tightening-sleeve f , the caps of the bearing, and, lastly, from the caps to the axle. The presser is provided on its inner side with a recess corresponding in shape to the rounded projecting bead, which accordingly engages therein in such a manner that the requisite freedom of displacement in relation to the case of the bearing is afforded to both the tightening-sleeve f and the caps. As the caps and sleeve are not rigidly connected with the casing, it follows that in case of any concussion or vibration occurring while the carriage is in motion the said caps will slightly turn upon the journal, whereby uniformity in the wear of the contact-surfaces within the caps is insured.

When the bearing becomes heated through friction, the increased friction which ensues between the journal and the caps of the bearing causes the tightening-sleeve to be turned along with the journal. The grating noise produced by the friction between the bead of the tightening-sleeve and presser i will cause the fact that the bearing has become hot to be audibly notified, so that it becomes perceptible at a distance and steps can be taken to avert any possible danger or evil consequences.

A A are grooves in the casing or box of the axle. In these grooves slides the axle-fork of any usual construction. (Not shown.) Underneath the said grooves at A' , Fig. 3, the material of the casing has a swelling or enlarged portion, owing to which, in case of concussion and when the shocks sustained are communicated to the casing through the axle-fork, the thickened portion A' rests against the tightening-sleeve f , whereby those parts of the casing which are not so strong are protected from the effect of the shocks, and any breakage of the casing is obviated.

Lubricating-oil is admitted into the axle-box upon the screw l , Fig. 1, being loosened, when the whole of the casing is filled with oil

and the journal is constantly lubricated, the oil reaching it through perforations or ports e' , provided in the tightening-sleeve and caps. Thorough lubrication is insured, owing to the fact that in case of rapid motion the oil is drawn through the ports e' .

One of the main features of this invention is a device whereby the oil is prevented from escaping from the box. The arrangement in question consists of a ring of leather, india-rubber, felt, or othersuitable material, which is embedded in an annular groove n provided in the casing. By means of a device shown in Figs. 4, 7, and 8 the flexible ring is constantly and uniformly pressed against the journal and against the sides of the said annular groove, so that a thoroughly effective packing is obtained. To avoid complication in the drawings this arrangement has been omitted from Fig. 1, while in Fig. 4 the packing-ring is not shown. The said ring should preferably consist of two leather washers $o o'$, which are so pressed or molded as to present a square sectional area open on one side. They are then fitted within each other in such a manner that they inclose a ring o^2 of felt or the like (also of square section) between them, or a hollow ring o^3 , Fig. 13, of india-rubber, may be employed for filling up the space between the washers and as an advantageous substitute for the ring o^2 , in which case the hollow ring may be filled or inflated with compressed air. Around the outer ring is passed a compressing-band p , the ends of which are introduced into a casing or chamber q , the lower part of which is supported by a resilient or spring-controlled plate y' , adhering to the circumference of the ring. A binding or tightening screw r is passed through the top of the said case q and prevented from slipping out of the case accidentally by the insertion of a peg or bolt r' . Onto the screw r is movably fitted a nut s , which is so guided by the sides of the case q as to be effectively hindered from revolving. The ends of the compressing-band p are secured to the nut s , so that by turning the screw r they are either tightened or loosened, whereby the ring located within the groove is compressed more or less and brought into correspondingly close contact with the part m of the axle.

The case q is adjustably guided in the vertical direction within a lid or cover u , which is secured upon the back b of the case of the axle-box. The small case, and consequently the compressing band or strap p also, and the annular packing are hindered from participating in the rotation of the axle, and in order to avoid raising the said lid u whenever the screw r is turned such lid carries in its center a screw-plug u' , upon the removal of which the screw r may be turned by means of a spanner.

Where the axle has very wide journal-bases the case may be constructed in the manner illustrated in Fig. 5. In this arrangement

there are provided two annular grooves n in juxtaposition, and in these grooves may be embedded packing devices such as have been described above.

Where smaller journal-bases are used or where they have been shortened through wear, the modified arrangement, of which Fig. 6 is a transverse section, may be employed. In this case the ring v , having first been heated, is passed over the journal, such ring being provided on its periphery with an annular groove. Into this groove is inserted a packing-ring of corresponding shape. The tightening device to be used here is the same as that which is above described.

What I claim, and desire to secure by Letters Patent of the United States, is—

1. In an axle-box the combination of a casing, caps adapted to surround the journal, and a tightening-sleeve surrounding said caps, guided in the casing, and adapted to turn with the journal, substantially as set forth.

2. The combination of a casing, caps adapted to surround a journal, a rotatable tightening-sleeve surrounding the caps and having a head, and a presser such as i held in the casing and engaging the said head, substantially as set forth.

3. An axle-box consisting of the two halves a and b jointed on a vertical plane transverse to the axle, having vertical transverse securing-flanges c , and forming a closed oil-chamber, the outer half having a closed end integral with its cylindrical portion, substantially as set forth.

4. The combination of a casing forming an oil-reservoir, and having an annular groove opposite the base of the journal, a bearing for the journal within the casing and having a space between itself and the casing, a ring in said groove, a band around the ring, and a tightening means mounted in said groove engaging and adapted to draw upon the ends of the band for tightening the band, substantially as set forth.

5. The combination of the casing, the journal, the packing-ring composed of two portions each U-shaped in cross-section and laterally open, fitting one between the flanges of the other and inclosing a soft substance, and a tightening-band inclosing a ring, substantially as set forth.

6. The combination with the axle-box casing, of the journal, the caps e fitting the same, the sleeve f , a packing-ring adapted to surround the journal, a compressing-band p around the ring, a chamber q , a movable part s within the latter and connected with the ends of the band, and means for moving the said part, substantially as set forth.

In witness whereof I hereunto set my hand in presence of two witnesses.

JOSEF KORBULY.

Witnesses:

KARL FRANZ,
OTTO FABIAN.