

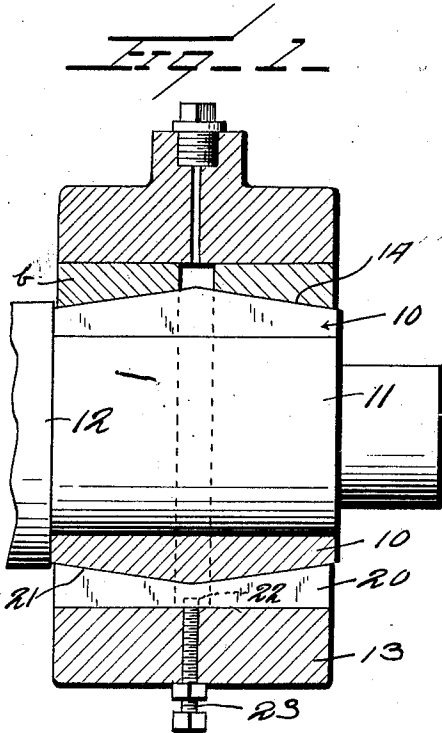
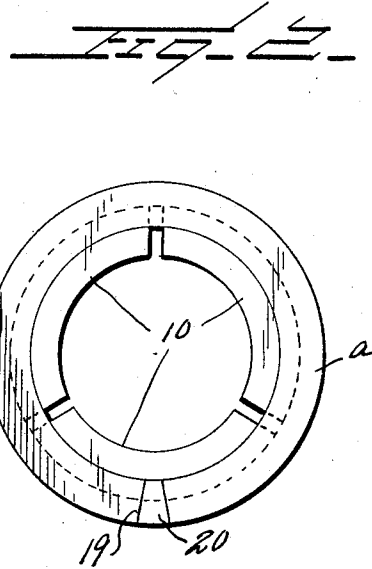
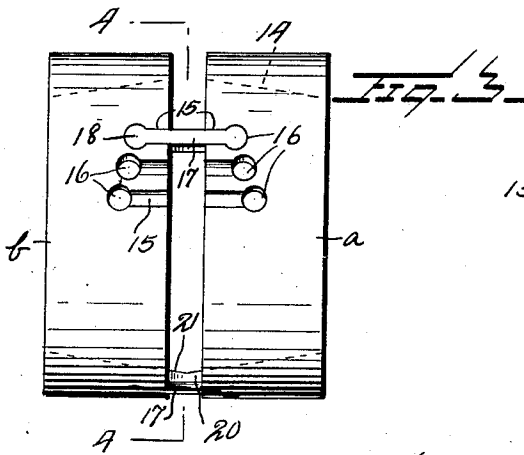
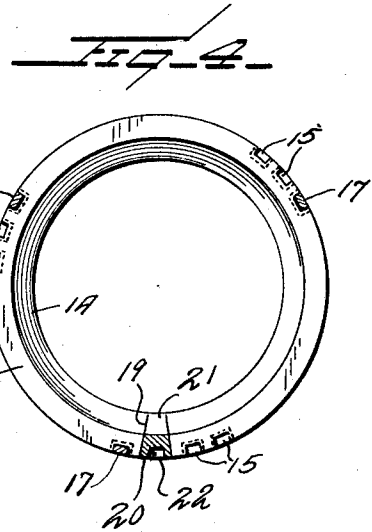
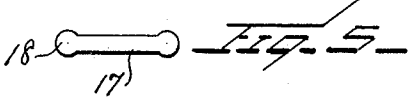
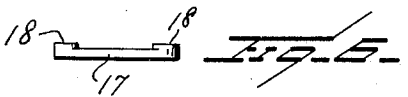
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W. H. CAREL, JR

1,741,183

ADJUSTABLE FLOATING BUSHING

Filed Dec. 8, 1927



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UNITED STATES PATENT OFFICE

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ADJUSTABLE FLOATING BUSHING

Application filed December 8, 1927. Serial No. 238,631.

This invention relates to bushings, and particularly to bushings designed to take up wear.

The general object of the invention is to provide an adjusting bushing so constructed that it may be readily inserted in place or withdrawn therefrom.

A further object is to provide a bushing of this character which will eliminate strain, which has no collars to break off, which provides for the retention of a large amount of grease, and which, when applied to the bearings of locomotive piston rods, valve rods, etc., permits wear to be taken up without the necessity of taking off the rod.

Other objects will appear in the course of the following description.

My invention is illustrated in the accompanying drawing, wherein:—

Figure 1 is a diametrical sectional view through a bearing constructed in accordance with my invention;

Figure 2 is an end elevation of the bronze bushing and the twin bushing;

Figure 3 is a top plan view of the twin bushing;

Figure 4 is an end elevation of one of the twin bushings;

Figure 5 is a plan view of one of the links;

Figure 6 is a side elevation of one of the links.

Referring to this drawing, it will be seen that I have illustrated my invention as applied to a crank pin of a locomotive, but it is to be understood that the bushing may be applied to many different parts without in any way departing from the spirit of the invention. The bearing comprises the inner floating bronze bushing 10 which is formed in three longitudinally extending sections of equal size. The outer face of this bronze bushing is tapered from the middle toward the ends thereof. The inner face of the bronze bushing is designed to fit the reduced portion 11 of a pin 12.

Disposed between the bronze bushing 10 and the bearing of rod 13 is a twin bushing formed in two sections *a* and *b*, these sections being alike. Each of these sections is annular in form and is tapered upon its inside face, as at 14, to fit the taper of the bushing 10. Each

of these sections *a* and *b* is formed at a plurality of equidistant points as, for instance, at three points with a set of coacting grooves 15 which extend inward from the inner edge of the section and terminate in circular recesses 16. Coacting with these recesses 16 are three keys 17, one for each set of grooves 15, each key terminating at its ends in circular heads 18, the heads 18 being adapted to fit within the recesses 16.

It will be seen from Figure 3 that the three grooves and recesses 15 and 16 in each set are of different lengths but that the keys are all of one length. Each section *a* or *b* of the twin bushing is split at 19, the end faces of the bushing section at the split being convergent, and this split accommodates the wedge-shaped key 20, as shown in Figure 4, whose inner face 21 is formed to fit the outer face of the floating bushing 10. This key is formed with the recess 22 and the eye of the connecting rod 13 is formed with a keeper bolt 23, which when turned home engages in the notch 22 of the key and holds this key from longitudinal movement. By turning up the keeper bolt, this key may be forced further in.

It will be seen that the bronze bushing is separated into three equal parts or sections and that the two sections *a* and *b* of the twin bushing are split. Thus this twin bushing is expansible under the action of the wedge and longitudinally shiftable upon the inclined outer face of the bronze bushing 10 by drawing the sections *a* and *b* closely toward each other. The wedge not only acts to expand this bushing but also acts as a keeper to keep the bushing from turning.

The primary object of this bushing is to take up wear and when the floating bushing 10 is worn so that it is approximately one-tenth larger than the pin (at which time it is ordinarily changed entirely and replaced by a new bushing), then the keeper bolt is withdrawn, thus permitting the floating bushing and the twin bushing to be shifted outward laterally and the links 17 are removed out of the shortest grooves 15 and placed in the next longer grooves, thus drawing the twin bushings nearer together and thus, of course, acting to force the floating bronze bushing

inward against the pin 11. When a bronze bushing is again worn to an extent requiring readjustment, the links 17 are shifted into the longest set of grooves 15 and this draws the two sections of the twin bushing up still closer together. Thus three adjustments of the twin bushings may be made before the floating bushing need be discarded and a new one inserted. By forcing the wedge 20 inward, the twin bushing may be expanded so as to fit the eye of the rod 13.

It will be seen that this bushing can be applied without taking the connecting rod off the pin and it permits the taking up of any wear on the bronze bushing from time to time as desired. A bushing of this character eliminates rod strain and acts as a universal joint on curves. It has no collars to break off and, therefore, prolongs the life of the bushing. The space between the twin bushing sections and the spaces between the three sections of the floating bronze bushing permit a large amount of grease to be retained within the bushing, thus reducing liability of hot pins or bearings.

I claim:—

1. A bearing comprising a centrally disposed bushing formed in a plurality of longitudinally extending sections, the outer face of said central bushing being tapered from the middle of the bushing outward to its ends, two opposed outer bushing sections having their inner faces inclined to fit upon the inclined outer face of the inner bushing, each of the outer bushing sections being split at one point, a wedge inserted in said split whereby the bushing sections may be enlarged, and means engaging the outer bushing sections with each other and adapted to be disposed to adjust the outer sections nearer to or further from each other to thus expand or contract the outer sections.

2. A bearing comprising a centrally disposed bushing formed in a plurality of longitudinally extending sections, the outer face of said central bushing being tapered from the middle of the bushing outward to its ends, two opposed outer bushing sections having their inner faces inclined to fit upon the inclined outer face of the inner bushing, each of the outer bushing sections being split at one point, a wedge inserted in said split whereby the bushing sections may be enlarged, the inner bushing sections having a plurality of sets of grooves, the grooves being parallel to the axis of the bushing sections, the grooves of each set being of different length and terminating in recesses, and keys, one for each set of grooves, having heads adapted to be disposed in said recesses, the keys being adjustable into different recesses in order to expand or contract the outer bushing.

3. A bearing of the character described including a central member and an outer con-

centric element, one rotatable with relation to the other, a floating bushing surrounding the central member and formed of a plurality of longitudinally separated sections, said bushing being tapered from its middle toward its ends, an outer bushing surrounding the floating bushing and formed of two laterally opposed, annular members, each split at one point and each having its inner face inclined to fit against the tapered face of the floating bushing, each section of the twin bushing being formed with a plurality of sets of grooves extending inward from the inner edge of the twin bushing section toward the outer edge thereof, the grooves of each set differing in length and each groove terminating in a recess, a plurality of locking keys adapted to be inserted in said grooves and having heads at the ends receivable in said recesses, the keys being adjustable in the sets of grooves to thereby laterally contract or expand the twin bushings, a wedge insertible in the split of the twin bushing, the inner face of the wedge being formed to conform to the outer face of the floating bushing, and a keeper bolt extending through the outer element and engaging in the outer face of said wedge whereby said wedge may be forced inward as desired.

In testimony whereof I hereunto affix my signature.

WILLIAM H. CAREL, Jr.