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BEARINGS FOR FORK STEMS

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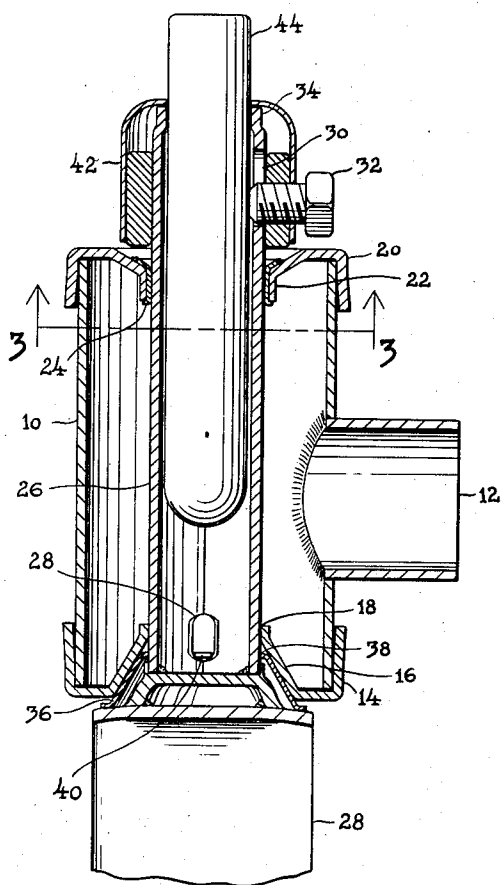


Fig. 1

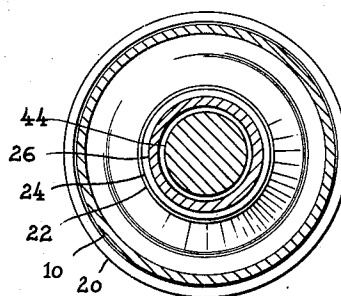


Fig. 3

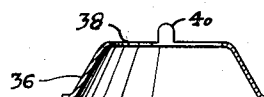


Fig. 2

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BEARINGS FOR FORK STEMS

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2 Claims. (Cl. 280—279)

This invention relates to improvements in bearings for fork stems of velocipedes and the like.

An object of this invention is to provide an inexpensive, quiet, smoothly operating bearing of this type which has a relatively long life.

Such bearing includes a cone shaped lower bushing which moves with the fork stem and rides in a complementary concave seat in the lower head cap under both radial and axial thrust. The fork stem opening in such cap closely engages the fork stem as an additional precaution to maintain proper alinement during moments when the head tube is jarred upwardly of the fork stem. A sleeve-like bushing is fitted in the upper head cap and provides a radial bearing for the fork stem. Such stem is held assembled by the usual handle bar collar, however, in this instance the top of the fork stem has a reduced diameter to closely engage the handle bar post and provide a tight adjustable support.

In the accompanying drawing:

Fig. 1 is a vertical central section taken through the head tube, backbone, and fork of a velocipede illustrating a fork stem bearing embodying the present invention;

Fig. 2 is a sectional view of the cone shaped bushing forming one of the elements of this invention; and

Fig. 3 is a sectional view taken on the line 3—3 of Fig. 1.

A comparatively large diameter head tube 10 is welded to the upper end of a backbone 12 of a velocipede in the customary manner. Such head tube is provided with a lower head cap 14 which is rigidly seated over the bottom of the head tube 10 and welded or otherwise secured. The lower head cap 14 has a concave seat 16 and a central opening 18 which closely engages the fork stem. An upper head cap 20 is seated over the top of the head tube 10 and secured thereto in the same manner as the lower head cap. The upper head cap 20 has an internal down-turned cylindrical flange 22 into which is press fitted a sleeve-type bronze bushing 24. This bushing is held rigidly in place by having its ends spun over against the internal flange 22. Such bushing has an inside diameter having a close bearing fit on the fork stem.

A formed tubular fork stem 26 is rigidly secured to the upper central part of the fork 28 in the manner customary in this art. At its lower end the fork stem 26 is provided with an oblong opening 28 which may be punched therein or made by aligned notches in each edge of the seam of the tube. Near its upper end the stem 26 has another oblong opening 30 which will adjustably receive the inner end of a set screw 32. The top of the stem 26 is swaged inwardly to provide a reduced diameter neck 34.

Before the fork stem 26 is assembled into the head tube a hollow conical shape brass bushing 36 having a central opening 38 upwardly from the edge of which projects a tab 40, is fitted over the stem 26 so that only the lower annular shoulders of the bushing rest on the bridge of the fork 28. The bushing does not, therefore, have to fit the irregularities of the surfaces joining the fork stem 26 and the fork 28. With the bushing in this position, the tab 40 is bent inwardly so as to fit into the lower oblong opening 28 and thus create inter-engaging means between the bushing and the stem so that

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they are constrained to rotate together. The stem 26 is then inserted upwardly through the central opening 18 in the lower head cap 14 and through the cylindrical bushing 24 in the upper head cap 20 until the conical bushing 36 rests in the concave seat 16. The smooth, long wearing, quiet sliding engagement between the conical bushing 36 and the concave seat 16 will provide both radial and axial support when vertically downward weight is placed on the head tube 10.

With the lower bearing bushing properly seated, a handle bar collar assembly 42 of usual design is seated over the upper end of the stem 26 and when a handle bar post 44 is fitted in the reduced neck 34, the tightening of set screw 32 threaded in the handle bar collar assembly will cause a frictional clamping engagement between such assembly, post and tube. The reduced neck 34 assists in making a tight clamp and in centrally locating the handle bar post.

The user in adjusting the height of the handle bar will often fail to make a close sliding fit between the handle bar collar assembly 42 and the upper head cap 20. Because of this, there will be freedom of vertical movement between the head tube 10 and the fork stem 26. While the downward thrust constantly imposed on the conical bushing 36 creates a radial thrust component causing it to maintain proper axial alinement nevertheless, there are times when going over bumps that the head tube will be jarred upwardly with respect to the fork stem. Misalignment is prevented during such momentary condition by a rather close sliding fit between the central opening 18 of the lower head cap 14 and the fork stem 26. This engagement provides a temporary bearing which need not include bearing materials because its use is momentary and it does not carry a heavy load.

I claim:

1. A bearing including a head tube having upper and lower caps with central fork stem receiving openings, a sleeve type bushing rigidly held in the opening of said upper cap, a fork having a fork stem with a lower end, a hollow conical shaped ring type bushing at said lower end having an opening fitted over said fork stem, said bushing having a lower annular shoulder resting on said fork to hold said bushing with the interior of its conical wall out of contact with said fork and fork stem and the juncture therebetween, inter-engaging parts on said stem and conical shaped bushing to restrain relative rotation therebetween, and a concave seat on said lower head cap, said stem being positioned in said head tube with said conical bearing resting in said concave seat and said sleeve-type bushing surrounding said tube.

2. A bearing for a fork stem operable in a head tube, said bearing including a lower conical shaped bushing mounted over said fork stem and rotatable therewith, a lower cap on said head tube having a concave seat in which said bushing rotates to take both axial and radial loads, said fork stem having an opening in the side thereof and said bushing having a tab bent into said opening to cause said stem and bushing to rotate together.

References Cited in the file of this patent

UNITED STATES PATENTS

1,448,157	Selik	Mar. 13, 1923
1,948,176	Hopkins et al.	Feb. 20, 1934
2,178,708	Snell	Nov. 7, 1939
2,202,479	Bullock	May 28, 1940
2,310,064	Conti	Feb. 2, 1943

FOREIGN PATENTS

651,948	Great Britain	Apr. 11, 1951
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