No. 715,171. Patented Dec. 2, 1902.

A. C. STILSON.

ROLLER BEARING.

(Application filed May 17, 1902.)

(No Model.)

Fig. 1.

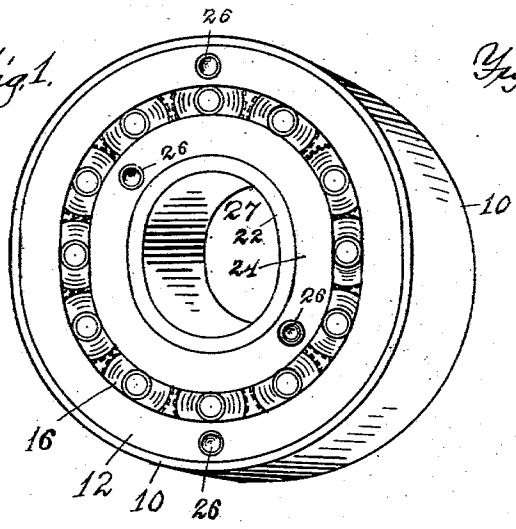


Fig. 2.

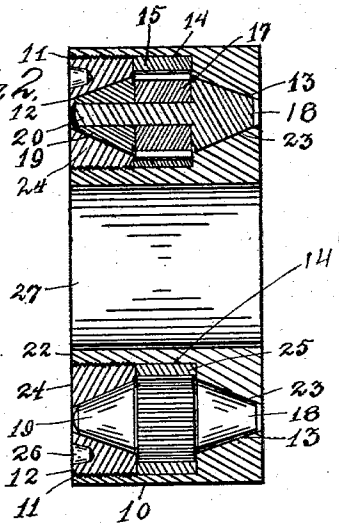


Fig. 3.

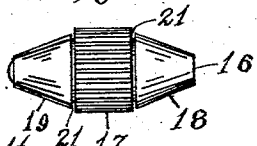
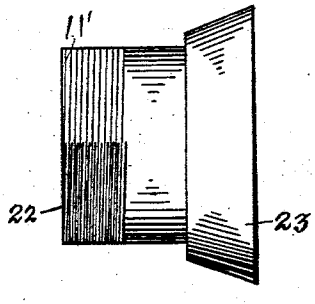
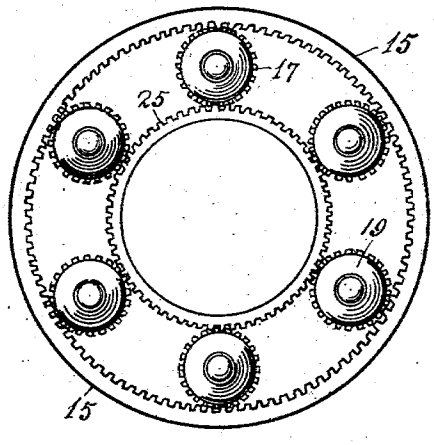


Fig. 4.

Fig. 5.





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UNITED STATES PATENT OFFICE.

AMOS CLINTON STILSON, OF EAST BRADFORD, PENNSYLVANIA.

ROLLER-BEARING.

SPECIFICATION forming part of Letters Patent No. 715,171, dated December 2, 1902.

Application filed May 17, 1902. Serial No. 107,746. (No model.)

To all whom it may concern:

Be it known that I, AMOS CLINTON STILSON, a citizen of the United States, residing at East Bradford, in the county of McKean and State of Pennsylvania, have invented new and useful Improvements in Roller-Bearings, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

My invention relates to the class of anti-friction-roller bearings shown in my former Letters Patent, No. 469,890, dated March 1, 1892, and No. 567,697, dated September 15, 1896; and the objects of my improvement are, first, to provide beveled tracks for bevel or taper ended rollers, in combination with an idler-gear, that end thrusts may be prevented, and, second, to so construct the parts that they may be made and combined in the simplest and cheapest manner and so that the rollers may have relative adjustment to the tracks.

In the drawings, Figure 1 is a perspective view of my roller-bearing. Fig. 2 is a sectional view at line X X in Fig. 1, with the exception of the lower roller. Fig. 3 is an elevation of roller with beveled or tapered ends and central gear. Fig. 4 is an end elevation of the detached idler-gear rings with rollers in position. Fig. 5 is a side elevation of the inner tube, which is threaded at one end and has beveled track at the other with a central space for the inner idler-gear ring.

Similar numerals refer to corresponding parts.

The numeral 10 is the outer part of the shell or casing, which is usually made smooth on the outside and has thread 11 cut on its inner side at one end. The other end of the inner side of part 10 is formed with a beveled track 13, which forms a conical-shaped opening for the purpose hereinafter fully set forth. The enlarged end of track 13 extends inwardly. The portion 14 is left smooth to receive the idler spacing-gear ring 15, which ring is revolubly mounted within part 10 on the portion 14.

Numeral 12 is an adjustable beveled track-ring, which has a screw-thread cut on its outer side, and its inner surface forms a conical-shaped opening or track similar to track 13. The thread on the outside of ring 12 enters the thread 11, cut on the inner side of part 10, and holds spacing-gear ring 15 in position on one side and with track 13 on the other side.

The numeral 22 is the central part of the shell or casing, which corresponds to the inner side of part 10 in its arrangement. It has a central opening 27 for the journal. A thread 11′ is cut on the outer side at one end. A beveled cone-shaped track 23 is formed on the opposite end from said thread end. The smaller end of the cone extends inwardly and the base outwardly. Between the threaded end 11′ and track 23 is the smooth part 14′, on which is revolubly mounted the idler spacing-gear ring 25.

Numeral 24 is an adjustable cone-shaped track-ring, having its inner side threaded and its outer side to form a cone-shaped track. Said inner threaded side of ring 24 screws onto threaded end 11′ and forms an opposite adjusting-ring to ring 12, the smaller end of the cone extending inwardly.

The numerals 16 16 are my rollers, which I usually make in the following manner: A central piece having a cone end 18 and a shaft 20 therefrom forms the foundation of the roller. The idler spur-gear 17, cut like a common pinion, is revolubly mounted on shaft 20, next to the base of cone 18. I usually permanently fasten cone end 19 upon shaft 20 by riveting the end of the shaft, thus holding the geared ring forming the roller-gear 17 in place. A groove 21, as shown in Fig. 3, is cut in the outer edge of the base of cone ends 18 and 19 each side of central gear 17 for clearance in case of adjustment of the rollers to their tracks. The cone-shaped ends 18 and 19 of the rollers are tapered outwardly toward a blunt apex from the "pitch-line" of the gear 17 and tracks 12 13 and 22 24, having a corresponding inward bevel to match the cone ends and hold them in position against lateral thrust. By this arrangement the lateral thrust is resisted and the lateral strain is distributed and equalized throughout the entire casing or shell.

It will be seen that the assembling of my roller-bearing is easily accomplished. First, the geared rings 17 are mounted on the shaft 20, and cone end 19 is riveted on each roller. Then the shell parts 10 22 are placed on end,

with the threaded ends upward. The spacing-gear rings 15 25 are slipped into place. As many rollers as desired may then be dropped into these gears, which hold them upright in place. They may be placed so close together that they will almost mesh, as in Fig. 1, or farther apart, as in Fig. 4, care being taken that they are placed about equidistant in order to obtain the best results. It is apparent that the rollers will be held in position by the idler-gears and kept equidistant as placed and without friction on the gears, since the only office of the gears is to keep the rollers in place. The gears do not bear any of the weight. This falls entirely on the cone-shaped tracks and roller ends. The adjusting-rings 12 24 are then screwed into place, the bearing of the rollers being quickly adjusted with a pointed spanner in holes 26 26 in the outer ends of rings 12 and 24.

It is also apparent that I have reduced the parts of my bearing to such simple form that they can be cheaply cut by automatic machinery, being well-known circular forms which are familiar to machinists.

I claim as new—

1. A roller for roller-bearings comprising a conical bearing end having a shaft extending therefrom, an idler-gear ring on said shaft, and a conical ring secured on said shaft to hold said gear-ring and form a bearing end.

2. A roller-bearing comprising rollers having conical ends which taper outwardly, idler-gears on said rollers, and a suitable casing therefor.

3. A roller-bearing comprising a suitable casing having idler-gears therein, rollers having conical ends which taper toward each end, and idler-gears on said rollers between said ends.

4. A roller-bearing comprising rollers, each having tapered ends and an intermediate roller-gear; suitable tracks for said tapered ends; and outer and inner spacing-gears in mesh with the roller-gears.

5. A roller-bearing comprising rollers, each having tapered ends and an intermediate idler roller-gear; suitable tracks for said tapered ends and outer and inner spacing-gears in mesh with the roller-gears.

6. A roller-bearing comprising rollers, each having tapered ends and an intermediate roller-gear; suitable tracks for said tapered ends and idler outer and inner spacing-gears in mesh with the roller-gears.

7. A roller-bearing comprising rollers, each having tapered ends and an intermediate idler roller-gear; suitable tracks for said tapered ends; and idler outer and inner spacing-gears in mesh with the roller-gears.

8. A roller-bearing comprising rollers, each having tapered ends and an intermediate roller-gear; suitable tracks for said tapered ends; outer and inner spacing-gears in mesh with the roller-gears; and means for adjusting the position of one of the tracks relative to another.

9. A roller-bearing comprising rollers having conical ends which taper outwardly, idler-gears on said rollers, a casing having idler-gears therein to mesh in said roller-gears, fixed bevel-tracks at one end of said casing and adjustable beveled tracks at the other end for said rollers.

10. A roller-bearing comprising a casing composed of outer and inner tubular-shaped parts, opposite fixed tracks on one end of said parts and adjustable tracks on the other end, the bevel on said tracks contracting outwardly, idler-gear rings between said tracks, rollers having conical ends which taper outwardly at the angle of said tracks, and idler-gears on said rollers between said conical ends to mesh in said gear-rings.

11. A roller-bearing comprising an outer casing; a beveled track adjustably secured within said casing; a beveled track at the opposite end of the casing; an inner bearing comprising an adjustable beveled track and an opposing beveled track; rollers tapering at the ends arranged between the tracks; intermediate gears on the rollers; and outer and inner spacer-gears meshing with said roller-gears.

12. A roller-bearing comprising the outer shell 10 having the integral beveled track at one end, and the internal screw-threads at the opposite end; the threaded beveled track 12 arranged in the screw-threads of the shell; the spacing-gear 15 arranged as an idler in the casing; the roll 18 having tapered ends adapted to the beveled tracks of the casing, said roll being provided with the roller-gear 17 intermediate the tapered ends, said gear being arranged as an idler on said roll; the sleeve 22 having the integral beveled track thereon; the adjustable track 24 at the opposite end of said sleeve and the spacing-gear 25, said spacing-gear being arranged as an idler on the sleeve 22.

13. A roller-bearing comprising rollers, each being provided with a gear; suitable tracks for said rollers; outer and inner spacing-gears in mesh with the gears on the rollers, certain of said gears being arranged as idlers.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

AMOS CLINTON STILSON.

Witnesses:
A. W. KETTLE,
S. A. BALDWIN.