No. 828,387. PATENTED AUG. 14, 1906.

T. S. CRANE.

FLEXIBLE ROLL FOR ROLLER BEARINGS.

APPLICATION FILED AUG. 4, 1902. RENEWED FEB. 10, 1906.

Fig. 1.

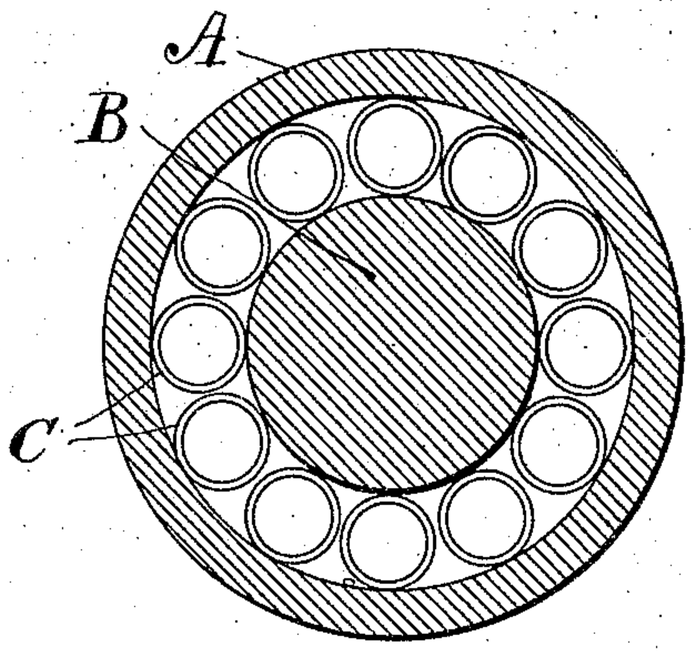

Fig. 5.

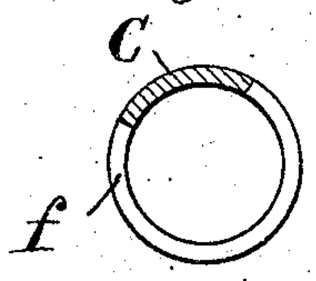

Fig. 6.

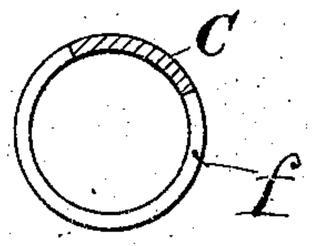

Fig. 4.

Fig. 2.

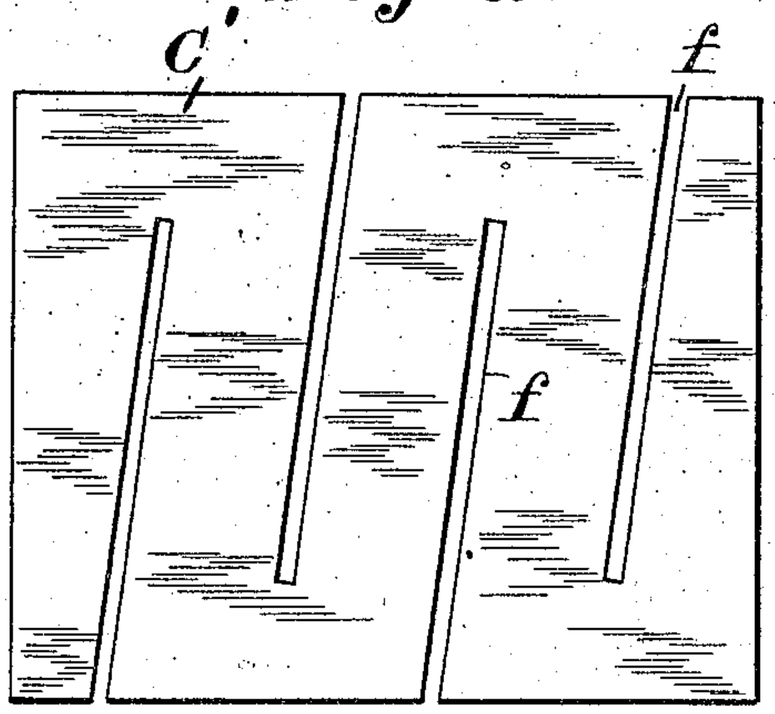

Fig. 3.

Attest:
L. Lee.
Arthur F. Hoard

Inventor.
Thomas S. Crane

UNITED STATES PATENT OFFICE.

THOMAS S. CRANE, OF ORANGE, NEW JERSEY, ASSIGNOR TO HYATT ROLLER BEARING COMPANY, OF HARRISON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

FLEXIBLE ROLL FOR ROLLER-BEARINGS.

No. 828,387. Specification of Letters Patent. Patented Aug. 14, 1906.

Application filed August 4, 1902. Renewed February 10, 1906. Serial No. 300,498.

To all whom it may concern:

Be it known that I, THOMAS S. CRANE, a citizen of the United States, residing at 24 Reynolds Terrace, Orange, county of Essex, State of New Jersey, have invented certain new and useful Improvements in Flexible Rolls for Roller-Bearings, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

The object of the present invention is to furnish an antifriction-roll for journal-bearings which may be constructed from a flat blank of sheet metal by merely stamping slots in the said blank and bending the same into cylindrical form. By removing a narrow strip of the metal in the formation of the slots the several coils of the roll are sufficiently separated from one another to bend very freely when subjected to lateral strain.

In the constructions heretofore employed the roll is not provided with open slits which remain open in the normal operation of the roll, and the circularly-disposed parts are not, therefore, able to yield laterally without crowding against one another. In the present invention I employ a rectangular blank and make the roll of length very considerable in relation to its diameter, and the open slots are extended inward from the opposite edges of the blank, so that when the latter is rolled into cylindrical form the edges of the blank form a joint longitudinal upon one side of the roll, and the slots extend alternately from such joint in opposite directions only partially around the roll. Where a longitudinal joint exists, the slots could not extend all the way around the roll without completely dividing it, and my construction, therefore, requires that the slots should extend around the roll a sufficient degree to impart flexibility, but not divide it. To make the roll yield freely to pressure upon all sides, the slots are extended alternately from opposite edges of the blank, so as to form adjacent coil-sections, which are united at their alternate ends and are thus adapted to yield equally to flexure upon any side of the roll. The slots are made parallel with one another and are preferably extended inward from the edges of the blank obliquely, so that when the blank is rolled up the successive sections of the roll form spiral coil-sections whose edges roll over different parts of the journal-casing, and thus avoid the continuous wear of the casing in the same place.

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

Figure 1 is a diagram of a journal-bearing with the journal supported in the bearing by twelve of the sheet-metal rolls. Fig. 2 is a plan of the blank for one of the rolls, and Fig. 3 the roll formed therefrom viewed from the side which exhibits the longitudinal joint. Fig. 4 is an edge view of such roll, showing the notches of the slits extending from one side of the roll nearly to the opposite side. Fig. 5 is a section on line 5 5 in Fig. 3, and Fig. 6 is a section on line 6 6 in Fig. 3.

In Fig. 1, A designates the casing or box of the roller-bearing, B the journal of the shaft supported therein, and C the antifriction-rolls formed of sheet metal.

In Fig. 2 a sheet-metal blank C′ is shown with open slots *f*, extended alternately from opposite edges of the blank nearly across the same. The slots are extended obliquely and parallel with one another, so as to form when the blank is rolled a series of adjacent spiral coil-sections, which are separated by the open slots *f* and their ends united adjacent to the longitudinal joint. Such connection of the sections enables them to yield very freely when any of them is subjected to pressure independently of the others, as may be caused by the presence of dirt or foreign substance at some particular point in the roller-casing A. Such yielding of the roll enables it to move freely within the casing, which cannot occur if the rolls are made solid or rigid. Lateral pressure and the necessity of yielding transversely are also caused whenever the journal or the casing of the roller-bearing is worn out of cylindrical shape, and the open slots between the coil-sections permit the roll to yield very freely by flexure at the points where the ends of the adjacent sections are united together. Such points exist upon each edge of the joint, as will be seen by inspecting Figs. 2 and 3, between the open ends of the slots, as the bottom of the intermediate slot extends inward to such point, leaving sufficient metal to connect the ends of the coil-sections.

My construction is exceedingly cheap, while it forms a light and elastic roll, and a

series of such rolls of the same length as the roller-bearing is adapted to support a journal which is not loaded beyond a proper limit and when properly loaded forms a journal-bearing of very elastic character.

I am aware that flexible rolls have been made from a solid welded pipe notched upon opposite sides, also from a spirally-wound strip, and also from a broad blank punched into V shape, and I do not, therefore, claim the mere use of open slots to promote flexibility nor the use of sheet metal to cheapen the manufacture of a roll; but my invention differs from all others in using a sheet-metal blank of rectangular form which can be cut from the sheet without any waste and the formation of the slots by stamping, which produces the construction at the lowest possible cost. Such construction furnishes all the advantages of open slots without forming the same by sawing or milling in the sides of a solid pipe. My invention is distinguished from any such solid-pipe construction by the longitudinal butt-joint upon one side, which permits the structure to be made from a flat rectangular blank by the mere operations of punching the slots and rolling the blank to cylindrical form.

Having thus distinguished my invention, what I claim herein is—

1. The antifriction journal-bearing roll herein described, comprising a cylindrical sheet-metal body having a longitudinal butt-joint upon one side, and open slots extended from said joint alternately in opposite directions partially around the roll, forming adjacent coil-sections united at alternate ends, with free spaces between said coil-sections to permit the several coil-sections to yield in relation to one another, to promote the flexure of the roll in different directions when required.

2. The antifriction journal-bearing roll herein described, comprising a cylindrical sheet-metal body having a longitudinal butt-joint upon one side, and open parallel slots extending obliquely from said joint alternately in opposite directions partially around the roll forming adjacent spiral coil-sections united at alternate ends with free spaces between said coil-sections, to permit the several coil-sections to yield in relation to one another, to promote the flexure of the roll in different directions when required.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

THOMAS S. CRANE.

Witnesses:
L. LEE,
C. F. CONNER.