July 29, 1941. F. E. BOZEMAN, JR 2,251,031

DRAWING ROLL COUPLING

Filed July 22, 1940

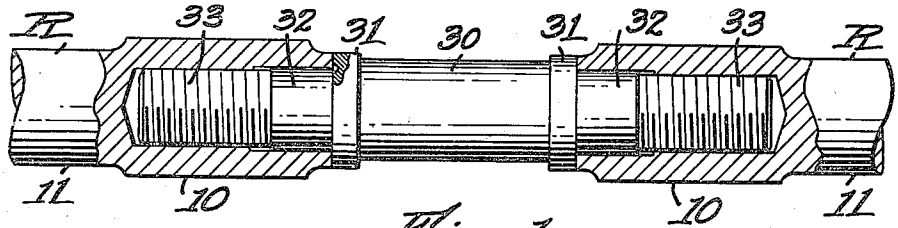


Fig. 1.

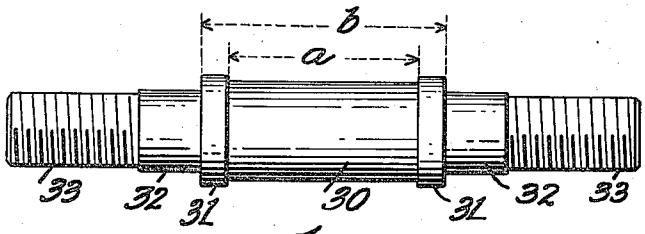


Fig. 2.

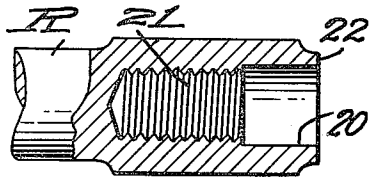


Fig. 3.

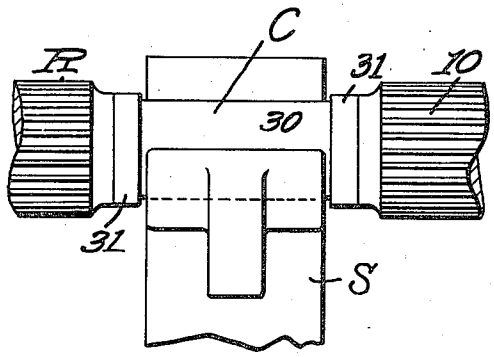


Fig. 4.

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DRAWING ROLL COUPLING

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Application July 22, 1940, Serial No. 346,743

1 Claim. (Cl. 19—141)

This invention relates to machines for preparing textile fibers, such as spinning and twisting frames, and relates more particularly to the rolls used for drawing the fibers in such machines. These drawing rolls extend the entire length of the machines and may be twenty or thirty feet in length. The rolls commonly rotate in open bearings in spaced roll stands, and the bearing portions of the drawing rolls are subject to substantial wear.

It is the general object of my invention to provide an improved construction by which a worn bearing portion of a drawing roll may be easily and economically repaired or renewed.

To the attainment of this object, I provide improved coupling members which are adapted to be inserted at each worn bearing and which are also adapted to be renewed, if a new coupling in its turn becomes substantially worn. I also provide means by which the overall length of a drawing roll may be easily and accurately maintained when a worn bearing portion is repaired or renewed.

My invention further relates to arrangements and combinations of parts which will be hereinafter described and more particularly pointed out in the appended claim.

A preferred form of the invention is shown in the drawing, in which—

Fig. 1 is a sectional side elevation showing my improved coupling member in operative relation to portions of a drawing roll;

Fig. 2 is a front elevation of the coupling member;

Fig. 3 is a sectional view of an end portion of a drawing roll adapted to receive my improved coupling member; and

Fig. 4 is a detail view of a portion of a drawing roll mounted in a roll stand or bearing.

Referring to the drawing, I have shown a portion of a drawing roll R, adapted to be rotatably mounted in bearings in spaced roll stands S (Fig. 4). Each drawing roll comprises fluted drawing portions 10 separated by interposed non-fluted portions 11, this being the usual construction.

In adapting a worn drawing roll R for use with my improved coupling members, I divide the roll into sections and provide each roll section with an outer cylindrical recess 20 in each end and aligned with the axis thereof, and with an inner threaded recess 21 aligned with the recess 20.

The cylindrical recess 20 is of somewhat larger diameter than the threaded recess 21, and the cylindrical wall of the recess 20 is accurately sized, either by grinding or reaming. The end surfaces 22 of each roll section are faced off to be accurately normal to the axis of the roll and to be accurately spaced apart and thus provide a predetermined length for each roll section.

My improved coupling member, as shown in Fig. 2, comprises a center bearing portion 30, an enlarged flange 31 at each end of the center bearing portion, a cylindrical aligning portion 32 outside of each flange 31, and a threaded portion 33 beyond each cylindrical portion 32.

The center bearing portion 30 is preferably hardened and is ground to the exact diameter of the bearing in which it will rotate, and the distance *a* between the flanges 31 is made such as to clear the sides of the roll stand when inserted therein, as shown in Fig. 4.

The distance *b* between the outer faces of the flanges 31 is maintained at a carefully predetermined length, as this dimension, plus the predetermined length of the roll section between the surfaces 22, determines the operative length of the drawing roll. As each roll is made up of several sections, with a corresponding number of coupling members, accurate maintenance of the dimension *b*, as well as of the length of each roll section, is necessary to prevent cumulative errors in the length and spacing of the drawing roll.

Each cylindrical aligning portion 32 is accurately sized, preferably by grinding, and fits closely in the associated cylindrical recess 20 in the end of a drawing roll section.

It will be noted also that the length of the aligning portion 32 is less than the depth of the recess 20, so that the portion 32 does not seat against the inner end of the recess when the flange 31 abuts the end surface 22 of the roll. Similarly, the threaded portion 33 of the coupling, which fits the threaded recess 21 of the roll section, does not seat in the end of the threaded recess.

Consequently, the spacing apart of the ends of the roll sections is determined solely by the distance between the outer faces of the flanges 31, and no particular accuracy is necessary in the depth of the cylindrical recess 20 nor of the threaded recess 21. Obviously, the overall length determined by the end surfaces 22 is a very easy longitudinal dimension to maintain accurately.

When bearing portions of a drawing roll become worn, the roll is removed and severed or separated at each bearing portion. Each section is then bored, threaded and ground or reamed

to provide the construction shown in Fig. 3, and the end surfaces **22** are accurately faced off and accurately spaced.

When two adjacent sections are thus prepared, they may be readily connected by inserting a coupling member C between the ends of adjacent roll sections and firmly screwing the parts together. The aligning portions **32**, in conjunction with the carefully faced flanges **31**, serve to accurately line up adjacent roll sections. If in course of time the bearings in a repaired roll should again become worn, the worn coupling members may be removed by unscrewing the parts and new coupling members may be inserted, whereupon the roll is then in condition for further use.

Having thus described my invention and the advantages thereof, I do not wish to be limited to the details herein disclosed, otherwise than as set forth in the claim, but what I claim is:

In a textile machine, a drawing roll comprising a plurality of roll sections and a plurality of interposed coupling members, each roll section having accurately spaced outer end surfaces, a cylindrical outer recess at each end and a threaded inner recess of less diameter, and each coupling member having a cylindrical center bearing portion, an annular portion of greater diameter at each end of said center bearing portion, a cylindrical aligning portion at the outer side of each annular portion and closely fitting one of said cylindrical recesses in an associated roll section, and a threaded portion of less diameter at the outer end of each aligning portion fitting one of said threaded inner recesses, each aligning portion being of less length than its associated cylindrical recess, each threaded portion terminating short of the inner end of its threaded recess when assembled, and the outer faces of said annular portions being accurately and definitely spaced apart and engaging the ends of adjacent drawing roll sections and thereby accurately determining the axial spacing of said roll sections.

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