

No. 820,982.

PATENTED MAY 22, 1906.

C. MILLS.
DRAWING ROLL.
APPLICATION FILED MAR. 23, 1904.

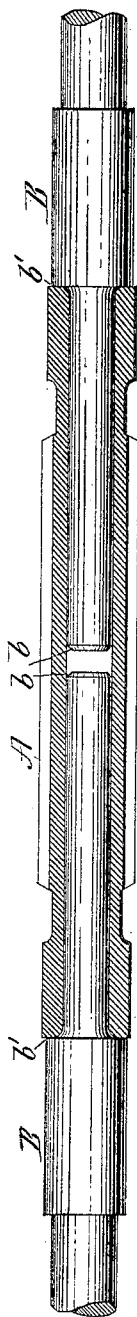


FIG. 1

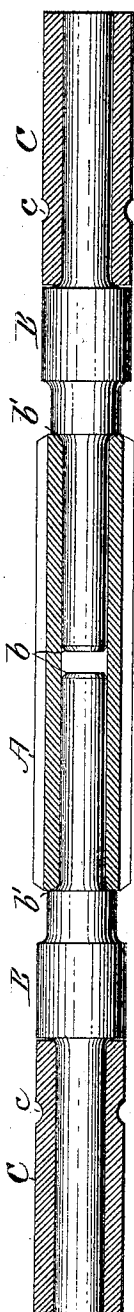


FIG. 2

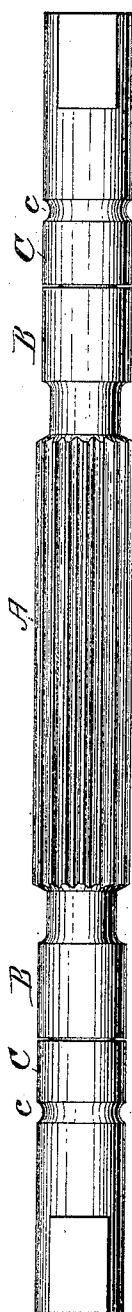


FIG. 3



FIG. 4

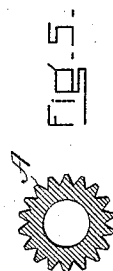


FIG. 5

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UNITED STATES PATENT OFFICE.

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DRAWING-ROLL.

No. 820,982.

Specification of Letters Patent.

Patented May 22, 1906.

Application filed March 23, 1904. Serial No. 199,623.

To all whom it may concern:

Be it known that I, CHARLES MILLS, a citizen of the United States, residing at Newton, in the county of Middlesex and State of Massachusetts, have invented a new and useful Improvement in Drawing-Rolls, of which the following is a specification.

My invention relates to the boss of the drawing-roll used in drawing-frames. Such frames are of varying widths, and the drawing-roll as a whole is ordinarily made of steel and is long enough to extend from one side of the frame to the other, each roll containing a proper number of bosses, according to the number of spinning-heads contained in the frame. Such a roll therefore may be of several feet in length and is of comparatively small diameter.

It is the experience of the spinner that where the roving or thread breaks the end, if it has passed between the drawing-rolls, is apt to wind around the boss, in which case before the machine has been stopped a considerable length of the roving or thread may have wound around this boss. The operator is then obliged to cut off the thread so wound on the boss and in doing this uses a knife which he is apt to handle rather roughly and in such a manner as in time to badly dent the boss and eventually render it unfit for use, in which case the entire frame must be stopped and a new roll put in place either temporarily or permanently, according as the boss can be refluted or not.

While it might be evident that the boss would not be injured if made of hardened steel, this has been heretofore impracticable for the reason that the small diameter of the roll in proportion to its length will allow it to warp or bend out of shape when heated to a proper temperature for the ordinary hardening process unless it is handled with the greatest possible care.

My invention is intended to overcome this trouble; and it consists, primarily, in a boss made independent of the roll and in the form of a sleeve, the drawing-roll as above comprising either one single shaft upon which one or more bosses are mounted or a series of shafts connected or coupled together by means of the bosses in the manner to be described.

My invention will be understood by refer-

ence to the drawings, in which I have shown, in Figure 1, partially in section, a portion of a roll comprising a hardened-steel boss which serves as a coupling for the ends of two adjacent sections, the boss being shown in longitudinal section. Fig. 2 is a similar view, the boss serving to couple the adjacent ends of two gudgeons the outer ends of which are mounted in suitable bearings. Fig. 3 is an elevation of the roll shown in Fig. 2. Fig. 4 is a roll made up of a single shaft upon which are mounted a series of bosses of the character specified. Fig. 5 is a cross-section of one of the bosses.

In the drawings, A is the boss, which will be of such a length as is required for the work it is to do, such length being well known to those skilled in the art and, in fact, varying from about one inch to about seven and one-half inches. Such a boss is made of steel, its periphery being grooved or fluted to the usual shape and is bored through its center, as shown, the passage so formed being, say, one-half inch in diameter. These bosses are then submitted to the ordinary steel-hardening process, in the course of which, although they are heated to the necessary degree of temperature and are handled while hot in the ordinary manner, are not ordinarily inclined to bend out of shape because of their shortness.

B represents the gudgeons, one end of each of which is preferably turned and ground to a diameter slightly greater—say about two-thousandths of an inch—than the interior diameter of the boss, the ends being coned slightly, as shown at *b*. These gudgeons may have suitable collars or stops *b'*, so that when driven into the boss the collar will bring up against the end of the boss and make a close fit. This is by no means necessary; but it completes the finish of the shaft. One of these gudgeons being driven into each end of the opening of the boss, the boss forms a coupling for the two gudgeons, and by means of a number of these gudgeons and of these bosses a composite roll may be made of sufficient length to supply a given drawing-frame, the opposite ends of each gudgeon being alike. Such a construction is indicated in Fig. 1, where, however, the opposing ends of two gudgeons only are shown.

In Figs. 2 and 3 the outer ends of the gudgeons fit in bearings C, properly grooved, as at

c, to receive the necessary weights to adjustably hold them in place. In this case each roll is short and independent of the rolls in line with it in the same drawing-frame.

5 At Fig. 4 is shown another construction where a continuous shaft D is used. The mode of construction of the bosses in this case is the same as that above described; but, as shown, the shaft is driven through a number of these bosses, each being retained in its proper place upon the shaft to register with the other mechanism of the drawing-frame by the tightness of the fit. It is evident that this construction, although appearing simple, is, in fact, not so desirable as that shown in the other figures, because if it becomes necessary to remove, say, one of the middle bosses from the roll for any reason all the bosses on one side of this particular boss must be removed, whereas if the roll is constructed as indicated in Figs. 1 and 2 it is comparatively simple to remove the gudgeons from the particular boss desired without disturbing the make-up of the rest of the roll. Thus my improved boss is valuable not only in being simple to make, but easy to put into use, and also rendering it simple to repair the drawing-roll as a whole in case of necessity, and this is true whether, in fact, it is hardened or not. The boss may be fluted or not, as may be desired.

I am aware of Letters Patent of Great

Britain No. 9,329 of 1884 to Alfred Hollings and Letters Patent of Great Britain No. 7,845 of 1887 to Lachlan MacLaine and dis- 35 claim the invention described in these patents.

What I claim as my invention is—

1. A drawing-roll boss having a fluted hardened exterior and a longitudinal opening therethrough, as and for the purposes described. 40

2. In combination with one or more gudgeons a drawing-roll boss having a fluted hardened exterior and a longitudinal opening therethrough, the end of each gudgeon projecting into a longitudinal opening in said boss and serving as a continuation thereof, as and for the purposes described. 45

3. The drawing-roll above described comprising a series of bosses each having a fluted hardened exterior, and each having a longitudinal opening through it, in combination with means engaging the interior of the openings in said bosses, whereby the said bosses 55 are kept properly centered and are connected to form a continuous drawing-roll from which any boss may be removed without the removal of any other boss, as set forth.

CHARLES MILLS.

In presence of—

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