

MEANS FOR PROTECTING ROLL BEARINGS OF TEXTILE MACHINERY.

Patented Nov. 16, 1909.

940,551.



Inventor :

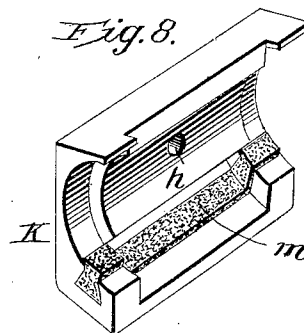
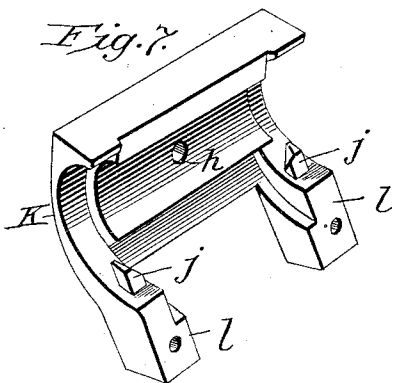
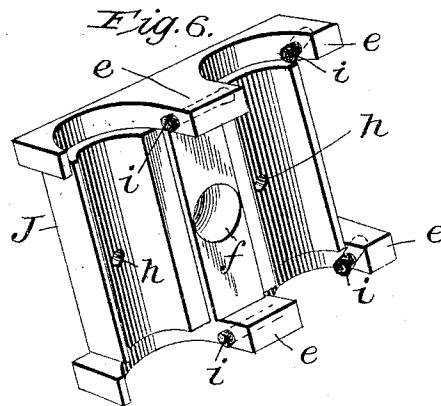
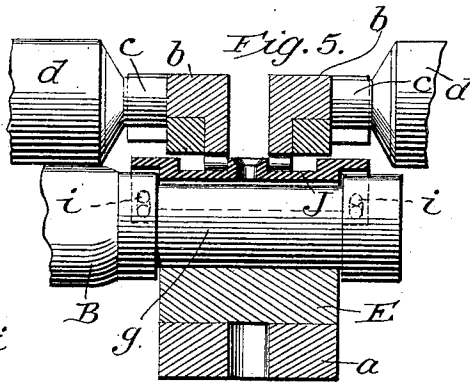
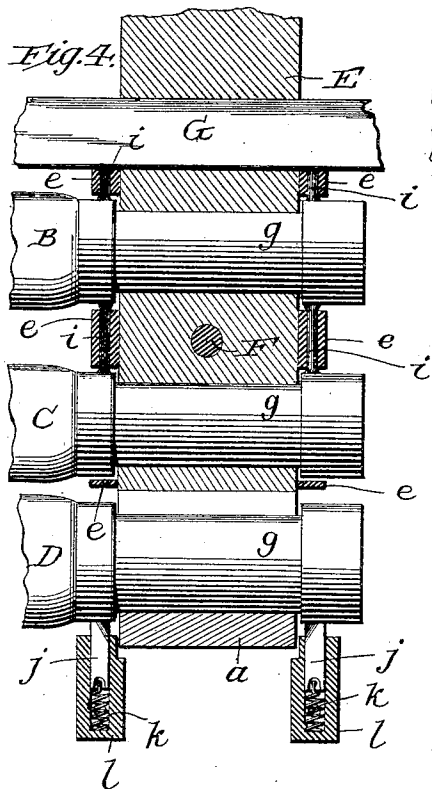
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 MEANS FOR PROTECTING ROLL BEARINGS OF TEXTILE MACHINERY.
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2 SHEETS—SHEET 2.



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MEANS FOR PROTECTING ROLL-BEARINGS OF TEXTILE MACHINERY.

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Specification of Letters Patent.

Patented Nov. 16, 1909.

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To all whom it may concern:

Be it known that I, JOHN L. PATTERSON, a citizen of the United States, residing at Roanoke Rapids, in the county of Halifax and State of North Carolina, have invented certain new and useful Improvements in Means for Protecting Roll-Bearings of Textile Machinery, of which the following is a specification.

This invention has for its object the protection of the journals and bearings of steel rolls of spinning frames and like machinery against the accumulation of dust, lint, etc., thereon or therein.

The improvements are applicable to spinning frames, slubbers, intermediate frames, and speeders or fly frames, or in other words, to all that class of spinning and like machinery in which, as now built, the roll journals lie in open bearings, exposed to floating lint, dust, etc.

Under existing conditions, lint, bits of waste, dust, etc., floating in the air of the carding or spinning room, come into contact with the roll journals or with the oil thereon, and adhere to the surface, either winding upon and about the journals, or wedging between the bearings and the journals. The accumulated material begets excessive friction, causing undue expenditure of power to drive the rolls, and involving some danger of fire incident to the generation of heat in the bearings. In some instances the friction has become so great as to strip the teeth of the driving gear; in other cases the rolls have been broken, bent, or sprung; and in all cases where the open bearings and unprotected journals are used it is necessary to clean them with a frequency greater than would be necessary were they covered or protected.

The roll journals and bearings must be kept well lubricated. Without means to prevent, the oil is apt to be thrown or to creep to the cots or leather covers of the top rolls, thus rendering them soft, interfering with their proper feeding or drawing, producing greasy or oily yarn, and entailing other undesirable results.

The object of my invention is to provide a suitable cover or protection for the roll journals, and so to construct the same that without alteration or special adaptation of existing machinery my improvements may be speedily applied thereto.

Further objects are, to provide for ready

removal of the cover devices so that the cleaning of the journals and bearings may be carried on as at present; the rolls removed and replaced at will; and, generally, the various parts of the machine left practically as accessible as now.

In the accompanying drawings: Figure 1 is a front elevation of a roll stand embodying my improvements, portions being broken away and others in section; Fig. 2, an end elevation, partially in section; Fig. 3, a vertical section on the line 3—3 of Fig. 1; Fig. 4, a section on the line 4—4 of Fig. 3; Fig. 5, a section on the line 5—5 of Fig. 3; Fig. 6, a perspective view of the cover of the journals of the back rolls; Figs. 7 and 8, perspective views of different forms of cover for the journals of the front or delivery roll.

In these drawings A, A, indicate the standards of an ordinary roll frame, provided with seats or bearings for the journals of three horizontal fluted steel rolls, B, C and D, commonly termed the "steel rolls", the roll D being the forward and lowermost roll, and commonly termed the "front" or "delivery" roll. It is customary to make the bearings for the journals of the rolls B and C in separate castings E, resting upon brackets *a* formed integral with the standards A, the castings E being secured upon the standard brackets by bolts F, as best shown in Fig. 3. As this is the ordinary construction it need not be further described.

Under existing practice the bearings for the journals of the rolls B, C, and D, are merely open semi-circular seats into which the roll journals are dropped, as indicated in Figs. 2 and 3, there being ordinarily no top or cover device of any sort applied to these bearings.

G indicates the usual trumpet rod, or roving rod as it is also called, which in practice carries a series of trumpets or funnel-shaped guides through which the slivers or rovings are carried, and which, through suitable mechanism of well-known construction, is reciprocated longitudinally to cause the slivers to be delivered to different portions of the lengths of the drawing rolls, this being necessary to prevent the wearing of circumferential grooves in the rolls.

Hinged or pivotally connected to the roll stand and usually to the casting E thereof, is an overhanging frame H having a series of parallel arms *b*, notched or recessed to

receive the journals *c* of top rolls I. These rolls are of usual form, each having two leather covered sections *d*, *d*, which are weighted and rest upon the slivers, and press them with the requisite force against the fluted steel rolls to insure their proper advance between these rolls and the top rolls. Thus far the construction is that now in general use, the upper side of each journal of the steel rolls B, C and D being uncovered and exposed to the floating lint, dust, etc.

J indicates a cover or cap designed to cover and protect the journals of the two rolls B and C, which are commonly placed at fixed distances apart, as indicated in the drawings, and K indicates a second cap or cover designed to cover and protect the journal of the front or delivery roll D. There will, of course, be like caps J and K applied to all journals in the length of the rolls, but as these are identical in construction, a description of one will suffice for all. The caps J are of the form best shown in Figs. 3, 5 and 6, upon reference to which it will be seen that they are so fashioned and proportioned as to reach entirely across the journal bearings or seats of the two rolls B and C and throughout the length of the bearing portion of each journal and somewhat beyond such bearing.

With a spinning frame constructed as here represented and having the bolt F, it is found convenient to so fashion the bottom face of the cap J as that it may rest upon the head of said bolt, and be thereby maintained at its proper elevation, or slightly above and out of contact with the roll journals, as plainly indicated in Figs. 2, 3 and 5, the lateral extensions of the cap overhanging the shoulders at the ends of the journal, as best shown in Fig. 5. The ends of the caps J bear against the end walls of the recess in the top of the casting E in which the journal bearings are formed, thus holding the caps against forward or backward movement.

As shown by full lines in Figs. 2 and 6, and by dotted lines in Figs. 3 and 5, each cap J has depending lugs *e* which, extending down on opposite sides of the casting E, preclude lateral shifting or displacement. A cavity *f* in the bottom face of the cap J receives the head of bolt F, which bolt head may form a support for the cap to prevent its falling below the desired level. The cap may, however, bear upon the casting E intermediate the rolls B, C, or rest upon shoulders in front and in rear thereof, if desired. Directly over each journal *g* of the steel rolls there is formed an oil hole *h* in the cap J so that the oil may be supplied to the journals without removing the cap.

Passing through the depending lugs *e* of the cap J are holes or perforations in which

are placed wickings or pieces of felt *i*, the ends of which protrude slightly beyond said lugs and bear against the shouldered portions of the rolls B and C beyond the journal or bearing portions *g*, as indicated in Figs. 2, 4 and 5. The purpose of these wickings or felts is to serve as wipers to remove from the shouldered portions of the rolls any oil or lubricant which may find its way thereto. In the drawing the wipers are represented as bearing against both the upgoing and downgoing side of roll B, but should it be found that any material quantity of the oil or lubricant passes the wiper on the upgoing side and is caused to accumulate above the wiper on the down-going side, contact on the down-going side may be prevented, the wiper being made short or left flush with the face of the lug for that purpose. The oil wiped from the shouldered or enlarged portion of the roll at either side of the journal *g* will gradually accumulate and finally drop downward away from the journals, where it may, if desired, be collected in a suitable receptacle. The overhanging portions of the cap J will preclude the throwing of oil from the steel rolls to the top rolls by centrifugal force, and the wipers will effectually prevent the creeping of oil along the roll to the drawing faces. The wipers *i* of the rear lugs *e* of cap J extend entirely through said lugs, as shown in Figs. 2 and 4, and by capillary attraction convey from the journals *g* sufficient oil to keep the revolving rod or trumpet rod G properly lubricated.

Owing to the fact that provision is made for adjusting the rolls B, C, relatively to roll D, the cap or cover K for the latter is made separate from the cap J. In its general characteristics, however, it resembles the cap J. It is preferably made to stand above and out of contact with the roll journal; has the overhanging lateral portions to prevent the oil thrown off by the rapidly rotating roll from reaching the top rolls; is readily removable, as is the cap J. It likewise has the oiling hole *h*. To remove from the shouldered or enlarged portions of the front or delivery roll D, at each end of the journal portion *g*, any oil which may gather thereon, I preferably employ spring-pressed metal wipers or scrapers *j*, shown in Figs. 2, 3, 4 and 7, the ends of which conform to the curvature of the portions of the roll against which they bear. These bearing faces are, however, beveled or wedging in form, being narrowest at the upper side and widening gradually toward the lower side so as to direct inward the oil which is scraped or wiped from the roll. The inner side faces are likewise beveled downward as indicated in Figs. 4 and 7, thus tending further to direct the oil inward and downward or away from the shoulders of the

rolls. Light springs k beneath the wipers or scrapers j maintain them in close and constant contact with the rolls, and compensate for any wearing of the ends of the wipers, yet produce but very slight friction, which is negligible.

In lieu of the scrapers or wipers j carried in the depending lugs l of the cap K , there may be employed simply a strip of felt m , conforming generally to the section of the cap K but protruding slightly inward therefrom, as indicated in Fig. 8, so that the felt may have a bearing upon the journal g and upon the shoulders or enlargements at each end thereof. The cap K in whichever form it may be made is simply set upon the top of the standard A , taking a bearing thereon in front and in rear of the roll journal g , and maintaining its position through gravity. The front roll revolves at comparatively high speed, and requires constant and uniform lubrication. So long as the felt or wick m is supplied with oil it aids in keeping the journal sufficiently and uniformly lubricated. It is desirable that the felt be saturated with oil, in which event it will effectually lubricate the journal for a very considerable length of time.

The frame H overhangs the caps J , K , as indicated in Figs. 1, 2, 3 and 5, and further insures their retention in place should there be any tendency to escape therefrom, though said frame has or may have no actual bearing upon the caps J , K . The caps or covers are retained against lateral displacement by the wiper-carrying lugs.

I am, of course, aware that it is common to provide journal boxes and bearings with removable caps or top sections secured in place usually by bolts or tap screws, and designed primarily to secure the shaft against displacement. Such caps or top sections are, however, impracticable in machinery of this class, the rolls of which require to be free for ready and frequent removal, as is well understood by those familiar with the art of spinning. It is at once unnecessary and undesirable to have the caps or covers in bearing contact with the roll journals, since to do so would be to add needless friction to said journals. By making the caps in the manner here described, and constructing them to serve merely as covers to protect the journals against floating lint, dust, and foreign matters, I completely overcome a serious difficulty incident to existing constructions, and I better protect the top rolls against oil thrown off by or creeping along the steel rolls. The caps may be speedily removed whenever necessary, and the additional time involved in removing and replacing them is so slight as to be negligible.

The saving incident to the use of these de-

vices is very considerable. This saving is, first, in the matter of power required to drive the machinery; second, in the time of employees required to clean the bearings; third, in the lessened frequency with which the cots or top roll coverings need to be renewed; fourth, in the decreased loss through greasy yarn, faulty work incident to oily roll surfaces and uneven drawing; fifth, in the lessened amount of oil necessary to lubricate the journals; sixth, in prevention of the breaking, springing, or bending of the steel rolls, and stripping of the driving gears; seventh, in lessening the wear of the journals and bearings incident to the presence of grit and foreign matters. When it is remembered that there are 312 leather covered top rolls in a 208 spindle frame, and that of these 156 are exposed to injury by oil from the journal bearings, it will be readily appreciated that the loss must be considerable where the oil is liable to find its way from the journals to the top rolls, and such is the fact as proven by experience.

While the invention is shown as applied to a machine having three rolls, it will be readily appreciated by those skilled in the art that it is not limited thereto, but that it may be applied to machines having any number of rolls.

The expressions "readily removable" and "freely removable" used herein, are intended to describe or define a cap which is not secured in position by screws or like fastenings, but which may at any time, and without first removing fastening devices, be freely lifted from place and removed, and claims containing either of these expressions are to be read with this understanding.

Without restricting myself specifically to the details of construction herein set forth, which may obviously be varied within reasonable limits, what I claim as my invention and desire to secure by Letters Patent is:

1. In combination with a spinning frame or like machinery, having open bearings and rolls with journals seated in said bearings; caps or covers extending over said journals and freely removable therefrom, said caps having extensions reaching over the portions of the rolls immediately beyond the journals proper, and serving to exclude dust and lint from the bearings and journals, substantially as described.

2. In combination with a roll stand having open seats or bearings, rolls provided with journals, said journals mounted in the open seats or bearings; and a freely removable closed cap or cover applied to the roll stand above the journals and adapted to extend over a plurality of said journals and to completely and closely cover the same and the open bearings.

3. In combination with a roll stand or frame having open seats or bearings; and

caps applied to said seats or bearings extending over the journals, and having lugs beyond the journals provided with wipers to remove oil from the rolls at points beyond
5 the journals.

4. In combination with a roll stand A, A, having open seats or journal bearings; rolls B, C, having journals *g* seated in said bearings; caps J applied to said bearings and
10 extending over the journals, and having depending lugs *e* provided with wipers *i*.

5. In combination with a roll stand A having open seats or journal bearings; rolls D seated in said bearings; caps K applied to
15 said bearings and extending over the journals, and having lugs *l* provided with springs *k*, and with wipers *j* to remove surplus oil from the rolls at points beyond the journals.

20 6. In combination with a roll stand having open seats or journal bearings; a reciprocating trumpet rod G carried in said stand; a roll B having its journals *g* mount-

ed in bearings in said stand; and caps or covers J extending over the journals *g*, and
25 having lugs *e* provided with wipers *i* bearing at opposite ends against the trumpet rod and the roll respectively, and serving to remove surplus oil from the roll and deliver it to the trumpet rod.

7. A spinning frame comprising a roll stand having open seats or journal bearings; rolls provided with journals, said journals mounted in the open seats or bearings; and
30 freely removable closed caps or covers applied to the roll stand above said journals and completely covering said journals and bearings, whereby dust and lint are excluded.

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

JOHN L. PATTERSON.

Witnesses:

A. L. CLARK,

D. C. BALLARD.