

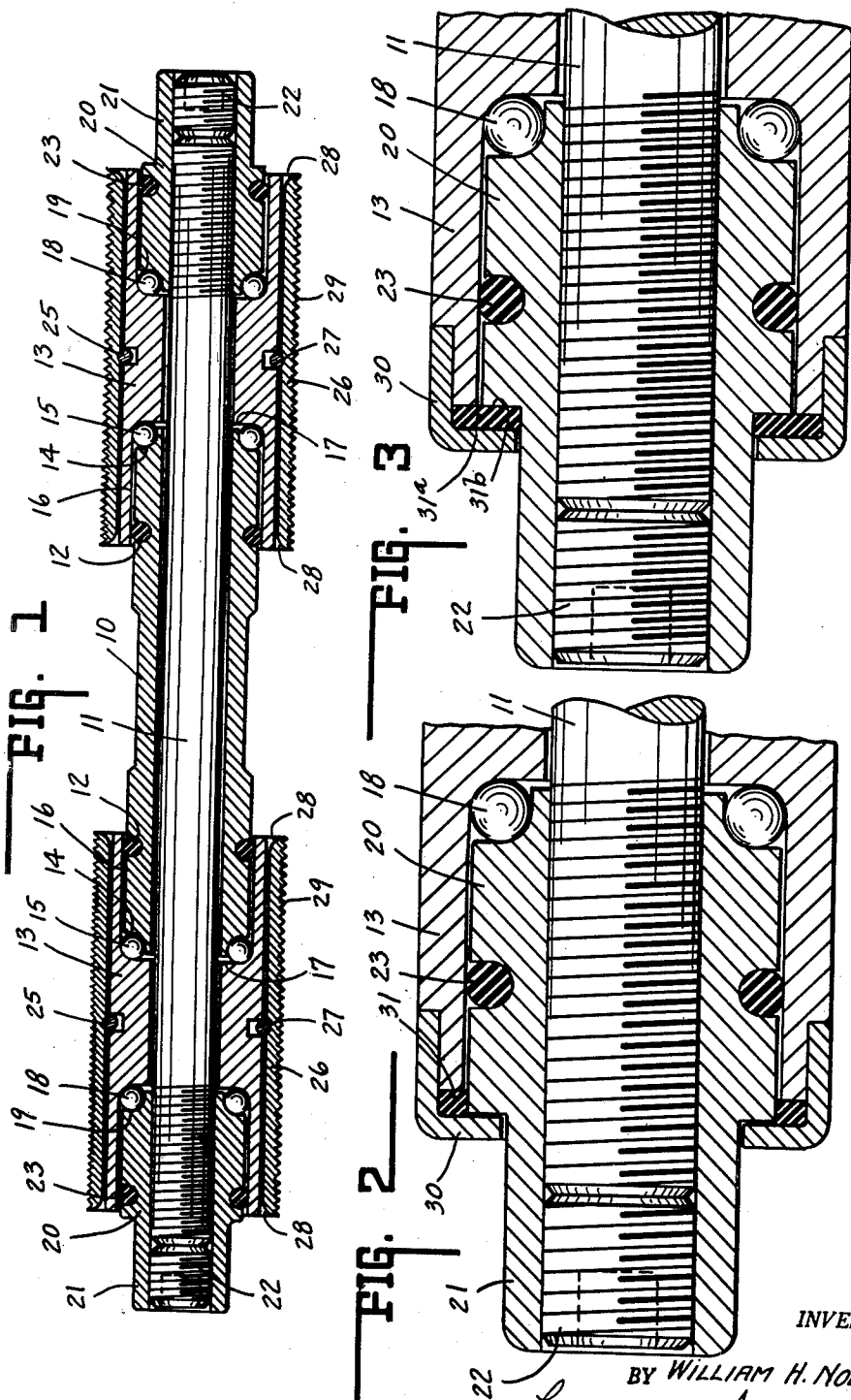
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TOP SPINNING ROLL FOR CARD ROOM DRAWING

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This invention relates to the bearing structure of the top spinning rolls for spinning room drawing frames, and particularly in respect to the sealing off and lubricant maintaining structure of the supporting bearings.

Whereas the advantage of ball bearings as applied to drawing rolls is well known in the spinning art, and such bearings have been provided for and successfully used in connection with the top rolls of spinning frames, it is the purpose of this invention to improve upon ball bearing structures as applied to the top roll in a spinning frame. In a spinning frame there is an excessive amount of dirt and grit still present in the cotton, and this, in conjunction with such lint, is thrown off from the slivers under treatment. Furthermore, there is little space within which ball bearings can be placed, and the weight loads carried by the top roll in a spinning frame is comparatively heavy. This results in difficulty in maintaining the bearings free from dirt, grit and lint, and at the same time maintain them self lubricating over a long period of time.

It is, therefore the principal purpose of the invention to improve upon ball bearing mounts for the top roll in a spinning frame, such as to provide ample roller bearing support therefor, maintain a supply of lubricant thereon so that the bearings are self lubricating for the life of the bearings, and seal off the bearings from the effect of dirt, grit and lint.

Another feature of the invention resides in the structure of the bearings so that after a long period of service and wear, the bearings may be readily adjusted to take up wear and any play.

Another feature of the invention resides in the structure of the bearing wherein it is self aligning in respect to the trunnion upon which the roll is supported, and the cot sleeves may be readily replaced when they become worn, all in the manner hereinafter more particularly set forth and described.

The full nature of the invention will be understood from the accompanying drawings and the following description and claims:

Fig. 1 is a central vertical section through the top spinning roll assembly with the spindle shown in elevation.

Fig. 2 is an enlarged end elevation showing one modified form of the invention.

Fig. 3 is the same as Fig. 2 showing a second modified form thereof.

In the drawings there is illustrated several modifications showing assemblies of the top spinning roll adapted to be applied to a spinning

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frame. In the modification illustrated in Fig. 1 the roll consists of a saddle bearing 10 which may be conveniently produced from round bar stock and bored through its center to accommodate the passage of a spindle 11. Adjacent to but spaced from opposite ends of the saddle bearing it is provided with annular grooves for reception of a sealing ring 12, said ring being interposed between the circumferential surface of the saddle bearing and the inside surface of the roll retainer 13, to provide a seal against escape of lubricant and the admission of dirt, grit or lint between these two surfaces.

Opposite ends of the saddle bearing 10 are inwardly grooved or recessed, as indicated at 14, to provide a self aligning ball bearing raceway for the ball bearings 15. The roll retainer 13, in addition to being formed with an axial bore for reception of the spindle 11 to rotate freely thereabout, is recessed at opposite ends, as indicated at 16, to embrace the respective ends of the saddle bearing in sealing relation therewith through the sealing rings 12. The recessed portion 16 terminates in a shoulder 17 providing an opposed raceway for the ball bearings 15. The opposite end of each of the roll retainers 13 is similarly recessed to provide inner raceways for the ball bearings 18 which ride about the recessed raceway 19 formed on the end of each of the trunnions 20. Each of the trunnions 20, when mounted at each end of the spindle 11, is provided with the rounded supporting ends 21 to fit in and be supported by the spinning frame. Said trunnions 20 are internally tapped to screw onto the threaded ends of the spindle 11, and be locked thereon by internal set screws 22, respectively. Each of the trunnions 20 is provided with an external annular groove for reception of a sealing ring 23 mounted in sealing relation with the internal surface of the end recessed portion of the roll retainer 13.

It will be observed that the spindle 11 mounts, through the ball bearings 15, 18, the saddle bearing 10 in slightly spaced relation thereto so as to be freely rotatable about the central portion thereof. Also, one of the roll retainers 13 is slidably mounted by said ball bearings to freely rotate about the spindle in spaced relation thereto, and also relative to the saddle bearing 10 at opposite ends thereof. Thus, in spaced relation to each other and at opposite ends of the saddle bearing there is a freely rotatable roll retainer embracing a pair of spaced sets of ball bearings 15 and 18 protected by the end sealing rings 12 and 23. A supply of lubricant may be provided

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within each roll retainer for lubricating the pairs of ball bearings, and be retained therein by the sealing rings 12 and 23, so as to be preserved from dirt, grit or lint and provide life time lubrication for said bearings.

It may further be noted that by reason of the curved or recessed end facings 14, 19, the opposed ends of the saddle bearing and trunnion, respectively, with the saddle bearing and roll retainers, are thereby self aligned and spaced from the spindle so as not to bear directly thereon. Furthermore, by reason thereof any slight wear of the bearings may be taken up by rotative adjustment of the trunnions.

Extending circumferentially about the outer periphery of each of the roll retainers 13 there is provided an annular groove for reception of a split snap ring 25. Slidably mounted over opposite ends of the respective roll retainers there is provided a cot sleeve 26. Said cot sleeve is provided with a corresponding and aligning internal groove 27 for reception of the snap ring 25 when the cot sleeve is slidably positioned over the roll retainer. Said cot sleeve is flared at opposite ends as indicated at 28 for convenience in camming the snap ring into its groove to permit said sleeve to be readily mounted in position over the snap ring. Each of the cot sleeves is scored, knurled or splined about its outer surface, as indicated at 29, to provide a suitable surface for better adhesion of the cot material.

The cot sleeves may be quickly and conveniently replaced by merely sliding them on or off their respective roll retainers 13, centered and held in place thereon by the snap rings 25 since the pressure required to force the cot sleeve over the snap ring is very slight, but from a direction not normally used in actual operation, it may be readily understood that two purposes are served by this action, i. e., the rapid interchange of cot sleeves when they are worn, and the positive retention of the cot sleeve upon its roll, respectively.

It may be further understood, of course, that in place of a single sealing ring 12 or 23 a pair of spaced sealing rings may be employed where desired, and they may be of any cross sectional configuration. Whereas they are shown here as circular in cross section, they may be square or rectangular without departing from the invention. Similarly, in place of a single snap ring 25 for interlocking the cot sleeves with their respective roll retainers, a pair of snap rings or any desired number of snap rings may be utilized and of any desired cross sectional configuration. Also, the usual lock nut and washer may be employed at each end of the spindle to lock the trunnions in their adjusted position in place of the internally recessed set screws 22.

In the modified form of the invention, as shown in Fig. 2, a metal slinger 30 may be secured within a recess provided at each end of the respective roll retainers 20 to expel fly by virtue of rotation and centrifugal force, each of said slingers being flanged inwardly to embrace an end portion of the trunnion. Each of said slingers may also encompass a sealing ring 31 interposed between the inturred flange thereof and the adjacent end of the roll retainer.

In the modified form of Fig. 3, the sealing ring 31a is of such dimensions as to extend within the slinger to the reduced supporting end of the trunnion to bear against the opposed shoulders 31b thereof respectively, as well as the adjacent recessed ends of the roll retainers 13.

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The slingers 30 of these modifications and the sealing rings embraced thereby really act as additional or comprehensive seals to protect the inner bearings of the roll.

The invention claimed is:

1. A top spinning roll for card room drawing frames, comprising a supporting spindle, a saddle bearing mounted for rotation about said spindle spaced inwardly from opposite ends thereof, a pair of roll retainers mounted for rotation about opposite ends of said saddle bearing, opposite ends of each retainer being inwardly recessed with the inner recessed portions overlapping and surrounding adjacent ends of said saddle bearing, a trunnion threaded on each end of said spindle, each having a reduced frame supported end and an inner enlarged bearing portion overlapped and embraced by outer recessed portions of said roll retainers respectively, ball bearings mounted within the recessed portions of said roll retainers to bear on recessed ends of said saddle bearing and adjacent recessed ends of said trunnions, sealing rings interposed between said roll retainers, saddle bearing and trunnions respectively, a cot sleeve slidably mounted over each of said roll retainers, and a snap ring receivable in said roll retainers for removably locking them in related position.

2. A top spinning roll for card room drawing frames, comprising a supporting spindle, a saddle bearing mounted for rotation about said spindle, a pair of roll retainers mounted for rotation about said spindle in embracing and supporting relation with opposite ends of said saddle bearing, a trunnion on each end of said spindle in supporting relation with said respective roll retainers, ball bearings for rotatably supporting said roll retainers upon said trunnions respectively, ball bearings for rotatably mounting opposite ends of said saddle bearing in said respective roll retainers, the opposite ends of each of said roll retainers being recessed, a slinger secured within each of said recesses having an inwardly turned outer flange spaced from the respective ends of said retainers, a sealing ring interposed between said flange and the adjacent end of said retainer, and a cot sleeve mounted over each of said retainers removably locked thereon.

3. A top spinning roll for card room drawing frames, comprising a supporting spindle, a saddle bearing mounted for rotation about said spindle, a pair of roll retainers mounted for rotation about said spindle in embracing and supporting relation with opposite ends of said saddle bearing, a trunnion on each end of said spindle in supporting relation with said respective roll retainers, ball bearings for rotatably supporting said roll retainers upon said trunnions respectively, ball bearings for rotatably mounting opposite ends of said saddle bearing in said respective roll retainers, each of said roll retainers having an outer peripheral recess formed about each end thereof, a shoulder formed on each of said trunnions and said roll retainers respectively extending in alignment with the retainer ends, a slinger secured at opposite ends of each retainer to lie in said recesses having an inwardly extending flange embracing and spaced from the adjacent end of the retainer and said shoulder, a resilient washer interposed between said flange and the adjacent retainer end and shoulder, jointly to provide an end seal for said retainers, and a cot sleeve removably mounted about each of said retainers.

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4. A top spinning roll for card room drawing frames, comprising a supporting spindle, a saddle bearing mounted for rotation about said spindle, a pair of roll retainers mounted for rotation about said spindle in embracing and supporting relation with opposite ends of said saddle bearing, a trunnion on each end of said spindle in supporting relation with said respective roll retainers, ball bearings for rotatably supporting the outer ends of said roll retainers upon said trunnions respectively, ball bearings for rotatably supporting the inner ends of said roll retainers on opposite ends of said saddle bearing respectively, the opposite ends of each of said roll retainers being recessed, a slinger secured within each of said recesses having an inwardly turned outer flange extending over the respective ends of each retainer respectively, and a cot sleeve mounted over each of said retainers removably secured thereon.

5. A top spinning roll for card room drawing frames, comprising a supporting spindle, a saddle bearing mounted for rotation about said spindle spaced inwardly from opposite ends thereof, a pair of roll retainers mounted for rotation about opposite ends of said saddle bearing, opposite ends of each retainer being inwardly recessed with the inner recessed portions overlapping and surrounding adjacent ends of said saddle bearing, a trunnion threaded on each end of said

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spindle, each having a reduced frame supported end and an inner bearing portion overlapped and embraced by the outer recessed portions of said roll retainers respectively, ball bearings mounted within the recessed portions of said roll retainers to bear on recessed ends of said saddle bearing and adjacent recessed ends of said trunnions, the opposite ends of said saddle bearing and the bearing portions of said trunnions being enlarged to provide elongated cylindrical surfaces in mating but slightly spaced relation with corresponding elongated cylindrical inner surfaces of the recessed portions of said retainers, each of said enlarged and elongated cylindrical surfaces of said saddle bearing and trunnions being provided with an annular recess spaced from said ball bearings, and a sealing ring mounted in each said recess having sealing relation with the inner cylindrical surfaces of said trunnions respectively for lubricant retention.

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