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W. STAHLECKER ETAL

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TOP ROLLER MOUNTING IN A SPINNING MACHINE

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Fig. 1

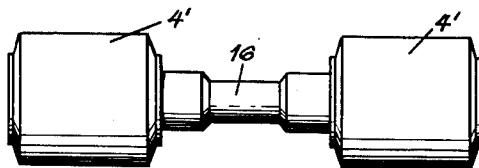
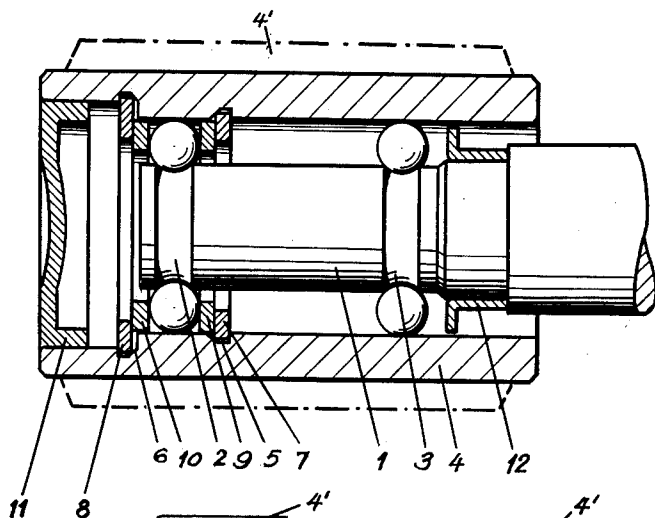
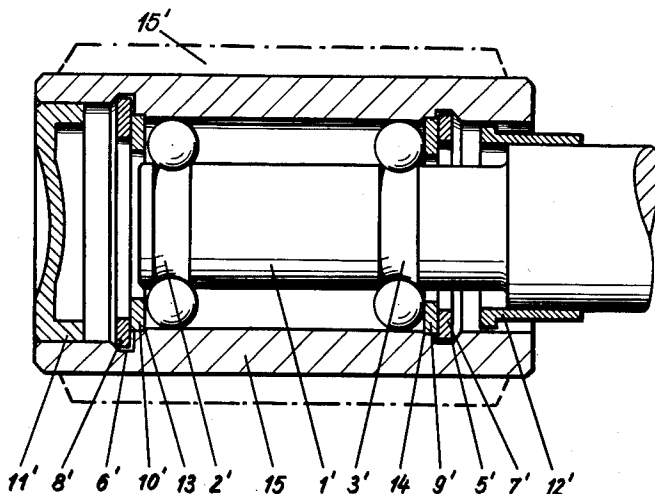


Fig. 3

Fig. 2



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TOP ROLLER MOUNTING IN A SPINNING MACHINE

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The invention relates to top roller mountings for spinning machines wherein independently rotatable top rollers are arranged in pairs on a common shaft, the journal of each top roller having two spaced ball bearing tracks, whereas the bore of the mounting sleeve for such roller is trackless.

In top roller mountings of the kind above referred to it is known to provide means for effecting the axial guidance of the mounting sleeves of such rollers, such means comprising, for example, spacer bushes the length of which is exactly adapted for the purpose and which have vertically ground end faces. Such expedients have for their object to obtain play-free running of the sleeves as far as possible. It has also been proposed to obtain said guidance by means of bodies having conical guide surfaces for the balls the said bodies being provided with a screw-thread intended to afford such adjustment as will give minimum axial play.

In all cases, the ball-engaging surfaces, which are not rolling surfaces but frictional surfaces, had to be machined to the best possible surface quality. The manufacture of top rollers is rendered very expensive by precision operations in the production of the aforesaid spacer bushes and the machining of the aforesaid guide bodies.

According to the present invention the running properties of a top roller can be considerably improved by providing in combination with the mounting sleeve for such roller axial guidance means comprising spring rings which may take the form of conventional type resilient split rings peripherally engaged in grooves in the bore of said sleeve, and abutment rings which are not specially machined but are stamped preferably from spring steel, each abutment ring being interposed between the balls in a track and an adjacent one of said spring rings whereby the said sleeve receives axial guidance whilst the balls in said tracks are permitted to run with a small amount of axial play.

As a result of the natural unevenness of the surface of the abutment rings, which have not been specially machined, each of the said rings bears only with the highest surface bumps against a small number of the balls or even against only one of the balls in a track. The other balls, on the other hand, have no contact with the abutment rings, so that no friction forces due to axial guidance can arise at these balls. Moreover, it may be expected that, as a result of the angle of contact between the surface bumps and a ball, the abutment ring will be pressed away from the row of balls in a track, so that then practically all the balls in such track run without contact with the side surface of such ring. The play permitted between the rows of balls and the abutment rings also prevents any jamming. The effect described is further assisted by the fact that the axial forces are only small.

A further advantage of the arrangement according to the invention is that the top roller mountings can be manufactured extremely inexpensively.

The invention will be hereinafter explained in greater detail with reference to the annexed drawing, wherein:

FIGURE 1 is a sectional elevation of a mounting wherein axial guidance in both directions is effected at one row of balls only;

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FIGURE 2 is a similar view of a mounting wherein axial guidance in one direction is effected at one row of balls and in the opposite direction at the other row of balls; and

FIGURE 3 is a side elevation in reduced scale of a shaft provided at each end with a roller mounting such as illustrated in FIGURE 1.

In FIGURE 1, a top roller shaft 16 has a journal 1 in which spaced ball tracks 2 and 3 are formed. A mounting sleeve or hub 4 with a trackless bore runs on the two rows of balls, the top roller 4' indicated by chain lines being finally fitted on said sleeve 4. The bore of the sleeve 4 is formed with partly conical annular recesses 5 and 6, in which the peripheries of spring rings 7 and 8 are inserted one at each side of a row of balls. These spring rings 7, 8 prevent any yielding of lateral abutment rings 9 and 10, interposed between the row of balls and a respective spring ring. These abutment rings 9 and 10 are not specially machined but are stamped out of preferably spring steel, so that a necessary amount of play is ensured. The abutment rings 9 and 10 in this example fit freely in the bore of the sleeve 4. A sealing cap 11 which may be made of plastic material is fitted in the outer end of the sleeve 4 and a fly-repelling ring 12 is fitted around the top roller shaft and within the inner end of said sleeve.

FIGURE 3 shows the top roller shaft 16 with the above described roller mounting structure on each end thereof.

In FIGURE 2, reference 1' denotes the journal of a top roller shaft in which journal ball tracks 2' and 3' are formed. In this example, shoulders 13 and 14 for engaging the abutment rings 9' and 10' are formed in the bore of the mounting sleeve 15 upon which is mounted the top roller 15' indicated in chain lines. The shoulders 13 and 14 are formed near respective ends of the sleeve 15 and so that the abutment ring 10' lies at the outer side of the left hand row of balls whereas the abutment ring 9' lies at the inner side of the right hand row of balls. Annular recesses 5' and 6' for engaging with the peripheries of spring rings 7' and 8' are formed adjacent to respective shoulders 14 and 13. The spring rings 7' and 8' bear against the conical part of the recesses 5', 6', so that the rings 9' and 10' are pressed against the shoulders 13 and 14 and thus secured in their position for axial guidance, such guidance being effected in one direction by the rings 10', 8' at one row of balls and in the opposite direction by the rings 9', 7' at the other row of balls. In this example also a sealing cap 11' and a fly-repelling ring 12' are provided.

As in the case of the FIGURE 1 embodiment, individual roller mountings as described above are mounted on each end of a shaft like shaft 16 of FIGURE 3.

We claim:

1. A top roller mounting in a spinning machine wherein a top roller is mounted for rotation on a shaft, means for jouralling said top roller on said shaft comprising a sleeve, rows of ball bearings received in spaced tracks on said shaft, guidance means providing axial guidance of said sleeve, said guidance means comprising spring rings disposed on either side of one of said ball bearing rows, said spring rings being spaced from said shaft and being received in grooves in the bore of said sleeve, and abutment rings intermediate and in contact with said spring rings and the balls of said one of said ball bearing rows.

2. A top roller mounting in a spinning machine wherein independently rotatable top rollers are arranged in pairs on a common shaft, a mounting sleeve for each of said top rollers, a journal at each end of said shaft within said mounting sleeve having two spaced ball bearing tracks and rows of balls in said tracks whereas the bore of said mounting sleeve is trackless, said mounting comprising the combination with said sleeve of axial guidance

means comprising spring rings spaced from said shaft and peripherally engaged in grooves in the bore of said sleeve, and stamped steel abutment rings, one each of said abutment rings being interposed between and in contact with one of said rows of balls and an adjacent one of said spring rings, one of said abutment rings being disposed to the right of at least one of said rows of balls and another of said abutment rings being disposed to the left of both of said rows of balls, as seen in side view whilst the said balls in said tracks are permitted to run with a small amount of axial play, said spring rings and abutment rings being so arranged that axial guidance in both directions is effected at one row only of balls.

3. A top roller mounting according to claim 2, wherein the abutment rings are freely mounted within the bore of the said sleeve.

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