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RING FRAME TRAVERSE DEVICE

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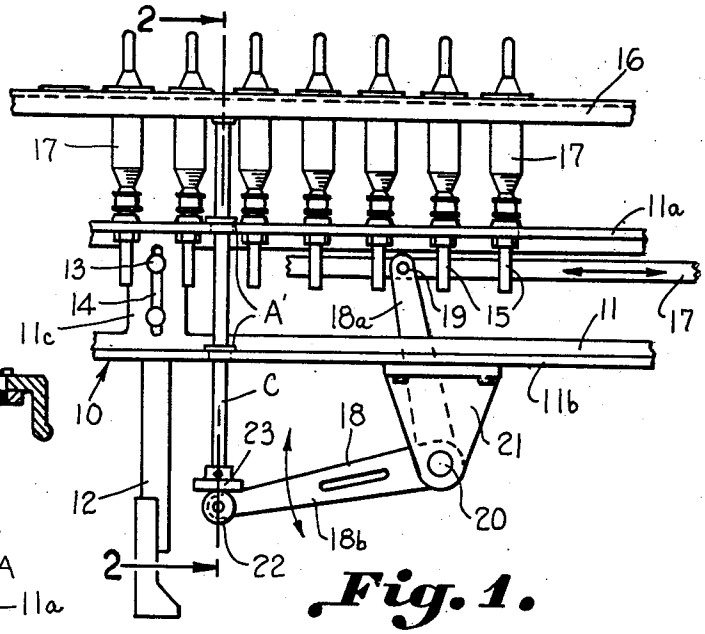

Fig. 1.

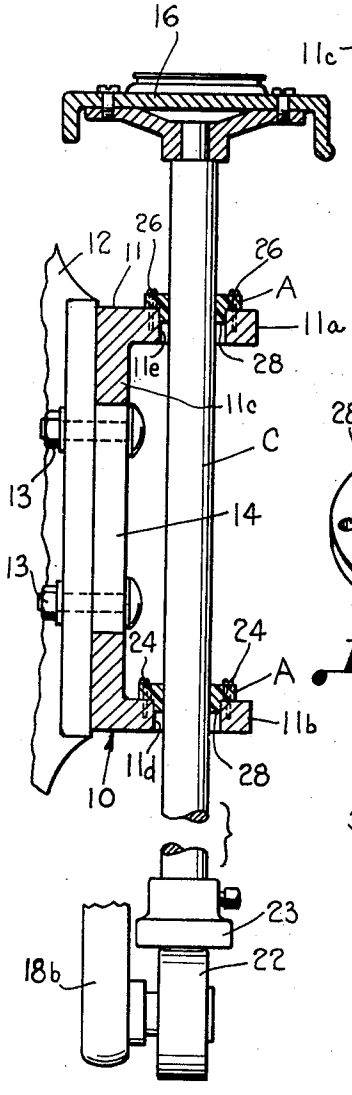

Fig. 2.

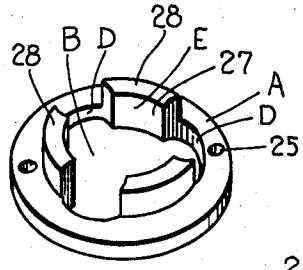

Fig. 3.

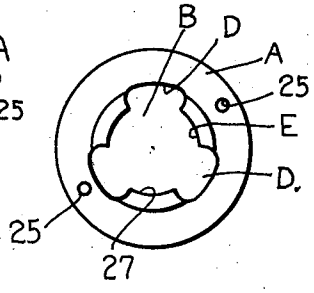

Fig. 4.

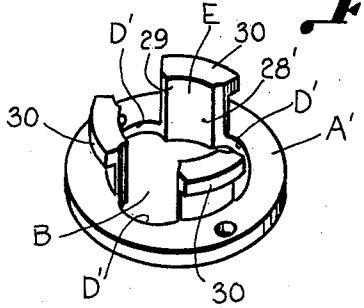

Fig. 5.

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RING FRAME TRAVERSE DEVICE

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This invention relates to textiles and more especially to an improved ring frame traverse device which includes a bearing supporting a lifter rod of such configuration and so constructed that binding of the lifter rod is avoided.

Ring frame traverse devices prior to this invention, generally, employed bearings for supporting lifter rods in the form of elongated tubular metallic sleeves. Due to the metal to metal contact of the lifter rod and the bearings and the substantial length of the metal bearings, it was necessary that the superposed bearings supporting the lifter rod be in near perfect alignment in order to prevent binding of the lifter rod therein. Due to oil accumulations, the tendency for lint to become clogged between the bearings and the lifter rod is increased and results in binding of the lifter rod with sufficient frequency to cause substantial financial losses occasioned by waste and lost production time. Since it is the function of the lifter rod to cause the ring rail to traverse in an up and down motion, it is evident that the cessation of such function causes disruption of the entire operation of the ring frame.

Accordingly, it is an important object of this invention to provide a ring frame traverse device which will avoid binding of the lifter rod.

Another important object of this invention is to provide a ring frame traverse bearing which will avoid the formation of lint accumulations and the like so as to bind the lifter rod and reduce friction between the bearing and the lifter rod by reducing the contact area and constructing contact portions of the bearing of a tough synthetic resinous plastic.

Another object of this invention is to provide a ring frame traverse bearing for supporting a lifter rod constructed at least partially of a yielding plastic material having a relatively low coefficient of friction to avoid binding of the lifter rod due to slight misalignment of the bearings.

The construction designed to carry out the invention will be hereinafter described, together with other features thereof.

The invention will be more readily understood from a reading of the following specification and by reference to the accompanying drawing forming a part thereof, wherein an example of the invention is shown and wherein:

FIGURE 1 is a front elevation of a ring frame illustrating a preferred embodiment of the invention therewith,

FIGURE 2 is an enlarged transverse sectional elevation taken on the line 2—2 in FIGURE 1,

FIGURE 3 is a perspective view illustrating a bearing constructed in accordance with the present invention,

FIGURE 4 is a plan view illustrating the bearing shown in FIGURE 3, and

FIGURE 5 is a perspective view illustrating a modified form of a bearing constructed in accordance with present invention.

The drawing illustrates a ring frame traverse device including an element A having an aperture B therein accommodating the lifter rod C. A plurality of spaced passageways D are provided within said element defining an opening extending longitudinally of the lifter rod and the bearing. The segments E between said passageways engage the lifter rod and support same. The portions of said segments which engage the lifter rod are constructed at least partially of yielding plastic material having a relatively low coefficient of friction, preferably Teflon.

The ring frame illustrated includes a frame broadly designated at **10** having the usual box rail **11** carried by samsons **12**. The box rail has upper and lower flanges **11***a* and **11***b*, respectively, and is mounted for vertical adjustment upon the samsons **12** by bolts **13** which pass through the samsons and a slot **14** within the web **11***c* of the box rail **11**. The bolsters **15** of the spindles are mounted in the upper flange **11** of the box rail, and the ring rail **16** traverses in an up and down motion to distribute yarn to build the yarn packages **17**.

The bearings have a body element A having an aperture B there in for supporting a lifter rod C for vertical traversing motion. The lifter rod C is caused to move up and down to carry the ring rail **16** in its traversing motion. The lifting segment which imparts such motion to the lifter rod are driven by a rod **17** which is itself driven back and forth in the direction of the arrow in FIGURE 1 by driving mechanism of the ring frame. The lifting segments include a bell crank **18** which has one arm **18***a* pivotally connected as at **19** to the rod **17**. The intermediate portion of the bell crank is pivotally mounted as at **20** to the hanger **21** which has connection with the lower portion of the box rail lower flange **11***b*. The arm **18***b* of the bell crank has a roller **22** mounted for rotation adjacent its free end. The lifter rod carries a follower **23** at its lower end which rides upon the roller **22** for raising and lowering the lifter rod C responsive to movement of the bell crank arm **18***b*. It will be observed that movement of the rod **17** to the left in FIGURE 1 will cause lowering of the arm **18***b* and movement of the rod to the right in FIGURE 1 will cause raising of the arm **18***b*. Thus, oscillatory movement is imparted to the arm **18***b* as indicated by the arrow in FIGURE 1 causing similar retsponsive movement of the lifter rod C.

The body of the first bearing A is illustrated in FIGURE 2 as being fastened to the upper portion of the lower flange **11***b* as by screws **24** which pass through apertures **25** in the body provided for that purpose. In a similar manner a second bearing is attached to the upper surface of the upper flange by screws **26** in superposed relation to the lower bearing. It will be noted by reference to FIGURES 3 and 4 that the body of the bearing A has an aperture B to accommodate the lifter rod C. It will also be noted that passageways D are provided between spaced segments E which provide portions **27** for supporting the lifter rod C.

It is preferable that the entire bearing be constructed of a yielding plastic having a relatively low coefficient of friction so as to avoid binding with the metal lifter rod C. As previously pointed out, the passageways D prevent the accumulation of lint by permitting same to free itself through the passageways. It is important that passageways are defined between the lifter rod and the bearing and that the material be capable of yielding somewhat and yet provide a suitable support for the lifter rod. It is preferable that the entire bearing be constructed from a tough synthetic resinous plastic material having a waxy characteristic that does not require lubricating when used as a bearing material and which yet provides some yielding characteristics. Such a suitable material is Teflon, which is the trademark of E. I. du Pont de Nemours & Co. Inc. for tetrafluoro ethylene. It is also important that a sufficient portion or body of such material be used in contact with an adjacent lifter rod C to be effective to prevent binding resulting from minor misalignment of the bearings. The body portion A carries depending portions **28** of the segments E. These depending portions **28** are accommodated within apertures **11***d* and **11***e* in the lower and upper flanges **11***b* and **11***a*, respectively, to prevent lateral displacement of the bearings.

FIGURE 5 illustrates a modified form of the invention in which like reference characters are used to designate like parts with prime notations added. It will be noted that the depending portions **28'** have each been extended as illustrated at **29** and provided with an outwardly extending flange **30**. These bearings are thus capable of being fixed to the flanges of the box rail without the use of additional fastening means. The legs formed by the depending portions **28'** and **29** carrying the outwardly extending flange **30** may be flexed inwardly so as to project same through apertures **11***d* and **11***e*. The flexibility of the plastic material from which the legs are preferably constructed would permit return of the flanges **30** to engage the surface of the flanges **11***d* and **11***e* remote from the body portion A' to thus fix the bearings within the box rail.

While a preferred embodiment of the invention has been described using specific terms, such description is for illustrative purposes only, and it is to be understood that changes and variations may be made without departing from the spirit or scope of the following claims.

What is claimed is:

1. In a ring frame and the like having a longitudinally disposed rail caused to traverse vertically by reciprocation of spaced vertical lifter rods mounted within spaced apertures within a fixed rail, the improvement including a bearing supporting each lifter rod carried by said fixed rail, said bearings each comprising, an element having an axial opening therein, each of said elements engaging said fixed rail on one side of the fixed rail, a plurality of circumferentially spaced segments carried by the element projecting inwardly of said opening, spaced inner bearing surfaces carried by said segments engaging the lifter rod, said segments being constructed of a yielding synthetic polymeric material having a relatively low coefficient of friction, said element having passageways between said segments within said element extending longitudinally of the lifter rod for the removal of lint and the like, and means fastening the element to said fixed rail, whereby locking of the rail traverse is avoided since the longitudinal passageways and the yielding segments of the bearings avoid binding as a result of lint accumulations and faulty alignment of the lifter rod, and whereby friction between the lifter rod and the bearing is reduced since the lifter rod is supported within the bearing by said spaced inner bearing surfaces reducing the surface area of contact between the rod and the bearing.

2. The structure set forth in claim 1, in which said segments extend vertically of said element within said aperture in said fixed rail.

3. The structure set forth in claim 2, in which said segments define spaces therebetween extending axially of the lifter rod.

4. The structure set forth in claim 2, in which said segments are flexible, extend through said aperture in said fixed rail, defining spaces between said segments, and in which said means fastening the element includes outwardly extending flanges carried adjacent the free ends of the segments engaging the side of the fixed rail remote from the element.

References Cited in the file of this patent

UNITED STATES PATENTS

3,557	Birkenhead	July 4, 1809
2,479,497	Kooistra	Aug. 16, 1949
2,831,737	Jacoby	Apr. 22, 1958
3,055,852	Youse	Sept. 25, 1962

FOREIGN PATENTS

447,817	Canada	Apr. 13, 1948