United States Patent

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[54] **BOBBIN TRUCK FOR ARRANGING TRANSFER TAIL**
5 Claims, 4 Drawing Figs.

[52] **U.S. Cl.** **242/131,** 211/13, 28/32
[51] **Int. Cl.** **B65h 49/02,** D02h 1/00, D03j 5/08
[50] **Field of Search** ..... 242/131, 131.1, 129.1—129.4; 211/13

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ABSTRACT: This invention is intended to wind up a loose transfer tail of yarn on the end of a bobbin, and to fix the tail end of yarn with an adhesive tape, etc. while rotating the bobbin on a bobbin truck wherein bobbin holder supporting plates are fixed onto the stanchions or plates of the bobbin truck. A number of bobbin holders are mounted on the bobbin holder plates and are made rotatable with a rotation drive disposed at the outer end of the bobbin holder. When a bobbin is put onto the bobbin holder, the bobbin can be manually rotated together with the bobbin holder by means of the rotation drive.

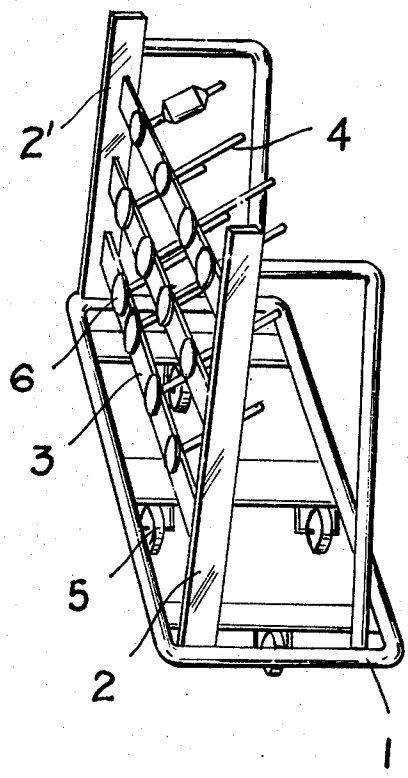


Fig. 1

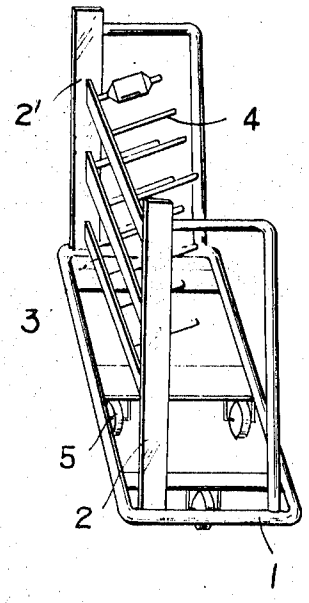


Fig. 2

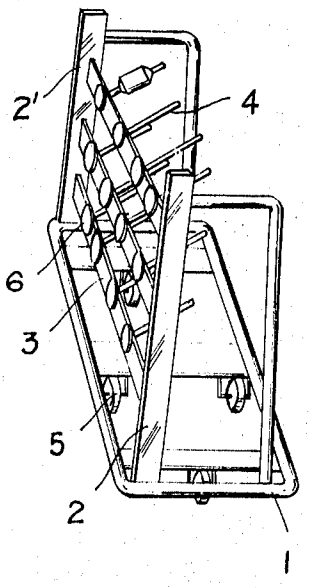


Fig. 3

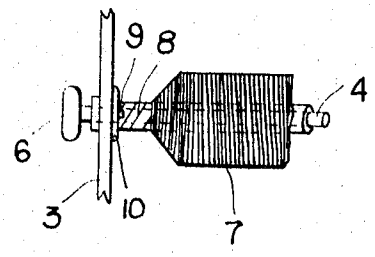
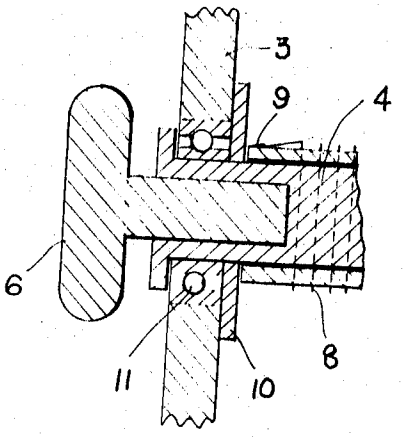


Fig. 4



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BOBBIN TRUCK FOR ARRANGING TRANSFER TAIL

A truck has hitherto been used for ease of operations in arranging the transfer tail of yarn wound onto a bobbin, and the present invention relates to improvements in said bobbin truck for arranging a transfer tail and the enhancement of work efficiency.

Generally speaking, when yarn is wound onto a bobbin with drawing machines, twisters, etc. a specified initial length of yarn is taken out of the yarn-winding part of the bobbin to prepare a transfer tail around the base of the bobbin. However, the tail often comes loose when a bobbin is taken off from drawing machines, twisters, etc. thus, the transfer tail must be rewound, and then the tail end must be fixed with an adhesive tape, etc. Operations such as the rewinding of the transfer tail and the fixing of the tail end have been done by pulling out each wound bobbin put onto the bobbin holders on a bobbin truck as shown in FIG. 1. This is a laborious and time-consuming work, and, what is worse, during movement to and from the truck, the heavy wound bobbin contacts with an adjacent bobbin and collides with the truck, resulting in bruises and soils of the wound yarn.

The object of this invention is to avoid such defects. It is easily understood that it is desirable that the transfer tail may be rewound and the tail end arranged while keeping the bobbin on the bobbin holder, for it reduces work efficiency to shift a full bobbin to and from the truck.

This invention comprises such a truck with bobbin holders attached thereto. However, the bobbin holder is per se so arranged that it is rotatable with the full bobbin thereon. Since the bobbin rotates together with the bobbin holder, the rewinding of the transfer tail and the fixing of the tail end become possible while the bobbin remains on the truck.

A further object of this invention is to rewind a transfer tail by rotating the bobbin holder while the bobbin remains on the bobbin holder on the bobbin truck and, after the rewinding, to fix the tail end while the full bobbin remains on the bobbin holder.

Another object of this invention is to raise operation efficiency and to eliminate defective products by use of said bobbin truck.

FIG. 1 is a perspective of a conventional bobbin truck for arranging a transfer tail.

FIG. 2 is a perspective of a bobbin truck for arranging a transfer tail in accordance with this invention.

FIG. 3 is a side view of an enlarged part of a bobbin holder in accordance with this invention.

FIG. 4 is an enlarged cross-sectional view of a bobbin holder in accordance with this invention.

This invention is described with reference to FIG. 2. There are stanchions 2 and 2′ mounted on bottom frame 1 provided with a plurality of wheels. Stanchions 2 and 2′ are slightly inclined forward against bottom frame 1 of the bobbin truck. A plurality of bobbin holder supporting plates 3 are so installed that said stanchions 2 and 2′ are laterally connected. A number of bobbin holders 4 are mounted at specified intervals on said bobbin holder supporting plates 3. It is preferable that said bobbin holder 4 be in a slightly upwardly inclined position. Said bobbin holder 4 is freely rotatable. At the outer end of bobbin holder 4 is disposed a rotation drive, for instance, protuberance 6. The bobbin holder can be rotated by holding protuberance 6 with the hands. The mechanism of said rotation drive is optional; in short any will do so long as the mechanism can rotate bobbin holder 4 in any optional direction.

Referring to FIGS. 3 and 4, more details are described.

Bobbin holder 4 is rotatably mounted on bobbin holder supporting plate 3 by means of bearing 11. Bearing 11 may be an ordinary plain bearing or a ball bearing. The shape of protuberance 6 is optional. It is permissible to rotate bobbin holder 4 with a device other than protuberance 6. A rubber plate 10 is placed between bobbin 7 and bobbin holder supporting plate 3, to prevent the crash of the tip of bobbin 7 with bobbin holder supporting plate 3, which might occur when the bobbin is placed onto the bobbin holder.

The operation of the bobbin truck for arranging a transfer tail in accordance with the present invention is described below. An operator stands at the back of a bobbin truck filled with a number of full bobbins, holds the end of transfer tail 8 with one hand, turns protuberance 6 with the other hand, thereby rotating bobbin 7, conducts the rewinding of transfer tail 8, and presses the tail end with adhesive tape 9 etc. for its fixation just when it comes to the surface.

As mentioned above, it is possible, according to the present invention, to rewind a transfer tail by rotating the bobbin holder while a full bobbin stays on the bobbin holder and to fix the tail end of the full bobbin while it is stationary on the bobbin holder. Time and labor required for moving each full bobbin to and from a bobbin truck in the conventional operation to rewind a transfer tail and fix a tail end can thus be saved. The damage and soils of the yarn which inevitably occur in the conventional operation can also be avoided. In the practice of this invention, the following close attention is required:

As mentioned previously, the inclination of stanchions 2 and 2′ is for convenience of operation. If an upper supporting plate for the bobbin holder is situated just above transfer tail 8, operation will not be easy, but if stanchions 2 and 2′ are slightly inclined forwardly, the upper bobbin holder supporting plate 3 is supported ahead and positioned above transfer tail 8. Therefore, there is no danger of interfering with operations, and the rewinding of a transfer tail and the fixing of a tail end can readily be done. However, the inclination of stanchions 2 and 2′ has its limitation. If the inclination is too acute, the center of gravity of the bobbin truck shifts to the inclined side, and the bobbin truck happens to overturn. It is desirable that the angle of stanchions 2 and 2′ with respect to the vertical be usually about 3 to 15°. The above is for the case when stanchions 2 and 2′ are inclined, but instead of stanchions, wide side plates may be installed and between these two plates may be arranged in forwardly inclined tiers a number of bobbin holder supporters 3. Further, if there is a distance between up-and-down bobbin holder supporters 3 sufficient enough for an operator to put his hand between them for fixing the transfer tail, there is no need to forwardly incline the bobbin holder supporters 3 and vertical multitiers may be arranged.

Lastly, in the present invention, there is no need to shift a bobbin into and out of the bobbin truck in rewinding a transfer tail and fixing a tail end because of the above-mentioned mechanism.

The arrangement of a transfer tail can be accomplished in a short time, and soils and damage of the products can be avoided to a great extent. This bobbin truck is, of course, usable for transporting and storing bobbins.

EXAMPLE

With a bobbin truck for arranging a transfer tail as shown in FIG. 2, the transfer tails of 1,000 bobbins containing 1 kg 75-denier 36-filament polyethylene terephthalate yarn, which had been wound with a draw-twister were rewound and fixed at their tail ends in 75 min. per operator with only 0.2 percent soils and damage of the products. On the contrary, with a conventional bobbin truck as shown in FIG. 1, 1,000 bobbins were finished in 167 min. with as high as 2.6 percent soils and damage of the products. In this case, each bobbin was taken out of the bobbin truck, arranged of its transfer tail, and returned to the bobbin truck.

I claim:

1. In a bobbin truck for transporting full bobbins by mounting said bobbins onto a corresponding plurality of bobbin holders, appropriately spaced to each other on one side of a plurality of bobbin holder supporting plates which are connected in tiers to a pair of stanchions or side plates at each side of said bobbin truck, the improvement comprising bearings fitted in said bobbin holder supporting plates and which rotatably support the lower end portions of said bobbin holders herein, said bobbin holders being slightly upwardly inclined, and protube-

rances disposed at the lower end portion of said bobbin holders for rotating said bobbin holders whereby a transfer tail is arranged while each full bobbin place on each bobbin holder is being rotated with each bobbin holder.

2. In a bobbin truck according to claim 1, the further improvement wherein said stanchions are inclined from the vertical and said bobbin holder supporting plates are inclined forwardly in tiers.

3. In a bobbin truck according to claim 1, the further improvement wherein a plurality of said bobbin holder supporting plates are incorporated into wide side plates and forwardly inclined in tiers.

4. In a bobbin truck according to claim 1, the further improvement wherein a rubber plate is disposed around said bobbin holders on the side of bobbin insertion and against said bobbin holder supporting plates.

5. In a bobbin truck according to claim 1, the further improvement wherein said bearings comprise ball bearings.