Feb. 13, 1951 I. M. GOREE 2,541,238

SPINNING RING

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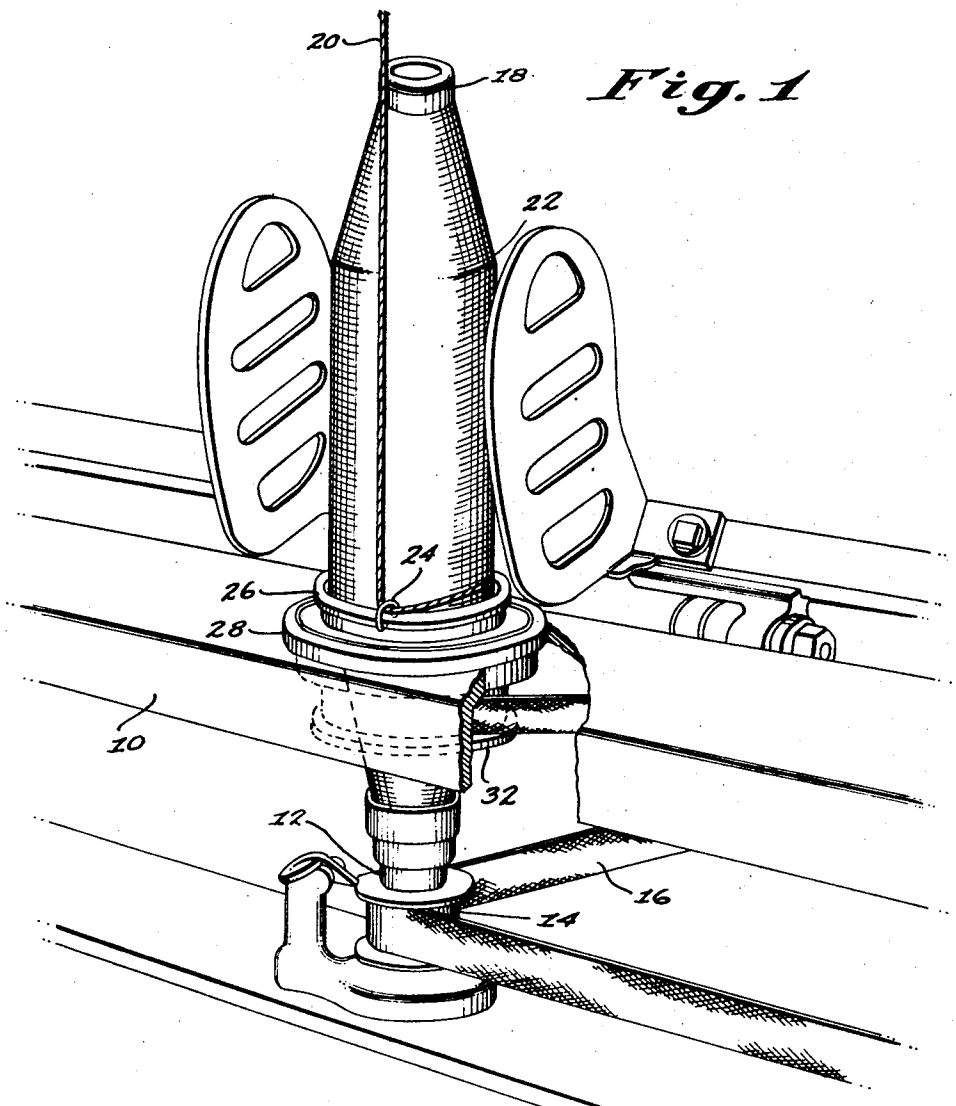


Fig. 1

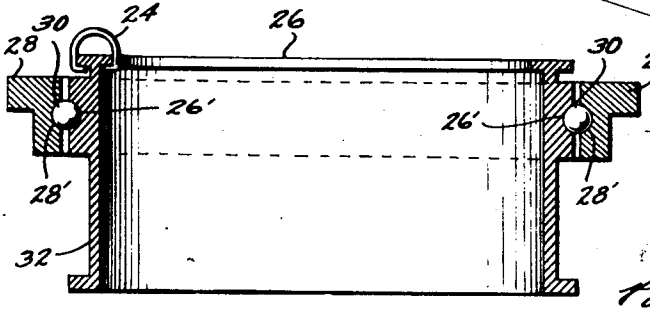


Fig. 2

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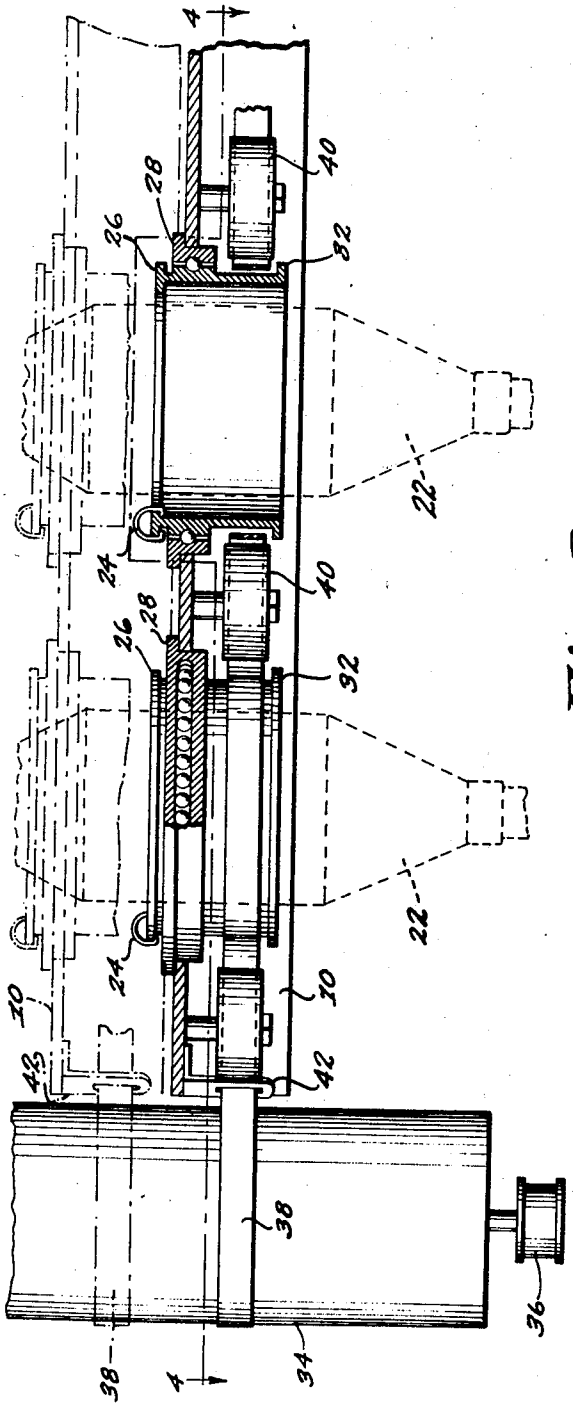


Fig. 3

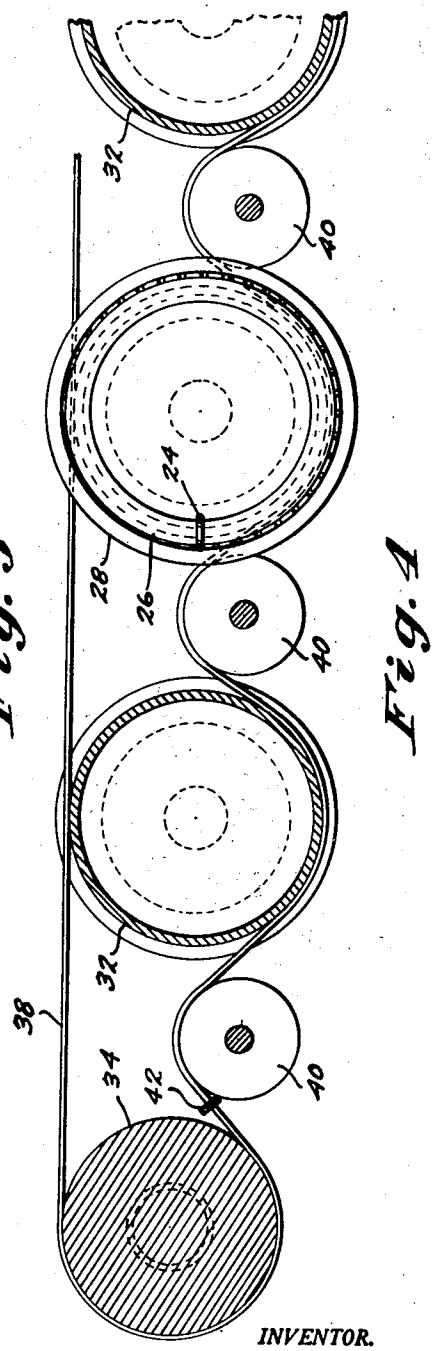


Fig. 4

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SPINNING RING

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Application October 1, 1949, Serial No. 119,112

4 Claims. (Cl. 57—124)

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This invention relates to spinning rings, and more particularly to an improved spinning ring arrangement by which the ring is mounted for rotation during the spinning operation so that the relative rotation of the traveler on the spinning ring can be substantially reduced to lessen correspondingly the strain and attrition imposed on the yarn by the traveler.

Also, according to the present invention, the spinning ring is arranged to be driven during the spinning operation so that the relative rotation of the traveler on the ring can be regulated and controlled.

These and other features of the present invention are described further below in connection with the accompanying drawings, in which:

Fig. 1 is a fragmentary perspective view illustrating the disposition of spinning rings on the ring rail of a spinning frame in accordance with the improved arrangement of the present invention;

Fig. 2 is a sectional detail of the spinning ring assembly;

Fig. 3 is a fragmentary side elevation, largely diagrammatic, illustrating the arrangement of the driving means for rotating the spinning rings; and

Fig. 4 is a corresponding horizontal section taken substantially on the line 4—4 in Fig. 3.

Referring first to Fig. 1 of the drawings, a usual form of ring rail is shown at 10 disposed for operation in relation to spindles 12 (only one of which is shown) driven at whorls 14 by tapes as at 16. The spindles 12 support yarn carriers 18 on which yarn 20 is taken up to build a bobbin 22 during the spinning operation.

The yarn 20 is led onto the bobbin 22 through a traveler 24 which is carried on the spinning ring 26, and which is pulled around the ring 26 as the yarn is wound on the carrier 18 by rotation of the spindle 12. In addition to leading the yarn 20 onto the carrier 18, the traveler 24 also serves the purpose of introducing a twist in the yarn, and during the spinning operations the ring rail 10 is actuated so that it has a cyclic up and down motion regulated to lay the yarn 20 on the carrier 18 so that the bobbin 22 is built in a desired pattern.

According to conventional practice in the construction of spinning frames and the like, the spinning ring is attached directly to the ring rail so that it forms a stationary guideway so to speak for the traveler. As a result of this arrangement, the speed of travel of the traveler on the spinning ring is characteristically very great,

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i. e., of the order of several thousand revolutions per minute, which in turn results in severe strain and attrition on the yarn. This circumstance makes it necessary to restrict the size (i. e., diameter) of ring used for a given spinning operation within rather close limits in order to maintain a favorable angle of pull on the yarn through the traveler. This restriction of the ring size in turn restricts the size of bobbin that can be built, which is an important disadvantage from the standpoint of both cost and production, and the seriousness of this problem has been substantially increased by the modern trend toward high speed operations.

According to the present invention this problem is largely obviated by arranging the spinning ring 26 for rotation on the ring rail 10, as mentioned above, so that the relative speed of travel of the traveler 24 may be substantially lessened, and thereby allow the size (i. e. diameter) of the ring to be increased to permit substantially larger bobbins to be built. This is done by providing a ring holder 28 adapted to be fixed on the ring rail 10, and which forms a bearing race as at 28' (compare Figs. 1 and 2). The spinning ring 26 is then mounted for rotation in this holder 28, being likewise formed for this purpose with a bearing race portion 26', and thereby adapted for assembly with the holder 28 on ball bearings 30 or the like.

The spinning ring 26 is further formed according to the present invention with a depending flanged portion as at 32 providing a pulley adapted to be driven for rotating the ring 26 in the holder 28. Driving means for the pulley portion of this ring 26 may be conveniently associated with the spinning frame drive. A suitable arrangement for this purpose is illustrated in Figs. 3 and 4 in which a driving drum 34 is shown disposed on the spinning frame adjacent one end of the ring rail 10. This driving drum 34 may be fitted with a suitable pulley or whorl as at 36 so as to be driven in turn by a tape or the like (not shown) just as the spindles 12 are driven druing the spinning operation. From the driving drum 34 then a tape 38 may be extended beneath the ring rail 10 and trained around the pulley portions 32 of each ring 26 as indicated best in Fig. 4. Tension rolls 40 may be disposed as shown to maintain the tape 38 taut on the pulley porsions 32, and a suitable shipper as indicated at 42 may be arranged on the ring rail 10 so that the tape 38 will be shifted on the driving drum 34 in accordance with the cyclic up and down motion of the ring rail.

An arrangement of this sort makes it possible to obtain nice regulation and control of the ring and traveler during the spinning operation, and, if desired, a variable speed adjusting means (not shown) may be provided to control the driving drum 34 and thereby provide for variable regulation of the speed of the traveler during the spinning operation.

I claim:

1. In a spinning frame, a vertically movable ring rail, an upstanding drum arranged near one end of the ring rail for rotation at a given elevation, a group of rings extending longitudinally of the rail, a holder surrounding each ring and held stationary upon the rail, the holder and ring having races, bearing elements held within the races, a wide pulley secured to each ring and extending downwardly below the ring and holder and having an approximately flat face, a wide flat belt extending longitudinally of the rail and engaging a plurality of the pulleys to drive them and passed about the upstanding drum to be driven thereby, means to shift the belt vertically with the movement of the rail so that the belt is shifted longitudinally of the drum, and means to drive the drum.

2. In a spinning frame, a vertically movable ring rail, an upstanding drum arranged near the ring rail and separate therefrom to rotate at a given elevation, a group of rings extending longitudinally of the rail, a holder surrounding each ring and held stationary upon the rail, the holder and ring having races, bearing elements held within the races, a wide pulley secured to each ring and extending downwardly below the ring and holder and having an approximately flat face, idler pulleys spaced from the ring pulleys and mounted upon the rail, a wide flat belt extending longitudinally of the rail and engaging faces of the ring pulleys and opposite faces of the idler pulleys and passed about the upstanding drum to be driven thereby, means to shift the belt vertically with the movement of the rail so that the belt is shifted longitudinally of the drum, and means to drive the drum.

3. In a spinning frame, a vertically movable ring rail, an upstanding drum arranged near one end of the ring rail for rotation at a given elevation, a group of rotary units extending longitudinally of the ring rail, each unit comprising a ring and a wide pulley which rotate together, said pulley having an approximately flat face, a holder surrounding a portion of each unit and held upon the ring rail, the holder and unit having races, bearing elements held within the races, a wide flat belt extending longitudinally of the rail and engaging a plurality of the pulleys to drive them and passed about the upstanding drum to be driven thereby, means to shift the belt vertically with the movement of the rail so that the belt is shifted longitudinally of the drum, and means to drive the drum.

4. In a spinning frame, a vertically movable ring rail, an upstanding drum arranged near one end of the ring rail for rotation at a given elevation, a group of rotary units extending longitudinally of the ring rail, each unit comprising a ring and a wide pulley which rotate together, said pulley having an approximately flat face, a holder surrounding a portion of each unit and held upon the ring rail, the holder and unit having races, bearing elements held within the races, a wide flat belt passed about the upstanding drum to be driven thereby and having longitudinal runs disposed upon opposite sides of the pulleys to engage with the faces of the pulleys, idler pulleys spaced from the ring pulleys and mounted upon the rail and engaging at least one longitudinal run for pressing the run into engagement with certain wide pulleys, means mounted upon the rail and movable therewith and engaging the belt to shift the same longitudinally of the drum, and means to drive the drum.

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