March 23, 1937. J. PILZ 2,074,556

DRAWING MECHANISM OF SPINNING MACHINES

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Fig. 1

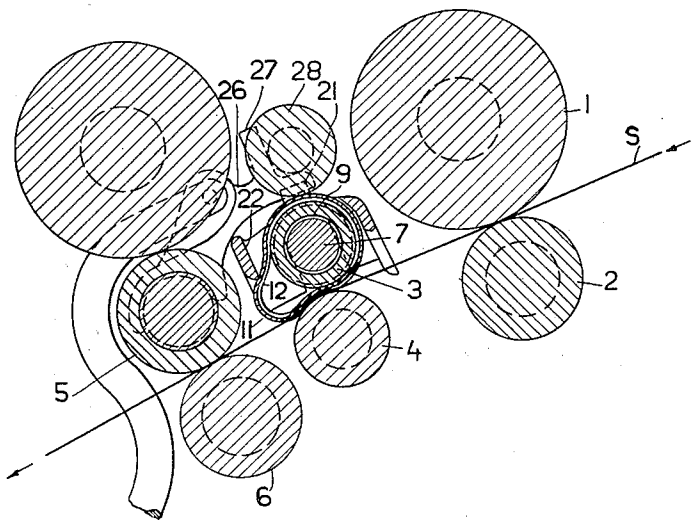
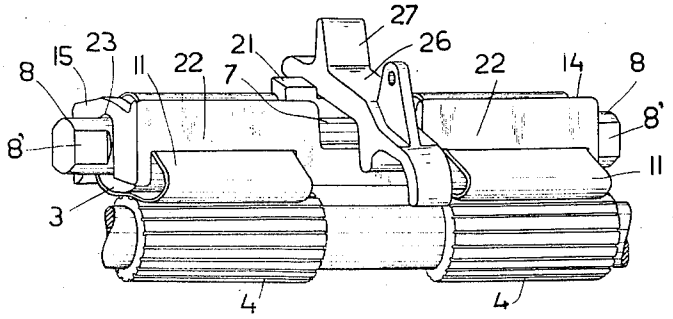


Fig. 2



Josef Pilz
INVENTOR
By Otto Munk
his ATT'y.

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Fig.4

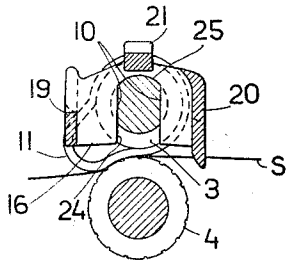


Fig.3

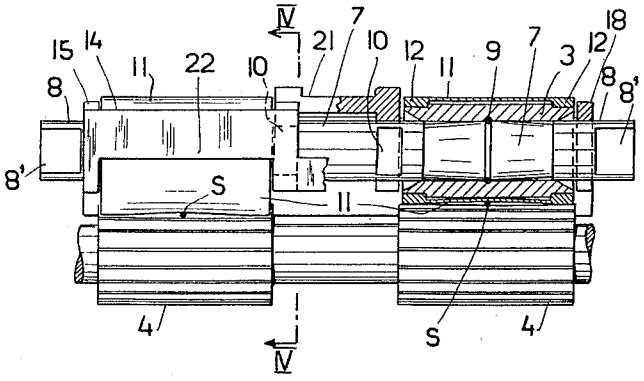


Fig.6

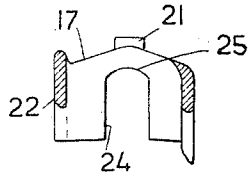


Fig.5

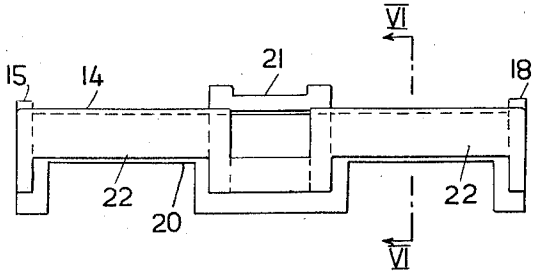


Fig.8

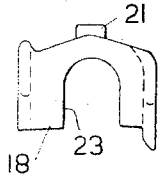
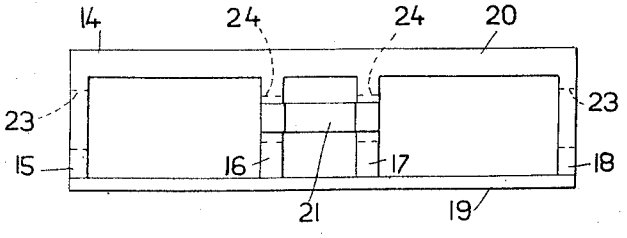


Fig.7



Josef Pilz
INVENTOR
By Otto Schmidt
his ATT'Y.

Patented Mar. 23, 1937 2,074,556

UNITED STATES PATENT OFFICE

2,074,556

DRAWING MECHANISM OF SPINNING MACHINES

Josef Pilz, Pottendorf, Lower Austria

Application March 8, 1934, Serial No. 714,547
In Austria March 11, 1933

8 Claims. (Cl. 19—131)

The invention relates to drawing mechanisms of spinning machines wherein the braking of the sliver is effected by means of belts, and more particularly to drawing mechanisms in which the belt passes around an upper roller and is so guided by a guide member that it rests on a portion of the surface of the respective lower roller whereby a curved braking field is produced. Drawing mechanisms of this kind may be used for roving frames as well as for flyer frames, the braking field being at the middle roller.

An object of the invention is to provide a drawing mechanism which may be applied to existing machines with the minimum of trouble and expenses.

A further object of this invention is to increase the reliability of operation and to improve the efficiency of spinning machines.

The essence of the present invention consists in that the frame carrying the guide member for the belts, and the stationary shaft of the rollers around which pass the belts are provided with means adapted to guide the frame in a direction transversely to the shaft. The frame may be slid on the axle, the aforementioned guide means preventing the frame from being rotated and displaced in the direction of the shaft. The frame is also provided with bearing surfaces by means of which the frame is allowed to rest on the shaft.

The bearing surfaces are arranged on relatively thin cross walls of the frame so that the adjustment of the frame with respect to the roller shaft may easily be effected as will be described hereinafter. Moreover the frame is so designed as to constitute a supporting member for the means weighting the rollers.

Other objects of the invention will be more apparent upon consideration of the accompanying drawings showing a drawing mechanism by way of example, wherein the belt embraces the upper middle pressure-roller, it being understood, however, that changes may be made in the structure as will fall within the scope of the appended claims without departing from the spirit of the invention. Fig. 1 is a vertical section; Fig. 2, a perspective view of the middle rollers with the guide frame; Fig. 3, a front view of the middle rollers with the guide frame partly in section; Fig. 4, a section on the line IV—IV of Fig. 3; Fig. 5, a front view of the guide frame; Fig. 6, a section on the line VI—VI of Fig. 5; Fig. 7, a plan view of the guide frame; and Fig. 8, an end view of the guide frame.

Like reference characters denote like parts in the several figures of the drawings.

Referring to the drawings 1 and 2 denote the feed rollers, 3 and 4 the middle rollers, and 5 and 6 the front or drawing rollers. The shaft 7 of the upper middle roller terminates in two pins 8 cut with plane faces 8', which may be inserted in suitable stands (not shown) so as not to be capable of revolution. S are the slivers.

The rollers 3 are rotatably mounted on the shaft 7 and kept in position by means of circular springs 9 which engage an annular groove in the shaft as well as one in the rollers. In the middle portion of the shaft 7 there are provided two pairs of plane faces or flattened portions 10 which are parallel to the plane faces 8'.

Around the roller 3 pass belts 11 which may consist of rubber, leather or the like material. In certain cases more particularly when working up fibres of a great length of staple it is preferable to provide the belt with a cross section such as shown in Fig. 3, according to which the thickness of the wall of the belt is greater at the ends of the belts than in the middle so that circular ribs 12 of a few millimetres in thickness are formed, which extend inwardly from the edge of the belt. Due to this particular cross sectional shape of the belt, the latter is resilient along the nipping line and along the drawing field. The same effect may be obtained by providing the ribs at the ends of the rollers themselves and using a belt of uniform thickness since also in this case the middle portion of the belt is not supported.

The ribs 12 may also serve as means for guiding the belt, it being merely necessary for this purpose to provide grooves in the roller which are adapted to receive the ribs. The depth of the grooves is smaller than the height of the ribs.

Upon the shaft 7 there is placed a frame 14 which consists of four cross walls 15, 16, 17 and 18 each in the form of a yoke, which are connected by longitudinal walls 19, 20 and by a bridge-like member 21. The wall 19 is so designed as to form guide plates 22 which are adapted so to guide the belts that the lower flight of the belt rests on a portion of the surface of the roller 4, and forms with it a curved drawing field. The yoke-shaped cross walls 15 and 18 are provided with slots 23 the width of which being equal to the diameter of the shaft 7. The slots have such a depth or length that a gap is left free between the curved edge at the bottom of the slot and the surface of the roller 3. The width of the slots 24 in the yoke-shaped cross walls 16 and 17 is equal

to the distance between the opposite flattened portions 10 of the shaft 7. The slotted cross walls 16 and 17 co-operate with the flattened portions 10 in the manner of a tongue and groove. The curved edges 25 of the slots serve as bearing surfaces for the frame, the cross walls 16 and 17 constituting saddles by means of which the frame rests upon the shaft 7.

By adjusting these bearing surfaces at a lower or higher position, the position of the guide plates 22 and thereby the pressure in the drawing field may be varied.

26 denotes a saddle which is supported on the one hand by the roller 5 and on the other by the bridge 21, and loaded by weights (not shown). Part of the load is transmitted to the frame and by the latter to the rollers 3. The saddle 26 is provided with a projecting portion 27 so as to form with it an angular bearing member for cleaning rollers 28 which rest on the belt and serve to remove adhering fibers therefrom.

If an existing drawing mechanism is to be altered into a drawing mechanism according to the invention it is merely required to remove the existing pressure roller and to substitute therefor the drawing roller according to the invention.

The costs of construction are therefore very small. The re-construction of existing drawing mechanisms into such according to the present invention does therefore involve only small expenses.

The invention is not limited to the drawing mechanism illustrated but may equally be applied to front pressure rollers for the purpose of diminishing the breaking of fibres. Moreover, the invention is not restricted to the use of belts like those illustrated in Fig. 3. The advantages obtained by the present invention are also brought about when using belts of equal thickness such as have hitherto been made with an even surface. The belt shown in Fig. 3 constitutes a particular embodiment of the invention.

I claim:

1. Drawing mechanism of spinning machines, comprising a pair of rollers the upper roller of which being mounted on a stationary shaft, a belt passing around the upper roller and resting on a portion of the surface of the lower roller of said pair of rollers, a frame with guide members for the belt, and means provided on the frame and on the shaft and adapted to guide the frame in a direction transversely to the shaft, a bridge-like member integral with the frame, and a saddle loaded by weights and adapted to bear against the bridge-like member.

2. Drawing mechanism of spinning machines, comprising a pair of rollers the upper roller of which being mounted on a stationary shaft, a belt passing around the upper roller and resting on a portion of the surface of the lower roller of said pair of rollers, a frame with guide members for the belt, and means provided on the frame and on the shaft and adapted to guide the frame in a direction transversely to the shaft, a bridge-like member integral with the frame, and a saddle loaded by weights and adapted to bear against the bridge-like member, the said saddle being so formed as to constitute a bearing for cleaning rollers adapted to clean the said belt.

3. Drawing mechanism of spinning machines, comprising a pair of rollers the upper roller of which being mounted on a stationary shaft, a belt passing around the upper roller and resting on a portion of the surface of the lower roller of said pair of rollers, a frame with guide members for the belt, and means provided on the frame and on the shaft and adapted to guide the frame in a direction transversely to the shaft, a bridge-like member integral with the frame, and a saddle loaded by weights and adapted to bear against the bridge-like member, the said saddle being provided with a projecting portion forming with it an angular member adapted to constitute a bearing for cleaning rollers capable of cleaning the said belt.

4. Drawing mechanism of spinning machines, comprising a pair of rollers, a belt passing around the upper roller of the said pair of rollers, and resting on a portion of the surface of the lower roller of the said pair of rollers, the belt being provided with ribs projecting inwardly from the edges of the belt, the upper roller being provided with circular grooves of a depth smaller than the height of the said ribs, and adapted to guide the said ribs.

5. Drawing mechanism of spinning machines, comprising a pair of rollers, the upper roller of which being rotatably mounted on a stationary shaft, a belt passing around the upper roller and resting on a portion of the surface of the lower roller of said pair of rollers, a frame with guide members for the belt, the said shaft being provided with diametrically opposite flattened portions, the said frame having cross walls in the form of a yoke adapted to rest on the said shaft and with the two parallel inner edges of the said yoke to engage the said flattened portions so as to prevent rotating of the frame, and a member loaded by weights and adapted to rest directly on the said frame.

6. Drawing mechanism of spinning machines, comprising a pair of rollers, a belt passing around the upper roller of the said pair of rollers, and resting on a portion of the surface of the lower roller of the said pair of rollers, the belt being spaced apart from the surface of the upper roller by means of stiff ribs projecting inwardly from the edges of the belt.

7. Drawing mechanism of spinning machines, comprising a pair of rollers, the upper roller of which being rotatably mounted on a stationary shaft, a belt passing around the upper roller and resting on a portion of the surface of the lower roller of said pair of rollers, a frame with guide members for the belt, the said shaft being provided with flattened portions and the said frame being provided with yoke-shaped portions adapted to rest on said shaft and to engage the said flattened portions so as to allow movement of the frame only in one direction transversely to the shaft, and a member loaded by weights and resting on the said frame.

8. Drawing mechanism according to claim 7, wherein a bridge-like member integral with the frame is loaded by weights.

JOSEF PILZ.