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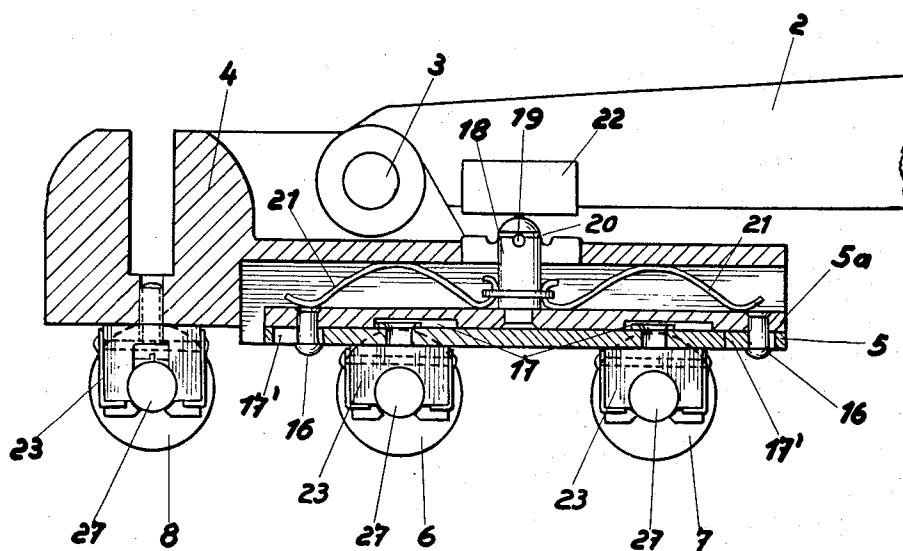
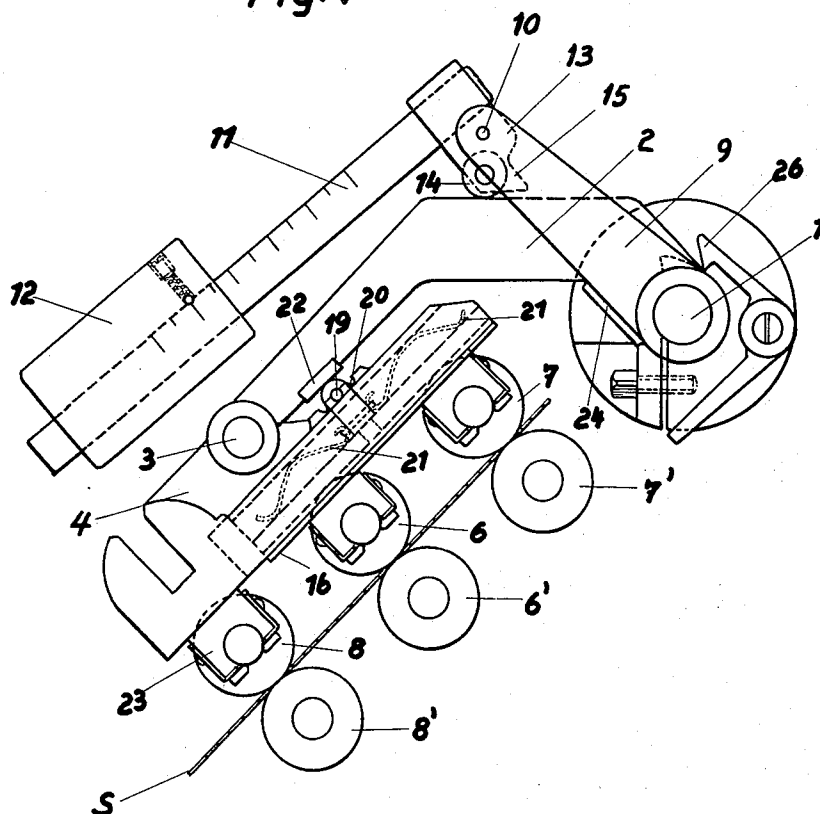
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**2,783,505**

# DRAWING FRAME FOR SPINNING MACHINES

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**Fig. 1**



*Fig. 2*

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## DRAWING FRAME FOR SPINNING MACHINES

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5 Claims. (Cl. 19—135)

Our invention relates to drawing frames for spinning machines, particularly ring spinning machines, and in a more specific aspect to adjustable weighting means for drawing frames whose top roll assembly can be swung upwardly away from the bottom rolls about a pivot rod extending transverse to the direction of the drawing operation.

In the known drawing frames of this type the required degree of nipping pressure is secured by weights suspended from the top roll assembly and also by one or more of the top rolls themselves for which purpose these top rolls are given particularly great weight. The latter case has the disadvantage that the corresponding top rolls must be exchanged for each desired change in nipping pressure, thus requiring inconvenient and time-consuming attendance. Besides, the carrying structure for the top rolls must be given a particular, spacially unfavorable design. The exchangeable weights are disposed laterally of the drawing frame and preferably on both sides thereof, thus occupying just those places where space is at a premium. Considerable time is required for attachment and removal of weights.

It is an object of our invention to eliminate these shortcomings and to provide a drawing frame with a top-roll weighting device that can readily and rapidly be set to any desired nipping pressure within a wide pressure range but does not occupy space within or laterally of the drawing mechanism proper.

Another object is to improve such a drawing frame as regards the facility and speed with which it can be set into and out of operation. More specifically, it is an object of our invention to devise the drawing frames in such a manner that a single manipulation suffices to relieve the top rolls of weighting pressure and also to swing them upwardly away from the bottom rolls, or to return the top rolls to the drawing position and also applying the proper weighting pressure.

To attain these objects and in accordance with a feature of our invention we provide a drawing frame of the type above described, with a separate weighting lever which bears from above upon the upwardly swingable holder of the top-roll assembly and which carries a weight acting upon the holder with a selectively adjustable leverage. According to another feature of the invention, the weighting lever has a fulcrum axis located above and parallel to the pivot axis of the top-roll holder and acts upon the holder at a place between that pivot axis and the point where the holder is pivotally linked to the rest of the top-roll assembly, the weight being slidably mounted on, and displaceable along the weighting lever. According to still another feature the fulcrum of the weighting lever is disposed on an arm which is rotatable about the pivot axis of the top-roll holder; and the weighting lever has a projection or roller resting against the top-roll holder from above for transmitting weighting pressure thereto, while the fulcrum-carrying arm has a stop engageable with the holder from below for lifting the holder and thus the

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entire top-roll assembly when the attendant swings the weighting lever upwardly to the inactive position.

The foregoing and more specific features of the invention, all set forth with particularity in the claims, annexed hereto, will be apparent from the embodiment illustrated on the drawing in which—

Fig. 1 shows a lateral view of a drawing frame in the operating position,

Fig. 2 shows part of the top-roll assembly of the same drawing frame also in a lateral view but on a larger scale and partly in section.

In the illustrated drawing frame, the upper portion, comprising the entire top roll assembly, is mounted on a pivot shaft or rod 1 which extends transverse to the drawing direction and may pass along a large number of individual drawing frames located side by side in a row of any desired length. The pivotal mounting of the top-roll assembly permits this assembly to be swung upwardly from the position illustrated in Fig. 1 to the open, inactive position. This is done with the aid of a holder 2 whose front end is linked by a pivot pin 3 to a guiding saddle 4 from which a supporting saddle, 5, 5a is pendulously suspended. The supporting saddle carries two top rolls 6 and 7. Another top roll, namely the delivery roll 8, is mounted on the guiding saddle 4. The top rolls 6, 7 and 8, when in operative position, cooperate with respective, stationarily journaled bottom rolls 6', 7', 8' to subject a textile strand S, such as a sliver or roving, to an attenuating draft caused by progressively higher speeds of the successive roll pairs respectively.

For providing between the rolls of each pair the nipping pressure required for the drawing operation, the above-described top roll assembly is weighted by means of a lever 11 which carries a slidably displaceable weight 12. The lever 11 bears from above upon the holder 2 at a point located between the pivot shaft 1 and the linking pivot 3. The lever 11 is fulcrumed on a pin 10 mounted on a swing arm 9 which is seated upon the pivot shaft 1 of the machine. The lever 11 has a short arm 13 which, during weighting performance, bears against the holder 2 preferably by means of an intermediate roller 14 journaled on the lever arm 13. The weighting lever thus has two angularly related arms of which the longer one extends above and along the holder 2 and carries the adjustable weight 12.

The swing arm 9 is provided with a stop 24 extending beneath the holder 2. When the upper portion of the drawing frame is to be swung upwardly into the open position, it is merely necessary for the attendant to lift the lever 11 so that this lever and the arm 9 swing about the axis of pivot shaft 1. The stop 24 then entrains the holder 2, thus lifting the entire top-roll assembly away from the bottom rolls. Preferably, and as shown, the swinging movement of lever 11 and of lever arm 13 relative to holder 2 are limited by a stop 15 formed by a projection of the lever arm 13. A pawl 26 is provided for latching and arresting the weighting lever and the entire truck roll assembly in the raised position.

The supporting saddle for the drawing rolls 6 and 7 is composed of two flat parts 5 and 5a connected with each other by screws 16. Part 5 is displaceable relative to part 5a in a direction parallel to that of the drawing operation. Such displacement is made possible by the provision of elongated openings 17 and 17' in parts 5a and 5 respectively. Firmly secured to part 5a is a pin 18 with two lateral dowel fingers 19. The dowels are hung into a selected one of a number of notches 20 of the guiding saddle 4. In this manner, the carrier saddle 5, 5a is pendulously suspended from the guiding saddle and can be selectively adjusted relative to the guiding saddle in a direction parallel to the drawing direction of the frame. Two leaf springs 21 between part 5a and the guiding saddle

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4 secure the supporting saddle in position, while permitting a pendulous adjustment of the supporting saddle.

For better distribution of the load of weight 12, the holder 2 transmits pressure not only through pivot pin 3 to the guiding saddle 4 but is also in pressure-transmitting engagement with the supporting saddle 5, 5a at a point between the pivot pin 3 and the pivot shaft 1. To this end, the holder 2 is provided with an abutment 22 bearing against the top of pin 18. It will be recognized that the pressure of the weight is centrally distributed upon the top rollers and that any desired loading can readily and rapidly be adjusted by displacing the weight. Furthermore, in such a drawing frame the weight can be kept relatively small so that the weighting lever is easily manipulated for opening and closing the drawing frame.

The drawing rolls 6, 7 as well as the delivery roll 8 of the top roll assembly are mounted and journaled by means of clamping springs 23. The rollers 6, 7, 8 have a middle portion 27 of reduced diameter, and the clamping springs 23 straddle this middle portion 27 of each roller and reach sufficiently over the roller periphery at this point to secure a reliable journaling of the top rolls.

Aside from the advantages mentioned above, all parts of the weighting device in a drawing frame according to invention and as illustrated are always readily accessible for inspection, adjustment or repair as they occupy space only above the drawing roll mechanism proper and do not extend downwardly between the roll pairs. No space is needed for any part of the weighting device at places horizontally beside the drawing rolls so that the individual drawing lines of a spinning machine can be located horizontally close to each other to afford a compact design of multi-line machinery.

It will be understood by those skilled in the art upon a study of this disclosure that our invention permits of various modifications as regards design details and hence may be embodied in devices other than that specifically illustrated and described, without departing from the essential features of our invention and within the scope of the claims annexed hereto.

We claim:

1. A drawing frame for spinning machines, particularly spinning machines, comprising a group of roll pairs each pair having a bottom roll and a top roll and all rolls being parallel to each other, a pivot shaft spaced from said group in parallel relation to said rolls, a saddle assembly on which said top rolls are mounted, a holder linked to said assembly and movable about the axis of said pivot shaft for lifting said assembly and said top rolls away from said bottom rolls, a weighting lever having a fulcrum parallel to said pivot shaft and having a long arm and a short arm, said short arm when effective being in pressure engagement with said holder at a place between said pivot shaft and the point where said holder is linked to said assembly, and a weight displaceably mounted on said long arm.

2. A drawing frame for spinning machines, particularly ring spinning machines, comprising a group of bottom rolls and top rolls all parallel to each other, a pivot shaft parallel to said rolls and spaced from said group of rolls, a saddle assembly on which said top rolls are mounted, a holder linked to said assembly and movable about the axis of said pivot shaft for lifting said assembly and said top rolls away from said bottom rolls, a weighting lever having a fulcrum parallel to said pivot shaft and having a long arm and a short arm angularly related to each other, said fulcrum being located above said holder, said short arm when in use extending from said fulcrum downwardly into pressure engagement with said holder at a place be-

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tween said pivot shaft and the point where said holder is linked to said assembly, said long arm extending from said fulcrum generally in a direction toward said point, and a weight displaceably mounted on said long arm.

3. A drawing frame for spinning machines, comprising a group of bottom rolls and top rolls all parallel to each other, a pivot shaft parallel to said rolls and spaced from said group of rolls, an assembly on which said top rolls are mounted, said assembly comprising a holder movable about the axis of said pivot shaft, an arm mounted on said pivot shaft, a weighting lever fulcrumed on said arm and having a fulcrum axis parallel to said shaft axis and upwardly spaced therefrom, said lever having a long arm and a short arm angularly related to each other, said arm extending when in use downwardly from said fulcrum axis and having a roller engageable with said holder to transmit weighting pressure to said holder, said long arm extending from said fulcrum axis generally along and above said holder, and a weight displaceably mounted on said long arm.

4. A drawing frame for spinning machines, comprising a group of bottom rolls and top rolls all parallel to each other, a pivot shaft parallel to said rolls and spaced from said group of rolls, an assembly comprising a saddle member and a guide member and a holder, one of said top rollers being journaled on said guide member, said holder being movable about the axis of said pivot shaft and being linked with said guide member to impart pressure thereto, said saddle member having pivot means joined with said guide member for pendulously suspending said saddle member from said guide member, said pivot means being adjustable relative to said guide member in a direction parallel to the drawing direction, an arm mounted on said pivot shaft, a weighting lever fulcrumed on said arm and having a fulcrum axis parallel to said shaft axis and spaced therefrom, a weight adjustably mounted on said lever, said lever being normally in pressure-transmitting engagement with said holder.

5. A drawing frame for spinning machines, comprising a group of bottom rolls and top rolls all parallel to each other, a pivot shaft parallel to said rolls and spaced from said group of rolls, an assembly comprising a saddle member and a guide member and a holder, one of said top rollers being journaled on said guide member, said saddle member being pendulously suspended from said guide member, said holder being pivotally linked to said guide member to transmit pressure thereto and having a point of pressure engagement with said saddle member at a location near the pendulous suspension of said saddle member, an arm mounted on said pivot shaft, a weighting lever fulcrumed on said arm and having a fulcrum axis parallel to said shaft axis and spaced therefrom, a weight adjustably mounted on said lever, said lever being normally in pressure-transmitting engagement with said holder.

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