June 17, 1941. W. STAHLECKER 2,246,474

GUIDING ARRANGEMENT FOR TOP WEIGHTING ROLLS

Filed Aug. 4, 1939 4 Sheets-Sheet 1

Fig. 1.

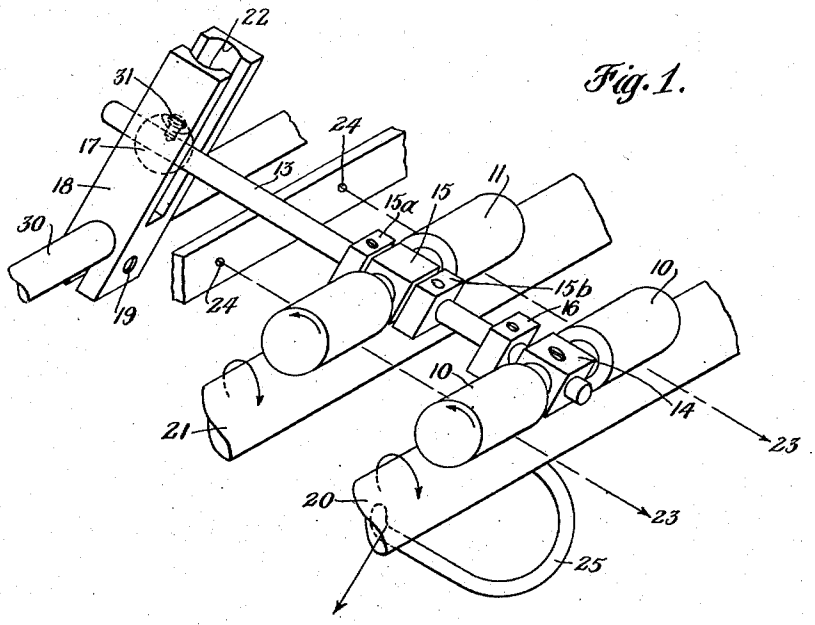


Fig. 4.

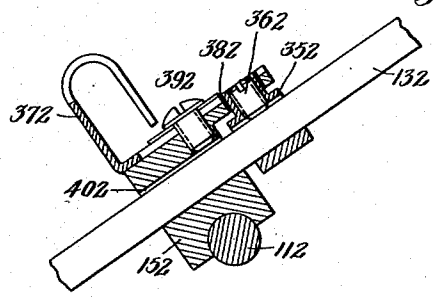


Fig. 5.

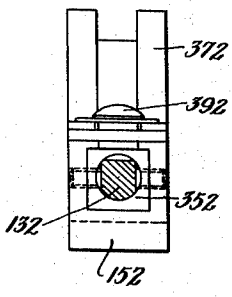
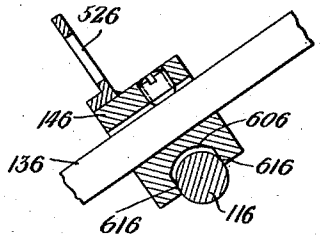


Fig. 6.



INVENTOR
Wilhelm Stahlecker

BY Chas. Lynn Russell
HIS ATTORNEY

June 17, 1941. W. STAHLECKER 2,246,474

GUIDING ARRANGEMENT FOR TOP WEIGHTING ROLLS

Filed Aug. 4, 1939 4 Sheets-Sheet 2

Fig. 2.

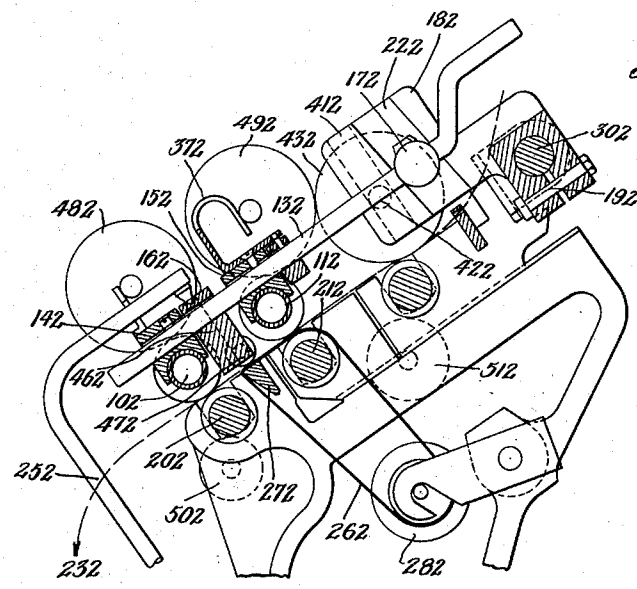
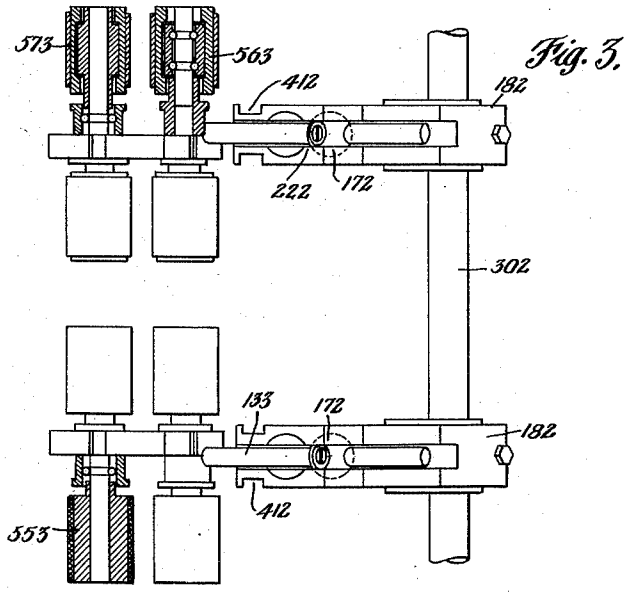


Fig. 3.



INVENTOR:
Wilhelm Stahlecker

BY Chas. Lynn Russell
HIS ATTORNEY

June 17, 1941. W. STAHLECKER 2,246,474

GUIDING ARRANGEMENT FOR TOP WEIGHTING ROLLS

Filed Aug. 4, 1939 4 Sheets-Sheet 3

Fig. 7.

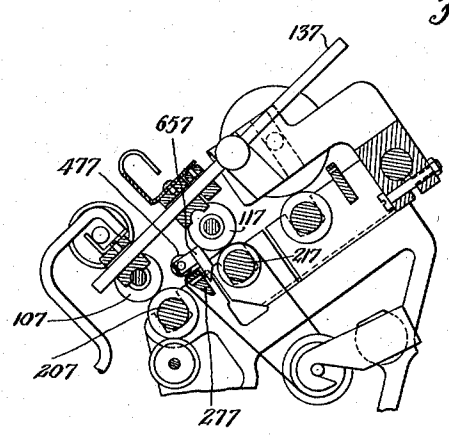
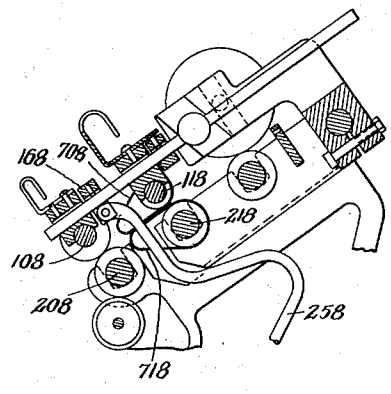


Fig. 8.



INVENTOR
Wilhelm Stahlecker

BY Chas. Lynn Russell
HIS ATTORNEY

June 17, 1941. W. STAHLECKER 2,246,474

GUIDING ARRANGEMENT FOR TOP WEIGHTING ROLLS

Filed Aug. 4, 1939 4 Sheets-Sheet 4

Fig. 9.

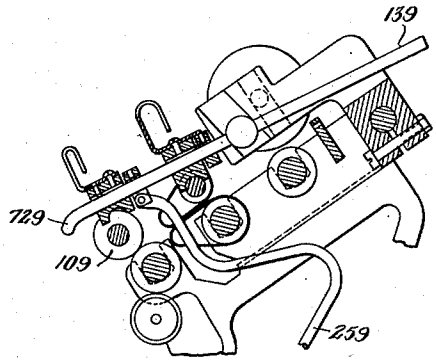
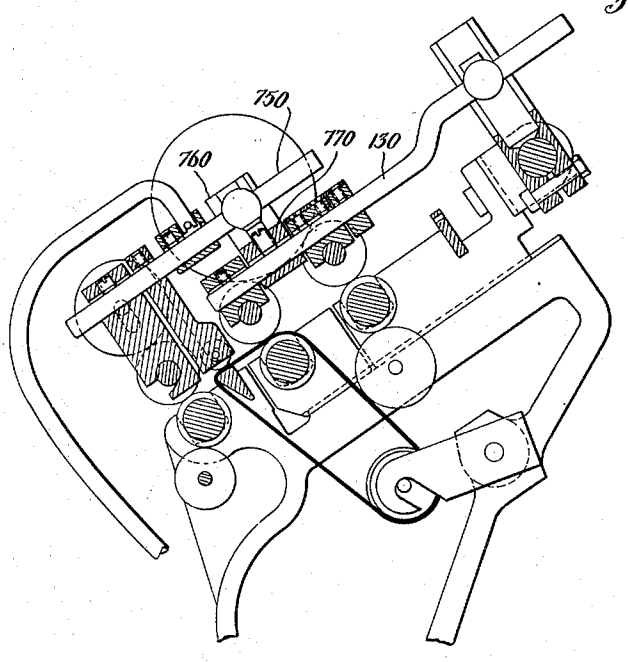


Fig. 10.



INVENTOR
Wilhelm Stahlecker

BY Chas. Lyon Russell
HIS ATTORNEY

Patented June 17, 1941

2,246,474

UNITED STATES PATENT OFFICE

2,246,474

GUIDING ARRANGEMENT FOR TOP WEIGHTING ROLLS

Wilhelm Stahlecker, Stuttgart-Bad Cannstatt, Germany, assignor to Vereinigte Kugellagerfabriken A. G., Schweinfurt, Werk Bad-Cannstatt, Germany, a corporation of Germany

Application August 4, 1939, Serial No. 288,272
In Germany January 4, 1939

12 Claims. (Cl. 19—135)

This invention relates to improvements in mechanisms for drawing and drafting fibrous materials, particularly for the formation of thread or yarn by passing it between top and bottom rolls urged into rolling contact against it.

One object of this invention is to provide a lever, guiding and controlling one or more shafts each having two opposed top rolls in such a way that said rolls automatically adjust themselves into a position parallel to the bottom rolls. Not only is a reliable nip obtained between the bottom rolls and the top rolls, but also unnecessary friction is avoided at the rolling contact, due to oblique setting of the rolls and due to wear in the roll bearings.

Another object of the invention is the provision of a guiding lever with elements enabling the top roll to be removed quickly.

With these and other objects in view, the invention consists of certain novel features of construction, as will be more fully described and claimed.

In the accompanying drawings:

Figure 1 is a perspective view showing a fundamental form of a guide lever connected with two pairs of top rolls opposed to two bottom rolls.

Figure 2 is an elevational view showing two top rolls connected with a guide lever and driven by bottom rolls.

Figure 3 is a partial plan view of the mechanism illustrated in Figure 2.

Figure 4 is a sectional view showing more detailed some parts of Figure 2.

Figure 5 is a sectional end elevation of the parts illustrated in Figure 4.

Figure 6 shows an elevational view of further details belonging to the previous figures.

Figure 7 shows in cross section a long draft system in a position for removing the middle top rolls.

Figure 8 shows a sectional end elevation of another long draft system embodying the invention.

Figure 9 shows the same construction as in Figure 8, the guide lever being in a position for allowing the front rolls to be taken off, and

Figure 10 is a sectional end elevation showing three top rolls connected and controlled by guide levers.

Referring to the drawings in Figure 1 there is shown in a sketchy manner the main parts of a mechanism for drawing fibrous material. The mechanism comprises the lower drawing rolls 20 and 21 which are positively driven in predetermined speed relations, and the top rolls 10 and 11 rotating freely with their associated lower drawing rolls.

The top rolls 10 and 11 are positioned by a guide member or lever 13 holding the shafts of the connected top rolls by means of relatively adjustable supporting blocks 14 and 15. This guide lever is furnished at its rear end with a joint member in form of a ball 17, rigidly secured to it and turning in a bearing block 18. The bearing block is fastened to a stationary cross rod 30 by the lock screw 19. The ball 17 is fastened to the lever 13 by a binding screw 31 so that the ball can be adjusted longitudinally upon the lever. The ball 17 of the joint may move up and down within the bearing channels 22.

The roving or sliver 23 is fed through the usual traversing trumpet 24 to the rolls 11 and 21. From the nip between these rolls the roving is drawn downward by the rolls 10 and 20 at a desired rate. The rolls are loaded by the load (not shown), and the loading hook 25 is hung in the adjustable member 16.

The supporting block 14 for the rolls 10 is fastened rigidly to the guide lever 13 consequently the shaft of these rolls 10 is not tiltable relatively to the axis of the guide lever 13. A slight tilting movement of the shaft for the top rolls 11 is permitted, the supporting block 15 not being fastened to the guide lever 13, it being permitted an adjustable lengthwise movement between the members 15a and 15b.

The direction of the rotation of the rolls is indicated by the arrows. The top rolls, due to their connection with the guide lever 13, and the circumferential forces given by the bottom rolls, are automatically forced to run in a position parallel to the axes of the bottom rolls. Therefore, lateral pivots for the top rolls as well as the usual corresponding bearing channels are not necessary for the drawing mechanism according to this invention.

In the construction shown in Figures 2 and 3, the guide lever 132 is applied for a long draft system of the so-called single belt type, there being a draft belt 262 passing over the bottom roll 212 and around a nose bar 272, mounted in a fixed position between the rolls 212 and 202. The draft belt also passes around a guide pulley 282, mounted in the usual way.

Weights (not shown) act on the hook 252 and the support 162 serve to press the top rolls 102 and 112 against the bottom rolls respectively upon the roving 232. The top rolls 102 and 112 are connected with the guide lever by means of adjustable supporting blocks 142 and 152. As ex-

plained in connection with Figure 1, the block 142 is connected rigidly with the guide lever, the block 152 having some clearance, so as to allow self-adjustment of the top rolls 112 connected to it.

Figures 4 and 5 show in more detail these parts of the construction. The holding member 354 is connected with the guide lever 134 by a binding screw 364, hooklike holding plate 374, having a hole 384 of somewhat larger diameter than the head of the screw 364. The supporting block 154 is connected with this plate by the screw 394 and loosely fitted on the guide lever. A clearance indicated by 404 allows the self-adjustment of the top rolls supported by the block 154.

Reverting to Figure 2, the ball 172 is shown fastened to the guide lever and movable within the channel 222 of the bearing block 182, which is held fast on the cross rod 302 by the screw 192. The bearing block 182 is not only provided with a channel 222 which is somewhat inclined, but is further provided with the bearing channels 412 for reception of the pivots 422 for the feed roll 432. In a similar way the load supporting member 452 is also provided with bearing channels 462, in this case for guiding the slip roll 472.

Clearer rolls 482, 492, 502 and 512 are shown; the clearer rolls 482 and 492 being supported by the members 522 and 372 respectively, which are connected with the supporting blocks 142 and 152.

The top rolls controlled by the guide lever can be of any usual type, either solid rollers 553 as shown in Figure 3, or of loose shell type 563 with stationary shaft, or of loose shell type 573 with rotating shaft. Antifriction bearings for the top rolls may be provided as shown in Figure 3, since they are giving special advantages for the rolls 573 and 583, the bearing of which is situated at the connection point between guide lever 132 and the top roll parts. At this point, any jointlike movement should be eliminated, in order to avoid oblique running position of the rolls connected with the guide lever. For the same reason, the saddles of the supporting blocks 142 and 152 are provided with recesses 606 as shown in Figure 6, thus supporting the shafts with the lower sections 616 only of the saddle surfaces.

Since the top rolls are not guided, the roll shells should be guided in an axial direction by projecting means or ball bearings as shown in 563 and 573 Figure 3.

Figure 7 shows a slight modification of the long draft system shown in Figures 2 and 3. According to this design, the slip roll 477 is guided in bearing elements 657, fastened to the nose bar 277.

Should it be required to remove the middle top roll 117, it is merely necessary to slightly lift the back end of the guide lever 137 from its position, as shown in Figure 7, which makes it possible to remove the rolls 117.

In Figure 8 a long draft mechanism of the double apron type is shown in connection with the elements of the present invention. The middle roll 118 is encircled by the upper apron 708 co-operating with the lower apron 718 in the usual manner. Especially for this draft system the self adjustment of the top rolls, in first line of the middle roll, into a position parallel to the bottom roll will be appreciated, since any oblique position of the middle rolls 118 would cause not only an unsufficient nip, but also axial forces acting upon the aprons and forcing them to run off and foul laterally disposed parts. This, in turn, would cause excessive wear and eventually destruction of the aprons.

The hook 258, going through the space between the front and middle rolls, is hung in the piece 168 which is adjustably connected with the guide lever, so that the space before the front roll is left entirely free.

Figure 9 shows, how by lifting the guide lever 139, at its front end 729, which is formed as a handle, the front top roll 109 can be removed quickly.

In the construction illustrated in Figure 10, a drawing mechanism of the single belt type is shown, with a main guide lever 130, and an additional guide lever 750. The swinging centre of the main lever 130 is arranged at its rear, and the swinging centre of the lever 750 which is also situated at the rear end, is supported in a bearing block 760 resting upon a block 770 which in turn is connected with the guide lever 130.

The foregoing description is directed solely towards the constructions illustrated, but I desire it to be understood that I reserve the privilege of resorting to all the mechanical changes to which the device is susceptible, the invention being defined and limited only by the terms of the appended claims.

I claim:

1. In mechanism of the character indicated, the combination of driven bottom rolls, a pair of top weighting rolls, a common shaft for the pair, the rolls being separated on the shaft, a guide lever connected with the shaft between the rolls, a fixed bearing block for the guide lever having a substantially vertical slot transverse to the guide lever, a joining device carried by the guide lever and disposed in said slot.

2. In mechanism of the character indicated, the combination of a plurality of driven bottom rolls, two pairs of top weighting rolls, a common shaft for each pair, the rolls being separated on the shaft, a guide lever connected with the shafts between the rolls of each pair, a fixed bearing block for the guide lever having a substantially vertical slot transverse to the guide lever, a joining device carried by the guide lever and disposed in said slot.

3. In mechanism of the character indicated, the combination of a plurality of driven bottom rolls, two pairs of top weighting rolls, a common shaft for each pair, the rolls being separated on the shaft, a guide lever connected with the shafts between the rolls of each pair, one of said shafts being tiltable about the axis of the guide lever, a fixed bearing block for the guide lever having a substantially vertical slot transverse to the guide lever, a joining device carried by the guide lever and disposed in said slot.

4. In mechanism of the character indicated, the combination of a pair of rolls, a common shaft for the pair, the rolls being separated on the shaft, a guide lever, a block on said guide lever, a saddle formed on its under side and adapted to rest upon the shaft for the said rolls between the same, so as to avoid mutual movability between the shafts and blocks, the roll shaft being removable from said saddle, and means for holding the block in adjusted position.

5. In mechanism of the character indicated, the combination of a pair of top weighting rolls, a shaft upon which said rolls are mounted, they being separated on the shaft, a guide lever removably connected to said shaft between the rolls, a bearing block having a vertically dis-

posed channel and a joint member connected to the guide lever and located in said channel.

6. In mechanism of the character indicated, the combination of a pair of opposed rolls rotatable independently upon a common rotary shaft, said shaft, a guide lever, a main bearing for said shaft arranged in the middle between the rolls.

7. In mechanism of the character indicated, the combination of two pairs of opposed rolls, a lever guiding such rolls, another pair of opposed rolls, a further lever guiding such pair and having a joint resting upon the first mentioned guide lever, means for loading the levers and rolls and a support member for the loading means and connecting blocks for the roll shafts, being adjustable along the guide levers.

8. In mechanism of the character indicated, the combination of two pairs of opposed rolls, a lever guiding such rolls, another pair of opposed rolls, a further lever guiding such pair and having a joint resting upon the first mentioned guide lever, means for loading the levers and rolls.

9. In mechanism of the character indicated, the combination of two pairs of opposed rolls, a guide lever, a shaft for the front pair of rolls detachably connected to the end of the guide lever, a supplementary lever connected to the shaft for the other pair of rolls, the latter being connected to said guide lever, a support member adjustable longitudinally of the guide lever, connecting blocks for the rolls also longitudinally adjustable on said lever, and means for loading the rolls.

10. In mechanism for carrying out a long draft system, the combination with a single belt arrangement, bottom rolls, of one or more pairs of opposed top weighting rolls, a guide lever connected to each of said pairs of rolls and a movable joint supporting said guide lever to enable the demounting of the said rolls.

11. In mechanism of the character indicated, the combination with a double belt arrangement, bottom rolls, of one or more pairs of opposed top weighting rolls, shafts upon which said pairs are mounted, a guide lever connected to said shaft, the front end of said guide lever being shaped as a handle for lifting it, thus enabling the removal of the front roll.

12. In mechanism of the character indicated, the combination with bottom rolls, of one or more pairs of opposed top weighting rolls, a double belt arrangement, a shaft for each pair of rolls, a guide lever, supporting blocks connected adjustably with the guide lever, saddles on said supporting blocks for resting upon the shafts of the top weighting rolls, the supporting block for the front row being rigidly connected with the guide lever.

WILHELM STAHLECKER.