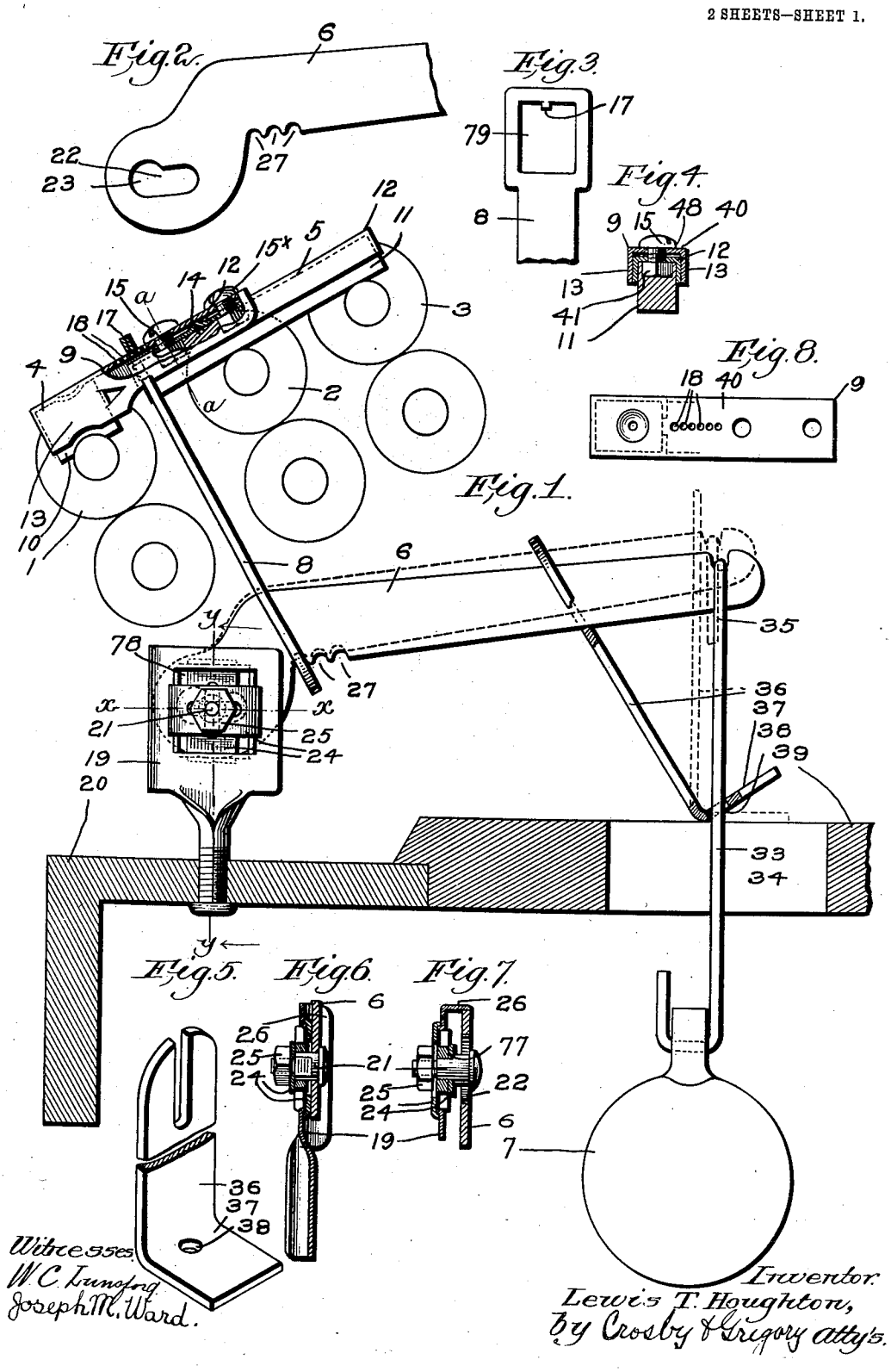
No. 879,641. PATENTED FEB. 18, 1908.

L. T. HOUGHTON.

TOP ROLL SADDLE.

APPLICATION FILED OCT. 18, 1906.

2 SHEETS—SHEET 1.



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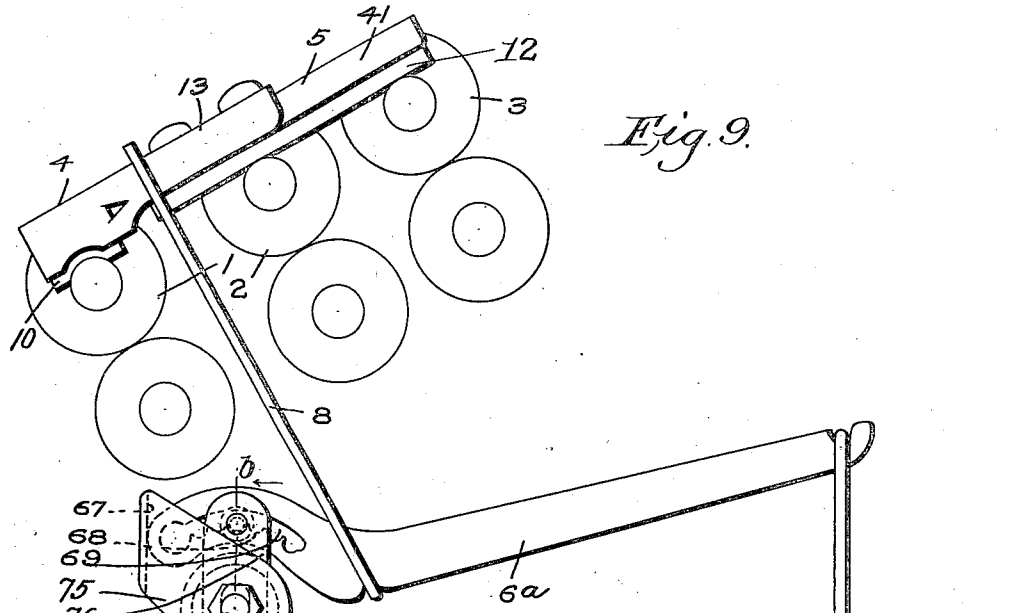

Fig. 9.

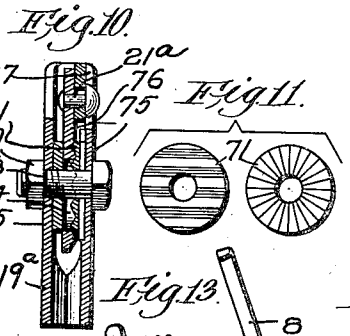

Fig. 10.

Fig. 11.

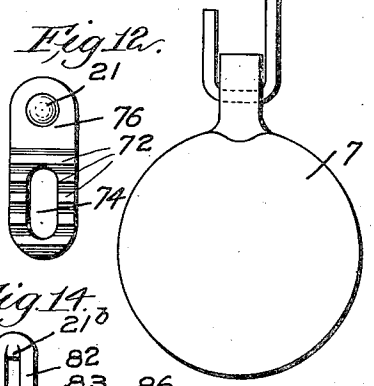

Fig. 12.

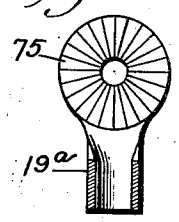

Fig. 16.

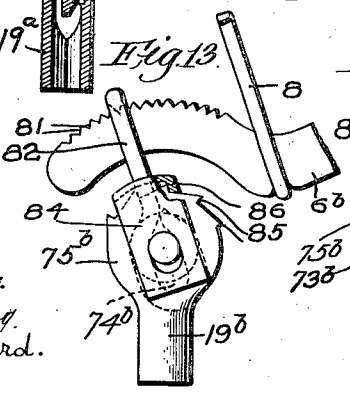

Fig. 13.

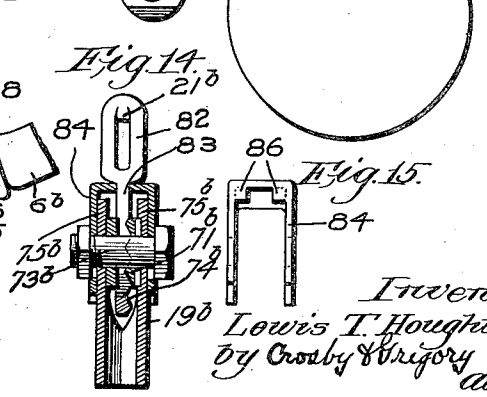

Fig. 14.

Fig. 15.

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UNITED STATES PATENT OFFICE.

LEWIS T. HOUGHTON, OF WORCESTER, MASSACHUSETTS.

TOP-ROLL SADDLE.

No. 879,641. Specification of Letters Patent. Patented Feb. 18, 1908.

Application filed October 18, 1906. Serial No. 339,454.

To all whom it may concern:

Be it known that I, LEWIS T. HOUGHTON, a citizen of the United States, and resident of Worcester, county of Worcester, and State of Massachusetts, have invented an Improvement in Top-Roll Saddles, of which the following description, in connection with the accompanying drawing, is a specification, like letters on the drawing representing like parts.

This invention relates to top roll saddles for spinning machines and its objects are, among others, to provide a novel construction of top roll saddle in which the combined height of the two members of the saddle, where they rest on each other, is only slightly greater than the height or depth of either member; to provide a novel construction in which the upper member, and especially the portion thereof on which the stirrup is supported, extends substantially parallel to the plane of the axes of the top rolls; to provide a novel construction by which the pressure on the middle roll may be adjusted; to provide a novel way of fulcruming the weighted lever to which the stirrup is attached so that the relative lengths of the lever arms thereof may be varied, thereby to increase or decrease the effective action of the weight; to provide a construction whereby the stirrup may be always held in correct position at right angles to the saddle in all adjusted positions of the fulcrum of said lever; and to provide a novel means for relieving the saddle of the weight and sustaining the latter.

Some embodiments of the invention will first be described and then the novel features thereof will be pointed out in the claims.

Figure 1 is a side view of a top-roll saddle embodying my invention, said view showing one way of adjustably mounting the fulcrum for the weighted lever; Fig. 2 is a side view of the weighted lever shown in Fig. 1; Fig. 3 shows the upper end of the stirrup; Fig. 4 is a section through the top-roll saddle on the line *a*—*a*, Fig. 1; Fig. 5 is a perspective view partly broken out showing the weight-sustaining member; Fig. 6 is a section on substantially the line *y*—*y*, Fig. 1; Fig. 7 is a section on the line *x*—*x*, Fig. 1; Fig. 8 is a top plan view of the upper member of the top-roll saddle shown in Fig. 1; Fig. 9 is a view similar to Fig. 1 showing a different way of adjustably mounting the fulcrum for the weighted lever; Fig. 10 is a section through the fulcrum for the weighted lever on the line *b*—*b*, Fig. 9; Fig. 11 shows the two faces of the washer used in connection with the adjustable fulcrum; Fig. 12 is a side view of the link which supports the fulcrum; Fig. 13 is a detail showing still another way of adjustably mounting the fulcrum for the weighted lever; Fig. 14 is a section on the line *c*—*c*, Fig. 13; Fig. 15 is a detail of the U-shaped member 84 used in connection with the device shown in Figs. 13 and 14; and Fig. 16 shows the inside face view of one of the cheeks of the fulcrum support shown in Fig. 10.

1, 2 and 3 designate the front, middle and upper top rolls respectively of a spinning machine, on which rest the top roll saddle, as usual. My improved top roll saddle is made with the upper member 4 and the lower member 5 as usual, and the requisite weight is applied to the top rolls by means of a weighted lever, from one end of which is suspended the usual weight 7 and which is connected to the saddle by a stirrup 8. These parts above enumerated are what are usually found in machines of this class.

In the present embodiment of my invention, the upper and the lower member of the saddle each comprise a sheet metal backing piece which is stamped or bent to shape, and a bearing block of some suitable material, such as wood, hard rubber, etc. Preferably I will employ wood for the material of the bearing block and arrange the wood with the grain extending at right angles to the axes of the rolls, so that the end of the grain will bear on the rolls. The upper member 4 of the saddle comprises a sheet metal backing piece 9 in which is secured the bearing member 10, preferably of wood, which rests on the front top roll, and the lower member 5 comprises the sheet metal backing piece 12 and the bearing block 11 which rests on the rear roll 3 and the middle roll 2. The backing piece 12 of the lower member is preferably stamped from sheet metal and has the side flanges 41 which embrace the bearing block 11. The backing piece 9 of the upper member is substantially U-shaped in cross section, it having the top 40 and the side flanges 13 which form between them a chamber of a size to receive the lower member 5, as plainly seen in Fig. 4.

The bearing block 10 is received between the flanges 13 at the forward end of the upper member and said block may be held from movement longitudinally of said member

in any suitable way, as by striking up projections from the side flanges which embrace the front and rear faces of the bearing block, or by inserting plates between the flanges to hold the block in place, or in any other suitable way. One of the members of the saddle, preferably the lower member 5, is provided with a fulcrum rib 14, against which the other member rests, as best seen in Fig. 1, so that the two members may rock slightly with reference to each other, thereby to adjust the weight on the middle roll. The rib 14 may be formed on the member 5 in various ways, and as herein shown it is made by bending to shape the sheet metal backing piece 12.

The relative position of the two members of the saddle may be determined by an adjusting screw 15, which is shown as passing through the upper member and as screw-threaded into a nut or block carried by the lower member. By turning up this screw more or less, the amount of pressure on the middle roll can be varied from zero to the maximum pressure. In case it is desired to relieve the pressure on the rear roll also, I may use a second screw 15^a, which is situated on the opposite side of the fulcrum 14 from the screw 15. With the two screws the pressure may be entirely relieved from either the middle roll or the rear roll, and any degree of pressure between zero and the maximum pressure can be applied to either of said rolls. It may not be necessary under all conditions to employ the second adjusting screw $15^\times$, in which case the saddle can be used with the single adjusting screw 15.

It will be noted from the above that the top roll saddle is very compact in its construction, owing to the fact that the lower member is received within the upper member, and that the combined height of the two members is practically no more than that of each individual member. It will also be noted that the two members extend substantially parallel with each other, and that the upper member extends in a direction approximately parallel with the plane of the axes of the top-rolls.

The stirrup 8 has an aperture 79 in its upper end, (see Fig. 3) through which the upper member of the saddle extends, and said stirrup is provided with a projection 17 which is adapted to be received in any one of a plurality of apertures 18 in the upper member 4. By means of this construction, the stirrup may be adjusted longitudinally of the top saddle and by the interlocking connection of the projection 17 with the apertures 18, it will be held in any adjusted position.

It is often times desirable to vary the amount of pressure applied to the saddle as a whole by the weight suspended from the weighted lever, and in order to permit this to be done, I have provided an adjustable fulcrum for said lever by which the relative lengths of the lever arms thereof may be varied.

Various ways of making the fulcrum for the weighted lever adjustable may be adopted without departing from my invention, and in order to illustrate the principle thereof I have herein selected a few constructions embodying this feature of the invention without, however, attempting to show all ways in which the desired adjustment of the fulcrum might be effected. In the selected embodiments of my invention the fulcrum is made adjustable by adjustably sustaining it on a fulcrum support, but the invention is not confined to such a construction. Referring now to Figs. 6 and 7, the fulcrum support 19 which is sustained by the roller beam 20 carries the fulcrum 21 on which is fulcrumed the lever 6 from which the weight 7 is suspended as usual. Said fulcrum is shown as a headed stud which is received in a slot 22 in the weighted lever 6, said slot having the enlarged portion 23 through which the head of the fulcrum may be inserted or withdrawn when the parts are being assembled or dismembered. The fulcrum 20 is made adjustable laterally and the slot 22 permits the fulcrum to be shifted relative to the lever thereby to vary the relative lengths of the lever arms thereof. In the present embodiment the lever 6 is maintained in its position by means of the flange 26 which extends laterally from the fulcrum support and against which the end of the lever 6 rests. The fulcrum, therefore, serves to support the lever and the flange 26 serves to hold the lever in its proper position.

In the embodiment shown in Figs. 6 and 7, the fulcrum support 19 is provided with an opening 78 which is spanned by two slotted plates 24, one on each side of the fulcrum support 19. These plates are arranged with their slots at right angles to each other and are held in any adjusted position by being clamped between a shoulder 77 on the fulcrum and a clamping nut 25 which is screwed on one end of the fulcrum. By loosening the nut 25, the fulcrum may be moved either up or down or transversely, or in both directions, and when so adjusted it may be clamped securely in position by means of the nut 25. The shifting of the fulcrum 21 horizontally results in changing the relative lengths of the arms of the lever and thus increases or diminishes the pressure on the top rolls resulting from the weight 7. The adjustment of the fulcrum vertically permits the lever 6 to be brought into the proper position relative to the stirrup and the saddle.

It is a desideratum that the stirrup 8 should always stand at right angles to the saddle for if said stirrup is thrown out of this

right angular position, the weight is not properly applied to the top roll saddle. In order to maintain this proper position of the stirrup 8 when the fulcrum is adjusted laterally to vary the relative lengths of the lever arms of the lever 6, I have provided means which maintains the lever 6 always in its proper position regardless of the lateral position of the fulcrum. One convenient way of securing this result is by providing the fulcrum support with a laterally-extending flange 26 against which the end of the lever 6 rests. With this construction it will be obvious that said flange will prevent the lever from moving horizontally and thus changing the angular position of the stirrup 8 when the fulcrum 21 is shifted laterally. I may if desired provide the lever 6 with a plurality of notches 27 into any one of which the stirrup 8 may be placed to secure the correct right angular position thereof.

In Figs. 9 to 15 I have shown some other ways in which the fulcrum for the weighted lever may be rendered adjustable. Referring now to Fig. 9, it will be seen that the fulcrum 21^a is carried by an adjustable member 76 which in turn is supported by the fulcrum support 19^a. This adjustable member 76 is shown as being mounted on the fulcrum support so that it can be vertically adjusted and also swung toward and from the front of the machine or longitudinally of the weighted lever 6^a. It is also so supported that it can be clamped in any adjusted position, and while this may be accomplished in various ways, I have shown the fulcrum support as bifurcated, and as having the two cheeks 75 between which the adjustable lever 76 is received. Said lever is shown as having a slot 74 in its lower end through which a clamping bolt or screw 73 extends, said bolt or screw also passing through the cheeks 75. One or both faces of the adjustable member 76 is provided with horizontal corrugations or ribs 72 to fit corresponding corrugations or ribs in a washer 71 which is confined between the adjustable member and one of the cheeks 75. The other face of said washer 71 is provided with radial corrugations or ribs, as shown at the right Fig. 11, and these interlock with corresponding radial corrugations or ribs in the corresponding cheek 75. When the nut 70 on the clamping bolt 73 is loosened, the adjustable member 76 may be adjusted vertically and may also be turned about the clamping bolt 73 as a fulcrum to bring the fulcrum 21^a into the desired position, the turning up of the nut 70 on the clamping screw operating to securely hold the member 76 in its adjusted position. The lever 6^a is also shown as having therein a slot 69 through which the fulcrum extends, and one wall of said slot may be provided with notches 68 in any one of which the fulcrum may be placed. The laterally-extending flange 26 serves not only to hold the weighted lever 6 in position and prevent said lever from sliding on the fulcrum, but said flange will be so positioned that the weighted lever 6 will hold the stirrup 8 at right angles to the top roll saddle. It is very desirable in apparatus of this class that the stirrup should always be maintained in this right angular position and by means of the construction I have herein illustrated wherein the position laterally of the weighted lever 6 is determined by the laterally-extending flange 26, and not by the position of the fulcrum, it is possible for me to always maintain this correct right angular position of the stirrup and yet secure the adjustment of the fulcrum for changing the relative lengths of the lever arms. I may if desired provide the lever 6 with a plurality of notches 27 into any one of which the stirrup 8 may be placed to secure the correct right angular position thereof when the end of the weighted lever rests against the flange 26.

Figs. 13, 14 and 15 show still another way of making the fulcrum adjustable. In this form of the invention the end of the weighted lever 6^b is serrated or provided with a plurality of notches, as at 81, and said notched or serrated end is inserted through the loop 82 of a fulcrum member, said loop having a fulcrum edge 21^b which is adapted to engage one of the notches 81. This fulcrum member is provided with a shank 83 which extends through a U-shaped member 84 that straddles the fulcrum support 19^b and is mounted to turn about the clamping bolt or screw 73^b. The fulcrum support 19^b is shown as bifurcated and the shank 83 is received between the two cheeks 75^b thereof, said shank 83 being held in place by the corrugated washer 71^b and having an aperture through which extends the clamping screw 73^b. The construction of the washer 71^b is similar to that of the washer 71 shown in Fig. 11, and it operates in the same way to hold the fulcrum member in its adjusted position. The upper edges of the cheek 75^b are provided with teeth 85 with which lugs or stops 86 carried by the U-shaped member 84 are adapted to engage. By loosening the clamping screw 73^b the fulcrum member and the U-shaped member 84 may be swung about said screw to bring the stops 86 into engagement with any one of the teeth 85, and said fulcrum member may be held in place by tightening up the clamping screw. The aperture 74^b in the lower end of the fulcrum member is in the form of a slot which permits said fulcrum member to be moved vertically as well as to swing about the clamping screw or bolt 73^b.

My invention is not limited to the illustrative ways of securing the desired adjustment of the fulcrum, as what is shown in the

drawings is only a few of the many ways in which this can be accomplished.

It is often necessary to take the weight off the top rolls for one reason or another, and one common way of accomplishing this has been to unhook the weight 7 from the end of the weighted lever 6. To prevent the weight from dropping to the floor when so unhooked, a washer is generally placed on the wire 33 by which the weight is suspended above the slot 34 in the frame of the machine, said washer by engaging with the loop 35 at the upper end of the wire preventing the weight from dropping when it is unhooked from the lever 6. With this construction, in again applying the weight to the lever 6, it is necessary to lift said weight sufficiently to hook the eye 35 over the end of the lever. To avoid the necessity of unhooking the weight from the lever 6, in order to take the weight off the rolls, and further to avoid the consequent necessity of lifting the weight and applying it to the lever 6, I have provided a construction whereby the weight may be taken off from the top rolls without detaching it from the lever 6. This is accomplished in the present embodiment of my invention by a weight-sustaining member 36 which has a laterally-extending foot 37 provided with an opening 38 through which the wire 33 passes. This weight-sustaining member is placed above the frame 39 with the foot 37 spanning the slot 34.

Under normal conditions the weight-sustaining member 36 is in its inoperative position, as shown in full lines Fig. 1, but when it is desired to relieve the top rolls from the weight 7, said weight-sustaining member is swung into the dotted line position, Fig. 1, in which position it lifts the outer end of the lever 6 and takes all of the weight 7, thus relieving the top rolls entirely of this weight. The foot 37 with its aperture performs the function of a washer and my weight-sustaining member is a combined weight-sustaining member and washer. With this construction, it is not necessary to detach the weight from the arm 6 in order to take the pressure from the top rolls and the rather heavy labor incident to lifting the weight 7 and placing it again upon the lever 6 is thus entirely avoided.

In the operation of spinning and drawing machines, the roving frequently becomes wound up upon some of the top rolls, and whenever this occurs, it is necessary to remove the saddle in order to clear the top-rolls and start them in operation again. This operation involves considerable labor in those machines in which the weight has to be lifted and detached from the arm 6, and it is especially hard for the young operators who usually have charge of machines of this class. In my construction, however, the weight may be readily taken off from the top-roll saddles with a very small exertion on the part of the operator, and considerable time is thereby saved. Furthermore the construction of top-roll saddle and its connection with the weight is such that when the weight-sustaining member is swung into operative position, to take the weight from the saddle, said saddle and the stirrup retain their relative positions and do not tumble apart as is the case with some top-roll saddles now in use. After the weight-sustaining member is thus moved into operative position, the saddle may be readily removed from the stirrup to afford access to the top-rolls for clearing them, but the saddle will not tumble out of position even when the weight is removed.

My invention is not necessarily limited to the embodiments herein shown, these having been selected merely to illustrate the invention, the novel features of which will be pointed out in the appended claims.

Having fully described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. In a top roll saddle, the combination with an upper member adapted to bear on the front top roll and provided with a chamber of a size to receive the front end of the lower member, of said lower member arranged to bear on the middle and rear top rolls and having its front end received within the chamber of the upper member.

2. In a top roll saddle, the combination with an upper member substantially ⊓-shaped in cross section, of a lower member having its front end situated within the upper member.

3. In a top roll saddle, in combination, a lower member and an upper member straddling the front end of the lower member and having fulcruming engagement thereon.

4. In a top roll saddle, in combination, an upper member substantially ⊓-shaped in cross section, and a lower member having its front end situated within the upper member and having a fulcruming engagement therewith.

5. In a top roll saddle, in combination, an upper member substantially ⊓-shaped in cross section and having a bearing block at one end, and a lower member received within the upper member.

6. In a top roll saddle, the combination of an upper member substantially ⊓-shaped in cross section and carrying at one end a wooden bearing block arranged with the grain running at right angles to the bearing surface, with a lower member situated within the upper member.

7. In a top roll saddle, the combination with an upper member having a metallic backing piece substantially ⊓-shape in cross section and a bearing block carried thereby, with a lower member situated within the

upper member, said lower member having a metallic backing piece and a bearing block carried thereby.

8. In a top roll saddle, the combination with an upper member having a metallic backing piece substantially Π-shape in cross section and a wooden bearing block carried thereby, with a lower member situated within the upper member, said lower member having a metallic backing piece and a wooden bearing block carried thereby, both of said bearing blocks being arranged with the grain of the wood running at right angles to the bearing surface.

9. In a top roll saddle, in combination, a lower member, an upper member straddling and embracing the lower member and having a fulcruming engagement therewith, and an adjusting screw to adjust said members relative to each other.

10. A top roll saddle comprising an upper member and a lower member, each member having a sheet metal backing piece and a wooden bearing block arranged with the grain of the wood at right angles to the bearing surface.

11. In a device of the class described, the combination of top rolls and a top roll saddle, a weighted lever therefor, and a fulcrum for said lever adjustable relative thereto.

12. The combination with a weighted lever for a top roll saddle, of a fulcrum therefor adjustable to vary the relative lengths of the lever arms thereof.

13. In a device of the class described, the combination with a weighted lever for a top roll saddle, of a fulcrum therefor adjustable relative thereto, and means to maintain the lever in one position in different adjusted positions of the fulcrum.

14. In a device of the class described, in combination, top rolls, a saddle therefor, a weighted lever suspended from the saddle, and an individual weight-sustaining member adapted to engage said lever only thereby to relieve said saddle from its weight.

15. In a device of the class described, in combination, top rolls, a saddle therefor, a weighted lever suspended from the saddle, and a weight-sustaining member comprising a strut portion and a laterally extending foot through which the suspending wire of the weight passes.

16. In a device of the class described, a top roll saddle, a lever connected thereto, and a weight sustained by said lever by a wire, in combination with a frame having a slot to receive said wire, and a weight-sustaining member loosely mounted on said frame and having a foot through which said wire passes, said member when thrown into operative position taking the weight from the saddle.

17. In a device of the class described, a top roll saddle and a weighted lever connected thereto, in combination with a weight-sustaining member in the form of a rocking strut having an aperture through which the suspending wire of the weight passes.

18. A saddle for top rolls of spinning machines comprising an upper member and a lower member having a fulcruming engagement with each other and two adjusting screws carried by one member and engaging the other, one screw being situated each side of the point of fulcruming engagement.

19. A saddle for top rolls of spinning machines comprising an upper member and a lower member having a fulcruming engagement with each other and two adjusting screws carried by the upper member and having screw-threaded engagement with the lower member, said screws being on opposite sides of the point of fulcruming engagement.

20. A saddle for top rolls, an upper member and a lower member, one of said members having a fulcrum rib on which the other member rests and two adjusting screws situated on opposite sides of the rib for positively swinging one of the members relative to the other in either direction about the fulcrum rib.

21. A saddle for top rolls comprising a lower member and an upper member having a fulcruming engagement with each other and means to swing positively either end of the lower member relative to the upper member.

22. A saddle for top rolls comprising a lower member and an upper member having a fulcruming engagement with each other and means to swing positively either end of the lower member relative to the upper member and to hold positively the lower member in its adjusted position.

23. In a machine of the class described, top rolls, a saddle therefor, comprising an upper member and a lower member having fulcruming engagement with each other at a fixed point, and means to take the pressure off from either the rear or the middle top roll.

24. In a device of the class described, a top-roll saddle, a weighted lever sustained thereby, said lever having a slot, a fulcrum extending through the slot, and an abutment flange engaging the end of the lever and preventing it from longitudinal movement in one direction.

25. In a device of the class described, a top-roll saddle, a pivoted weighted lever therefor, said lever having a slot, a fulcrum for the lever, and a fulcrum support provided with a flange to engage the end of the lever.

26. In a device of the class described, the combination with an adjustable fulcrum, of a weighted lever for a top-roll saddle mount-

ed thereon, and means to hold the lever in the same position in all adjusted positions of the fulcrum.

27. In a device of the class described, the combination of a weighted lever for a top-roll saddle provided with a slot, with a fulcrum extending through said slot, and on which the lever is fulcrumed, and an abutment to engage the end of the lever and hold it in proper position.

28. In a device of the class described, the combination of a weighted lever for a top-roll saddle, said lever being provided with a slot, of a fulcrum support, a fulcrum thereon extending through the slot and on which the lever is mounted, and an abutment to engage the end of the lever and hold it in proper position.

29. The combination of a slotted weighted lever for a top-roll saddle, with a fulcrum support, a fulcrum adjustably mounted thereon and extending through the slot of the lever, and an abutment to engage the end of the lever and hold it in position.

30. The combination of a slotted weighted lever for a top-roll saddle, with a fulcrum support having an abutment flange to engage the end of the lever, and a fulcrum carried by said fulcrum support and extending through the slot.

31. The combination of a slotted weighted lever for a top-roll saddle, with a fulcrum support having an abutment flange to engage the end of the lever, and a fulcrum adjustably carried by the fulcrum support and extending through the slot.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

LEWIS T. HOUGHTON.

Witnesses:
LOUIS C. SMITH,
BERTHA F. HEUSER.