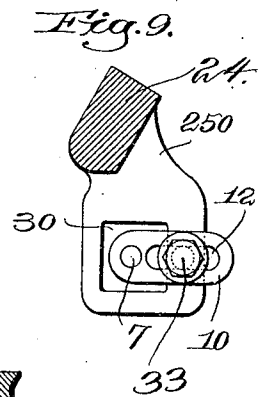
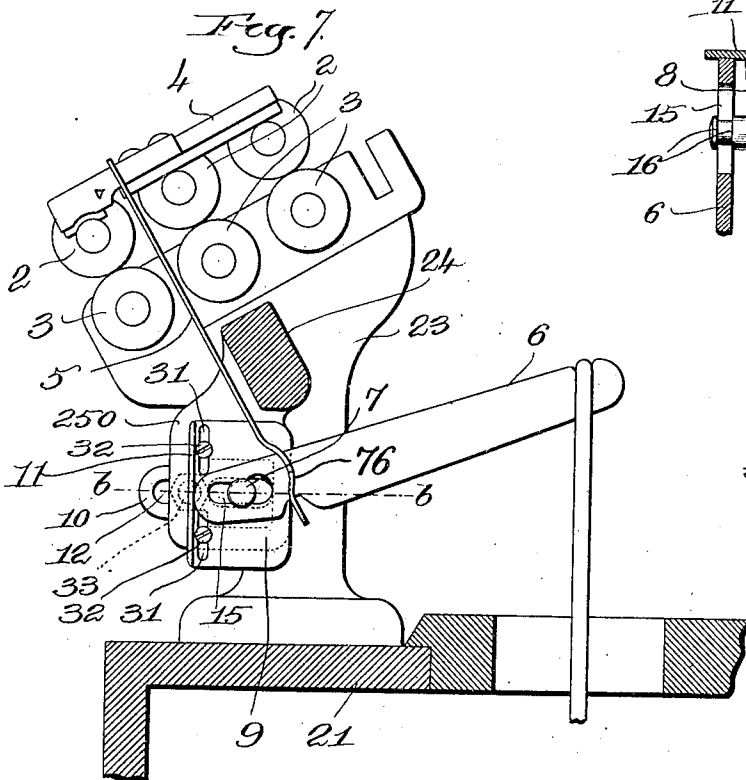
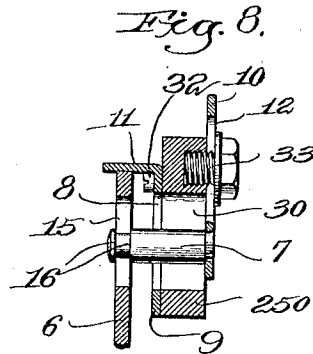
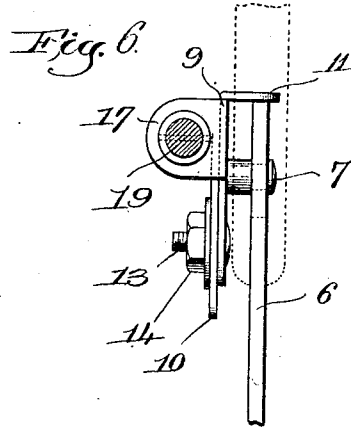


L. T. HOUGHTON.
TOP ROLL SADDLE MECHANISM.
APPLICATION FILED OCT. 23, 1907.

927,539.

Patented July 13, 1909.

3 SHEETS—SHEET 2.



Witnesses.

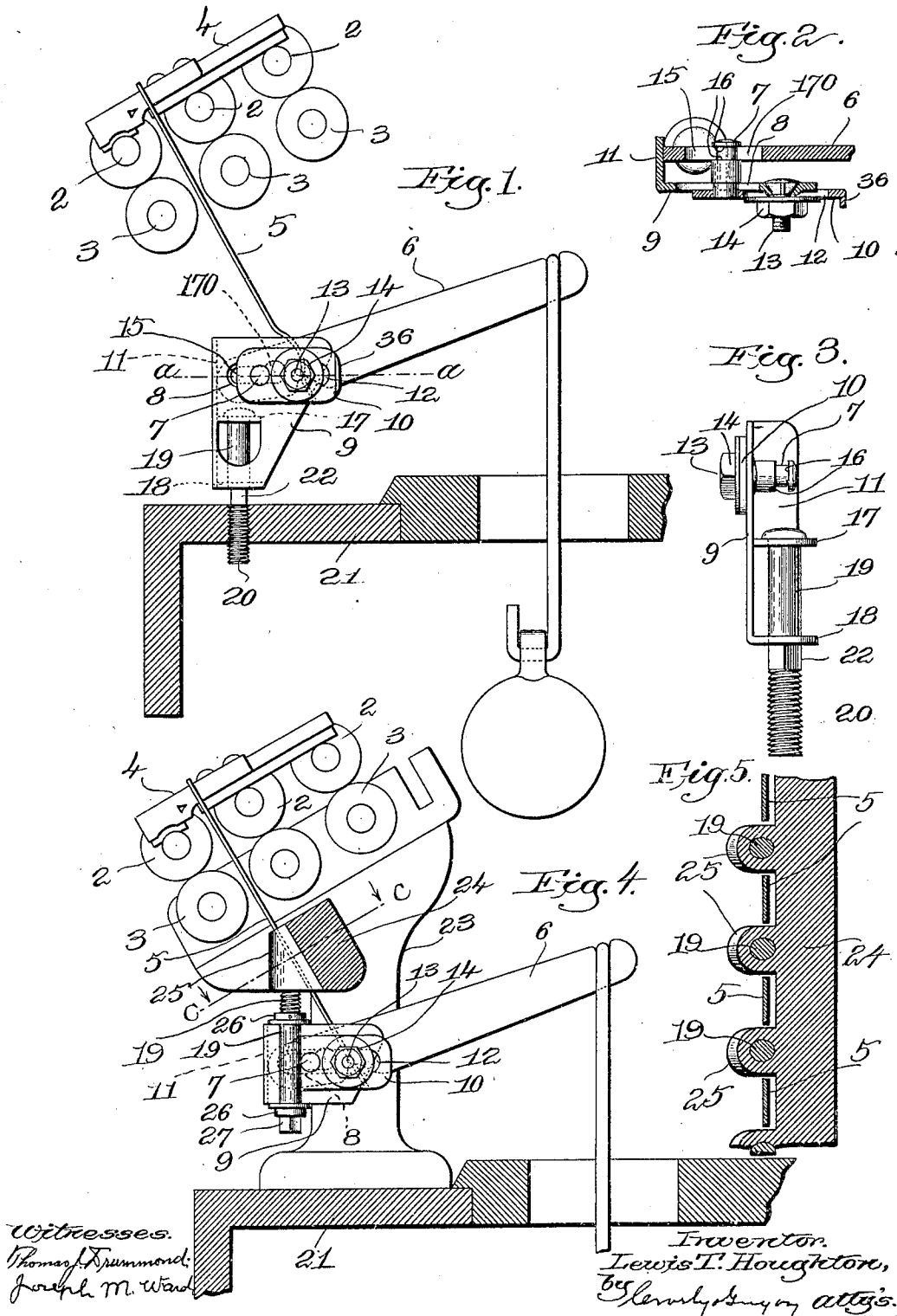
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Patented July 13, 1909.
3 SHEETS—SHEET 3.

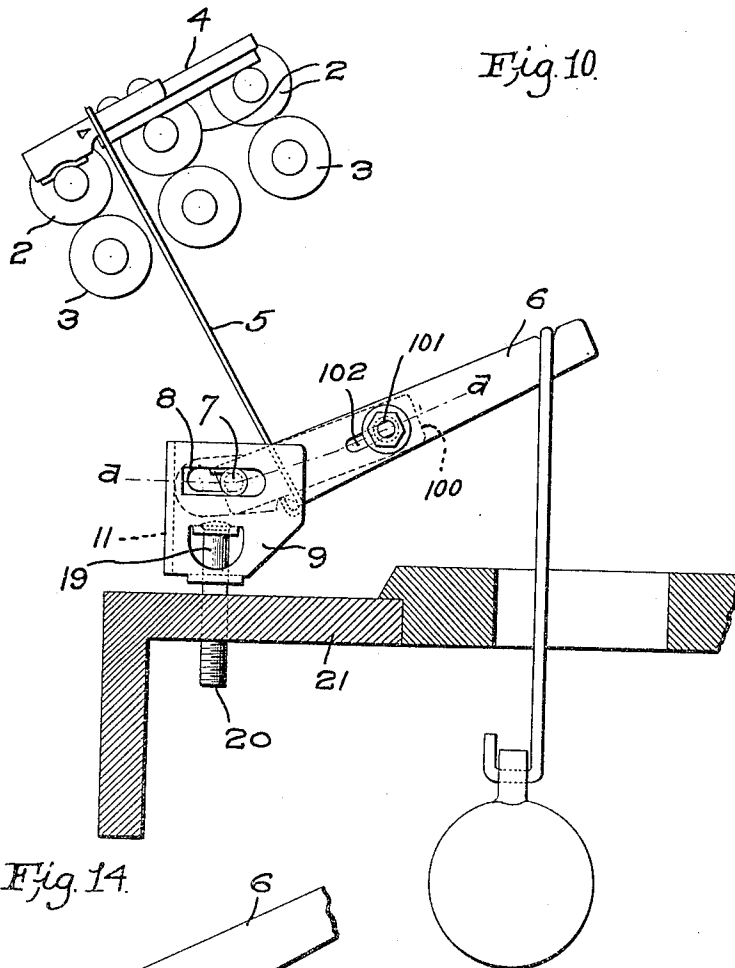


Fig. 10.

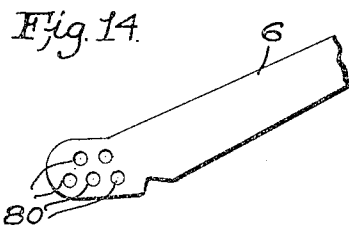


Fig. 14.

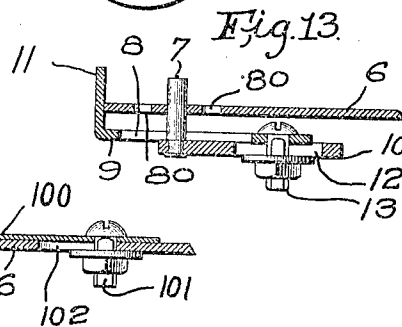


Fig. 13.

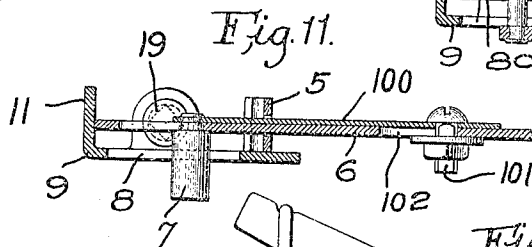


Fig. 11.

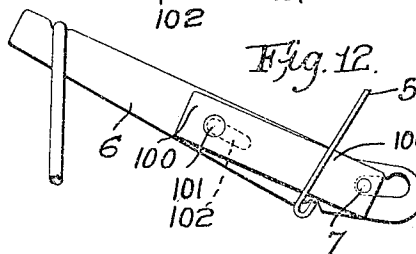


Fig. 12.

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UNITED STATES PATENT OFFICE.

LEWIS T. HOUGHTON, OF WORCESTER, MASSACHUSETTS.

TOP-ROLL-SADDLE MECHANISM.

No. 927,539.

Specification of Letters Patent.

Patented July 13, 1909.

Application filed October 23, 1907. Serial No. 398,791.

To all whom it may concern:

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

This invention relates to top roll saddle mechanism and especially to the fulcrum and its support for sustaining the weighted lever for the stirrup of the top roll saddle.

It is a desideratum that the stirrup should always stand at right angles to the top roll saddle, for if the stirrup is thrown out of this correct position the weight will not be properly applied to the top rolls. It is also desirable to be able to adjust the fulcrum of the weighted lever so that the effective pull of the weight on the top roll saddle can be varied.

In my Patent No. 879,641, dated February 18, 1908, I have illustrated, described and claimed a top roll saddle mechanism in which the fulcrum for the lever can be adjusted to vary the relative lengths of the lever arms thereof without affecting in any way any change in the position of the stirrup, and therefore with the construction shown in said application it is possible to maintain the stirrup always in its right angular position and at the same time to adjust the fulcrum for the weighted lever thereby to vary the effective pull on the stirrup. My present invention is in the nature of an improvement on the device described in said patent.

It has for its objects to provide a simplified construction permitting of the adjustment of the fulcrum relative to the weighted lever, and also to provide novel means of adjusting the fulcrum support vertically.

Referring to the drawings wherein I have illustrated some embodiments of my invention, Figure 1 is a side view of a fulcrum support and fulcrum embodying my invention, said view showing the top rolls in outline and also showing the roller beam in section; Fig. 2 is a section on the line *a—**a*, Fig. 1; Fig. 3 is a view looking to the left of the fulcrum support and its fulcrum; Fig. 4 is a view similar to Fig. 2 showing another way of supporting the fulcrum support; Fig. 5 is a section through the supporting bar 24 on the line *c—c*, Fig. 4; Fig. 6 is a top plan

view of the fulcrum support shown in Fig. 4; Fig. 7 is a view similar to Figs. 1 and 4 showing still another form of the invention; Fig. 8 is a section on the line *b—b*, Fig. 7; Fig. 9 is a view of the fulcrum holder looking from the right Fig. 8; Fig. 10 is a view similar to Fig. 1 showing a different form of fulcrum holder; Fig. 11 is a section on the line *d—d*, Fig. 10; Fig. 12 shows the opposite side of the weighted lever from that shown in Fig. 10; Fig. 13 is a section similar to Fig. 11 showing a modification; Fig. 14 is a side view of the lower end of the weighted lever shown in Fig. 13.

The top rolls 2, the bottom rolls 3, the top roll saddle 4, and the stirrup 5 from which the weighted lever 6 is suspended may be of any suitable or usual construction and form no part of the present invention, and since the method of operation is well known to those skilled in the art, it will not be necessary to further describe them herein.

I have herein shown several embodiments of my invention in all of which the weighted lever 6 is sustained on a fulcrum which is adjustable on a fulcrum support thereby to change the relative lengths of the lever arms of the lever, and means are provided for positioning the lever in the direction of its length so as to maintain the stirrup in the correct position with relation to the top roll saddle in every adjusted position of the fulcrum. This feature is claimed broadly in my aforesaid Patent No. 879,641, above referred to, and herein I have shown some improved constructions embodying said feature.

Referring now to Figs. 1, 2 and 3 which show one embodiment of my invention, the lever 6 is sustained on a fulcrum 7 which extends through a slot 8 in a fulcrum support 9, said fulcrum being secured to and projecting from a fulcrum holder 10. The fulcrum support 9 may conveniently be made of sheet metal which can be formed into shape by means of dies and as stated, it has the slot 8 through which the fulcrum projects. The fulcrum holder 10 is adjustably sustained by the fulcrum support 9 so as to permit said fulcrum holder with the fulcrum to be adjusted thereby to change the relative lengths of the lever arms of the lever 6. For thus adjustably sustaining the holder 10, I have shown it as provided with a slot 12 through which extends a clamping screw 13 that is carried by the fulcrum support 9, said screw having a nut 14 thereon by means of which

the fulcrum holder 10 can be clamped in its adjusted position.

The weighted lever 6 is provided with the slot 15 which is adapted to receive the fulcrum 7, and in the preferred embodiment, the portion of the fulcrum on which the lever 6 rests is reduced slightly in diameter thereby to form the shoulders 16, and the slot 15 is of a size to fit said reduced portion of the fulcrum. Preferably the slot will have an enlarged end 170 which permits the lever to be inserted over the end of the fulcrum, and when the lever has thus been inserted and brought into position between the shoulders 16, the reduced portion of the fulcrum can enter the main portion of the slot 15.

To maintain the lever 6 in such a position that the stirrup 5 will have the correct right angular position with relation to the top roll saddle, I have in the embodiment shown in Figs. 1, 2 and 3 provided the fulcrum support with the laterally-extending flange 11 against which the end of the lever 6 rests, said flange operating to hold the lever in its correct position regardless of the adjusted position of the fulcrum 7 all as described in said co-pending application. If it is desired to adjust the fulcrum thereby to change the relative lengths of the lever arms of the lever 6, this can readily be done by loosening the nut 14 and shifting the fulcrum holder 10 horizontally on the fulcrum support until the fulcrum is in the desired position and then clamping the holder in place by the nut 14. Owing to the fact that the lever is maintained in its correct position by the flange 11, the shifting of the fulcrum will not change the position of the lever, as will be obvious, but will merely change the relative lengths of the lever arms thereof. I have also supported the fulcrum support 9 so that it can be adjusted vertically without changing its position angularly. This is accomplished by providing said support with the two laterally-extending flanges 17 and 18 through which extends the adjusting screw 19, said screw having a screw-threaded portion 20 adapted to be screw-threaded into the roller beam 21. The screw may be provided with the non-circular portion 22 by which it may be turned. Since the screw is loosely mounted in the flanges 18, it will be obvious that the fulcrum support can be raised or lowered by merely turning the screw and screwing the latter up and down in the roller beam 21.

The construction of the fulcrum support shown in Figs. 1, 2 and 3 and of the fulcrum holder is such that both parts can be readily formed from sheet metal by means of dies and can, therefore, be cheaply manufactured.

In the embodiment of the invention shown in Figs. 10 to 12, the fulcrum holder is secured to and carried by the lever 6 instead of being secured to the fulcrum support as in the previously described embodiments. As

shown in said Figs. 10 to 12, the fulcrum 7 is carried by a fulcrum holder 100 which overlies the lever 6 and is adjustably secured thereto by means of a clamping screw 101 extending through a slot 102 in the lever. The fulcrum 7 which is sustained by the fulcrum holder extends through the slot 8 in the fulcrum support 9, and said fulcrum support is provided with the laterally-extending positioning flange 11 for maintaining the lever 6 in correct position and is secured to the roller beam 21 by the screw 19, all as described with reference to Figs. 1 to 3. In this embodiment the adjustment of the fulcrum is accomplished by merely loosening the clamping screw 101 and sliding the fulcrum holder 10 on the lever thereby to shift the position of the fulcrum relative to the lever. Said lever is maintained in its proper position by the flange 11 as in the above-described embodiments.

In the embodiments of the invention thus far described the fulcrum support is sustained by the roller beam. In Figs. 4 to 9 I have illustrated two forms of the invention in which the fulcrum support is carried by the usual brackets or stands 23 that support the rolls 2 and 3. In these embodiments of the invention I interpose a supporting bar 24 between adjacent stands 23 and attach the fulcrum supports to said bar 24. The bar 24 may be attached to the stands 23 in any suitable way and may be situated beneath the rolls 3 so as not to interfere with the stirrup 5. Said bar has formed thereon a plurality of lugs to which the fulcrum supports are secured, said lugs standing between the stirrups and therefore not interfering with them.

As shown in Figs. 4 and 6, the lever 6 is sustained on a fulcrum 7 which in turn is carried by a fulcrum holder 10, as shown in Figs. 1, 2 and 3, said fulcrum extending through a slot 8 in the fulcrum support 9 and having therein a slot 12 through which extends the clamping screw 13 by which the holder is adjustably clamped to the fulcrum support. In this embodiment the fulcrum support is also provided with the positioning flange 11 against which the end of the lever 6 rests and it is provided with the two laterally-extending flanges 17 and 18 through which the supporting screw 19 passes. As shown in Fig. 4, however, this screw passes upwardly through said flanges into the boss 25 on the bar 24, and said screw is provided with the collars 26 between which the flanges 17, 18 are sustained. The end of the screw is shown as squared at 27 so that it may be turned for adjusting the fulcrum support vertically.

In Figs. 7, 8 and 9 I have shown still another form of the invention in which the fulcrum support is adjustably secured to the lugs or bosses formed on the bar 24 by means

of screws extending through slots in said fulcrum support instead of by the screw shown in Fig. 4. In this embodiment the lugs or bosses extending from the bar 24 are designated by 250 and they are in the form of comparatively thin fins or webs having flat sides and provided with the opening 30 through which the fulcrum 7 extends. The fulcrum support 9 which has the positioning flange 11 as in the other embodiments of the invention is provided with the slots 31 through which extend clamping screws 32, said screws being screw-threaded into the web or lug 250 and serving to firmly hold the fulcrum support in correct position. Said fulcrum support also has the slot 8 therein through which the fulcrum 7 extends. The fulcrum holder 10 is clamped by means of a clamping screw 33 to the opposite side of the lug 250 from that to which the fulcrum support is secured, said fulcrum holder 10 having the slot 12 therein through which the clamping screw extends. In this embodiment the adjustment of the fulcrum holder 10 horizontally provides for the desired adjustment of the fulcrum to change the relative lengths of the lever arms of the lever 6 and the slots 31 provide for vertically adjusting the fulcrum support.

In Figs. 13 and 14, I have shown an embodiment wherein the lever 6 is provided with a plurality of apertures 80 into any of which the fulcrum 7 may be inserted. In this embodiment, the fulcrum 7 is shown as carried by a fulcrum holder 10 which in turn is adjustably secured to the fulcrum support 9 by means of the clamping screw 13, said fulcrum extending through the slot 8 in the fulcrum support. In making an adjustment of the fulcrum in this embodiment of the invention, it is necessary to withdraw the fulcrum from one of the apertures 80 and then after adjusting the fulcrum holder to the proper position, insert the fulcrum again into the desired aperture. If the apertures 80 are in two rows, as shown in Fig. 14, it may be also necessary to adjust the fulcrum support 9 vertically in order to maintain the correct position of the lever.

It will be seen that in all embodiments of my invention the fulcrum support and fulcrum holder can be readily and cheaply manufactured from sheet metal and that the construction provides for adjusting the fulcrum without causing any shifting of the position of the stirrup.

I will preferably provide the fulcrum holder 10 with a flange 36 at one end which may be struck lightly by a hammer or other instrument for the purpose of adjusting said holder.

The advantage of the construction shown in Figs. 4 and 8 is that the space above the roller beam is entirely free and clear and is not obstructed by the adjusting screws 19, as shown in Fig. 1.

In order to prevent the fulcrum from having contact with the stirrup when the fulcrum is adjusted to the limit in a direction toward the stirrup, I preferably either provide the stirrup with an offset portion 76, as shown in Fig. 7, or bend the lower end of the stirrup into substantially hook shape, as shown in Figs. 10 and 12, which construction brings the body of the stirrup sufficiently back from the point where the stirrup engages the lever so as to avoid all danger of the fulcrum coming in contact with the stirrup.

While I have illustrated some embodiments of my invention I have not attempted to show all embodiments and therefore do not wish to be limited to the construction herein shown.

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

1. In a top roll saddle mechanism, 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, a fulcrum support for said fulcrum having laterally-extending flanges and an adjusting screw extending through said flanges.

2. In a top roll saddle mechanism, the combination with a weighted lever for a top roll saddle, of a fulcrum support having laterally-extending ears or flanges, a fulcrum adjustably sustained by said fulcrum support, and an adjusting screw extending through said flanges of said fulcrum support.

3. In a top roll saddle mechanism, the combination with a weighted lever for a top roll saddle, of a fulcrum support having a horizontal fulcrum-receiving slot therein, a fulcrum for the lever extending through said slot and adjustable longitudinally thereof, said fulcrum being held from vertical movement by the walls of the slot, and means to hold the fulcrum in its adjusted position.

4. In a device of the class described, the combination with a weighted lever for a top roll saddle, of a vertically-adjustable slotted fulcrum support therefor, a fulcrum for said lever extending through the slot and adjustable therein, and means to position the lever in the direction of its length.

5. In a device of the class described, the combination with a weighted lever for a top roll saddle, of a fulcrum support having a horizontal slot, and a fulcrum holder adjustably secured to said support and provided with a fulcrum for said lever extending through said slot.

6. In a device of the class described, the combination with a weighted lever for a top roll saddle, of a fulcrum support therefor, said fulcrum support having a horizontal slot, means to sustain said fulcrum support for vertical adjustment only, and a fulcrum

holder adjustably secured to the fulcrum support and provided with a fulcrum for said lever extending through said slot.

7. In a device of the class described, the
5 combination with a weighted lever for a top roll saddle, of a slotted fulcrum support therefor, a slotted fulcrum holder having a fulcrum for said lever extending through the slot of the fulcrum support, and a clamping
10 screw extending through the slot of the fulcrum holder and adjustably clamping the latter to the fulcrum support.

8. In a device of the class described, the
15 combination with a top roll saddle, of a stirrup suspended therefrom, a weighted lever for the stirrup, and a fulcrum for said lever adjustable longitudinally thereof, the portion of the stirrup opposite the fulcrum being offset in a direction away from the fulcrum.

9. In a device of the class described, the
20 combination with a top roll saddle, of a stirrup suspended therefrom, a weighted lever for the stirrup, and a fulcrum for the lever adjustable longitudinally thereof and on
25 which the lever is fulcrumed, the point of engagement between the stirrup and the lever being in line with the body of the stirrup and the portion of the stirrup opposite the fulcrum being offset away from the fulcrum and situated out of line with the body
30 of the stirrup.

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

LEWIS T. HOUGHTON.

Witnesses:

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MARGARET A. DUNN.