April 5, 1927. 1,623,688

T. W. LAWTON

TOP ROLL SADDLE

Filed Nov. 20, 1925

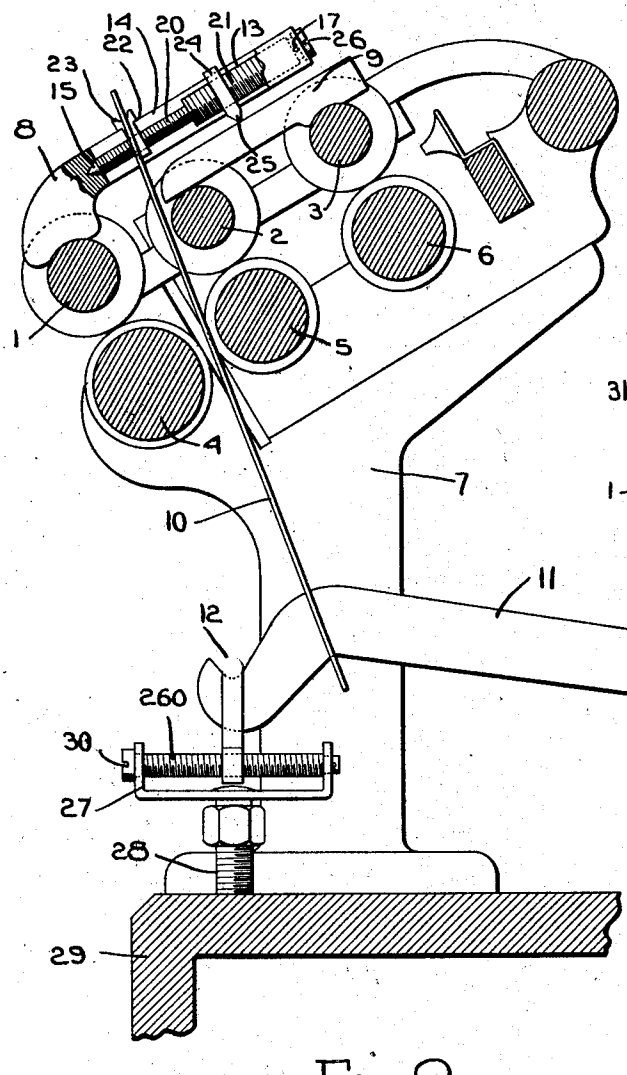


Fig. 1.

Fig. 4.

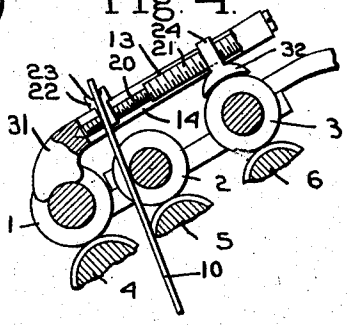


Fig. 2.

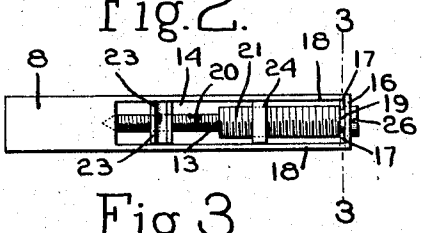
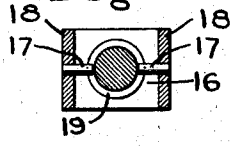


Fig. 3.



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UNITED STATES PATENT OFFICE.

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TOP-ROLL SADDLE.

Application filed November 20, 1925. Serial No. 70,433.

This invention relates to top roll saddles and has for its object to provide a novel top roll saddle construction having means for adjusting the bearing point at the rear of the saddle toward and from the front roll and for maintaining a predetermined distribution of the weight on the front roll and the bearing point in all adjusted positions of the bearing. The invention is applicable either to a top roll saddle of the construction embodying a front saddle member and a rear saddle member, in which case the adjustment of the bearing member results in varying the distribution of the weight between the back top roll and middle top roll without, however, changing the amount of weight delivered to the front top roll, or may be embodied in a one-piece saddle, in which case the predetermined distribution of the weight between the front top roll and rear top roll will be maintained, notwithstanding any adjustment of the bearing for the rear top roll.

In order to give an understanding of the invention I have illustrated in the drawings some selected embodiments thereof which will now be described after which the novel features will be pointed out in the appended claims.

Fig. 1 is a sectional view illustrating a top roll saddle embodying my invention;

Fig. 2 is a top view of the front saddle member;

Fig. 3 is an enlarged section on the line 3—3, Fig. 2;

Fig. 4 shows a different embodiment of the invention.

Referring first to Figs. 1 to 3 which show the invention embodied in a top roll of the type having a rear saddle member which rests on the rear and center top rolls and a front saddle member which rests on the front top roll and on the rear saddle member, 1, 2 and 3 indicating respectively the front top roll, middle top roll and back top roll and 4, 5 and 6 indicating the bottom rolls. 7 is a frame or stand in which the rolls are journalled.

The front saddle member is indicated at 8 and the rear saddle member at 9. 10 is the stirrup which is hung on the front saddle member and 11 is the usual weighted lever which is supported by the stirrup and the front end of which is fulcrumed in the fulcrum member 12.

As related to the type of top roll saddle shown in Fig. 1, one feature of my present invention is a novel construction by which a predetermined portion of the weight on the stirrup 10 is always delivered to the front top roll, the remaining portion of said weight being distributed in any desired proportions between the rear and middle top rolls.

The construction herein illustrated for accomplishing this comprises a differential screw member 13 which occupies a slot or opening 14 formed in the front saddle member, said screw at its front end being pointed as shown at 15 and bearing a socket member formed in the front saddle member and at its rear end extending through and journaled in the bridge piece 16 of the front saddle member. The screw is held from moving longitudinally in the front saddle member by means of two pins 17 which are anchored in the sides 18 of the top saddle member and the ends of which are engaged in an annular groove 19 formed in the screw. This differential screw is provided with two portions 20, 21 having screw threads of different pitch. The screw threaded portion 20 of finer pitch extends through and has screw-threaded engagement with a rest 22 which is received between the two sides 18 of the front saddle member and which extends above the latter, said rest having a concave seat 23 to receive the upper end of the stirrup 10. This rest 22 thus forms the bearing point of the stirrup on the top roll saddle. The other screw-threaded portion 21, which is of coarser pitch, is threaded through a bearing member 24 which extends below the top roll saddle and has a fulcrum point 25 at its lower end which bears on the rear saddle member 9. The rear end of the screw is provided with a screw driver slot 26 by which the screw may be turned.

The screw threads are both right-handed screw threads so that when the screw is turned both the rest 22 and the bearing member 24 will travel in the same direction but owing to the difference in pitch between the screw threads the bearing member 24 will move at a faster rate than the rest 22.

The parts may be adjusted so as to distribute any desired proportion of the total weight on the stirrup to the front roll and the relation between the pitches of the threaded portions 20 and 21 is such that in all adjustments of the screw this proportion will be maintained.

Merely for the sake of illustration let it be assumed that it is desired to have one-half the total weight on the stirrup distributed to the front top roll and the other half distributed to the rear saddle member. In this case the rest 22 will be situated midway between the bearing member 24 and the point where the front saddle member rests on the front top roll and the pitch of the screw threads 21 on the portion will be twice that of the screw threads on the portion 20.

With this construction, whenever the screw is turned both the rest 22 and the bearing member 24 will be moved longitudinally of the screw but because of the fact that the pitch of the screw portion 21 is twice that of the screw portion 20 the bearing member 24 will move twice as fast as the rest 22. As a result the rest 22 will always be maintained midway between the bearing member 24 and the point where the front saddle member rests on the front top roll. The turning of the screw and the shifting of the rest 22 and bearing member 24 does not, therefore, make any change in the distribution of the weight between the front top roll and the rear saddle member. The movement of the bearing member 24, however, varies the distribution of the weight between the back and the middle top rolls.

I have referred above to a differential screw having a two-to-one construction but so far as the invention is concerned it might be three-to-one or any other desired ratio. In other words, the construction might be such that two-thirds of the weight would be distributed to the front top roll and one-third delivered to the rear saddle member and this one-third distributed between the rear and middle top rolls. This would involve simply making the screw 13 with the proper pitch relation between the two parts 20 and 21.

The main feature of the invention resides in a construction by which a constant weight may be maintained on the front top roll while varying the distribution of the weight between the rear and middle top rolls and while I have herein illustrated a differential screw for accomplishing this end I do not wish to be limited to this particular construction.

In order to provide greater latitude of movement I propose to employ an adjustable fulcrum member 12. If the fulcrum member were fixed in position the amount which the rest 22 could be adjusted without bringing the stirrup into contact with one of the rolls would be limited because of the relatively narrow space between the front and middle top roll. I have provided, therefore, an adjustable fulcrum 12 which permits the lever 11 and the lower end of the stirrup 10 to be adjusted as necessary to clear the stirrup from the rolls.

The fulcrum 12 is carried by a screw-threaded member 260 which is swivelled in the arms of a yoke 27 that in turn is mounted on the screw-threaded shank 28 that screws into the frame 29. The head of the screw 26 is provided with a screw driver slot 30 by which the screw may be turned. As the screw is turned the fulcrum 12 is moved longitudinally of the screw and thus the weighted lever 11 and lower end of the stirrup 10 may be shifted bodily toward the front or the rear and into such a position that the stirrup will clear the rolls when the proper adjustment has been made in the top roll saddle to obtain the desired distribution of the weight.

In Fig. 4 I have shown the invention as embodied in a one-piece saddle which rests on the front top roll and rear top roll only. In this embodiment the one-piece saddle is shown at 31, it resting at its front end on the front top roll 1 as usual and having at its rear end a bearing member 32 resting on the rear top roll 3. With this construction the entire weight on the stirrup 10 is distributed between the front top roll and rear top roll.

The saddle member 31 in Fig. 4 carries the differential screw 13 having the two screw-threaded portions 20 and 21 as shown in Fig. 1, the portion 20 having finer screw threads than the portion 21.

The screw-threaded portion 21 has screw-threaded engagement with the bearing member 32 and the screw-threaded portion 20 has screw-threaded engagement with the rest 22 on which the support 10 is supported.

In a one-piece top roll saddle such as shown in Fig. 4 the usual practice is to have the stirrup so positioned that a greater portion of the weight will be delivered to the front top roll than to the rear top roll. For instance, a common practice would be to have two-thirds of the weight on the stirrup delivered to the front top roll and one-third to the rear top roll. With this invention this would be accomplished by arranging the rest 22 at a point one-third of the distance between the front top roll and the rear top roll.

In the drawing of cotton preparatory to spinning a different adjustment or spacing of the top rolls relative to each other is desirable when acting on cotton with a short staple than when acting on cotton with a longer staple and it is, therefore, a common practice to adjust the top rolls according to the requirements for use. The device shown in Fig. 4 permits such adjustment to be made without, however, changing the distribution of weight between the front top roll and the rear top roll. In the embodiment herein shown where two-thirds of the weight is to be on the front top roll and one-third on the rear top roll the pitch of the

screw thread 20 will be one-third of the pitch of the screw thread 21.

I claim.

1. In a top roll saddle, the combination with a rear saddle member adapted to rest on the rear and middle top rolls, of a front saddle member adapted to rest on the front top roll and on the rear saddle member, a weighted stirrup hung from the front saddle member, and means operative while the weight is applied to the middle and rear top rolls to vary the distribution of the weight on said top rolls without changing the amount of weight distributed to the front top roll.

2. In a top roll saddle, the combination with a rear saddle member adapted to rest on the rear and middle top rolls, of a front saddle member adapted to rest at its end on the front top roll, a bearing member carried by the front saddle member and resting on the rear saddle member, and means to shift the bearing member relative to the rear saddle member while in operative contact therewith and without changing the relative amounts of weight distributed to the front top roll and the rear saddle member.

3. In a top roll saddle device, the combination with front, middle and rear top rolls, of a top roll saddle resting on said top rolls, a weighted stirrup hung from the top roll saddle and applying weight thereto, and means operative while the weight is thus applied to vary the distribution of the weight between the rear and middle top rolls without changing the weight delivered to the front top roll.

4. In a top roll saddle device, the combination with front, middle and rear top rolls, of a top roll saddle resting on said top rolls, a weighted stirrup hung from the top roll saddle and applying weight thereto, and means operative while the weight is thus applied to vary the distribution of the weight between two of said top rolls without changing the weight on the other top roll.

5. In a top roll saddle, the combination with a rear saddle member adapted to rest on the rear and middle top rolls, of a front saddle member resting at one end on the front top roll, a bearing member carried by the front saddle member and resting on the rear saddle member, a seat member also carried by the front saddle member, a weighted stirrup hung from the seat member, and means for adjusting the bearing member so as to vary the distribution of the weight on the rear and middle top rolls and for simultaneously adjusting the seat member so as to maintain a constant distribution of the weight between the front top roll and the rear saddle member.

6. In a top roll saddle, the combination with a rear saddle member adapted to rest on the rear and middle top rolls, of a front saddle member resting on the front top roll, a differential screw carried by the front saddle member and having two screw-threaded portions of different pitch, a bearing member having screw-threaded engagement with one screw-threaded portion and bearing on the rear saddle member, a rest member having screw-threaded engagement with the other screw-threaded portion, and a weighted stirrup hung from said rest member.

7. In a top roll saddle, the combination with a rear saddle member adapted to rest on the rear and middle top rolls, of a front saddle member resting on the front top roll, a differential screw carried by the front saddle member and having two screw-threaded portions of different pitch, a bearing member having screw-threaded engagement with one screw-threaded portion and bearing on the rear saddle member, a rest member having screw-threaded engagement with the other screw-threaded portion, a stirrup hung from the rest member, a weighted lever supported by said stirrup, and a fulcrum for the lever adjustable in the direction of the length of the lever.

8. The combination with top rolls, of a saddle member resting on the front top roll, a bearing member by which the rear of the saddle member is supported and through which a portion of the weight on the saddle roll is transmitted to the rear top roll, a differential screw carried by the saddle member and having two screw-threaded portions of different pitch, one of which has screw-threaded engagement with the bearing member, a rest member having screw-threaded engagement with the other screw-threaded portion, and a stirrup hung from the rest member.

In testimony whereof, I have signed my name to this specification.

THOMAS W. LAWTON.