W. HOLDSWORTH.

ADJUSTABLE SADDLE FOR GILL DRAWING FRAMES.

APPLICATION FILED JUNE 9, 1919.

1,347,331.

Patented July 20, 1920.

2 SHEETS—SHEET 1.

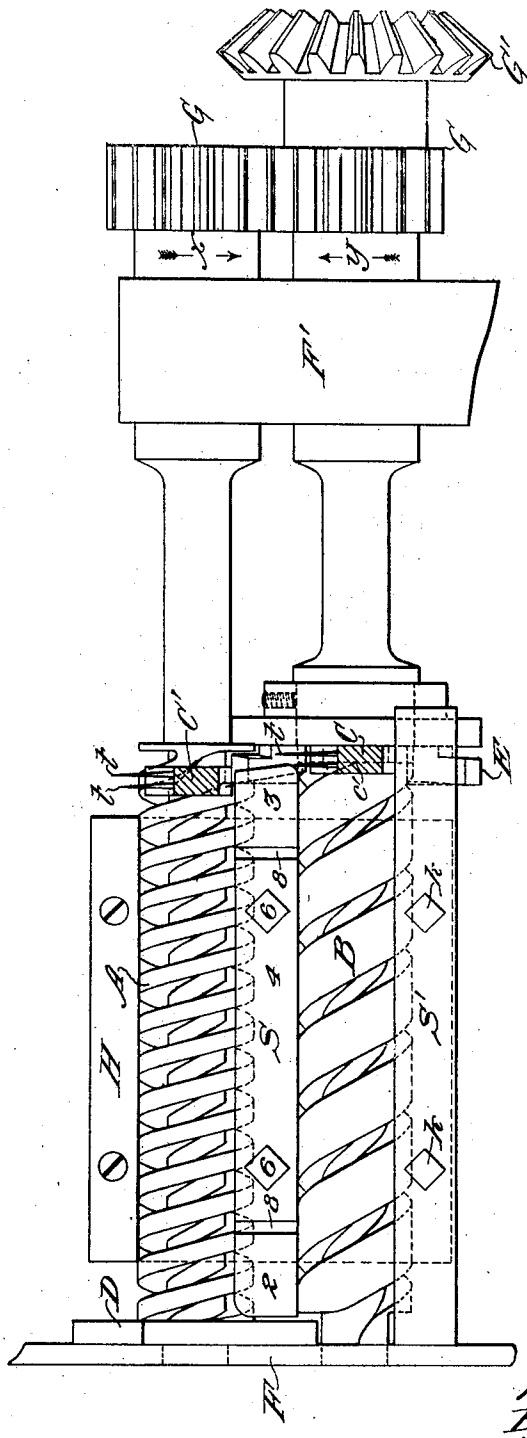

Fig. 1.

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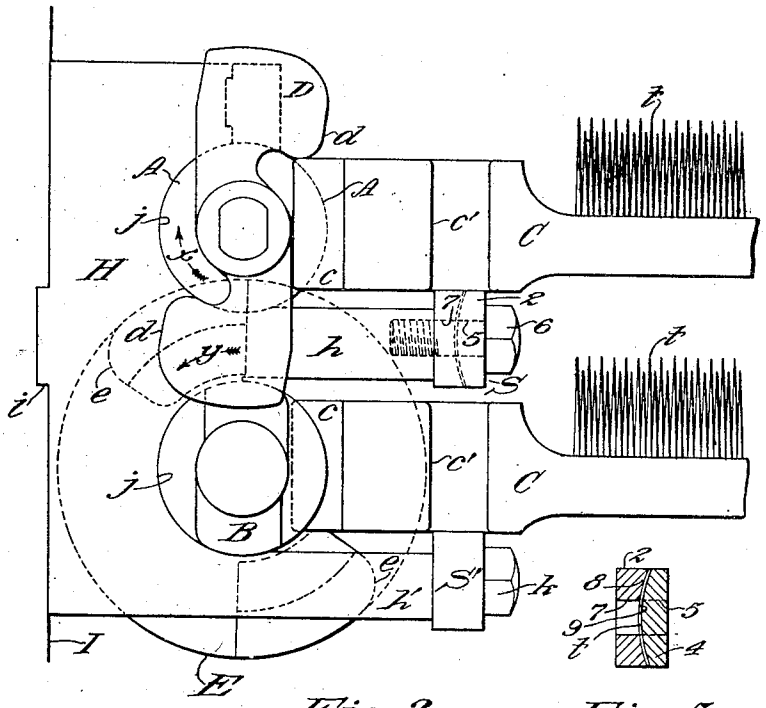

Fig. 2.

Fig. 5.

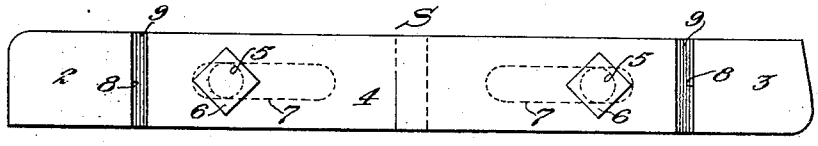

Fig. 3.

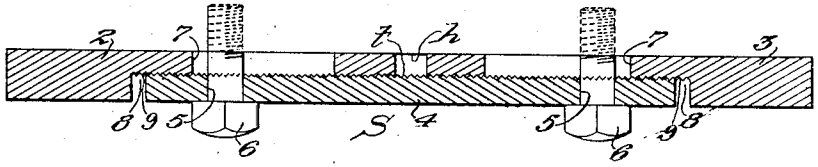

Fig. 4.

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UNITED STATES PATENT OFFICE.

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ADJUSTABLE SADDLE FOR GILL-DRAWING FRAMES.

1,347,331. Specification of Letters Patent. Patented July 20, 1920.

Application filed June 9, 1919. Serial No. 302,954.

To all whom it may concern:

Be it known that I, WILLIE HOLDSWORTH, a subject of the King of Great Britain, residing at Providence, in the county of Providence, State of Rhode Island, have invented certain new and useful Improvements in Adjustable Saddles for Gill-Drawing Frames, of which the following is a specification.

My invention relates to gill-drawing frames and consists of improvements in the means for supporting and guiding the gill-bars or fallers as they are traversed from the feed screws of the machine. The improvement is directed particularly to the horizontal guiding-track or top-saddle on which the gill-bars or fallers slide as they are propelled by their screws; and the object of the improvement is to render the saddle adjustable in position and variable in length, whereby its ends may be located in accurate relation to the threads of the top- and bottom-screws to insure their proper guiding-engagement with the bars as the latter are transferred from one screw to the other.

The manner and means for carrying out the improvement are fully described in the following specification, illustrated by the accompanying drawings, in which like reference characters designate like parts.

In the drawings:

Figure 1 is a side elevation of one set of the top- and bottom-screws of the gill-frame, showing my improved adjustable top-saddle in its relation thereto and illustrating two of the faller-bars at one end of the screws;

Fig. 2 is an end view of the screws, showing the faller-bars in engagement therewith and illustrating their relation to the saddle;

Fig. 3 is a side view of the improved top-saddle;

Fig. 4 is a plan view of the same in cross-section; and

Fig. 5 is a cross-sectional, detail view of the saddle.

Referring to Figs. 1 and 2 of the drawings, the operating mechanism of the gill-drawing frame comprises, in general, two sets of top- and bottom-screws A and B (only one set being shown) arranged in opposite, parallel relation and adapted to traverse the gill-bars or fallers C back and forth in the machine. The faller-bars or combs C are supported to slide on horizontal guides or saddles S—S′ as they are called, with their ends engaging the threads in the opposite screws to cause them to be traversed therefrom. The top-screws A propel the fallers C in one direction, and as they reach the end of their operative stroke they are carried down into engagement with the threads of the bottom-screws B, whereby they are traversed back in the opposite direction and then lifted and returned again to the top-screws. In this way a continuous movement is imparted to the fallers to pass them back and forth in horizontal paths at different levels. As the fallers C reach the end of the top-screws A they ride out of the screw-threads thereof and also slide off from the ends of the top-saddles S. At this point they are operated upon by cams D at the ends of the top-screws A which come into engagement with the bars to force them down into engagement with the bottom-screws B. The bars C are then returned to the opposite end of the bottom-screws B and as they ride out of the threads thereof another set of cams E, carried by the bottom-screws, act to lift them into position to engage the top-screws once more. The above described arrangement is common to practically all types of gill-drawing frames, one form of such a frame being described in U. S. Letters Patent No. 722,984, granted to William Holdsworth, Mar. 17 1903.

Figs. 1 and 2 illustrate only one set of top-and bottom-screws A and B, but it will be understood that these parts are duplicated on the opposite side of the machine; the faller-bars C being arranged to extend horizontally between the two opposite screws of each pair to engage their ends with the threads of the latter. As shown in Fig. 1, the top- and bottom-screws A and B are journaled in upright bearings F and F′ supported from the machine frame, and at one end they are connected rotatively by means of intermeshing spur-gears G—G. On the outer end of the bottom-screw B is a bevel-gear G′ through which both screws are driven from the main power-shaft of the machine, not herein shown. On one side of the machine both the top-and bottom-screws A—B have right-hand threads, as shown in Fig. 1, while the opposite set of screws, not herein shown, are left-handed. The top-and bottom-screws A—B of each set are rotated in opposite directions as indicated by the arrows *x*—*y* in Fig. 2, the arrangement

being such that the fallers C will be traversed to the left, as viewed in Fig. 1, by the top-screws, and to the right by the bottom-screws.

As shown in Figs. 1 and 2, the fallers C consist of relatively narrow, flat bars having their ends chamfered off on opposite sides to provide slightly inclined end-projections *c* adapted to be received within the helical grooves of the threads of the screws A—B as the bars extend in horizontal relation therebetween. Intermediate of their ends the bars C are cut away at top and bottom to reduce their width, and are studded along the upper edge with two rows of closely-spaced, sharpened pins or teeth *t* which form the comb for operating on the material passing through the gill-box or frame. It is further to be noted from Fig. 2 that one side of the enlarged end of the faller or gill-bar C is formed with a shallow slot *c'* adapted to serve as a guiding-groove for engagement with the end of the top-saddle S as it rides thereover during the transference of the faller from the bottom to the top screw.

It will be observed by reference to Figs. 1 and 2 that there are two saddles at each side of the machine for supporting the opposite ends of the gill-bars C at different elevations. As before indicated, however, my present improvement is applied particularly to the top-saddle S which serves as the track or guiding-means for the fallers as they traverse longitudinally of the top-screw A. The bottom saddle S' serves as a support or track for the fallers C as they follow the threads of the bottom-screw B, and when they reach the end of the lower screw they are lifted off from the bottom-saddle and transferred to the top-saddle S. The length of the bottom-saddle S' is therefore not particularly important except that it be sufficient to extend the full length of the threads of the bottom-screw. On the other hand, since the fallers C must pass across the ends of the top-saddle S as they are transferred between the two screws A and B, it is essential that this element be accurately proportioned and located in relation to the threads of both screws in order that there may be no interference with the fallers at the instant of their shifting or transference. Heretofore it has always been a difficult operation to set the top-saddles in relation to the transverse-screws, entailing very careful fitting. In many cases it becomes necessary to grind off the ends of the saddle to form it to the proper length and to repeatedly place and replace it until the correct location is secured. When a saddle becomes worn or damaged it requires considerable pains and labor to refit a new one to the machine and after the fitting process is completed the saddle must be removed and hardened. To obviate these difficulties I have devised a novel arrangement for rendering the top-saddle extensible in length and longitudinally adjustable in position so that it may be set with its ends in any predetermined relation to the terminus of the threads in the traverse-screws A and B.

As illustrated in Figs. 1 and 2, the top- and bottom-saddles are supported in horizontal positions at the sides of the screws A and B by means of a vertical block or standard H. Referring particularly to Fig. 2, the block H is fastened to the side frame I of the machine, with a tongue-and-groove connection at *i* to locate it in position thereon, and at its front are recesses *j* which serve as bearing-seats for the screws A—B. Projecting outwardly from the block H beyond the screws A—B are horizontal ledges *h—h'* to the front faces of which are attached the saddles S—S'. The bottom-saddle S' consists simply of a flat bar of hardened steel which is secured to the front face of the lower ledge *h'* by means of bolts *k—k*. As shown in Fig. 2, the bottom-saddle S' is located below the center of the bottom-screw B with its upper edge in horizontal relation to adapt it to support the fallers C as they traverse the screw with their ends in engagement with its threads.

The top-saddle S is fastened to the front of the upper ledge *h* and consists of overlapping parts which render it extensible in length and longitudinally adjustable thereon. As shown in Figs. 3, 4 and 5, the saddle S is made in three sections with two opposite end-pieces 2 and 3 and a central, overlapping clamp or cleat 4. The cleat 4 is provided with holes 5—5 at its ends for receiving bolts 6—6 which extend through slots 7—7 in the end-pieces 2 and 3 and screw into the front of the ledge *h*, see Fig. 2. As shown in Fig. 4, the end-pieces 2 and 3 are cut away or milled off along their front faces to provide recesses 8—8 for the cleat 4. Referring to Fig. 5, the milled portions of the end-pieces 2 and 3 are preferably concave in cross-section to provide a hollow seat adapted to receive the correspondingly formed convex inner face of the cleat 4. This concavo-convex joint between the engaging faces of the members acts to hold the several parts of the saddle in alinement and also provides a more secure clamping action of the cleat 4. As shown in Figs. 3 and 4, the concavo-convex engaging faces are provided with relatively fine, vertical teeth 9 which are brought into intermeshing engagement when the parts are clamped together to prevent longitudinal displacement therebetween. The end-pieces 2 and 3 are set in place on the front of the ledge *h*, the cleat 4 placed thereagainst with the complementary, serrated faces in engagement, and the bolts 6—6 are then applied thereto

to clamp the parts together. In this way the two end-pieces 2 and 3 are held in alinement in fixed position to provide a predetermined definite relation between their ends.

As shown in Fig. 2, the gill-bars or fallers C ride along the top of the saddle S with their ends in engagement with the threads of the top-screw A. At the outer end of the screw A is the arm-like cam-member D having opposite cam-faces *d*—*d* which come into engagement with the top of the fallers C after they reach the end of the top-saddle S and ride out of the threads of the top-screw A. The cams D act against the fallers to carry them down into engagement with the bottom-screws B, and at the end of their return traverse therealong the operation is reversed to transfer them to the top-screws. For this purpose the bottom-screws B carry cam-disks E—E which are formed with cam-faces *e*—*e*, see Figs. 1 and 2.

My improved top-saddle is applied to use as follows:

In setting up the machine the bottom-saddle S′ is secured fixedly in position on its ledge *h*′ and the parts 2, 3 and 4 of the top-saddle S are assembled in coöperative relation on the front of the upper ledge *h*. The gill-bars or fallers C are then set in place with their ends resting on the saddles and their extensions *c* engaging the threads in the opposite screws, it being understood that a plurality of bars are employed in closely-spaced relation along the screws. After the several fallers C are in place the holding-screws 6—6 for the top-saddle S are loosened slightly and the end-pieces 2 and 3 may then be adjusted in proper relation to the ends of the threads of the screws. For this purpose the traverse-screws A and B are rotated slowly by hand and as one of the bars C reaches the outer end of the screw A the saddle-section 2 is slid longitudinally to adjust it to position with its end engaging the vertical side face of the bar C as the latter rides out from the threads of the screw A and is carried down to the screw B. In the same manner the opposite section 3 of the saddle is then adjusted longitudinally with its end in position to engage the opposite side groove *c*′ in the bar C which is being raised from the screw B to the screw A. After the end-pieces 2 and 3 of the saddle S have thus been adjusted in position the screws 6—6 are set up against the cleat 4 to clamp the latter in place with its teeth *t* in engagement with the serrated faces 8—8 on the end-pieces 2—3. In this way the end-sections of the saddle are secured firmly in place against the supporting ledge *h* while being held from longitudinal or lateral displacement thereon. Fig. 1 shows one faller-bar C resting on the bottom-saddle S′ just as it reaches the end of its traverse to the right; while another bar C′ is illustrated as having been lifted up across the end of the top-saddle S. It will be noted from this view that as the cam E raises the bar C′ into engagement with the threads of the top-screw A it lifts it beyond the top of the saddle S, affording a slight clearance so that the bar will be entirely clear of the saddle when the screw-threads start its traverse to the left. The object of this is to insure that the bar C clears the end of the saddle before commencing its lateral feed, but immediately it passes across the end of the saddle S it will ride off from the cam E and drop down onto the top of the saddle. The right-hand end of the saddle-section 3 is rounded off on its under side and slightly inclined in the direction of the threads of the screws to provide further clearance and assist the entering of the bars into engagement with the top-screw A; while at its left-hand end the top of the saddle-section 2 is also rounded off to facilitate the exit of the bars from the top-screw.

My invention provides an extremely simple and efficient means for locating the top-saddle of the machine in proper relation to the threads of the gill-screws without machining or fitting the saddle to place. My improved saddle is thus rendered interchangeable for different machines and may be employed as a repair part without requiring the services of a skilled mechanic to set it in place. The parts of the saddle may also be adjusted to compensate for wear at its ends; thus insuring the proper coöperation of its parts with the fallers during their transference between the screws and providing for greater durability of the whole saddle. Furthermore, the improvement obviates the necessity of careful and laborious fitting of the top-saddles to the machine when the parts of the latter are assembled in the final stage of its erection, and therefore the cost of manufacture of the machine is materially reduced.

Various modifications might be made in the structure and arrangement of the parts of my improved device without departing from the spirit or scope of the invention; therefore, without limiting myself to the exact embodiment herein shown and described, what I claim is:

1. In a gill-drawing frame, the combination with the gill-screws and faller-bars operated thereby, of saddles for supporting the fallers as they are traversed from the screws, and means to adjust the length of the saddles to vary the position of their ends in relation to the screws.

2. In a gill-drawing frame, the combination with the gill-screws thereof, of faller-bars engaging said screws to be traversed therefrom, saddles for supporting the fallers in operative engagement with the screws,

and means to adjust the length of the saddles to vary the position of their ends in relation to the screws.

3. In a gill-drawing frame, the combination with the gill-screws, of faller-bars engaging said screws to be traversed therefrom, and an adjustable saddle for supporting the fallers in operative engagement with the screws, said saddle being variable in length to provide for adjusting the position of its ends in relation to the threads of the screws.

4. An improved saddle for gill-drawing frames comprising extensible sections adapted for adjustment in relation to each other to regulate the length of the saddle.

5. An improved saddle for gill-drawing frames comprising extensible sections, and means for securing the sections in fixed relation to each other.

6. An improved saddle for gill-drawing frames comprising extensible sections, means for holding said sections in alinement, and means for securing the sections in fixed relation.

7. An improved saddle for gill-drawing frames comprising two opposite end-sections and clamping means for securing said sections in fixed relation.

8. An improved saddle for gill-drawing frames comprising opposite extensible end-sections, a clamping-member extending between said end-sections in overlapping relation thereto, and means for securing the clamping-member against the end-sections to clamp the parts of the saddle in fixed relation.

9. An improved adjustable saddle for gill-drawing frames comprising extensible sections having concavo-convex engaging faces for maintaining the parts in alinement, and means to clamp the sections together to secure them is fixed relation.

10. An improved adjustable saddle for gill-drawing frames comprising extensible sections arranged in overlapping relation with their engaging faces provided with intermeshing teeth, and means to clamp the sections together to hold them in fixed relation.

11. An improved adjustable saddle for gill-drawing frames comprising opposite extensible end-sections, a clamping-member extending between the end-sections in overlapping relation thereto, the engaging faces between the parts being formed with cooperating serrations, and bolts extending through the clamping-member and end-sections to secure the parts of the saddle together in fixed relation.

12. In a gill-drawing frame, the combination with the gill-screws and faller-bars operated therefrom, of a fixed support, opposite extensible saddle-sections mounted on said support, means for holding said saddle-sections in alinement, and means for clamping the sections against the support, said clamping-means being releasable to allow for longitudinal adjustment of the saddle-sections.

13. In a gill-drawing frame the combination with the gill-screws and fallers operated therefrom, of a fixed support, a saddle mounted on said support, said saddle comprising overlapping extensible sections, and bolts extending through slots in the saddle-sections and screwed into the support.

In testimony whereof I affix my signature.

WILLIE HOLDSWORTH.