

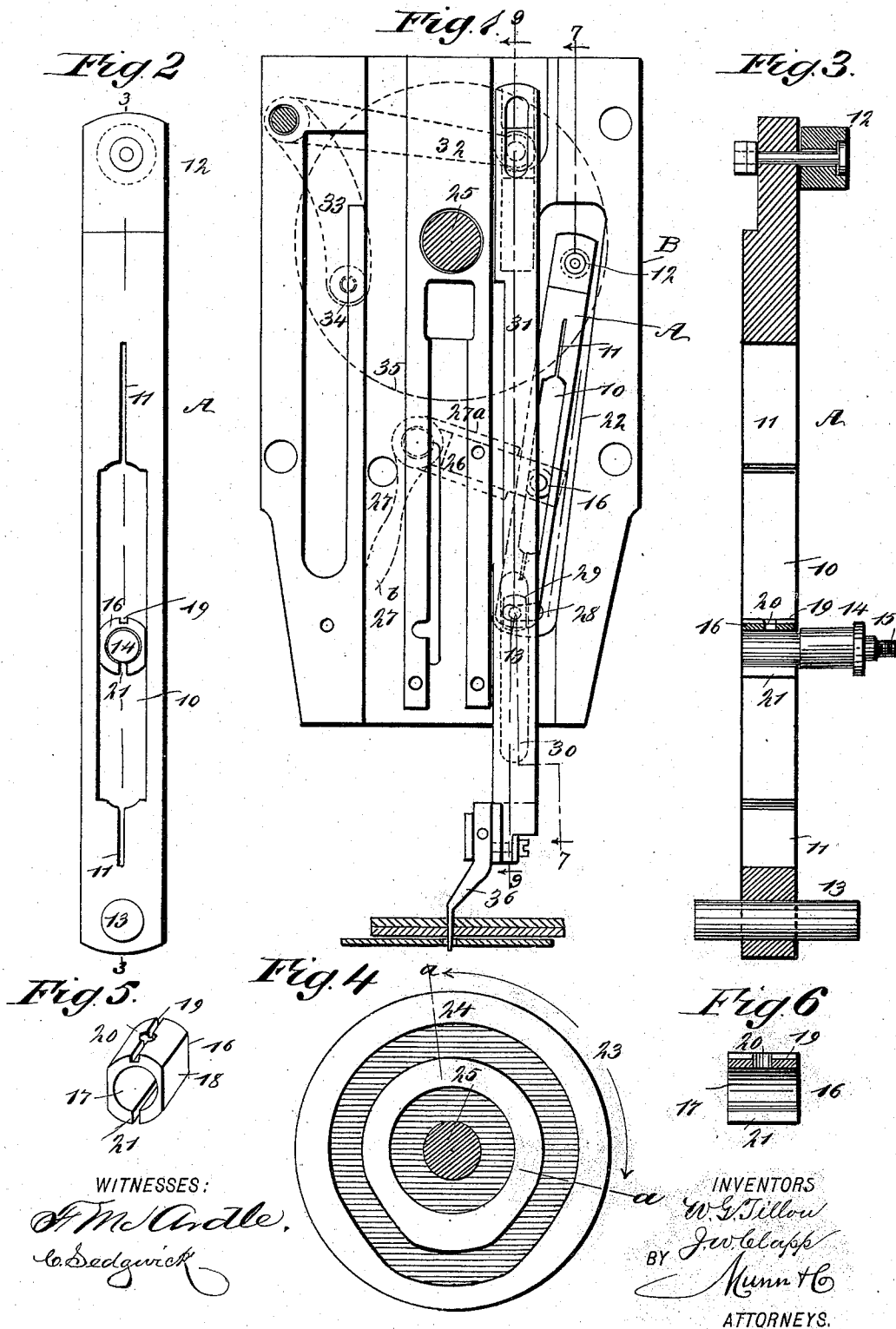
(Model.)

2 Sheets—Sheet 1.

W. G. TILLOU & J. W. CLAPP.
SEWING MACHINE.

No. 533,327.

Patented Jan. 29, 1895.



WITNESSES:
J. M. Andle,
C. Sedgwick

INVENTORS
W. G. Tillou
J. W. Clapp
BY *Munn & Co*
ATTORNEYS.

(Model.)

2 Sheets—Sheet 2.

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Fig. 7

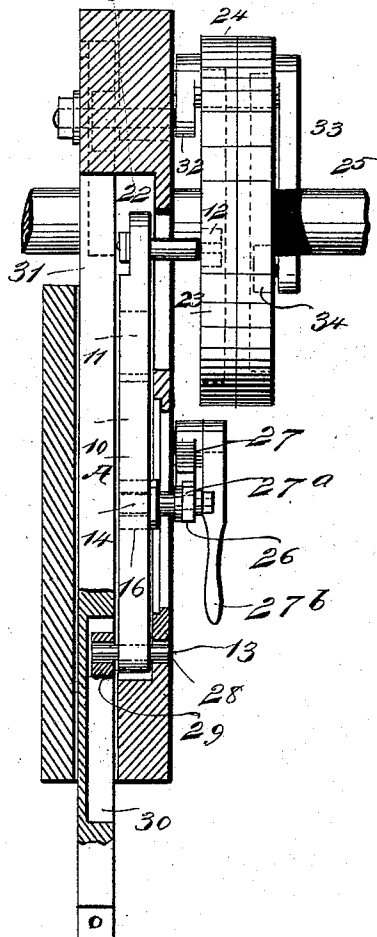


Fig. 8

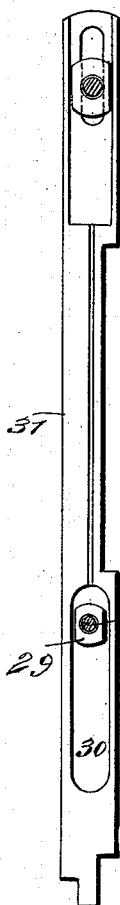


Fig. 9

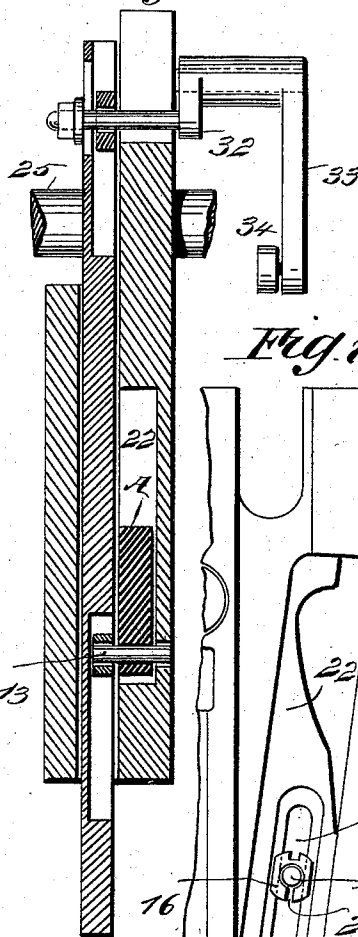


Fig. 10

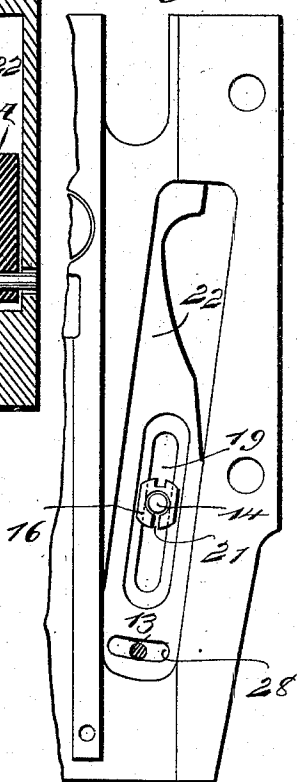
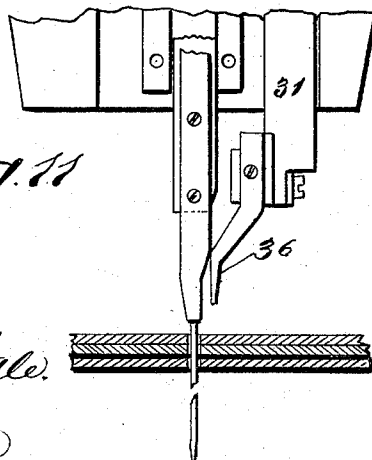


Fig. 11



WITNESSES:

J. M. Apple
C. Sedgwick

INVENTORS:

W. G. Tillou
BY *J. W. Clapp*
Munn & Co
ATTORNEYS.

UNITED STATES PATENT OFFICE.

WALTER GRAHAM TILLOU AND JOHN W. CLAPP, OF NEW HAVEN, ASSIGNORS
TO THE BOSWORTH MACHINE COMPANY, OF MILFORD, CONNECTICUT.

SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 533,327, dated January 29, 1895.

Application filed August 16, 1893. Serial No. 483,271. (Model.)

To all whom it may concern:

Be it known that we, WALTER GRAHAM TILLOU and JOHN WOOD CLAPP, of New Haven, in the county of New Haven and State of Connecticut, have invented a new and useful Improvement in Sewing-Machines, of which the following is a full, clear, and exact description.

Our invention relates to an improvement in sewing machines, especially to an improvement in leather sewing machines, and it relates especially to the construction of the feed-bar operating lever, the stud carried by said bar, and the cam actuating the bar operating lever.

The object of the invention is to provide a means whereby the stud which has movement in the feed-bar operating lever, and which communicates laterally reciprocating movement thereto, will work within the bar without creating any inconvenience in its slide way.

Another object of the invention is to so construct the driving cam of the feed-bar operating lever that its race will be wider at one point than at any other point in its length, thereby enabling the feed-bar operating lever to be carried a predetermined distance to one side by the haft of the needle when fine stitching is being performed, in which event the feed-bar operating lever may be liable to interfere with the action of the needle bar.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures and letters of reference indicate corresponding parts in all the views.

Figure 1 is a front elevation of a head of a leather sewing machine, illustrating the application thereto of the awl bar, the feed-bar operating lever and the shifting lever. Fig. 2 is a front elevation of the feed-bar operating lever. Fig. 3 is a longitudinal vertical section through said bar, taken practically on the line 3—3 of Fig. 2. Fig. 4 is a face view

of the cam adapted to actuate the feed-bar operating lever. Fig. 5 is a detail perspective view of the spring bushing for the fulcrum of the feed-bar operating lever; and Fig. 6 is a longitudinal section through the said spring bushing. Fig. 7 is a vertical section of the head of a machine, on line 7—7, Fig. 1. Fig. 8 is a rear view of the awl-bar, the pins that enter upper and lower slide blocks being in section. Fig. 9 is a vertical section of the head of the machine on line 9—9, Fig. 1. Fig. 10 is a front elevation of right-hand portion of head with awl-bar and feed-bar removed. Fig. 11 is a view illustrating the operation, the awl-bar being pushed to the right, out of the path of the descending needle by contact with the needle-holding shaft.

In leather sewing machines as usually constructed a round pin or short stud is entered in a groove or slide-way produced in the feed-bar operating lever, and in time the said pin or stud wears the side of the slide-way to such an extent as to render it uneven, which causes more or less of a rattling noise, and also imparts to the feed-bar operating lever an uneven motion, creating quite a difference in the execution of the sewing. The stud or pin should fit closely in the slide-way of the feed-bar operating lever without being tightly fitted, and heretofore in the event the groove or slide-way in the feed-bar operating lever became worn no means had been found for effectually taking up the wear. The main object of this invention, therefore, is to provide a stud or pin which will move properly in the feed-bar operating lever slideway, and which at the same time will not create any irregularity in its slide-way. To that end the feed-bar operating lever A, is provided with a longitudinal slot 10 to constitute a slide-way instead of the usual groove, and a longitudinal split or cut 11 is produced at each end of the slide-way, thereby converting the feed-bar operating lever at the slide-way into virtually a spring holder, that is to say, by reason of the length of said slot and cuts, the adjacent sides of the lever have a certain degree of elasticity.

The feed-bar operating lever is provided at

its upper end with the usual friction roller 12 and at its lower end with a pin 13, and is adapted to receive within its slide-way a fulcrum pin or stud 14. The fulcrum pin or stud may be of any approved construction. Preferably, however, its forward or outer end is slightly reduced in diameter, while its inner or rear end is very much reduced and threaded, as shown at 15 in Fig. 3. The forward reduced end of the fulcrum pin or stud has fitted upon it a spring bushing 16, shown in detail in Figs. 5 and 6. The spring bushing is preferably provided with a circular bore 17, which receives the outer or forward end of the fulcrum pin or stud 14. The bushing upon opposing sides is provided with flat faces 18, while the adjoining sides may be and preferably are cylindrical.

In one cylindrical side a longitudinal groove 19, is produced, and in this side an oil feed aperture 20, is likewise produced, while diametrically opposite to the groove 19 the bushing is provided with a longitudinal cut 21, extending through from its inner to its outer face. In this manner the bushing is given a spring character, and by making the bore 17 of slightly less diameter than the diameter of the portion of the stud upon which it is to be fitted, the bushing will remain firmly upon the stud, yet the stud may have more or less movement in it, and when the bushing is fitted in the slide-way 10 of the feed bar operating lever its flat faces 18, are engaged with the sides of the slide-way, and since the bushing is sprung upon the pivotal stud, in the event the sides of the bushing become worn to any extent they will wear equally, and the wear will be compensated by the outward spring or expansion of the bushing, while it is evident that the wear upon the walls of the slide-way will be equal from one end of the slide-way to the other.

A channel 22, is formed in the head B of the machine, as shown in Fig. 1, in which the feed-bar operating lever is adapted to have movement. A friction roller 12, is mounted on a lateral journal near the upper end of said lever and projects through an opening formed in the head, B, at the upper end of the channel, 22, and the said friction roller is adapted to travel in a cam race 23 formed upon one face of a cam 24, said cam being mounted upon the head shaft 25 of the machine, which may be driven in any suitable or approved manner. The cam race is peculiar in its shape to the extent that at one point in the race it is wider than at any other point in its length, the wider portion of the race being clearly shown in Fig. 4, and in the said figure it is designated by the reference letter *a*, so that when the friction roller 12 is in this wider section of the cam race the roller may have more or less of a transverse or lateral movement therein, thereby providing for more or less shifting of the opposite end of the feed-bar operating lever, since the feed-bar operating lever is fulcrumed by the pin

or stud 14, as heretofore stated, and the pivot is effected by passing the threaded end 15 of the stud or pin through a longitudinal slot made in the base wall of the channel 21 in which the awl feed bar has movement, and the said threaded end of the fulcrum pin is secured in any suitable or approved manner to a link 26, which link is located at the back of the head as shown in dotted lines in Fig. 1, and the said link has a sliding connection with a shifting lever 27, the said lever being preferably of angular construction, and it is fulcrumed upon a stud or its equivalent at the rear of the head, said lever comprising a member 27^a substantially U-shaped in cross section, and a handle member 27^b. It will be observed that by turning the handle member 27^b of the shifting lever that the link will be given a greater or a less elevation at the end in which the pivot stud of the feed-bar operating lever is fulcrumed, and therefore the lower end of the feed-bar operating lever will have more or less throw.

The pin 13 at the lower end of the feed-bar operating lever passes through a slot 28 in the head of the machine, as shown in Fig. 1, and the said pin likewise carries a block 29, which block has vertical sliding movement in a groove or slide way 30, made in the back of the awl bar 31. The awl bar 31, is given a vertical reciprocating movement in any suitable or approved manner, usually through the medium of links 32 and 33, shown in dotted lines in Fig. 1, the links being pivotally connected, and one of them carries a friction roller 34, which travels in the cam groove in the race of a cam 35, shown likewise in dotted lines in Fig. 1, this cam being mounted preferably upon the same shaft as the cam 24, imparting movement to the feed-bar operating lever.

The movement of the awl 36 at the base of the awl bar is as follows: The awl is brought vertically downward until it strikes and practically enters the material to be sewed. This is done through the medium of the cam 35. At this time the feed-bar operating lever is given a lateral movement owing to the revolution of its cam, and the awl bar is thereby shifted across the needle plate, causing the awl to carry with it the material to be sewed, and when the material to be sewed has been fed forward until the awl is over the needle hole in the needle plate, the feed bar ceases to act while the awl bar is carried downward farther and the awl is passed through the material, causing an opening for the admission of the needle. The next movement of the awl bar is upward and the next movement is a rearward one, the rearward movement being given by the feed-bar operating lever; but in the event that fine sewing is being done it may happen that the awl will not be carried rearwardly quite far enough to clear the haft of the needle, and in this event the haft of the needle will strike the awl, and as the race 23 in the feed bar cam 24 is wide

at one point, and as when the awl is carried rearward the friction roller 12 will be in the wide portion of the cam race, when the haft of the needle strikes the awl, the awl bar and likewise the feed-bar operating lever will be free to move backward the required distance.

Having thus fully described our invention, we claim as new and desire to secure by Letters Patent—

10 1. In a leather sewing machine, the combination with the feed-bar operating lever, said bar being provided with a slide-way having spring walls, of a fulcrum stud adapted to enter the slide-way, and a spring bushing located upon the stud, said bushing being pro-

vided with flat faces adapted for engagement with the walls of the slide-way, substantially as and for the purpose set forth.

2. In a leather sewing-machine, the combination of the feed-bar operating lever, and the driving cam, the same having its race widened at a given point in its length, the work-feeding awl and needle, and the bar carrying said awl, substantially as shown and described.

WALTER GRAHAM TILLOU.

JOHN W. CLAPP.

Witnesses:

WILLIAM G. MITCHELL,

J. M. HENDRICKS.