W. C. STEWART.

PULLING-OVER MACHINE.

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1,364,215. Patented Jan. 4, 1921.

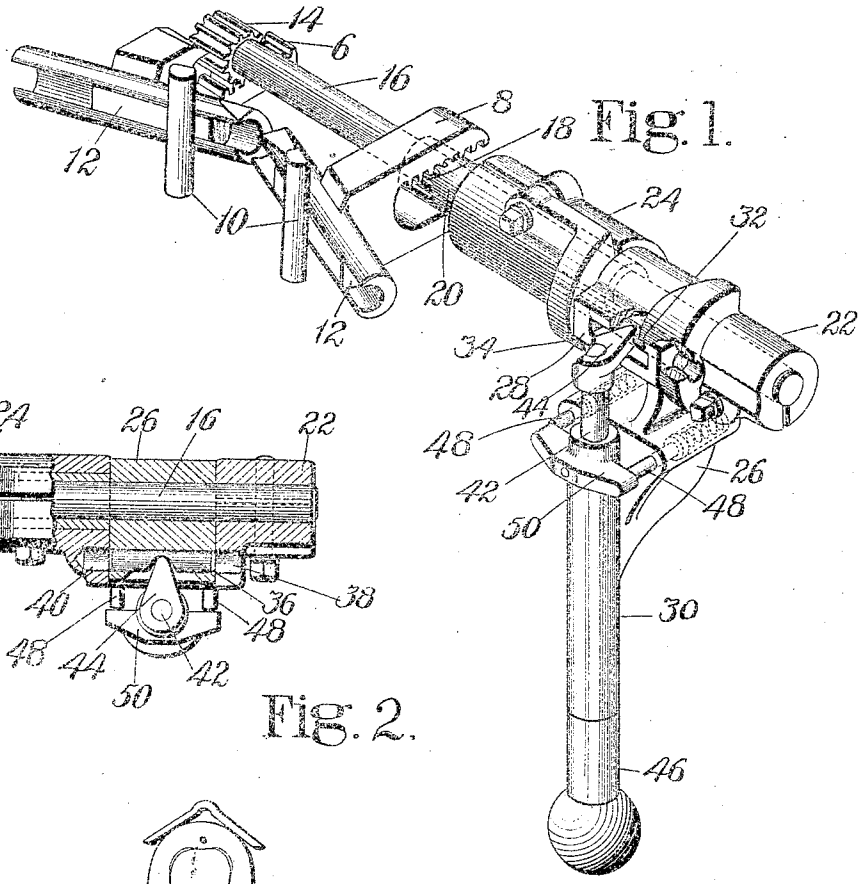


Fig. 1.

Fig. 2.

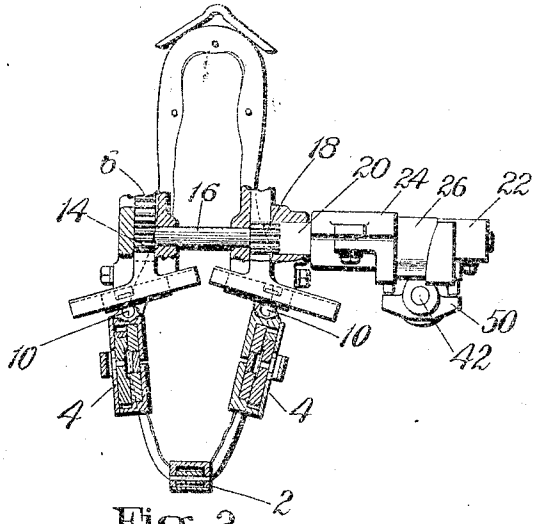


Fig. 3.

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PULLING-OVER MACHINE.

1,364,215. Specification of Letters Patent. Patented Jan. 4, 1921.

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To all whom it may concern:

Be it known that I, WILLIAM C. STEWART, a subject of the King of England, residing at Swampscott, in the county of Essex and State of Massachusetts, have invented certain Improvements in Pulling-Over Machines, of which the following description, in connection with the accompanying drawings, is a specification, like reference characters on the drawings indicating like parts in the several figures.

This invention relates to pulling-over machines, and has for an object certain improvements in the construction of such machines, as will be hereinafter fully explained. The invention is herein illustrated as embodied in mechanism particularly designed for use in a well known type of pulling-over machine the general features of which are described in detail in United States Letters Patent No. 1,029,387 granted on June 11, 1912, upon an application of R. F. McFeely. It should be understood, however, that in its broader aspects the invention is not limited to machines of this particular type.

Pulling-over machines as heretofore constructed, and as illustrated in said patent, are provided with means whereby, after the upper has been pulled and while it is held under tension, the opposite side grippers may be moved lengthwise of the last in such manner as to adjust the angular relation of the tip line of the upper to the longitudinal median line of the forepart of the shoe. For the purpose of such adjustment the side grippers in this type of machine have been connected together to cause a forward movement of the gripper at one side to be accompanied by a corresponding rearward movement of the gripper at the opposite side. While such mechanism has manifest advantages as affording convenient means for effecting a quick adjustment of the upper, the rearward movement of one gripper of equal extent with the forward movement of the other may tend in some cases to carry the portion of the tip seam at one side of the shoe too far to the rear for the standard length of tip in that particular style of shoe, and where considerable adjusting movement of the grippers is required may produce an objectionable slack condition in that portion of the upper which extends from the side gripper rearwardly toward the heel at one side of the shoe.

This invention provides, as an important feature, a novel construction of side gripper adjusting means adapted for convenient manipulation to effect relative movement of the opposite side portions of the forepart of the upper in such manner as to position the upper in the desired adjusted relation to the last without involving any consequences detrimental to the best results in the manufacture of the shoe. The construction herein shown comprises an adjusting member with connections whereby either of the side grippers may be moved lengthwise of the last independently of the other to any extent desired and irrespective of the position occupied by the other gripper, these connections being normally responsive respectively to movements of the adjusting member in opposite directions to move the opposite side grippers alternatively in a forward direction, that is, toward the toe end of the last. Embodied also in the illustrative mechanism is means adjustable at the will of the operator to permit either gripper to be moved independently in the reverse direction. In the use of this construction the tip may be "straightened" by a movement of one of the side grippers forwardly toward the toe end of the last unaccompanied by a rearward movement of the other gripper, which may be followed, if desired, by a comparatively slight rearward movement of the other gripper to insure that all portions of the tip line shall lie properly in the same transverse plane. Alternatively, in the use of the illustrative construction, the different side grippers may be moved successively in the same direction, for example to position the opposite ends of the tip line in the correct angular relation to the plane of the shoe bottom or to assist in tensioning the upper properly lengthwise of the last. Still another use for which the mechanism herein shown is adapted, depending upon the provision for connecting the adjusting means to either of the grippers for moving it rearwardly, is the simultaneous forward movement of one side gripper and rearward movement of the other in the manner of prior constructions.

The above and other features of the invention, including certain details of con-

struction and combination of parts, will now be described with reference to the accompanying drawings and pointed out in the claims.

In the drawings,

Figure 1 is a perspective view of the side gripper adjusting mechanism with which the illustrative machine is provided,

Fig. 2 is a view in section of a portion of the mechanism shown in Fig. 1, and

Fig. 3 is a plan view, with portions in section, of the gripper adjusting mechanism, illustrating the relation of this mechanism and the connected grippers to a shoe.

Machines of the illustrative type, as explained in detail in said prior patent, comprise a gripper 2 (Fig. 3) for engaging the upper at the toe end of the last, grippers 4 for engaging the upper at the opposite sides of the last, and means for operating the grippers to tension the upper, the machine coming automatically to rest with the upper under tension to permit inspection of the work and afford opportunity for any relative adjustment of the upper and the last which may be necessary in order, for example, to correct the angular relation of the tip line of the upper to the longitudinal median line of the forepart of the last. For the purpose of such adjustment the opposite side grippers 4 are connected respectively to rack bars 6 and 8, the connections comprising substantially vertical members 10 arranged in slideways extending longitudinally of the gripper casings and substantially horizontal members 12 in slideways formed on the front ends of the rack bars, whereby the grippers are permitted to move lengthwise and laterally for updrawing and overdrawing the upper. The rack bar 6 is engaged by a pinion 14 fast on the end of a transverse shaft 16 which is mounted in suitable bearings in the frame of the machine, and the rack bar 8 is engaged by a pinion 18 formed on the end of a sleeve 20 rotatably mounted on the shaft 16.

It will be seen by reference to Fig. 1 that the rack bar 6 is positioned underneath the pinion 14 while the rack bar 8 extends over the pinion 18, and it will be evident that in consequence of this arrangement movement of the side grippers in the same direction lengthwise of the last necessitates rotation of the pinions 14 and 18 in opposite directions respectively.

Securely clamped on the outer end of the shaft 16 is a split collar 22, and on the sleeve 20 is clamped a similar split collar 24. Between these collars there is sleeved on the shaft 16 a bracket 26 provided adjacent to the shaft with a forwardly extending rectangular projection 28 and formed to provide also a depending lever extension 30. On the collars 22 and 24 adjacent to the bracket 26 are lugs which, as shown in Fig. 1, are formed to provide shoulders 32 and 34 presenting abutment faces oppositely disposed for engagement respectively with opposite sides of the projection 28. When the machine is at rest with the side grippers in their normal positions lengthwise of the last prior to their operation upon a shoe, as determined by the centralizing means with which machines of the illustrative type are provided, the shoulders 32 and 34 lie substantially contiguous to the projection 28. It will be evident that as the parts are thus disposed movement of the hand lever 30 in one direction after the updraw movement of the grippers has been effected will serve through the engagement of the projection 28 with the corresponding shoulder 32 or 34 to move one of the side grippers forwardly toward the toe end of the last and that movement of the lever in the opposite direction will serve through engagement of the projection 28 with the other shoulder to move the other side gripper likewise toward the toe end of the last.

The projection 28 on the bracket 26 is recessed to provide a slideway for a pin 36 which is arranged to enter either a hole 38 in the collar 22 or a hole 40 in the collar 24, both these holes being alined with the pin when the parts are in their normal idle positions with the shoulders 32 and 34 in contact with the projection 28, as shown in Fig. 1. For sliding the pin 36 in one direction or the other the hand lever 30 is bored longitudinally to provide a bearing for a spindle 42 on the upper end of which is secured a dog 44 which engages in a notch in one side of the pin 36. On the lower end of the spindle 42 is secured a handle portion 46. Spring operated plungers 48 in engagement with a member 50 secured to the spindle 42 tend to maintain the spindle in a position to centralize the pin 36 and hold it out of engagement with both the collars 22 and 24. By turning the handle 46 the pin 36 may be moved into one or the other of the recesses 38 or 40 and thus lock the bracket 26 to the collar 22 or the collar 24 for imparting to one or the other of the side grippers a rearward movement toward the heel end of the last when the hand lever is moved in the appropriate direction.

In the use of this construction the operator, after the upper has been pulled by the grippers and while it is held under tension, inspects the work to determine whether any adjustment of the side grippers is necessary in order, for example, to correct the angular relation of the tip line to the longitudinal median line of the forepart of the shoe. If such adjustment is observed to be necessary, he determines which of the side grippers will be most effective through forward movement toward the toe end of the last to correct the position of the tip line, having par-

ticular regard to the proper length of the tip, and then swings the lever 30 in the direction to move that gripper forwardly. If the best results now require that the other side gripper be moved rearwardly to some small extent, the operator returns the hand lever 30 to its first position, while leaving the first gripper in the position to which it was adjusted, and then by turning the handle 46 in the appropriate direction connects the lever to the opposite gripper by the use of the pin 36. Having made this connection, the opposite gripper may be moved rearwardly by swinging the hand lever in the same direction in which it was swung to move the first gripper forwardly.

It will be evident that the pin 36 whereby positive connection with either of the grippers may be effected to move the gripper rearwardly as well as to move it forwardly, permits either gripper after it has been moved in a forward direction, for example by engagement of the projection 28 with one of the shoulders 32 or 34, to be moved in the reverse direction in case, for example, it may have been moved too far in the first instance. It will also be evident that by use of the projection 28 in engagement with the shoulders 32 and 34 the opposite side grippers may be both moved forwardly in succession to any extent desired, each independently of the other as, for example, to position the ends of the tip line in the correct angular relation to the plane of the shoe bottom or to tension both sides of the upper lengthwise of the last. Still another use which is permitted by the construction shown comprises a simultaneous movement of one side gripper forwardly and the other one rearwardly, which may be effected by the use of the projection 28 to turn one of the collars 22 or 24 and its connected pinion and by the use of the pin 36 to effect a simultaneous connection with the other collar to turn it at the same time in the same direction.

Having described the invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. In a machine of the class described, the combination with grippers for engaging an upper at opposite sides of a last, of means for moving said grippers relatively lengthwise of the last to adjust the upper, said means comprising an adjusting member and connections therefrom to the grippers constructed and arranged for imparting a movement lengthwise of the last to one of the grippers and for then imparting a movement lengthwise of the last to the other gripper while leaving the first gripper in the position to which it was moved by said means.

2. In a machine of the class described, the combination with grippers for engaging an upper at opposite sides of a last, of means for moving said grippers relatively lengthwise of the last to adjust the upper, said adjusting means comprising a member mounted for turning movement and connections responsive to movement of said member for moving either of the grippers independently lengthwise of the last irrespective of the position occupied by the other gripper.

3. In a machine of the class described, the combination with grippers for engaging an upper at opposite sides of a last, of a gripper adjusting member, and connections to said grippers normally positioned in operative relation to said member to cause a movement of the member in one direction to move one of the side grippers independently of the other toward the toe end of the last and a movement of the member in the opposite direction to move the other side gripper toward the toe end of the last independently of the first.

4. In a machine of the class described, the combination with grippers for engaging an upper at opposite sides of a last, of a gripper adjusting member mounted to turn in opposite directions alternatively, and separate connections to the opposite side grippers arranged normally in operative relation to said member to cause the different grippers to be moved alternatively in the same direction lengthwise of the last independently of each other in response to movements of said member in opposite directions.

5. In a machine of the class described, the combination with grippers for engaging an upper at opposite sides of a last, of a gripper adjusting member mounted to turn in opposite directions alternatively, and rotatable members connected respectively to the different grippers for moving them lengthwise of the last and provided with abutment faces oppositely disposed for operative engagement with said member in its different respective directions of movement.

6. In a machine of the class described, the combination with grippers for engaging an upper at opposite sides of a last, of a gripper adjusting member mounted for turning movement, and separate connections to the opposite side grippers for adjusting them lengthwise of the last comprising members rotatably mounted at opposite sides of said adjusting member, said adjusting member and rotatable members having coöperating abutment faces arranged to cause a movement of the adjusting member in one direction to impart an adjusting movement to one gripper without moving the other and a movement of the member in the opposite direction to impart an adjusting movement to the other gripper while leaving the first gripper in the position to which it was moved.

7. In a machine of the class described, the

combination with grippers for engaging an upper at opposite sides of a last, of separate connections to the opposite side grippers comprising members rotatable respectively in opposite directions for moving the different respective grippers forwardly toward the toe end of the last, said members having shoulders thereon facing respectively in opposite directions, and an adjusting member mounted for turning movement and arranged to engage one of said shoulders for adjusting one of the grippers forwardly when it is turned in one direction and to engage the other shoulder to adjust the other gripper forwardly when it is turned in the opposite direction.

8. In a machine of the class described, the combination with grippers for engaging an upper at opposite sides of a last, of a gripper adjusting member mounted to turn in opposite directions alternatively and constructed to provide oppositely disposed abutment faces, and separate connections to the side grippers comprising rotatable members mounted respectively at opposite sides of said adjusting member and movable respectively in opposite directions to adjust the different grippers lengthwise of the last in the same direction, said rotatable members having shoulders thereon for operative engagement with said abutment faces on the adjusting member, said shoulders being arranged to stand in substantially contiguous relation to said faces when the grippers are in their normal position lengthwise of the last.

9. In a machine of the class described, the combination with grippers for engaging an upper at opposite sides of a last, of a gripper adjusting member, and connections normally responsive to movements of said member in opposite directions to cause the different side grippers to be moved each independently of the other in the same direction lengthwise of the last.

10. In a machine of the class described, the combination with grippers for engaging an upper at opposite sides of a last, of means for moving either of said grippers independently of the other in the same direction lengthwise of the last to adjust the upper relatively to the last, and mechanism adjustable at the will of the operator to render said means effective to move either of the grippers in the reverse direction independently.

11. In a machine of the class described, the combination with grippers for engaging an upper at opposite sides of a last, of a gripper adjusting member, connections normally responsive to movement of said member in one direction to cause one of the side grippers to be moved lengthwise of the last, and manually operable means for rendering said member effective at the will of the operator upon a reverse movement to impart to said gripper a movement in the opposite direction.

12. In a machine of the class described, the combination with grippers for engaging an upper at opposite sides of a last, of means for moving one of said grippers independently of the other in one direction lengthwise of the last, and connections normally inoperative and arranged for use at the will of the operator to render said means effective to move said first named grippers in the reverse direction.

13. In a machine of the class described, the combination with grippers for engaging an upper at opposite sides of a last, of a gripper adjusting member mounted for turning movement, connections to one of the grippers comprising a member rotatably mounted adjacent to said adjusting member, said members having coöperating abutment faces to cause a movement of the adjusting member in one direction to impart a movement lengthwise of the last to the connected gripper while permitting the adjusting member to move in the opposite direction without moving the gripper, and a locking device manually operative to connect said members for imparting a reverse movement to the gripper when the adjusting member is moved in the opposite direction.

14. In a machine of the class described, the combination with grippers for engaging an upper at opposite sides of a last, of a gripper adjusting member mounted for turning movement, connections to one of the grippers comprising a member rotatably mounted adjacent to said adjusting member and normally responsive to movement of the adjusting member in one direction to move the gripper lengthwise of the last, and a clutch pin carried by said adjusting member and responsive to manual control to connect said members for movement in the reverse direction.

15. In a machine of the class described, the combination with grippers for engaging an upper at opposite sides of a last, of means for moving said grippers adjustably lengthwise of the last to correct the position of the upper on the last, said means comprising an adjusting member and connections constructed and arranged to enable the operator by movement of said member to impart adjusting movement to either of the grippers independently or to both the grippers simultaneously.

16. In a machine of the class described, the combination with grippers for engaging an upper at opposite sides of a last, of means for moving either of said grippers independently of the other in the same direction lengthwise of the last, and mechanism adjustable at the will of the operator

to render said means effective while moving a gripper in one direction to move the opposite side gripper in the reverse direction.

17. In a machine of the class described, the combination with grippers for engaging an upper at opposite sides of a last, of means for moving said grippers adjustably lengthwise of the last to correct the position of the upper on the last, said means comprising an adjusting member and connections constructed and arranged to enable the operator by movements of said member in opposite directions to move the grippers each independently of the other toward the toe end of the last or to cause such movement of either gripper to be accompanied by a reverse movement of the other gripper.

18. In a machine of the class described, the combination with grippers for engaging an upper at opposite sides of a last, of a gripper adjusting member mounted to turn in opposite directions alternatively, connections normally arranged to cause a movement of said member in one direction to move one of the grippers forwardly independently of the other and a movement of the member in the opposite direction to impart a forward movement to the other gripper independently, and means for rendering said member effective at the will of the operator to move either of the grippers rearwardly while the other is moving forwardly.

19. In a machine of the class described, the combination with grippers for engaging an upper at opposite sides of a last, of a gripper adjusting member mounted to turn in opposite directions alternatively, connections comprising rotatable members normally responsive respectively to the opposite movements of said adjusting member to impart movements in the same direction lengthwise of the last to the different respective grippers, and clutch means to enable the operator after imparting such movement in one direction to one gripper through the corresponding rotatable member to connect the adjusting member to the other rotatable member and move the other gripper in the opposite direction lengthwise of the last.

20. In a machine of the class described, the combination with grippers for engaging an upper at opposite sides of a last, of adjusting means for moving said grippers lengthwise of the last comprising rotatable members connected respectively to the different grippers, an adjusting member between said rotatable members, coöperating abutment faces on said different members normally disposed to cause movements of the adjusting member in opposite directions to impart movements to the different rotatable members alternatively, and clutch means whereby the adjusting member may be locked to either of said rotatable members at the will of the operator.

21. In a machine of the class described, the combination with grippers for engaging an upper at opposite sides of a last, of a gripper adjusting member mounted to turn in opposite directions alternatively, rotatable members connected respectively to the different grippers for moving them lengthwise of the last and provided with abutment faces oppositely disposed for operative engagement with said adjusting member in its different respective directions of movement, a clutch pin carried by said adjusting member and arranged to enter recesses in said rotatable members to effect a locking connection with either of said members alternatively, spring means for holding said pin normally disconnected from both said rotatable members, and manual means for manipulating said pin.

22. In a machine of the class described, the combination with grippers for engaging an upper at opposite sides of a last, of means for moving said grippers lengthwise of the last to adjust the upper, said adjusting means comprising members rotatably mounted and connected respectively to the different grippers, a hand lever pivotally mounted adjacent to said members, and clutch means normally disconnected from said members and arranged to be connected to either of the members alternatively at the will of the operator.

23. In a machine of the class described, the combination with grippers for engaging an upper at opposite sides of a last, of means for moving said grippers lengthwise of the last to adjust the upper, said adjusting means comprising members rotatably mounted and connected respectively to the different grippers, a hand lever pivotally mounted adjacent to said members, a pin carried by said lever and movable to connect the lever to the different members alternatively, and means mounted to turn about an axis extending lengthwise of said lever for imparting connecting movement to said pin.

24. In a machine of the class described, the combination with grippers for engaging an upper at opposite sides of a last, of means for moving said grippers lengthwise of the last to adjust the upper, said adjusting means comprising members rotatably mounted and connected respectively to the different grippers, a hand lever pivotally mounted adjacent to said members, means on said lever movable to connect the lever to either of said members alternatively, a member mounted to turn about an axis extending lengthwise of the lever to operate said connecting means, and spring means for normally maintaining said last named member in disconnecting position.

25. In a machine of the class described, the combination with grippers for engaging an upper at opposite sides of a last, of means for moving said grippers lengthwise of the last to adjust the upper, said means comprising a pivotally mounted hand lever, and mechanism for connecting said lever to either of said grippers alternatively, said lever having a handle portion mounted to turn about an axis extending lengthwise of the lever to operate said connecting mechanism.

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

WILLIAM C. STEWART.