C. D. FOYE.

PULLING-OVER MACHINE.

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1,366,908.

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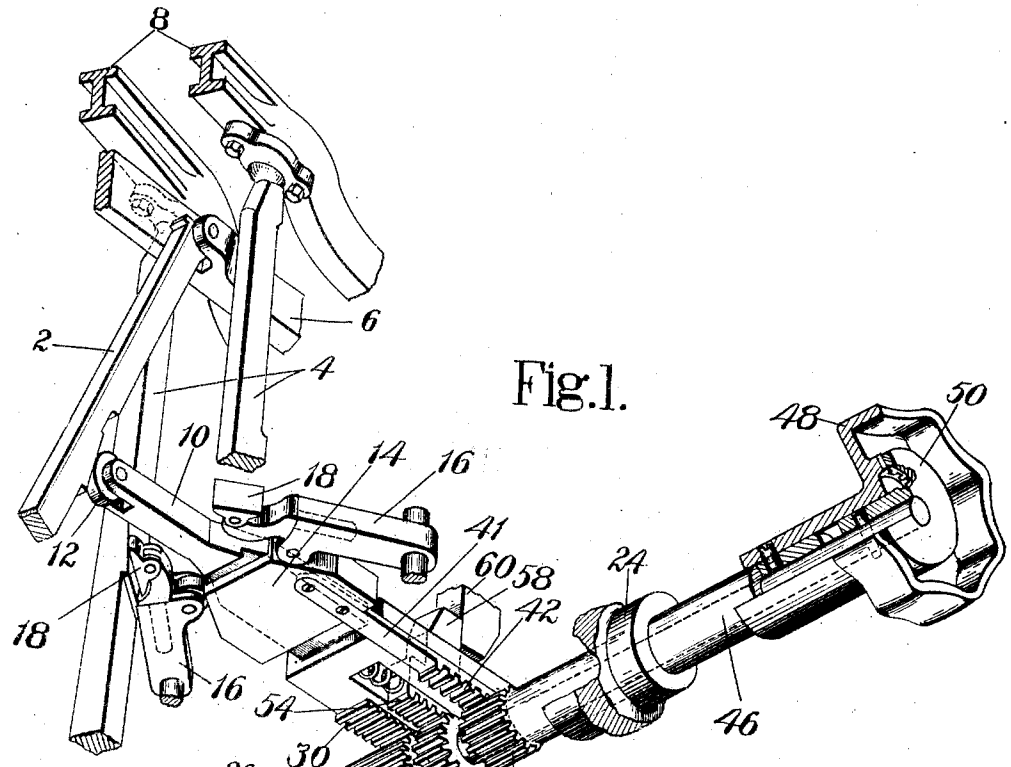


Fig. 1.

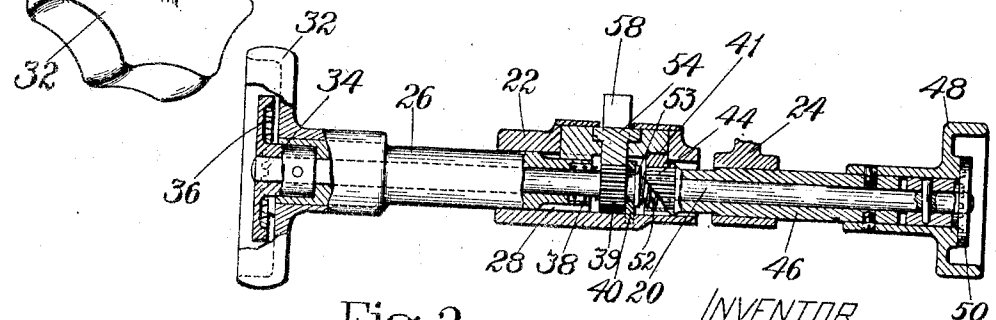


Fig. 2.

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PULLING-OVER MACHINE.

1,366,908. Specification of Letters Patent. Patented Feb. 1, 1921.

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To all whom it may concern:

Be it known that I, CYRUS D. FOYE, a citizen of the United States, residing at Beverly, 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 more particularly to the gripper controlling mechanism of such machines.

Pulling-over machines of a well known type, as illustrated for example in United States Letters Patent No. 1,029,387, granted on June 11, 1912, upon an application of R. F. McFeely, comprise in their organization grippers for engaging the upper at the toe end and at opposite sides of the last and gripper controlling mechanism, frequently termed "spreading mechanism," which determines the normal distance between the opposite side grippers and the normal position of the toe gripper lengthwise of the last and is operative after the upper has been pulled to permit the grippers to move inward over the bottom of the last and subsequently to return them to starting position. Heretofore such mechanism has been constructed to permit the toe and side grippers to be adjusted in unison at the will of the operator to adapt the machine for different sizes and shapes of shoes, the adjustments for width and length thus being coordinated, and also to permit the side grippers to be adjusted for different widths of shoes independently of any adjustment of the toe gripper for length. Conditions, however, frequently render it desirable that the toe gripper be adjusted for length when no adjustment of the side grippers is required, but this has necessitated heretofore two separate adjustments, namely an adjustment of the toe and side gripper positioning means as a unit in order to position the toe gripper in the desired location and then a corrective adjustment of the side gripper positioning means to restore the side grippers to their original position.

This invention provides an improved construction of gripper controlling means which facilitates relative adjustment of the toe and side grippers, and a feature of the invention consists in novel means whereby adjustment of the toe gripper for different lengths of shoes may be effected without altering the position of the side grippers. In the illustrative construction, which comprises a lengthwise movable bar for controlling the toe gripper and a wedge block on the bar for controlling the side grippers, the bar and the wedge block are adjustable each independently of the other. Conveniently these adjustments in the construction shown are effected by adjusting members located respectively at opposite ends of a controlling shaft whereby the bar and the wedge block are moved in unison in the cycle of operations of the machine, the bar and the wedge block being normally connected to the shaft through said adjusting members.

A further feature of the invention consists in novel means for adjusting the side grippers to space them differently for shoes of different widths, the construction provided by this invention having important advantages particularly in respect to simplicity and convenience of operation.

The above and other features of the invention, including certain details of construction and combinations of parts, will now be described with reference to the accompanying drawings and pointed out in the claims.

While the invention is herein shown as embodied in mechanism particularly designed for use in machines of the general type disclosed in said prior Patent No. 1,029,387, it will be understood that the invention in its broader aspects is not limited to machines of that type nor restricted to the precise details of construction herein illustrated.

In the drawings,—

Figure 1 is a perspective view of mechanism in which the invention is embodied, with portions broken away to show the interior construction, and

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

In machines of the illustrative type the grippers comprise a toe gripper bar 2 and side gripper bars 4 connected respectively to updraw levers 6 and 8 whereby the grip-

pers are operated to pull the upper, the grippers being so mounted upon the levers as to permit the toe gripper to swing lengthwise of the shoe and the side grippers to have a substantially universal swinging movement to permit of the various required operations and adjustments. The normal positions of the toe and side grippers are determined by gripper controlling or spreading mechanism, comprising a bar 10 provided with a roll 12 which engages the toe gripper bar 2 upon its rear side, and a wedge block 14 which controls the spacing of the opposite side grippers through pivoted levers 16 which have rolls bearing upon the inclined faces of the wedge block and are also provided with bearing members 18 which engage the side gripper bars 4 upon their inner sides. The wedge block 14 is mounted slidably upon the bar 10 to permit it to be adjusted along the bar, as will be hereinafter described.

At the required time in the cycle of operations the bar 10 and the wedge block 14 are permitted to move rearwardly in response to pressure of the grippers under the influence of their overdraw springs (not shown), the grippers thus moving inwardly over the bottom of the last to overdraw the upper and to make way for the tacking mechanisms. Such movement of the bar and the wedge block is controlled through the operation of a rotatable shaft 20 supported in a bracket 22 and a frame member 24. The connections between the shaft 20 and the bar 10 comprise a sleeve 26 which is mounted on the shaft and has at one end a pinion 28 for engagement with teeth 30 of a rack formed on the lower side of the rear portion of the bar 10, the sleeve having at its opposite end a hand wheel 32 provided with a segmental series of clutch teeth 34 which are arranged to engage coöperating teeth formed in a circular series on a clutch plate 36 secured on the end of the shaft 20. The clutch teeth are normally held in locking relation by means of a spring 38 which bears at one end against a pinion 39 fast on the shaft and tends to force the sleeve 26 outwardly and thus to maintain an operative connection between the sleeve and the shaft. A retaining plate 40 seated in a recess in the bracket 22 and engaging the pinion 39 prevents the shaft 20 from moving lengthwise toward the right from its normal position illustrated in Fig. 2.

The wedge block 14 in the present construction is connected to the shaft 20 through independent mechanism comprising a bar 41 which is fastened to the wedge block and moves in a guideway in the rear portion of the bar 10, the bar 41 having rack teeth 42 in engagement with a pinion 44 formed on one end of a sleeve 46 which is mounted on the opposite end portion of the shaft 20 from the sleeve 26, this end portion of the shaft being reduced in diameter, as shown in Fig. 2. Fast on the sleeve 46 at its outer end is a hand wheel 48 provided with clutch teeth which are arranged to interlock with similar teeth formed on a clutch plate 50 secured on the end of the shaft 20. A spring 52 seated in a recess in the end of the pinion 44 and bearing against a collar 53 that seats against the larger end portion of the shaft and overlaps the retaining plate 40 tends to move the sleeve 46 outwardly and thus to hold the teeth on the wheel 48 normally in coöperative relation to the teeth on the member 50 to connect the shaft 20 to the wedge block 14. It will be evident that the spring 52 also normally prevents the shaft 20 from moving toward the left (Fig. 2). The pinions 28 and 44 are of the same diameter, and consequently the bar 10 and the wedge block 14 are constrained to move together normally without relative movement.

Rotation of the shaft 20 is controlled by means of a rack bar 54 in engagement with the pinion 39, the rack bar having an upstanding lug 58 arranged to be engaged by a member 60. The member 60, as fully shown and described in said prior patent, is moved rearwardly at the proper time in the cycle of operations of the machine, thus releasing the lug 58 and permitting the shaft 20 to be turned by the rack teeth 30 and 42 in response to pressure of the grippers against the bar 10 and the wedge block 14. Subsequently by a reverse movement of the member 60 the shaft 20 is operated to move the bar and the wedge block forwardly and thus to return the grippers to their normal positions.

Should it be desired to adjust the toe gripper in such manner as to adapt the machine for operation upon a different length of shoe without change in width, this may be done by grasping the hand wheel 32 and moving the sleeve 26 lengthwise of the shaft 20 to disengage the clutch teeth 34 from the coöperating teeth of the clutch plate 36 and then turning the hand wheel and thereby moving the bar 10 in the required direction until the toe gripper is located in the correct position. Similarly, if it is desired to adjust for width only, the hand wheel 48 may be manipulated to move the wedge block 14 in the direction and for the distance required to conform the spacing of the side grippers to the character of the work. Convenient means is thus afforded for making quickly any necessary adjustment for width or for length or for both width and length. Immediately upon the release of either of the hand wheels 32 or 48 the clutch teeth become automatically effective to connect the respective gripper controlling member again to the shaft 20.

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 respectively at the toe end and at opposite sides of a last, of gripper controlling means constructed and arranged to determine the normal spacing of the opposite side grippers and the normal position of the toe gripper lengthwise of the last and operable after the upper has been pulled to permit the grippers to move inward over the bottom of the last, said gripper controlling means comprising mechanism adjustable to vary the normal spacing of the side grippers and additional mechanism adjustable independently to vary the normal position of the toe gripper lengthwise of the last.

2. In a machine of the class described, the combination with grippers for engaging an upper respectively at the toe end and at opposite sides of a last, of gripper controlling means constructed and arranged to determine the normal spacing of the opposite side grippers and the normal position of the toe gripper lengthwise of the last and operable after the upper has been pulled to permit the grippers to move inward over the bottom of the last, said gripper controlling means comprising mechanism adjustable to vary the position of the toe gripper lengthwise of the last without affecting the spacing of the side grippers.

3. In a machine of the class described, the combination with grippers for engaging an upper respectively at the toe end and at opposite sides of a last, of gripper controlling means operable after the upper has been pulled to permit the grippers to move inward over the bottom of the last and comprising a device for spacing the opposite side grippers laterally apart and a device for determining the normal position of the toe gripper lengthwise of the last, said last-named device being adjustable to vary the position of the toe gripper independently of any movement of the side gripper spacing device.

4. In a machine of the class described, the combination with grippers for engaging an upper respectively at the toe end and at opposite sides of a last, of devices arranged respectively to determine the spacing of the side grippers and the position of the toe gripper lengthwise of the last, a controlling member, and separate connections between said controlling member and the different devices to cause said devices to move in unison to control the grippers.

5. In a machine of the class described, the combination with grippers for engaging an upper respectively at the toe end and at opposite sides of a last, of devices arranged respectively to determine the spacing of the side grippers and the position of the toe gripper lengthwise of the last, a controlling member, and connections between said controlling member and the different devices to cause said devices to move in unison to control the grippers, said connections being constructed to permit either of said devices to be adjusted independently of the other to vary the normal position of the corresponding gripper or grippers.

6. In a machine of the class described, the combination with grippers for engaging an upper respectively at the toe end and at opposite sides of a last, of a bar for determining the position of the toe gripper lengthwise of the last, a wedge block for determining the spacing of the side grippers, and means for adjusting said bar and wedge block each independently of the other.

7. In a machine of the class described, the combination with grippers for engaging an upper respectively at the toe end and at opposite sides of a last, of a bar for determining the position of the toe gripper lengthwise of the last, a wedge block on said bar for determining the spacing of the side grippers, and mechanism connected to said bar and wedge block to cause them to move in unison to control the grippers, said mechanism being constructed to permit the bar and the wedge block to be adjusted each independently of the other to vary the normal position of the respective grippers.

8. In a machine of the class described, the combination with grippers for engaging an upper respectively at the toe end and at opposite sides of a last, of devices arranged respectively to determine the spacing of the side grippers and the position of the toe gripper lengthwise of the last, controlling means comprising a shaft extending transversely of the machine, and manually operative members mounted on opposite ends of said shaft and connected respectively to the different devices for adjusting them each independently of the other.

9. In a machine of the class described, the combination with grippers for engaging an upper respectively at the toe end and at opposite sides of the last, of devices arranged respectively to determine the spacing of the side grippers and the position of the toe gripper lengthwise of the last, controlling means comprising a rotatable shaft, pinions mounted on said shaft, independent connections between said pinions and the different respective devices, and clutch means constructed and arranged to connect both pinions normally to said shaft while permitting either of the pinions to be disconnected from the shaft independently and turned for adjusting its connected devices.

10. In a machine of the class described, the combination with grippers, for engaging an upper respectively at the toe end and at

opposite sides of a last, of devices arranged respectively to determine the spacing of the side grippers and the position of the toe gripper lengthwise of the last, controlling means comprising a rotatable shaft, adjusting members sleeved on opposite ends of said shaft, pinions connected to said members, racks engaging said pinions and connected to the different respective devices, and clutch means constructed and arranged to connect both said adjusting members normally to the shaft while permitting either of said members to be disconnected from the shaft independently and turned for adjusting its connected device.

11. In a machine of the class described, the combination with grippers for engaging an upper respectively at the toe end and at opposite sides of a last, of a bar for determining the position of the toe gripper lengthwise of the last, a wedge block on said bar for determining the spacing of the side grippers, a rotatable shaft extending transversely of said bar, pinions on said shaft, racks engaging said pinions and connected respectively to said bar and wedge block, and clutch means normally connecting both said pinions to the shaft and constructed to permit either of said pinions to be disconnected from the shaft independently and turned for adjusting its respective rack.

12. In a machine of the class described, the combination with grippers for engaging an upper respectively at the toe end and at opposite sides of a last, of gripper spreading mechanism comprising a lengthwise movable bar for determining the position of the toe gripper and a wedge block on said bar for determining the spacing of the side grippers, means comprising a shaft extending transversely of said bar for operating said mechanism, connections between said shaft and wedge block comprising a rack connected to the wedge block, a pinion on the shaft engaging said rack, and clutch means normally connecting said pinion to the shaft while permitting said pinion to be disconnected from the shaft and turned for adjusting the wedge block along said bar to vary the spacing of the side grippers.

13. In a machine of the class described, the combination with a toe gripper and opposite side grippers, of a bar for determining the position of the toe gripper lengthwise of a shoe, a wedge block adjustable along said bar to vary the spacing of the side grippers without affecting the position of the toe gripper, a rack movable with said wedge block, and a pinion engaging said rack for adjusting the wedge block.

14. In a machine of the class described, the combination with a toe gripper and opposite side grippers, of a bar for determining the position of the toe gripper lengthwise of a shoe, a wedge block adjustable along said bar to vary the spacing of the side grippers without affecting the position of the toe gripper, rack and pinion mechanism for adjusting said wedge block, and a clutch associated with said mechanism for holding the wedge block in adjusted position.

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

CYRUS D. FOYE