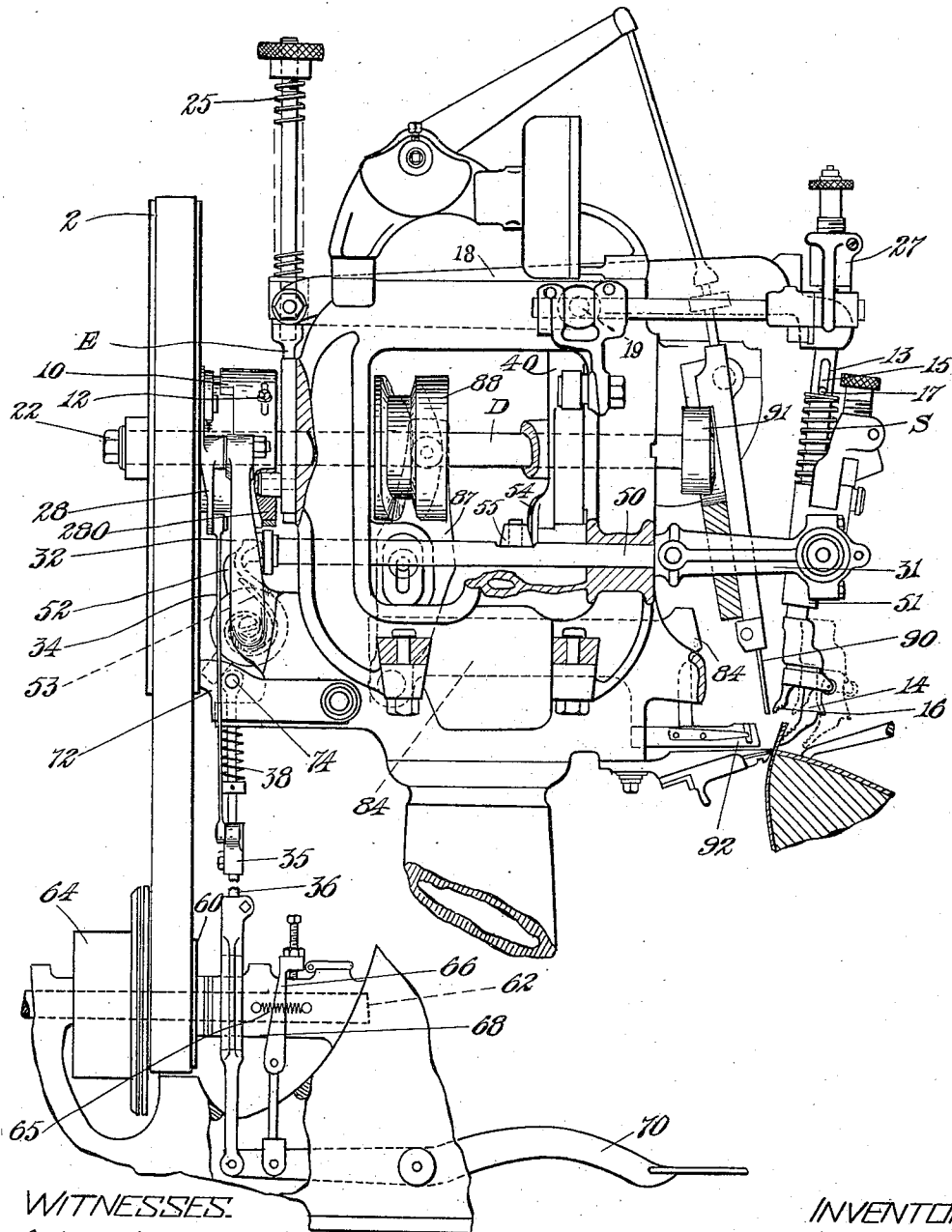


A. BATES.
MACHINE FOR USE IN THE MANUFACTURE OF BOOTS AND SHOES.
APPLICATION FILED JAN. 2, 1908. RENEWED SEPT. 10, 1909.

1,017,370.

Patented Feb. 13, 1912.

3 SHEETS—SHEET 1.



WITNESSES:

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Fig. 1.

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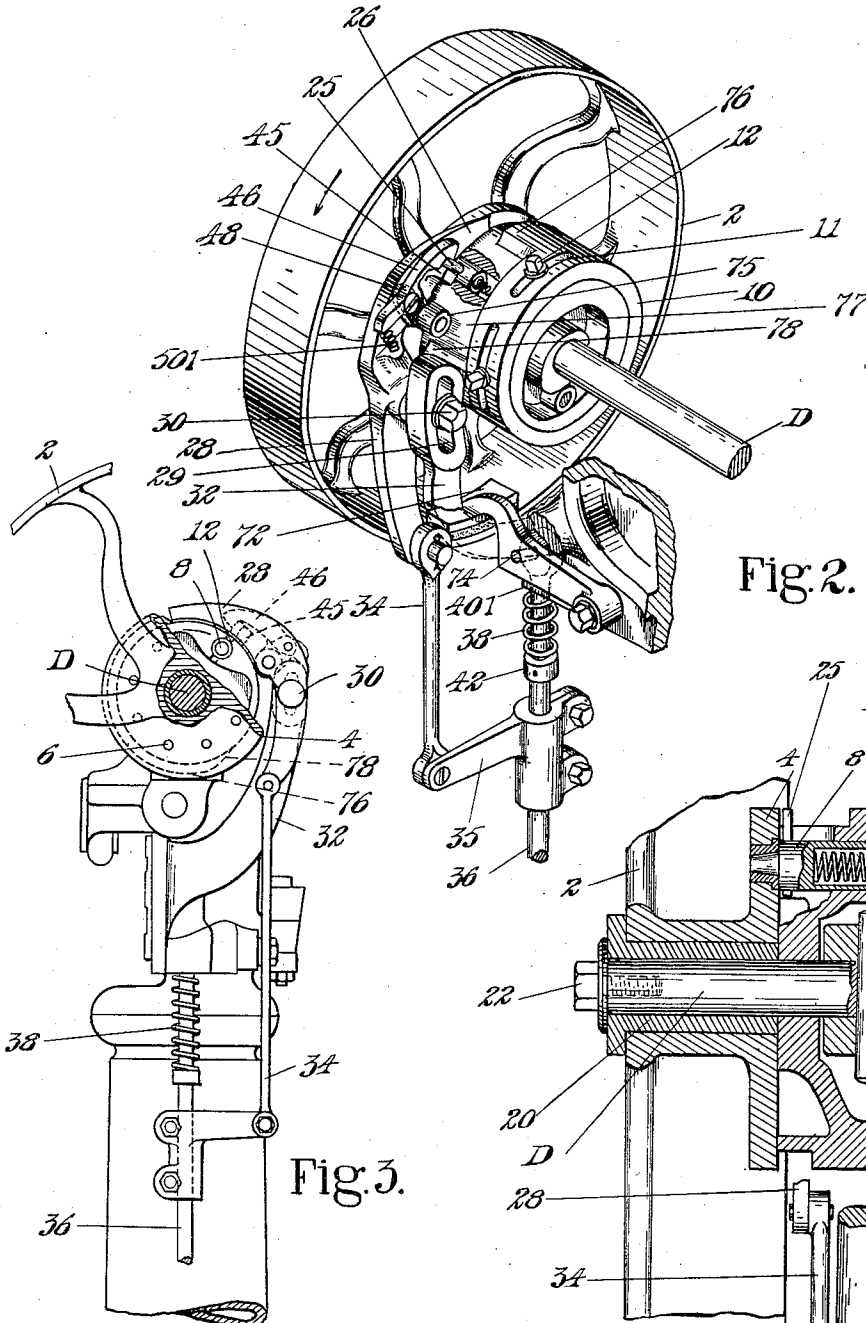


Fig. 2.

Fig. 3.

Fig. 4.

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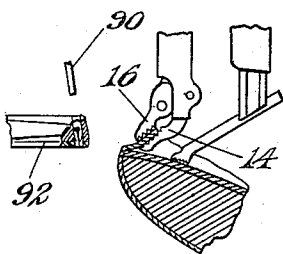
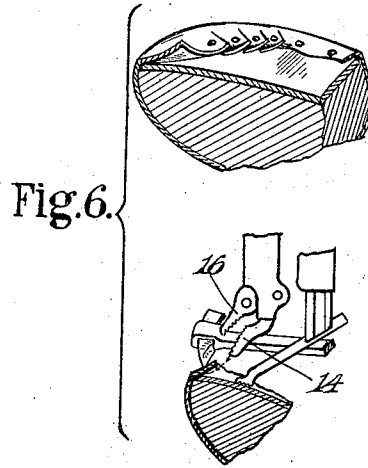
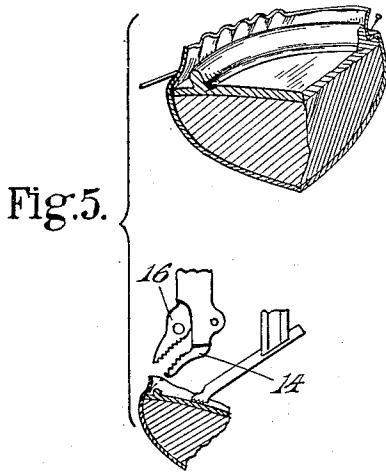


Fig. 7.

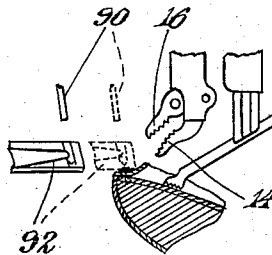


Fig. 8.

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UNITED STATES PATENT OFFICE.

ARTHUR BATES, OF LEICESTER, ENGLAND, ASSIGNOR TO UNITED SHOE MACHINERY COMPANY, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

MACHINE FOR USE IN THE MANUFACTURE OF BOOTS AND SHOES.

1,017,370.

Specification of Letters Patent.

Patented Feb. 13, 1912.

Application filed January 2, 1908, Serial No. 409,063. Renewed September 10, 1909. Serial No. 517,111.

To all whom it may concern:

Be it known that I, ARTHUR BATES, a subject of the King of England, residing at Leicester, in the county of Leicester, England, have invented certain Improvements in Machines for Use in the Manufacture of Boots and Shoes, 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 machines for working an upper over a last and is herein shown as embodied in a machine of the type known as the "hand method lasting machine," an example of which is shown in United States Letters Patent No. 584,744, dated June 15, 1897, to which reference may be had for full information as to the machine. This invention is, however, applicable to other machines in addition to that to which it is shown as applied.

An object of the invention is to render lasting and the like machines of greater utility than hitherto by enabling them to be operated with less skill on the part of the workman than has heretofore been required, and also adapting them to operate expeditiously and to advantage upon work presenting different conditions.

The machines of the type referred to comprise grippers and automatically operating means for actuating them to grip the upper and manipulate it over the last.

A specific object of this invention consists in providing means for insuring that the machine shall stop with the grippers in predetermined relation to the stock. In the absence of such provision reliance must be placed on the skill of the machine operator in stopping the machine with the grippers in a proper position. This skill is only acquired by training during a considerable time and an unskilled operator wastes much time and occasions some loss in extra revolutions of the machine in his efforts to stop the grippers in desired position.

An important feature of this invention consists in the combination with grippers and their operating mechanism of means for automatically interrupting the movement of the grippers in a selected position—as, for instance, in a predetermined position suitable for receiving the stock next to be gripped.

It is found in practice that operators dif-

fer as to the way in which they can obtain the best results from the machine, and also that differences in the shoes to be operated upon—as, for example, in the relative sizes of the lasts and uppers and in the qualities of the upper material—make it desirable to vary the position in which the grippers are stopped.

Another object of this invention is, therefore, to provide means which can be employed for stopping the grippers in different selected positions according to the requirements of the class of work being operated upon or the preferences of the operator. Broadly stated, this feature of the invention may be said to comprise the combination with grippers and their actuating mechanism, of means for varying the point in the path of movement of the grippers at which they come to rest. This is herein shown as embodied in a construction in which the grippers are operated through intermediate devices from an actuator from which they can be disconnected and in which means is provided that is capable of adjustment for causing the disengagement to occur at different points in the cycle of movement of the actuator. In the movement of the grippers in the machine shown they advance toward the upper, close, uplift, retreat or overdraw and then open. The illustrated adjustment is such that the grippers will be stopped at some point in their advance movement and to meet different conditions this will be varied to locate the stopping position at other points more or less near to the upper which is to be gripped. By stopping the grippers remote from their gripping position a maximum space is left for the positioning of the work, and when the uppers are large for the lasts this is usually advantageous. Also it is of advantage when there are associated with the grippers other devices such as knives which are used for slitting the edges of heavy uppers at the parts of the shoe where plaits are to be formed. In lasting shoes where the uppers are small for the lasts a stopping position nearer to the gripping position may insure a more accurate seizing of the narrow fringe of upper that projects over the edge of the last. In another use for which the machine is available it is desirable to stop the grippers immediately before they open to release the upper and

before the pulled upper is fastened. This gives the workman opportunity to examine the shoe and perhaps, if necessary, to manipulate the shoe and grippers relatively for further pulling or adjusting the upper before the fastening tack is driven.

For the purpose of providing for the adjustment that causes the grippers to be stopped at different points there may be employed, in combination with a shaft which is operatively connected with the grippers, a rotary actuator with a coupling device between the shaft and the actuator and disengaging mechanism between which and the coupling device there is provision for relative adjustment. By this arrangement the shaft will be disconnected from the actuator earlier or later in the cycle of operation of the machine according to the adjustment of the disengaging mechanism and will permit the shaft and the grippers to come to rest at a variable point in their path of movement. Preferably a brake will be employed and connected to the disengaging mechanism for operation with said mechanism to act on the actuator when the latter is disconnected from the shaft. In the machine shown the arrangement preferably will be such that the disengaging device, the brake and the means for disconnecting the source of power from the actuator will act in timed relation so that any alteration in the relative adjustment between the coupling device and the disengaging mechanism will correspondingly alter the period at which the brake acts and at which the source of power is disconnected.

In accordance with another feature of this invention a brake controller is employed which is operatively connected with the disengaging means as well as with the brake. This controlling cam holds both said disengaging means and the brake in an inoperative position during the major portion of the cycle of the machine's operation preceding the point at which the machine is to be stopped even if the treadle is released.

In the machine illustrated a friction clutch is provided between the rotary actuator above mentioned and the source of power, which is a shaft carrying a continuously moving pulley. The friction clutch is controlled by a disengaging device shown as a wedge which is connected through the treadle and intermediate devices with the brake and the disengaging means for the first-mentioned clutch. While the high part of the brake controlling cam is operative the friction clutch controlling device as well as the disengaging means for the first-mentioned clutch are locked and the machine will continue to rotate until the predetermined stopping point is reached and independently of the operator's pressure upon the treadle.

In certain uses of which the machine equipped with this invention is capable—as, for example, when the machine is arranged to stop automatically with the grippers holding the upper under tension, as described—it may be desirable to stop the machine a second time during the same cycle. By the use of a second clutch, as the one shown as a friction clutch, the machine may be stopped by promptly releasing the treadle after it has run a short distance, sufficient in the example mentioned to cause the securing tack to be driven and the grippers to be opened. This use of the machine presupposes that the so-called brake controlling cam is formed, as herein shown, with a low portion of material extent so disposed that the high portion does not become operative to lock the clutch controlling devices until after the shaft has turned through a portion of its revolution. In such uses of the machine as that mentioned there is an obvious advantage in this provision for automatically stopping the machine with the stock under tension and in position to be secured and then again stopping it after the securing tack has been driven and the grippers opened to receive another portion of the stock or the upper of another shoe.

These and other features of the invention, including certain details of construction and combinations of parts, will be explained more fully in the following description and then pointed out in the claims.

Figure 1 is a side elevation of the machine showing particularly the parts which are concerned with the present invention. Fig. 2 is a perspective view of the rear portion of the machine. Fig. 3 is a rear end elevation of the machine. Fig. 4 is a vertical section through parts shown in Figs. 2 and 3. Figs. 5 and 6 are detail views showing different conditions under which it may be desirable that the grippers be stopped in different positions. Fig. 7 shows another position in which the grippers may be automatically stopped in accordance with this invention. Fig. 8 shows a second position in which the grippers may be stopped in the same cycle of operation as that in which they are stopped in the position shown in Fig. 7.

In the illustrated machine to which the invention has been applied the driving shaft D is provided with cam blocks 280 and 40, the cam block 40 being an edge cam and having also a cam surface 54 on its side. Through these cams the grippers, which comprise the jaws 14 and 16, receive their movements. The jaws are connected, respectively, to rods 13 and 15 arranged one within the other and the head of the rod 13 is pivotally connected to the operating lever 18, which is fulcrumed at 19 and is connected through a spring 25 and slide E with the cam block 280 for raising and lowering

the grippers. The inner rod 15 is acted upon by the arm 27 of a rockshaft mounted in bearings in the lever 18 and provided with a second arm which receives motion from the cam 40 for closing the grippers. The grippers are opened by a spring S held under tension between a collar on the rod 13 and a pin 17 projecting from the rod 15. The gripper rods are guided through a block 51 pivotally mounted in the yoke 31 which is carried by the front end of a sliding bar 50. The bar 50 has a stud 55 by which it is shifted backwardly for moving the grippers toward the machine. A spring 53 actuates an arm 52 which, under control of the cam 54, reversely actuates the bar and the grippers to draw the gripped and pulled upper over the last bottom. The shaft D also has a cam 91 for raising the tack driver 90 against the tension of a suitable spring and releasing the driver at the proper time to insert a tack. The tack is presented in position to be driven for securing the upper by a carrier 92 connected to a reciprocating slide 84 that is actuated through a lever 87 by a cam 88 on the shaft D. These mechanisms for actuating the grippers and driving tacks, together with other mechanisms in the machine which it is not necessary here to consider, may be the same as the corresponding parts in the Patent No. 584,744 before mentioned. By means of this mechanism the grippers are advanced toward the edge of the last under the influence of the cams 280 and 54, the jaws being open. The jaws are then closed by the cam 40 and uplifted by their connections with the cam 280, after which they are moved outwardly from the machine for drawing the stretched upper over the last and are partially depressed for laying the upper in position to be secured. The cam 40 then permits the spring S to open the jaws for releasing the upper. The cams 280 and 54 are relatively formed for imparting to the grippers during their advance toward closing position a movement in different paths according to the type of shoes being lasted, as indicated in Figs. 5 and 6.

For the purpose of interrupting the movement of the grippers at a selected point in their cycle of operation the machine shown is equipped in accordance with the present invention with actuating mechanism which will now be described. The shaft D is extended rearwardly from the cam 280 and receives loosely a pulley 2, herein sometimes called the "actuator," the hub of which has a flange 4 provided with openings 6 adapted to receive a coupling device which is shown as a clutch bolt 8. This bolt may be carried by the cam 280, but is preferably mounted in a sleeve 10 which is angularly adjustable with relation to the shaft D and the cam 280. To this end the sleeve is shown as slotted at

11 to receive binding screws 12 extending from the cam 280 and by which it is held in adjusted position. For further holding the sleeve 10 in adjusted position it is acted upon by a collar 20 which is clamped against it by the screw 22 in the end of the shaft D. The clutch bolt 8, which is pressed toward the flange 4 by a spring 24, has an outwardly projecting pin 25 standing in a slot in the sleeve 10 and adapted to contact with a disengaging device, herein shown as a wedge 26 formed on a lever 28 which is fulcrumed at 30 on a bracket 32 projecting from the frame of the machine. The lever is connected by a link 34 with an arm 35 on a treadle rod 36, through which the wedge may be moved into and out of the path of the pin 25. A spring 38 arranged on the rod 36 between the portion 401 of the frame of the machine and an adjustable collar 42 moves the rod downwardly and the lever 28 in the direction for placing the wedge in the path of the clutch bolt pin when the parts are free to be thus moved. By this arrangement the driving shaft may be automatically disconnected from its actuator at a predetermined point in the cycle of the machine's operation after pressure on the treadle has been discontinued. Preferably the lever 28 will have a stop 45 in the path of the clutch bolt pin 25 and arranged to arrest positively the rotation of the driving shaft, thus interrupting the movement of the grippers at a predetermined point in their cycle of operation. The lever 28 is also provided with a detent 46 connected thereto by a link 48 and held by a spring 501 in position to hook over the end of the pin 25 when the latter is seated against the stop 45, whereby movement of the shaft in either direction is made impossible.

It will be understood from the foregoing description that the adjustable connection formed by the sleeve 10 between the clutch pin and the driving shaft permits a variation to be made in the point in the movement of the grippers and other parts of the machine at which the driving shaft will be stopped. By loosening the bolts 12 and 22 the sleeve and clutch bolt may be moved angularly with relation to the shaft and its cams to position it for causing the machine to be stopped earlier or later. An adjustment for accomplishing the same purpose is also provided by forming the lever 28 with a slot 29 concentric with the shaft D which permits the lever, and therefore the disengaging wedge 26, to be moved forwardly or backwardly with relation to the direction of rotation of the shaft for disengaging the coupling device from the pulley sooner or later.

In the illustrated machine the pulley 2 is driven by a belt from a loose pulley 60 in the base of the machine, said pulley 60 be-

ing movable endwise of its shaft 62 and provided with a friction disk adapted to engage a similar disk, forming a friction clutch, on the adjacent end of a constantly driven pulley 64. The pulley 60 is normally held out of contact with the other pulley by springs 65 and is moved into contact therewith to cause it to be driven by a wedge 66 engaging a sleeve 68. This friction clutch controlling wedge 66 is connected to the foot treadle 70 to which also the rod 36 before mentioned is connected. By this arrangement the driving connection between the pulley 2 and the continuously running pulley 64 is interrupted at the same time that the driving shaft D is disconnected from the pulley 2 and brought to rest by the wedge 26 and the stop 45.

A brake 72 for bringing the pulley 2 to rest at the same time that the clutch bolt 8 is withdrawn therefrom is pivoted to the machine frame and connected directly at 74 to the upper end of the treadle rod 36 so that when the treadle rod is depressed by its spring 38 the brake will be forced into engagement with the inner face of the rim of the pulley.

Provision is made for holding the brake out of engagement with the pulley 2 until the region is reached in the movement of the pulley at which the clutch bolt is to be withdrawn. This provision is desirable in order that the operator may remove his foot from the treadle during a portion of the cycle of the machine's operation without the brake being applied before the driving shaft is about to be unclutched from its actuator. To this end the lever 28, which as previously described, is unyieldingly connected to the treadle rod 36, is also provided with a roll 75, and the sleeve 10 has a cam surface upon which this roll rests. This cam surface includes a high portion 76 and a low portion 77 connected to the high portion by the incline 78. This incline is so located with relation to the clutch bolt that the disengaging wedge 26 is permitted to move into position for engagement with the pin 25 on the clutch bolt shortly before the pin reaches the angular position of the wedge and by the time the pin reaches the angular position of the wedge the roll is in the low part of the cam and the brake in engagement with the inner face of the pulley rim. It will be understood from the described relative arrangement and connection of the several parts that the high part 76 of the brake controlling cam when in operative relation to the roll 75 forms a lock which prevents movement of the disengaging device 26, 28 and the friction clutch disengaging wedge 66, as well as of the brake, to stop the machine. This provides that at any time after the low part 77 of the cam has passed the roll 75 the treadle may be

released without causing the machine to stop until its predetermined position is reached. Release of the treadle while the low part 77 of the cam is under the roll will, however, permit the friction clutch controlling device 66 to stop the machine by causing the springs 65 to separate the friction members on the pulleys 60, 64. It is to be observed that by forming the brake controlling cam upon the sleeve which carries the clutch bolt said cam and the clutch bolt are simultaneously adjusted for causing the machine to be stopped at different positions. If the sleeve is not employed and the clutch bolt is mounted directly in the cam block 280 the brake controlling cam will be formed also directly upon the periphery of said cam block. In that event variation in the stopping position of the shaft D may be obtained by adjusting the lever 28 with relation to its fulcrum 30 and the arm 35 will then be adjustably clamped upon the treadle rod 36 so that the relation of the wedge 26 to the brake may remain constant. It is to be observed that the low portion of the brake controlling cam is long enough to permit the machine to be stopped by the friction clutch controlling wedge 66 independently of the disengaging wedge 26 while the roll 75 is running in said low part of the cam.

In the use of the machine the shoe may be presented to the grippers as shown in Fig. 1 and when the machine is started by depressing the treadle 70 the grippers will advance toward the edge of the shoe, then close upon the upper, uplift, overdraw, and descend for laying the upper in position to be secured, after which they open and again come forward to grip another portion of the upper, these movements being repeated for working successive portions of the upper over the last at different times. At any time when it is desired to stop the machine the operator will discontinue the pressure upon the treadle and when the shaft in its rotation reaches the point at which the clutch bolt closely approaches the wedge 26 the brake controlling cam will permit the disengaging wedge to be moved by the spring 38 into the path of the clutch bolt pin for withdrawing the pin, while at the same time the brake is applied to the pulley 2 and the wedge 66 at the base of the machine is retracted for permitting the springs 65 to separate the pulley 60 from the continuously running pulley 64. This arrangement insures that the machine will come to rest in a predetermined position. This position, which will ordinarily be somewhere between the point at which the grippers open and their closing position, can be varied to suit different requirements by adjusting the sleeve 10 upon the cam block 280 or by adjusting the lever 28 with relation to its fulcrum 30. If the uppers of the

shoes being lasted are relatively small for the lasts so that the edge portion of the upper projects but little beyond the edge of the last it may be desirable to adjust the stopping mechanism so that the grippers will come to rest near their gripping position, as shown in Fig. 5 and in full lines in Fig. 1. Under different conditions, as, for example, when lasting heavy shoes, the uppers of which require to be slitted at the toe portion for the purpose of laying the plaits smoothly, it is desirable to have ample space between the grippers and the machine for inserting the upper, particularly if the slitting devices occupy a position in which the upper is liable to be fouled against them. To meet such conditions the disengaging device 26 and the coupling device 8 may be adjusted relatively to cause the grippers to come to rest at a point in their path of movement which is remote from their gripping position, as shown in Fig. 6 and in dotted lines in Fig. 1. The disengaging and coupling devices may also be relatively adjusted to cause the movement of the grippers to be interrupted at other points in their paths. For example, the automatically effected overworking movement of the grippers may be arrested when the grippers have pulled and overdrawn the upper into position for it to be fastened and just before they are to open for releasing the upper, as shown in Fig. 7. This may be desirable for the purpose of permitting the operator to inspect the upper before the securing tack is driven and, if necessary, to manipulate the shoe and grippers relatively for further pulling or adjusting the upper before the tack is driven for fastening the upper. At the end of the lasting operation the shoe may be withdrawn from the path of the grippers after the fastening tack is driven and before the grippers close again. If desired, however, the machine may be started and run only far enough to drive the tack and then may be stopped with the grippers open. This can be accomplished by momentarily depressing the treadle and then promptly releasing it before the high part of the brake controlling cam comes under the roll 75. It is, of course, understood that after this high part of the cam reaches the roll it not only holds the brake off the pulley 2, but also acts through the lever 28 and treadle rod 36 to prevent the friction clutch disengaging wedge 66 from movement to release the friction members of that clutch. Accordingly the brake controlling cam is shown, see Fig. 2, as having a low portion that extends beyond the clutch bolt 8 far enough to be stopped a second time before the high part of the cam intervenes to prevent the opening of the friction clutch. This provision for a second stopping of the machine in its cycle of operation

is not essential to the broad aspect of the invention and the brake cam might be so formed, by extending the high part of the cam into close proximity to the clutch bolt, that the machine would lock the friction clutch wedge against operation at any other time than that at which the clutch bolt is arranged to be operated. Alternatively with the foregoing the arrangement may provide for the automatic stopping to occur after the tack has been driven and the grippers opened and for the optional stopping to occur before the tack is driven. When this arrangement prevails, and it can be obtained by adjusting the sleeve 10, the upper can be gripped and pulled and then if the operator has any doubt about the upper having been pulled into correct position he can stop the machine and examine the work and make manual adjustments if required before the tack is driven. If he has no reason to doubt the correctness of position to which the machine has automatically pulled the upper he can permit the cycle of the machine to be completed without any stop between the pulling and the tacking.

Having explained the nature of this invention and fully described an embodiment thereof, I claim as new and desire to secure by Letters Patent of the United States:—

1. In a machine for lasting shoes, the combination with grippers for pulling the upper, of automatically operating mechanism for actuating the grippers constructed and arranged to bring them to rest in a predetermined position which can be varied.

2. A machine for lasting shoes having grippers for pulling an upper and means for securing the upper, combined with automatic actuating mechanism therefor, and including a cam for uplifting the grippers to pull the upper, and mechanism between the cam and its actuator arranged to disconnect the cam from the actuator only when the grippers are at a predetermined point in their path of movement and capable of adjustment to vary that point.

3. A lasting machine having grippers and mechanism for actuating them to work an upper over a last, combined with means arranged to be adjusted to cause the grippers to come to rest at a predetermined point in their path of movement.

4. A lasting machine having grippers and mechanism for actuating them to work an upper over a last, combined with means for automatically causing the grippers to stop at a predetermined point in the path of their movement, said means having provision for adjustment to vary the stopping point.

5. A lasting machine having grippers, actuating means therefor, and means for automatically disengaging them from their actuating means having provision for vary-

ing the point in their path of movement at which the disengagement shall take place.

6. In a lasting machine, the combination
5 with grippers, actuating means therefor, and a device for disengaging them from their actuating means, of means to vary the point in the path of movement of the grippers at which said disengagement occurs,
10 whereby the grippers can be arrested and maintained at any such point.

7. A lasting machine having grippers, an actuator, connecting devices between the actuator and the grippers through which
15 the latter are moved to work an upper over a last, combined with adjustable means to be rendered operative by the workman and arranged to become effective when the grippers are in a predetermined position dependent upon the adjustment of said means
20 for interrupting their connection with the actuator.

8. The combination with grippers, an actuator and operative connections between
25 the actuator and the grippers, of adjustable means for interrupting the movement of the grippers at a predetermined point in their path.

9. The combination with grippers, an actuator, and connections for moving the grippers to pull an upper, of means for automatically disconnecting the grippers from the actuator, said means having provision for arresting the movement of the
30 grippers when they are disconnected and being arranged for adjustment to vary the position in which the grippers will be arrested.

10. In a lasting machine, the combination
40 with grippers and a shaft for operating them, of mechanism for stopping the grippers at a predetermined point in their cycle of operation, and means for varying the position of the said point whereby the grippers may be arrested and maintained at any
45 required point in their operation.

11. In a lasting machine, the combination with grippers, an actuator, a shaft operatively connected with the grippers, and a
50 coupling device between the shaft and the actuator, of disengaging mechanism between which and the coupling device there is relative adjustment.

12. In a lasting machine, the combination
55 with grippers, a rotary member, a shaft operatively connected with the grippers, and a coupling device between the shaft and the rotary member, of disengaging mechanism between which and the coupling
60 device there is relative adjustment, and a brake operatively connected to the disengaging mechanism to be brought into operation by said mechanism.

13. In a lasting machine, the combination
65 with grippers, of a shaft from which the

grippers are operated, a rotary actuating member, a coupling device, and a disengaging device, said machine having provision for relative adjustment of the coupling device and the disengaging device to cause
70 the disengagement of the shaft and rotary member to occur sooner or later in the cycle of operation of the grippers.

14. In a lasting machine, the combination with grippers, a shaft from which the grippers are operated, an actuator, and a coupling device and a disengaging device arranged for relative adjustment, of a brake operatively connected with the adjustable device to be rendered operative sooner or
80 later according to the adjustment of said device.

15. In a lasting machine, the combination with grippers, a shaft from which the grippers are operated, a rotary member, a coupling device, a disengaging device, and means whereby the coupling device may be adjusted relatively to the disengaging device to alter the time at which disengagement will occur, of a brake, and a brake
85 controller adjustable with said coupling device.

16. In a lasting machine, the combination with grippers, a shaft that operates the grippers, a rotary member, a coupling device connecting said member to the shaft, and a disengaging device, of a part adjustably secured to the shaft and supporting the coupling device for adjustment with it.
100

17. In a machine of the class described, a power shaft, a pulley thereon, a clutch for controlling the pulley, a drive shaft, a rotary member thereon operatively connected with the pulley, a clutch between said rotary member and drive shaft, grippers, operative connections between the drive shaft and grippers, and means for simultaneously actuating both clutches.
105

18. A machine for lasting shoes, comprising grippers for pulling an upper over a last and automatic operating mechanism for the grippers, comprising a rotary actuator, and means to be set by the workman and capable of becoming operative at a predetermined time in the cycle of movement of the grippers for disconnecting them from the rotary actuator, said means having provision for locking the grippers against overthrow and backward movement.
110 115 120

19. A machine of the class described, comprising grippers, actuating mechanism therefor including a rotary member and connecting devices, mechanism for disengaging said connecting devices from the rotary member having provision for adjustment to cause the disconnection to occur at a selected point in the cycle of operation of the grippers, a brake and connections be-
125 130

tween the disengaging mechanism and the brake for controlling the application of the brake.

20. A machine of the class described, comprising grippers, actuating mechanism therefor including a rotary member and connecting devices, mechanism for disengaging said connecting devices from the rotary member having provision for causing the disconnection to occur at a predetermined point in the cycle of operation of the grippers, a brake, and connections between the disengaging mechanism and the brake arranged to permit the brake to be applied slightly in advance of the disengagement of said devices from the rotary member.

21. A machine of the class described, comprising grippers, actuating mechanism therefor including a rotary member and connecting devices, mechanism including a wedge, and a clutch bolt for disengaging said connecting devices from the rotary member, a brake connected with the wedge, and a cam arranged to hold the wedge and brake in an inoperative position during a portion of the movement of said member and to permit the brake to be applied and the wedge to be positioned in the path of the clutch bolt as the bolt approaches the wedge whereby the momentum of the grippers and their actuating parts may be checked at once when the clutch bolt is withdrawn.

22. In a machine of the class described, a power shaft, a pulley thereon, a clutch for controlling the pulley, a drive shaft, a rotary member thereon operatively connected with the pulley, a clutch between said rotary member and drive shaft, grippers, operative connections between the drive shaft and grippers, disengaging devices for the two clutches operatively connected together, and means for controlling the time in the cycle of the operation of the grippers at which the disengaging devices can become operative.

23. In a machine for working an upper over a last, the combination with grippers and mechanism for relatively actuating the grippers and last for manipulating the upper over the last, of automatically operating means for interrupting the movement of the grippers while they hold the portion of upper gripped by them under tension in position to be secured.

24. In a machine for working an upper over a last, the combination with a rest for a last, grippers and mechanism for relatively actuating the grippers and last for manipulating the upper over the last into position to be secured, of automatically operating means for interrupting the movement of the grippers while they hold the portion of upper gripped by them under tension in position to be secured, said machine

having provision for further relative movement of the grippers and last while the upper is so held under tension.

25. In a machine for working an upper over a last, the combination with grippers and mechanism for relatively actuating the grippers and last for manipulating the upper over the last, of automatically operating means for interrupting the movement of the grippers while they hold the upper under tension over the last bottom in position to be secured, and means for applying a fastening to hold the upper in overworked position.

26. In a machine for working an upper over a last, the combination with grippers and mechanism for relatively actuating the grippers and last for manipulating the upper over the last, of automatically operating means for interrupting the movement of the grippers while they hold the upper under tension over the last bottom in position to be secured, tack inserting mechanism, and means arranged to actuate said tacking mechanism when the machine is restarted.

27. In a machine for working an upper over a last, the combination with grippers and mechanism for relatively moving the grippers and the last for pulling the upper and laying it over the last bottom in position to be secured by a tack, of means for interrupting the operation of the machine with the upper in such position, and means for causing a securing tack to be driven at the will of the workman.

28. In a machine for working an upper over a last, the combination with upper engaging devices and mechanism for relatively actuating said devices and the last to work the upper over upon the last bottom into position to be secured, of automatically operating means for stopping the machine with the upper held by said devices in position to be secured, and automatically operating means for securing the upper when the machine is restarted.

29. A lasting machine having grippers and means for actuating the grippers to work successive portions of an upper over a last by repeated operations, combined with means for automatically interrupting the movement of the grippers while they hold the upper under tension in position to be secured.

30. A step by step type of lasting machine having grippers and means for actuating them repeatedly in the continuous operation of the machine, combined with means adapted to be rendered operative to stop the machine in a predetermined position, said machine having provision for also stopping the grippers at the will of the operator in any position selected by the operator within a prescribed angle of the machine's cycle.

31. A step by step type of machine for working an upper over a last having upper pulling and fastening mechanisms and organized for repeated operations on different parts of the shoe in continuous use of the machine, means normally inoperative and adapted to be rendered operative for automatically stopping the machine after one of said mechanisms has operated, and means for stopping the machine if desired after the other mechanism has operated.

32. A step by step type of lasting machine having upper pulling and fastening mechanisms organized for repeated operations on different parts of the shoe to last the shoe, means normally inoperative and adapted to be rendered operative for automatically stopping the machine after one of said mechanisms has operated, means for stopping the machine if desired after the other mechanism has operated, and means for locking the machine against interruption by either stopping means during a portion of its cycle of operation.

33. A machine of the class described, comprising grippers and continuously running mechanism for actuating them to work an upper over a last step by step by repeated operations, combined with means normally inoperative and adapted to be rendered operative for automatically stopping the grippers in a predetermined position, and other means for stopping the grippers at the will of the operator in a different position.

34. A machine of the class described, comprising grippers and mechanism for actuating them to work an upper over a last, combined with two clutches, means coöperating with one of said clutches to stop the grippers in a predetermined position, and other means coöperating with the other clutch and adapted to be used if desired to stop the grippers in a different position.

35. In a machine for working an upper over a last, the combination with grippers and mechanism for relatively actuating the grippers and last for manipulating the upper over the last, of automatically operating means for interrupting the movement of the grippers while they hold the upper under tension in position to be secured, and

means for fastening the upper, said machine having provision whereby it may be stopped at the will of the operator after the upper has been released by the grippers and fastened.

36. A lasting machine having grippers and means for actuating the grippers to work successive portions of an upper over a last by repeated operations, combined with means for automatically interrupting the movement of the grippers while they hold the upper under tension in position to be secured, tack driving means, and means adapted to start the machine and to stop it again at the will of the operator when the tacking means has operated and the grippers have been opened.

37. A step by step type of machine for working an upper over a last and fastening it by repeated operations applied at different parts of the shoe having, in combination, grippers, mechanism for actuating the grippers to pull the upper into condition to be secured, tack driving means, automatically operating means which is normally inoperative and may be arranged to stop the machine after the tack is driven, and means which may be used at the option of the operator to stop the machine while the upper is held under tension before it is fastened.

38. A step by step type of lasting machine comprising grippers, a tacker, mechanism for actuating the grippers and tacker to work an upper over a last and fasten it by repeated operations of the machine applied to different parts of the shoe, combined with means which is normally inoperative and may be arranged for automatically stopping the grippers after the tacker has operated, and means that can be used at the option of the workman to delay the driving of the tacks to give opportunity for him to examine the upper before it is fastened.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ARTHUR BATES.

Witnesses:

JOHN RICHARD LAW,
ARTHUR ERNEST JERRAM.