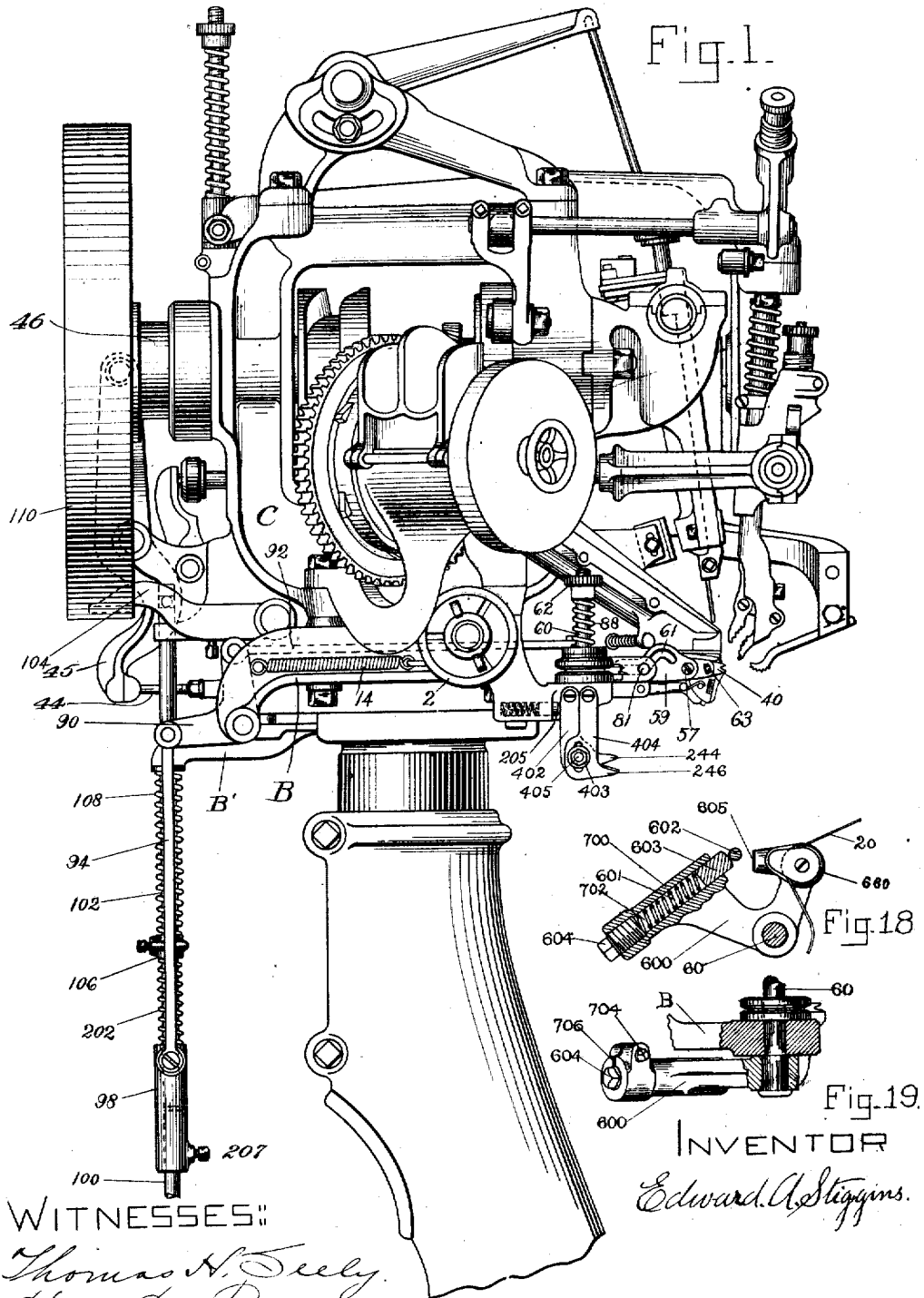


E. A. STIGGINS.
LASTING MACHINE.
APPLICATION FILED MAR. 21, 1901.

946,620.

Patented Jan. 18, 1910
5 SHEETS—SHEET 1.



E. A. STIGGINS.
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5 SHEETS—SHEET 2

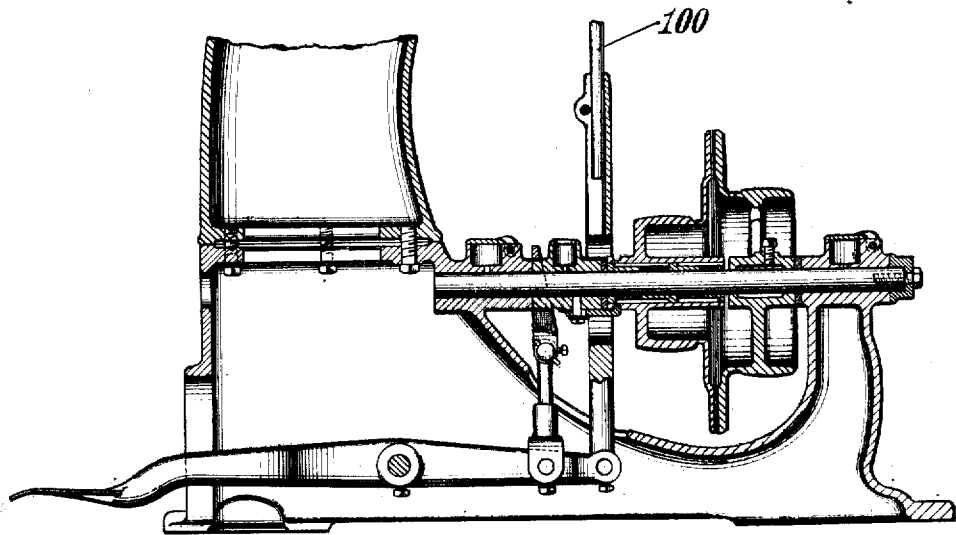


Fig. 1.^a

WITNESSES.

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946,620.

Patented Jan. 18, 1910.
 5 SHEETS—SHEET 3.

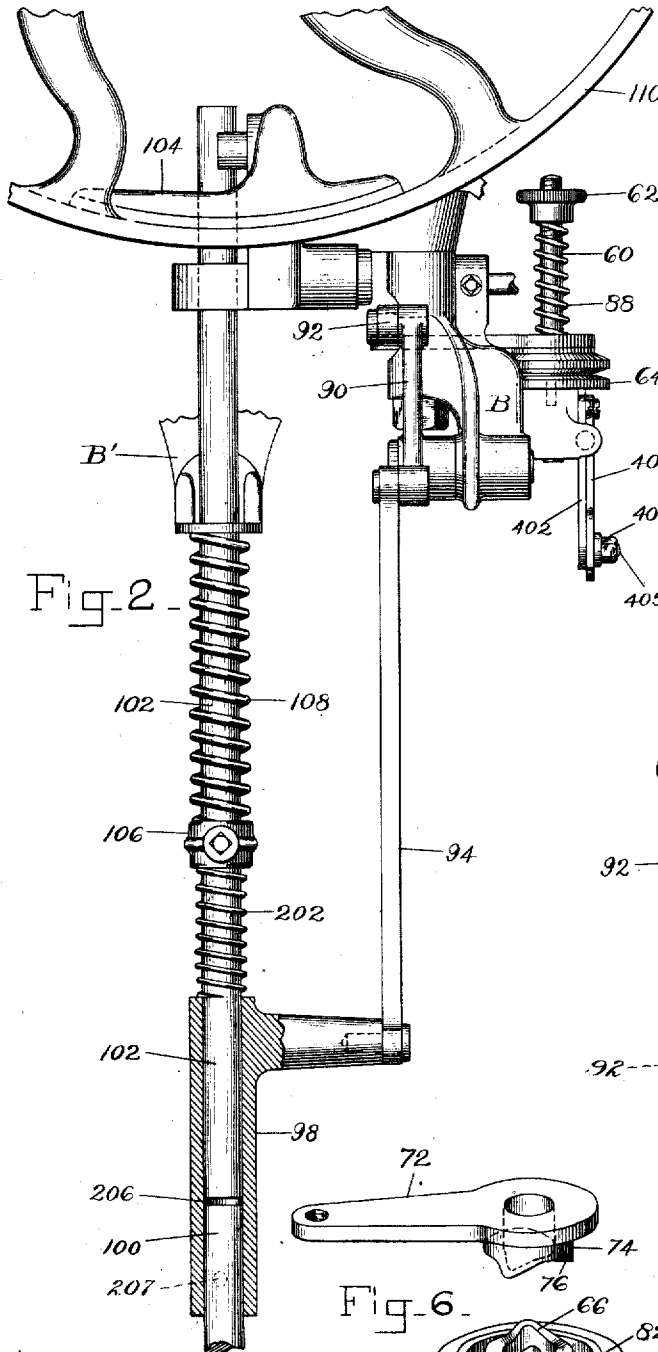


Fig. 2.

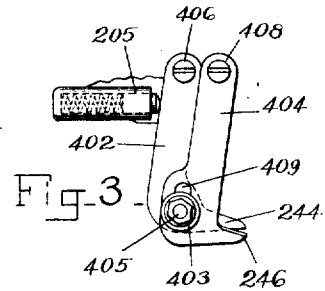


Fig. 3.

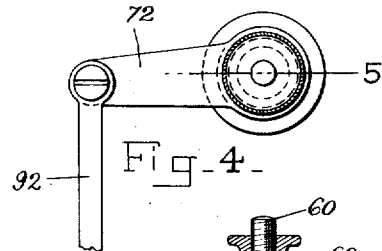


Fig. 4.

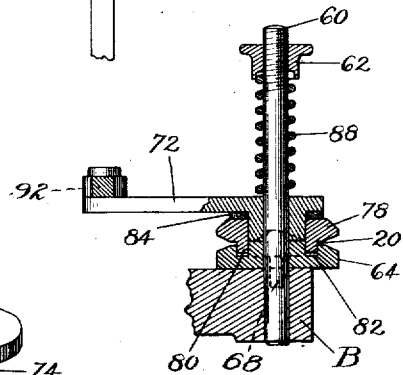


Fig. 5.

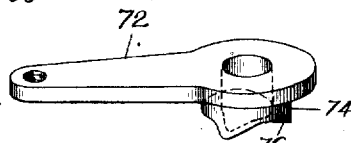


Fig. 6.

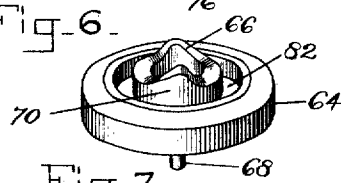


Fig. 7.

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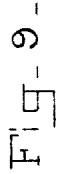
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5 SHEETS—SHEET 4.



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WITNESSES:

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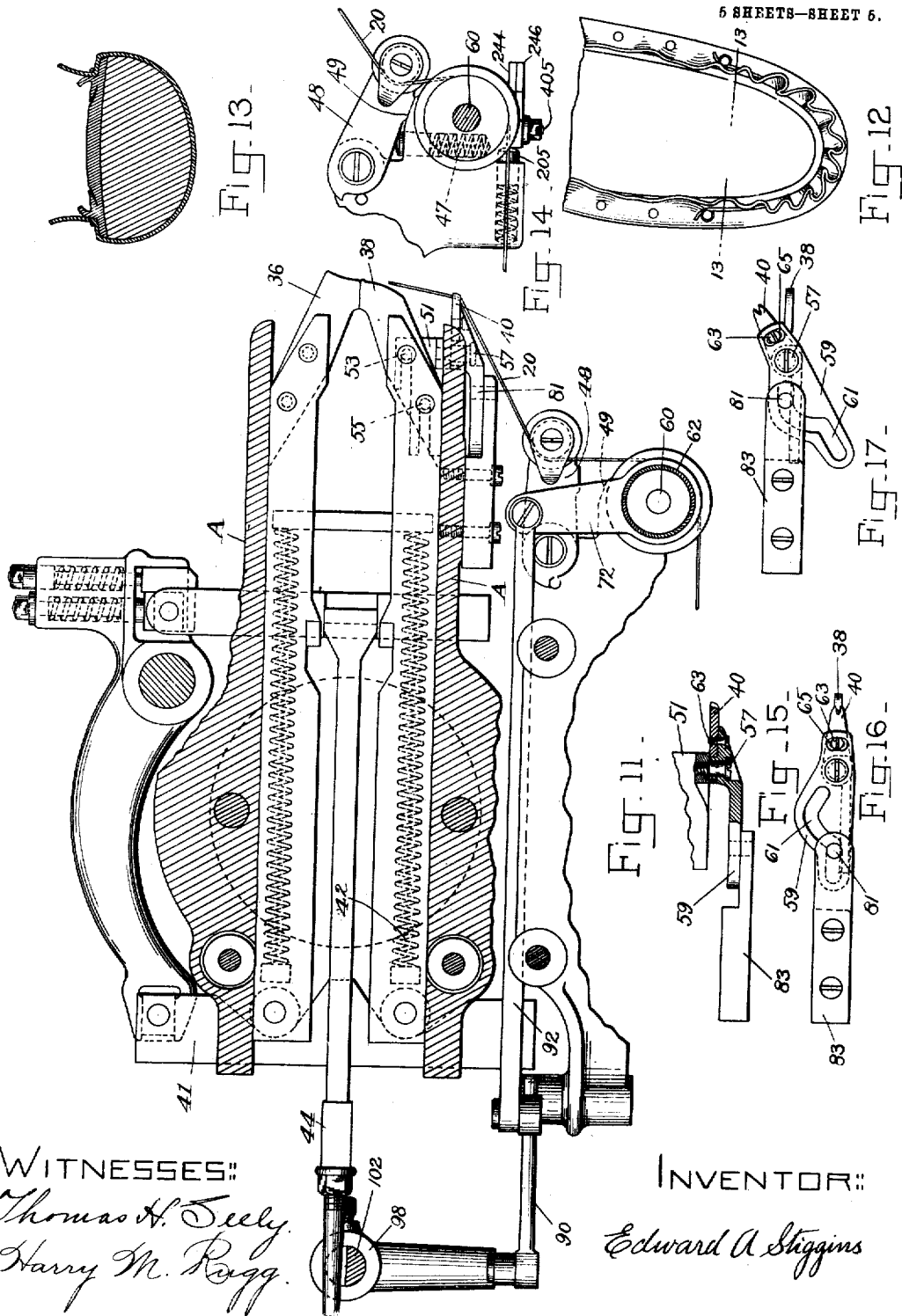
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946,620.

E. A. STIGGINS.
LASTING MACHINE.
APPLICATION FILED MAR. 21, 1901.

Patented Jan. 18, 1910.

5 SHEETS—SHEET 6.



WITNESSES:
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Harry M. Rigg

INVENTOR:
Edward A. Stiggins

UNITED STATES PATENT OFFICE.

EDWARD A. STIGGINS, OF BEVERLY, MASSACHUSETTS, ASSIGNOR TO UNITED SHOE MACHINERY COMPANY, OF PATERSON, NEW JERSEY, AND BOSTON, MASSACHUSETTS, A CORPORATION OF NEW JERSEY.

LASTING-MACHINE.

946,620.

Specification of Letters Patent. Patented Jan. 18, 1910.

Application filed March 21, 1901. Serial No. 52,231.

To all whom it may concern:

Be it known that I, EDWARD A. STIGGINS, of Beverly, county of Essex, Commonwealth of Massachusetts, have invented certain Improvements in Lasting-Machines, of which the following, read in connection with the accompanying drawings, is a specification.

This invention relates to lasting machines and particularly to the type of machines shown in United States Letters Patent, No. 584,744, granted June 15, 1897, on application of Ladd and McFeely. This invention is shown as embodied in a construction adapted to be applied to that machine for securing the upper about the toe portion of the shoe by a binder of wire or other continuous material which will be anchored to a tack at each side of the shoe to retain it in binding engagement with the upper. This binder takes the place of the tacks which were used to secure the upper at the toe of the shoe in a machine equipped as the one which is described in said patent. It has heretofore been proposed to provide the wire supplying mechanism for this machine with means to prevent free turning of the wire carrying reel and to provide a tension device for retarding the advance of the wire from the reel. This tension device was connected with a special treadle by which the tension on the wire could be increased at times. Further experiments have demonstrated that it is desirable to subject the wire to a very substantial tension while it is being superimposed upon the overworked upper to bind the latter firmly in place in the angle between the feather and the shoulder or lip of the innersole. In order to assist the feed of the shoe, which is effected largely by the lateral movement of the grippers while they have hold of the upper, and to assist in placing the wire, it has been proposed to connect the wire guide with the reciprocating presser of the machine. When the machine is thus equipped the wire is anchored at the right hand side of the shoe bottom and held taut while the upper is pulled and overlaid by the grippers and the latter are moved laterally to carry the shoe toward the right and further tighten the wire and while the operator turns the shoe, as is necessary in working around the toe, thereby presenting the overworked portion of the upper under the wire in position to be bound by it. The reciprocating

presser comes forward with the wire ahead of it while the turning of the shoe may be still in progress (for the machine works very rapidly) and the presser forces the upper into the angle where it is to be bound and seats the wire in binding relation to the portion of upper that has just been overworked. The advancing presser, acting through its connection with the wire guide advances the wire enough to permit the next feed of the shoe to be made by the laterally moving grippers but not enough so but that this feed is made against a snug wire which is thereby drawn into and held in binding relation to the overworked upper. When these operations have been repeated as many times as may be required to last around the toe the wire is to be anchored to a second tack at the left side of the shoe bottom and for this purpose it is necessary for the operator to draw the wire through the tension devices to obtain the necessary length to extend to and wrap about the anchor tack. When the full working tension is on the wire it is difficult for the operator to do this. In order to meet these conditions I have in accordance with an important feature of this invention provided means for relaxing the tension on the binding wire, preferably without special attention from the operator, or automatically, when the machine is stopped by its usual starting and stopping and brake mechanism shown in said prior patent and for similarly restoring the tension to its working limit when the machine is restarted. To this end I have provided a working connection between the treadle rod of said starting and stopping mechanism and the tension device whereby the latter is actuated from said treadle. This arrangement has the advantages which will be obvious from the foregoing explanation and the further advantage that the tension is relaxed while the machine is at rest so that the operator can readily pull out the length of wire required for making the initial anchorage of the wire to the tack on the right hand side of the shoe. Also a treadle which is already present in the machine and which the operator is accustomed to using is employed for the new or additional service so that no complication of the machine or confusion of the operator results from the incorporation of this invention in the known machine and it is made practi-

cable without burdening the operator to use a tighter tension than heretofore, and thus produce better work.

In further considering the wire binding operation as practiced by this machine I have discovered that in lasting difficult work, and also when an operator who is not highly skilled is using the machine, there frequently arise circumstances which render it desirable or necessary to stop the machine before the toe is fully lasted and thereafter to proceed to the completion of the toe. When the machine is stopped under such circumstances obvious disadvantages would result if the tension were released on the binding wire which is depended upon to hold the portions of the upper already lasted over the toe. I have therefore in accordance with a further important feature of this invention provided for stopping the machine without releasing the wire. In the illustrated embodiment of this invention the machine is stopped by a movement of the treadle less than the full treadle stroke required to relax the tension on the wire to the full extent contemplated. It will of course be understood that it is immaterial whether or not the tension is entirely discontinued when the maximum release is effected it being only necessary to reduce the tension enough to permit the wire to be pulled easily. Preferably a predetermined partial release of the tension, sufficient to permit the operator to pull the wire through for obtaining and making anchorage if desired, will be effected by the parallel treadle stroke which stops the machine but the important thing is that the machine may be stopped while sufficient tension is maintained to enable the portion of upper already lasted over to be held until after the machine may have been restarted to finish the lasting at full tension, or after the second anchorage has been effected by the wire and then, a further or a complete movement of the treadle may be employed to relax the tension to permit the wire to be pulled easily. As herein shown there is a lost motion connection between the treadle rod and the brake rod which permits the tension devices to be further actuated from the treadle after the brake is set. In developing these features of the invention novel tension or wire retarding devices have been produced and also other novel devices which are concerned with the proper handling of the wire in the relations and under the conditions prevailing in the described machine and other features of this invention are found in these novel devices and also in certain combinations of parts and more important details of construction all of which will appear in the following description and explanation of the illustrated machine. These features of the invention will all be pointed

out in the claims at the end of the description.

Of the drawings, Figure 1 is a side elevation of the upper part of the machine. Fig. 1^a is a section of the lower part of the machine. Fig. 2 is an elevation looking from the rear of the machine, made on an enlarged scale and showing parts comprised in this invention and connections. Fig. 3 is an elevation showing the cutters detached. Fig. 4 is a plan view of the parts shown in Fig. 5 and Fig. 5 is an elevation of a section on line 5 of Fig. 4. Figs. 6 and 7 are perspective views showing the wire-grip actuating cams detached. Fig. 8 is a plan view showing the principal parts comprised in and directly connected with this invention. Figs. 9 and 10 are detail views of parts shown in Fig. 8. Fig. 11 is a sectional plan view of parts shown in Fig. 8, said parts being shown in a different stage of the machine's operation. Fig. 12 is a plan view of the forepart of a lasted shoe. Fig. 13 is a section on line 13 of Fig. 12. Fig. 14 is a plan view showing detail connected with Fig. 11. Fig. 15 is a plan view, partly in section, and Figs. 16 and 17 are elevations all showing details to be referred to hereinafter. Fig. 18 is a plan and Fig. 19 is an elevation showing desirable construction of wire take-up to be used in this machine.

By referring to the patent above cited it will be observed that the boot or shoe upper, lining, etc., are assembled upon the last, and drawn over at the toe, and at each side at or near the ball of the last, and fastened by a tack or other suitable fastening in each of said places, all this preparatory for the lasting operation by said machine. A single pair of grippers is employed, and the boot or shoe is held, moved about, and advanced step by step by the workman for repeated operations of the machine on different parts of the upper at different times. Tack supplying and driving mechanisms are provided to secure each lasted section of the upper to the inner-sole preliminary for the next operation of the machine. In the machine here represented, mechanism is also employed, at times, for placing wire or like continuous material in position for binding the over-worked upper, particularly about the toe portion of the shoe. In this connection a wire 20 is made to pass from reel 2 around the wire-supporting guide 40, to the shoe held against the machine presser 36 as shown in Fig. 8. In use, said presser 36 is made to bear upon an overlaid portion of the upper while, in the next operation of said machine, the presser 38 is moved forwardly to press into place the next adjacent part of said upper. The wire 20, having its end attached by the workman to a tack *a*, is fed forward, guided and held by the support 40 in position for bearing upon and

binding the parts of said upper operated upon by said pressers. The support 40, being attached to the presser 38, is carried forwardly thereby to automatically feed said wire as further described hereinafter. The shoe is held, turned and moved by the workman for causing the upper to be thus overworked and tied in by wire 20 from tack *a* to tack *e*. The wire is then fastened to tack *e* and cut from the line of wire supply. It then serves for holding the upper against displacement until the same is otherwise secured to the inner-sole. Mechanism is employed, which may be substantially as shown in United States Letters Patent No. 696,740, granted April 1, 1902, for stopping the supply of tacks while the wire is being used to secure the upper. As said mechanism forms no part of the present invention, it is not herein shown and described.

In carrying out this invention, sleeve 4 is mounted to turn on a spindle 9, and it carries a pin 10. To the pin 10 is attached a strap 12 having connection with spring 14, the tension of said spring normally holding the said sleeve positioned with pin 10 resting on a stud 16 in frame B. A reel 2, employed for holding wire in bulk, is mounted to turn on said sleeve 4, and its movement on said sleeve is restrained to a degree by frictional resistance between the flange face 8 of said sleeve and the spring actuated plungers 6, 6. Such resistance is made to exceed the tension of spring 14, so that, in answer to a pull of wire 20, said sleeve shall be turned until stopped by the pin 10 bringing up against a stud 18 in frame B. During such movement of sleeve 4, the tension of spring 14 increases and is ever ready to reverse the movement of sleeve 4 for causing reel 2 to retake the wire pulled off when ever permitted to do so. In practical use, the workman attaches the free end of wire 20 to tack *a* and moves the shoe into position against the presser 36, as shown in Fig. 8. During this operation, the wire pulled off the reel 2 has caused said reel to turn sufficiently to bring sleeve 4 in position with pin 10 resting on stud 18. The presser 38 now moves forwardly, carrying with it the wire-supporting guide 40. During the first part of such movement, the arm 48, is swung on its pivot, against the tension of spring 47, into bearing with the machine frame at point 49 (as shown in Fig. 14), whereupon during the remainder of such movement the reel 2 is made to turn on the sleeve 4, and in this manner is given off the amount of wire required to permit the next advance step of the shoe.

The pressers 36, 38 are mounted to slide endwise in a fixed frame A and normally occupy a retracted position of inaction, as shown in Fig. 11, to permit intervening operations of the machine for lasting side por-

tions of the upper. From such position said pressers are advanced, when required for action during the lasting process, to the position for use, shown in Fig. 8, and the presser 38 is given short reciprocating movements while it occupies its advanced position. The pressers are advanced to operating position by the cam slide 41 against the tension of springs 42 and the presser 38 receives its reciprocatory or working movement, while in operative position, forwardly from the plunger 44 lever 45 and cam 46, Fig. 1, and rearwardly from one of said springs 42. These parts are shown and more fully described in said United States patents. During said intervening operations of the machine, it is desirable for the wire-supporting guide 40 to be moved from its operative position with its end in approximately the same horizontal plane as the presser 38, as shown in Fig. 16, to a position more remote from the plane of the shoe bottom as, for example, into the position shown in Fig. 17, to permit the shoe to be turned about by the operator and also in order that the guide shall not scratch or mar the shoe as the operator moves the shoe around. And to provide means for automatically moving the support 40 is one purpose of this invention. Preferably and as herein shown, the support 40 is moved from and toward its operative position simultaneously with the movement of the pressers toward and from their retracted position of inaction above mentioned.

In this embodiment of the invention, presser 38 is made to carry a plate 51, which is adjustably secured to the presser by bolts 53, 55, see Figs. 8 and 11. The wire-supporting guide 40 is mounted to swing on a stud 57, fixed in said plate to be moved therewith for positioning support 40 at different distances from the shoe. On stud 57 is also journaled the cam-plate 59, having cam-slot 61. Support 40 carries a screw 63, which extends through an oblong hole 65, in plate 59, and serves to clamp the support 40 and plate 59 together, and permits the arrangement of support 40 at different angles relatively to the plane of the shoe bottom. In the cam-slot 61 is a pin 81, having support in a bar 83, secured to frame A. It will now be understood, that, in the movement of pressers 36, 38 to the retracted position of inaction shown in Fig. 11, this plate 59 is carried along the pin 81 and is thereby turned on stud 57 for elevating support 40, as shown in Fig. 17, thus taking support 40 out of the way of the shoe as the shoe is moved about by the operator. In the advance movement of said pressers to the working position shown in Fig. 8, this plate 59 is reversely carried along the pin 81, and is thereby turned on stud 57, for placing the support 40 in working position, as shown in Fig. 16. In such position the pin 81 plays

in the straight part of cam-slot 61, to allow the plate 59 and, consequently, support 40 to be carried forwardly and backwardly by presser 38 in the short reciprocating movements of the latter and effect the stop by step feed movement of wire 20 off reel 2 as before described.

In the above mentioned Letters Patent No. 584,744, mechanism is shown and described for actuating the grippers to plait the upper, and the work pressers are operated only when the plaiting mechanism is operated. Consequently, support 40 is advanced and the wire is fed forward only when the plaiting mechanism is operative.

On the machine frame is a bracket holding the spindle 60, which has screw-threaded engagement with nut 62. On spindle 60, with one end resting on said bracket, is a ring-disk 64, having a projection 70, with cam face 66, and having also the pin 68, socketed in the bracket to prevent the disk from turning. On said spindle 60, also, is a plate 72, having a projection 74, with cam face 76, to cooperate with said cam face 66. On projection 74 is a ring 78, with a cylindrical projection 80, extending into the chamber 82, of disk 64. The collar 84 is interposed between ring 78 and plate 72 in order to facilitate the rotation of ring 78. On spindle 60 is a spring 88 between nut 62 and plate 72, and normally under tension. Said tension may be changed adjustably by suitably operating nut 62. Wire 20, in passing from reel 2, is made to travel over the cylinder 80, in position to be yieldingly gripped between ring 78 and disk 64 by action of spring 88, as shown in Fig. 5. It is desirable to reduce the tension on the wire when the machine is at rest in order to permit the workman to pull off the length of wire needed for attaching the wire to the first tack preparatory to the lasting of the toe of the shoe and an important feature of the invention consists in novel means for controlling the tension on the wire. In lasting machines as heretofore constructed devices of this class have been so arranged that the workman controlled the tension by a treadle which had to be frequently operated and required much time. In this invention, the tension device has been connected with the machine and the connections are automatically operated to apply or increase the tension while the machine is running, and to relax or reduce it when the machine is at rest to permit the wire to be pulled through the tension by hand for manipulation by the operator in preparing the shoe before starting the machine. Thus a great saving of time is effected by this feature of the invention.

It is the practice to stop the machine when the lasting of the toe has been completed but it would be undesirable to release the

tension immediately upon stopping the machine, as the workman has not then attached the wire to the second tack, so that it is important to arrange the machine to allow the workman time to finish applying the wire and to attach the wire to the tack before the tension is released. This object is secured in this invention by connecting the tension device with a part controlled by the treadle which actuates the starting and stopping mechanism which is shown in Figs. 1 and 1^a and will preferably be the same as that shown in said prior patent, as in itself it forms no part of this present invention. This connection is arranged so that the operator can allow the treadle to rise for a part of its movement, sufficiently to disconnect the clutch mechanism and apply the brake (thus stopping the machine), and then hold the treadle in that position, thereby still maintaining tension on the wire until he has finished binding the wire about the shoe and attaching it to the tack, after which he will allow the treadle to rise to its normal inoperative position and thereby further relax the tension or release it altogether if preferred. In practice, it is very desirable to grip the wire just before the machine starts into operation, and relax the tension on it where the machine stops. The construction herein shown as embodying this feature of the invention is as follows:—A bell crank lever 90, journaled in the machine frame for rocking movement, has one end connected pivotally with rod 92, the other end of which rod connects pivotally with plate 72. Said lever 90, by its other arm, connects pivotally with rod 94, which rod 94 also connects pivotally with a sleeve 98, attached to rod 100, and adapted for sliding endwise on rod 102. The rod 102 has support in the bracket B' on the machine frame to permit endwise movement for lifting and lowering the brake shoe 104. On the rod 102 is a fixed collar 106. The spring 108 on said rod is under tension between said collar and said bracket B' on the machine frame, and operates for depressing the rod 102, in order to apply the brake shoe 104 to wheel 110 to stop the machine. The spring 202 between said collar 106 and sleeve 98 is weaker than spring 108, and operates for depressing the sleeve 98, and, consequently, the rod 94, in order to actuate the connections described for relaxing the tension on the wire 20 sufficiently to permit the wire to be pulled through the tension device by hand.

It will now be understood, that a treadle, Fig. 1^a, is attached to the rod 100, and by depressing said treadle the rod 100 is lifted, through space 206, against the rod 102, for uplifting rod 102, and, consequently, the brake shoe 104. While the rod 100 is passing through the space 206, sleeve 98 which

is clamped to the rod 100 by a suitable screw, as shown in Fig. 1, will slide on rod 102 and thereby will transmit motion through rod 94, lever 90, rod 92 for turning plate 72, and by reason of cam faces 66, 76, rendering the spring 88 operative for gripping wire 20 between said ring 78 and disk 64, with the desired maximum or working pressure after which, the further upward movement of rod 100 operates the rod 102 to uplift the brake shoe 104 and allow the machine to start. When it is desired to stop the machine, the operator allows the treadle to rise for a part of its movement and thereupon spring 108 operates to depress rod 102 thereby applying the brake 104, and, consequently, forcing the machine to stop. Opportunity is now afforded, the wire still being under sufficient tension to prevent the upper being released, although not necessarily under the maximum tension, for the operator to complete the application of the wire to the shoe and to fasten it to tack *c*. After this has been done the operator entirely releases the treadle, whereupon spring 202 operates further to depress sleeve 98, and therefore the rod 100, and reversely actuate the said connections to cause plate 72 to be lifted, against the tension of spring 88, and relax the tension on the wire to the extent desirable for permitting the wire to be drawn through the tension device by hand. It will now be obvious that by the above described construction means is provided for rendering the wire retarding mechanism normally operative to hold the wire with sufficient firmness to bind the upper when the machine is running, and normally inoperative to hold the wire with a like binding firmness when the machine is stopped. Also it will be seen that by this construction provision is made by which the wire can be held with the necessary firmness to prevent release of the over-worked upper at times while the machine is at rest and before the tension on the wire is relaxed sufficiently to permit it to be readily drawn through the tension device by hand. The machine driving power, it will be understood, is applied and removed in proper time relations by mechanism connected with said treadle and fully described in patents above cited.

The wire cutters 404, 402 are supported pivotally on pins 406, 408 outstanding from the frame. The member 402 carries a bolt 405, which extends through an oblong slot 409, in the member 404, and has screw-threaded connection with nut 403, adapted for operation to clamp the members in sliding touch one with the other. The slot 409 permits the movement of said members required for the cutting operation. The wire to be cut is introduced between the cutting edges 244, 246 and force applied there-
through to swing the members backwardly

and drive the cutting edges through the through to swing the members backwardly moved to the normal or opened position by spring actuated plunger 205. No claim is made herein to the wire cutters as they form the subject matter of a divisional application Serial No. 512,901, filed August 14, 1909.

In connection with the wire attaching mechanism herein shown and described I prefer to use an improved edge gage, which is not herein shown or described in detail, as said gage forms the subject matter of United States Letters Patent No. 718,586, dated January 13, 1903, which is a division of this application.

It remains to describe the desirable construction of wire take up shown in Figs. 18, 19. In this connection the lever 600 has an upwardly extended arm on which is mounted the wire engaging wheel 660. Said lever has also a rearwardly extended arm 700, in which is a bore 702 running longitudinally therethrough. In one end of said bore is a plug 604 having screw threaded engagement with the lever. It is clamped in place adjustably by bolt 704, the lever arm being for that purpose cut through as indicated at point 706. In the bore 702 is a plunger 603. Between the plug 604 and said plunger is a spring 601 which is normally under tension. For use the lever 600 is pivoted on the machine stud 60 with the plunger 603 against the pin 602 which is fixed in the machine frame. The spring 601 then operates normally through plug 604 to turn the lever 600 on stud 60. Such action of spring 601 is stopped by the end 605 of lever 600 bringing up against a boss which may be the pin 602 as herein shown on the machine frame. In use the wire 20 is passed from the reel 2 around wheel 660, as shown in Fig. 18. Obviously the strain on said wire tends to move the lever 600 on stud 60 against the tension of spring 601 and by overcoming the tension of said spring carries the end 605 of said lever away from the said machine boss. When the pull on the wire is slackened the spring operates for swinging the lever 600 back to place and consequently causing it to take up the slack of the wire. The tension of spring 601 may be increased or diminished, conformably to the requirements of different kinds of work, by adjusting the plug 604. This construction may advantageously be used in place of the parts 48, 49 upon which it is an improvement.

Having thus described my invention, I claim and desire to secure by Letters Patent:—

1. In a machine for working an upper over a last, means for superimposing wire or like continuous material in position for binding the over-worked upper and mechanism for retarding the advance movement of said wire, in combination with means

for rendering said mechanism normally operative when the machine is running and normally inoperative when the machine is stopped, substantially as described.

5 2. In a machine for working an upper over a last, means for superimposing wire or like continuous material in position for binding the over-worked upper, and mechanism for retarding the advance movement
10 of said wire, in combination with means for rendering said mechanism normally operative when the machine is running and normally inoperative when the machine is stopped, said machine also having provision
15 for permitting said mechanism to operate while the machine is at rest.

3. In a machine for working an upper over a last, means for superimposing wire or like continuous material in position for
20 binding the over-worked upper, mechanism for retarding the advance movement of said wire, mechanism for starting and stopping the machine and connections where-through said retarding mechanism may be
25 controlled by the starting and stopping mechanism.

4. In a machine for working an upper over a last, means for superimposing wire or like continuous material in position for
30 binding the over-worked upper, mechanism to retard the advance movement of said wire, a starting and stopping mechanism, and means connected with said starting and stopping mechanism for causing said retarding
35 mechanism to become inoperative after the machine stops.

5. In a machine for working an upper over a last, means for superimposing wire or like continuous material in position for
40 binding the over-worked upper, mechanism for retarding the advance movement of said wire, a starting and stopping mechanism, and means to render said retarding mechanism operative or inoperative, said
45 means having connection with the starting and stopping mechanism for causing the retarding mechanism to become operative prior to the starting of the machine.

6. In a machine for working an upper over a last, means for superimposing wire or like continuous material in position for
50 binding the over-worked upper, mechanism to retard the advance movement of said wire, and means to be actuated for rendering said mechanism operative and subsequently
55 starting the machine.

7. In a machine for working an upper over a last, means for superimposing wire or like continuous material in position for
60 binding the over-worked upper, mechanism to retard the advance movement of said wire, and means to be actuated for stopping the machine and subsequently rendering said mechanism inoperative.

65 8. In a machine for working an upper

over a last, means for superimposing wire or like continuous material in position for binding the over-worked upper, mechanism to retard the advance movement of said wire, a movable part and connections actuated by a movement of said part for rendering said wire-retarding mechanism operative and subsequently starting the machine, and actuated by a reverse movement of said part for stopping the machine and subsequently rendering the wire-retarding mechanism inoperative.

9. In a machine for working an upper over a last, means for superimposing wire or like continuous material in position for binding the over-worked upper, a journal stud, a sleeve arranged for rotative movement on said stud, a wire holder supported on said sleeve for movement rotatively therewith and permitted movement on said sleeve independently to let off wire, and means to rotate the sleeve and holder to take up slack wire.

10. In a machine for working an upper over a last, means for superimposing wire or like continuous material in position for binding the over-worked upper, a journal stud, a sleeve arranged for rotative movement on said stud, a wire holder supported on said sleeve for movement therewith and arranged to permit movement with relation to said sleeve for letting off wire, friction means intermediate the wire holder and the sleeve for restraining said parts from relative movement, and means for rotating the sleeve and holder together in the direction for taking up slack wire.

11. In a machine for working an upper over a last, means for superimposing wire or like continuous material in position for binding the over-worked upper, said means including a reciprocating presser, and a wire-supporting guide adjustably mounted on said presser to occupy different positions with relation to the shoe.

12. In a machine for working an upper over a last, means for superimposing wire or like continuous material in position for binding the over-worked upper, said means including a wire-supporting guide, and means operating automatically for placing said guide at different angles relatively to the plane of the shoe bottom.

13. In a machine for working an upper over a last, means for superimposing wire or like continuous material in position for binding the over-worked upper, said means including a wire-supporting guide, means to cause said guide to approach the plane of the shoe bottom when said wire superimposing mechanism is put into operation, and to cause said guide to withdraw from the plane of the shoe bottom when said mechanism is put out of operation.

14. In a machine for working an upper

over a last, means for superimposing wire or like continuous material in position for binding the over-worked upper, said means including a wire-supporting guide, a support therefor, and means to shift automatically the position of said guide on said support.

15. In a machine for working an upper over a last, means for superimposing wire or like continuous material in position for binding the over-worked upper, said means including a wire-supporting guide, combined with means for automatically shifting said guide from a position approximately in the plane of the shoe bottom to a position at one side of said plane.

16. In a machine for working an upper over a last, means for superimposing wire or like continuous material in position for binding the over-worked upper, said means including a wire-supporting guide, and means for automatically shifting the position of said guide relatively to the plane of the shoe bottom when the wire-placing mechanism is rendered inoperative.

17. In a machine for working an upper over a last, means for superimposing wire or like continuous material in position for binding the over-worked upper, a wire-supporting guide movable longitudinally toward and from an operative position, means for rocking said guide with relation to the shoe when it is moved longitudinally toward and from its operative position, and means for moving said guide toward and from the shoe while in its operative position.

18. In a machine for working an upper over a last, means for superimposing wire or like continuous material in position for binding the over-worked upper, and mechanism for retarding the advance movement of the wire, comprising yieldingly actuated clamping plates having faces for engaging opposite sides of the strand of wire, combined with means for causing said clamping plates to occupy one relative position when the machine is running and to occupy a different relative position when the machine is at rest.

19. In a machine for working an upper over a last, means for superimposing wire or like continuous material in position for binding the over-worked upper, and mechanism for retarding the advance movement of the wire, comprising yieldingly actuated clamping plates having faces for engaging opposite sides of the strand of wire, and cooperating inclined stops for adjustably limiting the approach of the engaging faces of the plates, combined with mechanism for starting and stopping the machine, and connections between said starting and stopping mechanism and retarding mechanism for relatively moving the inclined stop faces to vary the tension applied to the wire.

20. In a machine for working an upper

over a last, means for superimposing wire or like continuous material in position for binding the over-worked upper, and mechanism for retarding the advance movement of the wire, comprising yieldingly actuated clamping plates having faces for engaging opposite sides of the strand of wire, and cooperating inclined stops for adjustably limiting the approach of the wire engaging faces, combined with means under control of the operator for giving said clamping plates predetermined relative movements for adjusting the inclined stop faces.

21. In a machine for working an upper over a last, means for superimposing wire or like continuous material in position for binding the over-worked upper, and mechanism for retarding the advance movement of the wire, comprising yieldingly actuated clamping plates having faces for engaging opposite sides of the strand of wire, and cooperating inclined stops for adjustably limiting the approach of the wire engaging faces of said plates, combined with means under control of the operator for relatively moving the clamping plates angularly to adjust the inclined faces.

22. In a machine for working an upper over a last, means for superimposing wire or like continuous material in position for binding the over-worked upper, and mechanism for retarding the advance movement of the wire, comprising yieldingly actuated clamping plates having faces for engaging opposite sides of the strand of wire, and cooperating inclined stops for limiting the approach of the wire engaging faces of said plates.

23. In a machine for working an upper over a last, means for superimposing wire or like continuous material in position for binding the over-worked upper, and mechanism for retarding the advance movement of the wire, comprising a fixed clamping plate 64 having a wire clamping face and also an inclined face 66, a cooperating yieldingly mounted clamping plate 78 having a wire engaging surface, a plate 72 having an inclined face 76 constructed and arranged to rest upon the inclined face 66 of the fixed clamping plate, and means under control of the operator for adjusting the plate 72 lengthwise of the inclined face 76 to vary the resistance applied by said clamping plates to the movement of the wire between them.

24. In a machine for working an upper over a last, the combination with a brake, of means for superimposing wire or like continuous material in position for binding the over-worked upper, mechanism for retarding the advance movement of said wire, and a single manually controlled means for actuating the brake and for actuating the wire retarding mechanism.

25. In a machine for working an upper over a last, means for superimposing wire or like continuous material in position for binding the overworked upper, and mechanism for retarding the advance movement of the wire, comprising clamping plates yieldingly pressed together and having faces for engaging opposite sides of a strand of wire, combined with starting and stopping mechanism and means under control of the operator for actuating the clamping plates to change the tension on the wire and for actuating the starting and stopping mechanism.
26. A machine for working an upper over a last, having means for holding wire in position to bind the upper in overworked position, and mechanism for retarding advance movement of the wire comprising superposed plates having wire clamping faces and inclined mutually contacting faces, and means for relatively actuating the plates to cause the inclined faces to vary the grip on the wire.
27. In a machine of the class described having the presser 38 adjustable endwise to operative position and arranged to be reciprocated while in operative position, the wire guide 40 pivotally mounted on the presser and the connection 61, 81 arranged to shift the guide angularly into its operative position when the presser is advanced to its operative position and to hold the guide against angular movement while the presser reciprocates.
28. In a machine of the class described, a reciprocatory upper presser, a wire guide connected to the presser, and position controlling means for the guide arranged to cause the guide to reciprocate in a right line with the presser in short reciprocations of the latter and to be moved angularly when the presser is given a long reciprocation.
29. In a machine of the class described, the movable presser, the wire guide pivoted thereon, the fixed stud 81 and the path 61 for the stud formed in the guide as shown for controlling and changing the position of the guide in different positions of the presser.
30. In a machine of the class described, the movable presser, the wire guide connected to the presser to be moved thereby and means for imparting to the guide an additional movement.
31. In a machine of the class described, a wire guide movable from and toward operative position, and means for actuating and controlling the guide constructed and arranged to impart reciprocatory working movements to the guide while in its operative position and to impart a movement in a different direction to the guide when it is shifted toward and from operative position.
32. In a machine of the class described, a wire supporter having a wire feeding movement and a movement from and toward operative position, means to actuate it to feed the wire, and positioning means having a portion formed to determine the path of the supporter in its feeding movements and another portion for giving the supporter a different movement when it is shifted toward inoperative position.
33. In a machine of the class described, a wire supporter having a wire feeding movement and a movement from and toward operative position, means to actuate it to feed the wire, the positioning plate 59 having the slot 61 comprising a straight portion and a curved portion and the cooperating stud 81 arranged in said slot, substantially as and for the purpose described.
34. In a machine for working an upper over a last, means for superimposing wire in position for binding the overworked upper, means for holding the supply of wire, means for advancing the strand of wire, and means to keep the strand tight, comprising the swinging lever 600, the wire wheel 660 over which the wire is deflected, the stop 602, and the spring 601 arranged to be compressed against said stop by the pull of the wire on the wheel.
35. In a machine for working an upper over a last, means for superimposing wire in position for binding the overworked upper, means for holding the supply of wire, means for advancing the strand of wire, and means to keep the strand tight, comprising an angle lever having on one arm a formation about which the wire is deflected and on its other arm a yielding plunger, and a stop located between the two arms of the lever in position to limit the movement of the lever in each direction.
36. In a machine of the class described, means for working an upper over a last into position to be fastened by a binder, a tension device for the binder, and means for increasing the tension on the binder when the machine is started and decreasing it when the machine is stopped without special attention from the operator, said machine having provision for stopping the machine and effecting less than the normal change of tension.
37. In a machine of the class described, the combination with means for working the upper into position to be secured by a binder of wire or other continuous material, power actuated driving mechanism therefor, including starting and stopping mechanism means for superimposing wire in position to bind the upper in overworked position, a tension device for the wire and means connected with the starting and stopping mechanism to vary the tension on the wire.
38. In a machine of the class described, the combination with means for preparing the shoe stock to be fastened, power actuated driving mechanism therefor, including starting and stopping mechanism means for superimposing wire in position to bind the upper in overworked position, a tension device for the wire and means connected with the starting and stopping mechanism to vary the tension on the wire.

ated driving means therefor including starting and stopping means having an operating treadle, a tension device, and connections from the treadle to the tension device to adjust the latter, said machine having provision for partially setting the tension without starting the machine.

39. In a machine of the class described, the combination with means for preparing the shoe stock to be fastened, power actuated driving means therefor including starting and stopping means having an operating treadle, a tension device, and connections from the treadle to the tension device to cause the tension to be increased by the depression of the starting treadle and to be decreased by the reverse movement of said treadle.

40. In a machine of the class described, the combination with means for preparing the shoe stock to be fastened, power actuated driving means therefor including starting and stopping means having an operating treadle, a tension device, and connections from the treadle to the tension device, said parts being constructed and arranged to cause the machine to be stopped and the tension partially relaxed when the treadle is raised less than its full stroke and to cause a further relaxation of the tension when the stroke of the treadle is completed.

41. A machine of the class described, having in combination, means for working an upper over a last into position to be secured by a binder of wire or like continuous material, actuating means therefor, starting and stopping means, a tension device for the

binder, and an operative connection between the starting and stopping device and the tension device arranged to apply tension when the machine is running and relax the tension when the machine is stopped, said machine having provision for stopping the machine while the tension device continues to hold the wire under binding tension.

42. A machine of the class described, having in combination, means for working an upper over a last into position to be secured by a binder of wire or like continuous material, actuating means therefor, a tension device for the binder and operating means for the tension device arranged to produce a maximum, a minimum and a predetermined intermediate degree of tension.

43. A machine of the class described, having in combination, means for working an upper over a last into position to be secured by a binder of wire or like continuous material, actuating means therefor, starting and stopping means, a tension device for the binder, and operating means for the tension device connected with and including the starting treadle and arranged to produce from said treadle a maximum degree of tension when the machine is running and either a minimum or an intermediate degree of tension when the machine is stopped.

Signed by me this 19th day of March 1901.

EDWARD A. STIGGINS.

Witnesses:

NELSON W. HOWARD,
THOMAS H. SEELY.

Corrections in Letters Patent No. 946,620.

It is hereby certified that in Letters Patent No. 946,620, granted January 18, 1910, upon the application of Edward A. Stiggins, of Beverly, Massachusetts, for an improvement in "Lasting-Machines," errors appear in the printed specification requiring correction as follows: Page 2, line 36, the word "parallel" should read *partial*; and page 5, line 67, the words "through to swing the members backwardly" should read *wire, whereupon said members are reversely*; and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 8th day of February, A. D., 1910.

[SEAL.]

E. B. MOORE,
Commissioner of Patents.

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39. In a machine of the class described, the combination with means for preparing the shoe stock to be fastened, power actuated driving means therefor including starting and stopping means having an operating treadle, a tension device, and connections from the treadle to the tension device to cause the tension to be increased by the depression of the starting treadle and to be decreased by the reverse movement of said treadle.

40. In a machine of the class described, the combination with means for preparing the shoe stock to be fastened, power actuated driving means therefor including starting and stopping means having an operating treadle, a tension device, and connections from the treadle to the tension device, said parts being constructed and arranged to cause the machine to be stopped and the tension partially relaxed when the treadle is raised less than its full stroke and to cause a further relaxation of the tension when the stroke of the treadle is completed.

41. A machine of the class described, having in combination, means for working an upper over a last into position to be secured by a binder of wire or like continuous material, actuating means therefor, starting and stopping means, a tension device for the

binder, and an operative connection between the starting and stopping device and the tension device arranged to apply tension when the machine is running and relax the tension when the machine is stopped, said machine having provision for stopping the machine while the tension device continues to hold the wire under binding tension.

42. A machine of the class described, having in combination, means for working an upper over a last into position to be secured by a binder of wire or like continuous material, actuating means therefor, a tension device for the binder and operating means for the tension device arranged to produce a maximum, a minimum and a predetermined intermediate degree of tension.

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