

H. W. WINTER.
MACHINE FOR SETTING HEEL AND SOLE PROTECTORS.
APPLICATION FILED AUG. 23, 1900.

994,354.

Patented June 6, 1911.

4 SHEETS—SHEET 1.

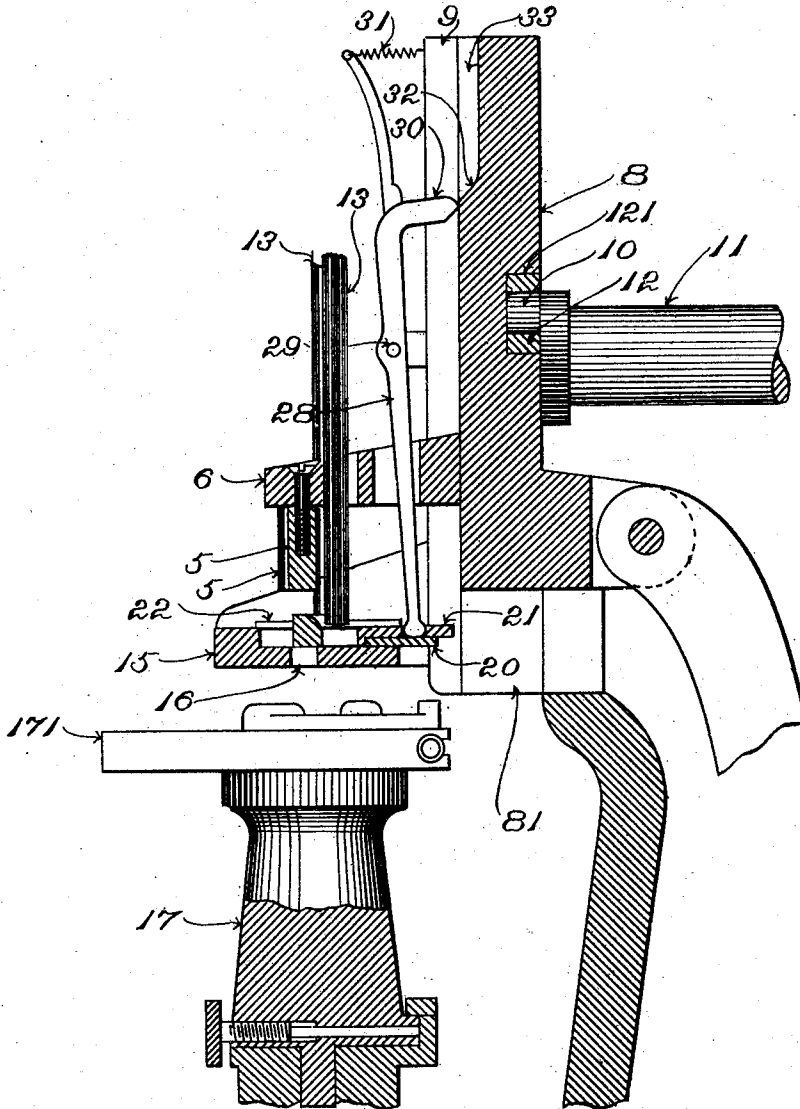


Fig. 1.

Witnesses:

Lepine & Rice
Oscar F. Bill

Inventor:

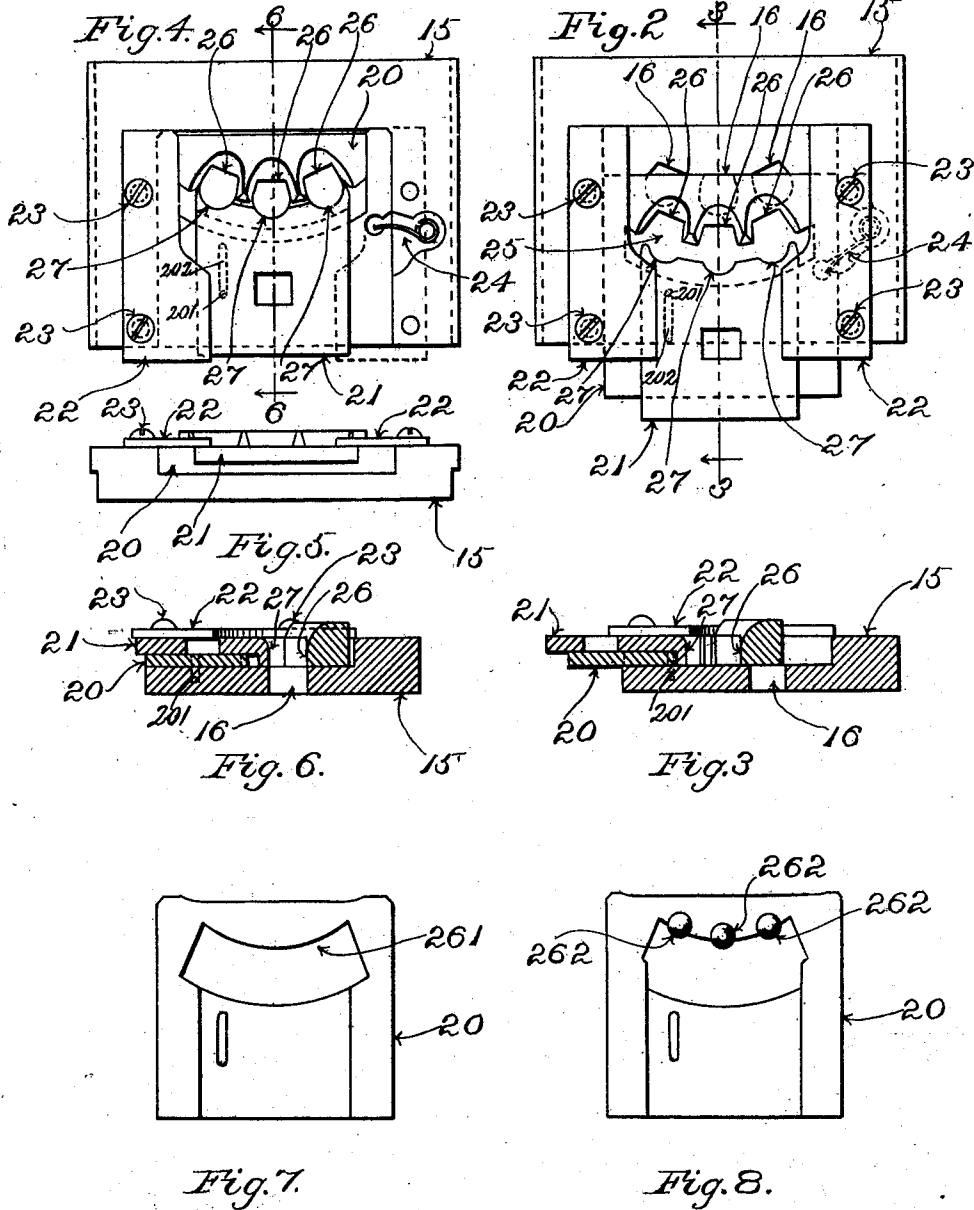
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4 SHEETS—SHEET 2.



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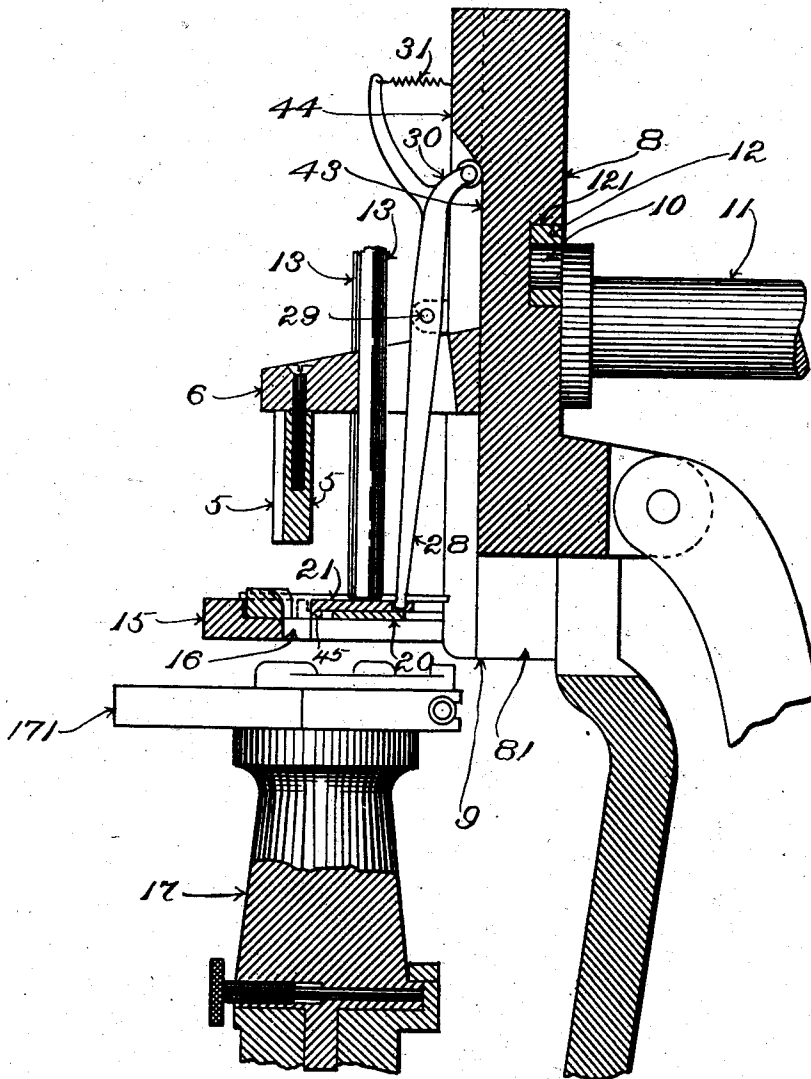


Fig. 9.

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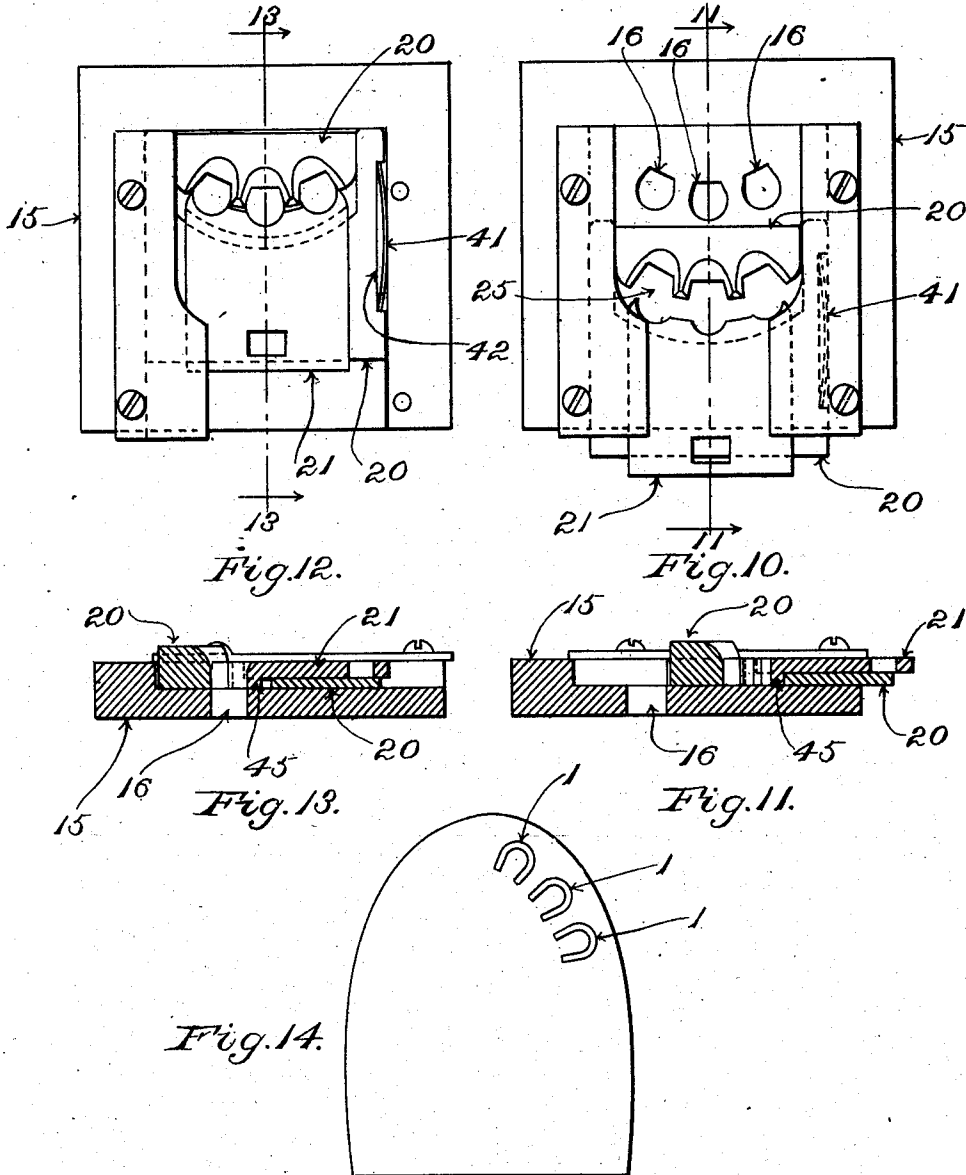
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4 SHEETS-SHEET 4.



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UNITED STATES PATENT OFFICE.

HENRY W. WINTER, OF LAWRENCE, MASSACHUSETTS, ASSIGNOR TO UNITED SHOE MACHINERY COMPANY, OF PATERSON, NEW JERSEY, AND BOSTON, MASSACHUSETTS, A CORPORATION OF NEW JERSEY.

MACHINE FOR SETTING HEEL AND SOLE PROTECTORS.

994,354.

Specification of Letters Patent.

Patented June 6, 1911.

Application filed August 23, 1900. Serial No. 27,787.

To all whom it may concern:

Be it known that I, HENRY W. WINTER, a citizen of the United States, residing at Lawrence, in the county of Essex, State of Massachusetts, have invented a certain new and useful Improvement in Machines for Setting Heel and Sole Protectors, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention relates to machines for driving or setting metallic reinforces or protectors into the heels and soles of boots and shoes for the purpose of retarding and equalizing the wear thereof.

More especially, the invention has relation to the devices which are employed in such machines for presenting and positioning the protectors or reinforces preliminary to the driving thereof, and assuring that the protectors or reinforces shall be driven in the proper position into the stock which receives the same.

The invention consists in the features which I will now proceed to describe with the aid of the accompanying drawings, in which latter I have illustrated the best forms in which the invention has thus far been embodied.

The characteristic features of the invention will be particularly pointed out and distinctly defined in the claims at the close of this specification.

In the drawings, Figure 1 is a view in vertical section of portion of a protector-setting machine having one embodiment of the invention applied thereto, only so much of the machine being shown as is necessary in order to properly disclose the nature and relations of the invention. Fig. 2 shows in plan the protector-transferring, holding and guiding devices pertaining to the said embodiment, the slides being in their retracted and open position represented in Fig. 1. Fig. 3 is a view in vertical section on the plane indicated by the dotted line 3—3, Fig. 2, looking in the direction indicated by the arrows adjacent the ends of such line. Fig. 4 is a view similar to Fig. 2 showing the slides closed together and advanced. Fig. 5 is an edge view of the said devices. Fig. 6 is a view in vertical section on the plane

indicated by the dotted line 6, 6, Fig. 4, looking in the direction indicated by the arrows adjacent the ends of such line. Figs. 7 and 8 are views showing in plan modified forms of one of the slides. Fig. 9 is a view corresponding with Fig. 1 showing a modification. Figs. 10 to 13, are views showing the modified transferring, etc., devices of Fig. 9. Fig. 14 shows a heel top-lift having a group of protectors inserted therein. Fig. 15 shows views of one of the protectors which are intended to be driven with the aid of the devices embodying the invention.

Extensive use is made in practice of reinforces or protectors which are formed of bent strips of metal, these being applied by being driven edgewise into the leather of the top-lift of a heel, or that of a sole, until the edges thereof remaining visible are flush with the outer surface of the top-lift or sole, or substantially so. 1, Fig. 15 designates a form of reinforce or protector of this general class, it being substantially of horse-shoe shape, with one edge 2 thereof formed sufficiently thin to enable the same to penetrate readily the leather into which the reinforce or protector is driven, while the other edge 3 thereof is somewhat thicker. Edge 2 may be termed the entering edge of the device, while edge 3, which is exposed at the face of the work into which the reinforce or protector is driven, and primarily receives the wear, may be termed the wear-receiving edge. Hereafter the term protector will be used in referring to the device 1.

It will be understood that while I have shown only one well known form of protector, the invention is equally serviceable in connection with other more or less varying forms of protectors. The showing in Fig. 15 therefore will be understood as being merely illustrative of one variety of the device that is referred to herein as a protector.

Fig. 14 shows in plan the top-lift of a heel for a boot or shoe having a series of protectors driven into the same. In this case three protectors are shown, this being a number that frequently is employed in practice, and they occupy positions in the top-lift at one side of the longitudinal axis of the lift and stand approximately radial

with reference to the curved rear portion of the lift.

It will be obvious that in being driven the protectors have to be so held and guided as to cause the entering edge of each to rest on or strike the surface of the leather fairly, and also so as to cause the protectors to take the proper position in the stock. If the protector should occupy an inclined position in being driven the work would be spoiled, while if the protector in being presented to the driver should become swung around transversely with respect to its intended position it would not be driven in the proper position into the leather, and thereby the appearance of the work would be injured. Protectors of the form illustrated in Fig. 15 are essentially U-shaped, and heretofore in machines devised for the purpose of automatically driving or setting the same, they have been guided and positioned by means of a rib or fin provided in the machine adjacent the driving point in the latter, upon the exterior of which rib or fin the protector has been caused to slide, the said rib or fin passing into the opening of the protector and constituting an internal guide for the latter while being driven. The use of this internal guide has been found disadvantageous in practice, since it has necessitated the use of a driving pin or driver made U-shaped in cross-section at its driving end in order to clear the said rib or fin while forcing the protector into the stock. A U-shaped driver is frail and subject to injury, and it has been necessary in machines employing the same to replace the drivers repeatedly. The breakages and other injuries to the drivers interfere with the use of the machines and lessen their capacity and productiveness, while considerable expense has been entailed in replacing the drivers by new ones.

My present invention simplifies the machines which are employed for driving or setting protectors, dispensing entirely with the internal guides located at the driving points in the machines, and enabling the U-shaped drivers to be replaced by solid drivers. These last are practically free from liability to breakage or injury in the use of the machine, and hence rarely, if ever, require to be replaced.

In the drawings the drivers are shown at 5, in Fig. 1 and also in Fig. 9. The number of drivers employed in a machine may vary in practice, but inasmuch as usually in the case of toplifts of heels, three protectors are driven in a group as indicated in Fig. 14, it may be stated that three drivers 5 ordinarily will be employed in a machine used in driving or setting protectors into toplifts.

The drivers 5, 5, are secured to a driver-block 6, Figs. 1 or 9. They extend downwardly from the latter. The driver-block

6 is applied to or formed on the plunger 8, the latter moving in suitable guideways 81, which are provided in the head 9 of the machine, the said plunger being actuated in any suitable or approved manner, as for instance by means of a crank-pin 10 carried by an operating shaft 11, the said crank-pin being represented as furnished with a roll 12 working in a transverse slot 121 with which the plunger 8 is furnished. As indicated in Figs. 1 and 9, the drivers 5, 5, are solid.

For the purpose of conveying the protectors to the place in the machine at which the drivers are arranged to act, suitable guides or raceways are provided as at 13, 13. These correspond in number with the drivers, and in practice protectors are applied to the guideways by hand or otherwise as preferred so as to furnish the necessary supply. Herein the guideways are shown constituted by strips which are suitably supported in proper position in the machine. A series of protectors is caused to straddle one edge of each of the said guideways.

15 is a block which is mounted in the machine in position below the drivers 5, 5, it being formed with a series of driver-passages 16, 16, through which the protectors are driven into the stock which is to receive the same. The said stock is held in contact with the lower surface of the said block 15 at the time of driving. The block is shown carried by the head of the machine, and beneath the same is shown a work-supporting post 17, upon the upper end of which is mounted a work-rest 171 to receive the piece of stock which is to have protectors driven into the same. In practice, after the stock has been placed on the work-rest 171 at the top of the work-supporting post 17, the latter is forced upwardly so as to compress the stock against the under surface of the block 15. I have not shown the means of forcing the post 17 upwardly, inasmuch as the same forms no part of the invention and any convenient means of communicating vertical movement to the post 17 for the purpose of thus compressing the stock and of afterward releasing the latter may be employed in practice.

Above the block 15 formed with the driver-passages 16, 16, I place a pair of plates 20, 21. These are mounted to slide transversely with reference to the said block and its driver-passages. I have herein shown the block 15 recessed in the top thereof to receive the plate 20, and the plate 20 in like manner recessed to receive the plate 21. The block and plates being thus nested together they are held in their proper relationship by means of gibs 22, 22, which are secured by screws 23, 23, to the block 15 at opposite sides of the recess therein and over-

lie the edges of the plates 20, 21, as shown. Plates 20 and 21 are capable of sliding together, *i. e.*, collectively, within the recess of block 15, while plate 21 is capable of sliding independently within the recess of the plate 20. A spring or springs 24 Figs. 2 and 4 applied to the block 15 acts on the plate 20 with a tendency to move the same to the rear in the machine. That is to say, to the right in Fig. 1. Plate 20 is constructed to permit of the passage of protectors therethrough. To this end it is formed with one or more openings or passages extending vertically through the same as at 25, Fig. 2. At one side of the said passage or passages 25 the plate 20 is provided with a surface or surfaces 26 for engaging with the protectors. The plate 21 is likewise formed with a surface or surfaces 27 for engagement with the protectors. The normal position of the plates 20, 21, relative to the block 15 is as represented in Figs. 1, 2 and 3, the passage or passages through the plate 20 being located beneath the lower ends of the raceways 13, 13, and above a solid portion of the block 15 to the rear of the driver-passages 16, and the plate 21 being moved to the rear, also, relatively to the plate 20 so as to separate the engaging surfaces 26, 27 to the maximum extent. As the parts move rearwardly into this position, the bottom protectors on the raceways, the said protectors having previously been supported by the top of plate 21, are capable of sliding or dropping from the said raceways into the passageway or passageways of the plate 20 until the bottom protector rests on the upper surface of the block 15. I provide means of causing relative movement of the parts which will cause the protectors in the said passageway of plate 20 to be clamped between the opposing engaging surfaces 26, 27, and then be carried forward in the machine so as to place them above the driver-passages 16, 16, and in line with the latter. Herein I have shown a simple arrangement for the purpose comprising a lever 28, suitably hung to the head of the machine, as upon a pin or pivot 29, and provided with a nose 30 arranged to be acted upon by a suitable moving part in the machine. In the present case the said nose is arranged to bear against the front of the plunger 8 under the action of a spring 31. In the construction of machine which is shown in Fig. 1, the prominent portion 32 on the plunger acts in the rise of the latter as a cam to move lever 28 to retract the plates 20, 21 and hold them in the positions relative to the block 15 and to each other in which they are represented in Fig. 1. The depressed portion 33 of the plunger in the descent of the latter allows the spring 31 to act to move the lever to shift plates 21 and 20 relatively to the block 15 so as to cause

the protectors, first to be clamped between the engaging surfaces 26 27 of the two plates, and then be carried along upon the block 15 into position in line with and above the driver-passages 16, 16. As the two plates move forwardly the solid part of plate 21 passes under the next to the bottom protector on each raceway and supports the same and the others above the same on the respective raceways until in the retraction of the plates the passageway or passageways in the latter are presented again beneath the ends of the raceways.

The engaging surfaces 26, 27 of the plates 20, 21, are so shaped with reference to the shape or form of the exteriors of the protectors as that when the said surfaces are caused to approach each other by movement of the plates relatively to each other the contact of the said surfaces with the non-circular exteriors of the protectors operates automatically to position the protectors prior to being driven. That is to say, the said engaging surfaces 26, 27 are so shaped that when they are operated to clamp upon the protectors they cause the latter to adjust themselves, in case they should not stand exactly as in Fig. 14 until they stand in precisely the positions which the protectors are required to assume in the stock. Some considerable variation in the shapes of the engaging surfaces 26, 27 is possible. In Figs. 2 to 6, the engaging surfaces 26 are constituted by the surfaces of recesses shaped to receive the open ends of the protectors, the said open ends passing into the said recesses and the extreme ends of the sides of the protectors abutting against the straight inner surfaces of the said recesses. The engaging surface or surfaces 27 of the plate 21 are shown formed with concavities receiving the convex back portions of the protectors. Protectors dropped from the ends of the raceways into the passageway or passageways of the plate 20 and resting on the upper surface of the block 15, may, and in practice frequently do, occupy positions varying considerably from that which they finally are required to assume in the stock, but when the movement of the plates relative to each other takes place, the clamping of the protectors between the engaging surfaces 26, 27, will cause the protectors to so swing around transversely in a plane parallel with the entering edge of a protector, and thereby re-adjust themselves in consequence of the pressure of the said surfaces against the prominent portions of the protectors, more especially at the open end of the protector, as to give the protectors the same position which they should have in the stock. Hence, when the protectors subsequently are driven into the stock they conform to requirements and present the required appearance.

It will be understood that the spring 31

acting on the lever 28 is more powerful than the spring 24, Fig. 2, applied to the driver-block 15 and acting against the plate 20. In Figs. 1 to 6 when spring 31 is permitted
 5 to act to move the lever, the action is first to move plate 21 upon plate 20 until the protectors have become firmly clamped between the engaging surfaces 26 and 27, after
 10 which the spring 24 yields and the plates 20 21 move together until protectors held by said plates are brought over the driver passages 16. See Figs. 2 and 6. This occurs during the descent of the plunger and
 15 drivers, and the plates 20, 21, remain in this position until the plunger and drivers complete their descent and begin to rise again. By the descent of the drivers 5, 5, the protectors are forced from the plates 20, 21 through the driver passages 16 and into
 20 the stock clamped between the work-rest 171 on the post 17 and the block 15. As the plunger rises and the prominent portion 32 of the plunger acts to move the lever 28, the said lever moves the plate 21 toward the
 25 right in Fig. 1. The plate 20 is moved in the same direction under the action of the spring 24, the extent of movement of the said plate 20 in such direction being limited, however, by means of a stop-pin 201, Figs.
 30 2 to 6, projecting from block 15 into a slot 202 in plate 20, the said pin and slot being represented in dotted lines in said figures.

In some cases I dispense with the use of the spring 24 carried by the block 15 and
 35 acting against the plate 20, and instead thereof cause the said plate 20 to be held otherwise, as frictionally, so that it will not move relatively to the block 15 until a sufficient amount of power is applied thereto
 40 to overcome the resistance due to the friction. Thus, in Figs. 9 to 13, I provide for producing a sufficient degree of friction against the plate 20 by means of a friction spring 41, seated in a recess 42 in the edge
 45 of plate 20 and compressed between the said edge and the adjacent side of the recess in the block 15 containing the said plate 20. In the case of the construction illustrated in the figures just mentioned, the spring 31
 50 acting on lever 28, when permitted by the depression 43 of the plunger 8 to move the said lever, acts in the rise of the plunger first to move plate 21 relatively to plate 20 until the protectors have become compressed
 55 between the engaging surfaces 26, 27, after which the frictional resistance to the movement of plate 20 being overcome, the plates 20 and 21 move in unison into their foremost position, thus placing the protectors
 60 above the driver passages 16, 16. This takes place as the drivers approach their highest position. The prominence 44 of the plunger acts during the descent of the plunger against the lever 28 to turn the same in
 65 opposition to the spring 31. The first re-

sult of this is to move the plate 21 upon plate 20, the latter remaining stationary. Thereby, the protectors are released and permitted to drop into the driver-passages, 16, 16. In consequence of the engagement of
 70 lip 45 of the plate 21 with the plate 20, the further movement of the lever 28 acts to cause plate 20 also to be retracted until plates 20 and 21 have been given their
 75 former position to the rear, with the passage 25 of the plate 20 in place below the lower ends of the raceways. This retraction of the plates 20 and 21 occurs in Fig. 9 during the first portion of the descent of the
 80 plunger and drivers.

Figs. 7 and 8 show certain modifications which may be made in the form of engaging surfaces 26 of the plate 20. In Fig. 7 I have represented the plate 20 as formed
 85 with a simple curved surface 261 in lieu of the recesses first described. The contact of the extreme ends of the sides of the protector with this curved surface 261, as the said ends are forced against such surface by the relative movement of the plate 21 and
 90 its engaging surface 27, causes the protectors to right themselves both vertically and horizontally in readiness for being driven. In Fig. 8 I have shown slight
 95 convexities at 262, 262, against which the open ends of the protectors are caused to take bearing, a slight convexity at each place being all that is required in order to cause the protectors to right themselves. These promi-
 100 nences or convexities are intended simply to act against the extreme ends of the sides of the protector at the opening thereof, and it is not necessary that they should enter into the interior of the protector.

Having now described my invention, I
 105 claim;

1. In a protector-setting machine, the combination with a driver, and means for supplying successive protectors to be driven, of a clamp within which a protector is free
 110 from internal restraint, and means for causing said clamp to act at the exterior of the protector, to partially rotate the protector, if misplaced, around its vertical axis into normal position for entry into the work, and
 115 means to shift the said clamp to carry the protector to the driving-point in the machine.

2. In a protector-setting machine, in combination, means to present successive pro-
 120 tectors, clamps to engage with the back and ends of the protector and by pressure against the same right the protector, means to shift the said clamps to carry the protector to the driving point in the machine, and a driver,
 125 substantially as described.

3. In a protector-setting machine, in combination, a raceway for the protectors, clamping plates, at the foot of such race-
 130 way serving in one position to support the

protectors on the raceway, said plates having openings which in another position of the plates receive a protector from the raceway, means to operate said plates to clamp the latter protector and then transfer the same to the driving point in the machine, and a driver, substantially as described.

4. In a protector-setting machine, in combination, a raceway for protectors, plates 20 and 21 at the foot of said raceway having opposing surfaces to receive a protector between them, and operating means acting in connection with plate 21 to clamp the protector against plate 20 and by a continued movement shift both plates in unison to carry the protector to the driving point in the machine, and a driver, substantially as described.

5. In a protector-setting machine, the combination with a driver, and a raceway terminating clear of the clamp and from which a protector is adapted to drop into the open clamp, of a clamp within which a protector supplied by such raceway is free from internal restraint, and means for causing said clamp to act at the exterior of the protector, to partially rotate the protector, if misplaced, around its vertical axis into normal position for entry into the work.

6. In a protector-setting machine, the combination with a solid driver, and a raceway terminating clear of the clamp and from which a protector is adapted to drop into the open clamp, of a clamp having an unobstructed interior space within which a protector is free from internal restraint, and means for causing said clamp to act at the exterior of the protector, to partially rotate the protector, if misplaced, around its vertical axis into normal position for entry into the work.

7. In a protector-setting machine, in combination a block, against which the stock is held, a driver, a raceway for protectors, slides 20 and 21 having opposing surfaces to clamp between them a protector from the said raceway, and actuating means whereby said slides are operated to clamp said protector and position it in readiness for driving, substantially as described.

8. In a protector-setting machine, in combination, a rest for the stock, a driver, a raceway for protectors, slides 20 and 21 having opposing faces to clamp between them a protector from the said raceway, and actuating means for moving said slide 21, whereby the protector is clamped between the said slides and given its proper position in readiness for driving, substantially as described.

9. In a protector-setting machine, in combination, a plurality of protector raceways, a carrier which receives a set of protectors from said raceways, movable means which acts upon the protectors to correctly position the respective protectors of a set in the re-

quired different positions radially, means to move the charged carrier to transfer its load of protectors from the delivery ends of the raceways to the respective driving-points, a plurality of drivers, and means to actuate the drivers in unison to drive the set of protectors simultaneously.

10. In a protector-setting machine, in combination, a driver, a raceway terminating clear of the clamp and from which a protector is adapted to drop into the open clamp, jaws which conform to the exterior of a protector, within which the protector is free from internal restraint, and means for causing said jaws to act at the exterior of the protector, to partially rotate the protector if misplaced, around its vertical axis into the required position for entry into the work.

11. In a protector-setting machine, in combination, a raceway, jaws for engaging a protector supplied by the said raceway, a driver, an operating lever by which said jaws are closed and opened, and moved from the raceway to the driving-point, and vice versa, and an actuating cam for said lever moving in unison with the said driver.

12. In a protector-setting machine, in combination, a raceway, jaws for engaging a protector supplied by the said raceway, a driver, an operating lever for said jaws, and an actuating cam for said lever reciprocating in unison with the said driver, and operating the lever to close the jaws upon the protector and then move the jaws to carry the protector to the driving point.

13. In a protector-setting machine, in combination, a raceway for protectors, a clamp having an unobstructed interior space within which a protector delivered from said raceway is free from internal restraint, means for opening the clamp in readiness to receive a protector and for then closing it upon the latter, said clamp acting at the exterior of the protector, in closing thereon, to partially rotate the protector, if misplaced, around its vertical axis into normal position for entry into the work, and a solid protector-driver.

14. In a protector-setting machine, in combination, a solid driver, means to supply a protector adjacent the driving-point, jaws within which the said protector is free from internal restraint, said jaws acting at the exterior of the protector, in closing thereon, to partially rotate the protector, if misplaced, around its vertical axis into normal position for entry into the work, means to open the said jaws for the reception of a protector, and a spring by which the jaws are closed upon the protector and caused to exert pressure upon its said exterior and to thereby give the protector the required position.

15. In a protector-setting machine, in

combination, means to present successive
protectors to be driven, clamps to engage
with the back and ends of a protector and
by pressure against the same right the pro-
5 tector in a plane parallel with the entering
side thereof, and operating means for the
said clamps.

In testimony whereof I affix my signature,
in presence of two witnesses.

HENRY W. WINTER.

Witnesses:

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LEPINE HALL RICE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."
