No. 654,298. Patented July 24, 1900.

# H. W. WINTER & B. J. CONLON.

## PROTECTOR SETTING MACHINE FOR BOOTS OR SHOES

(Application filed Nov. 24, 1899.)

(No Model.) 3 Sheets—Sheet 1.

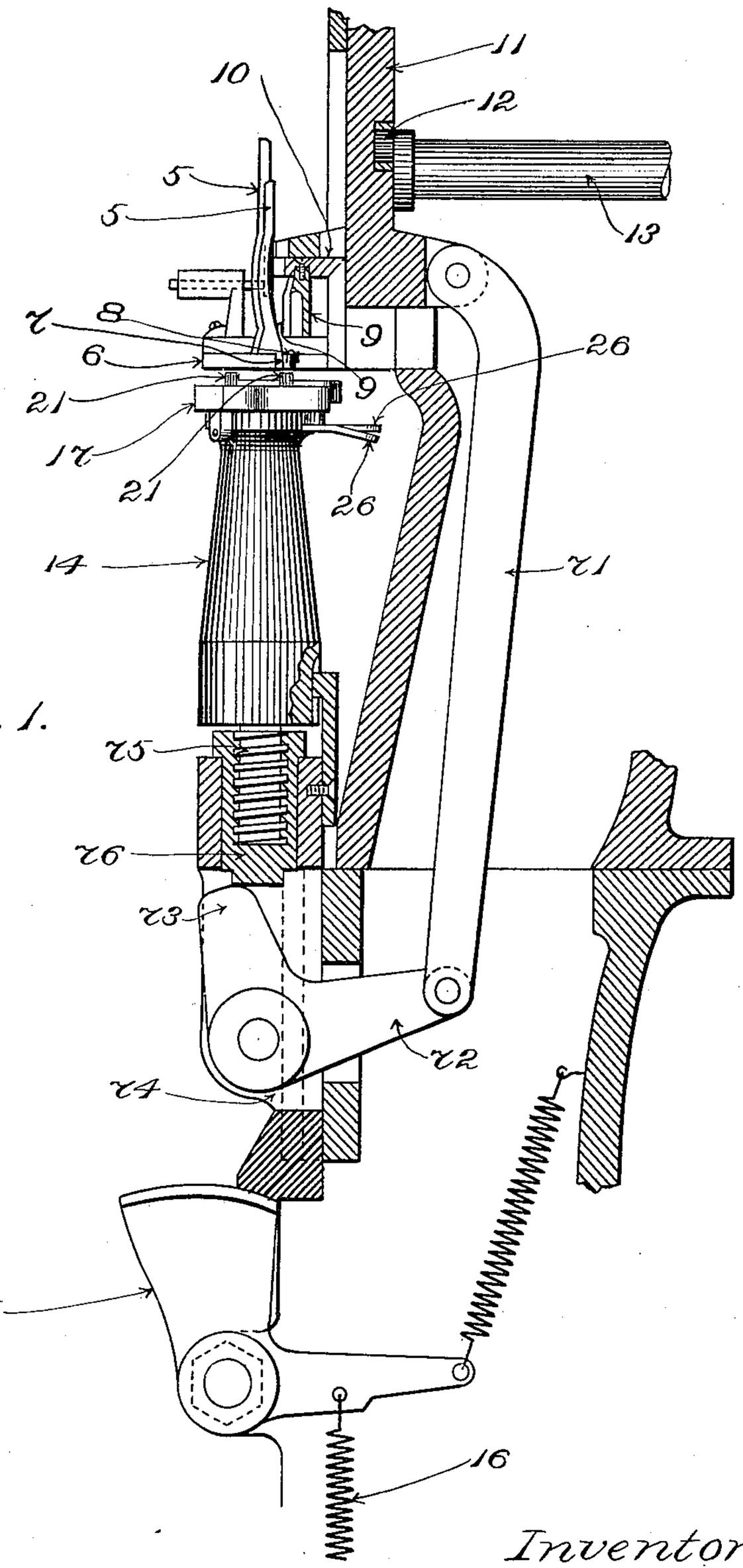


Fig. 1.

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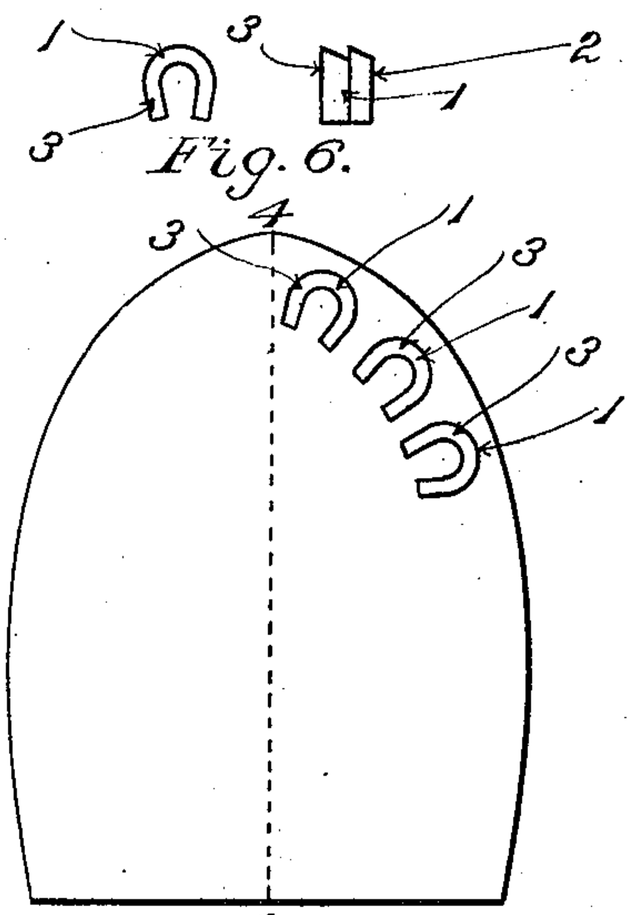


Fig. 7.

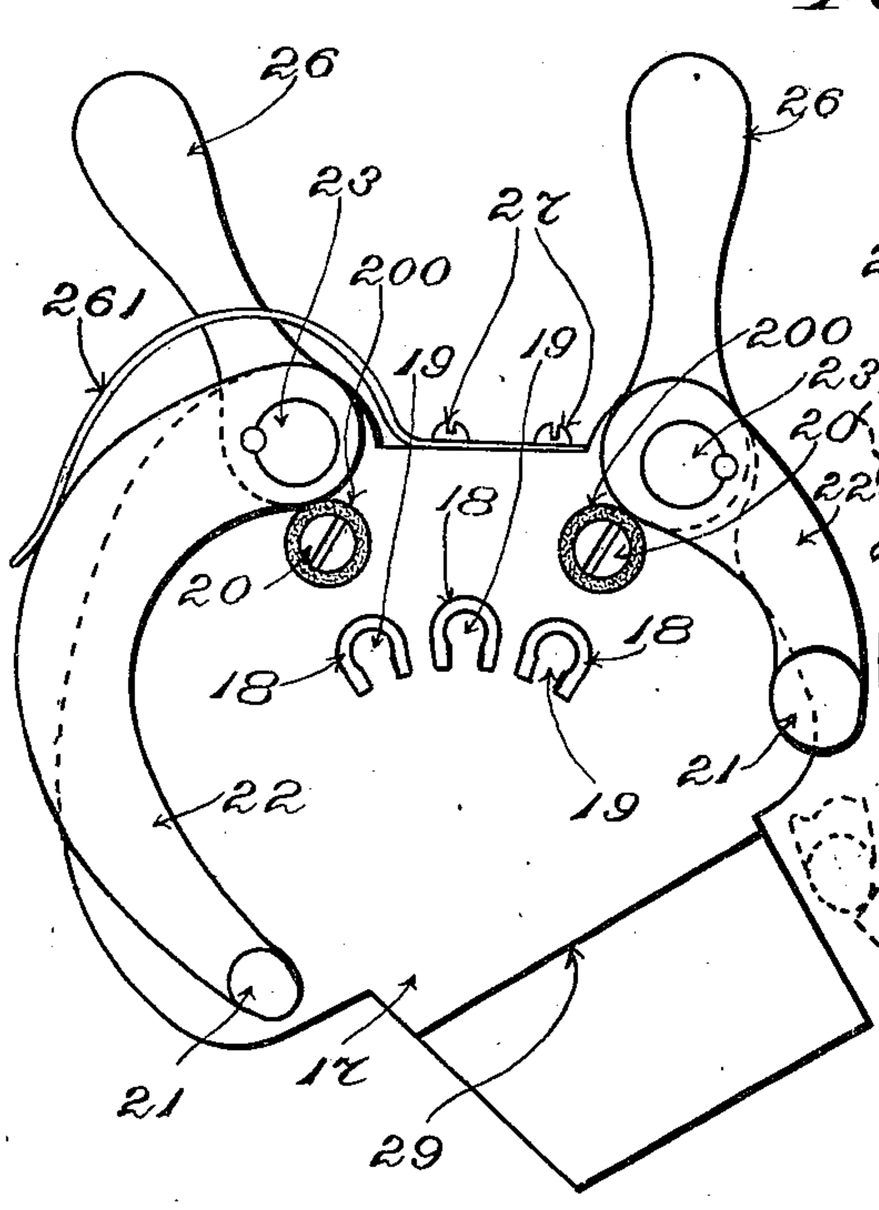


Fig. 2.

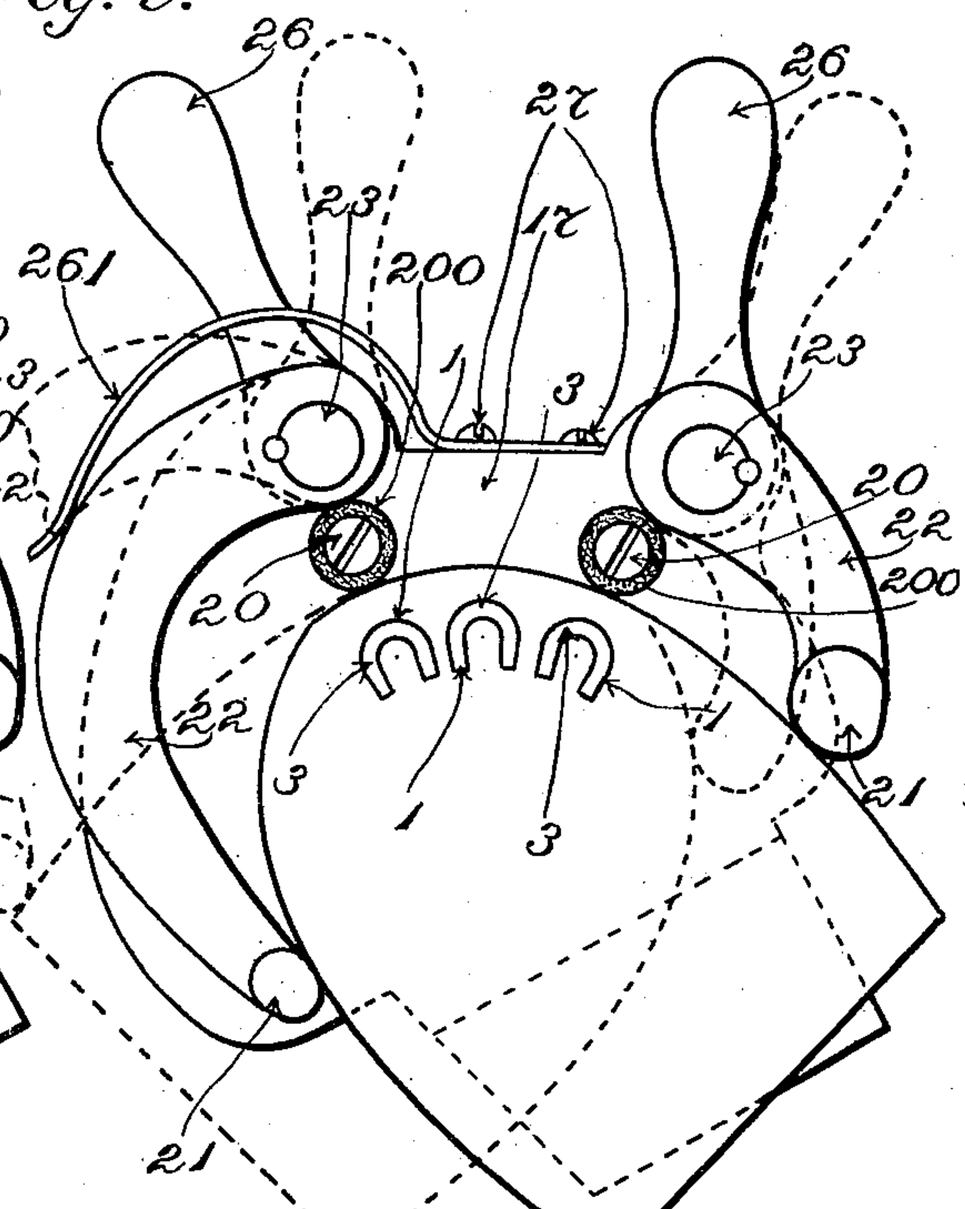


Fig. 3.

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## PROTECTOR SETTING MACHINE FOR BOOTS OR SHOES.

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(No Model.) 3 Sheets—Sheet 3.

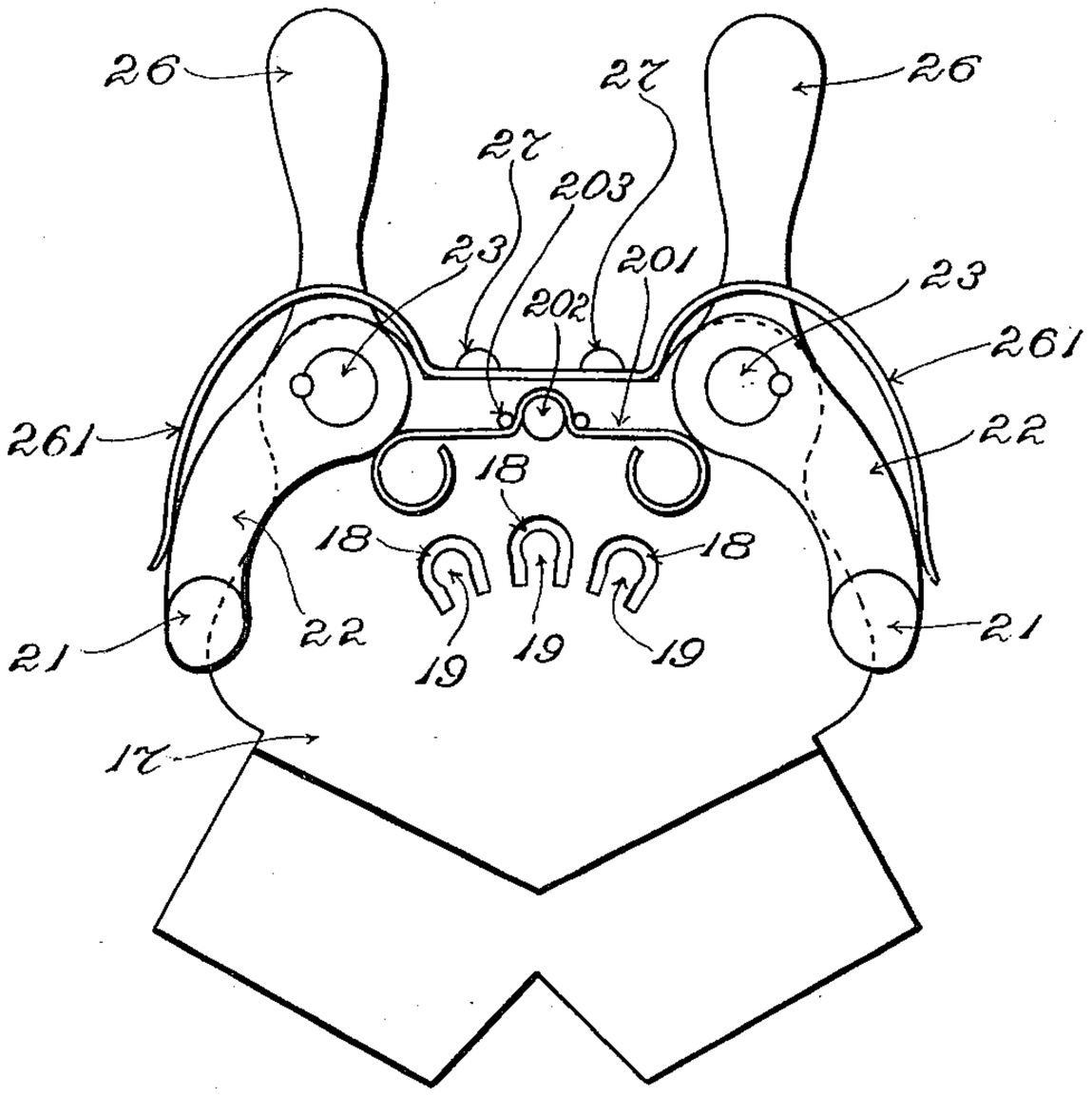


Fig. 5.

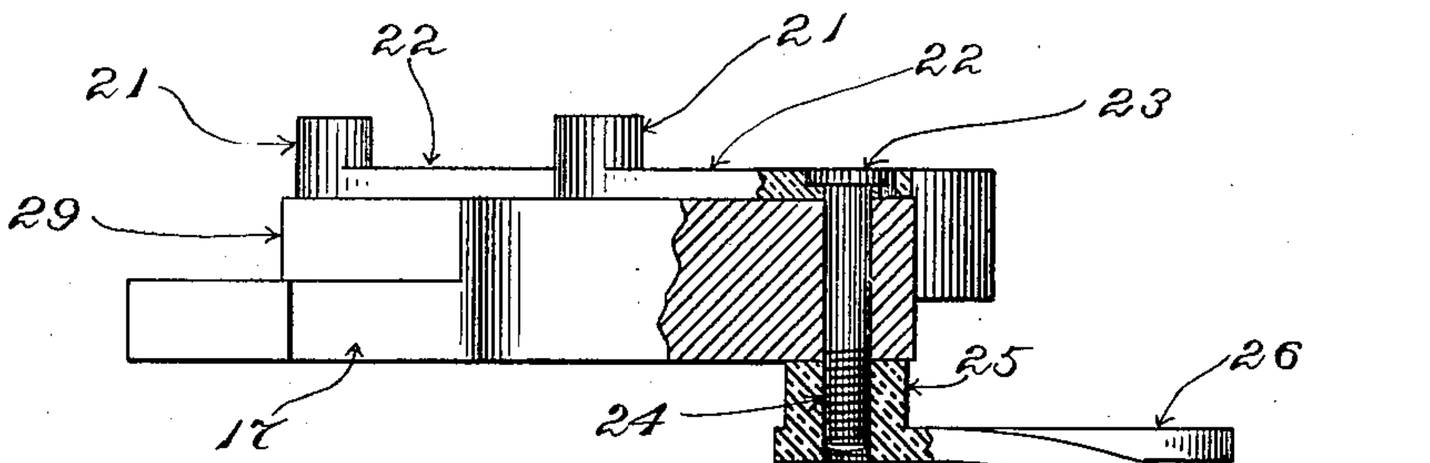


Fig. 4.

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# UNITED STATES PATENT OFFICE.

HENRY W. WINTER AND BARTHOLOMEW J. CONLON, OF LAWRENCE, MASSACHUSETTS.

## PROTECTOR-SETTING MACHINE FOR BOOTS OR SHOES.

SPECIFICATION forming part of Letters Patent No. 654,298, dated July 24, 1900.

Application filed November 24, 1899. Serial No. 738,156. (No model.)

*To all whom it may concern:*

Be it known that we, HENRY W. WINTER and BARTHOLOMEW J. CONLON, citizens of the United States, residing at Lawrence, in the county of Essex, State of Massachusetts, (and whose post-office address is 21 Oxford street, Lawrence,) have invented a certain new and useful Improvement in Protector-Setting Machines for Boots or Shoes, of which the following is a specification, reference being had therein to the accompanying drawings.

At the present time the use of metallic reinforces or "protectors" embedded in the top lifts of the heels of boots and shoes and in the heel portions of the soles of spring-heel footwear to retard and equalize the wear thereof is exceedingly general and extensive. The favorite and most satisfactory form of these reinforces or protectors is made of strips of metal bent into shape, these being applied by being driven edgewise into the leather of the top lift or sole until the edges thereof remaining visible usually are flush with the outer surface of the top lift or sole, or substantially so.

The present invention has relation to the machines which are employed for automatically driving reinforces or protectors such as aforesaid. More especially it relates to the devices which are employed in such machines for the purpose of supporting and gaging or positioning the top lifts or soles during the operation of driving the reinforces or protectors into the same.

Top lifts for heels and soles for spring-heel footwear vary considerably in their sizes, proportions, and thicknesses.

It is the main object of the invention to provide a work supporting and gaging device for machines of the class aforesaid which shall be fitted by simple and expeditiously-effected adjustment for universal use in connection with all of the usual sizes and proportions of heel-top lifts and spring-heel soles and also for use in connection with the different thicknesses thereof that are met with in practice.

The invention consists in the features of novel and improved construction, which are shown in the accompanying drawings and which will first be described with reference to the latter and afterward be particularly pointed out and distinctly defined in the claims at the close of this specification.

In the said drawings, Figure 1 shows in sectional elevation certain portions of a machine for setting protectors and to which our invention is represented as applied. Fig. 2 is a plan of the work-support, to which reference is made hereinafter. Fig. 3 is a similar view illustrating in addition the application to the said work-support of lifts pertaining to the heels of boots and shoes. Fig. 4 is a side elevation of the said work-support with certain portions thereof broken out. Fig. 5 is a plan of another form of the work-support. Fig. 6 shows different views of one form of protector. Fig. 7 shows a top lift for the heel of a boot or shoe with a series of protectors driven into the same.

Having reference to the drawings, 1, Fig. 6, designates a form of reinforce or protector which is well known in the art, it being substantially of horseshoe 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.

Hereinafter the term "protector" will be used in referring to the device 1.

Fig. 7 shows a top lift into which a group of protectors 1 1 1 has been driven. The usual position of the protectors is shown in this figure—namely, adjacent the rounded rear portion of the top lift (or heel portion of a spring-heel sole) and along that side of the top lift or sole, which will be outermost on the shoe and which side may for convenience be termed "outer" herein. This figure shows what may be termed a "right-hand" lift—that is to say, one intended to be applied to the boot or shoe for the right foot of a person. In the case of a left-hand lift the group of protectors are oppositely disposed with relation to the median line of the lift, which is indicated by the dotted line 4 4 in Fig. 7.

Certain of the essential parts of a machine for driving protectors are shown in Fig. 1. In the latter portions of raceways which are employed for the purpose of receiving the protectors and guiding them down into position to be driven are designated 5 5. Only the extreme lower ends of such raceways are represented. The number of raceways corresponds with the number of protectors which are to be driven at a time. In the present instance it is assumed that there will be three protectors driven at once, as indicated by the number of slits which are shown in the work-support. The protectors may in practice be applied to the said raceways and be controlled in their passage along the same to the place where they are driven in any convenient or known manner.

6 is a block at the delivery ends of the raceways 5 5 5, it having therein a hole 7 for each raceway. The said hole receives the protectors as they pass from the corresponding raceway. Each hole 7 has in connection therewith a spring-detent 8 for the purpose of arresting the protector after it has entered the hole.

9 9 are drivers for forcing the protectors from the holes 7 into the stock or material which is to receive the same. 10 is the block to which the said drivers are affixed, and 11 is the slide on which the said block is mounted. 12 is the actuating-crank for the said slide, and 13 is the rotatable shaft on which the said crank is mounted.

14 is the vertically-movable post to which is applied the work-supports, to which reference presently will be made. 15 is a cam, by means of which the said post may be forced upwardly for the purpose of causing the upper surface of the work-support to approach the under surface of block 6 in order to compress the work between such surfaces preliminary to the driving of the protectors, which takes place while the work is held compressed against the under surface of the said block. 16 is a part of a connection from the said cam to a suitable actuating-treadle or the like. (Not shown.)

The foregoing are or may be as heretofore or otherwise as preferred.

Having reference now to Fig. 2, 17 is the plate or block forming the main portion or body of the work-support. It is applied to the post 14.

In the case of the use of the illustrated form of protector it occurs in many instances that the thickness of the top lifts or soles into which the same are required to be driven is less than the height of the protector. Hence when the protectors are driven the entering edges thereof frequently pass entirely through the leather and project at the under side of the leather. One object in view in connection with the invention is to enable the protectors to be driven fully home in all thicknesses of leather, so that the wear-receiving edges of the same shall lie flush with the face of the leather. Another is to prevent the leather from being caused to bulge at the under side thereof, particularly at the center of the protector. Another is to avoid injury to the work-support or protectors in consequence of the entering edges of the latter being forced against portions of the work-support. Another is to enable the use of so-called "fiber," "Babbitt metal," or the like on the work-support to receive the impact of the entering edges of the protectors as they pass through the leather in being driven to be dispensed with. In attaining these various objects we form in the work-support in proper register with the raceways and drivers a series of slits 18 18 18. Each of these slits corresponds in contour with the contour in plan of a protector. In the present instance, therefore, the said slits are essentially of horseshoe shape. Each slit is of sufficient width to enable the entering edge of a protector to pass freely into the same as such edge passes through a piece of leather in the operation of driving the protector. The posts 19 19 19, which are inclosed by the respective slits, serve to support the portions of leather at the centers of the protectors during the driving. These posts preferably are formed of hardened steel to fit them for effectually withstanding wear.

For the purpose of enabling the top lift or sole which is to have protectors inserted into the same to be placed by hand upon the work-support quickly and with certainty in the required position with respect to the raceways, drivers, &c., in order to cause the protectors to be driven precisely at the predetermined places therein and without requiring special skill on the part of the operator who is in attendance upon the machine, we provide gaging devices, as follows: 20 20 designate two posts which project above the upper surface of the work-support a short distance to the rear of the slits 18 18 18. The distance between the proximate portions of the said slits and posts corresponds with the distance at which the protectors are to be set from the edge of the top lift or sole. These posts are fixed in position upon the work-support to receive the contact of the rounded portion of the top lift or sole which exists at the rear of the heel. These posts 20 20 may be designated herein for convenience the "rear" posts.

By the operation of driving the protectors into the leather of the top lift or sole the outer portions of the latter immediately adjacent the protectors are forced outwardly. This compresses the edge of the leather against the posts 20 20 in a manner which would injure the said edge by producing therein indentations corresponding with the posts if provision were not made against the formation of such indentation. We provide against such formations by cushioning the said posts. In Figs. 2 and 3 the posts are surrounded by rings 200 200, of yielding material, as leather

or rubber. In Fig. 5 the posts are constituted by the end portions of a bent spring 201, which is applied to the work-support and held in place thereon by a screw 202 and pins 203 203. The arms of the said spring yield when the edge of the leather is forced thereagainst by the expansion which is due to the forcing in of the protectors.

21 21 are side posts which are located in such relations to the other parts that by their engagement with the opposite sides of the edge of the top lift or sole they will cause the latter to assume the required angular position with relation to the protector-setting devices. These side posts 21 21 by their position determine the points around the periphery of the rounded rear portion of the top lift or sole at which the protectors shall be driven.

In order to provide for the handling of top lifts or soles of different sizes and shapes, as well as to enable variations to be secured whenever desired in the places around the peripheries of the respective top lifts or soles at which the protectors should be driven, the side posts 21 21 are mounted with capacity for transverse movement. Preferably the said side posts are movably supported by being applied to or formed upon arms 22 22, which are connected with the work-support by means of pivotal pins 23 23, secured to the said arms and mounted in bearings with which the work-support is formed or provided, the said pivotal pins being capable of turning in the said bearings. For the purpose of enabling the side posts to be held in place after having been adjusted we provide clamping or holding devices in connection therewith. Herein we have formed each of the pivotal pins 23 23 with a screw-thread at 24 and have applied to the threaded portion of each pivotal pin a lock-nut 25, adapted to make contact with the lower end of the bearing in the work-support, each lock-nut having a projecting handle 26 by means of which to work the same. By tightening up the lock-nuts against the lower ends of the bearings the side posts may be clamped and held in the positions which have been given to them.

The mode of operation of the gaging devices, so far as the said devices have been described, will be apparent from Fig. 3, in which latter a top lift is shown in place with a set of protectors driven into the same. As the operative pushes the top lift or sole home upon the upper surface of the work-support he causes the edge thereof to make contact with the four posts, the side posts having been properly disposed to suit the size and proportions of the said top lift or sole, and to bring the latter around into the angular position, which will cause the protectors to be set at the proper places around the periphery thereof. Transverse adjustment of the side posts is all that is necessary to provide for different sizes or shapes of top lifts or soles or to enable the protectors to be driven at the required places around the periphery of each top lift or sole. By full lines in Fig. 3 we have shown one position which a top lift may be caused to occupy on the work-support prior to having protectors applied thereto. The dotted lines in the same figure show another position which the top lift may be caused to assume.

Ordinarily the side posts will be fixed in place for use and will be adjusted to suit different sizes or shapes of top lifts or soles. We find it advisable in some cases—as, for example, when different shapes or sizes of top lifts or soles have to be operated upon—to leave one of the side arms movable toward and from the other, which is fixed, and to cause the said arms to be acted upon by a yielding force which causes the same to tend to approach always the fixed arm, so that when a top lift or sole for a spring-heel shoe is forced in between the two side posts the said yielding side post automatically will adapt itself to the corresponding edge of the said top lift or sole, following the contour and pressing at all times against the same. This will enable adjustment of the opposite or fixed side post to be dispensed with, thereby saving time. Thus 26′ is a flat or leaf spring having one end thereof affixed to the work-support, as by means of screws 27 27, and having the other end thereof arranged to bear against one of the arms 22. When the clamp pertaining to the arm in question is loosened, the said arm is left subject to the influence of the said spring.

A work-support embodying the features of the invention may be constructed with especial reference to use in connection with right-hand work or with left-hand work, in which case it will be necessary to provide each protector-setting machine with two interchangeable supports, one fitted for right-hand work and the other fitted for left-hand work.

Figs. 2 and 3 illustrate a support which has been constructed with more especial reference to performing right-hand work, although, as indicated by dotted lines in Fig. 3, it is adapted for use with left-hand work as well. For left-hand work the construction may be reversed, so as to permit the work to be applied and held conveniently in the opposite position, and thereby enable the protectors to be introduced adjacent the opposite portion of the edge of the top lift or side.

Fig. 5 shows a support which has been devised more especially with reference to use either for right-hand work or for left-hand work, as may be required, the change in the character of the work being provided for by properly setting the side posts. In the figure last mentioned both the arms are acted upon by springs.

In the process of manufacturing spring-heel footwear it is customary to mold or shape the heel portion of a sole to provide for the introduction beneath the same of the lift, which produces the spring or projection of the said heel portion. This molding or shaping forms

a shoulder immediately adjacent the heel portion. Inasmuch as in those cases where the protectors project entirely through the sole it would be injurious to the mold or dies of a molding-machine to introduce a sole into the same with the protectors set therein, it is necessary that the molding of the sole should be performed before the protectors are set therein. In order to accommodate in the setting-machine the drop or shoulder that is produced in the sole by the said molding process, we rabbet the forward portion of the work-support, as at 29 in Figs. 2 and 4.

In Fig. 1 we have shown provisions giving a final compression to the stock at the instant of driving protectors into the same, such provisions comprising a link 71, extending from slide 11 to the arm 72 of a cam 73, which last is pivoted on the slide 74. Post 14 is mounted upon said slide, the latter being acted upon by the cam 15, to which reference has been made. Post 14 has a screw-threaded lower end 75, fitting an internally-threaded socket in a block 76, which is free to move in a bearing provided therefor in slide 74. The cam 73 takes against block 76, and at the time when slide 11 is depressed to drive the protectors cam 73 is turned to move block 76, post 14, and the work-support vertically with relation to the slide 74. These features do not form part of the present invention.

We claim as our invention—

1. In a protector-setting machine for boots and shoes, in combination, protector-driving devices, and the work-support having the slits corresponding in contour with that of a protector and receiving the entering edges of the protectors as the latter are driven home, the said slits inclosing the central posts adapted to support the leather at the centers of the protectors, substantially as described.

2. In a protector-setting machine, in combination, the work-support, the cushioned rear posts for contact with the rounded rear portion of the stock which is to receive protectors, and the side posts for contact with the edge of the stock at opposite sides thereof, substantially as described.

3. In a protector-setting machine, in combination, the work-support having the rear posts for contact with the rounded rear portion of the stock which is to receive protectors, the movable side posts for contact with the edge of the stock at opposite sides thereof, and means to effect transverse adjustment of the said side posts, whereby, by shifting the said side posts different sizes and shapes of stock may be accommodated, and the protectors may be driven at the required places around the periphery of the latter, substantially as described.

4. In a protector-setting machine, in combination, the work-support, the rear posts for contact with the curved rear portion of the stock which is to receive protectors, the oppositely-located side posts for making contact with the edge of the stock at opposite sides thereof, the movable arms on which the said side posts are mounted, and means of securing the said arms and side posts in the required positions of transverse adjustment, substantially as described.

5. In a protector-setting machine, in combination, the work-support, the rear posts for contact with the curved rear portion of the stock which is to receive protectors, the oppositely-located side posts for making contact with the edge of the stock at opposite sides thereof, the movable arms on which the said side posts are mounted, means of securing the said arms and side posts in the required positions of transverse adjustment, and a spring acting to move one of the said arms and its side post inward with yielding force, substantially as described.

6. In a protector-setting machine, in combination, a work-support, the rear posts for making contact with the rounded rear portion of the stock which is to receive protectors, the oppositely-located side posts for making contact with the edge of the stock at opposite sides thereof, the arms on which the said posts are provided, the screw-threaded pivots for the said arms, and the lock-nuts applied to the said pivots, substantially as described.

7. In a protector-setting machine, in combination, a work-support, the rear posts for making contact with the rounded rear portion of the stock which is to receive protectors, the oppositely-located side posts for making contact with the edge of the stock at opposite sides thereof, the arms on which the said posts are provided, the screw-threaded pivots for the said arms, the lock-nuts applied to the said pivots, and the spring acting in connection with one of the said arms, substantially as described.

8. In a protector-setting machine, in combination, a work-support, the rear posts for making contact with the rounded rear portion of the stock which is to receive protectors, the oppositely-located side posts for making contact with the edge of the stock at opposite sides thereof, means to fix one of the side posts in position, and a spring operating in connection with the other side post with a tendency to carry it toward the first thereof, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

HENRY W. WINTER.
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Witnesses:
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