

A. B. FOWLER.  
BUFFING MACHINE.  
APPLICATION FILED APR. 23, 1902.

972,843.

Patented Oct. 18, 1910.  
2 SHEETS—SHEET 1.

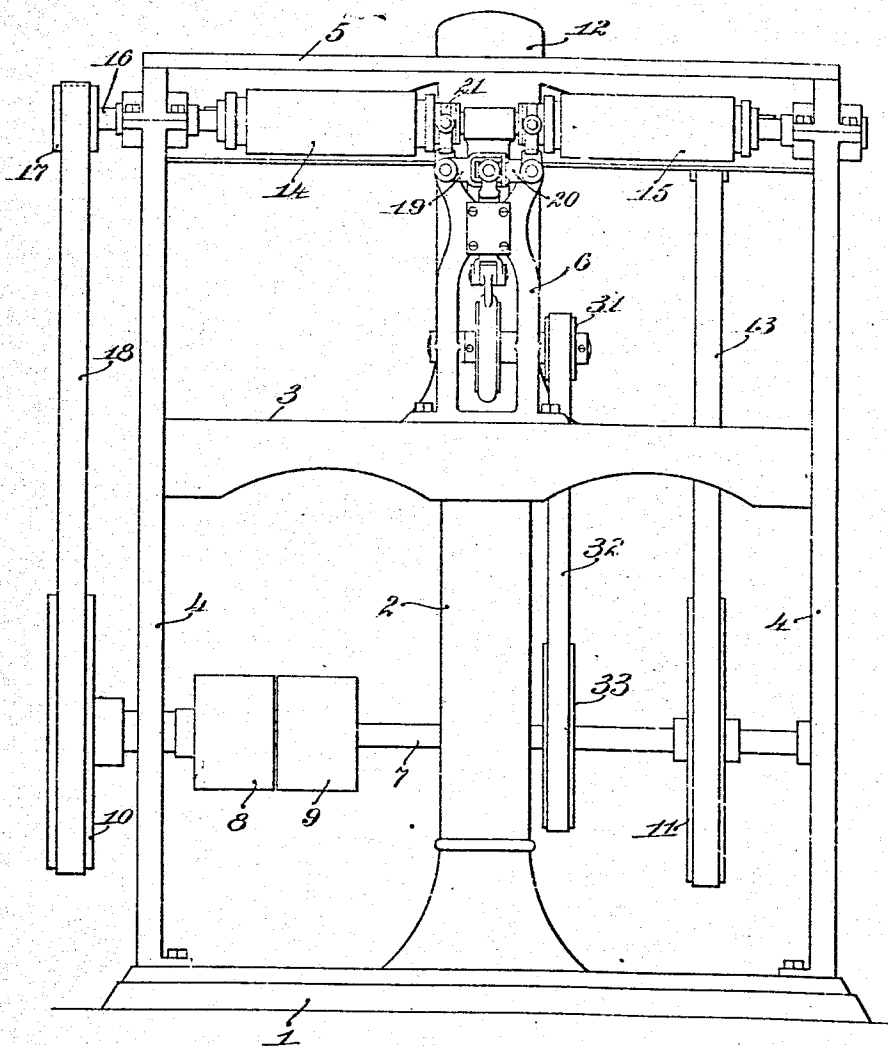


Fig. 1.

Witnesses  
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Alfred H. Hildreth

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by his Attorneys  
Phillips Van Coven & Fish

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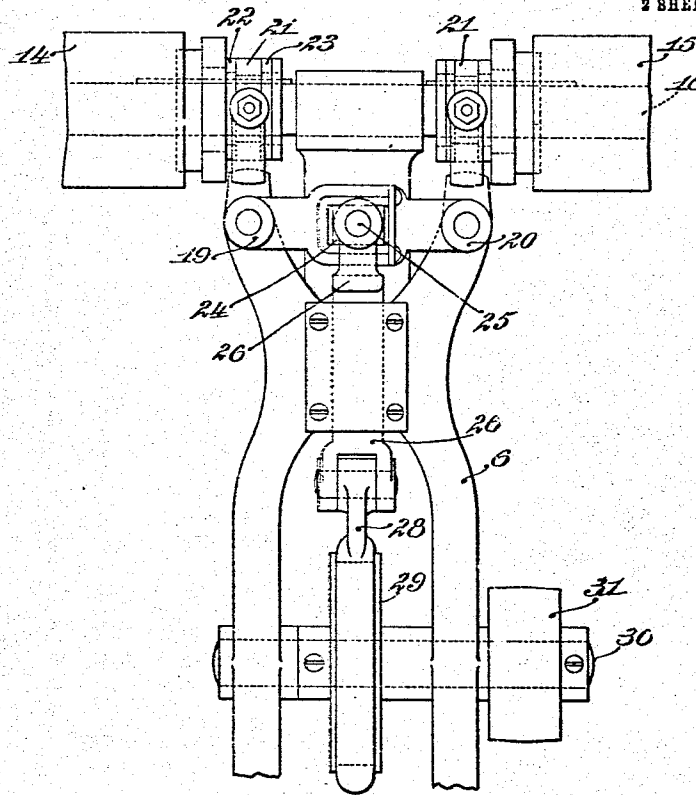


Fig. 2.

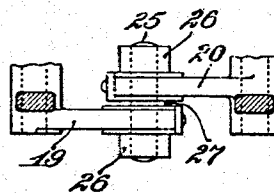


Fig. 3.

Witnesses

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# UNITED STATES PATENT OFFICE.

ALFRED B. FOWLER, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO UNITED SHOE MACHINERY COMPANY, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

## BUFFING-MACHINE.

972,843.

Specification of Letters Patent.

Patented Oct. 18, 1910.

Application filed April 23, 1902. Serial No. 104,264.

*To all whom it may concern:*

Be it known that I, ALFRED B. FOWLER, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Buffing-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention relates to buffing machines and more particularly to that class of buffing machines which comprise a buffing roll adapted to act upon the bottoms of the soles and heels of boots and shoes.

Buffing machines comprising a buffing roll, as now usually constructed, are provided with means for imparting a movement of rotation only to the buffing roll. Buffing machines have, however, been produced which are also provided with means for imparting an endwise reciprocating movement to the buffing roll, the object being to cause the scores produced by the abrasive surface of the roll to cross each other and thereby render the machine capable of producing a better surface, increase the amount of work which can be done by the machine, prolong the life of the abrasive covering, and reduce the number and extent of the movements which must be imparted to the boot or shoe by the operator during the buffing operation. Such machines have, however, been so constructed that only a slow reciprocating movement as compared to the speed of rotation can be imparted to the buffing roll so that the objects sought have not been attained, the reciprocating movement of the buffing roll being so slow as compared with its speed of rotation as to have little or no effect upon the action of the roll or on the character of the surface produced. The comparatively slow reciprocating movement imparted to the buffing roll has been necessitated by the fact that the mechanism for reciprocating the roll has been arranged to reciprocate the shaft upon which the roll is mounted and also by the fact that when two buffing rolls have been provided as is usual in this class of machines, the mechanism for reciprocating the rolls has been arranged to reciprocate both rolls simultaneously in the same direction. The roll of a buffing ma-

chine is rotated at a speed of three thousand revolutions a minute or upward and in machines provided with means for reciprocating the roll or rolls as heretofore constructed it has been found to be impractical to reciprocate the rolls at a speed which even approximates the speed of rotation on account of the strain put upon the various parts of the machine and on account of the vibrations imparted to the machine frame by the momentum of the heavy parts which are reciprocated.

The object of the present invention is to provide a machine comprising a buffing roll in which the buffing roll is reciprocated at such a speed as compared with the speed of rotation as to produce the results which have heretofore been sought to be attained by reciprocating the roll.

Other objects of the invention are to improve the construction of buffing machines comprising a buffing roll or rolls and render them more efficient in operation.

With these objects in view, my invention contemplates mounting the buffing roll of a buffing machine upon its shaft so as to rotate therewith and be capable of moving longitudinally thereon, and providing means for reciprocating the buffing roll longitudinally on its shaft, whereby the weight of the parts reciprocated is reduced and the speed at which the rolls can be reciprocated without subjecting the parts of the machine to injurious strain and without throwing the machine frame into vibration is greatly increased. This feature of my invention may be embodied either in a machine provided with a single buffing roll or in a machine provided with two or more buffing rolls.

My invention also contemplates providing a buffing machine comprising two buffing rolls with means for reciprocating the rolls simultaneously in opposite directions, whereby the tendency of the momentum of one roll to throw the machine frame into vibration is counteracted by the momentum of the other roll and the rolls can be reciprocated at a much higher speed than is practical when both rolls are reciprocated simultaneously in the same direction, as has heretofore been the practice. Broadly considered this feature of my invention is not limited to a construction in

which the rolls are mounted to reciprocate longitudinally on their shafts, although in its preferred form the rolls are so mounted as thereby the speed at which the rolls can be reciprocated is still further increased.

Other features of my invention relate to certain devices, combinations, and arrangements of parts hereinafter described and claimed, which possess advantages in simplicity of construction and ease and certainty of operation which will be apparent to those skilled in the art.

A buffing machine embodying my invention in its preferred form is illustrated in the accompanying drawings, but it is to be understood that except as specifically defined in the claims my invention is not limited to the construction illustrated but may be otherwise embodied without departing from the spirit thereof.

Referring to the drawings, Figure 1 is a view in front elevation of a buffing machine embodying the preferred form of my invention; Fig. 2 is a view in front elevation of a portion of the machine illustrated in Fig. 1, illustrating on an enlarged scale the mechanism for reciprocating the buffing rolls and Fig. 3 is a detail sectional plan view on the line 3-3 of Fig. 2 illustrating the connections between the bell cranks by which the rolls are reciprocated and their actuating slide.

The frame of the machine illustrated in the drawings consists of a base 1, a central standard 2 upon which is supported a table 3, side plates or standards 4, a cross bar 5 connecting the upper ends of the side plates 4, and a central standard 6 secured to the table 3. In the lower portion of the frame of the machine is mounted the driving shaft 7 provided with the fast and loose pulleys 8 and 9 and having secured thereto belt pulleys 10 and 11.

12 indicates the usual blower casing in which is mounted an exhaust fan which is driven from the pulley 11 by means of a belt 13 in the usual manner.

The machine illustrated in the drawings is provided with two buffing rolls, as is usual in this class of machines. These buffing rolls are indicated at 14 and 15 and are both mounted upon a shaft 16 journaled in the upper ends of the side plates 4 and in the upper end of the standard 6. A belt pulley 17 is secured to one end of the shaft 16 and the belt 18 passes over this pulley and over the pulley 10 on the driving shaft 7 so that the shaft 16 is rotated from the driving shaft.

The construction so far described is or may be the same as that of buffing machines which have heretofore been devised. In such machines, however, provided with means for reciprocating the buffing rolls, the buffing rolls have been secured to their

shaft so as to rotate and move longitudinally therewith. Such construction has necessitated that the buffing rolls be reciprocated at a low rate of speed as compared with the speed of rotation of the rolls, as has heretofore been explained. In the machine shown in the drawings the rolls 14 and 15 are splined upon the shaft 16 so as to be rotated with the shaft and be capable of a longitudinal reciprocating movement independent of the shaft, and means are provided for reciprocating the rolls on the shaft simultaneously in opposite directions. By mounting the buffing rolls to move longitudinally of the shaft, the shaft is not reciprocated as in prior constructions and the rolls can be reciprocated at a greatly increased speed without liability of injury to the operating mechanism or of throwing the machine frame into vibration. By reciprocating the rolls simultaneously in opposite directions the tendency of the rolls to throw the machine frame into vibration instead of being cumulative is counteractive and the two rolls can be reciprocated at the same speed or at a greater speed than would be the case if a single roll were employed.

The buffing rolls may be of any well-known or suitable construction. The means for reciprocating the rolls which I have shown in the drawings comprise two oppositely disposed bell cranks 19 and 20 pivotally mounted upon projections from the standard 6, the horizontal arms of the bell cranks extending toward each other and the vertical arms being forked and pivotally connected to rings 21 mounted loosely upon the inner ends of the buffing rolls between collars 22 and 23 secured to the rolls. The openings in the rings 21 are so shaped as to allow a slight vertical movement of the rings as the bell cranks 19 and 20 are oscillated. The inner ends of the horizontal arms of the bell cranks 19 and 20 are provided with slots in which rectangular blocks are mounted one of which is shown at 24 in Fig. 2. A pivot pin 25 passes through these blocks and is secured in the upper forked end of a slide 26 mounted to reciprocate in a vertical guideway in the standard 6. The forked upper end of the slide 26 embraces the inner ends of the horizontal arms of the bell cranks as is clearly shown in Fig. 3, and the blocks 24 are held separated by a washer 27. The lower end of the slide 26 is pivotally connected to a rod 28 provided with a strap surrounding an eccentric 29 secured to a short shaft 30 journaled in the lower portion of the standard 6. A belt pulley 31 is secured to one end of the shaft 30 and a belt 32 passes over this pulley and over the pulley 33 secured to the driving shaft 7 so that the shaft 30 is rotated from the driving shaft.

The relative proportions of the pulleys 17

and 10 and of the pulleys 31 and 33 are such that the buffing rolls are moved endwise an appreciable distance during a single revolution of the rolls. These pulleys may be proportioned to give the rolls any desired speed of reciprocation, the proportions shown in the drawings being such as to give the rolls about two thousand complete reciprocations during three thousand revolutions.

Having thus indicated the nature and scope of my invention and having specifically described a machine embodying the preferred form thereof, I claim as new and desire to secure by Letters Patent of the United States.

1. A buffing machine, having, in combination, a buffing roll shaft, a buffing roll mounted to rotate therewith and move longitudinally thereon, means for rotating the shaft, and means for reciprocating the roll, arranged to impart a complete reciprocation to the roll during a small number of revolutions of the roll substantially as described.

2. A buffing machine, having, in combination, a buffing roll shaft, two buffing rolls mounted to rotate therewith and move longitudinally thereon, means for rotating the shaft, and means for simultaneously reciprocating the rolls in opposite directions, substantially as described.

3. A buffing machine, having, in combination, two buffing rolls, means for rotating the rolls, and means for simultaneously re-

ciprocating the rolls in opposite directions, substantially as described.

4. A buffing machine, having, in combination, a buffing roll shaft, two buffing rolls mounted to rotate therewith and move longitudinally thereon, means for rotating the shaft, oppositely disposed bell cranks connecting with the inner ends of the rolls, a slide connecting with the bell cranks, and means for reciprocating the slide, substantially as described.

5. A buffing machine, having, in combination, a buffing roll shaft, two buffing rolls mounted to rotate therewith and move longitudinally thereon, means for rotating the shaft, two levers connecting with the inner ends of the rolls, and means for actuating the levers to reciprocate the rolls simultaneously in opposite directions, substantially as described.

6. A buffing machine, having, in combination, a buffing roll and means for rotating and reciprocating the roll at such relative speeds as to cause the scores produced by the surface of the roll during one revolution to cross the scores produced by the surface of the roll during a preceding revolution, substantially as described.

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

ALFRED B. FOWLER.

Witnesses:

HORACE VAN EVEREN,  
FRED O. FISH.