

973,422.

J. H. GIFFORD.
SHOE SOLE DRYING MACHINE.
APPLICATION FILED NOV. 15, 1908.

Patented Oct. 18, 1910.

2 SHEETS-SHEET 1.

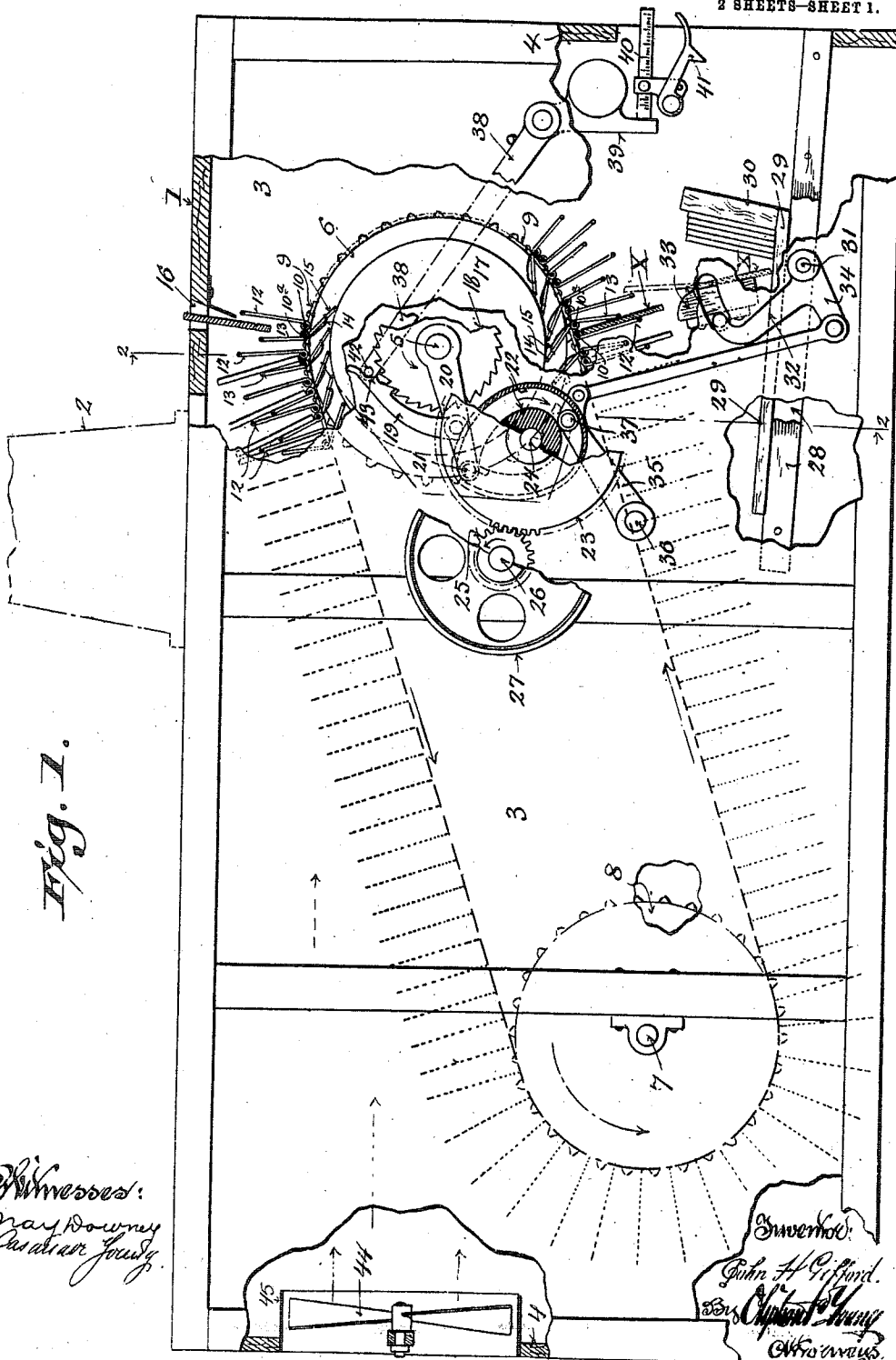


Fig. 1.

Witnesses:
May Downey
Cass at not found.

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2 SHEETS—SHEET 2.

Fig. 3.

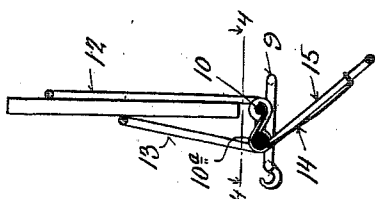
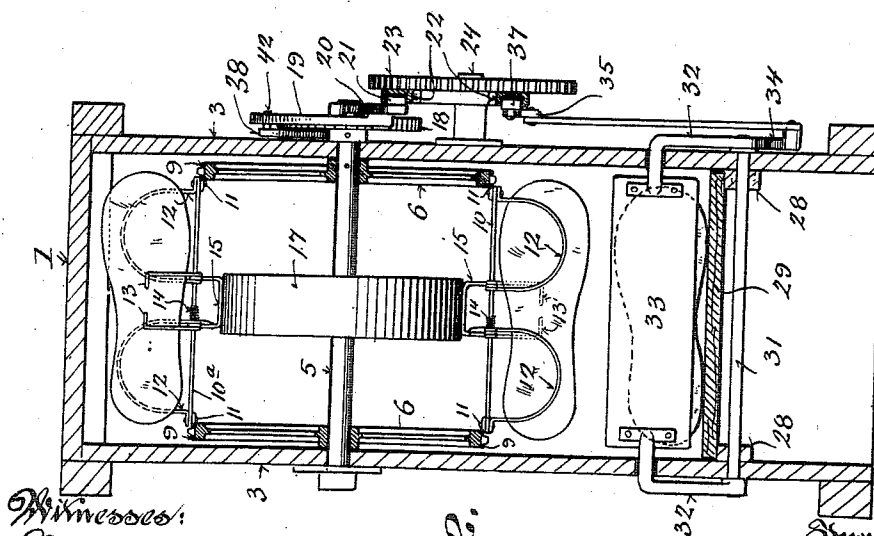
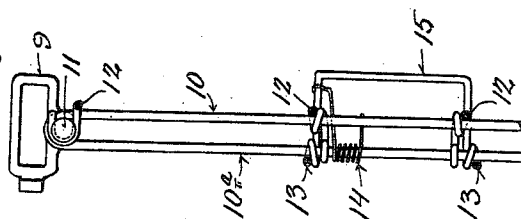


Fig. 4.



Witnesses:
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Fig. 2.

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UNITED STATES PATENT OFFICE.

JOHN H. GIFFORD, OF MILWAUKEE, WISCONSIN.

SHOE-SOLE-DRYING MACHINE.

973,422.

Specification of Letters Patent.

Patented Oct. 18, 1910.

Application filed November 15, 1909. Serial No. 528,012.

To all whom it may concern:

Be it known that I, JOHN H. GIFFORD, a citizen of the United States, and resident of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Shoe-Sole-Drying Machines; and I do hereby declare that the following is a full, clear, and exact description thereof.

10 The object of my invention is to provide a simple, compact and efficient shoe-sole drying machine, the construction and arrangement being such that the operator of a sole cementing machine, which is conveniently
15 located, may, after the soles are passed through said cementer, feed the same to compartments or racks carried by a slowly rotating endless conveyer, the soles being dried in transit and automatically discharged and stacked upon a tray or suitable receptacle. The dryer is also provided with
20 means whereby the conveyer feed may be checked at predetermined intervals to thus control the number of shoe-soles delivered to the tray. Heretofore the method employed
25 for accomplishing this work consisted in stacking the soles in portable trays or receptacles after they have been cemented, the trays being thereafter carried by the
30 operators to convenient locations of the factory where they are dried and distributed for the next operation in the manufacture of shoes.

35 By utilizing a device embodying the features of my invention speed is effected, together with a saving of much time and labor heretofore expended in handling shoe-soles after the same have been cemented.

40 The invention therefore consists in certain peculiarities of construction and combination of parts as fully set forth hereinafter with reference to the accompanying drawings, and subsequently claimed.

45 In the drawings Figure 1, represents a side elevation of a shoe-sole drying machine embodying the features of my invention, with parts broken away and other parts in section to more clearly define certain structural features. Fig. 2, a cross-section of the
50 same as indicated by line 2—2 of Fig. 1. Fig. 3, a detail longitudinal sectional view of one of the sole gripping racks with which the endless conveyer is provided, and Fig. 4, a sectional plan view of a portion of the
55 same, the section being indicated by line 4—4 of Fig. 3.

Referring by numerals to the drawings, 1 indicates a work-table, upon which is mounted a suitable sole cementing machine 2, as indicated by dotted lines. The table 60 is provided with side and end boards 3, 4 respectively, thus forming a closed chamber beneath said table. A transverse shaft 5 is mounted in bearings carried by the side boards 3 of the table, upon which shaft is 65 secured a pair of sprocket-wheels 6, 6 there being a similar shaft 7 mounted in bearings carried by the side boards adjacent to the opposite end of the said table, which shaft also carries a pair of sprocket-wheels 8, only 70 one of which is shown. Mounted upon the opposite pairs of sprocket-wheels, are endless link-belt chains 9; and to the opposite pairs of each link of these chains, there is secured a shoe-sole rack, which rack constitutes a spring-controlled gripping device. 75 The gripping device shown consists of parallel rods or lugs 10 and 10^a, that are secured to ears of the chain links by suitable rivets 11. These rivets also serve as retainers for 80 the outer ends of rigid bows 12, which bows have their inner ends wound around the rods 10 and 10^a, whereby they are held at a right angle to the chain links. The rod 10^a of each gripping device has loosely 85 wound thereon a gripping finger 13, arms of which are adapted to engage a shoe-sole inserted between the same and the spring bows 12, whereby the sole is securely clamped, being held by means of a coiled 90 spring 14, which coiled spring is wound around the rod 10^a and has one of its ends looped under the rod 10 and the opposite end arranged to engage one arm of a tail-piece 15 of the gripping finger, which tail- 95 piece extends below the plane of the chain-belt.

The shaft 5 and sprocket-wheels 6, which are located adjacent to the feed end of the table, are disposed directly under a feed- 100 aperture 16 provided in the table top whereby the shoe-soles, after being passed through the cementing machine, may be readily inserted through said slot and between the members of the gripping devices, the mem- 105 bers of which devices are held open to receive the soles at this point by means of a disk 17 that is rotatable with and secured to the shaft 5. The periphery of the disk 17 is arranged to engage the tail-piece 15, of 115 the gripping fingers 13, as the endless conveyer travels about the sprocket-wheels 9,

and thus it will be seen that as the gripping devices upon the lower stretch of the conveyor approach the disk, in the direction as indicated by the arrow in Fig. 1, the spring fingers will be successively actuated so as to effect release of the shoe-soles engaged thereby, said gripping fingers being held open until such time as they have completed an approximate half turn about the disk, when their springs 14 will be free to act, the gripping devices in the meantime having passed under the feed-aperture 16 and successively received freshly cemented soles, which are thereafter clamped as previously described.

To insure the most efficient results the conveyor is preferably intermittently rotated step by step, in its travel, a distance equal to the distance between links of the chain 9, or conveyor racks, and the timing of this intermittent motion is such that the members of each gripping device are alined and checked for a short interval of time directly under the table feed-aperture 16, thus insuring the reception of a shoe-sole therebetween, at intervals which coincide with the speed operations of the cementing machine.

The intermittent drive of the conveyor is obtained through a ratchet-wheel 18, which is secured to the shaft 5 at one side of the table and exterior of the adjacent side board. The ratchet-wheel is operated by a pawl 19 that is fulcrumed to an arm 20, which arm is loosely mounted upon the shaft 5. The outer end of the arm 20 carries a roller 21, which roller is adapted to engage a cam-wheel 22 that is carried by a toothed gear-wheel 23. This gear-wheel is loosely mounted upon a stud 24 that extends from the adjacent side board 3, the gear-wheel being driven by a pinion 25 that is mounted upon a power-shaft 26, to which shaft is also secured a suitable drive-pulley 27.

By the above arrangement of driving mechanism it will be understood that the speed of the conveyor is greatly reduced in proportion to the speed of the power-shaft, and with each rotation of the toothed-wheel 23 the ratchet-wheel 18, through its cam-controlled pawl, is rotated the distance of one tooth, which distance is equal to the space between the sole-gripping devices.

Cleats 28 are secured to the inner face of the side boards 3, which cleats constitute track members for a tray or receptacle 29 that is slidably supported thereon, the tray being provided with a vertically disposed backing strip 30 for the support of the first shoe-sole of a series which may be successively stacked upon said tray.

An oscillatory spindle 31 is mounted in the side boards 3 of the table directly under the tray and to this spindle is secured arms 32, that extend through slotted apertures in

the side boards 3. These arms terminate within the closed chamber of the table and serve as supports for a feed-bar 33 secured thereto. The feed-bar is disposed just above the bottom of the tray 29 and normally positioned relative to the disk 17, so as to receive and deflect the shoe-soles upon the bottom of said receptacle between its backing-strip and opposite face of said feed-bar. One of the arms 32 is provided with a bell-crank extension 34, which extension is linked to a lever 35, the lever being fulcrumed upon a stud 36 that extends from the adjacent side board 3. This lever carries an anti-friction roller 37 that engages the cam-groove 22 of the toothed-wheel 23, its point of engagement being diametrically opposite the point of engagement of the roller 21 which, as previously stated, imparts motion to arm 20 of the intermittent conveyor feed mechanism.

As shown in Fig. 1 of the drawings, the position of the cam-groove, relative to the parts actuated thereby, is such that the feed-bar will have no movement during the next quarter of a revolution of the cam-groove should the machine be in motion. During this first quarter of a revolution of the cam-groove however, the feed mechanism will have imparted motion to the conveyor and this movement will cause the shoe-sole marked "X" to be released from its gripping mechanism where, by gravity, it is delivered upon the tray 29 forward of the feed-bar 33. Further rotation of the cam-groove in the same direction, will now impart motion to the arm 35, which motion causes the feed-bar to push the sole X forward in stacked position relative to those already deposited upon said tray. The movement of the feed-bar just described is sufficient to cause the tray 29 to move forward a space equal to the thickness of one shoe-sole, and thus with each successive operation of the machine this tray is moved forward the thickness of a shoe-sole until the required number of soles are stacked thereon. The number of shoe-soles to be stacked upon the tray is controlled by a trip mechanism consisting of a pivoted lever 38, which lever is provided with a depending arm 39 having a plate 40 extending therefrom, upon which plate is adjustably mounted a dog 41, the nose of the dog being normally in the path of travel of the upper edge of the tray backing-strip 30. The end of the lever 38 is provided with a pin 42, which pin is in juxtaposition to a cam-face 43 of the feed-pawl 19. By this construction, when the backing-strip of the tray has moved forward a sufficient distance to engage the nose of the dog 41, further movement of the tray will then cause oscillation of the lever 38, which movement in turn causes disengagement of the pawl 19 from the ratchet-wheel, through action of the pin

42 against the cam-face of said pawl 19. The result of this action is, that upon the next movement of the feed-pawl, incidental to rotation of the cam-groove there will be
 5 no feed movement imparted to the ratchet-wheel, and the conveyer and its associated mechanism will thereby be stopped in its movement. The stoppage of the mechanism may be indicated by any suitable signal to
 10 the operator, and thereafter the tray, filled with the desired number of shoe-soles, may be removed and an empty tray substituted within the housing therefor, it being understood that the end board 4 adjacent to the
 15 cleats 28 is provided with an opening therein whereby access may be had for inserting or removing the sole trays. By providing a suitable scale upon the plate 40 adjustment of the dog thereon may be set whereby any
 20 predetermined number of shoe-soles may be deposited upon a tray, this result being especially desirable when different grades of shoe-soles are being operated upon, in order that each grade may be separately stacked,
 25 and thus more than one series of grades may be inserted upon the conveyer of the drying mechanism at a time.

While I have shown and described a specific mechanism for stopping the feed of the
 30 conveyer at predetermined intervals, it should be understood that the means illustrated may be varied to accomplish the same result without departing from the spirit of my invention, nor do I wish to confine myself to the specific means whereby intermittent driving motion is imparted to the end-
 35 less conveyer.

As shown in the accompanying drawings, the endless conveyer is approximately of
 40 such length, that a shoe-sole being deposited at the feed-slot, can be discharged at a point approximately alined therewith from the return or lower stretch of the conveyer in a perfectly dried condition, it being under-
 45 stood that the intermittent travel of said conveyer is, of course, taken into consideration with its length.

To insure perfect drying of the shoe-soles, a current of air is preferably passed through
 50 the chamber, which current may be attained in any convenient manner. The mechanism for accomplishing this result, as shown, consists of a fan 44, the shaft of which fan is mounted in suitable bearings, said fan being
 55 incased in a cylindrical jacket that is fitted within a corresponding aperture of the table end board 4 farthest from the feed end of the conveyer, and upon a plane approximately corresponding to the upper stretch
 60 of said conveyer. By this means an air blast is discharged over and between the shoe-soles as they are deposited upon the conveyer, the air being also adapted to pass down through the lower stretch of said conveyer and is discharged through the tray

opening at the end of the table farthest from the fan mechanism.

I claim:

1. A shoe-sole drying machine comprising an apertured casing having an inclosed
 70 chamber, an endless conveyer mounted within the chamber, a series of shoe-sole gripping members carried by the conveyer, intermittently actuated feed mechanism for said conveyer, means for releasing the shoe-
 75 soles from the gripping members, and mechanism under the control of the released shoe-soles for stopping the conveyer at predetermined intervals.

2. A shoe-sole drying machine comprising
 80 an apertured casing having an inclosed chamber, an endless conveyer mounted within the chamber, a series of racks carried by the conveyer, an intermittently actuated feed mechanism for said conveyer, a slidable tray
 85 disposed adjacent to the conveyer, a fixed backing-strip carried by the tray, a reciprocative guiding and feeding bar disposed opposite the backing-strip, between which backing-strip and feed-bar shoe-soles are
 90 adapted to be deposited, and means in operative connection with the tray and actuating mechanism of the conveyer for disengaging said actuating feed mechanism from
 95 said conveyer.

3. A shoe-sole drying machine comprising an apertured table having an inclosed chamber, an endless conveyer mounted within
 100 the chamber, a series of racks carried by the conveyer, actuating mechanism for said conveyer, a slidable tray disposed adjacent to the lower stretch of the conveyer, a backing-strip extending from the tray, and a reciprocative feed-bar disposed opposite the
 105 backing-strip, between which bar and backing-strip the dried shoe-soles are deposited.

4. A shoe-sole drying machine comprising an apertured table having an inclosed chamber thereunder, an endless conveyer mounted
 110 within the chamber, a series of spring-controlled gripping-members carried by the conveyer, releasing means for the gripping members, an intermittently actuated feed mechanism for said conveyer, a slidable tray
 115 disposed adjacent to the lower stretch of the aforesaid conveyer having a fixed backing-strip, a reciprocative guiding feed-bar disposed opposite the backing-strip, between which bar and backing-strip dried shoe-soles are adapted to be deposited, means for
 120 successively releasing the dried shoe-soles from the conveyer rack, and means controlled by the slidable tray for stopping the conveyer at predetermined intervals.

5. A shoe-sole drying machine comprising
 125 an apertured feed table having an inclosed chamber thereunder, wheel-carrying transverse-shafts supported within the chamber, an endless conveyer mounted upon the shaft-wheels, a series of bows carried by the con-
 130

veyer, spring-controlled gripping devices in communication with the bows, and a disk carried by one of the transverse wheel-shafts for effecting release of the gripping
5 devices.

6. A shoe-sole drying machine comprising an inclosed chamber having an endless conveyer mounted therein, a series of racks carried by the conveyer, a slidable tray disposed adjacent to the conveyer for the re-
10 ception of dried shoe-soles, and means in

gear connection with the conveyer for imparting movement to the sliding tray controlled by the delivery of a shoe-sole therein.

In testimony that I claim the foregoing I
have hereunto set my hand at Milwaukee in
the county of Milwaukee and State of Wisconsin in the presence of two witnesses.

JOHN H. GIFFORD.

Witnesses:

GEO. W. YOUNG,
MAY DOWNEY.