Oct. 27, 1925. 1,558,451

F. J. BALCOM

NAIL DISTRIBUTOR

Filed Sept. 2, 1921

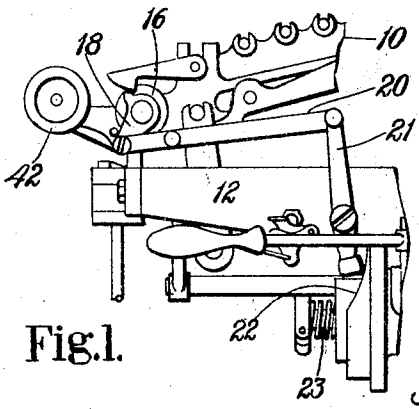


Fig.1.

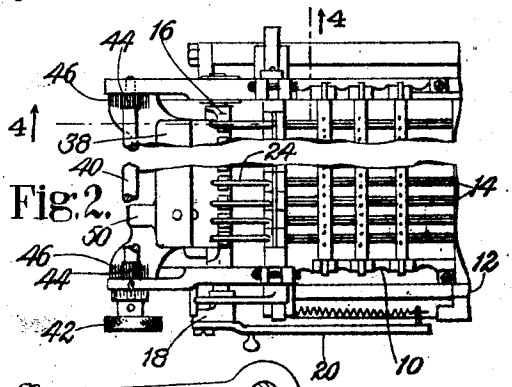


Fig.2.

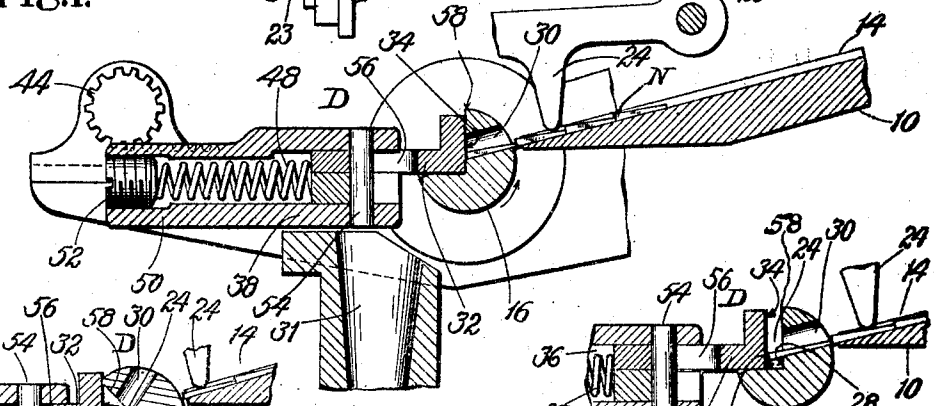


Fig.4.

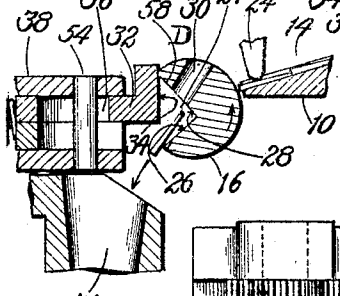


Fig.5.

Fig.6.

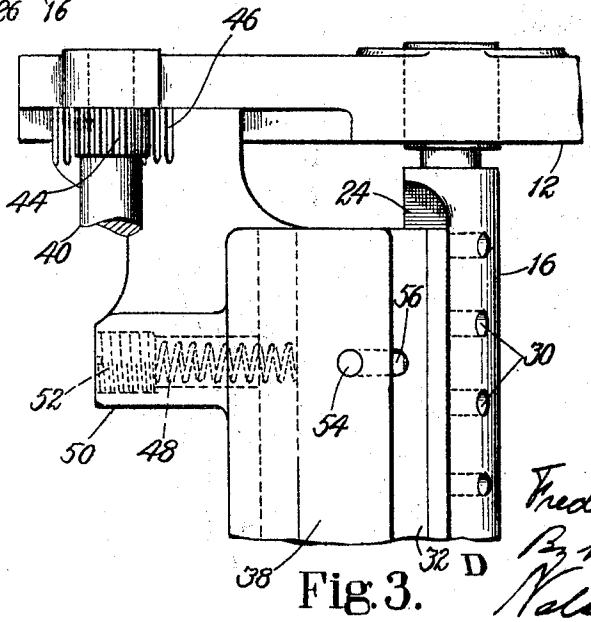


Fig.3.

INVENTOR.

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By his Attorney,

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Patented Oct. 27, 1925. 1,558,451

UNITED STATES PATENT OFFICE.

FREDERICK J. BALCOM, OF BINGHAMTON, NEW YORK, ASSIGNOR TO UNITED SHOE MACHINERY CORPORATION, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

NAIL DISTRIBUTOR.

Application filed September 2, 1921. Serial No. 498,074.

To all whom it may concern:

Be it known that I, FREDERICK J. BALCOM, a citizen of the United States, residing at Binghamton, in the county of Broome and State of New York, have invented certain Improvements in Nail Distributors, of which the following description, in connection with the accompanying drawings, is a specification, like reference characters on the drawings indicating like parts in the several figures.

This invention relates to nail-distributors and particularly to the discharge mechanism of such apparatus. In a well-known form of nail-distributor, a discharge device, furnished by a rotatable roll, is mounted between the nail-delivering ways and a stop-bar, and oscillated between one extreme position, in which the nails are received in depressions in the roll which are alined with the nail-ways and stop, and the opposite extreme position, in which the nails are discharged from the roll-depressions into conduits which supply loading mechanism. In this discharge mechanism the stop-bar is adjustable toward and from the roll, so that nails of different lengths may be operated upon successfully, the location of the bar always being such that the nails stopped upon the roll prior to delivery will hold the succeeding nails clear of said roll in its discharging movement. When, however, the length of the nails falls below a certain minimum for a roll of a particular diameter, the adjustment which would stop them with their inner extremities at the desired position is prevented by the bar coming in contact with the periphery of the roll. Rolls of small diameter, to give a wider range of stop-bar adjustment, cannot be used with long nails, since they afford for these an unstable support from which the vibration of the apparatus displaces them. It is therefore customary to provide a plurality of interchangeable rolls of different diameters, each of which will act properly through a certain limited range of nail-lengths. The present invention has as an object the simplification of this multiple-roll equipment by the provision of a discharge mechanism, which by adjustment only, without substitution of elements, will act successfully with all lengths of nails. To this end, a movable discharge device, as a rotatable roll, has combined with it a movable stop member, which may be a reciprocatory bar, extending into the path of said discharge device and of the nails delivered thereby. When thus related, the stop member may be carried inwardly toward the nail-ways in its adjustment, so that it will maintain even the shortest nails in the correct relation upon the roll to those following in the nail-ways. To permit the movement of the discharge device when the stop member is related to it as just set forth, the latter is preferably yieldable and the discharge device has provision for automatically moving the member out of its path in advance of the nails delivered. This movement I have shown as accomplished by a cam-surface, which may be formed upon the discharge-roll. In addition to this automatic movement of the stop member, there is provided means arranged to adjust the stop member with relation to the discharge device to position it for the particular length of nails to be delivered.

Of the many forms which my invention may assume, but one is illustrated in the accompanying drawing,

Fig. 1 being a side elevation of the forward portion of a nail-distributing apparatus to which my improved discharge mechanism is applied;

Fig. 2, a broken top plan view of the same portion of the apparatus;

Fig. 3, a similar view, enlarged, showing one side of the apparatus only;

Fig. 4, an enlarged vertical section on the line 4—4 of Fig. 2, illustrating particularly the relation of the elements for co-operation with the shortest nails; while

Figs. 5 and 6 are like views, one showing the discharging position, and the other the adjustment of the parts for co-operation with longer nails than appear in Fig. 4.

The general nail-distributing organization may be similar to that disclosed in Patent No. 1,005,303, Pope, Oct. 10, 1911. This includes a nail-conveyor 10 arranged to reciprocate in a frame 12 and provided with inclined grooves or nail-ways 14 carrying the nails from a drum or container (not illustrated) in series in each of the ways, as appears at N in Fig. 4, to the discharge mechanism D. The discharge member proper appears as a roll 16, journaled horizontally for rotation upon the forward end of the conveyor-frame. The roll 16 is os-

cillated from the nail-receiving position, shown in Fig. 4, to the nail-discharging position, illustrated in Fig. 5, by a crank-arm 18 fixed to the spindle of the roll and operated through a link 20 and a lever 21 from a cam 22 upon a shaft 23, this shaft being constantly rotated while the apparatus is in operation. Co-operating with the nail-ways are the usual stop-fingers 24, oscillated from a cam on the discharge-roll spindle to alternately release the nails to permit their travel down the nail-ways to the discharge mechanism and check this advance while said discharge mechanism is operating. These fingers have no peculiar relation to the present invention.

Extending longitudinally of the axis of the discharge-roll and opening through its periphery is a recess 24, which approximately has the form which would be produced by removing from the roll a sector of 90 degrees. In the normal or nail-receiving position of the roll (Figs. 4 and 6), a wall 26 of the recess lies horizontally, while the other wall 28 extends vertically. Opening through the wall 28 and through the opposite side of the roll is a series of transverse perforations 30, corresponding in number to the nail-ways, being alined with them and having the same inclination when the discharge-roll occupies the nail-receiving position. In the opposite extreme position, illustrated in Fig. 5, the perforations 30 are so inclined that they discharge the contained nails by gravity into conduits 31 leading to the loading mechanism of the machine, as a heeler, which is to be supplied. Entering the roll-recess 24, so that it lies in the path of movement of said roll in its oscillation, is a stop member, shown in the form of a bar 32. This bar preferably is parallel to the normally horizontal wall 26 of the recess, and has a vertical stop-surface 34 parallel to the recess-wall 28 and extending across the forward ends of the perforations 30. The bar is mounted to reciprocate in a horizontal way 36 in a plate 38 mounted for adjustment toward and from the discharge-roll upon the forward portion of the conveyor-frame. This movement may be effected by a shaft 40 arranged to be turned by a hand-wheel 42 and having fast upon it pinions 44, 44 meshing with series of rack-teeth 46, 46 upon the upper face of the plate. The stop-bar is pressed yieldably toward the discharge-roll along lines at all times intersecting it by springs 48, two of which may be employed, these springs being contained in bores in extensions 50 from the outer edges of the plate. The forward extremities of the bores are threaded to receive screw-plugs 52, against which the inner ends of the springs abut. By turning these plugs toward or from the stop-bar, the force with which the springs resist its movement may be varied. The inward travel of the bar under the expansive force of the springs may be limited by pins 54 extending across the way 36 and held by the upper and lower walls of the plate 38. These pins pass through slots 56 in the stop-bar, the elongation of the openings permitting the desired yield of the bar. Formed upon the roll 16, as an extension of the recess-wall 28 and above the perforations 30, is a cam-surface 58 arranged to contact, in the oscillation of the roll, with the stop-surface 34 of the bar or with an upward extension therefrom.

In using this discharge device, the stop-bar 32 is adjusted by moving its supporting plate 38, until the wall 34 is in such a position that contact of the forward ends of the nails, as they lie in the receiving depressions 30, will bring the opposite extremities just outside the periphery of the roll to hold the succeeding nails spaced from said roll. This is as illustrated in Fig. 4, for the shortest nail which the mechanism is adapted to operate upon, and as in Fig. 6, for a longer nail. Even when the stop-bar is adjusted for the longest nails, with the surface 34 farthest from the perforations 30, there will be no danger of displacement of the nails by the jarring of the apparatus, since they are held positively against the upward movement which would dislodge them, by the closed perforation-walls. As the roll 16 oscillates in the direction of the arrows in Figs. 4 and 5 of the drawing to discharge the nails, the cam-surface 58, operating against the stop-surface 34, forces the bar forward, the springs 48 yielding. Thus the roll moves the bar out of its path, as is particularly shown in Fig. 5, leaving said roll free to oscillate. This at once carries the stop-surface of the bar away from the delivery-ends of the perforations, and the nails contained in the perforations fall, without anything to interfere with their discharge, over the recess-surface 26 into the conduits 31. As reverse movement of the roll occurs, the springs 48 cause the bar to follow the surfaces 58 and 28 back to the normal receiving position, whereupon the nail-receiving and discharging operation is repeated.

Having described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. In a nail-distributor, a movable discharge device arranged to hold temporarily the nails to be delivered, and a movable stop member extending into the paths of movement of said device and of the nails therein.

2. In a nail-distributor, a movable discharge device, a movable stop member extending into the path of movement of said device, and a spring arranged to force the

stop member toward the discharge device along lines intersecting the discharge device throughout the movement of said device.

3. In a nail-distributor, a rotatable discharge device, and a yieldable stop member having its nail-engaging surface extending into the path of rotation of said device.

4. In a nail-distributor, a rotatable discharge device, a yieldable stop member extending into the path of rotation of said device, and means arranged to adjust the stop member with relation to the discharge device.

5. In a nail-distributor, a movable discharge device, and a movable stop member extending into the path of movement of said device, there being provision for automatically moving the member out of said path in advance of nails delivered by the discharge device into engagement with said member.

6. In a nail-distributor, a movable discharge device, a movable stop member extending into the path of movement of said device, there being provision for automatically moving the member out of said path, and means arranged to adjust the stop member with relation to the discharge device.

7. In a nail-distributor, a rotatable discharge device, and a yieldable stop member extending into the path of rotation of said device and of the nails discharged therefrom, there being a surface movable into contact with the stop member for moving it from the discharge device.

8. In a nail-distributor, a rotatable discharge device having a nail-receiving perforation, a yieldable stop member normally co-operating with one extremity of the perforation and arranged for actuation by the device in its discharging movement, and means arranged to adjust the stop member toward and from the perforation.

9. In a nail-distributor, a discharge-roll having a recess opening through its periphery, and a nail-stop extending into the recess through the peripheral opening.

10. In a nail-distributor, a peripheral discharge-roll having a recess and an opening through the roll from another portion of the periphery into the recess, and a nail-stop entering the recess to normally co-operate with the end of the opening.

11. In a nail-distributor, a discharge-roll having a peripheral recess and an opening through the roll into the recess, a nail-stop movable into the recess, and a spring normally holding the stop in the path of the nails delivered through the opening.

12. In a nail-distributor, a movable discharge-roll having a recess and an opening through the roll into the recess, a nail-stop supported independently of the roll and movable into the recess, and a spring normally holding the stop in co-operation with the opening.

13. In a nail-distributor, a rotatable discharge-roll carrying a cam-surface, and a stop for the nails discharged by the roll, said stop being movable by said surface.

14. In a nail-distributor, a rotatable discharge-roll having a series of nail-receiving openings and a cam-surface formed thereon and extending along the series of openings, and a movable nail-stop contacting with said surface.

15. In a nail-distributor, a rotatable discharge-roll, a movable plate adjacent thereto, a stop-bar mounted to reciprocate upon the plate in contact with the roll, and a spring interposed between the plate and bar and acting to force said bar toward the roll.

16. In a nail-distributor, a rotatable discharge-roll, a movable plate adjacent thereto, a stop-bar mounted to reciprocate upon the plate in contact with the roll, a spring interposed between the plate and bar and acting to force said bar toward the roll, and means arranged to vary the force with which the bar presses against the roll.

17. In a nail-distributor, an oscillatory discharge-roll, and a movable stop-bar co-operating with the nails discharged by the roll, the roll in its oscillation co-operating with the bar to effect its movement.

18. In a nail-distributor, an oscillatory discharge-roll having a longitudinal recess, a transverse opening through the roll into the recess and a cam-surface adjacent to said recess, and a yieldable stop-bar extending into the recess for co-operation with the opening and contacting with the cam-surface to be moved thereby in the oscillation of the roll.

19. In a nail-distributor, an oscillatory discharge-roll having a longitudinal recess, a transverse opening through the roll into the recess and a cam-surface adjacent to said recess, a plate adjustably mounted adjacent to the roll, and a stop-bar yieldable upon the plate, said bar extending into the recess for co-operation with the opening and contacting with the cam-surface to be moved thereby in the oscillation of the roll.

20. In a nail-distributor, a movable discharge device, and a movable stop member for nails discharged by the device supported independently of said device and arranged for movement by contact therewith.

21. In a nail-distributor, a movable discharge device, a movable stop member supported independently of said device and arranged for movement by contact therewith, and means arranged to vary the relation of the stop member to the discharge device.

In testimony whereof I have signed my name to this specification.

FREDERICK J. BALCOM.