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DISCHARGE MECHANISM FOR NAIL DISTRIBUTORS

Filed Sept. 12, 1929

Fig.1.

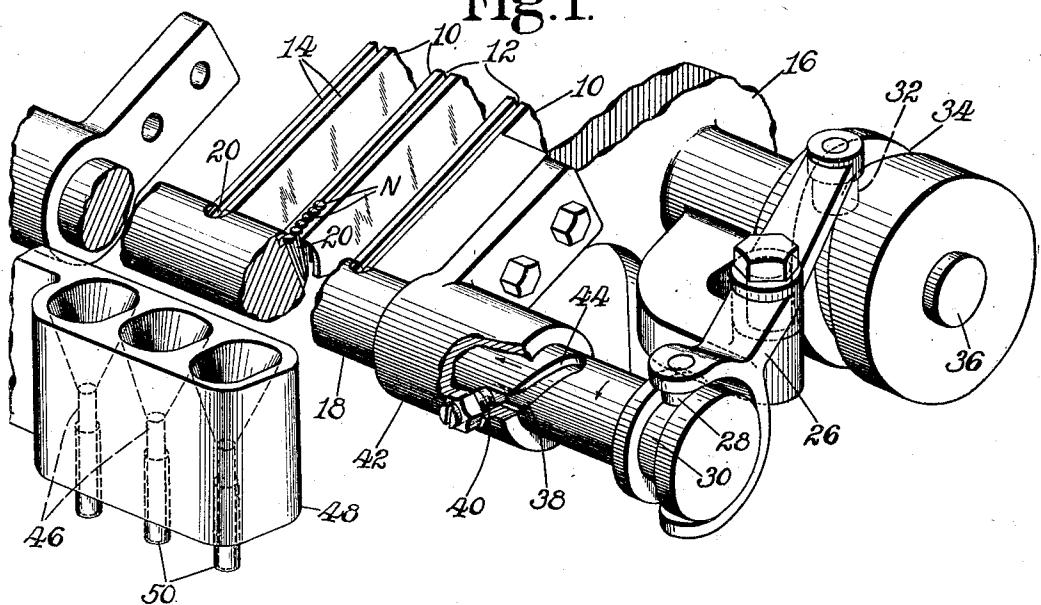


Fig.2. N

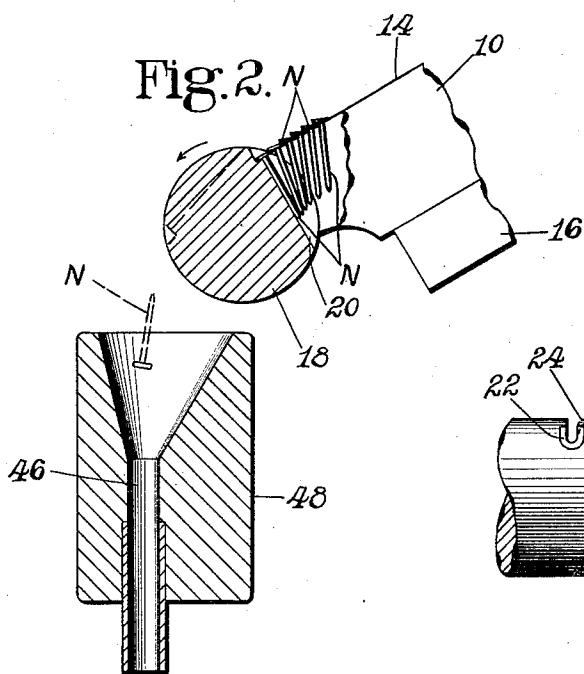
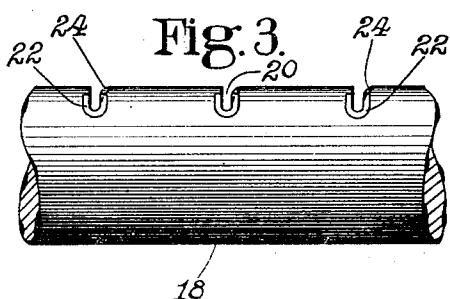


Fig.3.



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UNITED STATES PATENT OFFICE

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DISCHARGE MECHANISM FOR NAIL-DISTRIBUTORS

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The present invention relates to means whereby nails or similar fastenings are discharged one by one or group by group from the raceways of nail-distributors, it particularly concerning such organizations in which the nails are supported by their heads in their travel through the distributor, and are reversed in the direction of their advance after leaving the raceways.

Objects of the invention are to maintain the accurate uninterrupted delivery of successive nails or loads of nails by mechanism containing few elements, easily operated and readily maintained in service. These objects I attain by combining with one or more raceways of a nail-distributor, a discharge device which both moves bodily and turns about an axis, and which constantly co-operates with the raceway or raceways to limit the travel of nails therethrough. Preferably, this device is in the form of a roll, with which is associated means for moving it longitudinally of its axis and for oscillating it. By the first or bodily travel, the nails are picked off positively from the raceways, while the succeeding movement effects their reversal for delivery to conduits without possibility of clogging. Herein I have shown the oscillation as obtained by means made effective in the reciprocating movement. To guard against interference with the separating movement of the discharge device, in which a nail-receiving recess is carried from a position in alinement with a raceway to one side thereof, there is provided at the edge of the recess which moves across the raceway, a curved wall or other cam-surface, which will act to force back the succeeding nail.

The accompanying drawings illustrate a particular form of my invention,

Fig. 1 being a perspective view of the discharge-portion of a nail-distributor, parts being broken away;

Fig. 2, a transverse vertical section through Fig. 1; and

Fig. 3, a partial top plan view of the discharge-roll.

Leading from any desired nail-feeding arrangement are raceways 10, one or more in number, three being illustrated in the draw-

ings. These raceways may each consist of a pair of parallel inclined bars, those of each pair being spaced from each other at 12 to give a way through which travel, under the influence of gravity, nails N hanging by their heads upon the upper surfaces 14 of the bars. Upon the frame 16, in which the bars are supported, is journaled a discharge-roll or member 18 extending across the lower portions of the raceways, lying in close proximity to them in their concave ends. In the roll, normally alined with each space 12, is a recess 20. This is shown as segmental (Fig. 2), its length along the chord of the segment being sufficient to receive the longest nail to be delivered. Its depth, or the space between the periphery and chord, is such that a nail may lie within it clear of the end of the associated raceway. At what is normally the upper extremity of each recess 20 is a supporting surface 22 for the nail-heads, this surface being in a depression outside the main recess. Each surface 22 is in substantial alinement with the raceway-surfaces 14. At one edge of each recess is a cam-wall 24, shown as corresponding substantially to a portion of a cylinder. The purpose of this cam-surface will later appear.

To bring about the separation of nails from the raceways and their reversal, the roll 18 is actuated in two directions, being shifted longitudinally of its axis and rotated about said axis. The first movement may be produced by a lever 26 fulcrumed upon a frame and having, at its forward extremity, a yoke provided with opposite projections 28 entering a circumferential groove 30 in the roll. The opposite end of the lever has a projection 32 lying in the groove of a cam 34 fast upon a shaft 36 intermittently rotated during the operation of the distributor. The throw produced by the cam 34 is sufficient to move each recess 20 from alinement with its raceway-space 12, bringing opposite said space a portion of the cylindrical surface of the roll. Each recess therefore separates from the series above it the contained nail, supporting the succeeding nails of the series upon the adjacent roll-surface. During this movement, each surface 24, contacting with

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the nail next to the one picked off, cams the former and those resting against it smoothly back along the raceway-space 12, thus preventing interference with the travel of the 5 roll. To cause the rotation of the roll, it has formed in its surface a cam-groove 38, which receives the end of a projection 40, appearing as a screw threaded through a bracket 42 and having a smooth cylindrical portion fitting the groove. One extremity of this 10 groove, or that in which the projection rests during the separation of the terminal nails, is straight and parallel to the axis of the roll. It is therefore without effect thereon. 15 After the roll has separated the lowest nail of each series and closed the ends of the raceways, a curved portion 44 of the groove 38 reaches the projection 40. This, in the continued bodily travel of the roll, compels it to 20 rotate in the direction of the arrow in Figs. 1 and 2 of the drawings. As a result of this, the recesses 20 assume the relation illustrated in dotted lines in Fig. 2, their inclination being such that the nails fall, reversed, into 25 conduits 46 in a head-bar 48. Tubes 50, connected to the conduits, lead the thus-delivered load of nails to the desired points, as in the loading mechanism of a heel-attaching machine. 30 Outlining the general operation of the distributing apparatus, nails are delivered continuously from a source to the raceway-spaces 12, forming therein series resting one against another, the lowest nail of each series entering 35 the recess 20 in the roll 18 which is aligned with the raceway-space. At some time, which may be determined by the operation of the loading mechanism supplied, power is applied to the shaft 36 to cause it to perform 40 its cycle of rotation. This, through the lever 26, moves the roll to the left, as viewed in Fig. 1 of the drawings, removing all the terminal nails from their respective series and supporting the succeeding nails upon the 45 unbroken surface of the roll, the cam-surfaces 24 forcing back the second nail of each series if this lies within the recess. Now the portion 44 of the cam-groove comes into action and rotates the roll through somewhat more 50 than 90°, or sufficient to carry the nails contained in the recesses over until they are delivered therefrom, falling into the conduits 46 and passing by way of the tubes 50 to the machine supplied. During the second half 55 of the cycle, the oscillation of the lever 26 in the opposite direction first restores the roll to its normal angular position, and then the recesses to their receiving alinement with the raceway-spaces. 60 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 raceway, and a discharge device movable bodily and turning 65 about an axis in proximity to the raceway and

delivering nails therefrom, said discharge device constantly co-operating with the raceway to limit the travel of nails therethrough.

2. In a nail-distributor, a raceway, a discharge device movable bodily and turning about an axis in proximity to the raceway and delivering nails therefrom, means for imparting bodily movement to the device to separate nails one by one from the raceway and for turning the device to reverse the separated nails, and conduits into which the reversed nails fall from the discharge device. 70

3. In a nail-distributor, a raceway, a rotatable discharge member provided in its periphery with a recess normally aligned with the raceway, said recess having at one edge a cam-surface for engagement with nails in the raceway arranged to force back said nails, and means for moving the discharge member in a direction to carry the cam-surface across the raceway. 80

4. In a nail-distributor, a raceway, a discharge member provided with a recess normally aligned with the raceway, said recess having at one edge a cam-surface for engagement with nails in the raceway, said cam-surface extending from within the recess to the periphery of the discharge member, and means for moving the discharge member in a direction to carry the cam-surface across the raceway and for turning the member to deliver the nails from the recess. 90

5. In a nail-distributor, a raceway, a discharge-roll co-operating with the raceway, and means for reciprocating the roll longitudinally of its axis in nail-retaining co-operation with the raceway and for oscillating said roll. 100

6. In a nail-distributor, a raceway, a discharge-roll provided with a recess normally co-operating with the raceway, means for reciprocating the roll longitudinally of its axis and closing the raceway by the periphery of said roll, and means made effective in such reciprocation for oscillating said roll. 105

7. In a nail-distributor, a series of raceways arranged to support nails by their heads, a discharge-roll extending across the ends of the raceways and having a series of recesses normally aligned therewith, there being associated with each recess means for supporting a contained nail by its head, and means for moving the roll to separate a load of nails from the raceways and to reverse said nails. 115

8. In a nail-distributor, a series of raceways arranged to support nails by their heads, a discharge-roll extending across the ends of the raceways and having a series of recesses normally aligned therewith, there being associated with each recess means for supporting a contained nail by its head, means for reciprocating the roll to separate from the raceways a load of nails contained in the 125

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25 recesses, and means for oscillating the roll to deliver the nails in reversed relation.

9. In a nail-distributor, a series of race-
ways arranged to support nails by their
heads, a discharge-roll extending across the
ends of the raceways and having a series of
recesses normally alined therewith, there be-
ing associated with each recess means for
supporting a contained nail by its head, a
lever arranged to reciprocate the roll, and a
cam arranged to oscillate said roll.

10. In a nail-distributor, a series of race-
ways arranged to support nails by their
heads, a discharge-roll extending across the
ends of the raceways and having a series of
recesses normally alined therewith, there be-
ing associated with each recess means for
supporting a nail received from the corre-
sponding raceway and a curved wall ar-
20 ranged to force back the succeeding nail in
said raceway, and means for moving the roll
to deliver the nails from the recesses.

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

20 25 THOMAS LUND.

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