June 11, 1935. C. H. BALCOM 2,004,233

NAIL DISTRIBUTOR

Filed Dec. 14, 1932

Fig.1.

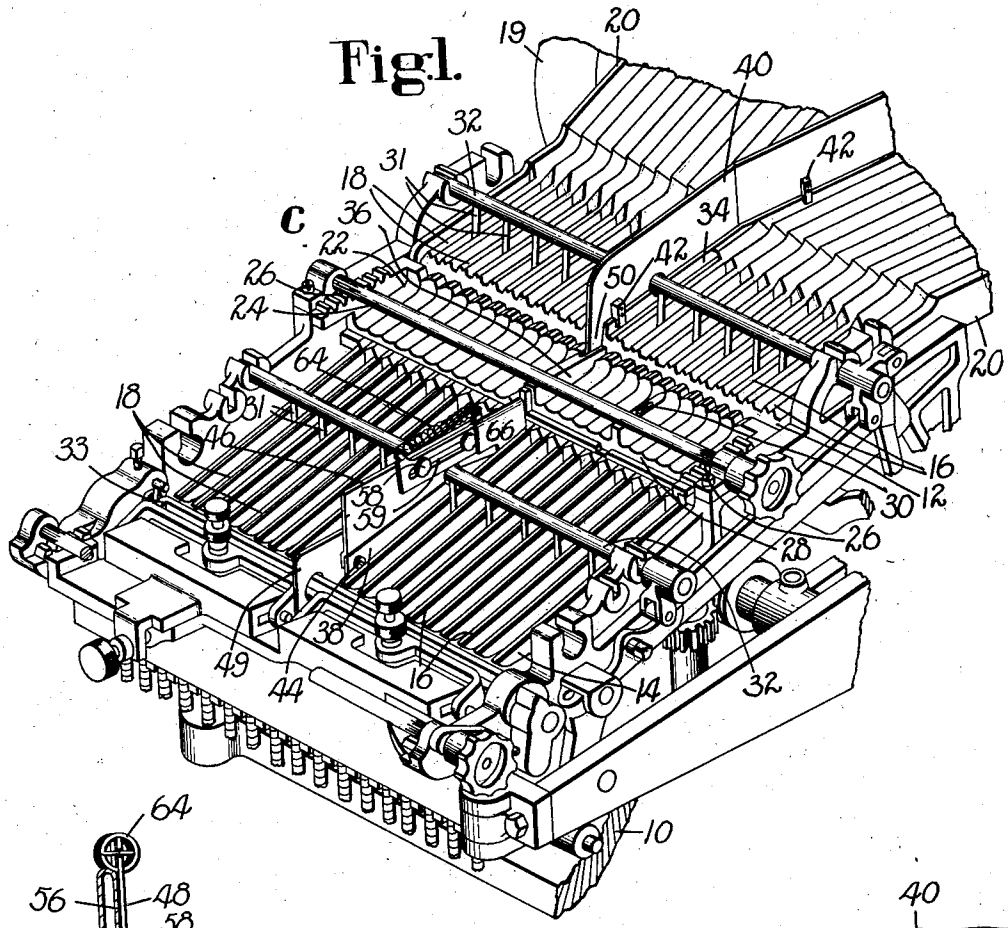


Fig.3.

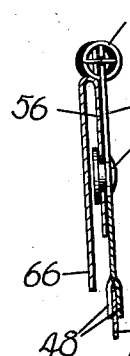


Fig.2.

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NAIL-DISTRIBUTOR

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7 Claims. (Cl. 1—39)

My invention relates to apparatus by which nails or like fastenings are taken from a mass and delivered in successive loads, each of a predetermined number, for use by such a machine as one for attaching heels to shoes. More particularly, it concerns an apparatus of this character which is adapted to supply nails of different lengths in the same load.

In the operation of plural-length nail-distributors, the forces which advance along their conveying means the groups of nails separately from their sources may be so applied that said nails tend to become thrown or displaced from one group to another, causing improper delivery. An object of this invention is to positively guard against this mixing of the nails. To this end, I associate with a nail-conveyor provided with raceways arranged in groups, a partition dividing the groups from one another and herein shown as having a portion movable to correspond to the position of a conveyor element with which it cooperates. In consequence of this, whatever may be the relation of said conveyor element, the portion of the partition is capable of assuming a like position. Thus, there is furnished at all times an effective barrier against the accidental transfer of nails from group to group. Preferably, the partition includes a fixed portion and a portion which may be in the form of a slide guided for movement thereon, there being shown a spring acting to draw the slide into co-operation with the conveyor element to effect a continuous closure. The element which the movable part engages is herein shown as a member with which nails lying in the raceways with their heads in one direction may contact and be reversed, so all point in the same direction after they have passed from an upper raceway-section and are received by a lower section. This reversing member or bar is adjustable toward and from the upper conveyor-section and the sliding partition-portion is capable of moving with it. Under some conditions, the fixed partition-portion may advantageously be received in a slot in the nail-contacting or reversing member, this being without regard to the movability of a partition-portion. The continuity of the division between the groups of raceways may thus be sufficiently maintained.

The accompanying drawing illustrates a particular embodiment of the invention,

Fig. 1 being a perspective view of my improved nail-distributor,

Fig. 2, a longitudinal section through the lower portion thereof, and

Fig. 3, a transverse sectional detail on the line III—III of Fig. 2.

In Letters Patent of the United States No. 1,657,630, Lund, January 31, 1928, is shown a two-length nail-distributor to which the present invention may usefully be applied. I have herein illustrated a portion of this apparatus, there appearing a fragment of the frame 10 upon which is mounted to oscillate longitudinally, to produce forward movement of the nails for their delivery, a conveyor C of the well-known "washboard" type. This conveyor has an upper inclined section 12 and a lower section 14 similarly inclined, in each of which sections are formed parallel nail-conducting raceway-grooves alined in pairs in the upper and lower sections. These grooves are arranged in two groups at opposite sides of the central longitudinal axis of the conveyor, there being at one side the group 16 and at the opposite side the group 18. The upper section of the conveyor is supplied with nails by way of diverging portions 20, 20 from rotatable drums or other sources, a fragment of one drum appearing at 19. At the forward extremity of the first section and above the second section of the conveyor is mounted a bar 22, with which the descending nails contact to reverse those which are proceeding points foremost. To permit this bar to co-operate properly with nails differing in length, it may be adjusted toward and from the upper conveyor-section 12, being arranged to slide longitudinally of the apparatus under the control of a shaft 24 rotatable by the operator and geared to the bar at 26, 26. Because the bar must act on nails of diverse lengths, it is provided with an independent adjustment for one of the groups of raceways, there being a section 28 corresponding to the raceway group 16 and variable in position upon the body of the bar. The section 28 is shown as adjustably secured to the bar by a slot-and-screw connection 30. Oscillatory fingers 31, carried by transverse shafts 32, displace nails which may be crossed on the raceways. The nails are picked off from the forward extremity of the section 14 by an oscillatory discharge-roll 33.

Dividing the groups of nail-conducting grooves 16 and 18 from one another longitudinally of the conveyor are shown comparatively low walls, that of the upper section 12 being identified by the numeral 34, that upon the reversing bar 22 by 36 and that of the lower section 14 by 38. The effective nail-retaining height of the first of these walls is increased by a partition 40, secured to it by clips 42, and attached to the wall

38 near its forward extremity by a screw 44 is a partition 46, provided with a slot to receive the screw. The rear of the partition is held against lateral displacement by lugs 48 extending upon opposite sides of the wall 38. An auxiliary partition 49, through an opening in which the roll 33 passes, may divide the raceway groups adjacent to said roll. The partitions 40, 46 and 49 are preferably of sheet-metal. With those designated as 36 and 56, they furnish sections of a composite partition extending preferably throughout the length of the raceway.

In the various positions to which the reversing bar 22 is adjustable, the interchange of nails between the raceway-groups 16 and 18 at the lower end of the conveyor-section 12 may be sufficiently guarded against by extending the partition 40 above the wall 36 of the bar and furnishing it with a depending end 50 entering a slot in said wall. The lower partition 46 might similarly enter a slot in the opposite side of the bar, but the width of this bar will not permit such an arrangement to furnish unbroken dividing means between the raceway groups for the maximum opposite adjustments of the bar. The direction in which the nails would approach an open slot would also be disadvantageous. I prefer to maintain such a complete division at the forward side where the mixing of the different lengths of nails, especially those which have become crossed upon the raceways, is most liable to occur. For this purpose, the partition 46 has a portion 56 arranged to slide upon it, the partition being shown as having spaced, headed studs 58, 58 projecting from one side through a slot 59 in the slide 56. Between an upward projection 60 from the partition and a corresponding projection 62 from the slide extends a tension-spring 64, exerting its force to draw the slide rearwardly and its end into engagement with the forward face of the reversing bar 22. The slot 59 is of such length that the slide may follow the bar in the adjustment of the latter to its extreme inward position. When the bar is carried forward, the spring 64 is elongated, the slot 59 again permitting a full adjustment. Thus, the continuity of the partition 46 is always preserved. At the rear of the slide 56 is shown an arm 66 extending from its upper edge and bent down substantially parallel to the body of the slide. This arm completes the closure beyond the inner end of the partition 46.

It will be seen that as the nails traveling down the conveyor are displaced by riding over one another, becoming crossed upon the raceways, and by the jar to which they are subjected during the oscillation of the apparatus, they will be retained by the partition of this invention in their own groups, the sections which make up said partition being arranged to furnish a substantially continuous division between them whatever position the reversing bar may occupy.

Having thus 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 nail-conveyor provided with groups of raceways extending adjacent to one another, and a partition dividing the groups of raceways and having a portion movable to correspond to the position of a conveyor element with which it co-operates.

2. In a nail-distributor, a nail-conveyor provided with groups of raceways extending adjacent to one another, and a partition dividing the groups of raceways and including a portion fixed to the conveyor and a portion guided for movement thereon.

3. In a nail-distributor, a nail-conveyor provided with groups of raceways extending adjacent to one another, a partition dividing the groups of raceways and including a portion fixed to the conveyor and a slide guided for movement thereon, and a spring acting to draw the slide into contact with an element of the conveyor.

4. In a nail-distributor, a nail-conveyor provided with upper and lower sections in which are groups of raceways, an adjustable nail-contact member mounted near the juncture of the sections, means arranged to move the contact member, and a partition dividing the groups of raceways and having a portion engaging the contact member and movable with said member during its adjustment.

5. In a nail-distributor, a nail-conveyor provided with upper and lower sections in which are groups of raceways, an adjustable nail-contact member mounted near the juncture of the sections, means arranged to move the contact member, and a partition dividing the groups of raceways, there being a slot in the contact member to receive the partition.

6. In a nail-distributor, a nail-conveyor provided with upper and lower sections in which are groups of raceways, a reversing bar extending across the lower section of the conveyor and contacting with nails from the upper section, means for adjusting the bar toward and from the upper section, a partition extending across the bar and corresponding in position to the division between the groups of raceways, said bar-partition being provided with a slot, and a partition dividing the groups of raceways upon the conveyor and received in the slot.

7. In a nail-distributor, a nail-conveyor provided with upper and lower sections in which are groups of raceways, a reversing bar extending across the lower section of the conveyor and contacting with nails from the upper section, means for adjusting the bar toward and from the upper section, a partition formed in sections which divide the groups of raceways upon the conveyor and extend across the bar, said partition being provided with a slot in one section receiving the end of another section at one side of the bar and with a slide yieldable in contact with the opposite side of the bar.

CHARLES H. BALCOM.