

J. H. POPE.
NAIL DISTRIBUTER.
APPLICATION FILED DEC. 6, 1918.

1,381,240.

Patented June 14, 1921.

4 SHEETS—SHEET 1.

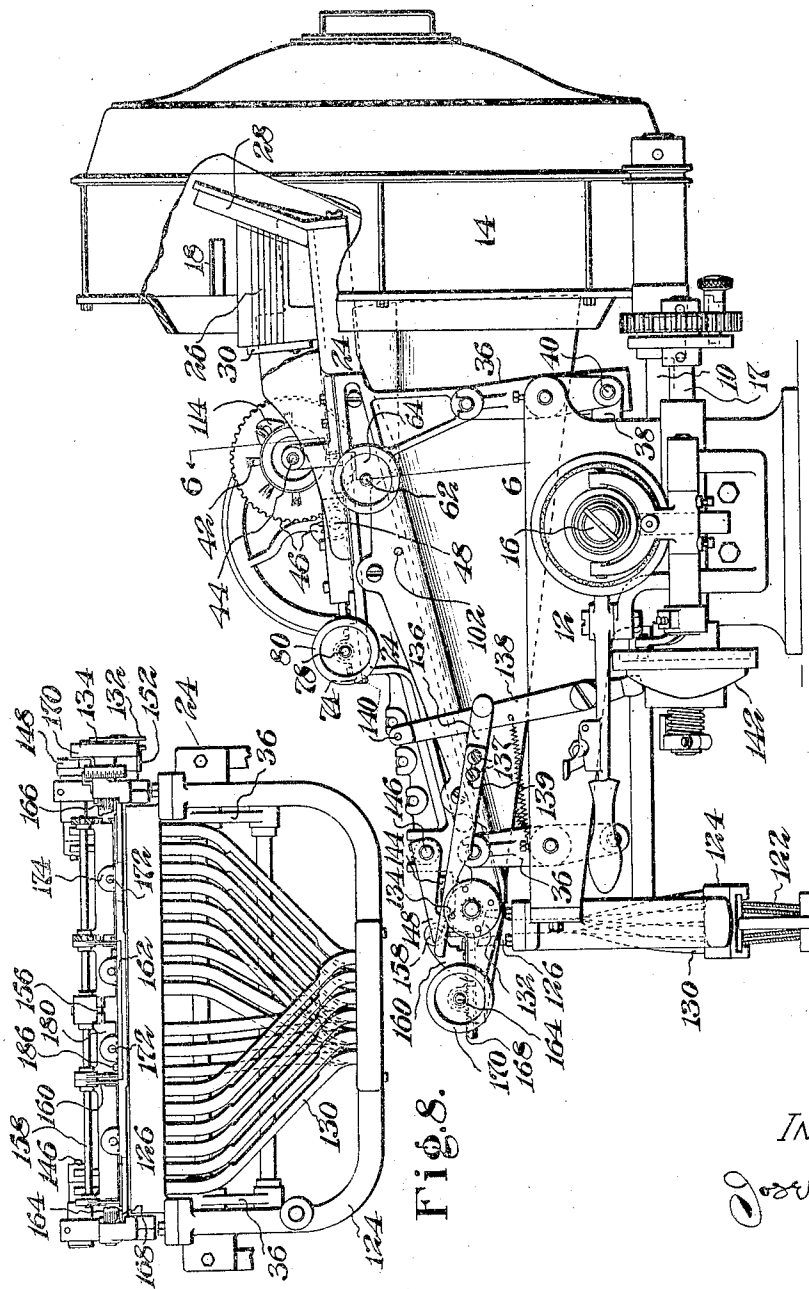


Fig. 1.

Fig. 8.

INVENTOR:

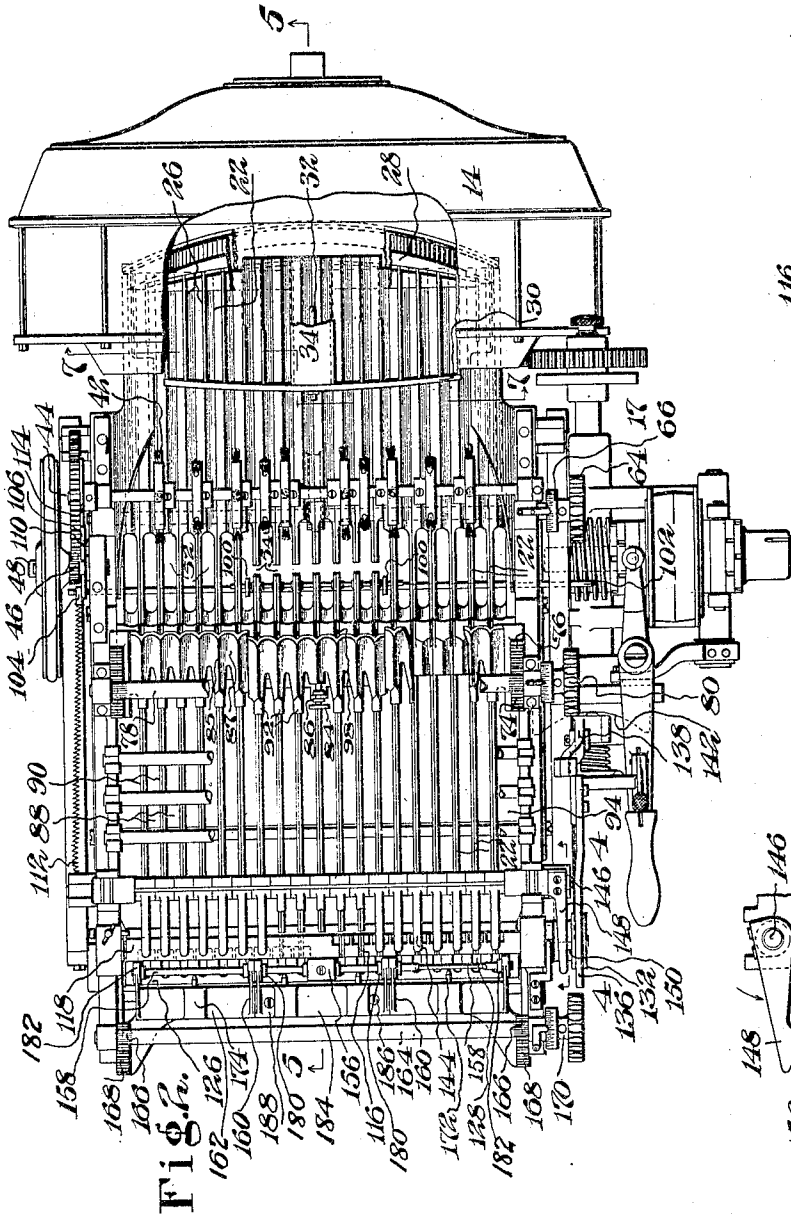
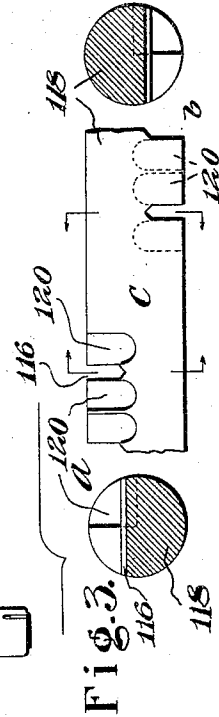
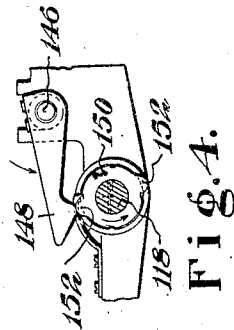
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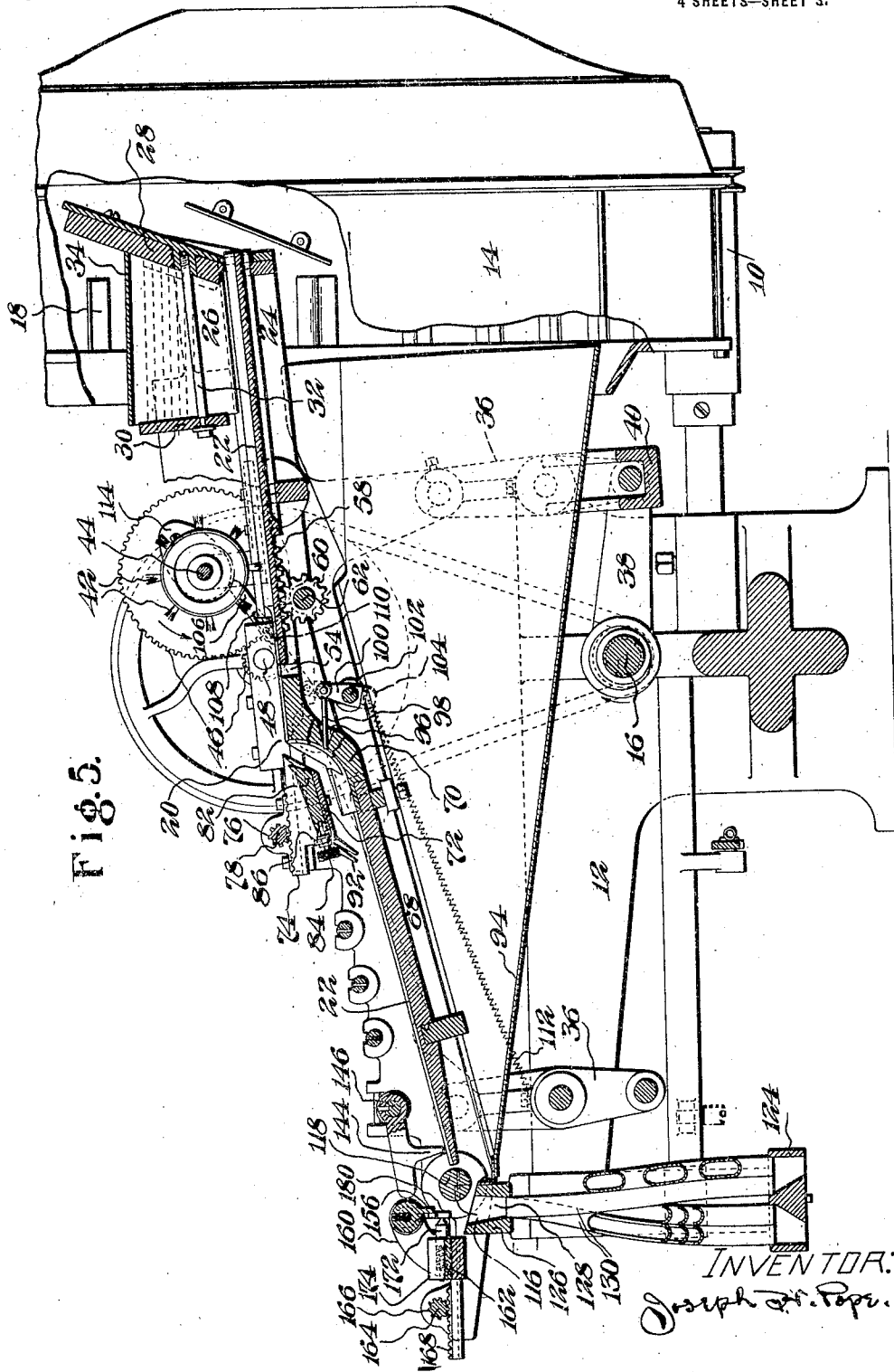
4 SHEETS—SHEET 2.



INVENTOR:
Joseph H. Pope.

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 4 SHEETS—SHEET 3.



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4 SHEETS—SHEET 4.

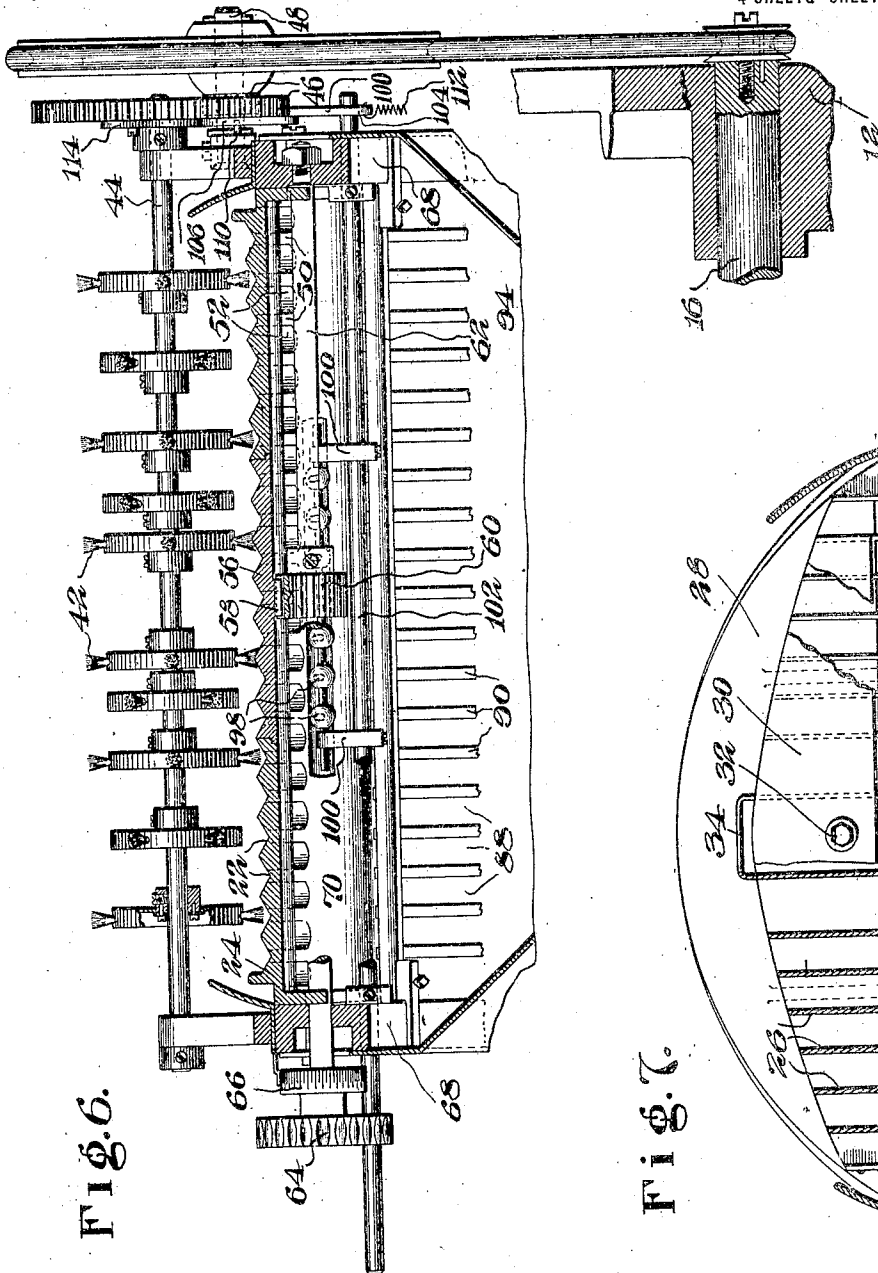
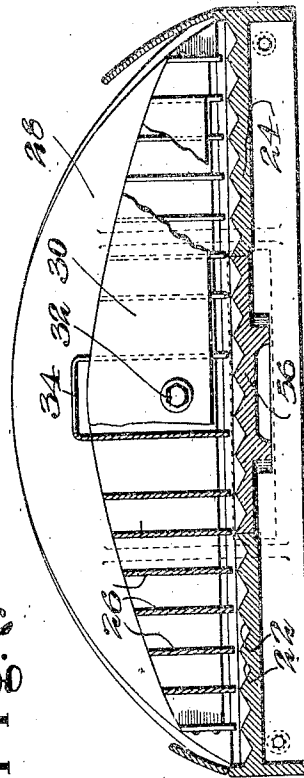


Fig. 6.

Fig. 7.



INVENTOR:
 Joseph H. Pope.

UNITED STATES PATENT OFFICE.

JOSEPH H. POPE, OF HAMILTON, MASSACHUSETTS, ASSIGNOR TO UNITED SHOE MACHINERY CORPORATION, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

NAIL-DISTRIBUTER.

1,381,240.

Specification of Letters Patent. Patented June 14, 1921.

Application filed December 6, 1918. Serial No. 265,575.

To all whom it may concern:

Be it known that I, JOSEPH H. POPE, a citizen of the United States, residing at Hamilton, in the county of Essex and State of Massachusetts, have invented certain Improvements in Nail-Distributers, 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 apparatus for distributing nails, for example to the loader mechanism of heel-attaching machines, and is more particularly concerned with an apparatus of this character adapted to deliver separately nails of different lengths.

With some types of heels, as those which are high and with considerable pitch, it may be desired to attach them with nails of one length driven through the portion toward the breast substantially at right angles to the heel seat, and with a less number of longer nails driven toward the rear of the heel in an inclined direction. To allow operations of this character to be accomplished, as a feature of this invention, nails of different lengths mixed together in a receptacle are conveyed and delivered separately with respect to length to conduits individual to nails of predetermined lengths, leading to the device or machine to be supplied or elsewhere, this delivery being effected simultaneously. For this purpose a railway between the nail receptacle and conduits is provided with separating means. As illustrated, this conveyer or railway has openings through which short nails may pass before reaching the conduit, and means for deflecting the long nails from the conveyer. By associating these two separating means with different nail conveying channels, the delivery from any channel may be confined to one length of nail. The conveyer in the present instance has two portions, one leading to the other, one of these portions, as that nearest the receptacle, containing the short nail openings in its channels, while at the juncture of these portions is located another separating means, as that for deflecting the nails, this preferably being furnished by a nail-reversing plate or other means. This plate has projections with opposite surfaces for directing the long nails to open-

ings between the channels of the second conveying portion. To determine the manner of distribution of the nails, there is provided means for varying the length of nails delivered to particular conduits. This may be effected by a change in the dimensions of the separating openings, or in the relation of the deflecting means to the conveyer. To adjust the former, I have shown a movable section in the railway, and for the latter adjustment the nail deflector has an independently movable section.

In the apparatus of this invention, the nails undelivered, or those separated from the channels, are returned to the receptacle, as by a chute on which they drop from the openings in the railway. This tends to decrease the frequency of delivery from each channel, so that the distributor may not keep pace with the operation of the machine which it feeds. In this connection, or whenever an increased rate of delivery is desired, a further feature of the invention therefore consists in means for delivering from a plurality of nail channels to a less number of nail conduits, thus insuring an ample supply for all. It is usually sufficient to feed each conduit from two nail channels, the main conduits each receiving nails from a pair of branch conduits. There herein appears a discharge device, preferably a roll, extending transversely of the conveyer and having nail-receiving elements, as depressions in the periphery of the roll, in different positions transversely of the conveyer and in different angular positions about the discharge device. These elements I have shown in two series situated at opposite ends of the discharge device and at opposite sides thereof. The receiving elements or depressions are arranged for alinement with different nail channels at different times, the elements of the two series alternately delivering through branch tubes to the main conduits at which they terminate.

The nails sometimes clog or wedge together in the channels of the conveyer, especially beneath such a cooperating member as the reversing or deflecting device at the connecting portion between the upper and lower portions of the conveyer. To avoid this, my invention provides as a feature clearing means movable toward and from the channels. Openings may be formed

in the channels at the points at which the tendency to clog exists, as opposite the reversing or other member extending across the conveyer, and fingers arranged to reciprocate through these openings.

Another feature of the invention involves a yieldable stop member for coöperation with the discharge device, this permitting nails caught in the device, as in the nail depressions of a discharge roll, to force the stop member from their path without injury to the apparatus. In some connections, as with apparatus delivering nails of different lengths along separate transverse portions of a railway, the yieldable member is preferably made in independently movable sections which may correspond to the railway portions. By this arrangement the nails for one portion caught in the discharge device may produce the relieving movement of the stop without affecting the action of a stop section for the other portions.

In the accompanying drawings a particular embodiment of the invention is illustrated, presenting the above and other features,

Figure 1 being a side elevation with parts broken away;

Fig. 2, a top plan view;

Fig. 3, details in side elevation and transverse section of the discharge roll;

Fig. 4, a sectional detail on the line 4—4 of Fig. 2;

Fig. 5, a longitudinal section on the line 5—5 of Fig. 2;

Figs. 6 and 7, transverse vertical sections on the lines 6—6 of Fig. 1 and 7—7 of Fig. 2, respectively; and

Fig. 8, a partial end elevation looking from the left in Fig. 1.

Mounted to rotate upon horizontal shafts 10, 10 extending longitudinally of a frame 12 is a nail drum or receptacle 14 driven through suitable gearing from a main shaft 16 journaled transversely of the frame, power being transmitted to one of the drum shafts through an intermediate longitudinal shaft 17, as in Patent No. 1,005,303, Pope, October 10, 1911. Nails of all the sizes it is desired to deliver, in the present instance two lengths of nails, are placed together in the drum and are elevated by shelves 18 fixed to the inside of its peripheral wall and fed thus mixed upon an inclined conveyer or railway 20, where they are received by longitudinally extending channels 22 in an upper portion 24 of the railway. Supported above the railway within the drum is a grating consisting of vertical bars or members 26, clamped between a rear inclined wall 28 fixed upon the railway and a forward bar 30 joined to the rear wall by bolts 32. The bars of the grating are so spaced from one another and so related to the railway channels that as the nails pass through

them they are turned in the same direction as the channels, to enter them in the correct position. The space between the lower edges of the bars of the grating and the upper surface of the railway is sufficient to allow nails to pass from one channel to another and thus avoid clogging between the bars in any of the channels. Between the two central bars across the top of the grating is a shield 34 preventing the delivery of nails from the shelves to the channels beneath it. The purpose of this will be later described.

The railway 20 is supported on pairs of vertical rock-arms 36, 36, pivoted for oscillation at opposite sides and opposite extremities of the frame 12 and actuated from the main shaft to produce the feeding movement of the railway by an eccentric rod 38 pivoted to a bar 40 joining the rear pair of rock-arms, this driving mechanism being substantially as is disclosed in the Pope patent previously mentioned. If nails travel down the railway from the grating 26 without being fully straightened, they are acted upon to align them with the channels by series of rotating brushes 42 mounted upon a transverse shaft 44 and operated by gearing 46 from a shaft 48 belted to the driving shaft. At this stage of their travel, both long and short nails may occupy together the channels 22, but beyond the brushes certain of the channels in the portion 24 of the railway, here shown as the seven at the center, are provided with means for separating the shorter nails. Near the lower or forward extremity of the railway portion 24 the channels 22 are continued upon separated bars 50, between which are openings 52. In the previously mentioned central channels are openings 54, one side of the entire series being furnished by a movable section 56 of the railway portion 24. This section is mounted to slide between side sections, it having upon its under face a rack 58 with which meshes a pinion 60 carried by a shaft 62 journaled in the sides of the frame. Upon this shaft at one extremity is a hand wheel 64 and an index device 66, by which the section may be set to vary the width of the openings to permit the passage of different length nails. Shorter nails upon reaching these openings 54 overbalance before contacting with the lower side of the opening, thus falling from the channels. Longer nails bridge the openings and continue their progress down the railway. In a plane lower than the upper run of the railway is another conveying portion 68 with a curved intermediate or connecting portion 70. This arrangement is as customary, the nail channels 22 preferably continuing through all the portions in the usual manner. Situated at the juncture of the upper and lower railway portions opposite the connecting portion 70 is

a nail-reversing device. This I prefer also to utilize as a means for separating the long from the short nails in certain of the channels, here shown as the outer sets at each side of the railway. This reversing and separating device consists of a main plate 72 extending across the railway and being mounted at its ends to slide on the frame 12. Here at its upper side it is provided with racks 74, 74 with which mesh pinions 76, 76 upon a shaft 78 rotatable in the frame, and having setting means 80 similar to that described in connection with the adjusting shaft for the railway section. Opposite the long nail channels in which are the openings 54, the plate 72 is provided with a section 82 mounted to slide upon it. This section may be adjusted by a screw 84 turning in lugs 86 upon the plate and being threaded into the section 82. This central portion of the reversing device acts in the manner well known. The long nails, coming toward it with their heads in advance down the channels of the upper section from which the short nails have been removed through the openings 54, overbalance when they reach the extremities of the channels above the connecting portion 70 and advance thus to the channels of the lower portion. Nails, however, the points of which are forward, extend across the space between the upper railway portion and the reversing plate until, when their heads leave the upper channels, their points are resting upon the section 82. This turns them so that they fall head-first and continue their travel in the same direction as the other nails. The end portions of the reversing plate are adjusted by the setting means 80 so that short nails moving in the outer series of channels are acted upon in the manner just described; that is, if traveling head-foremost, they continue their advance without coöperation with the plate, while, if point foremost, they rest upon it sufficiently to be reversed. The long nails, however, so bridge the gap between the upper railway portion and the plate that they do not fall through the space but continue their way over the plate, being deflected by upwardly extending V-shaped projections 85, which are alined with the channels 22, into intermediate depressions 87. These depressions are opposite openings 88 between the bars 90, in which are formed the channels 22 in the lower portion of the railway. The long nails therefore fall from these depressions into the openings 88, shielding fingers 92 at the ends of the projections 85 over the nail channels insuring their not being delivered to the latter. Beneath the openings 88 the long nails are received, together with the short nails falling through the openings 54, by a chute 94 inclined from the forward end of the railway back toward the drum 14, which it enters.

By this means the separated nails, of lengths predetermined by the adjustment of the railway openings and the reversing plate, are conveyed back to the drum to be again fed to the nail channels.

Through the channels in the connecting portions of the railway are openings 96 to receive fingers or rods 98. These fingers are pivoted on the upper extremities of rock-arms 100 fixed to a shaft 102 journaled in the frame beneath the lower end of the railway portion 24. At one extremity of the shaft is secured an arm 104, to which is articulated a rod 106 slotted at 108 and guided by a pin 110 fixed in the frame and projecting through the slot. The end of this rod 106 is drawn by a spring 112, joining the lower end of the arm 104 with the frame, against the periphery of a cam 114 carried by the brush shaft 44. By the action of the cam the rock-shaft is oscillated to reciprocate the fingers 98 through the openings 96 into the channels in the connecting portion 70 of the railway. Consequently, if nails become wedged in these channels, as is especially liable to be the case in the curved portions beneath the reversing plate, they are freed by the pressure of the fingers.

The nail channels 22 are alined with such discharge elements as nail-receiving depressions 116 in a discharge device or roll 118, extending across the end of the railway and being rotatably mounted in the sides of the frame 12. At each side of the depressions the roll is recessed to furnish a wall 120 with which nails which may be side by side in the railway channels contact, causing them to be displaced into the depressions 116. On account of both the long and short nails going back to the drum through the openings 88 and 54, the nails in a single channel may reach the discharge roll more slowly than they should be delivered to the nail conduits of the machine supplied, as the tubes 122 carried by the holder 124 of a heel-attaching machine (not shown). I therefore so organize the device that it will discharge nails from more than one channel to each tube 122. To this end, the depressions are arranged in a set made up of two series *a* and *b*, situated at opposite ends of the roll at each side of the center of the railway and in different angular positions circumferentially of the roll, the series being illustrated as 180 degrees apart in this direction. Between the series of depressions *a* and *b* is a blank space *c* upon the discharge roll, and the nail-channel 22 coming opposite this is kept free from nails by the shield 34, which deflects them to adjacent channels. In advance of and beneath the discharge roll is located a transversely extending holder 126 in which is an opening 128 alined with each roll depression 116. Pairs of openings 128, as those at corre-

sponding ends of the series of depressions *a* and *b*, are connected by branch tubes 130 with single main tubes 122. The discharge roll is rotated to alternately drop the nails in the series of depressions into the branch conduits by a pin-gear 132 fast upon the roll spindle at one extremity, and having contacting with it a shoulder 134 on the under side of a bar 136 pivoted upon a lever 138, which is fulcrumed at 140 near the top of the frame. The lever 138 is oscillated by a cam 142 secured upon the driving shaft 17 and contacting with the lower end of the lever. This mechanism turns the roll twice through 90 degrees for each rotation of the shaft 17, causing first one series of discharge elements and then the other to deliver their contents to the branch tubes 130. To insure the roll 118 being rotated to the proper angular position to discharge the nails from the depressions, the bar 136 is made in two sections secured to one another by screws 137 passing through a slot 139 in one of the sections. This permits the length of the bar, and therefore the angle at which the roll stops, to be varied.

Stop fingers 144 are shown, one projecting into each nail channel, the entire series being carried by a rock-shaft 146 lying across the portion 68 of the railway and being journaled in the frame 12. To successively release the lower nails in the channels for presentation to the corresponding depressions 116, this series of stop fingers is raised by an arm 148 fixed to the shaft 146 and contacting with a cam 150 fast upon the discharge roll spindle adjacent to the gear 132. The cam has two projections 152, 152, 180 degrees apart, thus corresponding in angular relation to the series of discharge depressions and operating the stop fingers synchronously with these in their rotation.

At the opposite side of the roll 118 from the stop fingers, and extending longitudinally of said roll, is a stop member or bar so located as to arrest the progress of the nails in the proper positions in the depressions 116. The bar is shown as supported by arms 156 mounted to turn upon rods 158, carried by brackets 160 projecting upwardly and rearwardly from a plate 162 sliding on the forward extremity of the frame 12. This plate may be adjusted in the usual manner for nail stop mechanism by a shaft 164 having pinions 166, 166 engaging racks 168, 168 on the plate, a setting device 170 for the bar being provided. Nails sometimes catch in the depressions in the discharge roll and are forced in the rotation of the latter against the stop bar. To prevent resulting injury, the bar is made yieldable, it preferably having four independently movable sections. Two of these, 180, 180, are situated opposite the halves of the central set of long-nail channels, while the other two, 182, 182, cor-

respond to the sets of short-nail channels of the railway. The arms 156 carrying these sections and turning about the rods 158 are held against swinging, as a result of the normal contact of the nails, by spring-pressed contact members or plungers 172 movable in horizontal bores through bosses 174 on the upper side of the plate 162. The bar sections 180, 180 are adjustable with respect to the discharge roll independently of the sections 182, 182, to provide for the correct positioning on said roll of different length nails. This is effected by mounting the arms supporting the bar sections 180, 180 on a plate 184, arranged to slide upon the plate 162 and fixed in place by screws 186 passing through slots 188 in the plate 184 and being threaded into the plate 162.

The general operation of my improved nail distributor may be outlined briefly as follows:

Mixed nails, including both lengths to be distributed, placed within the drum 14, are elevated thereby and delivered to the railway channels 22, being straightened therein by the grating 26 and the brushes 42. The railway section 56 being adjusted to give the proper width of opening 54 and the reversing plate sections 72 and 82 properly spaced from the end of the portion 24 of the railway, the short nails are separated in the central series of channels, falling through the openings 54, while the long nails in the two outer series are deflected from the channels by the projections 85 through the openings 88 and, together with the separated short nails, are returned to the drum by the chute 94. Thus in the lower portion 68 of the railway, the channels 22 contain the long and short nails separately and in the desired relation as to the direction of the heads by the joint action of the openings 54 and the portions 72 and 82 of the reversing and separating device. These separated nails, being received alternately by the two series of depressions of the discharge roll, are positioned thereon by the four sections of the stop bar, these yielding if nails are caught in any of the depressions, and are distributed by the pairs of branch tubes to the main tubes of the machine fed in sufficient quantities to insure a constant supply.

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

1. A nail distributor comprising a receptacle for holding mixed nails of different lengths, nail conduits, and means for conveying the nails of different lengths simultaneously from the receptacle to separate conduits individual to nails of predetermined lengths.

2. A nail distributor comprising a receptacle for holding mixed nails of different lengths, and a railway to which the recep-

tacle delivers, said railway including means for separating from one another the different lengths of nails, and means for moving the railway to cause the travel of the nails thereover.

3. A nail distributor comprising a receptacle for holding mixed nails of different lengths, a nail conveyer leading from the receptacle and being provided with nail channels, and means for returning nails of predetermined lengths from the channels to the receptacle.

4. A nail distributor comprising a receptacle for holding mixed nails of different lengths, nail conduits, and means for conveying long nails from the receptacle to the conduits; said conveying means having openings through which shorter nails are returned to the receptacle.

5. A nail distributor comprising a receptacle for holding mixed nails of different lengths, nail conduits, means for conveying long nails from the receptacle to the conduits, said conveying means having openings through which shorter nails may pass, and means for returning to the receptacle nails passing through the openings.

6. A nail distributor comprising a receptacle for holding mixed nails of different lengths, nail conduits, and means for conveying short nails from the receptacle to the conduits, said conveying means having means for deflecting longer nails therefrom.

7. A nail distributor comprising a receptacle for holding mixed nails of different lengths, nail conduits, means for conveying short nails to the conduits, said conveying means having means for deflecting longer nails therefrom, and means for returning to the receptacle the nails thus deflected.

8. A nail distributor comprising a receptacle for holding mixed nails of different lengths, nail conduits, and means for conveying different lengths of nails to the conduits, said conveying means having openings through which short nails pass and also having means for deflecting longer nails from the conveying means.

9. A nail distributor comprising a receptacle for holding mixed nails of different lengths, nail conduits, means for conveying different lengths of nails to the conduits, said conveying means having openings through which short nails pass and also having means for deflecting longer nails from the conveying means, and means for returning to the receptacle the deflected nails and those passing through the openings.

10. A nail distributor comprising a receptacle for holding mixed nails of different lengths, and a railway to which the receptacle delivers, said railway having openings across which long nails travel and through which short nails pass for return to the receptacle.

11. A nail distributor comprising a receptacle for holding mixed nails of different lengths, a railway to which the receptacle delivers, said railway having portions lying in different planes, and means located at the juncture of the portions for separating nails of different lengths.

12. A nail distributor comprising a nail receptacle, a railway leading therefrom, and combined nail-reversing and separating means associated with the railway.

13. A nail distributor comprising a nail receptacle, a railway leading therefrom and having nail-conveying channels, a reversing plate with which the nails contact, said plate being provided for a channel in the railway with opposite deflecting surfaces over which the nails pass.

14. A nail distributor comprising a receptacle for holding mixed nails of different lengths, a railway to which the receptacle delivers, said railway having upper and lower portions, the lower portion being provided with openings, and a plate including sections located at the juncture of the portions at different distances from the upper portion and having surfaces inclined toward the openings.

15. A nail distributor comprising a receptacle for holding mixed nails of different lengths, a railway to which the receptacle delivers, said railway having upper and lower portions, the lower portion being provided with openings, and a nail-reversing plate including sections located at the juncture of the portions at different distances from the upper portion and having surfaces inclined toward the openings.

16. A nail distributor comprising a receptacle for holding mixed nails of different lengths, a railway to which the receptacle delivers, said railway having upper and lower portions, the lower portion being provided with openings, and a plate including sections separated from the upper portion by different distances and furnishing a passage to the lower portion through which short nails pass, the upper surface of the section of the plate nearest the upper portion of the railway having inclines deflecting longer nails to the openings.

17. A nail distributor comprising a receptacle for holding mixed nails of different lengths, nail conduits, means for conveying nails of different lengths from the receptacle to separate conduits, and means arranged to vary the length of the nails which the conveying means will deliver to a particular conduit.

18. A nail distributor comprising a receptacle for holding mixed nails of different lengths, a railway to which the receptacle delivers, said railway including means for separating from one another the different lengths of nails, and means arranged to ad-

just the railway to vary the lengths of the nails separated.

19. A nail distributor comprising a receptacle for holding mixed nails of different lengths, nail conduits, means for conveying long nails to the conduits, said conveying means having openings through which shorter nails pass, and means arranged to vary a dimension of the openings.

20. A nail distributor comprising a receptacle for holding mixed nails of different lengths, nail conduits, means for conveying long nails to the conduits, said conveying means having openings through which shorter nails pass, and means arranged to vary the width of the openings longitudinally of the railway.

21. A nail distributor comprising a receptacle for holding mixed nails of different lengths, nail conduits, means for conveying short nails to the conduits, said conveying means having means for deflecting longer nails therefrom, and means arranged to vary the relation of the deflecting means to the conveying means.

22. A nail distributor comprising a receptacle for holding mixed nails of different lengths, a railway to which the receptacle delivers, said railway having portions lying in different planes, and means located at the juncture of the portions and being variable in position with respect thereto for separating the nails of different lengths.

23. In a nail distributor, a receptacle, and a railway leading from the receptacle and being provided with nail-conveying channels, there being openings in a portion of the channels to permit the passage of nails of predetermined lengths.

24. In a nail distributor, a receptacle, a railway leading from the receptacle and being provided with nail-conveying channels, there being openings in a portion of the channels to permit the passage of nails of predetermined lengths, and a chute to return to the receptacle the nails passing through the openings.

25. In a nail distributor, a receptacle, and a railway leading from the receptacle and being provided with nail-conveying channels, there being openings in a portion of the channels to permit the passage of nails of predetermined lengths, the railway having a movable section furnishing one side of the channel openings.

26. In a nail distributor, a receptacle, a railway leading from the receptacle and being provided with two portions having nail-conveying channels, and a plate between the railway portions having nail-deflecting projections alined with the channels of one of the portions.

27. In a nail distributor, a receptacle, a railway leading from the receptacle and being provided with two portions having nail-

conveying channels, and a plate between the railway portions having projections alined with the channels of one of the portions, there being depressions between the projections, the railway having openings in the channels alined with the plate projections and openings between the channels alined with the plate depressions.

28. In a nail distributor, a receptacle, a railway leading from the receptacle and being provided with two portions having nail-conveying channels and openings between the channels, a plate between the railway portions having projections alined with the channels of one of the portions to deflect nails to the openings, and a return chute to the receptacle to which the openings deliver.

29. In a nail distributor, a receptacle, a railway leading from the receptacle and being provided with two portions having nail-conveying channels, a plate between the railway portions having nail-deflecting projections alined with the channels of one of the portions, and means arranged to move the plate toward and from one of the railway portions.

30. In a nail distributor, a nail receptacle, a railway leading therefrom, and a nail-reversing device cooperating with the railway and including independently movable sections.

31. In a nail distributor, a nail receptacle, a railway leading therefrom, a nail-reversing plate extending across the railway and having a separate section, means arranged to move the plate with respect to the railway, and independent means for varying the relation of the plate section to the railway.

32. In a nail distributor, a nail conveyer having a plurality of nail channels, nail conduits, and discharge means arranged to deliver nails from plural channels to a less number of conduits.

33. In a nail distributor, a nail conveyer having a plurality of nail channels, nail conduits, and discharge means arranged to deliver nails from two channels to a single conduit.

34. In a nail distributor, a nail conveyer having a plurality of nail channels, nail conduits, a discharge device having means arranged to receive nails from pairs of channels, branch conduits to which each pair of channels delivers, and a conduit extending the branch conduits.

35. In a nail distributor, a nail conveyer, and a discharge device extending transversely of the conveyer and having nail-receiving means arranged in a set, the set including elements in different positions transversely of the conveyer and in different angular positions about the discharge device.

36. In a nail distributor, a nail conveyer,

and a discharge device extending transversely of the conveyer and having nail-receiving means arranged in a set, the set including two series of elements, said series being in different positions upon the device transversely of the conveyer.

37. In a nail distributor, a nail conveyer, and a discharge device extending transversely of the conveyer and having nail-receiving means arranged in a set, the set including two series of elements situated respectively at opposite ends of the discharge device.

38. In a nail distributor, a nail conveyer, and a discharge device extending transversely of the conveyer and having nail-receiving means arranged in a set, the set including two series of elements situated respectively at opposite ends of the discharge device and at opposite sides thereof.

39. In a nail distributor, a receptacle for holding mixed nails of different lengths, conduits leading to a machine utilizing the different lengths of nails separately, and means receiving the nails from the receptacle and delivering them separated as to length to the conduits.

40. In a nail distributor, a nail conveyer, a discharge device extending transversely of the conveyer and having nail-receiving means arranged in series, and nail conduits, the nail-receiving means in plural series delivering to the same conduit.

41. In a nail distributor, a nail conveyer, a discharge device extending transversely of the conveyer and having nail-receiving means arranged in two series, nail conduits, and branch conduits connecting the nail-receiving means of both series with a single nail conduit.

42. In a nail distributor, a railway provided with nail channels, nail conduits, and a discharge roll interposed between the railway and conduits, said roll being provided with depressions arranged for alinement with different nail channels and delivering to a less number of conduits.

43. In a nail distributor, a railway provided with nail channels, nail conduits, and a discharge roll interposed between the railway and conduits, said roll being provided with depressions arranged for alinement at different times with different nail channels and delivering to a single conduit.

44. In a nail distributor, a railway provided with nail channels, nail conduits, and a discharge roll interposed between the railway and conduits, said roll being provided with depressions arranged at opposite sides of the roll for alinement with different nail channels and delivering to a single conduit.

45. In a nail distributor, a railway provided with nail channels, nail conduits, and a discharge roll interposed between the railway and conduits, said roll being provided

with depressions arranged at opposite sides of the roll in two series for alinement with different nail channels, depressions in both series delivering to a single conduit.

46. In a nail distributor, a railway provided with nail channels, nail conduits, and a discharge roll interposed between the railway and conduits, said roll being provided with depressions arranged at opposite sides of the roll in two series for alinement with different nail channels, depressions in both series delivering to a single conduit, said series being located at opposite ends of the roll.

47. In a nail distributor, a railway provided with nail channels, nail conduits, a discharge roll interposed between the railway and conduits, said roll being provided with depressions arranged for alinement with different nail channels, and branch tubes receiving nails from plural depressions and delivering them to a single nail conduit.

48. In a nail distributor, a railway provided with nail channels, nail conduits, a discharge roll interposed between the railway and conduits, said roll being provided with depressions arranged at opposite sides of the roll in two series for alinement with different nail channels, and branch tubes connecting a depression of each series with a single nail conduit.

49. In a nail distributor, a nail conveyer, a movable discharge device receiving nails therefrom, actuating means for the discharge device, and means arranged to vary the position to which the discharge device is moved.

50. In a nail distributor, a nail conveyer, a discharge roll receiving nails therefrom and being rotatable into discharging position, driving mechanism for the discharge roll, and means arranged to vary the angle of discharge to which the roll is driven.

51. In a nail distributor, a nail conveyer, a rotatable discharge roll having depressions to receive nails from the conveyer, driving mechanism for the discharge roll, and means arranged to vary the position of the depressions for discharge.

52. In a nail distributor, a nail conveyer, a rotatable discharge roll having depressions to receive nails from the conveyer, and driving mechanism for the discharge roll including a connection variable in length.

53. A nail distributor comprising a receptacle for holding mixed nails of different lengths, a nail conveyer leading from the receptacle and being provided with nail channels and with means for causing the delivery of nails of different lengths through different channels, nail conduits, and a discharge device for delivering nails from plural channels to a single conduit.

54. A nail distributor comprising a recep-

- tacle for holding mixed nails of different lengths, a nail conveyer leading from the receptacle and being provided with nail channels and with means for returning nails of predetermined size from the channels to the receptacle, nail conduits, and a discharge device for delivering nails from plural channels to a single conduit.
55. A nail distributor comprising a nail conveyer provided with a nail channel, and a clearing member movable toward and from the channel.
56. A nail distributor comprising a nail conveyer provided with channels having openings, and clearing members movable through the openings for varying distances.
57. A nail distributor comprising a nail conveyer including separated portions lying in different planes and a connecting portion, and clearing members cooperating with the connecting portion.
58. A nail distributor comprising a nail conveyer including separated portions lying in different planes and a connecting portion, in which connecting portion are nail channels, and clearing members operable in said channels.
59. A nail distributor comprising a nail conveyer, a member extending over the conveyer and cooperating with the nails, and a clearing member movable between the conveyer and member.
60. A nail distributor comprising a nail conveyer, a nail-reversing member cooperating therewith, and a member movable through the conveyer toward and from the reversing means.
61. A nail distributor comprising a nail conveyer, a nail-reversing member cooperating therewith, there being channels between the conveyer and reversing member, and a clearing member operating in the channels.
62. A nail distributor comprising a nail conveyer provided with channels and having openings, fingers operating in the openings, and means for reciprocating the fingers through the openings.
63. In a nail distributor, a discharge device, and a yieldable stop member cooperating therewith.
64. In a nail distributor, a discharge device, and a stop member having independently yieldable sections cooperating therewith.
65. In a nail distributor, a conveyer provided with means for delivering over different portions nails of different lengths, a discharge device to which the conveyer delivers, and a stop member having movable sections corresponding to the delivery portions of the conveyer.
66. In a nail distributor, a conveyer provided with means for delivering over different portions nails of different lengths, a discharge device to which the conveyer delivers, and a stop member having yieldable sections corresponding to the delivery portions of the conveyer.
67. In a nail distributor, a discharge device, a stop member having independently yieldable sections cooperating therewith, and means arranged to simultaneously adjust the plural sections.
68. In a nail distributor, a discharge device, a support, and a stop bar depending from and being movable about said support.
69. In a nail distributor, a discharge device, a support, a stop bar depending from and being movable about said support, and spring-pressed members contacting with the bar.
70. In a nail distributor, a discharge roll, a rod parallel thereto, arms mounted to turn upon the rod, and a stop bar carried by the arms.
71. In a nail distributor, a discharge roll, a rod parallel thereto, arms mounted to turn upon the rod, a stop bar carried by the arms, and yieldable means for resisting the movement of the bar from the discharge roll.
72. In a nail distributor, a discharge roll, a rod parallel thereto, arms mounted to turn upon the rod, stop bar sections carried by the arms, and yieldable means for independently resisting movement of the sections.
73. In a nail distributor, a receptacle, a conveyer receiving nails therefrom, and separated members raised above the surface of the conveyer and between which nails pass from the receptacle.
74. In a nail distributor, a receptacle, a conveyer having channels receiving nails therefrom, and separated members extending longitudinally of the channels and being raised above the surface of the conveyer to allow nails to pass from one channel to another.
75. In a nail distributor, a receptacle, a conveyer receiving nails therefrom and having a wall at its rear extremity, and bars supported at one end upon the wall and extending longitudinally of the conveyer.
76. In a nail distributor, a receptacle, a conveyer receiving nails therefrom and having a wall at its rear extremity, and bars supported at one end upon the wall and extending longitudinally of the conveyer, the lower edges of the bars being spaced from the surface of the conveyer.
77. In a nail distributor, a receptacle, a conveyer receiving nails therefrom, a discharge device to which the conveyer delivers, said device having separated series of discharge means, and a shield within the receptacle over the conveyer, said shield being aligned with the separation between the series of discharge means.
78. In a nail distributor, a receptacle, a

conveyer receiving nails therefrom, a discharge device to which the conveyer delivers, said device having separated series of discharge means, and a grating through
5 which the nails pass from the receptacle to the conveyer, the grating having a shield

over the conveyer in alinement with the separation between the series of discharge means.

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

JOSEPH H. POPE.