

No. 896,573.

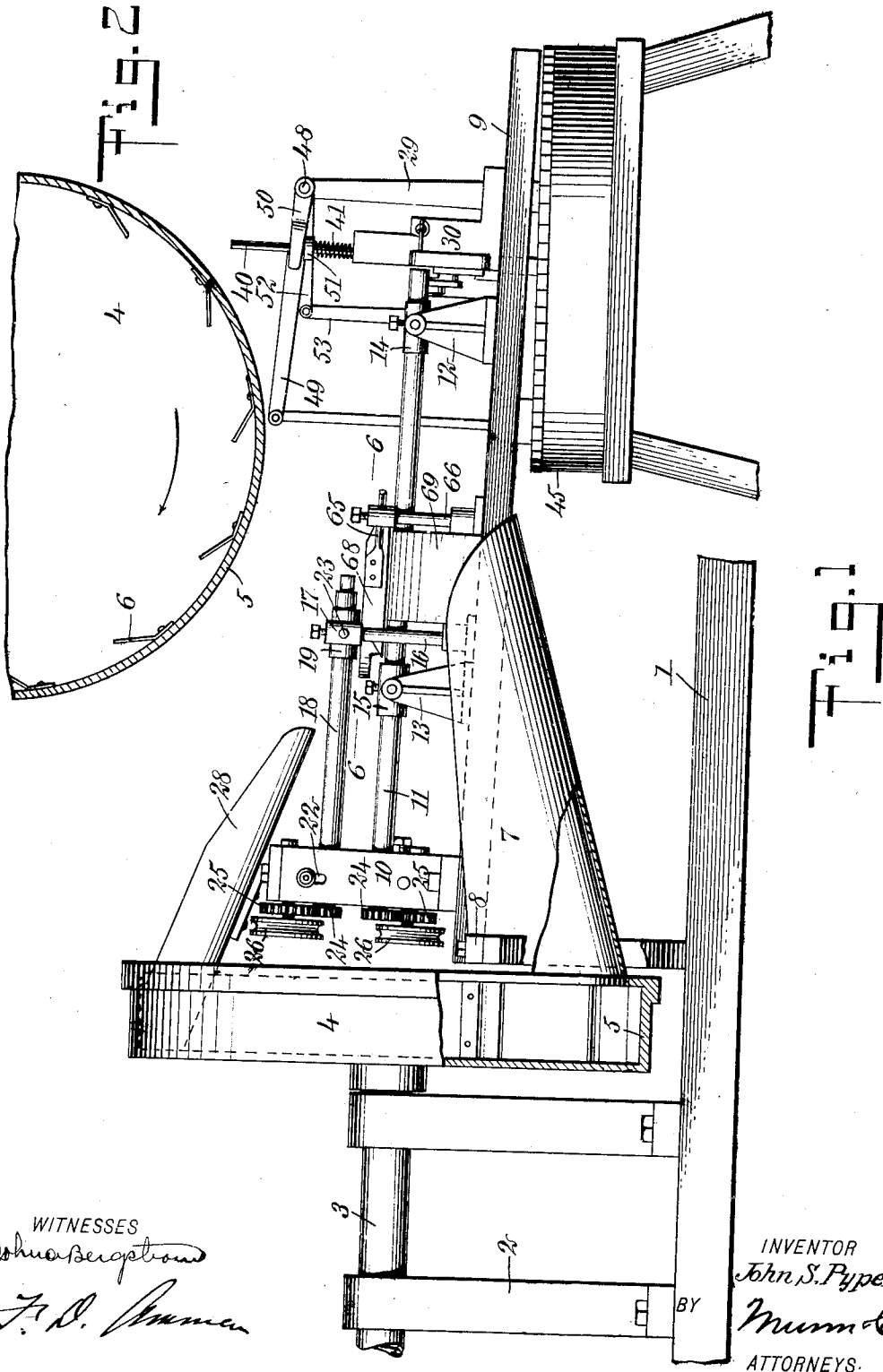
J. S. PYPER.

PATENTED AUG. 18, 1908.

FEEDING DEVICE FOR NAIL MACHINES.

APPLICATION FILED JUNE 8, 1907.

4 SHEETS—SHEET 1.



WITNESSES
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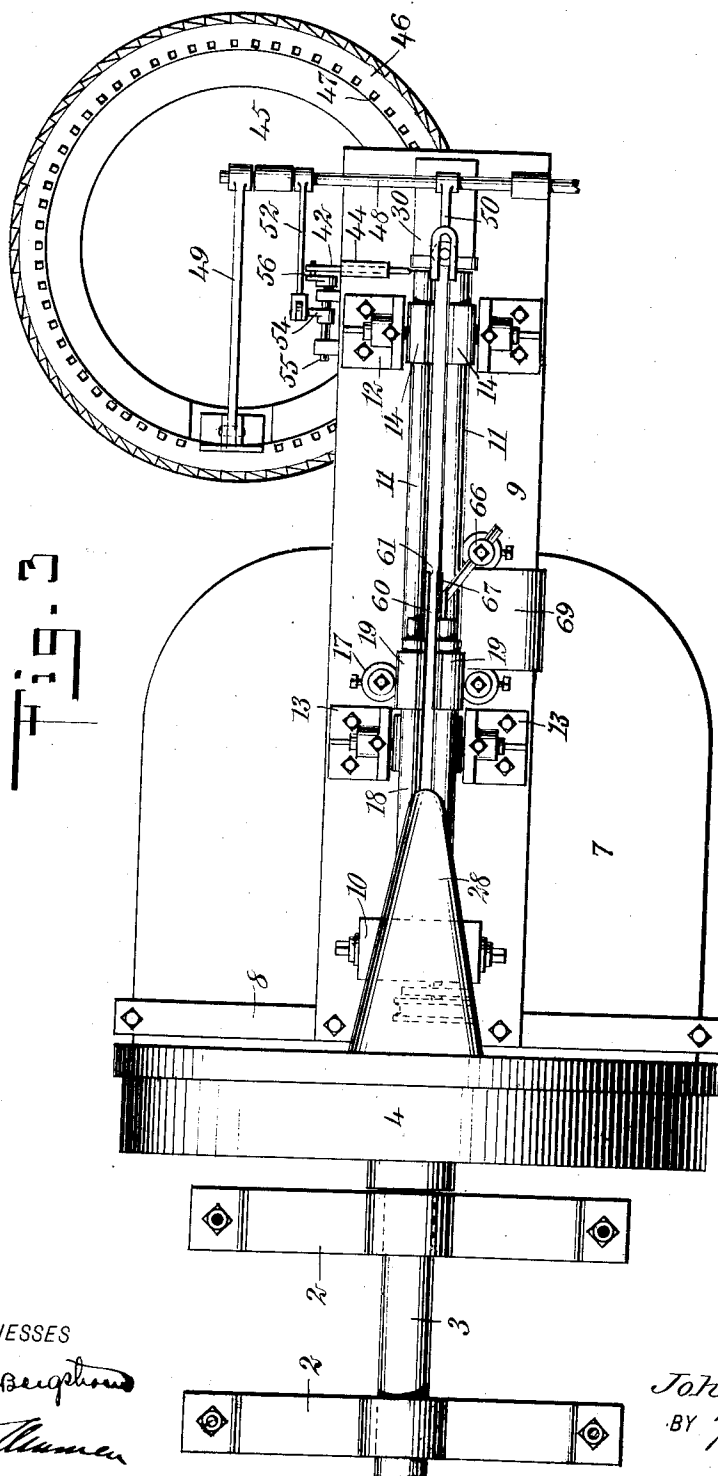
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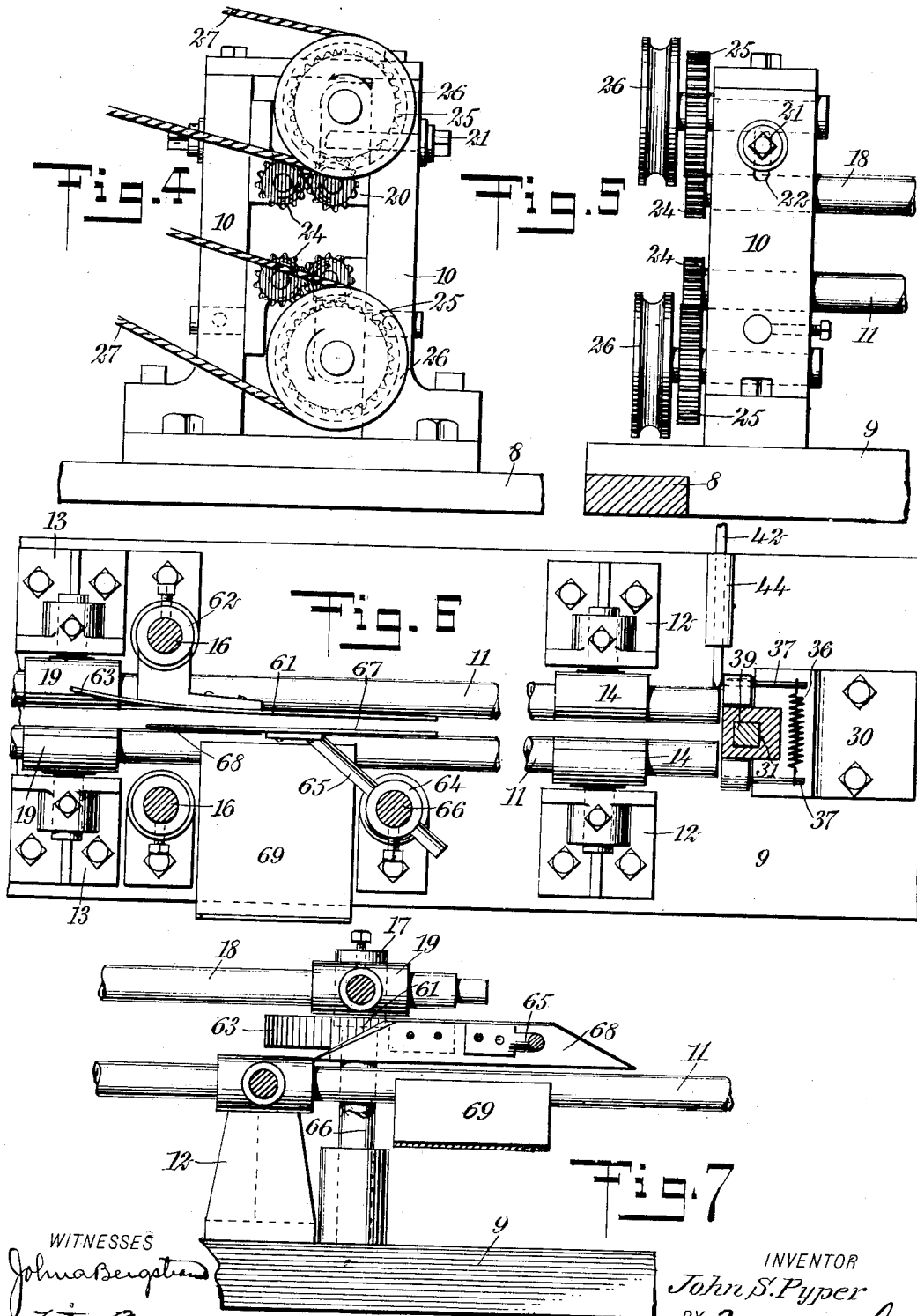
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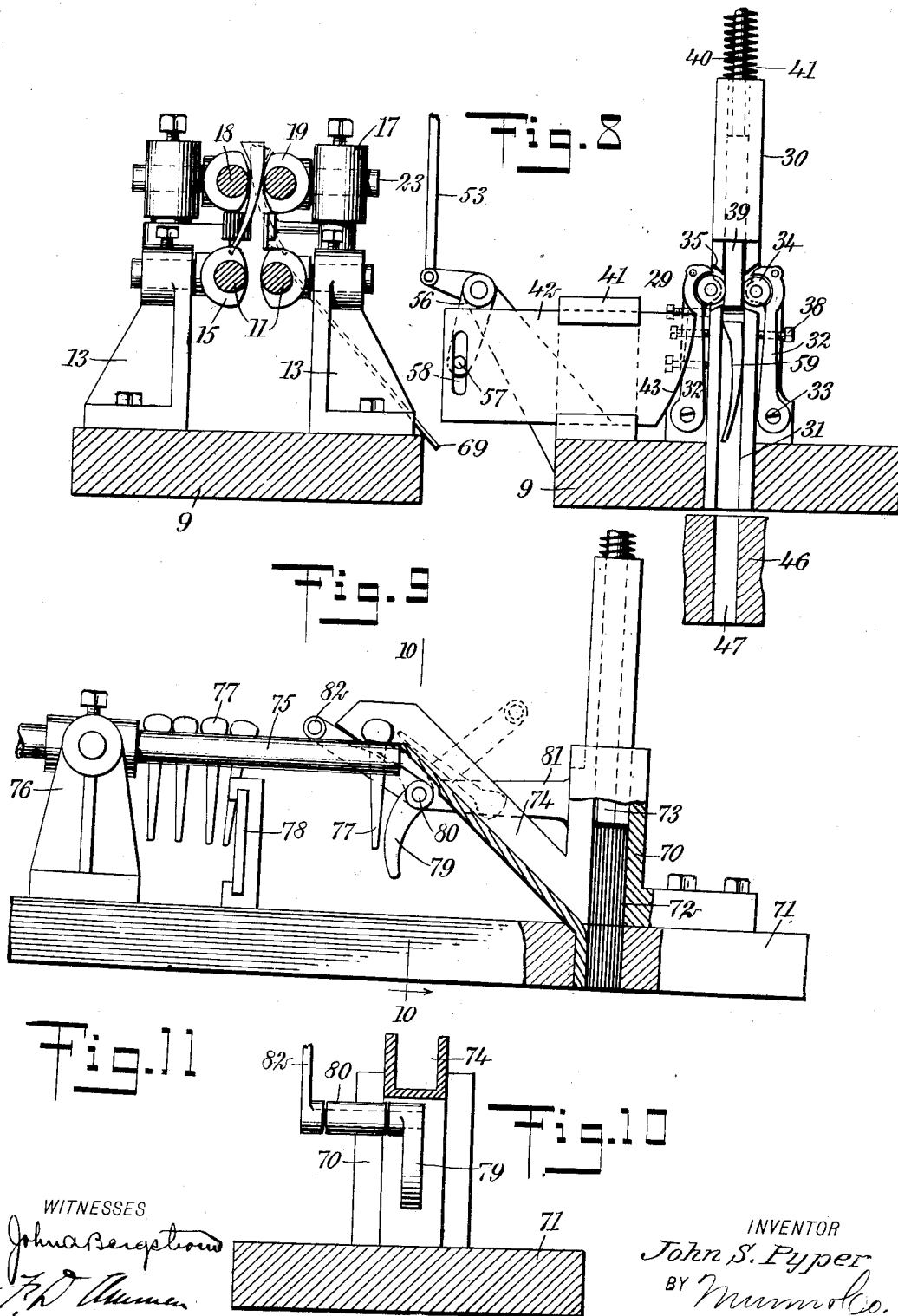
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4 SHEETS—SHEET 4.



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FEEDING DEVICE FOR NAIL-MACHINES.

No. 896,573.

Specification of Letters Patent.

Patented Aug. 18, 1908.

Application filed June 8, 1907. Serial No. 377,871.

To all whom it may concern:

Be it known that I, JOHN S. PYPER, a citizen of the United States, and a resident of Keeseville, in the county of Essex and State of New York, have invented a new and Improved Feeding Device for Nail-Machines, of which the following is a full, clear, and exact description.

This invention relates to a feeding device for nail machines, and is intended especially to be used in connection with machines for pointing horseshoe nails.

The object of the invention is to produce a device of this class which will operate effectively to present the nails to the pointing mechanism in the proper position.

The invention consists in the construction and combination of parts to be more fully described hereinafter and particularly set forth in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of the feeding device and showing a part of the nail-pointing mechanism, certain parts being broken away and shown in cross section; Fig. 2 is a vertical section through the lower portion of a feed wheel which constitutes a part of the feeding device; Fig. 3 is a plan of the feeding device, and showing, also, a portion of the pointing mechanism; Fig. 4 is an end elevation of the feeding device; Fig. 5 is a side elevation of the mechanism shown in Fig. 4, the rolls being broken away and a portion of the frame being shown in cross section; Fig. 6 is a horizontal section taken on the line 6—6 of Fig. 1, but upon an enlarged scale; Fig. 7 is a vertical section taken through the machine at the left hand portion of Fig. 6; Fig. 8 is a cross section taken near the delivery mechanism where the nail is delivered to the pointing mechanism; Fig. 9 is a cross section through the feed rolls illustrated in Fig. 6, and illustrating especially the selecting device for ejecting nails which have entered the feeding device in the wrong position; Fig. 10 is a vertical cross section showing a modified construction for the mechanism which is adopted when the nails must be introduced into the delivery mechanism in a reversed position; this view is a cross section on the line 10—10 of Fig. 11 looking toward the

right; and Fig. 11 is a side elevation of the modified construction of the mechanism for reversing the position of the nails as they pass to the delivery mechanism.

Referring more particularly to the parts, and especially to Figs. 1 to 3, 1 represents the base for the feeding mechanism. Upon this base suitable pillow blocks 2 are provided, supporting a horizontal shaft 3, which shaft carries rigidly a feed wheel 4. This feed wheel 4 has the form of an open pan so that it presents a circumferential or cylindrical face or rim 5, the interior whereof is provided with a plurality of inclined clips 6 which constitute buckets, enabling the feed wheel to raise the nails within the same when rotated in the direction of the arrow, as indicated in Fig. 2. At the open side of the feed wheel 4 which is disposed away from the pillow blocks 2, a feed pan 7 is provided which is inclined as shown, so that nails which fall upon it will slide down into the feed wheel, as will be readily understood. This feed pan 7 is disposed below a transverse cross bar 8 to which there is attached a frame plate 9 which extends longitudinally with respect to the axis of the shaft 3. This frame plate 9 is slightly depressed toward its outer end; that is, toward the end which is remote from the feed wheel 4. At the end of the frame plate 9 adjacent to the wheel 4 a housing 10 is provided, in the lower portion of which a pair of main feed rolls 11 are supported. These rolls are disposed a slight distance apart and are slightly inclined, as indicated. They are parallel with each other and at their lower ends are rotatably supported in pillow blocks 12. Intermediate pillow blocks 13 are provided; the pillow blocks 12 and 13 are provided with sleeves 14 and 15 respectively, which are cut away on their inner sides as shown in Fig. 8 so as to form a continuous uninterrupted open space between the rolls, as indicated very clearly in Fig. 6. Near the pillow blocks 13, uprights or standards 16 are provided, and the upper portions of these uprights 16 support bearings 17 for auxiliary feed rolls 18. These bearings 17 comprise sleeves 19 which are similar to the sleeves 14 and 15, being cut away on their adjacent faces so that a continuous open space is formed between the rolls 18. Like the rolls 11, the rolls 18 are disposed parallel with each other and a slight distance apart. The ends of the rolls 18 which lie near the feed wheel 4 are

supported in the housing 10. These rolls are adjustable vertically, their bearings 20 being attached to the inner faces of the housing 10 by means of bolts 21 passing through slots 22, as illustrated. The sleeves 19 are supported upon pivots 23 at the bearings 17 so as to permit of the adjustment described.

The ends of the rolls 11 and 18 project beyond the housing 10 on the side adjacent to the feed wheel 4, and are provided with rigid pinions 24 which mesh together as shown, so that the rolls 18 will turn in opposite directions, and so that the rolls 11 will turn in opposite directions. The rolls are adapted to be driven continuously by means of gear wheels 25 which mesh with one of the pinions 24, and these gear wheels 25 have rigid pulleys 26 which are adapted to be driven continuously by ropes 27, as shown most clearly in Fig. 4. It should be understood that when the machine is in operation, the pulleys 26 are rotated in the direction of the arrows indicated in Fig. 4, so that the adjacent faces of the rolls 18 and 11 move upwardly.

Supported on the upper portion of the housing 10 I provide a feed chute 28, the receiving end of which projects into the interior of the feed wheel 4 so as to catch the nails which are brought up by the buckets 6. This feed chute tapers toward its lower extremity which is disposed just over the feed rolls 18, as shown most clearly in Figs. 1 and 3.

At the lower end of the main rolls 11 I provide a delivery device 29, and this device comprises a housing 30 which is mounted upon the frame plate 9 as indicated. The construction of this housing is most clearly illustrated in Figs. 6 and 8; it presents a vertically disposed guide channel 31 in its face which lies adjacent to the ends of the rolls, and this channel 31 is centrally in alinement with the space between the rolls. On the sides of the housing 30 presser arms 32 are pivotally mounted at 33, being disposed in a vertical position as indicated in Fig. 8; at their upper ends they carry presser rollers 34 which are disposed opposite to each other as shown. Opposite these rollers the side walls of the channel 31 are cut away to form openings 35 through which the rollers project into the interior of the channel. The presser arms 32 are constrained toward each other by a helical spring 36 which is attached to pins 37 projecting from the sides of the arms, as indicated in Fig. 6. The rollers 34 are normally held in axial alinement with the rolls 11. They may be nicely adjusted by means of set screws 38 which are mounted in them and the ends of which rest against the outer sides of the walls of the channel 31, as shown in Fig. 8.

In the upper portion of the housing 30 a plunger 39 is guided vertically. The lower

portion of this plunger is of rectangular cross section so as to fit the channel 31, but the upper portion is formed into a round stem 40 about which there is disposed a helical spring 41 which tends to hold the plunger in an upwardly withdrawn position, as will be readily understood. In Fig. 8 the plunger is shown in a slightly depressed position, at which time it forces the rollers 34 apart in a manner which will be described more fully hereinafter. It should now be understood that the channel 31 presents an open side to the feed rolls 11 so that nails passing along between the rolls, may advance one at a time into the channel. In order to prevent the nails from passing into the channel at the wrong time, I provide a time gate 42, which consists of a plate having a curved forward edge 43, and this plate slides in a horizontal direction in a suitable guide 44.

The pointing mechanism 45 comprises a ring 46, as indicated in Fig. 3, the rim of which is provided with a plurality of openings 47 which are adapted to be brought successively beneath the channel 31 so as to align therewith, as indicated in Fig. 8. This wheel 46 is given a step-by-step motion for this purpose, by any suitable mechanism.

It should be understood that the plunger 39 and the gate 42 are automatically operated from the pointing mechanism. For this purpose a transverse rock shaft 48 is provided, which is operated by an arm 49 in any suitable manner, from the pointing mechanism. This rock shaft 48 is provided with a forked arm 50 which engages the upper extremity of the plunger 39 as illustrated in Fig. 1. The construction at this point comprises a collar 51 which is rigid with the stem 40, and this collar enables the forked arm 50 to depress the plunger by a downward movement; the spring 41 returns the plunger to its normal raised position, as will be readily understood.

In order to move the gate 42 automatically, a rocker arm 52 is provided, which is rigid with the rock shaft 48, and this arm 52, through the medium of a link 53, operates a rocker arm 54 on a small rock shaft 55 which is attached at the side of the frame plate 9, as indicated in Fig. 3. This small rock shaft 55 is provided with a rocker arm 56 having a laterally projecting pin 57 which passes through a vertical slot 58 formed in the outer end of the gate as indicated in Fig. 8. From this arrangement it should be understood that when the plunger moves downwardly, the gate remains withdrawn for a short space of time, so that when the plunger has returned to its normal raised position, a nail may advance into the channel 31. It should be understood that the nails should be introduced into the channel 31 in the position illustrated by the nail 59 in Fig. 8; but in the operation of the machine, many of the nails tend to occupy the opposite position, so that

the curve of the nail is disposed against the left side of the channel instead of against the right, as illustrated. In order to prevent this, I provide a selecting mechanism 60 which is disposed near the middle portion of the main rolls, as indicated in Fig. 3. Before proceeding to a description of this selecting mechanism, it will facilitate a clear understanding of it to state briefly that in the operation of the machine, the nails are being constantly dropped through the feed chute 28 by the feed wheel 4. As these nails fall upon the auxiliary rolls 18, many of them become caught between the rolls with their points hanging downwardly. In this connection it should be understood that the rolls are near enough together to prevent the heads of the nails from passing through. In this way, it should be understood that the nails will become caught between the rolls with their points hanging downwardly. It should be remembered that horseshoe nails are of slightly curved form, and, naturally, it will happen that some of the nails will be caught with the curve disposed in the desired position, while others will be disposed with the curve in the opposite or wrong position to enter the delivering mechanism. For this purpose the selecting device 60 is provided, affording means, as it does, for ejecting the nails which are held so that their curve is in the wrong position. It should be understood that the rotation of the rolls 18 tends to advance the row of nails held therebetween, by a slow movement toward the ends of the rolls.

Referring now especially to Fig. 6, I provide on one side of the machine a guide plate 61 which is carried by a bracket 62 which is rigidly attached to one of the standards 16 referred to above. The body of this guide plate 61 is disposed substantially parallel with the axes of the rolls, but at its end which is disposed toward the feed wheel, it is formed with a slight outward curve or lip 63. The body of the plate 61 lies substantially in alinement with the side of the guide space or opening which is formed between the rolls 11 as shown. On the opposite side of the machine I provide a standard 66 to which an adjustable bracket 64 is attached, said bracket comprising an inclined arm 65. To the outer extremity of the arm 65 an ejector plate 67 is attached; this ejector plate is disposed substantially in alinement with the opposite side of the open space between the rolls, and its end which is disposed toward the feed wheel, that is, toward the direction in which the nails are advancing, is provided with an inclined edge 68. As the nails advance in the feed rolls 18 and 11, those nails the points of which project toward the left, that is, toward the lip 63, come in contact with the lip 63 and are swung inwardly so as to pass into the guide space between the

plates 61 and 67. As to those nails whose points project in the opposite direction in advancing, their points strike the inclined edge 68 and they are deflected more fully toward the right, so that they do not pass into the guide space between the plates 61 and 67; hence, with these nails, as they reach the ends of the auxiliary rolls 18, they are dropped from the rolls. As they drop they fall upon an inclined apron 69 which throws them down into the feed pan 7. The other nails which have been guided properly into the space between the plates 61 and 67, fall from the ends of the auxiliary rolls 18, and their heads are caught between the rolls 11. They are then advanced by the continuous movement of the rolls 11 toward the delivery mechanism 29. When the gate 42 at the delivery mechanism, is open, the foremost nail advances into the channel so that its head comes into the space between the upper portion of the rollers 34. In this way the rollers 34 support the nail in the upper portion of the channel 31. At the proper moment with respect to the pointing mechanism, the plunger 39 descends, striking the head of the nail 59, as indicated in Fig. 8, and forces the nail downwardly. In doing so, the rollers 34 move aside by reason of their resilient mounting, so as to permit the plunger to pass downwardly into the lower portion of the channel, as illustrated. In this way the plunger feeds the nails one at a time to the pointing mechanism.

Under some circumstances, it may be desired to feed the nails to the delivery mechanism in an inverted position; that is, with the heads downwardly. In order to meet this requirement, I provide a modified construction shown in Figs. 10 and 11. In this construction, a guide bracket 70 is mounted upon the upper side of the frame plate 71; this guide bracket 70 has a vertical channel 72 in which a plunger 73 is guided in a vertical position. Communicating with the channel 72 I provide an inclined guide arm 74 which extends upwardly so that its upper edge lies adjacent to the upper portions of the main feed rolls 75, the ends of which are simply cut off as shown, so that they present ends projecting beyond the bearings 76. The nails 77 advance between the rolls in the manner described in connection with the preferred form, and these nails are held back by means of a time gate 78 similar to the time gate 42. This time gate is automatically drawn aside at the required time so as to allow the nails to pass one at a time. As the nails reach the inclined guide 74, their points are thrown upwardly by a curved trigger 79 which is pivotally mounted at 80 on a horizontal arm 81 projecting from the bracket 70. This trigger 79 is operated by a crank arm 82, and this

crank arm is automatically operated from the machine in any suitable manner. The trigger 79 is in alinement with the space between the rolls so that as the trigger moves toward the left as indicated in Fig. 11, it engages the lower end of the nail and rotates the nail toward the left so that it falls into the guide arm or chute 74 head first, as indicated by the dotted outline. It should be understood, of course, that the auxiliary rolls 18 are at a sufficiently high level to hold the points of the nails clear of the lower rolls 11. The nails whose points are engaged by the ejector plate are deflected so far to one side that when they fall from the ends of the auxiliary rolls they cannot fall between the main rolls 11. On the other hand, the guide plate 61 holds the points of the right nails directly over the opening between the main rolls so that when they fall from the auxiliary rolls they are caught between the main rolls.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. In a feeding device for curved nails, a pair of parallel members disposed apart and adapted to hold nails by the head suspended in the space between said members, said space being continuously open whereby said nails may pass from between the ends of said members, a second pair of members disposed apart and adapted to catch the nails which pass from said first members, and an ejector adapted to engage those nails suspended from said first members having their points projecting in the same way.

2. In a feeding device for curved nails, in combination, a pair of parallel members adapted to suspend nails by the heads therebetween and adapted to let said nails fall when they are advanced to the ends of said members, a second pair of parallel members presenting a space therebetween into which said nails may fall from said first members, and means for deflecting the points of those nails projecting in one direction so that these nails cannot fall into the space between said second members.

3. In a feeding device for curved nails, in combination, means for suspending the nails

by the heads in an elevated position, means for similarly supporting the nails at a lower elevation, means for guiding the points of the right nails into position to be caught by said second named means, and means for guiding the points of the wrong nails so that they pass said second-named means when they fall.

4. In a feeding device for nails, in combination, a pair of feed devices disposed apart and adapted to support nails suspended by the heads in the space therebetween, a housing constituting a guide, rollers movably mounted on said housing, alining with said devices and adapted to receive the nails therefrom one by one, means for resiliently holding said rollers in position, and a movable plunger adapted to advance the nails from between said rollers.

5. In a feeding device for nails, in combination, a pair of feed rolls, a housing having a guide channel, means for holding the nails in said channel when delivered from said rolls, and a plunger for advancing the nails when held by said last means.

6. In a feeding device for nails, in combination, a pair of feed rolls, spaced apart, a housing having a guide channel, a pair of rollers alining respectively with said rolls, means for resiliently holding said rollers at the sides of said channel, said rollers being adapted to support the nails as they are fed through into said channel, and a plunger guided in said channel and adapted to advance into the space between said rollers.

7. In a feeding device for nails, in combination, a pair of feed rolls, spaced apart, a housing adapted to receive the nails one at a time from said rolls, and a gate adapted to move into the space between said rolls and said housing and cutting off the advance of the nails to said housing, said housing having a channel for guiding the nails to the pointing device.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN S. PYPER.

Witnesses:

J. ALFRED BABER,
WILLARD H. BABER.