

No. 776,635.

PATENTED DEC. 6, 1904.

W. WOLFE.
NAIL FEEDING MECHANISM.
APPLICATION FILED AUG. 20, 1903.

NO MODEL.

2 SHEETS—SHEET 1.

Fig. 1.

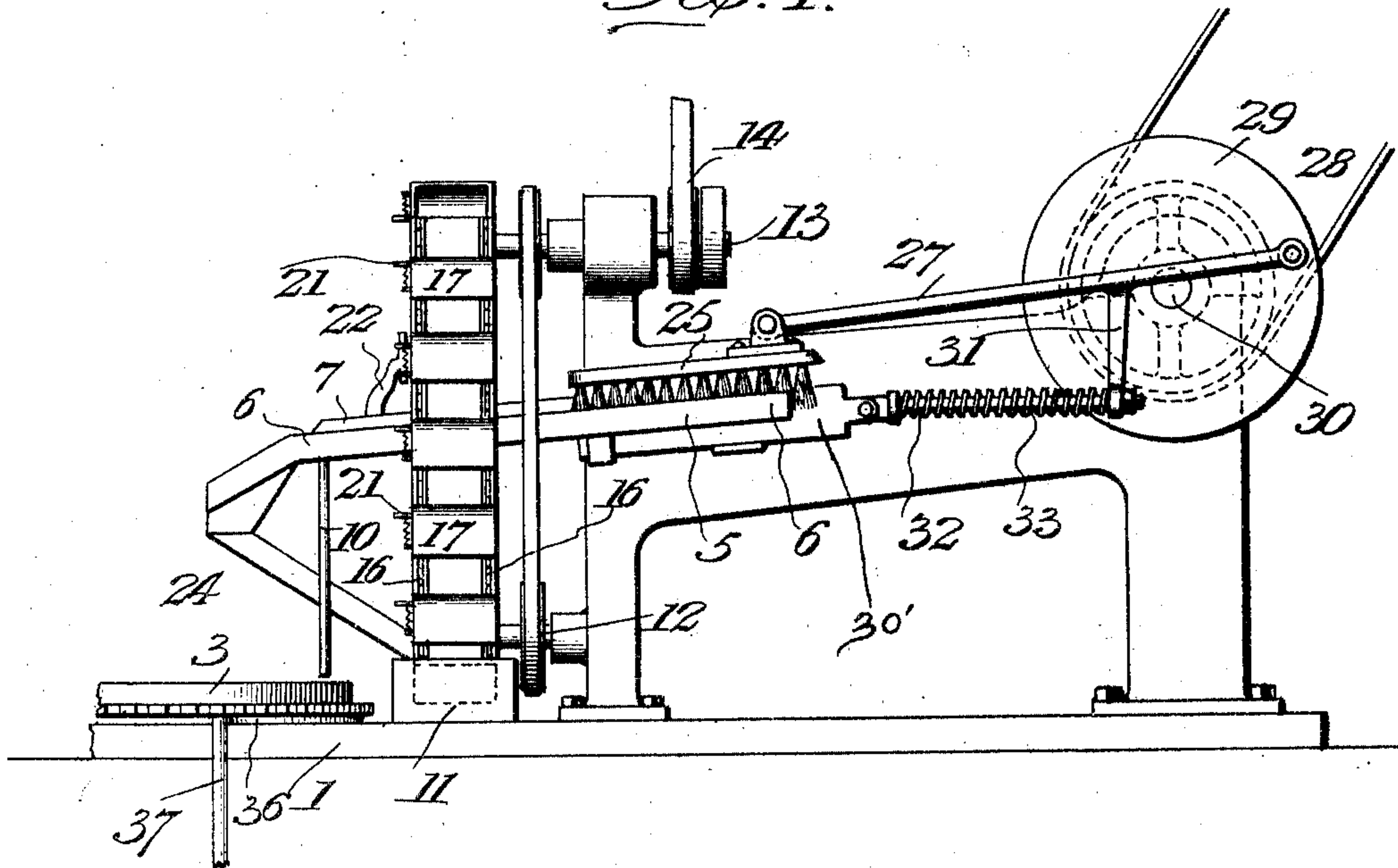
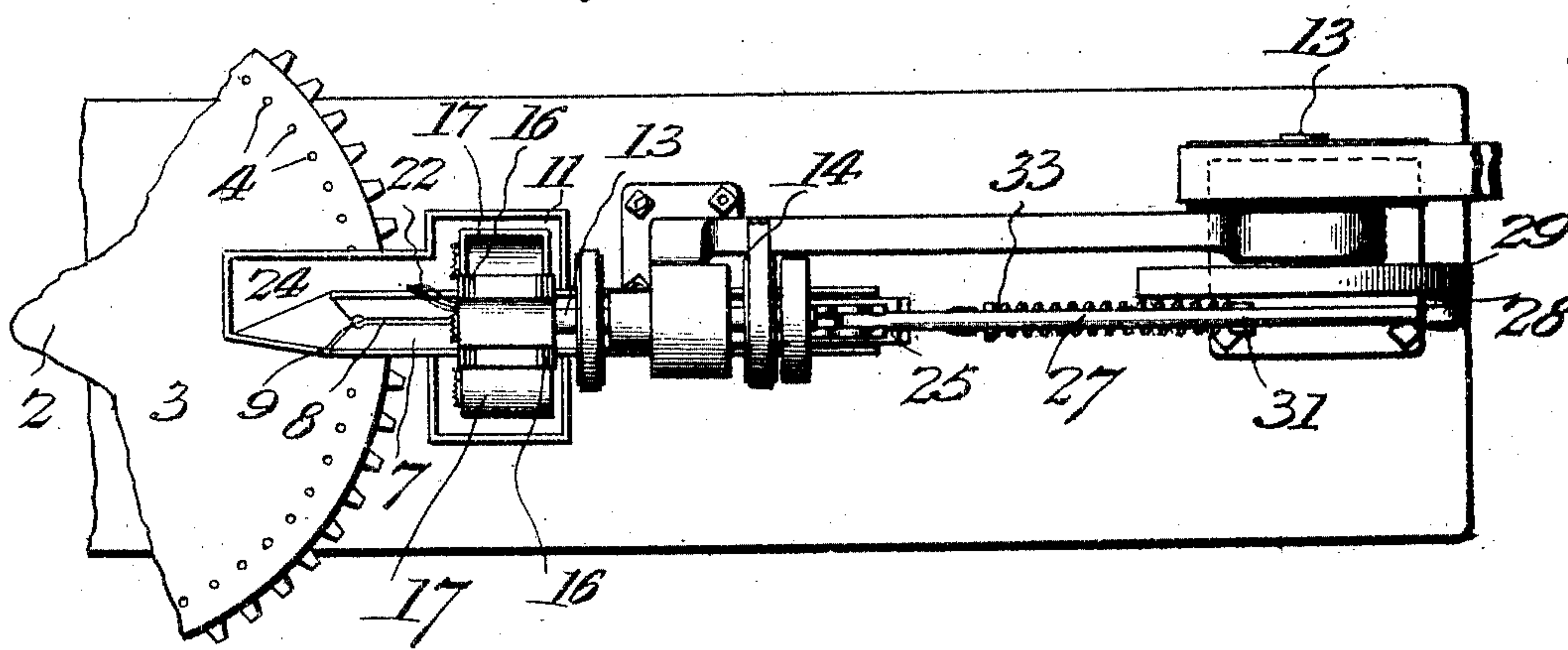


Fig. 2.



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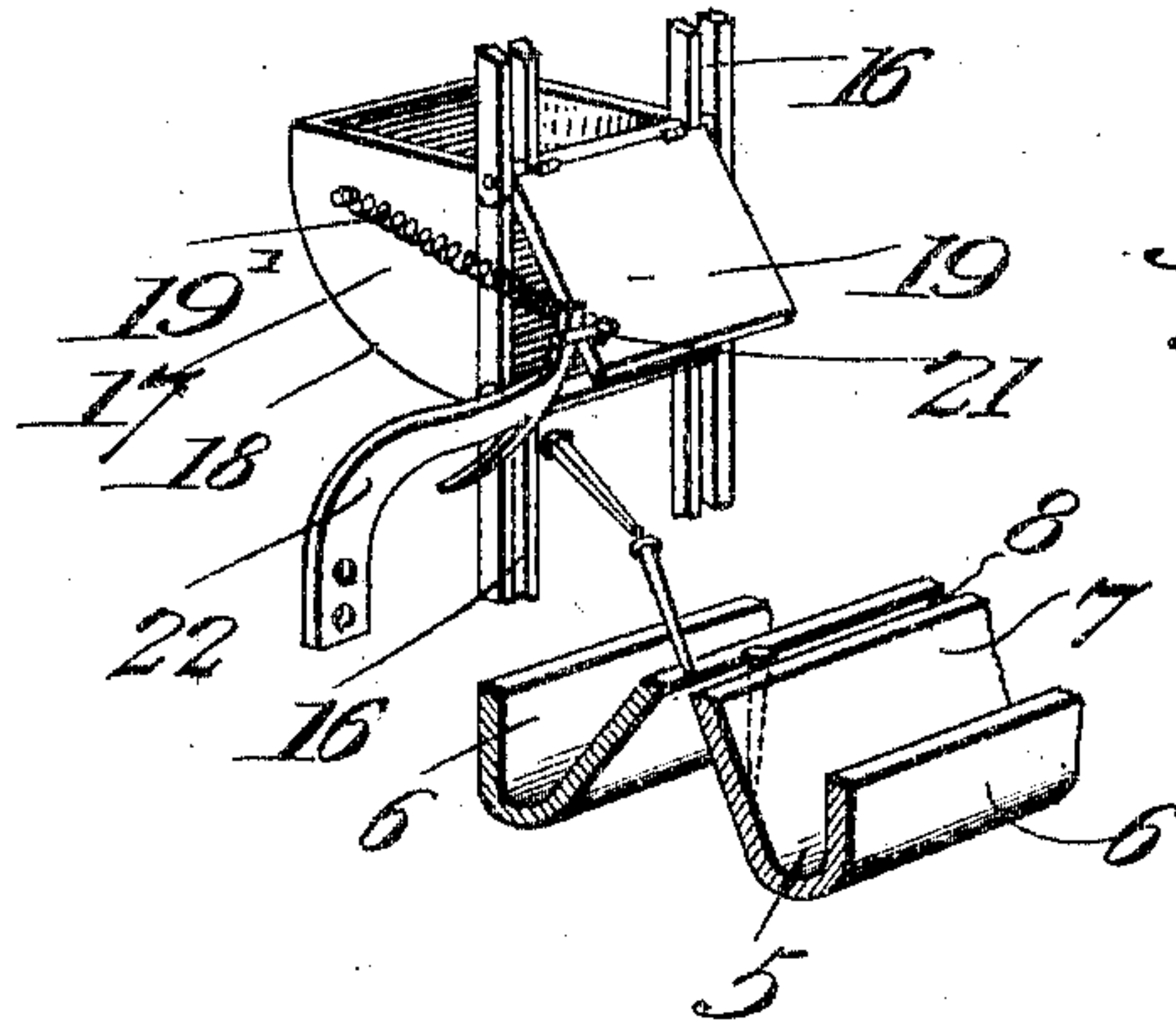
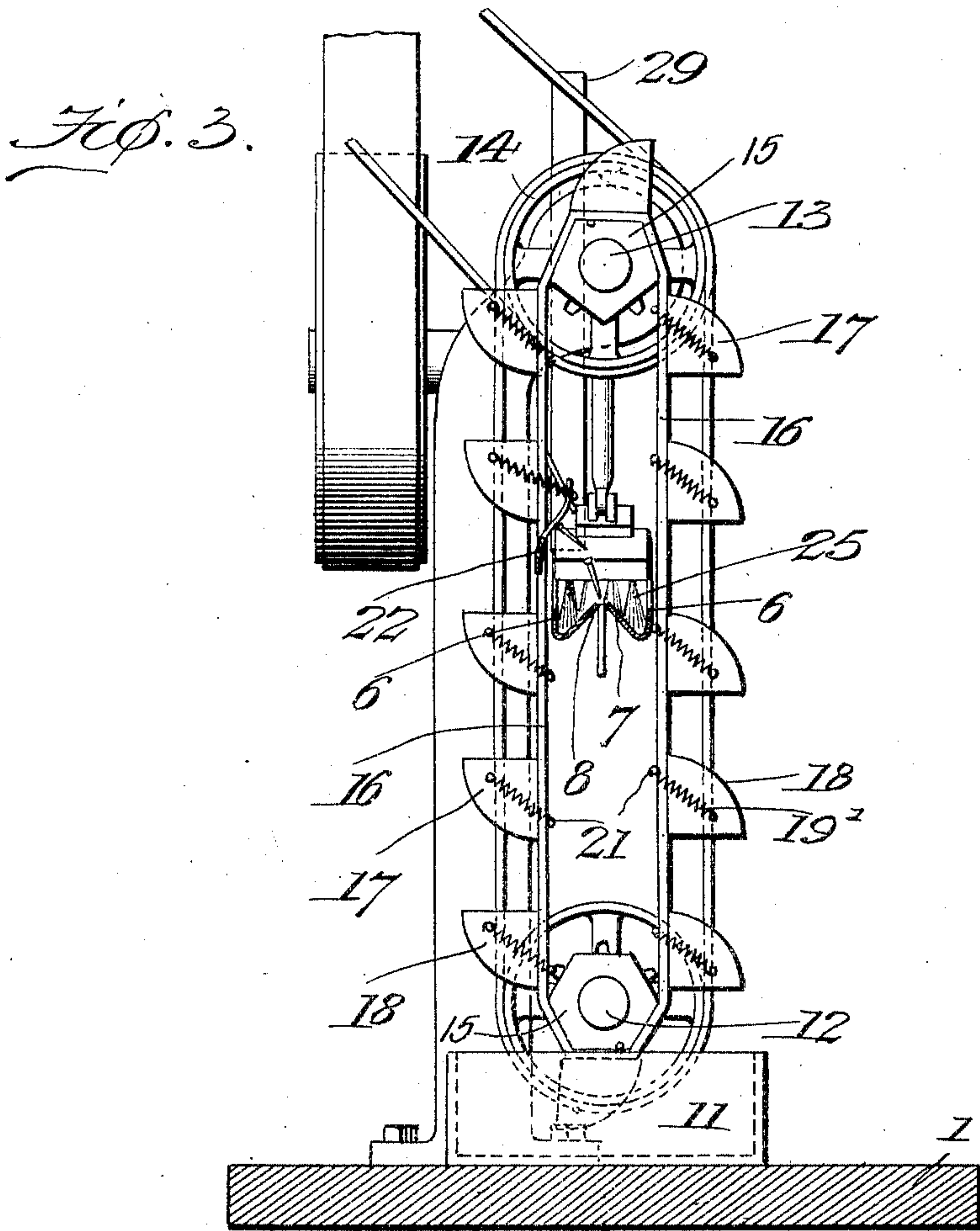
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UNITED STATES PATENT OFFICE.

WILLIAM WOLFE, OF BATAVIA, OHIO.

NAIL-FEEDING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 776,635, dated December 6, 1904.

Application filed August 20, 1903. Serial No. 170,199. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM WOLFE, a citizen of the United States, residing at Batavia, in the county of Clermont and State of Ohio, have invented a new and useful Nail-Feeding Mechanism, of which the following is a specification.

This invention relates to certain improvements in mechanism of that general class employed for the feeding of nails, pegs, screws, dowel-pins, and like securing devices to driving mechanisms.

The principal object of the invention is to provide a mechanism to which nails may be fed in bulk and delivered in proper position to a driving device of any appropriate character, the mechanism being adapted for the delivery of single nails, such as are usually supplied to machines employed in the building of heels of boots or shoes, or the delivery of a plurality of nails to a gang of simultaneously-operating drivers, such as are used in completing a heel-blank.

A further object of the invention is to provide a selecting means which will accept only nails presented to it in proper position, the remaining nails delivered at each operation being again returned to the delivery mechanism and presented again and again until such time as they happen to be in a proper position to be received by the selecting device.

A still further object of the invention is to provide a nail-feeding device in which the continuous feed of nails will not wholly depend on the selecting mechanism, provision being made for a continuous discharge except in case of accident or where the supply of nails is much below the normal.

A still further object of the invention is to provide a mechanism wholly automatic in its operation and in which the feed of the selecting device cannot become choked from an excessive quantity of nails.

With these and other objects in view, as will fully hereinafter appear, the invention consists in the novel construction and arrangements of parts hereinafter described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims,

it being understood that various changes in the form, proportions, and minor details in the structure may be made without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings, Figure 1 is a side elevation, partly in section, of a nail-feeding machine constructed in accordance with the invention. Fig. 2 is a plan view of the same. Fig. 3 is a transverse sectional elevation of the same on the line 3 3 of Fig. 1 and drawn to an enlarged scale. Fig. 4 is a sectional perspective view of the nail-selecting mechanism.

Similar numerals of reference are employed to indicate corresponding parts throughout the several figures of the drawings.

The main frame of the machine 1 is provided with suitable bearings and guides for the support of the various operating parts of the mechanism, and at one end of the base is a vertically-disposed pivot-pin 2 for the support of a horizontal disk 3, provided with an annular row of nail-receiving openings 4, to which the nails are successively delivered by the feeding mechanism and from which said nails are successively delivered to a driving mechanism. This portion of the device may be provided with two or three or more annular rows of nail-receiving openings, where a large number of nails are to be simultaneously fed to a gang of drivers such as are employed in the finishing operations of shoe machinery; but in general it is proposed to employ only a single row in order to deliver successive nails to a single driver employed for the purpose of holding together a number of taps or lifts assembled in form of a heel-blank.

Near the upper portion of the bed is a trough 5, having vertically-disposed side walls 6 and provided at its center with a rib 7, triangular in cross-section and provided with a longitudinally-disposed slot or groove 8, that constitutes the nail-selecting device. This groove is of such width at its top as to prevent the passage therethrough of the heads of the nails, the heads being generally of a larger size than the remaining portions of the nails; but at one end of said groove is an enlarged

space 9, through which the nails are successively dropped and are guided by a chute 10 to the receiving-openings 4 of the disk 3. The nails are dropped out the top of the slot by means of a suitable feeding mechanism, and only those nails which drop in an approximately vertical line and point foremost can enter the slot. The remaining nails slide down the inclined walls of the rib 7 to the bottom of the trough and from thence being returned to a preliminary supply-bin.

The supply-bin is arranged near the base or bed plate of the machine and at the initial operation is supplied with any desired number of nails, the supply being renewed at intervals. In this bin is a horizontally-disposed shaft 12, adapted to suitable bearings in the end cross-walls of the bin, and at a point above the trough 5 is a similar shaft 13, disposed parallel to the shaft 12 and receiving motion through a belt and pulley 14. The two shafts 12 and 13 are provided with sprocket-wheels 15 for the reception of link belts 16, said belts serving as supports for a series of equidistantly-spaced buckets 17, that successively dip into the trough 11 and carry the nails upward therefrom to a point above the trough and the rib 7. Each of the buckets is provided with a curved discharge-plate 18, rigidly secured in place and arranged in such manner that nails sliding by gravity down its curved inner wall will be directed at the discharge-point in an approximately vertical line and thence fall to the receiving slot or groove 8. The inner wall is formed by a plate 19, hinged at the top of the bucket and normally held in closed position by a tension-spring 19', extending between the plate 19 and a stud on one of the end walls of the bucket. Each of the plates 19 is provided with a projecting lug or antifriction-roller 21, adapted to engage a stationary cam 22, disposed at a point somewhat above the rib 7 and serving to move the successive plates to open position and allow the nails carried by the buckets to be discharged at a point above the slot or groove. Should the nails fall point downward and in a vertical or in an approximately vertical position, they will be received within the selecting slot or groove 8; but should they fall head down or be deflected, as may be the case where a large number of nails are carried by the bucket, they will come into contact with the inclined walls of the rib 7 and slide to the bottom of the trough.

At the end of the trough is an inclined chute 24, that is curved backward and terminates at a point slightly above the bin 11, so that the nails may be delivered by gravity from the trough to the bin and again presented for engagement by the buckets. To return the nails and insure delivery of the slot to the chute, there is employed a reciprocating brush 25, having bristles or similar devices on opposite

sides of the rib and adapted to force any nails lying in the bottom of the trough to the mouth of the chute. This brush is held in suitable guideways on the frame and is connected by a pitman 27 to a wrist-pin 28, projected from a crank-disk 29, and said crank-disk is carried by a shaft 30, receiving motion from any suitable source of power. The brush may be reciprocated at any desired speed, but preferably acts immediately after the operation of each bucket, so that it may assist to some extent in forcing selected nails farther along in the receiving-slot, and thus open the way for the nails carried by the succeeding buckets.

In order to insure positive movement of the nails, a slide 30' is arranged in the lower portion of the slot in such manner as to come into contact with the lower portion of the nails, said slide being connected to a pendent arm 31, carried by the pitman, by means of the rod 32, that carries a compression-spring 33, so that in the event of an accumulation of nails in the slot the spring will yield and prevent jamming of the nails or injury to any portion of the mechanism.

In the operation of the machine the initial and subsequent supplies of nails to the bin 11 are raised by the buckets and are successively discharged therefrom at points above the selecting-slot 8. Nails that fall into the slot are forced, by means of the slide 30', in the direction of the enlarged opening 9 and thence successively fall by gravity through a slot 10 and are received in the openings 4 of the horizontal disk 3. Nails that fail to enter the slot fall to the bottom of the trough and are re-engaged by the brush 25 and forced to return to the trough 11 to be again acted upon by the buckets. The nails that enter the openings 4 are held from passing entirely through said openings by the bottom plate 36 and are carried around until they reach the end of said plate, at which time they are presented immediately above the mouth of the chute 37, that leads to a suitable driving mechanism, or a number of nails may be simultaneously fed by corresponding number of chutes to the gang of drivers with no other change in the mechanism than the addition of the necessary number of chutes and drivers.

The machine forming the subject of this invention, while described as applicable principally for the delivery of single nails to heel-building machines, will also be of service in connection with driving machinery of any kind and may be used for the feeding of fastening devices of any character—such as nails, screws, pegs, dowel-pins, and the like—and in the event of an employment of the device in connection with that class of fastening devices of uniform diameter from end to end, such as dowel-pins, the bottom of the groove or receiving-slot will be provided with a stop-plate to prevent excessive downward move-

ment of the articles being acted upon. Where the mechanism is used in connection with ordinary shoe-nails, the selecting device also constitutes a separating mechanism for discharging slivers of metal or nails too small to be of any practical value, these falling entirely through the slot or chute to a waste-receptacle placed beneath the machine.

Having thus described the invention, what is claimed is—

1. In mechanism of the class described, an element having an open-top selecting slot or groove along which articles are fed to a point of discharge, means for feeding successive articles to said slot or groove, and means for positively engaging the articles entered in the groove and forcing them lengthwise of said groove, said forcing means leaving the slot free and open for the reception of additional articles during its return movement.

2. In mechanism of the class described, an element having an open-top selecting slot or groove along which articles are fed to a point of discharge, and means for engaging the rearmost article and imparting movement through it to the remaining articles whereby said articles are moved toward the discharge-point, said article-engaging means leaving the slot free and open for the reception of additional articles during its return movement.

3. In mechanism of the class described, an element having an open-top selecting slot or groove along which articles are fed to a point of discharge, and a reciprocating member entering said slot for engagement with the rearmost article and thereby imparting movement to all of the articles, said reciprocating member leaving the slot free and open for the reception of additional articles during its return movement.

4. In mechanism of the class described, an element having an open-top selecting slot or groove along which the articles are fed to a point of discharge, a reciprocating slide extending within the groove and by engaging the rearmost article serving to impart movement to the whole column of articles in the direction of the discharge-point, said slide when in its rearmost position leaving the slot clear for the reception of additional articles.

5. In mechanism of the class described, an element having a selecting slot or groove along which articles are fed to a point of discharge, a slide entering the groove and having a variable stroke determined by the number of articles in the slot or groove, a driving means for the slide, and a yieldable connection between the slide and the driving means.

6. In mechanism of the class described, an element having a selecting slot or groove along which articles are fed to a point of discharge, means for intermittently feeding successive quantities of articles to the slot, and a recip-

rocatory means for forcing the articles along the slot, said reciprocatory means operating between feeding intervals.

7. In mechanism of the class described, an element having a selecting slot or groove along which articles are fed to a point of discharge, means for intermittently feeding successive quantities of articles to the slot, a slide reciprocating in the slot and serving by engagement with the articles to feed the same lengthwise of the slot, and means for moving the slide to clear the slot in advance of each feeding operation.

8. In mechanism of the class described, a trough, a rib arranged in the trough and having a selecting slot or groove, means for feeding successive quantities of articles to the slot, and a brush movable along the rib to effect the discharge of articles failing to enter the slot or groove.

9. In a device of the class described, an element having a selecting slot or groove, a plurality of hoisting-buckets movable in successive order, movable doors forming part of said buckets, and means for successively opening the doors at the discharging-point to permit the articles carried thereby to fall into the groove.

10. In a device of the class described, an element having a selecting slot or groove, a supply-bin, an endless conveyer comprising a plurality of buckets for delivering the articles from the bin, spring-closed doors on said buckets, and means for successively opening the doors at points above said slot or groove.

11. In a device of the class described, an element having a selecting slot or groove, a supply-bin, an endless conveyer including a plurality of buckets, each provided with a curved discharge-wall and hinged door, a spring normally closing the door, and a fixed cam for opening the doors at points above said slot or groove.

12. In a device of the class described, a trough, a rib arranged in the trough and having a selecting slot or groove, an initial supply-bin, a feeding device for carrying the articles from the supply-bin and discharging the same above the slot or groove, a chute leading from the trough to the bin, a reciprocating brush disposed in the trough and serving to again deliver non-selected articles to the chute, and a slide arranged within the slot or groove and adapted to effect movement of said articles.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

WILLIAM WOLFE.

Witnesses:

A. J. GRIMES,
EDWARD STUMP.