J. S. PHIFER.

NAIL PACKING MACHINE.

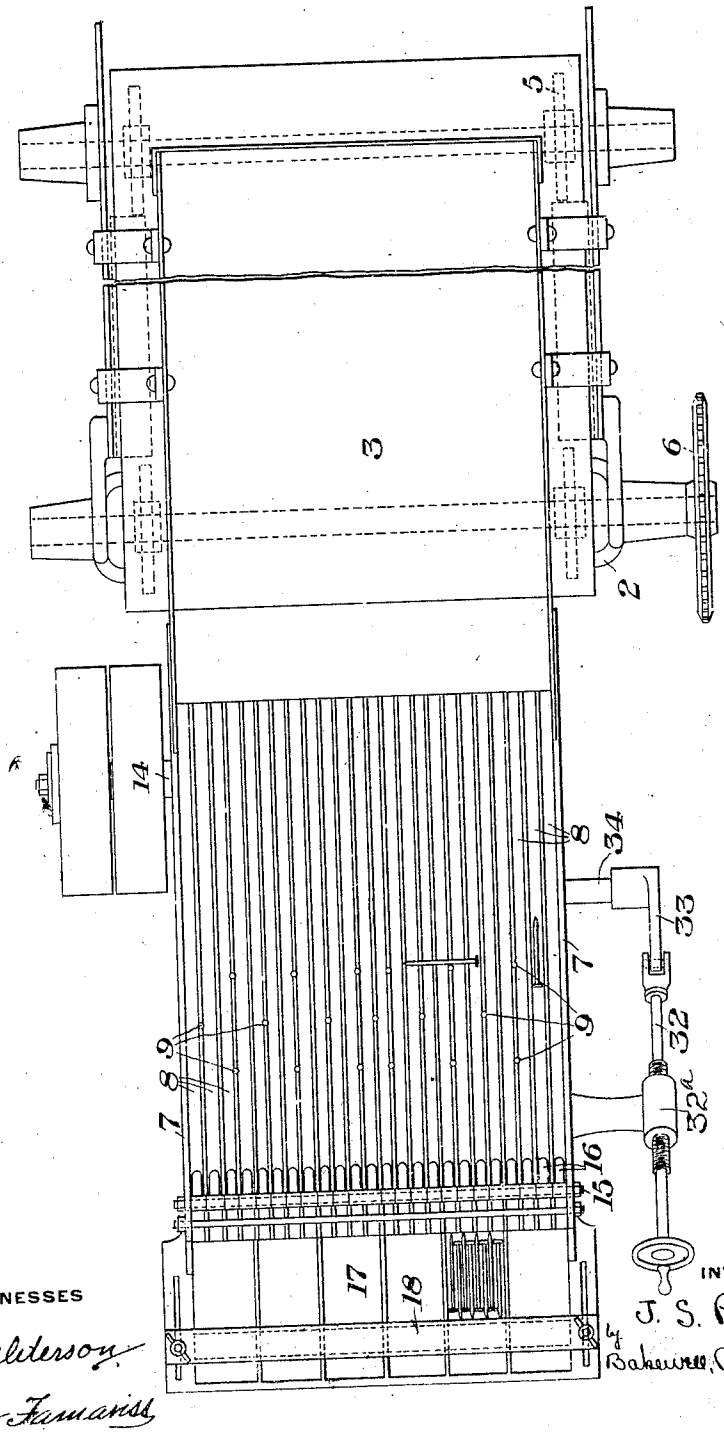
APPLICATION FILED OCT. 25, 1909.

1,047,984.

Patented Dec. 24, 1912.

5 SHEETS—SHEET 1.

Fig. 1.



WITNESSES

R. A. Balderson

Walter Famariss

INVENTOR

J. S. Phifer,

by Bakewell, Byrnes & Parmelee

his Attys.

J. S. PHIFER.

NAIL PACKING MACHINE.

APPLICATION FILED OCT. 25, 1909.

1,047,984.

Patented Dec. 24, 1912.

5 SHEETS—SHEET 2.

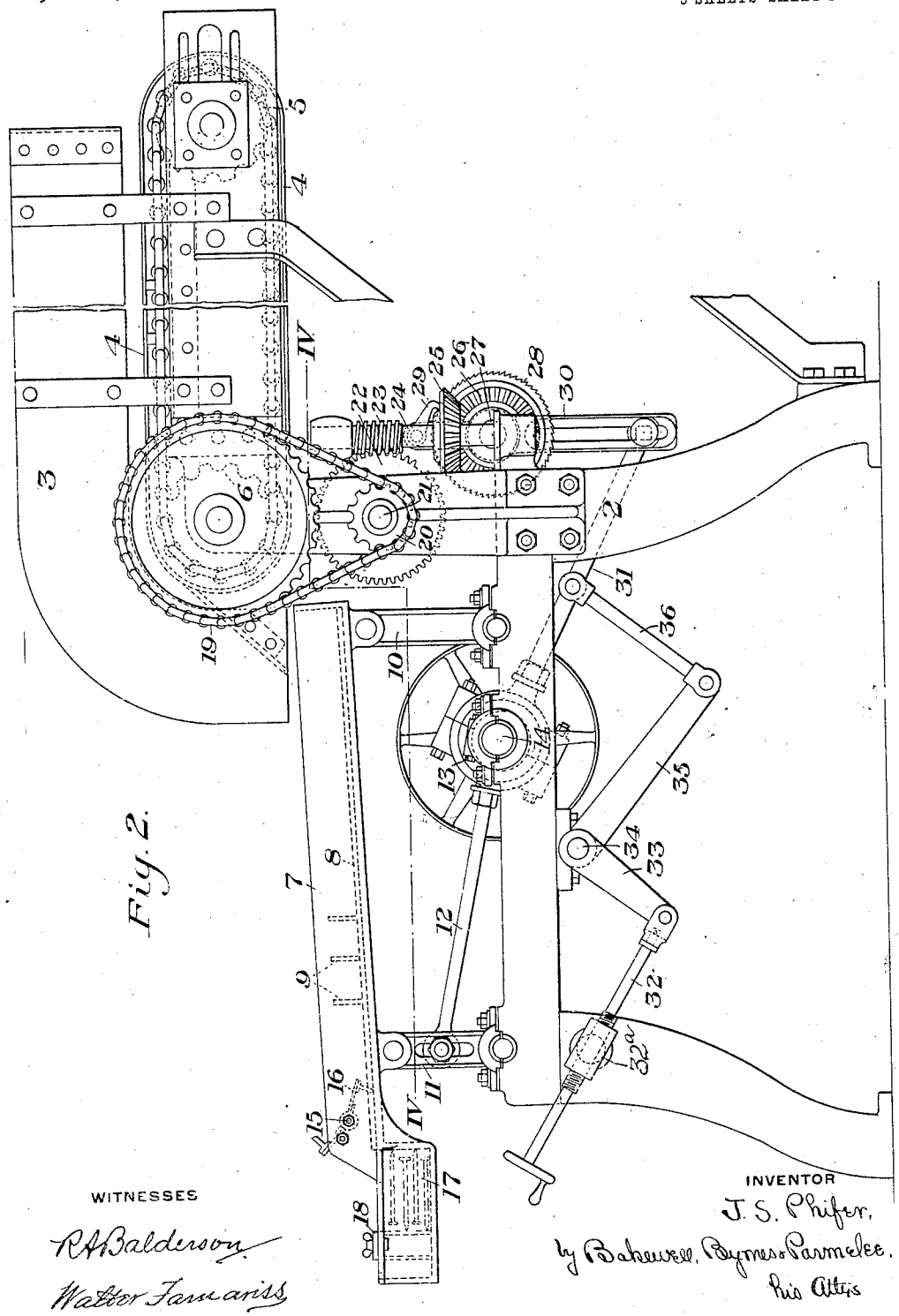


Fig. 2.

WITNESSES

R. A. Balderson

Walter Famariss

INVENTOR

J. S. Phifer,

by Bakewell, Byrnes & Parmelee,

his Attys

J. S. PHIFER.

NAIL PACKING MACHINE.

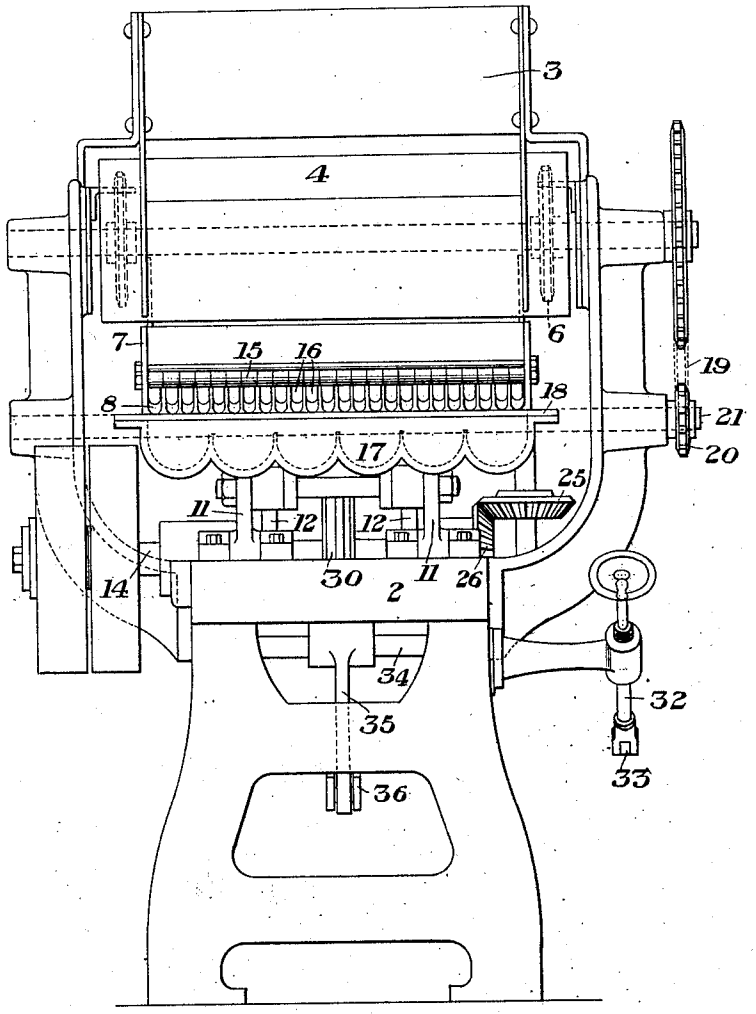
APPLICATION FILED OCT. 25, 1909.

1,047,984.

Patented Dec. 24, 1912

5 SHEETS—SHEET 3.

Fig. 3.



WITNESSES

R. A. Balderson

Walter Famariss

INVENTOR

J. S. Phifer,

by Bakewell, Baynes & Parmelee,

his Attys.

J. S. PHIFER.

NAIL PACKING MACHINE.

APPLICATION FILED OCT. 25, 1909.

1,047,984.

Patented Dec. 24, 1912.

5 SHEETS—SHEET 4.

Fig. 4.

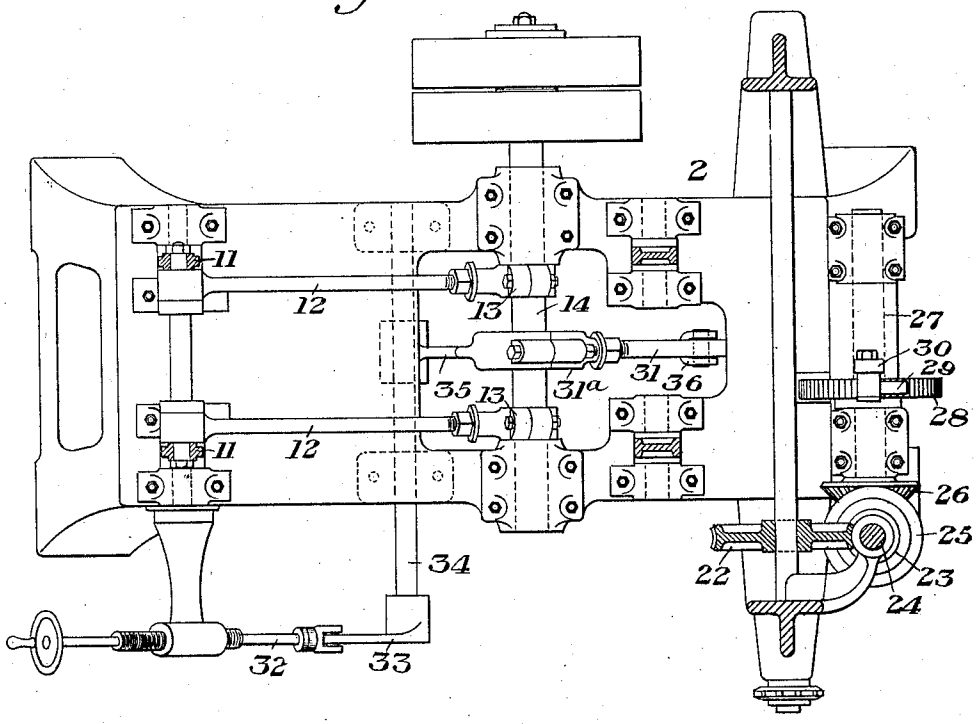


Fig. 6.

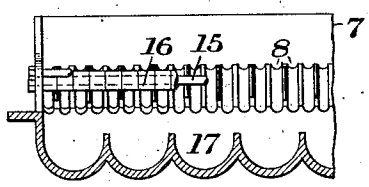
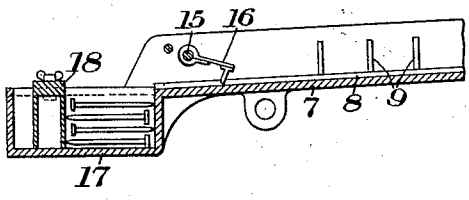


Fig. 5.



WITNESSES

R. A. Balderson

Walter Famariss

INVENTOR

J. S. Phifer.

by Bakewell, Byrnes & Parmelee.

His Attys

J. S. PHIFER.

NAIL PACKING MACHINE.

APPLICATION FILED OCT. 25, 1909.

1,047,984. Patented Dec. 24, 1912.

5 SHEETS—SHEET 5.

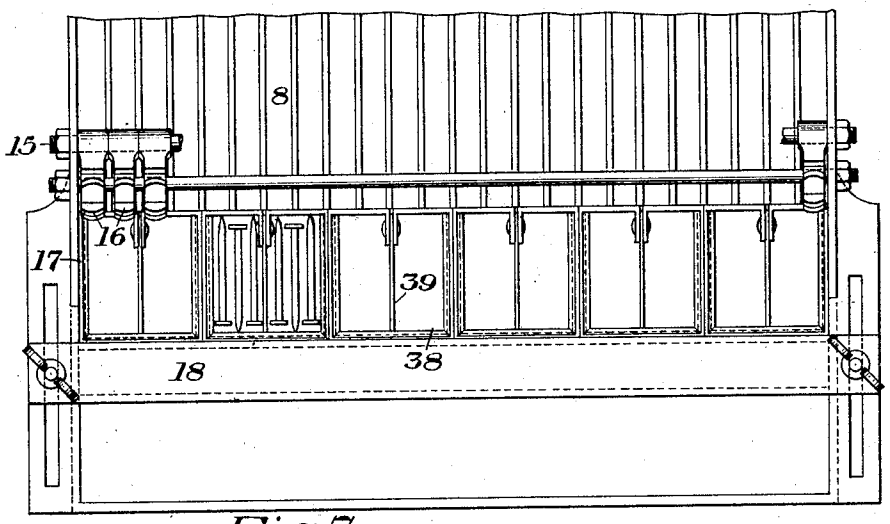


Fig. 7.

Fig. 8.

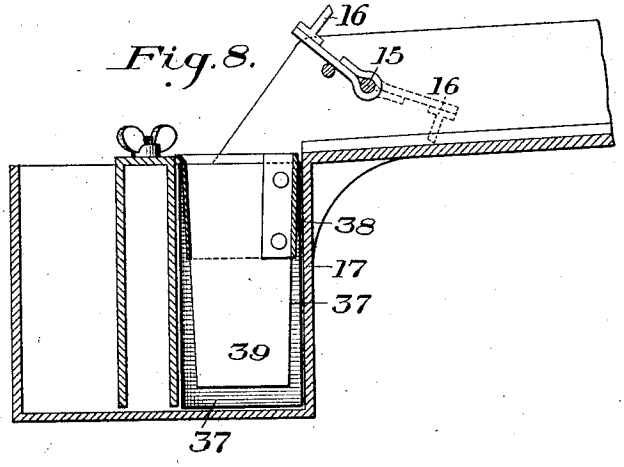
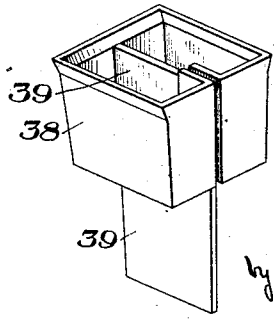


Fig. 9.



WITNESSES

R. A. Baldeson

Walter Famariss

INVENTOR

J. S. Phifer,

by Bakewell, Byrnes & Parmelee,

his Attys

UNITED STATES PATENT OFFICE.

JAMES STUART PHIFER, OF ALLENTOWN, PENNSYLVANIA, ASSIGNOR TO THE AMERICAN STEEL AND WIRE COMPANY OF NEW JERSEY, OF HOBOKEN, NEW JERSEY, A CORPORATION OF NEW JERSEY.

NAIL-PACKING MACHINE.

1,047,984. Specification of Letters Patent. Patented Dec. 24, 1912.

Application filed October 25, 1909. Serial No. 524,343.

To all whom it may concern:

Be it known that I, JAMES STUART PHIFER, of Allentown, Lehigh county, Pennsylvania, have invented a new and useful Nail-Packing Machine, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a plan view of a machine embodying my invention; Fig. 2 is a side elevation of the same; Fig. 3 is a front elevation; Fig. 4 is a horizontal section on the irregular line IV—IV of Fig. 2; and Figs. 5 and 6 are detail views showing a portion of the delivery end of the machine; Fig. 7 is an enlarged plan view of the delivery portion of the machine; Fig. 8 is a sectional view showing the manner of packaging the nails; and Fig. 9 is a perspective view of one of the packaging funnels.

My invention has relation to a nail-packing machine, and is designed to provide a machine of simple and effective character by means of which nails may be laid in a parallel position.

A further object is to provide a machine of this character which will perform its work rapidly; which can be readily adjusted to suit different sizes and kinds of nails; and which will feed the nails to the distributing table in a substantially uniform manner.

A further object is to provide means whereby the nails delivered by the machine in parallel position may be properly packaged.

The precise nature of my invention will be best understood by reference to the accompanying drawings, in which I have shown a preferred embodiment thereof, and which will now be described, it being premised, however, that various changes can be made in the details of construction and arrangement of various parts of the machine without departing from the spirit and scope of my invention as defined in the appended claims.

In these drawings, the numeral 2 designates the main frame of the machine.

3 is a hopper having parallel side walls, and having its bottom formed by an endless belt conveyer 4. This conveyer is carried by the two wheels or drums 5 and 6, the latter being positively driven in the manner hereinafter described. The conveyer belt is supported across its width at intervals in such a manner that it will not sag under the weight of its load of nails.

7 designates a distributing table, which consists of a plate having a corrugated or fluted upper surface formed by a plurality of parallel longitudinal grooves or flutes 8 extending from end to end thereof. The table is provided with a plurality of upwardly extending pins or projections 9 irregularly spaced thereon, and which serve to catch and retain any nails which may be in a transverse position on said table, as indicated by the single nail shown in Fig. 1. The table 7 is supported at its rear end by the links 10 and at its forward end by the links 11, these links 11 being connected by pitmen 12 with the straps 13 of an eccentric secured to a main driving shaft 14. The connection between the pitmen and the links 11 is slotted so as to be capable of adjustment to vary the throw of the table. Extending transversely over the front end of the table is a shaft 15 having thereon a plurality of fingers 16 which may be turned down into position to prevent any nails being carried thereby in packaging, as hereinafter described. At the front end of the table and below the level thereof, are a series of nail-receiving pockets 17, in which the nails are received, as indicated in dotted lines in Fig. 2. The front wall 18 of these pockets is made adjustable so as to adapt the pockets to receive nails of different lengths. The table is inclined somewhat toward its lower end, and as the nails are received thereon from the feeding belt, the vibratory movements of the table tend to shake the nails into endwise positions in the grooves 8. Any nails which lie transversely across the top of the grooves will be stopped by the pins or projections 9, and by the vibratory movement of the table will be worked around into proper positions. By adjusting the point of connection between the pitmen 12 and the links 11, the extent of vibration may be changed, as may be desired. By varying the speed of the driving motor, the number of vibrations per minute of the table can also be changed.

The nails delivered into the pockets 17 may be packaged in the following man-

ner:—Suitable cartons 37 (Fig. 8) of heavy paper or cardboard, may be placed in the pockets 17; and metal funnels 38 placed within the upper portion of the packages. These funnels are provided with a partition 39, which is extended downwardly to a point near the bottom of the carton, thus forming relatively narrow openings for the nails to pass through as they drop through the funnel into the cartons, and insure their being placed in parallel positions in the cartons. The funnels are flared as shown so that they may be easily inserted in the cartons and also protect the upper edges of the carton from injury. The cartons when filled, are removed, and empty cartons put in their places, the shaft 15 at such times being actuated to turn the fingers 16 downwardly into position to prevent any nails from being delivered by the table while the full cartons are being removed and empty ones put in their places.

The wheel 6 for the feed belt, is shown as being driven by a chain 19 from a chain wheel 20 on a transverse shaft 21. This shaft 21 carries a worm wheel 22 engaged by a worm 23 on a short vertical shaft 24. The shaft 24 has a bevel gear 25, which engages a corresponding bevel gear 26 on a transverse shaft 27. The shaft 27 has fixed thereto a ratchet wheel 28, which is engaged by a pawl 29 on a vibrating pawl carrier 30. This pawl carrier 30 is pivoted on the shaft 27, and its lower end is adjustably connected by the pitman 31 with the strap of an eccentric 31^a on the main driving shaft 14, the lower end of the carrier being slotted and a bolt connecting the end of the pitman 31 being mounted in the slot so as to be adjustable therein. For the purpose of varying the throw of the eccentric and thereby the speed of movement of the feed belt, I provide an adjusting means, consisting of a hand-operated screw shaft 32, which extends through the swiveled nut 32^a on the frame 2 and which is connected to an arm 33 of a rocker shaft 34. The shaft 34 has an arm 35, which is connected to the rod 31 by the link 36. By actuating the screw shaft 32, the bolt connecting the end of the pitman 31 to the pawl carrier 30 and the throw of the pawl carrier may be quickly adjusted so as to regulate the feed, as may be desired.

The machine described provides simple and effective means by which nails in quantities may be rapidly laid in parallel positions, so as to occupy very much less space in packing than when dumped promiscuously into a keg. This not only effects considerable saving in the cost of packaging, but it is also an advantage to the workman using the nails, since he can take a handful of them from the carton or box without being required to put them in parallel position ready for use.

It will be obvious that many changes may be made in the details of construction and arrangement of the parts. Thus, any suitable driving gearing for the feed conveyer may be employed; different means may be provided for adjusting the speed of the feed belt, and various other changes may be made as hereinafter claimed.

I claim:—

1. In a nail packing machine a vibratory inclined distributing table having a grooved upper surface, a feed belt for delivering nails to said table, driving means for said belt, means for varying the speed of said belt to regulate the supply of nails to the table and means for vibrating said table to distribute and move the nails across the table to the discharge end thereof; substantially as described.

2. In a nail packing machine a vibratory inclined distributing table having a grooved upper surface, a feed belt for delivering nails to said table, driving means for said belt, means for varying the speed of said belt to regulate the supply of nails to the table and means for vibrating said table to distribute and move the nails across the table to the discharge end thereof, said means being adjustable to vary the vibratory movement of said table; substantially as described.

3. A nail packing machine comprising in combination a nail feeding device, a vibratory distributing table on which the nails are delivered in bulk by said feeding device, said table having a series of longitudinally parallel grooves thereon, a plurality of swinging stop projections arranged to move into and out of operative position in said grooves, and nail receiving pockets at the lower end of said table; substantially as described.

4. A nail packing machine comprising in combination an endless feed belt, a vibratory nail distributing table on which nails are delivered in bulk by said feed belt, said table having a plurality of longitudinally extending lengthwise parallel grooves therein, a nail receiving pocket at the delivery end of the table, and a plurality of stop devices adjacent to the delivery end of said table and movable into and out of operative position in the grooves of said table; substantially as described.

5. A nail packing machine comprising in combination, a vibratory distributing table, means for supporting a plurality of nail receiving cartons at the delivery end of said table, means for vibrating said table, and means for varying the extent of vibratory movement of the table in moving the nails across said table; substantially as described.

6. In a nail-packing machine, a distributing table, means for vibrating the same and for causing the nails to assume parallel endwise positions thereon, means for support-

ing a plurality of nail-receiving cartons at the discharge end of the table, and nail-receiving funnels adapted to fit within the upper portions of the cartons; substantially as described.

7. In a nail-packing machine, a distributing table, means for vibrating the same and for causing the nails to assume parallel endwise positions thereon, means for supporting a plurality of nail-receiving cartons at the discharge end of the table, and nail-receiving funnels adapted to fit within the upper portions of the packages, said funnels having portions projecting downwardly to a point near the bottoms of the cartons; substantially as described.

8. A nail packing machine comprising in combination a lengthwise inclined vibrating table having a series of lengthwise parallel grooves on its upper surface, feeding means arranged to deliver nails in bulk on one end of said table, means on the lower discharge end of said table arranged to discharge nails lengthwise therefrom, and means for vibrating said table to distribute and cause movement of nails placed thereon toward and from the discharge end of the table, and means for regulating the extent of vibratory movement of said table; substantially as described.

In testimony whereof, I have hereunto set my hand.

JAMES STUART PHIFER.

Witnesses:

JOHN I. BAKER,

HARRY R. BRADER.