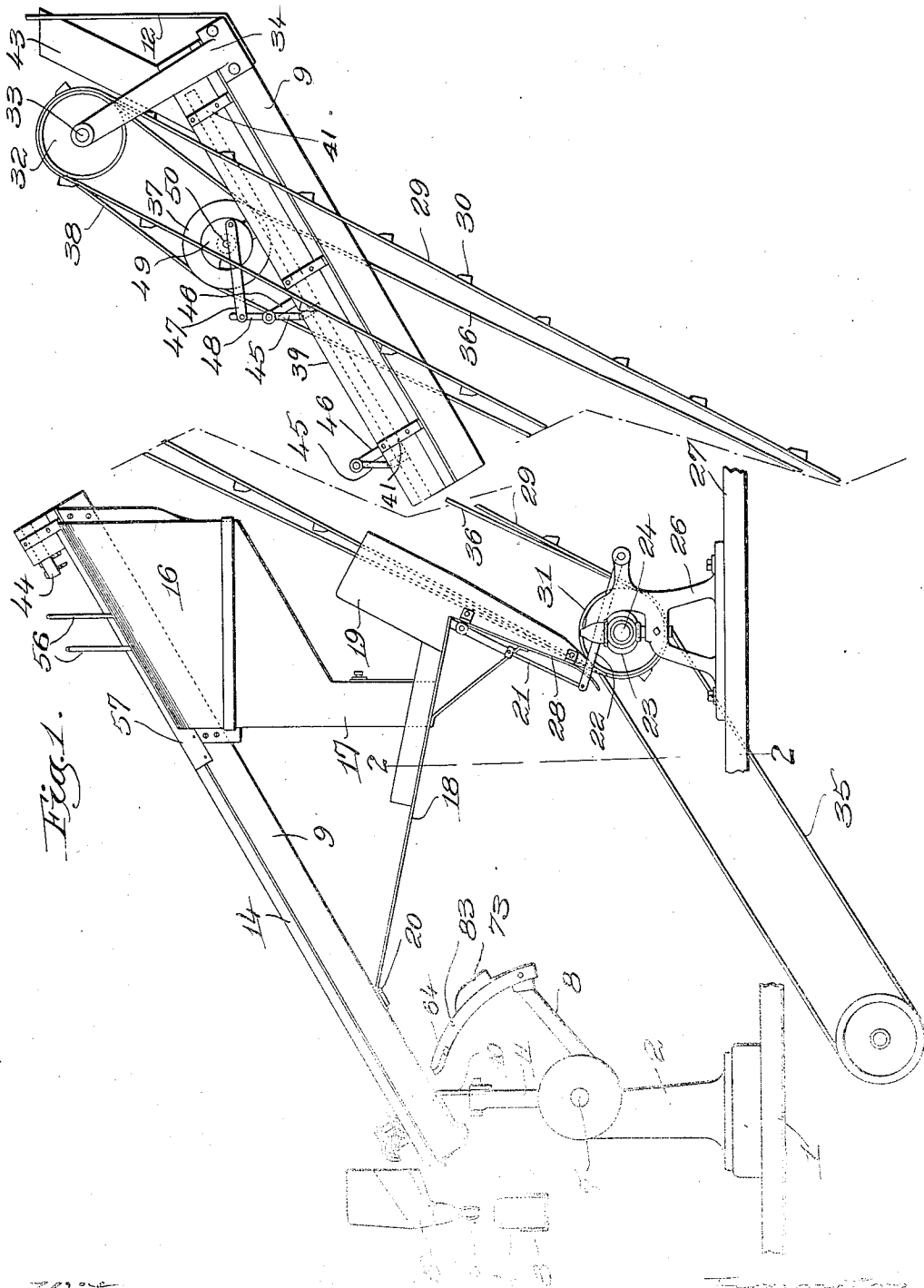


F. BARTER.
NAIL FEEDING MACHINE.
APPLICATION FILED MAR. 21, 1910.

1,164,975.

Patented Dec. 21, 1915.

3 SHEETS—SHEET 1.



Witnesses.

Thomas J. Drummond.
Joseph M. Woods.

Inventor.

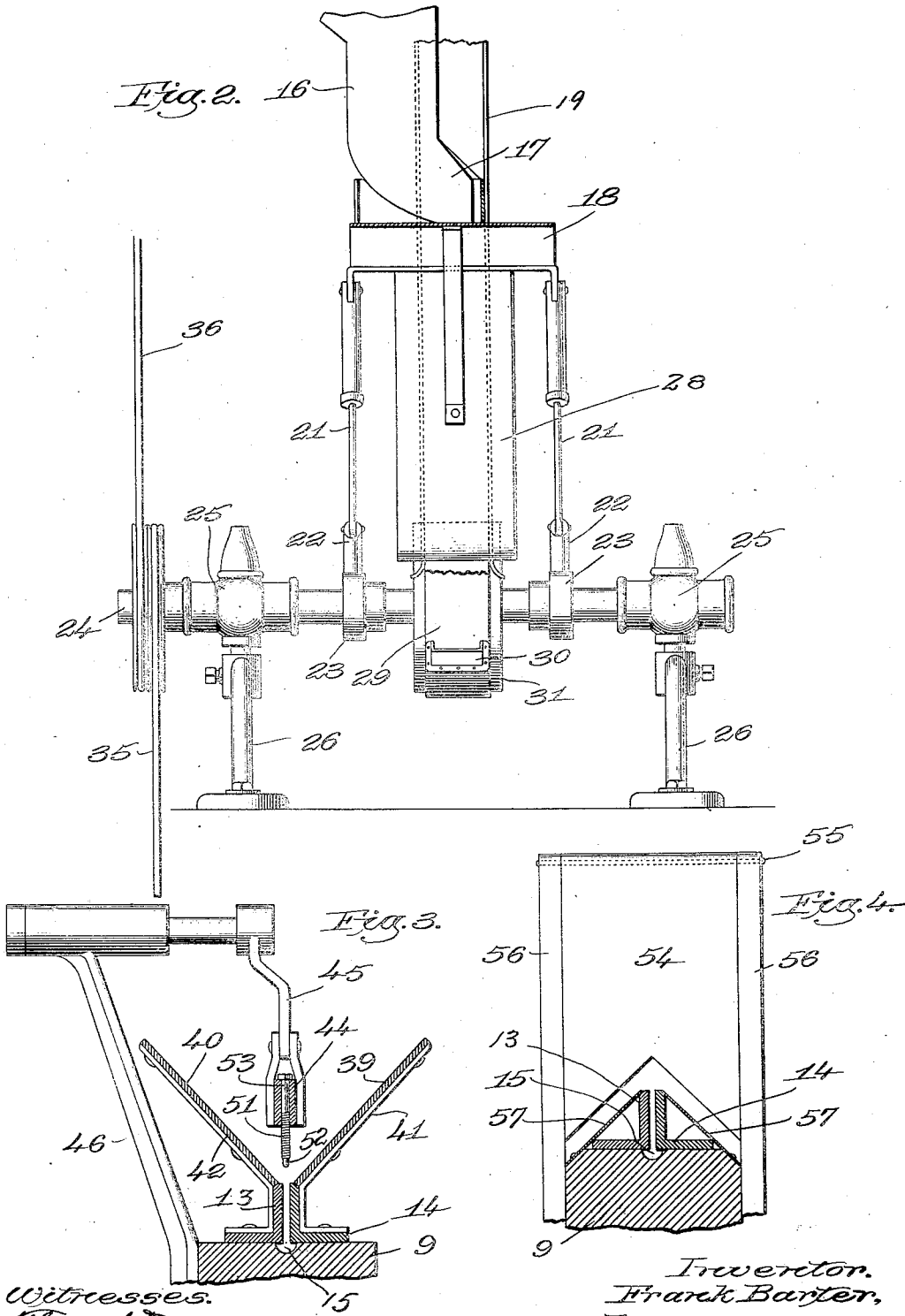
Frank Barter.
By [Signature] Attorney.

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3 SHEETS—SHEET 2.



Witnesses.
Thomas J. Drummond.
Joseph M. Ward.

Inventor.
Frank Barter,
By *Henry S. Simpson* atty.

1,164,975.

Fig. 5.

Witnesses.
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Frank Baxter.
Dr. Charles H. Hays.

UNITED STATES PATENT OFFICE.

FRANK BARTER, OF FITCHBURG, MASSACHUSETTS, ASSIGNOR TO BROWN BAG FILLING MACHINE COMPANY, OF FITCHBURG, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

NAIL-FEEDING MACHINE.

1,164,975.

Specification of Letters Patent.

Patented Dec. 21, 1915.

Application filed March 21, 1910. Serial No. 550,797.

To all whom it may concern:

Be it known that I, FRANK BARTER, a citizen of the United States, and resident of Fitchburg, county of Worcester, and State of Massachusetts, have invented an Improvement in Nail-Feeding Machines, of which the following description, in connection with the accompanying drawing, is a specification, like characters on the drawing representing like parts.

This invention relates to a machine for feeding nails in measured quantities. The machine is particularly designed and adapted for use in connection with a bag-filling machine such as shown, for example, in the patent to Cummings, No. 539,171 granted May 14, 1895.

The term "nail" is used in connection with this invention for convenience because it is to be understood that it is intended thereby to include any similar article such as tacks, screws, bolts, rivets, etc., which are adapted to slide in a slotted guideway. Such articles need not even be of the shape of a nail or the other articles previously enumerated.

The invention in its broad aspects is applicable to any kind of small article which it is desired to handle and package in pre-determined numbers.

It is frequently found necessary to package small quantities of such articles for various purposes and this result is speedily, accurately and efficiently secured by the present invention. The type of machine shown in the patent to Cummings referred to is adapted for filling flat paper bags or envelops with granular substances and then sealing the bags and discharging them from the machine.

The present invention, while capable of being used with any suitable packaging mechanism or bag-filling mechanism, is particularly designed for use in connection with a bag-filling mechanism of the general type shown in the Cummings patent.

The present invention presents a machine adapted to receive the nails in bulk, transfer them to a slotted guideway, and discharge them from the slotted guideway in pre-determined quantities and successively to the bag-filling or other mechanism.

The invention comprises not only the broad means for securing these results but also certain subsidiary mechanisms of novel

principle and construction, and the entire invention in all its aspects will more fully appear from the accompanying description and drawings and will be particularly pointed out in the claims.

The drawings illustrate the preferred form of the invention adapted for and arranged in connection with a bag-filling machine of the type shown in the said Cummings patent.

In the drawings, Figure 1 is a side elevation of the device, the right hand portion of the figure being shown much below its proper position in order to bring the entire side elevation upon the sheet; Fig. 2 is a front elevation, partly in cross section on the line 2-2 Fig. 1, looking toward the hopper and driving shaft of the machine; Fig. 3 is an enlarged cross section taken through the upper portion of the guideway; Fig. 4 is a similar cross section taken through the guideway behind one of the buffer plates; Fig. 5 is a side elevation of the lower end of the guideway; Fig. 6 is a view similar to Fig. 5 taken from the opposite side; Fig. 7 is a cross section of the guideway taken upon the line 7-7, Fig. 6; Fig. 8 is a top plan view of the portion of the machine shown in Figs. 5 and 6.

As has been stated, the invention in the form shown is particularly adapted for use in connection with a bag-filling machine of the type shown in the patent to Cummings, No. 539,171 granted May 14, 1895. It is unnecessary to illustrate such a bag-filling machine in detail and it has, therefore, been indicated only in a general way in Fig. 1, wherein 1 represents a suitable table upon which the standard 2 of the bag-filling machine is mounted. The bag-presenting mechanism of the machine is indicated at 3 and one of the stack of bags at 4. The funnel of the machine is shown at 5. This receives the articles to be placed in the bag and carries them into, and deposits them in, the bag which is opened for the admission of the funnel by a suitable bag-opener 6. The main shaft of the bag-filling machine is indicated at 7, and an arm 8 is shown as oscillated thereby, said arm 8 carrying the cams for operating certain devices concerned in the present invention.

The machine of the present invention in the form illustrated comprises a long inclined, slotted guideway down which, as

shown, the nails are fed by gravity to the bag-filling mechanism. This guideway comprises a base 9 suitably supported in an inclined position. It is herein shown as supported at the lower end by a bracket 10 bolted to the guideway and to a standard 11 carried on the main standard 2 of the bag-filling machine, and at its upper end by a hanger 12 fastened to some suitable overhead support. Secured to the upper surface of the base are two angle irons 13, 14 suitably spaced to receive the shank, leg, or prong of the nail or other article to be fed. The guideway proper, or the space down which the nails are fed, may also extend partially into the base 9, a groove 15 being shown for that purpose.

A hopper 16 is provided to receive the supply of nails, and it is preferably located beneath and near the middle of the length of the guideway, and means are provided for taking the nails from the hopper and depositing them in the upper end of the guideway. By this arrangement not only are the nails properly deposited in the upper end of the guideway but any nails which do not become properly positioned are directed back into the hopper.

The hopper 16 has a depending nose 17 open at the lower end, and the nails feed into this nose by gravity and out upon a joggle plate 18. This plate 18 is joggled against the nose of the hopper to insure the passage of the nails from the hopper onto the plate and their delivery to an auxiliary hopper 19 which is located at the end of the plate and in a general vertical position.

The plate 18 is suitably pivoted or connected at 20 to the base 9 of the guideway and is joggled from the links 21 connected to the ends of levers 22 operated by cams 23 carried by the shaft 24, the shaft 24 being mounted in vertically-adjustable bearings 25 carried by the standards 26 secured to a suitable bed plate support 27.

The auxiliary hopper 19 is open at its back to receive the nails from the plate 18 and is closed at the lower portion of the back by a spring plate 28 attached to the plate 18 so that the auxiliary hopper is supported and carried by the plate 18 while the front of the auxiliary hopper is formed by the run of the endless conveyer to be described.

The nails when they fall into the auxiliary hopper 19 are carried to the upper end of the guideway by an endless conveyer shown as a belt 29 provided with a series of buckets 30. This conveyer passes over pulleys 31, 32 mounted respectively upon the shaft 24 and the shaft 33 carried by the standards 34 attached to the base 9 of the guideway.

The shaft 24 is driven by a belt 35 from any suitable source of power. The shaft 24 drives a pulley 37 supported near the upper end of the guideway by a belt 36, and a sec-

ond belt 38 drives the pulley 32 from the pulley 37.

The upper portion of the guideway is provided with inclined walls extending upwardly at each side and shown as consisting of the plates 39 and 40 bolted by brackets 41 and 42 respectively to the angle irons 14 and 13. At the upper end of the guideway a chute 43 is arranged which directs the nails as they are discharged from the buckets 30 between the inclined walls 39 and 40. With the guideway arranged in an inclined position as shown the nails slide by gravity from the chute into the guideway and many of them will drop at once into position with their shanks extending into the slot and their heads lying along on the top of the angle irons. To insure as many as possible of the nails taking this position additional means are provided for wiping the nails into place. Such a means is shown in the preferred form of this invention as comprising a bar supporting a series of downwardly depending resilient wipers which wipe over the nails and cause them to assume the desired position in the guideway.

The wiper bar is shown at 44 pivoted to links 45 carried by the standards 46. This bar is reciprocated by a link 47 connected to prolongation 48 of one of the links 45 at one end, and at the other end to a crank disk 49 carried by a shaft 50 driven by the pulley 37. Depending from wiper bar 44 is a series of resilient wipers shown as comprising a helical spring 51 with a metal plug 52 at the lower end and a pin 53 at the upper end by means of which they are inserted. It will thus be seen that the wiper bar 44 is given a longitudinal reciprocating motion between the inclined walls 39 and 40 to carry the wipers back and forth over the guideway slot, thus acting to bring the nails into position in the guideway.

The lower end of the travel of the wiper bar is directly over the hopper 16, and somewhat farther down the guideway and over the hopper are mounted buffer plates 54 pivoted at 55 in standards 56 supported from the base 9. Any nails snapped out of the guideway or from between the inclined walls 39 and 40 by the wipers are flung against the buffer plates and directed therefrom back into the hopper. To insure the nails passing into the hopper the inclined walls 39 and 40 terminate at the hopper, and the guideway therebelow for a distance corresponding to the width of the hopper is provided with downwardly inclined plates 57.

By means of the devices thus described the nails in the guideway slot after leaving the inclined plates 57 pass in a steady and continuous stream by gravity down the guideway toward the lower end. It is a feature of the invention to provide for discharging the nails in predetermined quanti-

ties at the lower or exit end of the guideway, and these devices in preferred form are illustrated in detail in Figs. 5 to 8 inclusive, and are shown as operated by the cam carried by the arm 8.

At the very lower or exit end of the guideway a detent arm 58 is mounted to hold back the nails and this detent arm is carried by a plate 59 sliding transversely of the guideway and guided by screws 60 passing through slots therein. The plate 59 with its detent arm 58 is operated by a lever fulcrumed on the shaft 62 and having its short arm 61 projecting through the plate 59 and its long arm 63 adapted to be engaged by the cam 64 carried on the arm 8 of the bag-filling machine. A spring 65 connecting long arm 63 of the lever to a bracket 66 projecting from the guideway base 9 serves normally to hold the detent arm 58 across the guideway. The detent arm 58 may be adjusted longitudinally of the guideway to vary its position as indicated by slot 67.

The nails when held back by detent arm 58 are measured off in the required quantity by means of the hold-back 68 shown as a finger carried by a rock shaft 69 mounted in a standard 70 longitudinally adjustable by means of the set screw 71 and its slotted base on the base line of the guideway. The hold-back is rocked to engage the line of nails at a pre-determined point by means of an arm 72 depending into the path of the cam 73 carried by the arm 8 of the bag-filling machine, while a spring 74 attached to the arm 72 tends normally to hold the arm 72 against stop pin 75 in the base 9 with the hold-back finger elevated.

Under some conditions these devices, or their equivalents, may be sufficient to insure the discharge of the nails from the guideway in pre-determined quantities and at regular intervals, but it will usually be found necessary to provide means for insuring the passage of the nails in pre-determined quantities and their discharge from the guideway when released by the detent arm, and for that purpose the remaining mechanism is provided.

A standard 76 bolted to the base 9 of the guideway supports at its upper end a head 77 and a shaft 78. The shaft 78 is oscillated by the link 79 connected to the link 80, which, in turn, is connected to the lever 81 fulcrumed on the shaft 69 and having the depending arm 82 extending into the path of the pin 83 upon the arm 8 of the bag-filling machine. Pin 83 operates to swing the lever 82 in one direction and the lever is held normally in the opposite direction by the spring 84 connected thereto and to the standard 76. The shaft 78 carries the sleeve 85, and a clearing finger 86 is slidably mounted in the sleeve by set-screw 87 passing through the slot 88 and is held

yieldingly upward therein, while the projecting end 89 of the clearing finger is adapted at the proper time to contact with the cam 90 carried by the head 77 and cause the downward projection of the clearing finger in its sleeve. The clearing finger is mounted to move directly over and through the slot in the guideway. It will thus be seen that when the lever 82 is struck by the pin 83, the clearing finger 86 will be swung around, and as it reaches a point opposite the end of the hold-back finger 68 will be projected downwardly to strike against the last nail that is free from and below the clearing finger, and then will act to wipe all the nails measured off down and out of the guideway.

In the operation of the device the nails are fed down against the detent arm 58, which is normally projected across the slotted guideway, and the clearing finger 86 and the hold-back finger 68 are normally elevated. As the arm 8 is swung forwardly at the required time the cam 73 carried thereby actuates the hold-back finger 68 to move it downwardly and measure off a pre-determined quantity of nails between it and the detent arm 58. The continued motion of the arm 8 causes the cam 64 to withdraw the detent arm 58 and leave the measured quantity of nails free to pass out from the guideway. A still further movement of the arm 8 causes the pin 83 to actuate the clearing finger 86 and insure the discharge of the pre-determined quantity of nails from the guideway. The cams are so arranged that the detent arm 58 is moved backwardly into position by its spring before the hold-back finger 68 is elevated to release the nails above it in the chute.

Having fully described my invention what I claim as new and desire to secure by Letters Patent is:

1. A machine of the class described comprising means for presenting flat bags in position for filling, a bag opening device and funnel movable relatively to the bag presenting means to cause the funnel to enter the mouth of the endmost bag, an article guideway terminating adjacent said funnel, means for supplying similar articles to said guideway and automatic means for controlling the discharge of the articles from said guideway in predetermined quantities into said funnel.

2. A machine of the class described comprising means for presenting flat bags in position for filling, a bag opening device and funnel movable relatively to the bag presenting means to cause the funnel to enter the mouth of the endmost bag, an article guideway terminating adjacent said funnel, a hopper, means for transferring the articles from the hopper to the guideway, and automatic means for controlling the dis-

charge of the articles from the guideway in predetermined quantities into said funnel.

3. A machine of the class described comprising means for presenting flat bags in position for filling, a bag opening device and funnel movable relatively to the bag presenting means to cause the funnel to enter the mouth of the endmost bag, an article guideway along which the articles slide and terminating adjacent said funnel, and automatic means for intermittently holding back the nails at a predetermined distance from the end of the guideway, whereby the articles at the end may pass from the guideway into said funnel in predetermined quantities.

4. A machine of the class described comprising means for presenting flat bags in position for filling, a bag opening device and funnel movable relatively to the bag presenting means to cause the funnel to enter the mouth of the endmost bag, an inclined guideway down which the articles slide, a detent arm at the lower end of the guideway normally projected across the guideway in the path of the articles, a hold back finger mounted at a predetermined distance from the end of the guideway and normally out of the path of the articles, and automatic means for bringing the hold back finger into the path of the articles and withdrawing the detent arm from the path of the articles, thus to discharge a predetermined quantity from the end of the guideway into said funnel.

5. A machine of the class described comprising means for presenting flat bags in position for filling, a bag opening device and funnel movable relatively to the bag presenting means to cause the funnel to enter the mouth of the endmost bag, an inclined guideway down which the articles slide, a detent arm at the lower end of the guideway normally projected across the guideway in the path of the articles, a hold back finger mounted at a predetermined distance from the end of the guideway and normally out of the path of the articles, and automatic means for intermittently bringing the hold back finger into the path of the articles, thus to discharge successive predetermined quantities from the end of the guideway into said funnel.

6. A machine of the class described comprising an article guideway, a main hopper opening at the bottom, a plate extending beneath said opening, means for joggling said plate against the hopper to insure the delivery of the articles, an auxiliary hopper receiving the articles from said plate, and an endless conveyer passing through the auxiliary hopper to carry the articles therefrom to the guideway.

7. A machine of the class described comprising a slotted guideway having inclined walls extending upwardly at each side, a

series of resilient wipers mounted and operating above the slot in the guideway between the said walls to insure the positioning of nail like articles in the slot.

8. A machine of the class described comprising a slotted guideway having inclined walls extending upwardly at each side, a series of resilient wipers mounted and operating above the slot in the guideway between the said walls to insure the positioning of nail like articles in the slot, and a buffer plate mounted over the guideway in front of said wipers to stop articles ejected by the wipers.

9. A machine of the class described comprising a slotted guideway, a hopper located midway thereof, means for transferring nail like articles from the hopper to the upper end of the guideway, inclined walls extending upwardly at each side of the guideway above the hopper, a buffer plate mounted over the guideway above the hopper, and means mounted and operating above the slot in the guideway between the inclined walls to insure the positioning of the articles in the slot.

10. A machine of the class described comprising a slotted guideway, a hopper located midway thereof, means for transferring nail like articles from the hopper to the upper end of the guideway, inclined walls extending upwardly at each side of the guideway above the hopper, a buffer plate mounted over the guideway above the hopper, means mounted and operating above the slot in the guideway between the inclined walls to insure the positioning of the articles in the slot, and downwardly-inclined plates at each side of the guideway above the hopper whereby articles passing out from between the upwardly-inclined walls against the buffer plate are returned into the hopper.

11. A machine of the class described comprising a hopper opening at the bottom, a plate extending beneath said opening, and means for automatically joggling said plate against the hopper to insure the delivery of the articles.

12. A machine of the class described comprising an inclined guideway down which the articles slide, a detent arm at the lower end of the guideway normally projected across the guideway in the path of the articles, a hold-back finger mounted at a predetermined distance from the end of the guideway and normally out of the path of the articles, means for bringing the hold-back finger into the path of the articles and withdrawing the detent arm from the path of the articles, and means moving from the hold back finger toward the end of the guideway for clearing out of the guideway the articles below the hold-back finger.

13. A machine of the class described com-

prising an inclined guide-way down which the nails slide, a hold-back finger mounted at a pre-determined distance from the end of the guide-way and normally out of the path of the articles, means for bringing the hold-back finger into the path of the articles, and a device and means for moving it from the hold back finger toward the end of the guideway to clear out of the guide-way the articles below the hold-back finger.

14. A machine of the class described comprising an inclined guide-way down which the articles slide, a hold-back finger mounted at a pre-determined distance from the end of the guide-way and normally out of the path of the articles, means for bringing the hold-back finger into the path of the articles, a clearing finger movably mounted above the guide-way, and means for moving the clearing finger from the hold back finger toward the end of the guideway to clear the articles below the hold-back finger out of the guide-way.

15. A machine of the class described comprising an inclined guideway, means for continuously supplying articles to the upper end of said guideway, means for presenting open packages in regular succession beneath the lower end of said guideway, and automatic means for controlling the discharge of a predetermined quantity of the articles from the guideway into each package as it is presented thereto.

16. A machine of the class described comprising an inclined article guideway, a hopper for the supply of articles connected to, and opening into the upper end of said guide way, means for insuring the transfer of the articles from the hopper to the guideway, means for presenting open packages in regular succession beneath the lower end of said guideway, and automatic means for controlling the discharge of a predetermined quantity of the articles from the guideway into each package as it is presented thereto.

17. A machine of the class described comprising an inclined article guideway, means for continuously supplying articles to the upper end of said guideway, means for pre-

senting open packages in regular succession beneath the lower end of said guideway, an automatic means for intermittently holding back the articles at a predetermined distance from the end of the guideway and then releasing those not held back into each package as presented.

18. A machine of the class described comprising an inclined article guideway, means for continuously supplying articles to the upper end of said guideway, means for presenting open packages in regular succession beneath the lower end of said guideway, a detent arm at the lower end of the guideway normally projected across the guideway in the path of the articles, a hold back finger mounted at a predetermined distance from the end of the guideway and normally out of the path of the articles, an automatic means for bringing the hold back finger into the path of the articles and withdrawing the detent arm from the path of the articles, thus to discharge a predetermined quantity from the end of the guideway into each package as it is presented thereto.

19. A machine of the class described comprising an inclined article guideway, means for continuously supplying articles to the upper end of said guideway, means for presenting open packages in regular succession beneath the lower end of said guideway, a detent arm at the lower end of the guideway normally projected across the guideway in the path of the articles, a hold back finger mounted at a predetermined distance from the end of the guideway and normally out of the path of the articles, an automatic means for intermittently bringing the hold back finger into the path of the articles, thus to discharge successive predetermined quantities from the end of the guideway into each package as presented thereto.

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

FRANK BARTER.

Witnesses:

HARRISON BAILEY,
BENJAMIN F. BROWN.