June 25, 1929. H. T. KINGSBURY ET AL 1,718,565

AUTOMATIC HOPPER FEEDING DEVICE

Filed May 8, 1925 3 Sheets-Sheet 1

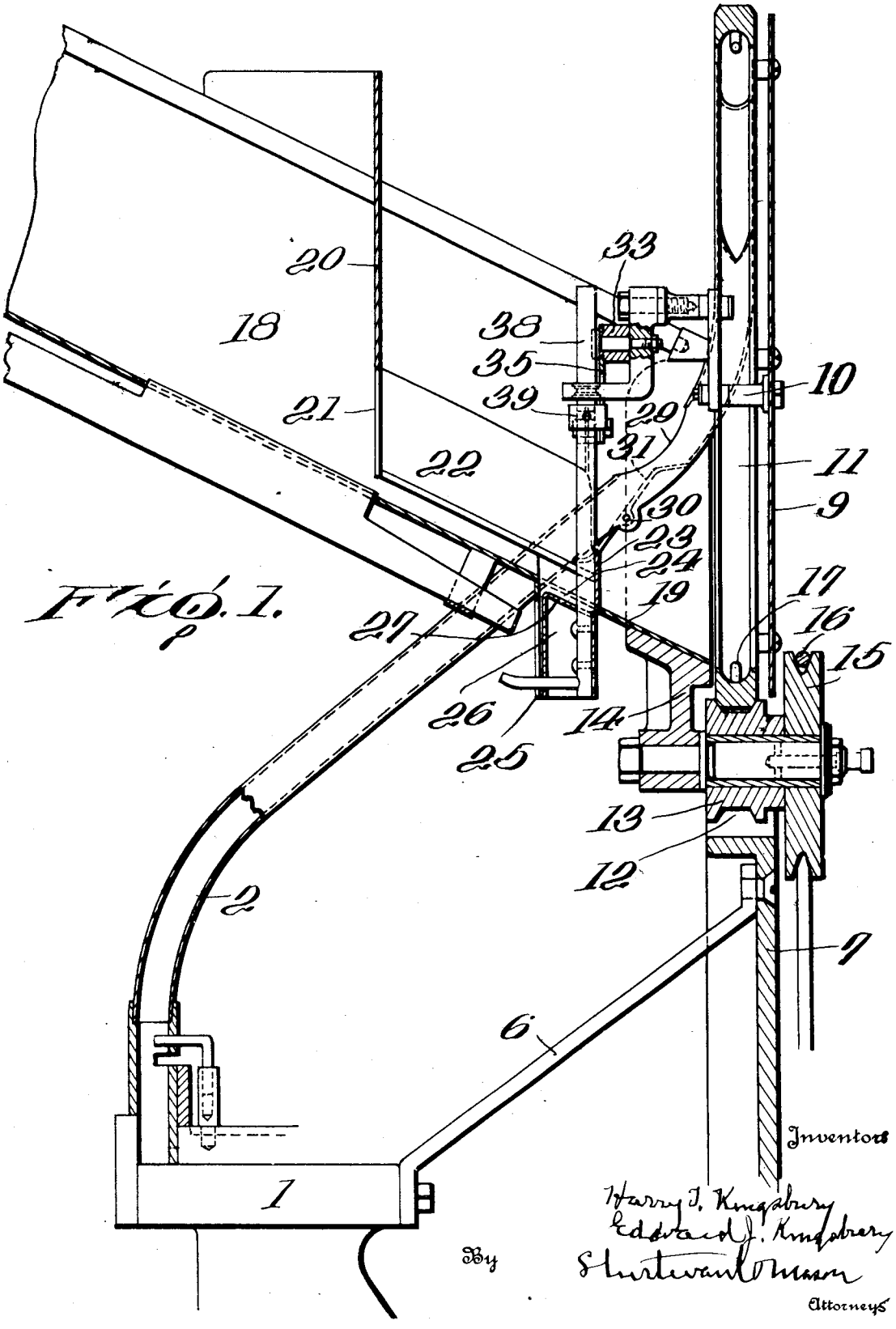


FIG. 1.

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AUTOMATIC HOPPER FEEDING DEVICE

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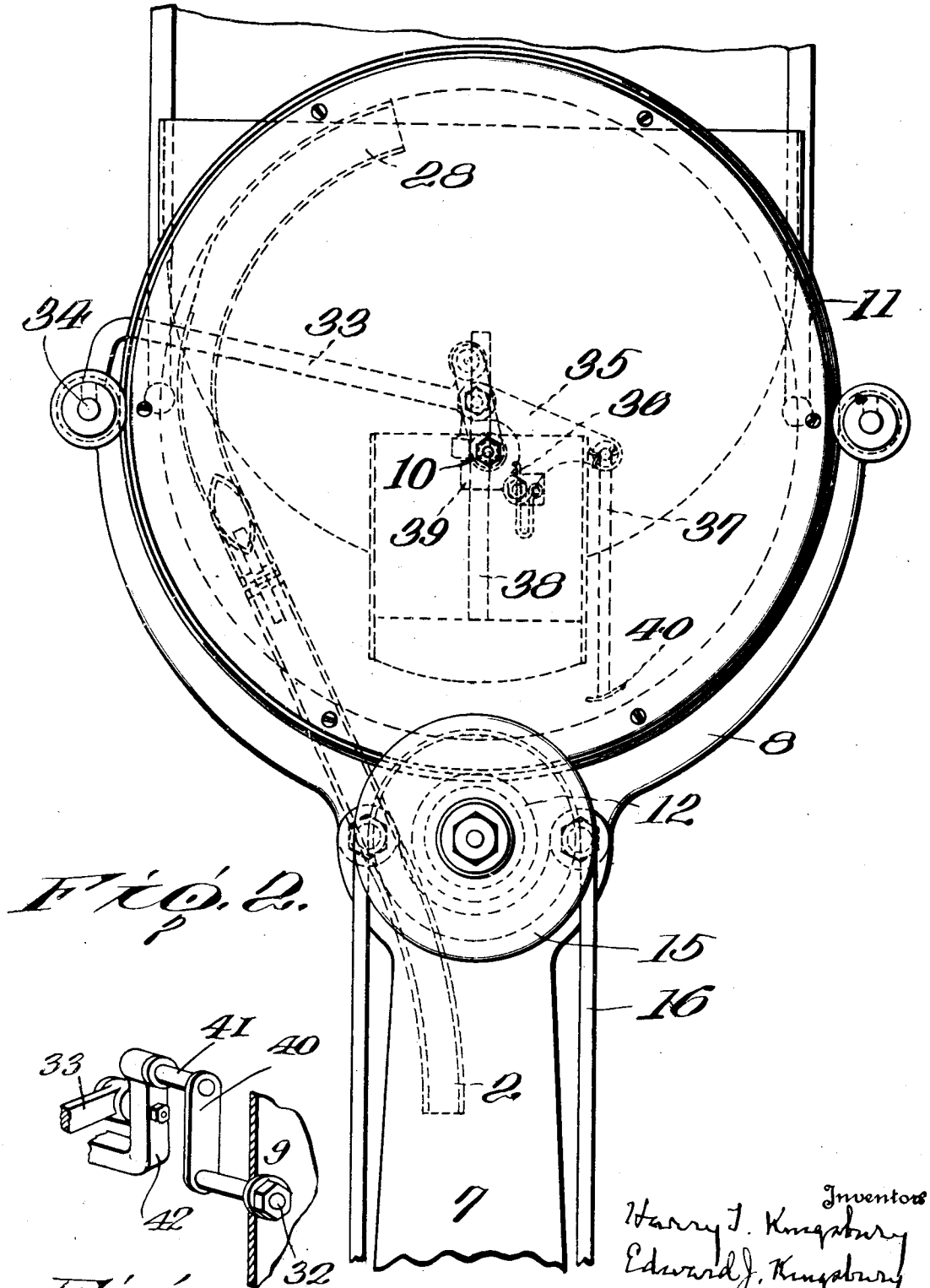


FIG. 2.

FIG. 4.

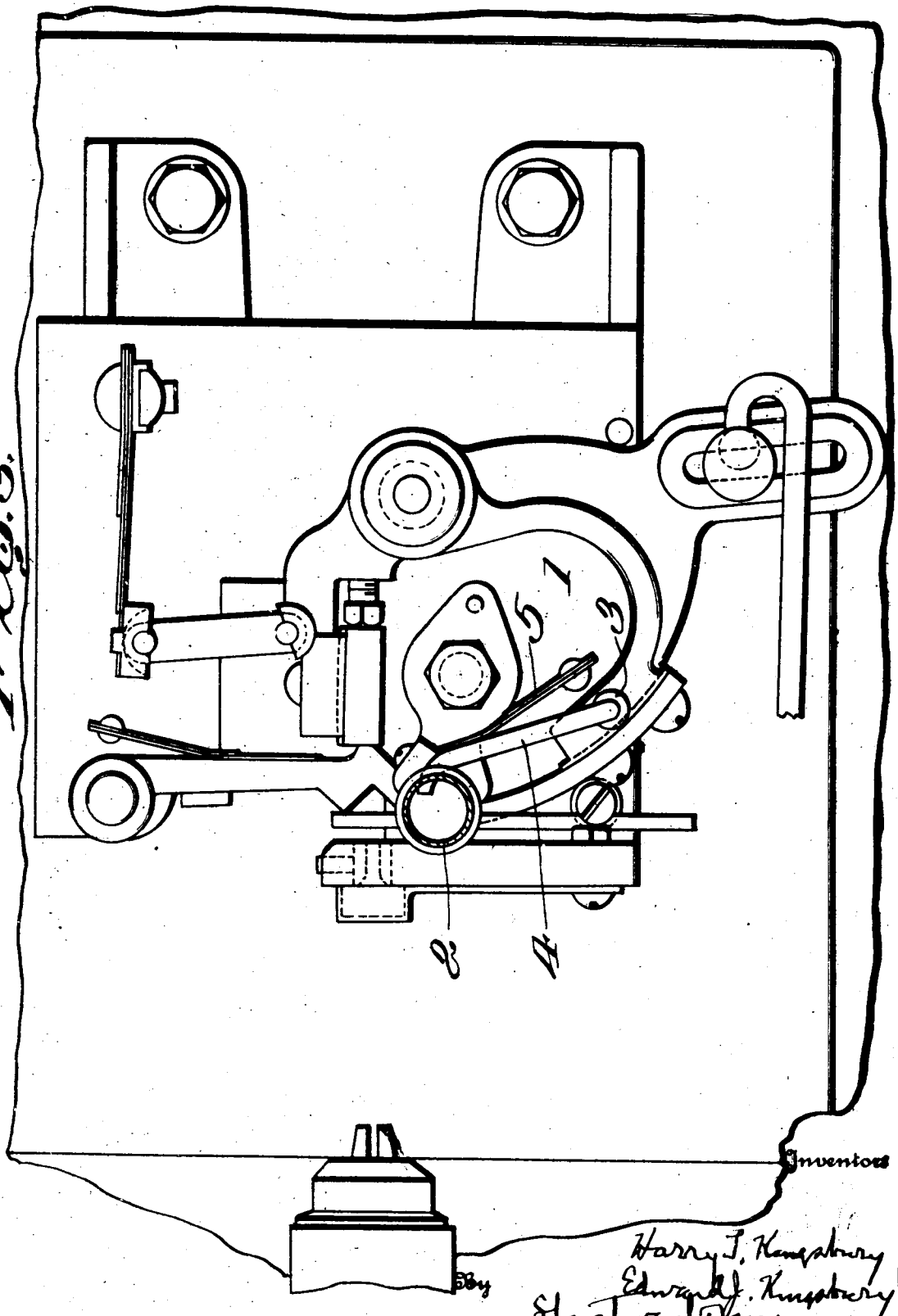
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AUTOMATIC HOPPER FEEDING DEVICE

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FIG. 3.



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UNITED STATES PATENT OFFICE.

HARRY T. KINGSBURY AND EDWARD J. KINGSBURY, OF KEENE, NEW HAMPSHIRE.

AUTOMATIC HOPPER FEEDING DEVICE.

Application filed May 8, 1925. Serial No. 28,943.

Our invention relates to automatic hopper feeding devices.

The object of our invention is to provide an automatic feeding device for nipples and the like, or any cylindrical member and feeding the same from a large hopper, one at a time, in their proper position, to a machine to be operated upon, and is more particularly adapted for use in drilling fixtures such as shown in our Patent No. 1,570,156 dated Jan. 19, 1926.

Another object of our invention is to provide a feeding device of this character which permits of a very large hopper for the stock of nipples or the like, and having means for feeding a small number of nipples from the hopper to the delivery wheel so that they can assume their proper position and be picked up thereby and delivered to the chute, one at a time, through which they are conveyed to the machine operating on the same.

A further object of our invention is to provide means whereby the nipples or the like will not be jammed in the chute but will be automatically discharged therefrom when the nipples have reached a predetermined point in the chute, and will be discharged back to the feeding wheel to again be taken up thereby and fed to the chute.

A still further object of our invention is to provide automatic means whereby the feeding of the nipples from the hopper to the elevator wheel is stopped when there are any nipples under the foot of the feeler lever and thus provide a simple, cheap and effective automatic feeder having certain details of structure and combination of parts hereinafter more fully set forth.

In the accompanying drawings:—

Figure 1 is a side elevation partly in section showing the feeding chute extending to the drilling fixture of the form shown in the above mentioned patent.

Figure 2 is an end view partly in section.

Figure 3 is a top plan view of the drilling machine showing the means for controlling the discharge of the nipples from the lower end of the chute.

Fig. 4 is a detailed perspective of the connection between the arm 33 and the plate 9.

Referring now to the drawings, 1 represents the drilling fixture which as shown is of the form shown in the above mentioned patent, but in this application the control of the nipples was through the medium of the rod 42, while in the present application the control of the discharge of the nipples through the chute 2 is by means of a tubular stud 3, mounted on the shifting lever. As the shifting lever passes to its back position the arm 4 is pressed against the second nipple in the chute, as shown in Figure 1 of the drawings, and holds it until the lower nipple is carried forward. When the first nipple is pushed forward, the second nipple drops down on the pusher bar and is free to drop in front of the bar when the bar moves back. The clamping arm 4 is used in upper notches for the two long style nipples and in the lower notch for the short nipple. A spring 5 bears on the outer face of the clamping arm and held in the position shown in Figure 3 of the drawings. The feeding mechanism is supported by the drill fixture by means of the bracket 6 attached to the frame 7 which is also fastened to the drill fixture at its lower end. The frame 7 carries at its upper end a semi-circular frame 8 which as shown has secured thereto a plate 9 carrying the stub axle 10 upon which is rotatably mounted the lifting wheel 11. The outer face of the lifting wheel 11 is slightly beveled and engages a correspondingly shaped groove 12 in the friction drive wheel 13. This friction drive wheel is mounted upon a downwardly extending arm 14 carried by the frames 7 and 8, whereby the lifting wheel is rotated. The outer end of the shaft of the friction drive wheel 13 is provided with a pulley 15 over which a drive belt 16 passes and by means of which the lifting wheel is continuously rotated, said drive belt being driven by the drill in any desired manner.

The lifting wheel 11 has its inner face provided with a semi-circular groove provided with hooks 17 which are of a diameter sufficiently large not to enter the smaller end of the nipples, but to enter the larger end whereby the nipples can only be lifted when in their proper position. The bracket 14 supports the enlarged hopper 18 which is arranged at an incline as indicated at 19, and the extreme lower end thereof is in a plane with the upper edge of the semi-circular groove in the inner face of the lifting wheel 11. The hopper 18 is provided with a partition 20 having a comparatively small opening in its lower end through which the nipples are fed to the chute 22 which has its lower end provided with a vertical plate 23 forming a dam to prevent the nipples from passing downwardly to the lifting wheel. The lower inclined bot-

tom 19 of the hopper above the dam or plate 23 is provided with an opening 24 and provided with a guide way 25 extending downwardly in which is arranged an elevator 26 having its upper face inclined at 27, and arranged at the same angle as the bottom 19 of the hopper. This elevator is of a size to pass upwardly through the opening 24, and elevate a small number of nipples upwardly within the chute 22 until the upper inclined end 27 reaches the upper edge of the partition 23 when they are dropped by gravity down into the semi-circular groove in the lifting wheel 11, and will be taken up by the hook 17 and discharged into the open end 28 of the chute 2, and they will then travel downwardly to the drill fixture and be fed to the drill fixture as herebefore described. The chute 2, as shown in Figure 1 of the drawings, has its upper face cut away as indicated at 29, and pivoted at 30 within the chute just below the cut away portion 29 is the ejector 31, which normally lies in such a position that the nipples are free to pass through the chute. When the chute has become filled and the lower end of the ejector is forced outwardly, as shown in Figure 1 of the drawings, the upper end of the ejector assumes such a position that as the nipples pass downwardly therethrough they engage the upper end and are thrown outwardly into the hopper and thus there will be no jamming of the nipples in the chute. The lifting wheel 11, at one side, is provided with a stud 32 eccentrically carried by the wheel and to which is pivotally connected the upwardly extending link 40 having a pin 41 at its upper end. The outer end of the pin 41 is provided with a loosely mounted link 42 to which is pivotally connected the inner end of the arm 33. The outer end of the arm 33 is pivoted at 34 to the frame 8, whereby the arm 33 is moved up and down by the rotation of the wheel 11. Mounted on the end of the arm 33 is a lever 35 which carries the relief pawl 36, and the feeler rod 37. The elevator 26 is provided with an upwardly extending rod 38 which carries a collar 39 which is engaged by the pawl 36, and said collar is cut away on an angle where the pawl passes over it when it is coming down. Thus, it will be seen that if there are any nipples under the foot 40, the pawl 36 is caused to move out from the collar and the rotation of the lifting wheel will not operate the elevator, and no more nipples would be fed from the chute 22 to the inclined bottom 19 of the hopper, and allow the nipples on the inclined bottom to not crowd and to assume the proper position in the semi-circular groove in the lifting wheel so that they could be taken up by the hooks in their proper position so as to be properly discharged in the chute.

Having thus fully described our invention what we claim is:—.

1. A feeding device of the character described comprising a stationary hopper, a chute adjacent the hopper, a lifting wheel adapted to lift the nipples from the hopper and discharge them into the chute, and an ejector pivotally mounted on the chute and controlled by the nipples in the chute whereby when the chute is filled with nipples so as to engage the ejector, said ejector is positioned for discharging the nipples delivered by the lifting wheel from the chute.

2. A feeder of the character described comprising a stationary hopper, a rotary lifting wheel communicating with the lower end of the hopper, an elevator for lifting the nipples from the hopper and feeding them to the lifting wheel chamber, and a feeler for controlling the elevator and stopping the same when a sufficient number of nipples are in a position to be fed to the lifting wheel.

3. A feeder of the character described comprising a stationary hopper, a rotary lifting wheel communicating with the lower end of the hopper, an elevator for lifting the nipples from the hopper and feeding them to the lifting wheel chamber, and means operated by the lifting wheel for raising and lowering the elevator, and a feeler carried by said means and adapted to disconnect the elevator from the lifting wheel for stopping the same when a sufficient number of nipples are in a position to be fed to the lifting wheel.

4. A feeder of the character described comprising a stationary hopper, a rotary lifting wheel communicating with the lower end of the hopper, and having lifting hooks on its inner periphery, a plate dividing the hopper into two compartments, an elevator for lifting the nipples from the upper compartment and discharging them into the lower compartment to be taken up by the lifting wheel, an eccentric stud carried by the lifting wheel, a rod carried by the elevator, and having a pawl connection with the stud, and a feeler extending into the lower compartment of the hopper and adapted to operate the pawl to disconnect the elevator rod from the stud and stop the elevator when a sufficient number of nipples are in a position to be fed to the lifting wheel.

5. A feeder of the character described comprising a stationary hopper, a rotary lifting wheel communicating with the lower end of the hopper, lifting hooks carried by the inner periphery of the lifting wheel, a chute adapted to receive the nipples from the hook, means for automatically discharging the nipples from the chute when they have reached a predetermined point therein, a partition dividing the hopper, an elevator for lifting the nipples from the hopper over the partition, an eccentric stud carried by the lifting wheel, a rod carried by the elevator, and having a pawl connection with the stud, and a feeler for operating the pawl and disconnecting the elevator from the lifting wheel when

a sufficient number of nipples are in a position to be fed to the lifting wheel.

6. A feeder of the character described comprising a stationary hopper, a rotary lifting wheel communicating with the lower end of the hopper, a chute receiving the nipples from the upper end of the lifting wheel and adapted to discharge them to the drill fixture, an elevator for lifting the nipples from the hopper and feeding them to the lifting wheel chamber, and means operated by the lifting wheel for raising and lowering the elevator, and a feeler carried by said means and adapted to disconnect the elevator from the lifting wheel for stopping the same when a sufficient number of nipples are in position to be fed to the lifting wheel.

7. A feeder of the character described comprising a stationary hopper, a rotary lifting wheel communicating with the lower end of the hopper, an elevator for lifting the nipples from the hopper and feeding them to the lifting wheel, a rod carried by the elevator and having a pawl connection with the lifting wheel, and a feeler for disconnecting said pawl, whereby the elevator is stopped when a sufficient number of nipples are fed to the lifting wheel.

8. A feeder of the character described comprising a stationary hopper, a rotary lifting wheel communicating with the lower end of the hopper and having lifting means on its inner periphery, an elevator for lifting the nipples from the hopper and feeding them to the lifting wheel chamber, means operated by the lifting wheel for raising and lowering the elevator, a feeler carried by said means and adapted to disconnect the elevator from the lifting wheel for stopping the same when a sufficient number of nipples are fed to the lifting wheel.

9. A feeder of the character described comprising a stationary hopper, a rotary lifting wheel communicating with the lower end of the hopper, and having lifting means on its inner periphery, a chute receiving the articles from the lifting means and adapted to deliver them to a drill fixture, means for ejecting the articles from the lower end of the chute and operated by the drill fixture, means for feeding the articles from the hopper to the lifting wheel chamber, a feeler for controlling said feeding means for stopping the feed when a sufficient number of articles are in a position to be fed to the lifting wheel.

10. A feeder of the character described comprising a stationary hopper, a rotary lifting wheel communicating with the lower end of the hopper and having lifting means on its inner periphery, a chute receiving the articles from the lifting wheel and adapted to deliver them to a drill fixture, an ejector in the chute for ejecting the articles when back in the chute when the chute is filled to that point, an elevator for lifting the articles from the hopper and feeding them to the lifting wheel chamber, means operated by the lifting wheel for raising and lowering the elevator, and a feeler carried by said means and adapted to disconnect the elevator from the lifting wheel and stopping the same when a sufficient number of articles are in a position to be fed to the lifting wheel.

11. A feeder of this character described comprising a stationary hopper, a rotary lifting wheel communicating with the lower end of the hopper, means for feeding the nipples from the hopper to the lifting wheel, and a feeler for controlling said means, and stopping the same when a sufficient number of nipples are in a position to be fed to the lifting wheel.

12. A feeder of the character described comprising a stationary hopper, a rotary lifting wheel communicating with the lower end of the hopper, means for feeding the nipples from the hopper to the lifting wheel, a feeler for controlling said means, and stopping the same when a sufficient number of nipples are in a position to be fed to the lifting wheel, a chute receiving the nipples from the lifting wheel and discharging them to the drill, and an ejector for throwing the nipples from the chute adjacent its upper end when the chute has been filled with nipples to that point.

In testimony whereof, we affix our signatures.

HARRY T. KINGSBURY.
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