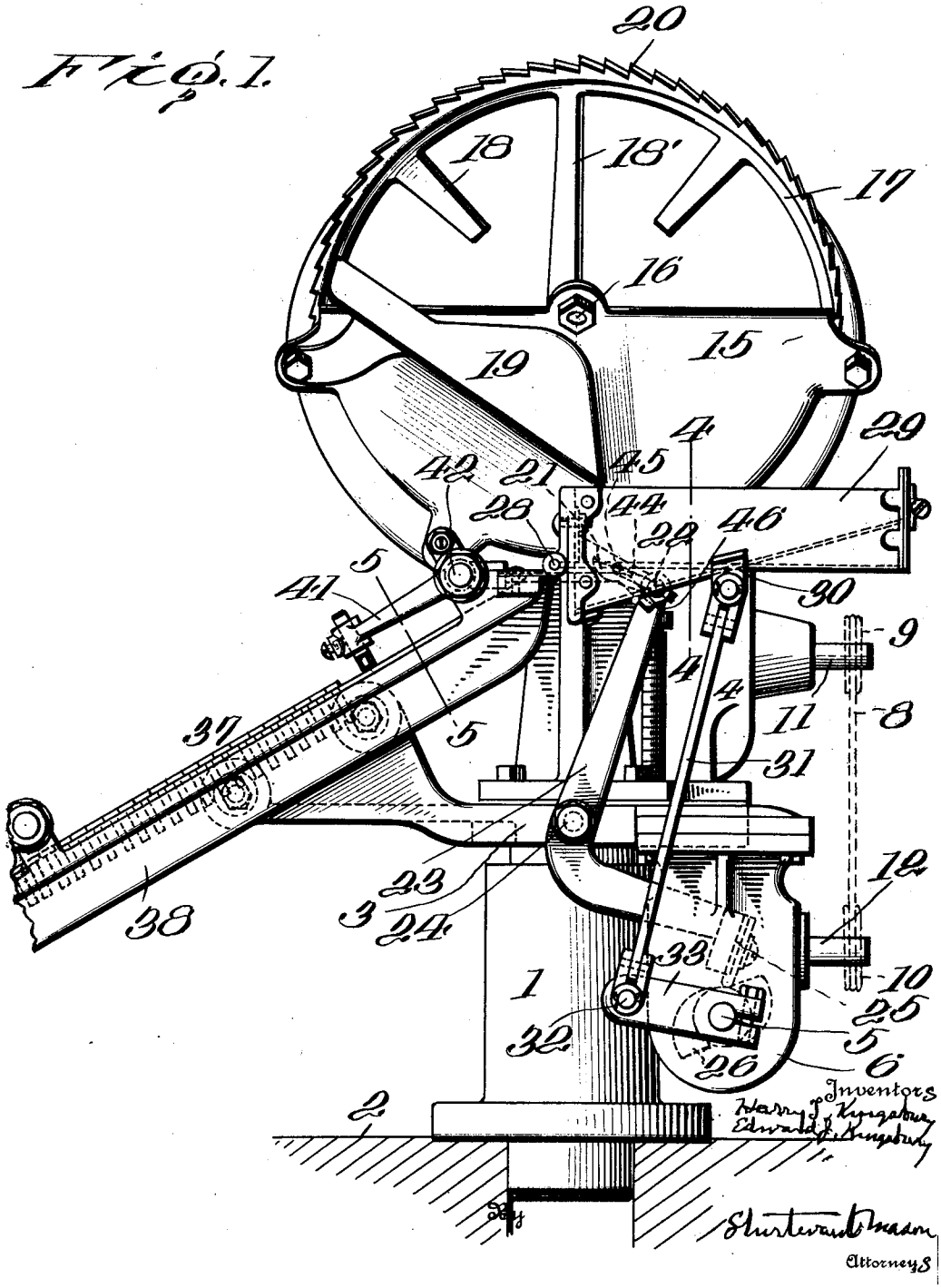
Nov. 22, 1927. 1,650,278

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AUTOMATIC HOPPER FEEDING DEVICE

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Fig. 1.



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Fig. 2.

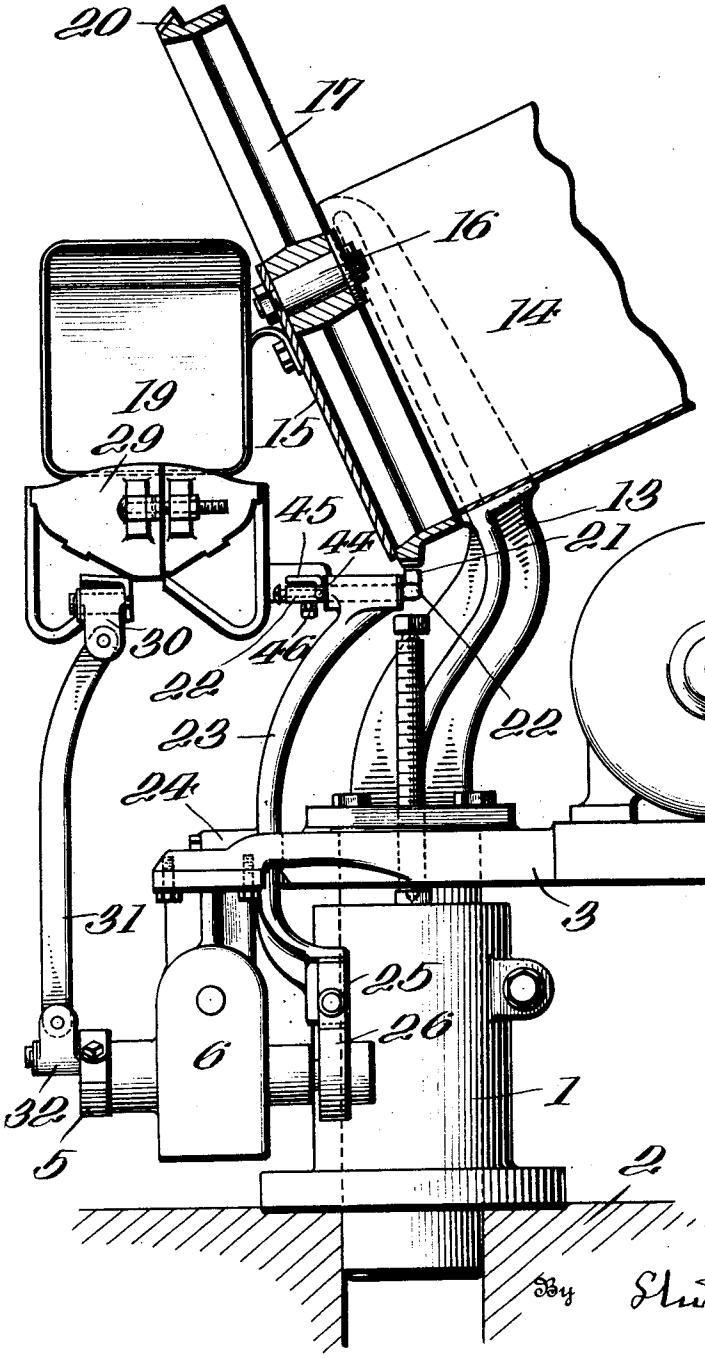
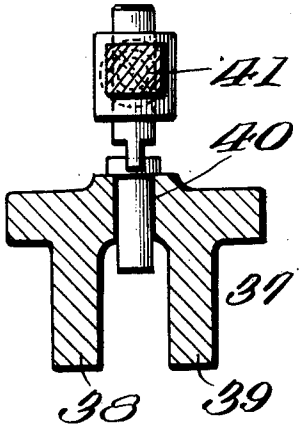
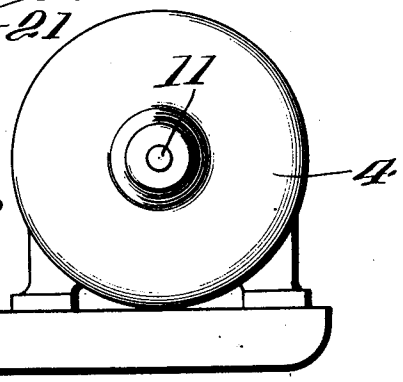


Fig. 5.





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Fig. 3.

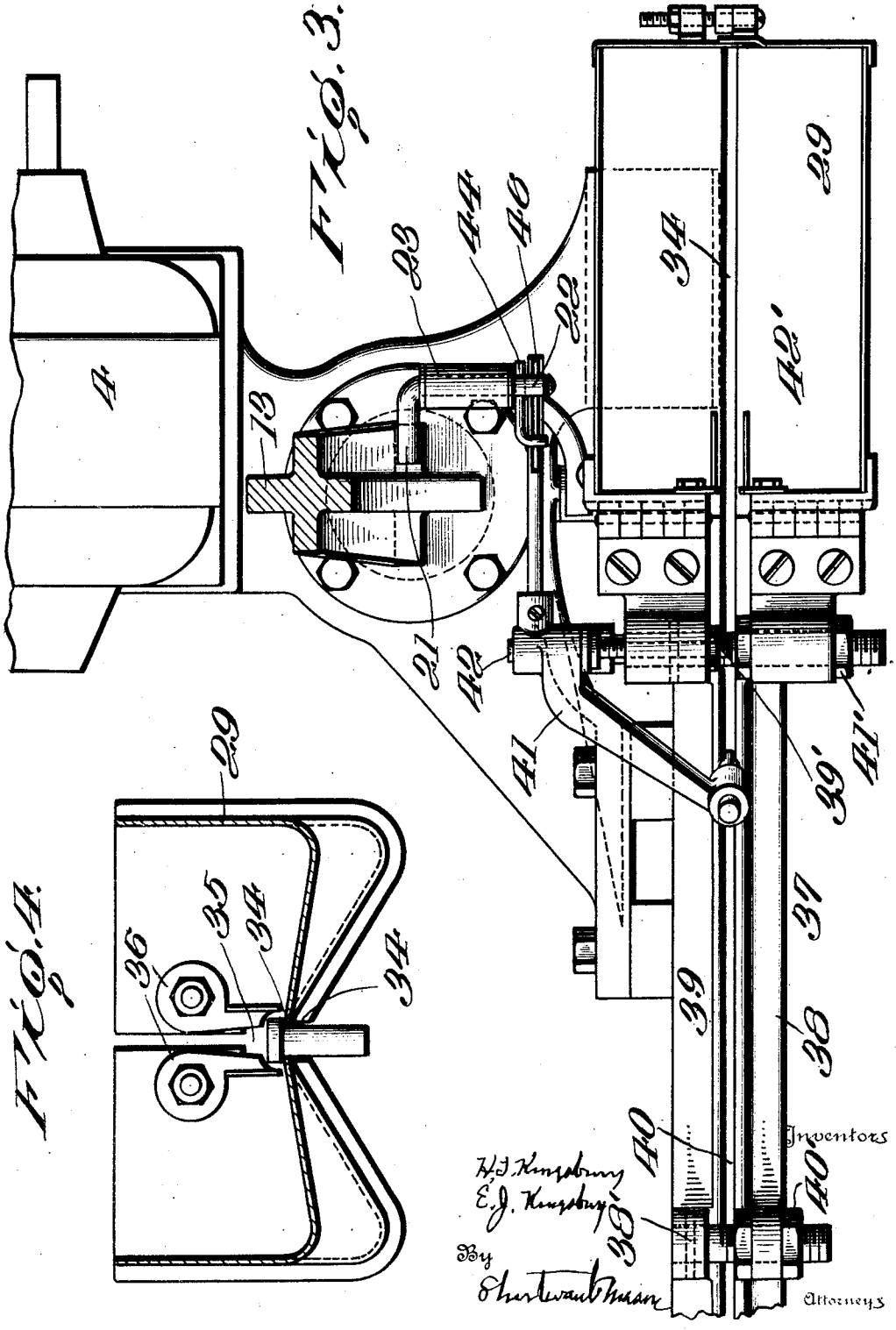


Fig. 4.

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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 January 21, 1925. Serial No. 3,751.

Our invention relates to improvements in automatic hopper feeding devices.

The object of our invention is to provide an automatic feeding device for rivets, bolts, nipples or any cylindrical member having heads or flanges, for feeding the same from a large hopper, one at a time in their proper position, to a machine to be operated upon.

Another object of our invention is to provide a feeler control which permits of a very large reservoir for the stock of rivets, bolts, nipples or the like, and a small oscillating hopper carrying a few rivets, bolts or the like, at a time, for causing them to assume their proper position, thus requiring little power to operate and causing the minimum abrasion by the tumbling action.

A further object of our invention is to provide means whereby rivets, bolts, nipples or the like, of different sizes, can be used by a slight adjustment of the slides in the chute and hopper, and which requires but a simple, single adjustment to accomplish the result.

A still further object of our invention is to provide a feeding device of this character which can be readily connected up for delivery, to any machine, and thus providing a simple and effective feeder having certain details of structure and combination of parts hereinafter more fully set forth.

In the accompanying drawings:—

Figure 1 is a side view of our improved automatic hopper feeding device.

Figure 2 is an end view partly in section.

Figure 3 is a top plan view.

Figure 4 is an enlarged transverse sectional view of the oscillating hopper, on the line 4—4, Fig. 1.

Figure 5 is an enlarged transverse sectional view showing the adjustable slides for feeding rivets, bolts or the like, of different sizes, taken on the line 5—5 of Fig. 1.

Referring now to the drawings, 1 represents the turret adapted to be mounted in the base 2, whereby it may be rotated in the base, so that the whole machine can be swung around so that the chute can be brought into proper position to feed the rivets, bolts or the like to the machine, all of which is well understood and needs no further description.

Mounted upon the turret 1, is a platform 3 adapted to support the motor 4, by means of which the shaft 5 is rotated through a gearing in the housing 6, and a belt 8 passing over pulleys 9 and 10, mounted on the shafts 11 and 12 of the motor and the gearing. By this structure it will be seen that the shaft 5 is continuously rotated and which operates the feeding mechanism, and which feeding mechanism is automatically stopped by the rivets in the chute after a predetermined number have entered the same. Mounted on the platform 3, is a bracket 13, supporting the large hopper 14 arranged in an inclined position and having its lower end open and provided with a plate 15, which is spaced from the open end of the hopper and carrying the stub shaft 16 upon which is rotatably mounted the feeding wheel 17. The feeding wheel 17 is provided with the inwardly extending members 18 inclined as shown, and with spokes 18′ adapted to pick up the rivets and carry them upwardly and discharge them into the chute 19, as will be hereinafter more fully described. The wheel 17, on its outer periphery, is provided with ratchet teeth 20 engaged by the pawl 21. The pawl 21 is pivotally mounted at 22, on the upper end of the L shaped lever 23. This lever 23 is pivotally mounted at 24 to the platform 3, and has its lower end provided with a bearing surface 25 engaging the cam 26, rigidly mounted upon the shaft 5. By this structure it will be seen that upon each rotation of the shaft 5, the lever 23 is rocked upon its pivot 24, and the pawl 21 carried thereby, is reciprocated and it engages the teeth 20 of the feed wheel 17, the same is caused to rotate on the stub shaft 16, and thus feeding the rivets, bolts or the like from the large hopper to chute 19, from which they are discharged to the oscillating hopper, later described.

Pivoted upon the bracket 13, at 28, is the hopper 29, which receives the rivets, bolts or the like from the chute 19 and this hopper 29 is provided with a bracket 30, to which is pivoted the pitman 31, which has its lower end pivotally connected at 32 to the crank 33, which is rigidly mounted upon the shaft 5, and which rotates therewith. By this structure it will be seen that the rotation of the shaft 5 oscillates the hopper 29 on its pivot 28, to cause the rivets to drop down into the slot 34, in the bottom of the hopper. The end of the hopper 28 is closed, and is provided with an opening 35 to allow the heads of the rivets, bolts or the like to pass from the hopper, and above the opening 35 are two pivoted guard fingers 36, which prevent the rivets from wedging in the opening, and also prevent the free passage of the rivet

from the hopper when the body portion has passed through the slot 34. Rigidly carried by the brackets 13, adjacent the lower end of the hopper 29, is a chute 37 which is composed of two plates 38 and 39, the outer plate 38 is adjustable toward the other plate by means of adjusting it on the studs 38′ and 39′, by means of nuts 40′ and 41′, so that the slot 40, between the two plates, can be varied for receiving rivets of different sizes. The upper end of the slot 40 is in alinement with the slot 34 in the hopper 29 so that upon each oscillation of the hopper, a rivet will pass from the slot 34 in the hopper 28, to the slot 40, in the slide. The hopper 29 has one half 42′ adjustable so that the slot 34 may be adjusted for rivets, bolts or the like of different sizes, and this half of the hopper is so mounted that the adjustment of the plate 38 of the chute carries with it the part 42′ of the hopper 29. This chute, as shown, is in an inclined position, and thus the rivets, by gravity, will slide down and assume the position shown in Figure 1 of the drawings, with their heads abutting. In order to stop the rotation of the feeding wheel 17, when the desired number of rivets have entered the chute, we provide the feeler 41, which is pivoted at 42, and has one end extending over the slide 37 directly above the slot 40, so that the heads of the rivets will hold the feeler upwardly, as will be later described. When the feeler 41 is held raised by the heads of the rivets, after the slot 40 is filled with rivets, the feeler is prevented from rocking upon its pivot 42. The pawl 21 carries a lateral shaft 22 which is mounted in the end of the L shaped lever 23 and adapted to oscillate therein. The said shaft 22 of the pawl is provided with an arm 44, turned laterally at its outer end as indicated at 45, and extends over the outer downwardly turned end 46 of the feeler arm 41. By this structure it will be seen that every time the L shaped lever 23 is rocked by the cam 26, the pawl is moved forward, and the lateral extension 45 engages 46 of the feeler arm, and throws it up so that the head of a rivet can pass the same in its downward movement in the slot in the slide. When the slot is filled up with rivets so that the feeler arm 41 is held upwardly, the end 46 will be held downwardly away from the lateral projection 25, and the pawl 21 will remain out of engagement with the ratchet teeth 20, on the feed wheel 17, and thus the feeding of the rivets from the hopper 14 to the chute 19 will be stopped until all of the rivets in the oscillating hopper 28 have passed into the slot 40 in the slide, and passed down below the lower end of the feeler arm. When this has taken place, the feeler arm 41 drops, forcing the pawl 20 upwardly by the engagement of the end 46 with the lateral extension 45, and thus moves the pawl into engagement and the ratchet teeth and the feeding mechanism again start.

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

1. A feeder of the character described comprising a stationary hopper, an oscillating hopper, means for feeding the articles from the stationary hopper to the oscillating hopper, a chute receiving the articles from the oscillating hopper, and a feeler pivoted above the chute to move upwardly controlled by the articles in the chute, and means operated by the movement of the feeler for stopping the feeding mechanism.

2. A feeder of the character described comprising a stationary hopper, an oscillating hopper, means for feeding the articles from the stationary hopper to the oscillating hopper, a chute for receiving the articles from the oscillating hopper, a feeler pivoted above the chute to move upwardly controlled by the articles in the chute, and means operated by the pivotal movement of the feeler for disconnecting the feeding mechanism and stopping the same.

3. A feeder of the character described comprising a stationary hopper, an oscillating hopper adjacent thereto, means for feeding the articles from the stationary hopper to the oscillating hopper, means for operating said feeding means, a chute receiving the articles from the oscillating hopper, and a feeler pivoted above the chute to move upwardly controlled by the articles in the chute and adapted to disconnect the operating means from the feeding means.

4. A feeder of the character described comprising a stationary hopper, an oscillating hopper, means for feeding the articles from the stationary hopper to the oscillating hopper, a chute receiving the articles from the oscillating hopper, and a feeler pivoted above the chute to move upwardly controlled by the articles in the chute and adapted to disconnect the operating means from the article feeding means, said feeler being raised by the operating means to allow the articles to pass therethrough.

5. A feeder of the character described comprising a stationary hopper, an oscillating hopper, a rotary feeder adapted to convey the articles from the stationary hopper to the oscillating hopper, a chute receiving the articles from the oscillating hopper, a feeler mounted to swing into the chute controlled by the articles in the chute, and means operated by the swinging movement of the feeler for stopping the rotary article feeding mechanism.

6. A feeding device of the character described comprising a stationary hopper, an oscillating hopper adjacent thereto, a rotary feeding mechanism adapted to feed the articles from the stationary hopper to the oscillating hopper, a chute receiving the ar-

ticles from the oscillating hopper, means for operating the rotary article feeding mechanism, and a feeler mounted to swing into the chute controlled by the articles in the chute, and means operated by the swinging movement of the feeler for disconnecting the operating means from the rotary article feeding mechanism.

7. A feeding mechanism of the character described comprising a stationary hopper, an oscillating hopper adjacent thereto, a chute receiving the articles from the oscillating hopper, a rotary feeding mechanism adapted to deliver the articles from the stationary hopper to the oscillating hopper, a pawl for operating the rotary delivery mechanism, and a feeler in the chute and controlled by the articles therein for disconnecting the pawl from the rotary delivery mechanism.

8. A feeding mechanism of the character described comprising a stationary hopper, an oscillating hopper adjacent thereto, a chute receiving the articles from the oscillating hopper, a rotary delivery mechanism adapted to deliver the articles from the stationary hopper to the oscillating hopper, ratchet teeth carried on the outer face of the delivery mechanism, a reciprocating pawl operated to rotate the delivery mechanism, and a feeler controlled by the articles in the chute for disconnecting the pawl from the ratchet teeth of the delivery mechanism for stopping the same when the chute is filled with articles.

9. A feeding mechanism of the character described comprising a stationary hopper, an oscillating hopper adjacent thereto, a chute receiving the articles from the oscillating hopper, a delivery mechanism for delivering the articles from the stationary hopper to the oscillating hopper, a pawl operating said delivery mechanism, and a feeler in the chute and controlled by the articles therein for disconnecting the pawl from engagement with the delivery mechanism and stopping the same when the chute is full of articles.

10. A feeding mechanism of the character described comprising a stationary hopper, an oscillating hopper adjacent thereto, a chute receiving the articles from the oscillating hopper, a rotary delivery mechanism adapted to deliver the articles from the stationary hopper to the oscillating hopper, teeth carried by the outer periphery of the rotary delivery mechanism, a continuously reciprocated pawl engaging the teeth of the rotary delivery mechanism, and a feeler controlled by the articles in the chute for disconnecting the pawl from the ratchet teeth on the delivery mechanism, and stopping the same.

11. A feeding mechanism of the character described comprising a stationary hopper, an oscillating hopper adjacent thereto, a chute receiving the articles from the oscillating hopper, a rotary delivery mechanism for delivering the articles from the stationary hopper to the oscillating hopper, ratchet teeth carrid by the outer periphery of the delivery mechanism, a continuously reciprocated pawl engaging the teeth on the delivery mechanism, a feeler in the chute and adapted to be raised and lowered by the pawl for allowing the articles to pass the same, and means operated by the feeler for disconnecting the pawl from the ratchet for stopping the delivery mechanism.

12. A feeding mechanism of the character described comprising a stationary hopper, an oscillating hopper adjacent thereto, a chute receiving the articles from the oscillating hopper, a rotary delivery mechanism for delivering the articles from the stationary hopper to the oscillating hopper, ratchet teeth carried on the outer periphery of the rotary delivery mechanism, a continuously reciprocated pawl engaging the teeth on the delivery mechanism, an oscillating feeler in the chute, and controlled by the reciprocation of the pawl for allowing the articles to pass under the same, and means carried by the feeler for holding the pawl out of engagement with the ratchet teeth when an article is below the feeler.

13. A feeding mechanism of the character described comprising a stationary hopper, a continuously oscillating hopper adjacent thereto, a chute receiving the articles from the oscillating hopper, a delivery mechanism for delivering the articles from the stationary hopper to the oscillating hopper, a continuously reciprocating ratchet for operating the delivery mechanism, a feeler in the chute and oscillated by the ratchet for allowing the articles to pass the same, and means operated by the feeler for disconnecting the pawl from the delivery mechanism when the feeler is held in a raised position by an article below the same.

14. A feeding mechanism of the character described comprising a stationary hopper, a continuously oscillating hopper adjacent thereto, a chute receiving the articles from the oscillating hopper, a delivery mechanism for delivering the articles from the stationary hopper to the oscillating hopper, ratchet teeth carried by the delivery mechanism, a continuously reciprocated pawl engaging the teeth for operating the delivery mechanism, a feeler in the chute and adapted to disconnect the pawl from the ratchet teeth on the delivery mechanism when the same is held in a raised position by an article below the same.

15. A feeding mechanism of the character described comprising a stationary hopper, an oscillating hopper having a slot in its bottom to receive the body portions of the

articles, a chute having a slot for receiving the articles from the slot of the oscillating hopper, means for adjusting the width of the slot in the oscillating hopper, and the chute, means for feeding the articles from the stationary hopper to the oscillating hopper, a ratchet for operating said feeding mechanism and a feeler adapted to disconnect the ratchet from the feeding mechanism when the slot in the chute is filled with articles.

16. A feeding mechanism of the character described comprising a stationary hopper, a continuously oscillating hopper adjacent thereto, a chute adjacent the oscillating hopper, the oscillating hopper and the chute having adjustable connecting slots for receiving the body portions of the articles, a rotary delivery mechanism adapted to deliver the articles from the stationary hopper to the oscillating hopper, ratchet teeth carried thereby, a continuously reciprocated pawl engaging said ratchet teeth, an oscillating feeler in the chute and oscillated by the reciprocation of the pawl, and means carried by the feeler for disconnecting the pawl from the ratchet teeth when the feeler is held in a raised position by an article in the chute.

17. A feeding mechanism of the character described comprising a stationary hopper, an oscillating hopper, a chute receiving the articles from the oscillating hopper, and having a slot in its bottom formed by two plates, means for adjusting one plate to and from the other, and the adjustment of said plate simultaneously adjusting the plate in the oscillating hopper, whereby the slots in the oscillating hopper and the chute are of the same width.

In testimony whereof, we affix our signatures.

HARRY T. KINGSBURY.
EDWARD J. KINGSBURY.