

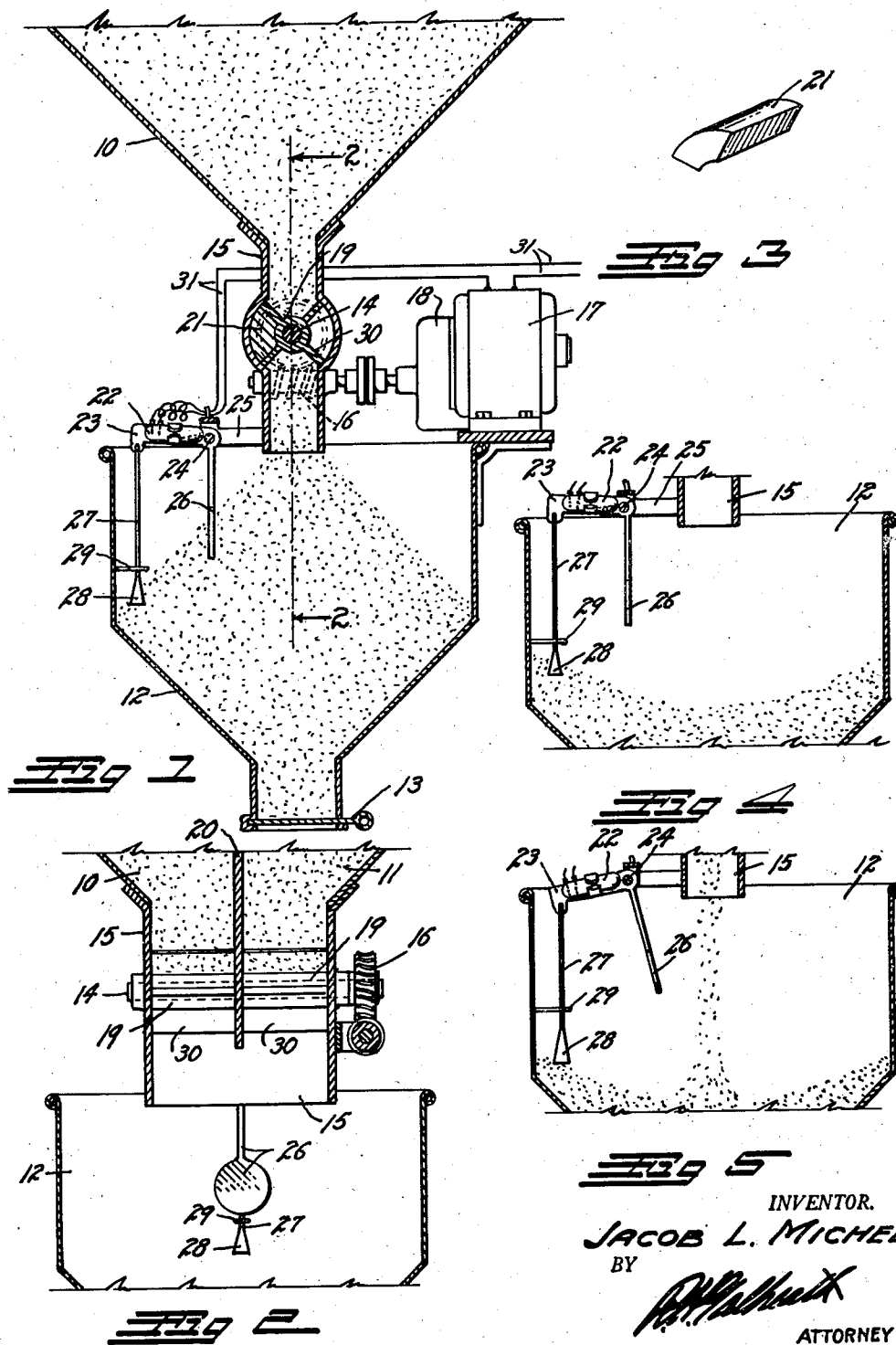
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AUTOMATIC MEANS RESPONSIVE TO QUANTITY OF MATERIAL IN DISCHARGING
RECEIVER FOR CONTROLLING DELIVERY FROM SOURCES

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AUTOMATIC MEANS RESPONSIVE TO QUANTITY OF MATERIAL IN DISCHARGING RECEIVER FOR CONTROLLING DELIVERY FROM SOURCE

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This invention relates to a device for feeding and proportioning granular, comminuted or powdered materials to any desired machine such as mixing machines, grinding machines, packaging machines and the like.

The principal object of the invention is to provide a simple, positively acting mechanism which will accurately control the flow of such materials to a feed hopper in accordance with the rate of withdrawal from said hopper.

Another object of the invention is to provide a device of this character which will feed a plurality of materials to a common receiver and automatically proportion the amounts of the different materials in any desired ratio.

Other objects and advantages reside in the detail construction of the invention, which is designed for simplicity, economy, and efficiency. These will become more apparent from the following description.

In the following detailed description of the invention reference is had to the accompanying drawing which forms a part hereof. Like numerals refer to like parts in all views of the drawing and throughout the description.

In the drawing:

Fig. 1 is a vertical section through the improved feeding and proportioning device;

Fig. 2 is a vertical section taken on the line 2-2, Fig. 1;

Fig. 3 is a detail perspective view illustrating one of the proportioning blocks employed in this invention;

Fig. 4 is a fragmentary cross-section illustrating the action of the control switch when the receiving hopper is partially emptied; and

Fig. 5 is a similar view illustrating the action of the control switch when the receiving hopper has reached its minimum content.

Typical parts of a feeding device are indicated by numerals in the drawing as follows: Supply bins 10 and 11, receiving hopper 12, and discharge gate 13.

The supply bins 10 and 11 have hopper bottoms which terminate in discharges placed adjacent each other. A discharge boot 15 is secured to the bottom of the bins for receiving material from the discharges thereof. The boot is divided by means of a central partition 20 into two compartments, each compartment being in communication with one of said bins.

A feed shaft 14 extends horizontally through both compartments of the boot. The shaft is driven from a suitable drive motor 17 through a speed reducing mechanism 18 and worm gear-
ing 16.

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The feeders 19 extend the full width of the compartments in the boot. Each feeder is provided with radially extending vanes 30 which divide them into receiving pockets. As the shaft rotates, these pockets successively fill with material from the bins 10 and 11 and each pocket full of material is carried around to the bottom of the boot where it falls into the receiving hopper 12.

Naturally, if both feeders are similar, an equal amount of material will be fed to the receiving hopper from both bins. Should it be desired to feed less of the material from bin 11 than is being fed from bin 10, a proportioning block 21 is inserted between the vanes 30 of one of the pockets of the feeder for bin 11, so that each rotation of the shaft 14 will feed four pockets full of material from bin 10 to each three pockets full from bin 11. By proper arrangement of the blocks 21 any desired proportion may be obtained between the materials in the bins 10 and 11.

The current to the motor 17 is conducted through circuit wires 31 which are controlled by means of a mercury tilt switch 22. The switch 22 is mounted on a tiltable switch arm 23 which is hingedly mounted on a switch shaft 24. The switch shaft is supported in brackets 25 from the boot 15 or in any other desired manner.

The arm 23 is swung about the shaft 24 by means of a downwardly extending paddle 26. The paddle 26 is so positioned that it will be in the line of final flow between the boot 15 and the hopper 12. Thus, when the hopper has filled to the point shown in Fig. 1, the material will have forced the paddle to the left to lift the arm 23 and the switch 22 to break the circuit to the motor 17 so as to stop further feeding of material.

A foot rod 27 depends from the free extremity of the arm 23 and terminates at its lower extremity in a conical foot member 28. A suitable guide loop 29 surrounds the rod 27 to hold the latter in place and to prevent swinging thereof. The foot member is so positioned that it will be imbedded in the material when the hopper is filled, as shown in Fig. 1, and will remain in this position to support the arm 23 as the hopper empties, as shown in Fig. 4. When the hopper has been emptied to a point approximating that shown in Fig. 5, the material will flow away from the foot member 28 so that it will no longer support the arm 23. This allows the arm to tilt downwardly to close the switch 22 to start the motor 17 so that the feeding device will resume operation to fill the hopper 12.

The conical shape of the foot member 28 is for the purpose of allowing it to be drawn up-

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wardly through the material by the action of the paddle 26 but its relatively broad bottom prevents it from descending into the material until the latter has fallen away, as shown in Fig. 5.

While a specific form of the improvement has been described and illustrated herein, it is desired to be understood that the same may be varied, within the scope of the appended claims, without departing from the spirit of the invention.

Having thus described the invention, what is claimed and desired secured by Letters Patent is:

1. Means for controlling the discharge of finely divided material from a receptacle comprising: a boot for receiving said material from said receptacle; a feeder in said boot for feeding material therethrough; a motor operating said feeder; a mercury tilt switch controlling the current to said motor; a tiltable arm supporting said switch; a paddle projecting from said arm into the flow of material from said boot for tilting the

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former; and a supporting member depending from said arm into said material to support the arm after the material has left said paddle.

2. Means for controlling the discharge of finely divided material from a receptacle comprising: a boot for receiving said material from said receptacle; a feeder in said boot for feeding material therethrough; a motor operating said feeder; a mercury tilt switch controlling the current to said motor; a tiltable arm supporting said switch; a paddle projecting from said arm into the flow of material from said boot for tilting the former; a supporting member depending from said arm into said material to support the arm after the material has left said paddle; and a conical foot member on said supporting member adapted to be imbedded in said material for supporting said arm.

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