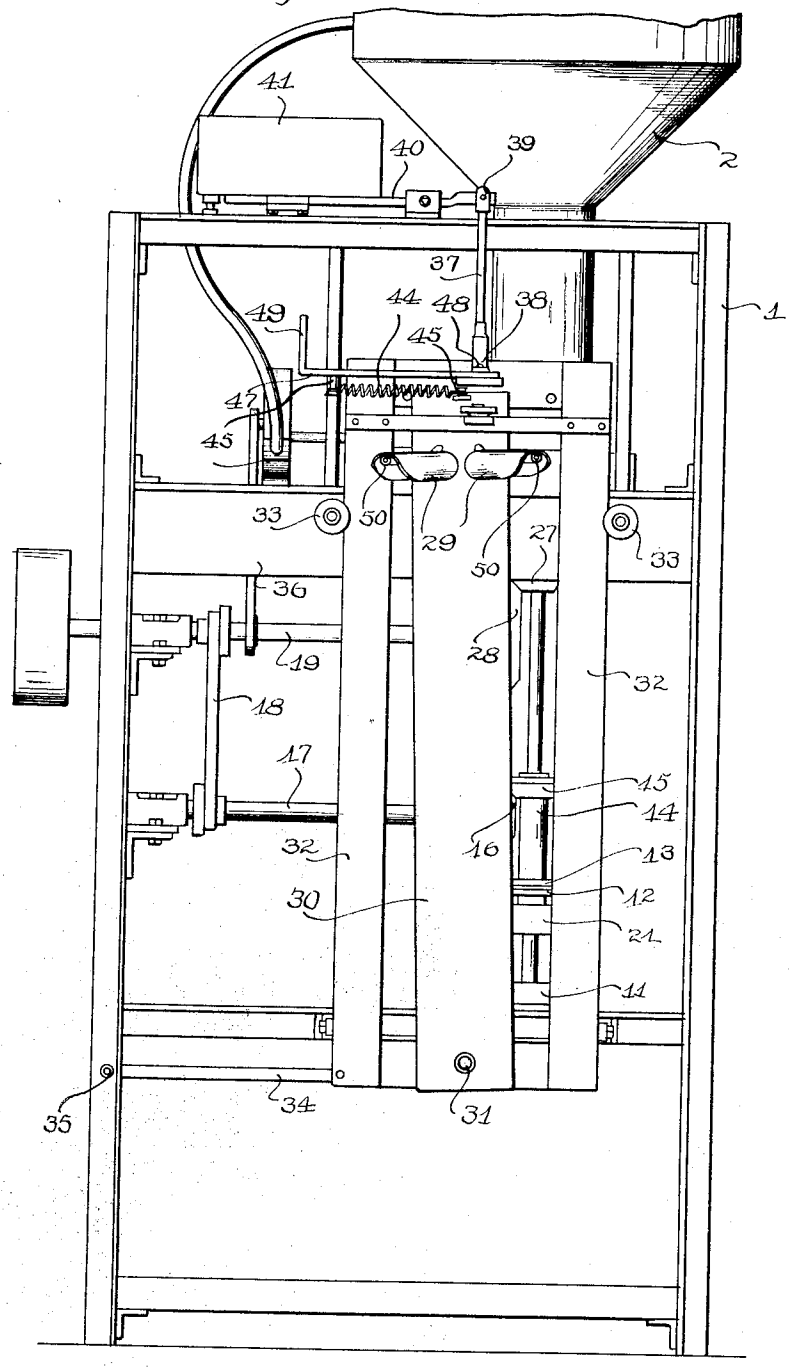
May 8, 1934. W. D. WRIGHT 1,957,875

BAG FILLING MACHINE

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Fig. 1.



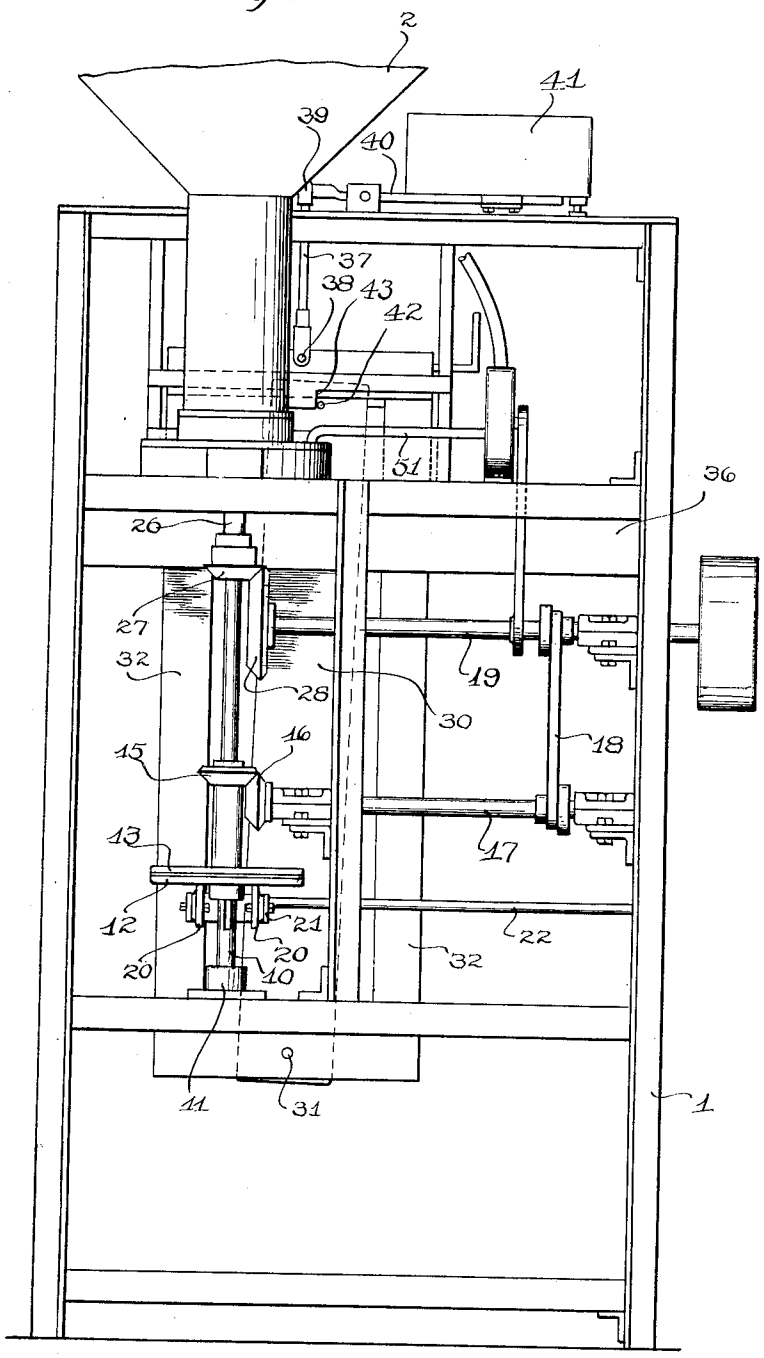
INVENTOR
William D. Wright
BY H. H. Simms
his ATTORNEY

May 8, 1934. W. D. WRIGHT 1,957,875

BAG FILLING MACHINE

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Fig. 2



INVENTOR
William D. Wright
BY H. H. Simmons
his ATTORNEY

May 8, 1934. W. D. WRIGHT 1,957,875

BAG FILLING MACHINE

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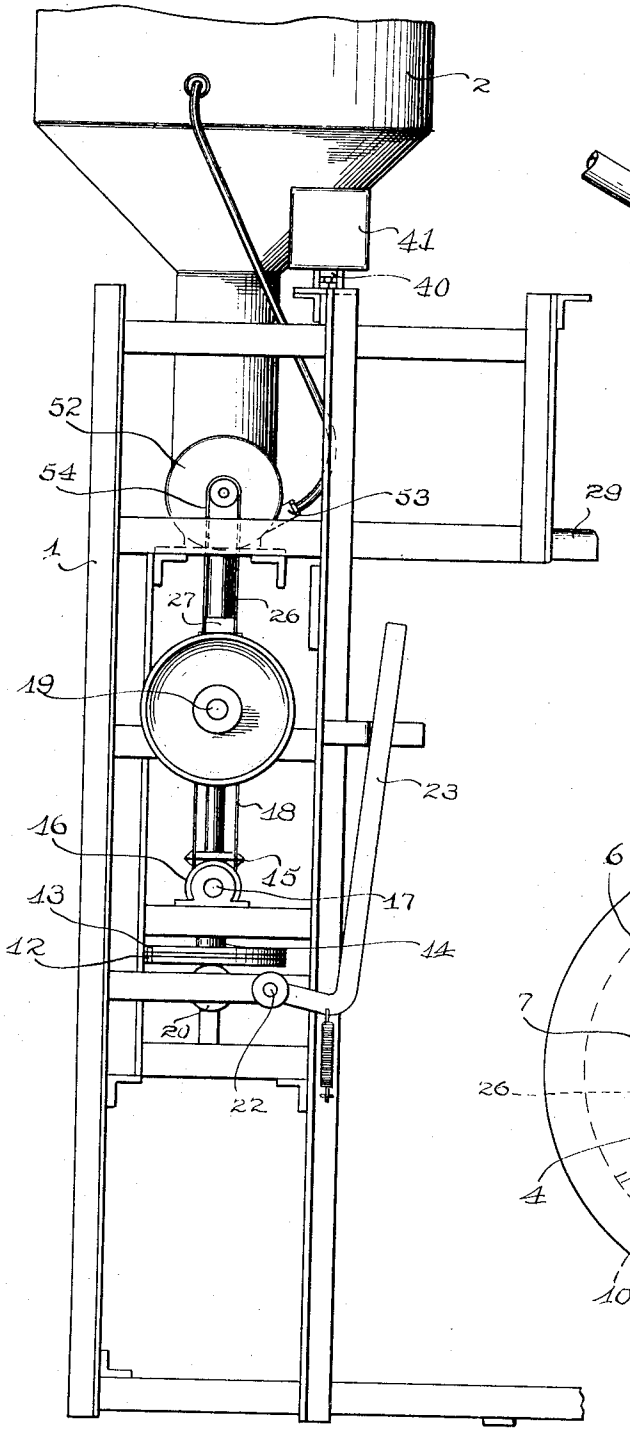


Fig. 3

Fig. 5

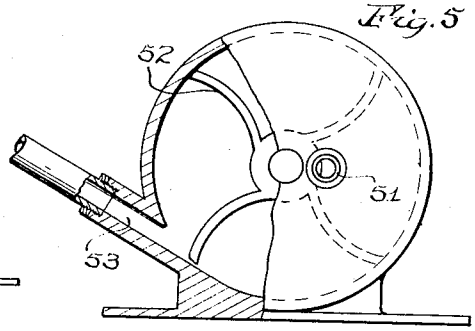
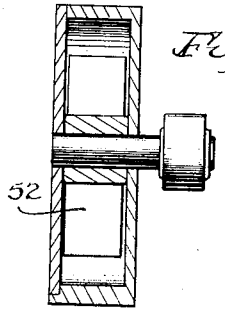


Fig. 6



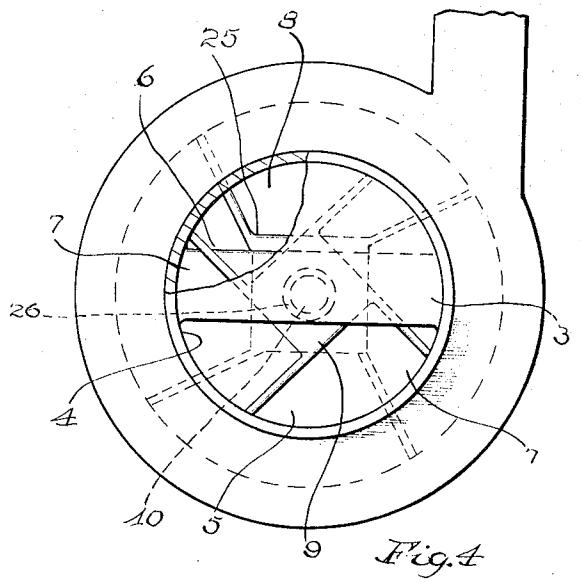


Fig. 4

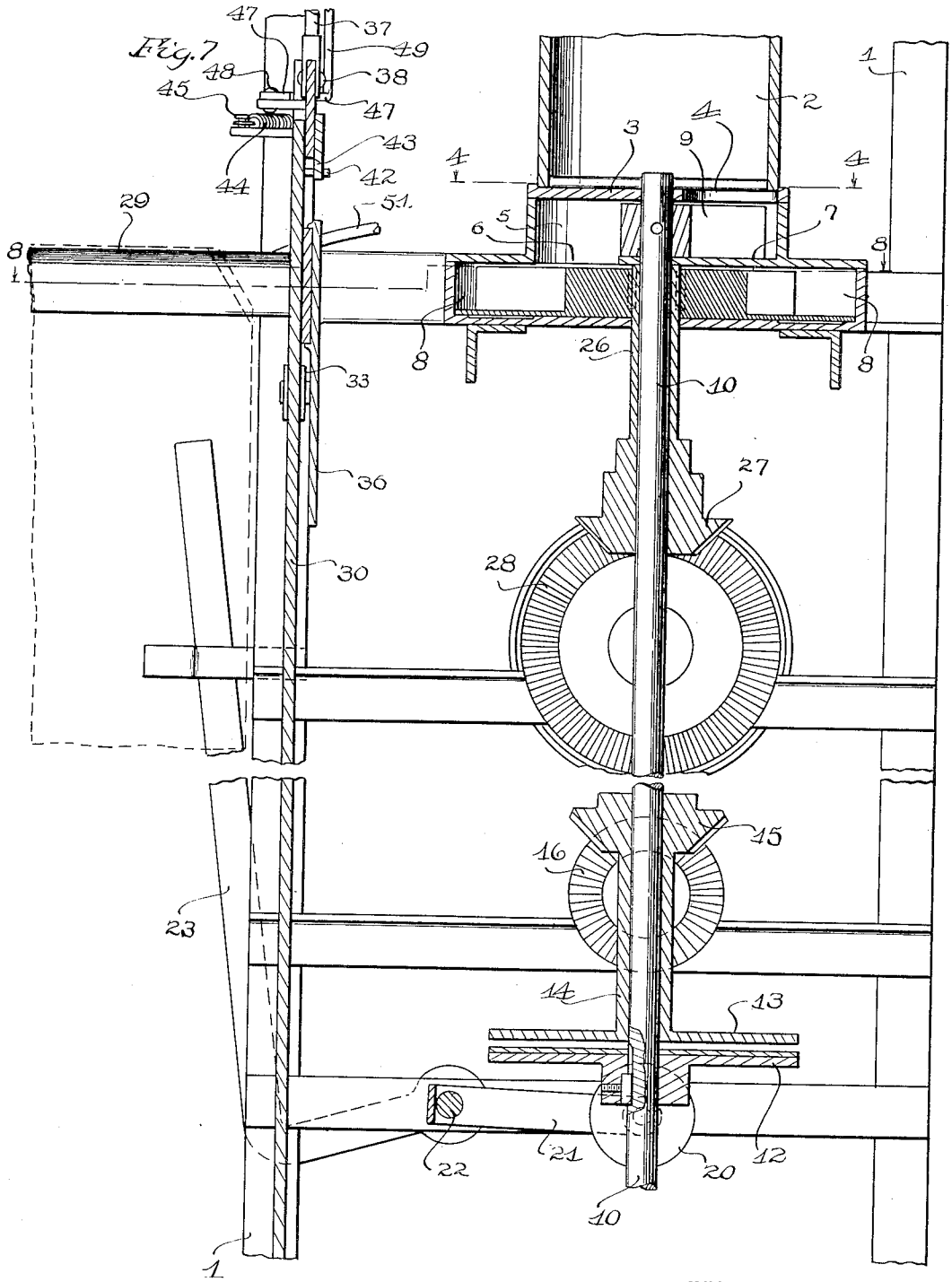
INVENTOR
William D. Wright
BY H. H. Simms
his ATTORNEY

May 8, 1934. W. D. WRIGHT 1,957,875

BAG FILLING MACHINE

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Fig. 7



INVENTOR
William D. Wright
BY
his ATTORNEY

May 8, 1934. W. D. WRIGHT 1,957,875

BAG FILLING MACHINE

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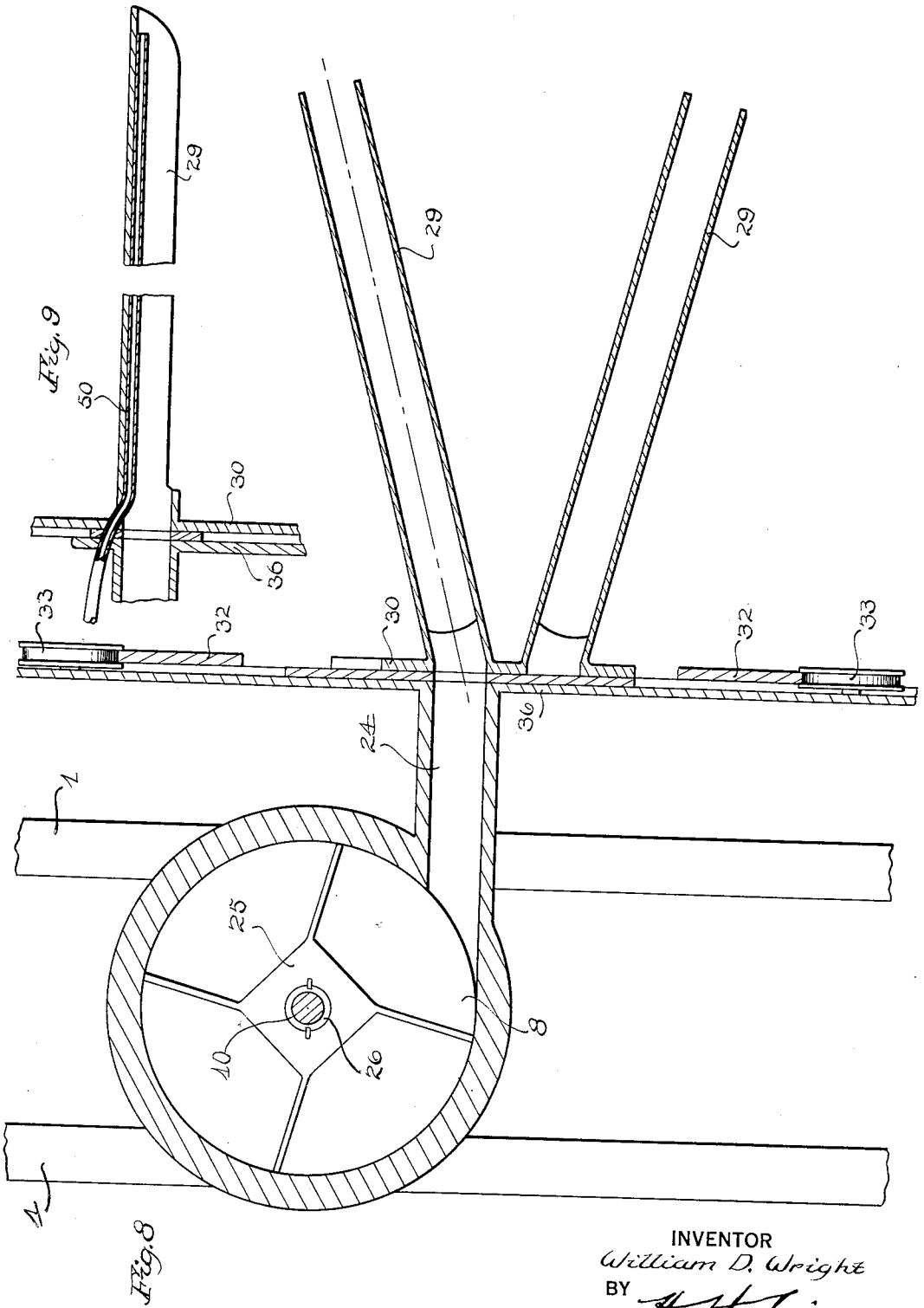


Fig. 9

Fig. 8

INVENTOR
William D. Wright
BY
H. W. Timms
his ATTORNEY

Patented May 8, 1934 1,957,875

UNITED STATES PATENT OFFICE

1,957,875

BAG FILLING MACHINE

William D. Wright, Brockport, N. Y., assignor to Charles F. Robb, Jr., Webster, N. Y.

Application April 16, 1931, Serial No. 530,496

5 Claims. (Cl. 226—48)

The present invention relates to bag filling machines and more particularly to that type of machine in which the material to be bagged is thrown through a nozzle into the bag to be filled. An object of the invention is to improve the construction of the means for feeding and throwing the material. Another object of the invention is to provide a novel means of causing an empty bag to shift to filling position as a filled bag moves away from filling position. Still another object of the invention is to dispense with the use of valves in directing the material from one bag to another. A further object of the invention is to provide a novel means for supporting the filling nozzles. A still further object of the invention is to provide novel mechanism by which one bag when filled automatically shifts the flow of material to another bag.

To these and other ends, the invention consists of certain parts and combinations of parts all of which will be hereinafter described: the novel features being pointed out in the appended claims.

In the drawings:

Fig. 1 is a view in elevation of a bag filling machine embodying the present invention;

Fig. 2 is a rear view of the machine;

Fig. 3 is a side view of the machine;

Fig. 4 is a section on the line 4—4, Fig. 7;

Figs. 5 and 6 are two detail views of the venting fan with parts in section;

Fig. 7 is a vertical section through the machine;

Fig. 8 is a section on the line 8—8, Fig. 7; and

Fig. 9 is a section on the line 9—9, Fig. 8.

In the illustrated embodiment of the invention, 1 indicates the frame of the machine having a hopper 2 into which the material to be bagged is deposited. This hopper has a bottom wall 3 provided with an opening 4 through which the material drops by gravity into a cylindrical feeding chamber 5 having a gravity discharge opening 6 in its bottom wall 7 situated out of line with the discharge opening of the hopper so that the material cannot pass directly from the hopper through the discharge opening of the feeding chamber. The bottom wall of the hopper is the top wall of the feeding chamber and the bottom wall 7 of the feeding chamber is the top wall of the chamber 8 of an impelling means.

Within the feeding chamber 5 is a movable feeding member in the form of a wheel 9 having tangentially arranged blades which sweep under the opening 4 and carry the material to the opening 6 through which it drops by gravity into the chamber of the impeller. When the feeding member is not moving, no material will pass from the feeding chamber to the impeller. Movement of the rotary feeder is effected, in this instance, through a vertical shaft 10 which is supported on a step bearing 11 on the frame 1 and which has an axially movable clutch disk 12 thereon movable into and out of engagement with a clutch disk 13 on the end of a hollow shaft 14 which surrounds the shaft 10 and has a bevel gear 15 at its upper end meshing with a bevel gear 16 on a shaft 17 which by a belt 18 is driven from a drive shaft 19. Movement of the clutch member 12 into engagement with the clutch member 13 may be effected by rollers 20 on a yoke 21 which is carried by a rock shaft 22 operable through a hand lever 23.

The impeller casing 8 has a tangential discharge 24 through which the material is thrown by means of a rotary impeller 25 arranged in the casing 8. The impeller may be turned by a hollow shaft 26 having the impeller secured to its upper end and its lower end provided with a bevel gear 27 at its lower end meshing with a bevel gear 28 on the end of the drive shaft 19. It will thus be seen that the impeller rotates continuously with the drive shaft 19 and the rotary feeding wheel may be stopped and started at any time without stopping or starting the rotary impeller. In this way the impeller casing may be entirely cleared of the material after the feeding stops.

The bags in which the material is received are preferably of a known type in which the material is fed to the bags through a self closing valved opening in a corner of the bag. This is effected, in this instance, by means of two supporting horns or nozzles 29 which pass through the valved openings into the bags and support the bags during filling, these horns or nozzles being open on their under sides and projecting horizontally in diverging relation from a common carrier 30 which, in this instance, is pivoted at 31 at a point below both nozzles. The swinging carrier 30 is pivoted to a carrier 32 which is guided on the frame 1 by rollers 33 and is supported by a laterally extending arm 34 which is pivoted at 35 to the frame 1. The discharge pipe 24 terminates at a fixed plate 36 against which the pivoted carrier plate 30 operates near its upper end so that the carrier plate will, by swinging to either side, cut off the supply of material to one discharge horn or nozzle 29 and open the supply to the other nozzle, the swinging movement of the carrier plate being such that in one extreme

position the inner end of one nozzle or horn will align with the end of the discharge 24 and in the other extreme position the inner end of the other nozzle will align with the discharge 24 so that the material will pass from the impeller through the discharge 24 and into and out of the aligned nozzle into a suspended bag.

The carrier 32 acts as a weighing frame and to this end is connected by a link 37 which is pivoted thereto at 38 and is pivoted at 39 to a lever 40 which has a weight 41 supported thereon. When the contents of a bag on a nozzle equals the effective weight of the weight 41, the frame 32 lowers on its pivot 35 and the carrier 30 shifts sidewise and effects the stopping of the flow of the material to the filled bag and at the same time directs the flow to another bag on the other nozzle.

Normally the frame 30 is held against shifting on its pivot 31 by a stop pin 42 projected from the rear side of the swinging nozzle carrier 30 and adapted, when the carrier is in open position, to engage one of two spaced fixed stops or abutments 43 on the frame of the machine, and when the carrier 30 is in the other position to engage the other of said stops 43. The bag is always filled from the nozzle occupying the higher position on the carrier 30 so that the weight of the material in the bag tends to hold the stop pin 42 against one of the stops and in this way the carrier is held against swinging under the weight of the bag, but on the lowering of the weighing frame or carrier 32, the stop 42 moves downwardly out of engagement with such stop and then the weight of the filled bag shifts the nozzle carrier 30 to bring the filling nozzle out of alignment with the pipe 24 and the other nozzle into such alignment. Of course before such shifting takes place, an empty bag should be fitted to that nozble which is cut off from the discharge pipe 24 of the impeller.

In order to insure the shifting of the nozzle carrier 30 on its pivot 31, a shifting device is employed, preferably in the form of a coil spring 44 which at one end is anchored at 45 to the swinging carrier 30 at the upper and center portion of the latter, the other end of the spring being secured at 46 to an arm 47 which is pivoted at 48 to the sliding frame 32 vertically above the pivot 31, a hand piece 49 is provided on this arm by which the position of the spring end 46 may be shifted to either side of the pivot 31 of the carrier 30. When on one side it tends to move the carrier 30 in one direction and vice versa. While a bag is being filled and the nozzle is in the raised position, the spring end is shifted so that the spring will shift the carrier to lower such raised nozzle and cut off the supply to such raised nozzle. The purpose of the spring is to insure a quick closing of the supply to the filled bag.

It has been found that when the material is thrown by the impeller into a substantially closed bag there is a tendency to build an air pressure in the bag and to avoid this action, a venting means is employed. This venting means, in this instance, comprises a vent tube 50 arranged within each horn or nozzle 22 and both leading to a common suction pipe 51 which connects with a suction fan 52 having a discharge 53 leading to any suitable point. The fan 53 may be driven from the shaft 19 by a belt 54.

From the foregoing it will be seen that there has been provided a bag filling machine in which the feeding mechanism discharges at the center of a rotary impeller where the latter creates a suction which tends to draw the material to the impeller. The rotary feeder is axially alined with the rotary impeller so that the shifter of the former may be extended through the shaft of the latter and a simpler driving mechanism obtained. No valves are employed in between the impeller and the discharge nozzles, as the latter are on a movable carrier which shifts to aline either nozzle with the impeller. The movement of the carrier may be effected by the weight of the bags and is held restrained until a bag has been filled; the carrier being mounted on a weight controlled member. The movement of the carrier may be assisted by spring means to quicken the shifting of the flow from one bag to another. The air pressure built up in the bag is relieved by a venting means which has a suction fan driven by the machine.

What I claim as my invention and desire to secure by Letters Patent is:

1. A bag filling machine comprising a horizontally arranged filling nozzle, a rotary impeller operating in a horizontal plane to throw material to and through the nozzle, and a rotary feeder mounted directly above the impeller and turning about a common axis therewith, said feeder discharging by gravity to the impeller, the rotary impeller having a hollow drive shaft, and the rotary feeder having a drive shaft extending through the hollow shaft, and a common driving means for the two shafts including a clutch connection with the shaft of the rotary feeder, the construction being such that when the clutch connection is closed said driving means drives the impeller shaft faster than the feeding shaft.

2. In a bag filling machine, the combination with an impelling means, of two horizontally arranged nozzles, each for supporting a bag to be filled, a carrier, a weight controlled movable member to which the carrier is pivoted to turn about a horizontal axis below and in a vertical line between the two nozzles so that either nozzle may align with the impelling means, the aligned nozzle being at the time in a higher plane than the other nozzle, and means for holding the carrier with either one of the nozzles aligned with the impelling means, releasing the carrier to permit the other nozzle to shift to aligned position on the movement of the weight controlled member under the action of a filled bag.

3. In a bag filling machine, the combination with an impelling means, of two horizontally arranged nozzles, each for supporting a bag to be filled, a carrier, a weight controlled movable member to which the carrier is pivoted to turn about a horizontal axis below and in a vertical line between the two nozzles so that either nozzle may align with the impelling means, the aligned nozzle being at the time in a higher plane than the other nozzle, and means for holding the carrier with either one of the nozzles aligned with the impelling means, releasing the carrier to permit the other nozzle to shift to aligned position on the movement of the weight controlled member under the action of a filled bag, and hand controllable spring means acting on the nozzle carrier to cause it to shift quickly when released.

4. A bag filling machine comprising a hopper having a horizontally extending bottom with a feeding opening therethrough, a horizontally arranged filling nozzle, a cylinder connected to said hopper and providing a feeding chamber, a rotary impeller in said feeding chamber, and a rotary feeder in said feeding chamber above said rotary impeller, said cylinder having a horizon-

tally extending partition therein located between said rotary impeller and said rotary feeder and provided with a second opening out of direct communication with the feeding opening of the hopper bottom, which said feeder discharges by gravity through said second opening to the impeller, the filling nozzle being connected to the cylinder in such a manner that the rotary impeller can be operated in a horizontal plane to throw material into and through the nozzle.

5. A bag filling machine comprising a horizontally arranged filling nozzle, a rotary impeller operating in a horizontal plane to throw material to and through the nozzle, a rotary feeder mounted directly above the propeller and turning about a common axis therewith, said feeder discharging by gravity to the impeller through an opening in a partition between said feeder and said impeller, the rotary impeller having a hollow drive shaft and the rotary feeder having a drive shaft extending through the hollow shaft, and means for driving both of said shafts so that the impeller shaft travels faster than the feed shaft.

WILLIAM D. WRIGHT.