Oct. 8, 1940. A. SOWDEN 2,216,786

PACKING MACHINE FOR CONTAINERS AND THE LIKE

Filed Aug. 7, 1939 4 Sheets-Sheet 1

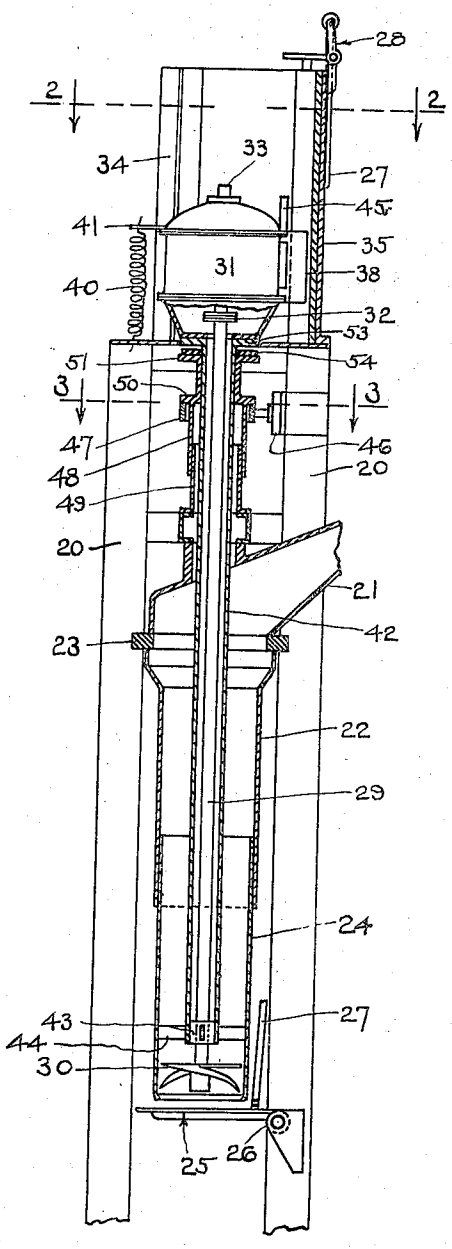


Fig. 1.

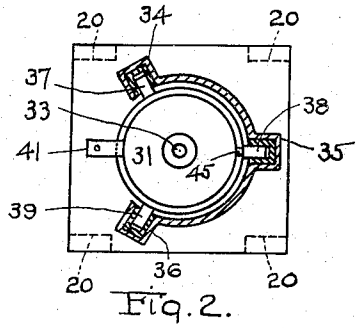


Fig. 2.

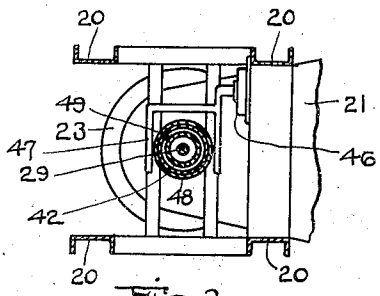


Fig. 3.

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Oct. 8, 1940. A. SOWDEN 2,216,786

PACKING MACHINE FOR CONTAINERS AND THE LIKE

Filed Aug. 7, 1939 4 Sheets-Sheet 2

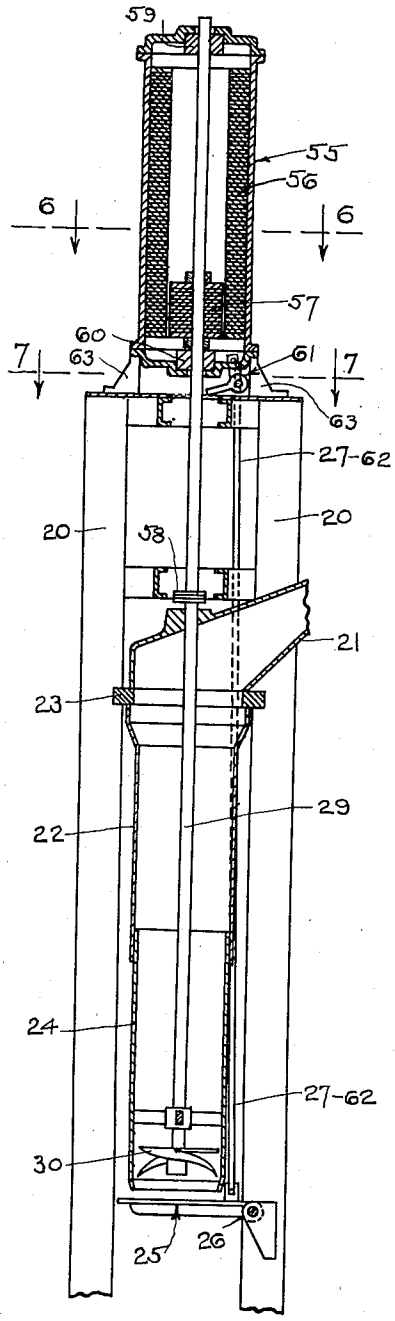


Fig. 4.

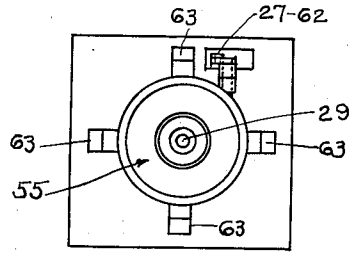


Fig. 5.

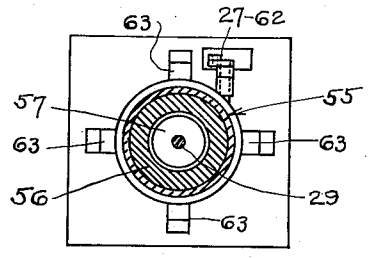


Fig. 6.

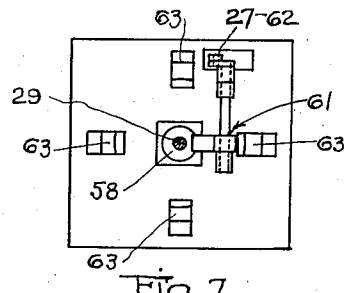


Fig. 7.

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PACKING MACHINE FOR CONTAINERS AND THE LIKE

Filed Aug. 7, 1939 4 Sheets-Sheet 3

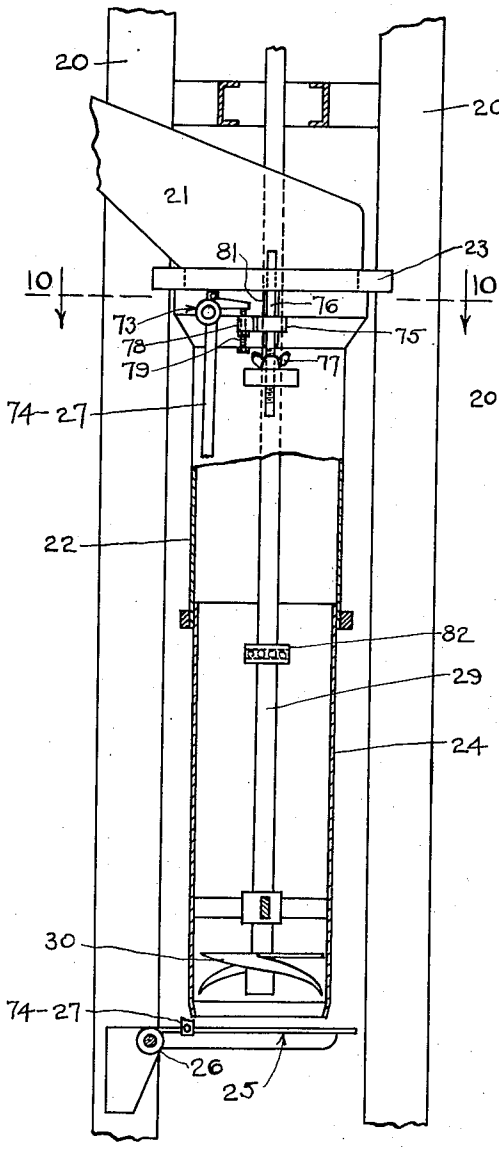


Fig. 8.

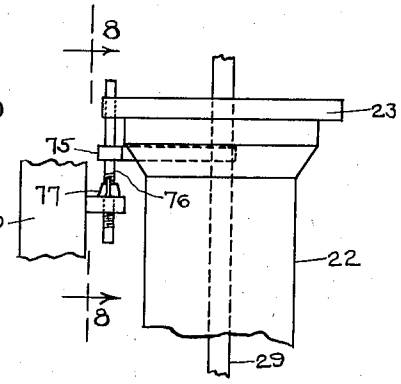


Fig. 9.

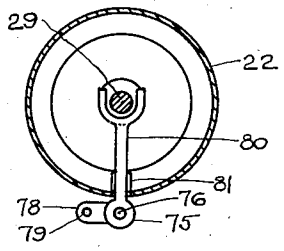


Fig. 10.

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PACKING MACHINE FOR CONTAINERS AND THE LIKE

Filed Aug. 7, 1939 4 Sheets-Sheet 4

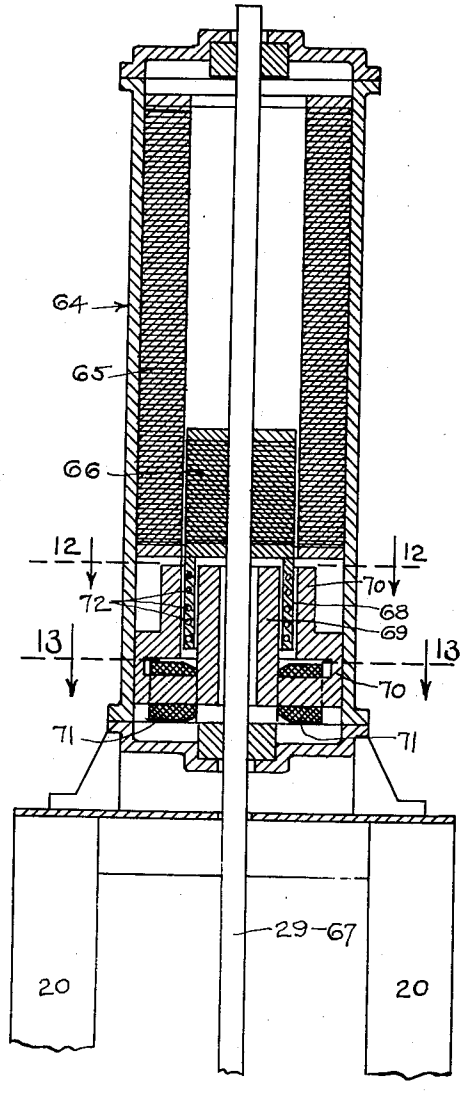


Fig. 11.

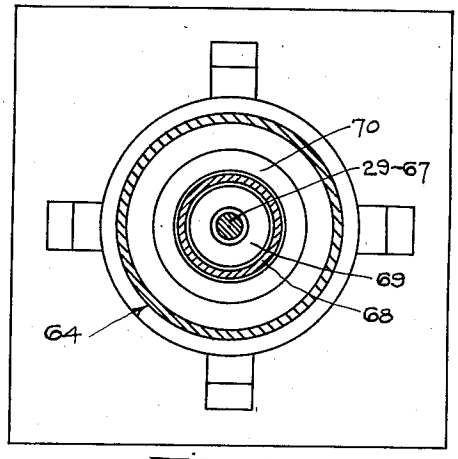


Fig. 12.

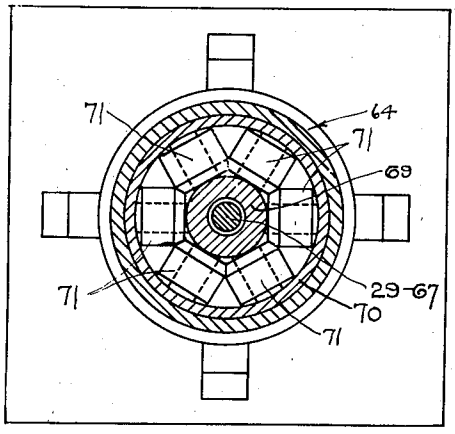


Fig. 13.

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Patented Oct. 8, 1940

2,216,786

UNITED STATES PATENT OFFICE

2,216,786

PACKING MACHINE FOR CONTAINERS AND THE LIKE

Alfred Sowden, Arkansas City, Kans.

Application August 7, 1939, Serial No. 288,736

13 Claims. (Cl. 226—23)

This invention relates to improvements in packers for packing such materials as flour, mill feeds, and the like, into bags and other containers therefor. The present invention relates to improvements in packers of the general type shown and disclosed in my co-pending application for Improvements in packing machines for containers, and the like, Serial No. 273,973, filed May 16, 1939, and in my Patent No. 2,184,474, December 26, 1939, application Serial No. 199,225, filed March 31, 1938. That general type of packer is one in which the bag or other container is supported on a stationary platform or other support during the filling and packing operation, there being provided a vertically movable auger or blade rotating with a vertical shaft extending downwardly into the bag, and capable of moving upwardly as the material is fed and packed into the bag until the operation is completed. At the completion of such filling and packing operation the platform is released and the filled and packed bag is allowed to descend to a suitable conveyor whereby it is carried away. In the meantime the shaft and auger are permitted to descend to their lowered position ready for another operation.

The above type of machines are intended for, and are capable of very rapid operations, several complete operations per minute, in fact, depending among other things on the size of the bags being filled and the nature of the material being packed; but in general it may be stated that rapidity of operation is a great desideratum for reasons readily apparent. This entails relatively high speeds of rotation of the shaft and auger, in fact, upwards of as many as seventeen hundred R. P. M. It also entails very frequent vertical movements of the shaft and auger unit, as the same must complete one up and down reciprocation for each complete filling.

Heretofore it has been customary to provide a splined or other similar driving connection to the shaft, so that the continuity of shaft drive may be maintained and use made of a driving element which remains at constant elevation during the vertical movements of the shaft and auger. In some cases such drive may be effected by means of a pulley splined to the auger shaft, and in other cases by means of a splined driving connection between the shaft and the rotor of a suitable driving motor mounted on the upper portion of the packer. In this latter case the arrangement may be one in which the auger shaft is carried directly up through the center of the rotor itself. In all these cases, however, it is seen that the ultimate drive of the auger shaft is effected by the splined connection thereto.

Now it is necessary to provide for delivery of a substantial amount of power to the shaft, amounting in some cases to as much as fifteen horse-power, and this power must be delivered to an auger shaft of relatively small diameter, for example two and one-half inches. At the speed used, for example, seventeen hundred R. P. M., this amount of power delivered to a shaft of the above diameter, means a driving force of substantially four hundred forty-five pounds exerted between the shaft and the driving element at the position of the spline. Inasmuch as the splined drive cannot be well lubricated, due to the fact that lubricant might find its way down into the material being packed, and also due to the fact that the splined portion of the shaft generally travels down into the enclosure wherein the material is contained, it follows that the friction between the shaft and the driving element is very considerable, especially during the portion of the operation during which the material is being packed into the container.

Now the packing operation occurs during the uptravel of the auger and shaft, which uptravel is effected by the screwing action of the auger on the material; and the density of packing depends largely on the force exerted on the material by the auger. That force is equal to the weight of the vertically moving parts which are sustained by the material being packed, plus the friction between the shaft and the driving element, due to the force exerted between these parts, as above shown. This friction is an uncertain quantity, due to the nature of the drive itself, and the impossibility of properly lubricating the parts, as well as changes due to wear of parts; but it may be assumed that a co-efficient of friction of twenty-five percent would be an approximation, so that the expected friction resisting vertical movement of the auger and shaft might amount to as much as one hundred to one hundred ten or fifteen pounds. This force must be overcome during the rising of the auger and shaft, and is supplemental to the actual weight of the parts themselves. If the weight should be assumed as two hundred pounds, this friction force would be an additional factor of substantially fifty percent thereof.

Now uniformity of packing, as well as best control of the operation, requires uniformity of pressure of auger on the material being packed, and such uniformity cannot be completely assured

when a spline drive is used, for reasons already explained.

The main object of the present invention is to provide a drive for the auger and shaft which completely eliminates the need of any form of splined connection between these parts. In this connection I have provided arrangements in which the shaft is directly connected to the rotor of a driving motor, as by means of a suitable coupling, the said rotor being arranged to move vertically up and down with the shaft movements. By this arrangement the question of lubrication is well taken care of, since the usual motor bearings will provide effective support for the rotor shaft; the splining is completely done away with, with consequent elimination of friction at that point, together with wear and tear thereon; and the friction force communicated to the auger is practically eliminated so that there is exact knowledge as to the pressure being applied to the material being packed, and said pressure is exactly uniform during the entire packing operation, so that the density of the pack is uniform throughout the container.

Sometimes I provide an arrangement in which the entire motor travels up and down with the auger and shaft, with partial counter-balance if necessary; and sometimes I provide an arrangement in which the driving motor has a long stator and a relatively short rotor working therein, so that the rotor and its shaft may move back and forth, or up and down with respect to the stator, while maintaining the proper electrical and magnetic relationship between these parts.

A further object of the invention is to make effective provision for support of the auger end of the shaft by an outboard bearing, thereby effectively preventing whipping of such shaft which is of considerable length.

A further feature of the invention relates to an improved arrangement for damping the downward movement of the auger and shaft and connected parts at the completion of each filling operation. In this connection I have provided herein an electro-magnetic damper for the above purpose, which damper becomes effective near the end of the descending movement of the parts, dissipating the energy of descent of the parts electrically and in the form of heat. In this connection, it is a further object to incorporate this electro-magnetic damper into the driving motor itself, and as a part thereof.

A further feature of the invention relates to an improved arrangement for releasing the platform which carries the bag or other container, at the completion of the filling and packing operations. This release arrangement is operated by the rise of the drive shaft; and in the arrangement herein disclosed the connections between the drive shaft and the release mechanism are effected in the packing chamber itself, with consequent very short and simple connections of parts. The arrangement is also such that very simple and exact adjustments may be effected so as to ensure tripping of the platform at the proper position of rise of the shaft.

Other objects and uses of the invention will appear from a detailed description of the same, which consists in the features of construction and combinations of parts, hereinafter described and claimed.

In the drawings:

Figure 1 shows a vertical section through the main operative parts of one embodiment of my present invention, wherein the motor moves up and down bodily with the shaft and auger, being suitably guided in such movements; and which arrangement provides an effective outboard bearing for the lower end of the auger shaft;

Figure 2 shows a horizontal section on the line 2—2 of Figure 1, looking down as shown by the arrows;

Figure 3 shows a horizontal section on the line 3—3 of Figure 1, looking down as shown by the arrows;

Figure 4 shows an alternative arrangement wherein there is provided a driving motor having a long stator, the rotor being directly connected to the shaft, and so arranged that the motor may move up and down within the stator, harmoniously with the up and down movement of the shaft and auger;

Figure 5 shows a top plan view of the arrangement of Figure 4;

Figure 6 shows a horizontal section on the line 6—6 of Figure 4, looking down as shown by the arrows;

Figure 7 shows a horizontal section on the line 7—7 of Figure 4, looking down as shown by the arrows;

Figure 8 shows a side view, partially in section, of the central portion of a construction embodying the platform release arrangement herein disclosed;

Figure 9 shows a partial view of the arrangement of Figure 8, looking at right angles to Figure 8;

Figure 10 shows a horizontal section on the line 10—10 of Figure 8, looking down as shown by the arrows;

Figure 11 shows a vertical section through an alternative form of motor drive embodying an electro-magnetic damper at the lower end thereof, for damping the fall of the rotor, shaft, and auger;

Figure 12 shows a horizontal section on the line 12—12 of Figure 11, looking down as shown by the arrows; and

Figure 13 shows a horizontal section on the line 13—13 of Figure 11, looking down as shown by the arrows.

Referring first to the arrangement of Figures 1, 2 and 3, in this case the frame of the machine is shown in outline, including the posts 20 at the corners thereof. The flour or other material to be packed is introduced through the chute 21 into the upper end portion of the tubular element 22. This tubular element is suitably supported by the frame through the medium of the collar 23. There is a lower tubular section 24 telescopingly related to the section 22, so that, during the filling operation the section 24 may rise, leaving the section 22 unchanged in elevation. There is provided a platform 25 adjacent to the lower end of the tubular section 24 when said section is in lowered position as shown; and this platform is swingingly carried by the hinge 26. The bag or other container to be filled and packed is placed up around the lower tubular section and up to cooperation with the upper tubular section, to which it may be connected in suitable manner, and then the platform is swung into the horizontal position shown wherein it will support the bottom of the bag. The platform is held in this horizontal position by means of a link 27, pivotally connected to the platform, and the upper end of this link is controlled in suitable manner, as by means of the toggle member 28 of Figure 1. In the arrangement of that figure, when the shaft reaches its upper limit of movement the toggle is tripped

and the link allowed to move down, thereby releasing the platform and allowing the filled and packed bag to slide down therefrom.

There is a drive shaft 29 extending vertically through the telescoping tubular elements. This shaft carries the auger or augers 30 at its lower end; and during the filling and packing operations the shaft and auger rise towards the upper end of the enclosure. The weight of these parts is sustained by the material being packed, and the auger in effect screws itself up through the material during the packing operation. Now heretofore it has been the practice to spline drive the shaft 29, but for the reasons heretofore mentioned, as well as others, such arrangement presents objections.

In the arrangement of Figures 1, 2, and 3, I have provided a suitable driving motor 31 above the chute 21, and in line with the shaft 29; and the rotor shaft of this motor is directly coupled to the upper end of the auger shaft 29, as by means of the coupling 32, the motor shaft being shown at 33. With this arrangement the motor must move bodily up and down with the movements of the shaft and auger. For this reason I have provided the three vertical guides 34, 35 and 36, reaching upwards from the packer frame, and the motor housing is provided with the corresponding riders 37, 38 and 39 which travel in, and are guided by these guides. The arrangement is such that a very sturdy and accurate guide is provided for the vertical movements of the entire motor, keeping it aligned with the auger shaft during its vertical movements.

The motor is continuously driven; and any suitable connections may be provided for supply of current to the motor for the above purpose. For example, the coiled double wire arrangement 40 may be provided, having its upper end connected to the bracket 41 carried by the motor proper, and the lower end of this coiled wire current supply may be connected to the packer frame, as shown.

With this bodily movable motor arrangement, I have also provided the tubular extension 42 reaching down from the motor housing and rigidly connected thereto, and surrounding the shaft 29, to a point close to the auger 30, the bearing 43 being provided between the lower end of the tubular extension and the shaft. The bearing 43 may be of dust proof construction, so that the space within the tubular extension is virtually dust proofed. With this arrangement it is evident that a very strong sturdy support is provided for the auger end of the shaft, and whipping is thereby prevented.

The lower telescoping section 24 moves up and down with the shaft and auger. For this purpose I have provided the spider having the arms 44 reaching from the lower end of the tubular extension 42 to the lower portion of the telescoping section 24. The rising and falling of the auger and shaft are thus communicated to the tubular section 24, which therefore rises as the bag is filled and packed.

As the motor completes its upward movement the block 45 strikes the horizontal arm of the bell crank 28, thereby tripping it. To control and dampen the descent of the motor, shaft, and auger, I have provided the following arrangements; A hydraulic shock absorber 46 is carried by the packer frame, and has a yoke 47 which embraces the shaft and surrounding parts, as shown in Figure 3. A short tubular section 48, surrounds the tubular extension 42, and this tubular section 48 telescopes onto a guide section 49 carried by the packer frame. The yoke 47 engages a shoulder of the section 48 so that the downward movement of said section 48 is communicated to the hydraulic shock absorber. There is provided a flange 50 on the section 48, to receive the yoke 47; and said flange 50 has a central section engaging the tube 42, and terminating at its upper end in another flange 51. The upper end of the tubular extension 42 has the flange 53 above the flange 51, and if desired a rubber or other suitable pad 54 may be provided on the flange 51 to take the initial shock of the downward movement of the parts. It will be noted that with this arrangement there is provided a very direct and effective transfer of the impact of descent to the shock absorber.

In the arrangement of Figures 4, 5, 6 and 7, I have provided a motor 55, having the long stator 56 wherein there works the rotor 57, and this rotor is direct coupled to the shaft 29 by the coupling 58. The length of the stator 56 is such in comparison to the rotor 57, that the necessary full amount of vertical movement of the rotor and shaft may be effected while maintaining magnetic driving connection between the stator and rotor. The motor is provided with the upper and lower bearings 59 and 60, whereby the rotor shaft is carried, and these serve to maintain alignment of the motor shaft up to the position of the coupling 58. As the shafts and auger, together with the rotor rise during the packing operation, the rotor shaft may project above the bearing 59.

In the arrangement of Figures 4, 5, 6 and 7, I have shown the platform trip arrangement, as including the bell crank 61 located between the motor and the upper end of the packer frame, the link 62 reaching therefrom down to the platform 25; and the coupling 58, or other suitable part carried by the rising shaft, may be used to trip the bell crank at the upper limit of movement.

The motor 55 of this arrangement may be carried by the brackets 63 on the top of the packer frame, as shown.

In the arrangement of Figures 11, 12 and 13, I have shown the driving motor 64 as being provided with the long stator 65, and with the vertically movable rotor 66, similar to the arrangement of Figures 4, 5, 6 and 7; so that the auger shaft 67 moves up and down with such rotor. In the present case I have shown an electromagnetic damper arrangement for damping the descent of the rotor, shaft, and auger. For this purpose there is provided a downward extension 68 on the lower end of the rotor, said extension being of the same size or diameter as the rotor; and this extension rises and falls with the rotor. There is provided a stationary, powerful magnet in the lower portion of the motor housing, including the central circular polar portion 69 surrounding the shaft 67, and the outer circular polar portion 70. There is provided a series of solenoids 71 surrounding neck portions joining the lower ends of the polar portions 69 and 70, so that, when these solenoids are energized a powerful flux is passed through the magnetic field, and across the gap between the polar portions 69 and 70.

The extension 68 is made of suitable material, either magnetic or non-magnetic (but preferably of soft iron), and there is embedded in this extension a series of circular bars or wires 72 of good conducting material, such as copper. These

bars or wires 72 establish closed electric circuits lying transversely of the direction of falling movement of the rotor at the conclusion of the descent thereof; but it will be noted that the rotation of the rotor does not cause these rings to cut across any portion of the field flux, so that such regular rotation does not induce any electro-motive force in these rings. Nevertheless, the falling movement causes these rings to cut across the powerful flux, thereby inducing powerful currents in the rings, and immediately setting up therein a powerful reaction tending to dampen the fall. It may also be noted that there will be generated in the material of the extension 68 a unidirectional electro-motive force (in the nature of a unipolar generator), but since the upper and lower ends of this extension 68 are not electrically connected together there will be no flow of current, and no reaction.

It is also noted that the damping effect of this arrangement depends on the rate of movement axially with respect to the magnetic field. During the falling movement this rate is large enough to establish a very large reaction, but during the rising movement of the auger, shaft, and rotor during the filling and packing operation, the rising movement is relatively slow, so that there is induced only a small current in the circular bars or wires 72, and only a very small reaction occurs. This damping arrangement may be built directly into the motor housing, as shown, or outside thereof, as desired.

In order to dampen the fall of the rotor and shaft and connected parts in case of failure or shutting off of the current supply, any suitable supplemental damping device, such as a hydraulic shock absorber, may be also provided.

Referring to Figures 8, 9 and 10, I have therein shown a modified arrangement of platform release. In this case the bell-crank 73 is located along-side of the upper portion of the upper tubular section, 22, the link 74 reaching downwardly therefrom to the platform 25. A slide 75 is located close to the bell-crank, the same having a pin 76 which works in suitable portions of the frame of the packer so as to guide the slide in its vertical movements. This pin carries the adjustment wing-nut 77, whereby the lowered position of the slide may be adjusted. This slide also has a lateral extension 78 wherein is carried the trip pin 79, which trip pin is adapted to engage the lower face of the bell-crank arm. By adjusting this pin the instant of disengagement may be adjusted with respect to the vertical position of the slide.

The slide also carries a yoke 80 which reaches to the interior of the upper tubular section 22, through a slot 81; and the inner end of this yoke embraces the shaft 29. There is provided on the shaft a collar or abutment 82 which is adapted to engage the yoke 80 at the completion of the upward movement of the auger and shaft. Preferably this collar is one having a part fixed to the shaft, and another part related thereto through the medium of a ball bearing, since the shaft is rotating rapidly while the yoke is non-rotating at the instant of engagement of these parts together. In the case of such a ball bearing arrangement, a suitable dust-proof shield should enclose the same.

It may be noted that in the case of such an arrangement as that shown in Figures 4, 5, 6 and 7, the height of the entire structure might be reduced by making use of such a platform trip arrangement as shown in Figures 8, 9 and 10, placing the coupling or flange 58 inside of the tubular sections as shown in Figures 8, 9 and 10, and using the platform release of said figures. It is deemed unnecessary to make specific illustration of this arrangement, as it will be readily evident from the arrangement of the other figures above referred to.

While I have herein shown and described only certain embodiments of the features of my present invention, still I do not intend to limit myself thereto, except as I may do so in the claims to follow.

I claim:

1. In a machine of the class described, the combination with a suitable bag support having an opening for introduction of material to be filled and packed, a vertically extending vertically movable shaft in said bag support, an auger on the lower end of the shaft, and a drop platform beneath the bag support in position to receive and support the bottom of the bag, of means to drive said shaft while permitting vertical movements of the shaft during the filling and packing operations, said drive means comprising an electric rotor direct coupled to the upper end of the shaft and vertically movable with the shaft, together with an electric stator in position to react with the rotor at all times during the vertical movements of the rotor aforesaid, whereby the shaft is driven continuously during vertical movements of the shaft, and without splined or like connections between the rotor and shaft, substantially as described.

2. In a machine of the class described, the combination with a suitable bag support having an opening for introduction of material to be filled and packed, a vertically extending vertically movable shaft in said bag support, and an auger on the lower end of the shaft, of means to drive said shaft while permitting vertical movements of the shaft during the filling and packing operations, said drive means comprising an electric rotor direct coupled to the upper end of the shaft and vertically movable with the shaft, together with an electric stator in position to react with the rotor at all times dfuring the vertical movements of the rotor aforesaid, whereby the shaft is driven continuously during vertical movements of the shaft, and without splined or like connections between the rotor and shaft, substantially as described.

3. In a machine of the class described, the combination with a suitable bag support having an opening for the introduction of material to be filled and packed, a vertically extending vertically movable shaft in said bag support, and an auger on the lower end of the shaft, of means to drive said shaft while permitting vertical movements of the shaft during the filling and packing operations, said drive means comprising an electric rotor direct coupled to the upper end of the shaft and a suitable stator in reactive relation to the rotor, at least the rotor being vertically movable with vertical movements of the shaft, whereby the shaft is driven continuously during vertical movements of the shaft, and without splined or like connections between the rotor and shaft, substantially as described.

4. In a machine of the class described, the combination with a suitable bag support having an opening for the introduction of material to be filled and packed, a vertically extending vertically movable shaft in said bag support, and an auger on the lower end of the shaft, of means to drive said shaft while permitting vertical movements

of the shaft during the filling and packing operations, said drive means comprising an electric motor, a direct coupled connection between the motor shaft and the auger shaft, suitable means to guide the motor vertically in alignment with the shaft of the auger, together with means to deliver current to the motor in all positions of vertical movement thereof, substantially as described.

5. In a machine of the class described, the combination with a suitable bag support having an opening for introduction of material to be filled and packed, a vertically extending vertically movable shaft in said bag support, and an auger on the lower end of the shaft, of means to drive said shaft while permitting vertical movements of the shaft during the filling and packing operations, said drive means comprising an electric motor, means to direct couple the motor shaft to the auger shaft, means for guiding the motor while permitting vertical movement thereof bodily in alignment with the auger shaft, and means to dampen falling movements of the motor and the auger shaft and auger, substantially as described.

6. In a machine of the class described, the combination with a suitable bag support having an opening for introduction of material to be filled and packed, a vertically extending vertically movable shaft in said bag support, and an auger on the lower end of the shaft, of means to drive said shaft comprising an electric motor located above the shaft and having its rotor shaft in alignment with the auger shaft, a direct coupled connection between the motor rotor shaft and the auger shaft, a tubular extension surrounding the auger shaft and having its upper end connected to the motor housing and its lower end in proximity to the auger, a suitable bearing between said lower end of the tubular extension and the auger shaft, and means to guide the motor in vertical alignment with the auger shaft, while permitting vertical movements of the motor bodily, substantially as described.

7. In a machine of the class described, the combination with a suitable bag support having an opening for introduction of material to be filled and packed, a vertically extending vertically movable shaft in said bag support, and an auger on the lower end of the shaft, of means to drive said shaft comprising an electric motor located above the shaft and having a rotor and a stator element, the stator element being of length substantially as great as the length of the rotor plus the vertical movement of the shaft and auger, a direct coupled connection between the rotor and the auger shaft, and suitable bearings for the rotor at the upper and lower ends of the motor element, substantially as described.

8. In a machine of the class described, the combination with a suitable bag support having an opening for introduction of material to be filled and packed, a vertically extending vertically movable shaft in said bag support, and an auger on the lower end of the shaft, of means to drive said shaft comprising an electric rotor above and in alignment with and direct coupled to the auger shaft, means for journalling the rotor in alignment with the auger shaft while permitting vertical movement of the rotor and auger shaft, and a stationary stator in reactive position with respect to the rotor and having a reacting element of length substantially as great as the reacting length of the rotor plus the vertical movement of the auger shaft, whereby the auger shaft is continuously driven in all positions of its vertical movement and with a minimum number of moving parts, substantially as described.

9. In a machine of the class described, the combination with a suitable bag support having an opening for introduction of material to be filled and packed, a vertically extending vertically movable shaft in said bag support, and an auger on the lower end of the shaft, of means to drive said shaft in all positions of its vertical movement and to dampen its descent, comprising an electric rotor mounted above and in vertical alignment with the auger shaft, a direct coupled connection between the rotor and the shaft, the rotor being vertically movable with the shaft and auger, a stator in reactive relationship with respect to the rotor, a downward extension on the lower portion of the rotor, including a horizontally extending closed electric circuit, and a stationary magnet element beneath the lowered position of the rotor, and having polar projections in position to receive the downward extension aforesaid between them, whereby the downward movement of the rotor and extension serves to generate an electric current in said electric circuit, to thereby react with the magnet element with dampening reaction, substantially as described.

10. In a machine of the class described, the combination with a suitable bag support having an opening for introduction of material to be filled and packed, a vertically extending vertically movable shaft in said bag support, and an auger on the lower end of the shaft, of means to drive said shaft in all positions of its vertical movement and to dampen its descent, comprising an electric rotor direct coupled to the shaft, a stator element in position to react with the rotor in all positions of vertical movement of the rotor, a downward extension on the rotor and including an electric circuit extending transversely with respect to the axis of the rotor, and a stationary magnet element located beneath the rotor and having polar portions in position to receive the downward extension of the rotor between them during the last portion of the descent of the rotor, whereby there are set up currents in the circuit aforesaid to react with the magnet with dampening effect on further descent of the rotor and connected parts, substantially as described.

11. In a machine of the class described, the combination with a suitable bag support having an opening for introduction of material to be filled and packed, a vertically extending vertically movable shaft in said bag support, and an auger on the lower end of the shaft, of means to drive said shaft in all positions of its vertical movement and to dampen its descent, comprising an electric rotor direct coupled to the shaft, a stator element in position to react with the rotor in all positions of vertical movement of the rotor, a reactor element connected to the rotor, and a magnet element in position to receive the reactor element into its magnetic field during the last portion of descent of the rotor and shaft and auger, whereby the descent of the rotor and shaft and auger is dampened during the last portion thereof, substantially as described.

12. In a machine of the class described, the combination with a suitable bag support having an opening for introduction of material to be filled and packed, a vertically extending vertically movable shaft in said bag support, and an auger on the lower end of the shaft, of means to drive the shaft in all its vertical positions, a platform

beneath the lower end of the bag support, for support of the lower end of the bag, means to pivotally mount the platform, permitting lowering of the platform into substantially vertical position, and means to retain the platform against lowering movement, and to release the platform at the conclusion of an upward movement of the shaft and auger, comprising a slotted opening in the upper portion of the bag support, a yoke element extending through said slotted opening to the interior of the bag support and into position around the shaft, means to guide said yoke element in its vertical movements, and toggle means in connection with the yoke element and the platform, releasable by the movement of the yoke element at the conclusion of the upward movement of the shaft and auger, substantially as described.

13. In a machine of the class described, the combination with a suitable bag support having an opening for introduction of material to be filled and packed, a vertically extending vertically movable shaft in said bag support, and an auger on the lower end of the shaft, of means to drive the shaft in all its vertical positions, a platform beneath the lower end of the bag support, for support of the lower end of a bag, means to releasibly mount the platform to permit release thereof for discharge of a filled and packed bag, and means to retain the platform against releasing movement, and to permit release of the platform at the conclusion of an upward movement of the shaft and auger, comprising a collar element of the shaft within the bag support, a yoke element embracing the shaft and reaching outwardly through the bag support and capable of releasing movement under influence of the collar at the upper limit of travel of the shaft and auger, together with means in conjunction with the yoke and the platform retaining means effectively to ensure release of the platform upon engagement of the collar with the yoke, substantially as described.

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