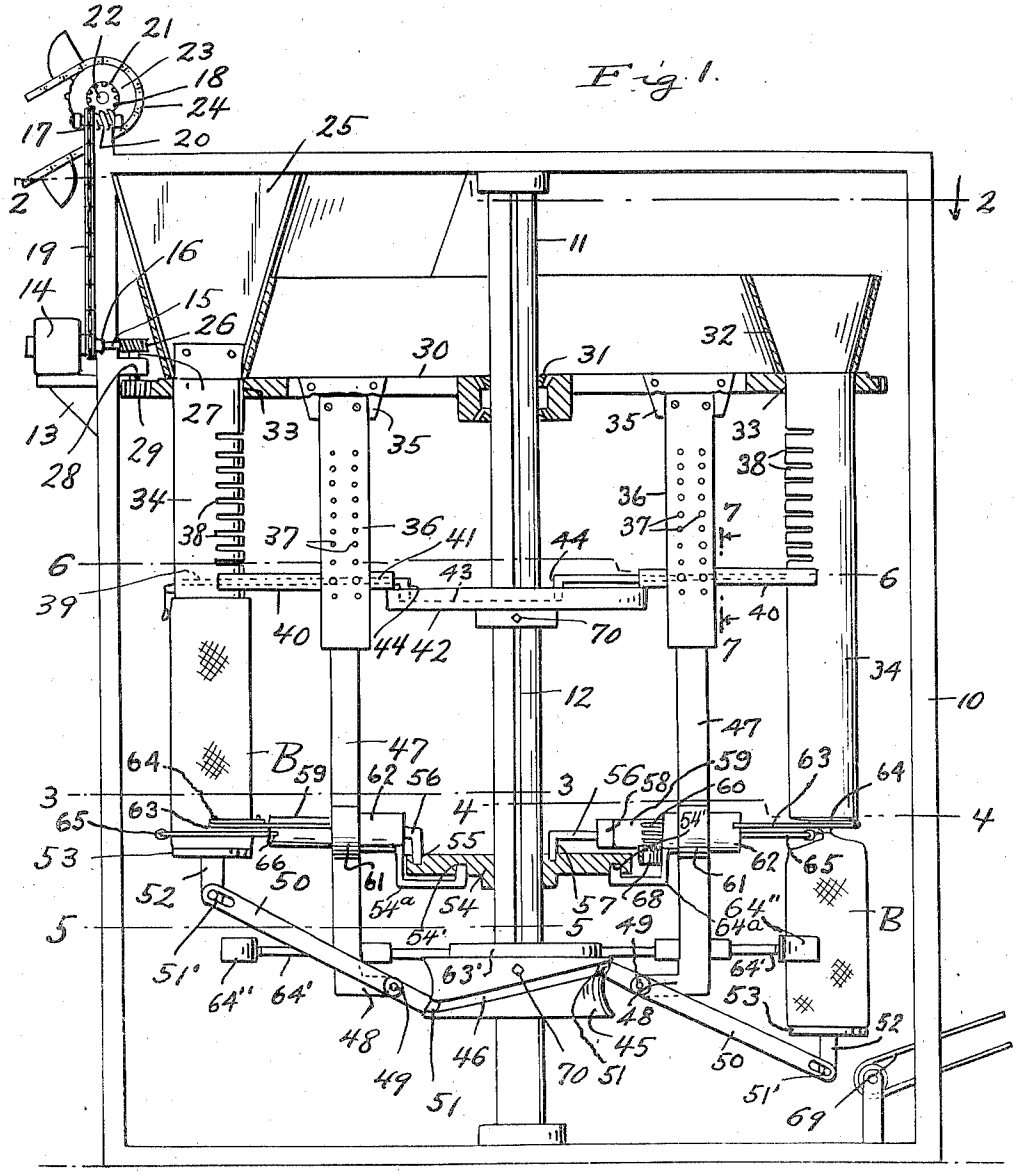
March 25, 1941. M. KUTIL 2,235,932

COAL BAGGING MACHINE

Filed June 7, 1939 4 Sheets-Sheet 1

Fig. 1.



Inventor

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By L. B. James

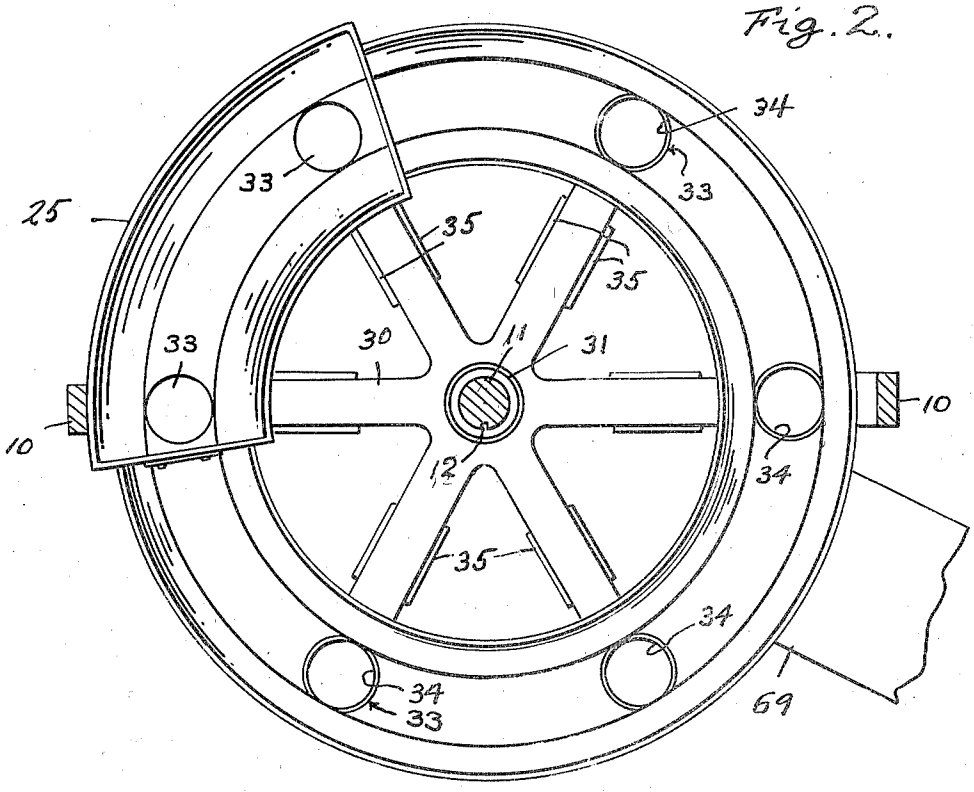
Attorney

March 25, 1941. M. KUTIL 2,235,932

COAL BAGGING MACHINE

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Fig. 2.



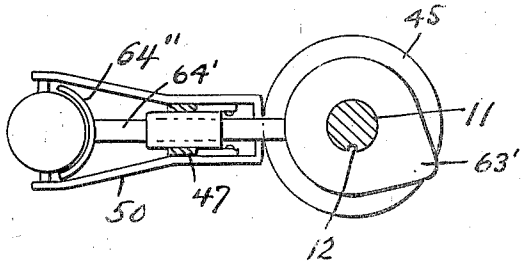


Fig. 5.

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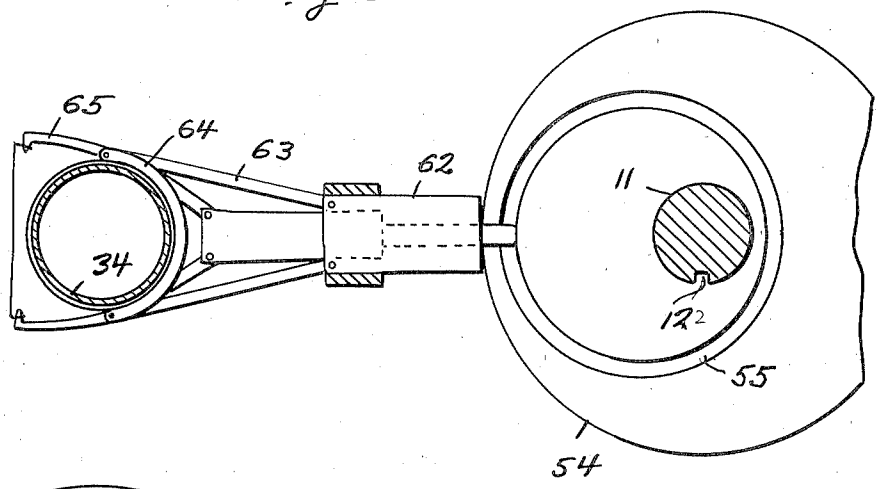
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March 25, 1941. M. KUTIL 2,235,932

COAL BAGGING MACHINE

Filed June 7, 1939 4 Sheets-Sheet 3

Fig. 3.



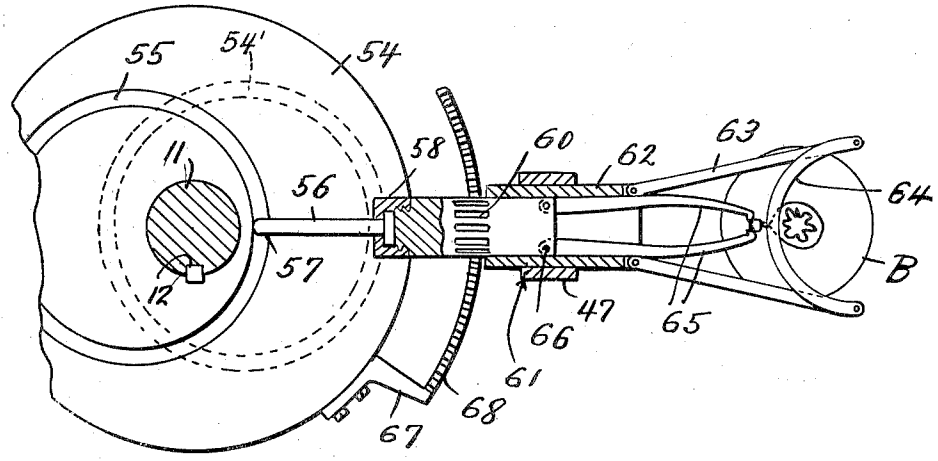


Fig. 4.

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COAL BAGGING MACHINE

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Fig. 6

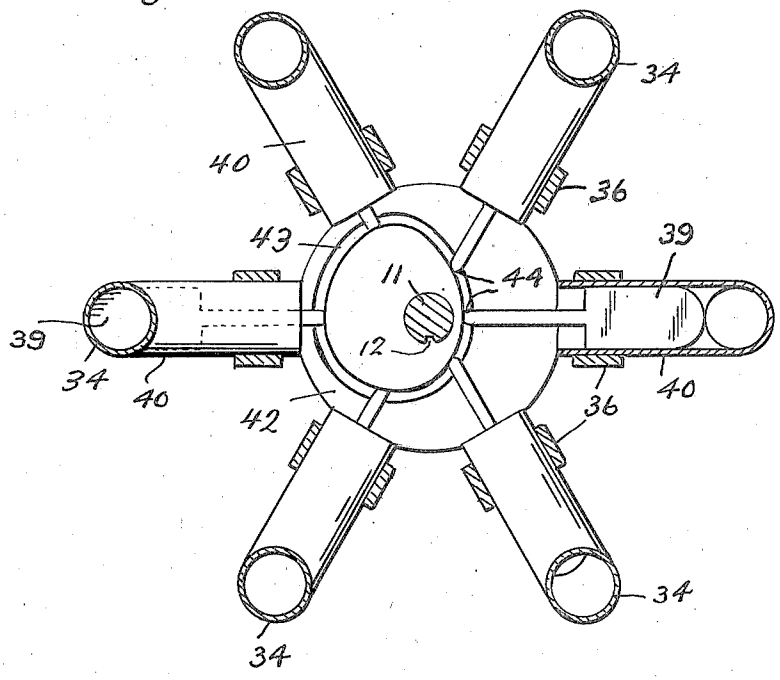




Fig. 8.

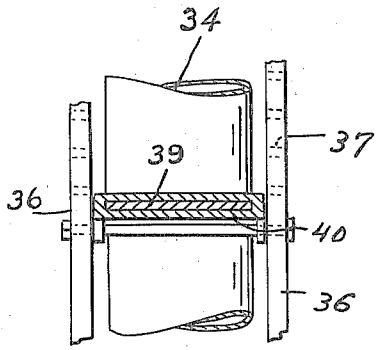


Fig. 7.

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Patented Mar. 25, 1941

2,235,932

UNITED STATES PATENT OFFICE

2,235,932

COAL BAGGING MACHINE

Michael Kutil, Sheboygan, Wis., assignor, by direct and mesne assignments, to Kutil Engineering Company, a corporation of Wisconsin

Application June 7, 1939, Serial No. 277,899

5 Claims. (Cl. 226—61)

This invention relates to a bagging machine for coal and other lump and granular material.

More particularly the invention relates to a continuously operating bag filler and deliverer.

One important object of the invention is to provide a novel machine of this character whereby measured quantities of material may be delivered to successively positioned bags, the quantities of delivered material being equal throughout the operation of the machine by novel means included therein.

A second important object of the invention is to provide means whereby the filling operation may be adjusted to deliver specific quantities of the material.

A third important object of the invention is to provide novel means for tying the mouths of the bags as they are positioned for delivery from the machine.

With the above and other objects in view the invention consists in general of certain novel details of construction and combinations of parts hereinafter fully described, illustrated in the accompanying drawings, and particularly set forth in the claims.

In the accompanying drawings, like characters of reference indicate like parts in the several views, and—

Figure 1 is a vertical median section through the entire machine.

Figure 2 is a section on the line 2—2 of Figure 1.

Figure 3 is an enlarged detail section on the line 3—3 of Figure 1.

Figure 4 is an enlarged detail section on the line 4—4 of Figure 1.

Figure 5 is a detail section on the line 5—5 of Figure 1.

Figure 6 is a detail section on the line 6—6 of Figure 1.

Figure 7 is an enlarged detail section on the line 7—7 of Figure 1.

Figure 8 is a detail view showing the fastening wire used in connection with this invention.

As best disclosed in Figure 1 the device is provided with a frame or casing 10 through the middle of which extends a vertical shaft 11 having a splineway 12 extending longitudinally thereof. At one side of the frame or casing 10 is fixed a bracket 13 carrying a motor 14. This motor is provided with a shaft 15 whereon is fixed a sprocket wheel 16. Supported on the frame, at the upper part thereof, is a shaft 17 whereon is a sprocket wheel 18 driven from the sprocket gear 16 by a chain 19. On this shaft is a worm 20 which meshes with a worm wheel 21 fixed on a shaft 22 which carries a sprocket wheel 23 around which passes the upper end of a bucket conveyor 24 delivering material to the machine from a suitable bin or the like.

Carried by the upper end of the frame is an arcuate hopper 25. On the shaft 15 is a worm 26 which connects with a suitable worm wheel 27 fixed on a shaft 28. On the lower end of this shaft is mounted a pinion 29 which meshes with a gear disk 30 rotatably supported about the shaft 11 by bearings 31. On this gear disk is mounted a circular hopper 32 which is constructed to slide around the lower part of the hopper 25. The disk 30 is provided with a plurality of openings 33 in which are held tubular members 34 constituting the measuring means. Obviously, these members 34 are carried around with the disk 30 which latter revolves on the shaft 11. On the disk 30 is also provided a series of sockets 35 carrying tubular members 36 through which project pairs of pins 37 constituting guide means. Opposite each pair of pins each tubular member 34 is slotted as at 38 to allow a valve 39 to slide in and out of the respective member 34. Each of these valves is carried by an arm 40 having a slot 41 therein through which the pins 37 pass so that the arm is guided thereby.

On the shaft 11 is mounted a face cam 42 the construction of which is shown best in Figure 6. This face cam has a cam groove 43 and each of the members 40 is provided with a downwardly extending end or lug 44 which fits in the groove 43.

Adjacent the lower end of shaft 11 is fixed, on the shaft, a cam member 45 having a peripheral cam groove 46. Extending downwardly from the members 36 are supports 47 having inwardly offset portions 48. Pivoted as at 49 to each of these inwardly offset portions is a lever 50 one end of which engages, as at 51, in the cam groove 46. The other end of each lever 50 extends outwardly and has a pin and slot connection 51' with the stem 52 of a bag platform or support 53. Each of these supports 53 is alined below and concentric to a member 34.

Also the shaft 11 carries a face cam 54 having on its upper face a cam groove 55. Radially disposed to each of these cam grooves is an arm 56 having a downwardly extending end 57 engaged in said cam groove 55. On the outer end of each arm 56 is carried a socket 58 wherein is revolvably mounted a twister body 59 having gear teeth 60 longitudinally disposed thereon. Each member 47 is provided with a bearing opening 61 wherein

is disposed a sleeve 62 in which the member 59 slides. From the outer ends of the members 62 project pairs of arms 63 carrying a bag gripper or support 64. Also a pair of arms 65 constituting twister arms extend outwardly by pivotal connections 66 from the member 59. On the cam member 54 is mounted a bracket which carries an arcuate rack 68 which, under certain conditions operates to rotate the member 59 as will be presently described.

At one point in the frame 10 there is provided a conveyor 69 for taking away the bags B which are held on the platform 53.

In the operation of the device, the motor being at work the conveyor 24 carries material up from the ordinary bin and drops it into the hopper 25. Now, as the various members 34 pass beneath the hopper these members 34 are filled. The attendant slips over the lower end of each member 34 a bag B. At this time the valve 39 is closed by the action of the cam 42. The disk 30 carries this bag-provided member around, it being understood that at the time of passage of the member 34 beneath the hopper 25 the member 34 will be filled with the material to be bagged. As the device is rotated by the motor 14 the valve 39 will be withdrawn toward the center with the consequence that the contents of the member 34 will drop into the bag. At the same time the cam groove 46 will act in conjunction with the opening of the valve 39 to drop the bag as shown at the right-hand of Figure 1. As the bag drops the member 64 will support the upper end portion thereof and, together with the yoke 64'', prevent the bag from tilting inwardly out of an upright position. Now as the cam 54 holds the rack 68 stationary the rotation of the members 56 will bring the gear teeth 60 into engagement with the rack 68. This occurs after the bag has been dropped and the attendant has taken a wire, such as shown in 68, and placed it around the neck of the bag with its looped end in engagement with the forward ends of the member 65. When the teeth 60 mesh with the rack 68 this causes rotation of the member 59 and consequently twists the wire ends and draws the wire loop tightly around the neck of the bag. During twisting of the wire about the neck of the bag the sleeve 62 is shifted outwardly by the engagement of its arm 54' in the groove 54a and the arm or yoke 64 will serve to push the upper end of the bag together under the member 34 to close and brace the upper end of the bag as the wire is twisted together about the closed upper end or neck of the bag.

Obviously, the cam members 42 and 45 may be adjusted vertically by means of the set screws 70 so that the quantity of material dumped from the members 34 can be regulated.

After the bags have been tied and lowered over the conveyor 69 they are pushed off their supports 53 by yokes 64'' carried by arms 64 slidably supported by the supports 47 as a cam 63 keyed to the shaft 11 reaches its outermost position toward the conveyor 69.

There has thus been provided a simple and efficient device of the kind described and for the purpose specified.

It is obvious that minor changes may be made in the form and construction of this invention without departing from the material principles thereof. It is not, therefore, desired to confine the invention to the exact form herein described but it is desired to include all forms which may come within the scope of the appended claims.

Having thus described the invention, what is claimed as new is:

1. In a device of the kind described, a frame, a vertical shaft supported in said frame, a disk mounted to rotate on said shaft, a hopper extending over an arcuate portion of said disk, an annular hopper carried by the disk and slidably engaging the first hopper, a series of measuring tubes depending from said disk and opening upwardly into the second hopper, bag supports each vertically alined below a respective measuring tube, means fixed on said shaft for alternately elevating and lowering said bag supports, said last means holding the bag supports elevated upon the tubes being respectively located beneath the first hopper, means to effect rotation of the bag supports around said shaft, a cam member mounted about said shaft, means actuated from the cam member for operating against an upper portion of a bag and closing the bag, means actuated from the cam member for twisting a binding wire about the closed upper end of the bag, and means acting in timed relation to the rotation of the bag supports for pushing said bags from said supports after tying after upper ends of the bags have been closed and secured.

2. In a bag filling and tying machine, a vertical shaft, a series of bag supports spaced around said shaft, means to cause rotation of the bag supports around said shaft, a series of frame members carrying said supports and rotating therewith, a cam member fixed to said shaft and constituting a flat disk provided with cam grooves in its upper and lower faces, sleeves each slidable in a frame member and carrying a bag engaging yoke, arms each fixed to a sleeve and engaging in the lower cam groove, a twister body rotatably and slidably mounted in each sleeve, a pair of twister arms carried by each body and projecting outwardly of the respective sleeve, an arm swivelled to the inner end of each twister body and engaging in the upper cam groove, and means to effect rotation of the twister body at a predetermined arc of the rotation of the bag carriers.

3. In a bag filling and tying machine, a vertical shaft, a series of bag supports spaced around said shaft, means to cause rotation of the bag supports around said shaft, a series of frame members carrying said supports and rotating therewith, a cam member fixed to said shaft and constituting a flat disk provided with cam grooves in its upper and lower faces, sleeves each slidable in a frame member and carrying a yoke for engaging the upper portion of a bag, arms each fixed to a sleeve and engaging in the lower cam groove, a twister body rotatably and slidably mounted in each sleeve, a pair of twister arms carried by the outer end of each twister body and projecting outwardly from the respective sleeve, an arm swivelled to the inner end of each twister body and engaging in the upper cam groove, an arcuate rack fixed in the path of said twister body, and teeth on the twister body engaging said rack to rotate the body.

4. In a bag filling and tying machine, a vertical shaft, a series of bag supports spaced around said shaft, means to cause rotation of the bag supports around said shaft, a series of frame members carrying said supports and rotating therewith, a cam member fixed to said shaft and constituting a flat disk provided with cam grooves in its upper and lower faces, sleeves each slidable in a frame member and carrying a yoke

for engaging the upper portion of a bag laterally thereof, an arm extending from the inner end of each sleeve and engaging in the lower cam groove, a twister body rotatably and slidably mounted through each sleeve, a pair of twister arms carried by each twister body and projecting outwardly of the respective sleeve, an arm swivelled to each twister body and extending from the inner end thereof engaging in the upper cam groove, a second cam member fixed to the shaft below the first cam member, and pusher means actuated by the second cam member and engageable with a bag for pushing the lower part off its support after a securing wire has been twisted about the upper portion of the bag.

5. In a bag filling and tying machine, a vertical shaft, a series of bag supports spaced around said shaft, means to cause rotation of the bag supports around said shaft, a series of frame members carrying said supports and rotating therewith, a cam member fixed to said shaft and constituting a flat disk provided with cam grooves in its upper and lower faces, sleeves each slidable in a frame member and carrying a yoke engaging the upper portion of a bag and applying lateral pressure thereto to close the upper end of the bag, arms each fixed to a sleeve and extending from the inner end thereof and engaging in the lower cam groove, a twister body rotatably and slidably mounted in each sleeve, a pair of twister arms carried by each body and projecting outwardly of the respective sleeve for carrying a securing wire between their outer ends, an arm swivelled to each twister body and engaging in the upper cam groove, an arcuate rack fixed in the path of said twister body, teeth on the twister body engaging said rack to rotate the twister body and cause the wire to be twisted tightly about the upper end of the bag and hold the bag closed, a second cam member fixed to the shaft below the first cam member, and pusher means actuated by the second cam member and engageable with a bag laterally thereof for pushing the lower part of the bag off its support.

MICHAEL KUTIL.