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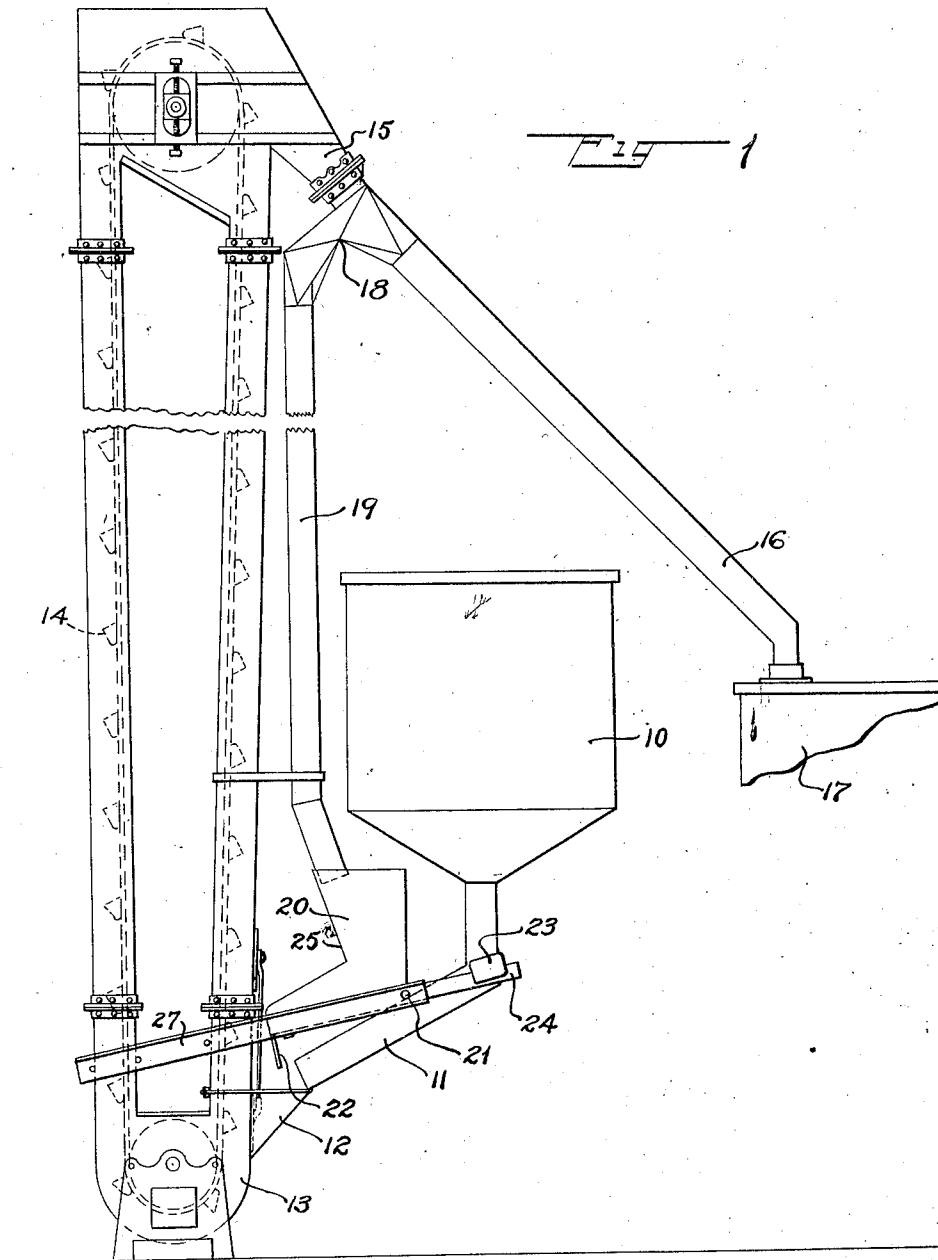
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ELEVATOR OVERFLOW CONTROL

Filed Dec. 31, 1925

2 Sheets-Sheet 1



BY

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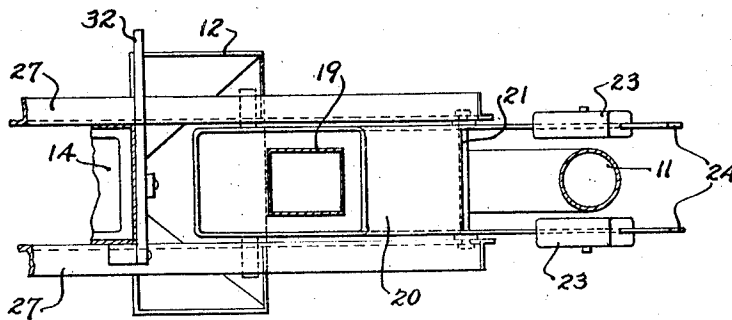
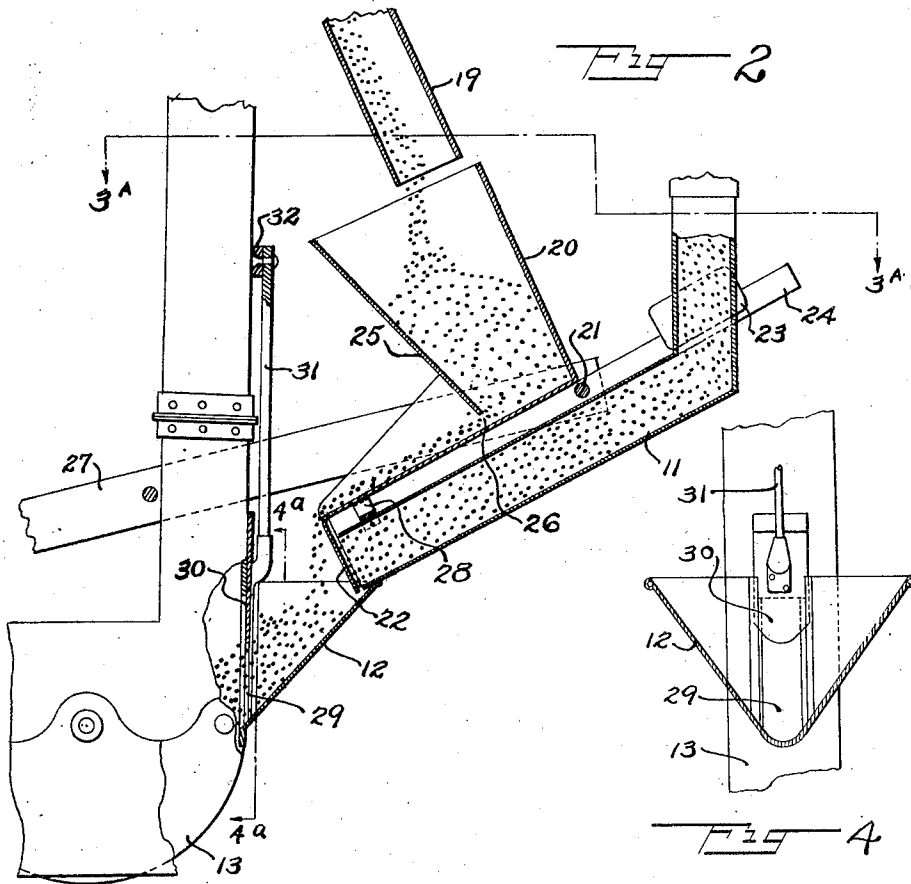


Fig 3

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ELEVATOR-OVERFLOW CONTROL.

Application filed December 31, 1925. Serial No. 78,536.

This invention relates to equipment for handling materials such as grains, coffee, sugar and the like, wherein material is elevated and discharged to a roaster, grinder or other machine having a determined capacity, and wherein it is desired to cut off the supply of material to the machine in case of clogging, breakage or the like without causing it to be jammed or clogged in the equipment, owing to failure to stop the elevating mechanism. In experience with equipments handling large volumes of materials, it is found desirable to have the elevator operate continuously, but unless means is provided for diverting the material from the intake of the grinder, roaster or the like in case of stoppage or clogging, an objectionable accumulation of material masses at the top of the elevator, spills down the legs and causes overloading and possibly breakage, and in any event is objectionable because of time required to dislodge the accumulation and resume operation.

According to this invention, means is provided for preventing accumulation of materials on the intake side of the roaster, grinder or the like by discharging it into a by-pass which diverts the material before it can pack, and this by-pass preferably discharges into the supply side of the elevator. The particular feature of the invention resides in providing an automatic gate for the supply which is normally opened but which is automatically closed upon accumulation of material in the by-pass, and which still leaves the by-pass open to return the excess material to the supply. Thereby, the elevator can operate continuously without any danger of overloading, and as soon as the production of the roaster, grinder or the like is resumed, material which has been discharging through the by-pass is fed through the machine and thereby causes the gate to automatically open and permit resumption of feed to the elevator for the supply.

Referring to the drawing,

Fig. 1 shows the side view of this invention,

Fig. 2 is a detail of the auxiliary overflow hopper and its connections,

Fig. 3 is a section on the line 3^a-3^a of Fig. 2,

Fig. 4 is a section on the line 4^a-4^a of Fig. 2.

The material to be raised is supplied to

the hopper 10, from which it moves by gravity through the passageway 11 to the receiver 12 on the elevator casing 13. The material flows in and fills the lower portion of the casing 13 and is then gathered up by the buckets 14 on the conveyor or elevator and carried to some floor above where it is emptied into the outlet pipe 15 connected with a pipe 16 or receptacle to receive the material and leading into some treating apparatus 17, such as one or more grinders, roasters, bagging machines or other apparatus. In the event that one or more of the treating machines 17 is stopped or slowed down without correspondingly stopping or slowing the elevator, the material being fed into the pipe 15 tends to back up until reaching the crest 18 when it overflows down the by-pass pipe or second passage 19 to the auxiliary hopper 20 pivoted at 21. The overflow pipe 19 is made large enough to at all times exceed the elevator capacity.

The feed elevator shown is of the continuously driven bucket type, but any other type of feed can be used wherein it is desired to control the supply according to the consumption, without cutting off the driving power of the feeding device.

When there is no overflow of material passing through the pipe 19, the auxiliary hopper 20 pivoted at 21 on arms 24 normally is tilted up (see Fig. 1) by weights 23. On the entry of enough material to overbalance weights 23 the hopper 20 tilts as shown in Fig. 2. Moving with hopper 20 is a gate 22 for closing the supply passage 11 to the main supply hopper 10 when hopper 20 is filled with material. After the overflow has subsided due to increased consumption of the machines, and the hopper 20 substantially emptied, the weights 23 move the hopper upward to the position shown in Fig. 1, thus raising the gate 22 and opening the passage 11 between the supply hopper 10 and elevator. The hopper is preferably of the general shape illustrated, one side being substantially vertical when no overflow is passing, and the other side 25 being inclined as shown. The outlet 26 at the bottom of the hopper 20 as shown in Fig. 2; is large enough to allow the overflow material to pass through at least as rapidly as the elevator can feed and drop into supply receiver 12. From the drawing it will be seen that movement

of the hopper 20 to close the gate 22 lowers the outlet 26, giving greater inclination to the bottom of the hopper 20 and facilitating the flow of material through said outlet. This also facilitates the flow capacity of the overflow passageway to an amount at least equal to the normal elevator capacity. The pivot 21 for the hopper is mounted between the bars 27 secured to the elevator framework. A laterally extending bar 28 is located beneath the hopper to engage the passage 11 to serve as a stop and prevent the hopper tilting more than is desired in one direction, and this bar 28 engages side frame members 27 to serve as a stop in limiting movement of the hopper in the opposite direction. The opening 29 between the receiver 12 and the elevator casing 13 is controlled by a sliding gate 30 operated by the rod 31 connected to the laterally extending bar 32 and raised and lowered as desired to control the supply of material in the elevator casing.

Among the advantages of this invention may be mentioned the overcoming of overflow losses or the danger of clogging any of the distribution pipes through material being supplied faster than it is removed. With this invention, it is not necessary to stop or slow down the elevator regardless of the duration of stoppage or period of reduced consumption in one or more of the treating machines. Not only is the overflow not jammed up, but it is fed back to be carried over again by the elevator and simultaneously the main supply passage 11 is closed to prevent an excess of material being fed to the elevator. On cessation of the overflow the weights 23 automatically tilt the auxiliary hopper 20 to its former position and lift the gate 22 to open the passageway 11 for further removal of material from the hopper 10.

I claim:

1. The combination with an elevator, of a passageway connected to the lower portion thereof, a gate for said passageway, a receptacle supplied by said elevator, an overflow passageway from said receptacle by-passing the elevator, and automatic means responsive to overflow of material for actuating said gate and permitting continued overflow through the elevator by-pass of at least normal elevator capacity.

2. The combination with an elevator, of a passageway connected to the lower portion thereof, a gate for said passageway, a receptacle supplied by said elevator, an overflow passageway from said receptacle by-passing the elevator, and automatic means responsive to overflow of material for actuating said gate and for facilitating the flow of material through said overflow passageway to an amount at least equal to the normal elevator capacity.

3. The combination with an elevator, of a passageway connected to the lower portion thereof, a gate controlling said passageway, a receptacle supplied by said elevator, an overflow passageway from said receptacle by-passing said elevator, and means in said passageway responsive to movement of material therethrough for actuating said gate, said last-mentioned means being movable to a position permitting continued movement through said overflow passageway of at least an amount of material equal to the normal elevator capacity.

4. The combination with an elevator, of a passageway connected to the lower portion thereof, a gate in said passageway, a receptacle supplied by said elevator, an overflow passageway from said receptacle, a hopper in said passageway movable in response to material therein to facilitate the passage of material through said hopper, and means closing said gate in response to movement of the hopper.

5. The combination with an elevator, of a passageway connected to the lower portion thereof, a gate controlling said passageway, a receptacle supplied by the elevator, an overflow passageway from the receptacle, a hopper having an opening in its lower portion and tilting in response to the weight of material passing therethrough to lower said opening and facilitate the passage of material, and means closing said gate in response to tilting of said hopper.

6. The combination with an elevator, of a passageway connected to the lower portion thereof, a gate controlling said passageway, a receptacle supplied by said elevator, an overflow passageway from said receptacle by-passing the elevator, a tilting hopper in said overflow passageway, a portion of said overflow passageway supporting said gate from said hopper and means closing said gate in response to tilting of said hopper.

7. In feed control mechanism, a supply passage, a tilting hopper having a gate controlling said passage and being itself open for continued passage of materials, means controlling the position of said hopper and gate according to the accumulation of material therein, and means supplying material to said hopper.

8. In a feed control mechanism, a supply passage, means for supplying material thereto, normally inoperative means to cut off said passage, a second passage, means for supplying material thereto, a hopper to receive material supplied by said second passage, means whereby accumulation of material in said hopper actuates said cut off means, and moves said hopper to automatically discharge it, and means for returning said cut off means to normal and inoperative position upon discharge of said hopper.

9. In a feed control mechanism, a supply

passage, means for supplying material thereto, a normally open gate for closing said passage, a second passage, means for supplying material thereto, a hopper to receive material supplied by said second passage, means whereby accumulation of material in said hopper closes said gate and moves said hopper to automatically discharge it, and means opening said gate upon discharge of said hopper.

10. The combination with an elevator, of a passageway connected to the lower portion thereof, a gate for said passageway, a receptacle supplied by said elevator, an overflow passageway from said receptacle by-passing the elevator, automatic means responsive to overflow of material for closing said gate and permitting continued overflow, and means responsive to cessation of overflow for automatically opening said gate.

11. The combination with an elevator, of a passageway connected to the lower portion thereof, a gate for said passageway, a receptacle supplied by said elevator, an overflow

passageway from said receptacle by-passing the elevator, automatic means responsive to overflow of material for closing said gate and permitting continued overflow of an amount of material at least equal to the normal elevator capacity by-passing said elevator, and automatic means responsive to cessation of overflow for opening said gate.

12. The combination with an elevator, of a passageway connected to the lower portion thereof, a gate for said passageway, a receptacle supplied by said elevator, an overflow passageway from said receptacle by-passing the elevator, automatic means responsive to overflow of material for actuating said gate and facilitating the flow of material, and automatic means responsive to cessation of overflow for reducing the capacity of said overflow passageway and for actuating said gate.

Signed at New York in the county of New York and State of New York this 18 day of December A. D. 1925.

JOSEPH L. KOPF.