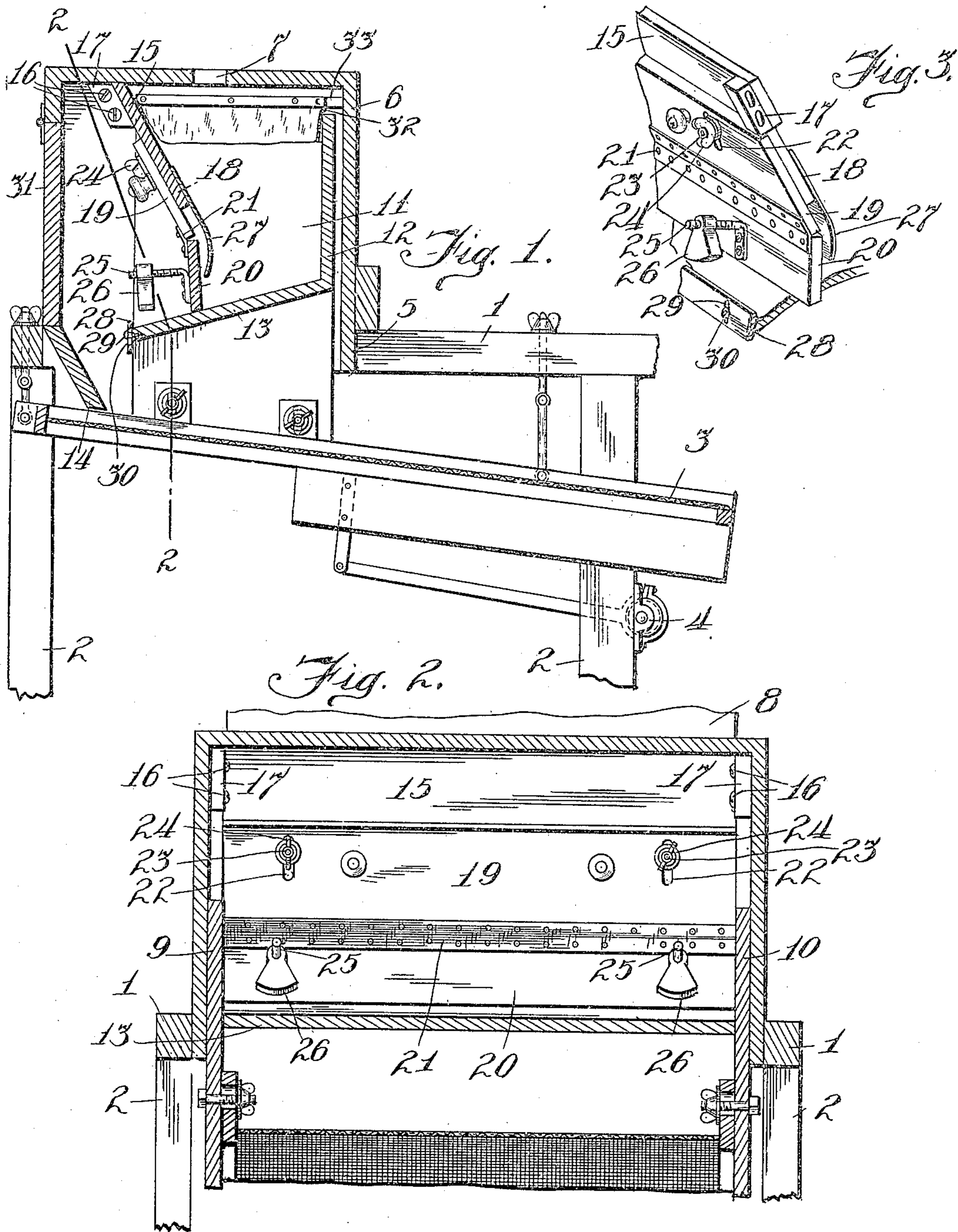


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FEED REGULATOR.
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UNITED STATES PATENT OFFICE.

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FEED-REGULATOR.

952,562.

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To all whom it may concern:

Be it known that I, MARK DURST, residing at Marcus, in the county of Cherokee and State of Iowa, have invented certain new and useful Improvements in Feed-Regulators, of which the following is a specification.

My invention relates to an attachment for grain treating machinery, its object being to provide a feed attachment which will cause improved and more efficient feeding of the grain or other material to the machine parts.

My invention is particularly applicable to such machines as roller mills, grain separators, middlings purifiers or cleaners, etc., where it is desirable that the grain or other material be fed regularly and uniformly in a noiseless manner. For example, in roller mills, it is desirable that the grain be fed in a regular and uniform stream to the grinding rolls, and in separating and cleaning machinery, it is desirable that the grain or other material be fed in a uniform stream to the sieves or other reciprocating cleaning members. It is also desirable that provision be made for adjusting the feed in accordance with the nature of the material to be fed and for adjusting the feed mechanism in accordance with the mechanical dispositions of the various machine parts.

Among the important objects of my invention are to provide an attachment in the form of a feed box which can be applied in the feed end or housing usually provided on grain treating machines; to adjustably connect the feed box with the reciprocating sieve or other reciprocating or oscillating part of the grain treating machine whereby the feed box as a whole is bodily reciprocated, and thus more efficiently preventing clogging or stagnation of grain or other material to be fed; to provide improved automatically operating flow controlling mechanism for controlling and distributing the flow from the feed box to the grain treating machine; to provide a construction in which the reciprocating feed box is free from frictional engagement with other parts to thereby prevent noise; to provide sealing means for preventing the escape of material from the feed box except from the automatic feed controlling mechanism provided therefor; and in general to provide improved construction and arrangement which will more

efficiently accomplish and perform the various desirable features above enumerated.

In the accompanying drawing, which clearly illustrates my invention; Figure 1 is an elevation view of one end of a machine to which my invention is applied, the feeding attachment being shown in section. Fig. 2 is a sectional view taken on plane 2, Fig. 1. Fig. 3 is a perspective view of one end of the adjustable gate mechanism.

The machine shown comprises a frame 1 and supporting uprights 2, 2. Below the top frame 1 is shown a sieve 3 adjustably pivoted between the uprights 2 to be reciprocated by cam mechanism 4 connected therewith in any suitable manner, which does not form part of the present invention. Above the upper end of the sieve there is an opening 5 in the top frame 1, over which is mounted a housing 6 in whose upper wall is an inlet opening 7 through which material can flow. Adjustably secured to the sides of the sieve 3 and extending upwardly into the housing 6 are the side members or walls 9 and 10. The adjustable connection between these walls and the sieve sides is shown as comprising bolts 9' extending through the walls and through elongated slots 9'' in extensions 10' on the sieve sides, the bolts being provided with thumb nuts 10''. These side members form the sides of a feed box 11 whose rear wall 12 and bottom board 13 extend between these walls 9 and 10, the bottom wall or board 13 being inclined forwardly and downwardly so that material fed into the feed box will have a tendency to flow downwardly to the sieve or screen 3. The lower end 14 of the front wall of the housing inclines rearwardly to assist in guiding the material to the screen. The feed box by being thus bodily carried by the screen reciprocates therewith and agitates the material within the feed box to accelerate its flow toward the screen.

Rigidly secured to and extending between the side walls of the housing 6 is a guide plate or apron 15 which inclines downwardly and rearwardly to direct the entering material first toward the rear of the feed box so that it will have time to arrange itself more or less into a uniform stream before it starts to flow down the bottom board toward the screen. The apron 15 can readily be secured by bolts or screws 16 passing through blocks 17 extending from the apron,

and if desired, the bolt holes through the blocks may be elongated so that the angles of the apron can be varied. As best shown in Figs. 2 and 3, the lower end of the apron extends into the feed box 11 and is narrower than the top end which connects to the side walls of the housing 6, the side walls of the feed box 11 passing between the side walls of the housing and the edges of the narrower lower section of the apron and sufficient clearance is provided to prevent frictional engagement between the relatively movable parts. Attached to the lower side of end 18 of the apron is the adjustable supporting plate 19 to whose lower edge is hinged the flow controlling gate 20. The hinge mechanism 21 may be in the form of a continuous strip or hinge or may be in the form of several individual hinges as desired. The plate 19 is provided with slots 22 through which pass bolts 23 secured to and extending from the apron 15, the ends of the screws being engaged by wing nuts 24. The plate 19 is, therefore, adjustable in its own plane whereby the gate 20 can be raised or lowered to vary the height of the outlet gap through which the material may flow from the feed box. By means of this adjustable support for the gate, the gate can also be adjusted rotationally in its plane so that any tilting or unlevel position of the machine can be compensated for to prevent piling of the grain at the low end of the bottom part and to cause the grain to flow in a uniform stream under such tilted or unlevel conditions. The material entering the feed box is, therefore, first deflected rearwardly by the apron and then encounters the gate and is thereby restricted to flow through the adjusted outlet gap in a steady and uniform stream.

Extending forwardly from the gate are arms 25 carrying weights 26, the weights having threaded engagement with the arms so as to be longitudinally adjustable thereon. The gate thus weighted will have a tendency to close the outlet from the feed box and to retard the flow of the material therefrom, thereby preventing the material from rushing from the feed box. By adjusting the weights along the arms 25, the rate of flow can be regulated in accordance with the operation of the machine. When the feed box is empty, the gate is held down by the weights and is practically closed. As the material flows into the feed box, the pressure thereof will cause the gate to open, but the weights, after adjustment, will maintain a uniform outlet gap between the gate and the bottom board so that the material can flow to the screen at only the rate it has been adjusted for and the flow will be in a regular and uniform stream. A stop extension 27 secured to the apron 15 will receive the gate when the feed box is empty

and will limit the inward swing of the gate. I also provide additional means for further insuring an even flow of the material to the screen, this additional means being in the form of a plate 28 secured to the front edge of the bottom board 13 by means of screws 29 passing through slots 30, the plate being, therefore, adapted for adjustment in its plane to compensate for any unevenness or irregularity in the flow of material after leaving the gate. The plate 28 by extending upwardly beyond the edge of the bottom board also serves to give the material an upward deflection so that it will strike the guide board 14 to be more efficiently fed to and distributed on the screen. The material, therefore, before it can reach the screen is guided and arranged by the various controlling members so that it must flow at a uniform rate and in a uniform stream to the machine to be fed. A door 31 is provided in the front of the housing 6 so that the flow of material can be observed and through this opening the adjustable parts are readily accessible so adjustment can be made at any time.

The walls of the feed box nowhere come in contact or in frictional engagement with the housing or other parts of the machine, and the operation of the feed mechanism, therefore, requires very little power. To prevent leakage from the feed box directly into the housing, a cloth 32 or other flexible material is secured to strips 33 on the housing above the feed box upper edges and extends down a distance into the feed box. The cloth follows the movement of the reciprocating feed box and maintains sealing engagement therewith so that material flowing into the feed box can escape only through the gap 20 provided therefor.

My improved attachment is of simple and inexpensive construction and can be readily applied to machines of the class mentioned. The manifold adjusting means provided give a wide range of adjustment so that the rate of flow can be accurately controlled and compensation made for tilted, unlevel or other mechanical conditions of the machine to which the attachment is applied. Instead of being connected with the reciprocating member of the machine, the feed box can be independently operated. The apron and gate supporting mechanism instead of being stationary could be carried by and operated with the feed box.

There are changes both in construction and arrangement and in operation that can be made which would still come within my invention, and I do not, therefore, desire to be limited to the precise form shown.

I desire to secure the following claims by Letters Patent.

1. In combination with a grain treating machine comprising grain treating parts,

means for reciprocating said parts, and a feed housing over said treating parts, of side members removably and adjustably secured to the grain treating parts and extending upwardly to the top of the feed housing, a rear wall extending between the upper ends and the rear edges of said side members, a base wall extending between said members and sloping forwardly and downwardly toward the grain treating parts, the upper ends of said side members together with the rear wall and base wall forming a feed box within the feed housing adapted to be bodily reciprocated with the grain treating parts, a stationary front wall part for said feed box secured at its sides to the feed housing and extending slopingly into the feed box to direct grain to the rear end of said box, and grain flow adjusting mechanism carried by said front wall and cooperating with the feed box to regulate the flow of grain from the feed box upon reciprocation of said feed box.

2. In combination with a grain treating machine comprising grain treating parts, means for reciprocating said parts, and a feed housing over said treating parts, of side members removably and adjustably secured to the grain treating parts and extending upwardly to the top of the feed housing, a rear wall extending between the upper ends and the rear edges of said side members, a base wall extending between said members and sloping forwardly and downwardly toward the grain treating parts, the upper ends of said side members together with the rear wall and base wall forming a feed box within the feed housing adapted to be bodily reciprocated with the grain treating parts, a stationary front wall part for said feed box secured at its sides to the feed housing and extending slopingly into the feed box to direct grain to the rear end of said box, grain flow adjusting mechanism carried by said front wall and cooperating with the feed box to regulate the flow of

grain from the feed box upon reciprocation of the feed box, and flexible sealing material secured to the feed housing adjacent the entrance edge of the feed box and extending a distance into the feed box to seal the entrance edge from the housing.

3. In a feed regulator for grain treating machinery, the combination of a feed box comprising side walls and a rear wall and having a sloping base, means for bodily reciprocating said feed box, a stationary front wall section extending into said reciprocatory feed box, a gate adjustably hinged to the lower end of said stationary front wall, said gate being weighted to normally close outlet from the box and adapted to be swung by the weight of grain in said box to adjust the outflow of grain therefrom, and an arresting ledge adjustably secured to the front edge of said sloping base to cooperate with said gate to cause uniform flow of grain from the feed box.

4. In a feed regulator for grain treating machinery, the combination of a feed box comprising side walls and a rear wall and having a sloping base, means for bodily reciprocating said feed box, a stationary front wall section extending into said reciprocatory feed box, a gate adjustably hinged to the lower end of said stationary front wall, said gate being weighted to normally close outlet from the box and adapted to be swung by the weight of grain in said box to adjust the outflow of grain therefrom, an arresting ledge adjustably secured to the front edge of said sloping base to cooperate with said gate to cause uniform flow of grain from the feed box, and means for bodily adjusting said feed box.

In witness hereof, I hereunto subscribe my name this 10th day of May A. D. 1909.

MARK DURST.

Witnesses:

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