

No. 897,899.

PATENTED SEPT. 8, 1908.

R. S. HOUSTON.
GRAIN TREATING APPARATUS.
APPLICATION FILED OCT. 9, 1907.

2 SHEETS—SHEET 1.

FIG. 1.

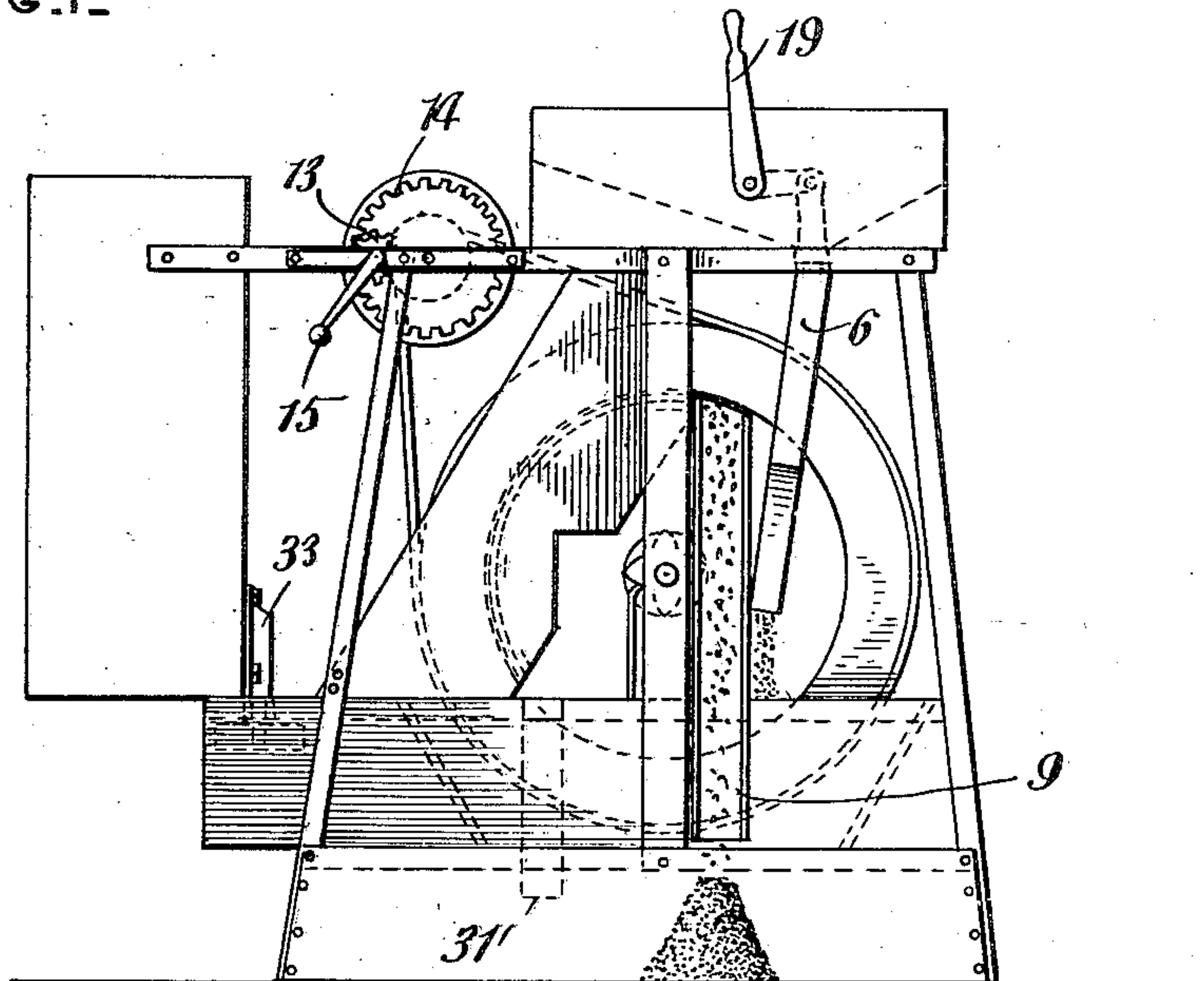
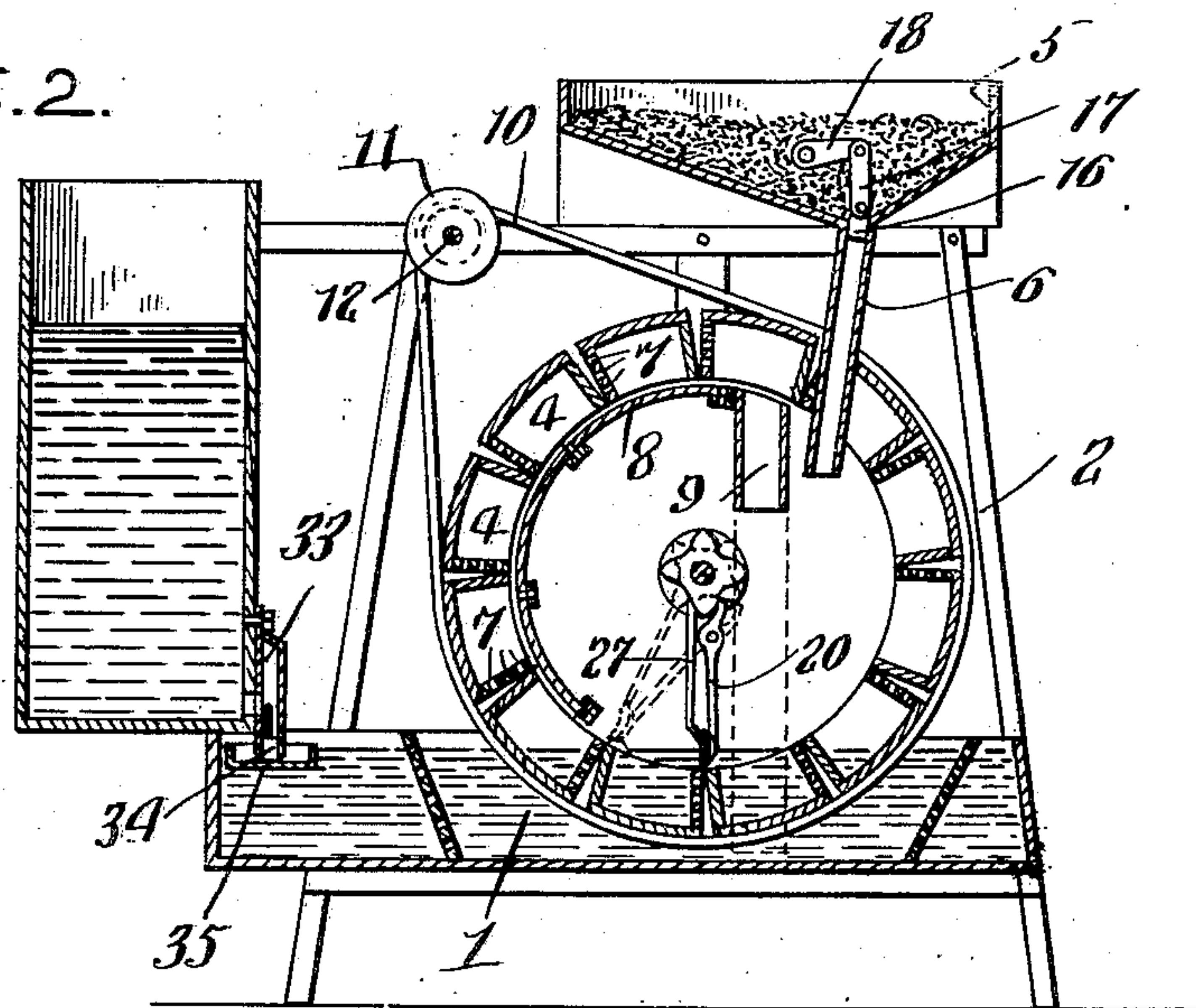


FIG. 2.



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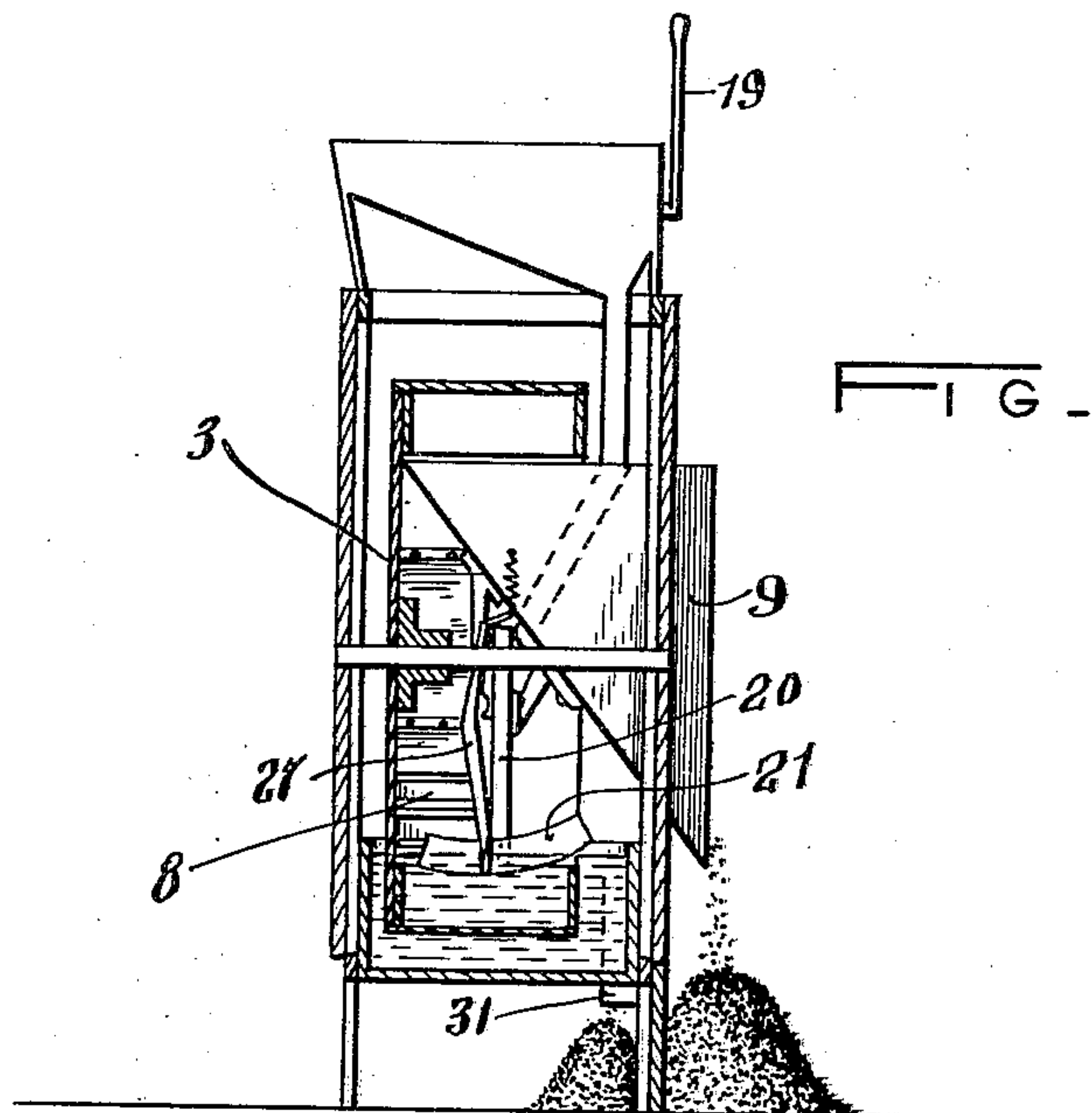


FIG. 3.

FIG. 4.

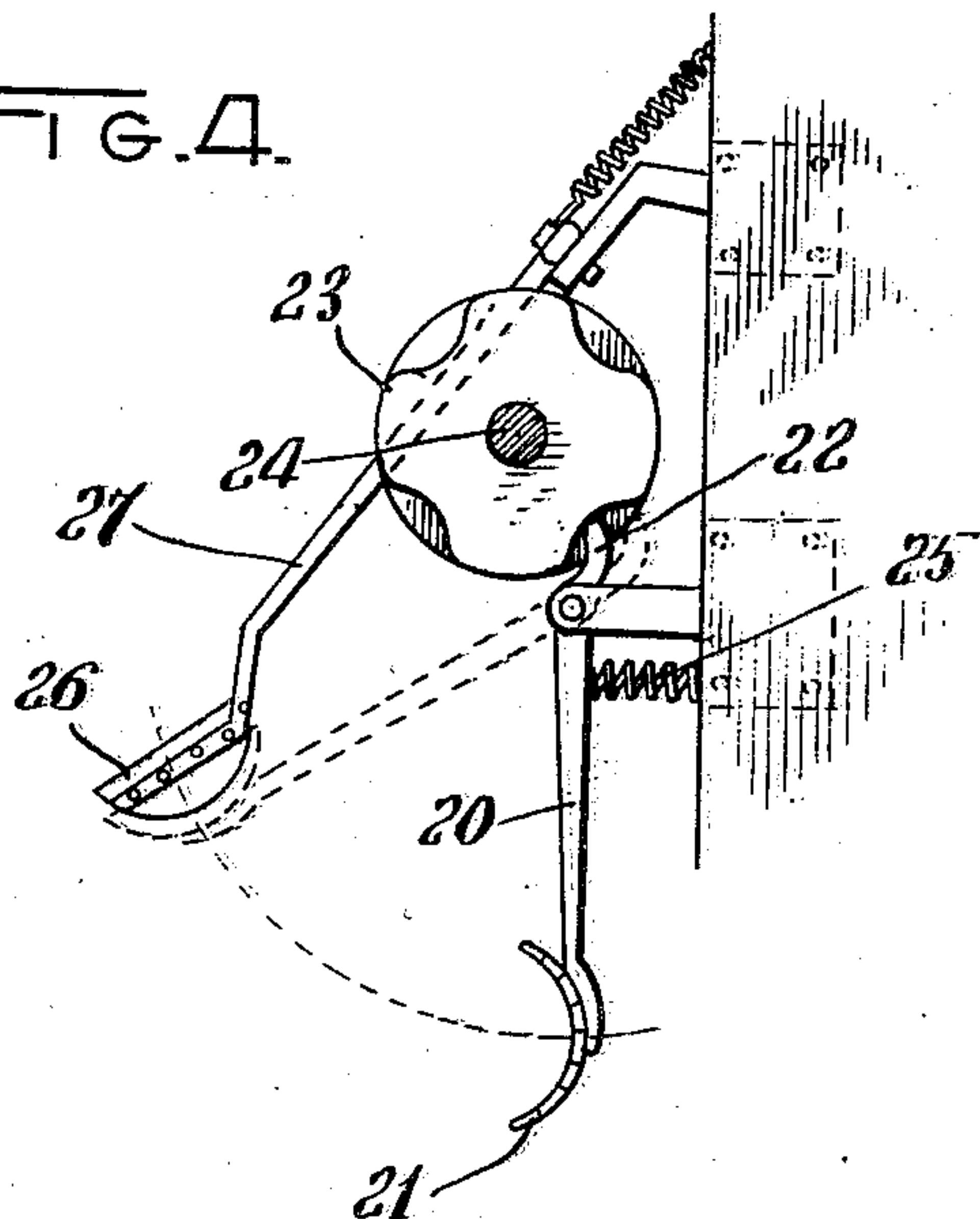
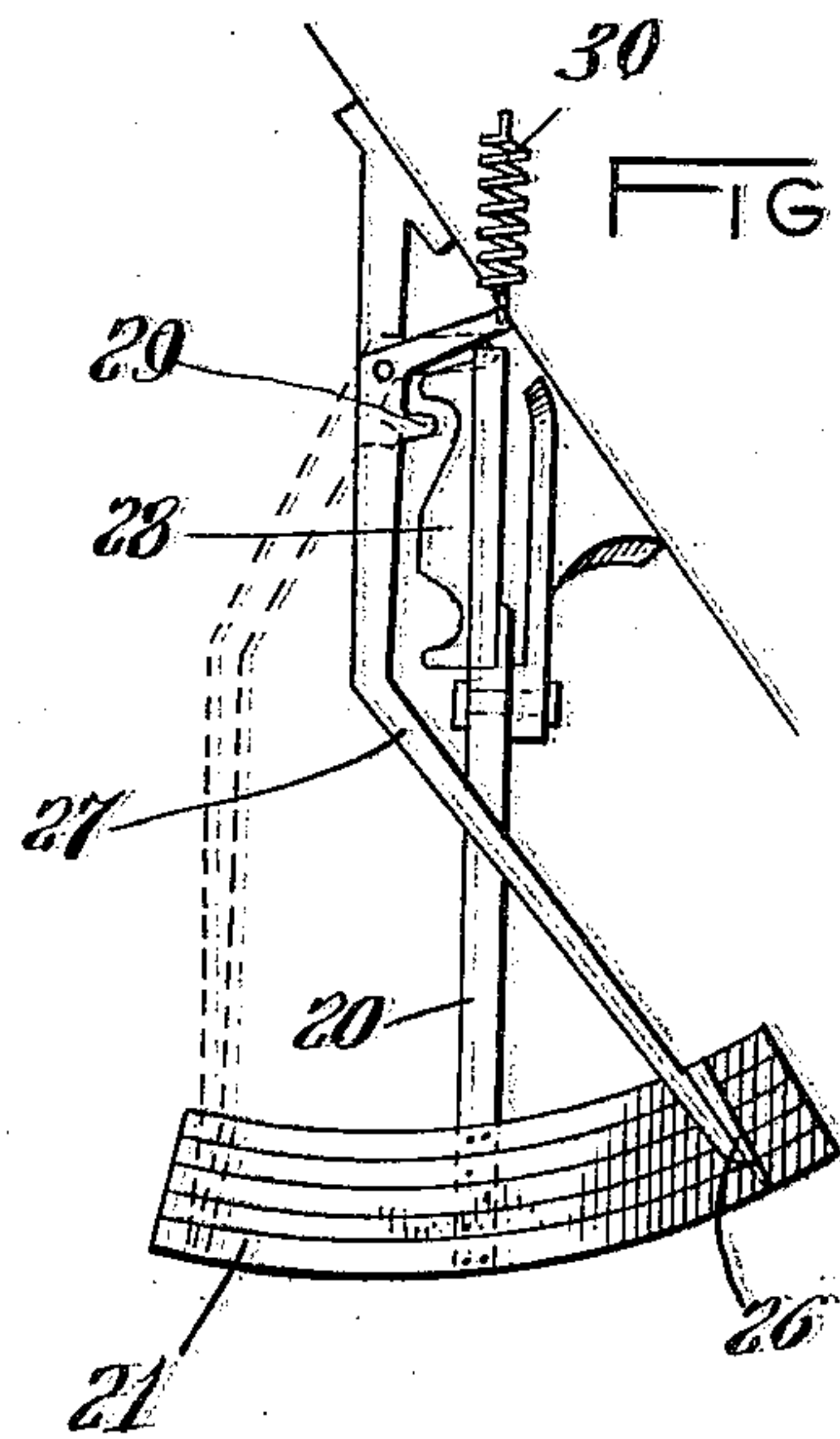


FIG. 5.



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UNITED STATES PATENT OFFICE.

ROBERT STANLEY HOUSTON, OF EMERSON, MANITOBA, CANADA.

GRAIN-TREATING APPARATUS.

No. 897,899.

Specification of Letters Patent.

Patented Sept. 8, 1908.

Application filed October 9, 1907. Serial No. 396,570.

To all whom it may concern:

Be it known that I, ROBERT STANLEY HOUSTON, a subject of the King of Great Britain, residing at Emerson, county of Manchester, in the Province of Manitoba, Canada, have invented certain new and useful Improvements in Grain-Treating Apparatus; and I do hereby declare that the following is a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The invention to be hereinafter described relates to grain treating machines and more particularly to that class of machines of this general class which are adapted to wash the grain or treat it in a bath by which the grain is separated from its accompanying impurities, the impurities being skimmed off or otherwise removed, and the grain delivered practically clean and pure.

Broadly speaking, the machine comprises a tank adapted to contain the treating fluid, a drum mounted to rotate so that its surface travels through the fluid, means for delivering grain to the drum through the fluid, devices for skimming the impurities from the surface of the fluid in the tank and means for automatically maintaining the level of the fluid at the required height in the tank.

To more clearly understand the construction, operation and use of the machine and the combinations of the several parts of the same, reference should be had to the accompanying drawings forming part of the present application, wherein like reference characters designate similar parts in the several views.

In the drawings: Figure 1 is a side elevation of the machine showing the grain delivery; Fig. 2 is a vertical longitudinal sectional view of Fig. 1 on line 2—2 of Fig. 3; Fig. 3 is a cross section on line 3—3 of Fig. 1; Fig. 4 is a detail side elevation of the skimmer and scraper; and, Fig. 5 is a plan view of the skimmer and scraper detached.

A tank 1 is provided, mounted in a framework 2 and adapted to contain liquid for treating grain. In the framework 2 is revolvably mounted a drum 3 which is closed on one side, as shown in Fig. 3, and so mounted that its periphery passes through the fluid in the tank 1. This drum is divided into a plurality of compartments 4 adapted to receive grain from a hopper 5 through a spout 6. The spout 6 is so positioned as to deliver the

grain to a compartment 4 through the fluid in the tank. That is, its position is such that the grain falls into the fluid just above a compartment 4 and then settles down into the compartment. These compartments, of course, are open inwardly toward the center of the drum in order to make such delivery to them feasible. The several compartments are perforated on one side as at 7 in order to allow the fluid to be drained from the grain as the drum rotates. It should be noticed that the adjacent faces of two compartments are not perforated, but that only a single one of two adjacent faces is so perforated and that the perforations are in the side of each compartment opposite to the direction of rotation of the drum. This arrangement prevents one compartment from draining into the adjoining compartment as will be readily understood.

As the drum is rotated, as will later appear, the grain in the rising compartments will tend to move toward the center of the drum and so fall from the open sides of the compartments as they near the highest point of the drum. To prevent this a guard 8 is provided which is secured to the frame of the machine and fitted snugly against the open faces of the compartments.

Attached to the guard 8 and to the framework 2 is a delivery chute 9 positioned slightly beyond the vertical diameter of the drum and adapted to receive the washed grain from the highest compartment of the drum and to deliver it out of the machine. Suitable gearing for driving the drum such as a belt 10, passing about the drum and over a pulley 11 fixed to the shaft 12 driven by gears 13 and 14 and crank 15 may be used. For delivering grain from the hopper through the spout to the compartments of the drum, a suitable plug valve 16 or its equivalent is connected by a link 17 to an arm 18 adapted to be operated by a lever 19.

As the grain falls from the spout 6 into the fluid the chaff, and other impurities remain floating on top, and to prevent accumulation of the same a skimming device has been devised by which the floating material is removed. The skimmer proper comprises a long arm 20 pivotally mounted at a point above the path of travel of the drum. Preferably this arm is pivoted to a bracket attached to the delivery chute 9 as shown in Fig. 3. The arm 20 is provided with a wide concaved skimmer blade 21 adapted to skim

the upper surface of the fluid above the lower compartment 4 to remove the floating matter. The arm 20 of the skimmer is provided with a heel 22 adapted to ride over the star or cam surface 23 fixed to the axle 24 of the drum. Each projection of the star or cam will depress the heel 22 and, of course, raise the arm 20 and skimmer blade 21 attached thereto. The weight of the arm 20 and blade 21 will act normally to return the same, but in order to assure its positive return a spring 25 is connected at one end to the arm 20 and at its opposite end to the chute 9, so that it exerts a tension on the arm 20 tending to return the same to its initial starting point.

On reaching its highest point the skimmer is held stationary in its extreme elevated position for a short period due to the form of the cam or star 23 as will be clear, on reference to Fig. 4, thus giving sufficient time for the scraper to remove its contents.

An arm 27 bearing a scraper blade 26 is pivotally mounted, as by a bracket, on the chute 9 and is adapted to reciprocate in a direction at right angles to the movement of the skimmer and in a plane parallel with the highest point reached by the skimmer blade 21. This scraper is reciprocated by means of a cam surface 28 which engages at intervals a lug 29 on the scraper arm 27. This cam surface 28 preferably is secured to, or formed integral with the cam 23 so that they both rotate in unison and is so proportioned to the cam 23 that it reciprocates the arm 27 and scraper blade 26 just at the moment that the skimmer reaches the upper limit of its travel. In order to insure and assist in the positive working of the scraper a spring 30 is securely attached at one end to an extension of arm 27 and at its opposite end to the chute 9. On reference to Figs. 3 and 5 it will be clear that the skimmings will be removed from the skimmer and delivered over the edge of the tank 1 through a sluice way or the like just inside the shovel board as indicated in dotted lines at 31 in Figs. 1 and 3. It will also be evident on reference to these figures that the washed grain will be delivered through the chute 9 just outside of the shovel board. From the above it will be clear that although the skimmings and the washed grain are delivered at approximately the same point, they are nevertheless kept completely apart.

During the operation of the machine con-

siderable of the fluid will be absorbed by the grain and accompanying impurities. In order to keep the fluid at the proper operative level a tank 32 is placed slightly above one end of the tank 1 and adapted to feed the fluid into the tank 1 through a spout 33 automatically closed by a valve 34 operated by the float 35 in tank 1. It will be readily understood that as the fluid in the tank 1 lowers the float 35 will fall and the spout 33 will be open to deliver fluid from the tank 32 to tank 1. The supply is automatically cut off at the proper point as will be obvious.

Many changes in construction, operation, arrangement, and various other combinations of the several parts of the machine may be resorted to without in any way departing from the field and scope of the present invention and it is meant to include all such in the invention as disclosed by the present application wherein a preferred form only of the machine is illustrated.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A grain treating apparatus comprising, a tank adapted to contain treating fluid, a drum mounted to rotate above said tank and through said fluid, means for delivering the grain to said drum, means for delivering the treated grain from said drum, a skimming device, a scraper cooperating therewith, and means carried by the drum to operate said skimming device and scraper.

2. A grain treating apparatus comprising, a tank adapted to contain treating fluid, a drum mounted to rotate above said tank and through said fluid, means for delivering grain to said drum, means for delivering the treated grain from said drum, a skimming device, a scraper cooperating therewith, and cams carried by the drum to operate said skimming device and scraper.

3. A grain treating apparatus comprising, a tank adapted to contain treating fluid, a drum mounted to rotate above said tank and through said fluid, means for delivering grain to said drum, means for delivering the treated grain from said drum, a skimming device, and a cam carried by said drum.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

ROBERT STANLEY HOUSTON.

Witnesses:

JOHN D. HAYWARD,
L. H. ASHBY.