E. SORENSON.

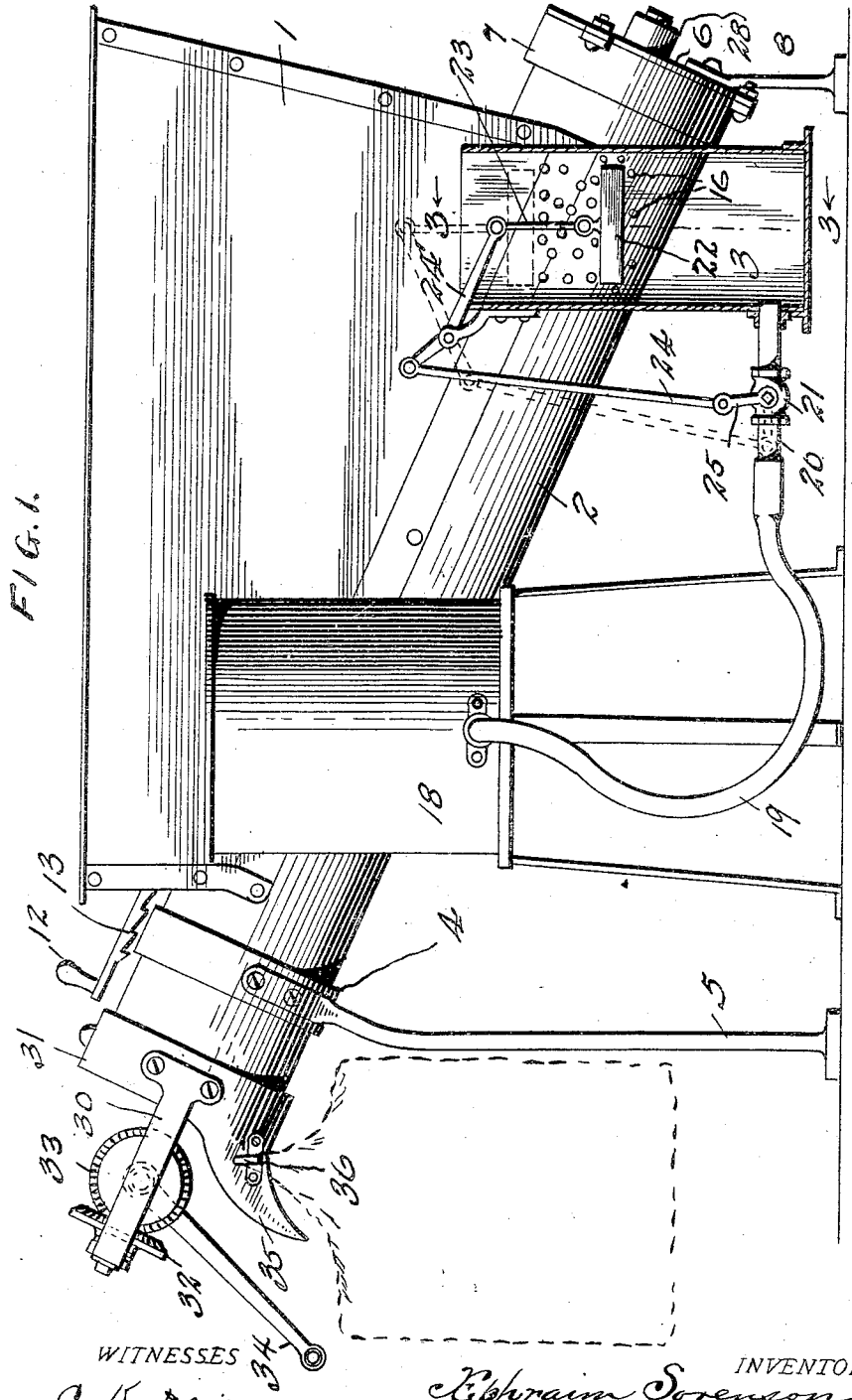
APPARATUS FOR TREATING GRAIN.

APPLICATION FILED MAR. 3, 1909.

941,821. Patented Nov. 30, 1909.

2 SHEETS—SHEET 1.

FIG. 1.



WITNESSES

C. K. Davis

M. E. Moore

INVENTOR

Ephraim Sorenson

By Wm. V. Moore Attorney

E. SORENSON.

APPARATUS FOR TREATING GRAIN.

APPLICATION FILED MAR. 3, 1909.

941,821. Patented Nov. 30, 1909.

2 SHEETS—SHEET 2.

FIG. 2.

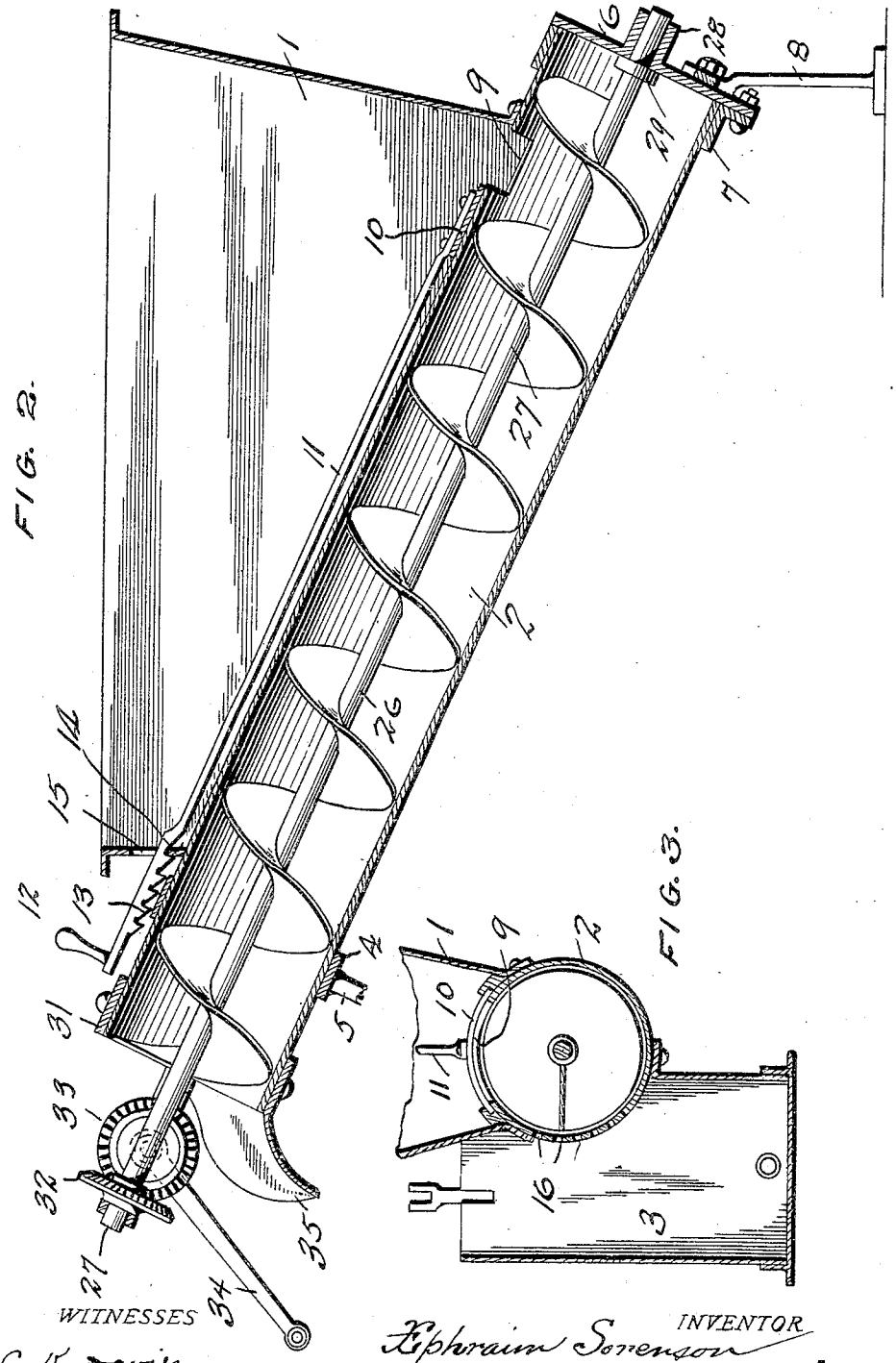


FIG. 3.

WITNESSES

C. K. Davis

M. E. Moore

INVENTOR

Ephraim Sorenson

By Wm. J. Moore Attorney

UNITED STATES PATENT OFFICE.

EPHRAIM SORENSON, OF EMMETT, IDAHO.

APPARATUS FOR TREATING GRAIN.

941,821. Specification of Letters Patent. **Patented Nov. 30, 1909.**

Application filed March 3, 1909. Serial No. 481,181.

To all whom it may concern:

Be it known that I, EPHRAIM SORENSON, a citizen of the United States, residing at Emmett, in the county of Canyon and State of Idaho, have invented certain new and useful Improvements in Apparatus for Treating Grain, of which the following is a specification.

The present invention relates to improvements for apparatus for treating grain, and is particularly applicable for treating seed grain in order to eliminate the possibility of the production of "smutty" grain in the ensuing crop. It is customary to treat grain for this purpose, and numerous modes are in use, but I find that a majority of these modes are objectionable because of the waste grain treating agent, delay in the process, and inefficiency in several particulars.

By utilizing my novel apparatus I accomplish the above result in an efficient manner, thoroughly mixing the treating agent with the grain, regulating the amount of cleanser fed to the grain, and expeditiously and regularly furthering the process of treatment.

The invention consists in providing a hopper for the reception of the grain to be treated, conveniently locating a reservoir containing the treating agent, which may be a solution of formaldehyde, for introducing the agent to a mixing chamber or receptacle, and means for conveying the grain through the mixing receptacle all as described and claimed.

The invention further consists in certain novel features of construction and combinations and arrangements of parts as will be pointed out in the claims.

In the accompanying drawings I have illustrated one example of the physical embodiment of my invention constructed according to the best mode I have so far devised for the practical application of the principles.

Figure 1 is a side elevation of the complete apparatus. Fig. 2 is a vertical longitudinal section, and Fig. 3 is a transverse section through the mixing receptacle and treating agent reservoir.

As before stated, the invention comprises a grain hopper 1, a mixing receptacle 2, a treating-agent tank 3, as the essential elements. The mixing receptacle forms the bottom of the hopper whose sides are preferably inclined or converge toward the bottom. The mixing receptacle is preferably a cylindrical tube situated in an inclined position and supported at its upper end through the medium of an annular band or sleeve 4 to which are secured the legs or supports 5. The lower end of the tube is closed by means of a head 6 secured by rivets or bolts to the sleeve or band 7 and a second pair of legs or supports 8 are attached to the head.

The bottom of the hopper is closed, except for a transverse opening 9 formed in the wall of the mixing chamber. The admission of grain from the hopper to the mixing chamber through this opening may be regulated by means of a gate 10 which may be shifted to open or close the space, by means of the rod 11 and handle 12 thereon. The gate may be held in adjusted position by the serrations or teeth 13 of the bar 11 engaging the wall 14 of the slot 15, through which slot the bar may be operated.

The treating-agent tank 3 is built upon the walls of the mixing chamber, and has communication thereto through the perforations 16 in the walls thereof. A reservoir 18 forms a suitable source of supply for the treating agent and is connected to the tank 3 by means of the flexible tube 19. This tube 19 is attached to a short piece of pipe 20 opening into the tank 3. A valve 21 is operated from a float 22 in the tank 3, to regulate the flow of the agent to the tank. The rise and fall of the quantity of treating agent actuates, through the float 22, a series of links 23 and 24 which are in connection with levers 24′ and 25. Thus, when an excess quantity of treating-agent is present in the tank, the float rises, tilts the pivoted lever 24′ through the medium of link 23, and lever 24′ in turn shoves down the link 24 and turns the valve lever 25, closing the valve to the extent of movement of the float. As the float falls again, due to lowering of the treating agent in the tank, the valve is again opened, as will be understood.

As the grain is fed from the hopper into the mixing receptacle the cleansing agent is fed through the perforations 16, and the cleansing agent is thoroughly mixed with the grain by means of a worm 26. This worm 26 is formed about the shaft 27, and the shaft is revolubly supported at its lower end in a bearing 28 formed on the head, and held in position by a sleeve or shoulder 29. The mixing chamber is open at its upper end, and a U-shaped frame 30 projects there-

about. The frame 30 is attached to a sleeve or band 31 which is secured to the mixing chamber, and the U-shaped frame thus forms a rigid bearing for the upper end of the shaft which passes through an opening therein.

The shaft and worm may be rotated in their bearings by means of the bevel gears shown, one of which, 32, is rigid on the shaft and the gear 33 engaging therewith. Gear 33 is journaled in one fork of the frame 30, meshes with gear 32 and may be turned by a crank handle 34. Thus, as the grain and treating-agent are commingled at the lower end of the mixing chamber, the worm is rotated from crank 34. The rotation of the worm lifts or carries the commingled grain and treating agent toward the open end of the receptacle, and in its passage the grains or seeds are thoroughly exposed to the action of the agent. A spout 35 may be formed on the band 31, and a pair of hooks 36 may be attached at the sides of the spout, upon which to hang a bag, shown in dotted lines Fig. 1. Thus as the treated grain emerges from the spout it may be conveniently caught in the bag.

From the above description taken in connection with the drawings it is evident I have produced an apparatus which fulfils all the conditions set forth as the purpose of my invention.

What I claim as new and desire to secure by Letters Patent is:—

1. The combination of a grain hopper, a sharply inclined receptacle, a cylindrical cleansing agent container formed thereon, and having a common wall with the receptacle and hopper, a supply tank therefor, means automatically regulating the flow between the tank and container, means for instantly checking or adjusting the flow of grain from the hopper into the receptacle, a combined mixer and conveyer supported in said receptacle, means for rotating said conveyer, and a discharge spout bearing bag attaching means formed on the upper end of the receptacle.

2. In a device of the character described, the combination with a cylindrical chamber, of a collar secured to the upper end thereof, brackets secured to the collar, a beveled gear wheel rotatably secured to one of said brackets, a shaft bearing a conveyer mounted in the cylinder and having a gear wheel on its upper end intermeshing with the gear wheel on the bracket, said shaft having its upper end journaled in the brackets, a vertically disposed cylindrical tank having a portion of its side cut away, said side terminating in flanges secured to the side of the chamber, the wall of the chamber also forming a wall for the tank and having perforations therein affording communication between the chamber and tank, means for automatically regulating the amount of treating agent in the tank and thus the amount passing through the perforations into the chamber, and means for introducing and regulating the flow of grain into the chamber, the conveyer serving to mix the treating agent and the grain contained in the chamber.

3. In a device of the character described, the combination with a cylindrical chamber, of a collar secured to the upper end thereof, brackets secured to the collar, a beveled gear wheel rotatably secured to one of said brackets, a shaft bearing a conveyer mounted in the cylinder and having a gear wheel on its upper end intermeshing with the gear wheel on the bracket, said shaft having its upper end journaled in the brackets, a vertically disposed cylindrical tank having a portion of its side cut away, said side terminating in flanges secured to the side of the chamber, the wall of the chamber also forming a wall for the tank and having perforations therein affording communication between the chamber and tank, means for automatically regulating the amount of treating agent in the tank and thus the amount passing through the perforations into the chamber, means for introducing and regulating the flow of grain into the chamber, a downwardly projecting lip formed on the collar, and bag securing means carried by the lip, the conveyer serving to mix the treating agent and grain in the chamber and convey them to the top of the chamber.

In testimony whereof I affix my signature, in presence of two witnesses.

EPHRAIM SORENSON.

Witnesses:
S. P. Bane,
Finley Monroe.