

No. 690,565.

Patented Jan. 7, 1902.

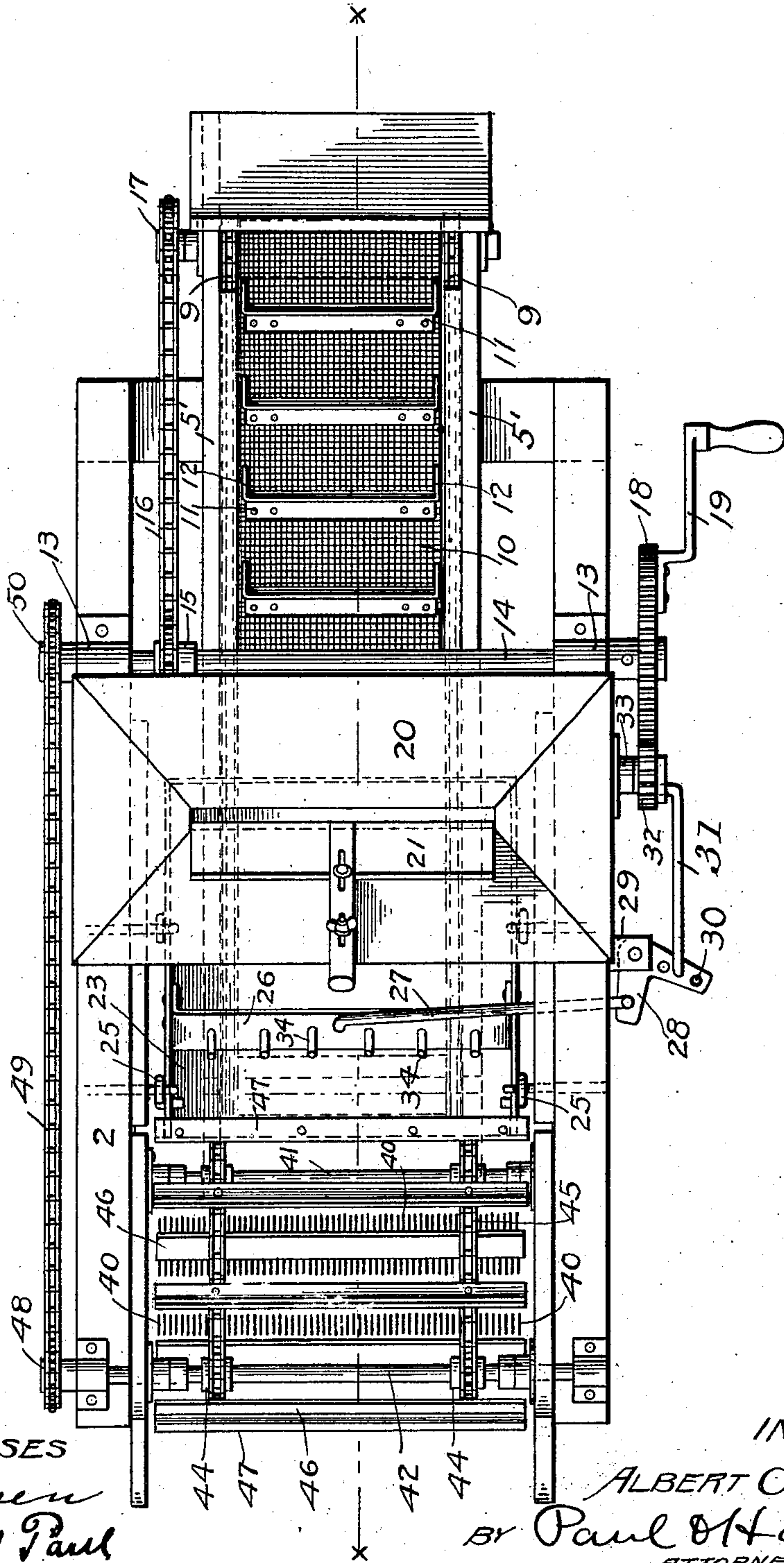
A. COLEMAN.
SMUT MACHINE.

(Application filed Jan. 20, 1900.)

(No Model.)

2 Sheets—Sheet 1.

FIG. 1.



WITNESSES

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INVENTOR

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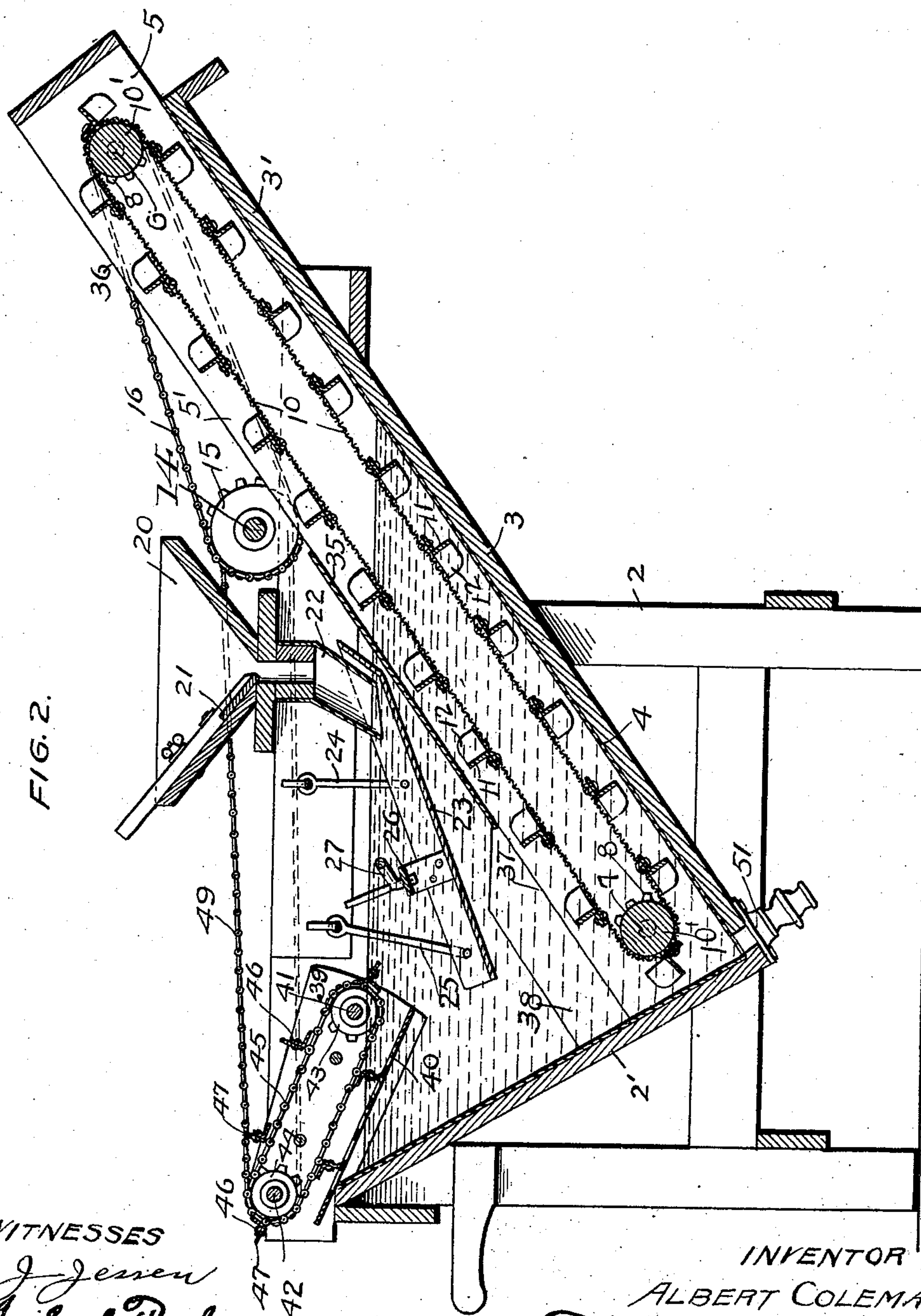
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WITNESSES

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INVENTOR:

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UNITED STATES PATENT OFFICE.

ALBERT COLEMAN, OF PORTLAND, NORTH DAKOTA, ASSIGNOR TO
CHANDLER S. EDWARDS, MIKKEL L. ELKEN, AND GUDBRAND
L. ELKEN, OF MAYVILLE, NORTH DAKOTA.

SMUT-MACHINE.

SPECIFICATION forming part of Letters Patent No. 690,565, dated January 7, 1902.

Application filed January 20, 1900. Serial No. 2,110. (No model.)

To all whom it may concern:

Be it known that I, ALBERT COLEMAN, of Portland, Traill county, North Dakota, have invented certain new and useful Improvements in Smut-Machines, of which the following is a specification.

My invention relates to grain-cleaning devices; and the object of the invention is to provide a machine for rapidly and thoroughly removing smut and other light deleterious particles from wheat and other grain.

The invention consists generally in various constructions and combinations, all as hereinafter described, and particularly pointed out in the claims.

In the accompanying drawings, forming part of this specification, Figure 1 is a plan view of a smut-machine embodying my invention. Fig. 2 is a longitudinal section on the line *x x* of Fig. 1.

In the drawings, 2 represents the frame of the machine, wherein a tank filled with water is supported, having spreading or flaring walls 2' and 3 and made water-tight by means of a sheet-metal lining 4 or in any other suitable way. The wall 3 has an extension 3' extending above the top of the machine, forming with said wall an inclined bottom for an elevator trunk or flight that is provided at its upper end with a discharge-opening 5 and with side boards 5', extending to the bottom of the tank.

Mounted in bearings in the sides 5' of the elevator-trunk near its upper end is a shaft 6, and near the lower end of the trunk is a similarly-mounted shaft 7. Each shaft is provided near its ends with sprocket-wheels 8, over which chains 9 pass, to which an endless wire screen 10, preferably of galvanized iron, passing over wooden rolls 10' on said shafts, is secured. This screen forms an endless belt or apron extending from a point near the bottom of the tank to the upper end of the inclined wall 3, near the discharge-opening therein, and moves in an inclined plane substantially parallel with said wall. Arranged transversely upon the screen at intervals are a series of buckets or pockets 11, composed, preferably, of angle-iron, having

one flange riveted to the screen and the projecting ends 12 of the other flange bent forward at substantially right angles to the main portion of the angle-iron and forming sides for the pocket to hold the grain therein.

Mounted in bearings 13 upon the top of the machine is a horizontal shaft 14, whereon is secured a sprocket-wheel 15, over which a chain 16 passes to a similar wheel 17 on one end of the shaft 6, and whereby the endless screen or elevator is operated when the shaft 14 is revolved. The shaft 14 projects beyond the sides of the machine and is provided at one end with a large gear 18, upon which I may arrange a crank 19 to permit the machine to be operated by hand, or said gear may be driven by power, if preferred.

Above the endless screen is a hopper 20, having an adjustable plate 21, by means of which the feed of grain may be regulated, and below said hopper is a spout 22, leading therefrom to an inclined pan or shelf 23, immersed in the water and having an imperforate bottom and adapted to oscillate laterally upon rods 24 and 25, that are pivotally secured to the sides of said pan and to the casing of the machine. A bar 26, having its ends secured to the sides of said pan, extends transversely over the same and is pivotally connected, preferably near its center, to a pitman-rod 27, projecting through an opening in the casing of the machine and pivotally connected to one arm of a bell-crank 28, that is pivotally supported upon a bracket 29 on the side of the machine. The other arm of the bell-crank is provided with a series of holes 30, adapted to receive one end of a rod 31, that is pivotally connected at its opposite end to the pinion 32 on a stud mounted in bearings 33 on the side of the machine. The pinion 32 meshes with the large gear 18, heretofore described, and is driven thereby, and through the medium of the bell-crank and its connection an oscillating lateral movement is imparted to the pan or shelf 23. Upon the bar 27, arranged at intervals, are a series of fingers or pins, which project above the surface of the water in the tank. When the pan is oscillated, these fingers will agitate

and stir up the water above the oscillating pan to aid in separating the smut and other light particles from the wheat, permitting the wheat to settle, while the smut and other light foreign material rises to the surface. The upper end of the oscillating pan is separated from the endless screen by an inclined plate 35, which extends above the top of the water in the tank and forms the top of the elevator-trunk. An opening 36 is provided in the elevator-trunk between the plate 35 and the upper end of the endless screen, through which said screen and the buckets thereon are visible and through which air circulates to dry the wheat as it is carried up by the buckets to the discharge-opening. An opening 37 is provided in the trunk between the lower end of the plate 35 and the wall 2 of the tank, through which the grain falls from the lower end of the oscillating screen 23 into the bottom of the tank beneath the lower end of the endless screen. As said screen does not extend the full width of the tank, I prefer to provide inclined plates or boards 38 upon each side of the opening 37 to direct the grain into the space beneath the screen. As the grain falls from the hopper upon the oscillating shelf the smut and other light particles, aided by the agitation of the water, will rise to the surface, and in order that such foreign matter may be rapidly removed from the tank I provide an inclined trough or box 39, having its inner end below the surface of the water in the tank. The bottom of this box or casing is provided with a series of slots or perforations 40, and mounted in the sides of the box near its inner end is a shaft 41, and a similar shaft 42 passes through the sides of the box near its outer end and is mounted in bearings on the top of the machine and forms a pivot whereon said box is adapted to swing. Sprockets 43 and 44 are provided on said shafts, over which chains 45 pass, to which angle-plates 46 are secured; said plates being provided with flexible strips 47, preferably of rubber, forming scoops or skimmers that gather up the smut and other light particles and sweeping over the perforated floor of the trough or box carry the foreign material that has been gathered up to the top of the trough and discharge it out of the machine. The perforations in the bottom of the box prevent the water from being carried out of the machine by the action of the scoops or skimmers. The shaft 42 projects beyond the sides of the machine and is provided with a sprocket 48, over which a chain 49 passes to a similar sprocket 50, provided on the shaft 14, and wherefrom the shafts 41 and 42 and the devices thereon are driven. A discharge-pipe 51, having a suitable valve, is provided in the bottom of the tank, through which the water may be drawn off when desired.

The operation of the machine is as follows: The tank having been filled with water to the desired height, grain is placed in the hopper,

and as it falls down upon the oscillating shelf or pan it will be thoroughly shaken and the smut and other light particles separated therefrom, and the grain passing on to the lower end of the oscillating shelf will fall into the space beneath the lower end of the endless screen and be gathered up by the buckets thereon and carried to the top of the machine, and thence discharged through the opening 5. As said screen extends a considerable distance above the surface of the water, the grain will be drained of water and will also dry considerably before reaching the upper end of the screen. As the smut and other light particles rise to the surface of the water the vibrating fingers or pins will keep the mass in motion, and the agitation of the water will move the foreign material into the open end of the inclined box, where it will be caught up by the scoops and carried out of the machine. When desired, the inclined box may be lifted out of the water, swinging on the shaft 42 as a pivot, and, if desired, suitable means may be provided on the casing of the machine whereby the inclination of the box with respect to the surface of the water may be regulated. If preferred, the water in the tank may be chemically prepared to kill the germs of smut, or it may be heated to such temperature that all germ life in the material that is separated from the grain will be destroyed.

In various ways the apparatus which I have shown may be modified by any one skilled in the art, and I therefore do not wish to be confined to the details of construction herein set forth.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a machine of the class described, the combination, with a tank containing a supply of water, of a hopper arranged therein, an inclined oscillating pan or shelf immersed in the water below said hopper in position to receive the grain therefrom, agitating fingers or pins provided on said pan and means for oscillating said pan, substantially as described.

2. In a machine of the class described, the combination, with a tank containing a body of water, of a hopper supported thereon, an inclined pan or shaker immersed in the water beneath said hopper in position to receive grain therefrom, agitating-fingers provided on said pan, means for oscillating said pan, an elevator trunk or flight provided in said trunk beneath said pan to receive grain therefrom, and an endless screen having a series of buckets or pockets provided within said elevator-trunk, substantially as described.

3. In a machine of the class described, the combination, with a tank containing a body of water, of a hopper thereon, an inclined pan or shelf immersed in the water beneath said hopper said pan having an imperforate bottom, means for oscillating said pan, means operated by the movement of the pan for agi-

tating the water above said pan to aid in separating the smut from the grain, means for gathering up the smut and conveying the same out of the machine, and a grain conveyer
5 or elevator provided beneath said inclined pan, substantially as described.

4. In a machine of the class described, the combination, with a tank containing a body of water, of a hopper, an inclined oscillating
10 pan beneath the same to receive grain therefrom, water-agitating devices provided on said pan, an elevator trunk or flight provided

beneath said pan and having closed sides and bottom and openings in its top above and below the water-line, and a grain-conveyer provided within said elevator-trunk, for the purpose specified. 15

In witness whereof I have hereunto set my hand this 11th day of January, 1900.

ALBERT COLEMAN.

In presence of—

FRED BENTLEY,

H. G. HALVERSON.