

No. 633,447.

Patented Sept. 19, 1899.

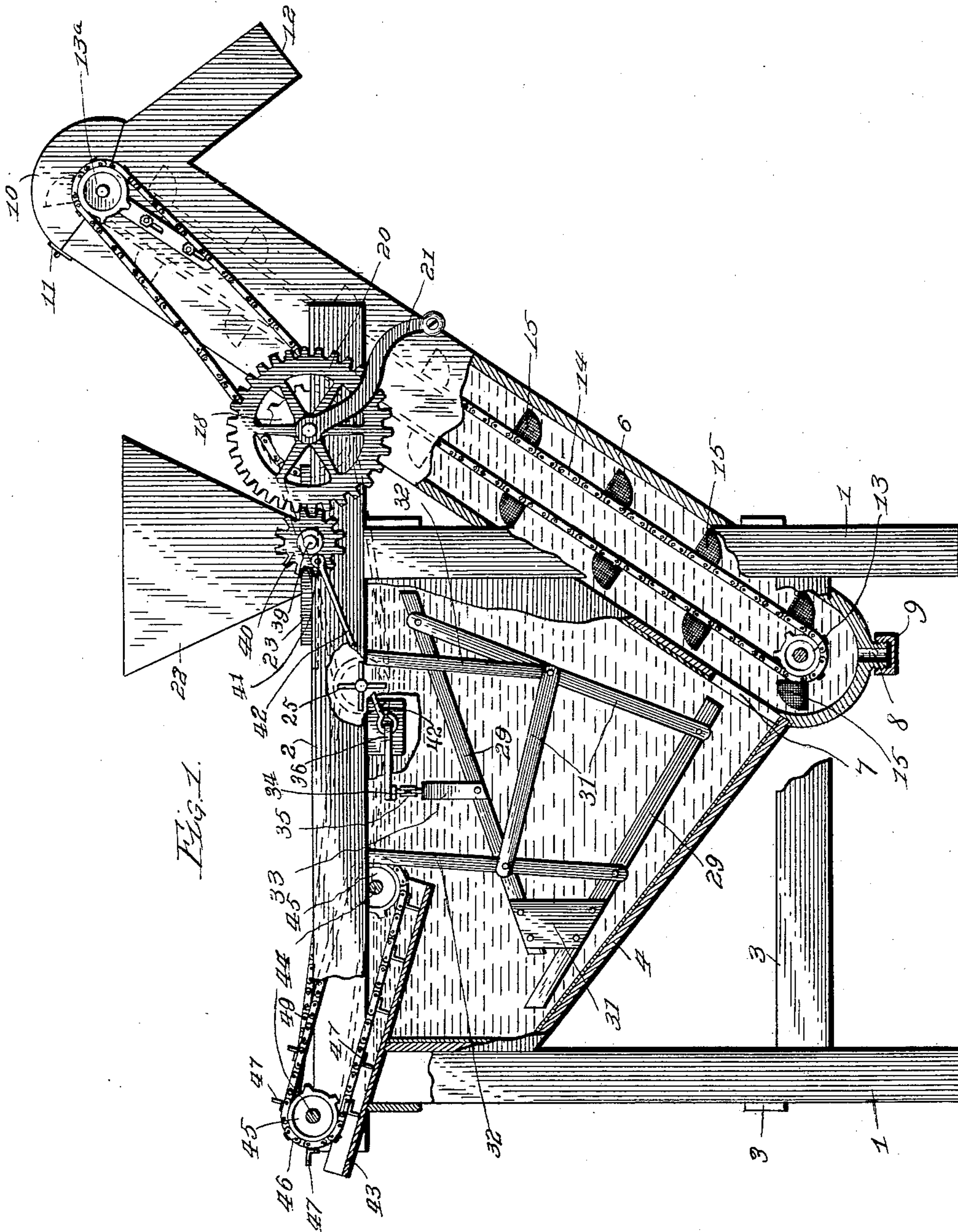
B. B. GRINLEY & A. COLEMAN.

SMUT MILL.

(Application filed Apr. 3, 1899.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES:

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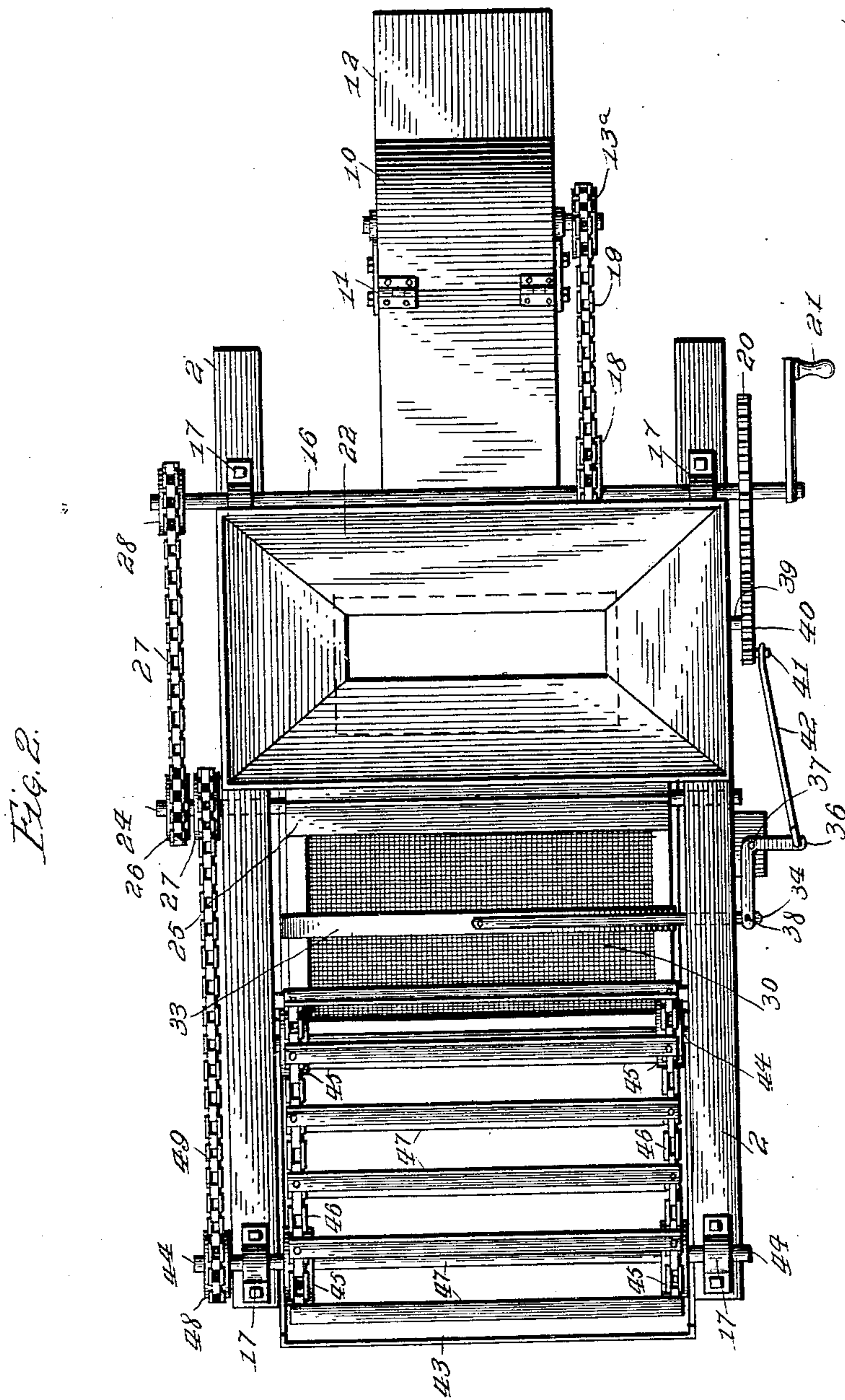
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UNITED STATES PATENT OFFICE.

BENNEDECK B. GRINLEY AND ALBERT COLEMAN, OF PORTLAND, NORTH DAKOTA.

SMUT-MILL.

SPECIFICATION forming part of Letters Patent No. 633,447, dated September 19, 1899.

Application filed April 3, 1899. Serial No. 711,614. (No model.)

To all whom it may concern:

Be it known that we, BENNEDECK B. GRINLEY and ALBERT COLEMAN, citizens of the United States, and residents of Portland, in the county of Traill, State of North Dakota, have invented certain new and useful Improvements in Smut-Mills, of which the following is a specification.

Our machine is designed for cleaning wheat, barley, oats, &c., of smut. We also use in connection with our machine water mixed with a chemical known to kill the germ of smut, or we may, if found desirable, use hot water of about 133° Fahrenheit; and our invention consists, generally speaking, of a receptacle suitably mounted within a frame and water-tight. Above this receptacle, at one end, we mount a hopper, and within the receptacle a shaking-screen is suitably suspended, above which is a beater or agitator. At the rear end of the box or receptacle we suitably mount a chain carrier and trough, said trough and carrier extending more than half of its length within the box or receptacle and below the water-line of said receptacle. Immediately to one side and communicating with the said receptacle is an elevator-flight, within which is suitably mounted a sprocket-chain carrying elevator-buckets.

In the drawings, Figure 1 is a side view of the machine, parts being broken away and in section. Fig. 2 is a top plan view of the same.

1 are legs or standards of the machine, connected at the top by stringers 2 and suitably braced near the bottom by braces 3.

4 is a tank or receptacle suspended by suitable means within the frame of the machine, said tank being constructed, preferably, of galvanized iron or other suitable material.

6 is an elevator-flight extending from a point below the bottom of the tank or receptacle 4 and communicating with said receptacle by means of an opening 7 in the forward wall of said tank, the extreme lower end of the elevator-flight being provided with an exit-port 8, closed when the machine is in operation by means of the screw-threaded cap 9.

10 is a cap fastened to the elevator-flight by means of suitable hinges 11, and 12 is a spout

leading from the elevator-flight to a suitable place of deposit for the grain treated in this machine.

13 are sprocket-wheels journaled in the elevator-flight at the top and at the bottom and geared together by means of the sprocket-chain 14, on which is suitably secured the elevator-buckets 15, said buckets being preferably made of galvanized wire-cloth.

13^a is a sprocket-wheel rigidly secured to the shaft of the sprocket-wheel 13 at the top of the elevator-flight.

16 is a shaft extending across and beyond the sides of the machine and journaled in the strap-bearings 17, secured to the stringers of the machine. 18 is a sprocket-wheel mounted on said shaft in line with the sprocket-wheel 13^a, with which it is connected by means of the sprocket-chain 19.

20 is a gear-wheel mounted upon the shaft 16 outside of the frame of the machine, and 21 is a handle or other source of power connected with the shaft 16.

22 is the hopper of the machine, and 23 is a cut-off mounted immediately below the throat of the hopper and adapted, when desired, to close the throat of the hopper.

24 is a shaft journaled in the stringers of the machine, on which is mounted, within the machine and partly below the water-line of the receptacle 4, a beater 25. While this beater is shown in the drawings as being of star shape, it is of course obvious that any desired style of beater may be used.

26 and 27 are sprocket-wheels mounted on one end of the shaft 24. The shaft 24 is connected with the shaft 16 by means of a sprocket-chain 27, which gears with the sprocket-wheel 28 on the shaft 16 and the sprocket-wheel 26 on the shaft 24.

29 are the side frames of two sieves 30. In this connection it will be noted that one end of the lower sieve 30 extends beyond the lower end of the upper sieve 30, as clearly shown in Fig. 1.

31 are braces connecting the two sieves together and holding them in a fixed relation to each other.

32 are flat steel springs secured to the sides

of the sieves and by means of which the sieves are suspended from the top of the machine in the tank or receptacle 4.

33 is a flat piece of metal secured at its ends 5 to the sides of the uppermost screen 30 and extending entirely across the same and given a slight upward bend in its middle.

34 is a pitman-rod connected at its inner end, by means of the link 35, to the middle of 10 the flat piece of metal 33.

36 is a bell-crank lever suitably pivoted at 37 to the frame of the machine. One end of the bell-crank lever is connected at 38 to the pitman 34.

39 is a shaft suitably journaled in the frame 15 of the machine, on which is rigidly mounted a spur-wheel 40, having a wrist-pin 41, said spur-wheel meshing with the gear-wheel 20.

42 is a link or rod, one end of which is secured to the wrist-pin, while the other end is 20 secured to one end of the bell-crank lever 36, as clearly shown in Fig. 2 of the drawings.

43 is a slide or trough mounted at the rear of the machine and extending a greater part 25 of its length within the tank or receptacle 4 and below the water-line of said tank or receptacle.

44 are shafts suitably journaled in the frame of the machine, on which are mounted, respectively, sprocket-wheels 45, immediately 30 over and within the edges of the trough 43.

46 are sprocket-chains connecting the sprocket-wheels 45, and 47 are skimmers or buckets extending the entire width of the 35 trough 43 and connected at their respective ends to the sprocket-chains 46, as clearly shown in Fig. 2.

48 is a sprocket-wheel rigidly secured to one end of the shaft 44 outside of the frame of the 40 machine, and 49 is a sprocket-chain connecting the sprocket-wheel 48 with the sprocket-wheel 27 on the shaft 24.

The grain is introduced into the hopper 22, from which it runs into the water in the tank 45 4. The beater 25, revolving, strikes and sinks the grain almost immediately after it strikes the water. All light stuff—such as smut-bulbs, wild oats, and other like seed—float to the surface, and the sprocket-chains 46, with 50 the skimmers or buckets 47, working in the trough 43, skims the light seed from the surface of the water and discharges them at the rear end of the trough 43 as refuse. The sound grain passes over the two sieves 30, 55 which have a shaking motion imparted by the crank-lever 36 and the shaking-rod 34. Thus the seed being under water and subjected to this shaking motion, they are thoroughly cleansed and freed from all impurities and foreign matter. The grain drops 60 from the lower end of the lower screen 30

through the opening 7 in the trough into the elevator-flight, thence into the elevator-buckets 15, and is further cleansed by being drawn 65 up through the water in the elevator-shaft; but as soon as the elevator-buckets have reached a point above the water-level in the tank 4 the water is all drained from the elevator-buckets, inasmuch as the buckets are 70 made of perforated material. Above this point the grain is in a measure dried by reason of the rapid motion of the elevator-chain 14.

The screens 30 being suspended by means of the flat springs 32 and having the link connection 35 between the shaking-rod and 75 the strap 33 are very effective in scouring and cleaning the grain introduced in the machine.

The tank is made of galvanized iron, preferably, in order that the water may be heated 80 in the same by means of a gas-jet or other flame located immediately under said tank. Of course it is obvious that instead of heating the water we may introduce certain chemicals into the water that are known to kill the 85 germ of smut.

The water may be drained from the machine by removing the screw-threaded cap 9 at the bottom of the elevator-flight.

What we claim, and desire to secure by Letters Patent, is— 90

1. In a machine of the character described, the combination with the tank, flat-spring supports in the same, a series of screens suspended in the tank on said supports, at angles less than a right angle to each other, 95 means to agitate the screens, a beater extending across said tank at the top and partly below the water-line of said tank and a trough extending into the rear end and partly below 100 the water-line of the tank and a revolving skimmer working in said trough.

2. In a machine of the character described, the combination with the tank, flat-spring supports in the same, a series of screens suspended in the tank on said supports at angles less than a right angle to each other, 105 means to agitate the screens, a beater extending across said tank at the top and partly below the water-line of said tank, a trough extending into the rear end and partly below 110 the water-line of the tank, a revolving skimmer working in said trough, and an elevator-flight having an opening extending into said tank below the screens, and an elevator-chain 115 carrying perforated buckets mounted in said flight.

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Witnesses:

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