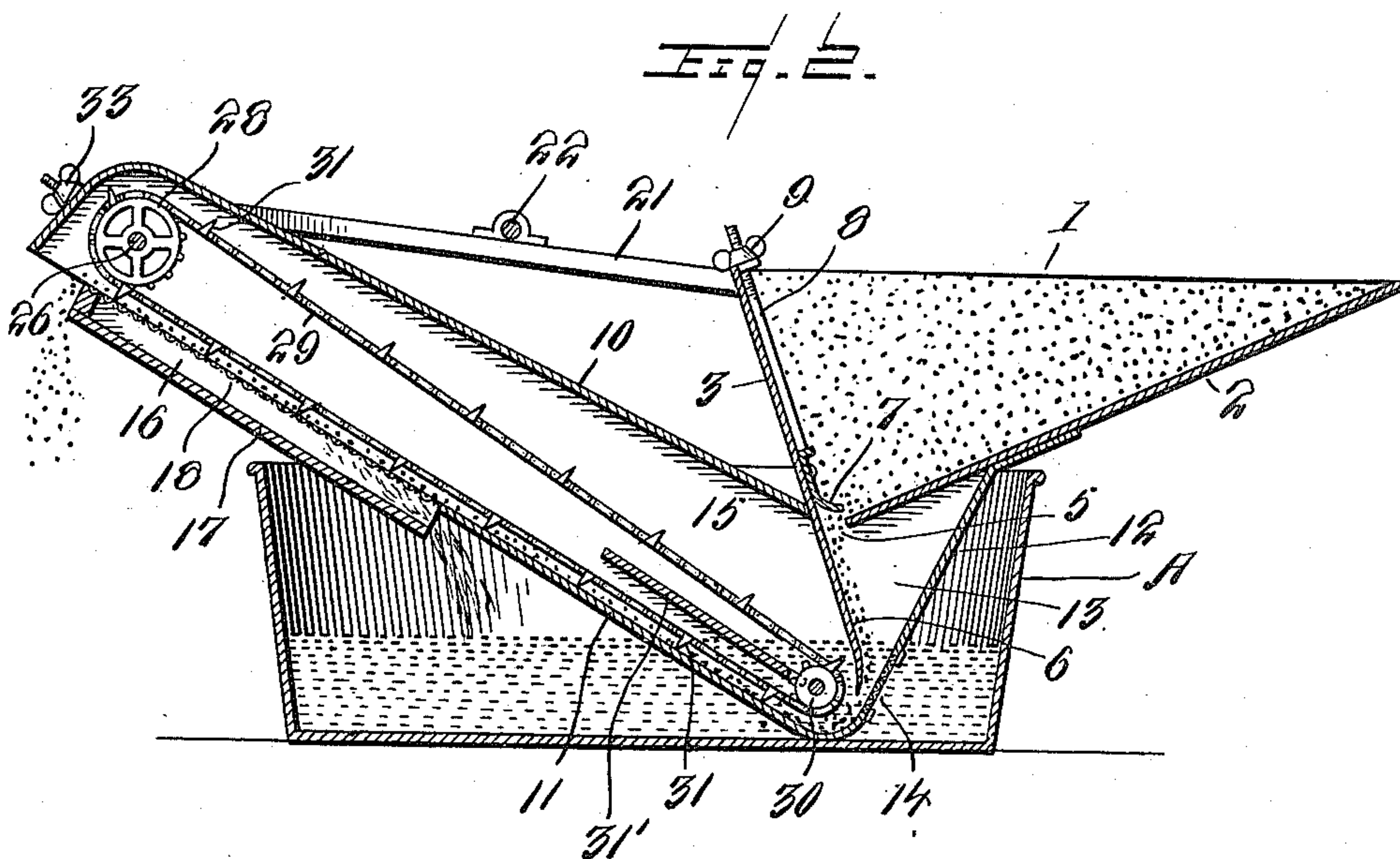
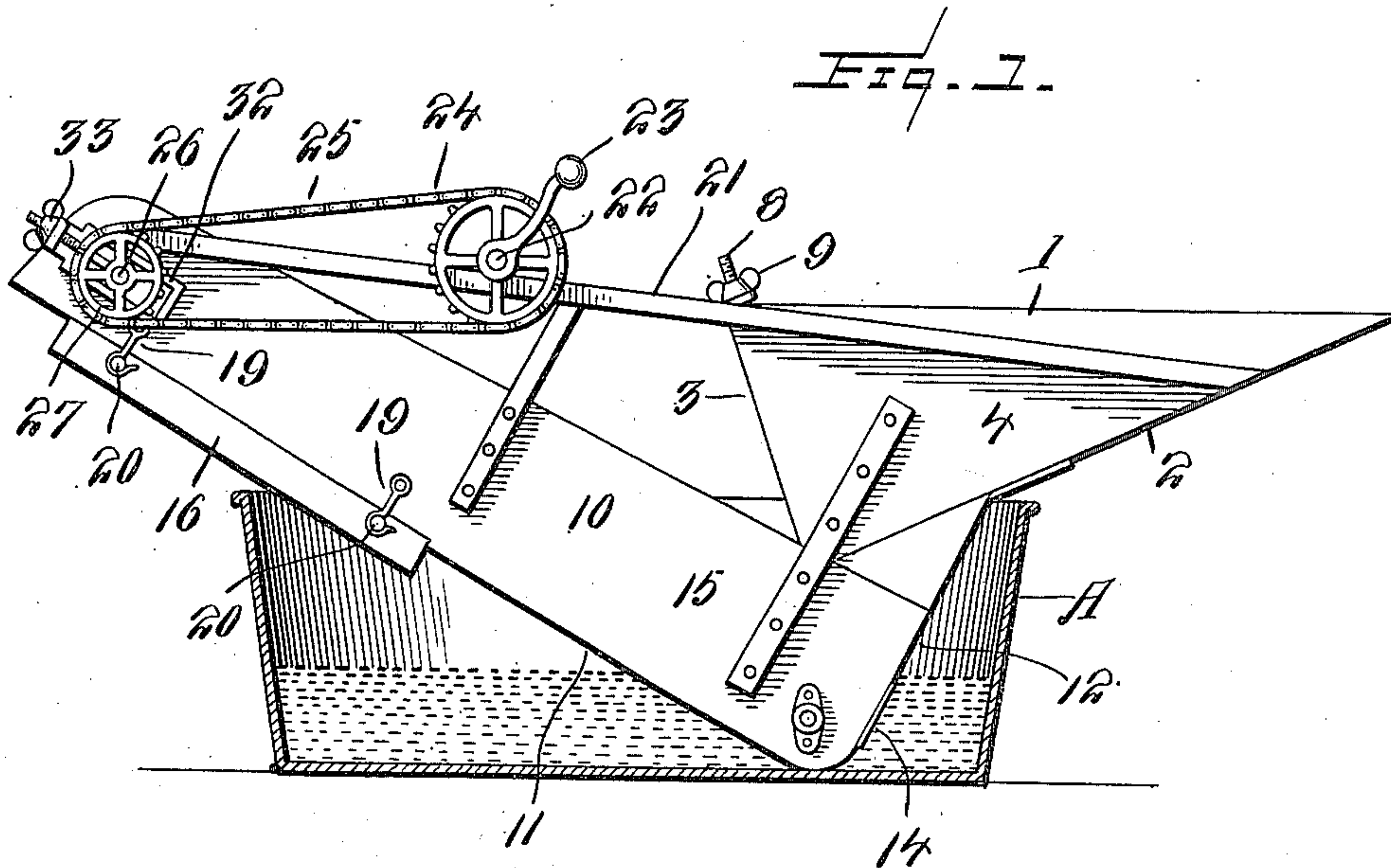


D. A. MAANUM.
SMUT CLEANER,
APPLICATION FILED FEB. 25, 1910.

964,290.

Patented July 12, 1910.

2 SHEETS—SHEET 1.



Witnesses
E. R. Puffert
C. Bradley.

Inventor
Dedrick A. Maanum.
By Victor J. Evans.
Attorney

D. A. MAANUM.
SMUT CLEANER.
APPLICATION FILED FEB. 25, 1910.

964,290.

Patented July 12, 1910.

2 SHEETS—SHEET 2.

Fig. 3.

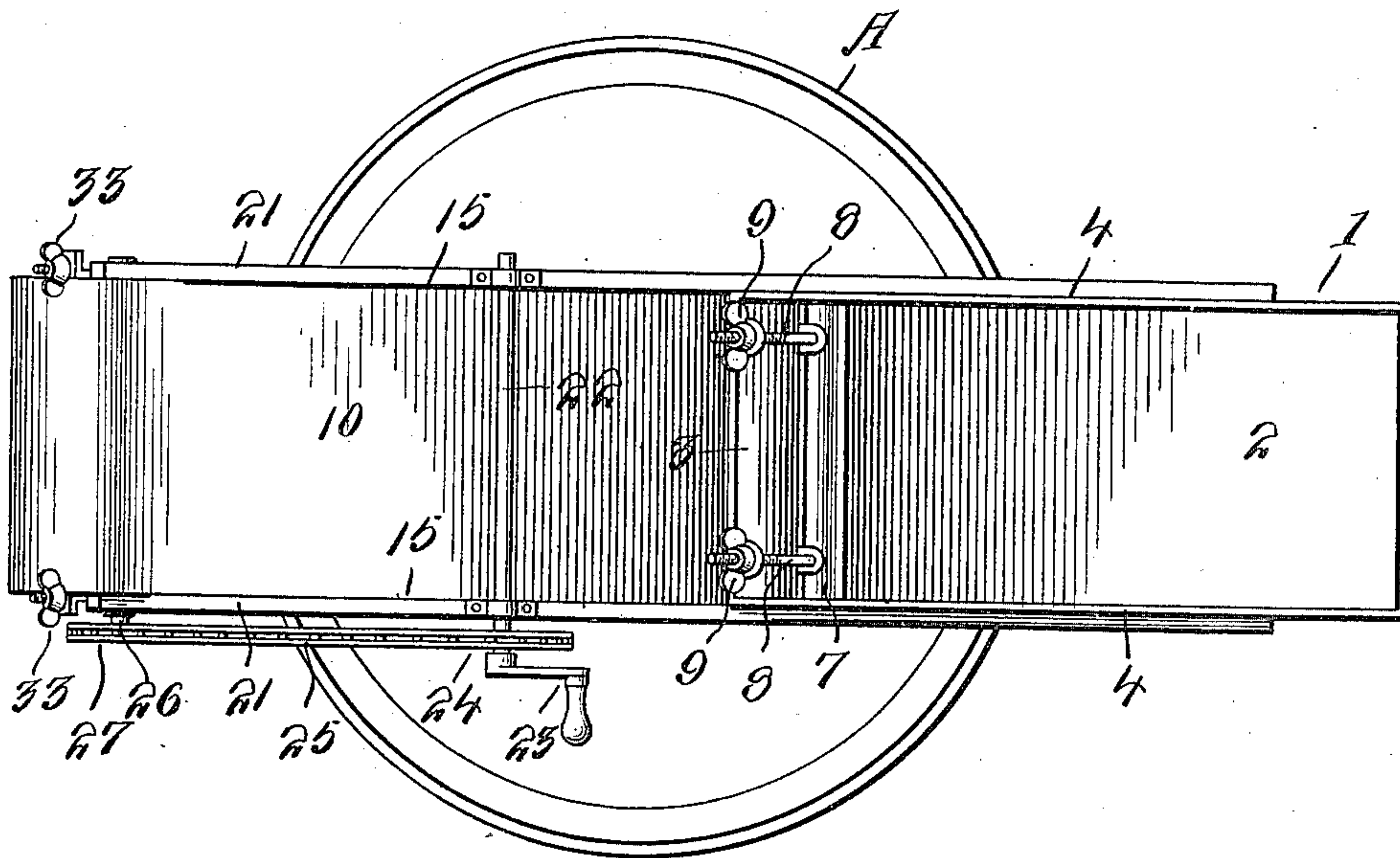


Fig. 4.

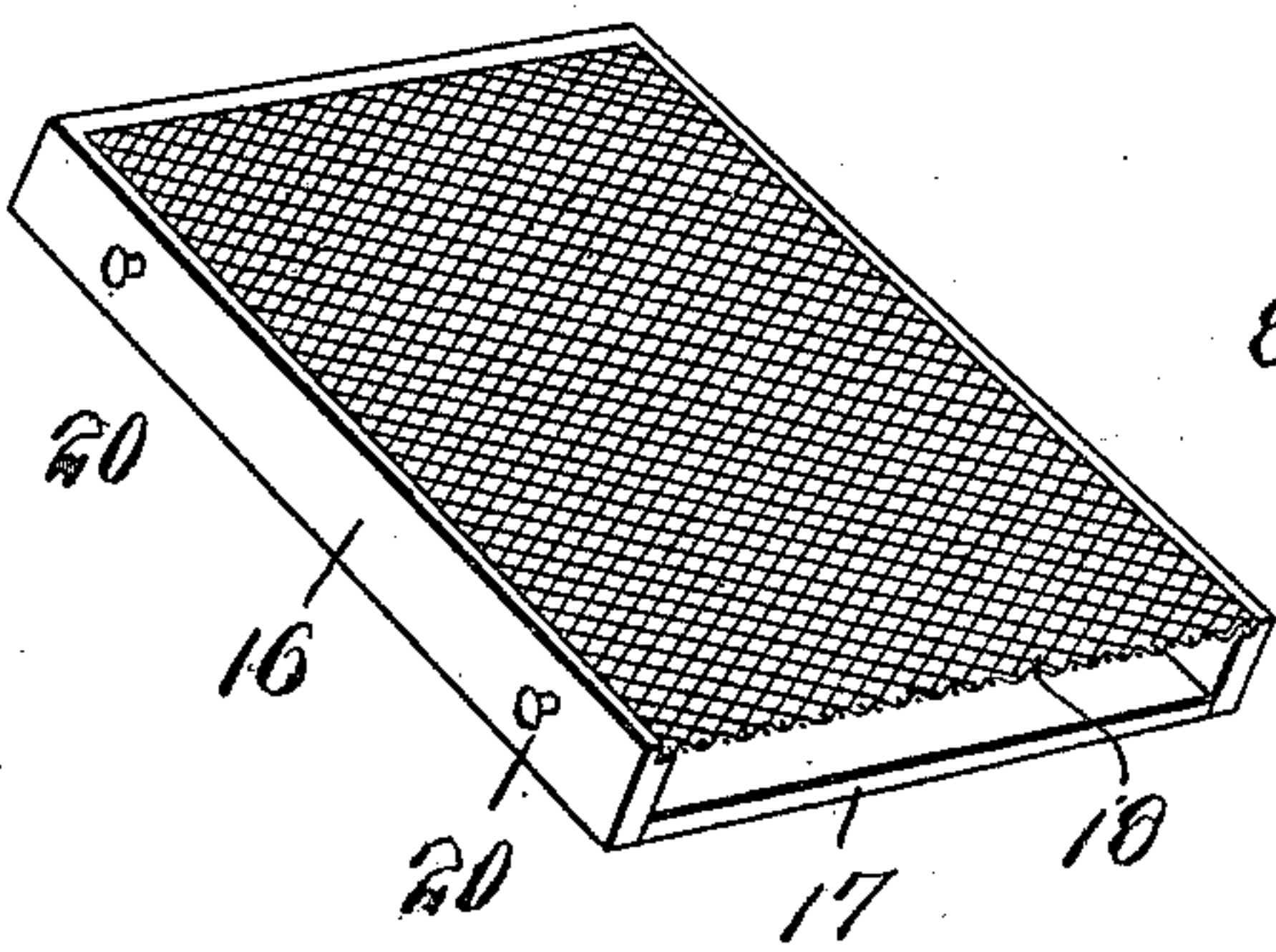
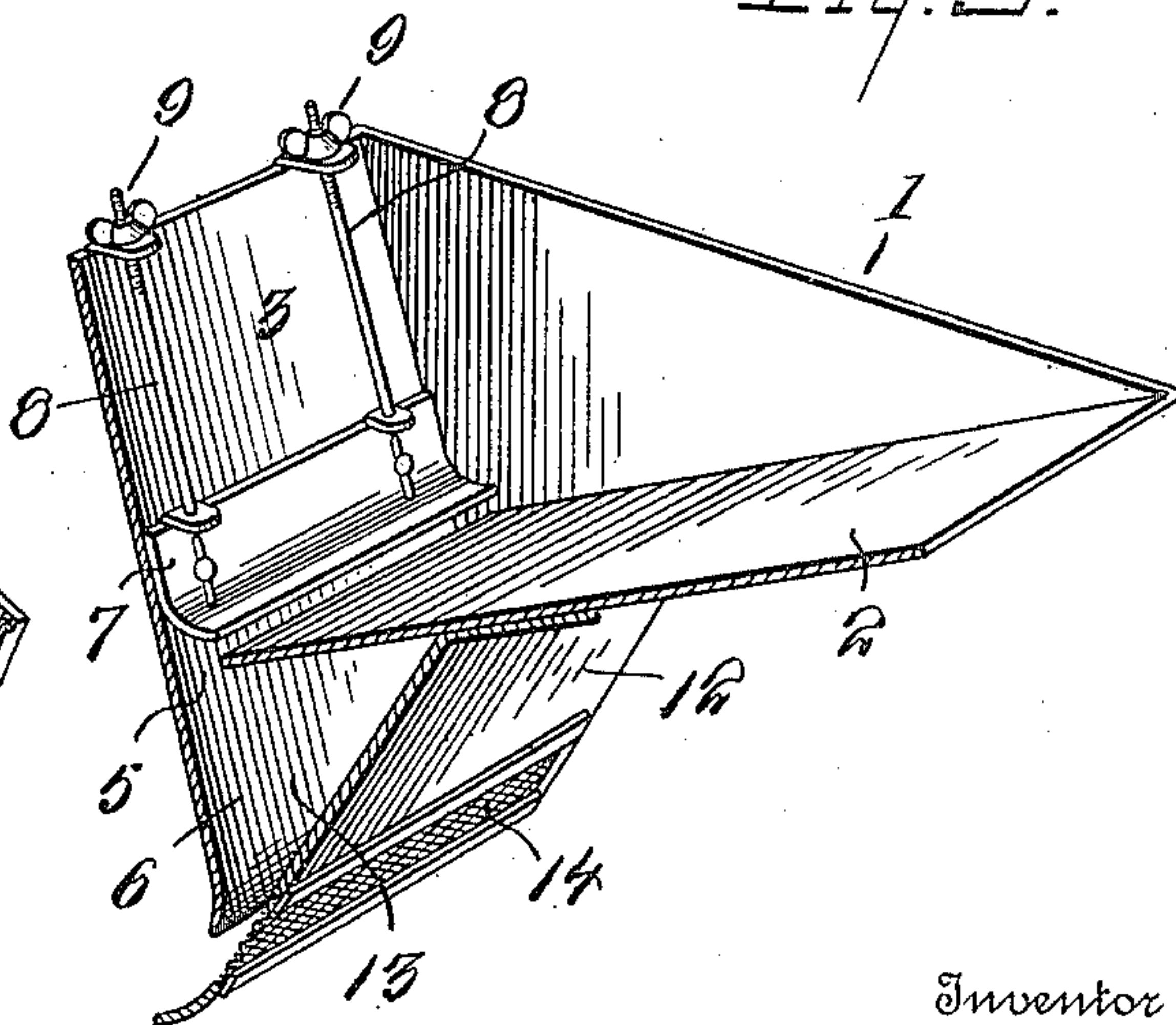


Fig. 5.



Witnesses
E. R. Ruppert
C. B. Bradley.

Inventor
Dedrick A. Maanum.

By Victor J. Evans
Attorney

UNITED STATES PATENT OFFICE.

DEDRICK A. MAANUM, OF CLONTARF, MINNESOTA.

SMUT-CLEANER.

964,290.

Specification of Letters Patent.

Patented July 12, 1910.

Application filed February 25, 1910. Serial No. 545,889.

To all whom it may concern:

Be it known that I, DEDRICK A. MAANUM, a citizen of the United States, residing at Clontarf, in the county of Swift and State of Minnesota, have invented new and useful Improvements in Smut-Cleaners, of which the following is a specification.

This invention relates to a machine for cleaning and removing smut from grain and consists of that type which the grain is fed into a curing solution or washing liquid and removed therefrom by an endless conveyer.

The invention has for one of its objects to improve and simplify the construction and operation of machines of this character so as to be comparatively simple and inexpensive to manufacture, reliable and efficient in use and readily adapted for different kinds of grains.

Another object of the invention is to provide a novel arrangement of grain feeding means and an endless conveyer for moving the grain through the washing liquid and carrying the same to a plate over which the grains roll in their ascent, whereby a sort of scrubbing or cleaning action is produced, there being a screen above the plate for permitting the liquid to flow back into the liquid containing tank, so that waste will be prevented.

With these objects in view, and others as will appear as the description proceeds, the invention comprises the various novel features of construction and arrangement of parts which will be more fully described hereinafter and set forth with particularity in the claims appended hereto.

In the accompanying drawings, which illustrate one embodiment of the invention, Figure 1 is a side view thereof. Fig. 2 is a longitudinal section. Fig. 3 is a plan view of the machine. Fig. 4 is a perspective view of the screen. Fig. 5 is a sectional perspective view of the hopper and feed regulator therefor.

Similar reference characters are employed to designate corresponding parts throughout the several views.

Referring to the drawing, A designates the tank, that contains the washing solution or liquid and in the present instance, the tank is shown as an ordinary wash tub in which the apparatus is set. The apparatus comprises a hopper 1, which has

an inclined bottom 2, which coöperates with an inclined end wall 3 to form an approximately V-shaped chamber, the sides of which are closed by side walls 4. The bottom 2 has its lower edge slightly spaced from the wall 3 to form an outlet 5 for the material contained in the hopper and under the outlet is an inclined material guiding plate 6, which may be a continuation of the inclined wall 3 of the hopper. The feed of the material is regulated by a valve 7, which extends across the outlet or opening 5, and is supported by one or more rods 8, each movable longitudinally by a nut 9, so that the valve can be moved toward or from the bottom 2 at the outlet and thus vary the area of the opening through which the material flows.

Connected with the bottom of the hopper is an upwardly inclined chute or elevator 10, which consists of a bottom plate 11, which is bent upwardly at 12 to connect with the bottom of the hopper and this upwardly extending portion 12 coöperates with the material guiding plate 6 to form a secondary hopper 13, through which the material passes to the washing liquid, the lower portion of the secondary hopper being open and provided with a screen 14 to permit the liquid to freely enter the lowermost portion of the chute, the side walls 15 of the latter being solid so as to prevent the entrance of liquid, except through the screen 14.

The bottom 11 extends along only the lower portion of the chute or elevator and the upper portion is open, and at this opening is arranged a combined screen and drain device for permitting the washed grain to drain while passing over the screen and the dripping from the grain flows back into the tank A. This device comprising a frame 16, which has a solid bottom 17 and secured to the frame and spaced from the bottom is a flat screen netting 18, disposed substantially in the same plane with the plate 11 of the elevator duct or chute. The frame 16 extends only around three sides of the device and is open at the bottom so that the liquid draining from the grain can return to the tank. This combined screen and drain device is removably supported on the upper portion of the chute 10 by means of hooks 19 engaging buttons or projections 20 on the sides of the frame 16. The upper end of the chute is connected by braces 21

with the top of the wall 3 of the hopper so that a durable and rigid structure is produced. On these braces is mounted a horizontal shaft 22, that has an operating crank 23 at one end and also a sprocket wheel 24 around which passes a sprocket chain 25. In the upper end of the chute 10 is a horizontal shaft 26, which has a sprocket wheel 27 with which the sprocket chain meshes. On this shaft and arranged within the chute is a sprocket wheel 28 around which passes the upper end of a continuous conveyer chain 29, the lower end of which passes around a sprocket wheel or idler 30 rotatably mounted in the bottom of the chute. On the chains 29 are arranged spaced buckets or vanes 31, which move the material through the liquid and over the plate 11 and screen 18 and finally discharges the material out of the upper end of the chute or elevator. The shaft 26 is mounted in slidable bearing boxes 32, that are adjustable by means of screws 33 so that both the driving chain 25 and conveyer chain can be simultaneously loosened or tightened as required. In the lower portion of the elevator or chute is arranged a plate 31' which extends from one side of the chute to the other and is disposed parallel with and between the upper and lower flights of the conveyer chain, the bottom portion of the plate entering the liquid for preventing the grains from circulating around the sprocket wheel.

In practice, the smut machine is set into a tube or other tank, which contains the washing liquid, the depth of the latter being such that a considerable portion of the bottom plate 11 of the chute or elevator will be above the level of the liquid, or in other words, the liquid will reach approximately to the upper edge of the screen 14. The material is now supplied to the hopper and the feed controlled by properly setting the valve 7. The driving shaft is then operated by turning the crank so as to cause the endless conveyer to operate. The material flows from the hopper along the plate 6, which has its lower edge terminated between the sprocket wheel and upwardly extending wall 12, so that it will not interfere with the buckets of the chain passing under it, or with the grain flowing between it and the wall 12. The grain is thus presented continuously to the successive buckets, which move downwardly into the liquid and then upwardly along the bottom of the chute or elevator, carrying the grain through the liquid and upwardly out of the same over the plate 11 and screen 18.

The grain picked up by each bucket will receive a rolling motion as it passes over the plate 11 and as considerable liquid is carried by with the grain a sort of scrubbing action will result and by the time the grain reaches the screen, the water can drain back

into the tub or tank. The screen and drain device can be removed for the purpose of cleaning or for substituting a different screen whenever occasion requires. It will thus be seen that the grain does not remain long into contact with the water and a highly efficient cleaning action is produced. And furthermore, the liquid is kept in circulation since it enters the chute at the bottom and drains back from the chute through the screen at the upper portion of the bottom of the chute. It will be noted that the apparatus is bodily removed from the tank and is in fact a separate unitary structure and can be lifted off the tank when the washing liquid is to be removed.

From the foregoing description taken in connection with the accompanying drawing, the advantages of the construction and of the method of operation will be readily apparent to those skilled in the art to which the invention relates, and while I have described the principle of operation of the invention, together with the device which I now consider to be the best embodiment thereof, I desire to have it understood that the apparatus shown is merely illustrative and that such changes may be made when desired as are within the scope of the claims.

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

1. In a machine of the class described, the combination of a main hopper having an opening in its bottom, an elevator having its lower end disposed under the hopper, a plate extending from the hopper into the elevator and cooperating with the end wall of the latter to form a secondary hopper, a valve controlling the feed from the main to the secondary hopper, an endless conveyer for carrying the material through the elevator from the secondary hopper, a portion of the bottom of the elevator being open, and a removable screen and drainage device at the said opening, with a tank in which the lower end of the elevator is submerged, said screen being disposed outside the elevator and having its lower end extending into the tank.

2. In a machine of the class described, the combination of a hopper composed of downwardly inclined walls spaced from each other at the bottom to form an outlet, one of the walls projecting below the outlet to form a guide for the material, an elevator connected with the hopper and extending from one side of the same, means for bracing the upper end of the elevator from the hopper, means for admitting liquid to the lower end of the elevator where the material passes off the said extended wall of the hopper, a combined screen and drainage device forming a portion of and separable from the bottom of the elevator, and means for removably mounting the said device on

the elevator, an endless conveyer provided with buckets and extending longitudinally of the elevator with its bottom flight disposed in coöperative relation with the bottom of the elevator, and a driving mechanism for the conveyer, with a tank in which the machine is removably mounted with the lower end of the elevator submerged therein,

and the lower end of the combined screen and drainage device extending into the tank. 10

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

DEDRICK A. MAANUM.

Witnesses:

A. A. ROBERTS,
T. A. MAANUM.