

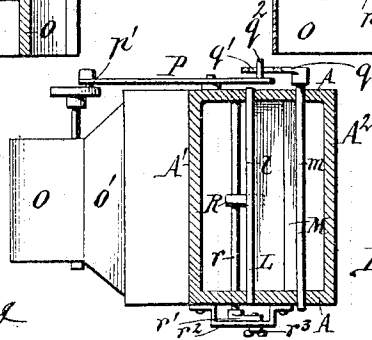
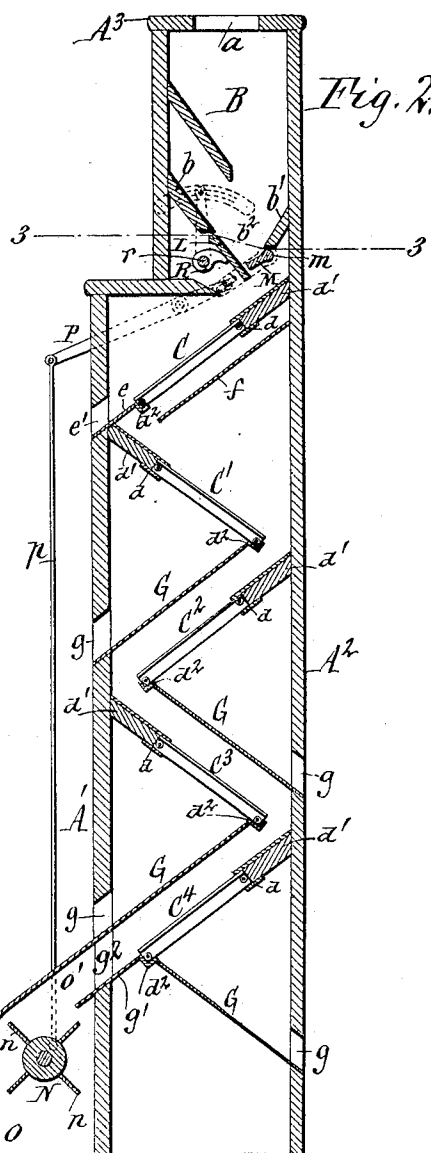
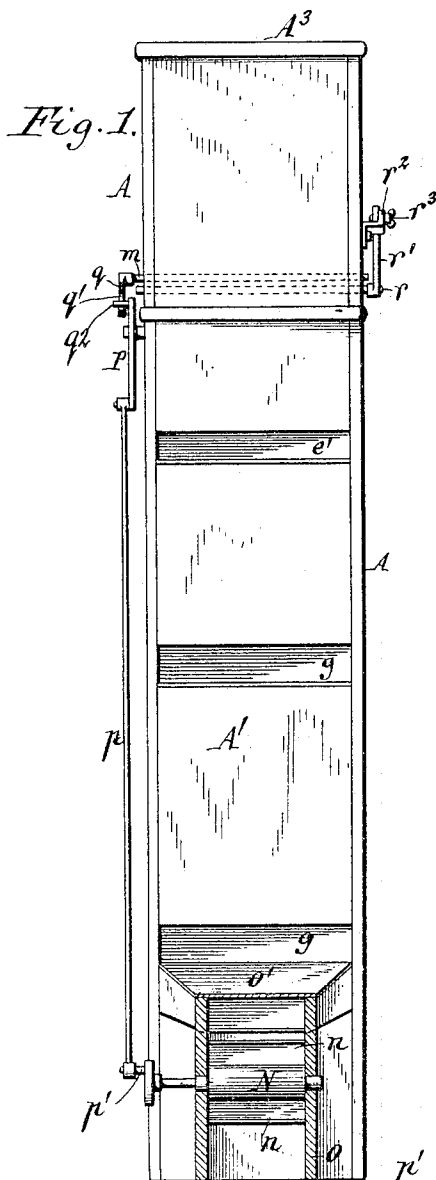
No. 766,623.

PATENTED AUG. 2, 1904.

W. W. HUNTLEY.
GRAIN SEPARATOR.
APPLICATION FILED DEC. 27, 1898.

NO MODEL.

2 SHEETS—SHEET 1.



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No. 766,623.

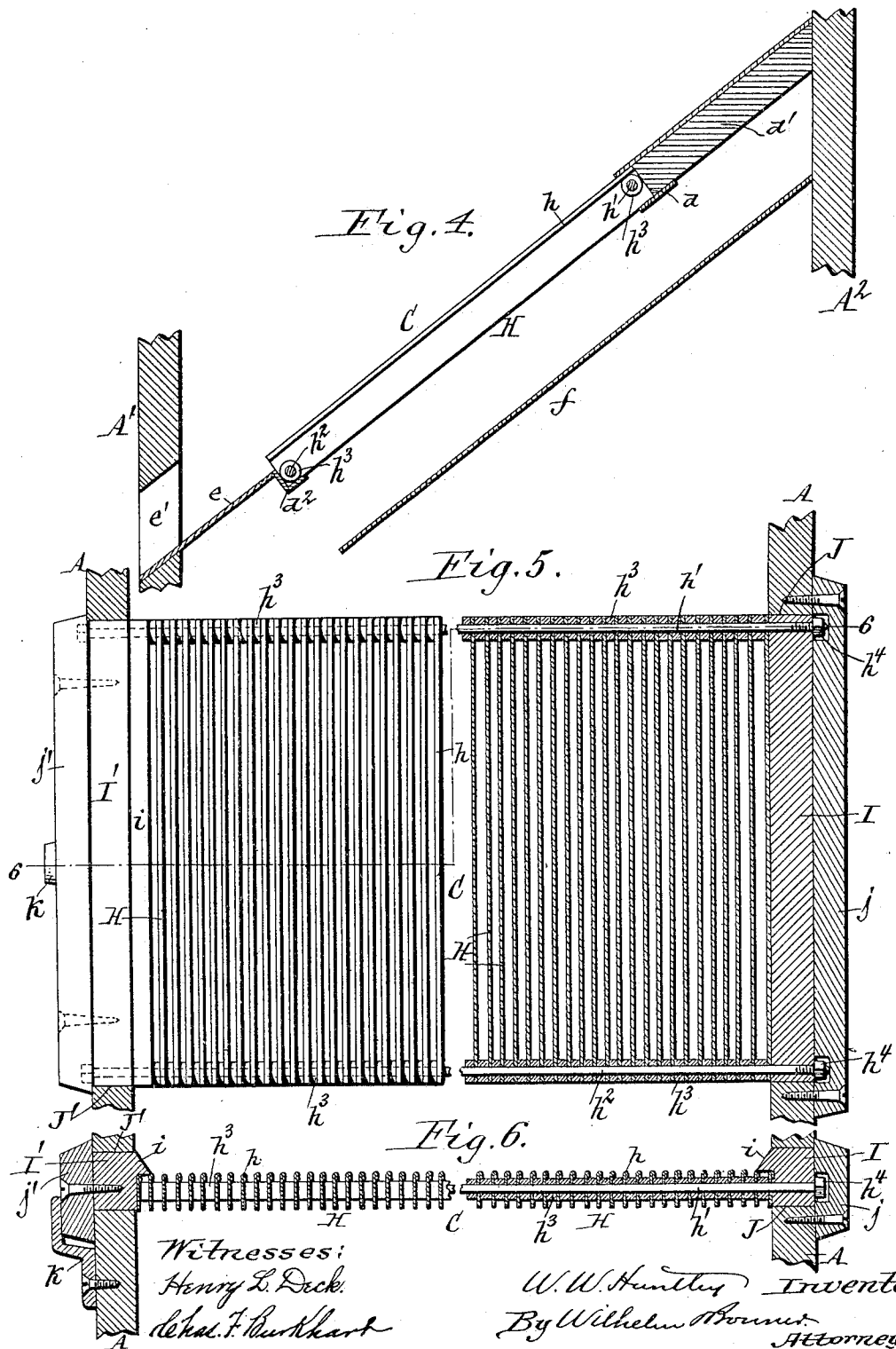
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NO MODEL.

2 SHEETS—SHEET 2.



UNITED STATES PATENT OFFICE.

WILLIAM W. HUNTLEY, OF SILVERCREEK, NEW YORK, ASSIGNOR TO THE
HUNTLEY MANUFACTURING COMPANY, OF SILVERCREEK, NEW YORK.

GRAIN-SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 766,623, dated August 2, 1904.

Application filed December 27, 1898. Serial No. 700,361. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM W. HUNTLEY, a citizen of the United States, residing at Silvercreek, in the county of Chautauqua and State of New York, have invented new and useful Improvements in Grain-Separators, of which the following is a specification.

This invention relates principally to a grain-separator in which the screens are arranged in zigzag fashion one below the other and in which the grain flows by gravity from one screen to the other.

One of the objects of my invention is to produce a screen which is simple and durable in construction and which is not liable to become clogged.

Another object of my invention is to provide a feed device whereby the grain is distributed uniformly over the entire width of the screens and which is operated by the grain flowing through the apparatus.

In the accompanying drawings, consisting of two sheets, Figure 1 is a front elevation, partly in section, of my improved grain-separator. Fig. 2 is a vertical longitudinal section of the same. Fig. 3 is a horizontal section thereof in line 3 3, Fig. 2. Fig. 4 is a fragmentary longitudinal section of one of the screens and its supports on an enlarged scale. Fig. 5 is a horizontal section of the same. Fig. 6 is a cross-section in line 6 6, Fig. 5.

Like letters of reference refer to like parts in the several figures.

The main inclosing case of the separator consists of two side walls A A, a front wall A', a rear wall A'', and a top board A'', having an inlet a for the grain or other material to be separated. The upper part of the case is contracted and forms a feed-hopper B, the bottom of which is formed by two boards b b', which incline inwardly from the front and rear walls of the case, respectively, and which are separated at their lower ends by a discharge-opening b'.

C C' C'' C''' C'''' represent five screens arranged in zigzag fashion one below the other within the casing. Each of the screens is supported at its upper end in a transverse guide d, arranged on the inner end of a guide-board d',

which inclines inwardly from the adjacent end wall of the casing, and its lower end is supported by a transverse guide d'', supported from the side walls of the casing. In the arrangement of the screens shown in the drawings the material passes from the feed-hopper upon the head of the uppermost screen C and the coarse portion of the material passes from the tail or lower end of the screen upon a delivery-board e and is conducted by the latter through an opening e' in the front wall. The fine material passing through the uppermost screen is conducted by a deflecting-plate f' upon the head of the second screen C', and from the latter the grain passes successively over the remaining screens, the material passing from the tail or lower end of each screen to the head of the screen next below. The material passing through each of the lower screens C' C'' C''' C'''' is conducted by a deflecting-plate G through an opening g in the adjacent front or rear wall of the casing. The material passing over the tail or rear end of the lowermost screen C'''' is preferably discharged by a plate g' through an opening g'' in the front wall of the casing.

Each of the screens is constructed as follows: H represents a number of straight thin bars or strips, preferably of sheet metal, which are arranged vertically or on edge and lengthwise side by side and are separated from each other to form narrow longitudinal slits or spaces between the strips. The upper edge of each strip is folded or doubled over, as shown at h, to stiffen the strip and also to make the strip thicker along its upper longitudinal portion than along its lower portion, thereby forming a space between adjacent strips which is narrow at the top and wide at the bottom. This enables any material which enters between the upper thick portions of adjacent strips to freely escape through the wider space between the lower portions of the strips, thereby preventing clogging of the screen. The screen bars or strips are supported by front and rear tie or supporting bars or rods h' h'', which pass transversely through openings formed in the front and rear ends of the strips and through side bars I I',

which are arranged along the outermost strips. The screen strips are separated the desired distance by means of washers or spacing-sleeves h^3 , which are mounted on the tie-rods between the strips. The screen strips, washers, and side bars are tightly drawn together by the head or shoulder on one end of each tie-rod (shown by dotted lines in Fig. 5) and a screw-nut h^4 upon the opposite end of the tie-rod. In order to hold the screen strips rigidly in their spaced position at the head of the screen, the tie-rod and spacing-washers at the head of the screen are arranged closely to the upper edge of the strips, as shown in Fig. 4, thereby preventing the strips from being bent or deflected at that point. In order to prevent kernels or particles which project downwardly into the space between the strips from lodging against the spacing-washers at the tail end of the screen, these washers and the tie-rod supporting the same are arranged as low as possible on the screen strips, as shown in Fig. 4, so that the material tailing off from the screen clears the same.

In order to prevent the material from lodging in the space between each outermost strip and the adjacent strip, each side bar is provided on its inner side with a guard-flange or rib i , which overhangs the outermost pair of strips on the adjacent side of the screen, as shown in Figs. 5 and 6.

The screen is seated with its side bars in slots or openings $J J'$ in the side walls of the casing, through one of which the screen may be removed for cleaning or making repairs. The joints between the side bars and the casing are covered by cleats $j j'$, one of which, j , is preferably secured to the casing, while the other is secured to the opposite side bar, which is arranged in the opening through which the screen is removed. The screen may be held in the casing by any suitable means—for instance, by a turn-button k , arranged on the casing and engaging with the outer side of the cleat j' , as shown in Figs. 5 and 6.

As the material passes from the feed-hopper to the screen the same is distributed uniformly over the entire width of the screens by a feeding device which is constructed as follows: L represents a regulating valve or gate, and M a distributing-plate, both arranged below the opening in the hopper and whereby the flow of the grain from the hopper is regulated and distributed. The regulating-valve is secured with its upper end to a transverse rock-shaft l , which is journaled in the side walls adjacent to the lower end of the front bottom board b of the hopper, so as to turn in a vertical plane. The distributing-plate is secured at its upper end to a transverse rock-shaft m , which is arranged adjacent to the lower end of the rear bottom board b' of the hopper and journaled in bearings in the side walls. The distributing-plate is arranged substantially at right angles to the regulating-valve, and the lower edge

of the plate faces the inner side of the valve. By vibrating the plate the grain is agitated and caused to flow in a stream of uniform width and thickness from the hopper through the space between the plate and regulating-valve, thereby preventing bridging or lodging of the grain and causing the grain to spread uniformly over the entire surface of the top screen and any following lower screens, whereby all portions of the screens are brought alike into use and the capacity of the separator is increased and the separation rendered uniform. This separator contains no parts which require to be operated by power excepting the distributing-plate, and in order to dispense with a motor for operating this plate which is distinct from the separator the power exerted by the grain or other material flowing through the separator is utilized for actuating the distributing-plate. For this purpose the flowing grain is directed against the wings n of a rotary wheel N , whereby the latter is turned and the movement of this wheel is transmitted to the distributing-plate. As shown in the drawings, the wheel is arranged in front of the casing and below the outlet g^2 for the material which tails off from the lowermost screen C^4 , so that this material strikes the blades of the wheel with great force by reason of the momentum which the material has gathered in flowing over the screens and turns the wheel, which latter can be of comparatively small diameter. The horizontal shaft of this wheel is journaled in the side walls of a housing O , which incloses the wheel, said housing being connected at its upper end by a chute O' with the outlet of the lowermost screen C^4 and having an opening in its bottom for the discharge of the material after the same has engaged the driving-wheel and turned the same.

The motion may be transmitted from the wheel to the distributing-plate by any suitable mechanism, that shown in the drawings consisting of a rock-lever P , pivoted to the outer side of the casing and having one of its arms connected by a rod p with a crank p' on the wheel-shaft, and a rock-arm q , arranged on one end of the shaft of the distributing-plate and connected with the other arm of the rock-lever by a slot q' and a pin q^2 or otherwise.

By adjusting the regulating-valve toward or from the end of the distributing-plate the thickness of the stream of grain, and consequently the quantity of grain, passing from the hopper to the screens is decreased or increased. This adjustment of the valve is effected by a cam R , against which the valve rests by gravity and which is mounted on a transverse shaft r , journaled in the side walls of the casing. The shaft r is turned so that its cam moves the valve toward or from the distributing-plate by an adjusting-arm r' , secured to one end of the cam-shaft and held in

its adjusted position on a segment r^2 by a clamping screw-nut r^3 .

I claim as my invention—

1. A separator-screen composed of straight
5 flat strips arranged on edge lengthwise side by
side and having their upper edges folded over
to increase the thickness of the upper por-
tions of the strips, spacing devices between
said strips, and ties for holding the strips and
10 spacing devices together, the spacing devices
at the front end of the screen being arranged
near the upper edges of the strips, while the
spacing devices at the rear end of the screen
are arranged near the lower edges of the
15 strips, substantially as set forth.

2. A separator-screen having straight strips
of sheet metal arranged on edge lengthwise
side by side, each strip having its upper edge
portion folded over against one side of its
20 body, thereby forming an enlarged head
which is rounded at the top and flat at the
sides, substantially as set forth.

3. The combination with the feed-hopper and
the inclined screen which receives the material
25 to be separated from the hopper, of a movable
distributing device arranged above said screen

in the path of the material passing to the
screen, a driving-wheel which is arranged be-
low said screen and rotated by the material
escaping from said screen, and connections 30
between said driving-wheel and distributing
device to actuate the latter, substantially as
set forth.

4. The combination with the feed-hopper and
the inclined screen which receives the material 35
to be separated from the hopper, of a vibrat-
ing distributing-plate arranged on one side of
the outlet of the hopper, a regulating-valve
arranged on the opposite side of the outlet of
the hopper and capable of adjustment toward 40
and from the distributing-plate, a driving-
wheel which is arranged below the screen and
is rotated by the material escaping from the
screen, and connections between said driving-
wheel and distributing-plate to actuate the 45
latter, substantially as set forth.

Witness my hand this 19th day of Decem-
ber, 1898.

W. W. HUNTLEY.

Witnesses:

JNO. J. BONNER,
ELLA R. DEAN.