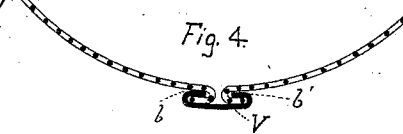
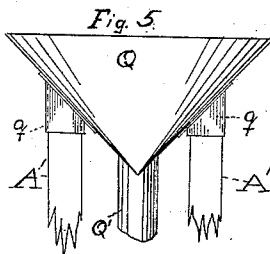
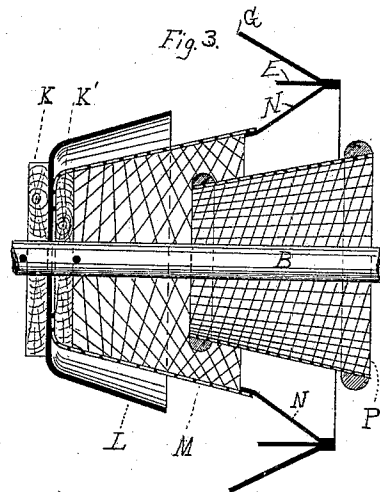
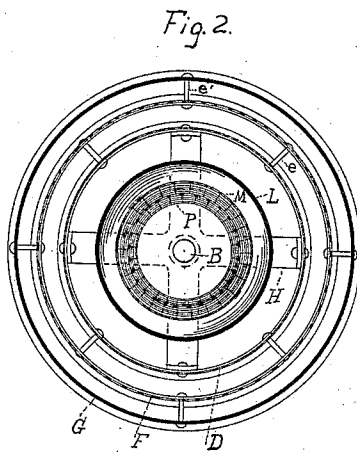
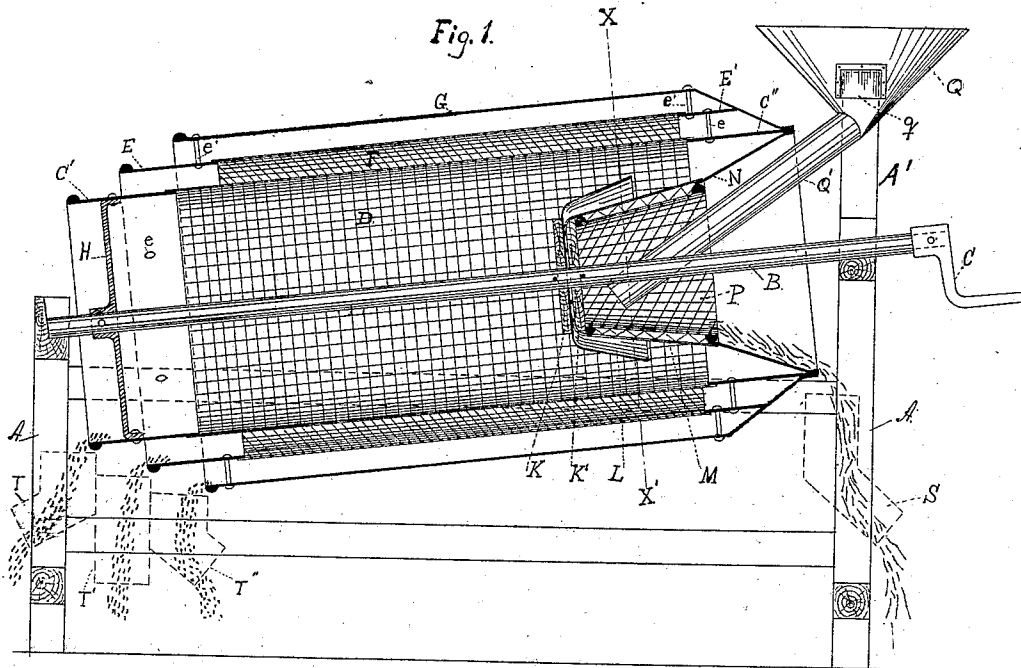


(No Model.)

G. C. BEEMAN.
GRAIN SEPARATOR.

No. 387,204.

Patented Aug. 7, 1888.



Witnesses
Emma F. Elmore,
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UNITED STATES PATENT OFFICE.

GEORGE C. BEEMAN, OF MINNEAPOLIS, MINNESOTA.

GRAIN-SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 387,204, dated August 7, 1888.

Application filed October 12, 1887. Serial No. 252,187. (No model.)

To all whom it may concern:

Be it known that I, GEORGE C. BEEMAN, a citizen of the United States, and a resident of the city of Minneapolis, county of Hennepin, State of Minnesota, have invented a certain new and useful Improvement in Grain-Separators, of which the following is a specification, reference being had to the accompanying drawings.

My invention consists in the construction hereinafter fully described, and particularly pointed out in the claims.

In the drawings, like letters referring to like parts, Figure 1 is a longitudinal vertical section of a machine embodying my improvements. Fig. 2 is a cross-section of the same on the line X X' of Fig. 1. Fig. 3 is a vertical section of the straw catcher or separator detached, on a larger scale, which is shown in position at the upper end of the machine in Fig. 1. Fig. 4 is a detail in cross-section of a part of one of the screens, illustrating my means for fastening together the edges of the screens. Fig. 5 is an end view of the hopper.

A is the supporting-frame, which may be of any suitable kind.

B is a shaft mounted in suitable bearings on the main frame at an inclination to the horizontal plane.

C is a removable crank attached to the upper end of the shaft B.

C' C'' are a pair of imperforate rings or short cylinders of equal diameter, to the adjacent or facing ends of which is secured a cylindrical screen, D, having meshes of a size adapted to retain the first grade of grain and to pass everything else.

E E' are rings or short imperforate cylinders similar to C' C'', but of larger diameter, and are supported at a fixed distance outside of C' C'' by the studs *e*. To the facing ends of E E' is secured a cylindrical screen, F, of like diameter, having meshes of smaller size than D, adapted to retain all the grain received from the screen D which it is desirable to save and to pass the broken grain, cheat, sand, and all other finely-divided foreign material.

G is an imperforate cylindrical shell of larger diameter than the screen F, and held at a fixed distance outside the same by the studs *e'*. These screens are all mounted upon the

shaft B and turn with it, the said shaft passing through the center of the innermost screen. They are supported at a fixed distance from the shaft at their lower ends by the cross-brace H, which is rigidly attached at its central point to the shaft and at its extremities to the interior of the innermost ring, C', and are supported at their upper end indirectly from a disk fixed to the shaft, as hereinafter described.

K is a disk of considerably smaller diameter than the screen D, which is fixed to the shaft B a short distance from the upper end of said screen.

L is an imperforate conical shell encircling the shaft B, having its smaller end fixed to the disk K and having its larger and open end near the upper extremity of the screen D.

M is a conical screen smaller in diameter than the shell L, made of galvanized iron for the purpose of giving it stiffness and strength, and having meshes large enough to freely pass the coarsest kinds of small grain and fine enough to catch the broken bits of straw and other coarse foreign matter.

The galvanized-iron screen M encircles the shaft B inside the shell L. Its small end is clamped to the small end of said shell by a disk, K', fixed to the shaft or in any other suitable way, and its large end extends outward and upward beyond the upper end of the screen D. An imperforate shell, N, in shape like the frustum of a cone, encircles the shaft B, and has its smaller end rigidly attached to the large end of the screen M, and its large end coincident with and rigidly fastened to the outer end of the ring C''. The peripheral walls of the shell N are more sloping than those of the screen M. This shell N is preferably made of galvanized iron, for securing rigidity and strength with lightness. Its function is twofold. It serves as an outlet or chute, conducting the material caught by the screen M out over the upper end of the outer shell, G, and it serves, together with the stiff galvanized-iron screen M, to support the ring C'' and the whole upper end of the concentric screens and cylinders at a fixed distance from the shaft B.

P is a removable galvanized-iron screen similar to M, but open at both ends, of smaller diameters, and having finer meshes. It is placed

within the screen M, as shown in Fig. 1, when wheat is to be run through. When separating oats or barley, it is removed, the screen M being relied on to catch the straw, &c.

5 In Fig. 3 the screen P is shown as it appears when partly removed.

Q is a suitable receiving-hopper, detachably mounted in any suitable way on the upper end of the main frame A, and provided with the inclined delivery-spout Q', extending from the bottom of the hopper to a point near the inner or small end of the screen M or P.

A suitable chute, S, catches the straw bits, &c., as they come from the shell N and conducts them wherever desired. A series of chutes, T, T', and T'', is arranged directly under the tail ends of the concentric rings and shell C E G, conducting the different grades of wheat and the waste matter wherever desired.

20 In order to have the screens D and F work to the best possible advantage, it is desirable to have them as smooth as possible on their interior. I accomplish this end by uniting the edges of the sheet of wire constituting the cylinder in the manner shown in Fig. 4, as follows: I take a strip of thin sheet-iron, V, of the same length as the screen, and I bend both edges first downward and then inward into lips or underturned hook-shaped flanges *b b'*. The edges of the screen I turn first upward and then outward over the lips *b b'*, and clamp the parts firmly together by pressure. This secures the two edges of the screen without break in the continuity of the inner surface.

35 The operation of my machine is as follows: The separator being revolved by the crank C, grain is conducted from the hopper Q by the pipe Q' to the inner end of the screen M or P. The bits of straw and large foreign matter are here caught and conducted out over the upper end of the separator. Everything else falls through onto the shell L, whence it is conducted to the upper end of the inner screen D. The screen D retains all the first-grade grain and conducts the same to the chute T and passes everything else to the outer screen, F. The screen F retains all marketable grain received from the inner screen, D, conducting it to the chute T', and passes everything else to the shell G. The shell G carries everything received down to the chute T'.

The hopper Q is detachably supported on the upper end of the main frame, as shown in Figs. 1 and 6.

The main frame A is composed of A-shaped standards and longitudinal braces, the shaft B having a bearing in the apex of each standard, the standard at the head of the machine being higher than that at the foot. A pair of upright posts, A', are rigidly fastened one to each leg of the head standard and extend upward to the proper height for the hopper. The hopper is provided on its under surface

with metallic sockets *g*, adapted to fit over the upper ends of the posts A'. This gives a firm and detachable mode of attachment and leaves a free space for the removal of the shaft and screens.

The hopper Q is provided with an adjustable gate or outlet. (Not shown.) The spout Q' is conical, the large end being attached to the hopper.

The support H, for sustaining the lower end of the screens, I preferably make of wood instead of iron, as shown, and connect the ends directly to the ring C', without cleats or shoulders, by a screw or wire nail from the outside of the ring, and I bevel the face of the support standing in the direction of the movement of the screen to a knife edge, (not shown,) in order to prevent it from interfering with the free passage of the grain.

It is a matter of great importance to make the straw-catcher M of galvanized iron, as thereby all the wires are soldered together at their points of mutual contact—*i. e.*, at every corner of each mesh—and a strong rigid screen is provided, which is capable of sustaining a load without collapsing, and which is perfectly smooth on its interior. If made of common screen-wire, as the screens D and F, the straw-catcher would not preserve its form and could not be used to support the outer shells and screens. The movable straw-catching screen P is also made of galvanized iron, so that it will preserve its form. The machine is equally well adapted for separating flaxseed. The flaxseed is caught by the outer screen, F, after the coarse foreign matter has been eliminated by the screens P and D, while the fine stuff—sand, grass seed, &c.—passes through to the shell G.

What I claim, and desire to secure by Letters Patent of the United States, is as follows:

1. The combination of a rotary shaft, a series of cylindrical screens of different degrees of fineness mounted thereon, a coarser conical screen in the receiving end thereof closed at its small end and opened at its larger end, and a finer removable conical screen adapted to fit within the coarser conical screen, substantially as set forth.

2. The combination of a rotary shaft, a series of cylindrical screens of different degrees of fineness mounted thereon, a conical screen in the receiving end thereof, closed at its small end and open at its larger end, a finer removable conical screen adapted to fit within the coarser conical screen, and a detachable feed-hopper having a discharge-spout projecting into said conical screen, substantially as set forth.

GEORGE C. BEEMAN.

In the presence of—

EMMA F. ELMORE,
JAS. F. WILLIAMSON.