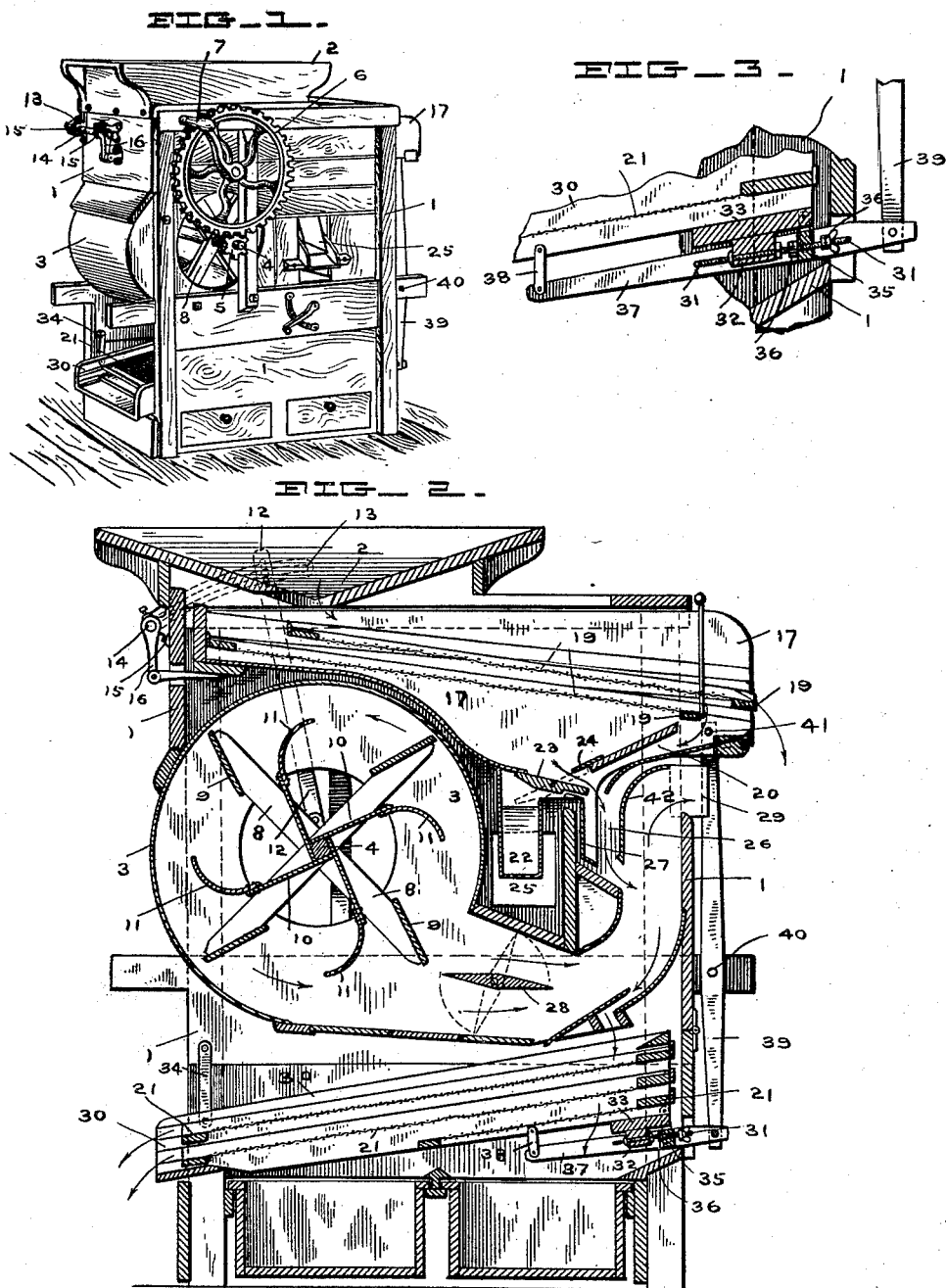


B. S. CONSTANT.
FANNING MILL.

No. 458,843.

Patented Sept. 1, 1891.



Witnesses

H. W. Neely.
C. B. Griffith.

Inventor.

Boston S. Constant,
By his Attorney
C. P. Jacobs.

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FIG. 4.

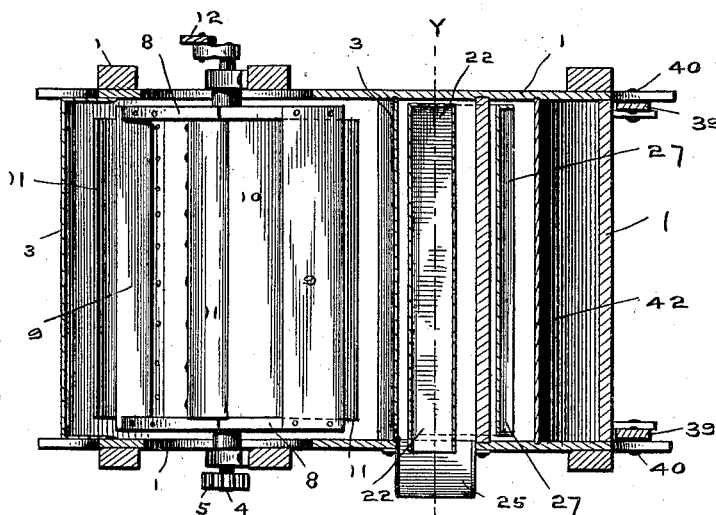
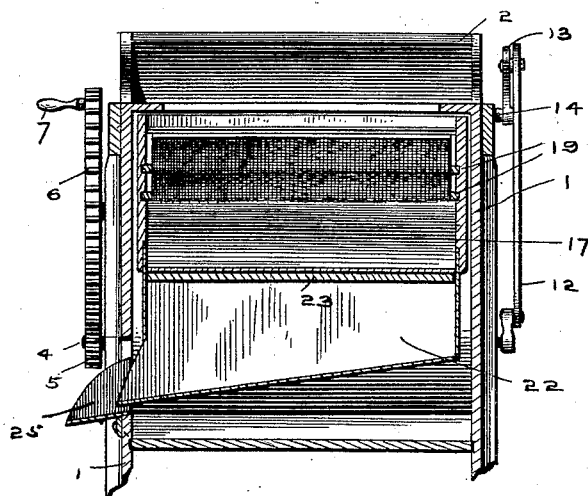


FIG. 5.



Witnesses

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UNITED STATES PATENT OFFICE.

BOSTON S. CONSTANT, OF LOGANSPOUT, ASSIGNOR OF ONE-HALF TO
NEWTON M. BOWEN, OF INDIANAPOLIS, INDIANA.

FANNING-MILL.

SPECIFICATION forming part of Letters Patent No. 458,843, dated September 1, 1891.

Application filed January 28, 1891. Serial No. 379,460. (No model.)

To all whom it may concern:

Be it known that I, BOSTON S. CONSTANT, of Logansport, county of Cass, and State of Indiana, have invented certain new and useful
5 Improvements in Fanning-Mills; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which like figures refer to like parts.

10 My invention relates to improvements in that class of machines known as "fanning-mills;" and it consists in an improved construction of the fan and the arrangement of the vibrating shoe and riddles and in the
15 combination of parts for more thoroughly cleaning and separating the grain, as hereinafter set forth and claimed, and will be understood from the following description.

In the drawings, Figure 1 is a perspective
20 view of a fanning-mill embodying my device. Fig. 2 is an enlarged vertical central section through the machine. Fig. 3 is a detail view, further enlarged, of the knocking mechanism connected at the bottom of the machine. Fig.
25 4 is a transverse section of Fig. 2 on a line through the throat 22. Fig. 5 is a cross-section through Fig. 4 on the line *y y*.

In detail, 1 is the frame-work of the machine.

30 2 is the hopper, which is constructed in the ordinary manner.

3 is the drum or shell inclosing the fan and having circular openings at its ends for the admission of air. The fan is carried on the
35 axle 4, having bearings in the frame, one end of the axle provided with a small pinion 5, which engages with a driving-pinion 6, having a handle 7 for operating the same. The fan is composed of two series of arms carrying
40 blades, the first of these 8 being formed in pairs on either side near the ends of the drum, the arms being straight and having flat blades 9 attached to their outer ends, connecting each pair of arms together, the blades being
45 set at an angle with their arms, as shown in Fig. 2. The second series of arms 10 are formed of thin material and extend between

the arms 8 and radiate from the axle 4 and on their outer ends carry convex blades 11, and the arms 10 are somewhat shorter than the
50 arms 8, and the convex blades work a little in the rear of the flat blades 9, as shown in Fig. 2. This peculiar arrangement of the blades enables me to produce a much greater blast, and the blades being convex in the di-
55 rection in which the fan revolves the air, instead of being drawn to the center, is driven to the outside, thereby effecting a more complete separation and cleaning of the dust and small particles of chaff from the berries of 60 grain.

12 is a rod connected by a short crank at its lower end to the shaft of the fan and at its upper end by a thumb-screw working in a slot to the adjusting-arm 13, which is rigidly connected to a rock-shaft 14, carried in brackets 15 on the frame. To this shaft is also connected a rocking arm 16, at whose lower end is pivotally connected an arm which is bolted to the shoe 17. The object of the
65 adjusting-arm 13 is to regulate the throw of the shoe, and is the same device shown in Letters Patent No. 317,094, issued to me May 5, 1885, and needs no particular description
70 here, it being sufficient to say that by loosening the thumb-screw connecting the rod 12 to the arm 13 the former can be moved to the end of the latter or back toward the rock-shaft 14, and by setting it in toward such
80 shaft it increases the leverage and of course the amount of vibration of the shoe, while by moving it out to the end of the arm 13 it decreases the movement of the shoe. In Fig. 2 this connection is shown in dotted lines a little more than midway.

85 17 is the shoe itself, provided with two riddles 19 of different sizes, the coarser being set at the top, as shown, and the finer below. The grain from the hopper passing through the upper riddle falls either on the riddle just
90 beneath it or passes down through the wheat-channel 20, and thence downward, as indicated by arrows, upon the riddles or sieves 21 below, the larger berries being discharged

over the end of the upper riddle into any suitable receptacle that may be provided for the purpose.

Connected to the shoe and vibrating with it is a narrowed throat 22, and 23 is a valve pivoted to the side of the frame, so that the smaller seeds and berries as they pass through the screens above fall directly upon this valve, and when in the position shown in the full lines in Fig. 2 these pass down in the direction of the curved arrows with the wheat; but if the valve 23 be turned to connect with the piece 24, which is rigid, then the seeds fall upon this valve and will be discharged into the spout 25 and pass directly out at the side of the machine.

26 is a narrow throat formed within the machine, through which pass the wheat-berries on their way to the air-blast and lower riddles, and to prevent this throat from being clogged I have arranged an extension 27 of the shoe, which reaches to near the bottom of the throat, so that the movement of this extension with the shoe will aid in expelling the grain should it be inclined to clog or otherwise block up. The rigid piece 42 forms the other wall of the throat 26.

28 is a valve set in the opening, through which the air-blast passes directly from the fan upon the descending stream of berries, cleaning them of dust, which is carried by the blast out of the machine through the opening 29. This valve may be adjusted so as to increase or decrease the opening or throat beyond the fan, as desired. The riddles 21, located below the fan, are carried in a grooved frame 30 in the usual manner, which is suspended at one end from links 34, and at the other end is a knocker for jarring the screens or riddles and preventing their clogging with dust or dirt. This consists of a screw-rod 31, which passes through a block 32, connected to a strip 33, attached beneath the screen-frame 30, this rod held in place by nuts on either side the block and passing loosely through a strip 35, with jam-nuts 36 on either side, as shown, the outer ones being provided with a thumb-screw for regulating the stroke. The strip 35 is connected at either end to pitmen 37, which are connected at their inner ends by links 38 to the screen-frame and at their outer ends to shaking-bars 39, centrally pivoted at 40 to the machine-frame, the upper ends of these bars connected at 41 to the upper shoe 17. The lower screens are therefore brought into operative connection with the shoe 17, and the revolution of the fan operates both mechanisms at one and the same time. The pitmen are reciprocated by the shaking-bars 39, and the jam-nuts 36 are alternately thrust against the intervening strip 35, thus giving the screen-frame 30 a jolting movement.

What I claim as my invention, and desire to secure by Letters Patent, is the following:

1. In a fanning-mill, a fan comprising a shaft having bearings in the sides of the frame, a series of arms mounted thereon carrying flat blades set at an angle to the line of the arms, and an intermediate series of arms, also mounted on the shaft and between the arms carrying the flat blades, carrying convex blades, substantially as shown and described.

2. In a fanning-mill, a fan composed of a shaft journaled in the frame-work, two series of arms on such shaft, the outer series carrying flat blades set at an angle to the line of the arms, and an intermediate series of shorter arms secured to the shaft between the outer ones and carrying convex blades, such blades disposed in the rear of the blades of the other series, substantially as shown and described.

3. In a fanning-mill, a fan comprising a shaft journaled in the frame-work, a series of straight arms carried on such shaft at the outer ends thereof, carrying flat blades, and another series of arms also mounted on such shaft, extending between the outer arms and at an angle thereto, carrying convex blades, the latter shorter and set between the first set of blades, substantially as shown and described.

4. In a fanning-mill, a frame-work, a hopper connected thereto, a series of separating-screens carried in a vibrating shoe hung in the frame-work below such hopper, means, substantially as shown, for regulating the movement of the shoe, a fan for creating a blast, a narrowed throat connected to the shoe below and in front of the shell of the fan, a second throat, one side formed in the frame-work, the other formed by a downward extension of the shoe, a valve pivoted to the shoe and adapted to close either throat and open the other when desired, and a second valve pivoted to the frame-work and set in an air-passage beyond the fan for regulating the air-blast, all combined substantially as shown and described.

5. In a fanning-mill, a narrow throat 26, formed between the rigid wall 42 of the frame-work and the depending vibrating wall 27, formed upon and a part of the shoe 17, substantially as shown and described.

6. In a fanning-mill, a frame-work, screens hung therein, arms supported beneath the screens by links and connected to each other by a cross-bar, and a set-screw passing through such cross-bar for adjusting the stroke and adapted to contact with a projection on the screens, such arms being connected to an operating mechanism, substantially as shown and described.

7. In a fanning-mill, a frame-work, a vibrating shoe carrying screens supported in the top thereof, a second series of screens carried in a vibrating frame at the lower end of the main frame-work, an adjustable

knocking device comprising arms pivotally
connected by links to such frame, a cross-
bar connecting such arms, a screw for ad-
justing the stroke and contacting with a pro-
5 jection beneath such screen-frame, and a
link connecting the knocking mechanism
with the screen-carrying shoe above, where-
by both sets of screens are simultaneously op-
erated by one and the same mechanism, all

combined substantially as shown and de- scribed.

In witness whereof I have hereunto set my
hand this 13th day of January, 1891.

BOSTON S. CONSTANT.

Witnesses:

H. D. NEALY,
E. B. GRIFFITH.