

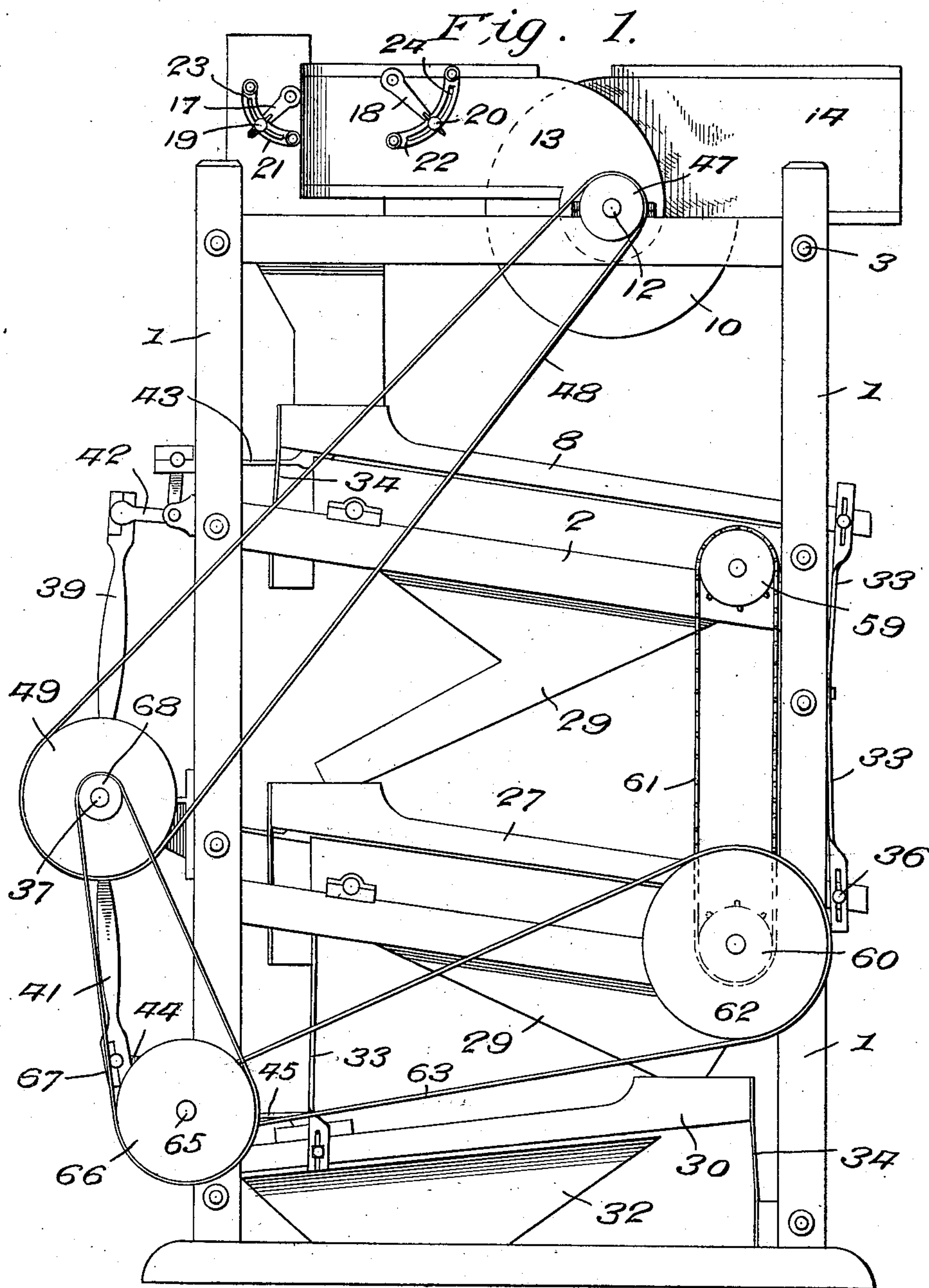
No. 889,811.

PATENTED JUNE 2, 1908.

H. RUDDICK.
SEPARATOR.

APPLICATION FILED DEC. 10, 1907.

3 SHEETS—SHEET 1.



WITNESSES:

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W. J. Fitzgerald

INVENTOR

H. Ruddick

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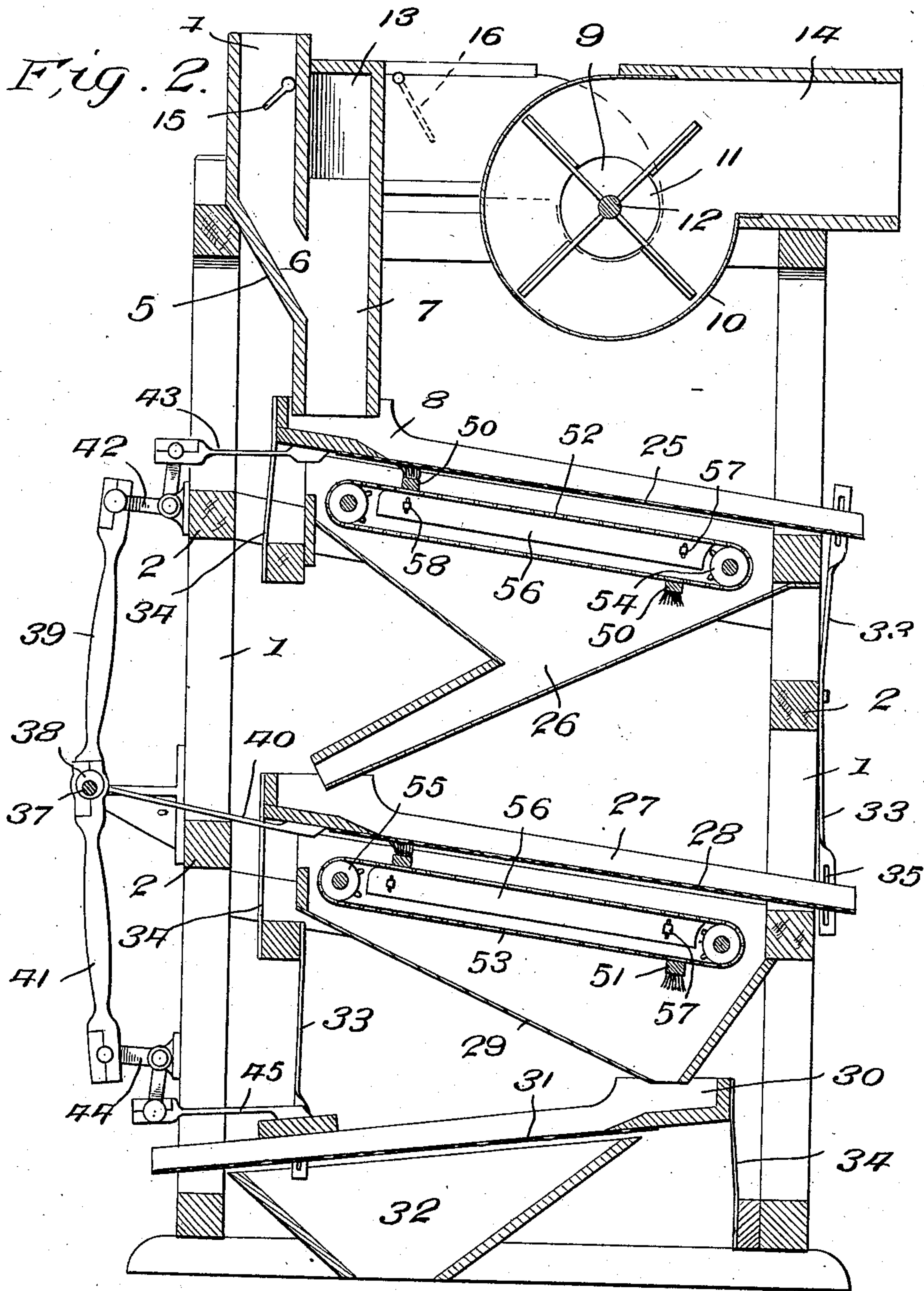
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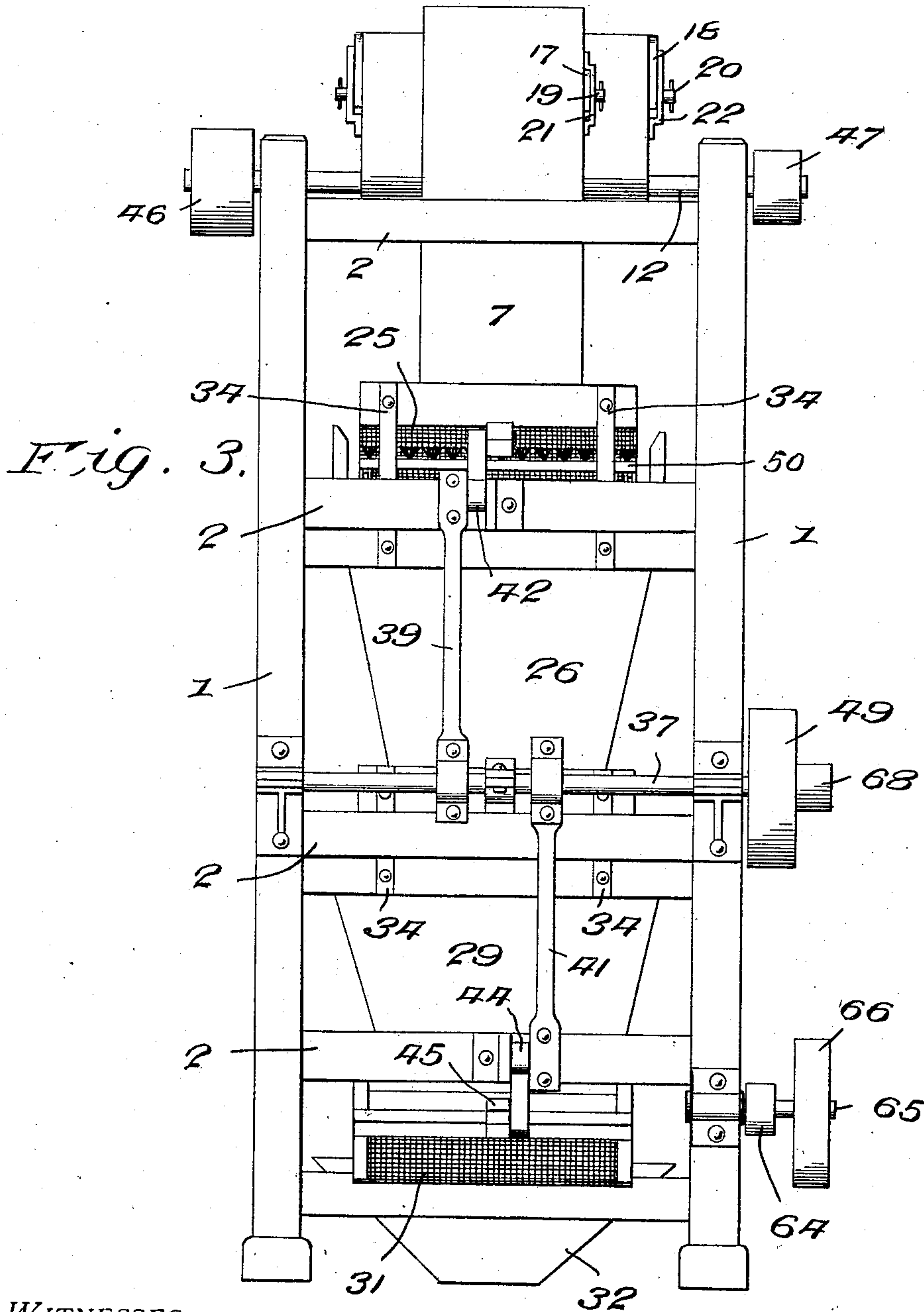
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UNITED STATES PATENT OFFICE.

HENRY RUDDICK, OF DALLAS, OREGON.

SEPARATOR.

No. 889,811.

Specification of Letters Patent.

Patented June 2, 1908.

Application filed December 10, 1907. Serial No. 405,843.

To all whom it may concern:

Be it known that I, HENRY RUDDICK, a citizen of the United States, residing at Dallas, in the county of Polk and State of Oregon, have invented certain new and useful Improvements in Separators; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to new and useful improvements in separators and more particularly to that class adapted to be used for separating foreign particles from grain and like products and my object is to provide a plurality of screens, over which the grain is adapted to pass.

A further object is to provide a suction fan for removing dust, chaff, and the like, from the grain before it is deposited on the screen.

A further object is to provide means for oscillating or moving the screens longitudinally, whereby the grain, etc., thereon will be moved the full length of the screen and a still further object is to provide means for cleaning the screens or removing any particles lodged in the mesh thereof.

Other objects and advantages will be hereinafter referred to and more particularly pointed out in the claims.

In the accompanying drawings which are made a part of this application, Figure 1 is a side elevation of my improved grain separator. Fig. 2 is a central, vertical, longitudinal, sectional view thereof, and, Fig. 3 is a front elevation of the machine.

Referring to the drawings in which similar reference numerals designate corresponding parts throughout the several views, 1 indicates standards, to which are secured frame pieces 2, said frame pieces being secured to the standards in any preferred manner, as by means of bolts, or the like 3.

Mounted between the upper frame pieces and secured thereto in any preferred manner, is a hopper 4, the lower end wall 5 of which is tapered, so that the grain entering through said hopper will be deflected through an opening 6 in the lower end of the hopper, into a chute 7, said chute extending above and below the opening 6 and having its lower end open, so that the grain will pass from the chute into a screen frame 8 located immediately below the lower end of the chute. The object in so arranging the hopper, is to

cause the grain to flow into the chute in a thin stream and the grain will also be more or less agitated in striking the inclined wall 5, so that any dust or like particles therein will become loosened from the volume of grain and to remove the dust and lighter particles, I provide a suction fan 9, the housing 10 of which is provided with ports 11, which ports are preferably disposed around the shaft 12 of the fan and the dust and lighter particles are collected and drawn into the fan 9 through ducts 13, which ducts communicate at one end with the upper end of the chute 7 and at their opposite ends with the ports 11. The dust is then discharged from the fan through a blast pipe 14 and by extending said pipe as desired, the dust and foreign particles may be conveyed and deposited at any suitable point.

The flow of the grain through the hopper 14 and the amount of suction by the fan, are controlled by means of dampers 15 and 16, located in the hopper 4 and ducts 13, respectively, said dampers being controlled by means of fingers 17 and 18, which are secured to the dampers 15 and 16 and extend over the outer faces of the hopper and ducts, respectively, said dampers being held in their adjusted positions by securing clamping bolts 19 and 20 to the free ends of the fingers, which clamping bolts cooperate with clamping plates 21 and 22, respectively, said plates being provided with slots 23 and 24, through which the clamping bolts extend and, when the dampers have been adjusted to their proper positions, the bolts are tightened onto the clamping plates and the dampers firmly held in their adjusted positions. The grain, after leaving the chute 7, passes through a screen 25 in the screen frame 8, the foreign particles too large to pass through the mesh of the screen, being carried over the end of the screen and deposited upon the floor or in any suitable receptacle for the purpose. The grain after passing through the screen 25, enters a conveying pipe 26 and is conveyed to one end of a screen frame 27, from whence the grain passes through a screen 28 of a finer mesh than the screen 25, the larger foreign particles remaining in the grain, being thrown from the end of the screen 28, while the grain passing through the screen 28, is conveyed by a chute 29 to one end of a screen frame 30, from whence the grain passes over a screen 31, carried by the screen frame 30 and, in this instance, the

mesh of the screen is such that only the inferior grains and smaller foreign particles remaining in the product being screened, will pass through the screen, while the prime
5 grains are conveyed to the lower end of the screen and deposited in any suitable receptacle, the inferior grains and foreign particles being deposited in a hopper 32, from whence they are conveyed to any suitable point.

10 The screen frames are open at one end and the frames 25 and 27 are inclined in one direction, while the frame 30 is inclined in the opposite direction, thereby conveying the foreign particles to one end of the ma-
15 chine, while the prime grains are conveyed to the opposite end thereof and by making the screens interchangeable, the grain may be readily graded as the occasion may require and various kinds of screens may be
20 employed for separating different kinds of grain.

The screen frame and screens carried thereby, are adapted to oscillate and said frames are supported one above the other by
25 means of flexible straps 33 and 34, the straps 33 being employed for supporting the lower ends of the frames and are provided with slots 35, through which take adjusting bolts 36 and by which means the angle of said
30 frames may be readily regulated.

The frames are oscillated through the medium of a shaft 37, which is located at the forward end of the machine and substantially midway between the upper and lower screen
35 frame, said shaft having eccentrics 38 mounted thereon, to which are secured pitmen 39, 40 and 41, the pitman 39 extending upwardly from the shaft and being pivotally secured to one arm of a bell-crank lever 42,
40 while to the opposite arm of said lever, is pivotally secured one end of a link 43, the opposite end of said link being secured to the screen frame 8.

The pitman 40 extends directly from its eccentric to the screen frame 37, while the pitman 41 extends downwardly and engages one arm of a bell-crank lever 44, while to the opposite arm of the lever is pivotally secured one end of a link 45, the opposite end of said
50 link being secured to the screen frames 30 and, by mounting the eccentrics in unison on the shaft 37, the screen frames will be given opposite movements, that is to say, when the screen frame 8 is at its rearward stroke,
55 the frame 27 will be midway between its stroke and the frame 30 at its forward stroke, thereby overcoming the shaking or jarring movement to the separator, co-incident to having the frames move in unison, the vibra-
60 tory movement in this construction being equalized.

Power is applied to the separator through the medium of a driving pulley 46, which is fixed to one end of the fan shaft 12, while to
65 the opposite end of said shaft is secured a

belt wheel 47, around which is directed a belt 48, the opposite end of the belt being directed around a pulley 49 on the shaft 37.

In order to keep the screens 25 and 28 cleared of all foreign particles, such as might
70 collect in the mesh thereof, I locate brushes 50 and 51, respectively, below said screens and mount the brushes on sprocket chains 52 and 53, respectively, said chains being carried by sprocket wheels 54 and 55, respectively.
75

The brushes are adapted to move longitudinally of the screens and to keep said brushes in touch with the screens, that portion of the sprocket chain immediately below the screens, is passed over guides 56,
80 which guides are adjustably secured to parts of the chutes 26 and 29 by introducing binding bolts, or the like, 57 through slots 58 in the guides 56 and, by this construction, it will be readily seen that when the screen
85 frames are raised or lowered to change the pitch of the screens, said guides may be correspondingly raised or lowered to keep the brushes in touch with the screens.

The shafts upon which the sprocket wheels
90 54 and 55 are mounted, are rotated to drive the sprocket chains and move the brushes below the screens by securing to the outer ends of two of said shafts, sprockets 59 and 60, respectively, around which travels a
95 sprocket chain 61 and to the shaft containing the sprocket 60, is secured a driving pulley 62, around which passes a belt 63, the opposite end of said belt extending around a pulley 64 on a stub shaft 65, the outer end of
100 said shaft having a pulley 66 to receive a belt 67 from a pulley 68 on the shaft 37 and it will be readily seen that when the shaft 37 is rotated, power will be applied to the pulley 60 through the belts and pulleys interposed be-
105 tween the pulleys 60 and 68. Instead, however, of employing an engine for driving the separator, any suitable form of gearing may be supplied in place of the driving pulley 46 and the separator operated by manual power.
110

It will thus be seen that I have provided means for thoroughly and efficiently cleaning and grading various classes of grains and one wherein the dust and lighter particles will be removed before the grains are depos-
115 ited on the screens.

It will likewise be seen that the pitch of the parts carrying the screens, may be readily regulated to increase or decrease the flow of the grain across the screens and by providing the dampers in the feed hopper and air ducts, the flow of the grain through the hopper and the blast of air employed for removing the dust particles, may be likewise
120 regulated.
125

It will also be seen that by regulating the oscillating movement of the screen frames, so that they will move in reverse order to each other, the usual vibration of separators of this class will be practically overcome.
130

What I claim is:

5 In a separator of the class described, the combination with a frame, a vertically disposed hopper on said frame having an inclined lower end and an opening at the lower edge of said inclined end wall and a chute extending above and below said opening; of a series of screen frames below said chute, flexible straps at each end of said frame, means to
10 adjust one end of the frames on the supporting straps, screens in said frames, a driving shaft for said frames, eccentrics on said shaft, a pitman for each of said eccentrics, bell-crank levers for the upwardly and downwardly
15 extending pitmen, links extending

from said levers to their respective screen frame, the remaining pitman being directly engaged with its respective frame, said eccentrics being arranged in unison on the shaft, whereby said screen frames will be oscillated in opposition to each other and means to convey the product from one screen to the next succeeding screen. 20

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses. 25

HENRY RUDDICK.

Witnesses:

RALPH ADAMS,
MITCHEL M. BUTLER.