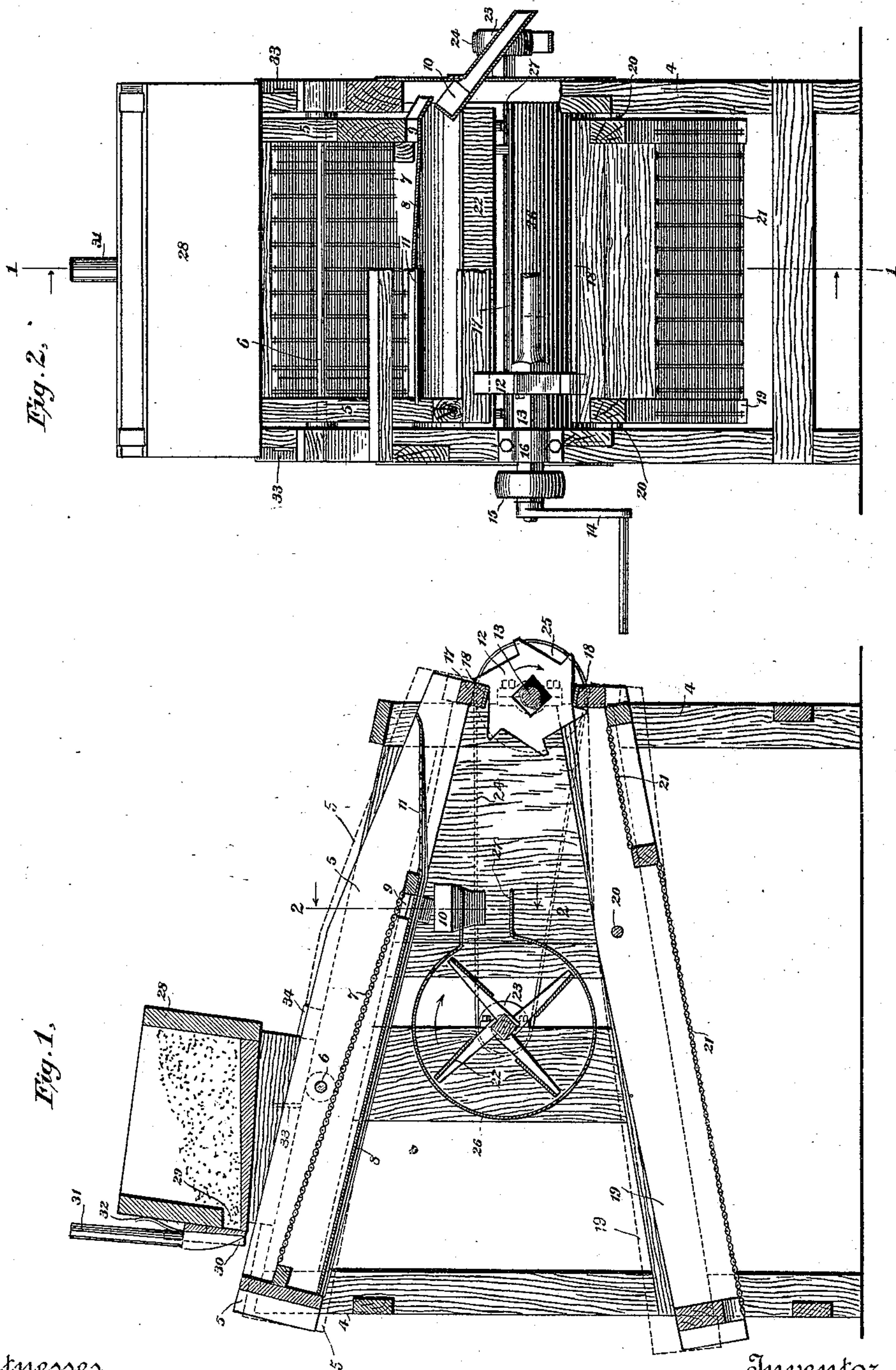


(No Model.)

DE M. SCOTT.  
GRAIN SEPARATOR.

No. 447,845.

Patented Mar. 10, 1891.



Witnesses  
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# UNITED STATES PATENT OFFICE.

DE MARQUIS SCOTT, OF GOSS, MISSOURI.

## GRAIN-SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 447,845, dated March 10, 1891.

Application filed November 5, 1890. Serial No. 370,430. (No model.)

*To all whom it may concern:*

Be it known that I, DE MARQUIS SCOTT, a citizen of the United States, residing at Goss, Monroe county, State of Missouri, have invented certain new and useful Improvements in Grain-Separators, of which the following is such a full, clear, and exact description as will enable any one skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to a machine for cleaning grain or wheat and separating therefrom cheat, grass, seeds, cockle, and all foreign matter which it is desired to free the grain or wheat from; and the invention consists in the various novel and peculiar arrangements and combinations of the several parts of the machine, all as fully hereinafter described, and then pointed out in the claims.

In the accompanying drawings, illustrating a machine embodying my invention, and wherein like numbers of reference designate like parts throughout—

Figure 1 is a sectional view of a separating-machine constructed after the manner of my invention, the section being taken on a vertical plane indicated by line 1 1 in Fig. 2. Fig. 2 is a right-hand end view of the machine shown in Fig. 1, with a portion thereof shown in section on a vertical transverse plane indicated by line 2 2 in Fig. 1, and with part of the drive-shaft removed.

Referring to the drawings, 4 designates the framing of the machine, in the upper part of which is mounted a vertically rocking or tilting screen-shoe 5. This shoe extends about the length of the machine and is swung on a horizontal bar 6, which is fixed across the framing 4. This bar 6 extends loosely through the sides of the screen-shoe, so that the same may be easily tilted or rocked on the bar, and it is preferably located to one side of the center of length of the shoe, so that the shoe may normally assume an inclined position, as shown in the drawings.

The shoe 5 is provided with an ordinary screen 7, which extends considerably short of the length of the shoe. The bottom of the shoe, which may, if desired, be provided with a series of the screens 7, one above the other, instead of having a single screen, as shown, is

provided with an imperforate floor or bottom piece 8. This bottom or floor piece 8, which may be made of a suitable sheet metal or wood, is inclined from one side of the shoe toward the other, so that the screenings or matter which sifts through the screens may be directed to one side of the bottom of the shoe and toward a discharge-spout 9, which is located at the low side of the floor and near the end of the screen 7. This discharge-spout 9, which is carried by the shoe, is of course moved with it, and a stationary chute or spout 10 is inserted in the side of the machine for the discharge-spout to empty into.

The lower or discharge end of the shoe 5 is provided with a screen or perforated plate 11, which extends about horizontally and is provided with a guard or upturned end to prevent the grain from working off. This screen or perforated plate 11 receives the grain or material which does not pass through the screen 7, but which is delivered from the lower end thereof as partially-cleaned grain. In the present construction the perforated plate 11 is formed in one piece with the bottom 8 of the shoe, which construction will be found to be a desirable one when these parts are made of sheet metal.

One end, preferably the lower end, of the screen-shoe 5 is engaged by rotary cams 12, mounted upon and turning with the drive-shaft 13, which is placed across the machine in suitable bearings 16 and is provided with a hand-crank 14 for turning the shaft, and also with a belt-pulley 15, to be used when the machine is to be driven by other than hand-power. The cams 12 for shaking the shoe are provided with a series of high points or projections, in order that at each revolution thereof the shoe may be given a series of movements. These cams are star-shaped and the points or projections thereof are shaped so that when the cam has raised the connected shoe or screen to the highest point and released it the same may fall by its own weight to the low point of the cam, in order to impart thereto the peculiar bumping or jarring action which forms one part of my invention. These cams are placed upon a squared portion of the drive-shaft 13 by means of a square opening in the center of the cams, though of course the shaft may be cylindrical



and the cams secured thereto in an ordinary manner. In the construction shown there are two cams 12 12, located one at each side of the end of the shoe 5, the cross bar or beam 5 17 of which is acted on or engaged by the cams. If preferred, this cross-bar 17 may be dispensed with and the cams be made to engage the ends of the side pieces of the shoe, though by the use of the cross-piece 10 17 the shoe is given greater strength. One cam would serve to impart the necessary jarring action to the shoe, but I use two, one at each side thereof, in order to gain a smoother action. Where the cam engages the 15 shoe the latter is provided with a wear-plate 18, which may be easily replaced when worn out by the rubbing of the cam. The cams are arranged so that the projections thereof engage and release the shoe at the same time, 20 so that when they are rotated in the direction of the arrow in Fig. 1 the shoe will be tilted into the position indicated by the dotted lines and then released by the cams to the action of gravity. This movement will impart a 25 bumping or jarring motion to the screen each time it is rocked on its bearings, so that the grain on the screens of the shoe will thereby receive a series of concussions as it is jarred or bounced over the screen in addition to the 30 sliding movement of the grain on the screen. In this way the foreign matter and dirt which may adhere to the grain will be quickly loosened and removed from it, while the screenings or matter which is to pass through the 35 screen will be assisted in its passage through the same. By reason of giving the vertically-rocking screen-shoe a series of bumps or concussions, and thereby quickening the cleaning of the grain, it will be necessary to pass the 40 grain through or over a less number of screens or sieves than would be the case where the shoe is vibrated laterally or endwise.

The grain or material after leaving the upper screen-shoe 5 is delivered to the upper end 45 of a similarly-operated screen-shoe 19, which is likewise mounted and rocked vertically, though it is inclined in an opposite direction to the upper shoe. This lower screen-shoe is hung so as to tilt upon a bar 20, fixed across 50 the machine, and it is provided with suitable screens 21, which, if preferred, may be multiplied and arranged one above the other, in the usual way. This lower screen-shoe is suspended on its bearings on the rod 20, preferably at a point to one side of the center of the 55 length of the shoe, in order to maintain it in an inclined position normally, though of course the same effect could be obtained by swinging the shoe from its center of length and 60 weighting one end of it so as to throw it out of balance, in order that when it is moved into horizontal position and released by the actuating-cams it may gravitate quickly into its normally-inclined position so as to forcibly 65 jar it.

The jarring action is imparted to the lower screen-shoe 19 by means of the same cams 12

which actuate the upper shoe. The said cams engage the upper end of the lower shoe, which is located directly beneath the lower end of 70 the upper shoe, the parts being so arranged that the points of the cams raise the connected end of the upper shoe at the same time at which they depress the connected end of 75 the lower shoe and simultaneously release the shoes to the action of gravity. This shoe is likewise provided with a wear-plate 18 where the cams engage it. If preferred, each shoe may have an independent cam or set of cams 80 located at the lower ends of the shoes; but it will be found preferable to adopt the arrangement I have here shown for the purpose of economy of parts, as well as for the purpose of reducing the friction, and thereby requiring 85 less power to run the machine. Though I have shown the screen-shoes as mounted to tilt upon a horizontal bar, other suitable means for suspending the rocking shoes may be used. The clean grain is discharged from the lower 90 end of the shoe 19, while the screenings may be gathered from beneath the shoe.

In order to carry off the light material and dust from the grain as it falls from the upper shoe to the lower, a fan 22 is provided, the 95 shaft of which carries a pulley 23, which is driven by means of a belt 24, passing around a band-wheel 25 on the drive-shaft 13. This fan is located between the screen-shoes, and the casing 26 thereof is provided with a blast-pipe 27, which opens between the shoes, so as 100 to direct the blast outwardly from the machine and away from the screens.

The grain is fed to the upper end of the upper screen-shoe 5 by means of the removable box or hopper 28, the discharge-opening 105 29 of which is provided with a sliding gate 30, which is mounted in suitable guides located on the box and is formed with a handle 31 for operating it. This sliding gate is provided with a spring 32, which serves to hold 110 the gate in adjusted position. This box or hopper 28 is removably placed upon the top of the machine-frame 4 and is held from moving sidewise by means of the pins 33, fixed in 115 the machine-frame, and is kept from moving in the other direction by means of the stops 34, also fixed upon the machine-frame.

There are many ways, which will readily suggest themselves, by which the vertical jarring motion may be imparted to the screen-shoes, and I therefore do not limit myself to 120 the specific construction herewith shown, neither do I limit myself to the particular kind of screen-shoe which I have illustrated.

Having thus described my improvements 125 in grain-separators, what I claim as my invention, and desire to secure by Letters Patent, is—

1. In a grain-separator, the combination, with an upper and a lower pivoted screen-shoe, of one or more cams, each engaging both 130 of the said screen-shoes for simultaneously tilting the same and then releasing them to the action of gravity, for the purpose set forth.



2. In a grain-separator, the combination, with a vertically-rocking inclined upper screen-shoe and a vertically-rocking lower screen-shoe oppositely inclined thereto, of  
5 one or more cams located between the lower end of the upper and the upper end of the lower shoe for simultaneously rocking the shoes, substantially as and for the purpose set forth.

10 3. In a grain-separator, the combination, with a rocking screen-shoe, of a floor or bottom for the shoe extended beyond the discharge end of the screen or screens and provided at such end beyond the screen with  
15 openings for the grain to pass through, substantially as and for the purpose set forth.

4. In a grain-separator, the combination, with an upper vertically-rocking screen-shoe, such as 5, and a lower vertically-rocking  
20 screen-shoe, such as 19, of one or more cams 12, placed intermediate the adjacent ends of and engaging the said screen-shoes for simul-

taneously actuating the same, substantially as and for the purpose set forth.

5. In a grain-separator, a screen-shoe, such as 5, having an imperforate bottom 8, inclined from one side of the shoe toward the other and provided with a discharge-spout 9, substantially as and for the purpose set forth.

6. In a grain-separator, a screen-shoe 5, provided with a screen or sieve 7, an imperforate bottom 8 beneath the said screen, and a discharge-spout 9, and a screen or perforated plate 11 for receiving the material from the screen 7, substantially as and for the purpose  
35 set forth.

In testimony whereof I have hereunto set my hand, this 29th day of October, 1890, in the presence of two subscribing witnesses.

DE MARQUIS SCOTT.

Witnesses:

G. W. HILL,

R. B. GWYN.