

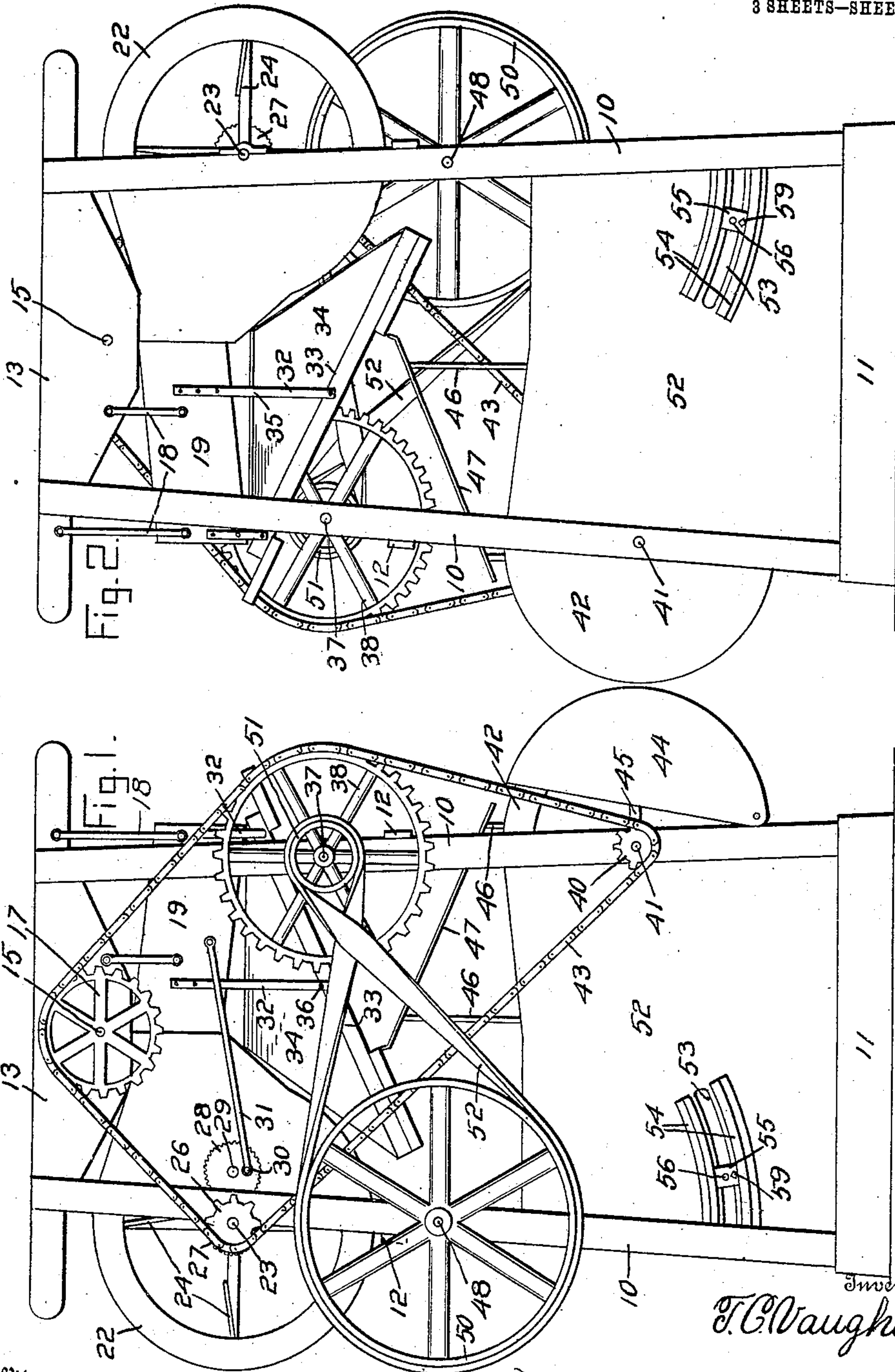
T. C. VAUGHAN.
GRAIN SEPARATOR.

APPLICATION FILED JAN. 29, 1907.

914,997.

Patented Mar. 9, 1909.

3 SHEETS—SHEET 1.



Witnesses

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334

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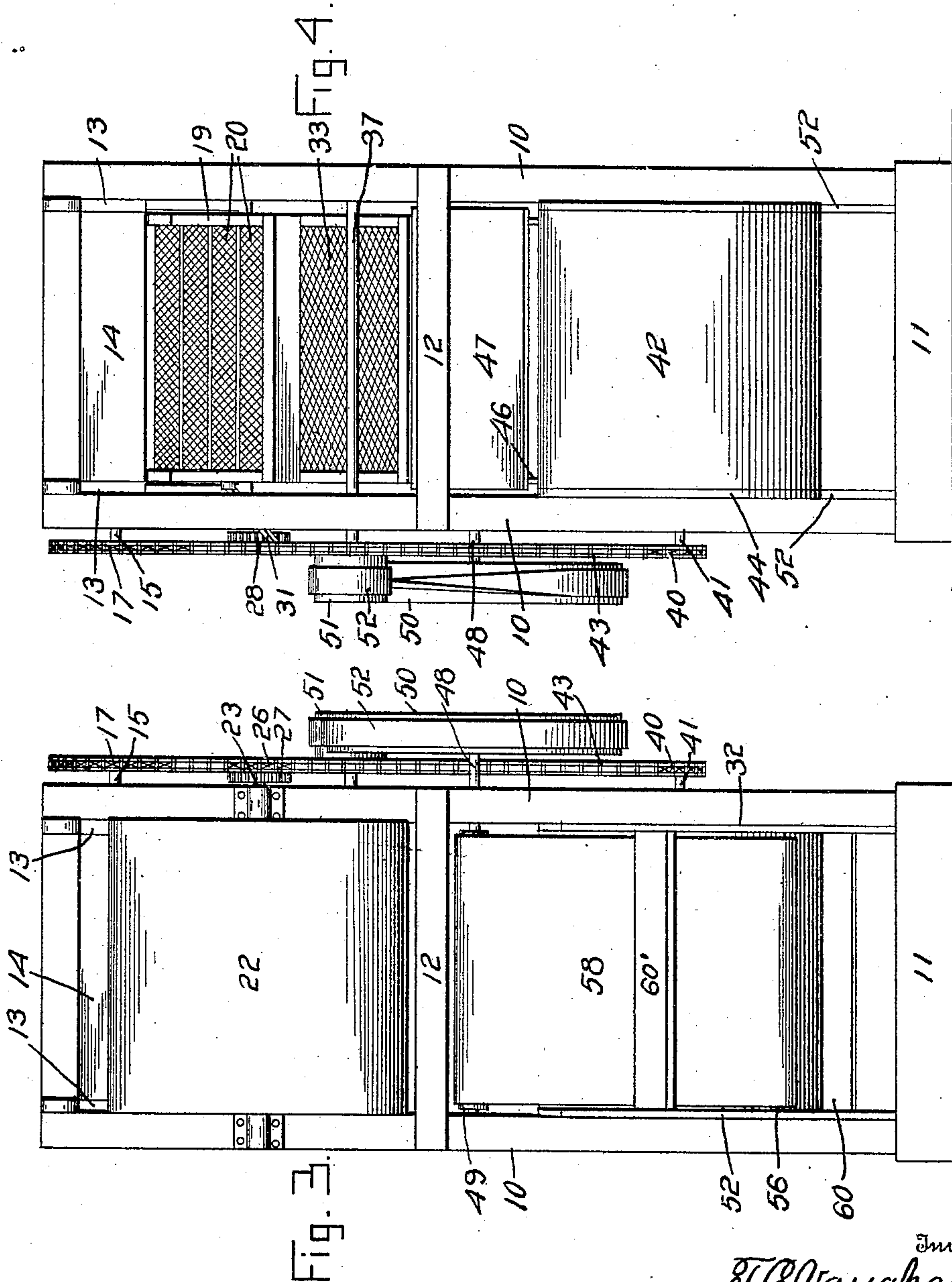
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Witnesses
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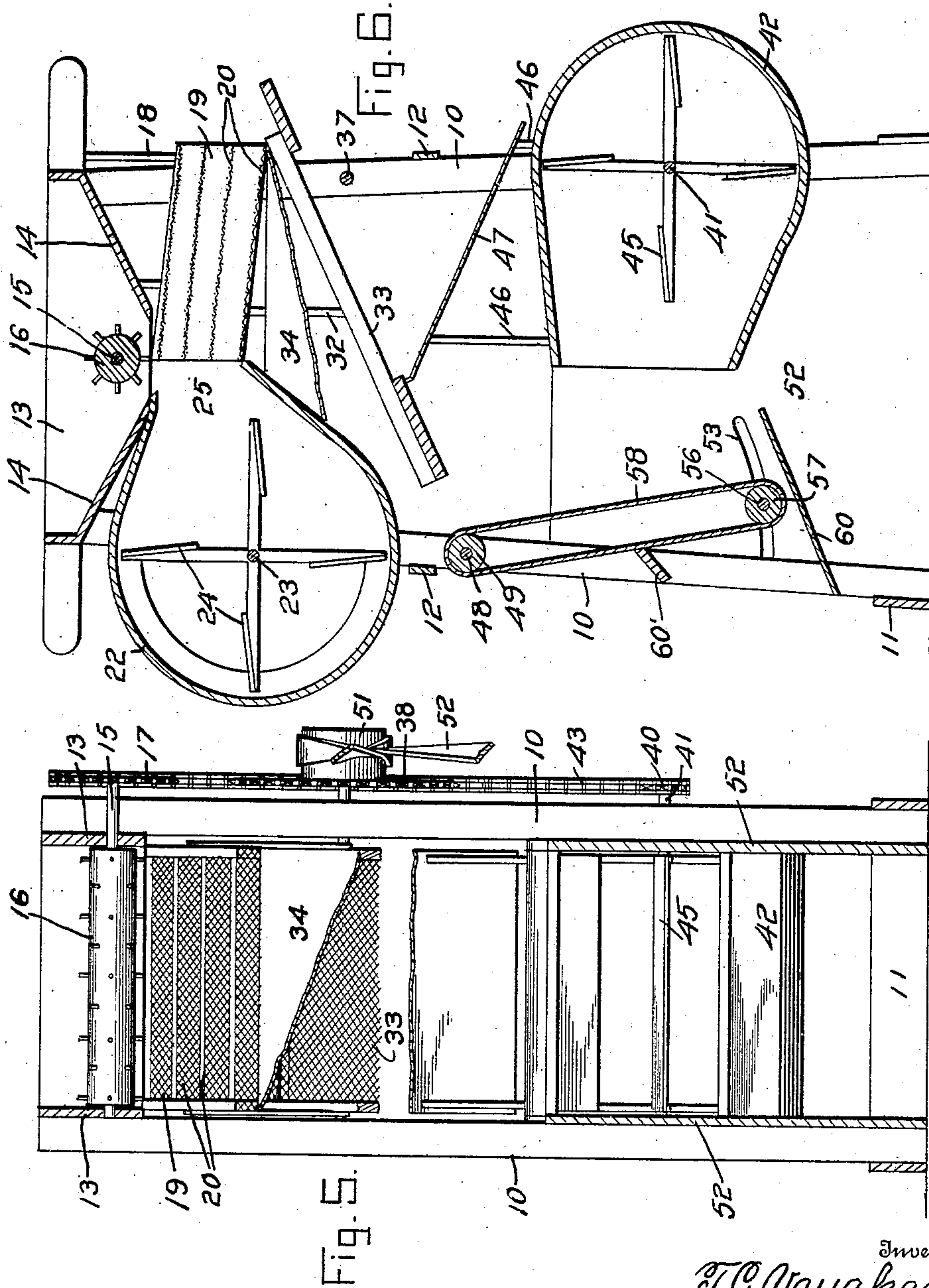
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UNITED STATES PATENT OFFICE.

TIMOTHY C. VAUGHAN, OF ALBERTA, MINNESOTA.

GRAIN-SEPARATOR.

No. 914,997.

Specification of Letters Patent.

Patented March 9, 1909.

Application filed January 29, 1907. Serial No. 354,654.

To all whom it may concern:

Be it known that I, TIMOTHY C. VAUGHAN, a citizen of the United States, residing at Alberta, in the county of Stevens, State of Minnesota, have invented certain new and useful Improvements in Grain-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.

This invention relates to grain separators and has for its object to provide a machine of this character which will separate light and heavy grain such as wild oats from the good grain, the object of the invention being to provide a machine of this character which although simple in construction, will be very efficient in action.

The invention resides in the provision of a carpet apron which is mounted to travel upon rollers and against which is directed a blast of air, the grain being deposited upon or against the apron and in the path of the air-blast. Where a mixture of two kinds of grain is to be separated, and one kind of grain is heavier than the other, the heavier grain will roll from the carpet while the lighter grain will be held thereto by the air-blast above mentioned, a complete separation being thus effected.

The invention also resides in a novel arrangement of parts whereby the separation of the grain will be as complete as possible.

In the accompanying drawings: Figure 1 is a side elevation of the invention. Fig. 2 is a similar view of the opposite side thereof. Fig. 3 is a front elevation. Fig. 4 is a rear elevation. Fig. 5 is a vertical sectional view through the machine. Fig. 6 is a similar view, but taken in a plane at right angles to the plane in which Fig. 5 is taken.

Referring more specifically to the drawings, the mill comprises a frame including uprights 10 which converge upwardly and which are connected at their lower ends by means of cross-pieces 11 and intermediate their ends by means of cross-beams 12, the said beams being secured at their ends to the corresponding uprights of each pair at the sides of the machine, it being understood that there are four such uprights, one located at each corner of the machine.

Secured to the sides of the machine are boards 13 and disposed between these boards and intermediate the front and rear sides of

the machine are oppositely inclined boards 14 which form, together with the boards 13, a hopper. Mounted for rotation in the side-boards 13 is a shaft 15 upon which is disposed a forced feed-roller 16 of any desired construction, the said roller being, as will be readily understood, located between the adjacent lower ends of the bed-boards 14 of the hopper. Mounted upon the shaft 15 for rotation therewith is a sprocket-gear 17 which serves as a means for rotating the shaft from a power-shaft in a manner to be hereinafter described.

The side-boards 13 of the hopper are extended forwardly and rearwardly beyond the adjacent upright of the machine and suspended by means of rods 18 from the said boards and at the rear of the machine is a screen-box 19, it being understood that there are two pairs of the rods for the screen-box, one pair being suspended from the boards inwardly of the uprights at the rear end of the machine, and the other pair being suspended from the extended portions of the said boards which lie rearwardly of the machine. This, it will be seen, locates the rear end of the box beyond the rear end of the machine. The said screen-box is designed for oscillatory movement and disposed within the box is a plurality of screens 20 which may be of any desired construction and which are inclined downwardly and rearwardly as shown in Fig. 5 of the drawings, for a purpose to be hereinafter described. Each end of the screen box is open as is also the top and bottom thereof, and mounted between the uprights at the forward end of the machine is a fan casing 22 in which, upon a shaft 23, is mounted a fan comprising a plurality of blades 24. The fan casing 22 has its discharge opening 25 arranged to discharge at the forward open end of the screen-box 19 for the purpose of supplying a blast of air upon the screens 20 which are located within the said screen-box, the screens being inclined downwardly and rearwardly they will, as will be readily understood, receive the blast of air against their under side. The shaft 23, as in the case of the shaft 15, is designed to be driven from a power shaft in a manner to be hereinafter described, a sprocket-wheel 26 being provided upon the said shaft 23 for this purpose. A pinion 27 is also secured upon the shaft for rotation therewith and meshes with a pinion 28 which is journaled upon a stub-shaft 29 carried by

one side of the fan-casing 22. The pinion 28 is provided with a crank pin 30 with which is connected one end of a connecting rod 31, the said rod being connected at its opposite
 5 end to one side of the screen-box 19, it being understood that rotation of the shaft 23 will impart an oscillatory movement to the said screen-box.

The purpose of the screens 20 is to separate
 10 the good grain from the foul grain and rigidly suspended beneath the said screen-box by means of pairs of hangers 32 is a screen 33 which has its rear end extended slightly beyond the rear end of the screen-box 19 to re-
 15 ceive the grain discharged therefrom and has its forward end extending considerably in advance of the forward end of said screen-box, for a purpose to be hereinafter described. The said screen 33 is located in an
 20 inclined frame downwardly and forwardly of the machine and is, as will be readily understood, designed for oscillatory movement with the screen-box 19. In order to prevent the screenings from the screen-box 19 falling
 25 upon the screen 33, I provide a screening-pan 34 which is triangular in shape and is secured at one of its edges to the hangers 32 at one side of the machine and directly beneath the screen-box 19 as at 35 and at its opposite
 30 edge to the hangers 32 at opposite sides of the machine and adjacent the corresponding edge of the screen 33, as at 36. By thus mounting the screen-pan 34, the said pan is disposed in a plane having an inclination
 35 downwardly, forwardly and to one side of the machine.

It will be understood from the foregoing that the screenings from the screen-box 19 will fall upon the said pan and be discharged
 40 upon the same at the extreme lower corner thereof into a suitable receptacle and that the mixture of different kinds of grain from which the screenings have been separated will be deposited upon the screen 33 for further
 45 separation.

Mounted upon the pair of uprights at the rear end of the machine for rotation, is a power-shaft 37 upon which is keyed or otherwise secured a sprocket-gear 38 over which
 50 and the sprocket gears 17, and 26, and a sprocket-gear 40 upon a fan-shaft 41, which is journaled in a fan casing 42, is a sprocket-chain 43 which serves to communicate power from the shaft 37 to the several other shafts
 55 mentioned in the foregoing. The fan-casing 42 is located in the lower end of the machine and includes a wind-board 44 which is hinged thereto to regulate the supply of air from the fan which is located within the casing and
 60 indicated by the numeral 45. Supported by means of uprights 46 upon the fan casing 42 is an inclined pan 47 which receives the screenings from the screen 33 and deposits them at a point rearwardly of the machine,
 65 it being understood that the said pan, in

order to perform this function, is inclined downwardly and rearwardly.

Mounted for rotation upon the pair of uprights 10 at the forward end of the machine, is a shaft 48 upon which and between
 70 the said uprights is disposed a roller 49, and mounted upon the said shaft for rotation therewith is a belt-wheel 50, with which and a belt-pulley 51 upon the power-shaft 37, is engaged a belt 52 by means of which
 75 motion is communicated from the said power-shaft to the said shaft 48.

A casing 52 is provided upon each side of the separator and is slotted as at 53. Mounted upon each side of the slot 53 in the
 80 casing at each side of the machine is a flanged guide-strip 54, the said strips forming between them a guide-way and in each guide-way is slidably disposed a bearing box 55 in which is journaled a shaft 56 carrying
 85 a roller 57 over which and the roller 49 is engaged an apron 58 which is preferably formed of carpet or other rough cloth material. The slot 53 is curved in the arc of a circle with the shaft 48 as its radius and it
 90 will consequently be seen that the shaft may be moved to position the apron at different angles of inclination. In order to hold the shaft in its adjusted position, I provide for
 95 each of the bearing blocks 55 a set-screw 59 which is engaged through the said block and impinges against the side of the casing 52.

The fan 45 is so arranged that it will discharge directly against the said apron and in order that light and heavy grain may be
 100 effectually separated, it is discharged from the screen 33 against the said apron, the blast of air from the fan serving to hold the light grain against the apron, the blast of air being however so regulated that the
 105 heavier grain will readily roll from the apron and fall upon an inclined pan 60 which is located directly beneath the roller 57. The nature of the apron causes the lighter grain to adhere thereto and the said
 110 grain is carried by the apron over the roller 49. In order that the grain may be removed from the apron, I provide a scraper 60' which consists of a strip of wood or other material which is mounted transversely in
 115 the separator in position to contact at one of its edges with the apron 58, the said edge being beveled as shown in Fig. 5 at its said edge.

It is to be understood that I do not desire
 120 to be limited to the exact details of construction shown and described, for obvious modifications will occur to a person skilled in the art.

What is claimed is:

1. In a grain separator, a supporting frame, an inclined screen supported within said frame, rollers carried by said frame and spaced apart, the upper roller being also
 125 spaced from the discharge end of the screen, 130

an endless belt of carpet or similar fabric operating over said rollers and supported thereby slightly inclined from the perpendicular, means for operating said belt to
 5 move its inner side upwardly, a fan casing carried by the frame with its discharge below the discharge end of said screen and opposite said endless belt, and a fan within said fan casing and operating to project the air
 10 forcibly against said belt and approximately at right angles thereto.

2. In a grain separator, a supporting frame, an inclined screen supported within said frame, an endless belt of carpet or like
 15 material spaced from the discharge end of the screen and arranged slightly inclined from the perpendicular, means for operating said belt to move its inner side upwardly, a fan casing carried by the frame with its
 20 discharge below the discharge end of said screen and opposite said endless belt, and a fan within said fan casing and operating to project the air forcibly against said belt and approximately at right angles thereto.

25 3. In a grain separator, a supporting frame, an inclined screen supported within said frame, an endless belt of carpet or like material spaced from the discharge end of the screen and arranged slightly inclined
 30 from the perpendicular, means for operating said belt to move its inner side upwardly,

a fan casing carried by said frame with its discharge below the discharge end of said screen and opposite said endless belt, a fan within said fan casing and operating to pro- 35
 ject the air forcibly against said belt and approximately at right angles thereto, a chute arranged to receive the material falling from the upwardly moving side of the belt, and a scraper engaging the belt at its down- 40
 wardly moving side.

4. In a grain separator, a supporting frame, an inclined screen supported within said frame, an endless belt of carpet or like material spaced from the discharge end of 45
 the screen and arranged slightly inclined from the perpendicular, means for operating said belt to move its inner side upwardly, means for adjusting said belt to change its inclination, a fan casing carried by the 50
 frame with its discharge below the discharge end of said screen and opposite said endless belt, and a fan within said fan casing and operating to project the air forcibly against said belt and approximately at right angles 55
 thereto.

In testimony whereof, I affix my signature, in presence of two witnesses.

TIMOTHY C. VAUGHAN.

Witnesses:

DANIEL HARRIGAN,
 JOHN M. BYRNE.