No. 609,091. Patented Aug. 16, 1898.

E. L. FIXLER.

GRAIN SEPARATOR AND CLEANER.

(Application filed Feb. 25, 1897.)

(No Model.) 4 Sheets—Sheet 1.

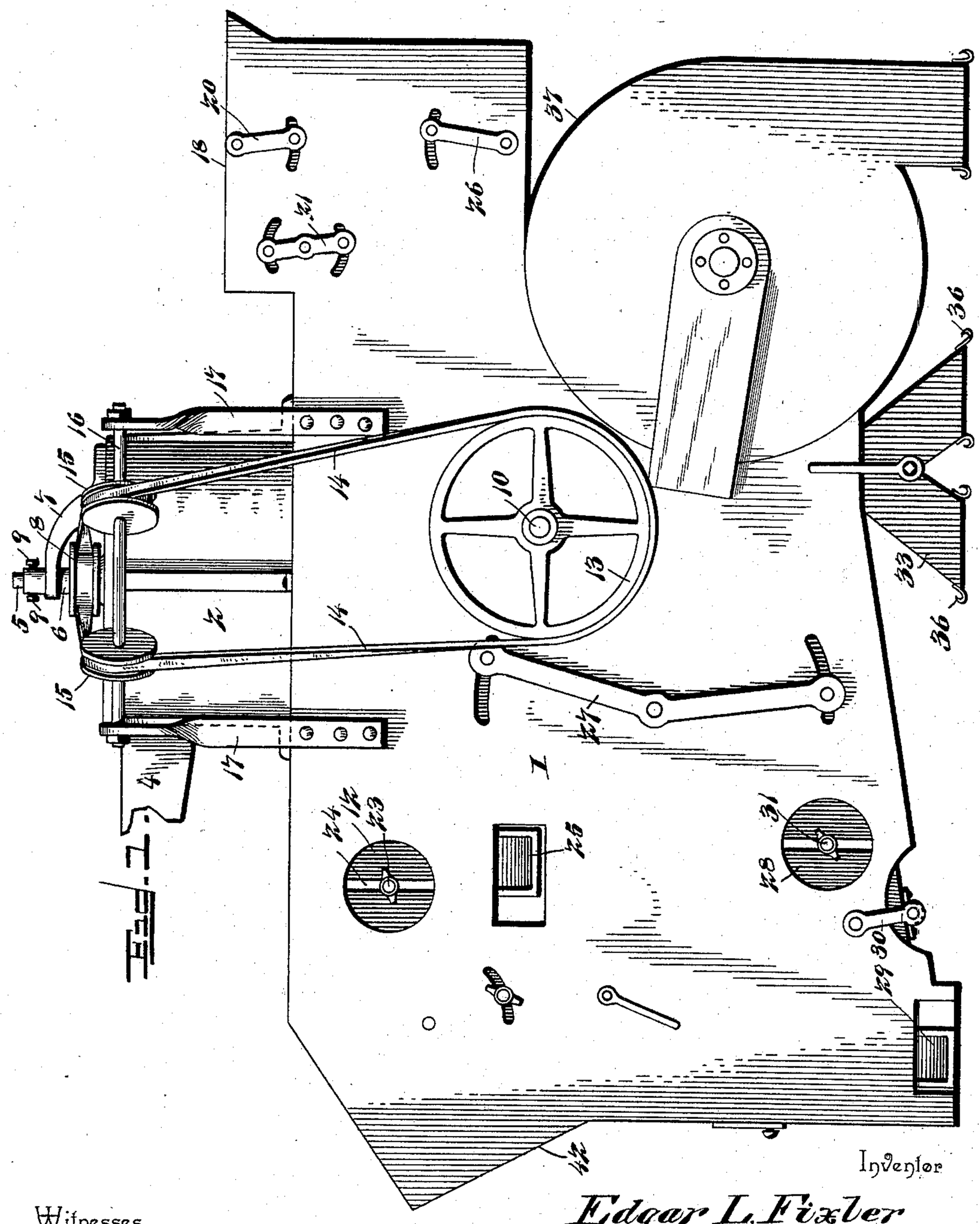

FIG. 1.

Witnesses

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(No Model.) 4 Sheets—Sheet 2.

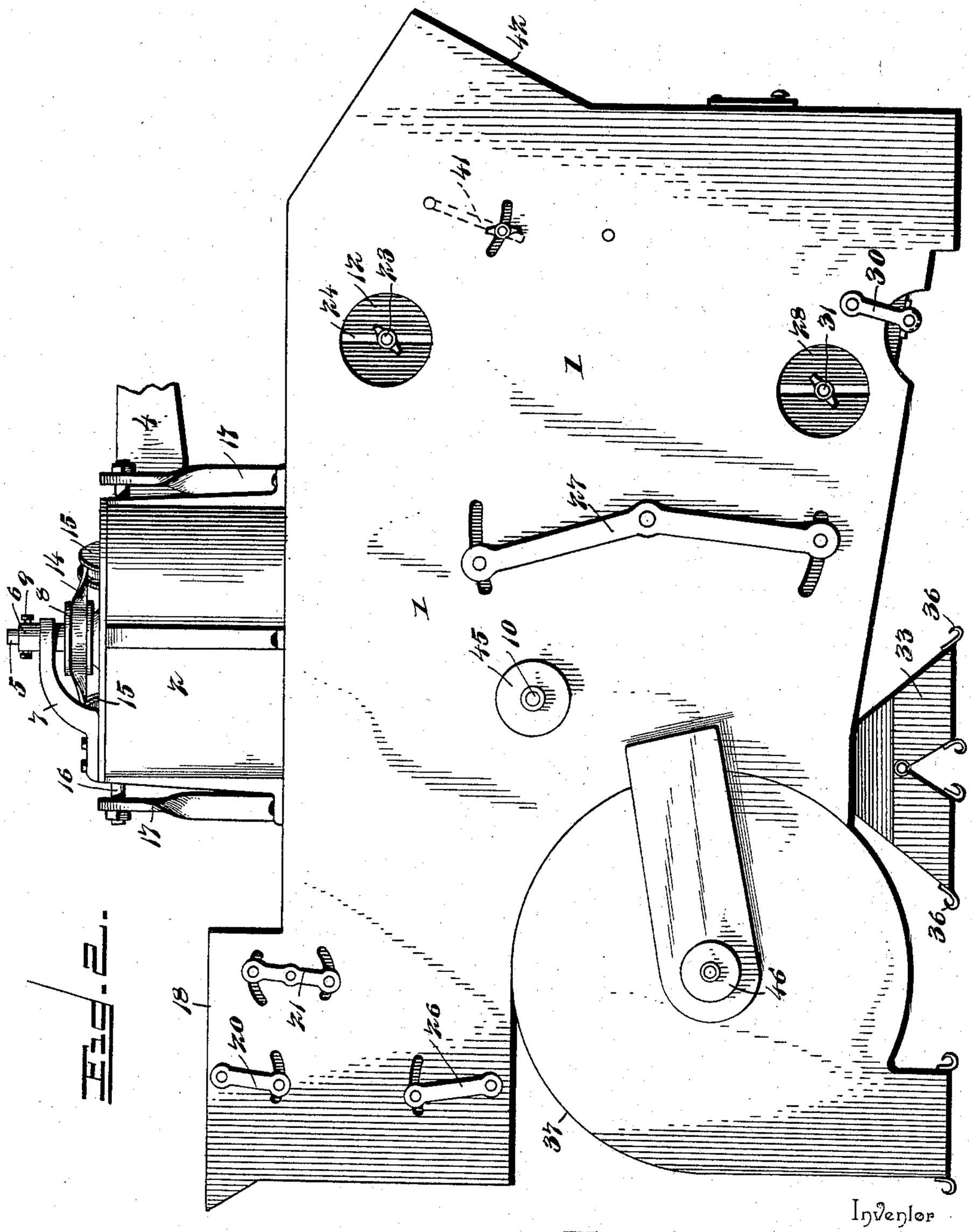

FIG. 2.

Witnesses

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No. 609,091 Patented Aug. 16, 1898.

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GRAIN SEPARATOR AND CLEANER.

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(No Model.) 4 Sheets—Sheet 3.

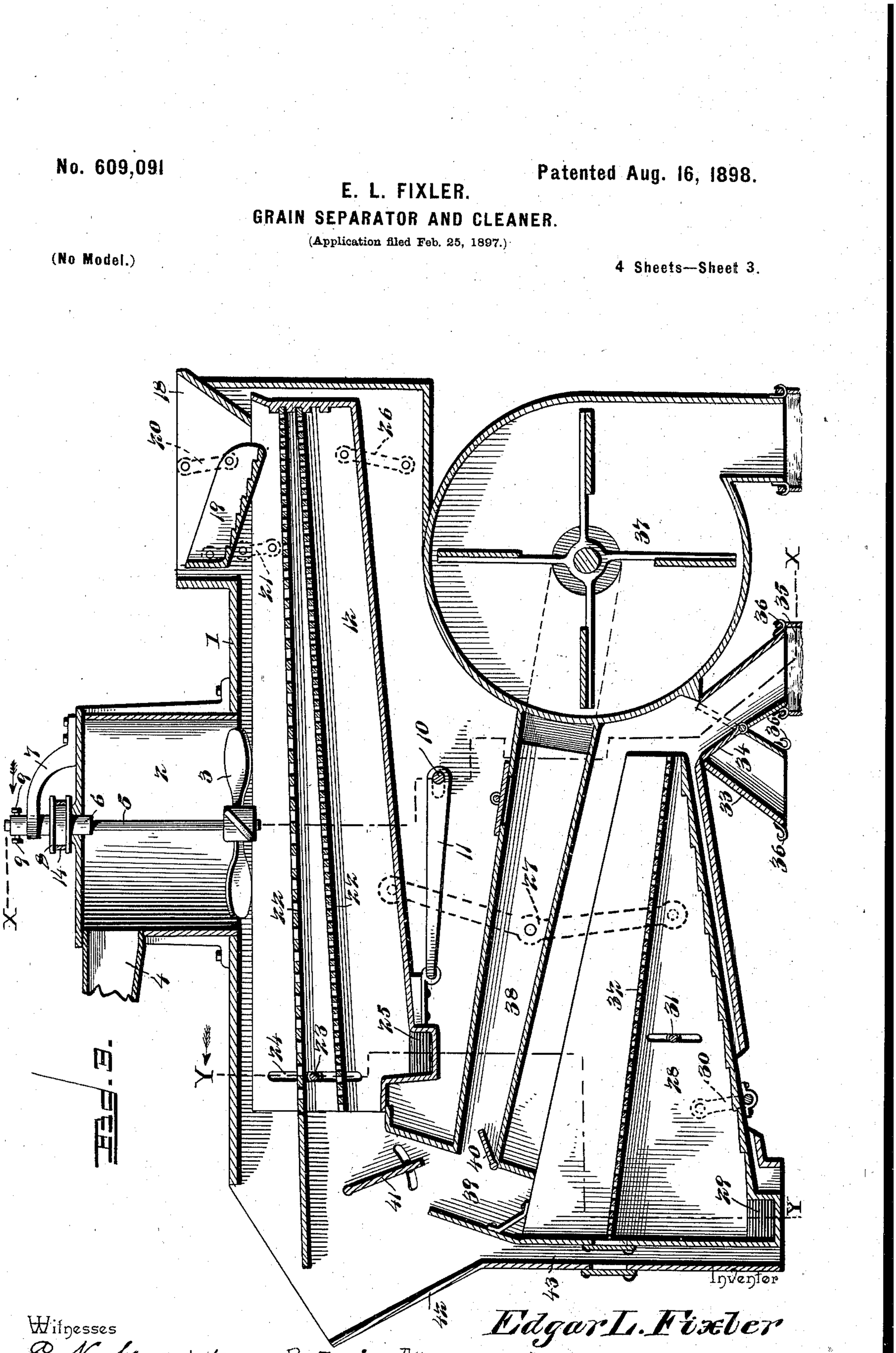

FIG. 3.

Witnesses
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No. 609,091. Patented Aug. 16, 1898.

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GRAIN SEPARATOR AND CLEANER.

(Application filed Feb. 25, 1897.)

(No Model.) 4 Sheets—Sheet 4.

FIG. 5.

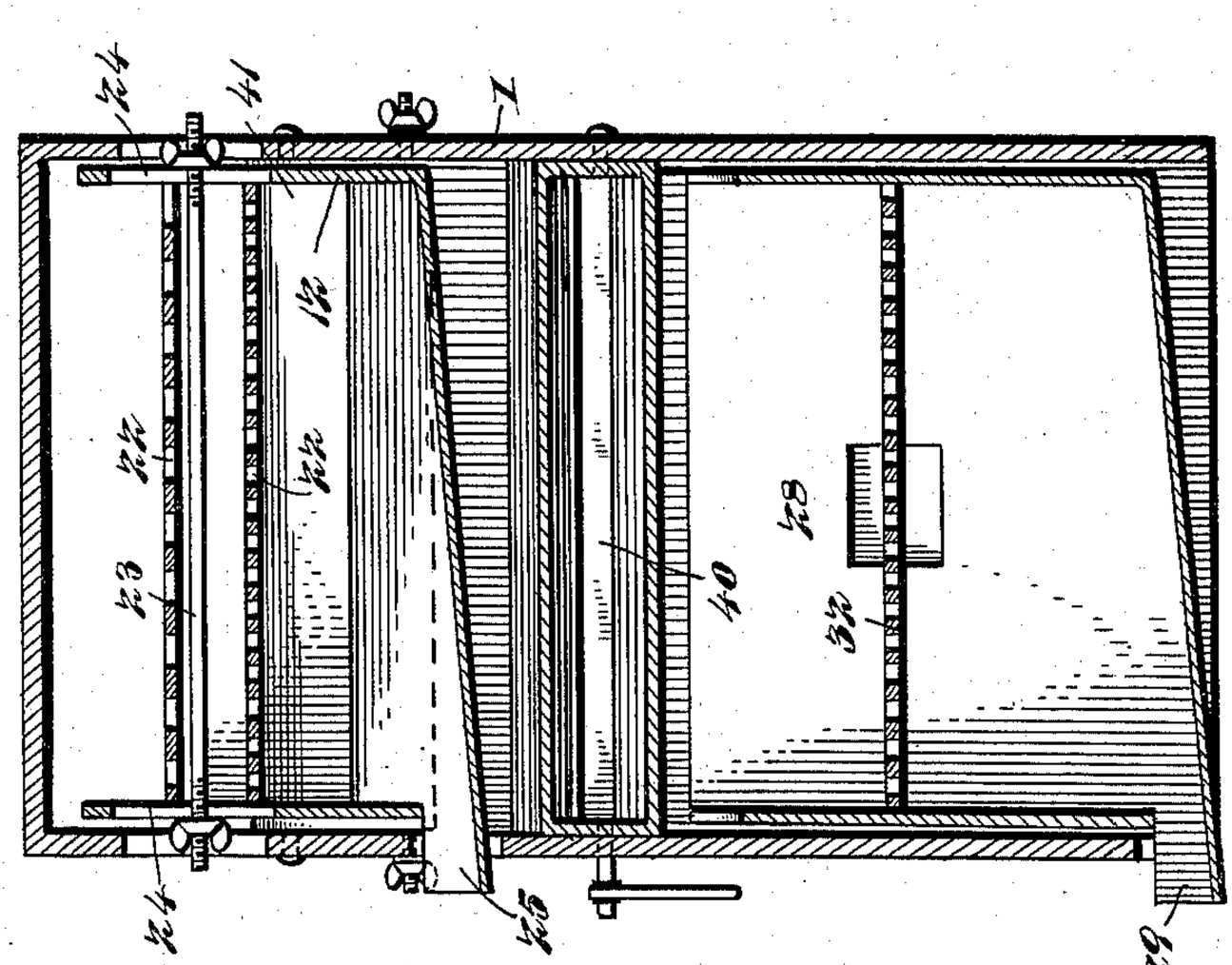

FIG. 4.

Witnesses

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Inventor

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UNITED STATES PATENT OFFICE.

EDGAR L. FIXLER, OF DELTA, OHIO.

GRAIN SEPARATOR AND CLEANER.

SPECIFICATION forming part of Letters Patent No. 609,091, dated August 16, 1898.

Application filed February 25, 1897. Serial No. 624,987. (No model.)

To all whom it may concern:

Be it known that I, EDGAR L. FIXLER, a citizen of the United States, residing at Delta, in the county of Fulton and State of Ohio, have invented a new and useful Grain Separator and Cleaner, of which the following is a specification.

This invention relates to machines for separating and cleaning grain as received from the threshing-machine, the separation being effected by a series of graduated sieves and the cleaning by means of fans combined with the action of the sieves, all as will appear more fully hereinafter, reference being had to the accompanying drawings for a full understanding of the details and nature of the invention.

The improvement is susceptible of various changes in the form, proportion, and the minor details of construction without departing from the principle or sacrificing any of the advantages thereof, and to a full disclosure of the invention an adaptation thereof is shown in the accompanying drawings, in which—

Figures 1 and 2 are elevations of the improved separator as viewed from opposite sides. Fig. 3 is a central longitudinal section thereof. Fig. 4 is a transverse section on the line X X of Fig. 3, looking in the direction of the arrow. Fig. 5 is a transverse section on the line Y Y of Fig. 3, looking to the left, as indicated by the arrow.

Corresponding and like parts are referred to in the following description and indicated in the several views of the accompanying drawings by the same reference characters.

The frame or casing 1 of the combined separator and cleaner is of box form and is surmounted about midway of its ends by a drum 2, which incloses a fan 3, by means of which the chaff and light stuff are drawn off as a preliminary step to the cleaning of the grain. A spout 4 connects with the upper portion of the drum 2 for carrying off the foreign matter to a convenient point of discharge. The shaft 5, carrying the fan 3, is adjustable vertically in a sleeve 6, journaled in a bracket 7 and in the head of the drum, said sleeve being supplied with a band-pulley 8 and provided with binding-screws 9, by means of which the shaft 5 is secured in an adjusted position. By loosening the binding-screws 9 the shaft 5 and fan 3 can be adjusted vertically in the drum 2 to any required elevation, thereby regulating the draft, the speed and other conditions being the same. A shaft 10 is journaled near its ends in the sides of the framework or casing and has a crank portion intermediate of its ends, to which one end of a pitman 11 is connected for transmitting motion to the upper shoe 12. A band-pulley 13 is secured to one end of the shaft 10, and a drive-belt 14 connects it with the pulley 8 for operating the fan and passes over direction-pulleys 15 on a shaft 16, supported by means of brackets 17, fastened at their lower ends to the frame or casing 1.

A hopper 18 is provided at one end of the casing, and a vibrating pan 19 is located therein and receives the grain and loosens and lightens it and directs the grain to the front portion of the shoe 12. The upper face of the pan-bottom is notched, so as to insure the loosening and feeding of the grain when the pan is vibrated. This pan 19 is arranged so as to incline forwardly and downwardly, thereby attaining the end for which it is provided in the best manner possible. Swinging links 20 support the front end of the pan, and levers 21 support the rear portion thereof and have pivotal connection midway of their ends with the frame or casing 1 and have their upper ends connected with the pan 19 and their lower ends with the shoe 12, whereby motion is transmitted to the pan from the shoe.

The shoe 12 is located in the upper portion of the frame or casing and is provided with a series of sieves 22, having graduated openings for successively grading and removing the impurities from the grain, and these sieves are adjustable at either or both ends to admit of their inclination being varied according to the character and condition of the grain being treated. A tie-rod 23 connects the sides of the shoe near their rear ends and is vertically adjustable in slots 24, formed in the said sides. The projecting end portions of the tie-rod are threaded and receive winged nuts, by means of which the sides of the shoe are drawn together and clamped against the edges of the screens, thereby holding the latter in an adjusted position. A pocket 25 is

formed in the bottom of the shoe near its delivery end and inclines transversely of the machine and is intended to receive broken and small grain and deliver the same to one side of the machine, as clearly indicated in Fig. 5. The shoe 12 is supported at its front end by swinging links 26 and at its rear end by levers 27, which are fulcrumed about midway of their extremities to the sides of the frame or casing. The pitman 11 connects the shoe 12 with the crank portion of the shaft 10 and is vibrated in this manner and imparts a corresponding vibratory movement to the pan 19 by means of the levers 21, as previously intimated.

A shoe 28, inversely disposed to the shoe 12, occupies the lower portion of the frame or casing and has connection with the lower ends of the levers 27 and is vibrated thereby. A pocket 29 is located at the outer or rear end of the shoe and subserves the same purpose as the pocket 25 of the shoe 12 and inclines and discharges at one side of the machine. Links 30 support the rear end of the shoe 28 in such a manner as to permit of it vibrating when the machine is in operation. A tie-rod 31, similar to the tie-rod 23, draws the sides of the shoe 28 together and holds the sieve 32 in an adjusted position. This sieve 32 inclines forwardly and downwardly from its rear end and terminates at a point directly above a twin spout 33, so as to deliver the grain in a marketable condition thereto. A valve 34 is pivoted at its lower end at a point corresponding with the juncture of the members comprising the twin spout and is adapted to be turned so as to close either, thereby directing the grain through the other. A bag or receptacle 35 is applied to the lower end of one or the other of the members of the spout to receive the cleaned grain and is held in place by means of hooks 36, applied to the delivery end of the spout members.

A suction-fan 37 is located in front of the shoe 28 and directly beneath the front portion of the shoe 12 and communicates with an inclined passage 38, located intermediate of the shoes 12 and 28, and this passage connects at its rear end with a passage 39, inclining slightly from the vertical. A gate 40 is located at the juncture of the passages 38 and 39 and is adjustable to open the passage 38 more or less and is pivotally supported at its lower edge and movable at its upper edge, so as to serve as a deflector and prevent any grain or matter entering the passage 38. By reason of the inclination of the inner wall of the passage 39 the upper edge of the opening controlled by the gate 40 falls short of the lower edge of the said opening, and by having the said gate pivoted at its base in line with the wall at the lower edge of the opening therein it serves to shed outward any heavy grains falling within the said opening. A cant-board 41 is located at the upper end of the passage 39 and is pivoted at its upper edge and free to swing at its lower edge, thereby causing the grain to be deflected toward the inner wall of the passage 39 to a greater or less extent, according to the speed of the fan 37 and the nature and weight of the grain being cleaned.

The topmost screen 22 overhangs the cant-board 41 and passage 39 and directs the tailings toward the rear end of the machine and upon an inclined board 42, by means of which they are directed into a vertical passage 43 and conveyed to the ground or into a receptacle placed to receive them. The fan 37 is driven from any convenient part of the thresher by means of a belt passing around a pulley 46 on the end of the fan-shaft in the usual manner. When the machine is in operation, a vibratory movement is imparted to the pan 19 and shoes 12 and 28, and the fans 3 and 37 are driven at the required rate of speed, according to the nature of the grain being separated and cleaned. The grain being fed into the hopper 18 is received upon the pan 19, thence upon the topmost screen of the shoe 12, when the separation and cleaning begin. The dust, chaff, and light particles are drawn off by means of the fan 3. The tailings pass over the rear end of the upper screen upon the board 42 and escape through the passage 43, and the small and broken grains are received in the pocket 25 and are directed to one side of the machine. The whole and larger grains pass from the second sieve of the shoe 12 into the passage 39 and in their descent are subjected to a blast of air rushing into the passage 38 and which removes the last traces of any light foreign matter, and the grain dropping upon the screen 32 is recleaned and passes from thence into the twin spout and is bagged for the market.

Having thus described the invention, what is claimed as new is—

1. In a grain separator and cleaner, the combination of upper and lower separating-shoes, a passage connecting the delivery end of the upper shoe with the receiving end of the lower shoe and having its inner wall inclined, a suction-fan in communication with an opening in the said inclined wall, a gate for closing the opening in the inclined wall and pivoted at its lower end to the lower edge of the said opening, and adapted to swing inward at its upper end and shed outward any heavy grains falling within said opening, and a cant-board at the upper end of the said passage, pivoted at its upper end opposite the delivery end of the lowermost screen of the upper shoe, and adjustable at its lower end toward and from the aforesaid inclined wall to deflect the grain more or less toward it, substantially as and for the purpose specified.

2. In a grain separator and cleaner, the combination of a drum surmounting the casing inclosing the separating and cleaning mechanisms, and a shaft vertically adjustable with respect to the drum and bearing a fan, substantially as and for the purpose specified.

3. In a grain separator and cleaner, the combination of a drum mounted upon the frame or casing containing the separating and cleaning mechanisms, a sleeve journaled to the drum and a bracket applied thereto, means for rotating the sleeve, and a shaft vertically adjustably mounted in the sleeve and bearing a fan operating in the drum, substantially as described.

4. The herein-described grain separator and cleaner, comprising a casing, a drum mounted thereon, a fan vertically adjustable in the drum, upper and lower shoes inversely disposed, levers connecting the said shoes, a pan located in the hopper, levers connecting the pan with the upper shoe, an approximately vertical passage connecting the upper and lower shoes, a horizontal passage communicating with the vertical passage and having connection with a fan, a gate at the juncture of the vertical and horizontal passages, an adjustable cant-board at the upper portion of the vertical passage, and a twin spout at the delivery end of the lower shoe supplied with a valve, substantially as and for the purpose set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

EDGAR L. FIXLER.

Witnesses:
WILLIAM MACK, Jr.,
A. A. DUMARESQ.