

(No Model.)

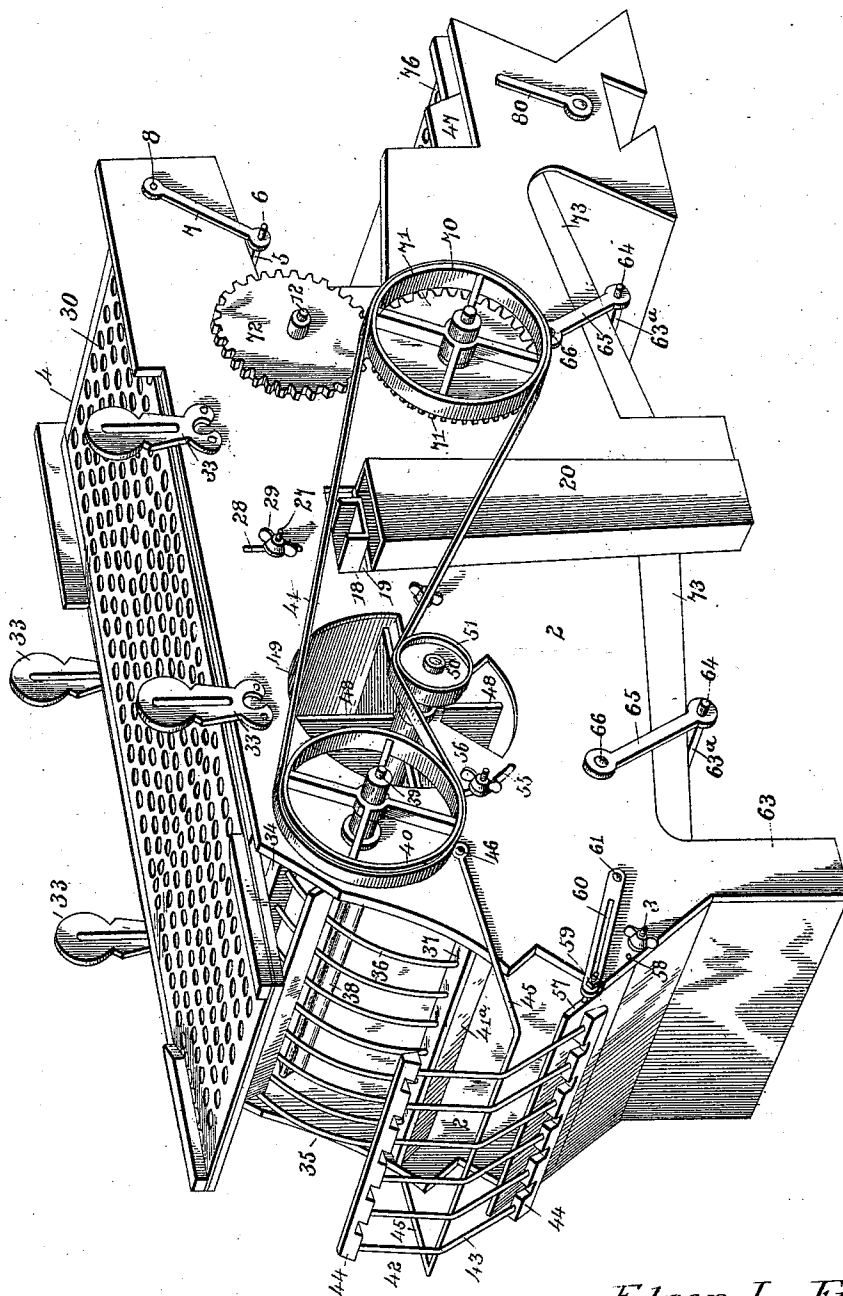
3 Sheets—Sheet 1.

E. L. FIXLER & A. H. WILLIAMS.
FOUL SEED EXTRACTOR AND RECLENER.

No. 542,337.

Patented July 9, 1895.

FIG. 1.



Witnesses

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(No Model.)

3 Sheets—Sheet 2.

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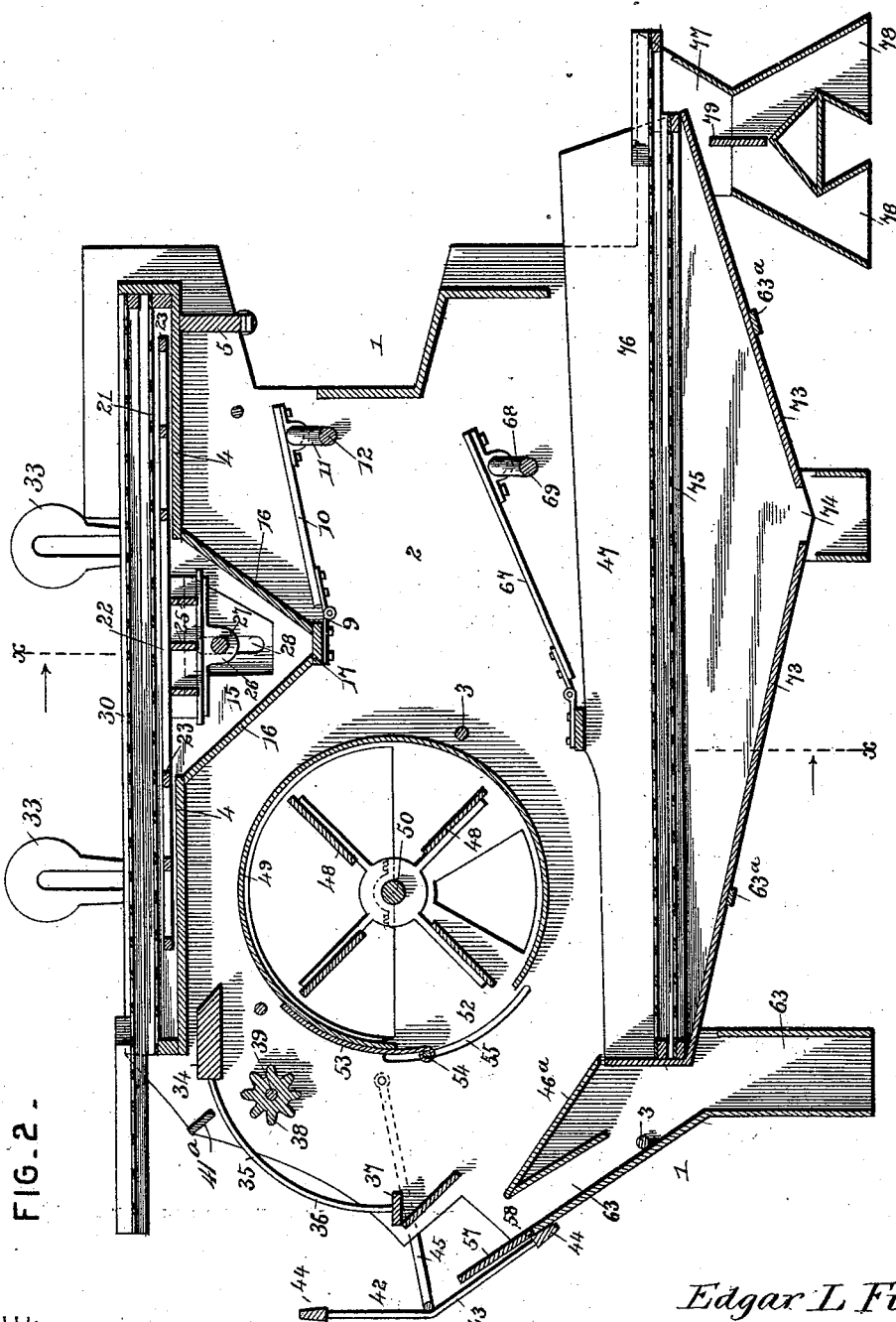


FIG. 2 -

Witnesses

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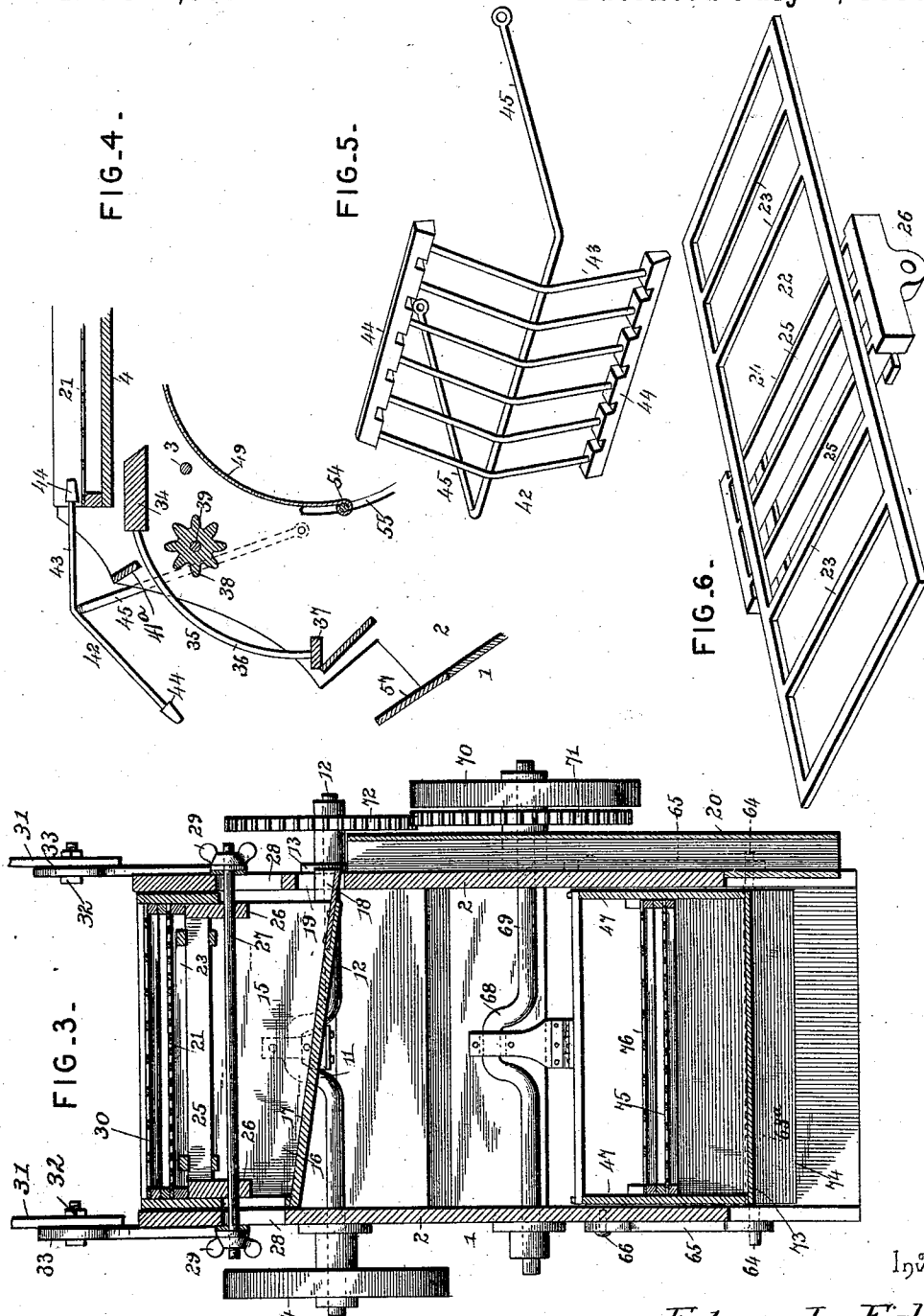
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3 Sheets—Sheet 3.

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UNITED STATES PATENT OFFICE.

EDGAR L. FIXLER AND ANSON H. WILLIAMS, OF DELTA, OHIO.

FOUL-SEED EXTRACTOR AND RECLEANER.

SPECIFICATION forming part of Letters Patent No. 542,337, dated July 9, 1895.

Application filed November 16, 1894. Serial No. 529,039. (No model.)

To all whom it may concern:

Be it known that we, EDGAR L. FIXLER and ANSON H. WILLIAMS, citizens of the United States, residing at Delta, in the county of Fulton and State of Ohio, have invented a new and useful Foul-Seed Extractor and Recleaner, of which the following is a specification.

This invention relates to foul-seed extractors and recleaners for grain thrashers or separators; and it has for its object to provide a new and useful machine of this character adapted to be used in connection with an ordinary thrasher or separator to provide efficient means for thoroughly extracting or separating foul seeds from wheat, oats, and other grains that have passed through an ordinary thrasher, and to reclean such grains, in order to produce the finest possible grades thereof.

With these and other objects in view, which will readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination, and arrangement of parts hereinafter more fully described, illustrated, and claimed.

In the drawings, Figure 1 is a perspective view of a machine constructed in accordance with this invention. Fig. 2 is a central longitudinal sectional view thereof. Fig. 3 is a transverse vertical sectional view on the line *xx* of Fig. 2. Fig. 4 is a central longitudinal sectional view of the upper part of the machine, showing the adjustable skimming-apron adjusted with one end thereof disposed within one end of the upper cleaning-shoe. Fig. 5 is a detail in perspective of the adjustable skimming-apron. Fig. 6 is a similar view of the stationary sieve-cleaner for the upper vibrating cleaning-shoe.

Referring to the accompanying drawings, 1 designates the casing of the machine, essentially comprising the opposite parallel casing sides 2, suitably connected together at different points by the transverse tie rods or bolts 3, and arranged to work within the upper part of the open casing 1 is the upper vibrating cleaning-shoe 4. The upper vibrating cleaning-shoe 4 is substantially rectangular in shape, and is of a length nearly equaling the length of the casing, within which the said shoe has a combined reciprocatory vibrating movement, and the said vibrating shoe is

adapted to be arranged under the upper discharging end of the usual elevator-spout of an ordinary grain-thrasher or separating-machine. To secure this disposition of the upper vibrating shoe to receive the grain from the thrasher or separator, the herein-described machine is preferably placed directly on a side of the thrasher or separator.

The upper vibrating cleaning-shoe 4 has attached to the under side thereof, near one end, the transverse supporting-bar 5, provided with the spindle extremities 6, loosely engaging in the lower ends of the hanger-links 7, pivotally secured at their upper ends at 8 to opposite sides of the casing 1, near one end thereof, to provide for supporting one end of the shoe for a swinging movement, and loosely connected to the shoe 4 at an intermediate point, as at 9, is one end of an operating-pitman 10, the other end of which is connected to an intermediate crank 11 of the transverse crank-shaft 12. The transverse crank-shaft 12 is journaled in suitable bearings 13 at opposite sides of the casing, and upon one extremity of said shaft, outside of the casing, may be mounted a belt wheel or pulley 14, that receives a belt from any suitable driving source, such as one of the wheels or pulleys of the thrasher or separator, in connection with which the machine is employed.

The vibrating shoe 4 is provided at a point intermediate of its ends with a bottom seed-pocket 15, having the declining sides 16, that connect with a laterally-inclined chute-board 17, forming the bottom of said pocket and leading into a short offstanding chute 18. The short offstanding chute 18 is attached to one side of the bottom seed-pocket of the upper vibrating shoe and projects through and works in a chute-slot 19, formed in one of the casing sides, and said chute serves to discharge the foul seed and other separations from wheat, oats, or other grain into the upper end of a side discharge-spout 20, arranged at one side of the machine-casing and serving to discharge the foul seed and other similar separations to any point desired outside of the machine. The said vibrating shoe 4 is designed to removably accommodate inside of the same a fine-mesh separating-sieve 21. The fine-mesh separating-sieve 21 may be of any approved construction, but preferably of

the construction in which the meshes of the sieve are made up of a series of closely-arranged slots, and the meshes of the sieve 21 are sufficiently fine to prevent the wheat, 5 oats, or other grain being separated from passing therethrough, while at the same time providing for the separation of the foul seed and other impurities from the good grain and the discharge of such foul seed or other im- 10 purities into the bottom seed-pocket already referred to.

The fine-mesh separating-sieve 21 is adapted to have the frame thereof snugly register within the shoe 4 and to rest flat on the bot- 15 tom thereof, and adapted to be arranged between the sieve 21 and the bottom of the shoe 4 is the stationary rectangular sieve-cleaning frame 22. The stationary sieve-cleaning frame 22 is of a shorter length than the shoe 20 and the sieve 21, so that as the shoe is vibrated or reciprocated the frame 22 will be held to a position to scrape or contact gently with the under side of the sieve 21, that works there- 25 over, and thereby providing means for keeping the meshes of said sieve clean and also for working the foul seed and other separated impurities from the flat floor of the shoe into the bottom seed-pocket 15. The sieve-cleaning frame 22 is provided at both sides of its 30 center with a series of transverse cleaner-bars 23, that perform the double function referred to of cleaning the sieve and working the separations into the bottom seed-pocket, and the said frame 22 is secured on top of an 35 adjustable transverse frame-support 24. The adjustable transverse frame-support 24 comprises a series of connected parallel frame-bars 25, that allow the separations to fall freely therebetween into the seed-pocket, and 40 said frame-support is arranged inside of the pocket 15 and is provided at its under side with the rod-lugs 26, that loosely receive the transverse bolt-rod 27, the threaded extremities of which project through aligned slots 45 28 in opposite sides of the upper vibrating shoe and of the casing, and on the outside of the casing sides. The threaded ends of said bolt-rod receive the thumb-nuts 29, that serve to clamp the frame-support 24 fast in any ad- 50 justed position, whereby any wear on the frame 22 may be readily compensated for and the same always maintained properly adjusted to secure the results noted. The bolt-rod 27 not only provides means for the verti- 55 cal adjustment of the cleaning-frame 22, but at the same time loosely supports such frame in position, so that it will readily adjust itself to the vibrations of the shoe.

To provide for properly supporting the ma- 60 chine in position to dispose the sieve of the upper shoe under the discharge from the thrasher or separator, opposite pairs of verti- cally-slotted bracket-plates 33 are secured to the opposite under sides of the casing 1. The 65 bracket-plates extend above the upper edges of the casing and are adapted to be adjust- ably bolted, by means of the bolts 32, to suit-

able hangers 31, arranged at one side of the thrasher or separator to provide for the sup- 70 port of the extractor and recleaner.

In the recleaning of oats and similar grains the sieve 21 is the only sieve employed in the upper vibrating shoe, but in recleaning wheat a removable overflow-sieve 30 is employed. 75 The removable overflow-sieve 30 is rectangular in shape to removably register within the shoe 4 over the sieve 21, and the said remov- able overflow-sieve may consist of any suit- able coarse-mesh sieve of a rectangular shape and of a length exceeding the length of the 80 vibrating shoe 4 and of the casing 1, and one end of the long sieve 30 projects beyond one end of the shoe 4 to provide for discharging joints, straws, and other coarse material be- yond one end of the machine, so that the grain 85 will be relieved from such materials and will pass to the sieve 21 in a partially-cleaned condition.

The open discharging end of the upper vi- brating cleaning-shoe 4 is arranged to slide 90 on top of the upper horizontal rest-bar 34 at the upper inner end of the segmental grain-grating 35. The said segmental grating 35 consists of a series of parallel curved grating wires or bars 36, connected at their upper and 95 lower ends, respectively, by the horizontal rest-bar 34 and the lower grating-bar 37, said bars 34 and 37 being fitted securely within the casing 1 at one open end thereof. Ar- ranged directly under the upper ends of the 100 wires or bars 36, adjacent to the outer edge of the rest-bar 34, is the longitudinally-fluted grain-roller 38. The longitudinally-fluted grain-roller 38 is mounted on a transverse roller-shaft 39, journaled transversely within 105 the casing 1, and carrying upon one end, out- side of the casing, the belt wheel or pulley 40, over which passes one portion of a belt 41, that serves to communicate motion to the roller 38 in the manner to be presently re- 110 ferred to.

As the wheat, oats, or other grain is worked off from the sieve 21, through the open end of the shoe 4, such grain falls over the rest- 115 bar 34 onto the grain-roller 38, which evenly and regularly drops the grain into the space below the same and confined within the grating 35, and as this operation takes place the grating itself serves to throw off at one end of the machine the coarse stuff or tail- 120 ings, and the grain is kept close to the wires or bars of said grating by means of an in- clined grain-board 41^a, supported at an angle between the opposite frame sides directly over and near the grating at a point inter- 125 mediate of the upper and lower ends thereof.

When the machine is used without the over- flow-sieve 30, as clearly illustrated in Fig. 4 of the drawings, in working oats an adjust- 130 able skimming-apron 42 is adapted to be used in connection with the open discharging end of the upper shoe 4.

The adjustable skimming-apron 42 essen- tially comprises a parallel series of angular

wires or bars 43, connected at their opposite ends by the transverse apron-bars 44, and the said connected wires or bars 43 are secured at an intermediate point to a U-shaped adjusting-bail 45, the opposite extremities of which are pivotally connected, as at 46, to opposite sides of the casing 1. The apron 42 is arranged for adjustment at one end of the casing 1, and when in use is adjusted to a position to bring one of the transverse bars 44 inside of the open end of the shoe 4, directly above one end of the sieve 21, and in this position the said apron will skim off all coarse straws and similar stuff and discharge the same out at one end of the machine, while at the same time allowing the oats to pass through the grating 35 onto the fluted grain-roller 38. As the grain falls from the fluted grain-roller within the grating 35, the same falls onto the inclined cant-boards 46^a, that are arranged transversely within the casing 1 below the grating 42 and serve to guide or deflect the grain into one end of the lower vibrating cleaning-shoe 47, that is arranged to work within the lower part of the casing 1. During its passage onto the lower cleaning-shoe 47 the grain passes across a wind-blast from the rotary fan 48. The rotary fan 48 is mounted to revolve within a circular fan-casing 49, arranged within the casing between the upper and lower shoes, and said fan is mounted on a transverse fan-shaft 50, journaled in opposite sides of the casing and having mounted on one extremity thereof a belt-pulley 51, over which passes the lower portion of the belt 41, that communicates motion to the roller 38 in the manner described.

The circular fan-casing 49 is provided in one side thereof with a blast-opening 52, that is designed to be covered and uncovered by a curved wind-door 53. The curved wind-door 53 is arranged to work on the outside of the casing 49 and is attached at its lower edge to a transverse adjusting bolt-rod 54, the threaded extremities of which project through and work in the curved slots 55, formed in opposite sides of the casing 1. The threaded extremities of said bolt-rod 54 outside of the casing are engaged by the thumb-nuts 56, that provide means for holding the door 53 in any adjusted position to provide for the proper regulation of the blast discharged through the blast-opening 52. The blast from the fan 48 does not pass through either of the shoes, but only through the grain that falls from the upper to the lower shoe and serves to free such falling grain from light impurities. Beyond the space between the adjacent inclined cant-boards 46^a is arranged an adjustable tailings-board 57. The adjustable tailings-board 57 is pivotally mounted at one edge, as at 58, between the opposite casing sides 2 at one end of the casing, and connected to one end of the adjustable board 57 is an adjusting-screw 59, working in the longitudinal slot of the longitudinally-slotted adjusting-arm 60, pivotally secured at its inner end, as at 61, to one side of the casing 1 on the outside thereof. By loosening the screw 59 and adjusting the arm 60 the board 57 may be properly adjusted, with respect to the wind-blast, to provide for catching the tailings or light impurities blown out from the falling grain, and to direct such tailings into the end tailings-spout 63, formed within the casing 1 at one lower end thereof.

The lower vibrating separating-shoe 47 is of substantially the same shape and size as the upper shoe 4, and said lower shoe has attached to the underside thereof, near one end, the transverse supporting-bar 63^a, provided with the spindle extremities 64, loosely engaging in the lower ends of the hanger-links 65, pivotally secured at their upper ends, as at 66, to opposite sides of the casing 1, near one end thereof. At an intermediate point the lower shoe 47 has loosely connected to the top thereof one end of the operating-pitman 67, the other end of which is connected to the intermediate crank 68 of the transverse crank-shaft 69. The transverse crank-shaft 69 is journaled transversely in the casing 1 above the lower shoe 47, and has mounted on one extremity thereof, outside of the casing, a belt-wheel 70, over which passes a portion of the belt 41, and alongside of the belt-wheel 70 is mounted a gear-wheel 71, that meshes with a similar adjacent gear-wheel 72, mounted on one end of the upper crank-shaft 12, to provide a connection for transmitting motion to the various working parts of the machine from said upper crank-shaft, as will be readily understood.

The lower vibrating shoe 47 is provided with the oppositely-inclined bottom boards 73, that decline to an intermediate bottom discharge-opening 74 to provide for the discharge of the final separations from the good grain on the fine-mesh separating-sieve 75, that is arranged within the bottom part of the shoe 47, and effects any separation that the sieve 21 in the upper shoe fails to effect. Ordinarily the sieve 75 is employed alone in the shoe 47, as already described in connection with the upper shoe; but in recleaning wheat a coarse-mesh long overflow-sieve 76, similar to the sieve 30, is employed. The coarse-mesh long overflow-sieve 76 is removably arranged in the shoe 47 over the sieve 75, and one end of the sieve 76 projects beyond the open end of the shoe 47 and subserves the same function as the sieve 30 already referred to. The good grain that is worked over the sieve 75 is discharged at the open end of the shoe 47 into the upper end of the transverse hopper-box 77. The transverse hopper-box 77 is arranged at one end of the casing 1 under the open discharging end of the shoe 47, and is provided with the branch grain-spouts 78, that serve to alternately discharge the grain into bags connected therewith in the ordinary manner, and arranged centrally within the hopper-box 77 is a pivoted valve-gate 79, that is adjusted at

one end of the box 77 by means of a suitable valve-lever 80 to alternately close and open up the spout 78.

From the foregoing the construction, operation, and many advantages of the herein-described machine will be readily apparent to those skilled in the art, and it will be understood that changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

Having thus described the invention, what is claimed, and desired to be secured by Letters Patent, is—

1. In a grain recleaner, the casing, upper and lower cleaning shoes supported to vibrate within the casing and having separating sieves, a segmental grain grating arranged within one end of the casing and comprising upper and lower transverse bars and a series of parallel curved grating wires, the upper of said transverse bars being arranged directly under one end of the upper shoe, and a fan arranged between the two shoes to direct its blast through the falling grain passing from the upper to the lower shoe through said grating, substantially as set forth.

2. In a machine of the class described, a cleaning shoe provided with a flat floor and with a bottom seed pocket at an intermediate point, the separating sieve fitted within said shoe, a stationary vertically adjustable skeleton frame support arranged within the seed pocket of the shoe, and comprising a series of connected parallel frame bars, and a stationary rectangular sieve cleaning frame secured intermediately on said support so as to extend beyond both sides of the seed pocket, and provided with a series of transverse cleaner bars adapted to work against the under side of said sieve, and also over the flat floor of the shoe to work the separations into the seed pocket, substantially as set forth.

3. In a grain recleaner, the casing, upper and lower vibrating cleaning shoes supported within the casing, the upper of said shoes being provided at an intermediate point with a bottom seed pocket, the separating sieve fitted in the upper shoe, a stationary rectangular sieve cleaning frame arranged on the bottom of the upper shoe longitudinally under the sieve therein, and adapted to provide for cleaning the sieve and also for working the separations into said seed pocket a transverse skeleton frame support connected to said frame at an intermediate point, a transverse vertically adjustable bolt rod connected to said frame support to loosely and adjustably support the same, and a fan arranged between the two shoes, substantially as set forth.

4. In a grain recleaner, the combination of upper and lower vibrating cleaning shoes, a

grain grating arranged under the discharging end of the upper shoe, a fluted grain roller under the upper end of said grating, and the fan arranged between the two shoes, substantially as set forth.

5. In a grain recleaner, the casing, the upper and lower cleaning shoes supported to vibrate within the casing and having separating sieves, a segmental grain grating arranged within one end of the casing and comprising upper and lower transverse bars and a series of parallel curved grating wires, the upper of said transverse bars forming a rest bar for one end of the upper shoe to slide on, an inclined grain board supported at an angle over and in contact with said grating, a longitudinally fluted grain roller mounted to rotate within said grating adjacent to the rest bar thereof, and a fan arranged to discharge its blast under said grating, substantially as set forth.

6. In a grain recleaner, the combination of the casing, the vibrating separating shoe mounted within the casing and having a sieve therein, and an adjustable skimming apron supported at one end of the casing and adapted to have one end adjusted within one end of the shoe above the sieve therein, substantially as set forth.

7. In a grain recleaner, the combination of the casing, the vibrating cleaning shoe mounted within the casing and having a sieve therein, a U-shaped adjusting bail pivotally connected to one end of the casing, and a skimming apron attached to said bail, said skimming apron comprising a series of parallel angular wires and transverse bars connecting the ends of said wires, one of said transverse bars being adapted to be adjusted to a position within the open end of the shoe above the sieve therein, substantially as set forth.

8. In a grain recleaner, the combination of the casing, upper and lower vibrating shoes carrying sieves, a segmental grain grating arranged at one end of the casing below the plane of the discharging end of the upper shoe a fluted grain roller arranged under the upper end of the grating, adjacent inclined cant boards arranged below the lower end of the grating and declining toward the lower shoe, a circular fan casing arranged between the two shoes and provided in one side with a door-inclosed blast opening disposed below the plane of the grating to discharge the blast through the grain as it falls to the lower shoe and the fan, substantially as set forth.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in the presence of two witnesses.

EDGAR L. FIXLER.
ANSON H. WILLIAMS.

Witnesses:

J. F. FIXLER,
JENNIE FIXLER.