L. E. SIMPSON.

SIFTING MACHINE.

APPLICATION FILED FEB. 3, 1915.

1,141,660.

Patented June 1, 1915.

2 SHEETS—SHEET 1.

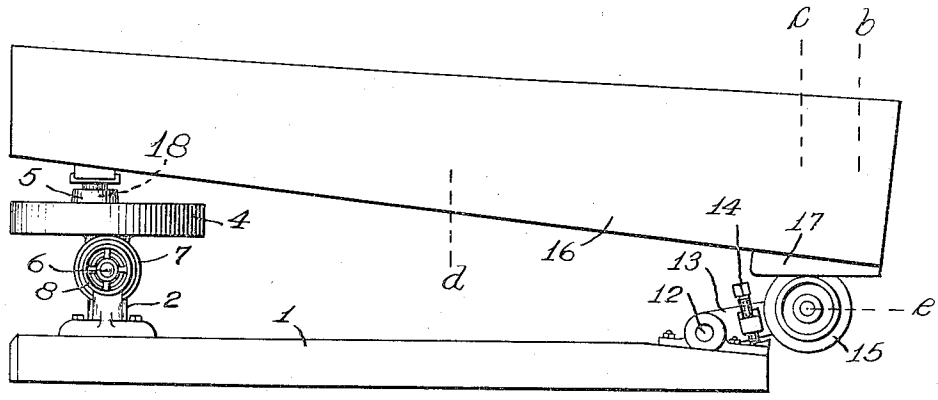


Fig. 1

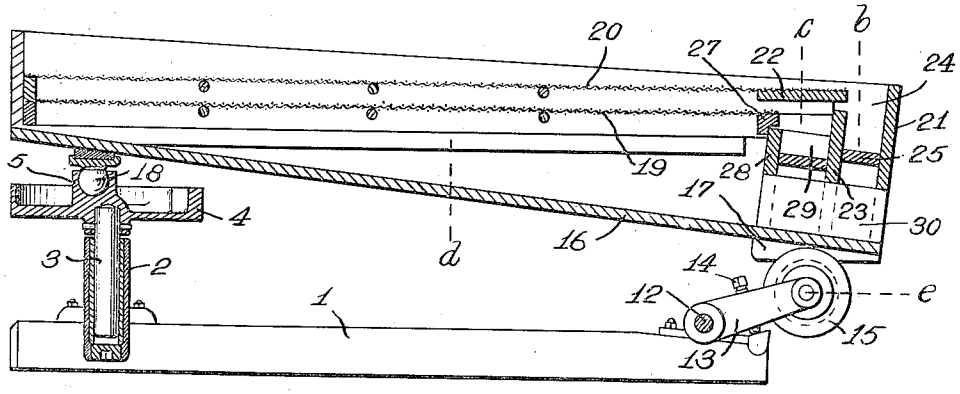


Fig. 2

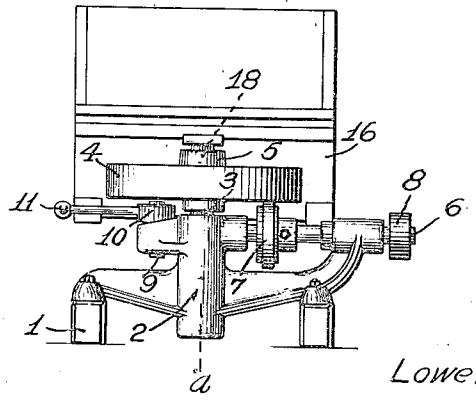


Fig. 3

Lowe E. Simpson

Inventor

Witnesses:

Geo. Johnson.

M. S. Belden.

By James W. See

Attorney

L. E. SIMPSON.

SIFTING MACHINE.

APPLICATION FILED FEB. 3, 1915.

1,141,660.

Patented June 1, 1915.

2 SHEETS—SHEET 2.

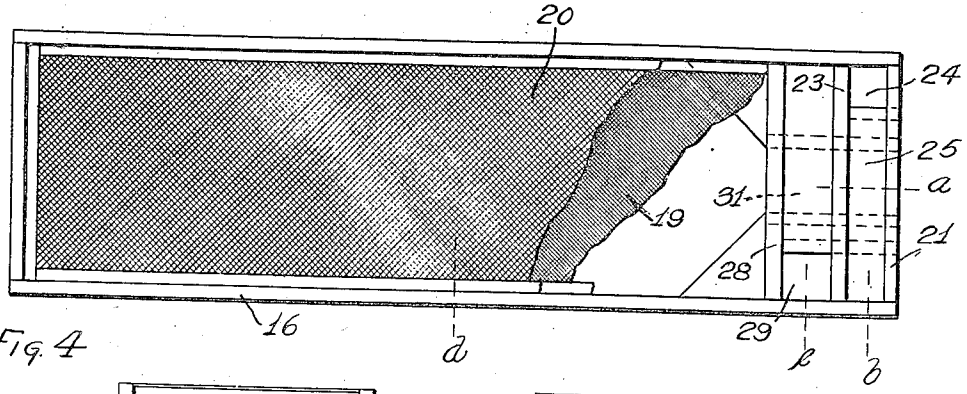


Fig. 4

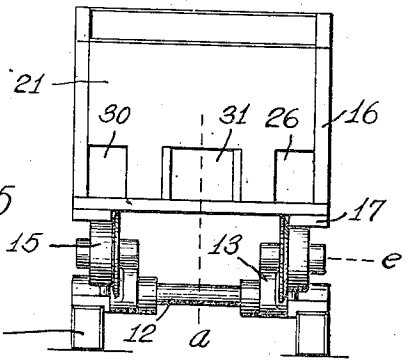


Fig. 5

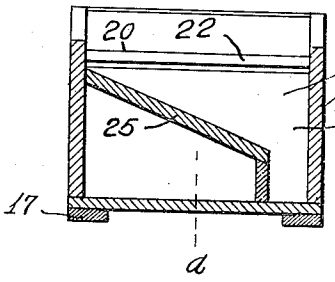


Fig. 6

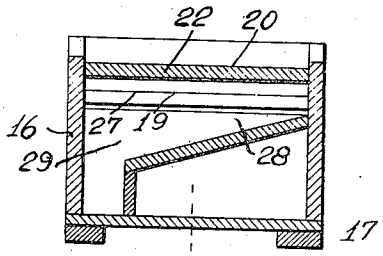


Fig. 7

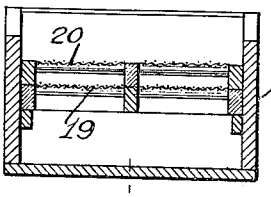


Fig. 8

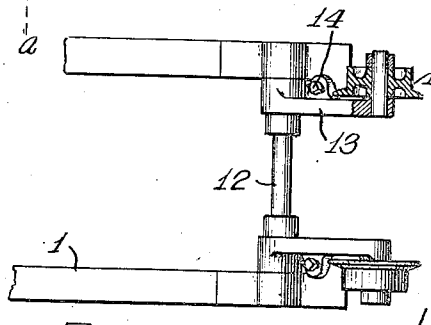


Fig. 9

Witnesses:

Geo. Johnson

M. S. Belden.

Lowe E. Simpson

Inventor

by James W. See

Attorney

UNITED STATES PATENT OFFICE.

LOWE E. SIMPSON, OF CINCINNATI, OHIO, ASSIGNOR TO THE ORVILLE SIMPSON COMPANY, OF CINCINNATI, OHIO.

SIFTING-MACHINE.

1,141,660. Specification of Letters Patent. Patented June 1, 1915.

Application filed February 3, 1915. Serial No. 5,821.

To all whom it may concern:

Be it known that I, LOWE E. SIMPSON, a citizen of the United States, residing at College Hill, Cincinnati, Hamilton county, Ohio, have invented certain new and useful Improvements in Sifting-Machines, of which the following is a specification.

This invention pertains to that class of sifting machines in which a box is disposed substantially horizontally and carries one or more sieves, a shaking motion being given to the box and its sieves to cause the material to move over different parts of the sieves so as to permit sufficiently fine portions of the material to pass through the sieves and the unsifted material to tail off of the discharged end of the sieves, the box with its sieves being adjustable to such degree of decline as will facilitate the passage of the unsifted material from the head toward the tail of the sieves, and the invention relates to improvements in the construction of machines of this class.

The invention will be readily understood from the following description taken in connection with the accompanying drawings in which:—

Figure 1 is a side elevation of a sifting machine embodying my improvements; Fig. 2 a vertical longitudinal section of the same in the plane of line *a* of Figs. 3, 4, 5, 6, 7 and 8; Fig. 3 an elevation of the head end of the machine; Fig. 4 a plan of the sieve-box; Fig. 5 an elevation of the tail end of the machine; Fig. 6 a vertical transverse section of the sieve-box in the plane of line *b* of Figs. 1, 2, and 4; Fig. 7 a vertical transverse section of the sieve-box in the plane of line *c* of Figs. 1, 2 and 4; Fig. 8 a vertical transverse section of the sieve-box in the plane of line *d* of Figs. 1, 2 and 4; and Fig. 9 a plan of the tail end of the base portion of the machine, parts appearing in the plane of line *e* of Figs. 1, 2 and 5.

In the drawings:—1, indicates a base for the machine, to be of any suitable form, but illustrated in the form of two transversely connected longitudinal timbers: 2, a vertical bearing carried by a bridgetree at the head end of the base: 3, a vertical shaft fitted to rotate and shift vertically in the bearing 2: 4, a crank-disk fast on the upper end of this shaft and having a plain lower surface: 5, an upwardly open circular socket eccentrically disposed on and carried by the crank-disk, the floor of this socket being of hemispherical form, this socket with the disk forming a crank: 6, a horizontal shaft journaled in the bridgetree which supports the crank, this shaft being radial to the axis of the crank: 7, a friction-disk mounted on this shaft and having its periphery in frictional engagement with the under surface of the crank-disk, this friction-disk being secured to its shaft but adjustable along the same to various radial positions relative to the crank-disk: 8, a pulley on shaft 6, typifying means by which that shaft may be rotated: 9, a vertical stud carried by the bridgetree below the crank-disk and vertically adjustable, the upper end of this stud being normally free from the lower surface of the crank-disk: 10, a cam mounted on this stud and adapted to adjust the stud upwardly into engagement with the crank-disk and elevate the crank-disk to a position free of engagement with the friction-disk. 11, a handle by means of which the cam may be turned: 12, a shaft supported at the tail end of the base of the machine: 13, a pair of arms mounted on this shaft and adapted for rising and falling motion independent of each other: 14, set-screws engaging the arms and the base and serving in angularly adjusting the free ends of the arms: 15, flanged wheels carried by the outer ends of the arms, with their axes parallel with that of shaft 12 and at right angles to the general length of the machine, there being one of these wheels, with its supporting arm, at each side of the machine: 16, a sieve-box having a declined floor and disposed over the base with its head end over the crank-disk and with its tail end over the flanged wheels, the floor of the sieve-box declining from its head toward its tail: 17, shoes carried by the tail end of the sieve-box and engaging treads of the flanged wheels, the shoes engaging, in the illustration, outside the flanges of the wheels: 18, a spherical crank-pin secured below the head end of the sieve-box and engaging within the socket of the crank-disk: 19, a sieve supported in the sieve-box and extending from side to side thereof and from the head of the sieve-box to near its tail: 20, an upper similarly supported sieve, of coarser mesh than sieve 19: 21, the tail wall of the sieve-box: 22, the tail end of upper sieve 20,

this tail end terminating a short distance from tail-wall 21: 23, a transverse partition in the sieve-box, near tail wall 21 and below the tail end of the upper sieve: 24, a chamber formed between the tail-wall 21 and partition 23, this chamber extending across the sieve-box: 25, a sloping floor for chamber 24, above the floor of the sieve-box and extending from one side of the sieve-box to near the other side and having a vertical portion near its lower end: 26, a discharge port through the tail-wall at the foot of chamber 23: 27, the tail end of the lower sieve 19, the same being farther from the tail-wall of the sieve-box than is the tail of the upper sieve: 28, a transverse partition in the sieve-box under the tail end of the lower sieve: 29, a chamber formed between partitions 23 and 28, this chamber having a declining floor, like floor 25, but declining in the opposite direction: 30, a discharge port leading out through the tail-wall of the sieve-box from chamber 29: and 31, a discharge port, through the tail-wall of the sieve-box, leading from the space in the box below the two sieves and communicating with a passage between discharge ports 26 and 30.

The rotation of shaft 6 brings about the rotation of the crank-disk and produces a gyratory motion, in a horizontal plane, at the head of the sieve-box. The rapidity of the gyrations may be varied, within limits, by adjusting the friction-disk upon its shaft. The weight of the crank-disk and the head of the sieve-box is supported by the friction-disk, there being no step-bearing needed for the shaft of the crank-disk. If it be desired, for any reason, to arrest the motion of the sieve-box, then it is only necessary, by operating handle 11, to turn its cam and elevate its stud, which, coming in contact with the crank-disk raises the crank-disk out of contact with the friction wheel. This not only severs the driving connection with the crank-disk but applies to it a brake which causes the sieve-box to quickly come to rest.

As the head end of the sieve-box gyrates the tail end reciprocates, though not in a truly right line, due to the fact that the head end of the box has considerable side movement. Shoes 17 are disposed against the flanges with such looseness or freedom as to prevent the flanges from interfering with the reciprocating motion of the shoes notwithstanding the shoes may not move truly in right lines.

By means of the set-screws the two flanged wheels may be raised or lowered to alter the fore-and-aft declination of the sieves, and by adjusting the flanged wheels independently the sieves may be adjusted to a transverse lever or to a transverse declination in either direction. And by reason of the spherical character of the crank-pin which transmits the shaking motion to the sieve-box, none of these adjustments of the flanged wheels interfere with the proper transmission of motion from the crank-disk to the sieve-box.

Assuming the flanged wheels to be so adjusted that sieves have a slight declination toward their tail ends, the material upon the upper sieve will be caused to shift around thereon in gyratory paths, these paths becoming elliptical and substantially straight as the material moves down the sieve. The material capable of passing through the upper sieve will go through to the lower seive, while coarser material incapable of passing through the upper seive will tail off into chamber 24 and discharge outwardly through discharge port 26 where it may be taken care of by any appropriate character of conductor. If the tail end of the sieve-box be elevated then the progress of the material down the upper sieve will be slower and more time will be given for the sifting action of the upper sieve, the most violent sifting action occuring, in any event, at the head of the sieve owing to the greater extent of vibration at that end of the sieve.

Material passing through the upper sieve falls to the lower sieve, the material passing through this lower sieve going to the floor of the sieve-box, while material too coarse to go through the lower screen tails off into compartment 29 and finds its way out of discharge port 30. Material which has passed through both sieves goes down the floor of the sieve-box and finds it way out of discharge port 31.

By adjusting a proper one of the flanged wheels higher than the other, the sieves may be accurately leveled transversely, and, if desired, they may be thrown out of level transversely, in which latter case the sifting effect and capacity becomes modified to a greater or less extent by concentrating the sifting action more at one edge of the sieves. The sifting action may be modified by altering the declination of the sieves, and this may be done without arresting the motion of the parts, the greatest variation in the sifting effect being, however, brought about by adjusting the rate of speed of shaking which is done by adjusting the friction disk radially with reference to the crank-disk. The illustration shows two sieves, supported separably in the sieve-box, but there may be a greater or less number of sieves.

I claim:—

1. A sifting machine comprising, a sieve-box, a pair of wheels disposed below the tail end of the sieve-box, shoes carried by the sieve-box and bearing on the treads of the wheels, mechanism for gyrating the head end of the sieve-box, and means for vertically adjusting said wheels independently

of each other to modify the longitudinal and transverse declination of the sieve-box, combined substantially as set forth.

2. A sifting machine comprising, a sieve-box, mechanism for supporting and gyrating its head end, a pair of pivoted arms disposed below the tail end of the sieve-box on axes transverse to the screen, wheels carried by these arms on axes transverse to the screen and supporting the tail end of the sieve-box, and set-screws for angularly adjusting the arms independently of each other to raise and lower the tail end of the sieve-box, combined substantially as set forth.

3. A sifting machine comprising, a vertical bearing, a crank having a shaft journaled in said bearing and having in its upper portion a spherical crank-socket, means for supporting said crank, mechanism for rotating said crank, a sieve-box having its head end disposed over said crank, a spherical crank-pin carried by the sieve-box and engaging said socket and supporting the head of the screen, and means for supporting and guiding the tail end of the sieve-box, and adjusting its two sides independently, combined substantially as set forth.

4. A sifting machine comprising, a vertical bearing, a crank-shaft journaled in said bearing, a crank-disk on the upper end of said shaft and provided with a spherical crank-socket and with a plain lower surface, a driving-shaft disposed radially to said crank-shaft, a friction-disk secured to said driving-shaft and engaging the lower surface of the crank-disk and adjustable along the driving-shaft, a sieve-box having its head end disposed over and supported by said crank-disk, a spherical crank-pin carried by the sieve-box and engaging said socket, and means for supporting and guiding the tail end of the sieve-box and adjusting its two sides independently, combined substantially as set forth.

5. A sifting machine comprising, a vertical bearing, a crank-shaft journaled and slidable therein, a crank-disk carried by the upper end of said crank-shaft and having in its upper portion a spherical crank-socket and having a plain lower surface, a driving-shaft disposed radially to the crank-shaft, a friction-disk carried by the driving-shaft and engaging the plain surface of the crank-disk, a sieve-box having its head end disposed over and supported by the crank-disk, a spherical crank-pin carried by the sieve-box and engaging said socket, means for supporting and guiding the tail end of the sieve-box and adjusting its two sides independently, a vertically moving member disposed below said crank-disk and adapted to elevate the head of the screen and raise the disk out of contact with the friction disk, and hand-operated mechanism for raising and lowering said vertically movable member, combined substantially as set forth.

6. A sifting machine comprising, a vertical bearing, a crank-shaft journaled and slidable therein, a crank-disk carried by the upper end of said crank-shaft and having in its upper portion a spherical crank-socket and having a plain lower surface, a driving-shaft disposed radially to the crank-shaft, a friction-disk carried by the driving-shaft and engaging the plain surface of the crank-disk, a sieve-box having its head end disposed over and supported by the crank-disk, a spherical crank-pin carried by the sieve-box and engaging said socket, means for supporting and guiding the tail end of the sieve-box and adjusting its two sides independently, a stud disposed below the crank-disk and adapted to have its upper end engage and lift the crank-disk free of contact with the friction-disk, a cam on the stud adapted to raise the stud and lift the head of the screen and the crank-disk, and hand-operable mechanism for operating the cam and raising the stud, combined substantially as set forth.

LOWE E. SIMPSON.

Witnesses:
CORA A. SIMPSON,
ALICE B. HENSHAW.