(No Model.) 2 Sheets—Sheet 1.

P. H. JACOBUS.

MIDDLINGS PURIFIER.

No. 553,285. Patented Jan. 21, 1896.

Fig. 1.

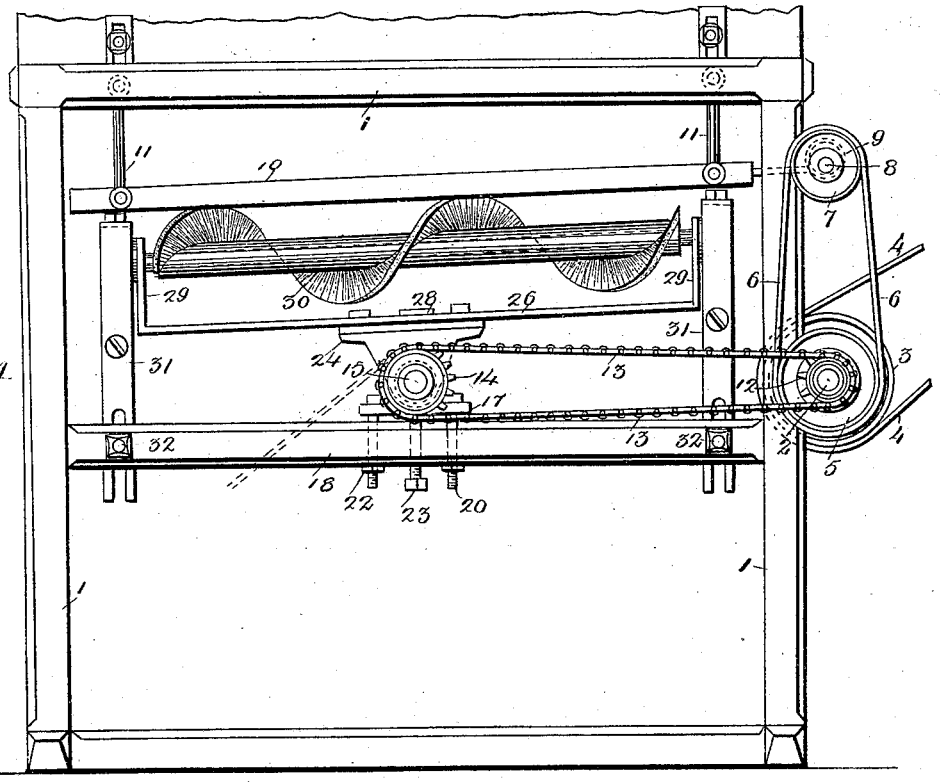
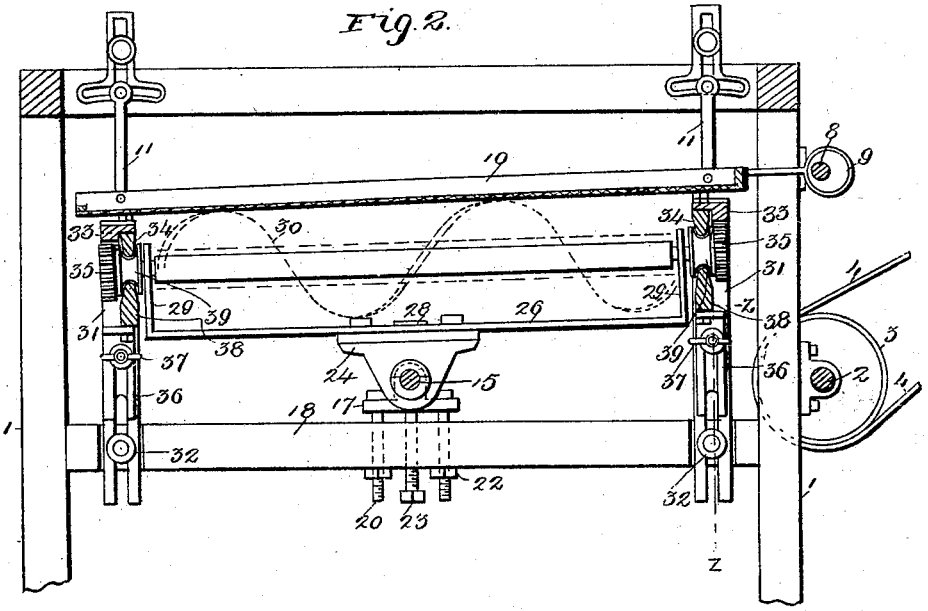


Fig. 2.



Witnesses,
Alfred A. Mathey
Frank Wells.

Inventor
P. H. Jacobus
By his Attorneys,
Keller & Starr

(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

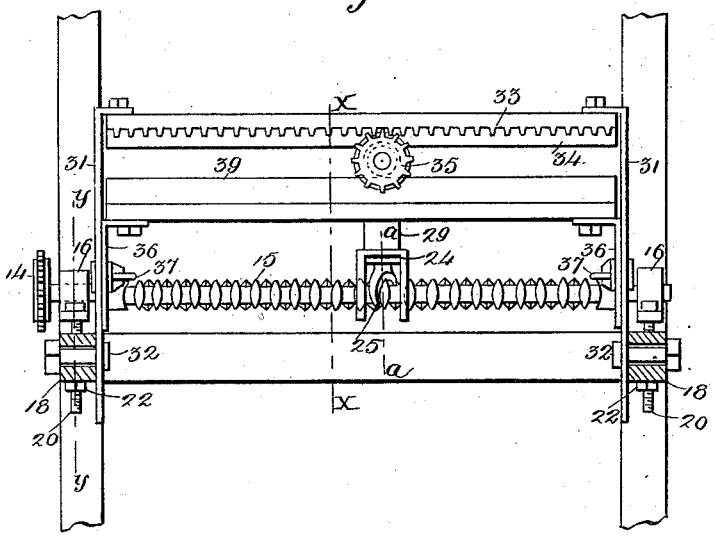


Fig. 5.

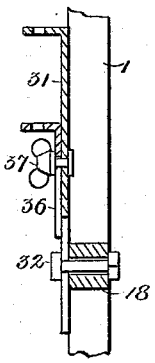


Fig. 4.

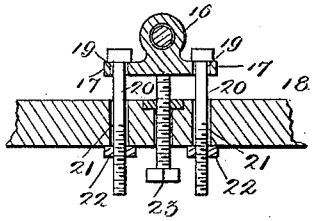
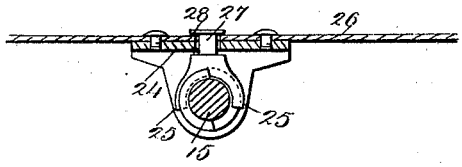


Fig. 6.



Witnesses
Alfred A. Mathey
Frank Wells

Inventor
P. H. Jacobus,
By his Attorneys,
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UNITED STATES PATENT OFFICE.

PETER H. JACOBUS, OF MILLSTADT, ILLINOIS.

MIDDLINGS-PURIFIER.

SPECIFICATION forming part of Letters Patent No. 553,285, dated January 21, 1896.

Application filed September 11, 1895. Serial No. 562,117. (No model.)

To all whom it may concern:

Be it known that I, PETER H. JACOBUS, a citizen of the United States, residing at Millstadt, in the county of St. Clair and State of Illinois, have invented certain new and useful Improvements in Middlings-Purifiers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention has relation to improvements in middlings-purifiers; and it consists in the novel arrangement and combination of parts more fully set forth in the specification, and pointed out in the claims.

In the drawings, Figure 1 is a longitudinal elevation of the purifier-frame. Fig. 2 is a longitudinal section of the same on the line *x x* of Fig. 3. Fig. 3 is an end view of the same with the driving-gears, &c., removed. Fig. 4 is a detail cross-section of one of the bearings for the screw-shaft, taken on the line *y y* of Fig. 3. Fig. 5 is a sectional detail of the supporting angle-bars for the rack-bars, taken on the line *z z* of Fig. 2; and Fig. 6 is a sectional detail taken at right angles to the screw-shaft and through the middle of the rider co-operating therewith, being approximately along the line *a a* of Fig. 3.

The object of my present invention is to construct a middlings-purifier which is convertible into a scalper or grader at the will of the operator and according to the quality and nature of the material to be treated, it being understood of course that the bolting-cloth or frame carrying the same is made to assume variable inclinations or a variable pitch in the different class of machines above referred to.

A further object is to provide positive driving mechanism for the reciprocating brush that acts against the under surface of the bolting-cloth thus variably inclined.

A further object is to simplify the general construction of the machine, as will more fully appear from the details to be hereinafter described.

No claim is made herein to the construction of air-chambers, bolting-cloths, location of fans, &c., as these are well known and in no-wise form the subject-matter of the present application.

Referring to the drawings, 1 represents the frame of a purifier, at one end of which is mounted a drive-shaft 2, having a belt-wheel 3, over which passes a belt 4 leading to any suitable source of power. On the same shaft 2 and adjacent to one end thereof is a belt-wheel 5, over which passes an endless belt 6, whose opposite end passes over a pulley 7 mounted at one end of a superposed shaft 8 operating at either end, an eccentric 9, which reciprocates the bolting-cloth frame or sieve 10, loosely depending from the vertically-adjustable swinging arms 11 pivoted at the ends of the sides of the purifier-frame. One end of the shaft 2 carries a sprocket-wheel 12, over which passes a sprocket-chain 13, passing at its opposite end over a second sprocket-wheel 14 carried at the end of the worm-reversing shaft 15 mounted transversely to the general length of the frame and transverse to the plane of oscillation of the bolting-sieve 10. The opposite ends of the shaft 15 have their bearings each in a lug 16 of a suitable plate 17, which latter is adjustable to and from the basal longitudinal supporting-beam 18 of the frame, the adjustment of the bearings thus mounted being accomplished as best seen in Fig. 4—viz., depending from suitable openings 19 in the plate 17 on either side of the lug 16 are the screw-threaded rods 20, the screw-threaded ends passing through suitable aligning openings 21 formed in the beam 18, and carrying each a nut 22. Supporting the plate 17 intermediate the rods 20 is the inner or upper end of a screw-threaded bolt 23 passed through the beam. By turning the bolt 23 in one direction or the other the plate at that particular end of the shaft will be adjusted to its proper position, after which the parts are firmly kept in their adjusted position by tightening the nuts 22 on the rods 21 against the bases of the beams 18.

Reciprocating back and forth along the worm-shaft 15 is a rider 24, whose sides loosely embrace the shaft and which has pivotally secured thereto the reversing-fingers 25 by which the reciprocation of the rider along the worm portion of the shaft is accomplished, this feature and movement, however, being old and forming no part of my present invention.

Carried by and riveted to the rider and disposed at right angles to the shaft 15 is a bar 26, the pivot 27 of the reversing-fingers loosely passing through it and its projecting end expanded into a head 28, as best seen in Fig. 6. The bar 26 extends on either side to a suitable distance from the opposite ends of the purifier-frame, the upturned terminal ends 29 thereof forming bearings for the reduced ends or shaft of the rotating spiral brush 30. From the connections described it is apparent that the rider will reciprocate the brush back and forth along the shaft 15 and in a direction at right angles to the direction of oscillation of the sieve against the bottom of which the brush bears. It is further obvious that as the rider loosely embraces the shaft 15 the said rider, and hence the brush carried by it, can be freely tilted (within certain limits) about said shaft to any desirable angle, that angle being determined by the slight pitch given the bolting-sieve in this class of machines. Carried along the inner face of each of the beams 18 and at points opposite the free ends of the brush-shaft are angle-bars 31, the basal portions of the long or vertical members of which are forked to receive the clamping-bolt 32, by which they are secured to the beams 18, and by which arrangement the same are made vertically adjustable. The short or horizontal members of each pair of angle-bars have secured thereto along their under surfaces an exterior rack-bar 33 and an adjacent inner fixed upper guide-rail 34. With the rack-bar is adapted to mesh and co-operate the terminal pinion 35 fixed at each end of the brush-shaft. Along the inner surface of the vertical members of each pair of angle-bars 31 are secured the supplemental vertically-adjustable angle-bars 36, the vertical members of which too are forked to receive the binding-bolt 37 that secures them to the bars 31, and along which they are adjustable. The horizontal members of each pair of supplemental angle-bars 36 have secured thereto along their upper surface the lower or adjustable guide-rail 38, between which and the fixed rail 34 the anti-friction-roller 39 loosely mounted on the brush-shaft adjacent to the fixed pinion 35 is free to revolve.

In middlings-purifiers proper the angle or pitch given to the bolting-frame is very slight and approximates that herein shown, and the parts, as shown, can readily be adjusted to accommodate this inclination with the greatest nicety.

The operation of course is obvious from the foregoing description; but it may be briefly stated that as power is applied to the belt 4 the bolting-frame will be reciprocated longitudinally with the frame, and the rider carrying the brush will be reciprocated transversely. The terminal pinions at the ends of the brush-shaft will engage their corresponding rack-bars with each reciprocation, rotating the brush in opposite directions at each stroke.

The present device can readily be converted into a scalper or grader where great inclination to the bolting-frame is necessary to be given in the scalper for purposes of removing the light bran from the middlings and flour and in the grader for properly eliminating the middlings from the flour. Where such conversion is effected, suitable means (within the skill of the ordinary mechanic) are provided whereby the bolting-frame can be swung and oscillated in a plane at right angles to that here shown—that is, parallel to the direction of reciprocation of the brush 6—and it is apparent that should the bolting-frame under those circumstances be tilted to a steep angle the shaft of the brush can be adjusted to conform to said angle by the adjusting-bolts 23 and rods 20, as described, and by properly shifting the angle-irons 31 and 36 to conform to the new condition of things.

Having described my invention, what I claim is—

1. In a middlings purifier, a suitable bolting frame, means for oscillating the same in one direction, a worm reversing shaft mounted transversely to the general direction of oscillation of the bolting frame, adjustable bearings for said shaft, a brush adapted to be tilted about and reciprocated along the said shaft, suitable driving mechanism for said shaft, terminal pinions carried by the ends of the brush shaft, rack bars co-operating with said pinions whereby as the brush is reciprocated it is turned about its axis and reversed with each reciprocation, a fixed guide rail for said brush shaft, an adjustable guide rail in proximity to the fixed rail, anti-friction rollers carried by the brush shaft and operating between the rails, and means for adjusting the relative position of the rack-bars and guide rails, substantially as set forth.

2. In a middlings purifier, a suitable frame, a suitable worm reversing shaft for the same, suitable plates forming bearings for the opposite ends of the shaft, supporting beams for the plates, a screw-threaded bolt passed through the beams at either end of the shaft and adapted to support the plates, screw-threaded rods depending from the plates and passing through suitable openings in the beams, securing nuts passed over the screw-threaded ends of the rods, whereby variable adjustment may be given to the ends of the shaft, a rotating brush adapted to be tilted about the shaft and reciprocated along the same, angle bars having each a forked vertical member adjustably secured by bolts to the aforesaid beams opposite the ends of the brush shaft, a rack bar and adjacent guide rail secured between the horizontal member of each opposite pair of angle bars, a supplemental angle bar having also a forked vertical member adjustably secured along the inner sur-

face of the vertical member of each of the first named angle bars, and a guide rail adjustable with said supplemental angle bars carried by the horizontal members of each pair of supplemental angle bars, whereby an accurate adjustment of the several parts is secured, substantially as set forth.

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

PETER H. JACOBUS.

Witnesses:
E. STAREK,
ALFRED A. MATHEY.