A. B. WELTY.

AUTOMATIC REVERSING MECHANISM.

APPLICATION FILED JUNE 10, 1911.

1,051,655.

Patented Jan. 28, 1913.

2 SHEETS—SHEET 1.

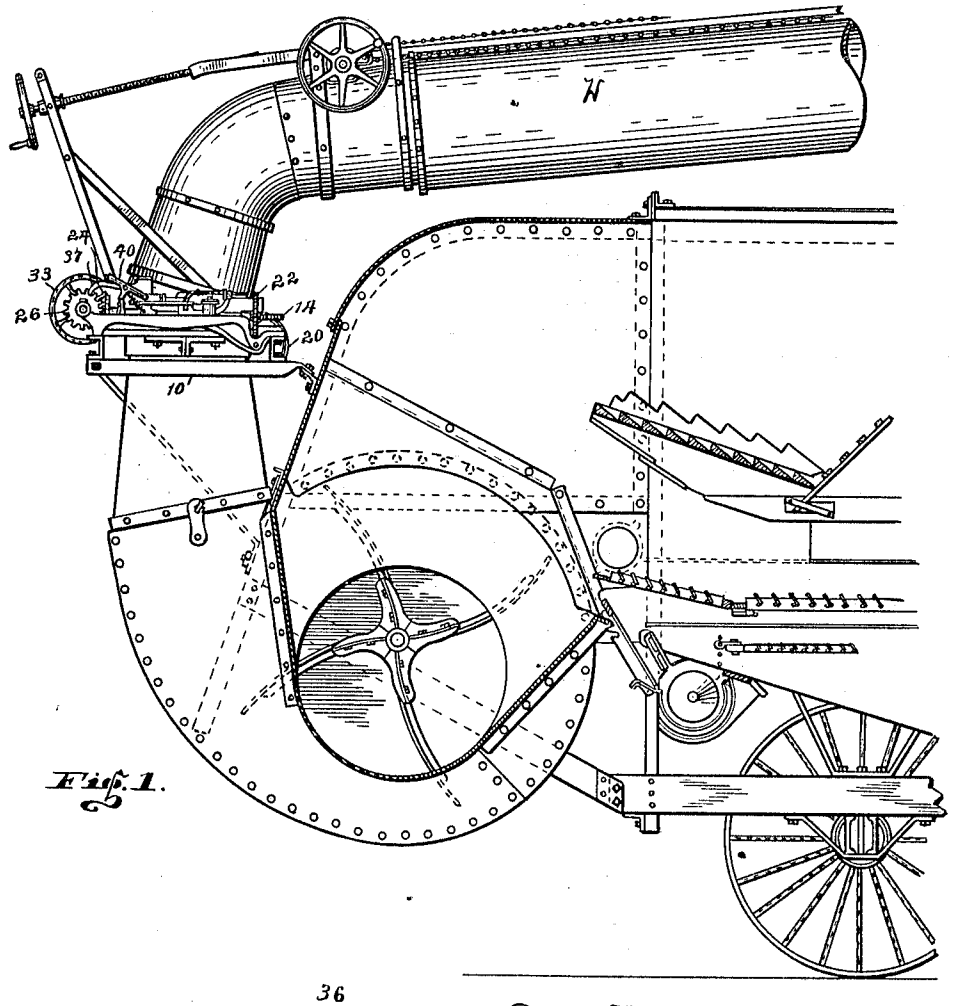

Fig. 1.

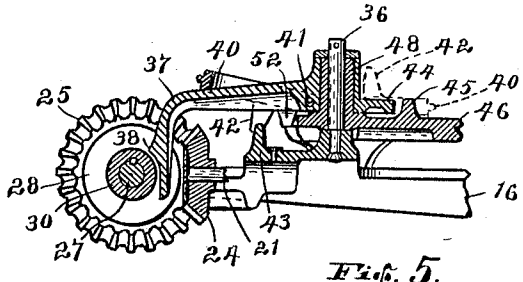

Fig. 5.

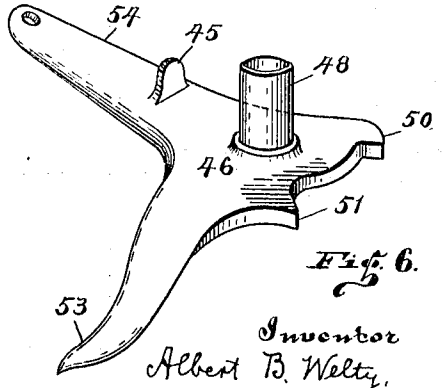

Fig. 6.

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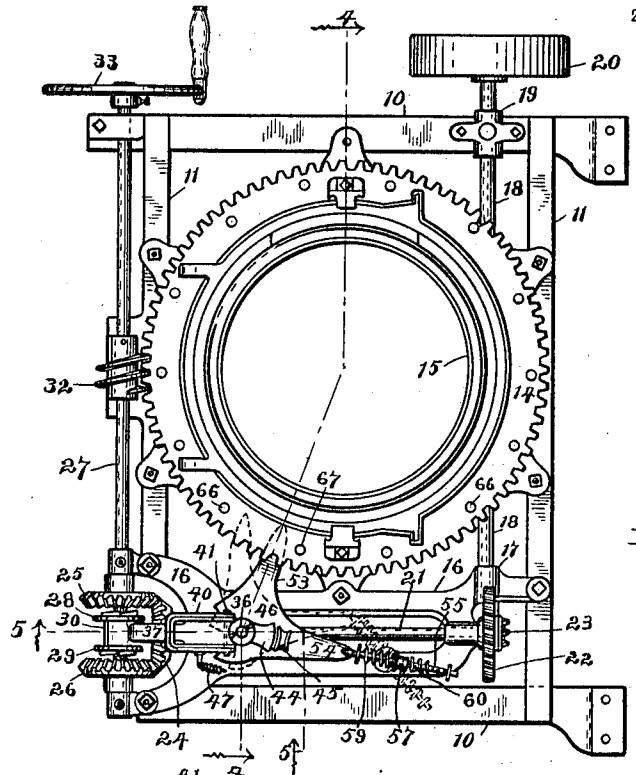

Fig. 2.

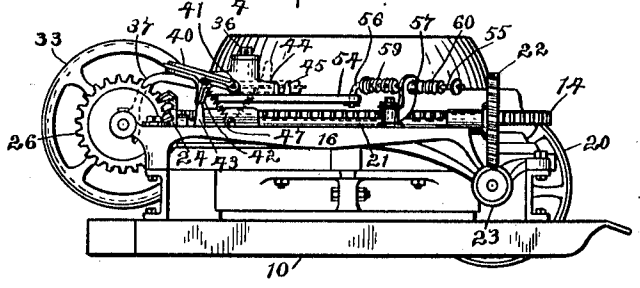

Fig. 3.

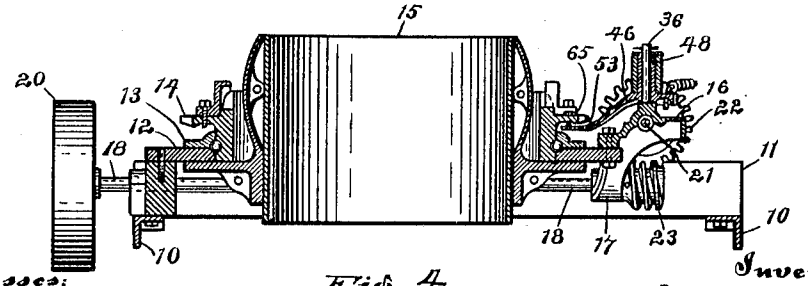

Fig. 4.

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UNITED STATES PATENT OFFICE.

ALBERT B. WELTY, OF RACINE, WISCONSIN, ASSIGNOR TO THE INDIANA MANUFACTURING COMPANY, OF INDIANAPOLIS, INDIANA, A CORPORATION OF WEST VIRGINIA.

AUTOMATIC REVERSING MECHANISM.

1,051,655. Specification of Letters Patent. Patented Jan. 28, 1913.

Application filed June 10, 1911. Serial No. 632,384.

To all whom it may concern:

Be it known that I, ALBERT B. WELTY, a citizen of the United States, residing at Racine, in the county of Racine and State of Wisconsin, have invented certain new and useful Improvements in Automatic Reversing Mechanism, of which the following is a specification.

My invention relates to improvements in automatic oscillating devices for pneumatic stackers, and it consists in certain details of construction and arrangements of parts whereby the operator is enabled to readily change the source of power for oscillating the stacker chute from hand to belt, or vice versa, as may be desired, and without the necessity of removing trip-pins and the like when manual power is employed, the neglect of which latter requirement has frequently been the cause of breakage of such oscillating devices as are now commonly used so far as they have come to my notice; and by which arrangement I am further enabled to dispense with certain mechanisms now forming part of such stacker equipment, and insure a positively and efficiently acting device for the purpose which will not become impaired by inattention of the operator in the manner hereinbefore indicated.

In the accompanying drawings, which form a part hereof, Figure 1 is a side elevation, partially in section, of a fragment of separator with a pneumatic stacker embodying my said invention attached thereto: Fig. 2 is a plan of my improved oscillating mechanism and associated parts; Fig. 3 a side elevation; Fig. 4 a detail sectional view as seen when looking in the direction of the arrows 4—4 in Fig. 2; Fig. 5 a detailed section on the dotted line 5—5 in Fig. 2, and Fig. 6 is a detail of a part of said mechanism.

In said drawings the portions marked 10, 11, indicate the framework upon which is mounted a turret comprising a base ring, 12, ball retainer, 13, worm wheel, 14, and means for connecting said parts, as usual, the base, 15, for the stacker chute H being fitted to said turret in any appropriate manner. Connected to said frame 10, 11, is a supplemental or trip frame, 16, having a suitable bearing, 17, in which is mounted one end of shaft, 18, the opposite end of said shaft being mounted in boxing, 19, on frame member 10, and provided with a suitable driving pulley, 20. Also mounted on said trip frame 16 is a counter-shaft, 21, provided with a worm wheel, 22, which meshes with worm, 23, on the end of said shaft 18, and at its opposite end said shaft is provided with a bevel gear, 24, which meshes with bevel gears, 25, 26, loosely mounted upon worm shaft 27, and provided with suitable clutch faces adapted to be engaged by the appropriate clutch member, 28, 29, forming part of double clutch, 30, said clutch being suitably splined upon shaft 27 so that it may be shifted therealong. Said shaft is also provided with a worm, 32, adapted to engage wheel 14, and at its outer end is mounted a hand-wheel, 33, or other device for the manual rotation thereof. Said trip frame 16 is provided with a stud, 36, upon which I mount a clutch lever, 37, the end 38 thereof being suitably formed to fit clutch 30 and shift the same to either of the bevel gears 25, 26, while they are either rotating or in stationary position. A trip-latch 40, is pivoted, at 41, to said lever 37, so that it may be swung over stud 36 to occupy the position indicated by the dotted lines in Figs. 3 and 5, but when in the position shown in full lines the lips, 42, thereof cover a projection, 43, of trip-frame 16, while in the opposite position said latch lies over the enlarged end, 44, of said lever 37 and a lug, 45, of trip-lever, 46, a spring, 47, being connected to said latch 40 and trip-frame 16 for retaining said latch in its different positions. Said trip-lever 46, by means of a collar 48, is also mounted on said stud 36 beneath clutch lever 37, and comprises two jaws, 50, 51, which are adapted to engage a projection, 52, of clutch-lever 37, and arms 53, 54, the pointed arm 53 projecting beneath worm wheel 14, and the arm 54 being preferably perforated to receive the end of a spring-guide, 55, the turned end, 56, of which passes through said perforation and is held in position by means of a cotter-pin or otherwise. Said spring-guide 55 passes and is adapted to slide through a stop, 57, which is pivoted on a stud, 58, secured to trip-frame 16, and carries the springs, 59, 60, which are held in position on said guide at each side of said stop by cotters, or as may be desired.

In operation, the driving pulley 20 rotates shaft 18, which shaft through its worm 23 and the worm wheel 22 rotates shaft 21 and the bevel gears 25, 26. Trip-pins, 65, are

inserted in holes 66, 67, in worm wheel 14, which include the arc within the range of arm 53 through which it is desired to oscillate chute H. Trip-latch 40 is thrown into the position shown by dotted lines in Fig. 3 to engage the projections 44, 45, so that clutch 30 and clutch-lever 37, with trip-lever 46, will be loosely connected. When said parts are thus arranged, spring 59 on guide 55, being under tension, will distend so that guide 55 will be pushed forward, actuating arm 54 to shift pointed arm 53 to the position indicated by the dotted lines in Fig. 2, and, when in such position, clutch 30 is in engagement with bevel gear 26 and rotates shaft 27 to cause worm 32 to revolve worm wheel 14. When the trip-pin in hole 66 in the advancing side of worm-wheel 14 has reached arm 53 trip lever 46 is carried in the same direction, its arm 54 returning spring guide 55 beyond its normal position as shown in full lines until it has slightly passed a center line between studs 36 and 58 in an opposite direction to that indicated in dotted lines, Fig. 2, thus causing clutch-lever 37, through its end 38, to shift clutch 30 to bevel gear 25, and thereby reversing the rotation of shaft 27 and consequently worm wheel 14, the trip-pin in hole 67 of said worm wheel then contacting with arm 53 and carrying it in reverse direction, which oscillations of the stacker chute by power from the threshing machinery may be continued so long as the parts are in the relation indicated. When, however, it is desired to arrange the mechanism to be operated manually, trip-latch 40 is thrown into the position shown in full lines in Figs. 3 and 5, when clutch member 38 may be instantly caused to throw clutch 30 into neutral position between bevel gears 25, 26, and therefore out of engagement therewith, or if not so previously arranged said member will remain in engagement with the clutch until a trip-pin is contacted by arm 53 of lever 46, which will move said lever on its pivot until either of the jaws 50, 51, according to the rotation of said lever, engages the projection 52 of clutch lever 37, which operation will automatically throw clutch 30 into neutral position out of engagement with said bevel gears where it will be so held by trip-latch 40. In this condition, hand-wheel 33 may be freely turned in reverse directions to oscillate the stacker chute as desired, and when trip-pins in holes 66, 67, contact with arm 53 said arm will be carried along in a corresponding direction, gradually compressing spring 60 by its communication therewith through arm 54 and spring-guide 55, so that said arm will be sufficiently yielding to permit such pin to pass, and when the direction of oscillation is reversed said arm is carried along by the opposite pin, and by the compression of said spring 60 is likewise given sufficient yielding motion to permit said pin to pass. In this manner, when manual power is employed for oscillation it will not be necessary to remove trip-pins from worm wheel 14, as the means by which arm 53 is permitted to yield from contact with said pins insures the free revolution of worm wheel 14, and, as hereinbefore explained, when it is desired to oscillate by other source of power, my improved device may be readily arranged accordingly by simply changing the position of trip-latch 40.

I claim as my invention:

1. The combination, in an automatic reversing mechanism, of a frame, a supplemental frame mounted thereon, a driving shaft mounted on said frames, a counter-shaft mounted on said frames and communicating with said driving shaft, a worm-shaft mounted on said frames and communicating with said counter-shaft, a worm-wheel engaging said worm-shaft, a trip lever mounted on said supplemental frame, a clutch-lever associated with said trip-lever, and a trip-latch pivotally mounted on said clutch lever whereby said levers may be engaged in different relations to each other.

2. The combination, in an automatic reversing mechanism, of a worm-wheel, a worm shaft for driving the same, a countershaft, and a driving shaft communicating with said shafts, of a trip frame, a trip lever mounted thereon comprising an arm communicating with said worm wheel and a member through which said arm is actuated, means for actuating said member, a clutch-lever supported on said frame, and a trip-latch mounted on said clutch lever for engaging said trip and clutch levers.

3. In a reversing mechanism, a trip frame, a trip lever pivotally mounted thereon, a clutch lever mounted on said trip lever, a trip-latch mounted on said clutch lever and adjustable in reverse directions thereover to engage said clutch and trip levers, and means for yieldingly securing said latch in its adjusted positions.

4. In an automatic reversing mechanism, the combination of a worm-wheel, a worm-shaft engaging therewith and having bevel gears thereon, a clutch mounted on said shaft intermediate said gears, a countershaft having a gear wheel meshing with said bevel gears, a driving shaft communicating with said countershaft, a trip frame communicating with said shafts, a trip-lever mounted on said trip frame and having a tripping arm and a shifting arm, a spring-mounted guide communicating with said shifting arm, means for adjustably supporting said guide, a clutch-lever associated with said trip-lever and adapted to engage said clutch, and means for locking said trip lever and said clutch lever to permit oscillation of said worm-

wheel by the synchronous rotation of said shafts or by the independent rotation of said worm shaft.

5. The combination, in an automatic reversing mechanism, of a trip frame, a trip lever pivotally mounted thereon embodying a tripping arm and a shifting arm, a clutch-lever associated with said trip lever and having a projection thereon to contact with said trip-lever, a trip-latch for locking said levers, and spring-actuated means for shifting said trip-lever on its pivot.

6. The combination, in an automatic reversing-mechanism, of a trip-lever embodying jaws, a trip-arm and a shifting-arm; a clutch-lever associated with said trip lever and adapted to contact with said jaws; means for actuating said shifting arm to shift said trip-arm; and means for locking said trip-lever and said clutch-lever.

7. The combination, in an automatic reversing mechanism, of a worm wheel, a worm-shaft communicating therewith, loosely mounted bevel gears thereon, a counter-shaft, a gear thereon adapted to mesh with said bevel gears, a trip frame supporting said counter-shaft, a trip-lever mounted on said trip frame and having a tripping arm adapted to engage said worm-wheel, automatic means for shifting said trip lever, a clutch-lever associated with said trip-lever, and means for locking said levers in different relations to each other.

8. The combination, in an automatic reversing mechanism, of a worm-wheel, a worm-shaft communicating therewith, loosely mounted bevel gears thereon, a clutch intermediate said bevel gears, a countershaft communicating with said worm shaft, a driving shaft communicating with said counter-shaft, a trip-frame communicating with said shafts, a trip-lever mounted on said frame and adapted to engage said wheel, a clutch-lever associated with said trip-lever and said clutch, means for locking said levers in different relations to each other, a pivotally mounted stop on said trip frame, and a spring-mounted guide supported in said stop and communicating with and adjusting said lever.

9. The combination, in an automatic reversing mechanism, of a worm-wheel and power transmitting shafts, of a trip-lever embodying jaws and arms, a clutch-lever associated with said trip lever and having means for contacting said jaws, means for locking said levers in different relations to each other, and spring-actuated means for automatically shifting said trip lever.

10. The combination, with an automatic reversing mechanism, of an integrally formed trip-lever comprising arms, jaws and latch-engaging means, a clutch lever embodying latch engaging means, and a trip-latch associated with said levers adjustable in reverse directions and adapted to engage said levers.

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

ALBERT B. WELTY.

Witnesses:
ALVA C. FOSTER,
M. A. RICHARDSON.