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Patented Oct. 11, 1898.

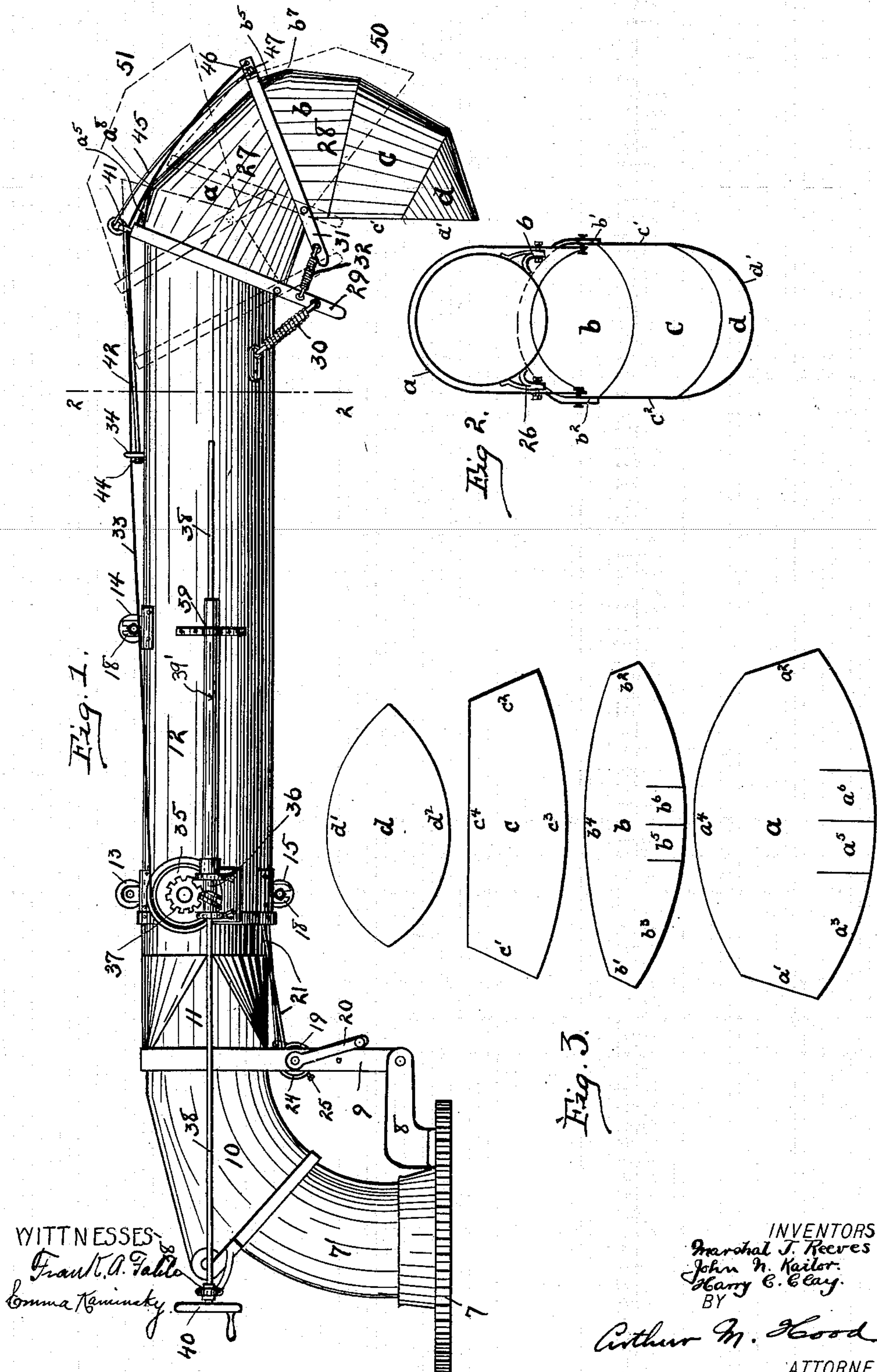
M. T. REEVES, J. N. KAILOR & H. C. CLAY.

PNEUMATIC STACKER.

(Application filed Jan. 29, 1898.)

(No Model.)

2 Sheets—Sheet 1.



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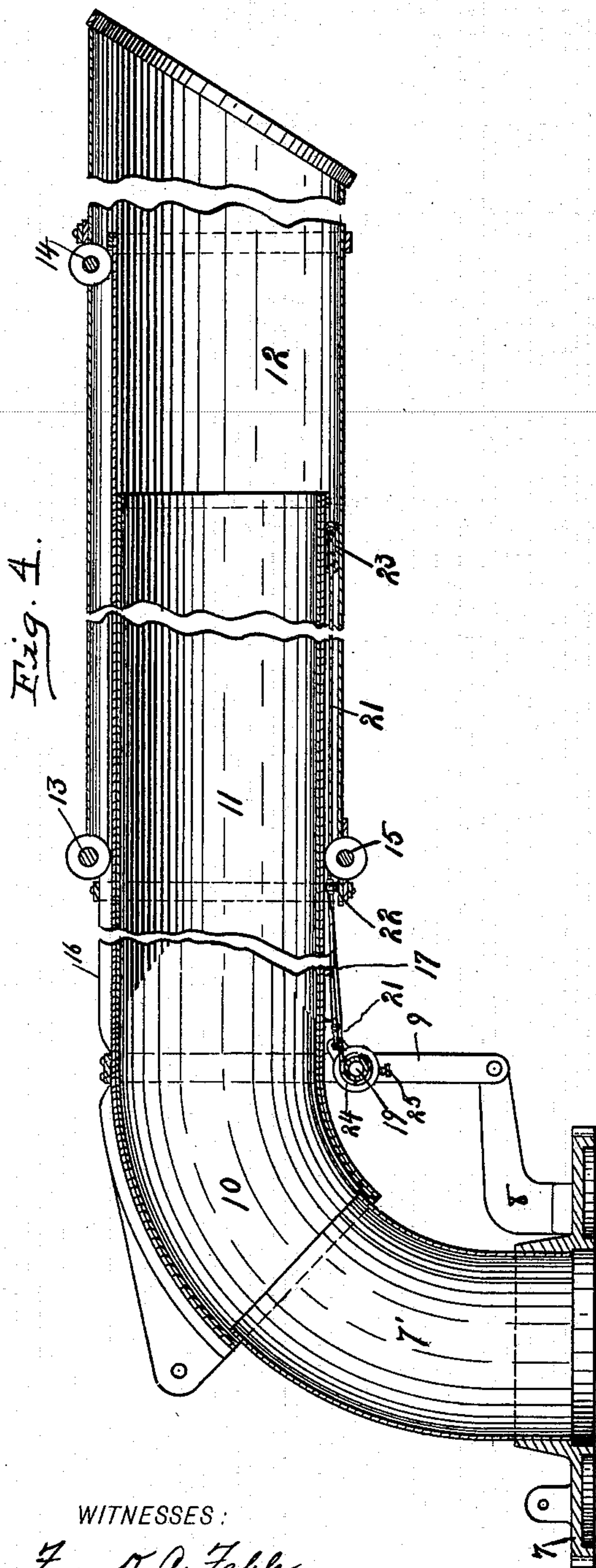
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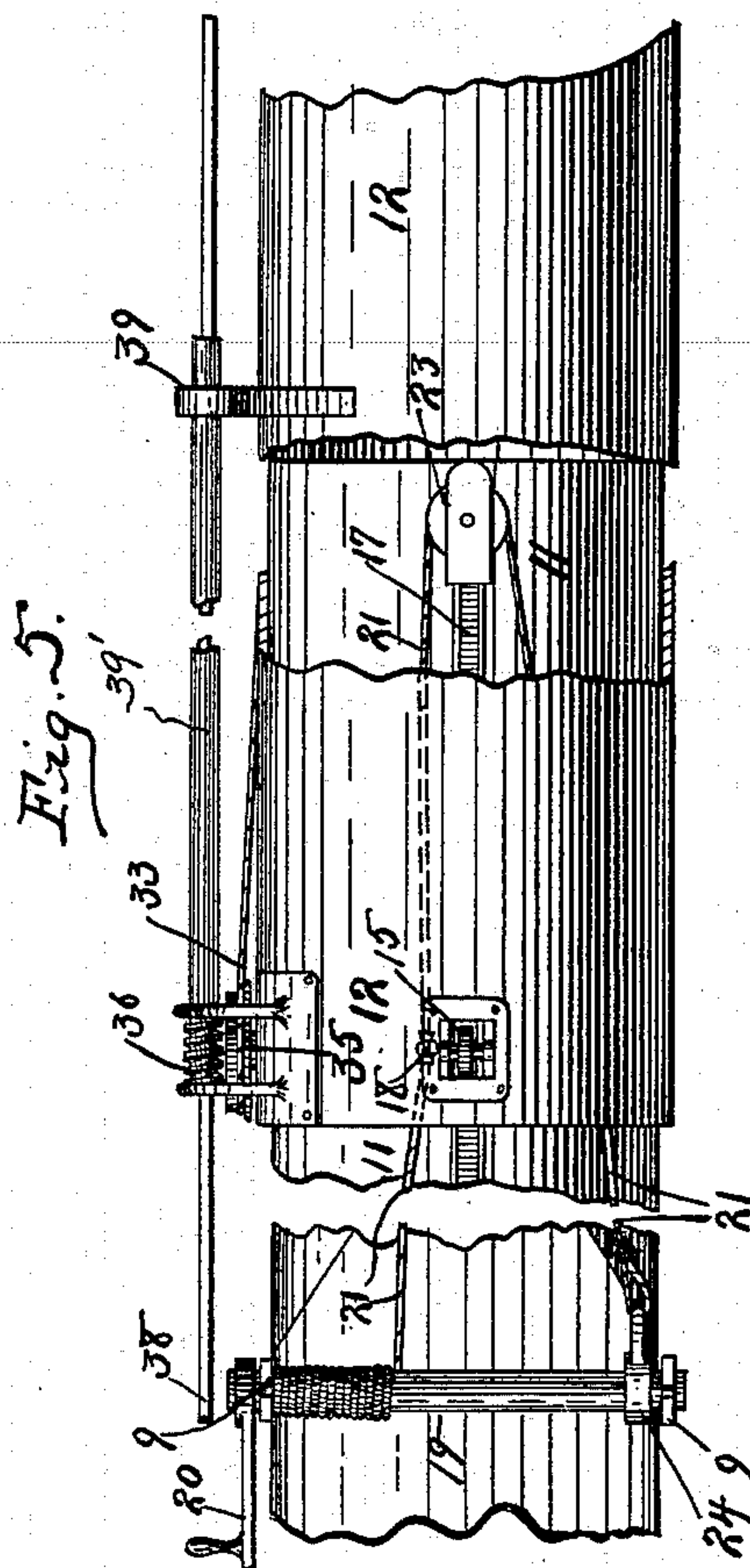
(No Model.)

2 Sheets—Sheet 2.



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UNITED STATES PATENT OFFICE.

MARSHAL T. REEVES, JOHN N. KAILOR, AND HARRY C. CLAY, OF
COLUMBUS, INDIANA, ASSIGNORS TO THE REEVES & COMPANY,
OF SAME PLACE.

PNEUMATIC STACKER.

SPECIFICATION forming part of Letters Patent No. 612,213, dated October 11, 1898.

Application filed January 29, 1898. Serial No. 668,378. (No model.)

To all whom it may concern:

Be it known that we, MARSHAL T. REEVES, JOHN N. KAILOR, and HARRY C. CLAY, citizens of the United States, residing at Columbus, in the county of Bartholomew and State of Indiana, have invented a new and useful Pneumatic Stacker, of which the following is a specification.

Our invention relates to an improvement in pneumatic stackers.

The objects of our invention are to produce an improved form of hood for the delivery end of a stacker-tube; to provide improved means for operating said hood, which means shall be independent of the longitudinal movement of the tube which carries the hood; to provide improved means for operating the outer telescoping end of the discharge-tube, and to provide such other improvements as shall be pointed out and claimed.

The accompanying drawings illustrate our invention.

Figure 1 is a side elevation. Fig. 2 is a vertical section on line 2 2, Fig. 1. Fig. 3 shows the shape of the several sections of sheet metal used in the construction of the hood. Fig. 4 is a central vertical section of the discharge-tube, the hood being omitted. Fig. 5 is a detail from the under side.

In the drawings, 7 indicates a gear which forms the revoluble base of the stacker, and to this is secured an arc-shaped tubular section 7'. Mounted upon gear 7 are two arms 8, to the outer end of each of which is pivoted an arm 9. Between the outer ends of the arms 9 is the inner arc-shaped end 10 of the tube 11, the said end telescoping over the section 7' in the usual manner. Telescoping over the main tube 11 is a tubular section 12, the said section being supported by means of a pair of rollers 13 and 14, carried by the upper side of the section, and a similar roller 15, carried at the inner end of the under side of said section. Rollers 13 and 14 rest and operate in a channel 16, carried along the upper side of tube 11 and extended somewhat beyond the outer end thereof, as shown in Fig. 4, and roller 15 rests within a similar channel 17, carried upon the under side of tube 11. Rollers 14 and 15 are preferably vertically ad-

justable between a pair of slotted ears 18. For the purpose of moving tube 12 back and forth upon the tube 11 a windlass 19 is mounted between arms 9 and provided with a suitable handle or crank 20. Secured to the windlass 19 is one end of a cable 21, the said cable passing from the windlass through an eye 22, carried upon the inside of the inner end of the tube 12, to which it is secured. The cable then passes forward and around a pulley 23, mounted upon the under side of the outer end of tube 11 and from there back to a collar 24, secured to and forming a part of the windlass 19. Collar 24 is rotatably adjustable upon the windlass and is held in any desired position by means of a set-screw 25. By rotating collar 24 upon the windlass the tension of the cable 21 may be easily and quickly adjusted.

The outer end of the tube 12 is preferably beveled, and secured upon opposite sides thereof, near the outer end, are two brackets 26, to which are pivoted the lower inner corners of the first hood-section 27, which is substantially semicylindrical in cross-section, the lower ends of said section, however, being shorter than its middle. Pivoted to the outer corners of the section 27 is the second hood-section 28. The inner edge of the section 27 is preferably bound with a strengthening-band 29, which is extended beyond the pivot to form an arm, to which is attached one end of a spring 30, the other end of said spring being secured to the tube 12. It will be understood, of course, that the spring 30 is duplicated upon the opposite side of the hood-section. The inner end of section 28 is also strengthened by a band 31, which is extended outside the pivot, and to this extended end is secured one end of a spring 32, the other end of which is secured to the extended end of band 29. Secured to the upper side of band 31 is a cord 33, which is passed back through an eye 34, carried by the tube 12, and secured to a winding-pulley 35, mounted upon a stud-shaft secured to the side of the inner end of tube 12. Mounted in suitable bearings near pulley 35 is a worm 36, which meshes with a gear 37, carried by said pulley. Worm 36 is provided with a polygonal axial open-

ing, through which passes a polygonal shaft 38, the inner end of which is supported in a bearing 38', mounted upon the tube 11, and the outer end of which is supported by a bearing 39, carried by tube 12. For the purpose of forming a long bearing for the outer end of shaft 38 a sleeve 39' may be mounted between the bearing 39 and the bearings of the worm 35. This sleeve 39' is rotatably mounted within its bearings, so that it rotates with the shaft, but is longitudinally movable upon said shaft. Secured to the inner end of shaft 38 is a suitable hand-wheel 40, by which it may be rotated.

The springs 30 and 32 tend normally to throw the two hood-sections into the positions shown in full lines in Fig. 1, and in order to limit the outward movement of each of said sections an eye 41 is secured to the upper side of band 29. Pivoted in this eye is one end of a rod or wire 42, the other end of which passes through the eye 34 and is provided with a head 44. Pivoted to the outer end of rod 42 or to the eye 41 is the inner end of a second rod or wire 45, the outer end of which passes through an eye 46, carried by the band 31, and is provided with a head 47.

It is well understood that it is not new to form a hood for the discharge end of a stacker-tube of a series of semicylindrical sections pivoted each to the section immediately preceding; but in all of such constructions it has been found very difficult to provide an arrangement by which the straw could be directed at all of the angles desired. In the present construction we are enabled, owing to the peculiar shape of the hood-sections and by the use of but two such sections, to direct the straw at any angle between a line drawn through the axis of the discharge-tube and a line drawn at least one hundred and thirty-five degrees from said line toward the rear. In other words, supposing the hood-sections to be in the position shown in full lines in Fig. 1, the straw may be thrown back toward the separator at an angle of from forty-five to thirty degrees from the horizontal. In order to accomplish this result, the two sections of the hood are formed in the following manner:

The section 27 consists of a single piece *a*, of sheet metal, of substantially the shape shown in Fig. 3, the said piece having the two converging straight edges a^1 and a^2 and the curved edges a^3 and a^4 , the edges a^3 and a^4 being designed to form the rear and forward edges, respectively, of the completed section. Running in from the edge a^3 are three parallel slits, forming a pair of tongues a^5 and a^6 . When the piece *a* is bent into shape, the outer edges of the two tongues are lapped over the adjacent portions of the sheet, and the adjacent edges of the two tongues are also lapped, thus forming in the completed section the hump or bend a^8 . The section 28 is formed of the three sections *b*, *c*, and *d*. The piece *b* is somewhat similar in shape to the piece *a* and has the two converging straight

edges b^1 and b^2 , the curved edge b^3 , along which the band 31 is to be secured, and the curved edge b^4 . Cut in from the edge b^3 are three parallel slits, forming the tongues b^5 and b^6 , similar to the tongues of the piece *a*, and which are overlapped in the same manner to form the hump b^7 . The piece *c* has the two converging straight edges c^1 and c^2 , the curved edge c^3 , and the straight edge c^4 . The piece *d* is bounded by the two convex edges d^1 and d^2 . In forming the section 28 edges b^4 and c^3 are riveted together, and the edges c^4 and d^2 are also riveted together. When thus placed together, the edges b^1 , c^1 , d^1 , c^2 , and b^2 form a U-shaped line (shown in Fig. 2) which in side elevation is substantially a straight line, as shown in Fig. 1. By this arrangement the piece *d* forms a snout for the end of the outer section.

In order to move the tube 12, the operator grasps crank 20, and by turning it in the desired direction the tube may be thrown forward or drawn back. If there is any slack in the cable 21, it may be taken up by loosening screw 25, turning the collar 24, and resetting the screw. As the tube 12 is moved back and forth the worm 36 slides freely over the shaft 38, so that the movement of said tube in no wise affects the hood-sections 27 and 28. To adjust the hood-sections, the operator turns hand-wheel 40, which, through the shaft 38, worm 36, gear 37, and pulley 35, operates to wind or unwind the cord 33. In throwing up the hood-sections from the position shown in full lines in Fig. 1 the first pull on cord 33 swings the outer section 28 upon its pivot until it lies in the position indicated in dotted lines at 50, the upper inner edge of said section coming into engagement with the section 27. A further pull upon cord 33 swings the two sections together about the pivot of section 27 until the whole may be swung up into the position indicated in dotted lines at 51, the snout *d* of the section 28 then lying above the medial or axial line of the tube 12.

It will be noticed that the tube 12 is free to move back and forth upon the tube 11 without disturbing the adjustment of the hood-sections and that the two tubes 11 and 12 may be swung as a whole about the pivots of arms 9 without affecting the positions of the hood-sections and without affecting the relative positions of the two tubes.

We claim as our invention—

1. In a pneumatic stacker, the combination with a pair of telescoping tubes, of a windlass, a collar rotatably adjustable upon said windlass, means for positively holding said collar in different angular positions, a pulley carried by the inner tube near the end thereof, and a cable, one end of which is secured to the windlass and the other end secured to the adjustable collar, the said cable being passed around the pulley and secured at one point to the outer tube, substantially as described.

2. In a pneumatic stacker, the combination

with the inner tube, of a second tube telescoping thereover, of a roller carried by the under side of the second tube near the inner end thereof, a second roller carried by the upper side of said tube in advance of the under roller, and channels mounted upon the upper and under sides of the first tube inside the outer tube and arranged to form tracks for said rollers.

3. In a pneumatic stacker, the combination with the inner tube, of a second tube telescoping thereover, of a roller carried by the under side of the second tube near the inner end thereof and radially adjustable, a second roller carried by the upper side of said tube in advance of the under roller and also radially adjustable, and channels mounted upon the upper and under sides of the first tube and arranged to form tracks for said rollers.

4. In a pneumatic stacker, the combination with a pair of telescoping tubes, and an adjustable hood carried by one of said tubes, of a winding-pulley carried by the tube carrying the hood, a cord secured to said pulley and to the hood, a shaft mounted in a pair of bearings, one carried by each of the telescoping sections, the bearing carried by the hood-carrying section being longitudinally movable upon the shaft, a gear longitudinally movable upon and rotatable with said shaft, a gear carried by the winding-pulley, and means for holding the two gears in mesh with each other, substantially as described.

5. In a stacker, the combination with a pair of telescoping tubes and an adjustable hood carried by one of said tubes, of a winding-pulley carried by the hood-carrying tube, a cord secured to said pulley and to the hood, a gear carried by said winding-pulley, a second gear supported in suitable bearings on the hood-carrying tube and meshing with the first gear, a tubular journal supported upon the hood-carrying tube, a shaft passing through said tubular journal and said second gear, the said second gear being revoluble with and longitudinally movable upon the said shaft, and a bearing carried by the other of the telescoping tubes in position to support the inner end of the said shaft, substantially as described.

6. A hood for pneumatic stackers, consisting of two sections, the first section being open at both ends and at the bottom and pivoted, at its inner lower corners, to the end of the stacker-tube, an arm extending below the

pivot, a spring secured one end to said arm and the other end to the stacker-tube, the second section, open at one end and the bottom, pivoted near the lower outer corners of the first section and having an arm extending below the pivot, and a spring secured one end to said arm and the other end to the first section, substantially as set forth.

7. A hood for pneumatic stackers, consisting of a first section substantially semicylindrical, open at both ends and at the bottom, and arranged to be pivoted, at its lower inner corners to the end of a stacker-tube, and a second snout-shaped section, open at one end and the bottom only, and pivoted at the lower corners to the lower outer corners of the first section, the arrangement being such that, in the outer position of the two sections, the snout-shaped section will direct the straw backward, substantially as described.

8. A hood-section for an adjustable hood for pneumatic stackers, the same being formed of a sheet a , of substantially the shape shown, the said sheet having formed therein a pair of tongues a^5 and a^6 which, when the sheet is bent into shape, will overlap each other and the adjacent portions of the sheet to form the hump a^8 , substantially as described.

9. A snout-shaped hood-section for pneumatic stacker-tubes, the same being formed of the pieces b , c , and d , the said piece b having tongues b^5 and b^6 , of substantially the shape shown, and secured together with the piece c between the other two, substantially as described.

10. In a pneumatic stacker, the combination with the discharge-tube thereof, of a hood-section pivoted thereto, a second hood-section pivoted to the outer end of the first section, a rod secured at one end to the first hood-section and passed back through an eye carried by the discharge-tube, a head carried by the free end of the rod, a second rod secured to the first hood-section and passed forward through an eye carried by the second hood-section, and a head carried by the free end of the second rod, substantially as described.

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