

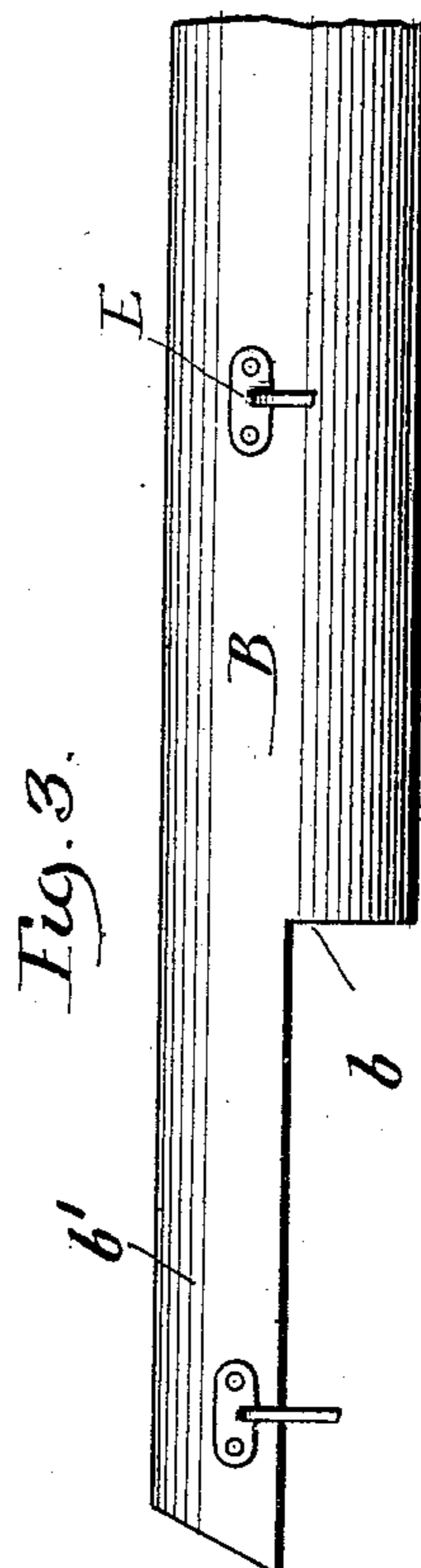
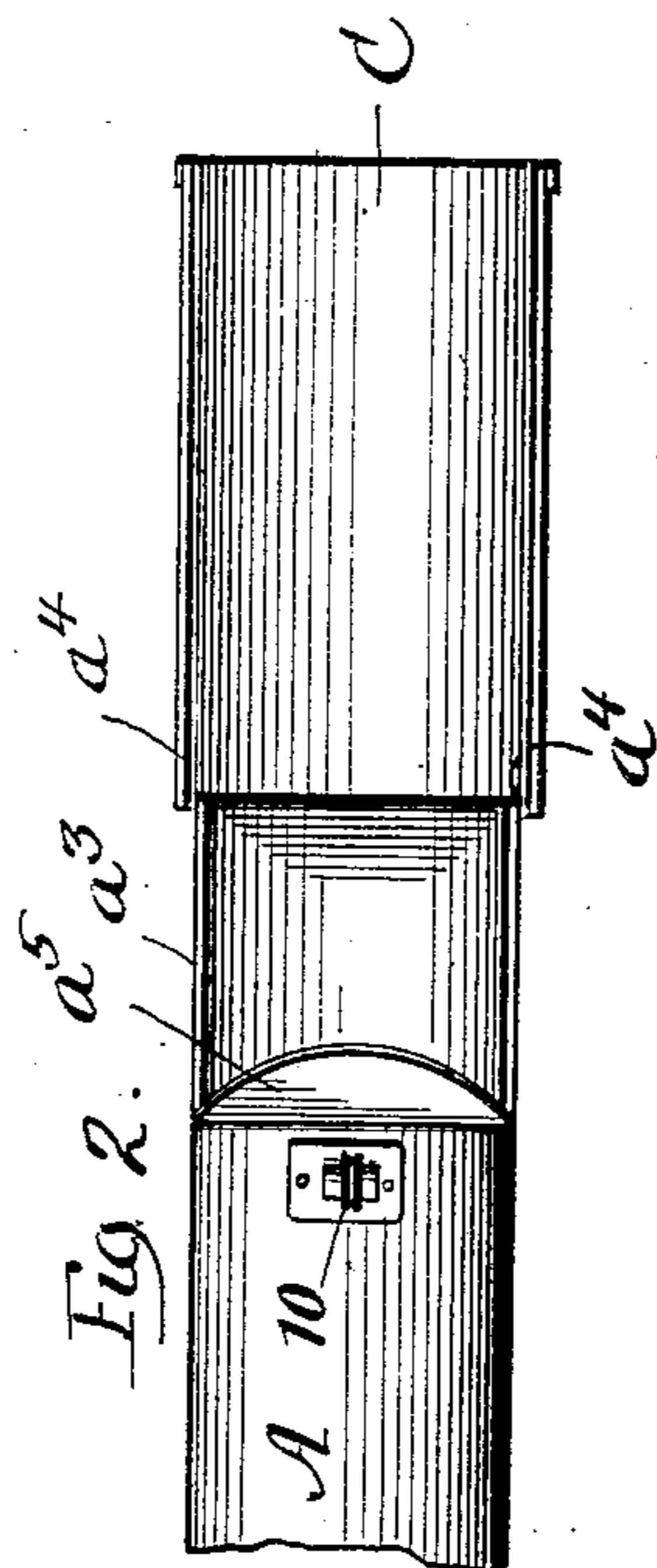
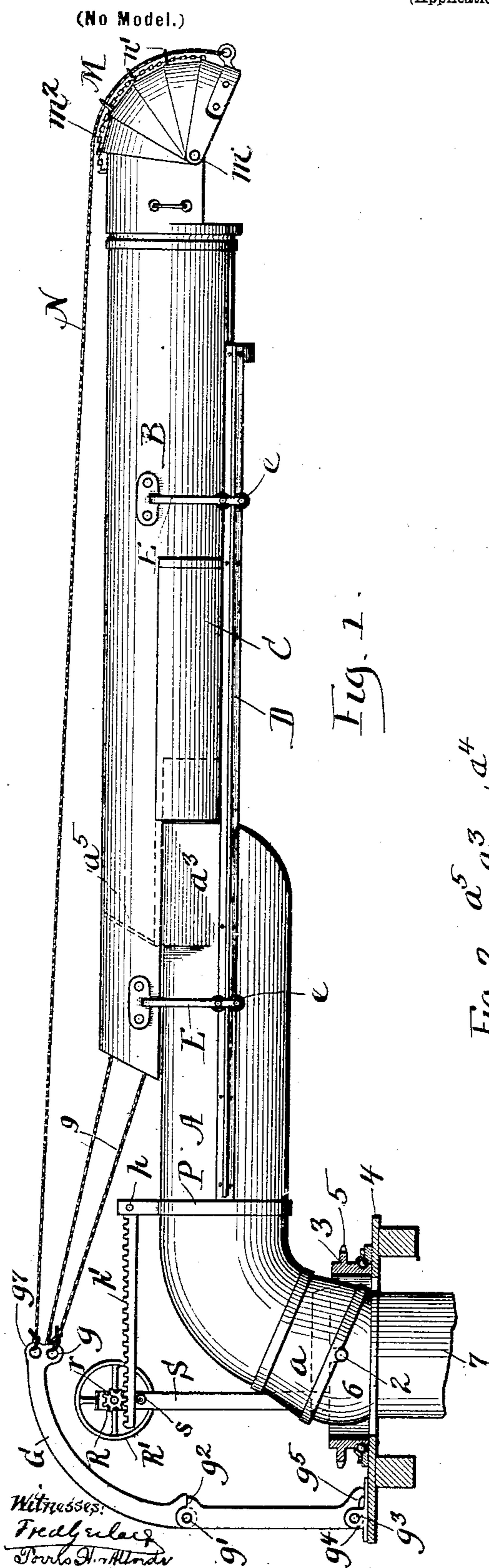
No. 703,078.

Patented June 24, 1902.

F. L. NORTON.  
PNEUMATIC STACKER.

(Application filed Mar. 8, 1902.)

2 Sheets—Sheet 1.



Witnesses:  
Fred J. Fisher  
Charles H. Allen

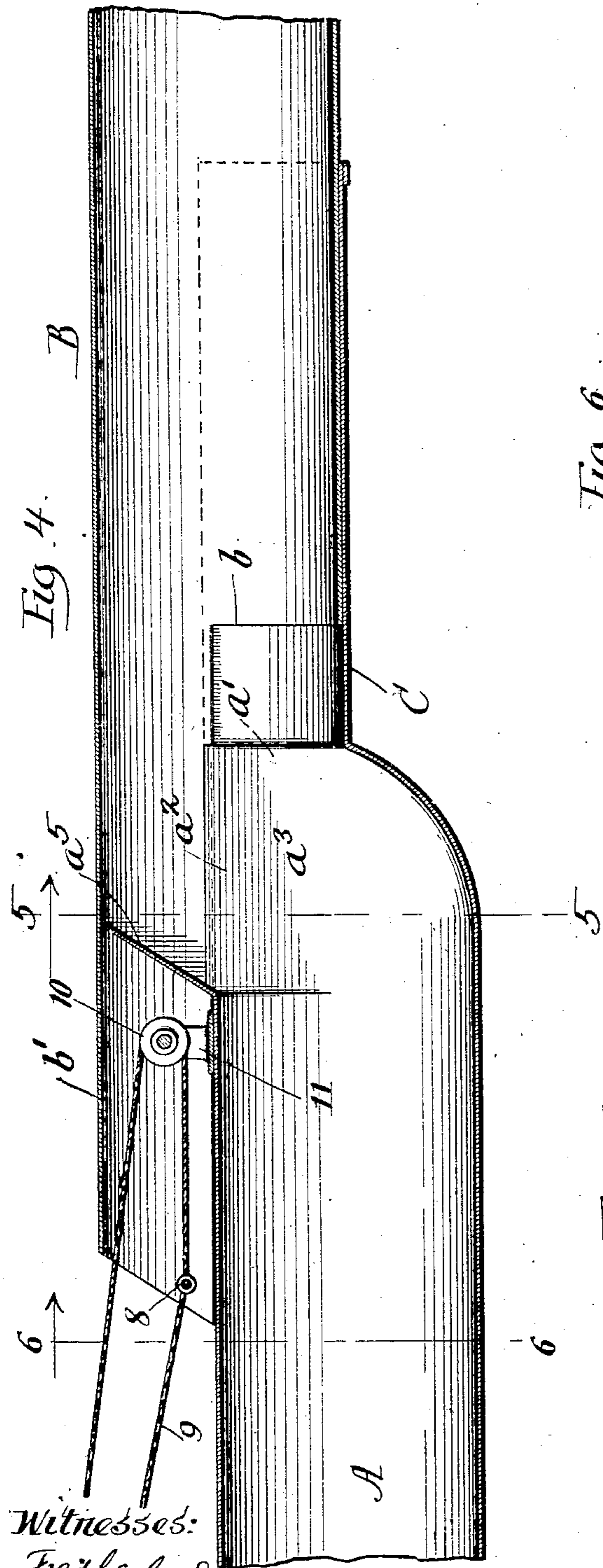
Inventor:  
F. L. Norton  
By Fred J. Fisher  
his Attorneys

F. L. NORTON.  
PNEUMATIC STACKER.

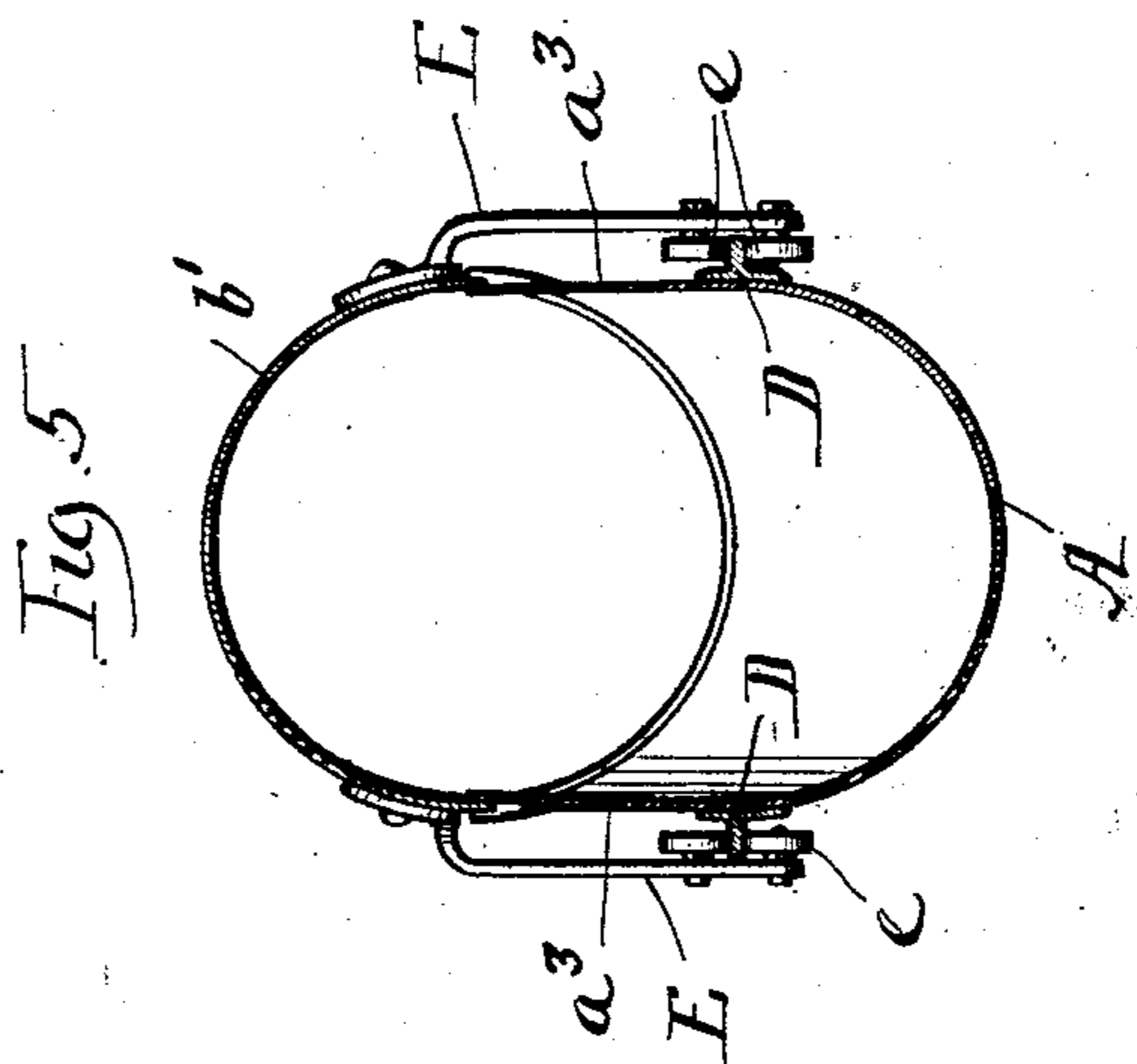
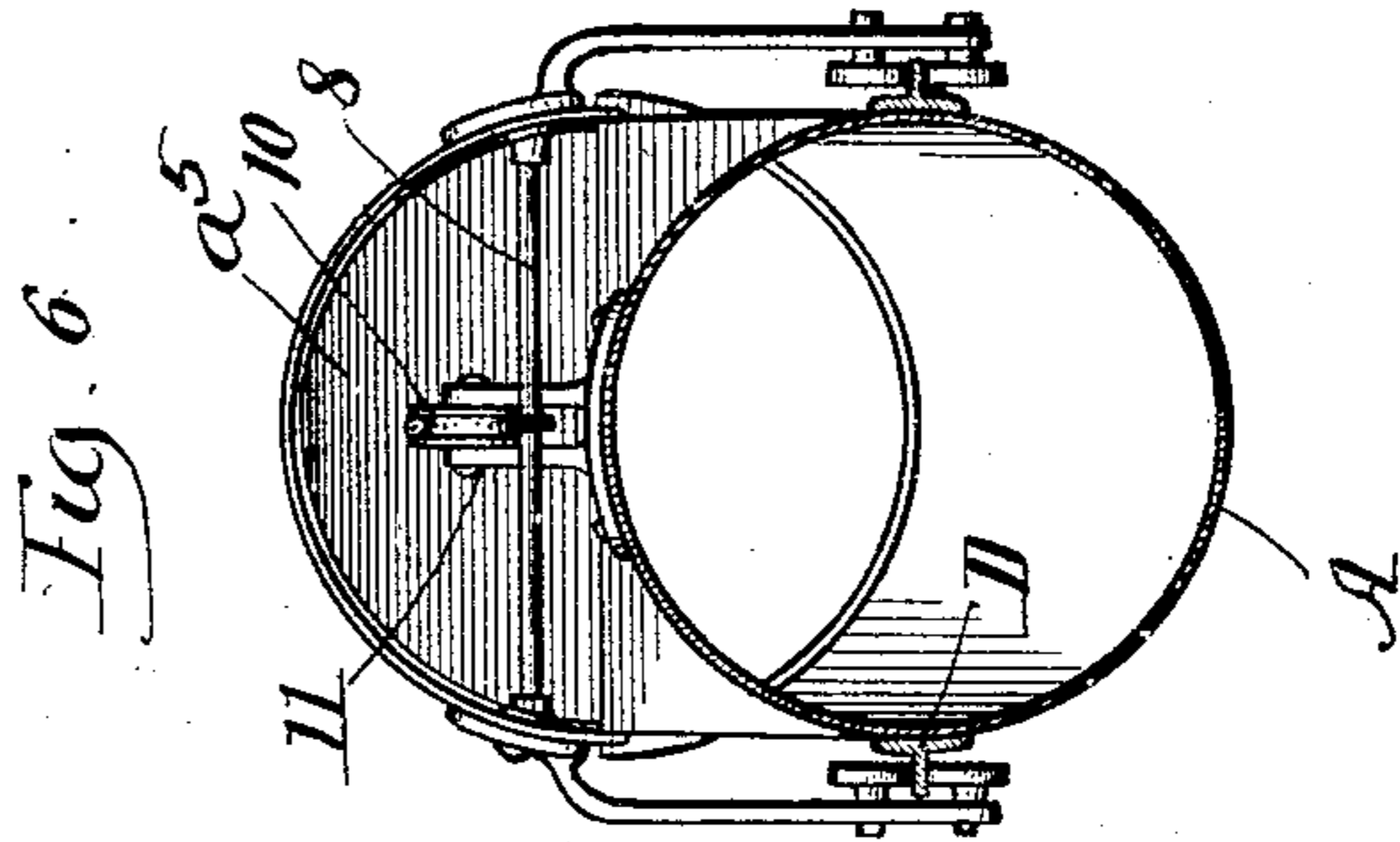
(Application filed Mar. 8, 1902.)

(No Model.)

2 Sheets—Sheet 2.



Witnesses:  
*Frederick*  
*Norris H. Alford*



Inventor  
*F. L. Norton*  
By *Wm. Fisher*  
his Attorneys.

# UNITED STATES PATENT OFFICE.

FREDERICK LEE NORTON, OF RACINE, WISCONSIN.

## PNEUMATIC STACKER.

SPECIFICATION forming part of Letters Patent No. 703,078, dated June 24, 1902.

Application filed March 8, 1902. Serial No. 97,230. (No model.)

*To all whom it may concern:*

Be it known that I, FREDERICK LEE NORTON, a citizen of the United States, and a resident of the city and county of Racine, State of Wisconsin, have invented certain new and useful Improvements in Pneumatic Stackers, of which the following is a full, clear, and exact description.

The invention has for its object to provide an improved construction of chute or pipe for pneumatic stackers; and it consists in the novel features of construction hereinafter described, illustrated in the accompanying drawings, and more particularly pointed out in the claims at the end of this specification.

In pneumatic straw-stackers as now commonly constructed the straw chute or pipe whereby the straw is discharged from the blast-fan consists of two tube-sections telescopically sustained one within the other, so that by drawing out these sections the length of the pipe or chute may be varied as the construction of the stack progresses.

One serious objection to the employment of a pipe formed of telescopic sections is that any jamming or bending of one pipe-section must seriously interfere with the ease of movement of the sections in lengthening or shortening the pipe. By my present invention the telescoping of the pipe-sections is avoided, and the lengthening or shortening of the pipe or chute is accomplished by varying the point at which the one section of the chute delivers the straw through the side wall of the other section.

My invention also provides a much lighter and more easily extensible construction of pipe or chute than is possible where the pipe or chute is formed of telescopic sections.

Figure 1 is a view in side elevation of a pneumatic stacker pipe or chute embodying my invention. Fig. 2 is a detail plan view of the outer end of the inner pipe-section. Fig. 3 is a detail side view of the inner and of the outer pipe-section. Fig. 4 is an enlarged view, in vertical longitudinal section, through the adjoining portions of the inner and outer sections of the pipe. Fig. 5 is a view in cross-section on line 5 5 of Fig. 4. Fig. 6 is a view in cross-section on line 6 6 of Fig. 4.

A designates the inner section, and B de-

notes the outer section, of the chute. As shown, the inner section A of the chute is pivotally mounted upon pintles 2, that are sustained by a turn-table 3, that is revolvably supported upon the deck 4 of the threshing-machine, the turn-table 3 being shown as provided with an annular gear 5, whereby it will be shifted to effect the lateral swinging of the chute or pipe. The lower end of the chute-section A is shown as enlarged, as at *a*, to set over the frusto-spherical upper end 6 of the bustle-pipe 7, the inner end of the chute-section A and the upper end of the bustle-pipe being thus united by a universal joint.

As shown more particularly in Fig. 4, the outer end of the chute-section A is open transversely, as at *a'*, and at its top or longitudinally, as at *a''*, and this open end of the chute-section A is connected to the cut-away inner end of the outer chute-section B. In the preferred form of the invention the chute-section B has the lower half of its wall at its inner end cut away, as at *b*, and the uncut-away inner portion *b'* of the chute-section B extends over the open outer end of the chute-section A, as clearly shown in Figs. 1 and 4 of the drawings. Preferably the outer end of the chute-section A has its upper portion adjacent the opening *a''* formed with straightened walls *a'''*, and the lower edges of the portion *b* of the chute-section B overlap the edges of these walls *a'''* and rest upon the narrow laterally-extending or offset portions *a''''* at the outer end of the chute-section A. (See Figs. 2 and 5.) A shield C extends outwardly from the end of the chute-section A, and in the preferred form of the invention this shield C is formed in piece with the outer end of the chute-section A. The purpose of the shield C is to close that part of the cut-away space *b* of the outer chute-section that is not covered by the discharge end of the inner chute-section A when the outer chute-section has been shifted outwardly to lengthen the pipe or chute. The upper edges of the shield C lap the lower edges of the portion *b'* of the chute-section B. Preferably a guard-plate *a'''''* extends upwardly from the opening *a''* of the chute-section A into the portion *b'* of the chute-section B and serves to prevent the escape of straw at the inner end of the chute-

section B. From the construction of parts as thus far described it will be seen that when the chute-sections A and B are set together as shown the straw, under the action  
5 of the blast-fan, (not shown,) will pass in the direction of the large arrow, Fig. 4, from the chute-section A to the chute-section B, from which it will discharge onto the stack.

If the parts be assumed to be in the relative position shown in the drawings and it is  
10 desired to lengthen the pipe or chute, the outer chute-section B will be shifted outwardly, so that the discharge of straw from the section A into the section B will occur  
15 through the side wall of the chute-section B at a point more remote from the outer end of the section B. When the section B is thus moved outward, it is necessary that that portion of the cut-away space  $b$  of the section B  
20 that is not immediately opposite the discharge end of the section A shall be closed or covered to prevent the escape of straw, and this closing of the cut-away space of the chute-section B will be effected by the shield C, that  
25 moves with the section A and is preferably formed in piece therewith. On the other hand, if it is desired to shorten the chute or pipe the outer chute-section B will be drawn inward, thus varying the point at which the  
30 straw is delivered by the chute-section A through the side wall of the chute-section B, and at such time the shield C, or a considerable portion of it, will overlap the body of the chute-section B.

35 In the preferred form of the invention the chute A is provided at its sides with rails D, fixed thereto and extending outwardly beyond the end of the chute-section A and beneath the chute-section B, and to the sides of  
40 the section B are connected the hangers E, carrying antifriction-rolls  $e$ , that set upon opposite sides of the rails D. This construction allows the chute-section B to be moved easily back and forth, so as to vary the point  
45 at which the section A shall deliver straw into the section B and to vary the length of the chute or pipe as an entirety. Moreover, by means of the rails D and hangers E the chute-sections are securely held together, the  
50 rails serving also to give rigidity to the chute or pipe. While any convenient means may be employed for effecting the longitudinal movement of the chute-section B, I prefer to use the simple means shown in the drawings—  
55 that is to say, a rod 8 extends across the inner portion  $b'$  of the chute-section B, and to this rod 8 is connected (see Fig. 4) a rope or cable 9, that passes around a pulley 10, that is mounted upon a bracket 11, fixed to the  
60 top of the chute-section A. By drawing on either end of the rope or cable 9 the chute-section B may be moved inwardly or outwardly, so as to vary the length of the pipe or chute. As shown, the rope or cable 9  
65 passes through an eye  $g$  of a standard G, and the ends of this rope or cable are fastened together. The standard G has its upper end

extending to a point immediately above pin-  
tles 2 and above the center of oscillation of  
the turn-table 3, so that the relative position  
70 of the chute-sections A and B is not affected by the lateral swinging of the pipe or chute. Preferably the standard G is formed of sections hinged together, as at  $g'$ , these hinged  
75 sections being formed with abutting shoulders  $g^2$ , which limit the forward turning of the upper section of the standard G and, if desired, also the lower end of the standard G may be pivoted, as at  $g^3$ , to a bracket  $g^4$  on  
80 the deck 4 of the machine. When the lower end of the bracket G is thus pivoted, it will be provided with a foot or extension  $g^5$  to limit the forward turning of the bracket G. The bracket G, being formed of hinged sections,  
85 can be conveniently turned out of the way and close to the deck, so as to permit the machine to more readily pass beneath bridges, through low doors, or the like.

The outer end of the chute-section B is shown as provided with the usual hood M,  
90 that is formed of segmental sections pivoted, as at  $m$ , and a cable N is connected to the outermost segmental section of the hood and passing through rings  $n'$ , attached to each section, leads back to an eye  $g^7$  of the bracket  
95 G. Hence it will be seen that by drawing upon the cable or rope N the relative position of the sections of the hood M may be varied in manner well understood by those familiar with this class of devices. A chain  $m^2$  may  
100 be employed to connect the segmental sections of the hood M together and to the outer end of the chute-section B and limit the downward drop of the hood.

Any convenient means may be employed  
105 for raising and lowering the chute or pipe as an entirety. As shown, the chute-section A is provided with a band P, that encircles it adjacent its inner end, and to the upper ends of this band is pivotally connected, as at  $p$ , a rack-  
110 bar  $p'$ , that is engaged by a pinion R on a shaft  $r$ , that is journaled in a yoke S, that rises from the opposite sides of the turn-table 3. A rod  $s$  (furnished, if desired, with a friction-roll) supports the rack-bar  $p'$  in engagement with  
115 the pinion R. A hand-wheel  $R'$  upon one end of the shaft  $r$  serves as a convenient means for enabling the operator to turn the pinion in order to effect the raising or lowering of the chute or pipe.  
120

It is obvious that the precise details of construction above set out may be varied by the skilled mechanic and that features of the invention may be employed without its adop-  
125 tion as an entirety.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a pneumatic stacker, a chute comprising two sections, one of said sections having  
130 a cut-away space in its wall and the other of said sections having its discharge end connected to the first-mentioned section opposite said cut-away space and means for vary-

ing the relative positions of said sections and varying the point at which one section discharges into the other.

2. In a pneumatic stacker, a chute comprising two sections connected together out of axial line, one of said sections having a cut-away space in its wall and the other of said sections having its discharge end connected to said first-mentioned section opposite said cut-away space, said sections being adjustable relative to each other in the direction of their length.

3. In a pneumatic stacker, a chute comprising two sections connected together out of axial line, one of said sections having a cut-away space in its wall and the other of said sections having its discharge end connected to said first-mentioned section opposite said cut-away space, said sections being adjustable relative to each other in the direction of their length and a shield to cover the cut-away space of said first-mentioned section.

4. In a pneumatic stacker, a chute comprising two sections connected together out of axial line, one of said sections having a cut-away space in its wall and the other of said sections having its discharge end connected to said first-mentioned section opposite said cut-away space, said sections being adjustable relative to each other in the direction of their length and a shield to cover the cut-away space of said first-mentioned section, said shield being connected to one of said sections.

5. In a pneumatic stacker, a chute comprising two sections adjustably connected together out of axial line, one of said sections having a cut-away space and the other of said sections having an open end arranged opposite said cut-away space, one of said sections being provided with a guide-rail and the other of said sections being provided with a bracket engaging said guide-rail.

6. In a pneumatic stacker, a chute comprising two sections adjustably connected together out of axial line, one of said sections having a cut-away space and the other of said sections having an open end arranged opposite said cut-away space, one of said sections being provided with forwardly-projecting rails and the other of said sections being provided with brackets engaging said rails.

7. In a pneumatic stacker, a chute comprising two sections adjustably connected together out of axial line, one of said sections having a cut-away space and the other of said sections having an open end arranged opposite said cut-away space, one of said sections being provided with forwardly-projecting rails and the other of said sections being provided with brackets engaging said rails, said brackets carrying antifricition-rolls to bear on said rails.

8. In a pneumatic stacker, a chute comprising an inner and an outer section, one of said sections having one side of its wall cut away and the other of said sections having its dis-

charge end open both longitudinally and transversely to afford a free discharge from said inner to said outer section, and means for shifting one of said sections lengthwise of the other.

9. In a pneumatic stacker, a chute comprising an inner and an outer section, one of the sections being adjustable lengthwise of the other section and having a portion of the wall at its inner end cut away, and being provided adjacent said space with an extension, said other section having its discharge end opposite the above-mentioned cut-away space and having a guard-plate projecting within the aforesaid extension, and a shield adapted to close more or less of the said cut-away space.

10. In a pneumatic stacker, a chute comprising an inner and an outer section, said outer section having its side wall cut away to form a space along its inner end and said inner section being provided at its outer end with an opening arranged opposite said cut-away space of the outer section and with a shield adapted to cover more or less of said cut-away space and means for shifting said outer section inwardly and outwardly along said inner section.

11. In a pneumatic stacker, a chute comprising an inner and an outer section, said outer section having its side wall cut away to form a space along its inner end and said inner section being provided at its outer end with an opening arranged opposite said cut-away space of the outer section and with a shield adapted to cover more or less of said cut-away space and means for shifting said outer section back and forth comprising a cable connected to said outer section and a pulley upon said inner section around which said cable passes.

12. In a pneumatic stacker, the combination with a chute formed of inner and outer sections, the outer section being adjustable lengthwise of the inner section, of a connection leading inwardly from said outer section and whereby it is adjusted and a standard mounted upon a fixed part of the structure and having its upper end extending to a point substantially above the center of horizontal oscillation of the chute, and there united to said connection that leads from the outer chute-section.

13. In a pneumatic stacker, the combination with a chute formed of inner and outer sections, the outer section being provided at its outer end with a movable hood, a connection leading inwardly from said hood and whereby it may be shifted, and a standard mounted upon a fixed part of the structure and having its upper end extending to a point above the center of oscillation of the chute and there united to the connection that leads from said hood.

14. In a pneumatic stacker, the combination with a chute provided with means whereby it may be laterally oscillated, of a standard mounted upon a fixed part of the struc-

ture and having its upper end extending to a point substantially in line with the center of oscillation of the chute, to which standard may be united the connections that lead to  
5 movable parts of the chute.

15. In a pneumatic stacker, the combination with a chute provided with means whereby it may be laterally oscillated, of a standard mounted upon a fixed part of the struc-

ture and having its upper end extending to a point substantially in line with the center of oscillation of the chute, said standard being formed of collapsible sections whereby it may be lowered out of the way when not in use.

FREDERICK LEE NORTON.

Witnesses:

ORSON Z. OLIN, Jr.,

EDWIN E. RUSSELL.