No. 641,045. Patented Jan. 9, 1900.

J. B. SCHUMAN.

PNEUMATIC ELEVATOR AND WEIGHER.

(Application filed Oct. 16, 1899.)

(No Model.) 3 Sheets—Sheet 1.

Fig. 1.

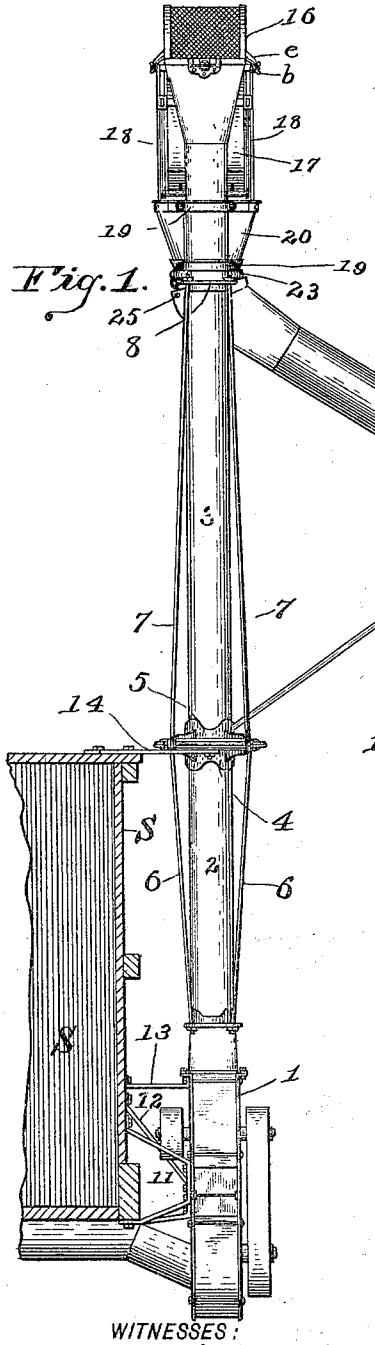


Fig. 5.

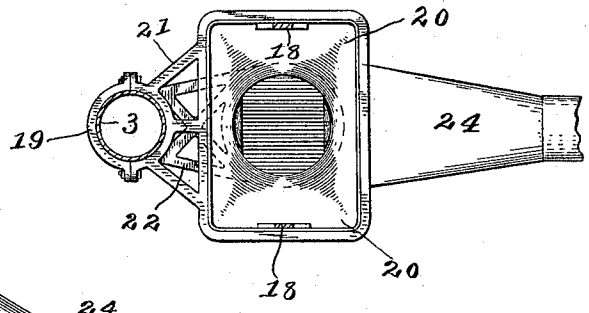


Fig. 6.

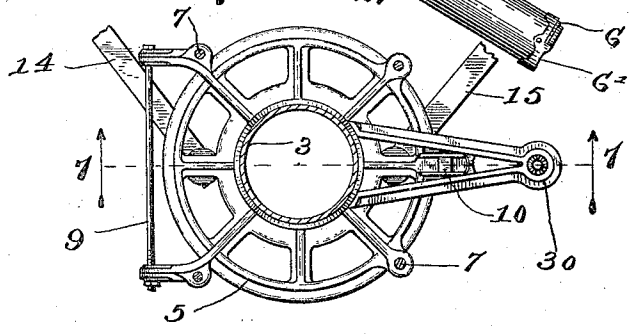
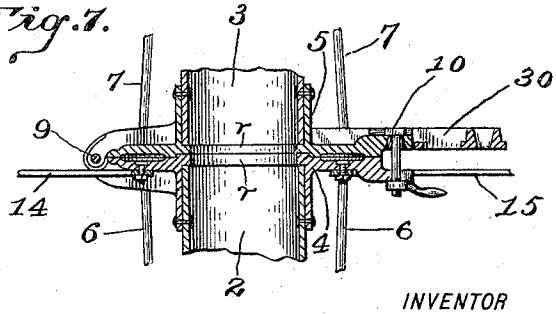


Fig. 7.



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(No Model.) 3 Sheets—Sheet 2.

Fig. 2.

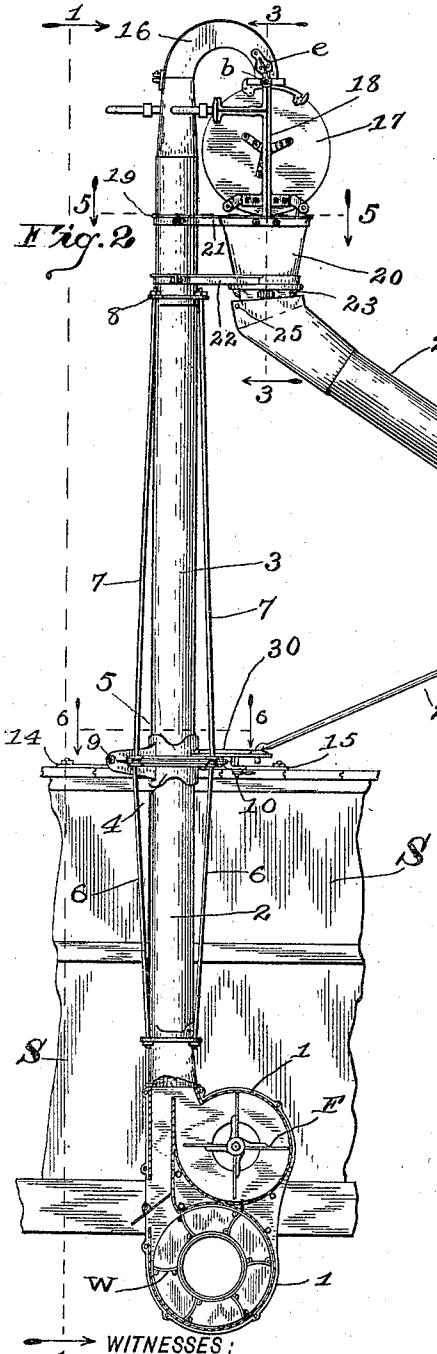

Fig. 3.

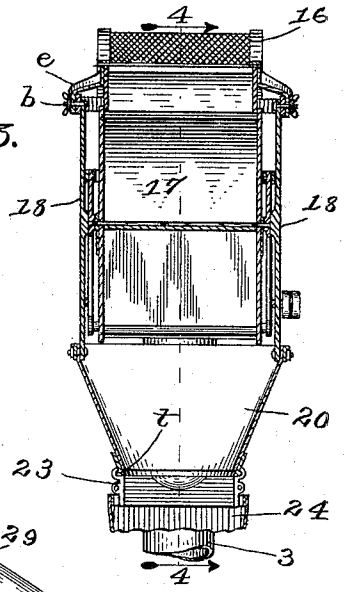

Fig. 4.

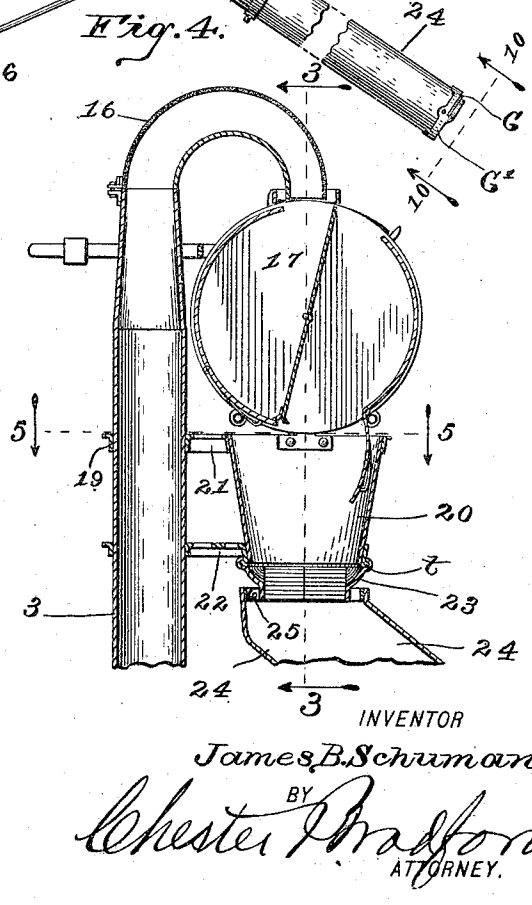

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Fig. 8.

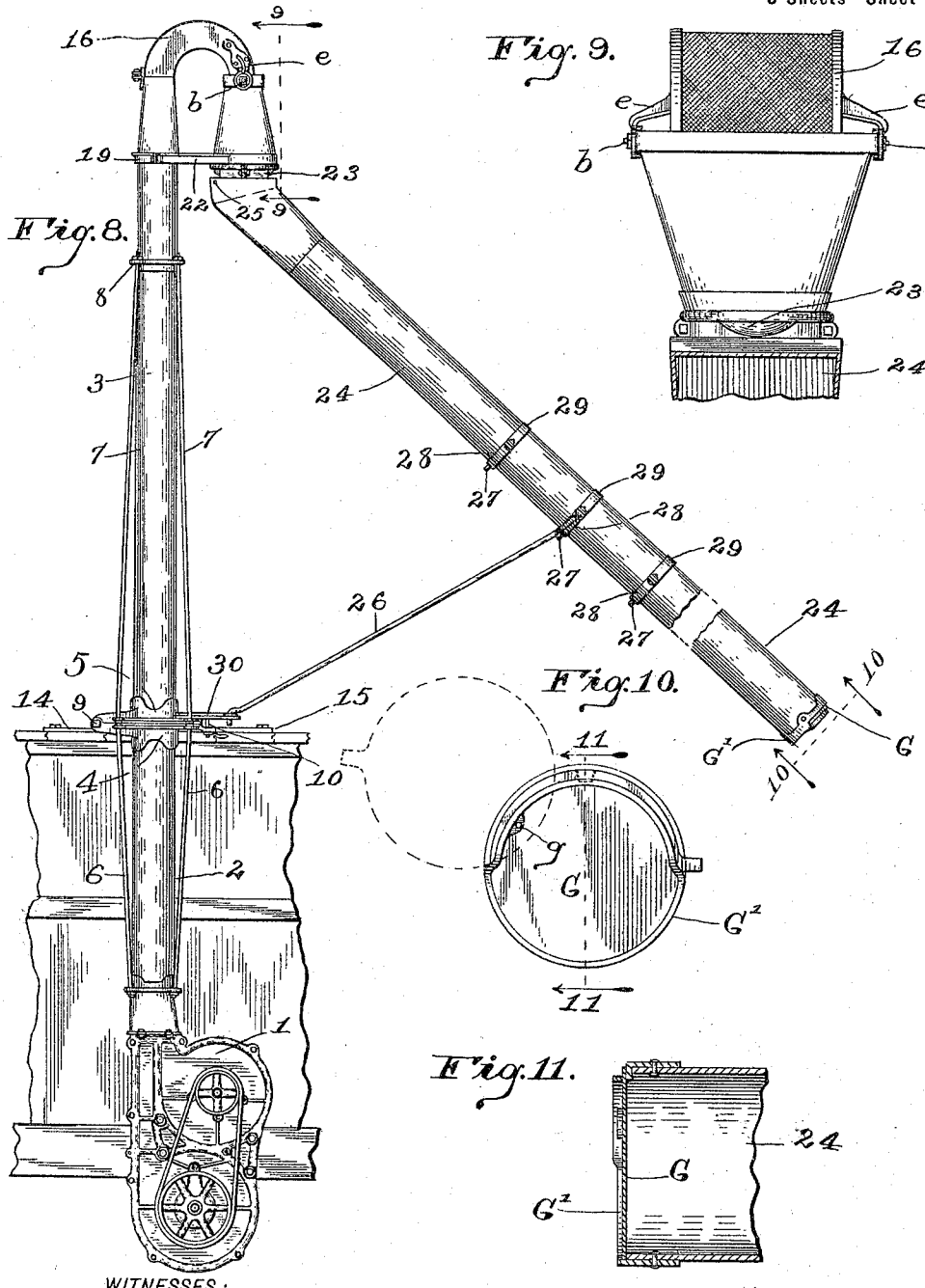

Fig. 9.

Fig. 10.

Fig. 11.

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UNITED STATES PATENT OFFICE.

JAMES B. SCHUMAN, OF COLUMBIA CITY, INDIANA, ASSIGNOR TO THE PNEUMATIC ELEVATOR AND WEIGHER COMPANY, OF INDIANAPOLIS, INDIANA.

PNEUMATIC ELEVATOR AND WEIGHER.

SPECIFICATION forming part of Letters Patent No. 641,045, dated January 9, 1900.

Application filed October 16, 1899. Serial No. 733,744. (No model.)

To all whom it may concern:

Be it known that I, JAMES B. SCHUMAN, a citizen of the United States, residing at Columbia City, in the county of Whitley and State of Indiana, have invented certain new and useful Improvements in Pneumatic Elevators and Weighers, of which the following is a specification.

My present invention relates to that class of apparatus which forms the subject-matter of Patent No. 603,925, issued May 10, 1898, to The Pneumatic Elevator and Weigher Company upon my application; and it consists in certain new and improved features incident to a different form of machine.

Said invention will be first fully described and the novel features thereof then pointed out in the claims.

Referring to the accompanying drawings, which are made a part hereof and on which similar reference characters indicate similar parts, Figure 1 is an elevation of a machine embodying my present invention as seen from the dotted line 1 1 alongside Fig. 2, the discharging-spout being swung out at right angles with the body of the threshing-machine or separator to which the elevator is attached; Fig. 2, a side elevation of said machine, the delivery-spout being swung around to a position in line with the body of the threshing-machine or separator; Fig. 3, a vertical sectional view, on an enlarged scale, through the weigher-hopper and adjacent parts as seen from the dotted line 3 3 in Figs. 2 and 4; Fig. 4, a vertical sectional view as seen from the dotted line 4 4 in Fig. 3; Fig. 5, a horizontal sectional view showing the receiving hopper in plan as seen from the dotted line 5 5 in Figs. 2 and 4; Fig. 6, a top or plan view, on a still further enlarged scale, of the hinge and adjacent parts as seen from the dotted line 6 6 in Fig. 2; Fig. 7, a detail vertical sectional view through said hinge as seen from the dotted line 7 7 in Fig. 6; Fig. 8, a side elevation similar to Fig. 2, but with the weigher mechanism omitted, showing the machine as a wagon-loader; Fig. 9, a detail elevation as seen from the dotted line 9 9 in Fig. 8; Fig. 10, an end elevation of the lower end of the discharge-pipe, on an enlarged scale, as seen from the dotted line 10 10 alongside Figs. 2 and 8; and Fig. 11, a detail sectional view on the dotted line 11 11 in Fig. 10.

The fan casing or housing 1 (generally and hereinafter called the "elevator-boot") and the elevating or delivery wheel W and blast-fan F contained therein are similar, generally speaking, to the corresponding parts shown and described in Letters Patent No. 603,925 above referred to, although somewhat improved in form, and therefore need not now be further described herein. This boot is shown in section in Fig. 2 to show the form and construction of said wheel and fan. The elevator-pipe is composed of two sections 2 3 and extends up from the neck of said boot to the height required. In this type of machine the elevation desired is considerable, and the pipe is consequently quite tall. At about the level of the top of the threshing-machine or separator S said sections are united by a peculiar hinge composed of two parts 4 and 5, by which, as best shown in Fig. 7, the ends of the two pipe-sections 2 and 3 are brought closely and neatly together. In order to insure an exact registry, a small lip is preferably formed on one part of the hinge and a corresponding annular groove in the other, which match together, as shown. Circular ribs *r* may also be provided to receive and protect the ends of the pipe. The hinge also forms a portion of a truss by which the pipe is supported. From the lower part 4 four truss-rods 6 extend down to the neck of the boot or housing, where their lower ends are secured, and from the upper half 5 four other truss-rods 7 extend up to a ring 8 on the pipe 3 near its upper end. As will be readily seen, this arrangement forms a perfect truss. The two parts 4 and 5 of the hinge are connected together on one side by the hinge-pintle 9 and on the other side by a suitable locking-bolt 10, the latter of which is easily loosened and moved out of engagement with the part to which it is connected, so that the upper portion of the structure can be folded down for the purposes of storage or transportation to about the level of the top of the separator. The whole structure is connected to the separator S by stay-bars, as 11, 12, 13, 14,

and 15, the two latter of which are suitably secured by appropriate bolts to the part 4 of the hinge and to the top of the separator S. These, as will be readily seen, can be attached in any desired number and at any desired angles and are capable of being adjusted as may be deemed best.

At the upper end of the pipe 3 is the curved separating-head 16, the upper or outer surface of which is composed of perforated or reticulated material. The weighing-hopper 17 is suspended by ears *e* and bolts *b* to the outer or discharging end of said head by means of a frame 18, which is also preferably connected to the pipe 3 below the head 16. This connection is preferably made, as best shown in Fig. 2, through the receiving-hopper 20, the carrying-arm 21, secured to the upper end thereof, and the semicircular clamp 19, which, with the adjacent and similarly-formed end of the arm 21, fits onto said pipe 3, as best shown in Fig. 5.

The receiving mouth or hopper 20 above mentioned is positioned directly below the weighing-hopper 17 and is carried from the pipe 3 by suitable bracket-arms 21 and 22, the outer ends of which are semicircular in form and fit against the pipe 3 and are secured onto said pipe by clamps 19. It will be seen that by this arrangement the receiving mouth or hopper and the weighing-hopper are both strongly and rigidly supported from the pipe and are held firmly in line with each other. The supports 21 and 22 being between the weighing-hopper and the turn-table by which the discharging-pipe is supported, the latter exerts no strain upon the weighing-hopper, and therefore there is no danger that the moving of the discharging-pipe on the turn-table will operate to disturb the adjustment of the scale mechanism or cause the weighing-hopper to bind on its bearings or be varied in its relation to adjacent parts, which would be liable to occur were the receiving mouth or hopper suspended altogether upon the weighing-hopper frame.

As best shown in Figs. 2, 3, and 4, there is a turn-table track *t*, formed on the lower end of the receiving-hopper 20, and upon this turn-table track is mounted a turn-table 23, to which in turn is hinged the upper end of the discharging-pipe 24 by means of a hinge-pivot 25. This discharging-pipe 24 has a gate G, pivoted at *g* in a circular frame G′ at the lower end and is supported at any desired angle by means of a brace 26, the upper end whereof is forked and bears against a suitable detent, as a lug 27, on bands on said pipe, (each of which bands is preferably composed of the halves 28 and 29,) and the lower end of which engages with the outer end of an arm 30, carried by the upper hinge-part 5. As will be seen, especially by an examination of Fig. 2, the arm 30 extends out such a distance that the point of attachment of the brace is perpendicularly below the center of the receiving mouth or hopper 20 and the turn-table which is carried thereby, so that in whatever direction the discharging-pipe is turned the bracing action is the same.

The machine above described is the result of much study and experiment, and actual use has demonstrated its high practical efficiency. It not only performs the work of elevating and loading the grain with great rapidity, but it also cleans and scours it, thus improving its condition.

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

1. The combination, in a pneumatic elevator and weigher, of the elevator-boot, suitable elevating-wheels therein, a pipe leading upwardly from the neck of said boot, a separating-head on the top of said pipe, a weighing-hopper supported from said pipe and separating-head, a receiving mouth or hopper arranged below said weighing-hopper and connected to the pipe below the head, a discharging-pipe mounted by means of a turn-table and hinge connection to said receiving mouth or hopper, a support perpendicularly below the center of said receiving-hopper and the turn-table thereon, and a brace-bar extending from said support to said discharging-pipe.

2. The combination, in a pneumatic elevator and weigher, of the boot, suitable elevating-wheels within said boot, a pipe leading from the neck of said boot upwardly and composed of two sections joining at about the level of the height of the separator, a hinge-and-truss structure at the point of union, and truss-rods running from the two halves of said structure downwardly and upwardly respectively, whereby the sections of the pipe are strongly braced and supported, substantially as set forth.

3. The combination, in a pneumatic elevator, of the elevator-boot, the two-section pipe leading therefrom, the hinge-and-truss structure at the point of union of the two sections of pipe, the same being composed of the two parts 4 and 5 united at one side by the hinge or pivot 9 and at the other side by the hinge-bolt 10, and truss-rods running from the lower hinge-half 4 to the neck of the housing, and other truss-rods running from the upper hinge-half 5 to a ring near the top of the upper pipe-section, said several parts being constructed, arranged and operating substantially as set forth.

4. The combination, in a pneumatic elevator, of the boot, the pneumatic tube or pipe leading upwardly from said boot, a weigher supported from the discharging end of said pipe, a receiving mouth or hopper supported from said pipe below said weighing-hopper, and a discharge-pipe swiveled upon and leading from said receiving-mouth or discharging-hopper, substantially as set forth.

5. The combination, in a pneumatic elevator, with the conveyer-tube, its separating-head and weigher mechanism suspended from

said head, of a receiving-hopper positioned below said weighing-hopper, bracket-like arms connected to said receiving-hopper and extending thence to and resting against said pipe, and clamps which with said bracket-like arms surround said pipe whereby said receiving-hopper is securely and rigidly supported directly from said pipe, substantially as shown and described.

6. The combination, in a pneumatic elevator, of the elevator-boot, the conveyer-tube, its separating-head, a hopper arranged below said head and supported from said conveyer tube and head, and a discharge-pipe swiveled upon and leading from the hopper.

7. The combination, in a pneumatic elevator, of the elevator-boot, the conveyer-tube, a separating-head on said tube, a hopper, and connections extending upwardly from said hopper to said head and laterally from said hopper to said tube, whereby said hopper is strongly supported and held in place.

In witness whereof I have hereunto set my hand and seal at Indianapolis, Indiana, this 6th day of September, A. D. 1899.

JAMES B. SCHUMAN. [L. S.]

Witnesses:
C. S. FRYE,
JAMES A. WALSH.