

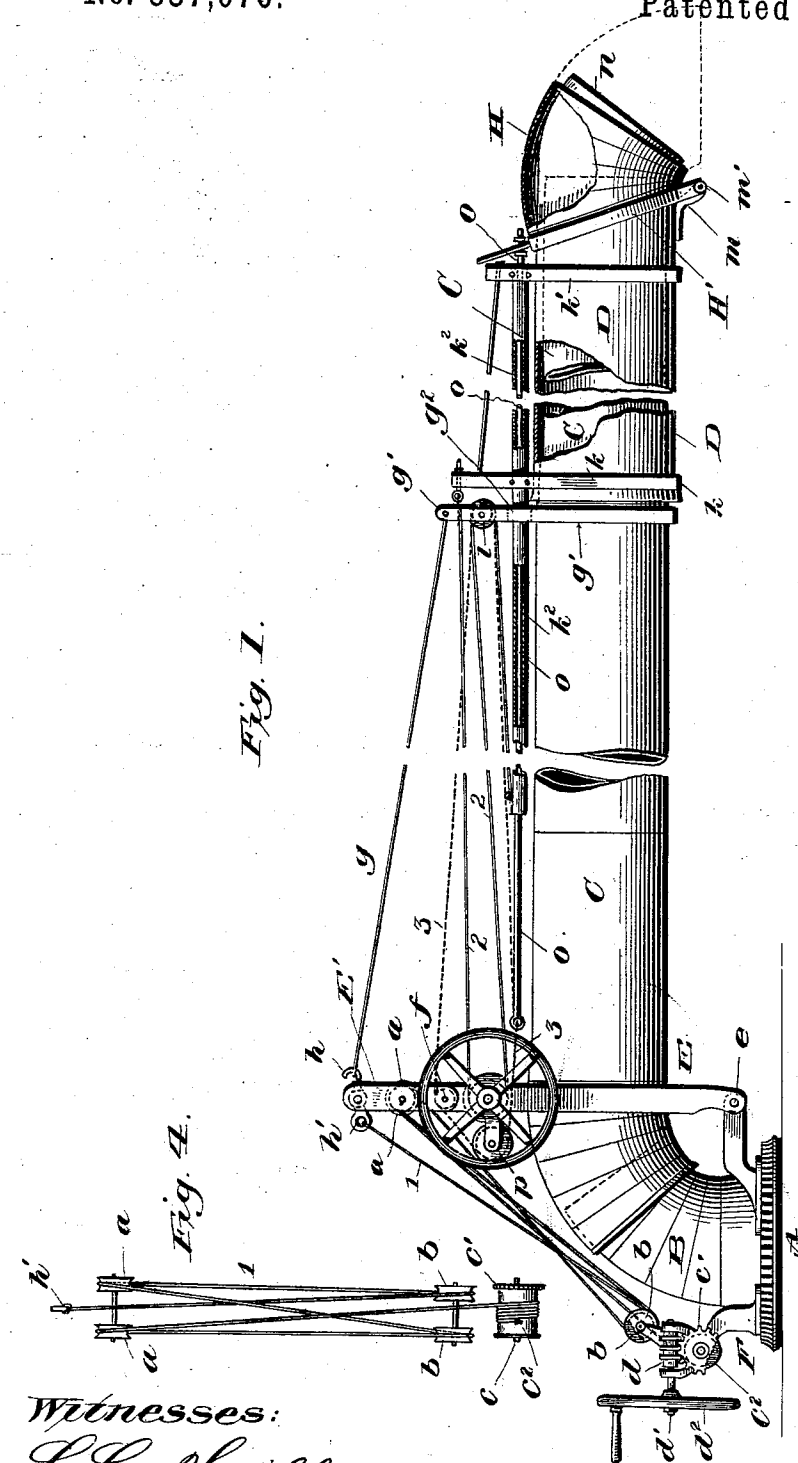
(No Model.)

F. W. ROBINSON.
STRAW STACKER.

2 Sheets—Sheet 1.

No. 537,070.

Patented Apr. 9, 1895.



Witnesses:
L. C. Hills.
J. B. Keefe

Inventor:
Francis W. Robinson,
by *Marcellus Bailor*
his Atty.

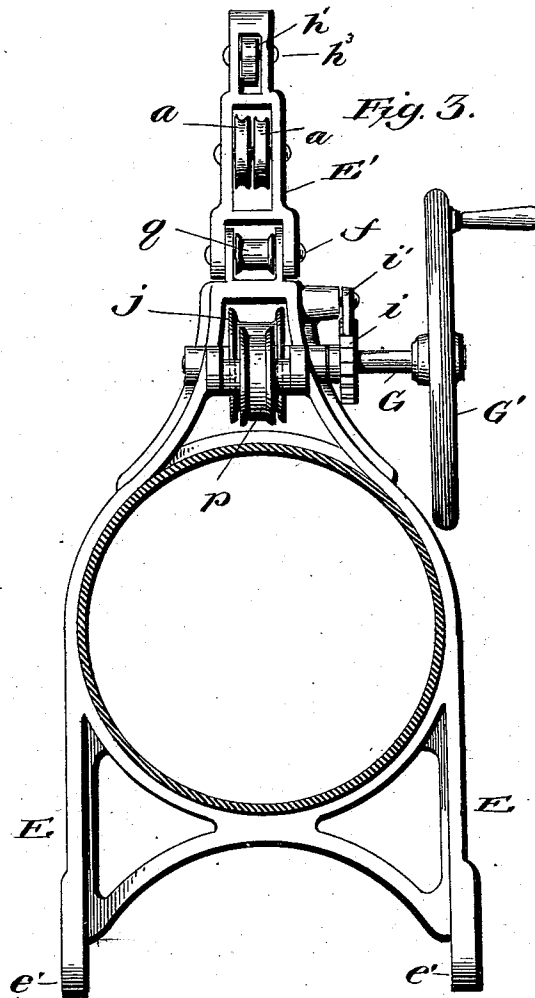
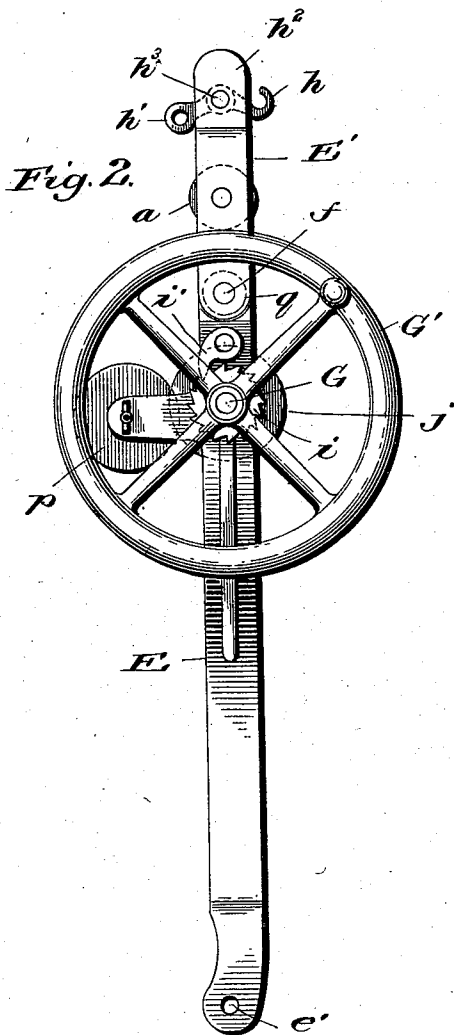
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STRAW STACKER.

No. 537,070.

Patented Apr. 9, 1895.



Witnesses:

L. C. Hills.
J. B. Keefe

Inventor

Francis W. Robinson,

by Maxwell Bailey
his Atty.

UNITED STATES PATENT OFFICE.

FRANCIS W. ROBINSON, OF RICHMOND, INDIANA, ASSIGNOR TO THE
ROBINSON & COMPANY, OF SAME PLACE.

STRAW-STACKER.

SPECIFICATION forming part of Letters Patent No. 537,070, dated April 9, 1895.

Application filed February 2, 1895. Serial No. 537,110. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS W. ROBINSON, a citizen of the United States, residing at Richmond, in the county of Wayne and State of Indiana, have invented certain new and useful Improvements in Straw-Stackers, of which the following is a specification.

My invention relates to straw stackers, or straw stacking attachments, for use in connection with thrashing machines, and more particularly to that class of such devices known as pneumatic or wind stackers.

I will first describe my improvements by reference to the accompanying drawings, forming a part of this specification, and will then point them out specifically in the claims.

In the drawings: Figure 1 is a sectional side elevation of so much of a straw stacker as needed for the purposes of explanation. Fig. 2 is a side elevation on enlarged scale of the hinged or swinging trunk supporting bracket. Fig. 3 is a rear elevation of the same with the trunk in section. Fig. 4 is a diagrammatic plan of the hoisting appliances.

My improvements are applicable to the chute or trunk of straw stackers generally, but the particular embodiment of the same illustrated in the drawings is intended for use on a straw-stacking attachment of the kind set forth in my Letters Patent No. 532,428, of January 8, 1895.

A is the turn table mounted in any suitable way to revolve upon the body of the stacker or stacking attachment, and having peripheral worm teeth to engage an operating worm by which it may be revolved. Means for this purpose are well known; and as they form no part of my present invention, I do not deem it necessary to illustrate them.

B is the "stump," as it is termed, of the trunk or chute, attached to and moving with the turn table. The trunk in this instance is telescopic, being composed of two sections C, D, the outer one D being mounted and adapted to move lengthwise on the inner section C to vary at will the working length of the trunk as a whole. The inner section at its inner end is curved to fit and move upon the correspondingly curved neck of the "stump" B, and it is secured to a bracket E, hinged at its base to the turn table at e.

The bracket E, as shown more clearly in Fig. 3, has ears *e'*, at the bottom by which it is hinged to the turn table, and above the ears it is made annular to fit around the trunk which passes through and is secured to it at this point. This inner end of the trunk and the neck of the "stump" on which that end fits, are curved in the arc of a circle struck from the pivot or hinge point *e* as a center, so that the trunk in being swung up or down can move freely on the curved neck of the "stump." Above its annular portion the bracket is prolonged in the shape of an upwardly extending stem *E'*, which I make use of as the rigid arm of the derrick by which the trunk is swung up and down, and I also can, and do, mount in this arm a number of the pulleys over which pass the ropes or cords for effecting various adjustments of the trunk as hereinafter described.

In order to permit the derrick arm or stem *E'* to be turned down out of the way, when the machine is passing under low places, as through a barn door, I provide it at a suitable point with a hinge as at *f*. When the stem is upright it is held in position by suitable means as for example by the stay rod *g* jointed at its front end to an upright post *g'* on the trunk section C, and at its other end detachably engaging a hook *h* on the upper end of the stem. By disengaging the rod from the hook *h*, the hinged part of the derrick arm or stem can be turned or folded down backward whenever desired.

The hoisting appliances connected with the derrick arm or stem *E'* may be of any suitable kind. The arrangement which I prefer for the purpose is shown in the drawings.

In the stem *E'* are journaled two pulleys *a* fixed by side as seen in Fig. 3. In a stand *F*, fixed to the turn table, are journaled two corresponding pulleys *b* (only one of which is seen in Fig. 1). In the stand is also mounted a shaft *c* carrying a worm wheel *c'* and having also fixed on it a drum *c²* (shown by dotted lines in Fig. 1). The worm wheel engages and is driven by a worm *d* fixed on a shaft *d'* having its bearings in the stand *F* and provided with an operating handle *d²*. One end of the hoisting rope *l* is fastened to a hook or eye *h'* at the outer end of the derrick arm or

stem E'. The rope then extends down around and under one of the pulleys *b*, up over and around one of the pulleys *a*, thence down around and under the second pulley *b*, thence up over and around the second pulley *a*, and thence down to the drum *c*² to which it is made fast. In this way a powerful purchase is obtained which enables the operator to lift the trunk with ease. I prefer to form the parts *h h'*, one upon each end of a bar *h*² pivoted centrally in the top of stem E' as indicated at *h*³.

I proceed now to a description of the appliances which I now prefer for operating the outer trunk section when, as in the present instance, the trunk is telescopic.

Journalled in the stem E' below the hinge-point *f* is shaft G provided with an operating handle G', and with a ratchet wheel *i* (Figs. 2 and 3) to be engaged by a retaining pawl or dog *i'* pivoted to the stem E', the pawl and ratchet being for the purpose of locking the shaft G when it has been operated to extend or move outwardly the outer section D. Upon the shaft is mounted a pulley *j*. Fast to the inner end of the outer section D is an upright post *k*; and attached to the post as well as to a second post *k'* at the front of section D is a rod or pipe *k*², which is parallel with the trunk and extends back along a portion of the rear section C, passing loosely through an eye or hole *g*² in the post *g'* on section C. In post *g'* is journalled a pulley *l*. To post *k* is made fast one end of a wire or other rope 2 which thence extends back to and around the pulley or drum *j* on shaft G, making one or more turns around said drum to prevent slipping. It thence extends forward to and around pulley *l* on post *g'* and thence back to the rear end of the rod or pipe *k*² to which it is attached. By rotating the shaft G the outer section D will be moved lengthwise of the inner section C in one direction or the other according to the direction of rotation. The rod *k*² serves as a guide and prevents rotation of the outer section on the inner section.

The hood or deflector H, at the outer end of the trunk or chute although a hinged deflector is in a sense telescopic, in that when raised it telescopes or moves back upon and around the discharge end of said trunk. A support H' to which its rear end is attached is hinged at its lower end at *m'* to a bracket or hanger *m* on the under side of the trunk; and the deflector is shaped as a tubular curved elbow, its curve line being on a circle struck from the pivotal point *m'* as a center. In Fig. 1 it is shown in full lines in its raised position and in dotted lines in its lowered position. In raised position it surrounds and houses the front end of the trunk, and is moved bodily back and out of the path of that end. It is to be noted also that the discharge end of the trunk also is slightly curved downward as shown at *n*—this curvature in practice being from one-eighth to one-

fourth of a full elbow turn. The advantage of this is that when the trunk is elevated and the deflector is fully thrown back, the straw is not thrown or blown so loosely up into the air, as it would be if the discharge end were straight, but is deflected toward the straw stack and is not scattered to such an extent as it otherwise might be. This curvature also facilitates the telescoping of the deflector upon the discharge end and permits a better joint to be made between that end and the deflector when the latter is lowered.

I prefer to operate the deflector positively in both directions, and also in the case of a telescopic trunk (such as illustrated in the drawings) to provide that these means may automatically adjust themselves to variations in the length of the trunk occasioned by the lengthwise movement in either direction of the outer trunk section upon the inner section. To this end I loosely connect with the deflector an operating rod *o* which is loosely attached to the upper end of the deflector support H' and thence extends back along and parallel with the trunk to a point which when the trunk is contracted will be in the neighborhood of the derrick arm E' as shown in Fig. 1. This rod preferably passes lengthwise through the tubular guide rod or pipe *k*².

In brackets on the rear of the stem E' is journalled a pulley or drum *p* to be revolved by hand by suitable means such as a crank handle or the like. In the stem E' is journalled a spool *q* having its axis coincident with the hinge point *f* between the two parts of the stem; and in the post *g'* is a second pulley like pulley *l* arranged alongside of that pulley, just as the one pulley *a* is placed alongside of the other pulley *a* in the stem E'. An operating rope or cord 3 passes to and makes one or more turns around drum *p* to prevent slipping; thence passes up over spool *q* to avoid interference with the cable for telescoping the trunk; thence to and around the pulley provided for it at the point *l*, and thence back to the rear end of rod *o* to which it is attached—both ends of the rope 3 being then attached to the rod *o*.

By turning the drum *p* by hand, the deflector can be adjusted as desired. At the same time when the outer trunk-section is moved lengthwise on the inner section for the purpose of extending or contracting the length of the trunk the drum *p* will automatically revolve and render the rope 3 in the proper direction, the pull being upon one or the other of the ends of the rope 3 according to the direction of movement of the outer trunk section.

The operating rod *o* is typical of any suitable rearward extension from the deflector for proper attachment thereto of the operating cable or rope 3. Under this arrangement the rope 3 is practically an endless cable, the system of pulleys or drums around which it passes are mounted on the inner trunk section or some part moving in unison there-

with, and the arrangement is such that while the deflector can at all times be moved positively in either direction, the operating means will automatically render and adjust themselves to variations in the working length of the telescopic trunk. This feature I believe to be new with me beyond its special embodiment illustrated in the drawings.

Having now described my improvements in straw stackers, and the best way now known to me of carrying the same into effect, I state in conclusion that I do not limit myself narrowly to the structural details herein described and illustrated, since manifestly the same can be varied in a number of respects without departure from the spirit of my invention; but

What I claim, and desire to secure by Letters Patent, is as follows:

1. In combination with the trunk or chute and its hinged support or bracket, a hinged derrick arm or stem attached to and carried by said support or bracket, means for holding said hinged stem in upright position, and hoisting appliances connected to said stem, substantially as hereinbefore set forth.

2. The combination of the trunk or chute; the hinged trunk support or bracket; the derrick arm or stem carried by said bracket; the pivoted double hook $h\ h'$ h^2 ; the stay rod, connected to one of the hooks; and hoisting appliances connected to the other hook, substantially as and for the purpose hereinbefore set forth.

3. The combination with the two part telescopic trunk and the hinged support or bracket for the inner trunk section, of a derrick arm or stem carried by said bracket, and the appliances for moving the outer trunk section upon the inner section, the operating drum or pulley j of which appliances is mounted in and carried by said derrick arm or stem, substantially as and for the purposes hereinbefore set forth.

4. The combination with the telescopic trunk, a hinged bracket attached to and supporting the inner trunk section, and a derrick arm or stem carried by said bracket, of hoisting appliances consisting of a hoisting rope and series of pulleys, the front ones of which latter are mounted in said stem, and appliances for moving the outer telescopic trunk section upon the inner section, comprising an operating rope and a series of pulleys or drums the rear operating one of which is mounted in said stem, substantially as and for the purposes hereinbefore set forth.

5. In combination with the telescopic trunk, its hinged supporting bracket, a deflector hinged to the outer telescopic trunk section, and appliances for hoisting the trunk, and adjusting the outer telescopic section and operating the hinged deflector, of a derrick arm or stem formed in one with or attached to the hinged trunk supporting bracket, connected to the hoisting appliances, and carry-

ing the operating pulleys or drums $j\ p$, whereby the telescopic section and the deflector are severally adjusted, substantially as and for the purposes hereinbefore set forth.

6. The hinged supporting bracket, and the two part jointed derrick arm or stem attached to said bracket, and having mounted in that portion of it below the joint or hinge, the operating drums or pulleys $j\ p$, for the outer telescopic trunk section and the hinged deflector respectively, in combination with the telescopic trunk, hoisting appliances connected to the outer end of the jointed stem, and devices for adjusting the outer telescopic section and hinged deflector, connected to and operating in conjunction with the pulleys or drums $j\ p$ respectively, substantially as and for the purposes hereinbefore set forth.

7. In combination with the telescopic trunk, the deflector hinged to the outer trunk section, an operating rod attached to said deflector and extending back along the trunk, and operating means connected to said rod and mounted on and carried by the inner trunk section, substantially as and for the purposes hereinbefore set forth.

8. In combination with the telescopic trunk, and the guide pipe attached to the outer trunk section, a deflector hinged to said outer section, an operating rod attached to said deflector and extending back through and beyond the guide pipe, and operating means connected to the said rod, and mounted on the inner trunk section, substantially as and for the purposes hereinbefore set forth.

9. The trunk or chute having a downwardly curved discharge elbow n in combination with the curved elbow shaped deflector H hinged to and adapted to telescope upon the trunk, as herein shown and described.

10. In combination with the trunk or chute and its hinged support or bracket, the two part-jointed derrick arm or stem having one of its members rigidly attached to the bracket, hoisting appliances connected to the other member, and means for holding the last named member in unfolded and extended condition, as hereinbefore set forth.

11. The trunk or chute and its hinged supporting bracket, in combination with a two part-jointed derrick arm or stem attached to and carried by said bracket, hoisting appliances connected to the outer member of said derrick arm or stem; a hinged hood or deflector at the discharge end of the trunk; and appliances for adjusting said deflector, the operating drum or pulley p , of which is carried by the fixed member of said derrick arm or stem, as hereinbefore set forth.

In testimony whereof I have hereunto set my hand this 29th day of January, 1895.

FRANCIS W. ROBINSON.

Witnesses:

OLIVER P. NUSBAUM,
HOMER HOCKETT.