

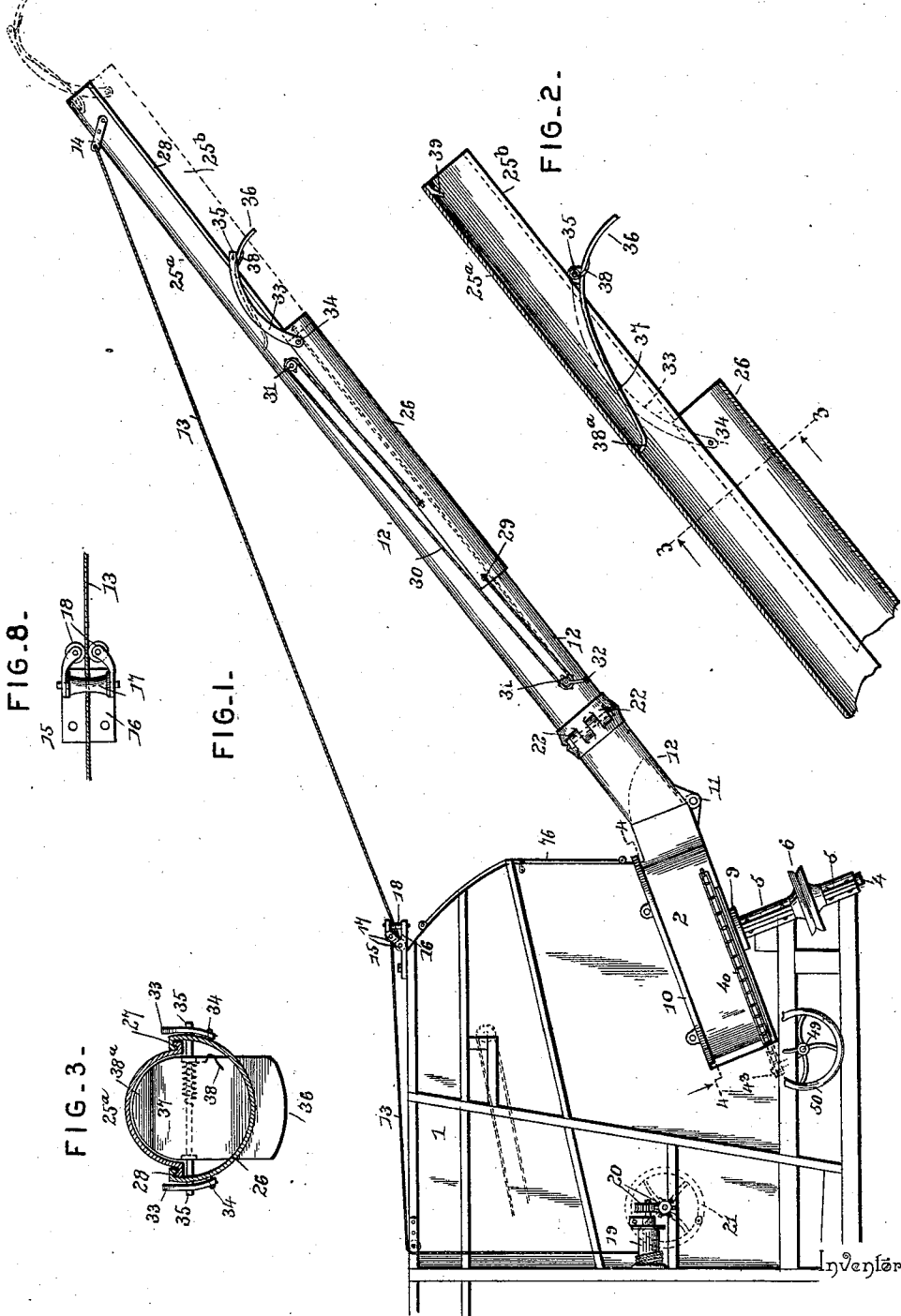
(No Model.)

2 Sheets—Sheet 1.

C. T. H. BOND.
PNEUMATIC STRAW STACKER.

No. 540,573.

Patented June 4, 1895.



Witnesses

Jas. H. McLaughlin

D. P. McLaughlin

By his Attorneys.

Charles T. H. Bond

C. A. Snow & Co.

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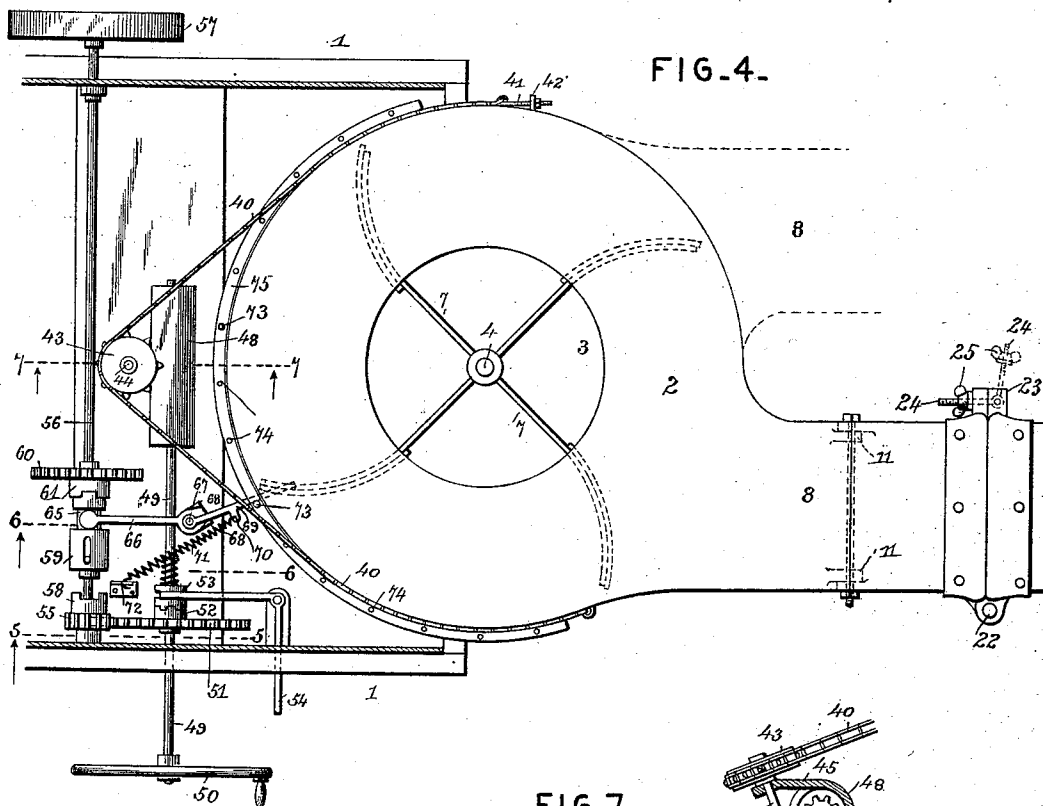


FIG. 4.

FIG. 5.

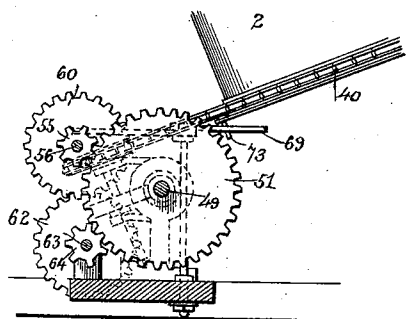


FIG. 7.

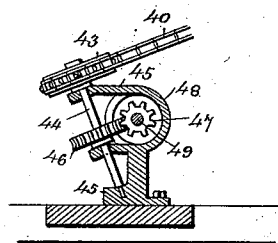
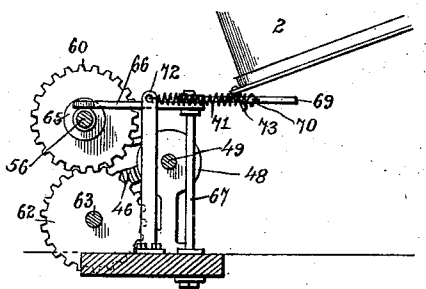


FIG. 6.



Inventor

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UNITED STATES PATENT OFFICE.

CHARLES T. H. BOND, OF WEBSTER, ASSIGNOR OF ONE-HALF TO ROBINSON & CO., OF RICHMOND, INDIANA.

PNEUMATIC STRAW-STACKER.

SPECIFICATION forming part of Letters Patent No. 540,573, dated June 4, 1895.

Application filed October 20, 1894. Serial No. 526,498. (No model.)

To all whom it may concern:

Be it known that I, CHARLES T. H. BOND, a citizen of the United States, residing at Webster, in the county of Wayne and State of Indiana, have invented a new and useful Pneumatic Straw-Stacker, of which the following is a specification.

This invention relates to pneumatic straw stackers; and it has for its object to provide a new and useful pneumatic straw stacking attachment for ordinary thrashing machines, providing simple and efficient means for automatically distributing the straw onto the stack.

The invention also contemplates a pneumatic stacking attachment that can be used in conjunction with the ordinary stacking carrier or elevator, which latter may be employed for stacking the straw, while the pneumatic attachment is employed at the same time for carrying out the chaff and dust from the thrasher.

With these and other objects in view, which will readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination, and arrangement of parts hereinafter more fully described, illustrated, and claimed.

In the drawings, Figure 1 is a side elevation of a pneumatic straw-stacker constructed in accordance with this invention. Fig. 2 is an enlarged detail longitudinal sectional view of the upper portion of the conveyer spout or trunk. Fig. 3 is a detail transverse sectional view on the line 3 3 of Fig. 2. Fig. 4 is a sectional view on the line 4 4 of Fig. 1. Fig. 5 is a sectional view on the line 5 5 of Fig. 4. Fig. 6 is a similar view on the line 6 6 of Fig. 4. Fig. 7 is a similar view on the line 7 7 of Fig. 4. Fig. 8 is a detail plan view of the guide for the spout-adjusting cable.

Referring to the accompanying drawings, 1 designates a thrashing machine of the ordinary construction, within the rear end of which is adapted to be obliquely arranged the fan casing 2. The fan casing 2, is arranged within the casing of the thrasher 1, in a proper position at the rear end thereof, to receive the straw and chaff that is passed through the thrasher, and said obliquely disposed fan casing 2, is provided with a top inlet opening

3, communicating with the interior of the thrasher to receive the straw and chaff and to provide for the discharge thereof. The said fan casing is of the usual circular shape, and in the present invention is supported to oscillate transversely within the rear end of the thrasher on the upper end of the angularly disposed fan shaft 4. The angularly disposed fan shaft 4, is mounted in suitably aligned bearings 5, on the frame of the thrasher 1, and carries at an intermediate point a belt wheel or pulley 6, to receive a belt for transmitting motion thereto, and said fan shaft carries on its upper end within the circular transversely oscillating fan casing 2, the rotary fan 7, that forces a blast of air through the offstanding casing neck 8, that is disposed upwardly by the inclination of the casing, and is projected eccentrically from the outer side of the fan casing either in the position shown in full or in dotted lines. The said fan casing 2, that is arranged on the shaft 4, turns at its lower side on a circular bearing plate 9, formed at the upper end of one of the bearings 5, and the upper side of said fan casing turns within the semi-circular flanged guide plate 10, that is secured obliquely within the casing of the thrasher 1, at the top of the fan casing 2, to provide means for steady- ing and forming a guide for the fan casing 2, in its transverse oscillating movement.

The fan casing neck 8, has hinged to the outer lower side thereof by the hinge joints 11, the inner end of the tubular conveyer spout or trunk 12, that provides for conveying the straw and chaff from the fan casing onto the stack. The inner end of said conveyer spout or trunk 12 works over the outer end of the neck 8, and is adapted to be adjusted up and down to the desired angle as may be required by the height of stack being made, it being noted that the hinge joints 11, are at the lower side of the conveyer spout or trunk and the casing neck 8, to admit of this adjustment; and to provide for the up and down adjustment of the spout or trunk 12, an adjusting cable 13, is connected at one end as at 14, to the outer upper end of said spout or trunk 12, and is guided through the cable guide 15, secured on top of the thrasher 1, at the rear end thereof. The said cable guide

15, consists of an attachment plate 16, horizontal superimposed guide rollers 17, between which the cable passes, and a pair of parallel vertically disposed guide rollers 18, supported at one side of the rollers 17, to receive the cable therebetween, so that the same may be easily adjusted, while at the same time moving freely with the lateral adjustment of the conveyer spout or trunk as it automatically swings back and forth in a lateral direction, as will be more particularly referred to. From the cable guide 15, the cable 13, is guided to a suitably arranged winding drum 19, with which is connected the worm gearing 20, operated by a suitable hand wheel 21, at one side of the thrasher 1, to provide for the up and down adjustment of the spout or trunk 12, on the hinge 11.

The tubular conveyer spout or trunk 12, is provided at a point adjacent to the bottom hinge connection 11, with the neck 8, with a side hinge joint 22, that admits of the spout or trunk being folded directly against one side of the thrashing machine 1, when not in use, instead of being folded in an upright position or on top of the thrasher, as has been heretofore done in machines of this character. The adjacent edges of the hinged sections of the spout directly opposite the side hinge joint 22, are provided with the bifurcated bolt lugs 23, to one of which is pivotally connected one end of a hinge bolt 24, the other end of which carries a thumb nut 25, that is adapted to engage on the other bifurcated lug to provide for detachably connecting the hinged sections of the spout or trunk together, while at the same time allowing the long portion of the spout or trunk to be readily folded back against one side of the thrasher.

From an intermediate point to the outer upper end thereof, the tubular conveyer spout or trunk 12, is provided with an open lower side 25^b, that is formed by longitudinally bisecting the spout or trunk for a portion of its length, thereby leaving an outer arched end portion 25^a disposed over the lower open side 25^b, and said lower open side 25^b, of said arched end portion is adapted to be covered and uncovered by a sliding semi-circular spout section 26, working on and embracing the under side of said spout or trunk. The said semi-circular spout section 26, is provided at its opposite upper edges with the intumed slide flanges 27, that loosely engage over the outwardly disposed upturned guide flanges 28, formed at the opposite side edges of the arched end portion 25^a, of the said spout or trunk, and by reason of this connection the sliding spout section 26, may be adjusted to cover and uncover any portion of or the entire lower open side 25^b, of the spout or trunk, according to the point where it is desired to discharge the straw onto the stack. The sliding spout section 26 has connected thereto as at 29, the opposite ends of an adjusting chain 30, that is arranged to pass over the oppositely disposed wheels 31, mounted on one side of the

spout or trunk 12, and to one of which is attached a suitable crank handle 32, to provide for adjusting the chain for sliding the spout section 26, to the desired position.

A pair of curved supporting arms 33, are rigidly connected at their inner ends as at 34, to opposite sides of the spout section 26, at the outer end thereof, and said curved supporting arms 33, project beyond the outer end of the spout section 26, and are connected together by a transverse pivot rod 35, that is disposed to slide directly under the semi-circular top portion 25^a, of the conveyer spout or trunk. The said transverse pivot rod 35, has pivotally mounted thereon a curved deflecting hood 36, provided with an inner rounded end 37, that registers inside of the arched end portion 25^a, of the conveyer spout or trunk in order to provide for catching the straw or chaff and deflecting the same down on to the stack directly as it passes beyond the outer end of the spout section 26. A spring 38, is coiled on the transverse pivot rod 35, and is connected at one end to the curved deflecting hood 36, to provide for normally holding the inner rounded end 37, thereof within the top portion of the conveyer spout or trunk, and said inner rounded end 37, of the deflecting hood is bent to form a hook flange 38^a, that is adapted to be carried into engagement with a hook lug 39, fitted within the arched end portion 25^a, at the outer extremity thereof, so that when the spout section 26, has been adjusted to entirely inclose the outer lower open side of the conveyer spout or trunk, the deflecting hood and supporting arms therefor will be automatically elevated to a position disposed beyond the outer extremity of the spout or trunk 12, to provide for the proper deflection of the straw on to the stack as will be readily understood.

The obliquely disposed transversely oscillating fan casing 2, has attached to diametrically opposite sides thereof the opposite extremities of an operating chain 40, and at one of its attached extremities, the said chain is connected with an adjusting screw 41, engaging in a nut 42, at one side of the fan casing to provide for maintaining the said chain at a proper tension. Beyond the inner side of the obliquely disposed fan casing 2, the chain 40, attached thereto, is arranged to pass over a chain wheel 43, mounted on the upper end of a chain operating shaft 44, journaled in a suitable bearing support 45, arranged in longitudinal alignment with the fan-shaft 4, that forms a pivotal support for the fan casing. The chain operating shaft 44, has mounted thereon intermediate of its ends a worm wheel 46, with which meshes an adjacent worm 47, arranged within a housing or casing 48, on the inner end of a worm operating shaft 49, the other end of which extends outside of the thrasher 1, and may be provided with a hand wheel 50, for turning the same in order to provide for transversely or laterally oscillating

the fan casing to swing the conveyer spout or trunk back and forth over the stack, but the said worm shaft 49, has preferably mounted thereon the loose gear wheel 51. The loose gear wheel 51, is provided at one side with a clutch hub 52, adapted to be normally engaged by the spring actuated clutch collar 53, feathered on the shaft 49 and having connected thereto one end of the bell crank adjusting lever 54, that provides means for disengaging the clutch collar from the hub of the wheel 51, when desired, and when the lever 54, is not adjusted, the wheel 51, is normally locked to the shaft 49, to provide for rotating the same.

The gear wheel 51, meshes with an adjacent pinion 55, loosely mounted on one end of a drive shaft 56, journaled transversely within the casing of the thrasher and carrying upon one end opposite the pinion 55, the belt wheel or pulley 57. The loose pinion 55, is provided at one side with a clutch hub 58, that is adapted to be engaged by one end of a double clutch collar 59, feathered on the shaft 56, between the pinion 55, and a loose gear wheel 60, also mounted on the shaft 56, and provided at one side with a clutch hub 61, to be engaged by one end of the collar 59. The loose gear wheel 60, meshes with an adjacent gear wheel 62, therebelow, and mounted on one end of a countershaft 63, mounted in suitable bearings below the shaft 56, and carrying on the end opposite the wheel 62, the pinion 64, meshing with the gear wheel 51, below the pinion 55, to provide for transmitting motion to the shaft 49, from the wheel 60, when the collar 59, is in engagement therewith.

The double clutch collar 59, is provided at a point intermediate of its ends with the annular groove 65, in which engages one end of the clutch lever 66, the other end of which is pivotally mounted on the upper end of a supporting post 67, located adjacent to the rear side of the fan casing 2. The pivoted end of the clutch lever 66, is provided with the spaced lugs 68, between which plays a trip lever 69, the inner end of which is also pivotally secured on top of the pivoted end of the lever 66, on the upper end of the supporting post 67. The trip lever 69, has connected thereto at an intermediate point, as at 70, one end of a retractile spring 71, the other end of which is connected to the upper end of a stationary attaching arm 72, arranged at a suitable point at one side and adjacent to the supporting post 67.

The free end of the trip lever 69, is adapted to be engaged at either side by the spaced trip pins 73, that are adjustably fitted in any of a series of pin openings 74, in the casing flange 75, formed on the fan casing at the inner lower side thereof, and the distance between the spaced pins 73, regulates the swing or oscillation of the fan casing. Now it will be understood that when one of the pins 73, engages against one side of the trip lever 69,

the same will be moved against one of the lugs 68, of the clutch lever, and when the spring 71, has passed over the pivot of the trip lever, a continued pull will be exerted on the trip lever to cause the double clutch collar 59, to be thrown quickly into engagement with either of the clutch hubs 58, or 61. A reverse adjustment of the clutch collar occurs when the trip lever is engaged by the other pin carried by the fan casing, and as the adjustment of the collar alternates between the pinion 55 and the wheel 60, the shaft 49, will be rotated alternately in opposite directions to provide for imparting an oscillating movement to the fan casing 2, and therefore a lateral swing to the conveyer spout or trunk.

Changes in the form, proportion and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

Having thus described the invention, what is claimed, and desired to be secured by Letters Patent, is—

1. In a pneumatic straw stacker, the combination of a transversely oscillating fan casing arranged obliquely within the rear end of the thrasher and provided with a straight off-standing neck disposed upwardly by the inclination of the casing and thereby obviating a choking of the material within the neck, the fan arranged within the casing, an inclined conveyer spout or trunk hinged at its lower end to the outer lower side of the casing neck and provided at a point adjacent to said hinge connection with the neck with a separate and independent side hinge joint that admits of a side folding of the spout or trunk independent of its inclination, a temporary fastening for the unhinged edges of the side hinge joint and means for raising and lowering the spout or trunk, substantially as set forth.

2. In a pneumatic straw stacker, the combination, with the fan casing; of an inclined conveyer spout or trunk having an outer arched end portion provided with a lower open side, an adjustable slidable spout section arranged to slide on said arched end portion, an adjustable deflecting hood connected with the outer end of said slidable spout section and working directly within said outer arched end portion, and means whereby the same is automatically adjusted by the movement of the slidable spout section substantially as set forth.

3. In a pneumatic straw stacker, the combination with the fan casing; of the inclined conveyer spout or trunk comprising an inner cylindrical portion and an outer arched end portion having a lower open side and a hook lug at its outer extremity, an adjustable slidable spout section arranged to slide on said arched end portion, a pair of supporting arms connected to the upper end of the slidable spout section, a transverse pivot rod connecting said arms, and a spring adjusted curved

deflecting hood mounted on said rod between the supporting arms and provided with an inner rounded end registering in said outer end portion of the spout or trunk, said inner
5 rounded end of the hood having a hook flange adapted to be carried into engagement with said hook lug, substantially as set forth.

4. In a pneumatic straw stacker, the combination of an oscillating fan casing carrying a
10 spout and adjustable spaced trip pin at its rear side, an operating chain connected at its extremities to opposite sides of the fan casing, suitably arranged worm gearing connected with said chain, and one of the shafts of said
15 worm gearing carrying a gear wheel, a suitably arranged drive shaft, an oppositely located gear wheel and pinion loosely mounted on the drive shaft and both provided with clutch hubs, a double clutch collar feathered
20 on the drive shaft between said loose pinion and gear wheel thereon, a counter shaft carrying at one end a gear wheel meshing with

the gear wheel on the drive shaft and at its opposite end a pinion meshing with the gear wheel of one of the worm gearing shafts, a
25 clutch lever pivotally supported at one end and loosely connected at its other end with said clutch collar, said clutch lever being provided at its pivoted end with spaced lugs, a trip lever pivotally supported to play between
30 the lugs of the clutch lever and adapted to be engaged at either side by the trip pins of the fan casing, and a retractile spring connected at one end to a fixed point of attachment and
35 at its other end to the trip lever at an intermediate point, substantially as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

CHARLES T. H. BOND.

Witnesses:

JOHN H. SIGGERS,
E. G. SIGGERS.