

No. 618,898.

Patented Feb. 7, 1899.

F. M. & W. R. NASH.  
PNEUMATIC STRAW STACKER.

(Application filed Dec. 1, 1897.)

(No Model.)

2 Sheets—Sheet 1.

FIG. 2—

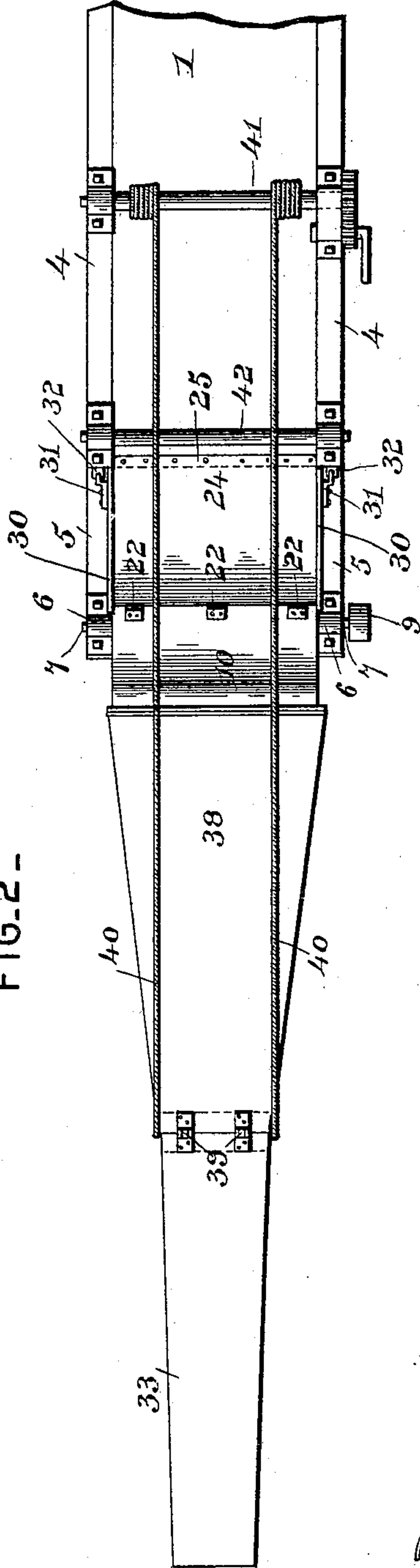


FIG. 1—

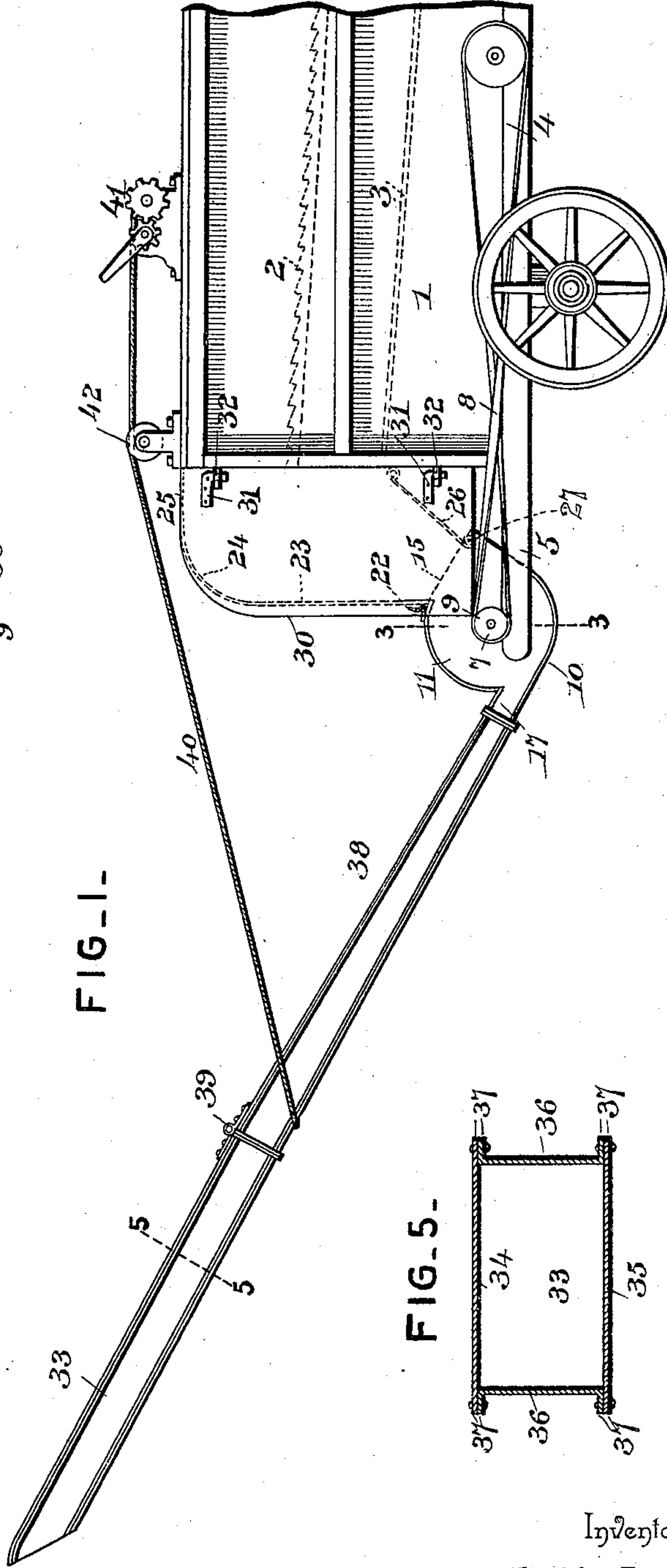
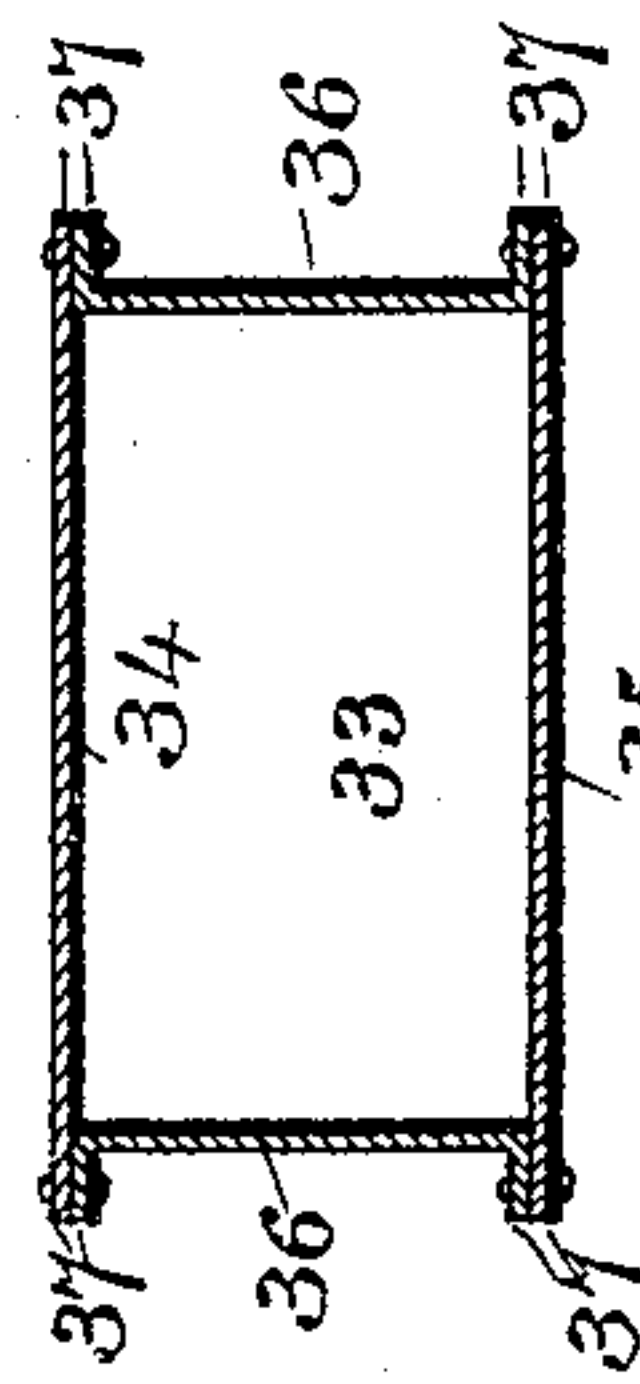


FIG. 5—



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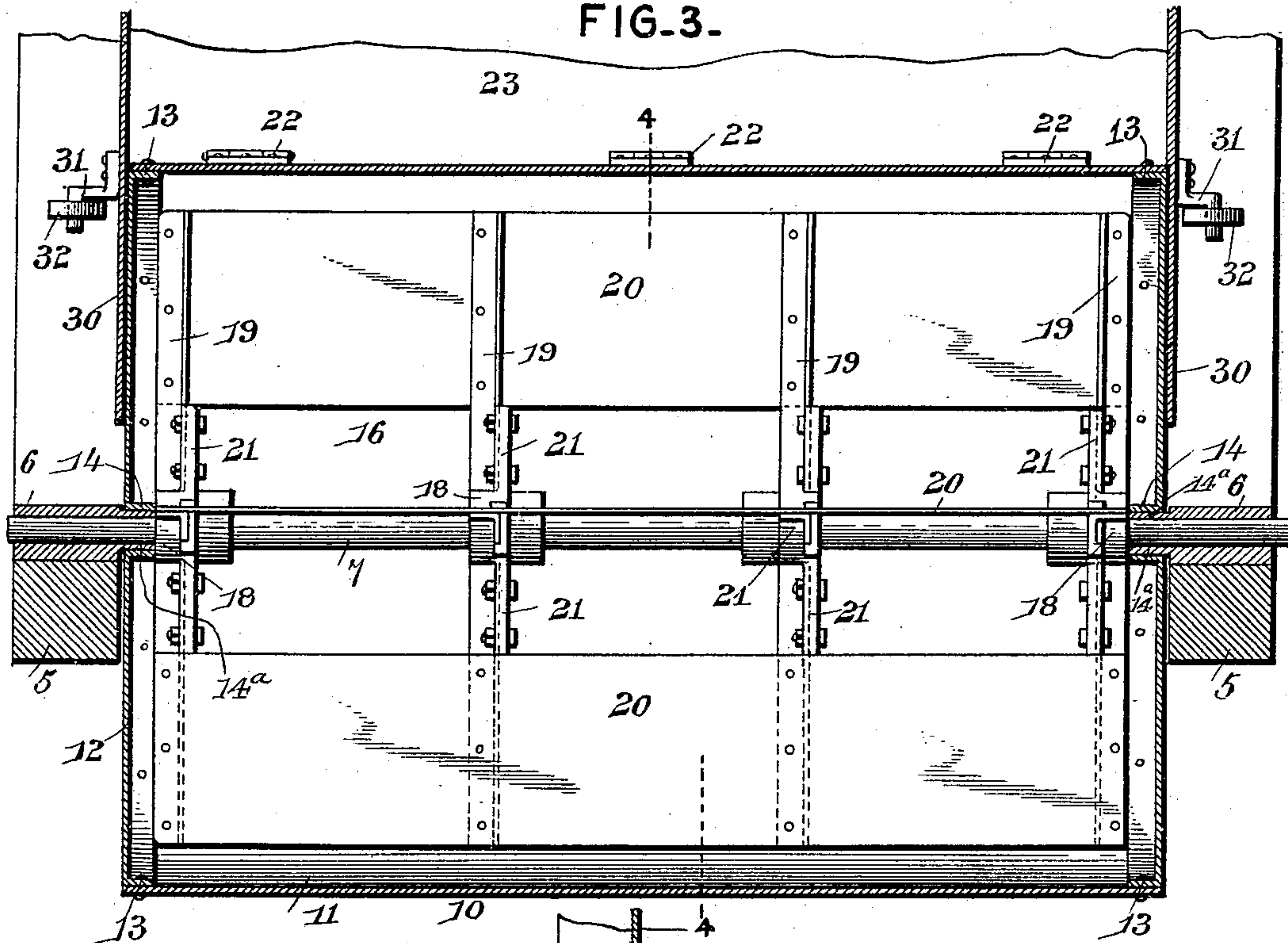
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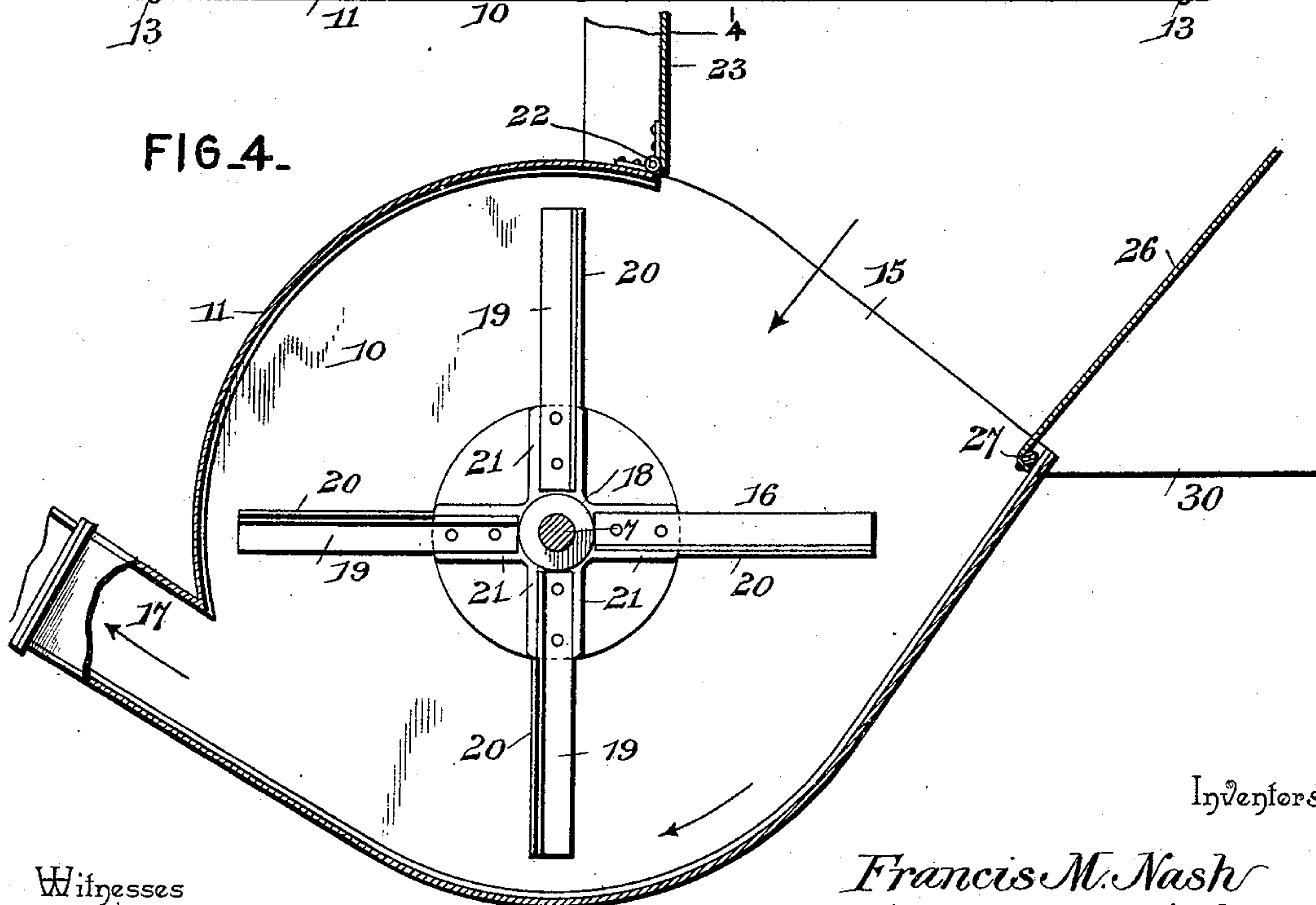
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**2 Sheets—Sheet 2.**

**FIG. 3.**



**FIG 4.**



Inventors

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# UNITED STATES PATENT OFFICE.

FRANCIS M. NASH AND WILLIAM R. NASH, OF MOTLEY, MINNESOTA.

## PNEUMATIC STRAW-STACKER.

SPECIFICATION forming part of Letters Patent No. 618,898, dated February 7, 1899.

Application filed December 1, 1897. Serial No. 660,352. (No model.)

*To all whom it may concern:*

Be it known that we, FRANCIS M. NASH and WILLIAM R. NASH, citizens of the United States, residing at Motley, in the county of Morrison and State of Minnesota, 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 an improved stacker attachment of this character adapted to be used in connection with grain-threshing machines, clover-hullers, rice-threshers, and all machines requiring a stacker to remove and stack the straw after the grain or seed has been separated therefrom.

To this end the invention primarily contemplates a simple and efficient construction of pneumatic-straw-stacker attachment that can be readily handled and manipulated to provide for a proper stacking of the material discharged from the rear end of the separator.

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 the pneumatic-straw-stacker attachment for separating-machines constructed in accordance with this invention. Fig. 2 is a top plan view thereof. Fig. 3 is a transverse sectional view on the line 3 3 of Fig. 1. Fig. 4 is a detail sectional view on the line 4 4 of Fig. 3. Fig. 5 is a detail sectional view on the line 5 5 of Fig. 1.

Referring to the accompanying drawings, 1 designates a separator-machine having therein the usual straw agitator or rack 2 and the sieve 3, diagrammatically illustrated in Fig. 1 of the drawings, and which respectively provide for the delivery of the straw and chaff out of the rear end of the separator in the usual manner. In the present invention the frame-sills 4 of the separator 1 are provided at the rear end of the machine with the rear extensions 5, on the outer extremities of which extensions, beyond the rear end of the casing of the machine, are mounted the bearing-boxes 6, in which are journaled the opposite

extremities of the horizontal fan-shaft 7, which shaft is arranged parallel with the cylinder-shaft and cleaning-fan shaft of the separator-machine, thereby providing an arrangement whereby the fan-shaft 7 of the stacker attachment can be belted directly with any of the horizontal shafts of the separator by means of the belt 8, passing around the driving-pulley 9, mounted on one extremity of the said shaft 7.

The horizontal fan-shaft 7, which is mounted on the outer ends of the rear sill extensions 5, loosely supports thereon the axially-movable cylindrical fan casing or housing 10. The fan casing or housing 10 essentially consists of a circular shell 11 and the opposite end plates 12, which end plates are provided with peripheral inturned flanges 13, which register within and are riveted to the opposite ends of the shell 11, and the said casing end plates 12 are further provided with central inturned journal-collars 14, which loosely receive the fixed supporting-journals 14<sup>a</sup>, which are preferably extended from the inner sides of the bearing-boxes 6, thereby providing for the loose pivotal support of the fan-casing and relieving the fan-shaft from the weight thereof. The horizontal fan casing or housing 10 is of a length equaling the entire transverse width of the separator-machine and is open at its inner upper side to provide the receiving-throat 15, which lies immediately below and beyond the discharging-points of the straw agitator or rack and the sieve 3 of the separator-machine, and by reason of the length of the fan casing or housing the receiving-throat 15 is necessarily of the same length as the width of the separator, so that all the material discharged out of the rear end of the separator will be caught by and drawn within the fan casing or housing by the suction of the revolving fan 16 therein. The revolving fan 16 is also arranged horizontally within the fan casing or housing and parallel with the cylinder of the thresher, and the diameter of the revolving fan is somewhat less than that of the fan casing or housing, so as to allow the straw to pass freely under the fan and out through the discharge-neck 17, formed at the outer lower side of the fan casing or housing. The horizontal revolving fan 16 essentially comprises a series of spider-



hubs 18, secured fast on the horizontal shaft 7, radially-disposed blade-arms 19, extended from said spider-hubs, and horizontal fan-blades 20, secured to said blade-arms and lying parallel with the shaft 7. The blade-arms 19 of the revolving fan preferably are formed of angle-iron and have their inner ends securely bolted at one side of the recessed hub-arms 21 of the spider-hub 18, and the blades 20 preferably consist of iron plates, so as to complete a fan that shall be exceptionally strong and powerful, so as to positively and efficiently do the work required of it.

The cylindrical fan-casing 10, which is free to turn on the fixed supporting-journal 14<sup>a</sup>, has hinged thereto at one side edge of its receiving-throat 15, by means of a series of hinges 22, the lower edge of the metallic hood-plate 23. The metallic hood-plate 23 is arranged directly beyond the rear discharging end of the separator and is provided with an upper curved top portion 24, which is rigidly connected at 25 to the top of the separator-casing, at the extreme rear end thereof, so that said curved top portion 24 will lie directly beyond the discharging-point of the straw agitator or rack and will provide for directing or guiding such straw downward into the throat 15 of the fan-casing. In connection with the upright metal hood-plate 23 is employed an inclined deflecting-apron 26, which loosely engages at its upper end with the rear end of the separator, directly below the plane of the sieve 3 at this point, and the lower end of said inclined apron 26 has a loose pivotal connection 27 within the fan-casing 10 at the side edge of the throat 15, opposite the hinge connection between the said fan-casing and the said metal hood-plate 23.

The upright hood-plate 23 and the deflecting-apron 26 for the chaff form therebetween a combined straw and chaff chute, which directs the straw and chaff directly into the fan-casing irrespective of the suction of the revolving fan, and the opposite open sides of this chute are inclosed by the opposite side doors 30. The opposite side doors 30 are of a greater height and width than the height and width of the chute referred to, so as to completely close in the same and form a suction-chamber wherein the fall of the straw and chaff will be accelerated by the suction of the fan, and at their inner edges the upright side doors 30 have secured thereto hinge-hooks 31, which removably engage in the hinge-eyes 32, secured in the frame-timbers of the separator, at the extreme rear end thereof, and provide a connection between the side doors and the separator whereby the said doors may be readily swung open, so as to give access to the fan and also to the rear end of the separator, as may be necessary from time to time, said side doors being held closed by means of suitable latches.

The discharge-neck 17 of the fan-casing 10 has securely bolted or otherwise rigidly fas-

tened thereto the inner lower end of the inclined tubular stacking-spout 33, which spout essentially consists of top and bottom plates 34 and 35, respectively, and opposite side plates 36, arranged between the side edges of the plates 34 and 35 and provided with out-turned flanges 37, riveted or otherwise suitably secured to the said top and bottom plates to complete the tubular spout, which is rectangular in cross-section, as clearly illustrated in Fig. 5 of the drawings. The inclined tubular stacking-spout 33 is provided with a flared lower portion 38, which is widened out to a width agreeing with the length of the fan-casing 10, so that the contents of said fan-casing may at all times be freely discharged without impediment into and up through the stacking-spout, and the said stacking-spout is further provided at a point intermediate of its inner and outer ends with a hinge-joint 39, which separates the spout into inner and outer portions, the outer of which portions may be readily folded back on top of the inner portion of the spout, so that the latter may be adjusted out of the way as much as possible when not in use.

The stacking-spout 33 has suitably connected thereto at a point directly adjacent to its hinge-joint 39 an adjusting-cable 40, which winds and unwinds on a suitably-operated windlass 41, mounted on top of the separator, and said cable is guided over a guide-roller 42, journaled on top of the separator-casing, at the extreme rear end thereof. By adjusting the windlass 41 the extreme outer end of the stacking-spout may be raised and lowered, according to the requirements of the stack, and in this up-and-down adjustment of the spout it will be obvious that by reason of its rigid connection with the fan-casing said fan-casing will turn on its pivots, so that such fan-casing and stacking-spout always maintain the same relative position to each other. In the adjustment of the inclination of the stacking-spout it will also be observed that the hinge connection between the fan-casing and the lower end of the hood-plate 23 will permit such lower end of the hood-plate to yield inward or outward as the fan-casing turns, and in such movement of the fan-casing it will also be obvious that the inclined deflecting-apron 26 will maintain its loose pivotal connection with the fan-casing at one side of its throat 15, so that whatever the adjusted position of the stacking-spout the throat 15 will always be in position to receive the straw and chaff, and the hood-plate 23 and the apron 26 will maintain the same relative positions with respect to the fan-casing. It will further be noted at this point that the side doors 30 are sufficiently high and wide to provide for properly closing the opposite open sides of the straw and chaff chute irrespective of the adjustment of the stacking-spout.

From the foregoing it is thought that the operation, construction, and many advantages



of the herein-described straw-stacker attachment will be readily apparent to those skilled in the art, and it will be understood that 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, a horizontal axially-movable fan-casing supported at the rear end of a separator-machine and provided in its upper side with a receiving-throat, an upright hood-plate arched over the discharge end of the separator and having a movable connection at its lower end with the fan-casing at one side of its receiving-throat, a fan arranged to rotate within the fan-casing, an inclined stacking-spout rigidly connected with the fan-casing at the discharge-opening thereof, and a pair of oppositely-located upright side doors arranged to cover the open sides of the space communicating with the throat of the fan-casing, substantially as set forth.

2. In a pneumatic straw-stacker, the combination of a chute arranged to cover the rear discharging end of the separating-machine, a horizontal axially-movable fan-casing having a hinge connection with one of the walls of said chute and provided at its inner upper side with a receiving-throat communicating with the chute, a fan arranged to rotate within the casing, and an inclined stacking-spout rigidly connected at its lower end with the fan-casing at the discharge-opening of the latter, substantially as set forth.

3. In a pneumatic straw-stacker, a horizontal fan-casing supported at the rear end of a separator-machine and provided in its upper side with a longitudinal receiving-throat, an upright hood-plate arched over the discharge end of the separator and hinged at its lower end to the rim of the fan-casing at one side edge of the receiving-throat, a revolving fan arranged within the fan-casing, and an inclined stacking-spout extended from the discharge-opening of the fan-casing, substantially as set forth.

4. In a pneumatic straw-stacker, a horizontal axially-movable fan-casing supported at the rear end of a separator-machine and provided in its upper side with a receiving-throat, an upright hood-plate arranged over the discharge end of the separator and having a hinge connection between its lower edge and the fan-casing at one side edge of the receiving-throat, an inclined deflecting-plate extending into the throat of the fan-casing at a

point opposite the connection of the hood-plate therewith, a rotary fan mounted within the fan-casing, and an inclined stacking-spout extended from the discharge-opening of the fan-casing, substantially as set forth.

5. In a pneumatic straw-stacker, a horizontal fan-casing supported at the rear end of the separator-machine and provided in its upper side with a receiving-throat, a hood-plate arranged over the rear end of the separator and connecting with the fan-casing at one side edge of its receiving-throat, an inclined deflecting-apron extending into the throat of the fan-casing opposite the lower end of the hood-plate, opposite upright side doors arranged over the open sides of the chute inclosed between the hood-plate and the deflecting-apron, and an inclined stacking-spout extended from the discharge-opening of the fan-casing, substantially as set forth.

6. In a pneumatic straw-stacker, the combination with oppositely-arranged fixed supporting-journals, of a horizontal cylindrical fan-casing arranged beyond the rear end of a separating-machine and provided at its opposite ends with journal-collars receiving said journals, at its upper inner side with a receiving-throat of a length equaling the width of the separator, and at its outer lower side with a discharge-neck, a horizontal revolving fan arranged to rotate within the fan-casing, the horizontal shaft of said fan being journaled in suitable bearings at the rear end of the separator-machine, an upright hood-plate arranged beyond the discharging end of the separator and provided with a curved top portion rigidly fastened to the top of the separator-casing, the lower edge of said hood-plate having a hinge connection with the fan-casing at one side edge of its receiving-throat, an inclined deflecting-apron having a loose pivotal connection at its lower end with the fan-casing at one side edge of its throat, opposite upright side doors having a hinge connection at their inner edges with the rear end of the separator and adapted to be swung over the open sides of the chute inclosed between the hood-plate and deflecting-apron, and an adjustable inclined stacking-spout connected at its lower inner end with the discharge-neck of the fan-casing, substantially as set forth.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in the presence of two witnesses.

FRANCIS M. NASH.

WILLIAM R. NASH.

Witnesses:

WILLIAM PENNAR,  
ANNA E. OLIVER.