

No. 676,482.

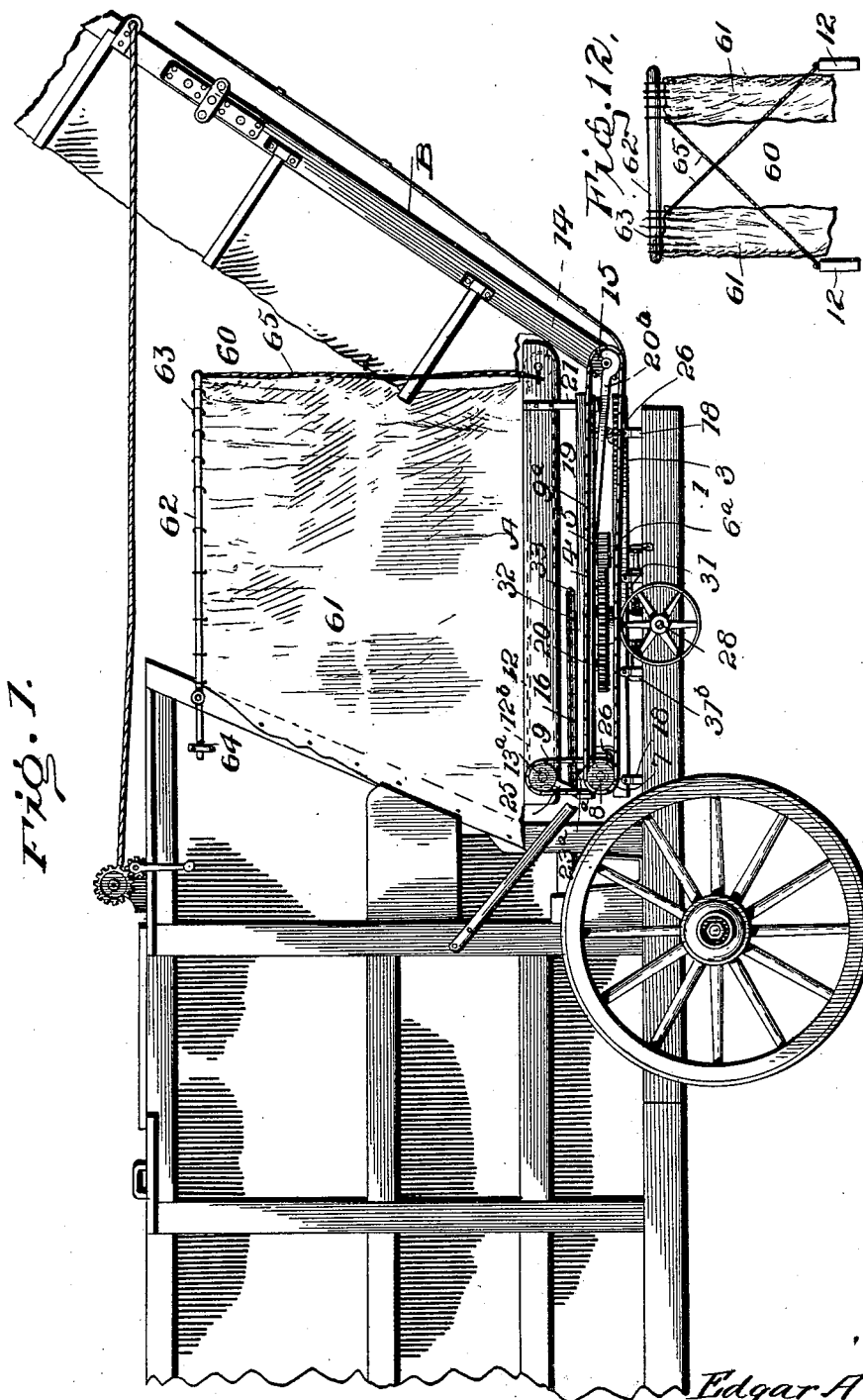
Patented June 18, 1901.

E. A. WRIGHT.
STRAW STACKER.

(Application filed July 3, 1899.)

6 Sheets—Sheet 1.

(No Model.)



Witnesses
John M. ...
Edwin L. Bradford

Inventor
Edgar A. Wright
by *H. H. Bliss*
Attorney

No. 676,482.

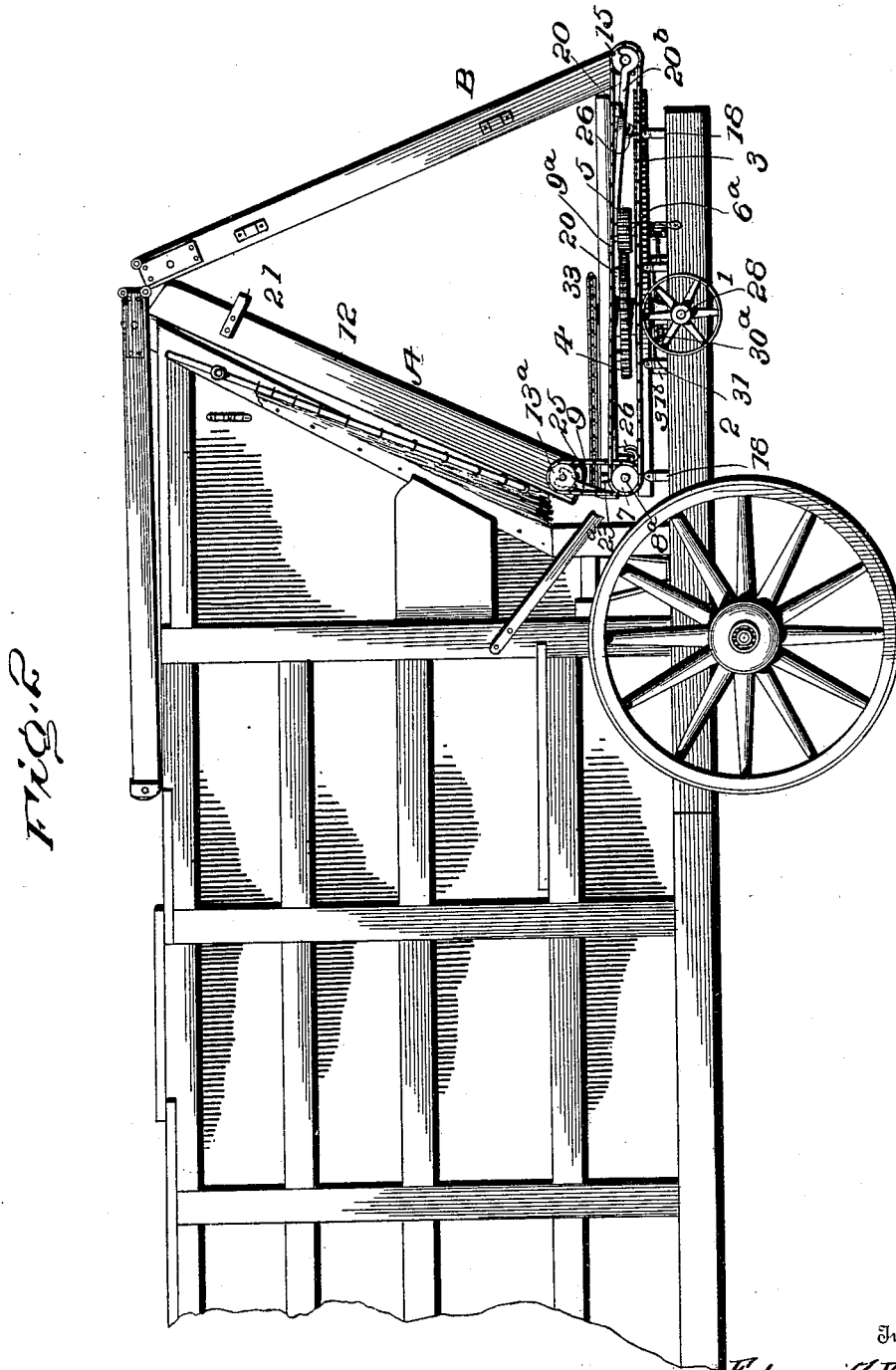
Patented June 18, 1901.

E. A. WRIGHT.
STRAW STACKER.

(Application filed July 3, 1899.)

6 Sheets—Sheet 2.

(No Model.)



Witnesses

Johnnie
Edmund L. Bradford

Inventor

Edgar H. Wright
by *N. H. Bliss*
Attorney

No. 676,482.

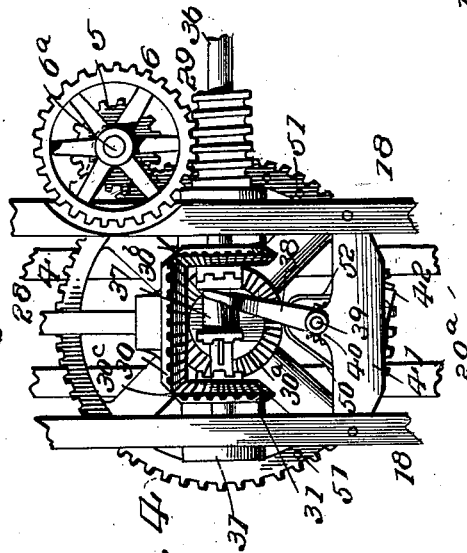
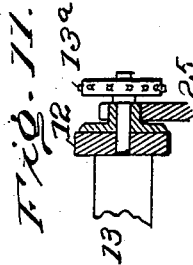
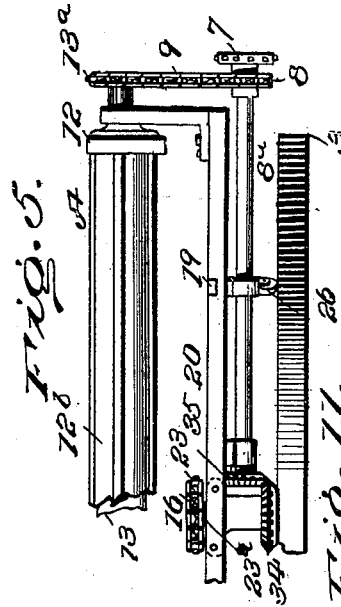
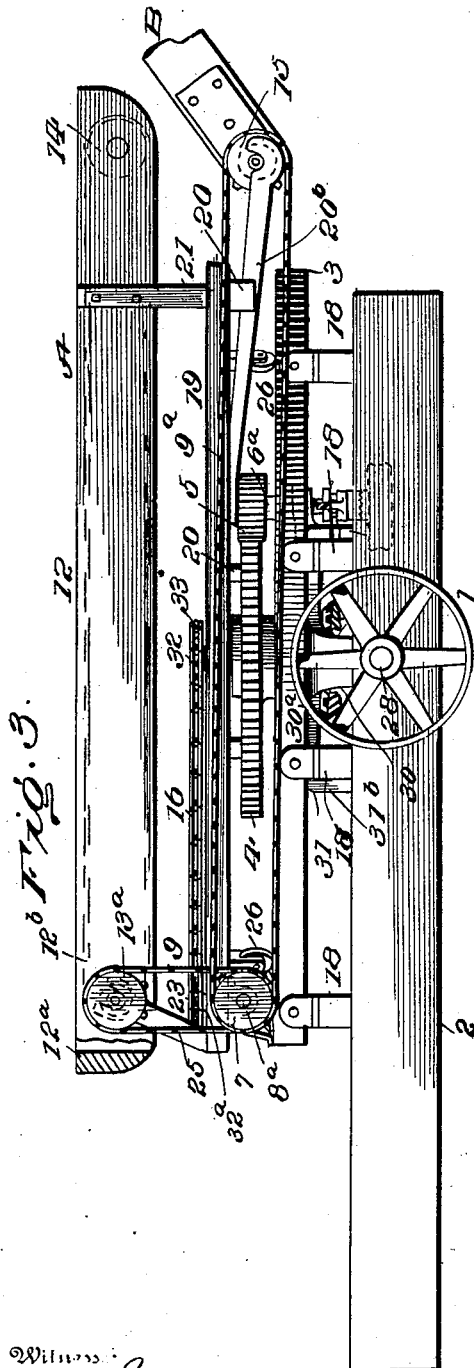
Patented June 18, 1901.

E. A. WRIGHT.
STRAW STACKER.

Application filed July 3, 1899.)

(No Model.)

6 Sheets—Sheet 3.



Witness:
for Inve
Edwin L. Bradford

Inventor
Edgar A. Wright
by A. H. Bliss
Attorney

No. 676,482.

Patented June 18, 1901.

E. A. WRIGHT.
STRAW STACKER.

(Application filed July 3, 1899.)

6 Sheets—Sheet 4.

(No Model.)

FIG. 6.

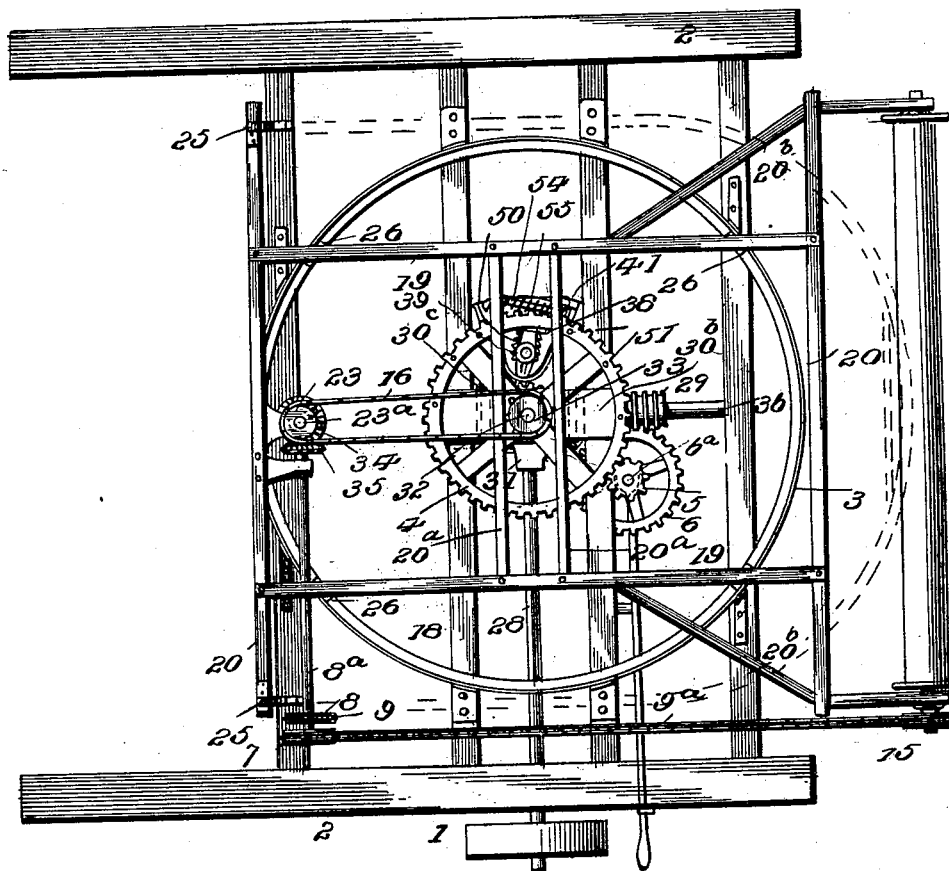
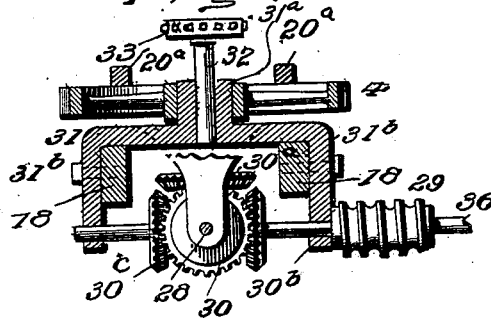


FIG. 7.



Witnesses

For minor
Edwin L. Bradford

Inventor

Edgar A. Wright
by *H. H. Blise*
Attorney

No. 676,482

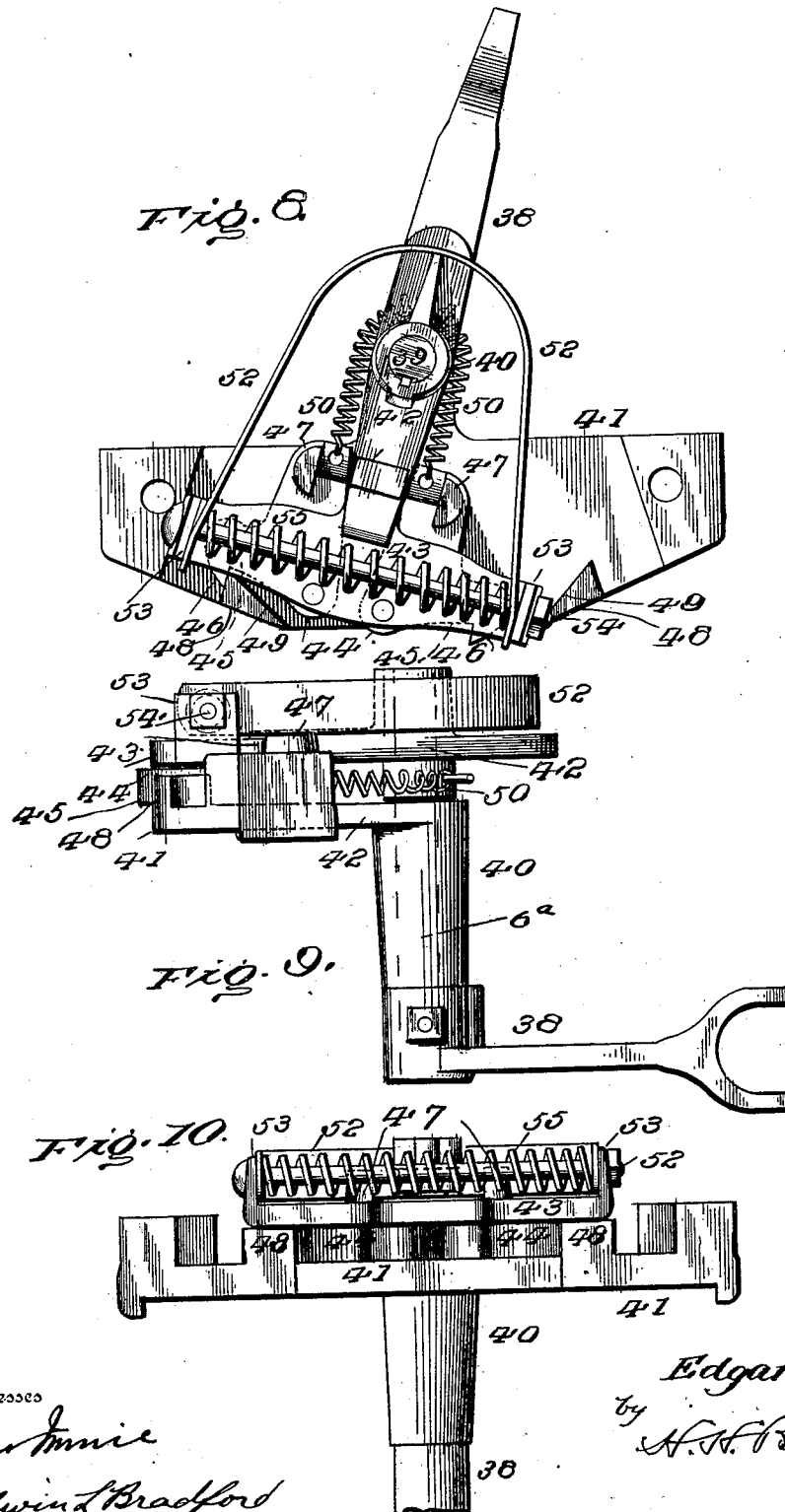
Patented June 18, 1901.

E. A. WRIGHT.
STRAW STACKER.

(Application filed July 3, 1899.)

6 Sheets—Sheet 5.

(No Model.)



Witnesses

Johnnie
Edwin L. Bradford

Inventor

Edgar A. Wright

by

A. H. Bliss
Attorney

No. 676,482.

Patented June 18, 1901.

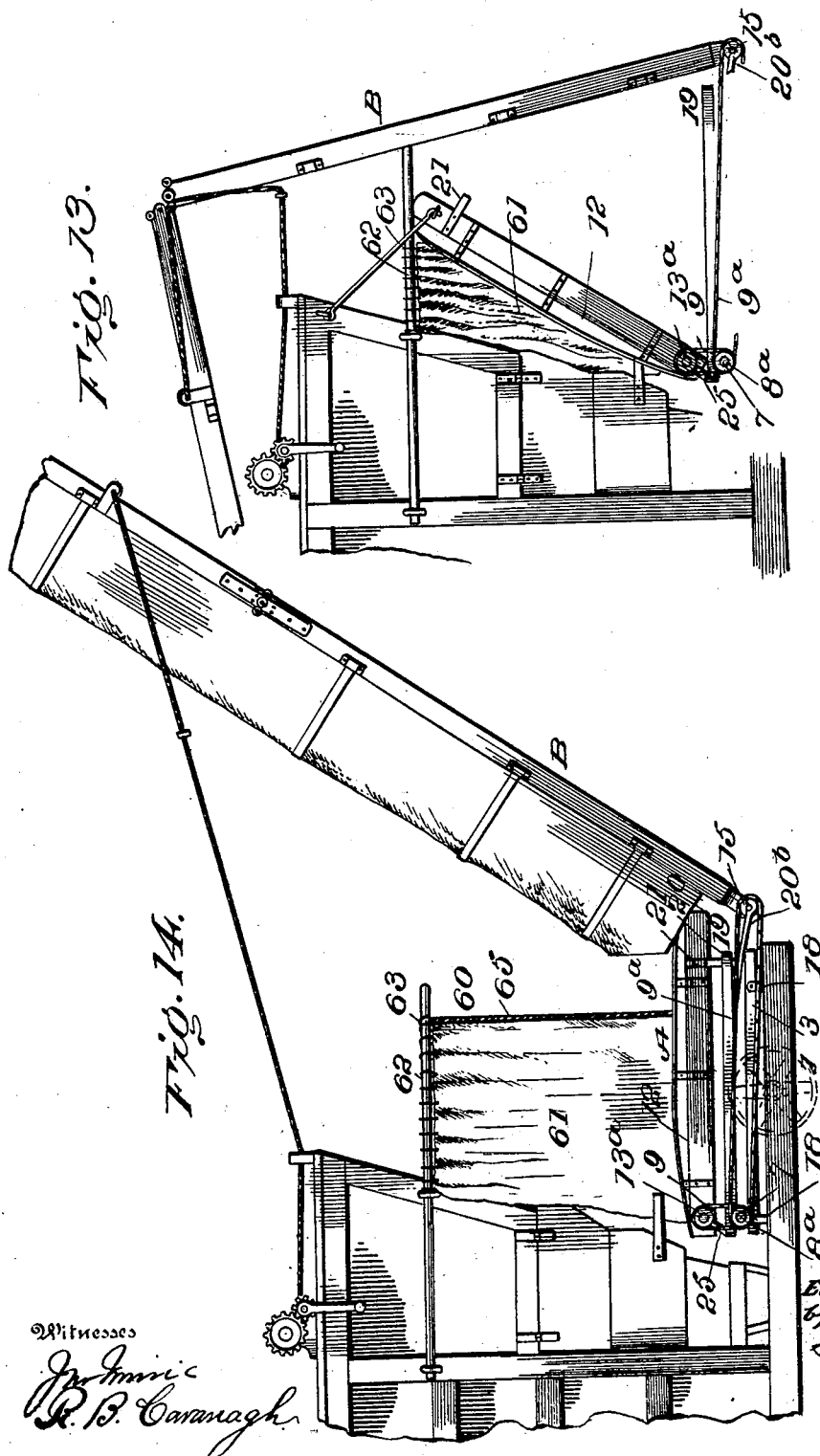
E. A. WRIGHT.

STRAW STACKER.

(Application filed July 3, 1899.)

6 Sheets—Sheet 6.

(No Model.)



Witnesses

J. J. Smith
R. B. Carranagh

Inventor
Edgar A. Wright
by
H. H. Bliss

Attorney

UNITED STATES PATENT OFFICE.

EDGAR A. WRIGHT, OF CANTON, OHIO, ASSIGNOR TO THE AULTMAN
COMPANY, OF SAME PLACE.

STRAW-STACKER.

SPECIFICATION forming part of Letters Patent No. 676,482, dated June 18, 1901.

Application filed July 3, 1899. Serial No. 722,736. (No model.)

To all whom it may concern:

Be it known that I, EDGAR A. WRIGHT, a citizen of the United States, residing at Canton, in the county of Stark and State of Ohio, have invented certain new and useful Improvements in Straw-Stackers, of which the following is a specification, reference being had therein to the accompanying drawings.

Figure 1 is a side elevation of a portion of a grain threshing and separating mechanism and of a straw-stacker embodying my improvements. Fig. 2 is a side elevation of the same, showing the parts folded up for storage or transportation. Fig. 3 is a side view of the lower parts of the stacker on a larger scale. Fig. 4 is a plan view of the gearing and clutch at the center of the rotary frame. Fig. 5 is a rear view of parts of the apron or carrier driving mechanism. Fig. 6 is a plan view showing the main frame and some of the movable parts above it. Figs. 7 to 11 show details. Fig. 12 is a front view of the flexible curtains at the side of the horizontal carrier. Figs. 13 and 14 illustrate a modification in the supporting devices for the carrier.

In the drawings I have shown the rear part of a thresher and separator of one of the sorts adapted to have my improvements applied thereto.

From the bottom part of the main frame of the machine there extends backward a lower rigid frame formed of the sills 2 2, rigidly secured to the main frame, together with cross-girths of suitable number and material, as shown at 18 18. Upon this main bottom frame are supported the movable frames and the operative parts.

31 indicates a bracket or frame casting secured to the main bottom frame at the place where the central parts of the horizontally-movable frames are to be put. It comprises vertical legs or plates, which are secured to the bottom frame, an upward-rising tubular bearing 31^a, and downward-extending bracket-arms 31^b for supporting some of the movable parts. The main horizontally-swinging frame is composed of the longitudinal bars 19, connected together by cross-bars 20 20^a, together with bars 20^b, which serve as inclined braces and also provide at their front ends bearings

for the rear stacker elevator section. There is a ring or circular track 3 of relatively large radius secured to the bottom stationary frame. Upon this track or ring rest supporting-rollers 26, which are mounted in suitable supports on the under side of the rotary frame 19 20. At the center of the rotary frame is the relatively large toothed ring or wheel 4, the boss or hub of which rests upon the aforesaid frame-bracket 31 on the stationary frame. It is rigidly secured to the bars 20^a, lying above it.

Upon the rotary frame are mounted the two sections A and B of the straw carrier and stacker. The inner section is normally horizontal when at work, it being formed with the sides 12 and the rear end wall 12^a, within which is arranged the endless carrier 12^b. The latter is supported upon and rotates with the rollers 13^a and 14. The shaft or spindles of the roller 13^a rest in bearings which are mounted upon the supporting-standards 25, which rise from the inner end of the rotary frame. At the front end the carrier A is supported by means of legs 21, which rest upon the outermost cross-bar 20 of the rotary frame. The outer longer inclined carrier-section B may be made in the usual way, having the side bars suitably joined and with the rollers at the top and bottom and the endless carrier supported thereon. At its lower end it is supported on the rotary frame by bearing-pieces at the axis of the lower roller resting in the supports provided by the aforesaid bars. The endless belts on the sections A and B of the stacker are driven by the chains 9 and 9^a, the chain 9 extending from the sprocket-wheel 13^a on the hinge-axis of the carrier-section A down to the sprocket-wheel 7 on the shaft 8^a, mounted transversely of the rotary frame, and the chain 9^a extending from the sprocket-wheel 7 on the last said shaft to the wheel 15 on the hinge-axis of the outer carrier-section. Power is transmitted to the said chains 9 and 9^a as follows:

28 is the main drive-shaft, mounted so as to extend or lie transversely of the machine on the lower stationary frame. At its inner end near the vertical axis of rotation of the upper frame it carries a bevel-wheel 30.

This engages with the bevel-wheel 30^a, the shaft 32 of which passes upward through the hub or tubular bearing 31^a on the stationary frame. At the other end of this shaft there is a sprocket-wheel 33, which is connected by the chain 16 with a sprocket-wheel 23 on shaft 23^a. This shaft carries a bevel-wheel 34, which engages with the wheel 35 on the afore-said shaft 8^a.

Through the train of devices just described power is transmitted from the belt-wheel 1 to the sprockets and chains which engage with and actuate the rollers of the stacker-sections A and B. Provision is also made for oscillating the frame 19 and 20 simultaneously with the movements of the straw-carrying belts as follows:

36 is a shaft mounted on the main stationary frame, it having two loose bevel-wheels 30^b 30^c. These wheels both engage with the main driving-bevel 30 and are continuously rotated thereby in opposite directions.

37 indicates a clutch adapted to engage with either of the wheels 30^b or 30^c. On the shaft 36 there is a worm 29, which meshes with the worm-wheel 6 on the vertical shaft 6^a, that at its upper end carries a pinion 5, which engages with the above-described toothed ring 4. When the clutch 37 is in engagement with the wheel 30^c, the worm and worm-wheel will turn the oscillating parts in one direction; but when it engages with the wheel 30^b the frames will be turned in the opposite direction. The clutch is automatically moved from one beveled wheel to the other as follows:

38 is the shipping-lever, engaging with the clutch. It is secured to a vertical shaft 39, which is mounted in a bearing 40, supported by the base-plate 41. At the upper end the shaft 39 is secured to a crank 42, having a cross head or bar 43.

44 44 are dogs pivoted to the crank-arm or its cross-head, each of these being formed with a hook at 45, a cam-surface at 46, and an upward-extending lug 47. The dogs are arranged oppositely to each other. At 48 there are cam-lugs on the bracket-plate, having their surfaces 49 situated in the path of the cams. The hook parts of the dogs are normally held in their outmost positions by means of springs 50. To release the dogs from the locking-lugs 49, use is made of trip-pins 51, inserted in the toothed ring or wheel 4. These trip-pins can engage directly with the dogs to release the clutch-lever 38 and with the crank-arm 42 to throw the clutch; but I have provided a mechanism for attaining superior results in this connection, as follows:

52 indicates frames or bars lying in the path of the trip-pins 51. Preferably they are formed integrally as the legs of a loop or stirrup, as shown, bent from elastic metal. They are confined in position by lugs 53 at the ends of the cross-bar 43 and are held by the pivot-

rod 54. When one of the trip-pins 51 is moved toward its dog 44, it first impinges upon one of these elastic bars 52 and must bend it, and thereby store up force in the loop before it (the pin) reaches the dog 44, and it continues to press against the elastic bar until it has moved the lug 47 far enough to release the dog from the catch-lug 48. The instant that the dog is released the force stored in the spring-bar exerts itself and the crank 42 and its attached parts, including the shipping-lever, are quickly and powerfully thrust into their opposite positions, bringing the clutch into engagement with the opposite bevel-wheel 30^b or 30^c, whereupon the rotary motion of the revolving frame is stopped and its motion in the opposite direction is commenced, causing the pin 51, just referred to, to reverse its direction. As the crank 42 and the cross-bar 43 move in the way last described under the pressure of the trip-pins and the expansion of the spring the cam-face 46 on the other dog impinges on the cam-face 49 of the other stop-lug 48, and these move the hook end of the dog inward until it passes the point of the lug 48, and thereupon the spring 50 immediately throws the hook of the dog outward to engage with the lug and lock the crank and the shipping-lever from movement. This locked condition is maintained until the opposing trip-pin (which has now started in its movement toward the clutch-throwing devices) impinges upon the other elastic arm 52, after which a series of steps will occur similar to those above described, resulting in the reversing again of the clutch.

To supplement the elastic action of the parts at 52, I prefer to place between their ends a coiled spring 55, it being around the rod 54.

Devices of this character for throwing the clutch are positive and reliable, avoiding the uncertainty which has been incident to other mechanisms and insuring that the clutch shall be completely thrown the entire distance necessary to effect the reversing.

I am aware that in stackers with reversible driving mechanisms for the stacker-frame use has been made of a clutch, a clutch-throwing lever, and a spring adapted to exert draft or pressure upon the clutch-lever on both sides of the central position of the lever and that the spring has been so arranged that the stacker-frame would energize the spring as the central or half-way point was reached and that the increased energy would be exerted upon the lever after the central position was reached and throw the lever to the other end of its throw; but I believe myself to be the first to have provided a clutch-throwing mechanism for such machine in which use was made of a lever and spring, with suitable adjuncts, so related that the spring shall transmit to the lever all of the force which throws it and yet be held by a

positively-acting lock which must be released before the spring can exert force upon it. Such a mechanism enables me to secure the desired movements of the clutch very quickly and with great force and in such way as to guard against any accidental throwing of the lever at a wrong instant, as sometimes results from the slack in the gearing or the lost motion in the parts. The positive lock and the devices for releasing it are so placed and related to the others that the lever will not be thrown until the desired instant and when thrown will move with the full force of the spring, both ends being under compression.

15 With the carriers above described I combine a peculiarly-arranged curtain or flexible shield for preventing the wind from carrying the straw out of line as it descends from the straw-tables in the separator. This curtain 20 or shield is indicated, as a whole, by 60. It is made in two parts 61 61, one at one side and the other at the other side of the machine. They are supported upon a rod or bar 62 by means of rings 63 or equivalent carriers. The rod or bar 62 has a curved part 25 bent on a line substantially concentric with the axis of rotation of the stacker and having its legs adjustably secured to the separator-frame, as at 64. The curtain-sections 30 61 61 are made quite "full." Their upper edges are free to move along the curved rod 62, except that the parts which are adjacent to the separator-frame are preferably fastened stationarily. The curtains at their 35 outer edges are left separate somewhat, so as to permit the straw to be readily carried by the horizontal carrier and delivered to the vertical carrier. 65 is a cord or rope connected to the curtain-sections near their upper 40 edges and also connected to the horizontally-swinging frame. When the frame moves in one direction around its axis, the draft exerted by the cord 65 causes the curtain to slip around on the rod 62 in the direction of the motion of the frame, one curtain-section 45 becoming relatively taut and the other relatively full. Then when the stacker-frames are reversed the cord exerts draft upon the curtains in the opposite direction and the rings and curtains slip around toward the 50 other side of the machine guided by the rod 62.

If desired, two cords can be employed, one extending from the left-hand curtain-section toward the right-hand side of the frame below and the other extending from the right-hand curtain to the left side of the frame.

When the machine is to have its parts packed together or folded up for transportation, the curtains and curtain-rods can be detached or swung downward and inward, as shown in Fig. 2, as the supporting devices for the rod 64 may include a hinge, as indicated in the drawings; but in this respect there can be modification, for, as shown in Figs. 13 65 and 14, the supporting and guiding rod for the curtains is permanently stationary, and in this case the dimensions of the carrier-

frame are such as to permit the folding of the parts without interference with or from the curtain-support.

What I claim is—

1. In a straw-stacking mechanism, the combination of a stationary frame, a rotary frame on the stationary frame a horizontal straw-carrier section on the rotary frame having its 75 inner end hinged to said rotary frame, an outer rear carrier-section hinged to the outer end of the rotary frame, carriers on the said carrier-section, independent driving devices for each carrier, whereby the outer end of 80 the horizontal carrier is left free relative to the outer carrier, power-transmitting devices at the axis of rotation of the rotary frame for actuating the carrier-driving devices, means for rotating the rotary frame also at 85 the said axis, means for automatically reversing the movement of the rotary frame, and a main power-shaft actuating both of said sets of devices at the axis, substantially as set forth.

2. The combination, of the lower stationary frame, the rotary frame on the stationary frame, the inner carrier-section on the rotary frame hinged at its inner end, the outer carrier-section independently hinged to the rotary frame, the gearing at the axis of rotation of the rotary frame for rotating it, and rotating therewith, the means for driving the carriers of said carrier-sections, independently of each other, the power devices at said axis 100 for actuating the carrier-drivers, the clutch for reversing the movement of the rotary frame, the stationary worm and worm-wheel interposed between the clutch and the rotating gearing, substantially as set forth.

3. In a straw-stacking mechanism, the combination, of the stationary frame, the reversible rotary frame, the straw-carrying devices supported on the rotary frame, a driving mechanism for the carriers on the rotary 110 frame, two oppositely-moving wheels for rotating the rotary frame, a clutch adapted to alternately engage with the said wheels, a clutch-thrower a lock for the clutch-thrower, a trip on the rotary frame to release said lock, 115 and a spring movable with the clutch-thrower and interposed between the trip and the lock, substantially as set forth.

4. In a straw-stacking mechanism, the combination, of the reversible rotary frame, the 120 straw-carriers supported thereby, means for rotating said frame in one direction, means for rotating it in the opposite direction, a clutch for alternately bringing the two rotating means into and out of action, the 125 clutch-thrower, the lock therefor, a trip for the lock on the rotary frame operative when moving in one direction, a second trip, on the rotary frame operative when moving in the opposite direction, and a spring movable with 130 the clutch-thrower, and arranged substantially as set forth to be impinged upon by either of said trips prior to the latter releasing the lock substantially as set forth.

10. In a straw-stacker, the combination with the separator-frame, of a lower stationary frame, a swinging frame mounted upon the latter, a carrier for the straw mounted upon the said swinging frame, flexible curtains for directing the straw from the separator to the straw-carrier, the said curtains being attached at their forward ends to the separator-frame and at their rear ends attached to the rotary frame, whereby as the said frame is moved the rear ends of the said curtains move in substantial correspondence therewith, the rear ends of the curtains being separated.

16. In a straw-stacker, the combination with the reversible rotary stacker-frame and its support, of the reversible driving mechanism for the frame, a reversing shifter for the said mechanism, a spring arranged to move the said shifter, a movable abutment against which the spring bears, a lock for holding the said abutment and preventing the spring from acting upon the shifter, and means for put-

ting the spring under tension and for tripping the said lock whereby the movable abutment is released and the spring permitted to move the shifter, substantially as set forth.

5 17. In a straw-stacking mechanism, the combination with the reversible rotary stacker-frame and its support, of the reversible driving-gearing for the said stacker-frame, a swinging reversing shifter therefor, a spring
10 arranged to move the said shifter and having an abutment carried by the said shifter, a lock for holding the said abutment stationary while the spring is being put under tension, means carried by the stacker-frame for putting the spring under tension while locked,
15 and a trip for releasing the lock after the spring has been put under tension, whereby the abutment of the spring is freed and the latter is allowed to move the shifter, substantially as set forth.

18. In a straw-stacking device, the combination of a lower stationary frame, a rotary frame mounted thereon, a substantially horizontal straw-carrier on the rotary frame, an
25 outer straw-carrier section hinged to the outer end of the rotary frame, power-transmitting devices mounted upon the lower stationary frame and extending to the axis of rotation of the rotary frame, gearing mechanism situated substantially in the central longitudinal
30 plane of the rotary frame when in its normal or mid position and extending from its axis of rotation rearward, a transverse shaft driven by the said gearing mechanism arranged in the rear portion of the rotary frame, and driving-gearing extending from said shaft to the carriers and operating to drive the same, substantially as set forth.

19. In a straw-stacker, the combination,
40 with the horizontally-swinging straw-stacker, and the separator-casing, of the flexible curtain or shield supported upon the separator-casing and arranged to extend around the axis of motion of the carrier, and means for adjusting the central portion thereof intermediate of the parts adjacent to the separator-casing bodily around said axis, substantially as set forth.

20. In a straw-stacker, the combination,

with the horizontally-swinging carrier, the
50 separator, the separator-casing, of the flexible curtain or straw-shield extending from one side of the separator-casing backward, then across the vibrating carrier, and then back to the other side of the separator-casing,
55 and means for adjusting the central part thereof intermediate of the parts adjacent to the separator-casing bodily transversely of the longitudinal lines of the separator, substantially as set forth.

21. In a straw-stacker, the combination, with the horizontally-adjustable carrier, the separator and separator-casing, of the flexible curtain or straw-shield situated above the swinging carrier with its end parts held
65 stationary relative to the separator-casing and its central part arranged above the central part of the outer end of the swinging carrier, and means for moving said central part of the curtain laterally in correspondence
70 with the swinging movements of the carrier, substantially as set forth.

22. In a straw-stacker, the combination with the horizontally-swinging carrier, and the separator-frame, of the curtain-supports
75 secured to the separator-frame and projecting rearward therefrom over the swinging carrier, and the curtain or straw-guide having its upper part adjustably connected to the said support, and means for connecting said
80 curtain to the swinging carrier, substantially as set forth.

23. In a straw-stacker, the combination, with the horizontally-swinging carrier and the separator-frame, of the curtain or straw-
85 shield supported from the separator-casing and connected to the swinging carrier, substantially as set forth, whereby the outermost portion of the curtain is moved in correspondence with the movement of the swinging carrier.

In testimony whereof I affix my signature in presence of two witnesses.

EDGAR A. WRIGHT.

Witnesses:

PRIMUS PHILIPPI,
W. R. BAXTER.