

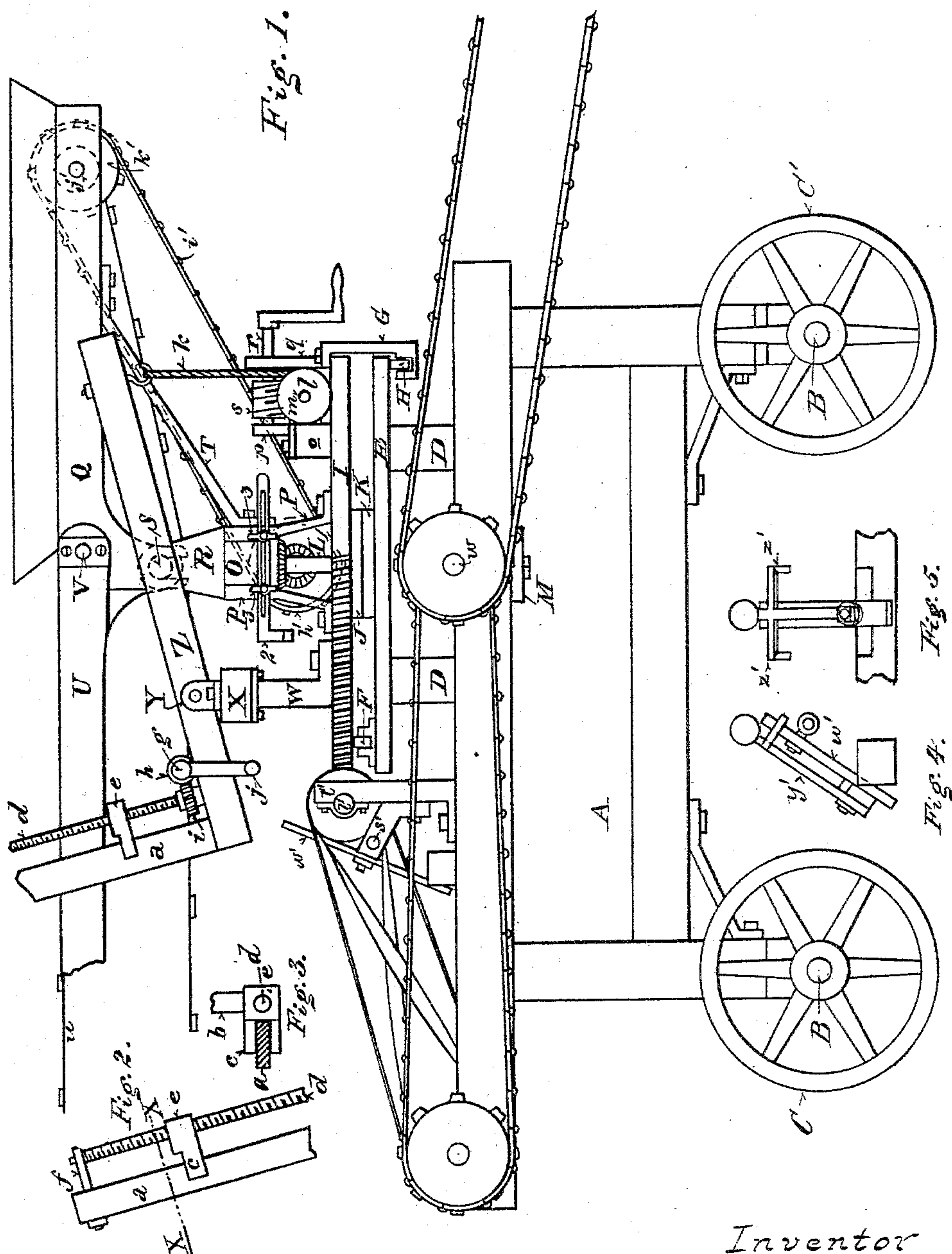
(No Model.)

3 Sheets—Sheet 1.

J. M. SMITH.
STRAW STACKER.

No. 412,303.

Patented Oct. 8, 1889.



Witnesses
Warren Hull,
H. M. Plaisted.

Inventor
Joshua M. Smith,
By H. A. Coulman,
His Attorney.

(No Model.)

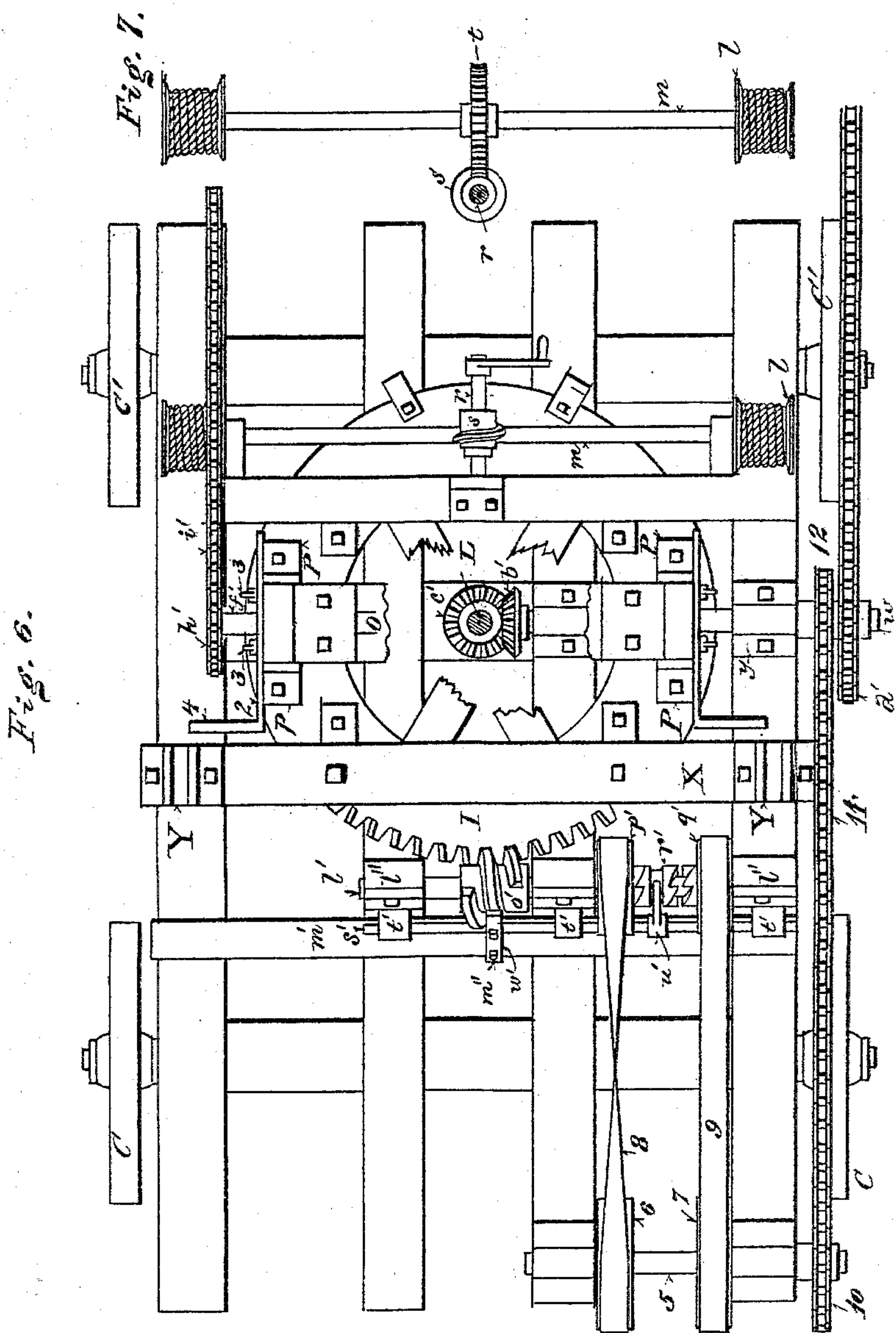
3 Sheets—Sheet 2.

J. M. SMITH.

STRAW STACKER.

No. 412,303.

Patented Oct. 8, 1889.



Witnesses
Warren Hull,
H. N. Plaisted.

Inventor
Joshua M. Smith,
By H. A. Tailor,
His Attorney.

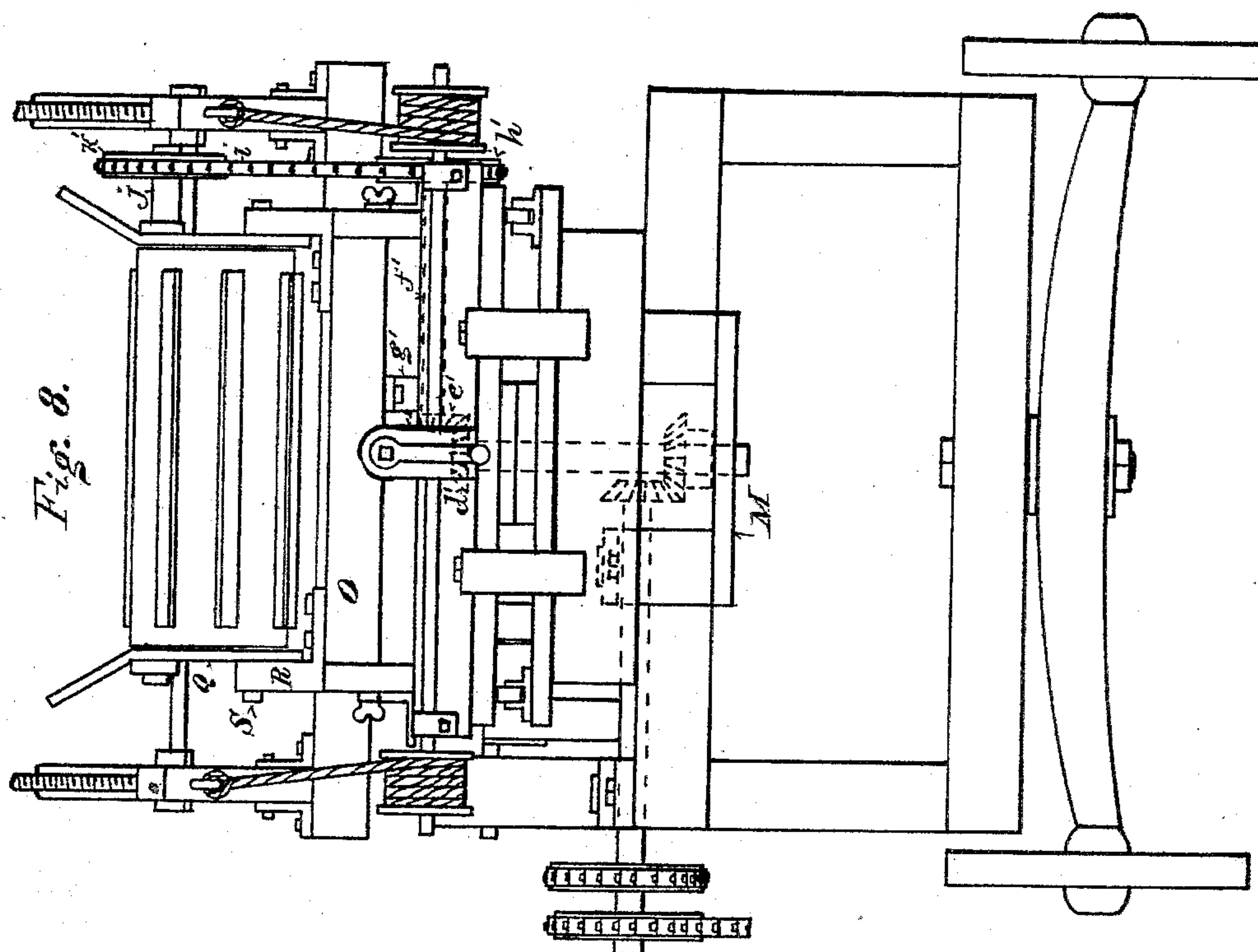
(No Model.)

3 Sheets—Sheet 3.

J. M. SMITH.
STRAW STACKER.

No. 412,303.

Patented Oct. 8, 1889.



Witnesses
Warren Hull.
H. M. Plaisted.

Inventor
Joshua M. Smith,
By H. A. Coulman,
His Attorney.

UNITED STATES PATENT OFFICE.

JOSHUA M. SMITH, OF SPRINGFIELD, ASSIGNOR OF ONE-HALF TO CHARLES F. WOLFE, OF MOOREFIELD, OHIO.

STRAW-STACKER.

SPECIFICATION forming part of Letters Patent No. 412,303, dated October 8, 1889.

Application filed June 10, 1889. Serial No. 313,652. (No model.)

To all whom it may concern:

Be it known that I, JOSHUA M. SMITH, a citizen of the United States, residing at Springfield, in the county of Clark 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.

This invention relates to certain new and useful improvements in straw-stacking machines; and the improvements have reference to the organizations, combinations, and constructions hereinafter more fully described, and pointed out in the claims.

In the accompanying drawings, forming a part of this specification, and in which like reference-letters indicate corresponding parts; Figure 1 represents a side elevation of my improved machine with a part of the carrier and its frame broken away; Fig. 2, a detail elevational view of a part of the carrier-adjusting mechanism; Fig. 3, a sectional view on the line *xx* of Fig. 2; Fig. 4, a detail side view of the clutch-shifting mechanism; Fig. 5, a rear view of the same; Fig. 6, a detail plan view of the machine with the elevator and the immediate adjuncts removed; Fig. 7, an elevation of part of the carrier-elevating mechanism, and Fig. 8 a front elevation of the machine.

The letter A designates a stout rectangular frame mounted upon the axles B, fitted to wheels C C', the latter being the forward wheels. Upon this frame are fitted transverse sleepers D, and upon these sleepers is constructed an annular platform E, which carries supporting-rollers F and serves as a track for the supporting-hanger G and roller H. These rollers F and H serve to support the outer portion of the master-wheel I, so that it will not rock on its bearing-plates J and K, the latter being supported by the platform E. This master-wheel supports the carrier-frame, the hopper-frame, and numerous other devices which move with the carrier-frame when the latter is swung from side to side; hence the necessity for providing for a staunch mounting for this master-wheel. The king-bolt for the master-wheel is constituted of the vertical shaft L, to be hereinafter referred to, and mounted in a step M and

the sill O, the latter being supported by the standards P, secured to the master-wheel. The hopper-frame Q is supported by stout lugs R, carrying pins S, and secured upon the sill O, as seen in Figs. 1 and 8. A bar T braces the frame Q to the sill O, as seen in Fig. 1. The carrier-frame U is pivotally connected at V with the hopper-frame, and is otherwise supported by its adjusting and elevating mechanism, now about to be described. Standards W, also carried by the master-wheel I, support a cross-beam X, having brackets Y, to which are pivoted levers Z, one at each side. The rear ends of these levers carry perpendicular extensions *a*, braced together by a transverse bar *b*, having jaws *c*, which slidably embrace the said extensions. Screw-threaded adjusting-rods *d* are mounted upon the levers Z and pass through the screw-threaded apertures in the heads *e* of the bars *b*, as seen in Figs. 1, 2, and 3, the upper ends of said rods being guided by the brackets *f*, carried by the upper ends of the perpendicular extensions or bars *a*. A transverse shaft *g*, mounted upon the levers Z, has worms *h*, which mesh with the worm-gears *i*, carried by the rods *d*. By rotating a crank *j* on the shaft *g* the rods *d* are rotated and the transverse bars *b* raised or lowered and the carrier-frame correspondingly raised or lowered, said frame resting upon said transverse bar *b*. Thus the carrier-frame can be adjusted to different positions, while its main elevation or lowering is accomplished by moving the levers Z on their pivots through the instrumentality of the ropes *k*, wound upon the drums *l* on the shaft *m*. This shaft has bearings secured to a transverse sill *o*, carried by the master-wheel I. Brackets *p* and *q*, carried by the sill *o* and master-wheel I, respectively, support a crank-shaft *r*, having a worm *s*, which meshes with a worm-gear *t*, carried by the shaft *m*. By means of these devices the levers Z are manipulated to raise and lower the carrier-frame on its pivotal point V, while, as before stated, any slight adjustment is effected by the crank-shaft *g*, the screw-threaded rods *d*, and the intermediate devices. Any approved form of endless carrier *u* will be used.

Motion is transmitted from the thrashing-

machine with which the stacker is used, or from any other source, to the carrier through a shaft w , mounted in the boxes y y , secured to the general frame, and having a sprocket-wheel a' and a bevel-pinion b' , which meshes with a similar pinion c' on the shaft L , already referred to. The upper end of this shaft L is provided with another bevel-pinion d' , which meshes with a similar pinion e' , carried by a shaft f' , (shown in dotted lines in Fig. 8,) and mounted in pendants g' , extending from the sill O , one of which is seen in Fig. 8. This shaft f' carries a sprocket-pulley h' , which is connected by a sprocket-chain i' with the carrier-driving shaft j' through a sprocket-pulley k' . It will be observed that the power is transmitted from a shaft mounted upon the stationary frame to the carrier through a vertical shaft, which constitutes the pivotal bolt for the swinging operation of the stacker.

I will now refer to the mechanism for giving motion to the master-wheel, which I term the "swinging" mechanism. This consists of a shaft l' , mounted in suitable boxes secured to a standard l'' on the main frame, and carrying a worm o' , which meshes with worm-gear teeth formed in about one-half of the periphery of the master-wheel. This shaft carries two pulleys p' and q' , which receive motion in a manner presently to appear. They are loosely mounted on this shaft, and are clutched therewith by a double-faced clutch r' , also mounted on the shaft l' , with a spline or feather key to rotatably connect it with the shaft. The pulley p' rotates in one direction and the pulley q' in the other direction, so that when one of these pulleys is clutched to the shaft l' the master-wheel through the worm o' is rotated in one direction and the carrier-frame swung to one side—say to the left—as viewed from the front end of the machine, and when the other pulley is clutched to said shaft the master-wheel is rotated in the other direction and the carrier-frame correspondingly swung in that direction. The means for alternately clutching these pulleys p' and q' to the shaft l' consists of a sliding shifter-shaft s' , mounted in suitable bearings t' , carried by the standard l'' , having an arm u' , which engages with the clutch r' . A trip, consisting of an arm w' , pivoted to the piece m' by its bolt m'' , is connected with the shifter-shaft s' and arranged to be struck by strikers, hereinafter described, and carried by the swinging mechanism, so as to shift the clutch from engagement with one of the pulleys at about the limit of the swing into engagement with the other of the pulleys p' and q' , so as to reverse the direction of rotation of the shaft l' , and hence rotate the master-wheel back in the other direction, at the limit of which another striker actuates the arm w' and throws the clutch into engagement with the other or first engaged of said pulleys.

In Figs. 4 and 5 I have shown a modifica-

tion of the tripping devices, consisting of a bar y' , pivoted on the pivot-bolt of the arm w' , and having projections z' and a weighted upper end. The projections z' are first met by the strikers above referred to, and the bar y' given a thrust to one side, so that this heavy upper end will acquire sufficient momentum to throw the arm w' by engaging it with one of said projections far enough to insure the required movement of the double-faced clutch r' . This latter form of trip is preferred, because with it the clutch is sure to be moved the proper distance.

Referring now to the strikers, these consist of the slotted bars 2, adjustably secured by the thumb-nuts 3 to the ends of the sill O , and having lateral extensions 4, which engage with the trip devices already described. The object of making the strikers adjustable is to cause them to strike the tripping device sooner or later in the swing of the carrier, so as to determine the limit of such swing.

I will now refer to the mechanism for giving motion to the pulleys p' and q' . This consists of a shaft 5, mounted on the rear end of the main frame, and having pulleys 6 and 7, which are connected with the pulleys p' and q' , respectively, by a crossed belt 8 and a straight belt 9, so as to rotate said pulleys in opposite directions. A sprocket-wheel 10 is also carried by the shaft 5 and receives motion through a sprocket-chain 11 from a sprocket-pulley 12, carried by the shaft w .

It will now be observed that my improved machine comprehends a rotatable master-wheel carrying a superincumbent carrier-frame, with its hopper and endless carrier proper, elevating mechanism for the carrier, adjusting mechanism for the carrier, and a portion of the driving mechanism for the carrier, and the remainder of the power-transmitting mechanism upon the main frame, together with the power-transmitting device for the swinging mechanism and the shifting devices therefor.

As thus constructed, all of the various adjustments as to position, the extent of the swinging of the carrier, the application of the power for driving and swinging the carrier, and automatically changing the direction of the swinging, as well as a proper balancing of the machine, are all provided with simplicity in the construction of the various parts.

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

1. In a straw-stacker, the combination, with the main frame, a circular track, one or more supporting-rollers, and a supporting-bracket having a roller engaging said track, of a master-wheel mounted upon said track carrying said bracket and supported by said rollers, motion-transmitting mechanism including a worm geared to said master-wheel, a carrier-frame, its hopper, and a carrier proper incumbent upon said wheel, pivoted levers, a

winding-shaft and ropes connected thereto, an adjusting bar, screw-threaded rods, and a crank-shaft and gears therefor carried by said levers, the bar engaging the carrier-frame and the levers and winding devices supported by said wheel, a central shaft and power mechanism geared thereto, and striking and tripping devices for the swinging mechanism.

2. In a straw-stacker, the combination, with the main frame and a circular track, and rollers above and beneath said track engaging therewith, of a master-wheel supported by said track and rollers, the lower of said rollers being connected by a suitable bracket with the said master-wheel.

3. In a straw-stacker, the combination, with the main frame and a supporting-table, of a master-wheel supported above said table, a carrier and its elevating mechanism mounted upon said wheel, a shaft upon the main frame carrying a worm-gear that meshes with the said master-wheel and having pulleys and operating mechanism to rotate the pulleys in different directions, a clutch to engage the pulleys alternately with the shaft, tripping devices to actuate said clutch, and strikers carried by the master-wheel to engage the tripping-arm.

4. In a straw-stacker, the combination, with a master-wheel, of a hopper-frame incumbent upon the same, a carrier-frame pivoted to the hopper-frame, pivoted levers having bars at one end adjacent to the carrier-frame, a transverse crank-shaft having worms, screw-threaded shafts geared to said worms and connected by said bars, a transverse rod operated by said bars and in engagement with the carrier-frame, and a drum-shaft, its drums, a crank-shaft carried thereby, and ropes or chains connecting the levers with the drums of said shaft, the said elevating

mechanism being also incumbent upon said master-wheel.

5. In a straw-stacker, the combination, with the main frame, a worm-shaft supported thereby and having two pulleys thereon, a clutch to engage them alternately with the shaft, and tripping devices connected with the clutch, of a master-wheel mounted upon said main frame and having worm-teeth meshing with said worm, a carrier, elevating mechanism therefor superincumbent upon said master-wheel, and strikers also carried by said master-wheel and adapted to engage with the tripping devices and to throw it in first one direction and then in the other.

6. In a straw-stacker, the combination, with the main frame, a shaft mounted therein, pulleys on the shaft, a clutch to engage the pulleys alternately with the shaft, and tripping mechanism including a pivoted weighted bar with projections to engage the tripping-arm, of a master-wheel geared to said shaft and carrying adjustable strikers.

7. In a straw-stacker, the combination, with a master-wheel, of carrier elevating and adjusting mechanism consisting of pivoted levers having perpendicular bars at one end, screw-threaded rods guided by said bars, a transverse bar carried by said rods and having jaws and engaging the perpendicular bars, and a crank-shaft geared to said screw-threaded rods, a drum-shaft, a crank-shaft geared thereto, and ropes or chains connecting said levers with the drums of said drum-shaft.

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

JOSHUA M. SMITH.

Witnesses:

CHASE STEWART,
WARREN HULL.