

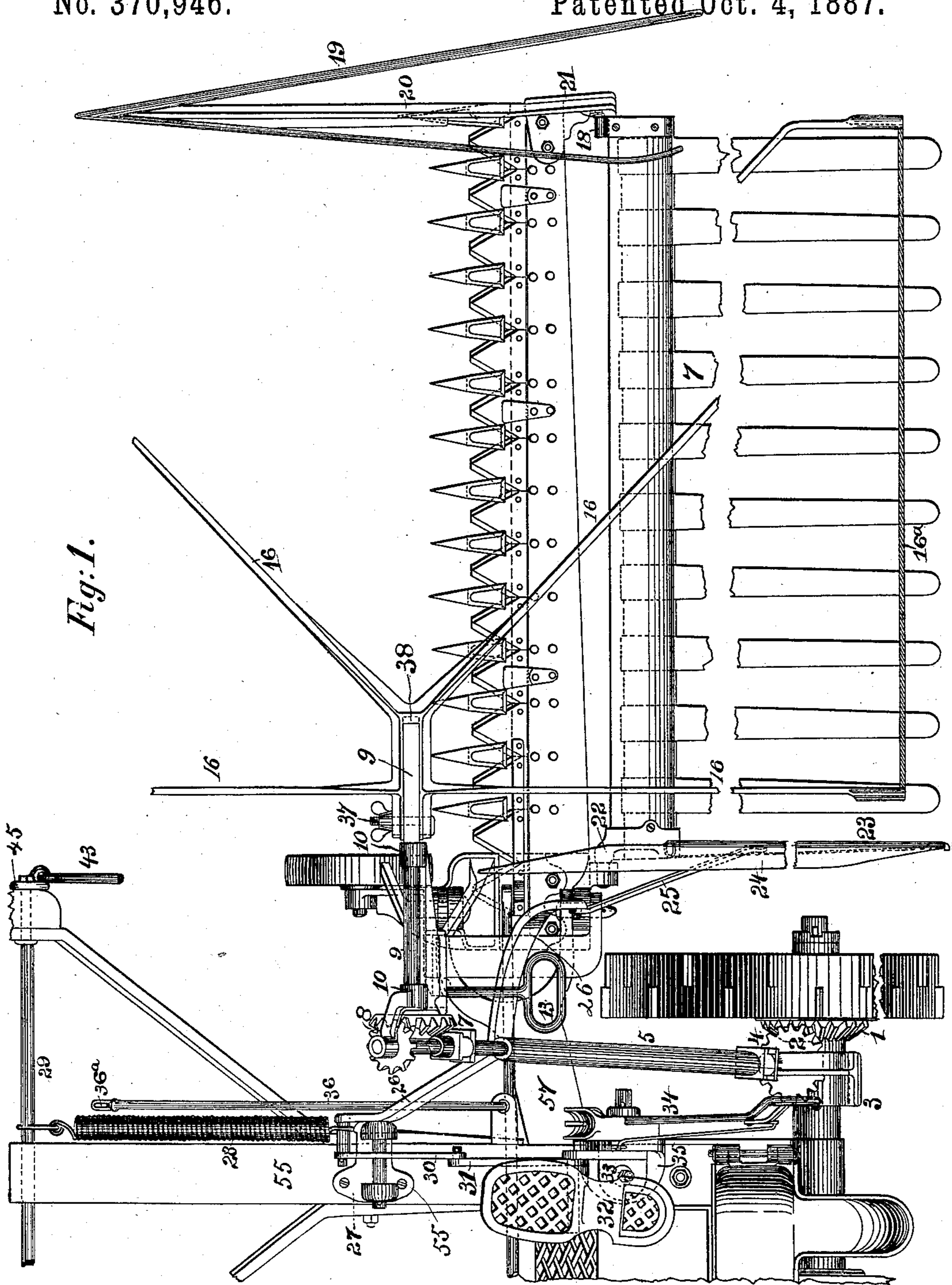
(No Model.)

4 Sheets—Sheet 1.

J. JANSSON.
REAPING MACHINE.

No. 370,946.

Patented Oct. 4, 1887.



Witnesses.
Baltus DeLong
L. B. Wright

Inventor.
John Jansson,
By Atty - Baldwin, Hopkins & Peyton.

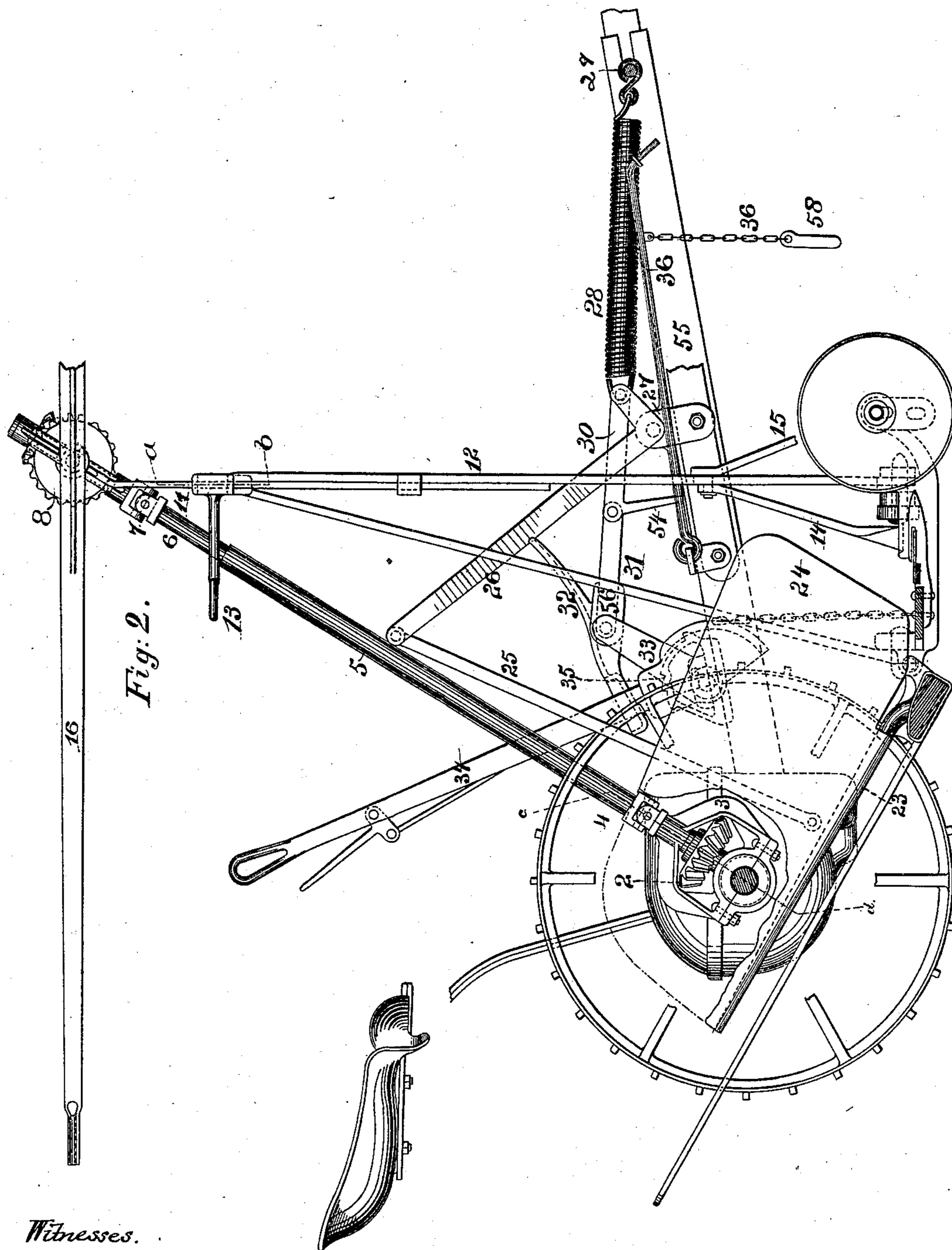
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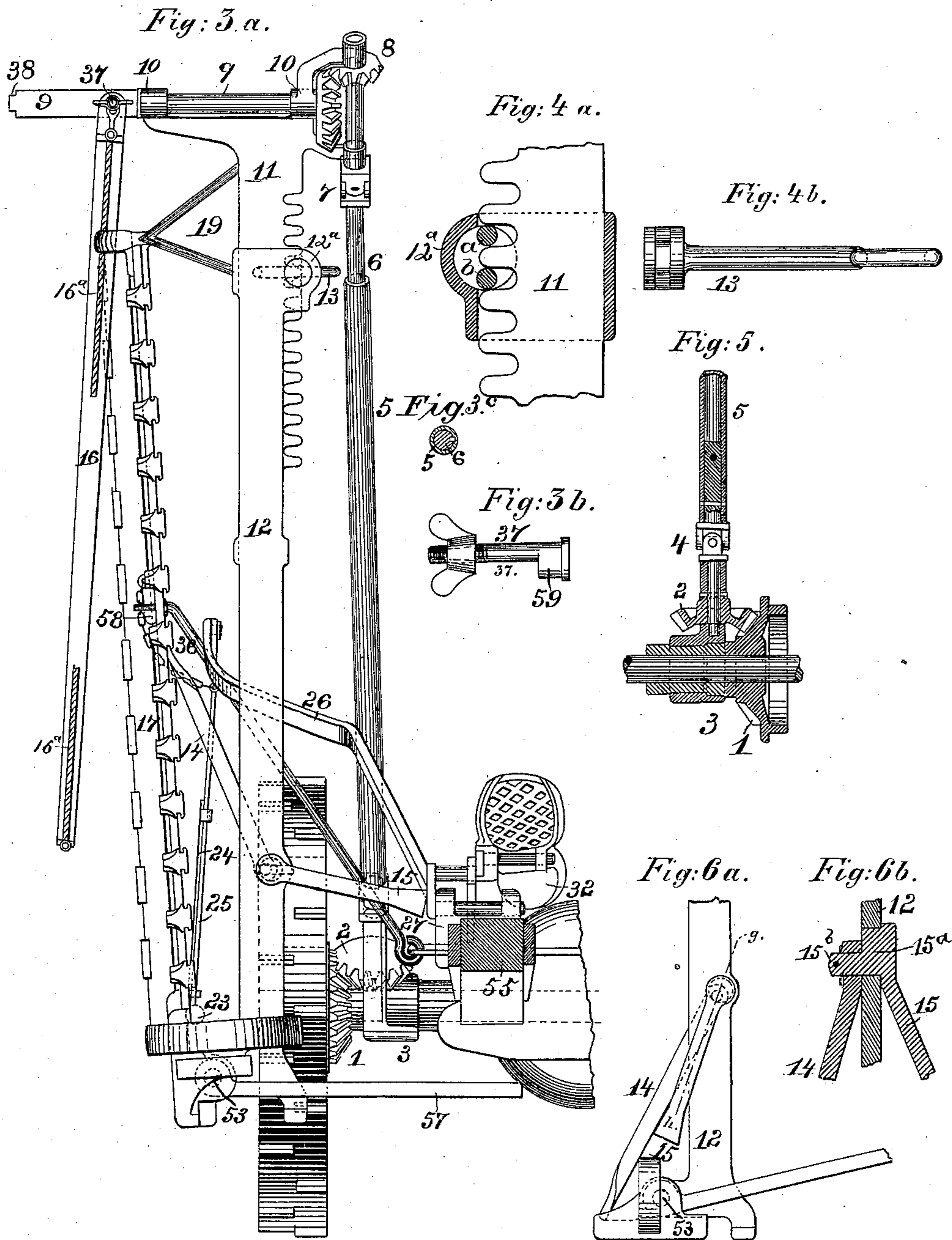
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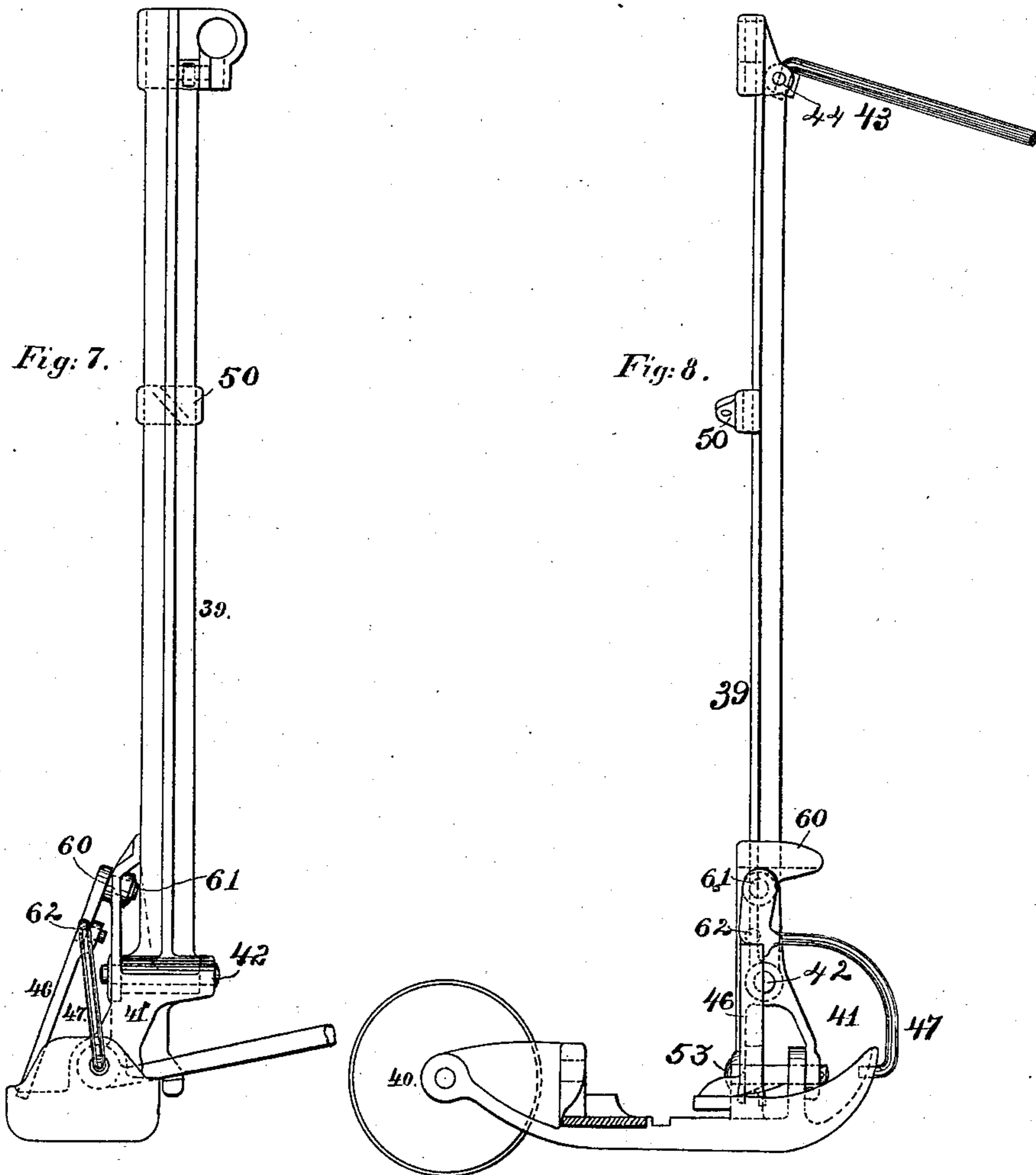
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Inventor
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UNITED STATES PATENT OFFICE.

JOHN JANSSON, OF STOCKHOLM, SWEDEN, ASSIGNOR TO AKTIEBOLAGET
PALMCRAANTZ & CO., (LIMITED,) OF SAME PLACE.

REAPING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 370,946, dated October 4, 1887.

Application filed September 5, 1885. Serial No. 176,239. (No model.) Patented in France April 22, 1885, No. 175,678; in Sweden June 3, 1885, No. 197; in England August 21, 1885, No. 9,944; in Germany September 8, 1885, No. 36,273; in Finland November 26, 1885, No. 250, and in Norway December 31, 1885, No. 307.

To all whom it may concern:

Be it known that I, JOHN JANSSON, a subject of the King of Sweden, residing at Stockholm, Sweden, have invented certain new and useful Improvements in Reaping-Machines, (for which I have secured Letters Patent in England, No. 9,944, dated August 21, 1885; in France, No. 175,678, dated April 22, 1885; in Germany, No. 36,273, dated September 8, 1885; in Sweden, No. 197, dated June 3, 1885; in Norway, No. 307, dated December 31, 1885; and in Finland, No. 250, dated November 26, 1885,) of which the following is a specification.

My invention consists in certain combinations herereinafter specified by the claims, involving, among other devices, the reel or fly and the dropper or grain-depositing cradle. The reel by which the crop is laid toward the cutters is driven from the axle of the main wheels by a pair of beveled pinions, giving motion to an upright telescopically-jointed shaft with universal joints, and another pair of beveled pinions at the upper end of the shaft. One of these latter pinions is on the reel axis or shaft. The bearing for the reel is carried on a standard which is in two parts, sliding one on the other, and adjustable in height by means of a rack and key. The key has two pins, serving as teeth for engaging the rack-teeth, and is self-locking, thus dispensing with the employment of detent devices such as used when a rack and pinion are employed for adjusting the height of the standard. The standard is jointed to the shoe or inner divider of the finger-bar, and is held upright when in use by a stay or strut, and is locked by means of an eccentric, which sets the strut down fast against a projection on the shoe. The arms of the reel are connected by cords, which serve as beaters. The reel is so connected with its axis that it can be released and turned at right angles thereto for the purpose of reducing the space occupied by the machine when out of use or arranged for traveling. The crop as it is cut is received upon an inclined dropper-platform or cradle consisting of parallel bars fixed to the under side of a cross-bar, which is pivotally supported be-

hind the finger-bar. The cradle is supported by being connected by way of a link-bar with the longer arm of a bell-crank lever. A spring connected with the shorter arm of the lever operates to raise the cradle. The cradle is moved to deposit the grain by a treadle, to which a partial rotary motion is imparted by the foot. An arm or link fixed at one end to the treadle and connected by a link with the shorter arm of the bell-crank lever transmits the movement of the treadle to this lever, and so causes the cradle to descend at the proper time. When the cradle is up, the joint connecting the treadle arm or link fixed to the treadle with the link passing to the bell-crank lever is slightly beneath the line of thrust, and is prevented from further descent by a stop, the cradle being thus supported independently of the spring. In machines in which the height of cut is adjustable a double joint is provided in attaching the reel-supporting standard at its lower end to the shoe to give the requisite freedom of movement, and a stay is provided passing from near the top of the standard to the draft-shafts. In such machines the supporting-wheel of the finger-bar is at the rear end of the shoe instead of at its front end.

In the accompanying drawings, Figure 1 represents a reaping-machine in plan arranged for work. Fig. 2 is a side view, partly in section, of the same. Fig. 3^a is a front view of the machine arranged for transport. Fig. 3^b represents the attaching-screw of the reel. Fig. 3^c is a transverse section of the telescopic shaft through which the reel is driven. Fig. 4^a is a section on the line *a b* of Fig. 2. Fig. 4^b is a side view of the key for the adjusting-rack. Fig. 5 is a section on the line *c d* of Fig. 2. Fig. 6^a is a front view of the lower part of the standard. Fig. 6^b is a section taken on the dotted line *g h*, Fig. 6^a. Figs. 7 and 8 represent an arrangement of mechanism employed when the grain-depositing apparatus is applied to a reaping-machine with stubble-regulating apparatus, with the finger-bar pivoted to rock about the center of a supporting-wheel situated behind it, instead of in front of it, as seen by the preceding figures. Fig.

7 is a front view of the reel-standard supported on the shoe or inner divider. Fig. 8 is a side view of the same.

The grain-depositing apparatus consists of two main parts, the reel and the cradle or dropper-platform, with its treadle mechanism.

The reel is put in motion in the following manner: The driving-ratchet on the right side of the machine, viewed from behind, is on the inner side provided with a conical pinion, 1, gearing with a corresponding pinion, 2, on a shaft which runs in a bearing, 3. This shaft is, by means of a universal coupling, 4, connected with the hollow shaft 5, which receives the inner shaft, 6. Parts 5 and 6 are connected by a groove and feather in the manner shown by Fig. 3^c. Another universal coupling, 7, connects the shaft 6 with the conical gearing 8 and the axis 9 of the reel. The axis 9 is supported by the bearings 10, projecting from and cast together with the rack-bar 11. The bar 11 is able to slide upon the standard 12, mounted on the inner shoe of the finger-bar. The rack is made at pleasure to rise or lower by means of a key, 13, which serves to maintain the rack at the height to which it is set. The standard 12 is locked in its place and made to stand erect upon the finger-bar by means of the stay 14 and its strut 15, so that if, for instance, a stone or other like obstruction raises the finger-bar at the outer end the shaft of the reel nevertheless remains parallel with the finger-bar. The reel 16 is provided with two pairs of arms, which at their outer ends are connected by cords or like flexible connections 16^a.

The cradle, with the treadle mechanism, works in the following manner: The cradle 17 has its outer pivot, 18, supported in the straw-divider 19, which in its turn is supported upon the outer finger, 20, of the finger-bar and upon the attachment 21. The inner pivot, 22, is supported by an ear or bearing on the shoe. Against the inner pivot of the cradle, and parallel with the bars of which it is composed, there is fixed a bar, 23, on which a vertical guard, 24, is pivoted at its lower edge. Near the lower edge of this guard is fixed on a pivot a link-bar, 25, and the opposite end of this link-bar is jointed to the bell-crank lever 26, which has its fulcrum on a bearing, 27, and maintains the cradle at a suitable angle to the finger-bar. The lever 26 is supported by means of a spring, 28, one end of which is secured to the short arm of the bell-crank lever and the other to the stay 29 of the draft-shafts. The treadle mechanism consists of the link 30, projecting from the short arm of the bell-crank lever, and the intermediate link, 31, jointed at one end to it and fixed at its opposite end to the treadle 32, which latter is pivoted on the treadle attachment 33. A socket, 56, formed with the treadle and projecting in a forward direction from its pivot, serves to receive the rear end of the link 31 and fixedly connect it

with the treadle midway its length. When the back or heel end of the treadle is brought downwardly by the foot, it lowers the cradle toward the ground, and when its front end is brought downward the cradle is raised from the ground. The cradle, except upon movement of the treadle, cannot fall to the ground, whatever the weight of the grain collected upon it, because when the cradle is raised the joint between the links 30 and 31 is flexed downward slightly beneath the line drawn through the centers of the front end of the link 30 and the rear end of the link 31, too great downward movement of the joint being prevented by a stop formed by the arm 54, projecting downward from the joint and bearing against the draft-bar 55, to which the shafts are attached. Obviously the point of junction between the links, constituting a toggle-like connection between the treadle and the bell-crank lever, must first be raised slightly by means of the treadle before the cradle can move automatically by upward flexure of the said toggle-like connection.

The rack 11 of the reel-standard always remains at the desired height unless put in motion by operating the key 13. This self-locking operation of the key is due to the fact that its pins *a* and *b* are on opposite sides of the center of motion. The weight of the rack, it will be seen, is supported by the pins, and the pressure upon the pins tends to rotate the key in the same way that a pinion having contiguous teeth would be rotated, and such a rotation is obviously impossible from pressure upon the pins. When, however, the key is turned by hand to the right or to the left, according to the direction it is desired to move the rack, adjustment is rendered easy. The key has suitable bearing, 12^a, in the upper end of the standard 12. The strut 14 of the standard 12 operates to render the standard fast with the finger-bar while the machine is at work. The lock-piece 15 of the strut is by its pivot 15^a connected to the standard on one side thereof, and on the other side of the standard the pivot is provided with an eccentric-pin, 15^b, on which the strut 14 is secured. When the lock-piece 15 is brought upward, its pivot 15^a turns in the standard 12 and the eccentric-pin 15^b rises, thereby lifting the strut 14 from the shoe. On the other hand, when the lock-piece 15 is turned downward, the strut is pressed against the shoe, as seen in Fig. 6^a, and the standard is locked fast with the finger-bar. When the standard is released, it is free to turn about the joint-pin 53 at its lower end, and the apparatus may be folded for transport, as represented in Fig. 3^a. The lock-piece 15 then serves to support the standard, as the drawings indicate. When the grain-depositing cradle is lowered, the grain passes from the cradle to the ground, owing partly to its weight and partly to the aid received from the stubble, as is well understood. The cradle when clear of the grain is raised by the spring 28 and by the driver

by means of the treadle, as will be readily understood. The socket of the reel, or that part of it which receives the axis 9, is forked, being formed with two parallel sides, Fig. 1, between which the squared projecting end of the reel-shaft 9 is received. The shaft 9 terminates in a peg, 38, and this enters a corresponding recess in the socket of the reel between the two parallel sides of the fork. The shaft 9 has a hole through it to receive the screw 37, and the forked socket has also oblong slots (see dotted lines, Fig. 1) in its opposite sides corresponding with each other for the passage of the screw. The screw 37 has a shoulder, 59, which enters and fills one of the oblong slots of the forked socket, and so locks the socket upon its shaft.

For transporting the reaping-machine the apparatus is folded up in the following manner: The reel is raised to its highest position, the strut 14 of the standard is removed from the shoe, and the finger-bar is raised in the usual manner—that is, first or partially by means of its lever 34, (the lever has the ordinary rocking sheave and lifting-chain connecting it with the coupling-frame 57,) so that the pawl of the lever enters the second notch of the segment-rack 35, and then directly by hand. The cutting apparatus, when thus folded, is secured by means of the knife-stay 36. This stay has jointed connection at its inner end with the draft-bar 55, is bent and shouldered at and near its outer end, and slotted at 36^a at its bent outer end to receive the key 58 after this end has been passed through a hole in the finger-bar. The finger-bar is thus held between the key and shoulder of the stay. The attachment-screw 37 of the reel is next loosened sufficiently to permit the shoulder 59 adjacent to its head to escape from the oblong hole in the socket of the reel. The reel is then drawn outward to clear the recess at the junction of the inclined arms 16 from the peg 38, formed at the outer end of the reel-shaft, and the reel then folds down, as shown in Fig. 3^a, after which the screw 37 is again tightened.

By inspection of Figs. 1, 2, and 3^a it will be understood that the guard 24 does not fold with the cutting apparatus and platform, but remains vertical, or nearly so, because of its jointed connection with the bar 23. The slight upward and inward movements imparted to the guard in folding the parts are not sufficient to strain or materially alter the positions of the treadle mechanism and its connections with the guard.

Figs. 7 and 8 represent modified arrangements for the application of the grain-depositing apparatus to a machine provided with stubble-regulating apparatus and a rear instead of a front supporting-wheel attached to the shoe of the finger-bar. The finger-bar is pivoted to rock about the axis of the supporting-wheel 40, which, as modified, is in rear of the finger-bar, and the reel-standard 39 has a double joint-connection with the shoe in the

following way: A foot, 41, is pivoted at its lower end by a pivot-bolt passing through its forks and connecting it with lugs formed with the shoe. A pivot-bolt, 42, at right angles to the bolt securing the lower end of the foot connects this foot above with the standard. Provision is thus made for the proper rocking of the standard. The standard is provided with a stay, 43, Figs. 1 and 8, engaging at one end with the pivot-eye 44 at the top of the standard, and at its opposite end the stay is suitably secured to the shafts, (or to the inner end of the stay-bar 29 thereof,) by means of the attachment 45. If the height of cut be altered by rocking the finger-bar, the reel nevertheless retains its position with respect to the finger-bar, because of the above-described connections between the standard and shoe and the standard and the shafts.

To rigidly connect the foot of the standard with the shoe, the following devices are employed: The foot 41 is provided with an upward projection, 60, widened out at its upper end, where the standard bears against it, so that throughout the limited movement imparted to the standard when moving about its pivot-bolt 42 the standard will bear against this widened upper end of the foot. A curved lock-piece, 47, is engaged at its bent lower end with a socket in the point of the shoe, and its upper end is bent upwardly and connected by a pivot-bolt, 61, with the upward extension of the foot. A strut, 46, bearing at its lower end against a projection upon the shoe, is at its opposite end shouldered and lapped under the lock-piece 47 below its pivoted bolt 61. A pivot-bolt, 62, connects the upper end of the strut with the lock-piece, and the shoulder of the strut abuts against the lock-piece. It will be seen that by these devices the foot may be rigidly secured upon the shoe. The locking devices form a toggle-like connection between the shoe and the foot of the standard.

I claim—

1. The combination of the reel having the slotted forked socket, the reel-shaft received between the forks of the socket, and the attaching-screw passing through the reel-shaft and through the slots in the reel-socket, and provided with the shoulder for engagement with one of the slots in the reel-socket, substantially as and for the purpose set forth.

2. The combination of the reel-shaft having the end peg, the slotted forked socket having a recess to receive the peg of the shaft, and the attaching-screw passing through the shaft and through the slots of the socket, substantially as and for the purpose set forth.

3. The combination of the reel-standard, the rack having sliding connection with the standard, and the locking-key having its shaft mounted in the standard and provided with the pins *a b*, arranged on opposite sides of its axis and engaging with the rack, substantially as and for the purpose set forth.

4. The combination of the shoe, the reel-

standard, the strut 14, the lock-piece 15, and the pivot securing both the lock-piece and the strut to the standard and provided with the eccentric acting on the upper end of the strut, substantially as and for the purpose set forth.

5 5. The combination of the treadle, the bell-crank lever, the link fixed at one end to the treadle, the link jointed to the treadle-connected link and to the short arm of the bell-crank lever, the spring acting on the bell-crank lever, the rod connected at one end with the long arm of the bell-crank lever, and the cradle with which the opposite end of this rod has connection, the whole so arranged that
10 the spring raises the cradle and the links form a toggle and lock the cradle in its elevated position, substantially as and for the purpose set forth.

6. The combination of the cutting apparatus,

the cradle pivoted in rear thereof, the bar 23, 20 secured to the cradle, the guard pivotally attached at its lower edge to said bar, the link pivoted at its lower end to the guard near its lower edge, the bell-crank lever, to the long arm of which this link is pivoted, the spring 25 acting upon the short arm of the lever, the toggle-jointed links, the treadle connected by the toggle-jointed links with the short arm of the lever, and the stop for limiting downward flexure of these links, substantially as and for 30 the purpose set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

JOHN JANSSON.

Witnesses:

NERE A. ELFWING,

CARL BERGSTROM.