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PATENTED JAN. 1, 1907.

J. A. MELANCON & W. C. MAVOR.

CANE HARVESTER.

APPLICATION FILED NOV. 15, 1905.

4 SHEETS—SHEET 1.

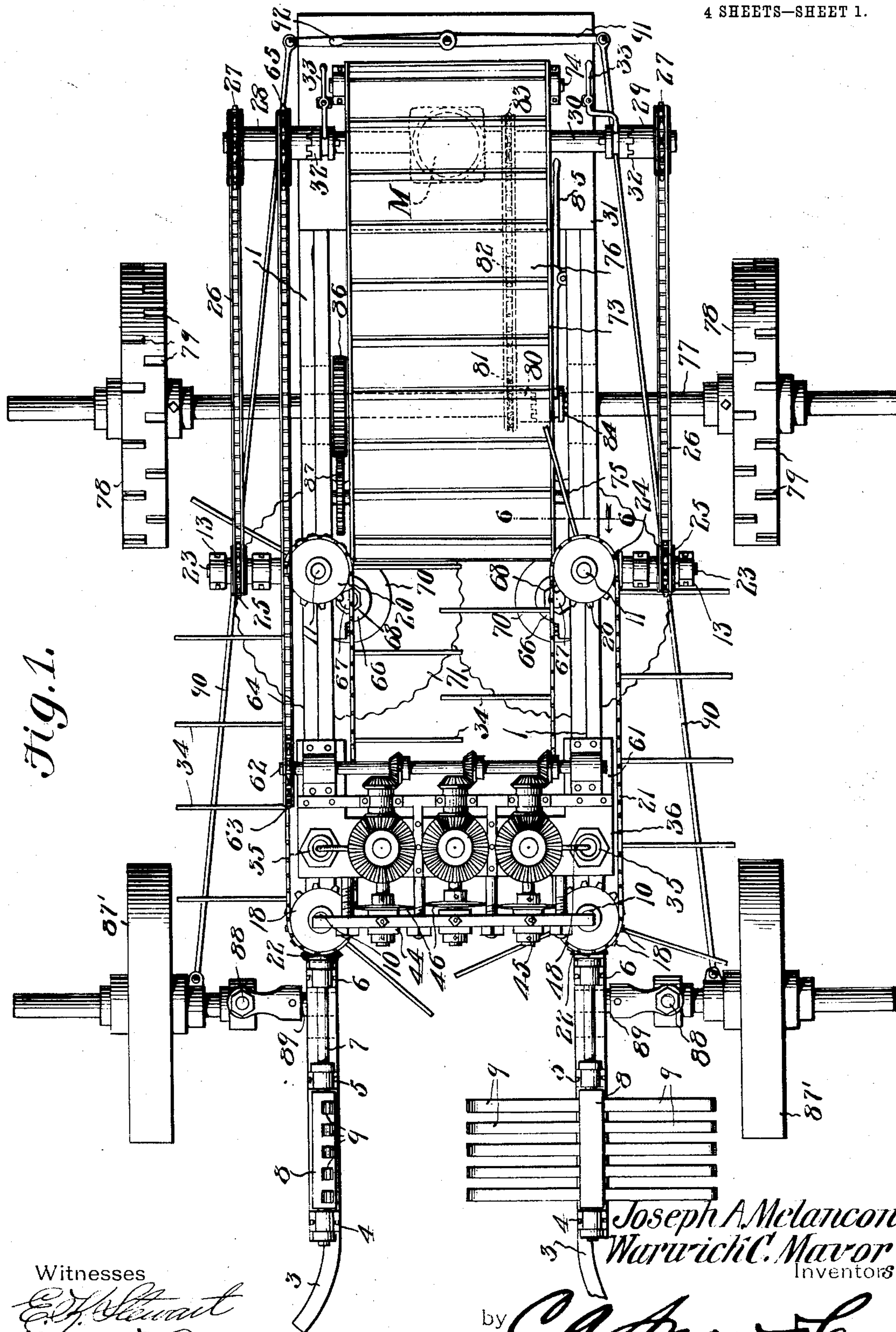


Fig. 1.

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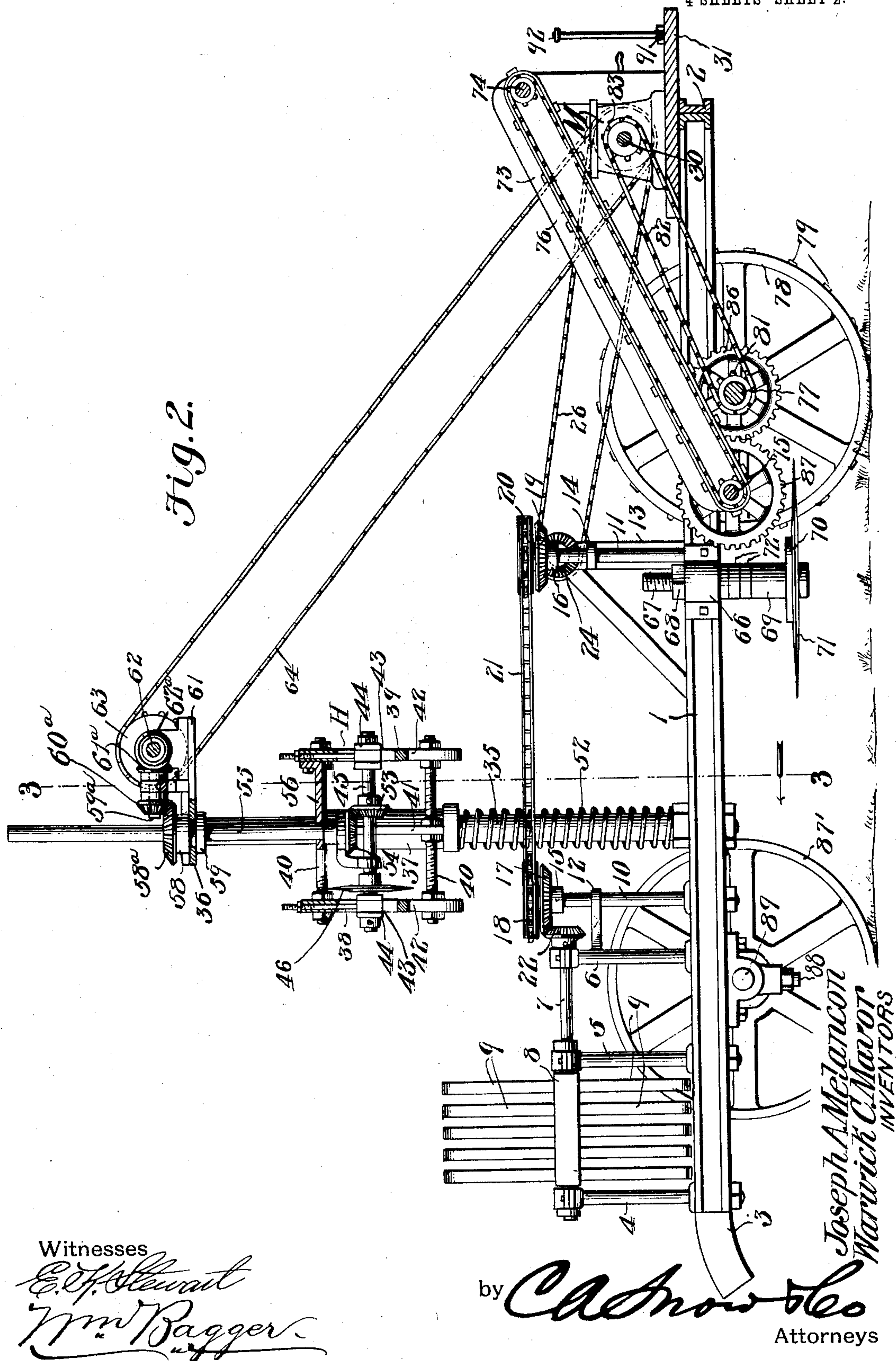
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4 SHEETS—SHEET 3.

Fig. 3.

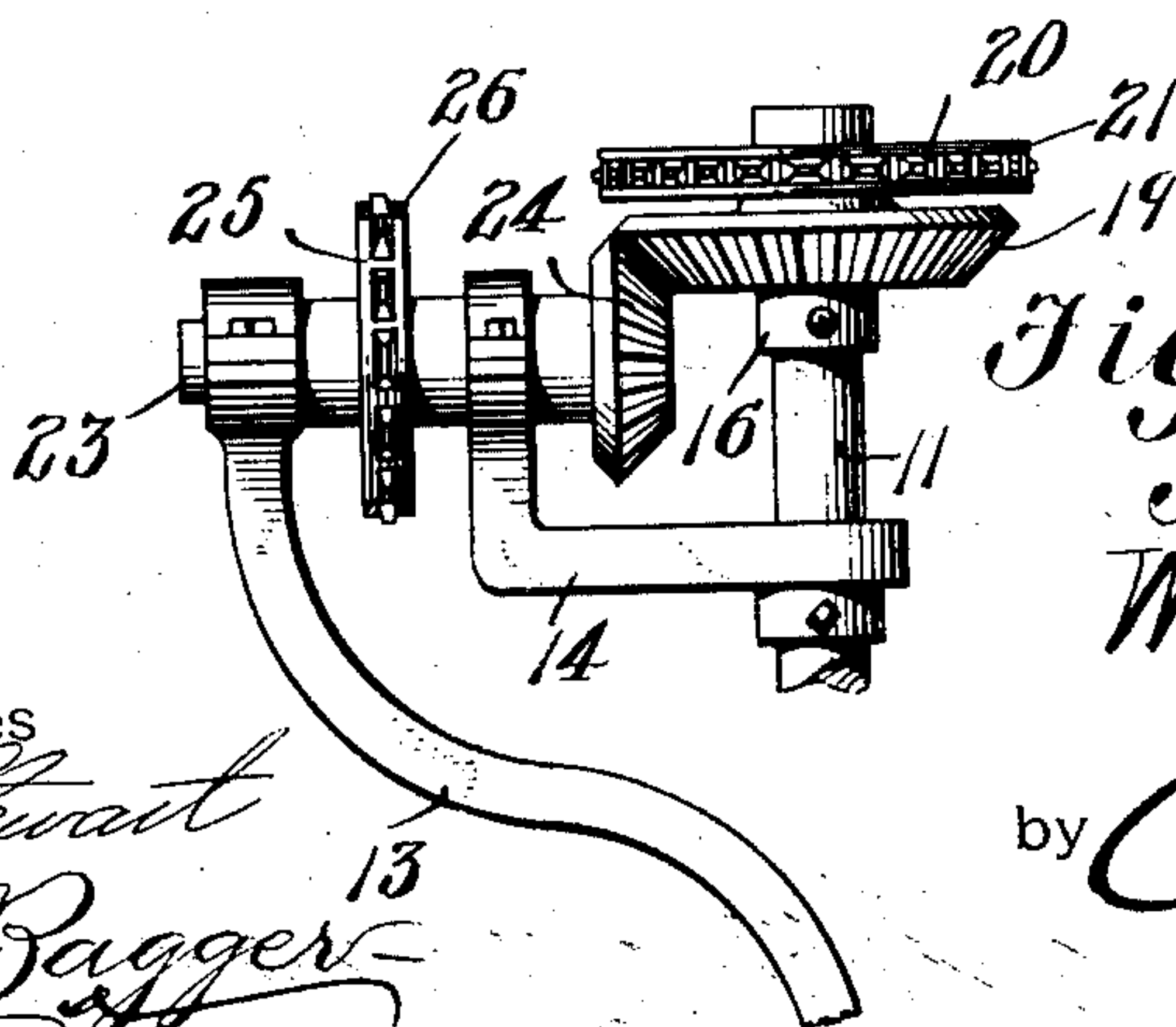
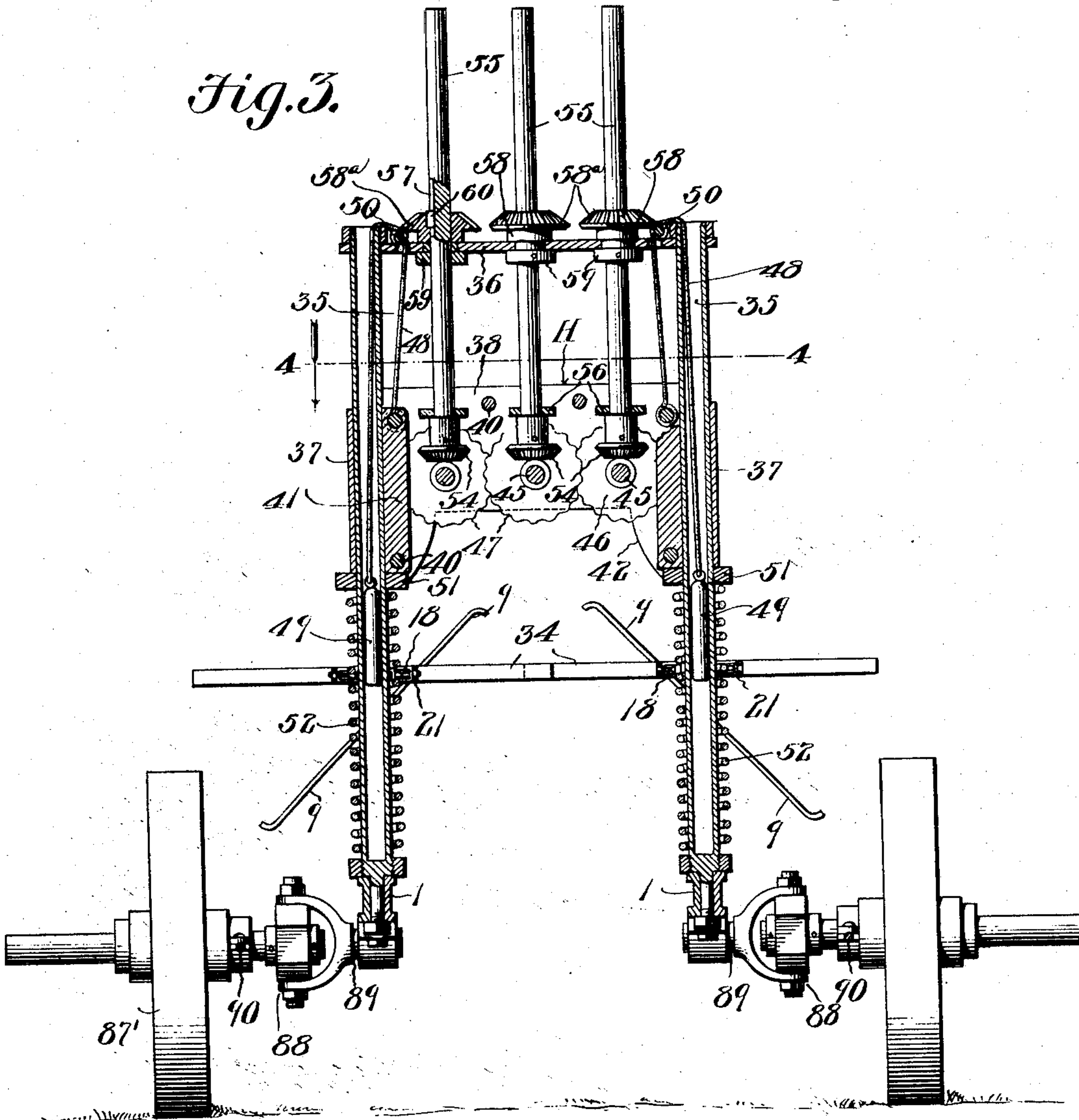


Fig. 6.

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4 SHEETS—SHEET 4.

Fig. 4.

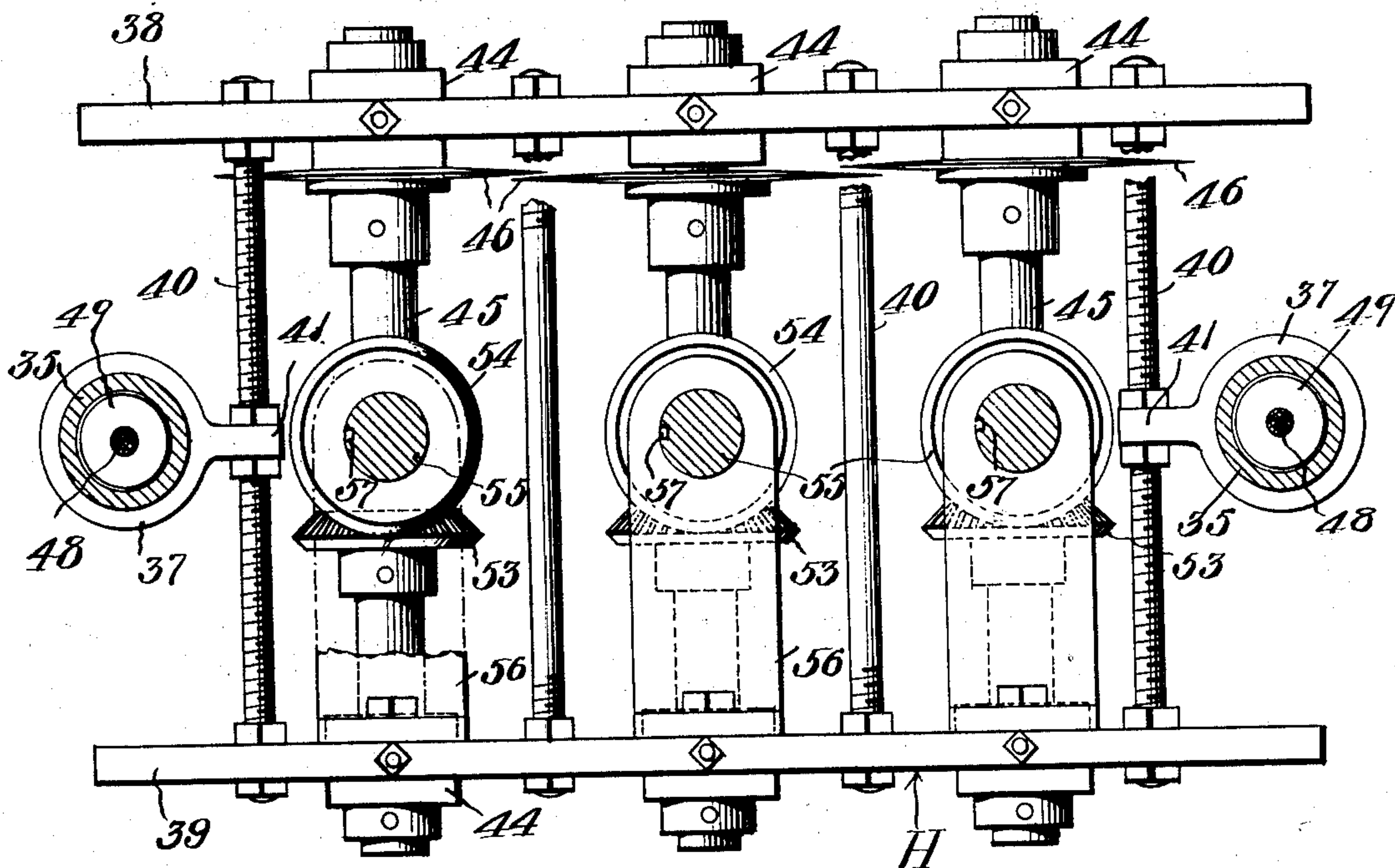
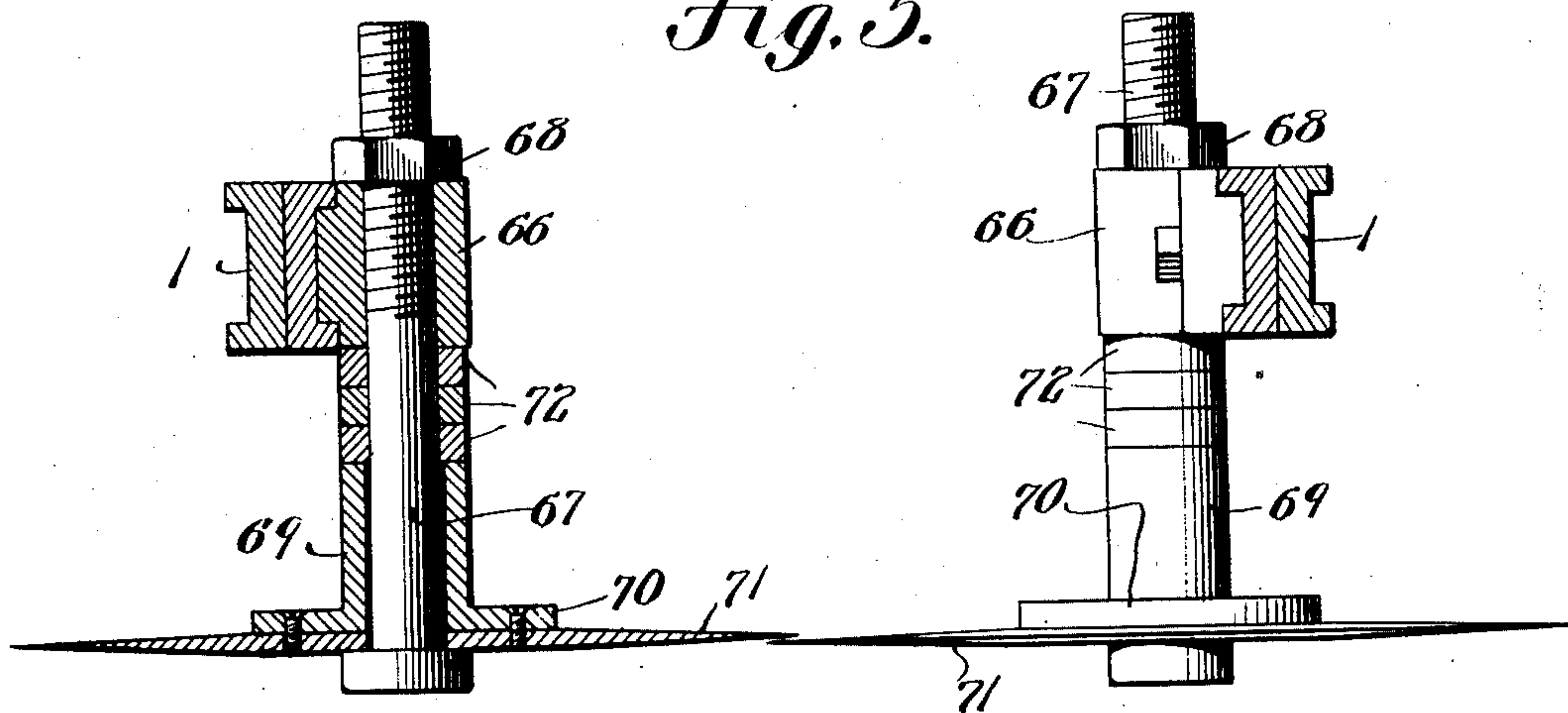


Fig. 5.



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UNITED STATES PATENT OFFICE.

JOSEPH A. MELANCON AND WARWICK C. MAVOR, OF McCALL, LOUISIANA.

CANE-HARVESTER.

No. 839,945.

Specification of Letters Patent.

Patented Jan. 1, 1907.

Application filed November 15, 1905. Serial No. 287,472.

To all whom it may concern:

Be it known that we, JOSEPH A. MELANCON and WARWICK C. MAVOR, citizens of the United States, residing at McCall, in the parish of Ascension and State of Louisiana, have invented a new and useful Cane-Harvester, of which the following is a specification.

This invention relates to cane-harvesters, and it has particular reference to machines of this class embodying mechanism for stripping and for topping the cane, as well as for cutting the same and for conveying it to the point of discharge, the objects of the invention being to simplify and improve the construction and operation of this class of machines and to increase the general efficiency of the same.

With these and other ends in view, which will readily appear as the nature of the invention is better understood, the invention consists in the improved construction and novel arrangement and combination of parts, which will be hereinafter fully described, and particularly pointed out in the claims.

In the accompanying drawings has been illustrated a simple and preferred form of the invention, it being, however, understood that no limitation is necessarily made to the precise structural details therein exhibited, but that changes, alterations, and modifications within the scope of the invention may be made when desired.

In the drawings, Figure 1 is a top plan view of a machine constructed in accordance with the principles of the invention. Fig. 2 is a longitudinal sectional view of the same. Fig. 3 is a transverse sectional view taken on the plane indicated by the line 3 3 in Fig. 2. Fig. 4 is a horizontal sectional view, enlarged, taken on the plane indicated by the line 4 4 in Fig. 3. Fig. 5 is a sectional elevation illustrating the cane-cutting blades. Fig. 6 is a detail view of part of the means for transmitting motion from the traction-wheels to the stripping-arms.

Corresponding parts in the several figures are indicated throughout by similar characters of reference.

The frame of the improved machine is constructed, preferably, of channel-iron, which is bent in a horizontal plane to an approximate elongated U shape, including the side members 1 1, which are connected by the bent rear portion 2, the forward extremities of the side members being spaced apart and curved or diverged downwardly and out-

wardly, as shown at 3, so as to form cane-gathering guides that will facilitate the admission of the stalks of cane between the side members of the frame.

Upon the side members of the frame near their front ends are supported standards 4, 5, and 6, the upper ends of which are provided with boxes or bearings for shafts 7. These shafts between the standards 4 and 5 are provided with hubs 8, having radially-extending resilient stripping-arms 9, which may be formed of flat steel rods slightly bent or rounded at the ends. These arms are set closely together, so as to engage the stalks and strip the leaves therefrom when the machine is in operation.

10 and 11 are vertical shafts or uprights, the former of which are supported adjacent to the uprights 6, which are provided with laterally-extending brackets 12, engaging and steadying the uprights 10. The uprights 11 are disposed adjacent to braces 13, and the said shafts or uprights 11 are provided with brackets 14. Supported for rotation upon the shafts 10 and 11 are combined bevel-gears and sprocket-wheels including hubs 15 16, the former of which carries a bevel-gear 17 and a sprocket-wheel 18, while the latter carries a bevel-gear 19 and a sprocket-wheel 20. The sprocket-wheels 18 and 20 at each side of the machine are connected by a link-belt 21, and the bevel-gears 17 mesh with bevel-pinions 22 upon the rear ends of the stripper-carrying shafts 7. In the braces 13 and the brackets 14 are supported for rotation shafts 23, carrying bevel-pinions 24, meshing with the bevel-gears 19, and the shafts 23 are provided with sprocket-wheels 25, that are connected by link-belts 26 with sprocket-wheels 27, formed upon sleeves or hubs 28 and 29, mounted upon the driven main shaft 30 of a gasoline or other motor M, which has been shown supported upon a platform 31 at the rear end of the frame. The sleeves or hubs 28 29 are normally loose upon the main shaft; but they may be connected therewith for rotation by means of suitable clutch members 32, for the manipulation of which shipping-levers 33 are provided.

The horizontally-disposed link-belts or chains 21, which are driven by the mechanism just described, are provided at intervals with outwardly-extending stalk-engaging pulling-arms or gathering-arms 34, which, as the machine advances, serve to engage the stalks of cane and to impel said stalks in a

rearward direction, the purpose of which will presently be made apparent.

Firmly supported upon the side members of the frame in rear of the shafts or uprights 10 and between the inner and the outer leads of the chains 21 are tubular uprights 35, which rise to a suitable height and which are connected at or near their upper ends by a cross member, such as a bar or plate 36. Mounted slidably upon the tubular uprights 35 are sleeves 37, supporting between them a vertically-movable member which we will designate as the "cutter-carrying head" or "cutter-carrying frame" H. This head comprises front and rear plates 38 and 39, which are suitably connected with each other by bolts or connecting members 40, some of which extend through and are securely connected with ribs or flanges 41, formed upon the inner sides of the sleeves 37. The lower edges of the plates 38 39 are cut away to form arched recesses 42. Said front and rear plates 38 39 are also provided with vertical slots 43, in which are adjustably mounted boxes or bearings 44, in which are journaled longitudinally-disposed parallel shafts 45, carrying circular cutters 46, preferably provided with serrated edges 47. The cutter-carrying shafts 45 are three in number, and the cutters have been shown as overlapping one another and disposed closely adjacent to the rear side of the front plate 38 of the head or frame H. The latter is connected by flexible elements 48 with counterweights 49, supported within the tubular uprights 35, said flexible elements being guided over pulleys 50, which are suitably supported adjacent to the upper ends of the tubular uprights. The head H and related parts being thus counterbalanced will practically float and adjust itself automatically to various positions. It is intended that the head or frame with its related parts shall somewhat overbalance the counterweights, so that some slight force will be required to move the head in an upward direction, this force being in practice derived from contact of the head with the upper ends of the stalks, which are bent under the head by the action of the pulling-arms 34 upon the chains 21, the object being to enable the head to be automatically adjusted as nearly as possible to stalks of varying lengths, the heads or tops of the stalks being severed by the rotary cutters, the edges of which project below the recessed lower edge of the front plate 38 of the head. It will be understood that the intention of this device is to provide an automatic adjustment whereby the tops will be removed from stalks of cane of various lengths, the object being to avoid the unnecessary waste which would result by severing all the stalks at the level, which will be necessary in order to remove the tops from the shortest stalks or otherwise to insure the removal of the tops

from the shortest stalks, which obviously could not be effected by a stationary cutting apparatus adjusted to remove the tops from stalks of a greater height than the shortest ones. It is recognized that in the operation of this device the vertically-movable head or frame will encounter greater resistance where two or more stalks happen to be growing close together than where the stalks are growing singly, in which event the tendency would be for the frame or head to move upward, causing the stalks to be severed nearer their extreme upper ends than would otherwise be the case; but it may be safely asserted that the stalks as a usual thing grow with considerable uniformity, or at least with sufficient uniformity to insure practical efficiency in the operation of the device. It will be furthermore observed that the normal resistance of the stalks is not altogether depended upon to effect the adjustment of the vertically-movable head or frame, inasmuch as the stalks by the action of the gathering-arms 34 upon the link-belts 21 will be forcibly bent in a rearward direction beneath the vertically-movable head or frame carrying the cutters, thereby assisting materially in effecting the desired vertical adjustment of the head or frame.

For the purpose of preventing the head from dropping too low upon the guides or uprights 35 stop-collars 51 are mounted upon said uprights, said collars being preferably supported upon springs 52, which are coiled or wound upon the uprights, thus forming yieldable supporting means for the cutter-carrying head.

By properly adjusting the boxes 44 the cutter-carrying shafts may be moved up or down within the head, so as to regulate the extent to which the cutting edges of the blades or cutters shall be permitted to project. This distance should at all times be sufficient to enable the cutter to operate efficiently to sever the tops from the stalks, and the adjustment is not only provided in order to compensate for wear, but also to enable the device to operate efficiently under varying crop conditions.

The cutter-carrying shafts are provided with bevel-pinions 53, meshing with bevel pinions or gears 54 upon the lower ends of shafts 55, bearings for which are provided in brackets 56, connected with the rear plate of the head H. The shafts 55 are longitudinally grooved, the grooves 57 extending through the greater portion of the lengths of said shafts. The latter are extended through hubs 58, that are supported for rotation by the top plate 36, said hubs being provided with collars 59, whereby they are held securely against displacement. Said hubs are provided with keys or splines 60, engaging the grooves 57 in the shafts 55, with which said hubs are thus connected for rota-

tion, without interfering with the freedom of the shafts to move upwardly and downwardly with the vertically-movable head H. As the brackets 56 are attached to the rear plate of the head H, the said brackets move with the said plate. The shafts 55 may move longitudinally through the said brackets, and when the parts are in the positions as shown in Fig. 2 of the drawings and the boxes 44 are lowered within the head H the said shafts will follow down and the bevel gear-wheels 54 and 53 will remain in mesh. The top plate 36 is provided with brackets 61, supporting a horizontal shaft 62, carrying a sprocket-wheel 63, which is connected by a link-belt 64 with a sprocket-wheel 65 upon the hub or sleeve 28 on the driven main shaft 30, from which motion may thus be transmitted to the shaft 62. From the latter shaft motion is transmitted to the hubs 58, which are provided with bevel-pinions, as 58^a, through the medium of suitably-supported short shafts 59^a, provided at their front ends with bevel-pinions 60^a, meshing with the bevel-pinions 58^a, and at their rear ends with bevel-pinion 61^a, meshing with bevel-pinions 62^a upon the shaft 62. Other means for transmitting motion may be used, if preferred, provided that sufficient speed is developed.

The side members 11 of the horizontal main frame of the machine are provided upon their inner sides with boxes 66, constituting sockets in which bolt members 67 are supported for vertical adjustment by means of nuts 68 at their upper ends. Upon the lower headed ends of the bolt members 67 are supported for rotation sleeves 69, having flanges 70, upon which are mounted rotary cutters 71, which may be raised or lowered, as may be desired, by simply adjusting the nuts 68 upon the bolt members 67, washers 72 being interposed between the sleeves 69 and the boxes or sockets 66. These cutters are rotated only by contact with the stalks of cane which they are designed to sever, and said stalks will readily be severed at the desired height from the ground without splitting or tearing.

Suitably supported upon the rear part of the frame is a carrier or conveyer including an inclined conveyer-trough 73, having bearings near its upper and lower ends for shafts 74 and 75, cooperating to support a suitably-constructed endless carrier 76, which is driven by means to be presently described.

The rear end of the frame of the improved machine is supported upon an axle which is mounted for rotation and which has carrying-wheels 78, the rims of which are provided in the usual manner with earth-engaging lugs 79. The axle has a loose clutch member 80, formed with a sprocket 81, which is connected by a chain 82 with a sprocket 83 upon the driven main shaft 30. The axle also carries a slidable sprocket member 84,

suitably keyed thereon and operable by means of a shipping-lever 85 to throw the axle 77 into and out of gear with the driving mechanism. The axle is provided with a spur-wheel 86, meshing with a spur-wheel 87 upon the shaft 75 of the carrier or conveyer, to which motion may be in this manner transmitted.

The front end of the frame is supported by means of carrying-wheels 87', which are connected by knuckle-joints 88 with stub-axes 89, securely connected with and supported by the side members 11 of the frame. The steering-knuckles are connected, as by link-rods 90, with the ends of a lever 91, supported upon the rear end of the frame in a position convenient to the operator, a handle 92 being provided for the manipulation of the steering-gear.

From the foregoing description, taken in connection with the drawings hereto annexed, the operation and advantages of this improved machine will be readily understood. The machine is not only propelled, but all the operative parts of the machine are driven by the single motor supported upon the rear end of the frame. The parts of the device being automatic in action do not require constant attention, and the services of but one man are necessary for the purpose of operating the machine successfully. As the machine passes over the ground the strippers will operate to strip the leaves from the stalks, and the latter will be moved by the pulling-arms carried by the endless chains into engagement with the floating cutter-carrying head, which by contact with the stalks will be automatically adjusted to the proper position to sever the tops from the stalks, the tops as well as the leaves dropping upon the ground. The stalks presently become engaged by the rotary cutting-disks 71, whereby they are severed and suffered to drop upon the inclined conveyer, whereby they are carried to the point of discharge.

Having thus described the invention, what is claimed is—

1. In a cane-harvester, a U-shaped frame of channel-iron having side members spaced apart at their front ends and curved downwardly and outwardly.

2. In a cane-harvester, a frame having side members spaced apart at their front ends, uprights supported upon said side members, longitudinal approximately horizontal shafts supported for rotation by said uprights, and flat resilient leaf-stripping members extending radially from said shafts.

3. In a cane-harvester, a frame having side members spaced apart at their front ends, uprights supported upon the side members, longitudinal parallel shafts supported for rotation by the uprights, and hubs upon said shafts having radially-extending resilient stripping-arms.

4. In a cane-harvester, stalk-cutting apparatus and rotating top-severing cutters operating transversely across the row of plants in advance of the stalk-cutting apparatus, and horizontal shafts supporting said top-severing cutters and extending longitudinally of the harvester.

5. In a cane-harvester, a vertically-movable frame automatically adjustable by contact with the plants, and top-severing cutters operating in said frame in an approximately vertical plane.

6. In a cane-harvester, a vertically-movable frame automatically adjustable by contact with the plants, and a top-severing cutter supported for operation in said frame in an approximately vertical plane.

7. In a cane-harvester, a frame supported for free vertical movement and automatically adjustable by contact with the plants, and a top-severing cutter supported for rotation in said frame in an approximately vertical plane.

8. In a cane-harvester, a frame disposed across the row of plants engaged by the machine and supported for free vertical movement, said frame being automatically adjustable by contact with the plants, and a top-severing cutter supported for operation in said frame in an approximately vertical plane.

9. In a cane-harvester, cane-cutting apparatus, and top-severing cutters operating in an approximately vertical plane transversely across the row of plants in advance of the cane-cutting apparatus.

10. In a cane-harvester, cane-cutting apparatus, a vertically-movable frame disposed in advance of the cane-cutting apparatus and automatically adjustable by contact with the plants, and a top severing-cutter carried by said frame.

11. In a cane-harvester, cane-cutting apparatus, a vertically-movable frame disposed in advance of the cane-cutting apparatus and automatically adjustable by contact with the plants, and a top severing-cutter operating in said frame in an approximately vertical plane.

12. In a cane-harvester, cane-cutting apparatus, a frame supported for free vertical movement in advance of the cane-cutting apparatus and automatically adjustable by contact with the plants, and a top-severing cutter supported for rotation in said frame in an approximately vertical plane.

13. In a cane-harvester, cane-cutting apparatus, a frame supported for free vertical movement in advance of the cutting apparatus, said frame being disposed transversely across the row of plants engaged by the machine, means for counterbalancing the frame to enable it to be adjusted automatically by contact with the plants, and a top-severing

cutter supported for operation in said frame in an approximately vertical plane.

14. In a cane-harvester, cane-cutting apparatus, a vertically-movable frame disposed across the row of plants engaged by the machine in advance of the cane-cutting apparatus, a top-severing cutter supported for operation in said frame in an approximately vertical plane, and cushion-springs for resiliently supporting said frame.

15. In a cane-harvester, a vertically-movable frame disposed across the row of plants engaged by the machine and automatically adjustable by contact with the plants, a top-severing cutter operating in said frame in an approximately vertical plane, and means for bending the stalks or plants beneath said frame.

16. In a cane-harvester, a vertically-movable frame disposed across the row of plants engaged by the machine and automatically adjustable by contact with the plants, a top-severing cutter operating in said frame in an approximately vertical plane, and endless chains having plant-engaging arms for bending the plants in the direction of the vertically-movable frame.

17. In a cane-harvester, tubular uprights, a frame supported for vertical movement upon said uprights, a top-severing cutter in said frame, weights within the uprights, and suitably-guided flexible elements connecting the weights with the frame.

18. In a cane-harvester, a pair of uprights, a vertically-movable frame guided upon said uprights, a stalk-severing cutter supported for operation in the frame, and springs coiled about the uprights to support the frame.

19. In a cane-harvester, tubular uprights, a vertically-movable frame guided upon said uprights, a top-severing cutter supported for operation in the frame, supporting-springs coiled about the uprights, counterweights within the uprights, and suitably-guided flexible elements connecting the weights with the frame.

20. In a cane-harvester, a pair of uprights, sleeves movable upon said uprights, connecting-rods carried by the sleeves, front and rear plates supported by the rods, boxes connected adjustably with said plates, shafts supported for rotation in the boxes, and cutters upon the shafts.

21. In a cane-harvester, a vertically-movable frame disposed across the row of plants engaged by the machine and automatically adjustable by contact with the plants, a plurality of horizontal shafts supported for rotation in said frame, circular cutters upon said shafts disposed to operate in an approximately vertical plane, and means for continuously rotating the shafts in the various positions occupied by the frame.

22. In a cane-harvester, a pair of uprights,

a vertically-movable frame guided upon said uprights, shafts supported by the frame and provided with bevel-pinions, cutters upon said shafts, a cross member connecting the 5 uprights, hubs supported by the cross member and mounted therein for rotation, longitudinally-grooved shafts extending through the hubs and having pinions meshing with the bevel-pinions upon the cutter-carrying 10 shafts, splines connecting the hubs in the cross member with the longitudinally-grooved shafts extending therethrough, a driven shaft supported for rotation by the cross member, and means for transmitting motion from said 15 shaft to the hubs.

23. In a cane-harvester, a pair of uprights, a vertically-movable frame guided upon said uprights and extending across the row of plants operated upon by the machine, a top- 20 severing cutter supported for operation in said frame in an approximately vertical plane, stalk-cutting apparatus arranged in rear of the uprights supporting the vertically-

movable cutter-carrying frame, and endless chains surrounding said uprights and having 25 outwardly-extending plant-engaging arms.

24. In a cane-harvester, a pair of longitudinally-supported shafts, strippers connected with said shafts, a pair of endless chains having outwardly-extending cane-engaging arms, 30 a vertically-movable frame extending across the row of plants engaged by the machine, and adapted to be automatically adjusted by contact with the plants, stalk-severing means, an endless conveyer, a motor, run- 35 ning-gear, and means for transmitting motion from the motor to the running-gear and to the operative parts of the machine.

In testimony that we claim the foregoing as our own we have hereto affixed our signa- 40 tures in the presence of two witnesses.

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Witnesses:

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