No. 640,389. Patented Jan. 2, 1900.

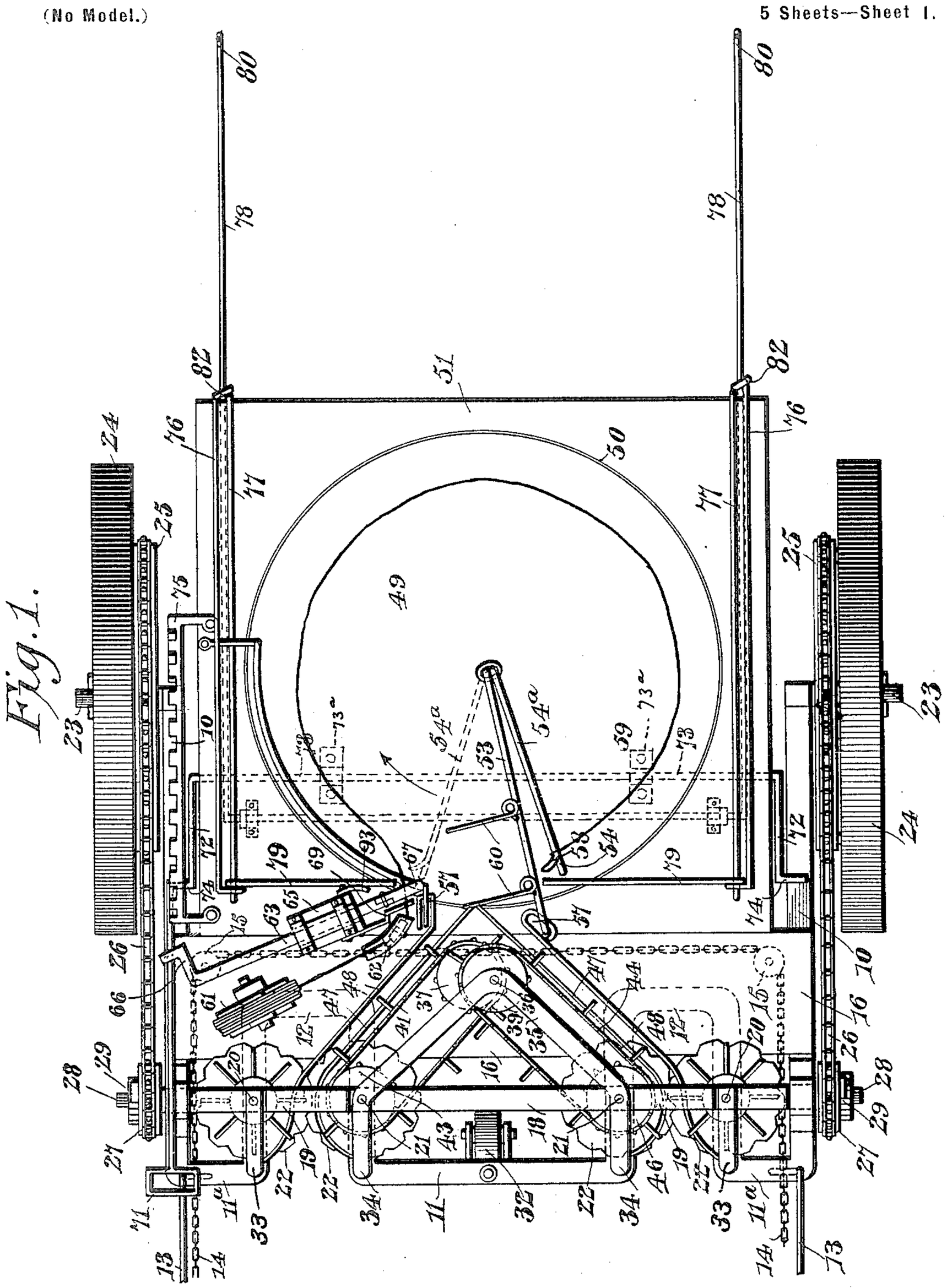
H. V. JOSEPH.

CORN HARVESTER.

(Application filed Mar. 29, 1899.)

(No Model.) 5 Sheets—Sheet 1.

Fig. 1.



Witnesses

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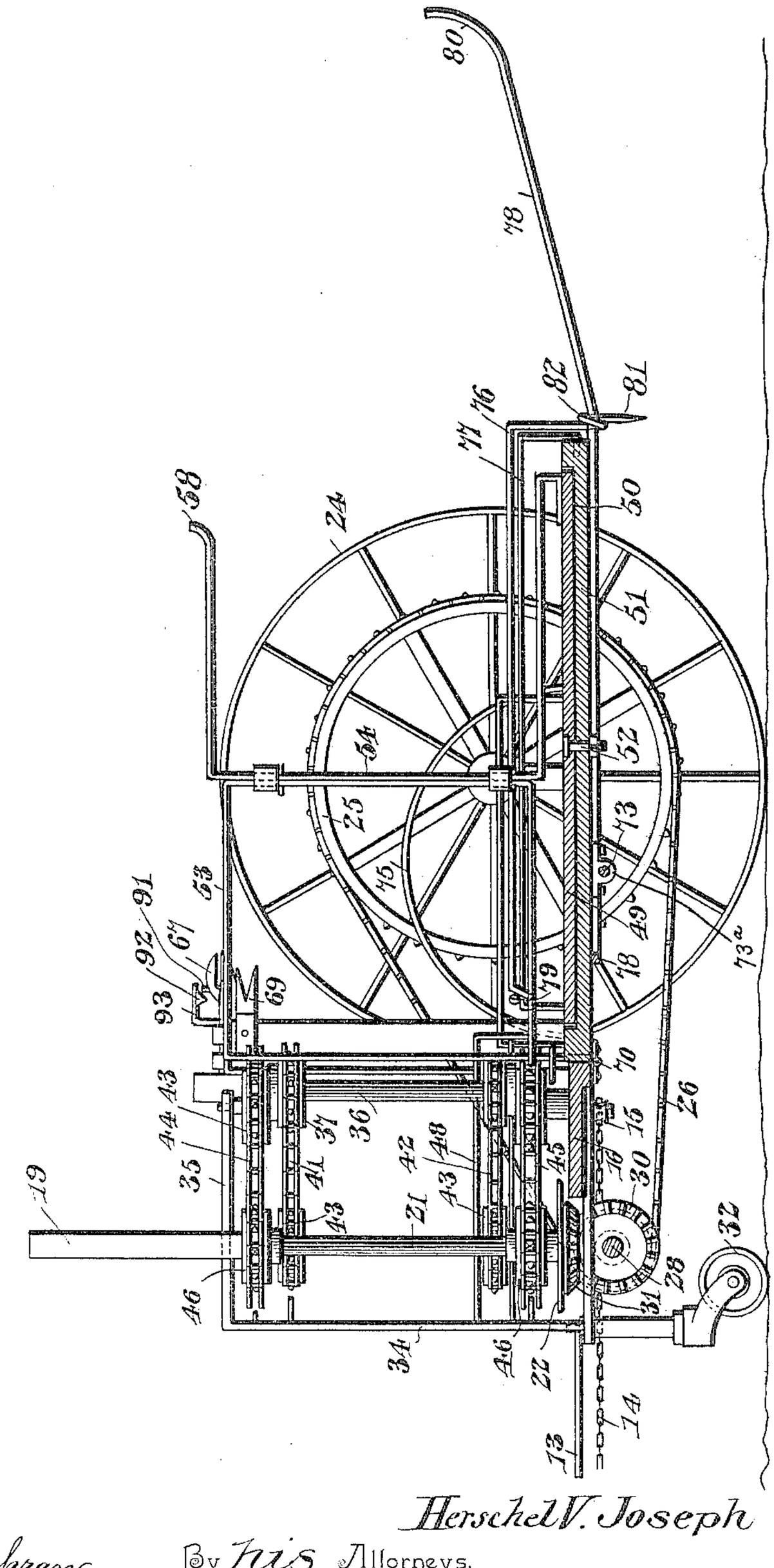
(No Model.) 5 Sheets—Sheet 2.

Fig. 2.



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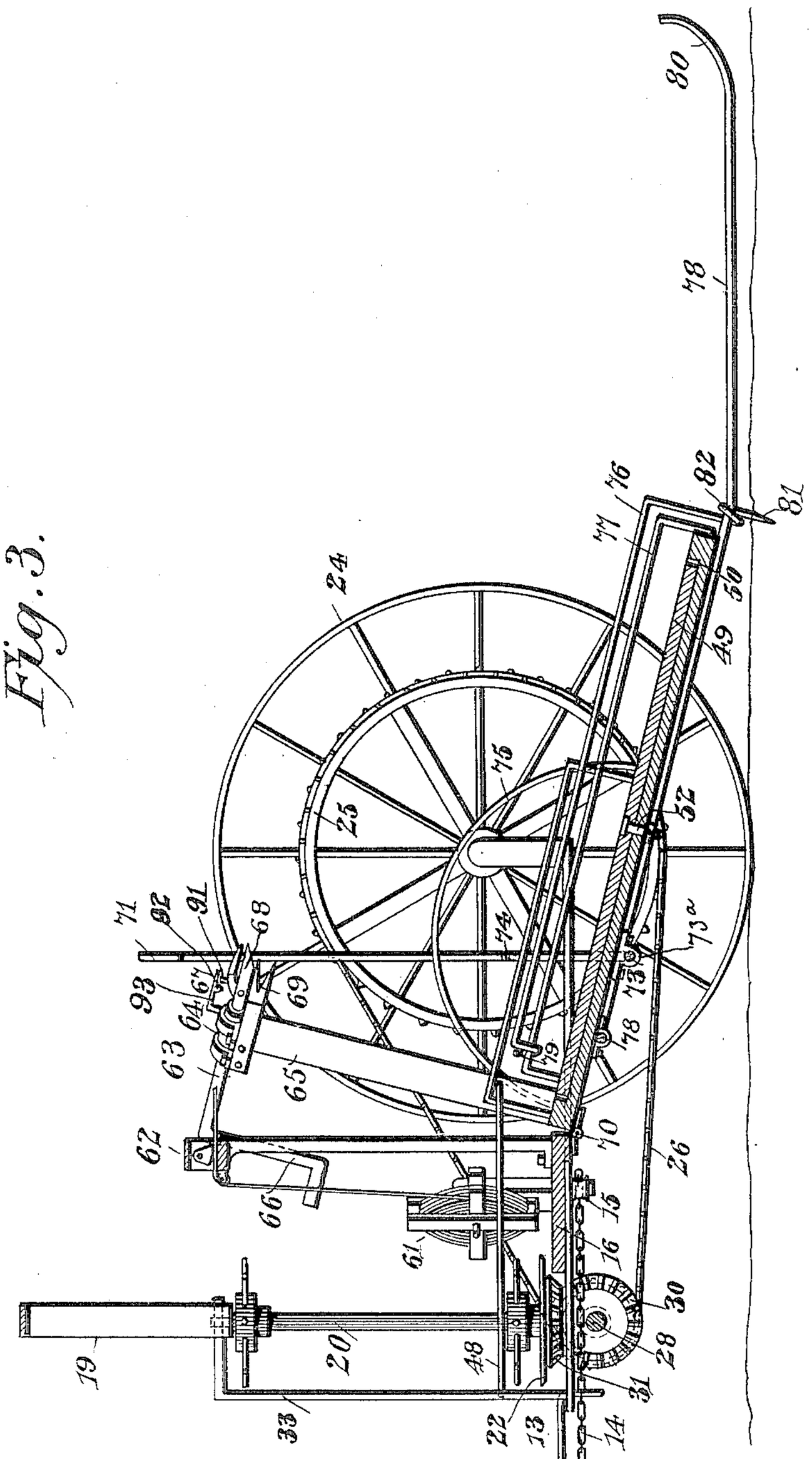
(No Model.) 5 Sheets—Sheet 3.

Fig. 3.



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(No Model.) 5 Sheets—Sheet 4.

Fig. 4.

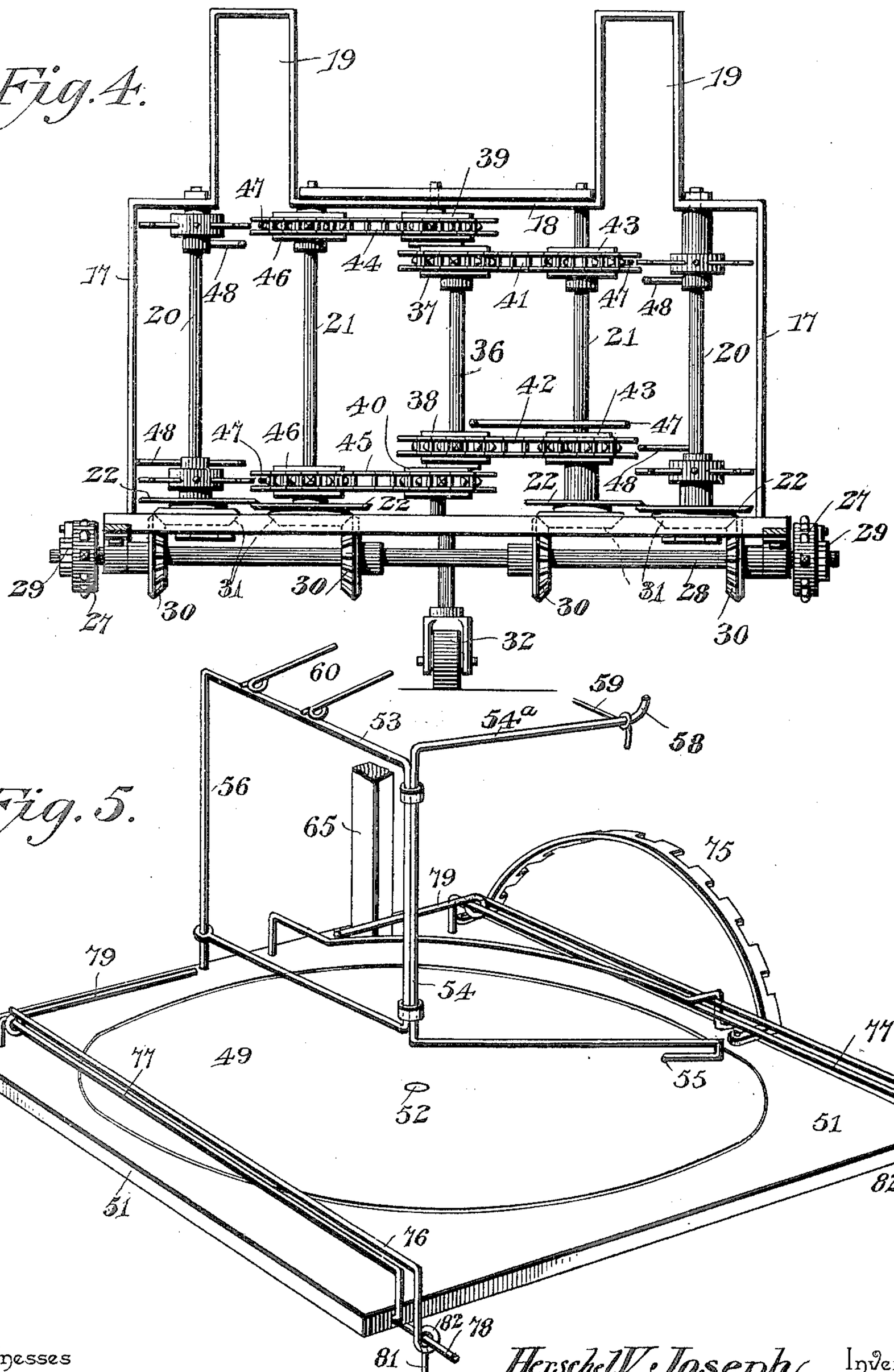

Fig. 5.

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(No Model.) 5 Sheets—Sheet 5.

Fig. 6.

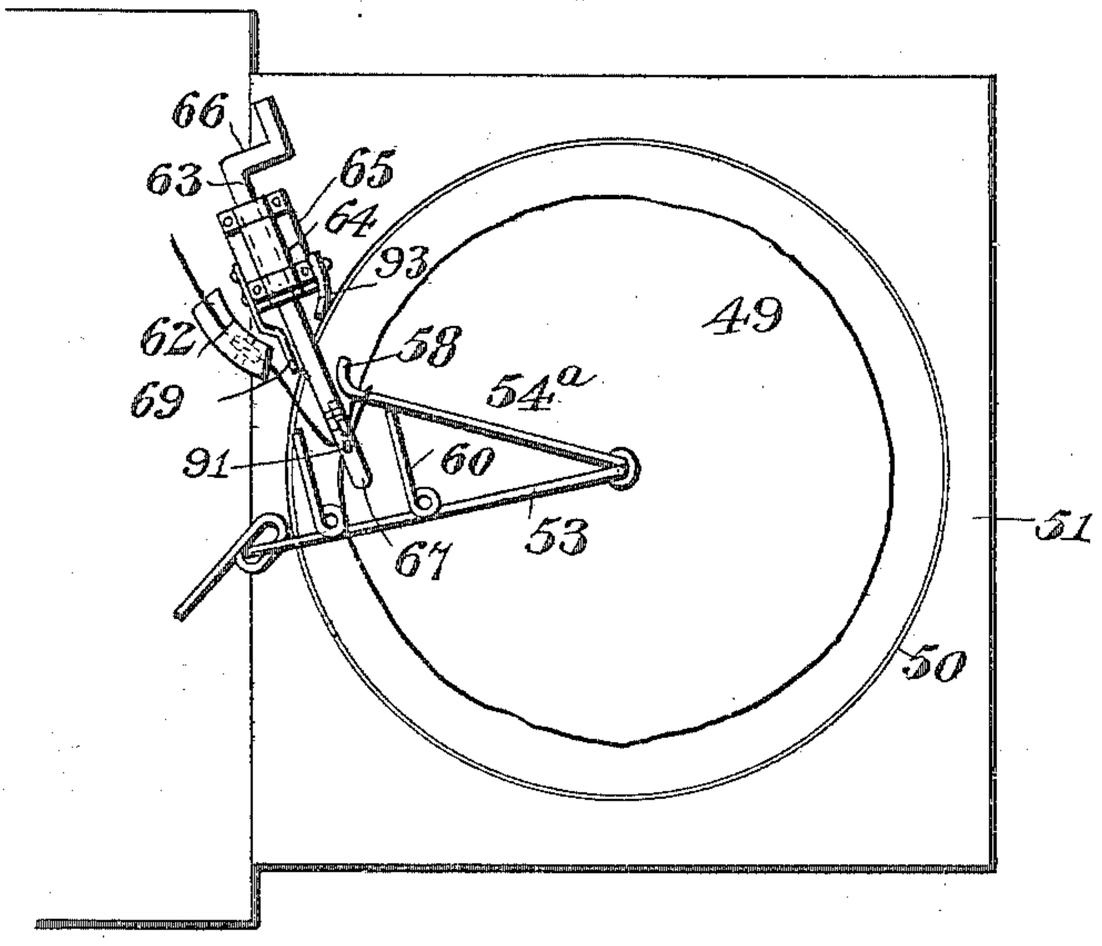


Fig. 7.

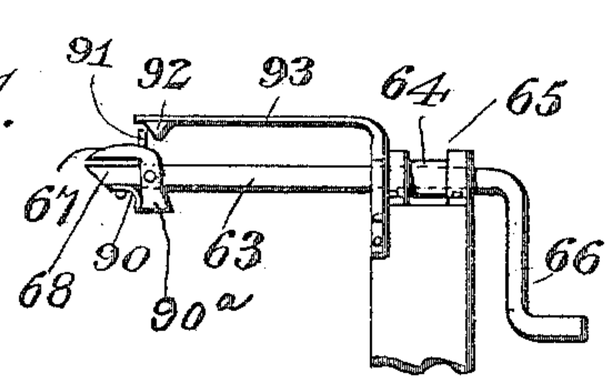
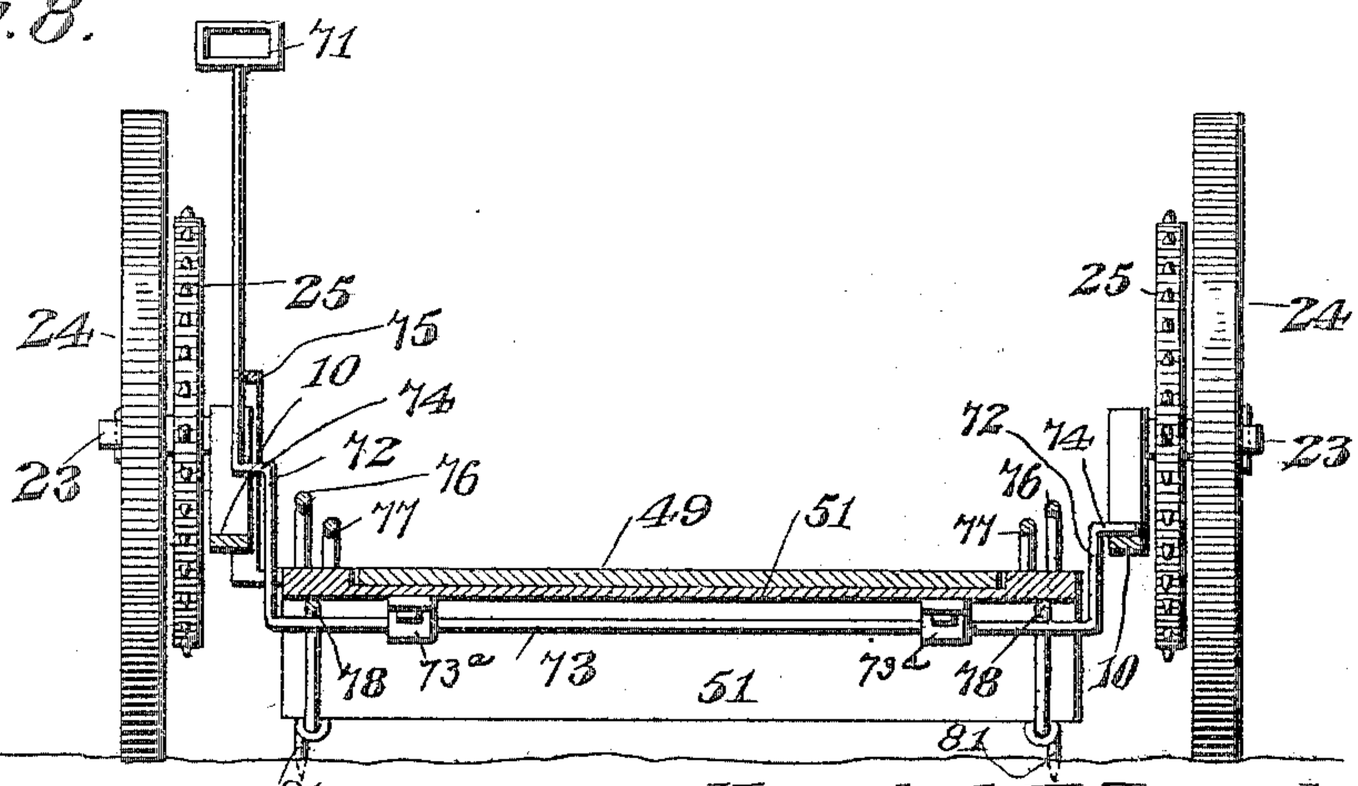


Fig. 8.



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UNITED STATES PATENT OFFICE.

HERSCHEL V. JOSEPH, OF AVALON, MISSOURI, ASSIGNOR OF ONE-HALF TO PETER T. HEDGES, OF PURDEN, MISSOURI, AND JOEL E. JOSEPH, OF SKELETON, OKLAHOMA TERRITORY.

CORN-HARVESTER.

SPECIFICATION forming part of Letters Patent No. 640,389, dated January 2, 1900.

Application filed March 29, 1899. Serial No. 710,986. (No model.)

To all whom it may concern:

Be it known that I, HERSCHEL V. JOSEPH, a citizen of the United States, residing at Avalon, in the county of Livingston and State of Missouri, have invented a new and useful Corn-Harvester, of which the following is a specification.

My invention relates to corn-harvesters, and has for its object to provide a simple and compact shocking mechanism in connection with cutting and conveying devices, and, furthermore, to provide efficient means whereby the completed shock may be discharged from the shocking-table.

Further objects and advantages of this invention will appear in the following description, and the novel features thereof will be particularly pointed out in the appended claims.

In the drawings, Figure 1 is a plan view of a harvester constructed in accordance with my invention. Fig. 2 is a central longitudinal section of the same, showing the parts in their normal or operative position. Fig. 3 is a similar view showing the shocking-table in its tilted or discharging position. Fig. 4 is a transverse section showing the cutting and conveying devices in elevation. Fig. 5 is a detail view in perspective of the shocking mechanism. Fig. 6 is a detail plan view showing the tying mechanism and the position of the tie with respect thereto, as also adjacent parts of the apparatus. Fig. 7 is a detail side elevation of the tying mechanism. Fig. 8 is a transverse section of the tilting platform, taken adjacent to the tilting lever and showing the connections thereof.

Similar reference characters indicate corresponding parts in all the figures of the drawings.

The supporting-frame of the harvester embodying my invention consists of side bars 10, connected at their front ends by a front bar 11, which is offset rearwardly at intervals to form loops 12, constituting entrance-openings, whereby the standing stalks of the corn in parallel rows are brought into contact with the cutting devices. To the end portions 11ª of the front bar are connected the draft appliances, of which I have deemed it necessary to illustrate only the adjacent extremities of tongues 13, the draft-chain 14 being extended under the plane of the supporting-frame, around direction-pulleys 15, and transversely beneath said frame, as beneath a fixed horizontal platform 16. In the construction illustrated the draft-chains, which extend forward from the supporting-frame, are connected beneath the platform 16, and, as shown, they may be constructed of a single chain to constitute a draft-equalizer. Rising from the side bars 10, near their front ends and in a transverse plane between the mouths of said entrance-openings and the rear ends of the loops 12, are standards 17, connected by a cross-bar 18, which is arched, as shown at 19, directly over the said entrance-openings of the main frame to allow the upper ends of the stalks to pass therethrough. Mounted vertically in alined bearings formed, respectively, in said cross-bar 18 and the rearwardly-offset portions of the front bar 11 are pairs of outer and inner spindles 20 and 21, respectively carrying cooperating knives 22, of which the adjacent portions of the edges are located in the centers of said entrance-openings of the supporting-frame to cut the stalks as the machine advances to bring the knives in contact therewith. Also the rear ends of the side bars 10 are offset laterally to form stub-axles 23, upon which are mounted the ground or driving wheels 24, having sprocket-wheels 25, connected by chains 26 with sprocket-pinions 27 on a transverse or counter shaft 28, located, preferably, in the vertical plane of the upright spindles 20 and 21. A clutch connection 29 is preferably arranged between each sprocket-pinion and the transverse or counter shaft to allow independent backward rotation of the connected ground or driving wheel, and said shaft carries bevel-gears 30, by which motion is communicated through similar bevel-gears 31 to the upright spindles 20 and 21. Also a caster-wheel 32 is arranged under the center of the front bar 11 to support the front of the frame. Also rising from the front bar 11 and connecting the same with the cross-bar 18 at opposite sides of the entrance-openings of the frame are vertical outer and inner guards 33 and 34, of which

the inner uprights 34 are extended rearwardly and connected to form a loop 35 of approximately V shape in plan. This loop constitutes a bracket, at the center of which is formed a point of attachment for the upper end of a cranked shaft 36, having inner or adjacent spindle portions, upon which are mounted sprocket-wheels 37 and 38, and outer offset or eccentric spindle portions, upon which are mounted sprocket-wheels 39 and 40, the sprocket-wheels 37 and 38 being connected by conveyer-chains 41 and 42 with similar upper and lower sprocket-wheels 43 on one of the inner upright spindles 21 and the sprocket-wheels 39 and 40 being connected by upper and lower conveyer-chains 44 and 45 with upper and lower sprocket-wheels 46 on the other inner spindle 21. Obviously these conveyer-chains receive motion from the spindle 21, which in turn are actuated by the transverse counter-shaft 28, and said chains are provided with the usual spurs, which span the interval between rearwardly-convergent inner and outer guide-rods 47 and 48, arranged in upper and lower pairs and combining to form ways which are flared at their front ends to receive the stalks in advance of the cutter disks or knives, and thus are parallel-sided to guide the stalks in their rearward passage to the shocking mechanism. The offset arrangement of the sprocket-wheels 37 to 40 provides for the operation of each pair of conveyer-chains without interfering with the other, and thus allows the stalks, which are severed by the two sets of knives, to be brought together at the point of convergence of the ways formed by said guide-rods 47 and 48. The inner guide-rods 47 are preferably connected at their rear ends, each rod being arranged in the horizontal plane of the conveyer-chain with which it coöperates; but the rear ends of the outer guide-rods 48 are separated to form an outlet for the stalks and allow them to be fed upon the revoluble shocking-table 49. This shocking-table, which is preferably circular in plan, is fitted in a seat 50 in a tilting platform 51, a central spindle 52 being employed to connect the table with the platform. In addition to the rotary table 49 the shocking mechanism includes stationary and movable spreading-frames 53 and 54ª, of which the latter may be pivotally mounted upon the former in alinement with the axis of the table, as clearly shown in Fig. 5, the outer end of said movable frame having attachment, as at 55, to the table and being adapted, as hereinafter explained, to communicate rotary motion to said table. In the construction illustrated the fixed spreader-frame 53 is provided with a front upright 56, which rises from the tilting platform 51 and has a slotted connection, as at 57, with the rear ends of the adjacent outer guide-rods 48, such slotted connection being designed to allow the tilting of the platform 51 without straining the guides of the conveying devices and at the same time without allowing disconnection of the fixed spreader-frame from said guide-rods. The movable or pivotal spreader-frame consists of upper and lower arms, (of which the latter, as described, is secured at its outer end to the rotary table,) and at the extremity of the upper one of these arms is formed a hook 58 for engagement with a tie-wire 59. Also extending laterally from the upper portion of the fixed spreader-frame are presser-arms 60, which when the movable spreader-frame is in its initial position, as indicated in dotted lines in Fig. 1, or adjacent to the plane of the fixed spreader-frame said presser-arms span the interval therebetween and are arranged across the path of stalks advanced by the conveying devices upon the shocking-table. The flexible tie, which may consist of wire or any other suitable material, is supplied from a reel 61, suitably mounted upon the stationary platform 16, and after passing through a guide 62 it is terminally attached to or engaged by the extremity of the carrier-arm, consisting of the upper member of said movable spreader-frame. Preferably the guide 62 is constructed with a clamping device, whereby backward or return movement of the tie is prevented, as when the tie is severed at a point in rear of the guide after the completion of a shock, and also of such a construction as to allow the tie to feed freely therefrom as the carrier-arm 54ª of said movable spreader-frame is advanced in the direction indicated by the arrow in Fig. 1.

In operation the spreader-frames are disposed in a forwardly-divergent relation to laterally bound a space which is in communication with the outlet of the conveyer devices, and as the severed stalks are fed rearwardly upon the table 49 they enter said space between the spreader-frames and, advancing toward the point of connection of said frames, tend to separate the same, and thus cause swinging movement of the frame 54 in the direction indicated by said arrow in Fig. 1, said separating or spreading action allowing greater space for the accommodation of the stalks, and the operation of spreading being continued until a shock is completed. The presser-arms 60, which are arranged in the path of the stalks as they enter the shocking mechanism, are pressed rearwardly; but their resilience serves to impart an outward pressure to the stalks, which assists in communicating motion to the movable spreader-frame, and thus increases the efficiency of the spreading action. The tie-wire being brought from the reel 61 through the guide 62 is passed over a cutter 69 and is then terminally attached to the carrier-arm 54ª. The tie-wire is maintained at all times outside of the forming shock, and thus serves to hold the stalks compactly between the spreader-frames. The advance of the movable spreader-frame continues until it reaches a position beyond the fixed portion of the frame, as shown in Fig. 6 of the drawings, carrying the wire around the

stalks and crossing it at a point between the jaws of the tying mechanism, which will be presently described. This tying mechanism, as shown in the drawings, and particularly in Fig. 6, consists of a tie-spindle 63, slidably journaled in the bearing 64, supported by the standard 65 and provided with a crank or handle 66, through the medium of which said spindle may be both reciprocated and rotated.

One end of the spindle has a fixed jaw 68, and pivoted to the spindle is a coöperating jaw 67, adapted for gripping action in connection with the fixed jaw. Between these jaws extends the tie-wire directly after passing over the cutter above mentioned, the wire playing through the jaws during the advance of the movable spreader-frame. As the movable spreader-frame passes these jaws it carries the end of the tie-wire between them, and thus makes a cross of the wire, the movable spreader-frame stopping at a point which brings this cross between the jaws and in a position to be gripped thereby.

In order to effect the gripping action of the jaws, the rear end of the jaw 67 is extended beyond its pivot and hangs below the spindle and has engaged therewith one end of the spring-plate 90, fixed to the under side of the spindle, and which spring tends to hold the jaws normally in an engaging position.

In order to open the jaws to grasp the crossed portion of the wire, a projection 91 is formed upon the upper surface of the pivoted jaw, and above its pivot and in the path of this projection as the spindle is reciprocated lies a block 92, supported by a spring 93, fixed to the support of the bearing 64. This block 92 is substantially triangular in form, and the tension of the spring 93 is such that as the spindle is moved forwardly the projection 91 will strike the block 92 and the pivoted jaw will be moved to an open position against the influence of the spring 90, and when the jaw has moved to the limit of its open position further outward movement of the spindle will cause the projection 91 to raise the block 92 and pass thereunder. At this time the open jaws are inclosing the crossed portions of the wire. When the projection 91 passes beyond the block 92, the jaws are brought together by the spring 90 and grip the wire with sufficient force to permit the twisting together of the ends of the wire. After the cross-wires have been gripped and before the twisting operation takes place the wire is cut upon the knife adjacent to the holder 62. After the twisting operation has been performed the spindle is drawn rearwardly until the depending end of the pivoted jaw engages the front of the block, when this engagement will act to move the pivoted jaw to release the wire, the pivoted jaw having its depending portion projecting slightly rearwardly, as shown at 90^a in Fig. 7, to accomplish this result.

The tilting platform 51 is hingedly mounted at its front edge, as shown at 70, upon the rear edge of the fixed platform 16 and is adapted to swing between the vertical planes of the side bars 10 for depression independently of the main frame. For returning this tilting platform to its normal position after being depressed at its rear edge, as indicated in Fig. 3, and maintaining the same in its normal or horizontal position, as indicated in Fig. 2, I have illustrated a hand-lever 71 connected at its lower end with a stirrup 72, of which the transverse portion 73 extends under the platform, as shown in dotted lines in Fig. 1, and is journaled in bearing-blocks 73^a. (Shown in Fig. 8.) The stirrup has offset bearing portions 74, which are mounted upon the adjacent horizontal side bars 10 of the supporting frame, and with one of which offsets the lever 71 is directly connected. The lever is adapted to operate in connection with a notched or toothed segment 75, terminally fixed to the platform 51 and adapted to hold said lever at different points in its adjustment. This platform-operating device is unconnected with the platform-supporting frame, the offset bearing portions 74 being free to slide toward and from the axis of the ground-wheels upon the side bars 10 and the transverse supporting member 73 of the stirrup being pivoted to the under surface of the platform. It will be seen that when the bearing portions 74 of the platform-adjusting device are arranged in rear of the fulcrum-point 70 of said platform the depression of the front or free end of the lever will impart upward pressure to the platform and that when the platform reaches the desired elevation the engagement of the lever with one of the notches or teeth of the segment will maintain it in that position. Preferably the lever is of a sufficiently yielding construction to adapt it to be engaged with or disengaged from the notches or teeth of the segment by a lateral swinging movement, the resilience of said lever normally holding it in position to engage the same.

In addition to the above-described mechanism, however, I have found it desirable to employ means for positively discharging a completed shock from the shocking-table, and in the construction illustrated said means consist of discharging-slides 76, mounted at opposite sides of the platform 51 upon guides 77 and 78, said slides being provided at their front ends with follower-arms 79, which extend inwardly over the surface of the platform and are normally arranged in advance of the shock. The guides 77 are secured to and extend longitudinally over the surface of the platform 51, while the guides 78 consist of arms extending rearwardly from the platform and terminating in upturned deflected or cam portions 80. Also the slides 76, of which the rear ends are mounted upon the guide-arms 78, are provided with spurs 81, which when the slides are in their normal positions are located adjacent to the rear edge of the platform 51 and are adapted to be forced into and engage the soil when the platform 51 is tilted or is released to drop with the weight

of the superposed shock. After the engagement of these spurs with the soil the forward movement of the machine will cause the follower-arms 79 to rearwardly traverse the upper surface of the shocking-table, and thus drag the shock from its place upon said table and deposit it in an upright position upon the ground in rear of the machine. As the guide-eyes 82 at the rear ends of the slides 76 reach the cam portions 80 of the guide-arms 78 they are elevated to withdraw the spurs 81 from the soil, whereupon by means of the lever 71 the platform may be returned to its normal or elevated position, and this causes a forward inclination of the guide-arms 78, which in turn causes the slides 76 to slip forward upon the guides until they reach their normal position. As shown in the drawings, the bar 79 passes under the frames 54.

It will be understood that in practice various changes in the form, proportion, size, and minor details of construction within the scope of the appended claims may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

Having described my invention, what I claim is—

1. In a harvester, the combination with a supporting-framework, of cutting and conveying devices including knives, rearwardly-convergent ways for guiding severed stalks, and rearwardly-convergent pairs of conveyer-chains having spurs adapted respectively to span said ways, means for carrying said conveyer-chains, consisting of a rear central cranked shaft having offset or eccentric spindle portions, and pairs of sprocket-wheels mounted respectively upon said spindle portions, and means for operating said knives and conveyers, substantially as specified.

2. In a harvester, the combination with cutting and conveying devices, of shocking mechanism consisting of a rotary table, and fixed and movable spreader-frames arranged in intersecting planes, with the space therebetween in communication with the point of delivery of the stalk-conveying devices when the movable frame is in its initial position, and said movable frame being connected with the rotary table for movement simultaneously therewith, substantially as specified.

3. In a harvester, the combination with cutting and conveying devices, of a shocking mechanism having a rotary table, fixed and movable spreader-frames arranged in intersecting vertical planes with the space therebetween in communication with the point of delivery of the stalk-conveying devices when the movable frame is in its initial position, said movable spreader-frame being connected with the rotary table for communicating motion thereto, and having a tie-carrying arm, adapted to carry a flexible tie extending through a guide arranged adjacent to the initial position of the movable frame, substantially as specified.

4. In a harvester, the combination with cutting and conveying devices, of a shocking mechanism having a rotary table, fixed and movable spreader-frames arranged in intersecting vertical planes with the space therebetween in communication with the point of delivery of the stalk-conveying devices when the movable frame is in its initial position, said movable spreader-frame being connected with the rotary table for communicating motion thereto, and having a tie-carrying arm, a fixed tie-guide arranged adjacent to the initial position of the movable frame, and having a clamping device, said parts adapted to carry a flexible tie extending through said guide and engaged by the carrier-arm of the movable frame, and tying mechanism, substantially as specified.

5. In a harvester, the combination with cutting and conveying devices, of a shocking mechanism having a rotary table, fixed and movable spreader-frames arranged in intersecting vertical planes with the space therebetween in communication with the point of delivery of the stalk-conveying devices when the movable frame is in its initial position, said movable spreader-frame being connected with the rotary table for communicating motion thereto, and having a tie-carrying arm, a tie terminally engaged by said carrier-arm and extending through a guide adjacent to the initial position of the movable frame, and yielding presser-arms carried by the stationary frame and extending transversely into the space between said frames, substantially as specified.

6. In a harvester, the combination with a supporting-frame and cutting, conveying and shocking devices, of a tilting platform carrying the shocking devices and adapted to be depressed at its rear edge to discharge a completed shock, a lever having a stirrup extending under said platform and provided with offset bearing portions engaging loosely upon adjacent portions of the supporting-frame adapted for downward pressure upon said adjacent portions, and a toothed segment carried by the platform for engagement by the lever, substantially as specified.

7. In a harvester, the combination with a supporting-frame having parallel side bars, and cutting, conveying and shocking devices, of a tilting platform hinged at its front edge for depression at its rear edge to discharge a completed shock, a platform-operating lever having a stirrup extending beneath and connected with the platform, and provided with offset bearing portions engaging loosely upon and having downward pressure upon said side bars of the frame and unconnected therewith, and a toothed segment carried by the platform for engagement by said lever, substantially as specified.

8. In a harvester, the combination with cutting, conveying and shocking devices, of a tilting platform, adapted for depression at its rear edge to discharge a completed shock, and shock-discharging devices consisting of slides

mounted upon the platform, provided at their rear ends with spurs for engagement with the soil, to hold the slides in a fixed position, and follower-arms at their front ends for engaging the shock, substantially as specified.

9. In a harvester, the combination with cutting, conveying, and shocking devices, of a tilting platform, adapted for depression at its rear edge to discharge a completed shock, shock-discharging slides mounted upon the platform and provided at their rear ends with spurs for engagement with the soil when the platform is depressed, and cams carried by the platform for engagement with said slides, to withdraw the spurs thereof from the soil, substantially as specified.

10. In a harvester, the combination with cutting, conveying and shocking devices, of a tilting platform, adapted for depression at its rear edge to discharge a completed shock, shock-discharging slides mounted upon the platform and provided at their rear ends with soil-engaging spurs and at their front ends with follower-arms, and guide-arms extending rearwardly from the platform to support the rear ends of the slides, and provided with cam portions for deflecting the rear ends of the slides to withdraw the spurs thereof from the soil, substantially as specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

HERSCHEL V. JOSEPH.

Witnesses:
JAMES M. PRICE,
GRANVILLE V. DE WITT.