

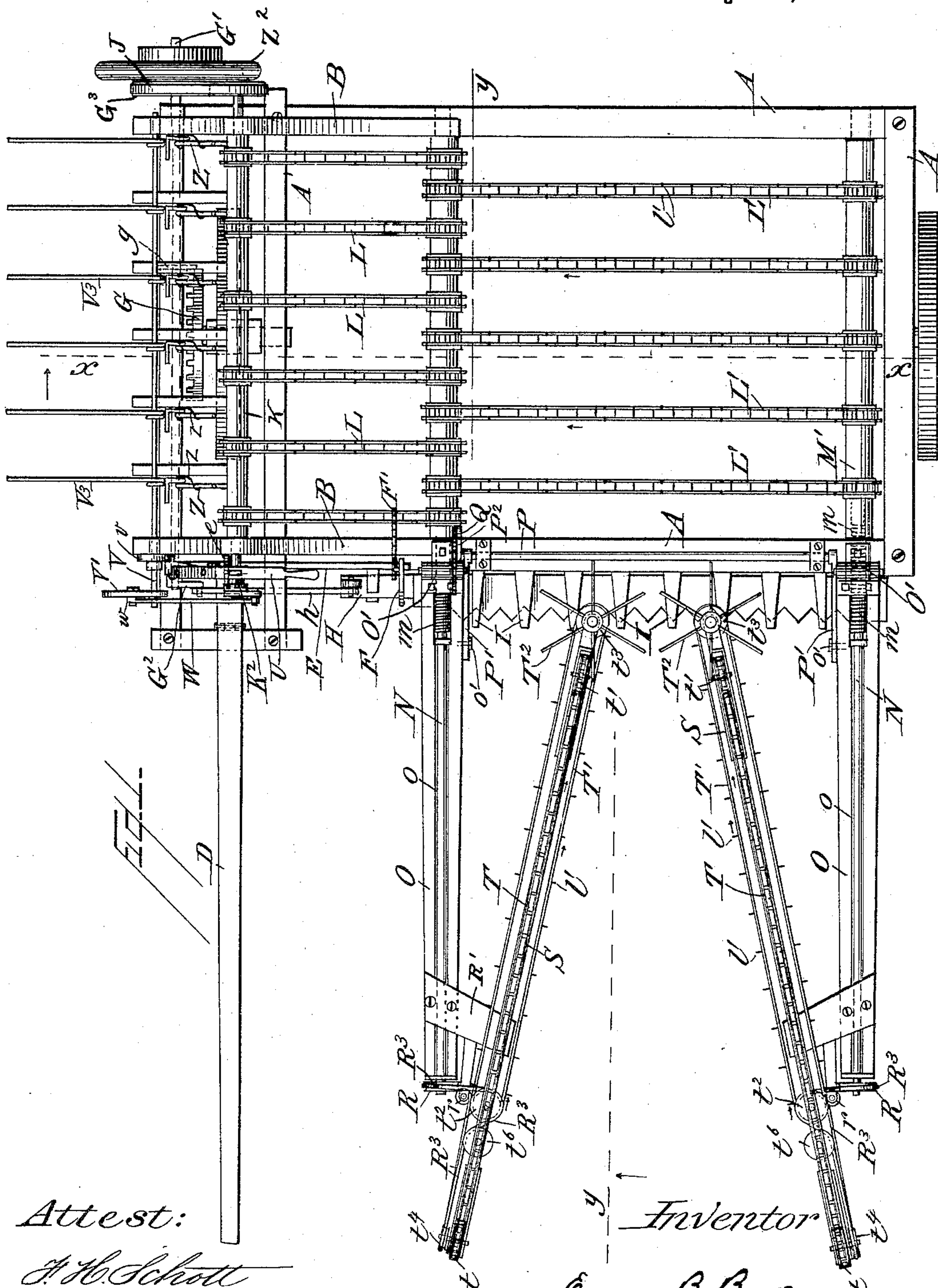
(No Model.)

3 Sheets—Sheet 1.

E. B. BOWEN.
CORN HARVESTER.

No. 474,359.

Patented May 10, 1892.



Attest:

F. H. Schott

W. Harvey Muzzey.

Inventor

Eugene B. Bowen
by Wm. Babcock, Atty.

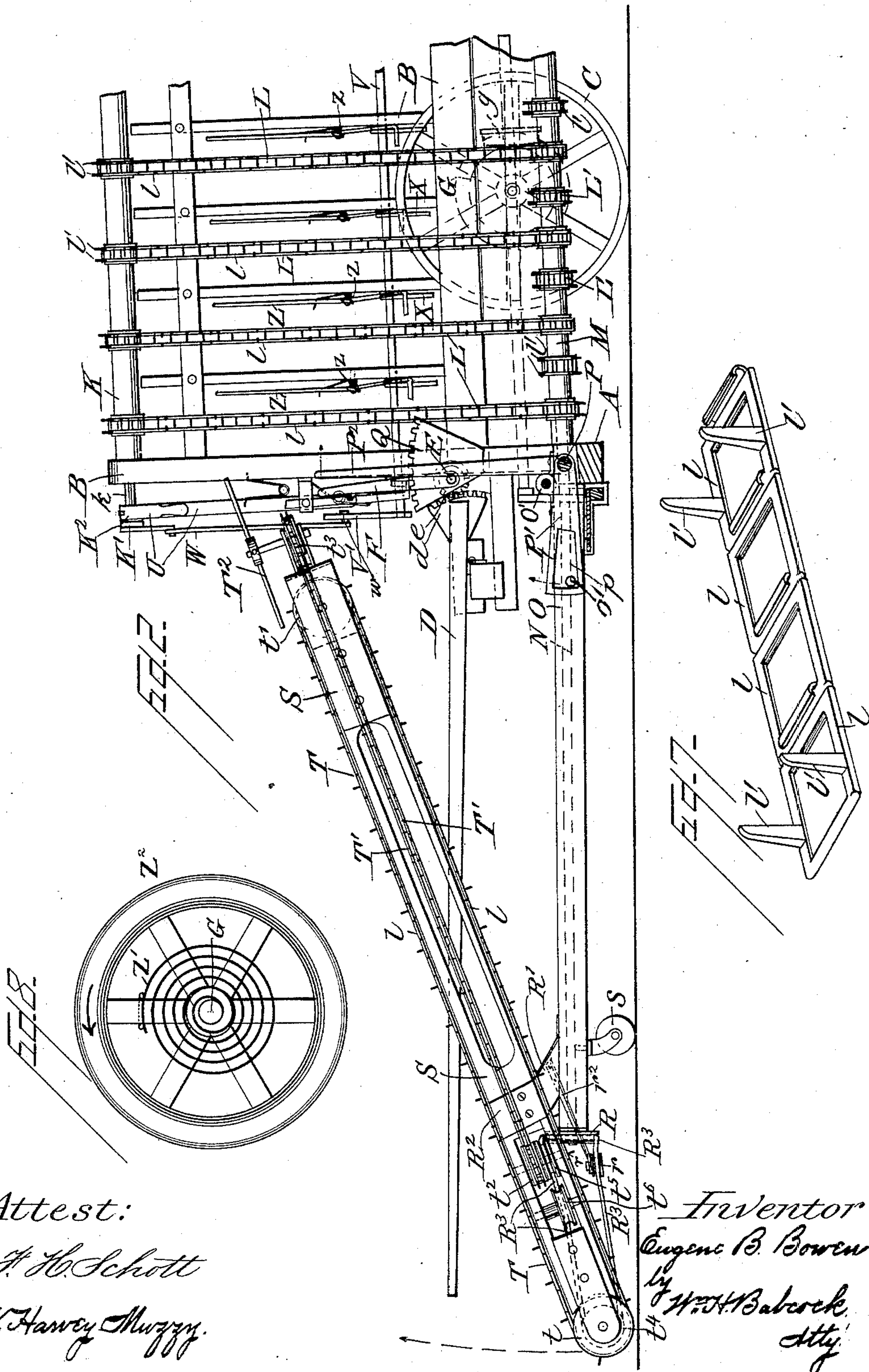
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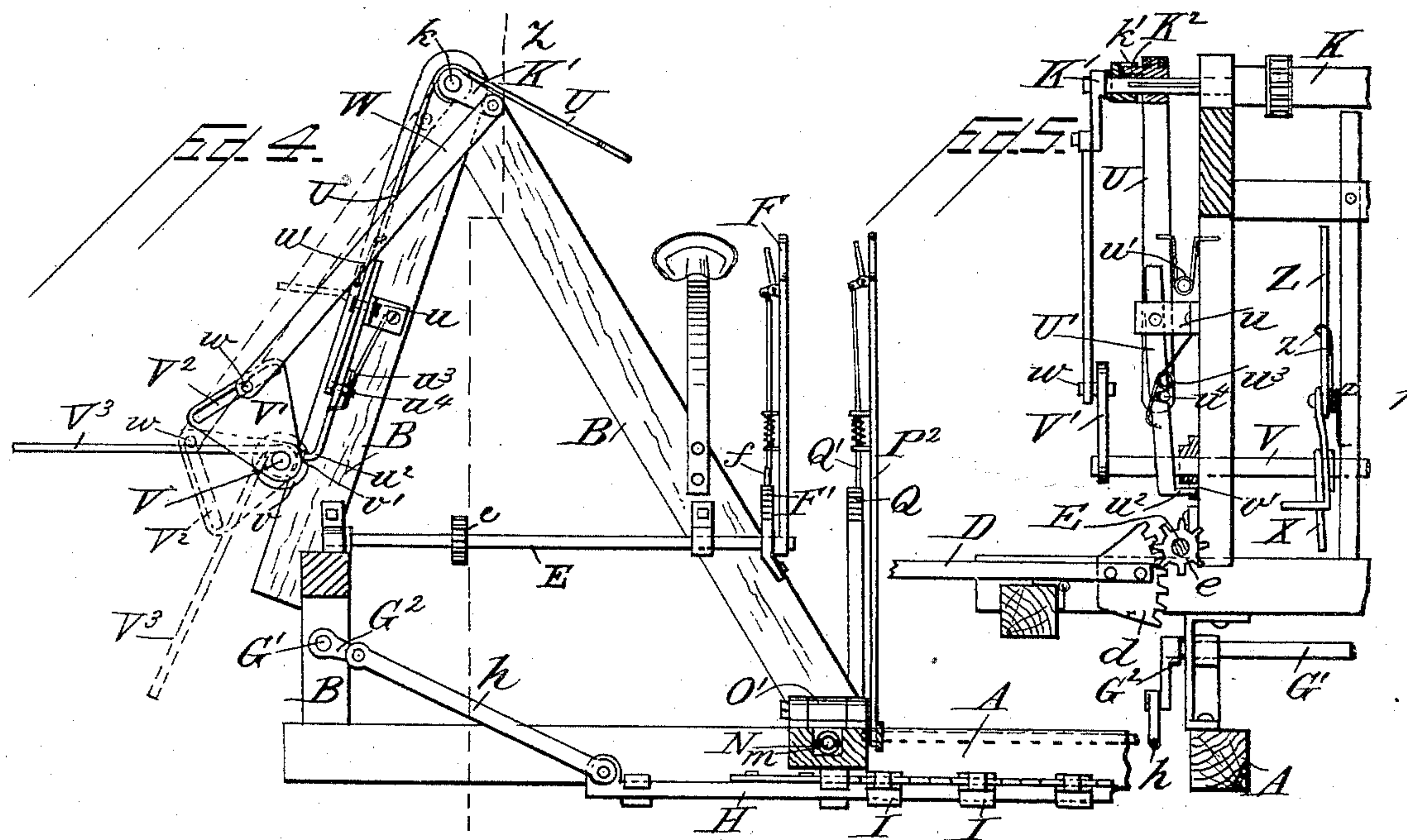
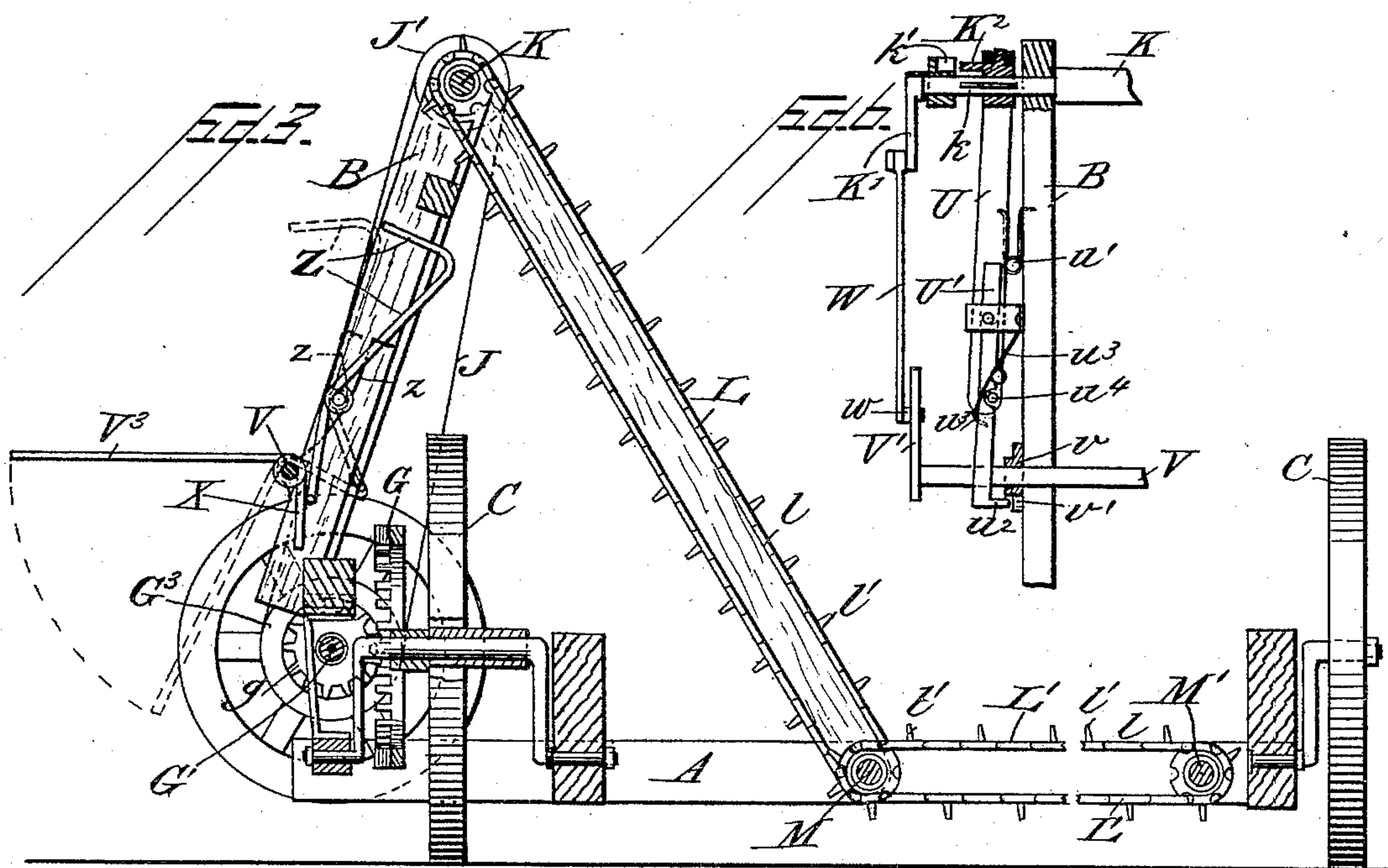
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UNITED STATES PATENT OFFICE.

EUGENE B. BOWEN, OF CENTREVILLE, MARYLAND.

CORN-HARVESTER.

SPECIFICATION forming part of Letters Patent No. 474,359, dated May 10, 1892.

Application filed December 10, 1891. Serial No. 414,570. (No model.)

To all whom it may concern:

Be it known that I, EUGENE B. BOWEN, a citizen of the United States, residing at Centreville, in the county of Queen Anne and State of Maryland, have invented certain new and useful Improvements in Corn-Harvesters; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention has for its chief objects to adapt corn-harvesters more perfectly to the harvesting of stalks which may have been beaten or blown down into an inclined position, to insure more perfect and regular action in dumping, so that no stalks may be strung along between the piles, and to improve the general operation of the machine by various improvements in the different parts thereof. To effect these objects I employ the construction and combination of devices hereinafter more particularly set forth and claimed.

In the accompanying drawings, Figure 1 represents a plan view of a machine embodying my invention. Fig. 2 represents a vertical longitudinal section on the line *y y* of Fig. 1. Fig. 3 represents a section of the same on the line *x x* of Fig. 1. Fig. 4 represents a detail view of the dumping devices and proximate parts in side elevation. Fig. 5 represents a section on the line *Z Z* of Fig. 4. Fig. 6 represents an additional detail view of a part of the dumping devices. Fig. 7 represents a detail view of a part of one of the chains serving as carriers and elevators, as hereinafter described. Fig. 8 represents a detail view of the balance-wheel and the spring connecting it to the main shaft.

A designates the main frame of the machine; B, the supplemental frame raised on one end thereof to support the elevating and dumping devices; C, the transporting-wheels, and D the draft-tongue, which is hinged, as usual, to allow the tilting of the frame A and devices attached thereto, the rear end of the said tongue being provided with a toothed segment *d*, which engages a pinion *e* on a horizontal shaft E, journaled in bearings attached to the raised frame B. One end of this shaft is provided with a hand-lever F,

having attached to it a catch or pawl *f*, which engages at will a fixed segmental rack *F'*. By rocking the said lever forward or backward the inclination of the frame A forward and downward is increased or diminished, the said pawl or catch and segmental rack locking it in any position of such adjustment. When in use the front of the said frame is generally about two or three inches from the ground, the rear being somewhat higher. To allow this the wheels C are provided with bent axles, as shown; or bearings may be used, which are adjustable vertically with respect to the axles, the frame A and bearings being raised and lowered together. These devices are not illustrated, as they are not new and have no direct relation to my improvements. One of the transporting-wheels C carries a concentric crown gear-wheel G, that meshes into a pinion *g* on driving-shaft G', which is provided at one end with a crank-arm G², having a pitman or connecting-rod *h* attached to it, whereby the knife bar or cutter H is reciprocated through the guard-fingers I, fastened to the front of the said frame A. From a pulley G³ on the said driving-shaft an endless belt J extends to a similar pulley or belt-wheel J' on the projecting end of a shaft or long drum K, which is journaled in the top of frame B. Endless elevating-chains L extend from this shaft or drum to a similar shaft or drum M, arranged horizontally in the main frame A. From this latter shaft or drum horizontal carrier-chains L' extend to a similar shaft or drum M', also journaled in said frame near one end thereof. Each of these chains L or L' is composed of flat links *l*, which are hooked together, every third or fourth link being provided with raised lugs *l'* to catch the stalks of corn, so that these may move with the travel of the endless chain. The forward ends of the said shafts or drums M M' are connected by springs *m* or other yielding joints with the rear ends of rods or shafts N, which turn in longitudinal grooves *o* of two forward-extending bars O, that are connected at their rear ends to the said frame A by vertically-operating hinges O'. Thus the change of inclination of frame A will not cause a similar inclination of the bars O and shafts N. To allow the said shafts and bars to be raised independently, I employ a

shaft P, extending along the top of the front of frame A and journaled thereon. This shaft has forward-extending lifting-arms P', provided with sector-shaped openings *p*, which receive studs *o'* on the inner sides of bars O. The said shaft has a lever P², provided with a pawl Q', which takes into a fixed segmental rack Q to lock the aforesaid parts in any position of such adjustment.

Each shaft N is provided at its outer end with a pulley or belt wheel R and a guide-roll *r*, the latter being mounted on a stud *r'* in the end of a plate *r*², which is attached to the bar O, wherein the said shaft turns, or to a broader plate R', attached thereto. Each bar O has one of these broader plates R', the same being bent up at its outer end R² and attached to a long guide-arm S. Each bar O has, also, a caster-wheel *s* under its outer end, on which it runs, always maintaining the same height from the ground. The two guide-arms S extend upwardly and inwardly toward each other and remain rigid with respect to the said bars O, the said bars and arms being raised and lowered together. The said caster-wheels hold the lower forward ends of the said guide-arms always a little above the ground. Each of these guide-arms is provided with two guide-chains constructed of links *l* after the fashion of those already described and extending endwise of said guide-arms over chain-wheels *t t'* *t*² *t*³. The chain of each arm, which is arranged in a vertical plane, is marked T, while that which is arranged in a more nearly horizontal plane is marked T'. Their lower forward sprocket-wheels *t t*² are provided with pulleys *t*⁴ *t*⁵ and receive motion from a belt R³, extending around the pulley or belt wheel R and in contact with the guide-roll *r*. A guide-pulley *t*⁶ for the said belt is also provided in the said arm between the pulleys *t*⁴ *t*⁵. The shafts of the uppermost and innermost chain-wheels *t*³, belonging to the more nearly horizontal guide-chains T', carry large star-wheels T², having long radial arms.

A journal *k* on one end of the upper shaft or drum K has a crank-arm K' loose upon it and a clutch K² feathered upon it to engage at will with recesses *k'* of the said crank-arm. A lever U, pivoted to a fixed lug *u*, is employed for shifting this clutch into and out of engagement, the said lever being provided with a spring *u'*, which tends to give it the former position. The lower part of this lever is provided with a pivoted extension U', having on its end a flange *u*² for engaging a notch *v'* of a disk or wheel *v*, turning rigidly with a dumping-shaft V to lock the said shaft. A supplemental spring *u*³, acting only on this pivoted extension, tends to force the said flange into position for such engagement. A stud *u*⁴ on the lower end of the main part of the lever comes in contact with the said pivoted extension when the said lever is moved for unclutching, and the said flange is moved out of engagement with the said notch *v'*.

From the crank-arm K' a pitman W extends to a V-shaped plate V' on the end of the said dumping-shaft, said plate having a slot V² in its upper part, which receives a stud *w* on the said pitman. This slot allows the said stud to move freely back and forth in it without actuating the said plate and the dumping-shaft V, so long as the dumping-arms V³ of the said shaft are in horizontal position for supporting the cornstalks, which are supplied to them by the elevating-chains hereinbefore described. When a sufficient load has accumulated on the said dumping-arms, the said lever is shifted to unlock the dumping-shaft and the load falls by its own weight, turning the said shaft so as to lower the said dumping-arms. The same movement unclutches the crank-arm K'. When the said lever is shifted to clutch the said crank-arm again, the rotation of the shaft K will cause the pitman W to lift the said plate, which then by reason of its lowered position is in contact at the upper end of the slot with the stud *w*.

During the temporary depression of the dumping-arms V³ there is danger that some stalks of corn will be fed over by the elevator-chains upon the ground, stringing along between the regular piles. To obviate this I employ supplemental pivoted guards or fingers Z, having their lower ends arranged to be struck by rods or arms X on the dumping-shaft V as the latter rocks downward and having their upper ends bent horizontally to catch any stray stalks thus falling. Each of these fingers or guards is provided with a spring *z* to replace it in its normal position out of the way when the shaft V returns to its position for receiving cornstalks on the dumping-arms.

Mounted loosely on the driving-shaft G' is the balance-wheel Z², which is connected to said shaft by spring Z'. This balance-wheel causes the devices to run steadily, and if the machine is suddenly stopped by striking an obstacle of any kind or otherwise the shock is much lessened by the wheel Z², which then continues its revolutions until the tension of spring Z' causes it to come to a gradual stop.

The general operation of the machine is as follows: It being drawn forward, the inclined guide-arms S come in contact with the stalks of corn. If these stalks have been blown over or beaten down into a slanting position, they will rest on the guide-chains T, which run along the tops of the said arms, and the upward and inward inclination of the said arms will lift the stalks into an upright position, directing also their tops together. The lugs *l'* of the links *l* of the said chains aid in this by taking hold of the said stalks as the said chains revolve and tending to draw them into the desired position. If the stalks are upright, the arms S and the lateral guide-chains T' merely draw and direct the stalks toward the center. Thus, whether originally upright or tilted, the stalks are delivered to the star-wheels T² in upright position, inclined slightly together, so as to be bunched. The said wheels

then deliver them to the cutting-faces of the knife, slightly spreading the said stalks as they do so, and the action of the said wheels, combined with the forward motion of the machine, throws the cut stalks on the frame A. The carrier-chains then deliver the said stalks to the elevator-chains, and the latter deliver them in turn to the dumping-arms, with the results before described.

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

1. In a corn-harvester, two upwardly and inwardly inclined guiding-arms and endless guide-chains mounted thereon, in combination with two forwardly-extending bars which are rigidly attached to said arms and provided at their front ends with supporting-wheels, and the frame of the machine, to which the said bars are hinged at their rear ends, substantially as set forth.

2. In combination with a pair of upwardly and inwardly inclined guiding-arms and endless traveling guide-chains mounted thereon, the frame of a corn-harvester, horizontal bars which are hinged at their rear ends to the said frame for vertical motion and rigidly attached at their forward ends to the said guiding-arms, a pair of shafts on the said frame, driven by one of the transporting-wheels, a second pair of shafts supported on the said hinged bars and rotating with the pair of shafts first mentioned, but having flexible connection thereto, and gearing between the shafts on the said bars and the said guide-chains, substantially as set forth.

3. In a corn-harvester, the combination of a dumping-shaft provided with outwardly-extending dumping-arms and inwardly-extending rods or equivalent attachments, with a set of pivoted fingers or guards arranged to have their lower ends struck by the said rods or attachments as the said dumping-arms descend, the upper ends of said guards or fingers being bent horizontally and held out to catch the cornstalks while the said rods remain thus in contact, and the said fingers being provided with replacing-springs, which restore them to their original position when the dumping-arms ascend and the pressure of the said rods is removed, substantially as set forth.

4. In a corn-harvester, the combination of a rotating shaft K, having a crank-arm, with a pitman operated thereby and having a stud at or near its lower end, and a dumping-shaft provided with dumping-arms and a slotted plate, the slot in said plate receiving the said stud and being of sufficient length to allow the shaft K and its crank-arm to turn without

affecting the dumping-shaft while the latter is in its normal position, but terminating at a point such that the rotation of the former shaft and its crank-arm after dumping will turn the dumping-shaft back into its normal position, substantially as set forth.

5. In a corn-harvester, the combination of a dumping-shaft having dumping-arms and a notched disk, with a lever carrying a flange for engaging with the said notch to lock the said dumping-shaft, a shaft K, provided with a loose crank-arm and a feathered clutch operated by the said lever for engaging the said crank-arm, and a pitman driven by said crank-arm and engaging an attachment of the said dumping-shaft, the said lever being spring-pressed into engagement with the said disk and so as to clutch the said crank-arm, substantially as set forth.

6. In a corn-harvester, the combination of a lever U, having a pivoted extension U' and a stud which engages such extension, with a disk or wheel on the dumping-shaft, which is notched to be engaged by a flange of said extension, a spring operating against the said extension to cause the said engagement, a rotating shaft K, which is provided with a loose crank-arm and with a clutch shifted by said lever to engage the said crank-arm, a spring operating against the said lever to cause the said clutching, a pitman operated by the said crank-arm, and a plate which is rigid with the said dumping-shaft and provided with a slot that receives a stud on the said pitman, the said slot being of such length that the turning of the crank-arm will not affect the dumping-shaft except when the latter is in the dumping position; substantially as set forth.

7. In a corn-harvester, the combination of a dumping-shaft with a rotating shaft K, connections between the said shafts, whereby the said dumping-shaft is lifted from its dumping position, a clutch and shifting-lever for making and disconnecting such connections at will, an attachment of said lever which locks the said dumping-shaft, and springs arranged to normally cause the said clutching and the said locking, the latter being effected after the clutching has caused the dumping-shaft to be turned back into its normal position, substantially as set forth.

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

EUGENE B. BOWEN.

Witnesses:

CHARLES F. RICH,
BLANCHARD EMORY, Jr.