

(No Model.)

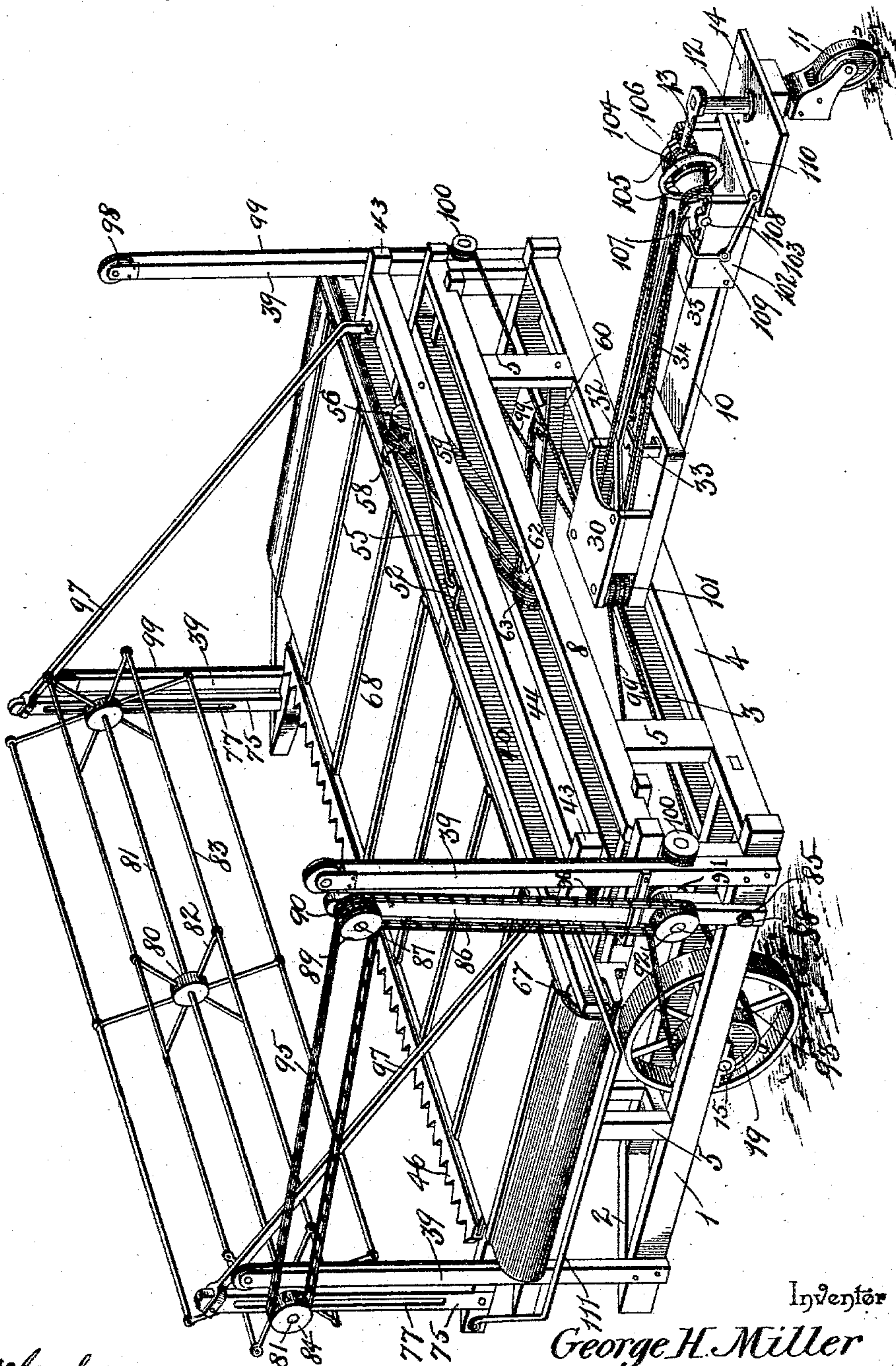
4 Sheets—Sheet 1.

G. H. MILLER.
HARVESTER.

No. 515,549.

Patented Feb. 27, 1894.

FIG. 1.



Witnesses

Jas. H. McLaughlin

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By His Attorneys,

Inventor
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(No Model.)

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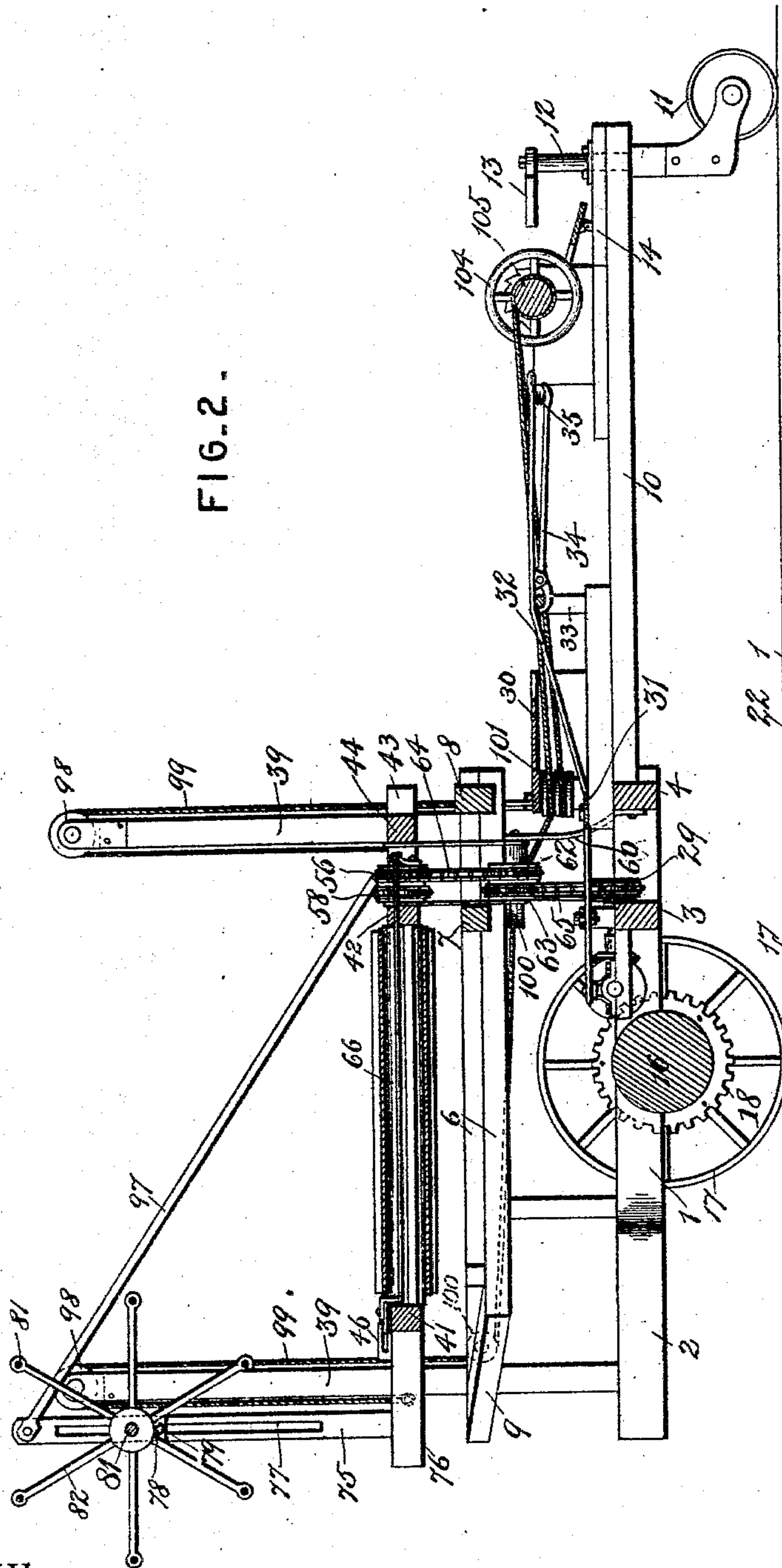


FIG. 2 -

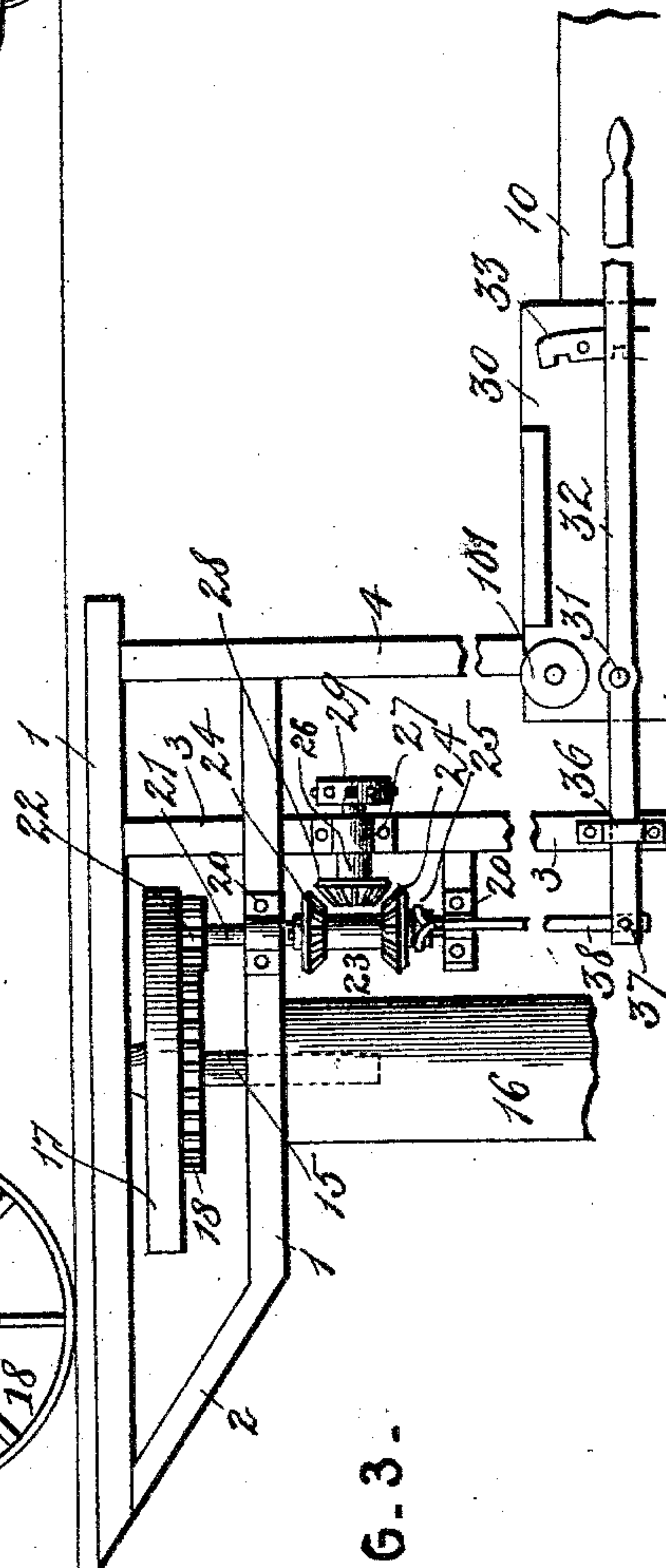


FIG. 3 -

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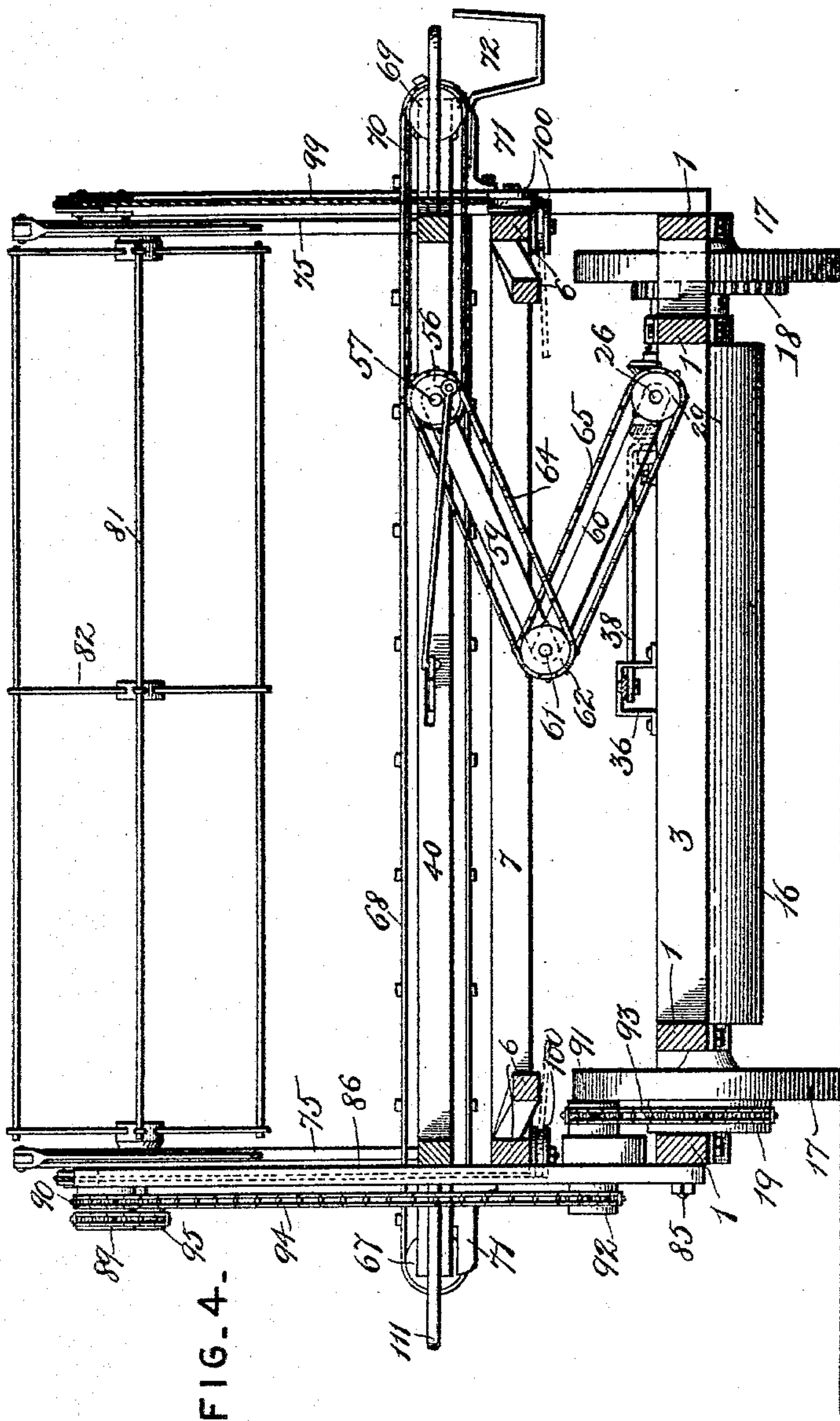


FIG. 4.

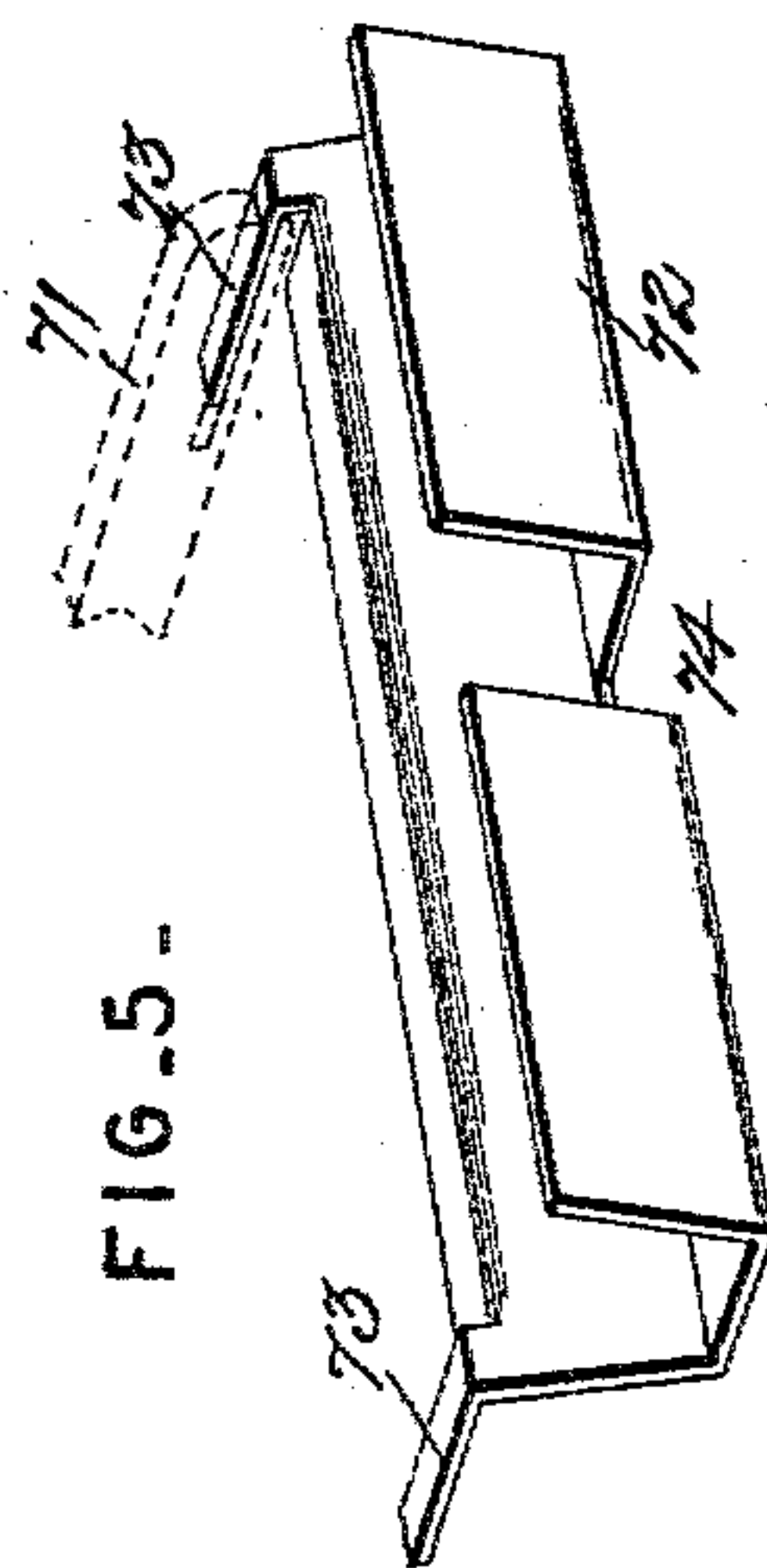


FIG. 5.

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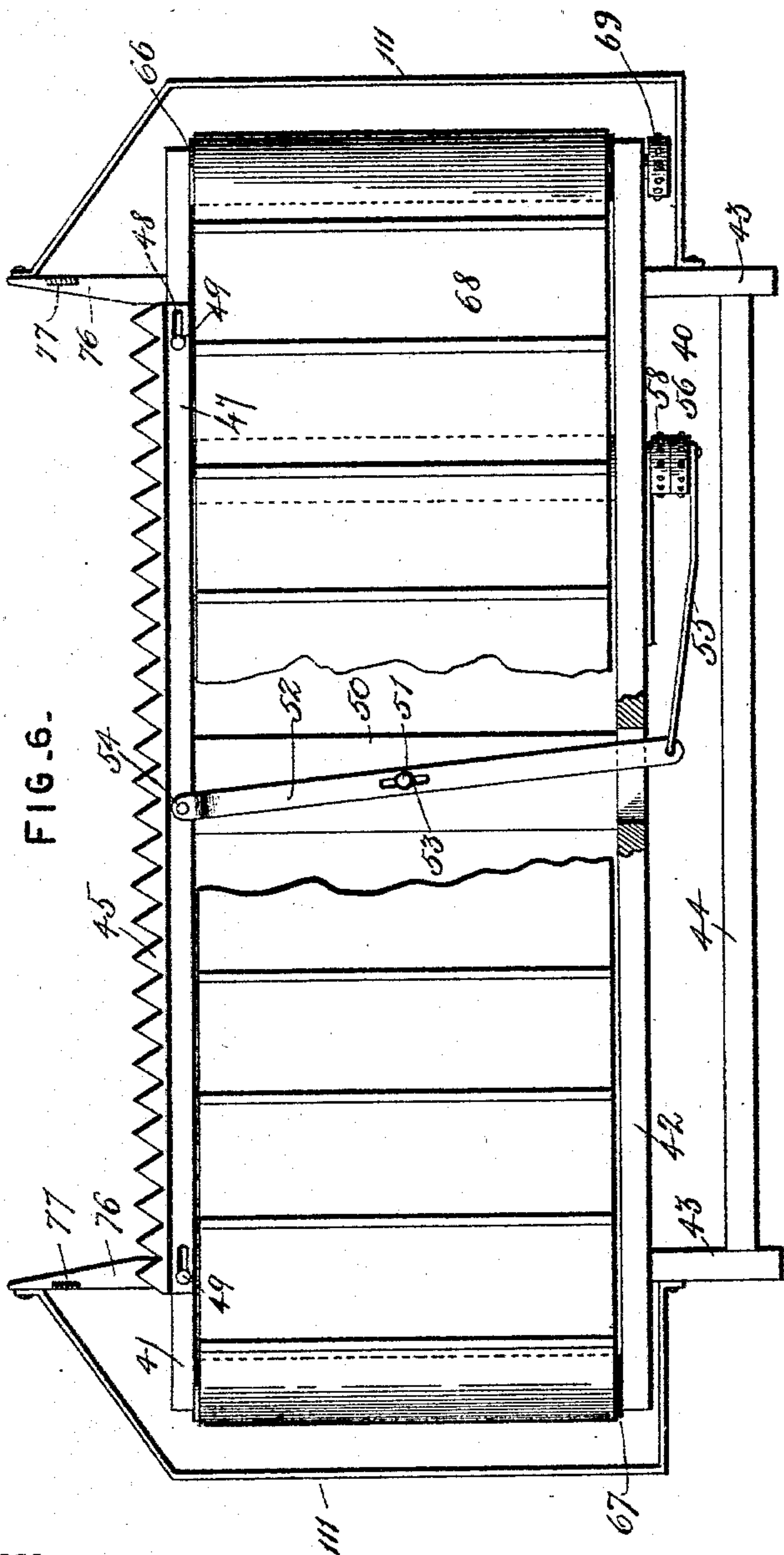


FIG. 6.

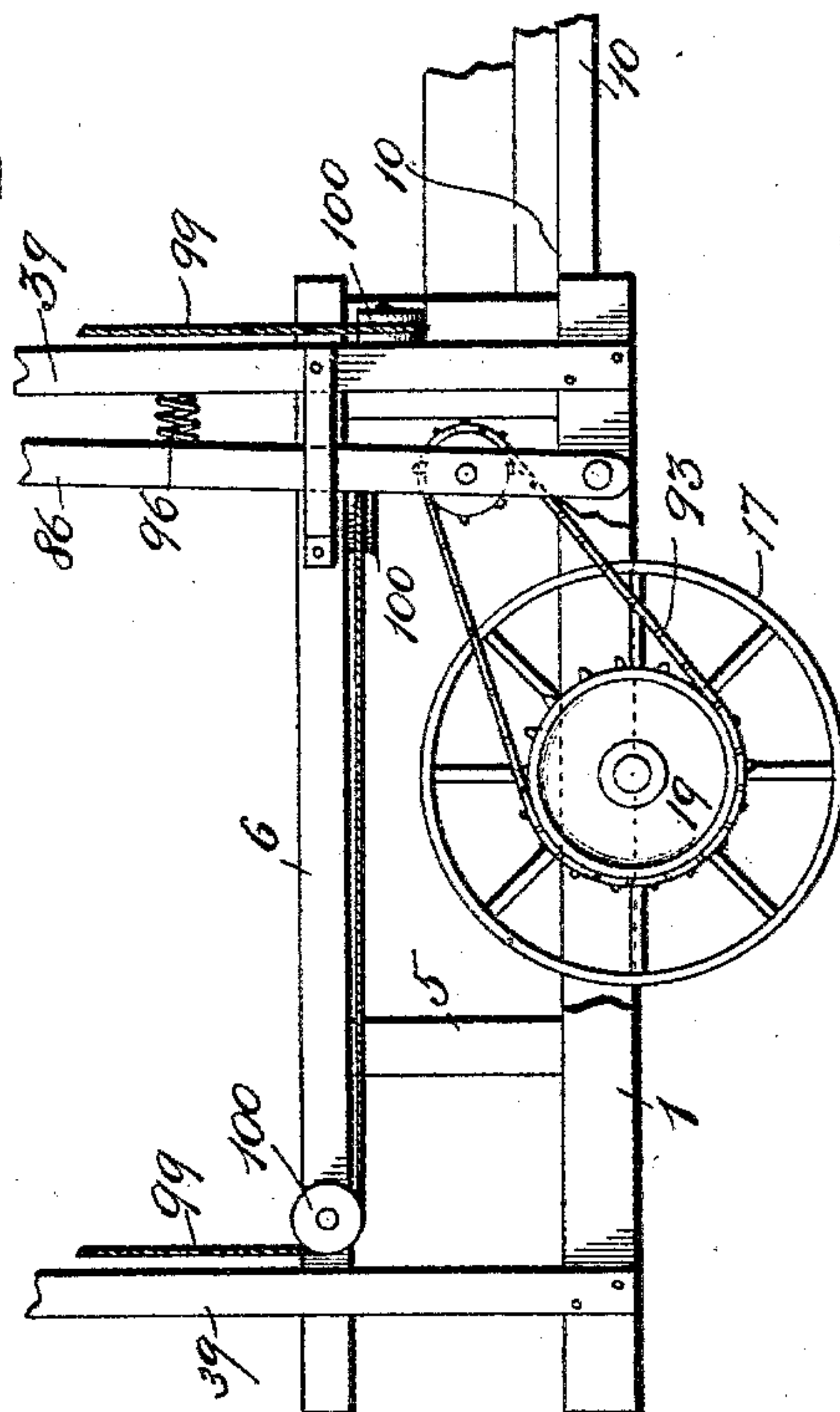


FIG. 7.

Witnesses

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UNITED STATES PATENT OFFICE.

GEORGE H. MILLER, OF EUREKA SPRINGS, ARKANSAS, ASSIGNOR OF ONE-HALF TO BENJAMIN J. ROSEWATER, OF SAME PLACE.

HARVESTER.

SPECIFICATION forming part of Letters Patent No. 515,549, dated February 27, 1894.

Application filed March 28, 1893. Serial No. 468,037. (No model.)

To all whom it may concern:

Be it known that I, GEORGE H. MILLER, a citizen of the United States, residing at Eureka Springs, in the county of Carroll and State of Arkansas, have invented a new and useful Harvester, of which the following is a specification.

My invention relates to improvements in harvesters, and to that particular class thereof of especially adapted for harvesting broom-corn, though, as will hereinafter appear, the machine as constructed is capable of operating upon other kinds of grain.

The objects of my invention are to provide a machine which shall be thoroughly under the control of the operator and adapted to simultaneously operate upon or harvest a series of rows of grain; which is capable of vertical adjustment, whereby the carrier and cutting mechanism supported thereby may be elevated to the proper height; to provide a convenient gearing for operating these parts from the ground-wheels of the machine, which gearing will adjust itself to the positions of the parts.

With these and various other objects in view the invention consists in certain features of construction hereinafter specified and particularly pointed out in the claims.

Referring to the drawings:—Figure 1 is a perspective view of a broom-corn harvester constructed in accordance with my invention. Fig. 2 is a vertical longitudinal sectional view of the same. Fig. 3 is a plan of a portion of the lower frame of the machine illustrating the shifting mechanism. Fig. 4 is a vertical transverse sectional view through the machine. Fig. 5 is a detail in perspective of the receiving trough. Fig. 6 is a horizontal sectional view of the main frame of the machine illustrating the cutting mechanism, for which purpose the carrier is broken away. Fig. 7 is a side elevation of a portion of the machine.

Like numerals of reference indicate like parts in all the figures of the drawings.

The following is a description of the framework of the machine, subject, however, to such changes in details as may properly fall within the scope of the skilled mechanic and will suggest themselves during the practice.

The lower or stationary portion of the frame

comprises pairs of opposite side bars 1, the inner bar of each pair being shorter than the outer bar and connected at their front ends by diagonal guide-bars 2, whereby the sets of bars 1 and 2 present a flared opening to the frame for the butts or stalks of the corn after the tops have been severed, as will hereinafter appear. The bars 1 and 2 are connected at their rear ends by parallel transverse bars 3 and 4, said bars being suitably joined to form a rigid structure. Studding 5 rise from the rear cross-bar 4 and the bars 1 and 2 and support upper pairs of side-bars 6 and rear parallel cross-bars 7 and 8. The side-bars 6 like the side-bars 1 and 2 are connected by the diagonal bars 9 which increases the width vertically of the flared mouth into which the stalks of the corn are directed as the machine progresses. From the transverse bars 3 and 4 there extends rearward a tongue 10, and the same has swiveled at its rear end a caster-wheel 11, from which rises a tiller-bar 12 having an operating handle or lever 13 which projects above a platform 14 that is also mounted upon the tongue at the rear end of the latter. Stub-axles 15, best shown in Fig. 3, are journaled in suitable bearings in each pair of side-bars 1, and between the inner side-bars of the pairs a crushing or deflecting roller 16 is located. Between the inner and outer side-bars of each pair ground-wheels 17 are journaled on the axles, and that axle at the right of the machine is provided with a master-gear 18, while that at the left is provided with a master sprocket-wheel 19.

In suitable bearings 20 located upon the timbers of the machine there is journaled a horizontal countershaft 21 extending parallel to the axle 15 at the right of the machine. This shaft 21 has affixed to its outer end a small spur gear 22, which is engaged by the master-gear 18 and operated. The shaft has furthermore splined thereon a sleeve 23, at each end of which a beveled pinion 24 is located, and beyond the inner pinion the sleeve is provided with an annular groove 25. A short shaft 26 is journaled in a bearing 27 upon the bar 3 and at a right-angle to the shaft 21, and upon the front end of the shaft 26 a beveled pinion 28 is located and upon the rear end a sprocket-wheel 29 is located.

The pinion 28 lies between the two gears 24, and by means of a lever and connections hereinafter described, it will be seen that the said sleeve 23 may be moved so as to throw either
 5 of the pinions 24 into engagement with the pinion 28 and thus give to the latter, its shaft 26, and sprocket-wheel 27 opposite motions or directions of rotation.

A housing 30 is supported upon the front
 10 end of the tongue 10, and upon the bottom of the housing and extending therefrom there is fulcrumed as at 31 (see Figs. 2 and 3) a hand-lever 32, which extends within easy reach of the operator upon the platform 14.
 15 This hand-lever moves over a toothed segment 33 suitably supported upon the tongue 10 and is provided with a pivoted locking lever or pawl 34, whose front end is pressed into engagement with a convenient tooth of the segment
 20 by means of a light coiled spring 35, which is located between the rear end of the lever 32 and said pawl. The front end of the lever 32 moves in a keeper 36 and is pivoted as at 37 to a connecting-rod 38 whose outer end terminates in a yoke that loosely engages the
 25 annular groove 25 formed in the sleeve 23.

Located between the transversely opposite pairs of uprights 39 that rise from the four corners of the framework thus described is a
 30 vertically movable carrier-frame 40, the same comprising front and rear transverse parallel bars 41 and 42 respectively, and in rear of the latter and extending between the rear uprights a pair of short rearwardly projecting
 35 bars 43 connected by a rear transverse bar 44 is located. The front transverse bar 41 carries a reaper or mower-knife or cutter 45 together with the finger-bar 46 in which said knives move. The knife-carrying plate 47 is
 40 slotted near its ends as at 48, and through the same project lugs 49 formed on the finger-bar and by which said knife-carrying plate is guided in its reciprocations. A cross-piece 50 connects the bars 41 and 42 at their mid-
 45 dles and from this cross-piece rises a pivot-pin 51. A lever 52 having a central slot 53 loosely receives and is fulcrumed upon the pin 51, the front end of said lever being pivoted as at 54 to the knife-carrying plate or
 50 bar 47, and at its rear end being connected by a pitman or connecting-rod 55 to the rear sprocket-wheel 56, which is located upon a transverse shaft 57 journaled in the bars 41 and 42. Upon the same shaft an inner
 55 sprocket-wheel 58 is likewise mounted.

A pair of links 59 are loosely connected at their upper ends to the shaft 57 and a similar pair of links 60 are loosely connected to the short shaft 26, said links having their remaining ends pivoted by a shaft 61, which carries a pair of sprocket-wheels 62 and 63, the former being connected to the sprocket-wheel 56 by a sprocket-chain 64, and the latter being connected to the sprocket-wheel 29
 60 by a sprocket-chain 65, whereby, as will be obvious, motion is communicated from the master-gear 18 through the train of gearing

heretofore described and to the shaft 57. The opposite ends of the carrier-frame are provided with rolls 66 and 67 journaled in
 70 the bars 41 and 42, and said rolls are connected by an endless apron or carrier 68. The shaft of the roll 66 is extended beyond the rear bar 42 in which it is journaled and carries a sprocket-wheel 69 which is connected
 75 with the sprocket-wheel 58 through the medium of a sprocket-chain 70 whereby as will be obvious, motion is conveyed to the apron or carrier 68, which through the medium of the shifting lever 32, heretofore described,
 80 may move in either direction.

A pair of grooved brackets 71 are secured to the outer side bars 6 of the frame and removably mounted in either one of said pair of brackets is a transverse trough 72. This
 85 trough 72 may be secured in the brackets by any suitable means, and in the present instance is provided with a pair of rearwardly-disposed slides 73, which take into the grooves of said brackets as best shown in Fig. 5. The
 90 trough is open at each end, and at its center is provided with a transverse opening 74 to give access to the hand and arm of an operator, who is mounted in a wagon at one side of the machine, whereby it will be obvious
 95 from the following description taken in connection with the foregoing, that as the brush is deposited in the trough, said operator may remove the same with facility and deposit them in the bottom of the wagon and in a
 100 compact form.

A pair of standards 75 rise from the front ends of the side or end bars 76 of the carrier frame, which side-bars, as best shown in Figs. 1, 2 and 6, have their inner faces flared so as
 105 to produce guides for drawing the grain toward the cutters. The standards 75 are provided with longitudinal or vertical slots 77, and in each is mounted a sliding journal-box 78 made adjustable in its slot by a set-screw
 110 79. A shaft 81 is journaled in the said boxes and therefore vertically adjustable through the medium thereof. Upon this shaft a series of hubs 80 is mounted, and from the hubs radiate spokes or arms 82, the same being
 115 connected by rods 83, the whole constituting a reel. The left end of the shaft 81 is extended and provided with a sprocket-wheel 84.

Pivoted upon a pin 85 to the outer side-bars 1 at the left of the machine is a swinging arm
 120 or bar 86, the same being provided at its upper end with a shaft 87, and above its pivot with a short shaft 88. The shaft 87 has a pair of sprocket-wheels 89 and 90 mounted loosely thereon, and the shaft 88 has an inner
 125 and an outer sprocket-wheel 91 and 92 mounted thereon, all as best shown in Fig. 4 of the drawings. The ground sprocket-wheel 19 of the axle is connected to the sprocket-wheel 91 by a chain 93, the sprocket-wheel 92 is connected to the sprocket-wheel 90 by a chain 94,
 130 and the sprocket-wheel 89 is connected to the sprocket-wheel 84 of the reel-shaft by a chain 95, so that as will be obvious, motion is con-

veyed from the ground-wheel through the various sprockets to the reel-shaft, which is always operated when the machine is in motion and in one direction, namely, that which will cause the corn heads to drop over and upon the moving apron or carrier 68. A coiled spring 96, best shown in Fig. 7, connects the pivoted arm 86 with the uprights 39 and exerts a tendency to draw the arm 86 toward the upright. At the same time it will be seen that the arm may yield or be drawn toward the front of the machine, which compensates for the raising and lowering of the reel, whereby its drive-chain is always maintained taut. Inclined braces 97 connect the upper ends of the standards 75 that support the reel-shaft to the rear projecting bars 43 of the carrier-frame.

Upon the upper end of each of the uprights 39 loose pulleys 98 are located, and over each pulley a hoisting rope 99 is passed. One end of each of these ropes is made fast to the carrier-frame adjacent to the four corners of the same, and the remaining portions of these ropes pass around suitable guide-pulleys 100 located at proper points and tend toward and pass between transversely opposite pairs of twin pulleys 101 which are mounted in the before mentioned housing 14 located upon the tongue 10 of the machine. In a pair of standards 102 located upon the platform at the rear end of the machine there is journaled a transverse winding shaft 103, said winding-shaft carrying a centrally operating wheel 104, opposite drums 105, and ratchet-wheels 106. To these opposite drums the pairs of ropes at the opposite sides of the machine are connected and are adapted to be wound thereupon. Pawls 107 are pivoted to the standards 102, and are designed at their free ends to engage with the teeth of the ratchet-wheels, whereby, as will be obvious, said ratchet-wheels are automatically locked against retrogression. A pair of bell-crank levers 108 are fulcrumed as at 109 to the outer sides of the standards 102, said bell-crank levers at their upper ends being pivotally connected each to a pawl 107, and at their lower ends in rear of the standards connected by a foot-treadle 110, which by being pressed will simultaneously lift each pawl from its locking position with its ratchet-wheel.

The operation of the machine will be obvious from the foregoing description in connection with the accompanying drawings, which operation during the detailed description was somewhat briefly mentioned, but in order that the same may be thoroughly understood I will briefly describe it again. The operator standing upon the platform 14, it will be seen has the machine thoroughly under control, guiding the same to the rows of corn, and through the medium of the wheel preventing the machine from being deflected by the standing corn at the grain-side of the machine. The grain is deflected and prevented from interfering with the machine by

means of guards 111, which are applied to the side-bars of the carrier-frame. By operating the hand-wheel it will be seen that through the mechanism heretofore described the carrier-frame together with the carrier, the cutting-mechanism, and the reel supported thereon may be all simultaneously elevated or lowered and locked at any point of elevation that may be desired, so that the machine is adapted for broom-corn of different heights and may be made to cut more or less of the head of the corn as may be desired. Furthermore, by means of the lever 32 which may be shifted, in a manner heretofore described, the motion or direction of travel of the carrier may be reversed so that the heads may be deposited in the trough at either side of the machine. Furthermore, it will be seen that the lever may be so operated as to prevent any movement whatever being transmitted to the carrier.

Various changes in the details of my invention may be made without departing from the spirit of the same, and I therefore do not limit my invention to such minute details as I have herein shown and described.

Having described my invention, what I claim is—

1. In a machine of the class described, the combination with a main framework, a carrier arranged over the same, a cutting-mechanism arranged in front of the carrier, and means for operating said cutting-mechanism, of a pair of vertical standards rising from the carrier-frame and provided with slots, boxes mounted in said slots, set-screws passing through the boxes and binding on the standards, a shaft journaled in the boxes, a reel carried by the shaft, and means for conveying motion to said shaft, substantially as specified.

2. In a machine of the class described, the combination with a rectangular main frame, ground-wheels for supporting the same, vertical guides receiving the main frame, a horizontal carrier-supporting frame located in the guides, means for horizontally raising and lowering said carrier-supporting frame as a whole, cutting-mechanism at the front end of the carrier-supporting frame, and means for giving motion thereto, of standards rising from the carrier-supporting frame, a reel-shaft mounted in the standards, and means for conveying motion to said reel-shaft, substantially as specified.

3. In a machine of the class described, the combination with a main frame having a general rectangular shape, uprights rising from the corners thereof, a carrier-supporting frame mounted for vertical movement between the uprights, and gearing between the ground-wheel and carrier, of pulleys on the upper ends of the uprights, a windlass, ropes passed over the pulleys and connected each at one end to the carrier-frame, suitable guide-pulleys for said ropes, and means for locking the windlass, substantially as specified.

4. In a machine of the class described, the combination with a frame of general rectangular shape, a rearwardly-extending tongue, a guide-wheel mounted therein, a windlass shaft, a wheel for operating said shaft, ratchet wheels carried by the shaft, pawls for locking the ratchet-wheels, a lever for simultaneously raising the pawls, and uprights at the corners of the frame each provided with a pulley, of suitable guide-pulleys, a carrier-supporting frame, means for giving motion to the carrier, ropes passed over the pulleys of the uprights and guide-pulleys and having one end connected to the carrier-frame and the remaining end to the windlasses, substantially as specified.

5. In a machine of the class described, the combination with a framework, a superimposed carrier-frame, and means for moving the same in either direction, of a trough, and means for removably connecting the same to the opposite ends of the machine under either end of the carrier-frame, substantially as specified.

6. In a machine of the class described, the combination with a frame, a carrier supported thereon, means for driving the carrier, a cutter arranged in front of the carrier, and a reel over the cutter, of means for driving the reel and operating the cutter, brackets at the sides of the machine, and a trough having slits extending from its inner edge and removably mounted in the brackets, substantially as specified.

7. In a machine of the class described, the combination with a lower main frame, ground-wheels for supporting the same, and an upper carrier-supporting frame, of means for raising and lowering said supporting frame, shafts located in the main frame and the carrier-frame, means for communicating motion from the ground-wheel to the shaft of the main frame, links loosely mounted on the two shafts, sprocket-wheels carried by the two shafts, a pivoting shaft connecting the free ends of the links, sprocket-wheels carried thereby, sprocket-chains connecting the sprocket-wheels of the shaft of the main frame with the sprocket-wheels of the pivoting shaft with the sprocket-wheels of the pivoting shaft with those of the shaft of the carrier-frame, and a sprocket-chain connect-

ing the sprocket-wheel of the carrier-frame shaft with the sprocket-wheel of the carrier for giving motion to the latter, substantially as specified.

8. In a machine of the class described, the combination with the main frame, vertical guides, a carrier-supporting frame, cutting mechanism arranged thereon, and means for giving motion to the carrier and cutting mechanism, of standards rising from the carrier-frame, a reel-shaft mounted in said standards, means for raising and lowering the carrier-frame, a sprocket-wheel carried by the reel-shaft, a pivoted arm arranged on the main frame, a spring for normally throwing the same away from the reel-shaft, sprocket-wheels located at the upper and lower ends of said arms, ground-wheels, a sprocket-wheel operated by one of the same, a chain connecting the sprocket-wheels of the ground-wheel with the lower sprocket-wheels of the arm, a chain connecting the latter with one of the upper sprocket-wheels of the arm, and a chain connecting the remaining upper sprocket-wheel of the arm with that of the reel-shaft, substantially as specified.

9. In a machine of the class described, the combination with a lower frame open at its front, a superimposed carrier-supporting frame, means for moving the carrier, a cutting mechanism carried by said carrier-supporting frame, and means for operating the cutting mechanism, of ground-wheels, axles for the same, and a roller carried by the axles, substantially as specified.

10. In a machine of the class described, the combination with a lower frame open at its front, a superimposed carrier-supporting frame, means for moving the carrier, a cutting mechanism carried by said carrier-supporting frame, and means for operating the cutting mechanism, of ground-wheels, axles for the same, and a roller arranged below the carrier-frame, 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.

GEORGE H. MILLER.

Witnesses:

DENNIS LEE,
T. J. REYNOLDS.