

No. 813,364.

PATENTED FEB. 20, 1906.

C. C. DOLAN.  
HOISTING AND CONVEYING MECHANISM.

APPLICATION FILED JUNE 9, 1905.

4 SHEETS—SHEET 1.

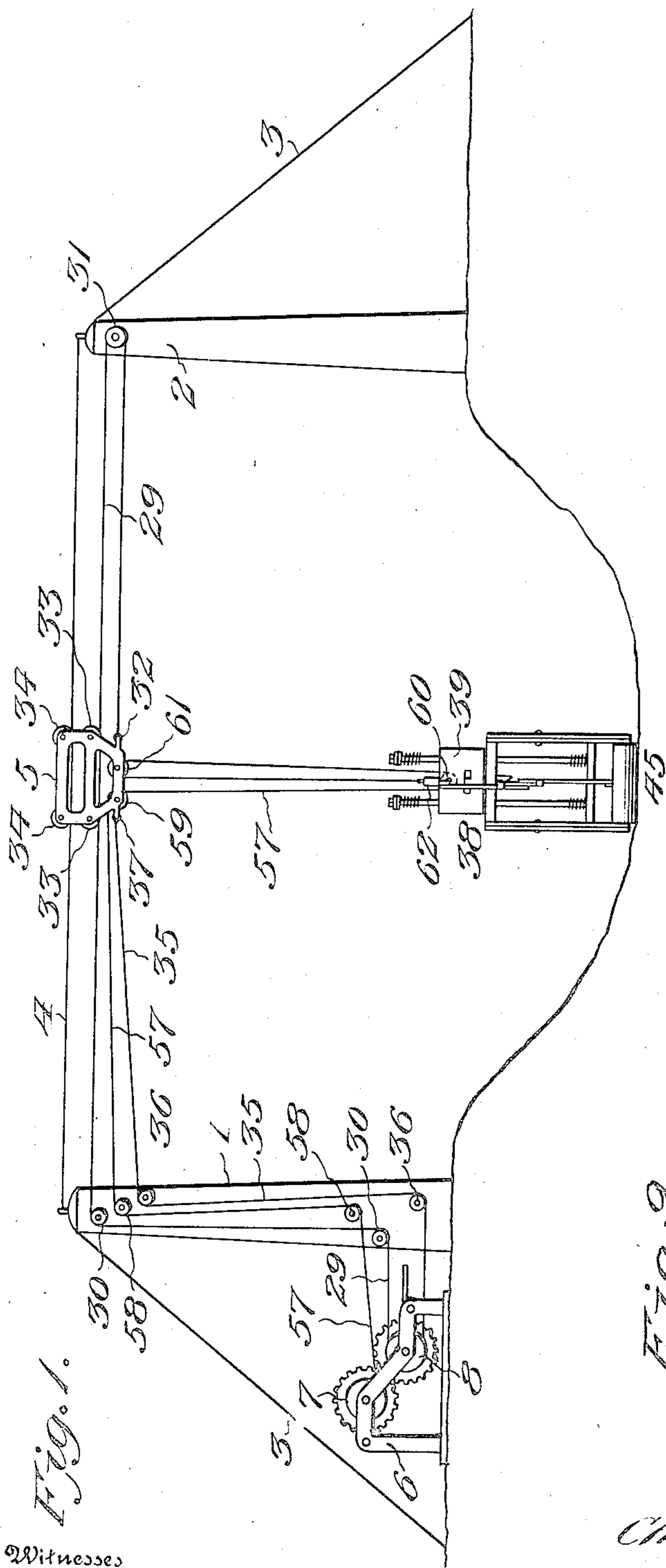


Fig. 1.

Witnesses

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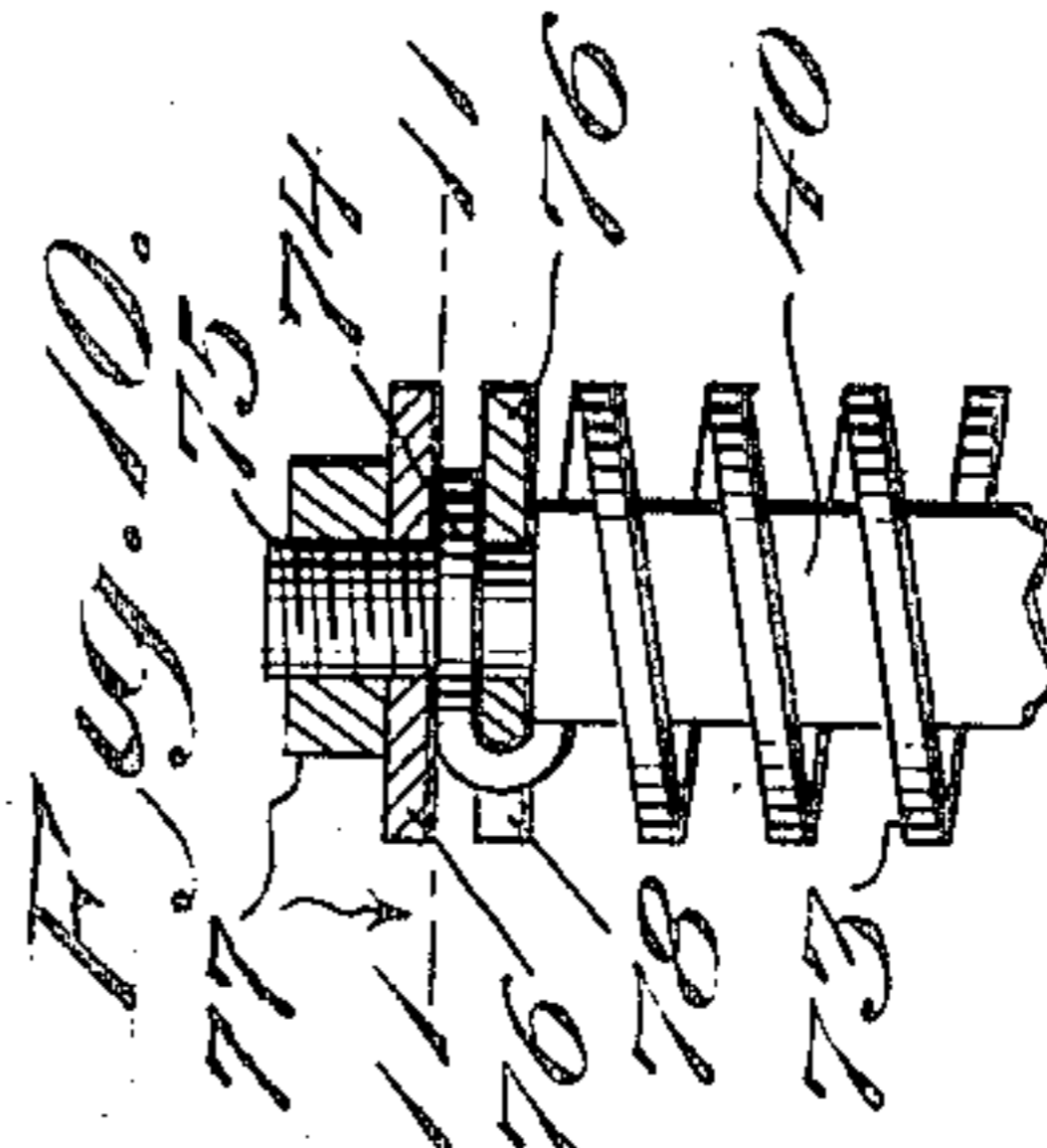
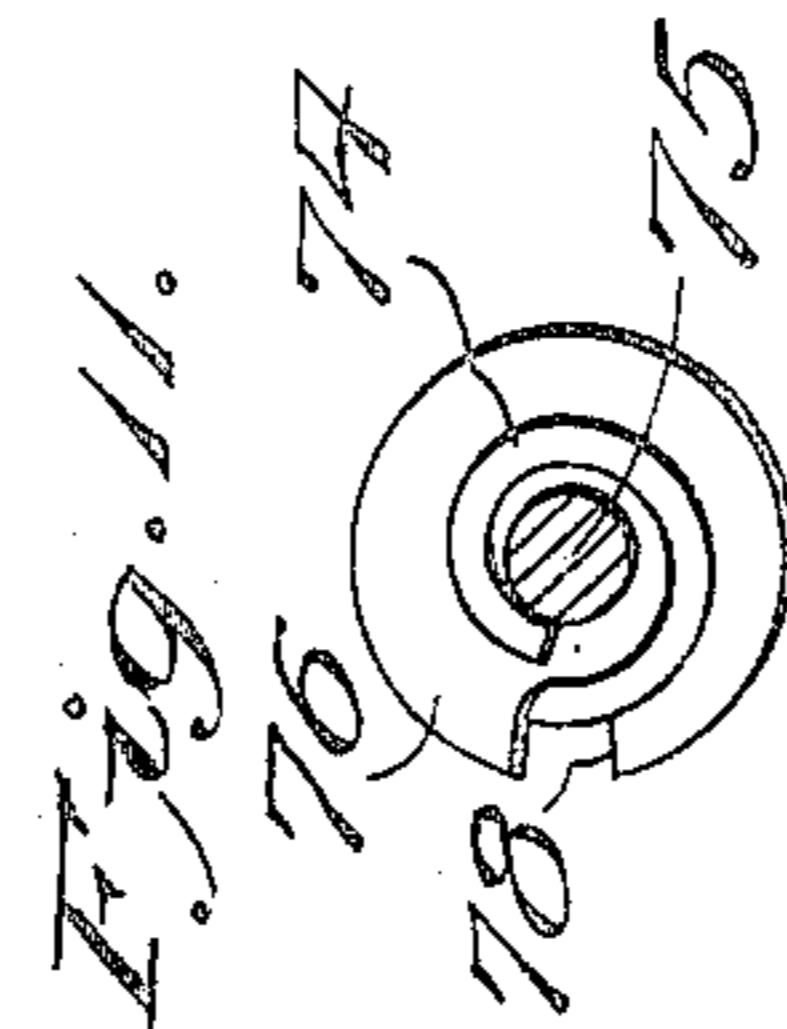
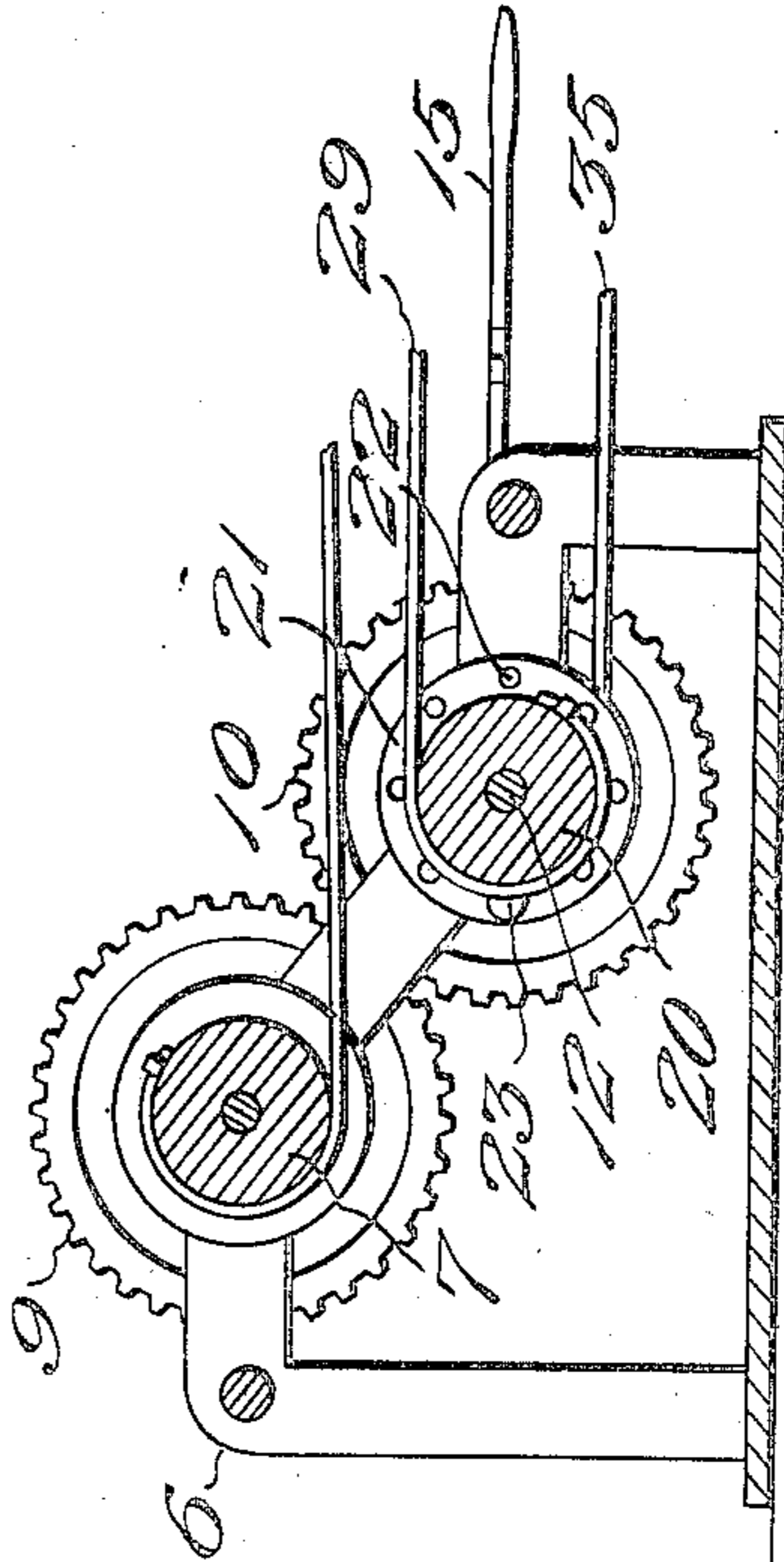


Fig. 9.



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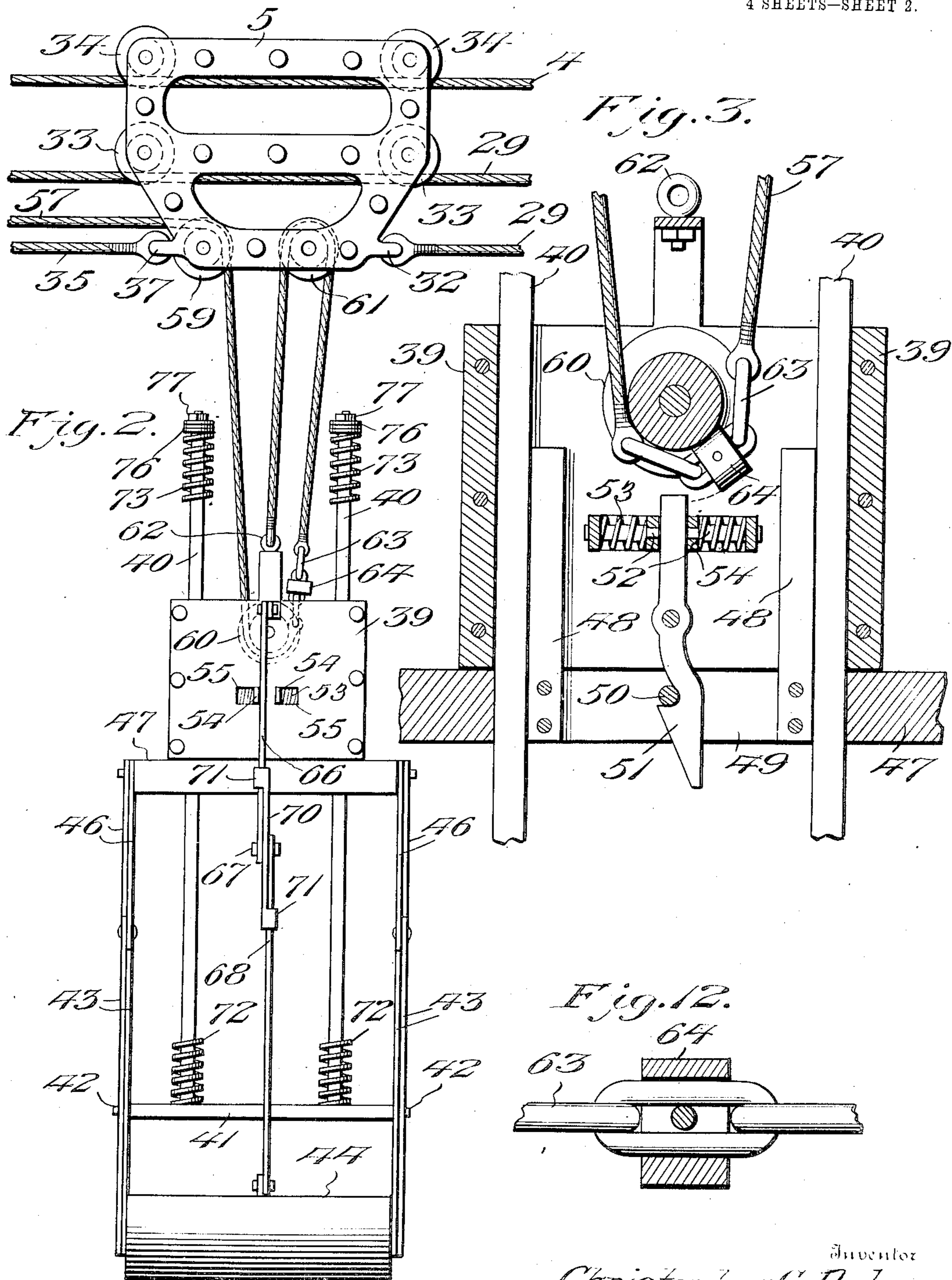
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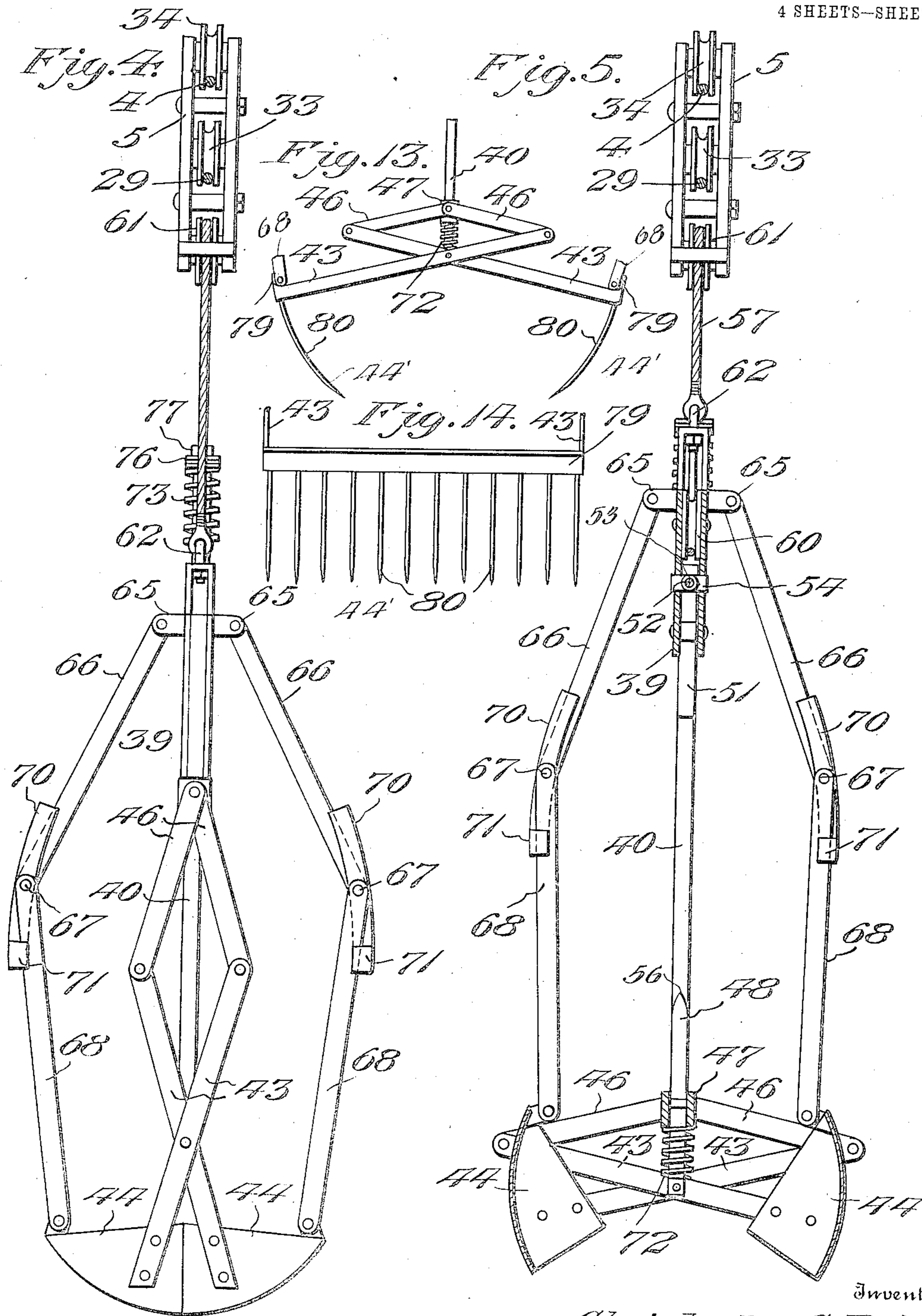
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4 SHEETS—SHEET 3.



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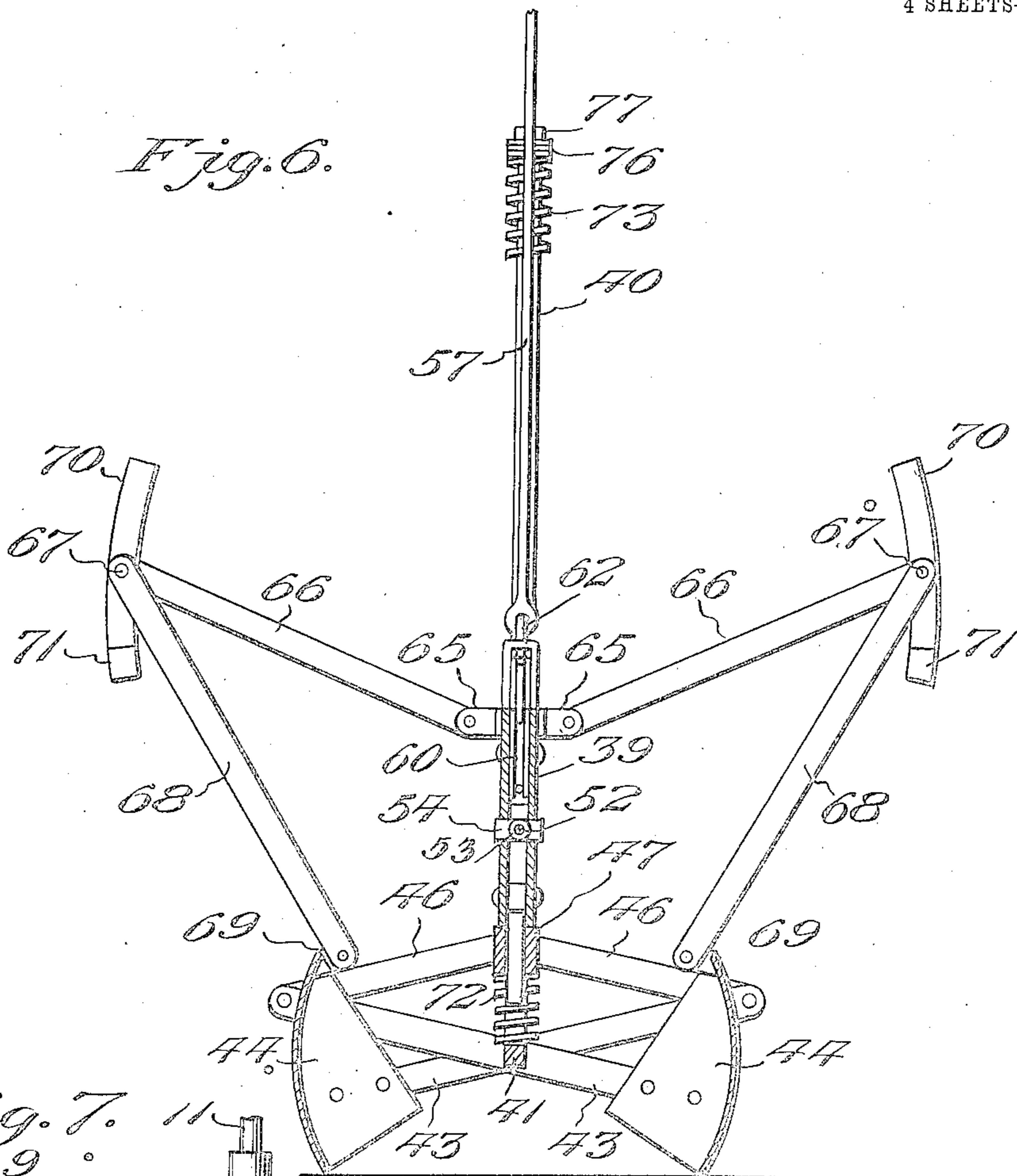
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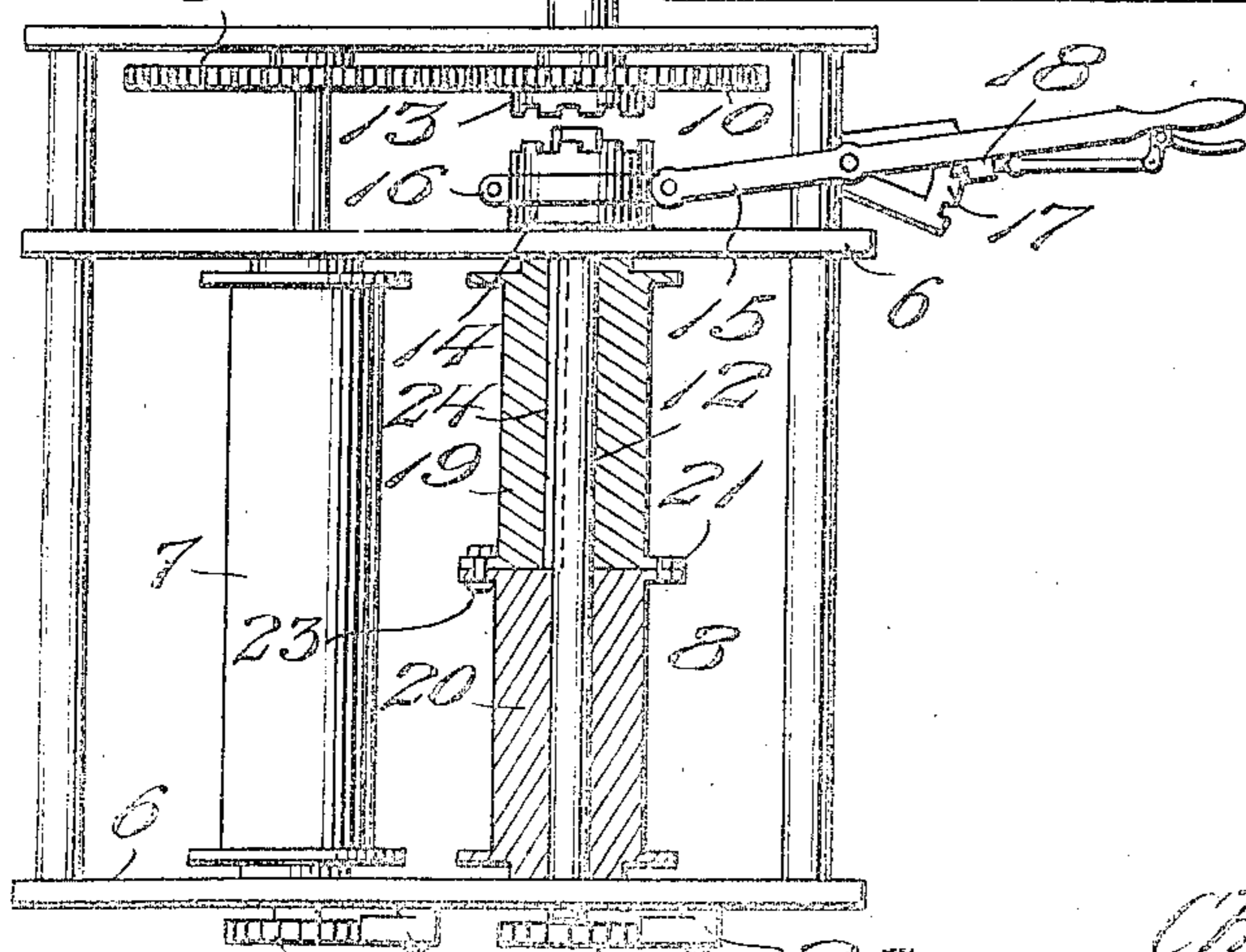
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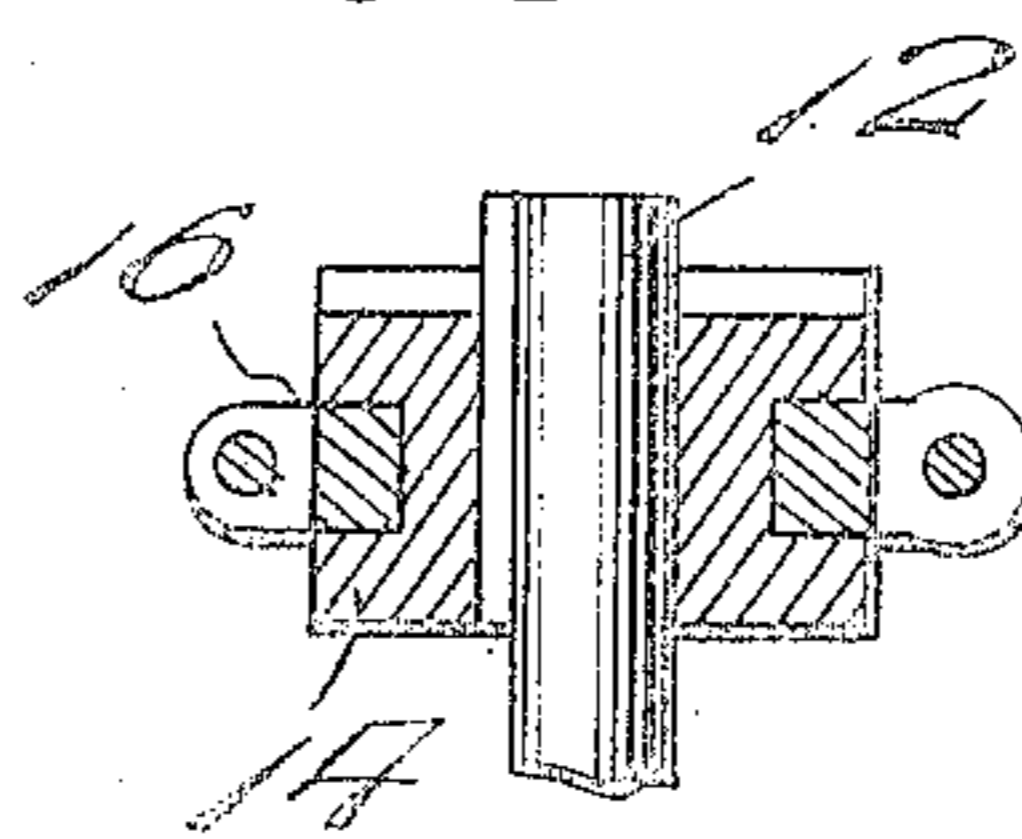
*Fig. 6.*



*Fig. 7.*



*Fig. 8.*



Witnesses 28 27 26 25

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# UNITED STATES PATENT OFFICE.

CHRISTOPHER C. DOLAN, OF LOCKPORT, NEW YORK.

## HOISTING AND CONVEYING MECHANISM.

No. 813,364.

Specification of Letters Patent.

Patented Feb. 20, 1906.

Application filed June 9, 1905. Serial No. 264,497.

*To all whom it may concern:*

Be it known that I, CHRISTOPHER C. DOLAN, a citizen of the United States of America, residing at Lockport, in the county of Niagara and State of New York, have invented new and useful Improvements in Hoisting and Conveying Mechanisms, of which the following is a specification.

This invention relates to hoisting and conveying mechanisms designed especially for use as a clam or other dredger, and has for its objects to produce a comparatively simple inexpensive device of this character in which the load may be readily collected, hoisted, and conveyed from place to place, one wherein the carriage will travel smoothly during the conveying operation, and one in which the load will upon reaching its point of destination be automatically released and deposited.

A further object of the invention is to provide a device of this character in which the carriage-operating cable serves as a guide upon which the carriage travels, one wherein the sections of the conveyer-bucket will be automatically locked in closed position, one wherein the locking member will be automatically released through the action of the hoisting-cable, and one in which the movable head included in the load-carrying device will be guided in its movements and cushioned at the completion of the latter.

With these and other objects in view the invention comprises the novel features of construction and combination of parts more fully hereinafter described.

In the accompanying drawings, Figure 1 is a side elevation of a hoisting and conveying mechanism embodying the invention. Fig. 2 is an enlarged side elevation of the load-receiving device and carriage. Fig. 3 is an enlarged detail view, partly in section, of parts of the load receiving and conveying device. Fig. 4 is an end elevation, on an enlarged scale, of the load receiving and conveying device and showing the bucket in closed position. Fig. 5 is a similar view, partly in section, showing the bucket in open position. Fig. 6 is a similar view showing the parts of the device in position for the bucket to receive its load. Fig. 7 is a top plan view, on an enlarged scale, of the cable-operating devices and showing the hoisting-drum in section. Fig. 8 is a detail view, partly in section, of the movable clutch-head. Fig. 9 is an enlarged detail view, partly in section, of the cable-op-

erating device. Fig. 10 is an elevation, partly in section, of the upper end of one of the buffer-springs. Fig. 11 is a section taken on the line 11 11 of Fig. 10. Fig. 12 is an enlarged detail view, partly in section, of the latch-operating head. Fig. 13 is a detail end view showing a modified form of load-grappling device. Fig. 14 is a detail side elevation of one of the grappling members.

Referring to the drawings, 1 and 2 designate a pair of supports, preferably in the form of vertical posts or standards, arranged in spaced relation at points between which the load is to be conveyed, said standards being braced by guy-ropes 3 and having extended therebetween a horizontal guide element or cable 4, attached in any appropriate manner to the upper ends of the standards and constituting a track or way on which a carriage 5 is arranged for travel.

Arranged adjacent to the standard 1 is a frame 6, having journaled for rotation therein a hoisting-drum 7 and a carriage-operating drum 8, connected for rotation one from the other by means of intermeshing gears 9 and 10, of which the latter is fixed upon a power-shaft 11, disposed in axial alinement with the shaft 12 of drum 8, there being provided on the gear 10 or its shaft a fixed clutch member 13, adapted for engagement by a companion clutch member or head 14, slidable upon the adjacent end of the shaft 12, but keyed to and for rotation with the latter. The clutch-head 14 is adapted for movement to engaging or non-engaging position by means of an operating-lever 15, pivoted at its inner end to a collar 16 upon the clutch-head and between its ends to the frame, there being attached to the latter a toothed ratchet 17, adapted for engagement by a pawl 18, carried by and for locking the lever in its adjusted position.

The drum 8 is composed of a pair of portions or sections 19 and 20, having their meeting ends provided with outstanding marginal flanges 21, having a series of spaced perforations 22, any one of which may receive a single fastening member or bolt 23, adapted for normally connecting the drum-sections for simultaneous movement, the section 19 being positively fixed to and for rotation with the shaft 12 by means of a spline or feather 24, while the section 20 is idly mounted upon the shaft for a purpose which will hereinafter appear. The shaft 12 may be fixed against rotation by means of a pawl 25, designed for engagement with a ratchet-

wheel 26, fixed on the shaft, the shaft of drum 7 being similarly fixed against movement by a pawl 27 and ratchet 28.

Attached at one end to the section 20 of drum 8 to be wound thereon is a flexible carriage-operating element or cable 29, arranged for travel around a pair of guide-pulleys 30 on the post 1 and extended thence around a guide-pulley 31 at the upper end of post 2, the other end of said cable being attached, as at 32, to the carriage 5, which latter is equipped with a pair of wheels or rollers 33, arranged for travel upon that portion of the cable 29 which extends between the standards and with a second pair of wheels 34, designed to travel on the track or way 4, there being engaged with the section 19 of drum 8 and to be wound thereon a second carriage-operating element or cable 35, led around guide-pulleys 36 on the post 1 and engaged at its other end, as at 37, to the carriage. It is to be noted in this connection that the cables 29 and 35 are attached to be wound in relatively reverse directions upon the drum 8, whereby as one cable is wound the other will be paid out, thus to positively move the carriage back and forth upon the track 4, and, further, that the cable 29 serves not only for moving the carriage, but also as a guide for the latter in its movements.

Connected to and for engagement with the carriage 5 in a manner hereinafter explained is a load-receiving device 38, in which 39 designates a sliding head or block arranged for travel upon a pair of vertical guide elements or rods 40, fixed at their lower ends to a horizontal cross piece or bar 41, provided at its ends with journals 42, on each of which is pivoted a pair of crossed members or levers 43, fixed at their lower ends to the sections 44 of a load-receiving bucket or scoop 45, the levers 43 being pivoted at their upper ends to connecting members or links 46, in turn pivoted to a cross piece or bar 47, carrying a pair of vertical guides 48, adapted to bear upon the inner edges of the guide 40 and fixed at their lower ends in a slot or recess 49, provided in the bar, there being also fixed in said recess a centrally-disposed pin or keeper 50, designed for engagement by a movable latch 51, pivoted in the block 39 and serving to detachably connect the latter and bar. The upper free end of the latch 51 is disposed between a pair of pressure members or plungers 52, arranged in a suitable opening or recess in the head and acted upon by pressure-springs 53 to maintain the latch in centered engaging position, there being provided upon the plunger-heads outwardly-extending bearing portions or fingers 54, disposed in guide openings or slots 55 in the side faces of the head 39 for guiding the plungers in their movements, the upper ends of the guide members 48 being sharpened, as at 56, for ready entrance into the block 39.

Connected with the drum 7 to be wound thereon is a hoisting element or cable 57, extended around guide-pulleys 58 on the post 1, from which it is led around a pulley 59 on the carriage, thence over a pulley 60, journaled in the head-block 39, then up and over a pulley 61 on the carriage and having its terminal fixedly attached, as at 62, to the block, it being apparent that when the cable is wound upon the drum the load-carrying device 38 will be hoisted to a position beneath the carriage 5 and for movement with the latter in its travel upon the guides 4 and 29. Connected in the cable 57 is a short chain-section 63, to one link of which there is fixed a latch-operating member or block 64, designed to contact with the upper end of the latch 51 in the manner and for the purpose which will be more fully described hereinafter.

Provided on the side faces of the block 39 is a pair of oppositely disposed and projecting ears 65, to each of which is pivoted a link 66, in turn pivoted, as at 67, to the upper end of a second link 68, the lower end of which is pivoted to an ear 69, fixed to the upper outer edge of one of the bucket-sections 44, while carried by the pivoting axle 67 of the pair of links is an engaging member or arm 70, having offset engaging portions or fingers 71 designed for engagement with the links to limit the inward movement of the latter at the pivot 67. It is to be understood in this connection that there are two sets or pairs of links 67 68, each of which connects one of the bucket-sections with the head 39, whereby the latter will serve, through the medium of the links, for moving said section to open or closed position.

Disposed upon the lower ends of the guides 40 are buffer-springs 72, adapted to receive the bar 47 for cushioning the parts of the mechanism when the bucket-sections are in open position, as illustrated in Fig. 6, while upon the upper ends of the guide there are fixed buffer-springs 73 to receive and cushion the block 39 when the parts are in dumping position, as illustrated in Fig. 5. The springs 73 are connected with their respective guides, preferably by forming on the upper end of each spring a terminal loop or coil 74, engaged around a threaded neck 75, formed on the guide and clamped between a pair of plates or washers 76, in turn secured in place by a nut 77, there being formed in the lower washer a marginal recess 78, through which the upper coil of the spring is passed to engaging position.

In practice the drum 7 is operated from the shaft 11 through the medium of the gears 9 and 10 for winding or unwinding the cable 57 to raise and lower the device 38, the clutch-head 14 being normally shifted to non-engaging position, as illustrated in Fig. 1, for throwing the drum 8 out of action, under

which conditions said drum is fixed against movement by means of the pawl 25 engaging the ratchet 26. After the bucket 45 has received a load and been hoisted to the position illustrated in Figs. 2 and 4 for movement with the carriage 5 the pawl 25 is released and the clutch-head 14 shifted to engaging position through the medium of lever 15, whereupon the drum 8 will be operated from the shaft 11 for winding one of the cables 29 or 35 and unwinding the other, thus causing the carriage to travel along the way 4 to the point at which the load is to be deposited, whereupon the drum 7 is again thrown into action for further winding the cable 57 until the member or block 64 contacts with the end of latch 51, whereupon the bar 47 will be released and slide downward on the guides 40 to the position illustrated in Fig. 5, thus acting, through the medium of the links 46 and levers 43, to move the bucket-sections 44 to open or discharging position. With the bucket-sections in this position the device is again moved, through the medium of the carriage 5, to the point for receiving another load, and the drum 7 is rotated in the proper direction for unwinding cable 57, whereupon the device 38 will descend until the bucket-sections still in open position rest upon the ground, whereupon the head 39 will continue to descend until the latch 51 engages the keeper 50 and the parts assume the position illustrated in Fig. 6. When the cable 57 is again wound, the head 39 will first move upward upon the guide and act, through the medium of the links, for moving the bucket-sections to closed position and at the same time for automatically receiving a second load, the previously-described operation being then repeated for conveying the load to and discharging it at the point where it is to be deposited. It is to be noted that when the bar 47 is released and descends it will be received upon and cushioned by the springs 72, while the block 39 will in like manner be cushioned by springs 73 during final operation of the cable 57 to actuate the latch, while the latter will be automatically returned to and maintained in engaging position through the medium of the spring-plungers 52, which are guided in their movements through the medium of the projecting portions 54, working in the slots 55, as before explained. It may also be mentioned that the guide-sections 48 serve in practice to present an extended bearing-surface for the guides 40 during movement of the bar 47 and also to effect proper alinement of the latter with the block 39 for insuring accurate engagement of the latch 51 with the keeper 50. Furthermore, it will be observed that under the peculiar construction of the drum 8 the sections 19 and 20 thereof may be readily disconnected for independent rotation in initially winding the cables thereon, it being understood that with

the drum-sections connected the cable 29 is first wound upon the section 20, which is thereafter disconnected by removing the bolt 23 to permit the cable 35 to be in turn wound in a reverse direction upon the drum-section 19, and, furthermore, that through this construction the cables may be properly tensioned.

In Figs. 13 and 14 there is illustrated a modified form of load-grappling device in which the relatively movable sections 44', carried and operated by the levers 43, each comprise a cross piece or bar 79 and teeth or tines 80, this form of grapple especially adapting the device for use in conveying and loading hay or the like. In other respects the device is identical in construction and operation with that above described.

From the foregoing it is apparent that I produce a simple inexpensive device which in practice will admirably perform its functions to the attainment of the ends in view, one in which the load-receiving device will be properly moved with the carriage for conveying the load from place to place, and one wherein the bucket-sections will be automatically operative both for receiving and discharging the load, it being understood that minor changes in the details herein set forth may be resorted to without departing from the spirit of the invention.

Having thus described the invention, what I claim is—

1. In a device of the class described, a load-receiving device comprising a pair of relatively movable sections, a guide, a member slidably mounted upon the guide and operatively connected with the sections, a head slidably engaged with the guide, a movable latching member for connecting the head with the slidable member, a track or way, a carriage movable thereon and a hoisting-cable operatively connecting the load-receiving device with the carriage, said cable being adapted for actuating the latch to release the slidable member from the head.

2. In a device of the class described, a load-receiving device including a pair of relatively movable sections, a guide, a cross-piece slidably engaged therewith and operatively connected with the sections, a head slidably on the guide and operatively connected with the sections for moving the latter to closed position, a movable latch adapted for connecting the head and cross-piece, a track or way, a carriage movable thereon, and a flexible hoisting element or cable operatively connecting the load-receiving device with the carriage, said cable being adapted for actuating the latch to release the cross-piece and permit movement of the sections to open position.

3. In a device of the class described, a load-receiving device including a pair of relatively movable sections, a guide, a member

slidably engaged with the guide, and operatively connected with the sections for moving the latter to open position, a head slidably engaged with the guide and operatively connected with the sections for moving the same to closed position, a movable latch member connecting the head and slidable member, and a flexible hoisting element operatively engaged with the load-receiving device and adapted for actuating the latch to release said slidable member.

4. In a device of the class described, a load-receiving device including a pair of relatively movable sections, a guide, a member slidably engaged with the guide and operatively connected with the sections for moving the same to open position, a head slidably engaged with the guide and operatively connected with the sections for moving the same to closed position, a movable latching member adapted for connecting the slidable member and head, a flexible hoisting element operatively engaged with the load-receiving device, and a tripping member carried by said

element and adapted to contact with and move the latch to releasing position. 25

5. In a device of the class described, a head, a load-receiving device operatively connected therewith and movable to dumping position, a guide-pulley journaled in the head, a movable latching member carried by the head a flexible operating element arranged to travel on the guide-pulley and provided with a latch-operating member, an element connected with the load-receiving device and adapted for engagement by the latching member to hold the device in non-dumping position, said latch being operable by the latch-operating member for releasing the element and springs acting on the latch to maintain the same normally in engaging position. 30 35 40

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

CHRISTOPHER C. DOLAN.

Witnesses:

JOHN L. FLETCHER,  
FABIUS S. ELMORE.