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Patented Sept. 17, 1901.

S. HALTOM.

TRUCK.

(Application filed Sept. 8, 1900.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 7.

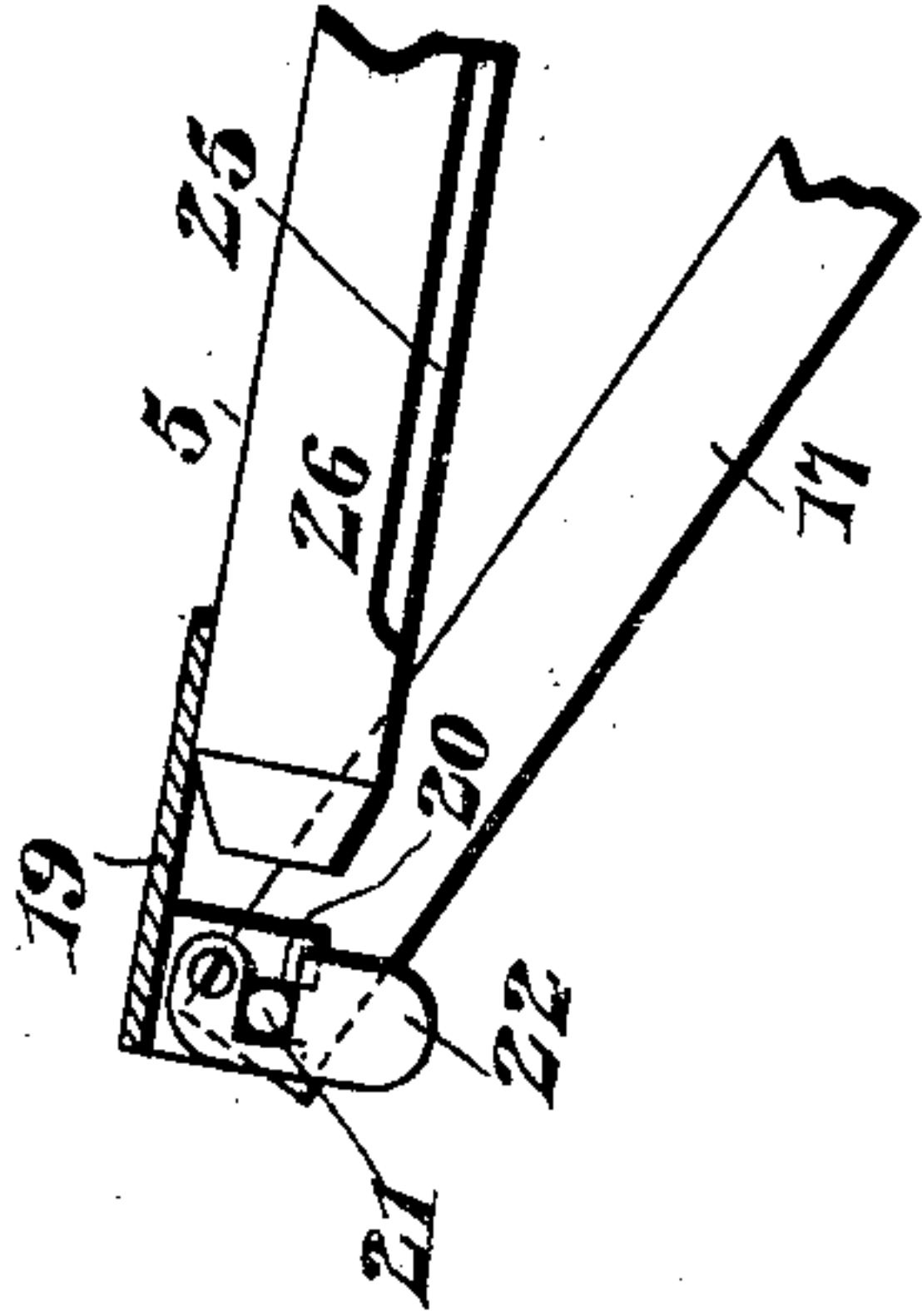
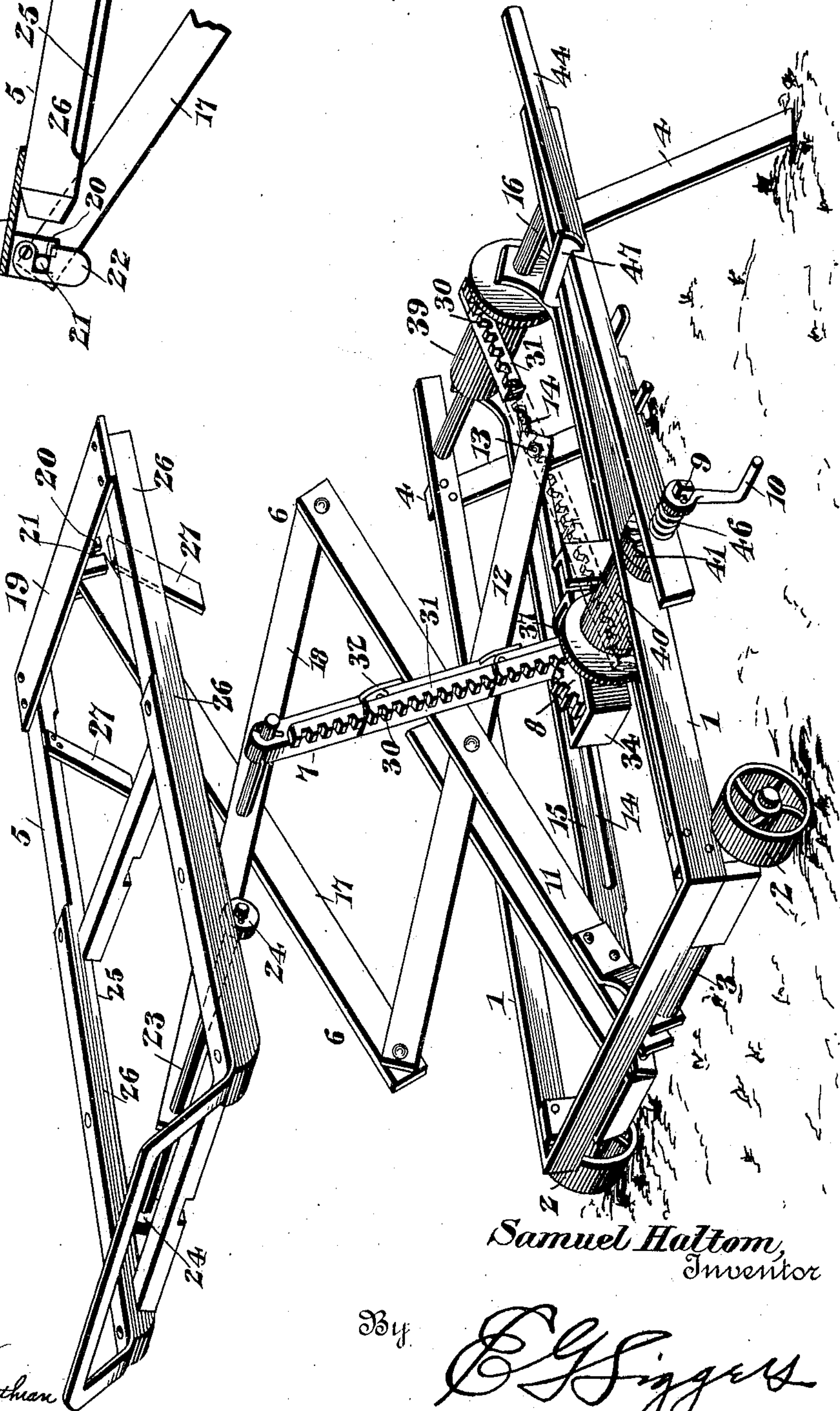


Fig. 1.



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No. 682,932.

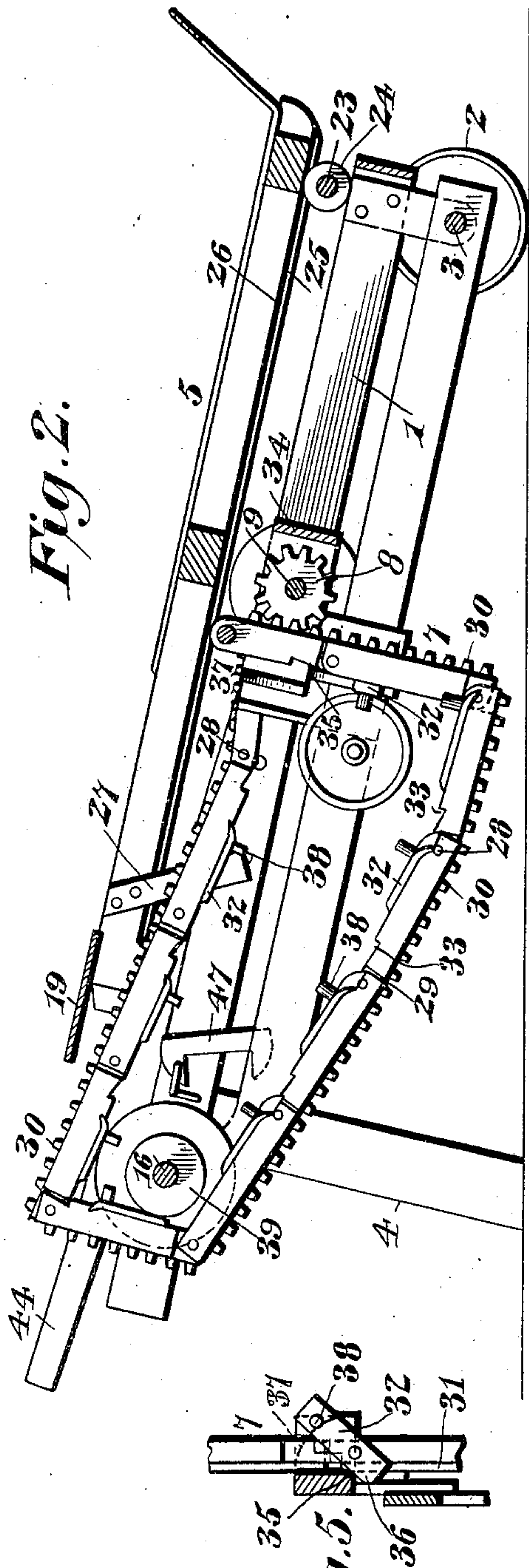
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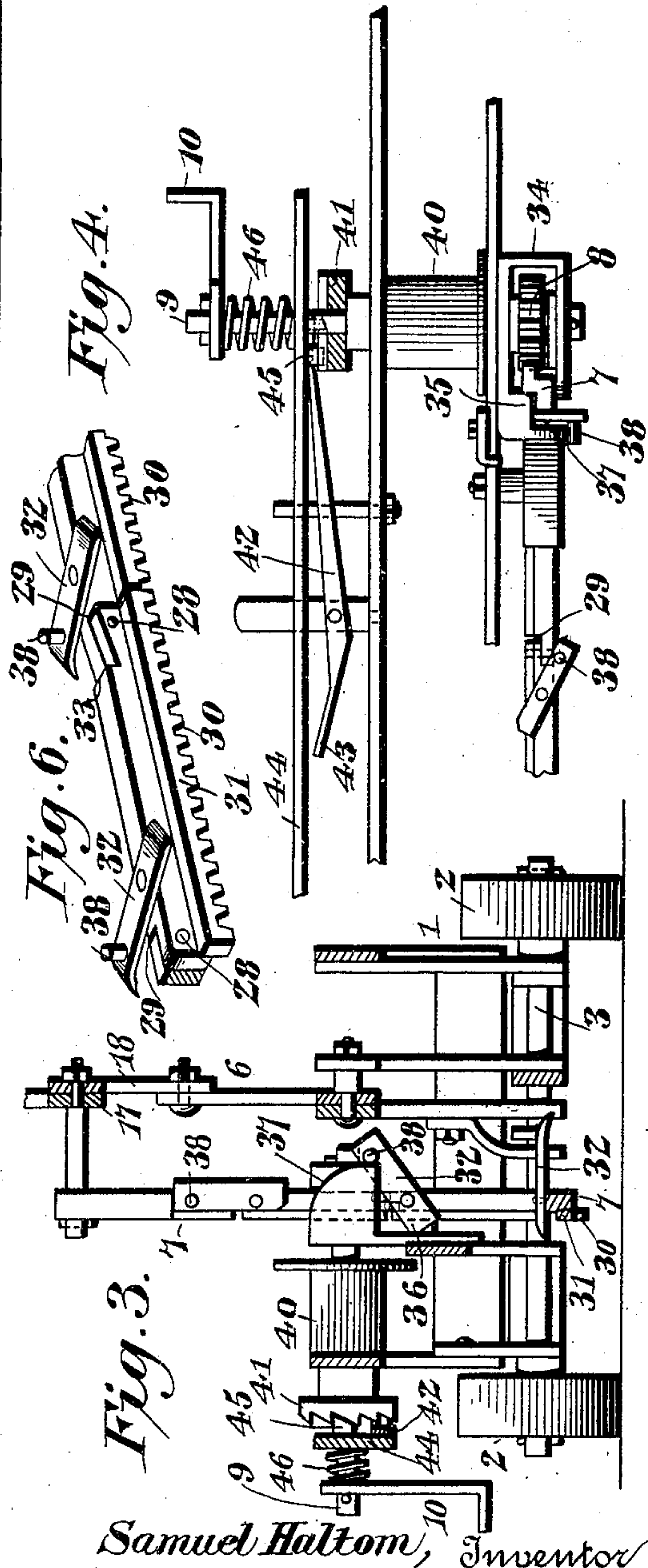
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2 Sheets—Sheet 2.



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# UNITED STATES PATENT OFFICE.

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## TRUCK.

SPECIFICATION forming part of Letters Patent No. 682,932, dated September 17, 1901.

Application filed September 6, 1900. Serial No. 29,231. (No model.)

*To all whom it may concern:*

Be it known that I, SAMUEL HALTOM, a citizen of the United States, residing at Henderson, in the county of Rusk and State of Texas, have invented a new and useful Truck, of which the following is a specification.

This invention relates to a novel truck, and has for its object to provide a truck equipped with a bed designed to be readily elevated for the purpose of lifting heavy freight to facilitate its delivery at points above the floor or ground.

A further object of the invention is to construct the bed-elevating mechanism in a manner to permit its operation by a single person to obviate the necessity for the employment of more than one handler to lift heavy objects to a suitably-elevated position—as, for instance, in loading a wagon.

Further and subordinate objects of the invention will hereinafter appear as the necessity for their accomplishment is developed in the succeeding description, taken in connection with the accompanying drawings, in which I have illustrated the preferred embodiment of my invention.

In said drawings, Figure 1 is a perspective view of my truck, showing the bed in an elevated position. Fig. 2 is a sectional view showing the bed depressed. Fig. 3 is a transverse sectional view showing one of the locking-plates being swung to its unlocking position by the lowering of the rack. Fig. 4 is a plan view of the rack, together with the mounting therefor and the mechanism employed to effect its actuation. Fig. 5 is a detail view showing one of the locking-plates in the act of being thrown to its locking position through the elevation of the rack. Fig. 6 is a detail perspective view of a portion of the elevating-rack, showing the locking-plates disposed in their unlocked positions to render the rack flexible. Fig. 7 is a detail sectional elevation of the bed-latch and the immediately-connected parts.

Referring to the numerals of reference employed to designate corresponding parts throughout the views, 1 indicates a truck-frame supported at its front end upon truck-wheels 2, carried by a transverse shaft or axle 3, and at its rear end by a pair of legs 4.

Above the truck-frame 1 is mounted the truck-bed 5, carried by an extensible bed-support 6 of the lazy-tongs variety and designed to be elevated and depressed by means of an elevating-rack 7, connected at its upper end to the upper portion of the support 6 and meshing with a pinion 8, carried at the inner end of a power-shaft 9, journaled in suitable bearings in the frame 1 and provided with a crank 10, designed to facilitate the transmission of motion to the pinion to move the rack longitudinally, and thereby elevate or depress the truck-bed, as desired.

The connection of the extensible bed-support 6 with the truck-frame 1 may be effected in any desired manner; but I prefer to bifurcate one of the lower members or levers 11 and swing the bifurcated end from the shaft 3 at a point within the frame, the corresponding member or lever 12 being provided with a roller or other suitable lateral stud 13, extending into an elongated guide-slot 14, formed in a longitudinal supporting-bar 15, having one end supported upon the shaft or axle 3 and its opposite extremity upturned and connected to a transverse connecting-rod 16, located at the rear end of the truck-frame and serving to lend rigidity to the latter. This form of connection comprehends the swinging of the lever 11 from a permanent fulcrum and for the slidable mounting of the lower end of the lever 12 for the purpose of permitting the ends of these levers to approach or recede for the purpose of effecting the extension or contraction of the bed-supporting frame in the well-known manner of lazy-tongs constructions. It will of course be necessary that similar provision for the change of relation of the upper members or levers 17 and 18 of the support 6 be provided—that is to say, the upper ends of those levers or members which support the truck-bed must be capable of relative movement corresponding to the relative movement of the members 11 and 12. I therefore provide the truck at its rear end with a transverse plate 19, from which depend a pair of slotted ears 20, designed to receive a pair of lateral studs or trunnions 21, extending in opposite directions from the upper end of the lever 17, said trunnions being retained in place within



the ears 20 by a swinging bed-latch 22, pivoted upon one of the ears 20 and designed when turned down to engage one of the studs 21 for the purpose of preventing the latter from becoming disengaged from the ears, but at the same time permitting such pivotal movement of the lever as will correspond to the swinging of the lever 11 upon the axle 3. At the end of the corresponding lever 18 is mounted a transverse bed-supporting shaft 23, at the opposite ends of which are mounted rollers 24, which are received within longitudinal recesses 25 in the under faces of the side bars 26 of the truck for the purpose of permitting said levers to traverse the truck longitudinally as the upper ends of the levers 17 and 18 approach or recede in accordance with the extension or contraction of the bed-support. For the purpose of limiting the rearward movement of the rollers 24 under the bed the latter is provided with depending stops 27, which strike against the shaft 23 and serve as means for preventing the bed from dropping entirely from the supporting-frame when the latch 22 is thrown back for the purpose of releasing the rear end of the bed from its support—as, for instance, when it is desired to tilt the bed for the purpose of dumping the contents thereof.

We have now seen that the truck constructed in accordance with my invention embodies a truck-frame, a lazy-tongs bed-support, a bed tiltably carried by the support and detachably connected thereto, and rack-and-pinion mechanism for effecting the extension and contraction of the bed-support. While this structure is believed to be novel, I have carried the invention still farther by originating a novel form of rack which, while constituting a perfectly-rigid support or elevating member, will be capable of being wound upon a drum in the manner of an ordinary chain. The special advantages of a structural feature of this character will be obvious, since it is desirable to provide for elevating the bed to considerable heights, for which purpose an ordinary rack could not be employed without making provision for the accommodation of the lower end of the rack as it is depressed below the truck-frame. I desire to secure a rack capable of being wound upon a drum, but which when extended beyond its supporting part or socket will be perfectly rigid in order to insure the sustaining of a considerable weight which may be imposed upon the truck-bed for elevation therewith. This end I attain by composing the rack of the desired number of separate sections connected by lapped joints, through which extend hinge-pintles 28. These pintles are located nearer the rear edge of the rack to form rule-joints 29, as clearly illustrated in Fig. 2. This particular form of joint, as is well understood, comprehends opposed end faces of adjacent links, which abut and prevent the deflection of the links in one direction, but permit them to have flexible

connection when urged in the opposite direction.

Projecting from the rear face of each rack-section I provide a series of rack-teeth 30, which may be integral with the sections or may be produced by securing toothed bars 31 along one side face of each section with the teeth projecting beyond the rear edge thereof, as shown in Fig. 6 of the drawings. It will therefore be seen that the rack may be wound upon a drum, whereby considerable lengths may be stored for the purpose of permitting a considerable elevation of the bed; but it is equally obvious that some means must now be provided for rendering that portion of the rack in use perfectly rigid, as it would otherwise fail to sustain the bed in its elevated position. To attain this end, I mount upon the front face of each rack-section a pivoted locking-plate 32, located adjacent to the joint and designed when turned into alinement with the rack to span the joint and have one end engage a shoulder 33, formed in the face of the adjacent member by recessing the latter, as indicated in Fig. 6. Obviously corresponding shoulders might be formed upon contiguous members at opposite sides of each joint for engagement at opposite ends of the locking-plate; but ordinarily the employment of a single shoulder will be effective. It is evident that when the locking-plates 32 are swung to a position transverse to the rack, as indicated in Fig. 6, said rack will be flexible and may be wound upon a drum or otherwise stored in small compass and that when said plates are swung into engagement with the shoulders 33 the connection between the members will be rigid to constitute such of the members as are locked by the plates a perfectly-rigid rack designed for the elevation of the bed under the impulse of the suitably-driven pinion 8. It now follows that means must be provided for sustaining and operating the rack and for automatically shifting the positions of the locking-plates 32 to render a portion of the rack inflexible for the support of the bed and another portion flexible for storage upon a drum or elsewhere. The operating means comprehends the pinion 8 and the shaft and crank connected therewith. The supporting and guiding means comprehends a casing 34, surrounding the pinion and designed to receive and guide the rack for the purpose of retaining the latter in mesh with the pinion. The means for automatically shifting the positions of the locking-plates embraces a locking-cam 35, projecting from the inner face of the casing 34 and located in the path of one end 36 of the locking-plates for the purpose of swinging them into their locked position as the rack is elevated through the manipulation of the crank 10. To shift the locking-plates 32 to their original or unlocked positions transverse to the rack for the purpose of rendering the latter flexible, I provide what may be termed an "unlocking-cam" 37 upon



one face of the rear end wall of the casing 34 for engagement with a pin or other projection 38, extending from the end of the plate opposite the end 36. The cams 36 and 37 I shall designate, broadly, as "plate-shifting" mechanism located upon the rack-support, as it will be seen that this mechanism automatically shifts the plates to insure the rigidity of that portion of the rack extending above the casing 34 and the flexibility of the portion extending therebelow.

Various expedients for disposing of the flexible lower end of the rack may be devised; but I prefer to mount an idler-pulley 39 upon the shaft 16 at the rear end of the truck-frame, around which the flexible end of the rack may be guided and passed to the drum 40, mounted on the shaft 9 and designed for the reception of the rack or of a flexible connector extending from the lower end thereof. For the purpose of preventing too-rapid descent of the bed I mount a ratchet-disk 41 upon the shaft 9 and disposed for engagement with a pivoted pawl 42, having a tailpiece 43 extending beyond its pivot and adjacent to an operating-lever 44, loosely mounted upon the shaft 9 and provided with a projection or tooth 45, likewise engaging the ratchet-disk 41 and urged in the direction of said disk by the spring 46, which forces the lever 44 against the engaging end of the pawl for the purpose of retaining both the lever and pawl in engagement with the disk. It will now appear that the rotation of the crank will effect the rotation of the pinion 8 and the elevation or depression of the bed, as the case may be. The leverage obtained by means of the crank is insufficient, however, for handling exceedingly heavy freight, and it is for this reason that I provide the long operating-lever 44, which when necessary may be oscillated to effect the step-by-step rotation of the shaft through its engagement with the disk 41. Whenever the rapid gravitation of the bed is desired, the free end of the lever 44 may be drawn toward the frame of the truck and retained by a hook 47, this movement of the lever serving to disconnect it from the ratchet-disk and to effect the disconnection of the pawl 42 therefrom, inasmuch as said pawl will be swung with the lever by the contact of the latter with the tailpiece 43.

The operation of my device is as follows: Supposing the truck to be organized, as indicated in Fig. 2 of the drawings, with the bed-latch 22 in engagement, as indicated in Fig. 7, said latch is disengaged to permit the bed 5 to slide forward until its front edge rests upon the ground, the rollers 24 facilitating this longitudinal or tilting movement of the bed. The load having been placed upon the bed, the latter is now drawn back to its initial position and is secured by reengaging the latch 22 with the stud 21. The truck is now moved to any desired point in the usual manner, and, assuming that it is necessary to

load the freight into a wagon or to deposit it at some other elevation, the pinion 8 is rotated through the manipulation of either the crank 10 or the lever 44, according to the weight of the object handled. The rotation of the pinion will effect the advance of the rack 7, and as the locking-plates are successively presented to the locking-cam 35 they will be thrown into the locked position to secure the rigidity and inflexibility of that portion of the rack extending above the casing 34. The advance of the rack, which is connected at its opposite end to the upper portion of the lazy-tongs bed-support, will effect the expansion or extension of the latter and the consequent elevation of the bed. When the desired elevation has been reached, the bed may be released or run forward and tilted as described in connection with the loading of the truck for the purpose of facilitating the deposit of its load upon the elevated surface to which the freight is designed to be delivered. The unloading of the bed having now been effected, the lever 44 is urged laterally and is engaged by the hook 47 to permit the shaft 9 to be reversed and the rack to be depressed and wound upon the drum 40. As the locking-plates, located above the casing 34, approach said casing during the depression of the rack the pins 38 will engage the unlocking-cam 37 to swing said plates to their unlocked positions for the purpose of insuring the flexibility of that portion of the rack located below the support.

From the foregoing it will be observed that I have produced a simple, durable, and ingenious truck of the character described embodying a construction calculated to effect the accomplishment of the various objects stated; but while the present embodiment of the invention appears at this time to be preferable I wish to reserve the right to effect such changes, modifications, and variations as may be clearly comprehended within the spirit of the invention.

What I claim is—

1. The combination with a vehicle frame and bed, of lazy-tongs comprising several connected pairs of crossed levers, constituting an extensible support for the bed and disposed to maintain the horizontal position of the bed during its elevation, and lifting mechanism connected to the lazy-tongs at the intersection of the levers of one pair.

2. The combination with a vehicle frame and bed, of an extensible support for the latter, a sectional rack disposed to effect the extension of the support to elevate the bed, and a suitably-driven pinion carried by the frame and engaging the rack, said extensible support being disposed to maintain the horizontal position of the bed during its elevation.

3. The combination with a vehicle frame and bed, of lazy-tongs comprising several connected pairs of crossed levers, constituting an extensible support for the bed and dis-



posed to maintain the horizontal position of the bed during its elevation, a longitudinally-movable rack operatively connected to the lazy-tongs at the intersection of the levers of one pair, and a suitably-driven pinion engaging the rack.

4. The combination with a vehicle frame and bed, of elevating mechanism for the bed, said mechanism comprising a sectional rack, means for locking the sections against relative movement, and means for operating the rack.

5. The combination with a vehicle frame and bed, of bed-elevating mechanism comprising a rack having flexibly-connected sections, a pinion engaging the rack, and means for automatically locking the rack-sections against relative movement as the rack is advanced beyond the pinion.

6. The combination with a vehicle frame and bed, of bed-elevating mechanism comprising a sectional rack, locking-plates designed to rigidly connect the adjacent rack-section, and means for operating said plates through the movement of the rack.

7. The combination with a vehicle frame and bed, of bed-elevating mechanism comprising a sectional rack, means for operating the rack, and means for locking and unlocking the section through the movement of the rack in opposite directions.

8. The combination with a vehicle frame and bed, of bed-elevating mechanism comprising a sectional rack, a pinion engaging the rack, locking-plates located upon the rack immediately adjacent to the joints between the sections, and locking and unlocking cams located to shift the positions of said plates through the movement of the rack in opposite directions.

9. The combination with a vehicle frame and bed, of bed-elevating mechanism comprising a sectional rack, a casing carried by the frame and arranged to guide the rack, locking and unlocking cams formed upon the casing, and locking-plates constituting elements of the rack and disposed to engage the cams as the rack is moved in opposite directions.

10. The combination with a vehicle frame and bed, of bed-elevating mechanism comprising a sectional rack, rack-operating mechanism carried by the frame, means for locking the rack-sections against relative lateral movement as said sections are advanced beyond the rack-operating mechanism, means for unlocking the sections as they are retracted below said operating mechanism, and a drum disposed to receive the flexible portion of the rack.

11. The combination with a vehicle frame and bed, of an extensible bed-support, a sectional rack connected to the support to effect the extension thereof, means for operating

the rack, and means for automatically locking and unlocking the rack-sections.

12. The combination with a vehicle frame and bed, of lazy-tongs constituting an extensible support for the bed, a sectional rack connected to the upper portion of the lazy-tongs, rack-operating means carried by the frame, locking-plates arranged to lock the rack-sections, and means for automatically shifting the positions of said plates to effect the locking and unlocking of the rack-sections.

13. The combination with a vehicle frame and bed, of an extensible bed-support comprising a series of crossed levers and a bed-latch arranged to effect a detachable pivotal connection between the bed and the terminal of one of the supporting-levers.

14. The combination with a vehicle frame and bed, of lazy-tongs comprising a bed-support, a shaft carried by one member of the lazy-tongs and provided with rollers supporting one end of the bed, a latch carried at the other end of the bed, and means carried by another of the lazy-tongs members and disposed for engagement by the latch.

15. The combination with a vehicle frame and bed, of lazy-tongs comprising upper terminals, one of which is pivotally connected to the rear end of the bed, and lower terminals, one of which is pivotally connected to the front end of the frame, the other upper terminal being slidably connected to the front of the bed, and the other lower terminal being slidably connected to the rear end of the frame, whereby the horizontal position of the bed is maintained during its elevation, and elevating mechanism connected to the lazy-tongs.

16. The combination with a vehicle frame and bed, of bed-elevating mechanism comprising a rack, a power-shaft, a pinion carried by the shaft engaging the rack, and a plurality of independent shaft-operating devices.

17. The combination with a vehicle frame and bed, of bed-elevating mechanism comprising a rack, a pinion engaging the rack, a shaft supporting the pinion, a ratchet-disk carried by the shaft, a pawl and an operating-lever both slidably mounted upon the shaft and arranged for engagement with the ratchet-disk, a spring urging the lever into its engaging position, and a crank upon the extremity of the shaft.

18. The combination with a vehicle frame and bed, of elevating mechanism for said bed, said mechanism comprising a sectional rack, and means for operating the rack.

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

SAMUEL HALTOM.

Witnesses:

R. BATEMAN,

E. A. DREEBEN.