

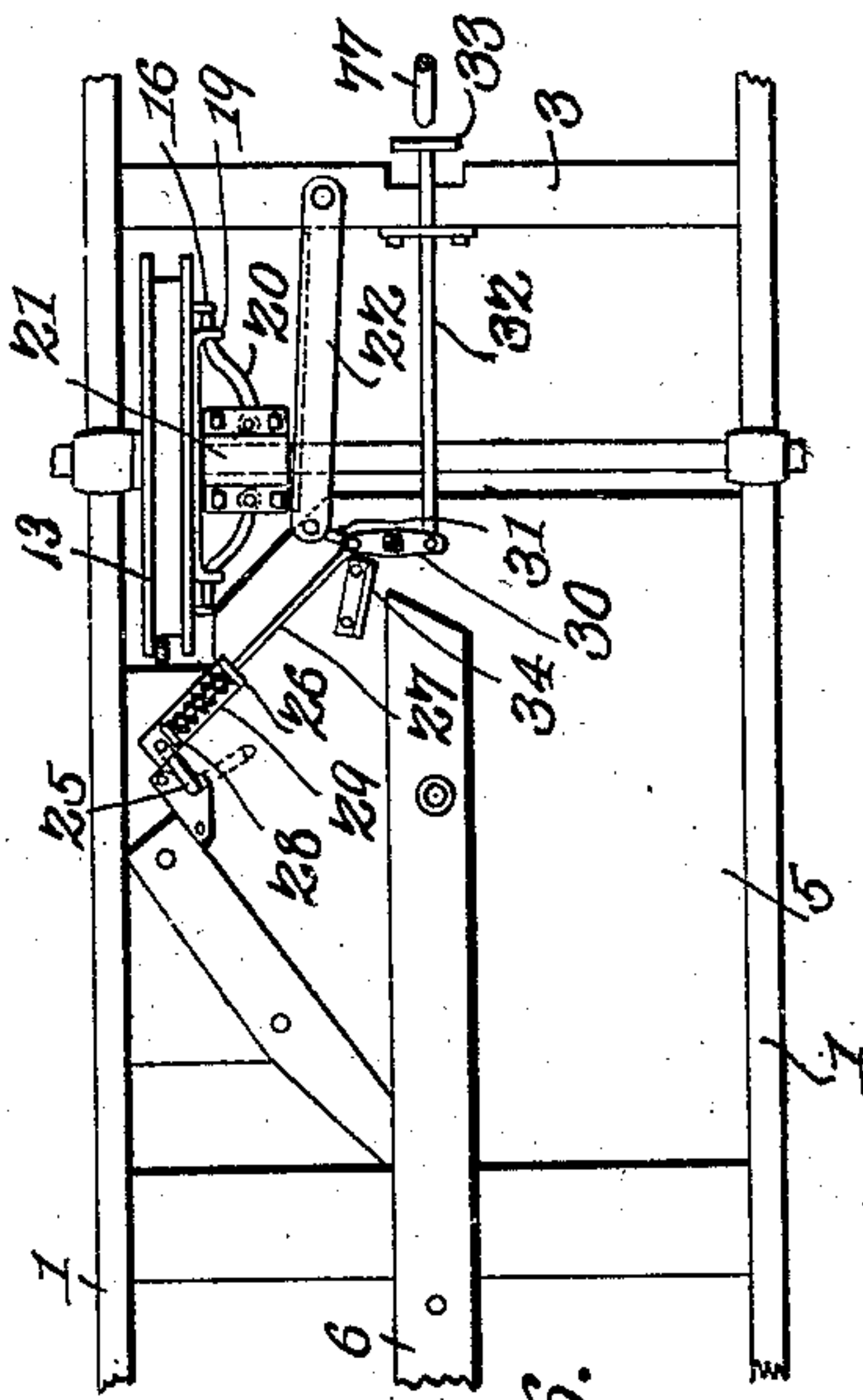
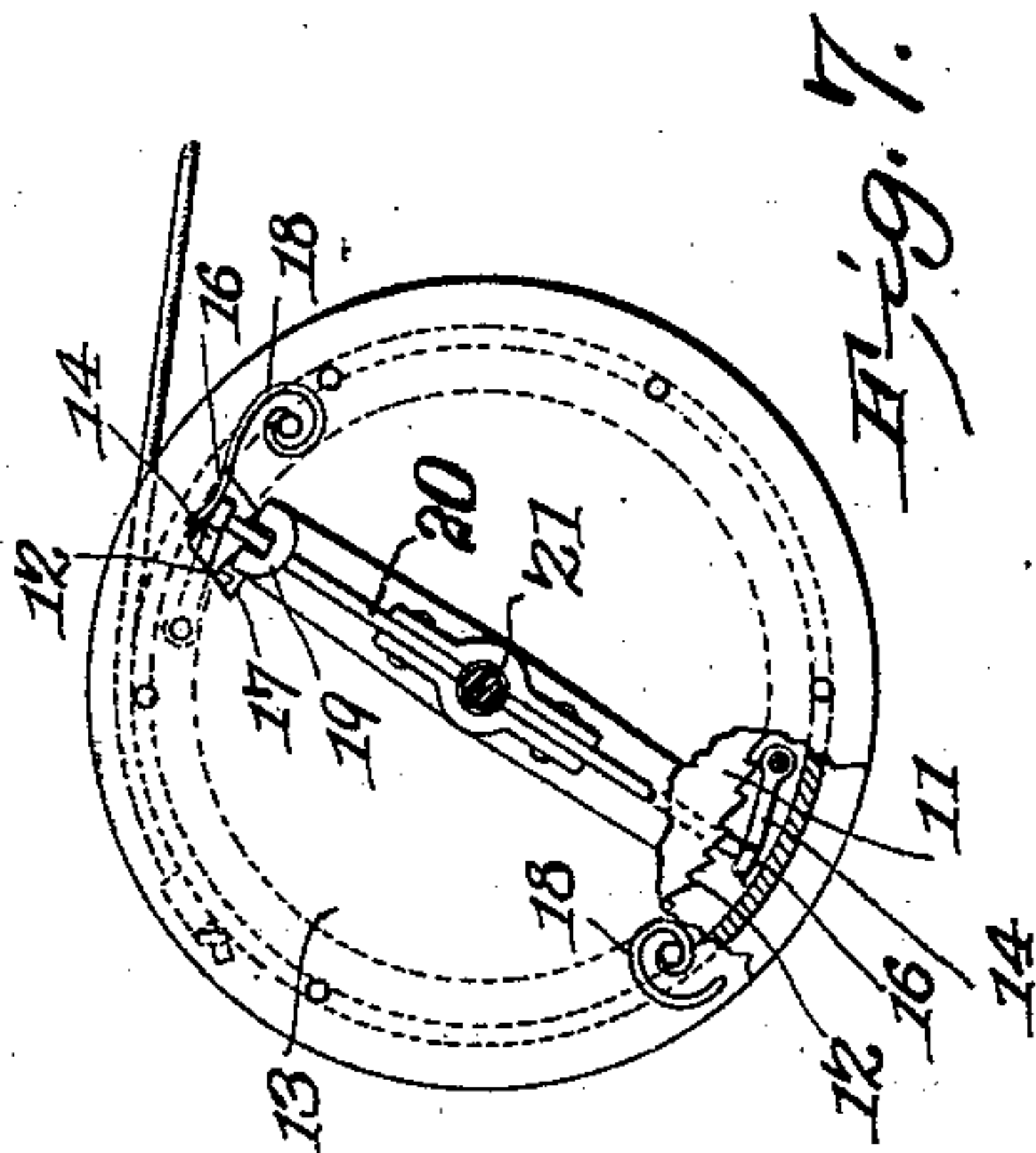
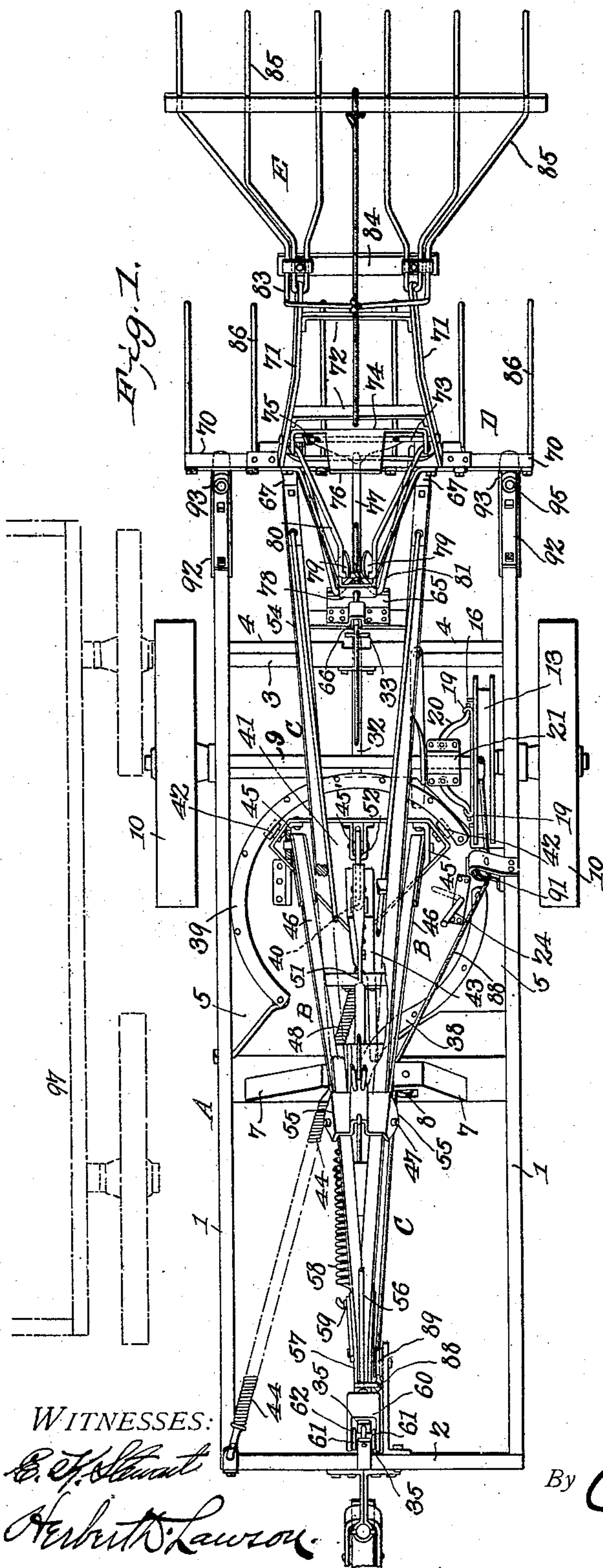
No. 842,417.

PATENTED JAN. 29, 1907.

O. E. NELSON.  
SHOCK LOADER.

APPLICATION FILED MAY 11, 1906.

3 SHEETS—SHEET 1.



WITNESSES:

*E. J. Stewart*  
*Herbert Lawton*

By

*Ole E. Nelson,*  
INVENTOR.  
*C. A. Snow & Co.*  
ATTORNEYS

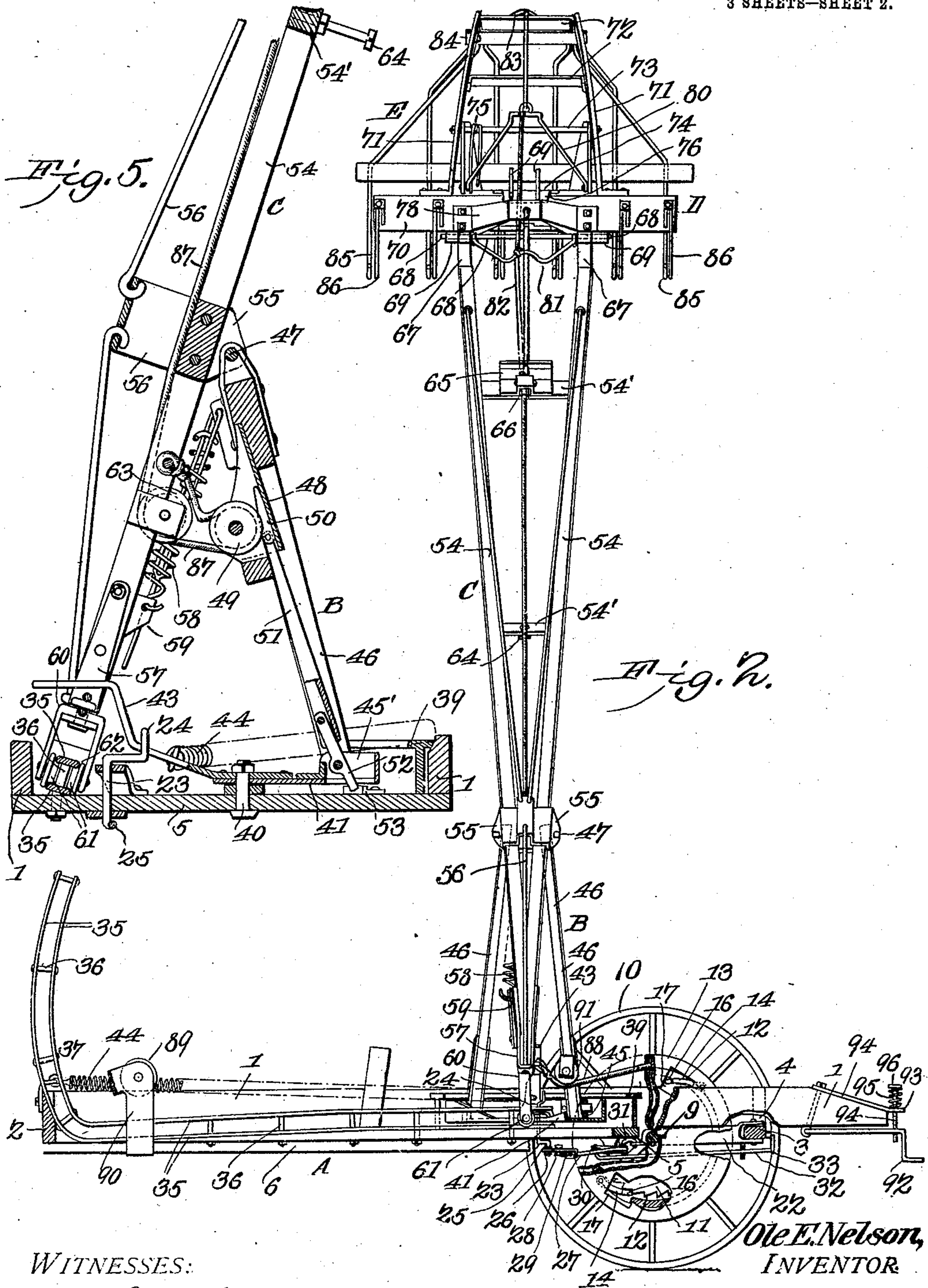
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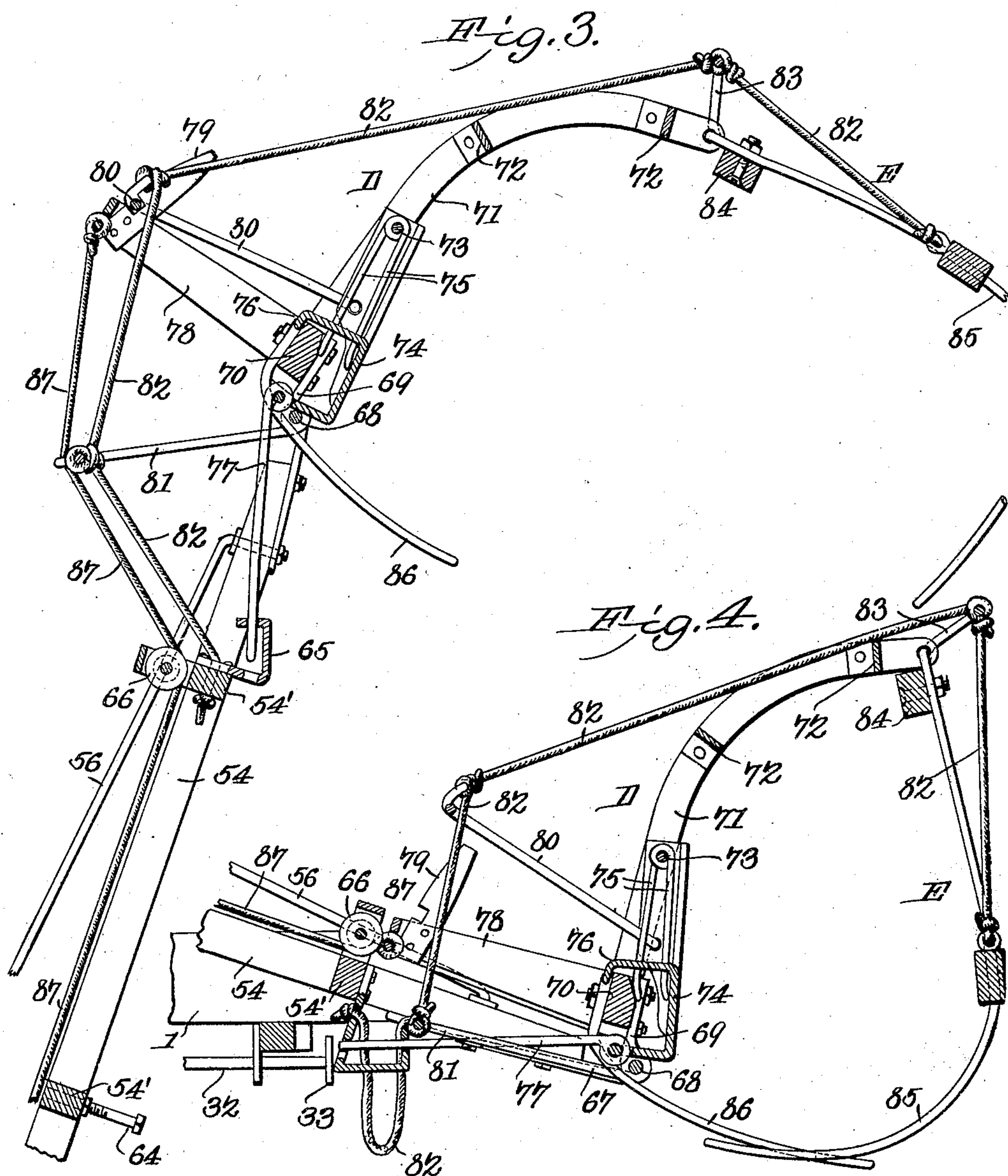
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3 SHEETS—SHEET 3.



*WITNESSES:*

E. F. Stewart  
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*Ole E. Nelson,*  
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# UNITED STATES PATENT OFFICE.

OLE E. NELSON, OF HERMAN, MINNESOTA.

## SHOCK-LOADER.

No. 842,417.

Specification of Letters Patent.

Patented Jan. 29, 1907.

Application filed May 11, 1906. Serial No. 316,334.

*To all whom it may concern:*

Be it known that I, OLE E. NELSON, a citizen of the United States, residing at Herman, in the county of Grant and State of Minnesota, have invented a new and useful Shock-Loader, of which the following is a specification.

This invention relates to machines commonly designated as "shock-loaders;" and its object is to provide a machine of this character which is adapted to be drawn over a field and which will automatically engage a shock, raise it above the machine, and release it at one side of the machine, so that the shock will fall into a wagon or other receptacle located at the side of the machine.

Another object is to provide novel mechanism whereby the various movements of the machine can be produced at the proper intervals without requiring the attention of an operator.

A further object is to provide novel means whereby the shock-lifting mechanism can be raised, partly rotated, and subsequently returned to its original lowered position.

A still further object is to provide a clutch of novel form actuated by the load and by the raising mechanism for throwing one of the traction or power wheels into or out of operative relation with the lifting mechanism.

With the above and other objects in view the invention consists of a frame supported by wheels of any desired form, and a clutch of novel form is mounted upon the machine for the purpose of throwing one of the wheels into or out of operative relation with a cross-beam.

A mast is fulcrumed between its ends upon a brace which is pivotally supported on a rotatable table carried by the frame, and the lower portion of the mast is mounted on a track of peculiar form which is arranged on the frame and partly around the table. A flexible connection between the mast and the frame is provided, so that when the drum is rotated in one direction the mast will be elevated from its normal or reclining position on the frame and subsequently partly rotated. The mast carries shock-engaging forks which are mounted in a novel manner, and these forks are formed with means adapted to be actuated by the load when the mast is in lowered position for throwing the drum into operative relation with the traction-wheel so as to cause the elevation of the mast and the

load. Means are provided for automatically locking the load within the forks and for releasing it after the mast has been raised and partly rotated, and mechanism is also employed which is adapted to operate upon the completion of the swinging of the mast for releasing the drum, so as to permit the mast to return to its lowered position.

The invention also consists of certain other novel features of construction and combinations of parts, which will be hereinafter more fully described, and pointed out in the claims.

In the accompanying drawings is shown the preferred form of the invention.

In said drawings, Figure 1 is a plan view of the complete machine, showing the mast in its normal or lowered position. Fig. 2 is a view, partly in side elevation and partly in section, showing the mast raised and turned into position for discharging the load therefrom. Fig. 3 is a view, partly in section and partly in elevation, showing the upper portion of the mast and the position assumed by the forks immediately subsequent to the discharge of the load. Fig. 4 is a similar view showing the forks lowered and in the positions assumed by them while gripping a shock. Fig. 5 is an enlarged vertical section through a portion of the frame and the lower part of the mast and brace and showing the means for locking the holding-table of the forks. Fig. 6 is a bottom view of a portion of the frame and showing the mechanism for transmitting movement from the mast or fork and to the clutch; and Fig. 7 is a view, partly in elevation and partly in section, of the drum and the mechanism for placing it in engagement with the axle.

Referring to the figures by characters of reference, A is a frame consisting of side beams 1, connected at their forward ends by a rear beam 2, while a cross-beam 3 connects said side beams adjacent their front ends and has centering or guide blocks 4 disposed thereon for the purpose hereinafter set forth. A platform 5 is carried by the central portions of the side beams, and a longitudinally-extending supporting-strip 6 extends from the platform to the rear beam. Centering-blocks 7 are arranged upon one edge of the platform, and one of these blocks carries a vertically-adjustable roller 8.

Rotatably mounted within and supporting the side beams 1 is an axle 9, having trac-



tion-wheels 10 mounted on the ends thereof and adapted to rotate therewith. Secured to the axle adjacent one of the side beams is a disk 11, having ratchet-teeth 12 formed on its periphery, and this disk is inclosed by a drum 13, having dogs 14 pivoted therein and provided adjacent their heads with fingers 16, extending through openings 17 in one face of the drum. These fingers are contacted by springs 18, which force the dogs normally into contact with the toothed periphery of the disk, so that under ordinary conditions the drum will rotate with the disk and axle when the machine is moved in one direction, but will not rotate therewith when the movement of the machine is reversed. Slotted ears 19 extend from the inner face of the drum, and mounted within them are plungers 20, which bear at one end against the fingers 16, while their other ends are pivotally connected to a sleeve 21, slidably mounted on the axle 9 and contacted by a lever 22, which is pivoted on the cross-beam 3 and loosely surrounds and is supported by the axle 9.

A vertical shaft 23 is rotatably mounted on the platform 5 and has a crank 24 at its upper end and another crank 25 at its other end. Crank 25 projects into a plate 26, in which is slidably mounted a rod 27, having a head 28, which slides within the plate 26. A coiled spring 29 is interposed between said head and one end of the plate for the purpose of holding the rod normally retracted into the plate 26. Rod 27 is pivoted to one end of a centrally-fulcrumed lever 30, arranged upon the bottom of the platform, and the same end of the lever is connected, by means of a link 31, with the lever 22, hereinbefore referred to. A plunger 32 is slidably supported by the cross-beam 3 and is connected to the other end of lever 30, and this plunger has a head 33 at its front end, which projects beyond the cross-beam 3. A suitable stop 34 is secured upon the bottom of the platform for limiting the movement of lever 30 in one direction.

It is to be understood that the lever 30 is normally in position against the stop 34, and when so disposed a link 31 holds the lever 32 against the sleeve 21, and the plungers 20 are thus pressed against the fingers 16 and hold the dogs 14 out of engagement with teeth 12 while the springs 18 are tensioned. The head 33 is also normally projected beyond the cross-beam 3. The drum is therefore normally disengaged from the toothed disk 11, and it is possible for the wheels 10 and axle 9 to rotate without actuating any of the mechanism.

Parallel superposed rails 35 are disposed longitudinally on the strip 6 and are held spaced apart in any suitable manner, as by means of spacing-strips 36, disposed along the longitudinal centers of the rails. The

rear ends of the rails are curved upward above the rear beam 2, as shown at 37, while the forward ends thereof after leaving the strip 6 are curved toward one of the side beams 1, as shown at 38, and terminate adjacent the ends of a curved guide-rail 39, which, with the curved portion 38 of the rails, forms substantially a circle about a pivot-bolt 40. On this bolt is mounted a table 41, having rollers 42 at one end which are mounted to travel within the curved guide-rail 39, and a raised angular tongue 43 extends from the opposite portion of the table and is connected to the rear beam 2 by means of an elongated coiled spring 44. This spring serves to hold the tongue normally projected toward the longitudinal strip 6.

Arranged upon the table 41 near one edge are upstanding ears 45, to the two end ones of which are pivoted the side beams 46 of a brace B. These beams converge toward their upper ends, and said ends have means for engaging a pivot-bolt 47. A grooved bracket 48 is carried by the brace-beam and has a pulley 49 journaled within it. Projecting between the periphery of this pulley and the inner face of the bracket 48 is a wedge 50, pivoted to one end of a rod 51, which in turn is pivoted to a lever 52, fulcrumed between its ends to intermediate ears 45' on the table. The lower end of this lever projects below the table and into the path of a cam 53, arranged on the platform and adapted when the table is turned to a predetermined point to swing the lever 52 on its fulcrum and pull downward on rod 51 and wedge 50, thereby withdrawing the wedge from position between the pulley and its bracket.

The brace B carries a mast C, formed of side beams 54, which converge rearwardly and are spaced apart at desired intervals by cross-strips 54'. Ears 55 extend from the side beams adjacent the reduced end of the mast and are pivoted on the bolt 47. The mast carries a truss 56 for reinforcing it longitudinally, and a cap 57 is secured upon the reduced end or apex of the mast and is connected, by means of a coiled spring 58, with a bracket 59 upon the mast C. This spring is adapted to draw the apex of the mast toward the brace and to facilitate the raising of a load. A yoke 60 is swiveled to the cap 57 and carries rollers 61, which are mounted to travel between the superposed rails 35, said rollers having flanges 62 to prevent lateral displacement thereof. A pulley 63 is mounted within the mast adjacent its apex. An arm 64 extends downward from one of the cross-strips 54' of the mast C and is adapted when the mast is in lowered position to bear upon the rod 51 adjacent its point of connection with lever 52, so that said lever will be projected into the path of the cam 53 whenever the mast is brought into lowered position.



tion, thereby projecting wedge 50 between pulley 49 and bracket 48. A guide-bracket 65 is fastened to the end cross-strip of the mast, and a pulley 66 is disposed adjacent thereto.

Straps 67 extend from the ends of the beams 54 and constitute supports for a rod 68, which serves to connect said straps with ears 69, extending from the head 70 of a rocking fork member D. This member consists of parallel curved arms 71, extending from the head 70 and suitably connected by means of cross-braces 72, and a pivot-rod 73 is also mounted within these arms and constitutes a support for a presser-plate 74, which is hung from the rod and is held normally projected beyond the head 70 by means of a spring 75. The outward movement of this plate is limited by an angular arm 76, which overlaps the head 70, and a plunger 77 is connected to the lower portion of the plate and is slidably mounted in the guide-brackets 65. A yoke 78 extends from under the head 70 and has outstanding hooks 79, rigidly secured to it. A bail 80 is pivoted to the presser-plate 74 and is proportioned to swing over the hooks 79 and to engage them for the purpose of holding the arms 71 and the head 70 at a predetermined angle to the mast. Another bail 81 is pivotally mounted on the rod 68 and extends to the other side of yoke 78. A cable or rod 82 is secured at one end to the upper or forward cross-strip 54' of the mast and is permanently fastened to the lower bail 81, from which it extends through the yoke 78 and is permanently fastened to the other bail 80.

From the bail 80 the rope extends between the arms 71 and is fastened to a bail 83, extending upward from the head 84 of an outer fork member E. This head has bowed tines 85 extending from it and suitably braced and adapted to project between curved tines 86, extending from the head 70 of fork member D. From the foregoing it will be obvious that when the bail 80 is disengaged from the hooks 79 the rope 82 will limit the inward movement of the fork member E and the two members D and E will be spaced apart a proper distance.

A cable 87 is fastened to the yoke 78 and extends under pulley 66 and thence longitudinally of the stem and partly around the pulley 63 and thence around pulley 49 and through bracket 48, the end of the cable being permanently secured in any suitable manner to the mast, preferably adjacent pulley 63. Another cable 88 is fastened to one side of the cap 57 and is secured at its other end to the drum 13. A pulley 89 is supported by a bracket 90 near the upstanding portions 37 of the rails 35 and extends above the path of this cable 88 when the mast is in its lowered position.

As heretofore stated, the mast C is nor-

mally lowered, so as to rest on the cross-beam 3, and when it is in this position the yoke 60 and the rollers thereon rest between the upper end of the upstanding portion 37 of the rails 35. The cable 88 also extends downward from the apex of the mast and under the pulley 89 and thence around the roller 8 on centering-block 7 and under a guide-pulley 91 at the side of the machine to the drum 13. The head 70 of fork member D rests on brackets 92, movably connected to the forward ends of the beams 1 and supported from arms 93 of stems 94, which are slidably mounted within the arms and are surrounded by springs 95, which bear at their ends on the arms 93 and upon heads 96 at the ends of the stems. These springs 95 constitute cushions for preventing injury to the mast and fork members when said parts drop to their lowered positions. It is also to be understood that when the mast is lowered the bail 80 is in engagement with the hooks 79, and the outer fork member E is therefore held projected beyond the member D by the rope 82. The yoke 78 of the fork member D is held substantially parallel with the mast by the rope or cable 87, which is held taut when the mast is in lowered position. The cable 87 is locked in taut position by reason of the fact that when the mast is lowered the arm 64 strikes the rod 51 and moves it into alinement with lever 52, thereby directing the wedge 50 between pulley 49 and bracket 48 and binding the cable 88 so as to prevent it from moving longitudinally. The yoke 78 is therefore maintained substantially parallel with the mast. The plunger 77 registers with the head 33 of plunger 32, and this plunger and head remain in this position as long as the mast is lowered. While the parts are in this position the machine is in condition for use.

When it is desired to load shocks onto a wagon, the same is connected in any desired manner to one side of the machine, so as to assume a position substantially such as shown by dotted lines at 97 in Fig. 1. The wagon and the machine therefore travel together, the fork members being arranged at the front of the machine. The wheels 10 and their axle 9 will revolve and the mechanism will be unaffected thereby. When a shock is reached, the material will be gathered on the tines 86 of the fork member D, and said material will press backward on the plate 74, thereby causing the upper bail 80 to move back out of engagement with the hooks 79. The rope 82 will therefore be released and the outer fork member E will drop by gravity, so as to confine the material between the tines 85 and 86. Simultaneously with the release of the bail 80 the plunger 77 presses backward on the head 33 of plunger 32, and as a result of this operation the lever 30 is swung on its fulcrum, so as to cause the



link 31 to pull on the lever 32. The tensioned springs 18 will therefore press the dogs 14 into engagement with the teeth on disk 11, and these springs 18 will also be of sufficient strength to swing the plungers 20 toward each other and slide the sleeve 21 longitudinally on the axle and against the lever 22. The drum is thus locked into engagement with the disk, and during the continued movement of the machine said drum will be caused to rotate with the disk and axle. Cable 88 will therefore be slowly wound on the drum, and as this cable extends under pulley 89 the apex or capped end of the mast will be pulled downward upon the upstanding portions 37 of rails 35 until said cable passes the pulley 89, which action is permitted in view of the fact that the connection between the cable and cap is capable of riding under the pulley. As soon as the rollers 61 have completed their downward movement upon the upstanding portions 37 of the rail the continued winding of the cable 88 will draw the rollers along the longitudinally-extending portions of the rails, thereby causing the fork-carrying end of the mast to swing upward and also causing the brace B to swing upon its pivotal connection with the table 41. Up to this point the raising of the mast has been facilitated by spring 58, which is tensioned while the mast is in lowered position and naturally contracts while the mast is being raised. When the roller-carrying yoke 60 reaches the forward end of the longitudinal portion of the tracks, the brace B assumes such a position that the lower end of lever 52 projects below the table and into the path of the cam 53. Further rotation of the drum and corresponding winding of the cable 88 will now swing the yoke 60 and its rollers 61 onto the curved portion 38 of the rails and will cause the table 41 to swing on its pivot, this movement being facilitated because of the rollers 42, which travel in the guide-rail 39. Just prior to the completion of this swinging movement of the table the lever 52 strikes the cam 53 and breaks the joint between said lever and rod 51, so as to cause the withdrawal of the wedge from engagement with the cable 87, and therefore said cable will be promptly released and the weight of the material carried by the fork members will cause the tines 86 to swing downward and the hook 79 on yoke 78 to swing upward into engagement with the upper bail 80. The rope 82 will therefore pull on the bail 83 and cause the outer fork member E to swing away from the fork member D, so as to clear the material carried by said portions and permit it to drop into the wagon at the side of the machine. Immediately following this action of the fork members the tongue 43 of the table strikes the crank 24 and causes shaft 23 to partly rotate. This movement of the

shaft will be sufficient to swing the lower crank 25 so as to pull on the rod 27 and cause lever 30 to swing back to its initial position. The plunger 32 will therefore be again projected beyond the front cross-beam 3, and the link 31 will press against the lever 22 and cause sleeve 21 to slide toward the drum. Plungers 20 will therefore press the dogs 14 out of engagement with the teeth of the disk 11 and the drum will be disconnected from said disk and free to rotate independently thereof. The spring 44, which is tensioned by the rotation of the table 41, will therefore promptly return the table to its initial position. As soon as the yoke 60 arrives in position at the forward end of the longitudinal portion of rails 35 the upper end of the mast and the fork members carried thereby will swing downward by gravity, causing the rollers 61 to travel along the rails and into the upstanding portions 37 thereof, whereupon all of the parts will return to their initial position and the operation can be repeated in the manner described. As the mast swings downward the cable 87 is pulled longitudinally, so as to swing the fork members upward into position to receive shocks between them, and just as the mast reaches the limit of its movement the arm 64 strikes the rod 51 and throws the wedge 50 against the cable 87, so as to lock it until after said cable has been released by the cam 53 in the manner heretofore described.

It will be seen that this machine can be drawn forward uninterruptedly and will automatically operate to grip, raise, and discharge shocks and will automatically reset itself to repeat this operation, the hoisting by the mechanism being in every instance started by the pressure of material accumulated by the forks.

The preferred form of the invention has been set forth in the foregoing description; but I do not limit myself thereto, as I am aware that modifications may be made therein without departing from the spirit or sacrificing the advantages thereof, and I therefore reserve the right to make such changes as fairly fall within the scope of the invention.

What is claimed is —

1. In a machine of the character described the combination with a frame, and wheels supporting the same; of a shock-engaging device carried by the frame, mechanism operated by the movement of the frame for raising the shock-engaging device, and means operated by the impact of said device against a shock for moving said mechanism into operative relation with the wheels.

2. In a machine of the character described the combination with a frame, and supporting wheels therefor; of hoisting mechanism carried by the frame, a shock-grabbing device connected to said mechanism, and means op-



erated by the impact of a shock with said grabbing means for throwing the hoisting mechanism into operative relation with the wheels.

3. In a machine of the character described the combination with a frame, and supporting-wheels therefor; of a mast movably supported by the frame, mechanism for hoisting the mast, shock-engaging means carried by the mast, and means operated by the contact of a shock with the engaging means for throwing the hoisting mechanism into operative relation with the wheels.

4. In a machine of the character described the combination with a frame, and supporting-wheels therefor; of a mast carried by the frame, mechanism for successively swinging the mast vertically and laterally, a shock-grabbing device carried by the mast, and means operated by the contact of a shock with said device for throwing the mast-operating mechanism into operative relation with the wheels.

5. In a machine of the character described the combination with a frame, and supporting-wheels therefor; of a mast carried by the frame, mechanism for successively swinging the mast vertically and laterally, a shock-engaging device carried by the mast, means operated by the contact of a shock with said device for throwing the mast-operating mechanism into operative relation with the wheels, and means operated by the lateral swinging of the mast for releasing the mast-operating mechanism.

6. In a machine of the character described the combination with a frame, and supporting-wheels therefor; of a mast carried by the frame, mechanism for successively swinging the mast vertically and laterally, a shock-grabbing device carried by the mast, means operated by the contact of a shock with said device for throwing the mast-operating mechanism into operative relation with the wheels, and means for returning the mast to its lowered position subsequent to the release of said mechanism.

7. In a machine of the character described the combination with a frame, and supporting-wheels therefor; of a mast movably carried by the frame, a rotatable drum, means operated by the drum for swinging the mast vertically and laterally successively, a shock-grabbing device carried by the mast, and means operated by the contact of a shock with said device for placing the drum in operative relation with the supporting-wheels.

8. In a machine of the character described the combination with a frame, and supporting-wheels therefor; of a mast movably mounted on the frame, a drum, a clutch for placing the drum into or out of operative relation with the supporting-wheels, mechanism operated by the rotation of the drum for successively swinging the mast vertically

and laterally, a shock-grabbing device upon the mast, and means operated by the contact of a shock with said device for actuating the clutch to place the drum in operative relation with the wheels.

9. In a machine of the character described the combination with a frame, and wheels supporting the same; of a brace pivotally supported by the frame, a mast fulcrumed between its ends upon the brace, a guide for one end of the mast and means for actuating it within its guide to raise the brace and mast.

10. In a machine of the character described the combination with a frame, and a rotatable element connected thereto; of a brace pivoted upon the frame, a mast fulcrumed between its ends upon the brace, guides carried by the frame and movably engaged by one end of the mast, and means operated by the revolution of the rotatable element for moving the mast within the brace to swing said mast and brace vertically.

11. In a machine of the character described the combination with a frame, and a rotatable element connected thereto; of a brace pivoted upon the frame, a mast fulcrumed between its ends upon the brace, guides carried by the frame and movably engaged by one end of the mast, means operated by the revolution of the rotatable element for moving the mast within the brace to swing said mast and brace vertically and laterally successively.

12. In a machine of the character described the combination with a frame, and a rotatable element; of a table carried by and adapted to partly rotate on the frame, a brace pivotally connected to the table and movable therewith, a mast fulcrumed between its ends upon the brace, guide-rails carried by the frame and partly surrounding the table, means upon the mast for movably engaging the rails, and mechanism operated by the rotatable element for moving the rail-engaging means upon the rails to swing the mast vertically and the table and mast laterally.

13. In a machine of the character described the combination with a frame, and a rotatable element; of a table carried by and adapted to partly rotate on the frame, a brace pivotally connected to the table and movable therewith, a mast fulcrumed between its ends upon the brace, guide-rails carried by the frame and partly surrounding the table, means upon the mast for movably engaging the rails, mechanism operated by the rotatable element for moving the rail-engaging means upon the rails to swing the mast vertically and the table and mast laterally, and a spring connection between the mast and brace to facilitate the vertical swinging of the mast.

14. In a machine of the character described the combination with a frame and a



rotatable element; of a table carried by and adapted to partly rotate on the frame, a brace pivotally connected to the table and movable therewith, a mast fulcrumed between its ends upon the brace, guide-rails carried by the frame and partly surrounding the table, means upon the mast for movably engaging the rails, mechanism operated by the rotatable element for moving the rail-engaging means upon the rails to swing the mast vertically and the table and mast laterally, and elastic means for retarding the lateral movement of the mast and table.

15. In a machine of the character described the combination with a frame, and a rotatable element; of a table carried by and adapted to partly rotate on the frame, a brace pivotally connected to the table and movable therewith, a mast fulcrumed between its ends upon the brace, guide-rails carried by the frame and partly surrounding the table, means upon the mast for movably engaging the rails, mechanism operated by the rotatable element for moving the rail-engaging means upon the rails to swing the mast vertically and the table and mast laterally, and means operated by the partial rotation of the table for throwing the mast-operating mechanism out of operative relation with the rotatable element.

16. In a machine of the character described the combination with a frame having a rotatable element; of longitudinally-extending guide-rails carried by the frame and having upstanding portions at one end, and laterally-curved portions at the other end, a table mounted to partly rotate upon the frame adjacent the laterally-curved portions of the rails, a brace pivotally mounted upon the table, a mast fulcrumed between its ends to the brace, means upon one end of the mast for traveling between all portions of the guide-rails, and means operated by the rotatable element for moving the rail-engaging means longitudinally of the rails to successively swing the mast vertically and, with the table, laterally.

17. In a machine of the character described the combination with a frame having a rotatable element; of longitudinally-extending guide-rails carried by the frame and having upstanding portions at one end, and laterally-curved portions at the other end, a table mounted to partly rotate upon the frame adjacent the laterally-curved portions of the rails, a brace pivotally mounted upon the table, a mast fulcrumed between its ends on the brace, means upon one end of the mast for traveling between all portions of the guide-rails, and means operated by the rotatable element for moving the rail-engaging means longitudinally of the rails to successively swing the mast vertically and, with the table, laterally, and means operated by the pivotal movement of the table in one di-

rection for throwing the mast-operating mechanism out of operative relation with the rotatable element.

18. In a machine of the character described the combination with a frame, and a rotatable element; of a toothed disk movable with said element, a drum inclosing the disk loosely mounted on the element, means carried by the drum for engaging the disk, a vertically-movable mast carried by the frame, means operated by the drum for raising the mast, and means operated by the mast at the completion of its movement for disengaging the disk from the drum.

19. In a machine of the character described the combination with a frame, and supporting-wheels therefor; of a toothed disk rotatable with the wheels, a drum mounted adjacent the disk, means carried by the drum for engaging the disk, a mast movably mounted on the frame, means operated by the drum for successively swinging the mast vertically and laterally, and means operated by the lateral movement of the mast for releasing the drum from the disk.

20. In a machine of the character described the combination with a frame, and wheels for supporting the frame; of a disk rotatable with said wheels, a drum, means carried by the drum for engaging the disk, a mast movably mounted upon the frame, means operated by the drum for successively swinging the mast vertically and laterally, a shock-grabbing device carried by the mast, and means operated by the contact of a shock with said device for placing the drum in operative relation with the disk.

21. In a machine of the character described the combination with a frame, and wheels for supporting the same; of a mast movably mounted upon the frame, mechanism for swinging the mast vertically, fork members carried by the mast and movably connected, and means connecting said members and the mast for automatically spreading the members apart under the weight of a load therein.

22. In a machine of the character described the combination with a frame, a brace pivotally mounted thereon, and a mast fulcrumed between its ends upon the brace; of mechanism for swinging the mast and brace vertically, a rocking fork member connected to the mast, an outer fork member movably connected to the rocking fork member, means operated by a load on the members for automatically spreading them apart, and a lock for securing the members in extended position.

23. In a machine of the character described the combination with a frame, and supporting-wheels therefor; of a brace pivoted to the frame, a mast fulcrumed between its ends to the brace, mechanism for swinging the brace and mast vertically, pivotally-



connected fork members one of which is pivoted to the mast, means connected to the mast and brace for extending the fork members during the lowering of the mast, and means upon the members for locking the forks in extended position.

24. In a machine of the character described the combination with a pivoted brace and a mast fulcrumed thereon and adapted to fold thereupon; of mechanism for swinging the brace and mast vertically, a fork member movably connected to the mast, a yoke outstanding therefrom, a flexible connection between the yoke, mast, and brace, said connection adapted to swing the yoke against the mast when the mast is lowered, and means operated by the lowering of the mast for clamping said connection against movement.

25. In a machine of the character described the combination with a table adapted to partly rotate, a brace pivoted upon the table, and a mast fulcrumed upon the brace; of mechanism for successively swinging the brace and mast vertically and laterally, a fork member movably connected to the mast, an outstanding yoke thereon, a flexible connection between the yoke and mast, means on the brace for engaging said connection to render it taut when the mast is lowered, means operated by the lowering of the mast for securing the rope when taut, and means operated by the lateral movement of the

raised mast and brace for releasing the taut connection.

26. In a machine of the character described the combination with a frame, and wheels supporting the same; of a mast movably mounted on the frame, mechanism for raising the mast, shock-grabbing devices connected to the mast, means carried by the mast for securing said devices in extended position, and means actuated by the pressure of the shock upon one of the devices for releasing said devices to grip the shock.

27. In a machine of the character described the combination with a vertically-movable mast, and mechanism for actuating the same; of a rocking fork member connected to the mast, a hooked yoke outstanding therefrom, an outwardly-extending fork member connected to the rocking fork member, means connected thereto and engaging the hooked yoke for securing the members in extended position, and means operated by the pressure of a shock against the rocking member for releasing the outwardly-extending member to embrace the shock.

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

OLE E. NELSON.

Witnesses:

H. SAMPSON,  
R. SOLBERG.