

(No Model.)

5 Sheets—Sheet 1.

L. L. BISBEE.
STACKER.

No. 572,151.

Patented Dec. 1, 1896.

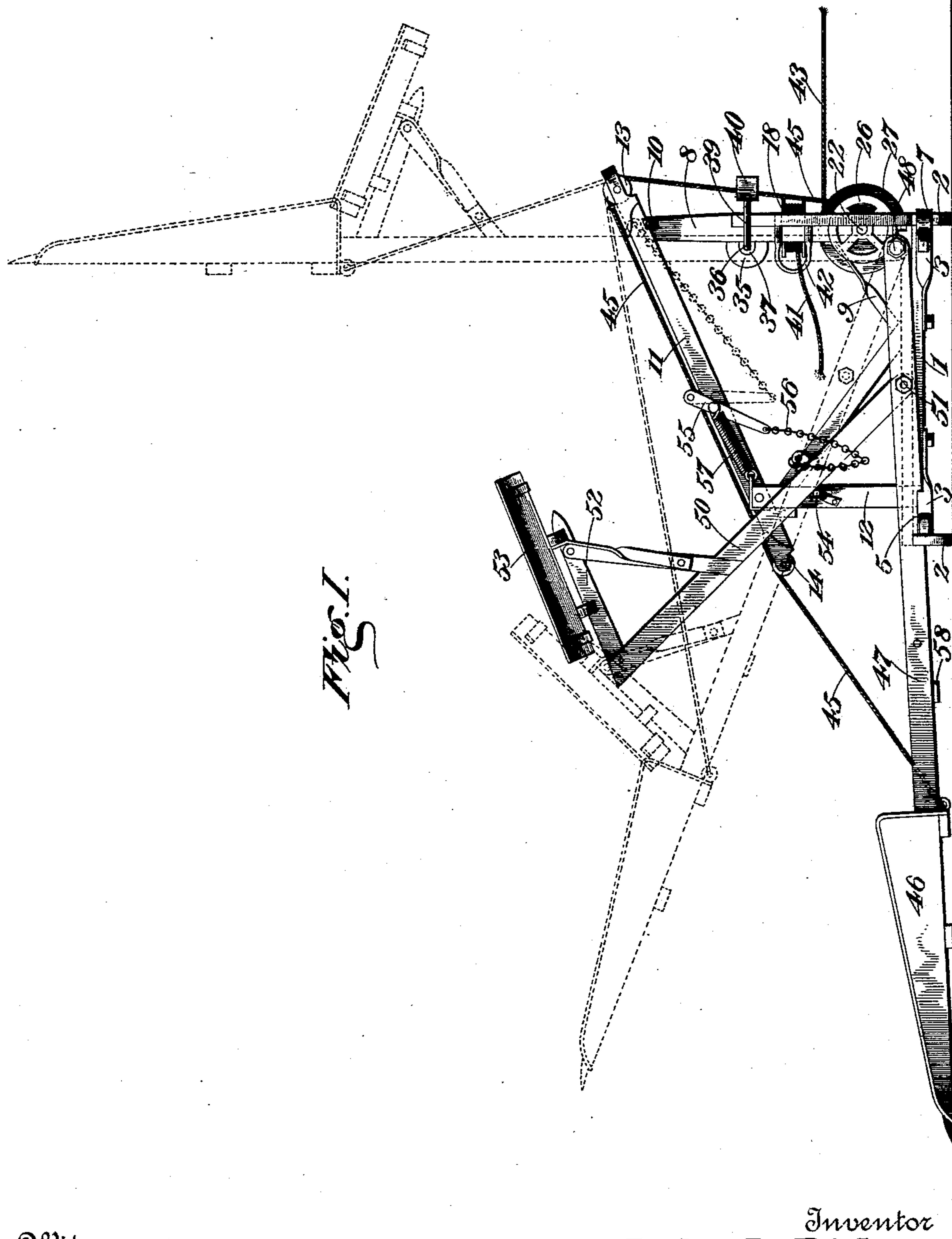


Fig. 1.

Witnesses

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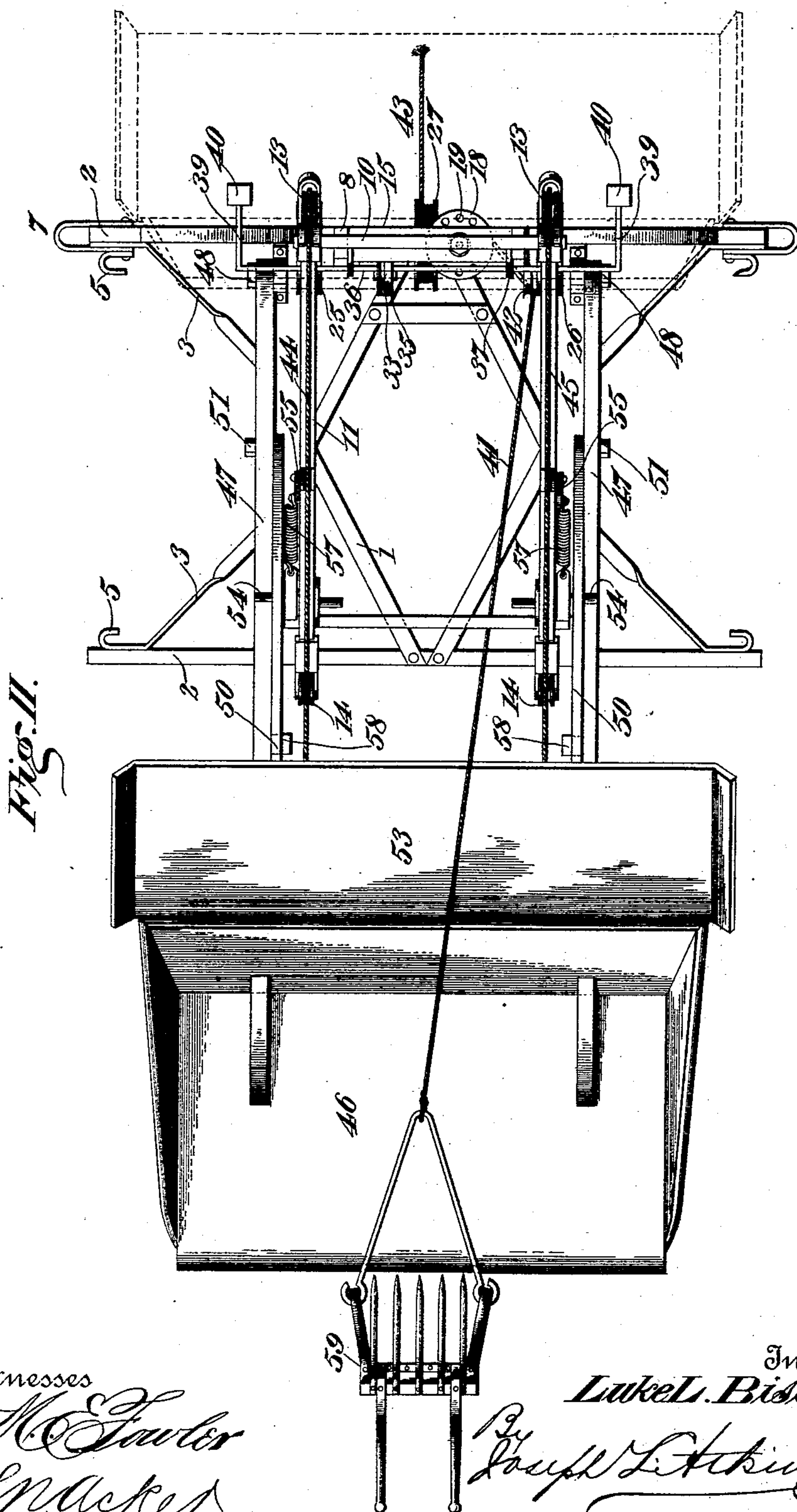
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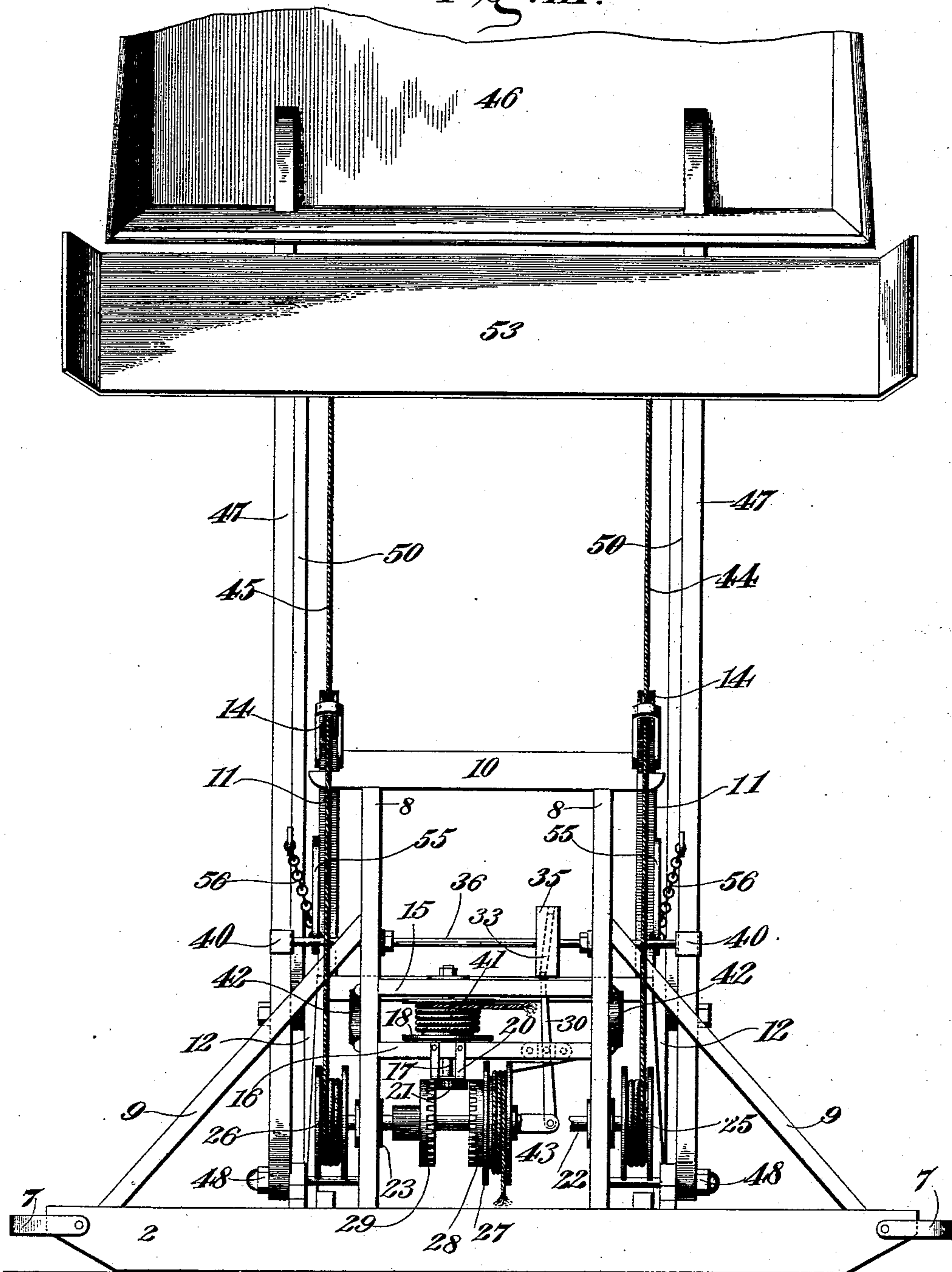
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Fig. III.



Witnesses

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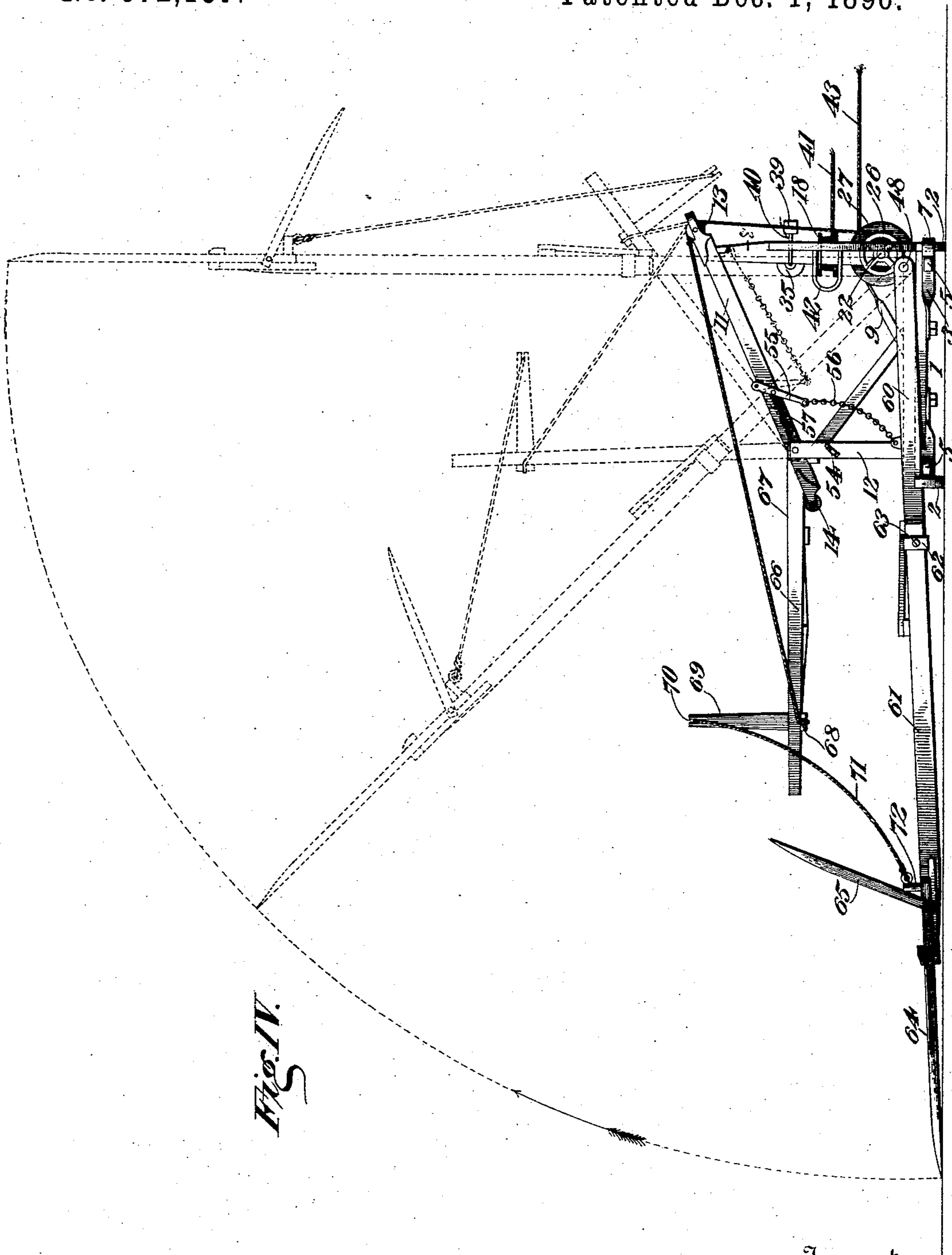
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(No Model.)

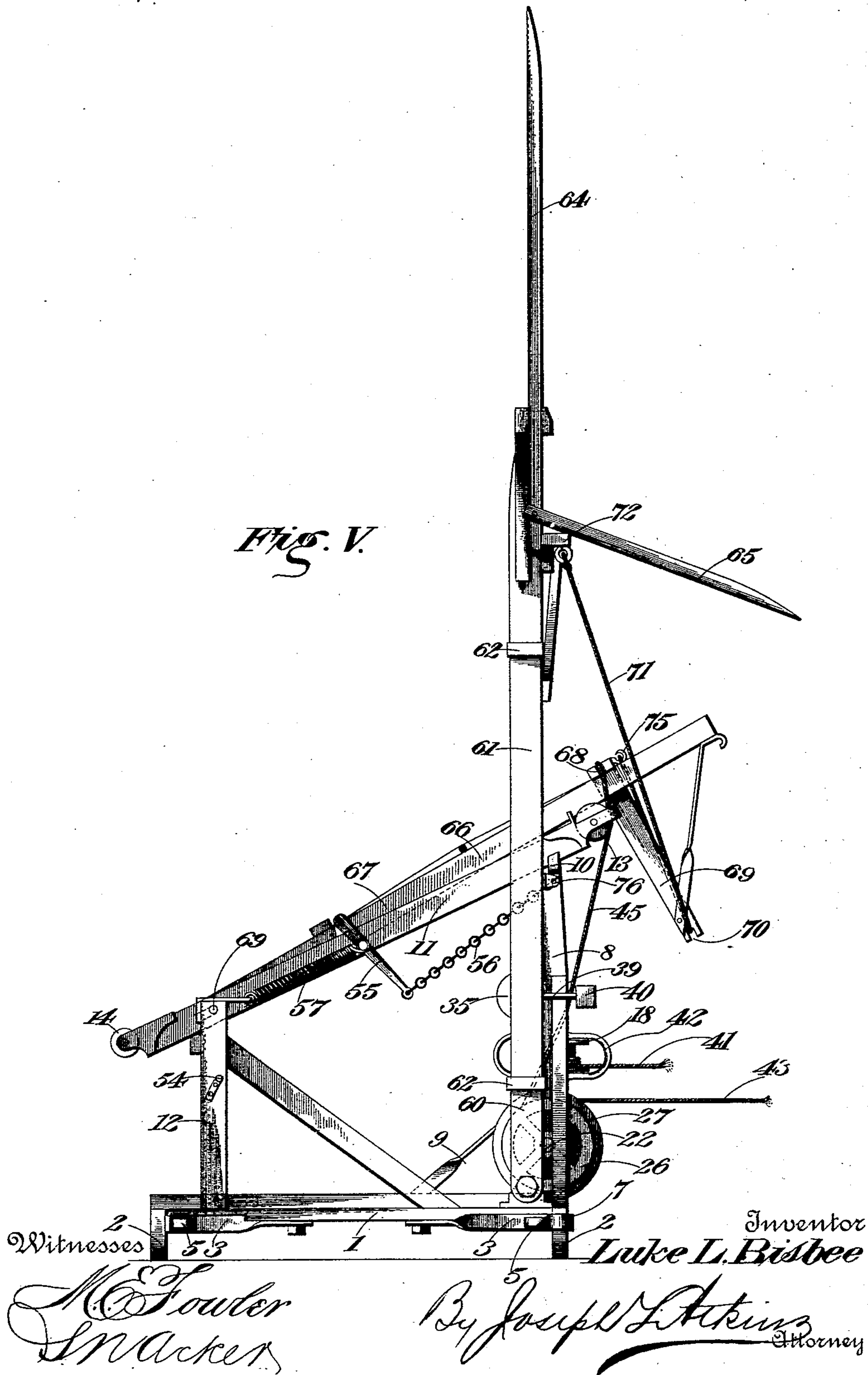
5 Sheets—Sheet 5.

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Fig. V.



UNITED STATES PATENT OFFICE.

LUKE L. BISBEE, OF SPENCER, IOWA.

STACKER.

SPECIFICATION forming part of Letters Patent No. 572,151, dated December 1, 1896.

Application filed December 30, 1895. Serial No. 573,752. (No model.)

To all whom it may concern:

Be it known that I, LUKE L. BISBEE, of Spencer, county of Clay, State of Iowa, have invented certain new and useful Improve-
5 ments in Stackers, of which the following is a specification, reference being had to the accompanying drawings.

The object of my invention is to produce improved mechanism for quickly, conven-
10 iently, and economically lifting loads of material from one position and depositing them in another. It is designed to be employed in excavating earth and loading it upon wagons or the like, for loading manure, for loading
15 hay or straw upon wagons or the like, or piling it in stacks, and for other loading operations of like description.

In the accompanying drawings, Figure I is a side elevation of my machine equipped for
20 excavating or the like with the platform shown in full lines in its lowest position and shown in its highest position and in the intermediate position in dotted lines. Fig. II is a top plan view of the same with the plat-
25 form shown in the intermediate position in full lines and in the completely-elevated position in dotted lines. Fig. III is an end view of the same with the platform shown in the completely-elevated position. Fig. IV is a
30 view similar to Fig. I, showing the machine equipped with a hay-fork, the hay-fork being shown in full lines in the lowered position and in the elevated position in dotted lines and being also shown as set to make its long-
35 est sweep. Fig. V is a view similar to Fig. IV, showing the hay-fork set to make a short sweep and in the completely-elevated position.

Referring to the figures on the drawings, 1
40 indicates the frame of the machine. It is preferably strongly braced and provided with sled-runners 2, by which it may be transported from place to place, as required. It is preferably provided at each end with diag-
45 onal metal braces 3, which are bolted, respectively, as indicated at 4, to the runners and are provided with hooks 5, by which a team, for example, may be secured to the frame to draw it. One of the runners is pref-
50 erably provided at each end with a pivoted loop or clevis 7.

8 indicates each of a pair of uprights, which

are supported upon one of the runners, and which are preferably firmly braced in the up-
right position, as by diagonal braces 9. 55

10 indicates a top cross-piece, to the respec-
tive extremities of which are secured inclined frame-pieces 11, which are supported at the
opposite extremities by uprights 12, shorter
than the uprights 8. Each of the pieces 11 60
is provided at each extremity, respectively, with pulleys 13 and 14, respectively.

15 and 16 indicate two cross-pieces carried
between the uprights and supporting between
them on a shaft 17 a winding-drum 18, whose
flanges are preferably pierced with opposite
65 apertures 19. The shaft 17 upon its lower
extremity is supported by a bearing-frame 20, below which is secured to it a pinion 21.

22 indicates a shaft carried at right angles 70
to the shaft 17 in suitable bearings 23 in the
uprights 8. It carries upon its opposite ends
winding-drums 25 and 26, respectively, that
are firmly secured to it. Between the up-
rights 8 it carries a large winding-drum 27, 75
that is revolubly fixed to it. The drum 27 is
longitudinally immovable upon the shaft 22
and is provided upon one side with a crown
cog-gear 28, which constitutes a fixed boss
upon the drum. 80

29 indicates another crown cog-wheel that
is fixed to the shaft 22 opposite to the gear
28 and of equal diameter with it. Between
the gears 28 and 29 the pinion 21 is located
and is adapted to drive the one or the other 85
as they are brought into engagement respec-
tively.

For producing engagement between the
gear 28 or the gear 29, as required, I prefer
to provide a lever 30, pivoted at one end to 90
the shaft 22 and movably secured near its
middle part to the cross-piece 16. Its upper
end engages with the cam-groove 33 of a semi-
cylindrical shunting-piece 35, that is secured
to a crank-shaft 36, carried in bearings 37 on 95
the uprights 8. The crank ends 39 of the
crank-shaft preferably terminate in counter-
weights 40, which hold the crank-shaft fixed
when turned to either extremity of a half-rev-
olution. In one position of the crank-shaft 100
the lever 30 throws the shaft 22, through the
bearings 23, so as to bring the gear 29 into en-
gagement with the pinion 21. In the opposite
position, through the longitudinal movement

of the shaft 22, the gear 28 is brought into engagement with the pinion 21 and the gear 29 is thrown out of engagement.

Around the drum 18 is wound a cable 41, which may be drawn in any direction behind the uprights 8 and preferably passes through a guide-loop 42. To the end of this cable, opposite the drum 18, is applied a power to unwind it from the drum 18, which operation imparts motion to the shaft 17. Through the movement of the shaft 17 and the pinion 21, if in engagement with the gear 28, the drum 27 is caused to rotate independently of the shaft 22. The drum 27 is provided with a cable 43, that is designed to load the apparatus, or it may be employed to rewind the drum 18, if required. If, on the contrary, the pinion 21 is in engagement with the gear 29 and out of engagement with the gear 28, the rotation of the shaft 17, through the pinion 21, imparts rotation to the shaft 22 and to the drums 25 and 26, which it carries upon its opposite ends, respectively. Around the drum 25 is wound a cable 44 and around the drum 26 is wound a cable 45. The pulleys 13, located, respectively, above the drums 25 and 26, guide the cables 44 and 45, respectively, to the elevator mechanism of the machine.

In the drawings two forms of elevating mechanism are illustrated. In the first three figures a compact mechanism adapted to lift the load directly over the upright frame (defined by the frame 1, the uprights 8 and 12, and the inclined piece 11) is illustrated. By the use of this mechanism any material can be lifted from one place and loaded into a wagon.

In Figs. IV and V mechanism for transferring material from one place to another at a greater distance from the former place is illustrated. The mechanism shown in Figs. I to III, inclusive, is designed mainly for loading wagons. That shown in Figs. IV to V is designed for distributing material over a greater area than that which a wagon occupies, as, for example, for stacking hay or straw. Accordingly I have shown in Figs. IV and V a special straw-stacking fork, and in Figs. I to III, inclusive, a solid platform in place of a fork, adapted to be used for excavating purposes or the like.

In the form of embodiment of my invention shown in Figs. I to III the cables 44 and 45 are attached to an elevating-platform 46, of suitable construction, which is pivotally supported, as by arms 47, as indicated at 48, to the frame 1, one of the arms 47 being located on one side of the frame and the other on the other side thereof and constituting the elevator-frame. The pivotal supports 48 are located in proximity to the base of the uprights 8 but between the runners 2, thereby rendering that part of the frame which supports the uprights the main support of the elevating mechanism, so that the stability of the machine is directly increased in propor-

tion to the weight of the load lifted by the machine. The arms 47 work transversely across the runners 2, so that when the machine is placed in position it is practically immovable while in operation.

50 indicates the discharge-platform arms, each being pivoted, as indicated at 51, to its respective arm 47. The arms 50 carry upon brackets 52 a discharge-platform 53.

54 indicates stop-pieces on the respective uprights 12, which engage the arms 50, as shown in full lines in Fig. I, and limit the downward movement of the discharge-platform 53.

55 indicates levers of elevator-frame-return-actuating mechanism, pivoted at one end, respectively, to the inclined piece 11 and at the other end secured flexibly, as by a chain 56, to the respective discharge-platform arms 50. Each of the levers 55 is provided with a spring 57, secured at one end to the lever and at the other end to the frame of the machine, as, for example, to the upright 12. The pulleys 14 serve as guides for the cables 44 and 45 when the platform 46 is in its lowest position. (See full lines in Fig. I.)

The arms 50 work between the arms 47, the latter being provided with projections 58, which limit the movement of the arms 50 with respect to the arms 47.

In operating the mechanism above described, as illustrated in Figs. I to III, inclusive, the platform 46 is first loaded, which can be conveniently accomplished by an ordinary loading implement, as, for example, by a scoop 59, that is secured to the end of the cable 43, the cable being actuated through the operation of the drum 27, the pinion 21 and the gear 28 being thrown into engagement for the purpose and the cable 41 being employed to impart rotation to the pinion 21 through the shaft 17 and drum 18, upon which the cable 41 winds. When the platform 46 is loaded, the gear 29 is thrown into engagement with the pinion 21, and the cable 41, having been previously rewound upon the drum 18, is again employed to impart rotation to the shaft 17, which, through the pinion 21, in engagement with the gear 29, winds the cables 44 and 45 upon their respective drums 25 and 26, thereby elevating the platform 46.

When the platform arrives at the intermediate position illustrated in dotted lines in Fig. I and in full lines in Fig. III, the projections 58 engage with the arms 50, and the further movement of the platform 46 carries the platform 53 with it until, as it approaches the position shown in Fig. IV, the arms 50 begin to draw against the tension of the springs 57. When it reaches the completely-elevated position shown in Fig. IV, the platform 46 is in the vertical position and the platform 53 inclines downwardly, so that the entire load from the platform 46 is discharged over the platform 53 clear of the mechanism of the machine, for example, into the body

of a wagon stationed to receive it. Immediately upon the release of the tension upon the cable 41 the springs 57 start the return movement of the arms 50, which, through the projections 58, is imparted to the arms 47. The springs suffice to throw the arms 47 out of the vertical position, when the weight of the platform returns them to their initial position. (Shown in full lines in Fig. I.)

10 In Figs. IV and V of the drawings extensible arms 60 and 61, moving one upon the other through bands 62 and adapted to be fixed in the elongated or shortened positions, as by pins or bolts 63, are employed in place
15 of the arms 47. The arms 61 carry upon their extremities a suitable fork or rack 64, composed of fingers, each of which is provided with a pivoted discharge or guide finger 65.

66 indicates an elevating-frame, the arms
20 67 of which are pivoted, as indicated, to studs 69, which project from the opposite inner sides of the inclined frame-piece 11. The frame 66 is designed to render the power applied to the cables 44 and 45 available to lift
25 a load that is somewhat removed from the base of the main frame of the machine, although for light loads the mechanism previously described might be employed for that purpose. The frame 66 is provided with jaws
30 68, into which the loop of the cable 44 45 may be fastened for actuating the frame 66. It is also provided with an upright frame 69, that is provided with jaws 70, in which a flexible connection or cable-loop 71, that is attached
35 to the base-piece 72 of the fork 74, may be fastened, so that by shortening the cables 44 and 45, to lift the frame 66, the frame 66 is utilized as a lever to apply the power from a shortened fulcrum to the load carried on the
40 fork 64. When the arms 61 are slipped upon the arms 60, to shorten the sweep of the fork 64, all that is necessary to do is to take up the extra length of the cable 71. For this purpose I provide a hook 75 upon the frame
45 66, over which the bend in the cable may be fastened. The fork may be loaded substantially in the same manner as the platform is loaded, as above described.

When the fork is lifted to the vertical position, as shown in full lines in Fig. V, the fingers 65 turn and allow the load to slip from them precisely in the same way that the platform 53 discharges its load, as before described. The return of the fork to the initial position is accomplished by the aid of the springs 57, as previously described, the chains 56 being fastened to the arms 60, as indicated at 76.

For transporting the machine from place
60 to place the platform or similar part of the machine may be elevated so as to clear the ground, and may be sustained in that position by placing a pin in any one of the apertures 19 of the drum 18, which, bearing against
65 the cross-pieces 15 and 16, prevent the unwinding of the drum and fix the parts in the position required.

For setting the machine in position for work a stake is driven in the ground in the proper place and is secured to one of the loops or
70 clevises 7. This affords proper resistance against draft upon the cable 41 when it is drawn through the guide-loop 42. If instead of being drawn in the direction of the sled-runners it is pulled at an angle thereto, the
75 weight of the machine upon the runners is sufficient to keep the apparatus stationary.

What I claim is—

1. The combination with a main frame, upright frame and uprights thereon, of a longitudinally-movable shaft in the uprights, an
80 operating-shaft at right angles to the first-named shaft, a drum upon the operating-shaft, a cable on the drum, a loose drum upon the first-named shaft, and cable thereon, elevator mechanism operatively connected with
85 the first-named shaft, and mechanism for shifting the position of the first-named shaft, a fixed gear upon the first-named shaft, and a pinion upon the operating-shaft adapted to
90 engage the gear upon the loose drum, or the gear fixed to the shaft, substantially as and for the purpose specified.

2. The combination with a main frame, uprights thereon, shaft and shaft-operating
95 mechanism, of guide-pulleys upon the uprights, cables winding upon the shaft, an elevator-frame pivotally supported upon the main frame, and connected to the cables, and a discharge-platform carried upon the elevator-frame at an inclination to the elevator-
100 platform so as to discharge the load of the elevator-platform when the latter is in the completely-elevated position, substantially as set forth.

3. The combination with a main frame, uprights, shaft and shaft-operating mechanism, of guide-pulleys upon the uprights, cables winding upon the shaft and working in the
110 guide-pulleys, an elevator-frame pivotally supported upon the main frame, and a discharge-platform pivotally secured to the elevator-frame, substantially as set forth.

4. The combination with a main frame, uprights, shaft and shaft-operating mechanism,
115 of pulleys upon the uprights, cables winding upon the shaft, an elevator-frame pivotally supported on the main frame and secured to the cables, a discharge-platform pivoted to the elevator-frame, and means for limiting
120 the movement of the discharge-platform before the elevator-frame has reached its lowest limit of movement, substantially as set forth.

5. The combination with a main frame, uprights, shaft and shaft-operating mechanism,
125 of an elevator-frame, or the like, pivoted to the main frame, a discharge-platform pivotally carried on the elevator-frame, a cable winding upon the shaft and secured to the platform, and elevator-frame-return-actuating mechanism connecting the platform with
130 the frame, substantially as set forth.

6. The combination with a main frame, uprights, shaft, and shaft-operating mechanism,

of an elevator-frame pivotally supported upon the main frame, cables winding upon the shaft and operatively connected with the elevator-frame, a discharge-platform pivoted to the elevator-frame, means for limiting the movement of the discharge-platform with respect to the elevator-frame, and elevator-frame-return-actuating mechanism connected to the frame and to the discharge-platform, substantially as set forth.

7. The combination with a main frame, up-rights, shaft and shaft-operating mechanism, of an elevator-frame pivotally supported upon the main frame, a cable operatively connected to the shaft, and elevator-frame, discharge-platform pivotally connected with the eleva-

tor-frame, means for limiting the movement of the discharge-platform, with respect to the elevator-frame, means for interrupting the downward movement of the discharge-platform before the elevator-frame reaches its lowest movement, and elevator-frame-return-actuating mechanism connecting the main frame and the discharge-platform, substantially as set forth.

In testimony of all which I have hereunto subscribed my name.

LUKE L. BISBEE.

Witnesses:

C. A. DUNWELL,
E. D. BISBEE.