

No. 697,578.

Patented Apr. 15, 1902.

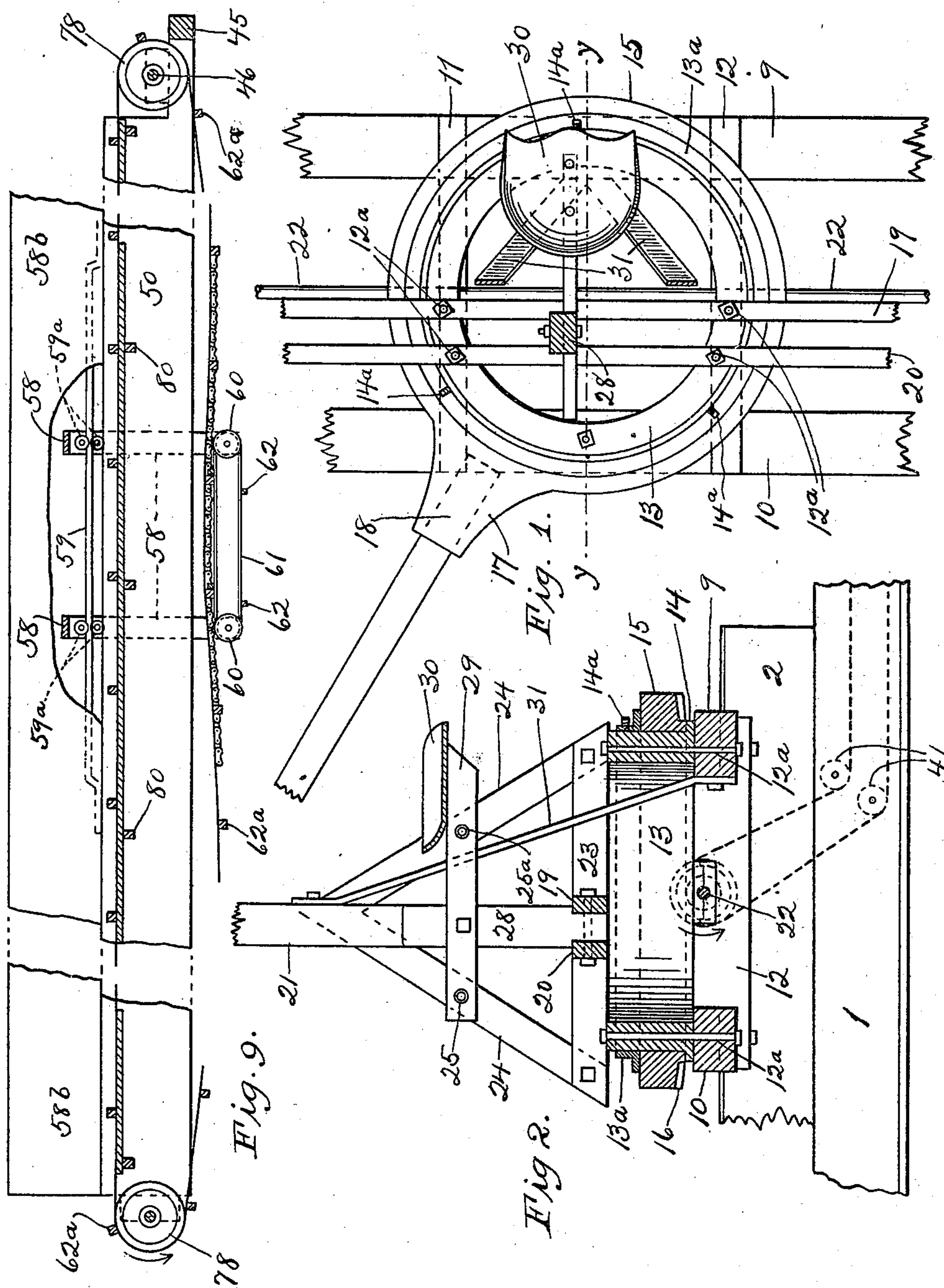
S. F. WEAVER.

STACKER.

(Application filed Dec. 11, 1900.)

(No Model.)

6 Sheets—Sheet 1.



WITNESSES:

K. M. Imboden,
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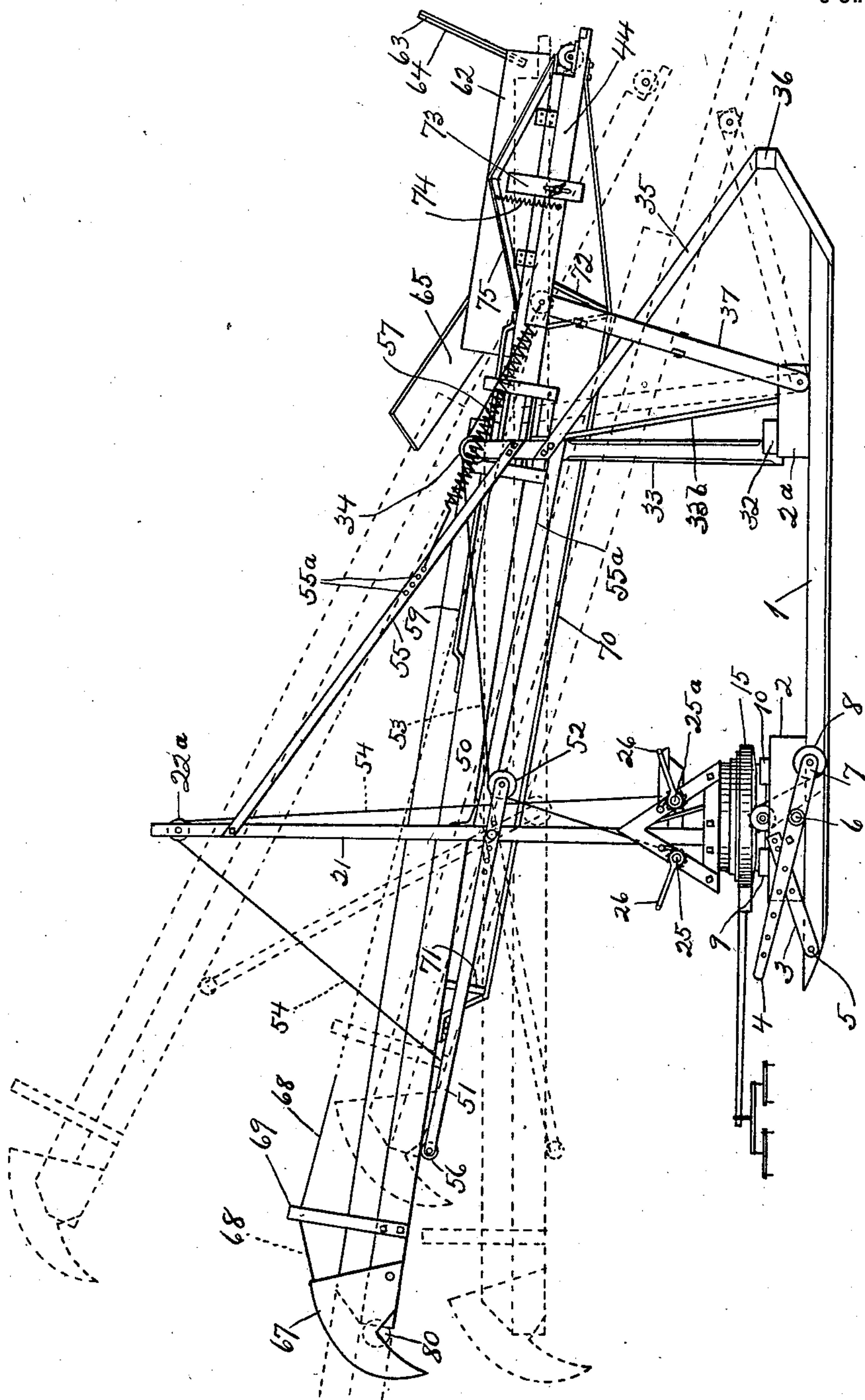


Fig. 3.

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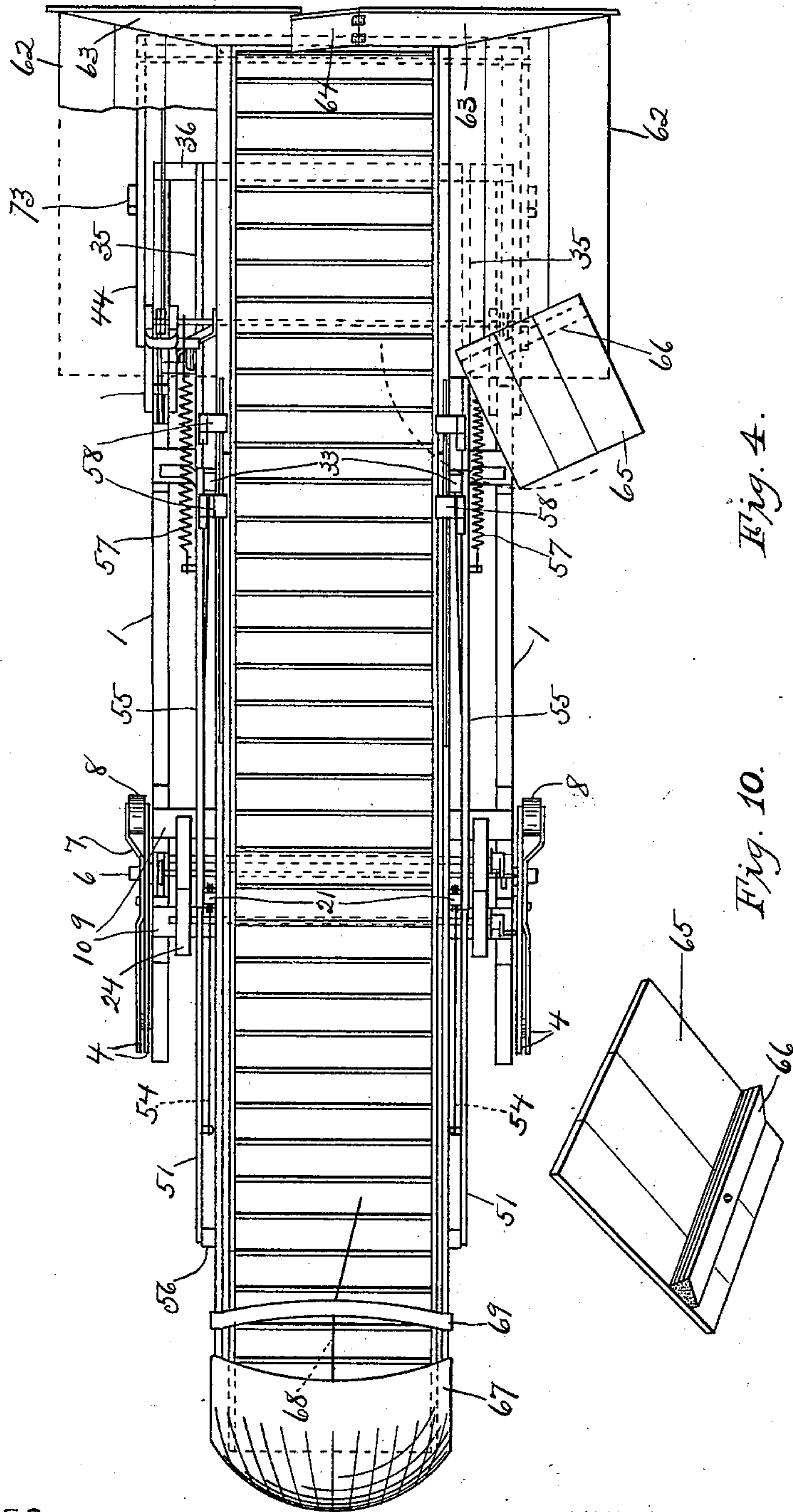
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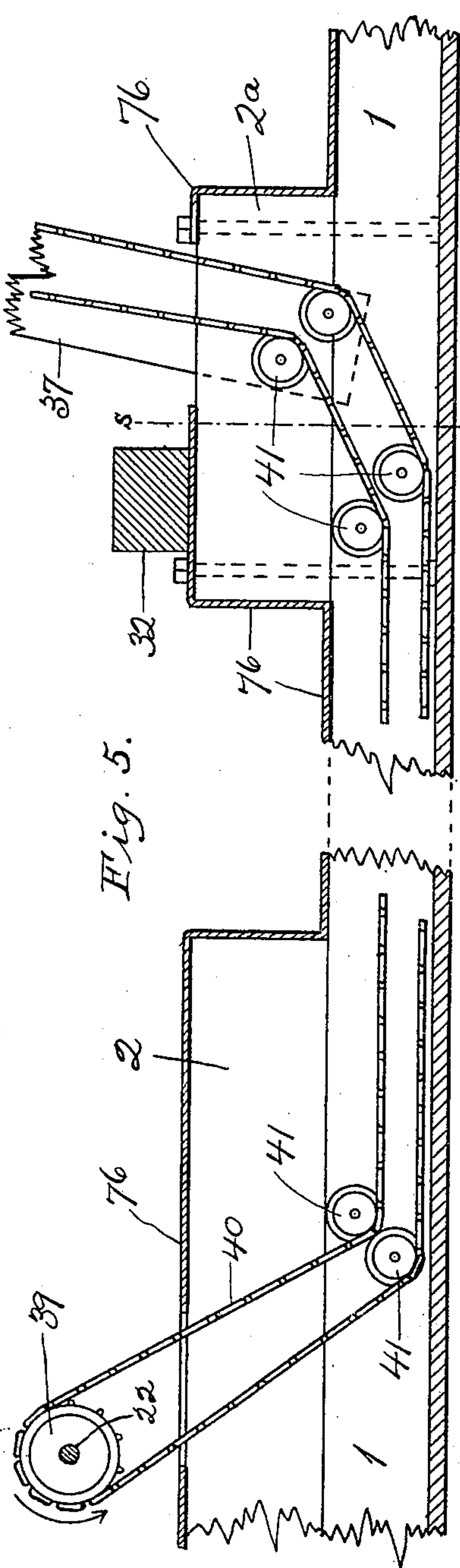


Fig. 5.

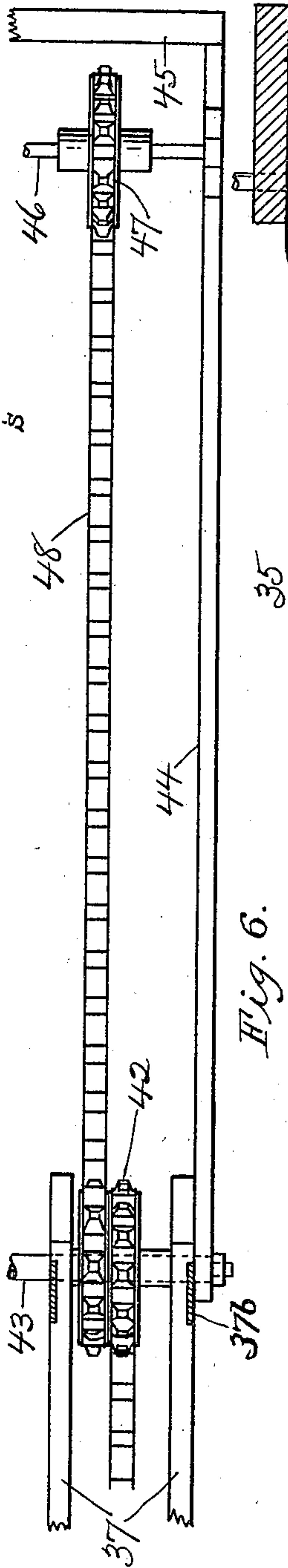


Fig. 6.

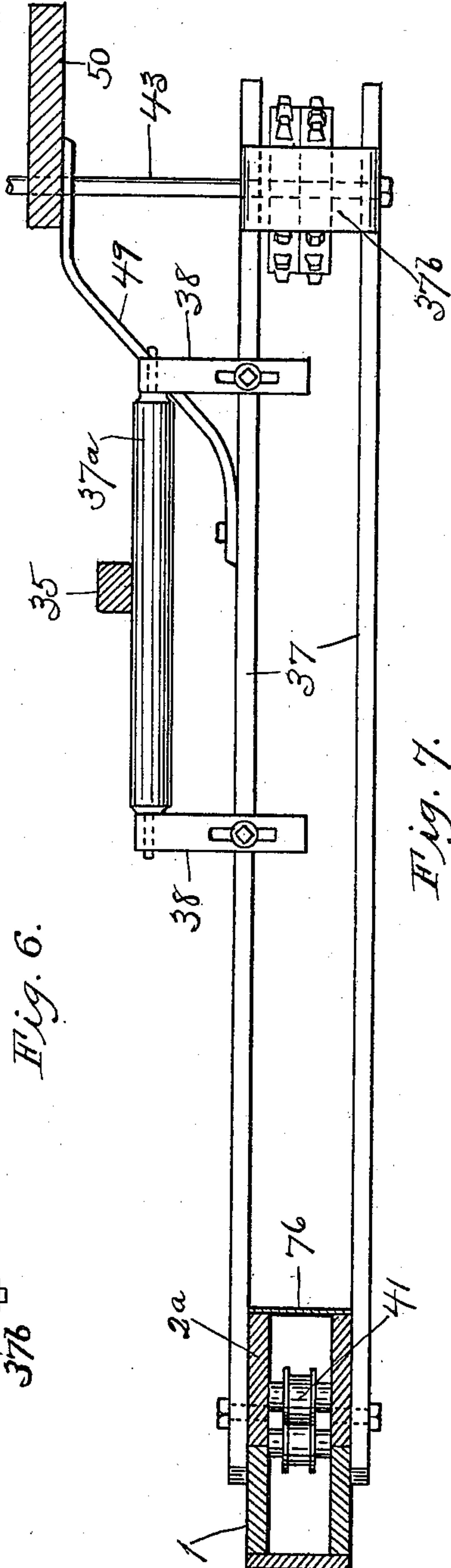


Fig. 7.

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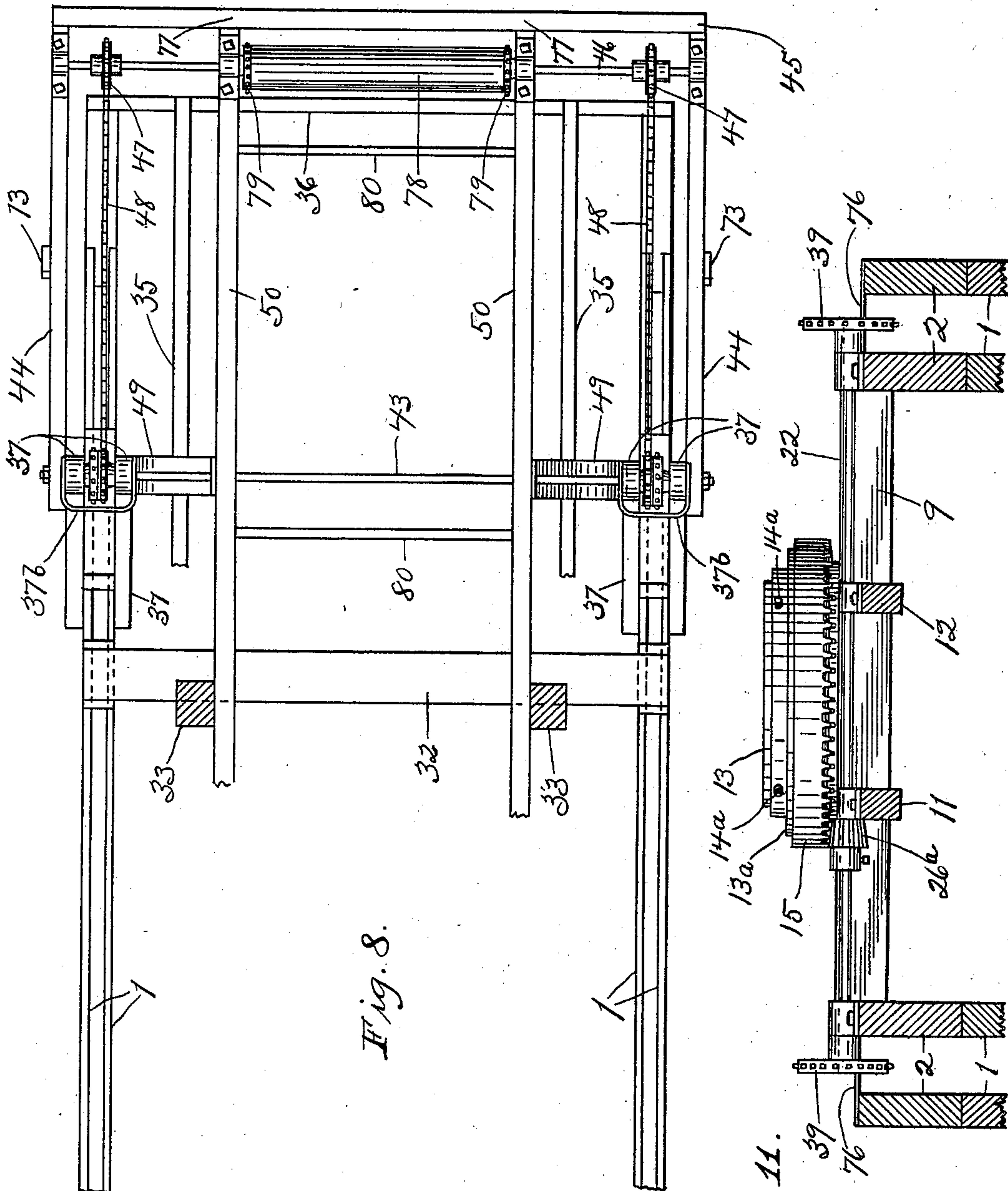


Fig. 8.

Fig. 11.

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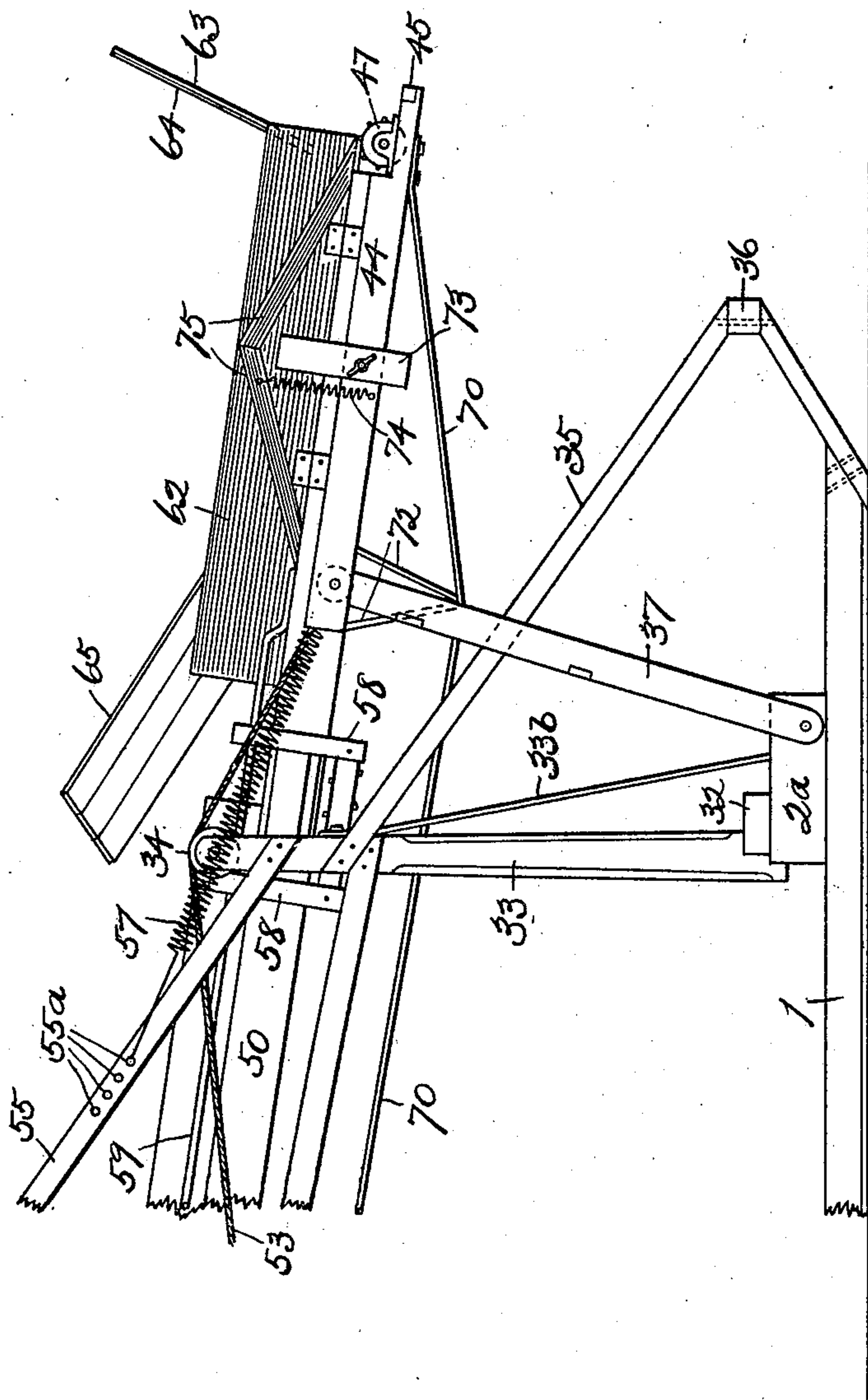


Fig. 12.

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UNITED STATES PATENT OFFICE.

SOLOMON F. WEAVER, OF PAYNE COUNTY, OKLAHOMA TERRITORY.

STACKER.

SPECIFICATION forming part of Letters Patent No. 697,578, dated April 15, 1902.

Application filed December 11, 1900. Serial No. 39,467. (No model.)

To all whom it may concern:

Be it known that I, SOLOMON F. WEAVER, a citizen of the United States, and a resident of the county of Payne and Territory of Oklahoma, have invented certain new and useful Improvements in Stackers, of which the following is a specification.

My invention relates to portable grain, hay, and straw stackers, and particularly to that class of grain-stackers where the heads or seed ends of the straws are harvested and the stalk of the grain left standing in the field; and another object which I have in view in the construction of such a stacker is to arrange so that it can be easily transported from one part of the field to another, also from farm to farm in adjoining neighborhoods without taking the machine to pieces for this purpose.

Another important object which I have in view is to produce an invention of the kind that in depositing the grain from the commencement of the stalk until finishing the grain may fall from the stacker to the center of the stack. By this means the center or the middle of the stack will be kept fuller or higher than the other portions as it rises and when completed will drain the storm moisture outward. Otherwise if the center or middle of the stack should be in construction lower or level with the other portions the moisture would have a tendency to drain inward, thereby injuring the grain, hay, or straw, as the case might be.

Having now so far described the object of my invention, I will proceed to describe the manner of its construction with reference to corresponding numerals on the drawings and specification, in which—

Figure 1 is a rotating horse-power machine, which is peculiarly adapted for operating my stacker. Fig. 2 is a vertical section of the same, with parts of the invention in plan, taken on line Y Y of Fig. 1. Fig. 3 is a side view in elevation of my invention, showing its general construction and the different positions the conveyer is in as the stack rises from the foundation to the completion indicated by dotted lines. Fig. 4 is a top plan view showing the general construction of the endless conveyers and other parts thereof. Fig. 5 is a broken section of one of the run-

ners, showing the position of sprocket-chains connected with sprocket-wheels, said chains passing over a system of holddown-pulleys 55 *en route* to a double sprocket-wheel which is loosely mounted on a horizontal shaft. Fig. 6 is a detail view, partly broken away, showing the position and route of the sprocket-chains from the double sprocket-wheels to 60 their destination at the front of the machine, also showing the upper ends of adjustable arms when adjusted to the lowest position, indicated by dotted lines seen at Fig. 3. Fig. 7 is an edge view of one of the adjustable 65 arms, carrying adjustable guide-rollers, also showing a cross-section of one of the runners, taken on line S S through the knee-blocks 2^a of Fig. 5, showing the position of holddown-pulleys and the manner of pivotally securing 70 said arms to the knee-blocks. Fig. 8 is a top plan view of the front end of the conveyer-frame, the rear end broken away, also the adjustable side and end table removed, showing the construction and location of the sprocket- 75 wheels and front roller over which the endless conveyer-apron passes. Fig. 9 is a broken longitudinal section of the conveyer-frame with the conveyer-apron in position on the rollers at each end thereof. Fig. 10 is a small 80 detached table, showing the under side of the same when in position and pivotally secured to a larger table seen at Fig. 4. Fig. 11 is a view, partly in elevation and partly in section, illustrating the power mechanism in 85 position, the driving-rim in engagement with pinion which is secured to a horizontal shaft, together with the sprocket-wheels on each end of said shaft, supported by knee-blocks in section. Fig. 12 is an enlarged view of 90 the right-hand end of Fig. 3 of my invention, disclosing clearly the construction thereof.

In practice of construction I first provide a pair of suitable runners 1, which may be constructed of any suitable material, their ends 95 curved, as shown. Said runners are provided with knee-blocks 2 and 2^a. At the rear end of each runner I have provided adjustable arms 3 and 4, one of which is pivotally secured to the runners at 5, the other to knee-block 2 100 at 6. The lower ends of arms 4 are extended and provided with slots or bifurcations 7. Pivotaly secured in said bifurcations are small wheels 8. The object of these arms

and wheels herein described is to facilitate the moving or transporting of the stacker from one place to another. When the stacker is to be removed, levers 4, the top ends of which being also bifurcated, are shifted to a greater elevation than shown. The inner ends of levers 3, which are flattened to engage the bifurcated top ends of levers 4, are correspondingly raised and secured to arm 4 by means of a key or pin inserted through the perforations in each arm, as indicated. When the top end of arm 4 is thus raised and secured, pulley 8 engages the earth and in a measure raises the rear end of the runners, so that they will not drag so heavily upon the ground. Upon said knee-blocks 2 I have provided means to carry the power mechanism for operating my machine, which consists of two cross-beams 9 and 10, rigidly secured to knee-blocks 2 and extending horizontally from one side to the other of the machine. Rigidly secured to the under side of said cross-beams are two cross-ties 11 and 12. The object of these is to further support the weight of the power-machine, together with the weight of the machine supported over the power mechanism. Secured by means of bolts to said cross-beams 9 and 10 is a circle or rim 13, sufficient in circumference to correspondingly rest upon said cross-beams 9 and 10, as shown. The lower portion of said rim is provided with an outwardly-extending flange 14. Resting upon said flange and snugly but loosely fitting said rim 14 is a driving-rim 15. Loosely fitting rim 13 is a third rim 13^a. The object of this rim is to securely hold rim 15 in position to prevent disengagement of cogs 16 from pinion 26^a (seen at Fig. 11) when the machinery is in motion. Through the vertical portion of said rim 13^a I have provided a suitable number of screw-bolts and followers 14^a, the object being to impinge rim 13 to counteract upward tendency of said rotating rim 15 when the machine is in motion. On the outward periphery of said rotating rim is an extension 17, made integral thereto, which is provided with an opening or socket 18 for the purpose of receiving a lever or tongue, as shown in dotted lines.

Located over the power mechanism, as hereinabove described, I have provided two parallel cross-beams 19 and 20. These beams are shown some shorter than the width between the runners, but may be extended. These are securely bolted to rim 13, as shown at 12^a, Fig. 1. Said bolts extend down through rim 13 and through cross-ties 11 and 12 and made secure thereunder, securely binding cross-beams 19 and 20, rim 13, and cross-ties 11 and 12 together. Between the outer ends of said ties are vertical masts or derricks 21, the lower ends of which are securely bolted between the said cross-beams, as shown. The top ends are forked or bifurcated to receive concave-face pulleys 22^a, as shown. I have also provided cross-beams 23 at right angle to cross-beams 19 and 20, made secure thereto. To

the last-mentioned cross-beams are secured at the outer ends converging posts or braces 24, as shown. The object of these is to carry a pair of windlass-shafts 25, extending horizontally, engaging a corresponding pair at the opposite side of the machine. These shafts are provided with cranks 26, made secure thereto, also with ratchets and pawls, as shown. Centrally located and secured in a vertical position between beams 19 and 20 is a seat-post 28, carrying a horizontal cross-arm 29. Through said cross-arm is a pair of round holes or perforations. Through these shafts 25 pass, which provide a central support for said shafts. On the outward-extended end of said arm 29 is a seat 30 for the convenience of a driver. Said masts or derricks are securely held in their vertical positions by means of a pair of strong braces 31, the lower ends of which are made secure centrally to cross-beam 9. From this point the braces diverge outward and upward until their upper ends intersect the mast at each side of the machine, where they are made secure by bolts, as indicated at Fig. 2. Made secure to double knee-blocks 2^a is a cross-beam 32. Secured to said cross-beam near the outer ends is a pair of vertical posts 33 of correspondingly the same distance apart as masts 21. The top ends are slotted or bifurcated to receive pulleys 34. Secured to said posts some distance below their tops are supporting guide-braces 35, their lower ends secured to cross-beam 36, which extends across at the front from one runner to the other. Pivotaly secured to double knee-blocks 2^a is a pair of adjustable arms 37, correspondingly the same on each side of the machine. Said arms are adapted to vary in position, as indicated by dotted lines, and are provided with guides or frictionless rollers 37^a, which are adjustably secured to said arms by means of adjustable brackets 38. The object of said frictionless rollers is to closely impinge braces 35 in order to prevent undue lateral movement of the mechanism of the front end of the machine carrying the endless conveyer-apron. Shaft 22, carrying pinion 26^a, is extended each way from the driving mechanism a sufficient distance to receive sprocket-wheels 39, as shown. These sprocket-wheels must be located on said shaft a corresponding distance with the distance from center to center of the runners, so that they will stand in perfect alinement with the longitudinal route of the sprocket-chain through the runners. Passing over these sprocket-wheels 39 are sprocket-chains 40, which drive the endless conveyer. Said sprocket-chains pass downward into the open runners 1, which are constructed of double thickness, forming a channel therein for the chains, as shown, the object of which is that the route of the chains from the power mechanism until leaving the runners is to obviate any danger of the animals' feet becoming entangled as they pass over said runners, which lie in the pathway while keeping the ma-

chine in motion. In order to hold these sprocket-chains in proper position or alinement between said runners, I have provided lag or holddown pulleys 41 for this purpose, and, further, I have provided pairs of the same secured between the side walls of knee-blocks 2^a. The object of these is to hold the chains in proper alinement after leaving the runners until double sprocket-wheels 42 are reached, which are located at the upper ends of adjustable arms 37 and loosely mounted on horizontal shaft 43. Pivotaly secured to outer ends of said shaft is extended arms 44. These extend to the front end of the conveyer-frame and intersect each end of cross-bar 45, extending across the front of the conveyer-frame, to which they are rigidly secured, as shown.

A short distance in the rear of cross-bar 45 is shaft 46, extending parallel therewith and journaled to bars 44 at each side of the conveyer-frame. The side walls 50 of the conveyer-bed are halved or recessed at their front ends, the remaining half extended, and intersects cross-bar 45 at 77. Said shaft 46 passes over the recessed ends of side walls 50 and is also journaled thereon, as seen.

Rigidly mounted on each end of shaft 46 are sprocket-wheels 47. From double sprocket-wheels 42, which are loosely mounted on horizontal shaft 43, are sprocket-chains 48, extending to and engaging said sprocket-wheels 47. Centrally of said shaft and rigidly secured thereto is a drum or roller 78. To each end thereof, mounted on said shaft 46 and to the drum, are sprocket-wheels 79. Over and from these sprocket-wheels are sprocket-chains extending to the rear or tail end of the conveyer, engaging another pair of sprocket-wheels at that point, which are rigidly mounted on a suitable shaft, together with a drum over which the conveyer-apron is carried, as indicated at Fig. 9 in longitudinal section. The side walls 50 of the conveyer-bed are secured parallel by means of a suitable number of cross-bars 80.

Rigidly secured to adjustable arms 37 are braces 49, curved or bent, as shown, and bolted at their lower ends, the upper ends resting against the outer walls 50 of the conveyer-bed, and are provided with openings through which shaft 43 extends. The object of these braces is to add carrying capacity to said shaft, which pivotaly carries the front end of the conveyer-frame. Pivotaly secured to masts 21 are arms 51, with their lower ends extended and bifurcated to receive concave-face pulleys 52. The object of these arms is to carry the rear end of the conveyer-frame, as shown. Made secure to said shaft 43 are cords or cables 53, which extend over pulleys 34, located in the upper ends of posts 33, thence over pulleys 52, thence down and secured to windlass-shaft 25, the object of which is to raise and lower the front end of the conveyer-frame, and thereby cause bodily longitudinal movement of the entire con-

veyer-frame, as indicated in dotted lines seen at Fig. 3, as occasion may demand, by winding and unwinding said cables secured to windlass-shaft 25.

Secured to arms 51, near the long outer ends thereof, are cables or cords 54. These cables pass upward and over pulleys 22^a, located in the upper ends of masts 21, and thence down, with the opposite ends secured to windlass-shaft 25^a. The object of these is to raise and lower the tail end of the conveyer-bed, as indicated by dotted lines, also in Fig. 3. It will further be observed that I have rigidly secured masts 21 and uprights 33 by means of braces 55 and 55^a, which are correspondingly the same on each side of the machine. These braces, together with the pair of braces 35 already described, serve to prevent longitudinal rack or swaying of the stacker. At the outer ends of said arms 51 is a horizontal roller 56, loosely journaled therein, upon which the rear end of the conveyer rests. The object of said roller is to effect easy longitudinal movement of the conveyer-frame and also easy radial movement of said arms 51 through the medium of the roller. It will further be observed that I have provided spiral springs 57, attached to braces 55, their upper ends secured to movable pins 55^a, their lower ends to shaft 43 adjacent to the outer walls of the conveyer-frame. The object of said springs is to assist in the elevation of the conveyer-frame from the position that it occupies, as indicated by lower dotted lines at the front end of the machine, as seen.

It will be understood that the circuitous route of the animals used to operate my invention is that they will necessarily have to pass over the two runners upon which the stacker is mounted and through which the main sprocket-chain passes. In doing this they pass under the conveyer-frame. When the conveyer-frame is in the lowest position, as indicated by dotted lines, the sag of the chains on the under side of the conveyer-frame is considerable and would when the conveyer-frame is in this position obstruct the head-room of the animals in passing, and to obviate this apparent difficulty I have provided automatic adjustable depending frames 58, suspended from suitable guideways 59, as shown in Figs. 4 and 9, one upon each side of the conveyer-frame. Secured to the under side of said depending frames I have provided suitable pulleys 60, said pulleys carrying belts or bands 61 near each edge of the apron. Said bands are provided with struts or lugs 62, made secure thereto and correspondingly the same distance apart as the horizontal conveyer-bars 62^a, secured to the conveyer-apron, so that each will correspondingly mesh or engage with the other, causing belt 61 also to rotate, the object of which is to raise the conveyer-chains a sufficient distance above pulleys 60 to prevent wear of the horizontal carrying-bars and also to make

the travel of the chains over said pulleys as noiseless and frictionless as possible. I have further provided at the front of my conveyer adjustable tables 62, hinged to each side of the conveyer-frame, as shown at Fig. 3. These tables are arranged to be set at a desired incline, so that when the product is shoveled or forked from the wagon to the conveyer portions of it may lodge thereon before reaching the conveyer-bed. If so, such portions will gradually gravitate to the conveyer-apron. It will be further seen that I have provided a similar apron 63 across the front end of the conveyer. The object of this is to serve in part the same purpose, but is in two pieces, each piece being rigidly secured at right angles in any suitable manner to the front ends of the respective side aprons 62. (Seen at Fig. 4.) I have further provided an adjustable trap or slide 64 central of the end aprons, hinged to either section thereof. The object of these is to close the openings between the two sections to prevent loose grain from spilling through the opening and to admit adjustment of the side aprons. I have further provided small aprons 65, pivotally secured on the top side of the large tables 62. At Fig. 10 I have shown one of these small aprons inverted, with a three-cornered batten 66 secured thereto. This batten serves to hold them in the desired position when they are pivotally bolted to aprons 62. These aprons are adapted to be swung around over the conveyer-apron, as indicated in dotted lines, and in the event that the product should unevenly accumulate on the conveyer-apron in such a manner that it would pass off in bulks these small tables will act as distributors, which will obviate such apparent difficulty. It will be further noticed that I have provided a hood 67, pivotally secured to the tail or upper end of the conveyer-frame, which is manipulated, raised, or lowered by means of a cord 68, passing through an eye in yoke 69. The object of said hood is to break currents of air when unfavorable for stacking. The opposite end of the cord is secured at any suitable point of the machine. It will further be observed that I have provided a pair of truss-rods 70, secured to the under side of the conveyer-frame, for the purpose of adding additional strength thereto. These truss-rods are supported in position by knees or struts 71 and 72. I have further provided a pair of adjustable brackets 73. These are secured to the sides of extended arms 44, with their upper ends extending upward and supporting the adjustable aprons 62. The object of these are to adjust and hold the aprons to the desired incline. I have also provided retaining coil-springs 74, adjacent to brackets 73, the lower ends of which are secured to said extended arms 44, as shown, the upper ends secured to a supporting-batten 75 at the under side of tables 62. The object of these springs is to adjustably hold said aprons down against

the top ends of brackets 73, at the same time admitting upward and radial movement of the outer edges of the side aprons 70

Referring back to Fig. 5, runners 1, I have provided a cover or shield 76, which extends over the channels in the top of the runners. The object of these shields is to prevent the accumulation of dirt and other loose matter which might fall from the animals' feet therein as they pass over the runners, and thus obstruct the free passage of the sprocket-chain. 75

At Fig. 3 I have provided a pair of stay-rods 33^b, secured to knee-blocks 2^a at their lower ends, converging inwardly and vertically rearward until their ends intersect vertical posts 33 and made secure thereat in any suitable manner. The object of these stay-rods is to strengthen post 33 and prevent lateral and longitudinal sway of my invention above the runners foundation upon which the structure rests. 80 85

As shown at Fig. 7, to adjustable arms 37 I have provided supporting yokes 37^b, rigidly secured to their upper ends. The object of these yokes is to securely hold the upper ends of the two pieces of which each arm is constructed parallel with the distance between them at their lower ends. They are also provided with holes or openings through their respective ends to admit shaft 43 to pass therethrough and, further, admit the free passage of sprocket-chains 48 over double sprocket-wheels 42 at these points in any of the oscillating movements of said adjustable arms. As shown at Fig. 9, I have further provided the usual side boards 58^b, secured in any suitable manner to the side walls 50 of the conveyer-frame. The object of these is to break the force of the wind and prevent the grain or straw, &c., from being blown from the conveyer. 90 95 100 105

It will be observed that I have shown and described two thicknesses in the construction of each one of my runners; but in building lighter machines I can operate the same with a single chain and dispense with one double runner and use a single thickness instead. 110 115

Having now fully described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a portable grain, hay and straw stacker, the combination of a pair of open runners, open front and rear knee-blocks mounted on said runners, a pair of cross-beams mounted on rear knee-blocks, a cross-beam mounted on front knee-blocks, power mechanism, vertical mast carrying arms and pulleys mounted on rear knee-blocks, vertical post and adjustable arms carrying pulleys mounted on front cross-beam and front knee-blocks, conveyer-frame carrying conveyer-aprons, mounted on adjustable arms carried by front knee-blocks and arms carried by vertical mast, sprocket-chains communicating from power mechanism to the conveyer-frame, substantially as described. 120 125 130

2. In a portable grain, hay and straw stacker, the combination of a pair of open runners, open front and rear knee-blocks carried by said runners, a pair of cross-beams mounted on rear knee-blocks, power mechanism, comprising a stationary rim, a rotating rim loosely mounted on the stationary rim, a stationary rim 13^a secured to the first-mentioned stationary rim mounted on rear cross-beams, a horizontal shaft carrying pinion and sprocket-wheels, mounted on cross-ties and inside rear knee-blocks, said pinion engaging cogs on rotating rim, adjustable arms pivotally secured to front knee-blocks, a horizontal shaft carried by said arms, double sprocket-wheels loosely mounted on said shaft, vertical mast mounted over the knee-blocks and the power mechanism, adjustable arms carried by said mast, conveyer-frame carrying conveyer-apron supported on said arms and mast at the rear end of the machine, and the adjustable arms at the front end, sprocket-wheels and sprocket-chains transmitting power from the power mechanism to the conveyer-frame, substantially as described.

3. In a portable grain, hay and straw stacker, a pair of open runners, open knee-blocks mounted thereon, cross-beams, power mechanism, and vertical mast carrying adjustable arms, mounted on rear knee-blocks and runners, cross-beam and adjustable arms carried by front knee-blocks, vertical post supported on said cross-beam, guide-roller and supporting-braces carried by said adjustable arms, conveyer-frame adapted to carry conveyer-apron supported on adjustable arms, sprocket-wheels and sprocket-chains adapted to transmit power from the power mechanism to the conveyer-apron, substantially as described.

4. In a grain, hay and straw stacker, a pair of channeled runners, open knee-blocks, mounted on said runners, cross-beams and power mechanism mounted on rear knee-blocks, vertical mast carrying adjustable arms mounted over the power mechanism and said cross-beams, cross-beam carried by front knee-blocks, vertical post mounted on and carried by said cross-beam, adjustable arms pivotally secured to said front knee-blocks, adapted to raise and lower the conveyer-frame, said conveyer-frame supported on said arms at the front and on adjustable

arms carried by vertical mast at the rear, adjustable aprons, and adjustable depending frames carried by conveyer-frame, and means for transmitting power from the power mechanism to the conveyer-frame, substantially as described.

5. In a portable grain, hay and straw stacker, the combination of a pair of open runners, adjustable arms 3 and 4 secured to their ends, cross-beam 36 to their front ends, open knee-blocks, cross-beams, and power mechanism, mounted on rear ends of said runners, open knee-blocks and cross-beam mounted near the front end of said runners, vertical post and adjustable arms carried by said cross-beam and front knee-blocks, vertical mast carrying adjustable arms mounted from the rear knee-blocks, conveyer-frame carrying conveyer-apron, carried by said adjustable arms in front and the adjustable arms carried by vertical mast at rear, supporting-braces 35, spiral springs 57 and supporting-braces 55^a and means for raising and lowering the conveyer-frame, and means for transmitting power from the power mechanism to the conveyer-frame, substantially as described.

6. In a portable grain, hay and straw stacker, the combination of a pair of open runners, shields closing open tops of said runners, open front and rear knee-blocks mounted thereon, cross-beams, power mechanism and vertical masts carrying arms, mounted on rear knee-blocks, cross-beam and adjustable arms carrying horizontal shaft mounted on front knee-blocks, conveyer-frame carrying rollers and conveyer-apron and hood mounted on horizontal shaft and arms carried by vertical masts, horizontal shaft carrying pinion and sprocket-wheels mounted on cross-ties and inside half of rear knee-block, sprocket-chains carried by said sprocket-wheels through open runners under hold-down pulleys, transmitting power from power mechanism to conveyer-roller carried by front end of conveyer-frame, substantially as shown and described.

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

SOLOMON F. WEAVER.

Witnesses:

M. E. MATCHETT,
K. M. IMBODEN.