

9 Sheets—Sheet 1.

No. 541,520.

Patented June 25, 1895.

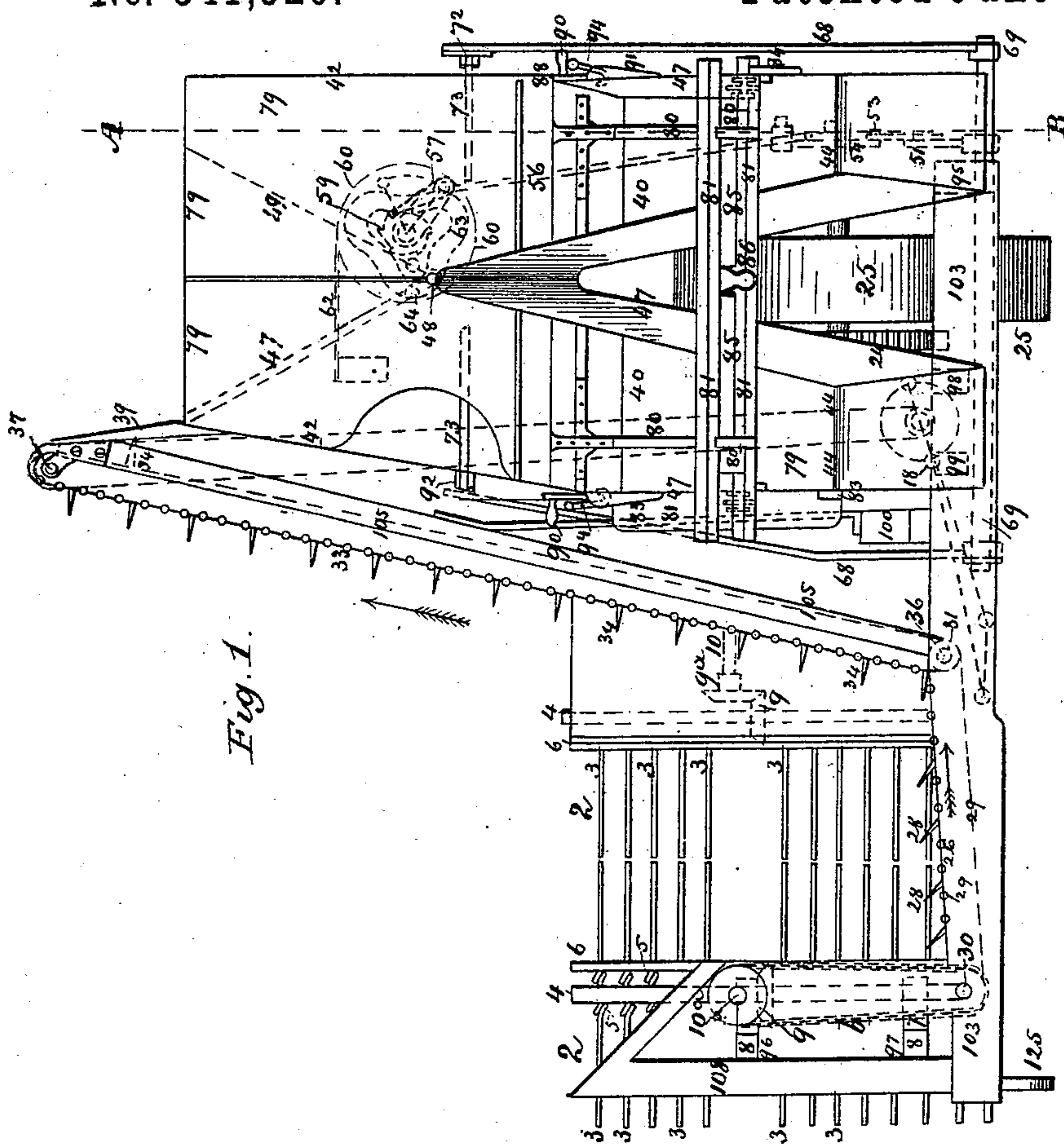


Fig. 1.

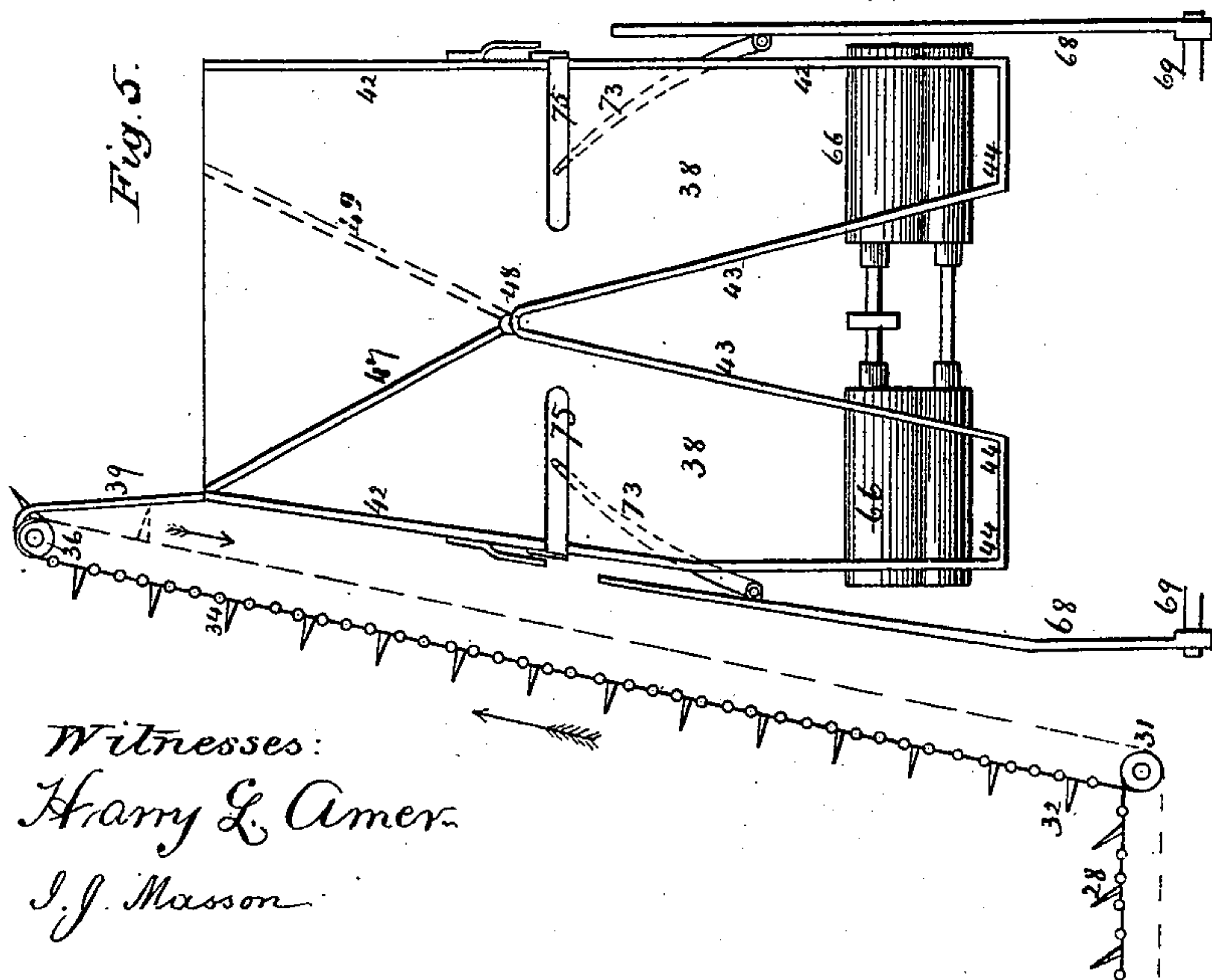


Fig. 5.

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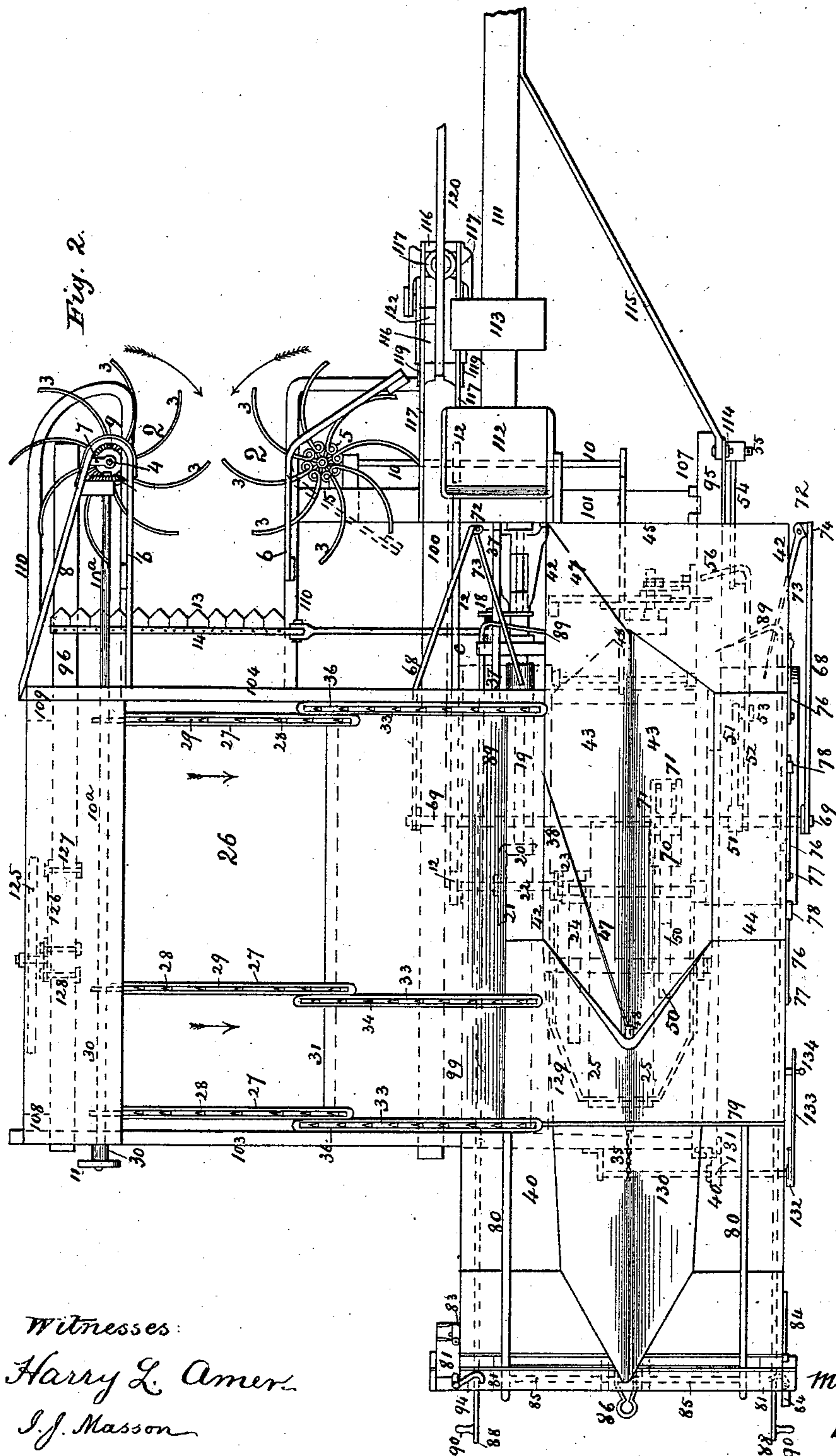
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CORN HARVESTER.

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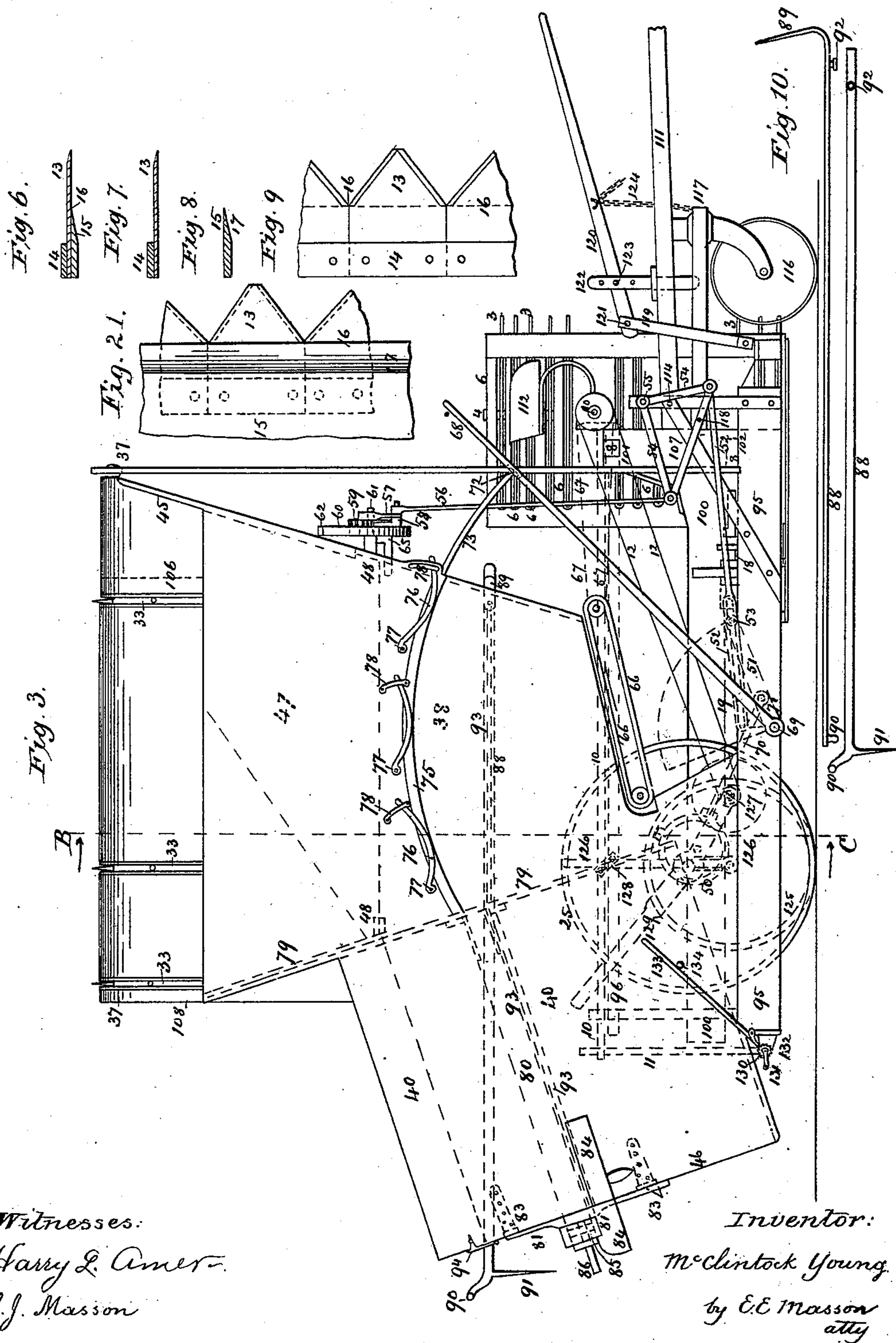
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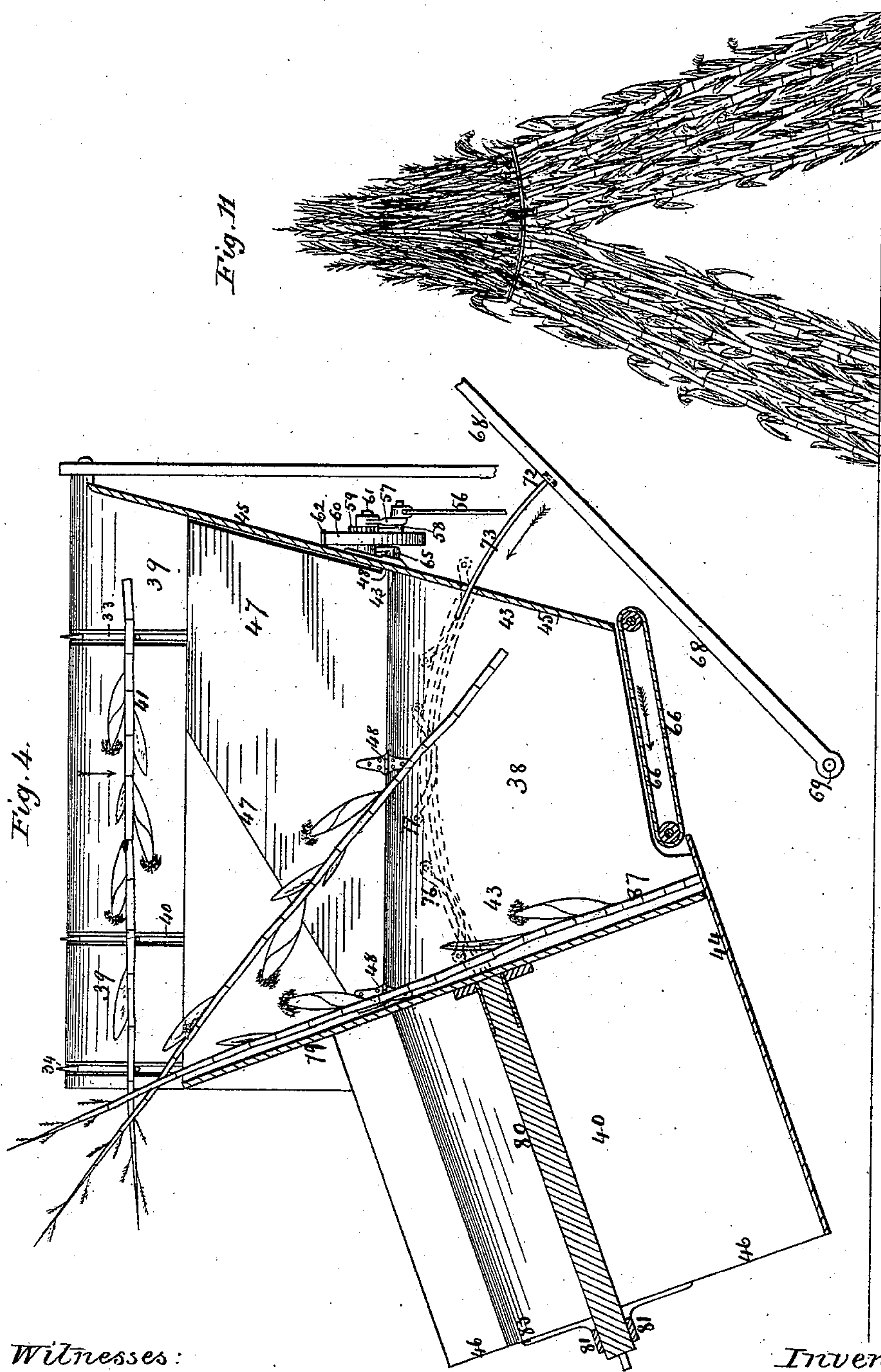
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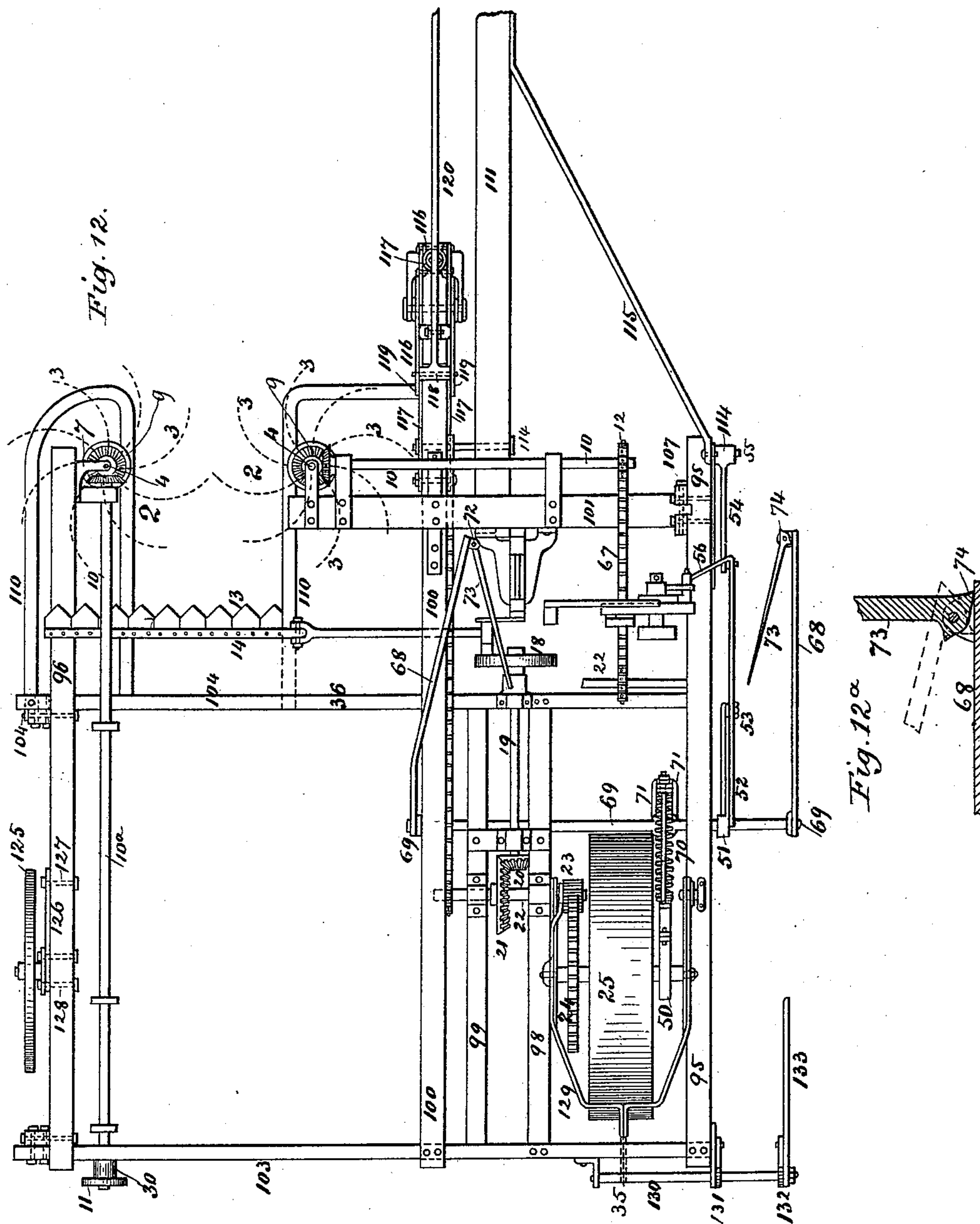
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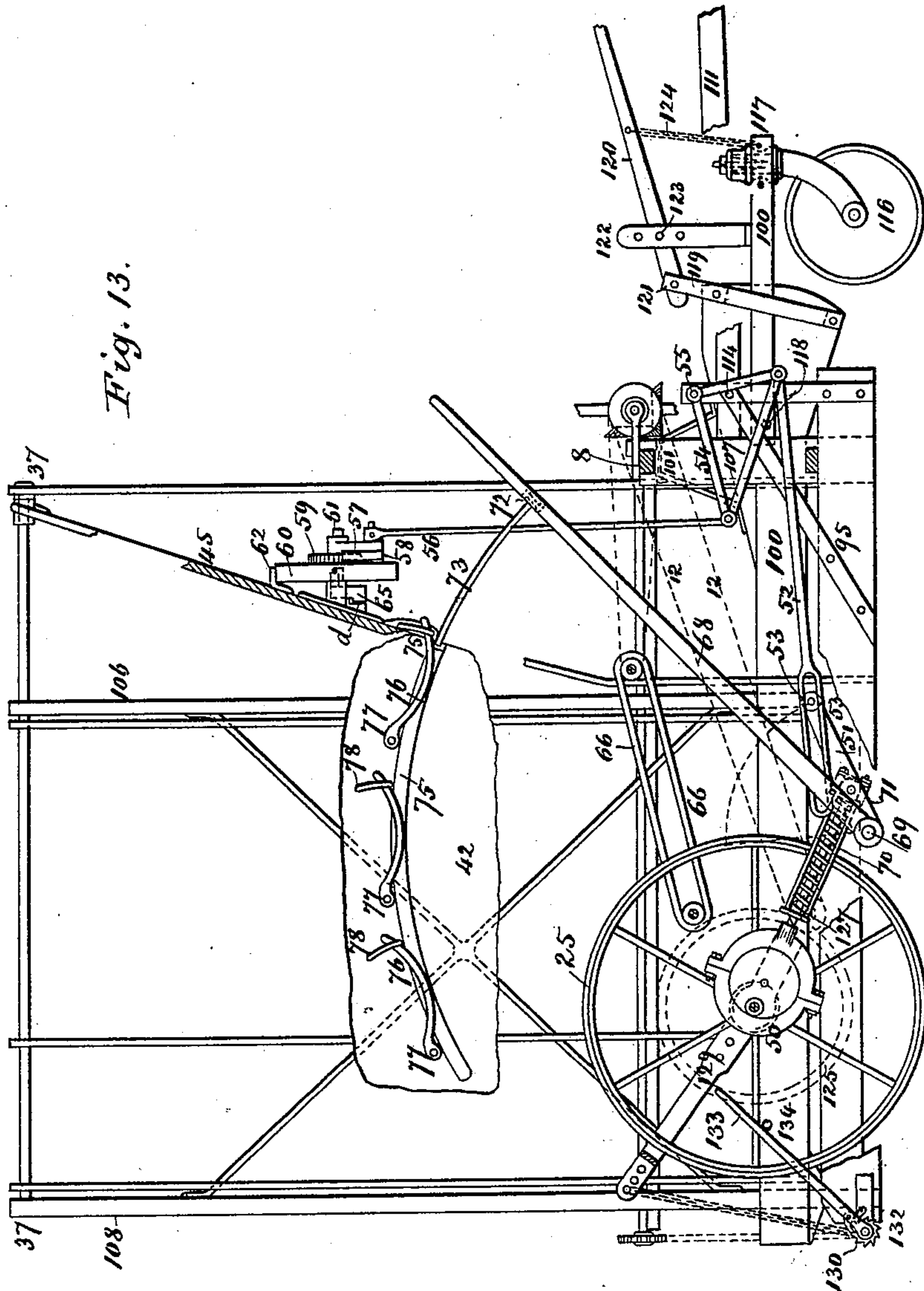
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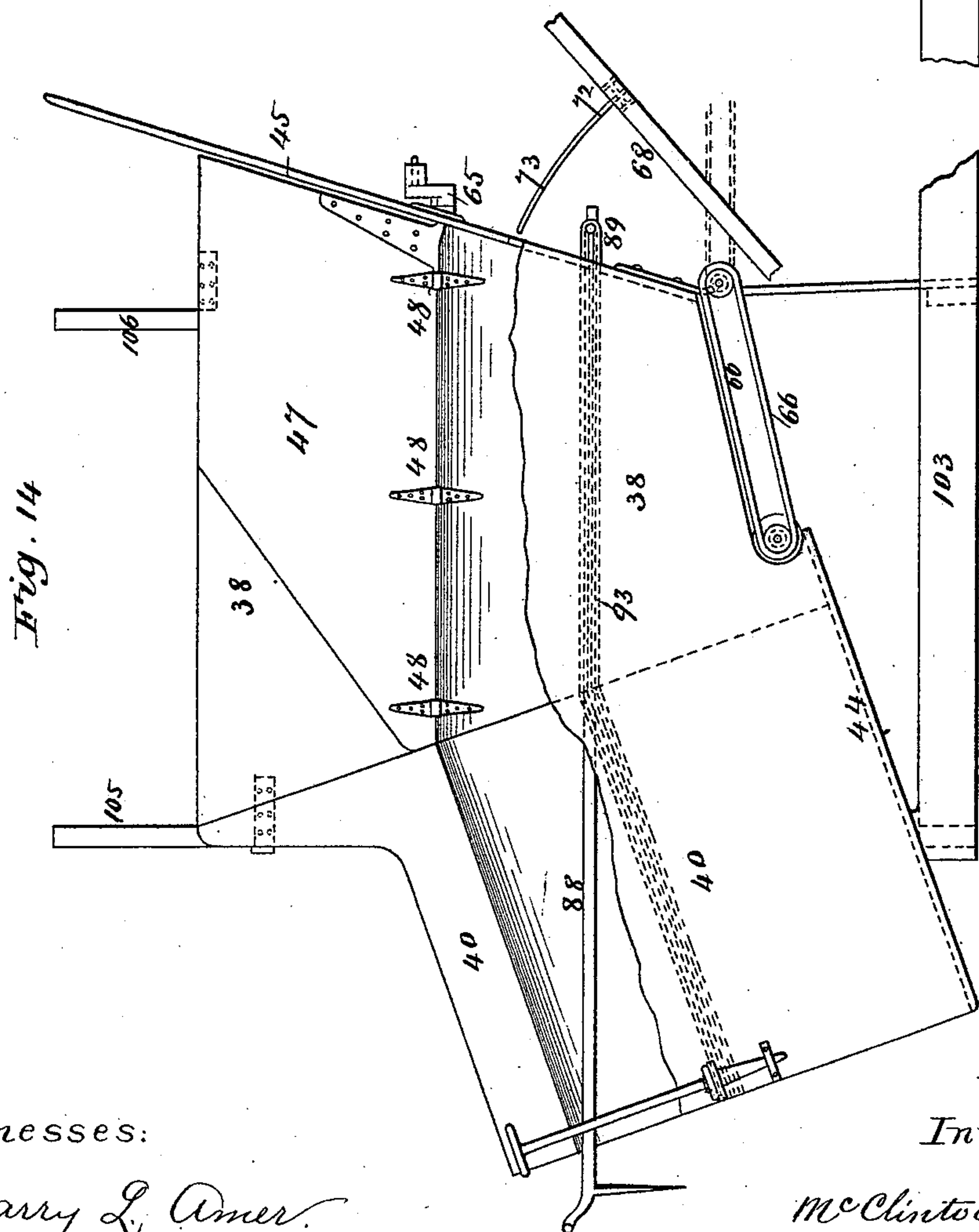
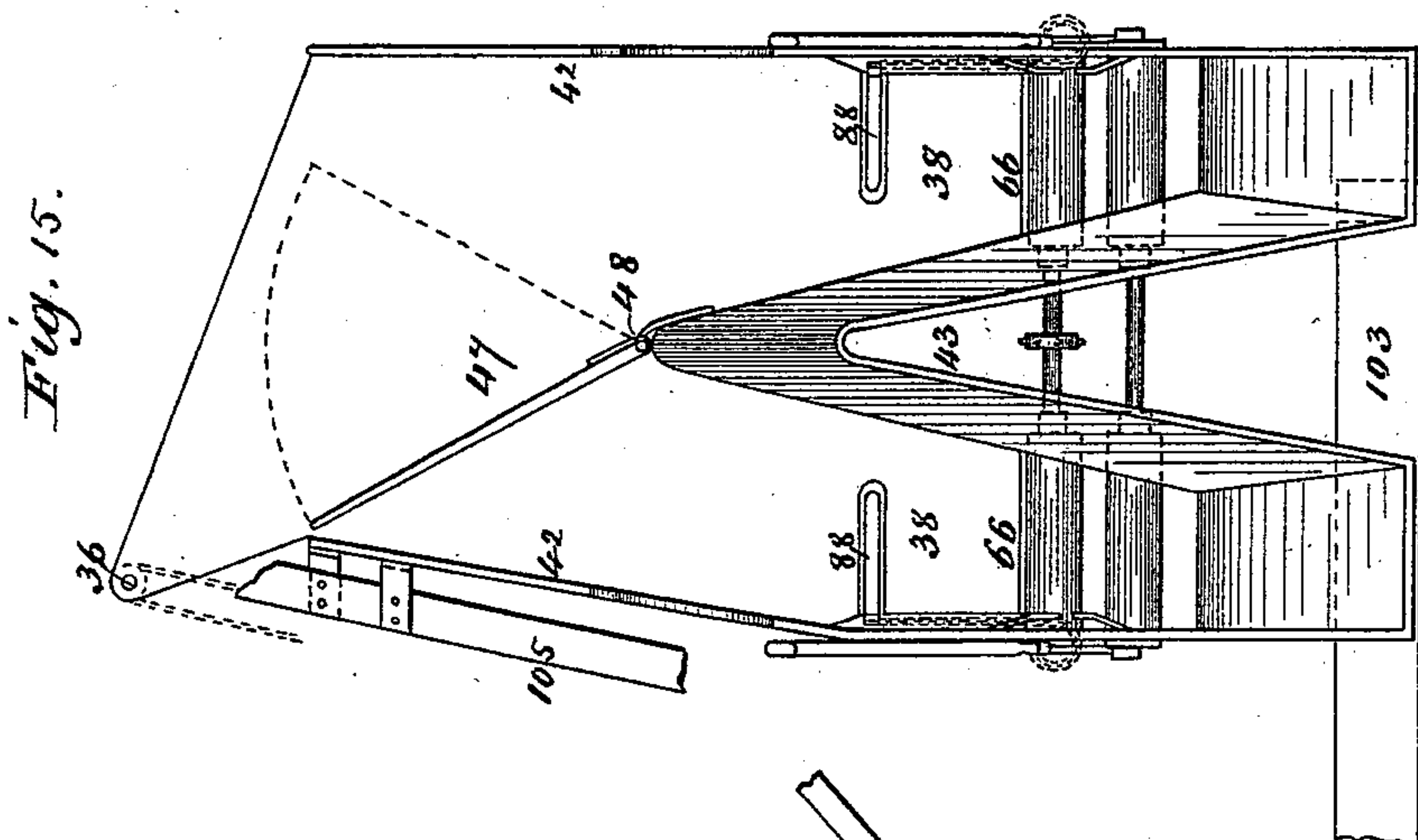
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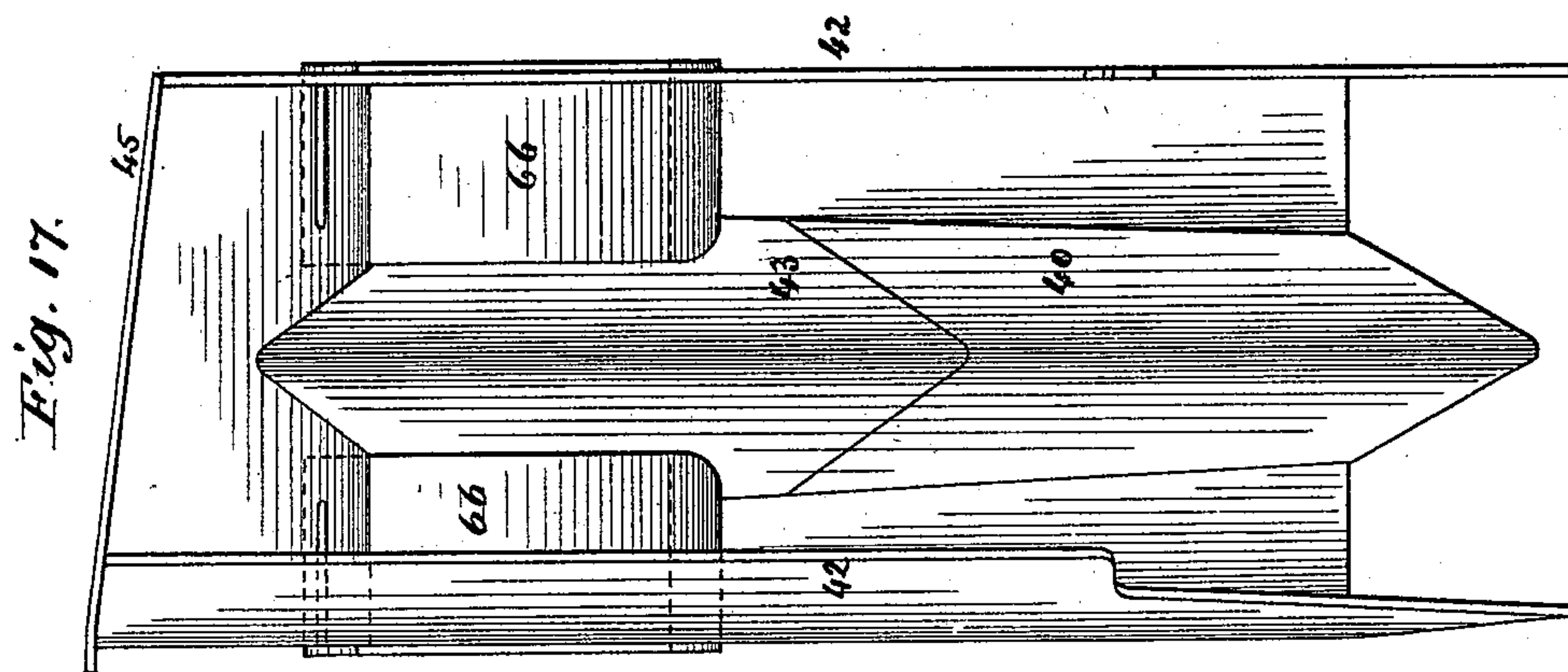
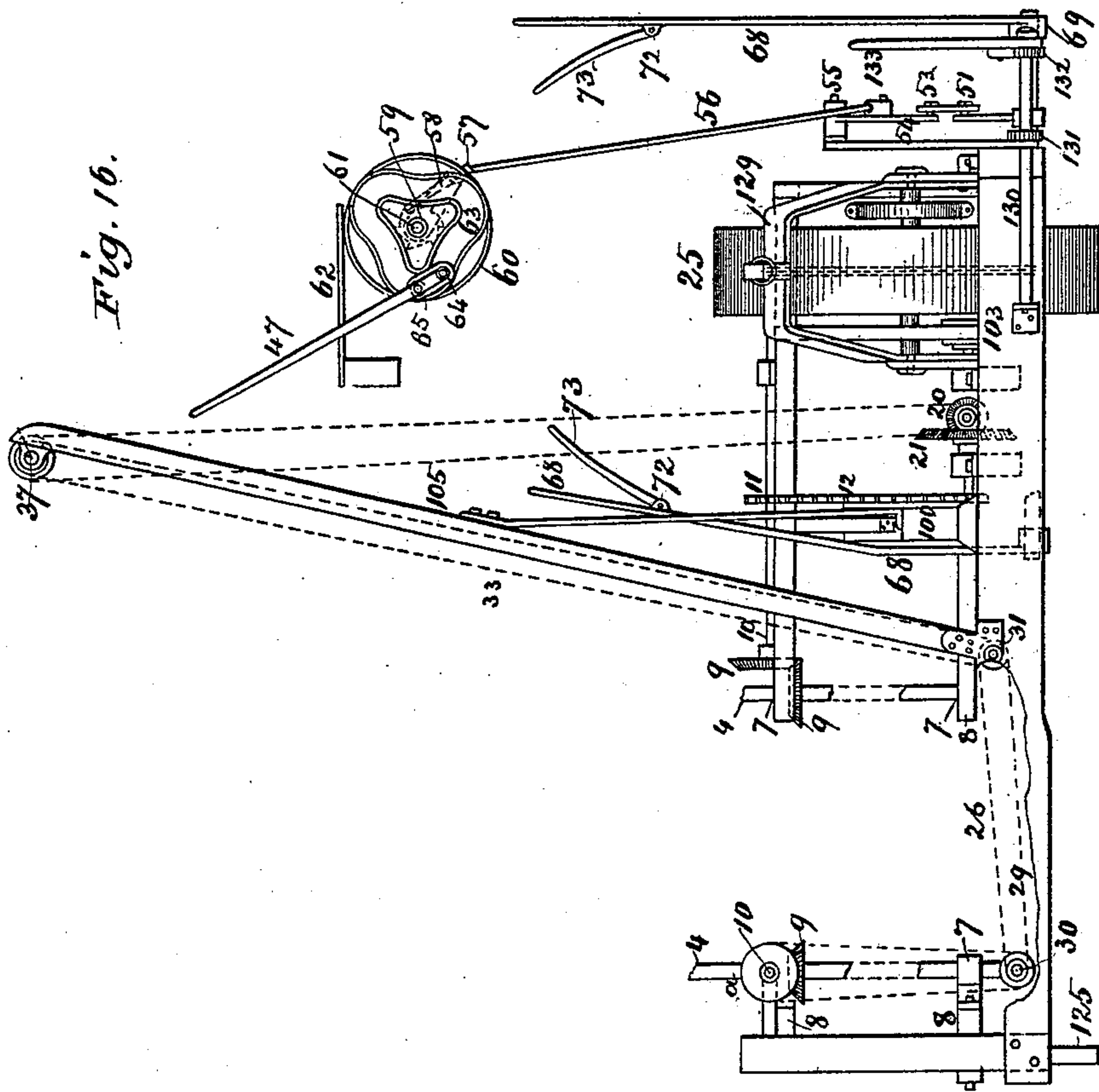
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Fig. 19

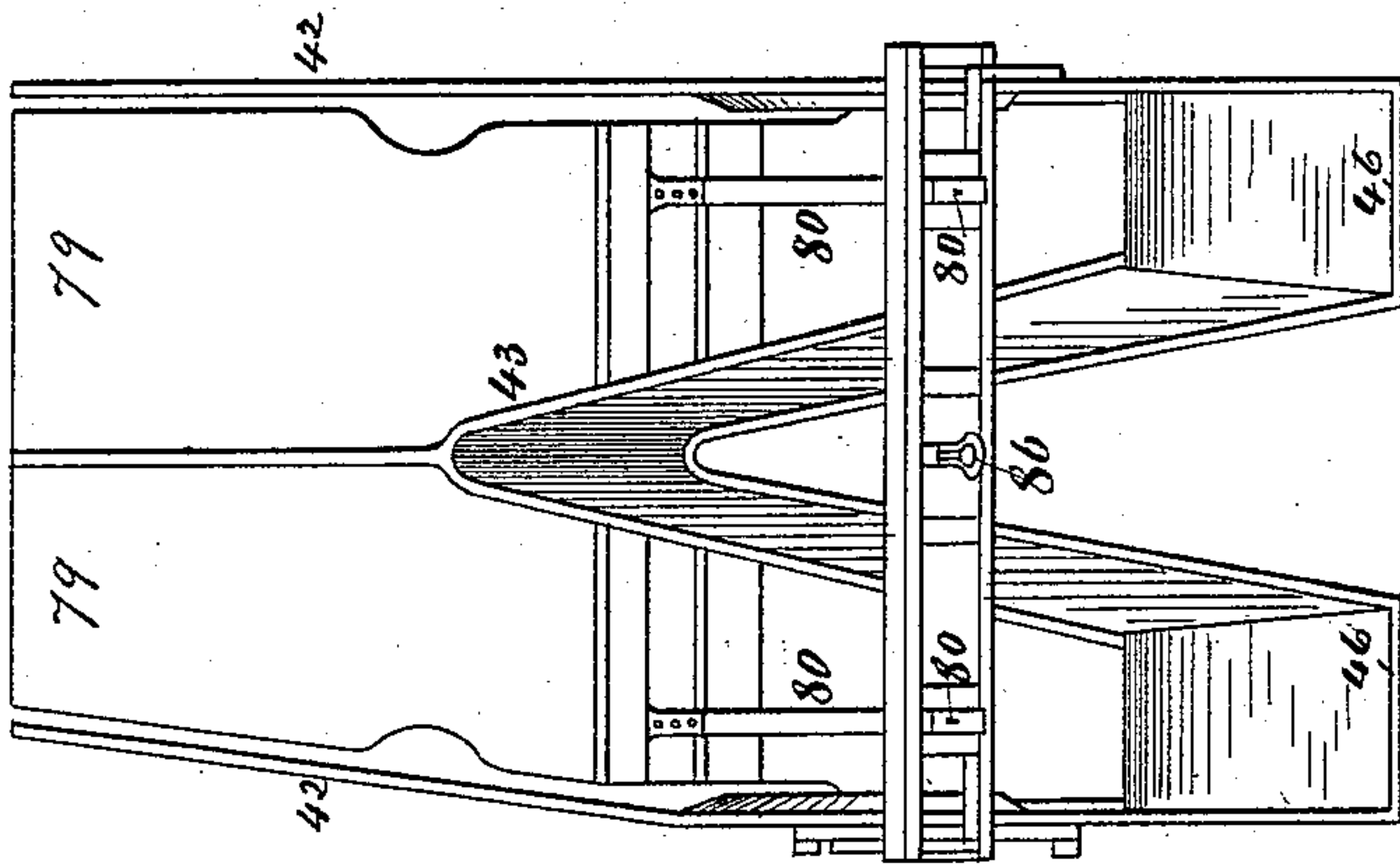


Fig. 18.

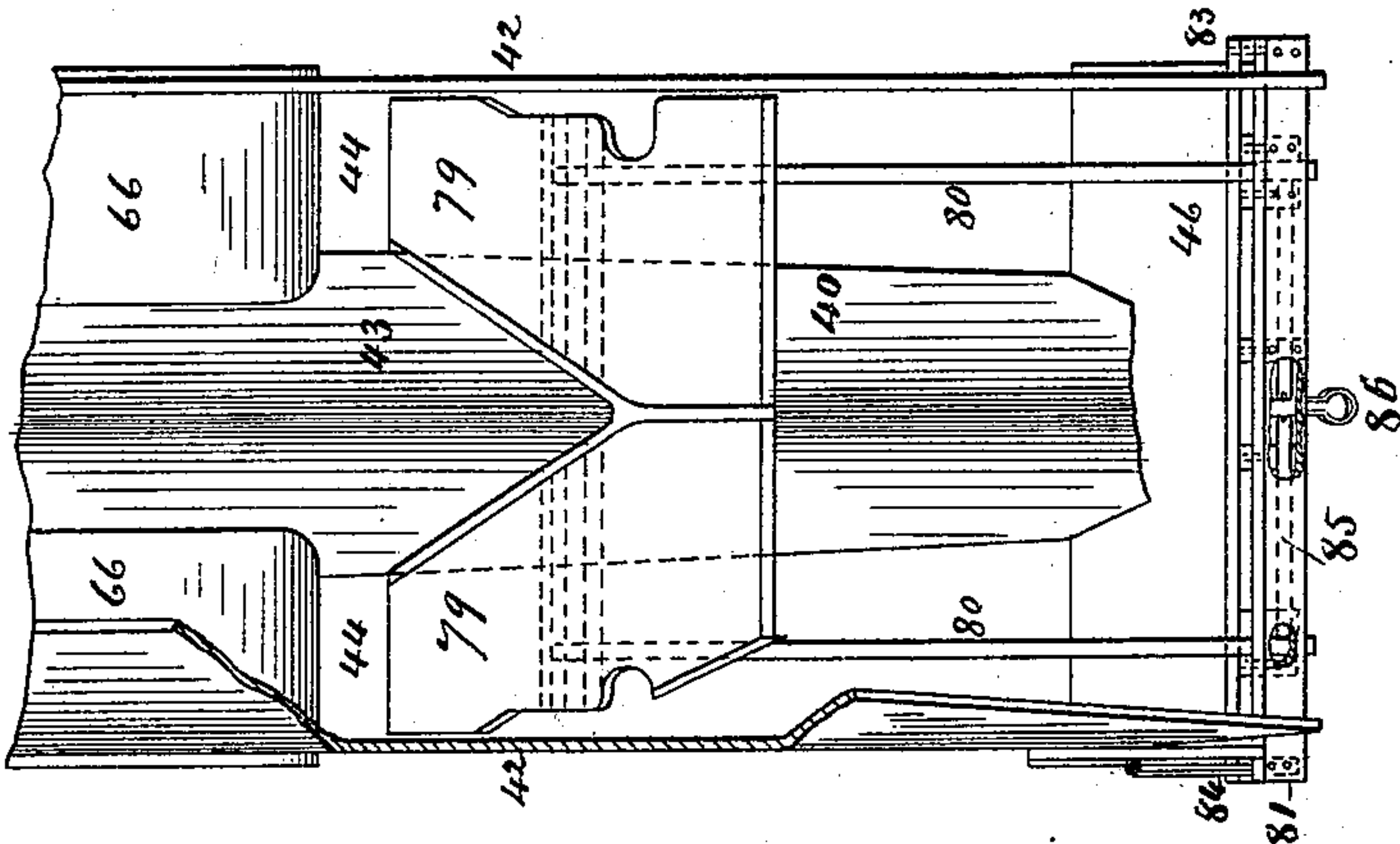
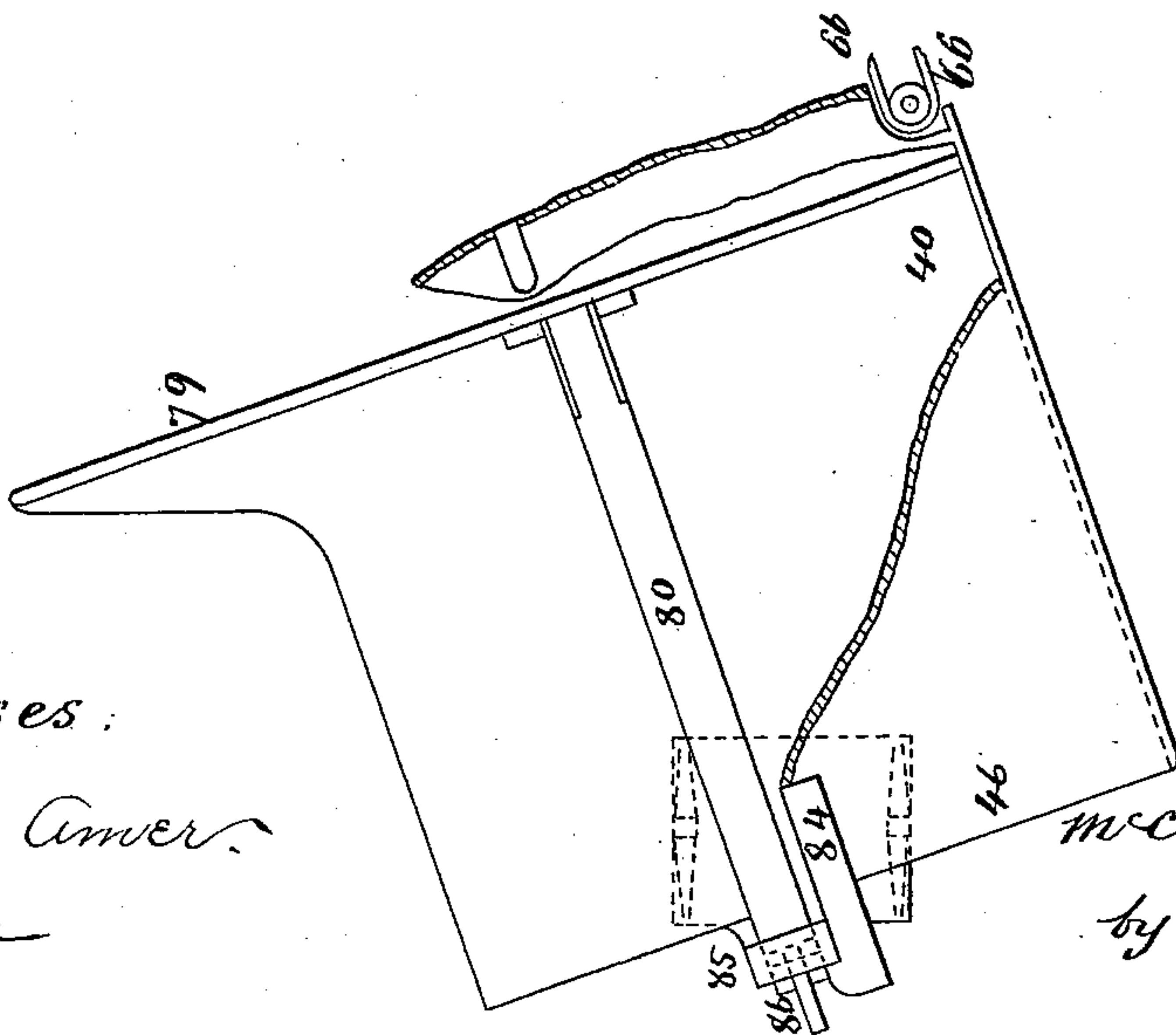


Fig. 20



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UNITED STATES PATENT OFFICE.

McCLINTOCK YOUNG, OF FREDERICK, MARYLAND.

CORN-HARVESTER.

SPECIFICATION forming part of Letters Patent No. 541,520, dated June 25, 1895.

Application filed September 21, 1887. Serial No. 250,319. (No model.)

To all whom it may concern:

Be it known that I, McCLINTOCK YOUNG, a citizen of the United States of America, residing at Frederick, in the county of Frederick and State of Maryland, have invented certain new and useful Improvements in Corn-Harvesters, of which the following is a specification, reference being had therein to the accompanying drawings.

10 The object of my invention is to construct a machine that shall first gather the corn by means of two reels having vertical shafts to straighten up the corn that does not stand upright and when cut, to cause it to fall properly on the platform; cutting the stalks, depositing them into a stalk receiving chamber, and causing them to assume an upright position with the butt ends down but spread, to form the shock, said butts being separated to facilitate the drying of the corn and give the shock a firmer stand upon the ground.

Another object is the proper packing of the shock into the shock-forming chamber and finally delivering it in a secure standing position on the ground without disarranging the formed shock.

In the accompanying drawings, Figure 1 shows a rear end view of the machine constructed in accordance with my invention. 30 Fig. 2 shows a top view of the same. Fig. 3 shows a side view taken from the tongue side, or side on which the horses are attached to the machine. Fig. 4 shows a section on line A B of Fig. 1. Fig. 5 is a section on line B C of Fig. 3 with the ground-wheel and other parts removed. Fig. 6 is a transverse vertical section of the cutter, cutter-bar, and guard. Fig. 7 is a transverse vertical section of the cutter and cutter-bar. Fig. 8 is a transverse 40 vertical section of the guard. Fig. 9 is a top view of the cutter and cutter-bar. Fig. 10 represents in top and side view one of the hooks to facilitate the removal of the shock. Fig. 11 is a view of the corn-shock as taken from the rear of the machine. Fig. 12 is a top view of a portion of the machine, showing the bottom frame and gearing, the elevator-frame, the stalk-receiving chamber, and driver's seat being removed. Fig. 12^a is a horizontal section, on a larger scale, of the hinge 50 of the corn-advancing fingers. Fig. 13 is a side view of a portion of the machine, showing

the raising and lowering mechanism at the front end and at the rear end, but the walls of the shocking-chamber removed (except a 55 portion) to show the stock-packing lever and the retaining-latches. Fig. 14 is a side elevation of the stalk-receiving and shock-forming chamber, with a part of the side walls and the movable partition removed. Fig. 15 is a rear 60 end elevation of the stalk-receiving chamber. Fig. 16 is a diagram elevation from the rear showing the means for raising and lowering the frame, the packing levers, and fingers, but with the stalk-chamber and movable parti- 65 tion removed. Fig. 17 is a top view of the stalk-receiving and shocking chamber with the apron and central A-shaped division. Fig. 18 is a top view of a portion of the stalk-receiving and shocking chamber with the movable partition therein. Fig. 19 is a rear 70 elevation showing the transverse partition in the shocking-chamber. Fig. 20 is a side elevation of the shock-forming chamber and the movable partition therein, the central division 75 being omitted. Fig. 21 is a bottom view of a portion of the cutters and cutter-guard.

The same figures and letters on the different views indicate like parts.

The frame of the machine consists of the 80 longitudinal timbers 95 on the land side of the machine, timber 96 on the grain side, timbers 98 and 99 supporting the gears alongside of the ground wheel and timber 100 alongside of the tongue; the cross timbers 101 under 85 the driver's seat, timber 103 in the rear of the machine and timber 104 in the rear of the cutter bar; the upright timbers 105 and 106 supporting the elevating aprons, and the upright timbers 108 and 109 on the grain side. 90

On the forward end of the frame, in front of the cutters are placed the gathering reels 2 the outer ends of whose arms travel at a much faster speed than the machine moves forward. The arms 3 of said reels are fas- 95 tened to the upright shafts 4. They are made of wire, and their inner ends coiled to form a spring at 5 to enable them to spring back when under great pressure. Said arms are curved backward, or in other words, have 100 their convexity toward the rear in their operative position to prevent them from drawing the corn through the guards 6 which have slots therein just wide enough to allow the

gathering arms to pass through them. The vertical shaft 4 turns in boxes 7 which are secured to timbers 8 fastened to the frame of the machine. The reels are revolved by a miter-wheel 9 on their shaft, said wheel gearing with a similar wheel 9^a on the shaft 10. The shaft 10^a of the outside reel is driven by a pulley 11 on its rear end, a chain *b* passing around it and also around a pulley on the shaft 30 lying below the latter operating also the stalk carrying chains 29. The inside reel is driven by a shaft 10 operated by the chain *c* and pulleys 12, one of which is mounted upon said shaft 10, and the other upon the shaft 22, hereinafter described.

The effect of the reels is to sweep the standing corn into a suitable position to fall properly onto the platform 26, whatever may be the position of the corn provided the reels will reach it. They do not advance in a positive manner as reels with rigid arms would, but exert a yielding and continued pressure on the standing corn.

The cutter is composed of sickle sections 13, riveted to the bar 14. The cutter rests upon the guard 15 the edge of which extends to the inner end of the beveled edges or the apex of the inner angle of the sections at 16, the cutter carrying bar 14 being some distance behind the inner end of the beveled edges of the cutters. The guard has its underside beveled at 17. The growing corn stalks present sufficient resistance without bending for the cutter to operate, without projecting guards to laterally support the stalk, and in fact they would be in the way as the stalks would sometimes be impaled upon them before reaching the cutters even if said guards do not extend beyond the points of the cutters.

The object of the guard extending to the root of the cutters is to prevent any upward pressure of the standing stubble of the stalks against the cutters after they have cut through the stalk, and the object of having the back or bar to which the sections are fastened some distance behind the root or apex of the inner angle of the sections is to insure the through cutting of the stalk before it strikes the back-bar. A reciprocating motion is given to the cutter-bar from the crank 18 on one end of the shaft 19 said shaft having at the opposite end the bevel pinion 20 that gears with the bevel wheel 21, upon the transverse shaft 22. The latter carries the spur pinion 23 that meshes with the spur wheel 24 on the axle of the ground wheel 25.

The stalks after being cut fall on the platform 26 which is provided with openings or slots 27 through which the inclined teeth 28 of the carrier project. Said teeth are inclined so as to be readily disengaged from the corn stalks when they reach the foot of the elevating apron 34 and are attached at regular intervals to the three endless chains 29 which pass around sprocket wheels on shafts 30 and 31. The teeth 28 being inclined, the inclined faces force the stalks upward when they reach said

shaft 31. The upper half of the chain moves in the direction shown by the arrow and carries the stalks that fall on the platform, to its inner end where they are taken by the elevating chains 33 which are provided with the straight teeth 34, by which they are carried to the top of the elevator. The chains 33 to which the teeth 34 are attached pass at the lower end of the elevator around sprocket wheels 36 on the shaft 31 and at the upper ends around sprocket wheels on the shaft 37 and the teeth project through slots similar to those in the platform.

From the upper end of the elevator where the teeth begin to descend, the inclosing guard 39 is inclined so as to extend beyond the ends of the teeth so that the teeth in passing through the slots in said guard gradually disappear thereunder so as not to carry the stalks with them but allow them to fall in a horizontal position (or nearly so) as shown at 41, in Fig. 4.

The object in using the three horizontal and three upright carrying and elevating chains, is for the rear chain to assist in moving the long stalks while the middle chain catches the shorter ones.

The stalk receiving chamber 38 has side walls 42 between which is placed an inverted V or wedge shaped division 43 upon its floor 44, and said chamber has its forward end 45 closed. The shock forming chamber 40 is a rear extension of the stalk receiving chamber and is about the same shape except that it is made downwardly inclined toward the opening 46 at the rear end to allow the formed shock to pass out freely.

Within the stalk receiving chamber is placed a gate 47 hinged at 48 to each end of the top of the internal wedge-shaped division and is used to open or close the top of either division of the stalk receiving chamber. When in the position shown at 47, in Figs. 1, 3, 4, and 5, the outside division of stalk receiving chamber will receive all the stalks carried over by the elevating chains and when in the position shown by the dotted line 49 the inside division will receive them. This gate may be operated by the driver or an attendant, but in this case it is worked automatically in the following manner: At every revolution of the driving wheel the eccentric 50 on the axle of said wheel (Figs. 2 and 3) moves the lever 51, that is mounted upon the horizontal shaft 69, Figs. 1, 2 and 3, back and forth. When it is drawn back the slotted connecting rod 52 is drawn back by the pin 53 in the end of the lever 51 and then it rocks the bell crank lever 54, which is pivoted at 55. This lever through the connecting rod 56 moves the lever 57 up, and this lever has one end loosely mounted upon the shaft 61 and carries a pawl 58 which engages with a six toothed ratchet wheel 59 that is fastened to the cam 60 revolving on the stud 61 fastened to the closed end 45 of the stalk receiving chamber. A spring 62 continually pressing

on the periphery of the cam produces friction enough to hold it steady when not moved by the levers and pawl described. The cam is provided with a groove 63 in which the roller 64 works. This roller revolves on a pin on one end of the lever 65 which is pivoted on a stud *d* projecting from the closed end 45. The other end of this lever is fastened to the gate or valve 47; whereby every revolution of the driving wheel of the machine will move the cam from the highest part of groove 63 to the lowest part and consequently cause the valve 47 to alternately close and open the two sides of the stalk receiving chamber at every revolution of the driving wheel.

In the bottom of the receptacles the aprons or belts 66 pass around rollers, the forward one of which is driven by the chain 67, Fig. 3, from the pulleys on the transverse shaft 10. These belts form a large part of the floor of the stalk receiving chambers and the upper ply moves toward the back of the machine. To bring the middle portions or bodies of the corn stalks in a compact shock against the rear end of the receiving chamber, the levers 68 are used and secured to the ends of the horizontal shaft 69 and are vibrated back and forth by the eccentric 50 through its connecting rod 70 and the short lever 71 pivoted to said rod 70 which lever 71 is secured to the shaft 69.

Near the upper end of the lever 68, at 72 are hinged the fingers 73 which are arranged so as to swing forward on their joint 72 but will not go beyond a right angle to the side wall 42 of the stalk receiving chamber, for as they straighten out the projection 74 on the hinge will come in contact with the face of the lever 68 while they are free to fold to the rear and then pass the corn stalks in their forward swing. When straightened out said fingers will nearly reach the sides of the inner wedge-shaped division 43. To allow these fingers to pass into the stalk receiving chamber there are openings or slots 75 in the sides and end of this chamber.

The retaining latches 76 are hinged at 77 to the side walls 42 and are allowed to rise and fall but are kept in position by hasps 78. Now every revolution of the driving wheel of the machine will cause the levers 68 to rock (the eccentric 50 being secured to the shaft of the driving wheel) and when said levers move toward the front of the machine the fingers 73 come in contact with the latches 76, and, as they are hinged, they bend back and leave the stalk receiving chamber clear; but when the levers move toward the back of the machine the latches in the same manner straighten them out so that any corn stalks that are in this chamber are carried to the back end thereof by the fingers.

In the shock forming chamber 40, there are partitions 79 which are mounted to slide back and forth therein and there is secured to said movable front-end partitions 79 Figs. 4, 18,

19 and 20 near the middle thereof the longitudinally projecting bars 80 which slide through the transverse frame 81; and said frame 81 consisting of two parallel strips properly connected together is hinged at 83 to the inside wall of the shock forming chamber adjacent to the rear end thereof and at the other side of the rear end is held in place by the latch 84 which latch is fastened to the outside wall of the shock forming chamber.

Followers 85 Figs. 1 and 2 keep a continued pressure against the sides of the projecting bars 80 by means of the spring 86 bearing upon the inner ends of said followers. When the movable end 79 has been pushed down to the rear frame 81, the stalks are in position to be discharged and by raising said frame 81 out of the latch 84 the end pieces and all, can be swung around on the hinges 83 so as to leave the end of the shock forming chamber entirely open.

It has hereinbefore been described how the corn stalks reach the top of the elevator and in falling reach the position of the stalk 41 in Fig. 4. After it has descended a very little lower the tassel end is arrested by the top of the movable end partition 79 and the butt continues to fall until it reaches the floor 44, and if the butt does not fall in this position the moving belt or apron 66 will carry it in proper position so that the stalk will be standing as shown at 87. For about every six or seven stalks that are cut the levers 68 move and the fingers 73 press the stalks that have fallen into the stalk-receiving chamber and also force the movable end 79 of said chamber back a distance equal to the space the stalks occupy. The valve 47 is then shifted by the action of the devices described to direct the stalks into the other side of the stalk-receiving chamber, wherein the same operation is repeated and so on alternately first in one side and then in the other side and the stalks are pressed together therein, the spring 86 at the rear end causing friction enough on the projecting bars 80 to have a compact shock, and when said shock is large enough the tops are drawn together and tied by the attendant.

The end frame 81 is then unlatched and swung around on its hinges thereby opening the rear end of the shock-forming chamber. To remove the shock from said chamber the rods 88 are used. Their forward end 89 is bent around to about a right angle to form a hook and the rear end has a handle 90 and on its under side a spur 91 to drive in the ground to anchor said rods. They have also a button 92, secured to the outside thereof adjacent to their hooked fore-arm, and said button can slide freely in a groove 93 formed on the sides of the shocking and stalk-receiving chambers, said grooves extending their entire length. To support the rear end of the rods 88 there is a hook 94 at the rear corners of the shock chamber. The closed front end of the stalk-receiving chamber 45 has horizontal slots cut

therein to allow the bent end of the rods 88 to pass through a short distance and have them out of the way of falling stalks.

To remove the shock from the machine the latter is stopped at the proper place. The door of the rear receptacle is then opened and the handle end of the rods 88 is released from the hooks 94 and drawn back until the bent ends reaches the shock. (The button 92 sliding in the groove 93 supports the bent ends.) The operator then drops the spurred ends to the ground and with his foot presses it into the ground. The machine is then started and pulls away from the shock leaving it standing, upon the ground. The spurs of the bent rods are then pulled out of the ground by the handles 90, the button 92 is inserted into the groove 93 and the pieces slid back to their places. The transverse frame is then swung back to its place and latched and the movable end 79 is pushed up to front of the shocking chamber and all is now ready to cut and form another shock. The form of the shock produced by this machine is such that it will stand firmly upon the ground and having a clear opening in the middle it will facilitate the drying of the corn.

In front of the reel bent bars of iron 110 are secured to the frame to assist in supporting and protecting the reel from collision. The tongue 111 is hinged to the frame at 114 and has the side brace 115.

The driver's seat 112 is located above the tongue and the foot board 113 rests upon the top of said tongue.

The front of the machine is supported on the caster wheel 116 that is connected with said machine by the iron straps 117 on the sides of the longitudinal timbers 100; and said straps are hinged at their rear ends to the timber 100 by the pin or bolt 118, and they are held in place in front by the vertical iron bars 119 between which they can move freely up and down but not sidewise. To the upper ends of the iron bars 119 the rear arm of the lever 120 is hinged at 121. The side of the lever bears against a standard 122 that rests at one end on the edge of one of the iron straps 117, and is connected to the lever 120 by a pin 123 passing through them.

To raise the front end of the machine the lever 120 is pressed down and secured by the chain 124.

The back of the machine is supported by the ground or driving wheel 25 and the platform supporting wheel 125. The wheel 125 is mounted on a stud secured to the lower corner of the bell-crank lever 126 which lever has one end pivoted at 127 to the longitudinal timber 96. This end of the machine is raised or lowered by moving the upper end of this lever back or forth and is secured in position by bolts and clamp 128.

The ground or driving wheel 25 is hung in an iron frame 129 which has its fulcrum on the shaft 22 of the spur pinion 23. The rear

end of this frame is connected with a light bar or windlass 130 by a chain 35. Said windlass bar has near the middle of its length a ratchet wheel 131 secured thereto with a pawl pivoted to the frame to engage in its teeth and hold it in position. At the outer end of said bar there is another ratchet wheel 132 fastened thereto with a lever 133 carrying a pawl, and this lever can swing freely on the bar. To raise the machine the lever 133 is rocked back and forth to wind the chain on the bar 130 and to lower it the pawl fixed to the frame of the machine is released by exerting sufficient pressure on the lever 133, when it is thrown back as far as it will go, to allow this pawl to be lifted off its ratchet. Then the lever is allowed to go forward against its stop 134 and this is repeated until the machine is as low as wanted.

Having now fully described my invention, I claim—

1. In a harvester the combination of a series of acute angle cutting sections, a connecting bar set back from the inner angle of said sections, and a continuous edge guard free of projecting fingers and having its front edge substantially in line with the apex of said inner angle and beveled under from said edge substantially as and for the purpose described.

2. In a corn harvester the combination of an elevator with a shock receiving chamber having sides 42, with a stationary front wall 45, the movable partition 79 at the rear and between them the A shaped division 43 substantially as and for the purpose described.

3. In a corn harvester the combination of an elevator with a shock receiving chamber having sides 42 with a stationary front wall 45, a hinged gate at the rear end, a movable partition 79 between the front wall and rear end gate, and the A shaped division 43 in said chamber substantially as and for the purpose described.

4. In a corn harvester the combination of an elevator with the shock receiving chamber having the stationary front wall 45, a hinged gate at the rear end, a movable partition 79, and its rearwardly projecting bars 80 frictionally retained the removable transverse bar 81 as described, and in said shock chamber the A shaped partition 43, substantially as and for the purpose described.

5. In a corn harvester the combination of the stationary walls of the stalk receiving chamber with the longitudinal partition midway between its sides and the leaf or board 47 hinged above the apex of said partition and means substantially as set forth to swing it over each half of said chamber, substantially as and for the purpose described.

6. In a corn harvester the combination of the stationary walls of the stalk receiving chamber, the longitudinal A shaped partition therein midway between its sides and the floor of said chamber consisting of belts 66,

with means as described to deliver the stalks in the stalk-chamber substantially as and for the purpose described.

7. In a corn harvester the combination of the stationary front walls of a shock receiving chamber the movable rear partition, the side walls having slots therein, with the packers 73 and operating levers 68 to which the packers are hinged, substantially as and for the purpose described.

8. In a corn harvester the combination of a receiving chamber having its side walls provided with horizontal grooves, with rods 88 having a spur at one end, a hook at the other and a button adjacent to said hook to engage with said grooves substantially as and for the purpose described.

9. In a corn harvester the combination of an elevator, a shock receiving chamber having a stationary front wall, the longitudinal A shaped partition in said chamber and the valve 47 hinged above said partition, with a lever secured to said valve at one end and carrying a roller at the opposite end, a grooved cam receiving said roller, an eccentric upon the driving-wheel axle and rods and levers connecting said eccentric with the operating cam substantially as described.

10. In a corn harvester the combination of a shock receiving chamber having a gate at the rear end, sliding followers 85 in said gate, springs against the inner ends of said followers, a movable partition 79 having rearwardly projecting bars 80 extending through the gate against which friction is produced by the sliding followers, substantially as and for the purpose described.

11. As an improvement in machines for harvesting corn and forming a shock therefrom, a machine supported on wheels and having two stalk-receiving chambers separated by a partition having an acute angular ridge and sides divergent toward its base, the front wall of said chamber being stationary and the rear

wall hinged; whereby the stalks received in said chambers are retained with their lower ends spread into two parts and their heads united into one bundle, the latter in position to be tied and the shock discharged with said lower ends spread into two parts substantially as described.

12. In a corn harvester the combination of a shock receiving chamber having the side walls 42 with a longitudinal fixed partition between said walls and the movable transverse partition 79, in the rear of said receiving chamber substantially as described.

13. In a corn harvester, a shocking chamber 40 having stationary side walls, a hinged gate at the rear end and a transverse partition in the front thereof and means substantially as described to move said partition back as the corn-stalks are fed in and accumulate in said chamber substantially as set forth.

14. In combination with a corn harvester, the rods 88 having a hook at one end and a spur at the other end substantially as described whereby the hooked end is adapted to embrace the corn-shock, and the spurred end is adapted to be driven in the ground to remove the shock from the machine when the latter is moved forward substantially as described.

15. In a corn harvester the combination of a shocking chamber having slotted side-walls, a movable partition between said walls, rods having hooks at one end projecting through the slots of said walls to engage the shock and having spurs at the other end adapted to be forced into the ground, whereby the shock will be removed from the harvester when the latter is advanced, substantially as described.

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

MCCLINTOCK YOUNG.

Witnesses:

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N. B. HARDING.