No. 879,403. PATENTED FEB. 18, 1908.

J. McCORMICK.

AUTOMATIC BUNDLE SHOCKER FOR BINDERS.

APPLICATION FILED APR. 18, 1903.

5 SHEETS—SHEET 1.

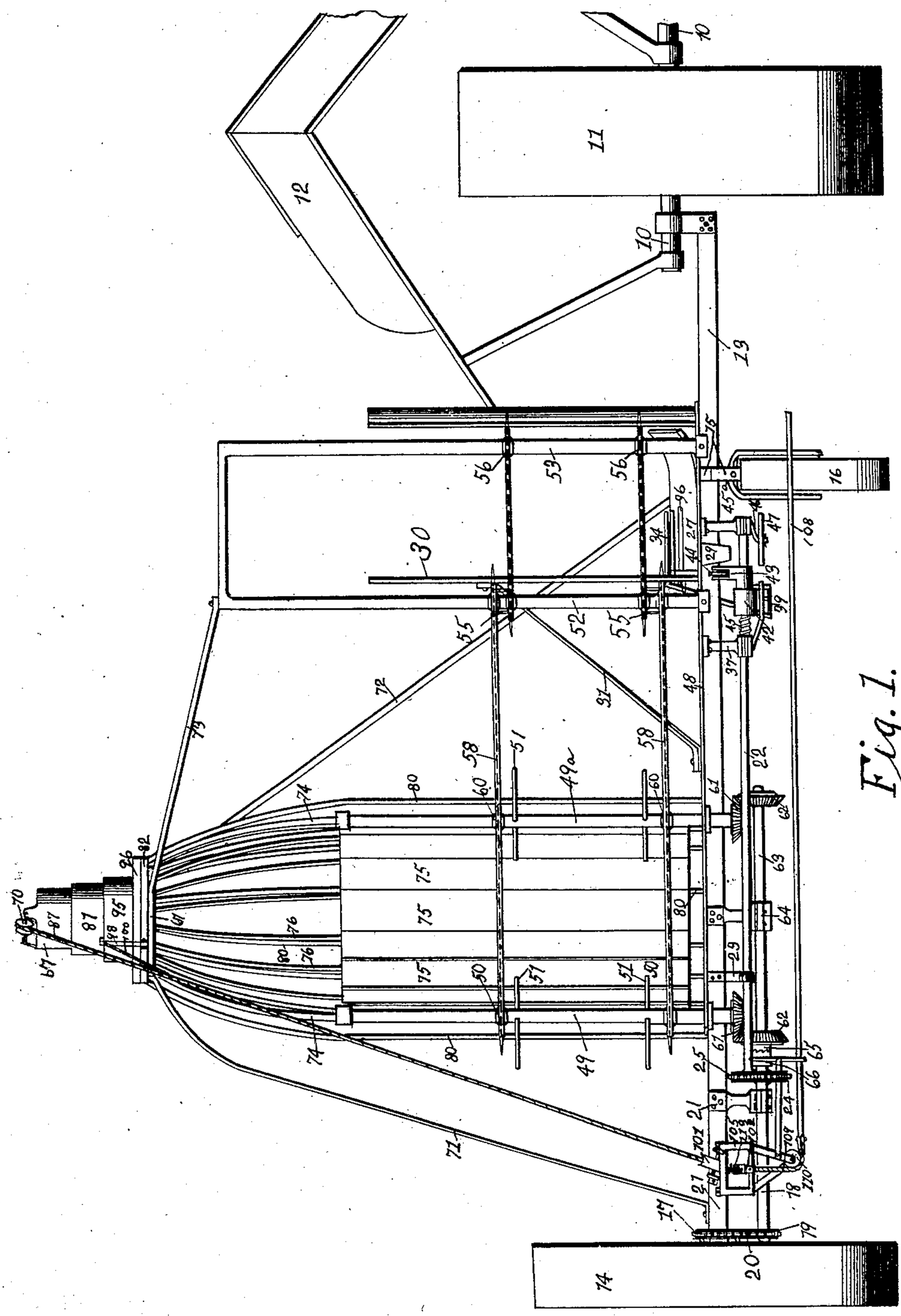

Fig. 1.

Witnesses.
K. K. Keffer.
A. G. Hagner.

Inventor, J. McCormick.
by Orwig & Lane Attorneys.

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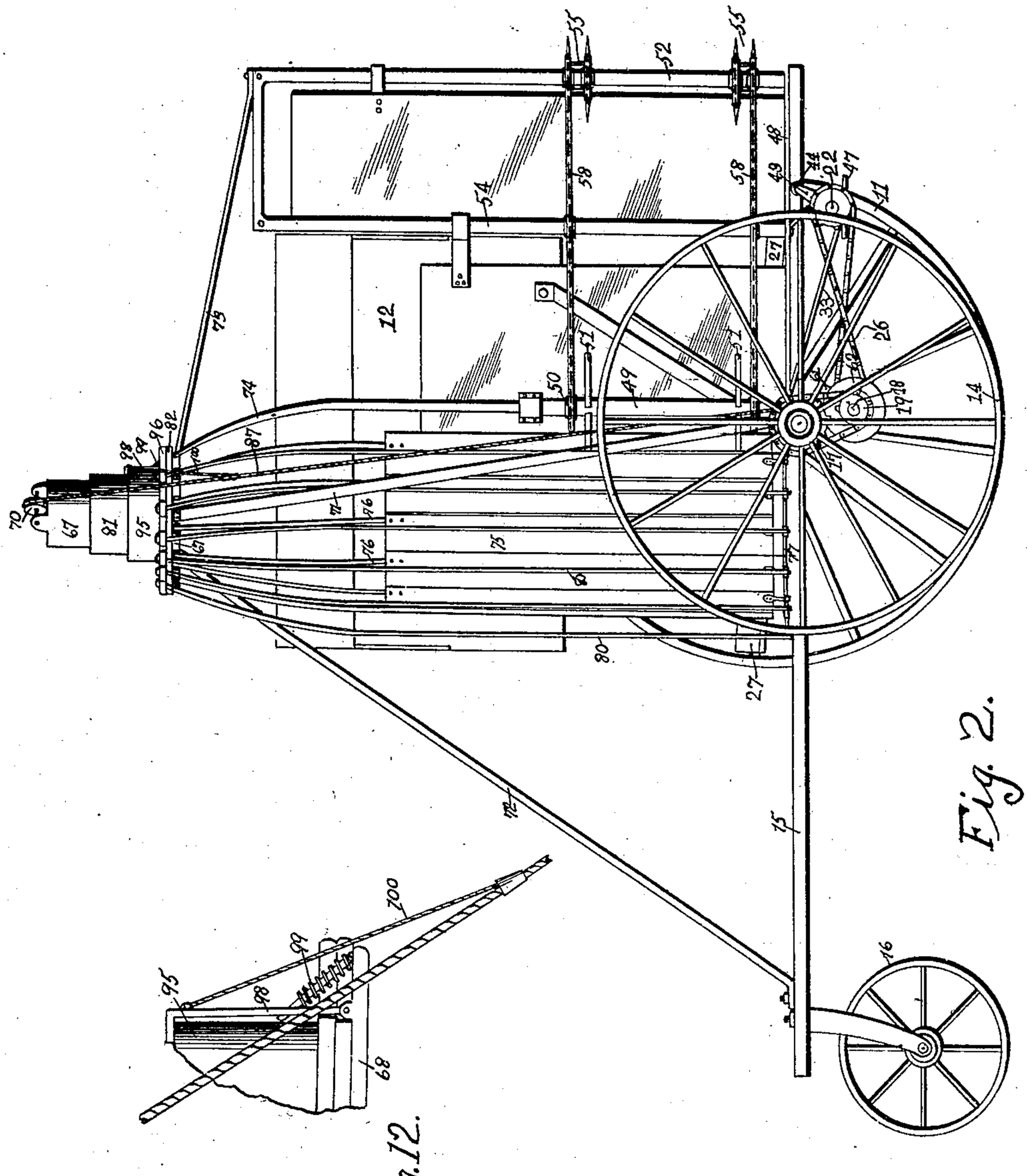

Fig. 2.

Fig. 12.

Witnesses.
K. K. Keffer.
A. D. Hagner.

Inventor, J. McCormick.
by Orwig & Lane Attorneys.

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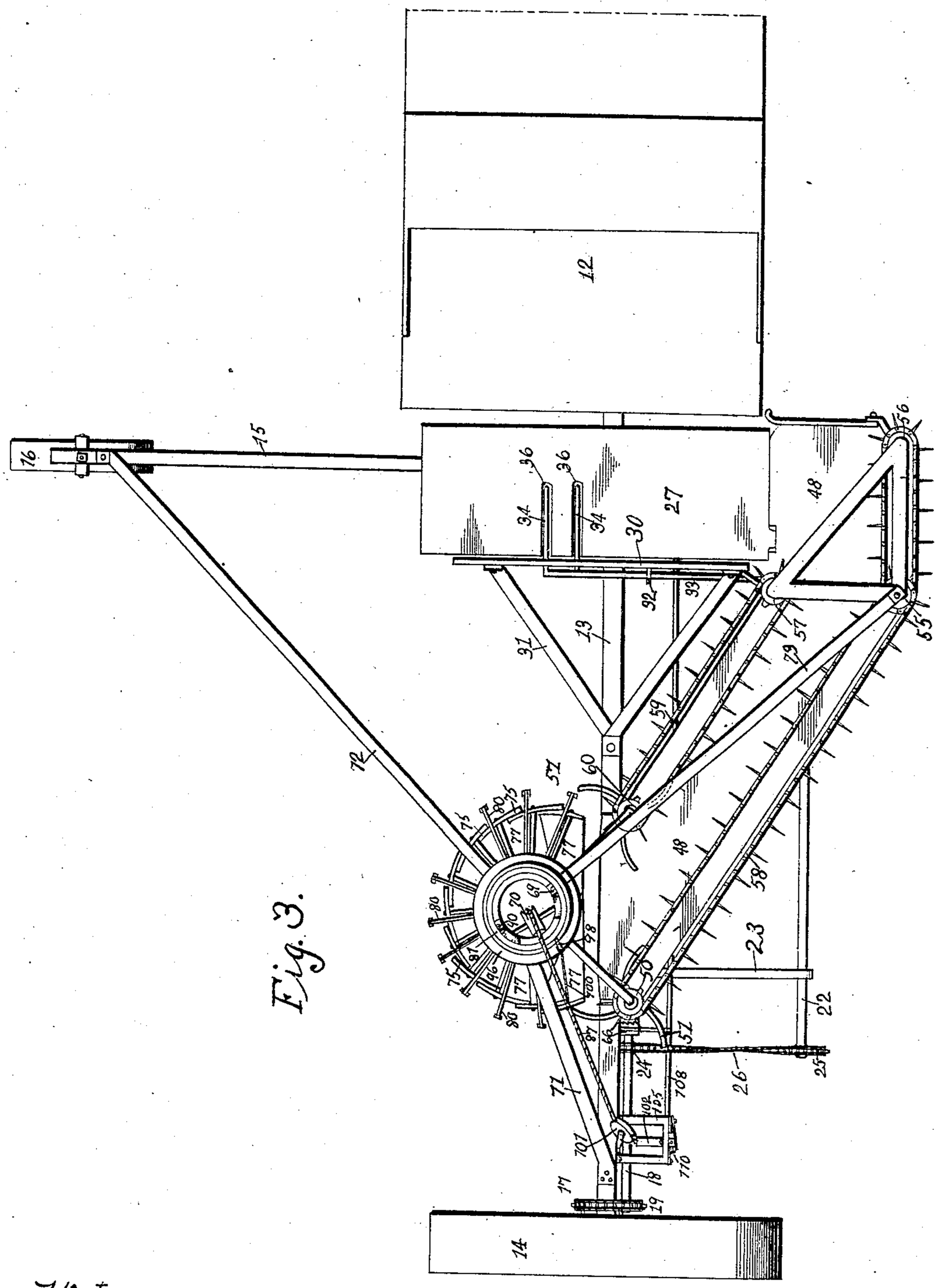

Fig. 3.

Witnesses.
K. K. Keffer.
A. G. Heagney.

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5 SHEETS—SHEET 4.

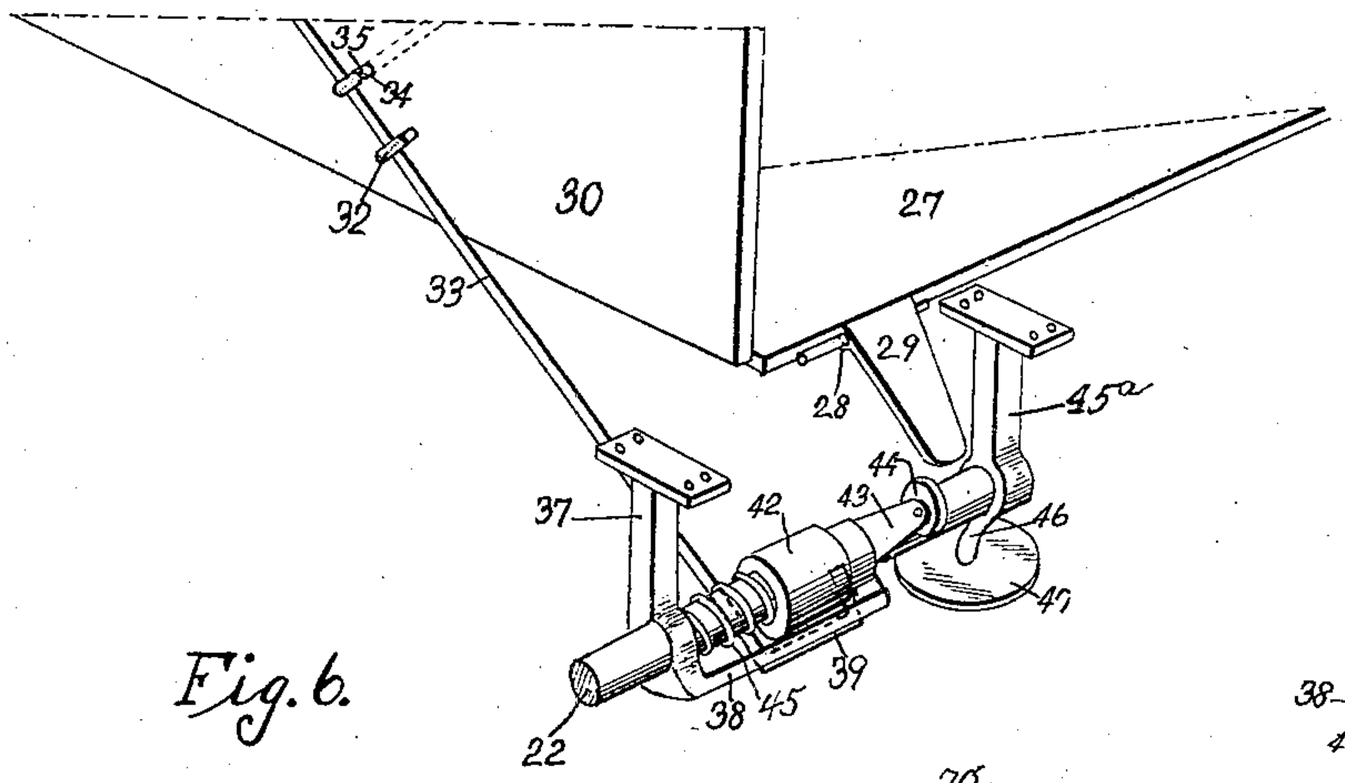

Fig. 6.

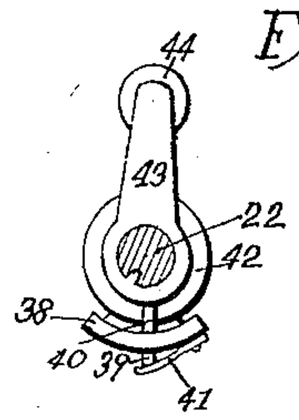

Fig. 7.

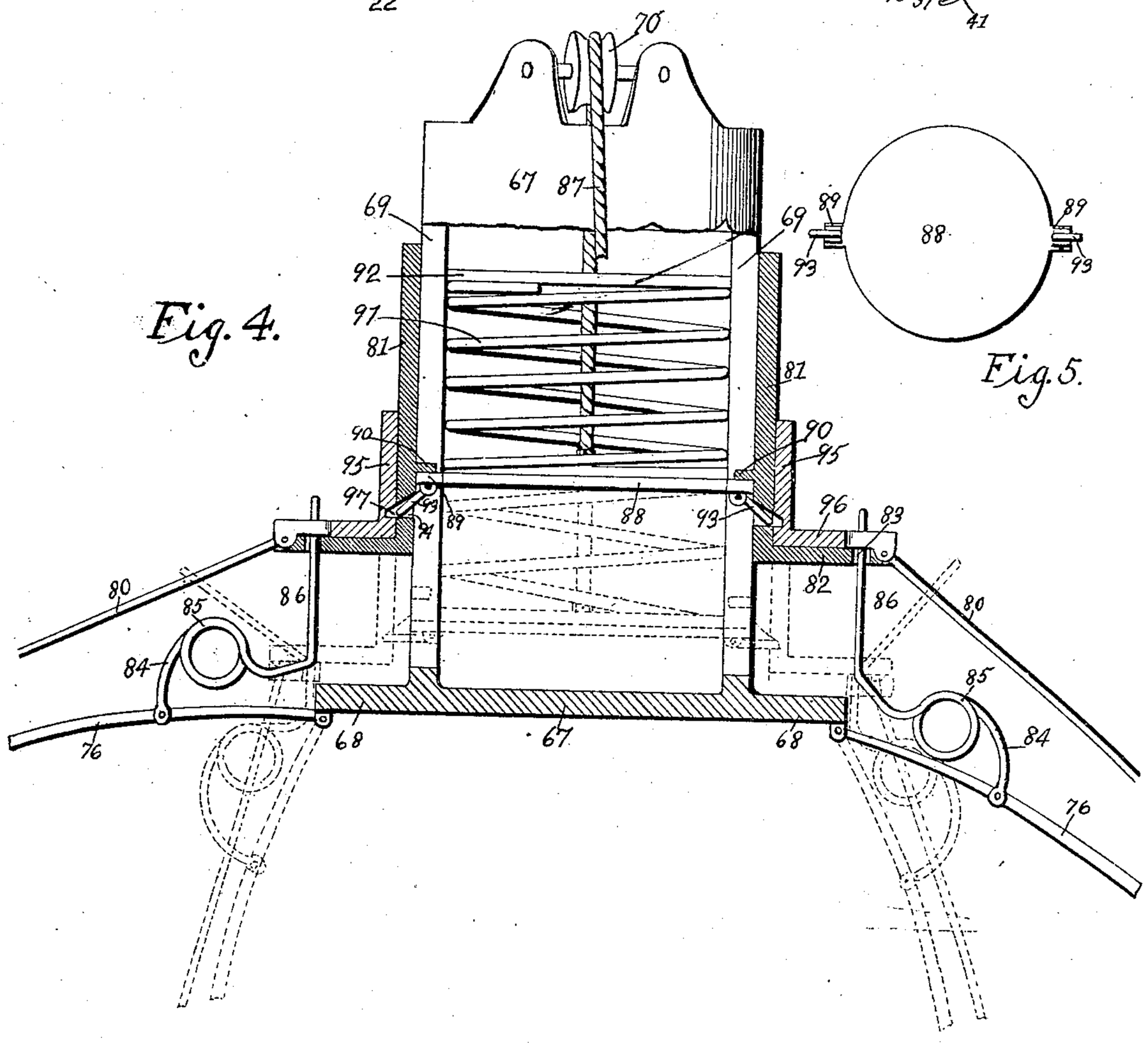

Fig. 4.

Fig. 5.

Witnesses.
K. K. Keffer.
A. G. Hague.

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5 SHEETS—SHEET 5.

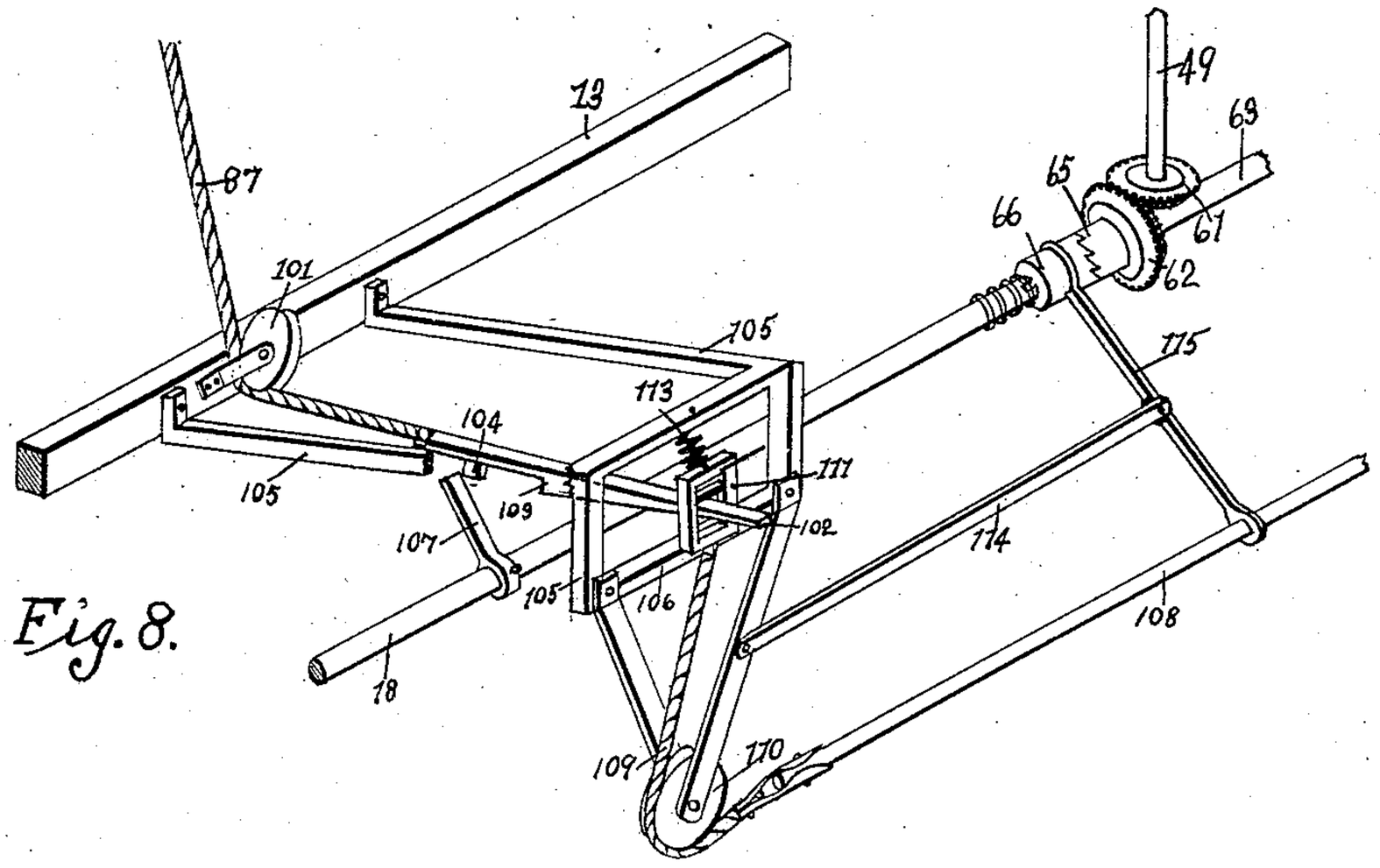

Fig. 8.

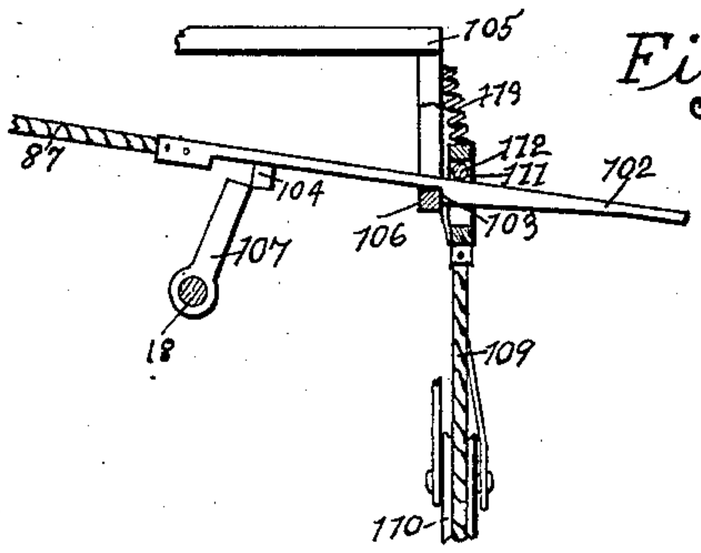

Fig. 9.

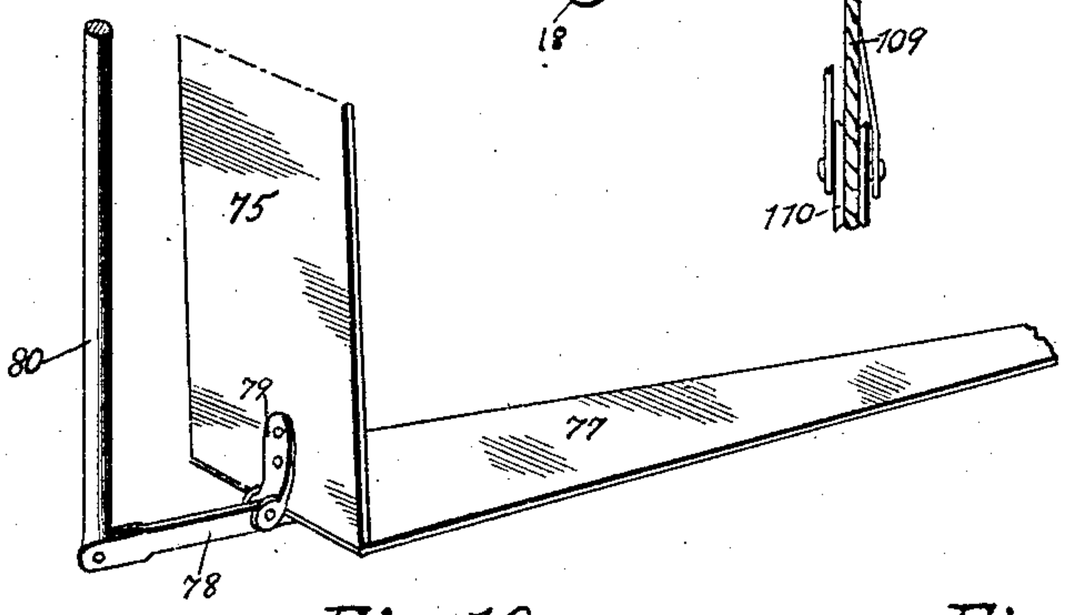

Fig. 10.

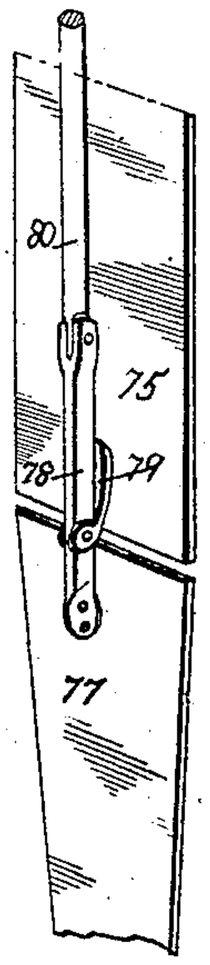

Fig. 11.

Witnesses.
K. K. Keffer.
A. G. Haggard.

Inventor, J. McCormick.
by Orwig & Lane Attorneys.

UNITED STATES PATENT OFFICE.

JOHN McCORMICK, OF DES MOINES, IOWA.

AUTOMATIC BUNDLE-SHOCKER FOR BINDERS.

No. 879,403. Specification of Letters Patent. Patented Feb. 18, 1908.

Application filed April 18, 1903. Serial No. 153,258.

To all whom it may concern:

Be it known that I, JOHN MCCORMICK, a citizen of the United States, residing at Des Moines, in the county of Polk and State of Iowa, have invented certain new and useful Improvements in an Automatic Bundle-Shocker for Binders, of which the following is a specification.

The objects of my invention are to provide a machine of simple, durable and inexpensive construction, designed to be used in the nature of an attachment, to be fitted to a grain binder, and when advanced over a field of grain with a binder, to receive the bundles from the binder, forcing them one by one into a shock former having expansible sides, and when a sufficient number of bundles have been received into the shock former, to deposit the shock thus formed, in an upright position on the ground surface.

My invention consists in certain details, in the construction, arrangement and combination of the various parts of the device, whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims and illustrated in the accompanying drawings, in which—

Figure 1 shows a front elevation of the complete machine, showing a portion of a binder, to illustrate the position of my attachment relative to the binder. Fig. 2 shows a side elevation of my complete device, also showing the binder supporting wheel. Fig. 3 shows a top or plan view of my machine and also illustrating a portion of a binder adjacent thereto. Fig. 4 shows an enlarged detail view partly in vertical section illustrating the top of the shock former and also showing two of the shock forming staves connected therewith, and illustrated in their extended or open position, also by dotted lines showing the said staves in their closed position and the position that the other parts would assume when the staves are closed. Fig. 5 shows an inverted plan view of the plate at the top of the shock former. Fig. 6 shows an enlarged detail perspective view illustrating the means for automatically elevating and releasing the bundle receiving platform. Fig. 7 shows a vertical sectional view through the shaft of the bundle elevating and releasing mechanism illustrating the device for tripping the said mechanism. Fig 8 shows an enlarged detail perspective view, illustrating the mechanism for opening the shock former, for holding it in its open position and for releasing it so that it may automatically close, and also illustrating the mechanism by which the device for advancing bundles to the shock former is held inoperative during the time that the shock former is in its open position. Fig. 9 shows a detail view illustrating the position of the hook and adjacent parts when in position for holding the shock former open. Fig. 10 shows an enlarged detail perspective view of the bottom portion of one of the shock forming staves and a part of the hinged bottom therefor, showing the botom in its closed position. Fig. 11 is a like view showing the bottom piece in its open position. Fig. 12 shows a detail view of a portion of the top of the shock former illustrating the latch device whereby the shock former is held in its closed position against the pressure of the weight of the grain in the shock former.

Referring to the accompanying drawings, I have used the reference numeral 10 to indicate the axle of a binder and 11 the traction wheel thereof. 12 indicates the table of the binder upon which the bundles or sheaves are bound. These parts are illustrated and described only to show the relative position of my improved shock forming device to the binder.

My improved machine comprises a stationary axle 13 supported at one end upon the axle 10 and having at its outer end a supporting wheel 14. This axle is designed to carry the weight of my improved shock former. The machine is braced against tilting movement by means of an arm 15 which extends rearwardly from the inner end of the axle 13 and is provided with a caster wheel 16 at its rear end.

All of the automatically operating parts of the machine receive their motion from the supporting wheel 14. This wheel 14 is provided with a sprocket wheel 17 fixed thereto and arranged to drive shaft 18 by means of the sprocket wheel 19 on said shaft, and the sprocket chain 20 connecting said sprocket wheels. This shaft 18 is supported in the brackets 21 which are connected with the axle 13, and the said shaft 18 is therefore constantly rotated during the advance of the machine. A second shaft 22 is mounted in suitable supports some distance in advance of shaft 18, and said shaft 22 is supported in the brackets 23 which are fixed at their rear ends to the axle 13. These shafts 18 and 22 are connected by means of the sprocket

wheels 24 and 25 fixed respectively to shafts 18 and 22, and which are connected by the sprocket chain 26 so that the shaft 22 is also continuously rotated during the advance of the machine. The said chain 26 is crossed to thereby rotate the shaft 22 in an opposite direction from the shaft 18.

I shall next describe the platform upon which the bundles are first received from the binder, and the means, automatically released by the weight of the bundle, for elevating said bundle and standing in an upright position in engagement with the bundle carriers. This mechanism comprises a shock receiving platform 27 hinged at 28 to swing in a vertical plane. It is positioned to receive the bundles discharged from the deck of the binder, and on its forward end beyond its hinge is a downwardly and forwardly extending arm 29. The numeral 30 indicates an upright guide at the outer edge of the platform 27, extended parallel with said platform and supported by the braces 31 which are fixed to axle 13. On the outer surface of this guide 30 is a bearing 32 in which the trip rod 33 is rotatably mounted. Fixed to one end of the trip rod 33 are the arms 34 passed through slots 35 in the guide 30 and standing a short distance above the platform 27 when said platform is in its lowered position. The said platform is provided with slots 36 through which the said arms 34 may pass when the platform is being elevated.

The numeral 37 indicates a bracket attached to a stationary support and having bearings in its lower end to support shaft 22. Connected with this bracket 37 is a lateral extension 38 through which the trip rod 33 is passed. On the lower end of the rod 33 is a lateral extension 39 and an upturned end 40, the said extension 39 is normally parallel with the shaft 22 and the upturned end at right angles thereto.

The numeral 41 indicates a spring fixed to the under side of the extension 38 and normally holding the upturned end 40 upwardly. By this means the arms 34 on the other end of the trip rod 33 are normally held in a horizontal position and when a bundle of grain strikes them, the rod 33 will be rocked sufficiently to draw the upturned end 40 downwardly a slight distance against the pressure of spring 41.

The numeral 42 indicates a hub slidingly mounted upon and fixed against rotation relative to the shaft 22. Connected with this hub 42 is an arm 43 having a roller 44 at its outer end.

The numeral 45 indicates an extensile coil spring wound upon shaft 22 with one end bearing against bracket 37 and its other end against hub 42, normally forcing the arm 43 to position where it will stand in the path of the arm 29 of the tilting bundle platform, so that, as the shaft 22 is rotated, the roller 44 will strike upon arm 29 and elevate platform 27, and when the roller has passed beyond the arm 29 the platform 27 will drop by gravity to its former position. The upturned end 40 of the trip rod 33 is designed to engage the end of hub 42 opposite from spring 45 so that the said spring may only throw the arm 43 into the path of arm 29 when the trip rod has been actuated, and as soon as the hub 42 has been moved against the pressure of its spring so that its arm 43 will be out of the path of the arm 29, the said upturned end 40 of the trip rod will hold it in its inoperative position.

I have provided means for automatically moving the hub 42 against the pressure of its spring as soon as it has operated the tilting platform 27 as follows: The numeral 45[a] indicates a bracket fixed to a stationary support and forming a bearing for the shaft 22. An extension 46 on its lower end supports a horizontal disk 47, which disk has its edge arranged in the path of the arm 43 so that after arm 43 has tilted the platform 27 said arm will, at the lower portion of its movement, strike the edge of roller 47 and thus the hub 42 will be moved longitudinally upon its shaft until the upturned end 40 of the trip rod 33 will engage the hub and hold it in position out of the path of the arm 29.

I shall next describe the means by which the bundles are held in an upright position and are carried to the shock former.

The reference numeral 48 indicates a stationary platform in front of the tilting platform 27. This platform 48 projects rearwardly and toward the outer end of the machine frame. At the rear end of the platform 48 are two upright shafts 49 and 49[a], each shaft having thereon two sprocket wheels, those on shaft 49 indicated by the numeral 50 and those on shaft 49[a] by the numeral 60, each shaft also having two sets of curved packing arms 51. At the front of the machine frame is a stationary upright shaft 52 and at one side of the shaft 52 is a stationary upright shaft 53, and immediately in the rear of the shaft 52 is a stationary upright shaft 54. On the said shaft 52 are two pairs of sprocket wheels 55, loosely mounted, and on the shaft 53 are two sprocket wheels 56, loosely mounted. On the shaft 54 are two sprocket wheels 57, loosely mounted. These sprocket wheels are connected with each other as follows: Two sprocket chains 58 are provided to connect the sprocket wheels 50 and 55. Two similar chains 59 connect the sprocket wheels 57 with the sprocket wheels 60 on the shaft 49[a]. The said shafts 49 and 49[a] impart motion to each of the bundle carrying sprocket chains just described, and I provide for driving these shafts 49 and 49[a] as follows: On the lower end of each of said shafts is a beveled

gear wheel 61 meshed with a mating beveled gear wheel 62 fixed to a shaft 63. This shaft 63 has its bearings in a bracket 64 and stands directly in line with shaft 18. The numeral 65 indicates a ratchet faced hub fixed to the end of shaft 63, and the reference numeral 66 indicates a mating ratchet faced hub slidingly mounted on the end of shaft 18 adjacent to the ratchet faced hub 65. Obviously when these clutch devices are in engagement the shaft 63 will be driven and when the clutch devices are separated, the shaft 63 will be inoperative. In this connection it is to be noted that it is desirable to have the bundle conveying chains held inoperative during the time that the shock former is open, and I have provided means, which will be hereinafter described, whereby the sliding clutch member 66 will be moved from engagement with the mating clutch 65 when the shock former is open.

I shall next describe the construction and operation of the shock former.

The reference numeral 67 indicates the head of the shock former which is preferably cylindrical in form and is provided with a horizontal outwardly projecting flange 68 at its bottom, two vertical slots 69 at diametrically opposite sides, and a pulley 70 is supported in its top. This head 67 is supported in an elevated position immediately in the rear of platform 48 by means of three braces 71, 72 and 73, and also by extensions 74 at the tops of the shafts 49 and 49[a], so that it is firmly fixed in this position. The shock former proper is composed of a series of staves 75. At the tops of the staves are the arms 76 which are pivoted to the rim 68. These staves are of such shape that when in their closed position the edge of one will overlap the adjacent edge of its neighbor as clearly illustrated in Fig. 3. On the bottom of each stave is a bottom piece 77 fixed to a lever 78 which is fulcrumed in a bracket 79 on the bottom of the stave. At the outer end of the lever 78 is a rod 80 which, when forced downwardly, will elevate the bottom piece 77 to a horizontal position. The means for operating these rods will be hereinafter described. The means for elevating the staves is clearly illustrated in Fig. 4 and consists of a collar 81 slidingly mounted upon the exterior of the head 67 and having a flange 82 at its lower end, the periphery of which projects beyond the edge of flange 68. The said flange 82 is provided with a series of openings 83. Connected with each of the rods 76 is a spring rod 84 having a coil 85 and a straight end 86 arranged at or near a right angle to the rod 76. This straight end 86 is passed through the opening 83. Assuming the staves to be in their closed position, and the collar 81 to be in its lowered position, as illustrated in dotted lines in Fig. 4, then obviously when the collar is raised the ends 86 will be moved inwardly and the staves will be elevated. The coil 85 serves to provide a limited amount of elasticity in the parts 84 so that the staves will raise gradually and without jarring the machine. To provide means for raising this collar 81 when it is desired to dump the shock former, I have provided a rope 87 passed over the pulley 70, and having one end attached to a disk 88 having the lugs 89 at its ends, said lugs entering the slots 69 in the head 67, and, formed on the interior of the collar 81, is an annular rim 90 above the disk 88. This disk 88 is normally held to its downward limit by means of an extensile coil spring 91 interposed between a cross piece 92 on the interior of the head 67, and the top of the disk 88 so that said spring normally holds the disk to its downward limit of movement.

I have provided means whereby the disk 88 will force the collar 81 downwardly with it as follows: Pivoted to the under surface of each of the lugs 89 is a pawl 93 and, formed in the collar 81, below the annular rim 90 are the notches 94 to receive said pawls so that, when the disk 88 is forced downwardly by its spring, the pawls 94 will enter said notches and force the collar 81 downwardly with it. Said pawls 93 and notches 94 are so arranged that, when the disk 88 is at its lower limit of movement, the pawls project through the notches and the disk passes some distance beneath the annular rim 90. Hence when the disk is elevated, it moves upwardly a short distance before engaging the rim 90 and elevating the collar 81, for purposes hereinafter made clear. I have also provided means for actuating the bottom pieces 77 as follows: Slidingly mounted on the exterior of collar 81 is a collar 95 having a flange 96 to which the rods 80 are pivoted. This collar 95 also has notches 97 in line with the notches 94 and designed to receive the pawls 93 when in their extended position.

It will be noted by referring to Fig. 3 of the drawings that the staves form a complete circle except at the front where the bundles are admitted into the shock former. Assuming that the shock former is empty and in its closed position, and assuming that bundles are being forced into it, as before described, it is obvious that as the number of bundles in the shock former increases, the staves of the former will operate against the pressure of the spring rods 84, as the coils 85 thereof permit the said staves to yield. Then when the rope 87 is pulled upwardly against the pressure of spring 91 the first effect of such movement will be to withdraw the pawls 93 from the notches 97, thus permitting the collar 95 to move upwardly. As soon as the collar is released by said pawls, it will quickly fly upwardly a short distance on account of the pressure of the shock in a downward direction upon the bottom pieces

of the staves, so that the bottom of the staves will drop first. Then the disk 88 will strike upon the rim 90 and thereby elevate the collar 81, and when the said collar 81 is elevated it draws the arms 86 inwardly as before explained, and elevates the staves. The rope is pulled upon until the rim 82 strikes the rim 96, and it is held for a short space of time until the shock is dropped into the field and is cleared from the shock former. Then when the rope 87 is released the spring 91 forces the disk 88 downwardly thus forcing the pawls 93 outwardly into the notches 94 and 97. Hence both the collars 81 and 95 will be forced downwardly and the shock former will again assume its closed position. By this means just described, the bottom of the shock former is released first and the sides are drawn upwardly immediately thereafter. In this connection I have provided means whereby the weight of the shock in the shock former will not operate to force the disk 88 upwardly against the pressure of its spring as follows: Referring to Fig. 12, I have used the reference numeral 98 to indicate a hook pivoted to a flange 68 and designed to engage the top of collar 95. This latch is normally held in position to engage the collar 95 by means of the spring actuated bar 99, and a short rope 100 is attached to the rope 87 and also to the hook 98. These parts are so arranged that when the shock former is in its closed position the spring 99 will force the latch 98 into engagement with the top of the collar 95, thus locking the disk 88 at its downward limit of movement. Then when the rope 87 is pulled, the first effect of such pull will be to draw the hook 98 outwardly, thus releasing it from engagement with the collar 95 and permitting said collar to be forced upwardly by the pressure of the shock upon the bottoms of the staves.

I shall next describe the means by which the rope 87 is pulled downwardly as required to open the shock former. This rope passes downwardly over a direction pulley 101 fixed to axle 13, and its lower end is attached to a bar 102 having a shoulder 103 and a lug 104 on its under surface.

The reference numeral 105 indicates a frame supported by the axle 13 and having a square piece 106 designed to be engaged by shoulder 103 when the bar 102 is in position required for holding the shock former in its open position. Hence in order to draw the rope 87 to the position required for opening the shock former, it is only necessary to force the bar 102 forwardly until its shoulder 103 engages the square bar 106. I have provided means for thus forcing the bar forwardly as follows: Mounted upon shaft 18 is an arm 107 rotated constantly by the shaft 18 directly beneath the lug 104, so that, when the bar 102 is forced downwardly, it will stand in the path of the arm 107, and hence the said arm will force the bar 102 forwardly far enough, so that its shoulder 103 will engage the cross piece 106, hence in order to pull the rope 87, it is only necessary to draw the bar 102 downwardly, and I have provided for doing this as follows: The numeral 108 indicates a rod having a rope 109 attached to its end and passed over a direction pulley 110 supported by frame 105. The opposite end of the rope 109 is attached to a slotted bar 111 having an anti-friction roller 112 at the top of its slot. This bar 111 is supported by means of a contractile spring 113 attached to frame 105, and the said spring normally holds the bar 111 in such position that the bar 102 is above the path of the arm 107. However, by pulling upon the rod 108 the slotted bar 111 together with bar 102 may be drawn downwardly against the resiliency of spring 113 to bring said bar in the path of the arm 107. It is intended that this rod 108 shall be pulled by the operator of the binder whenever he perceives it desirable to open the shock former. It is desirable that the bundle advancing mechanism and the packing arms should remain inoperative during such time as the shock former is in its open position, and to this end I have provided the following device. The numeral 114 indicates a brace fixed at one end to the frame of pulley 110 and pivotally supporting at its other end a lever 115. One end of this lever 115 is attached to the rod 108 and the other end is fixed to the sliding clutch member 66 so that a pull upon rod 108 will throw the sliding clutch member 66 out of engagement with its mating clutch member 65, and thus stop the rotation of shaft 63. Then when the operator releases the rod 108 the clutch device will be thrown into gear and the bar 102 will be elevated by means of spring 113 out of engagement with the frame 106, so that the shock former may close automatically as before described.

In practical operation and assuming further that a bundle is dropped from the binder, it will first strike upon the arms 34 and its weight on said arms will operate the trip mechanism as required to throw the arm 43 into the path of the extension 29, thus elevating the platform 27 and standing the bundle in an upright position upon the platform 48 and in engagement with the toothed sprocket chains 58. The platform 29 immediately drops to its horizontal position, as before explained, readily to receive a succeeding bundle. The toothed sprocket chains 58 and 59 carry the bundle rearwardly while still maintaining its upright position until it reaches the packing arms 51, which packing arms will force the bundle into the closed shock former. As the successive bundles are forced into the shock former, the pressure of the bundles against the staves of

the shock former will cause the shock former to expand against the pressure of the springs 85, and this will continue until the operator pulls upon the rod 108. When he does this the grain advancing and packing mechanism is temporarily stopped as before explained and the rope 87 is pulled by power from the shaft 18, and the bottom of the shock former is first released and immediately following this the staves of the shock former are all raised. This movement compresses the tops of the bundles together and permits the butts of the bundles to expand, so that, when the shock is dropped to the ground, which is only a short distance beneath the shock former, the shock will stand in an upright position. As soon as the shock former has cleared the shock, the operator releases the rod 108, and as before explained the shock former closes and the bundle carrying mechanism is again automatically operated.

Having thus described my invention, what I claim and desire to secure by Letters Patent of the United States, therefor is—

1. In a machine of the class described, a tilting platform to receive bundles of grain, an arm arranged for rotation in a path adjacent to the platform and means controlled by the dropping of a bundle on the platform for moving said arm to position where it will tilt the platform and means for automatically returning the arm after the platform has been tilted.

2. In a machine of the class described, a tilting platform to receive bundles of grain, a sleeve arranged for sliding movement, means controlled by the dropping of a bundle upon the platform for moving said sleeve, an arm rotated in a path adjacent to the platform and positioned to be moved by said sliding sleeve to position where it will tilt the platform, a spring normally tending to move the arm to position for tilting the platform, and a stationary guide arranged in the path of the rotating arm to return the arm to its normal position after the platform has been tilted.

3. In a device of the class described, the combination of a hinged platform having an arm thereon, a rotary shaft, an arm slidingly mounted on the shaft, a spring normally holding the arm on the shaft in position where it will engage the arm on the platform, and a trip rod having arms above the platform and having an extension to engage the sliding arm and hold it in position out of the path of the said arm on the platform.

4. In a device of the class described, the combination of a hinged platform having an arm thereon, a rotary shaft, an arm slidingly mounted on the shaft, a spring normally holding the arm on the shaft in position where it will engage the arm on the platform, a trip rod having arms above the platform and having an extension to engage the sliding arm and hold it in position out of the path of the said arm on the platform, and a guide roller arranged in position to engage the arm on the shaft and slide it to position where it will not engage the arm on the platform after the said arm on the shaft has passed beyond and out of contact with the arm on the platform.

5. In a device of the class described, the combination of a hinged platform having an arm thereon, a rotary shaft adjacent to said arm, a hub slidingly mounted on said shaft and rotating therewith, an arm fixed to said hub, a roller in the end of the arm to engage the arm on the platform, a spring normally holding the hub to position where the arm on the hub will engage the arm on the platform, a spring actuated trip rod, an extension on one end of the trip rod normally holding the hub in position where the arm on the hub will not engage the arm on the platform, an arm on the trip rod above the platform, and a guide roller in position to engage the arm on the hub and force it to position out of the path in which the arm on the platform stands, substantially as and for the purposes stated.

6. In a machine of the class described, the combination of a shock former arranged in an upright position and open at its front, and a bundle advancing mechanism comprising a series of toothed sprocket chains to engage opposite sides of a bundle and carry the bundle toward the open front of the shock former, packing arms to receive the bundles from the toothed chains and to force them into the shock former, means for operating said grain advancing mechanism when the machine is moved over the ground surface and manually operated means for throwing this grain advancing mechanism in and out of gear.

7. In a machine of the class described, the combination of a shock former arranged in an upright position and having an open front, grain advancing mechanism comprising toothed sprocket chains to engage opposite sides of a bundle and carry it to the shock former, packing arms receiving the bundle from the toothed sprocket chains and forcing it into the shock former, a shaft for driving the sprocket chains and packing arms, a clutch connected with said shaft, a second shaft rotated upon the advance of the machine, a mating clutch on the second shaft and manually operated means whereby these clutches may be thrown into or out of engagement with each other.

8. In a machine of the class described, a shock former comprising a stationary top, a series of staves hinged to the top, a bottom piece hinged to each stave, means for releasing the bottom pieces so that they may swing downwardly, and means for elevating the staves.

9. In a machine of the class described, a

shock former comprising a stationary top, a series of staves hinged to the top, a bottom piece hinged to each stave, means for releasing the bottom pieces so that they may swing downwardly, means for elevating the staves, and spring actuated means for raising all of the bottom pieces at the same time.

10. In a machine of the class described, a shock former comprising a stationary top, a series of staves hinged to the top, a yielding pressure device for each stave normally holding it inwardly, and means for jointly swinging all of the staves outwardly.

11. In a machine of the class described, a shock former comprising a stationary top, a series of staves hinged to the top, yielding pressure devices normally holding the staves to their inner limit of movement and means for jointly swinging all of the staves outwardly.

12. In a machine of the class described, a shock former comprising a stationary top, a series of staves hinged to the top, yielding pressure devices normally holding the staves to their inner limit of movement, means for jointly swinging all of the staves outwardly and a bottom piece hinged to each stave and means for releasing all of the bottom pieces at the same time.

13. In a machine of the class described, a shock former comprising a stationary cylindrical top, a number of staves hinged to the stationary top, an arm fixed to each stave, a sliding top on the stationary top to guide the stave arms, a bottom piece hinged to each stave, a second sliding top mounted on the first, rods connecting the second sliding top and the hinged bottom pieces, spring actuated mechanism normally forcing the first and second sliding tops in position to hold the staves and bottoms in a closed position, and means for elevating the said sliding tops against the spring pressure to open the shock former.

14. In a shock former, the combination of a cylindrical top, staves hinged to the cylindrical top, a sliding collar on the cylindrical top having a flange at its lower end provided with a number of openings, a rod connected with each stave and made of spring metal, a coil in said rod and a straight arm on each rod passed through one of the holes in the said rim, spring actuated mechanism for normally forcing the sliding collar downwardly, and means whereby the sliding collar may be elevated.

15. In a shock former, the combination of a cylindrical top, staves hinged to the cylindrical top, a sliding collar on the cylindrical top having a flange at its lower end provided with a number of openings, a rod connected with each stave, made of spring metal, a coil in said rod and a straight arm on each rod passed through one of the holes in the said rim, spring actuated mechanism for normally forcing the sliding collar downwardly, and means whereby the sliding collar may be elevated, a second sliding collar on the first, rods hinged to the second sliding collar, a bottom piece hinged to the lower end of each stave and having said rods attached thereto, a disk slidingly mounted in the cylindrical top, a spring normally holding said disk downwardly, pawls on the disk to engage both the sliding collars upon a downward movement to thereby move them jointly in a downward direction, and an internal rim on the first sliding collar to be engaged by said disk in its upward movement after the pawls have been withdrawn from engagement with the outer sliding collar, substantially as and for the purposes stated.

16. In a device of the class described, a shock former comprising in combination a stationary cylindrical top, a number of staves hinged to said top, a spring rod 84 attached to each stave, a coil 85 in each rod and an arm 86 on each rod, a bottom piece hinged to the lower end of each stave projecting inwardly, an arm fixed to each bottom piece projecting outwardly, a rod 80 hinged to each of said arms, a collar 81 having a flange 82 provided with openings 83 slidingly mounted on the said stationary top, said openings 83 receiving the arms 86, said sliding collar 81 also having openings 94, and a rim 90 above said openings, a sliding collar 95 on the exterior of collar 81 provided with notches 97 in line with openings 94 and also having a flange to which the rods 80 are pivoted, a disk 88 slidingly mounted in the stationary top, pawls 93 on said disk to pass through the openings 94 into the notches 97, a spring normally holding the disk 88 to its downward limit of movement, and a rope attached to said disk for elevating it, substantially as and for the purposes stated.

17. In a device of the class described, a shock former comprising in combination a stationary cylindrical top, a number of staves hinged to said top, a spring rod 84 attached to each stave, a coil 85 in each rod and an arm 86 on each rod, a bottom piece hinged to the lower end of each stave projecting inwardly, an arm fixed to each bottom piece projecting outwardly, a rod 80 hinged to each of said arms, a collar 81 having a flange 82 provided with openings 83 slidingly mounted on the said stationary top, said openings 83 receiving the arms 86, said sliding collar 81 also having openings 94, and a rim 90 above said openings, a sliding collar 95 on the exterior of collar 81 provided with notches 97 in line with openings 94, and also having a flange to which the rods 80 are pivoted, a disk 88 slidingly mounted in the stationary top, pawls 93 on said disk to pass through the openings 94 into the notches 97, a spring normally holding the disk 88 to its downward limit of movement, and a rope 87 attached to said disk for elevating it, and a spring

actuated latch pivoted to the stationary top to engage the top of the sliding collar 95 to hold it to its downward limit of movement and a rope 100 attached to the rope 87 and to the spring actuated latch so arranged that the first effect of a pull upon said rope 87 will be to release the latch before the disk 88 is elevated.

18. In a device of the class described, the combination of a shock former normally closed by spring pressure a rope, means for automatically drawing said rope as required to open the shock former comprising a sliding bar connected with the rope, a lug on the sliding bar, an arm rotated during the advance of the machine, manually operated means for forcing the sliding bar into position where the rotating arm may engage the lug thereof, and a shoulder on the sliding bar to engage a stationary support to hold the sliding bar in position with the shock former open.

19. In a device of the class described, the combination of a rope, a shock former opened by a pull upon said rope, a bar1 02 having a shoulder 103 and a lug 104 attached to said rope, a rotating shaft, an arm 107 on the rotating shaft to engage said lug 104, a stationary bar 106 to be engaged by the shoulder 103, a slotted bar 111 to receive the bar 102, a spring for normally holding the slotted bar to an elevated position out of the path of arm 107, and a rope attached to the slotted bar whereby it may be drawn downwardly into the path of the arm 107, for the purposes stated.

20. In a device of the class described, the combination of a rope, a shock former opened by a pull upon said rope, a bar 102 having a shoulder 103 and a lug 104 attached to said rope, a rotating shaft, an arm 107 on the rotating shaft to engage said lug 104, a stationary bar 106 to be engaged by the shoulder 103, a slotted bar 111 to receive the bar 102, a spring for normally holding the slotted bar to an elevated position out of the path of arm 107, and a rope attached to the slotted bar whereby it may be drawn downwardly into the path of the arm 107, a shaft 63, a clutch member thereon, bundle advancing mechanism driven by the shaft 63, a sliding spring actuated clutch member on the shaft to which the arm 107 is attached, a lever connected with the sliding clutch member at one end, and a rod 108 connected with the other end of said lever and also with the rope to which bar 111 is attached, said parts being so arranged that a pull upon the rod 108 will first stop the rotation of shaft 63 by disconnecting the clutch members, and will then throw the bar 102 into the path of the rotating arm.

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Witnesses:
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