W. A. LEITCH.

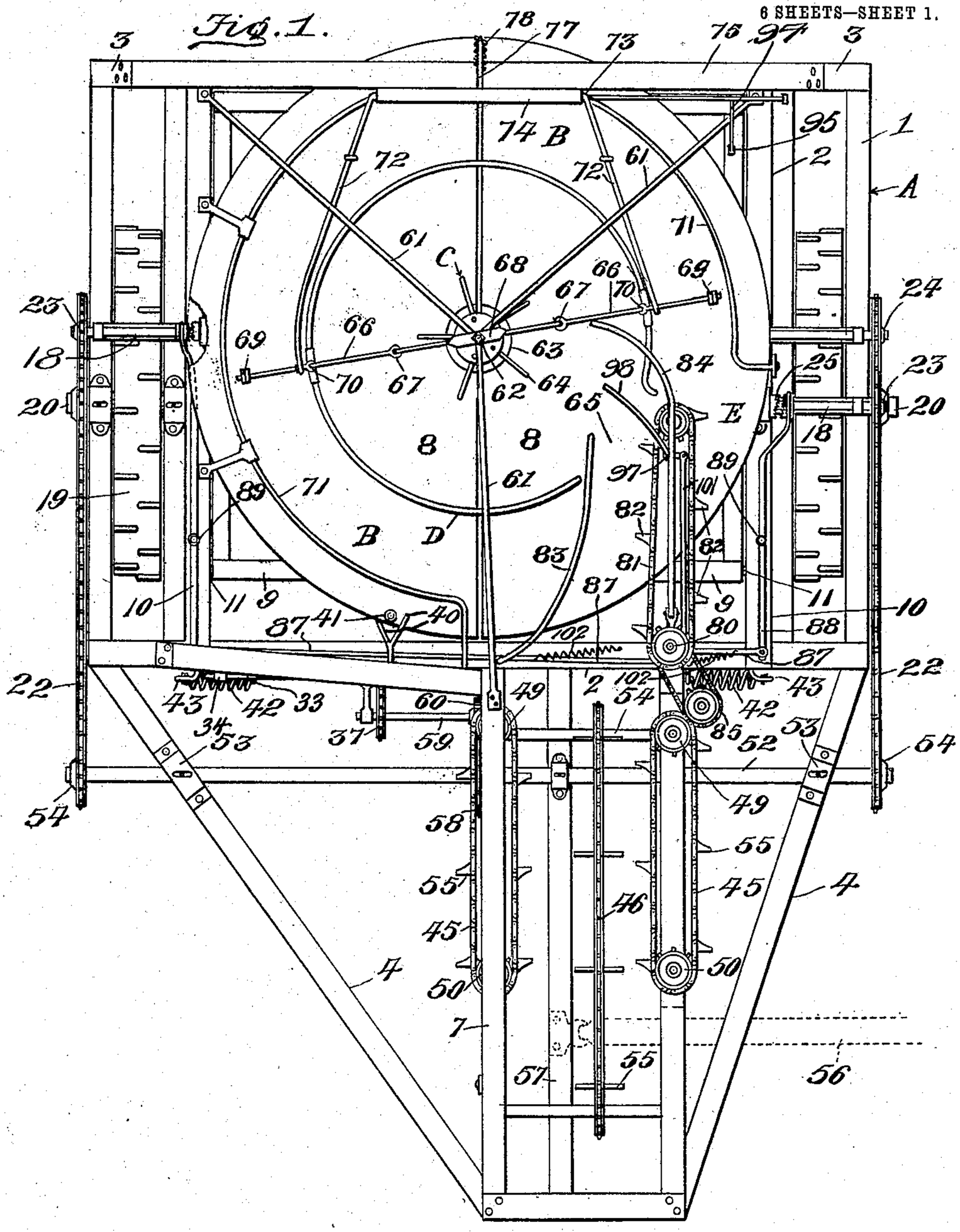
GRAIN SHOCKING MACHINE.

APPLICATION FILED MAY 16, 1907.

900,559. Patented Oct. 6, 1908.

6 SHEETS—SHEET 1.

Fig. 1.



Witnesses

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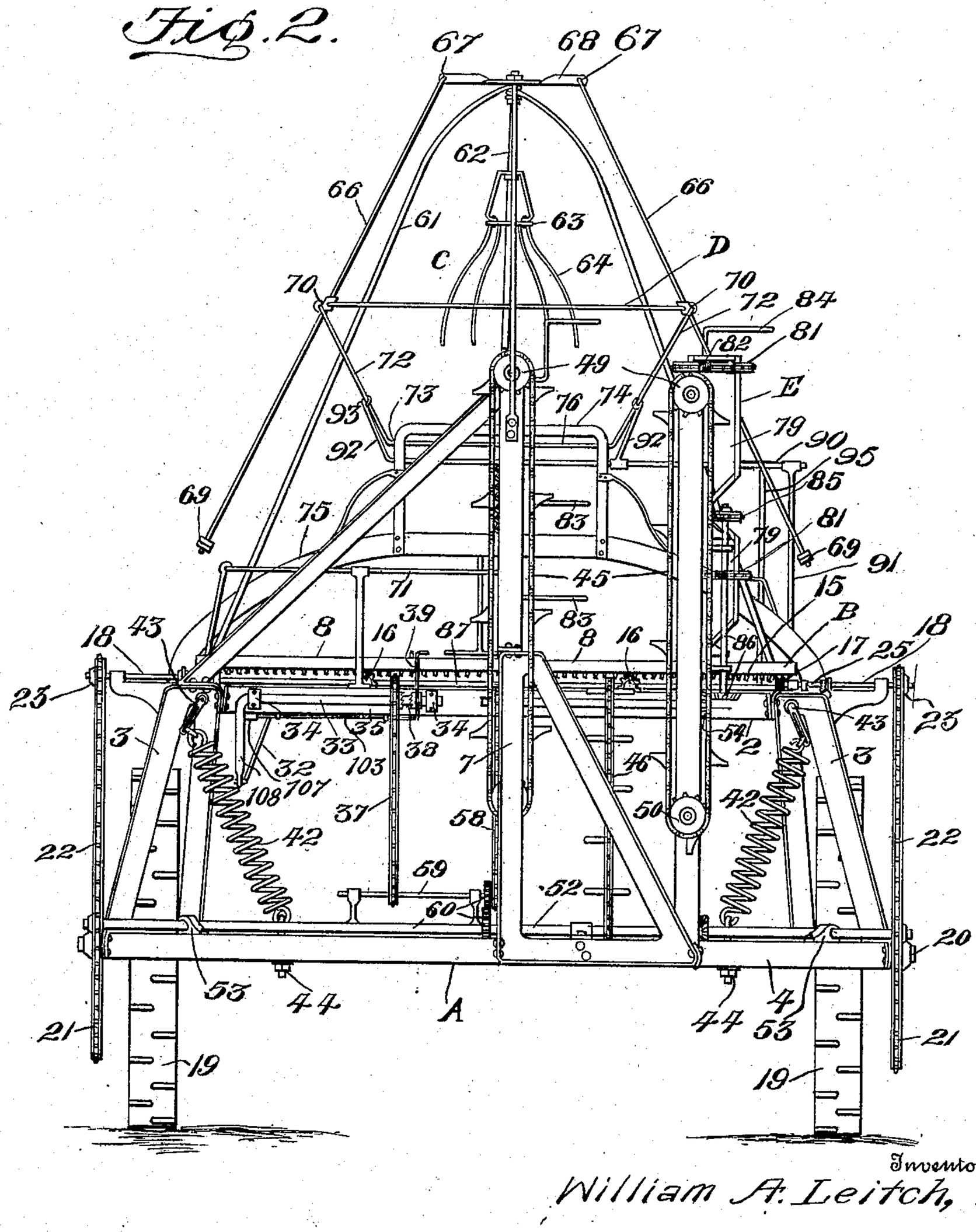
6 SHEETS—SHEET 2.

Fig. 2.



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6 SHEETS—SHEET 3.

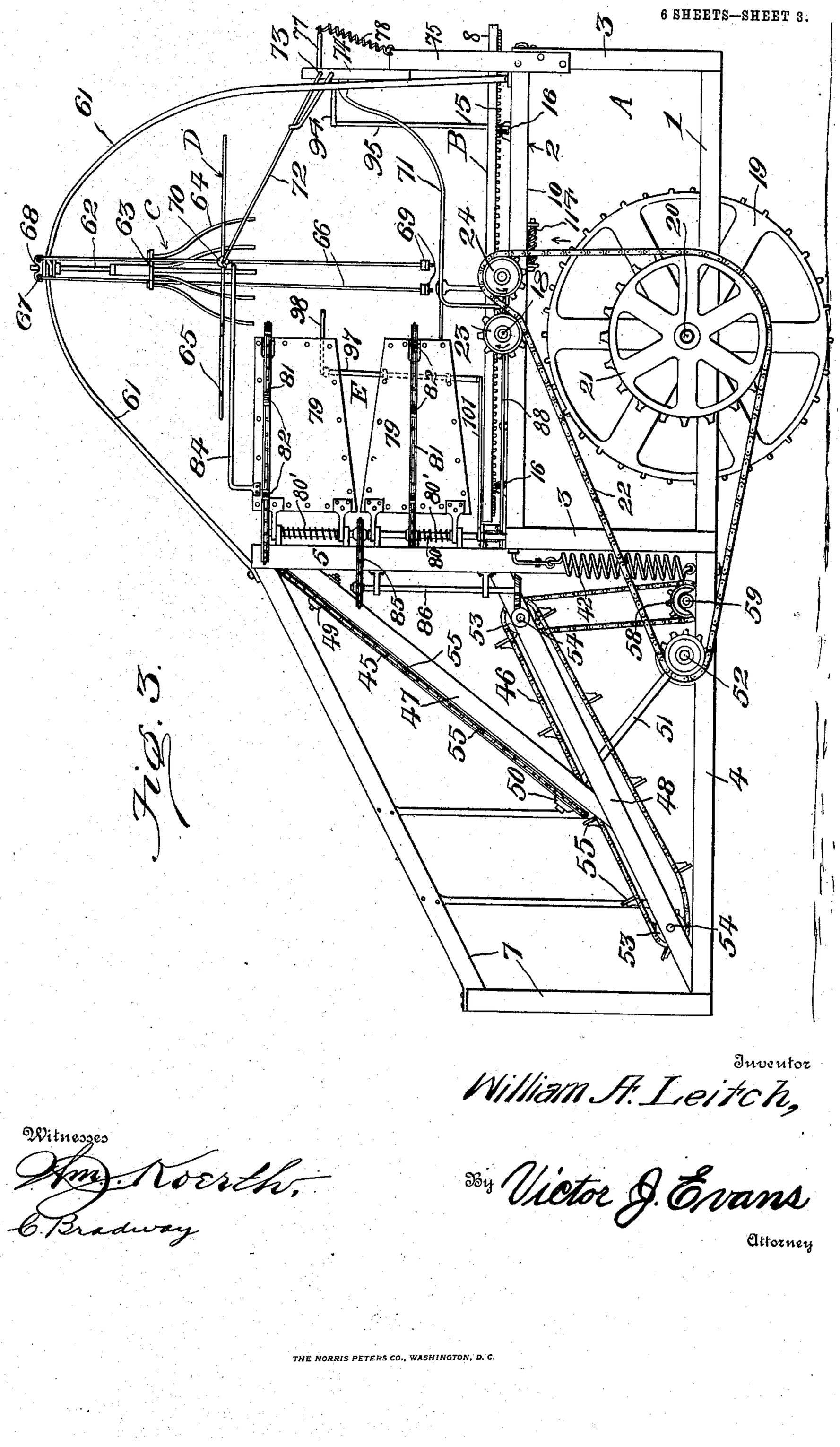

Fig. 3.

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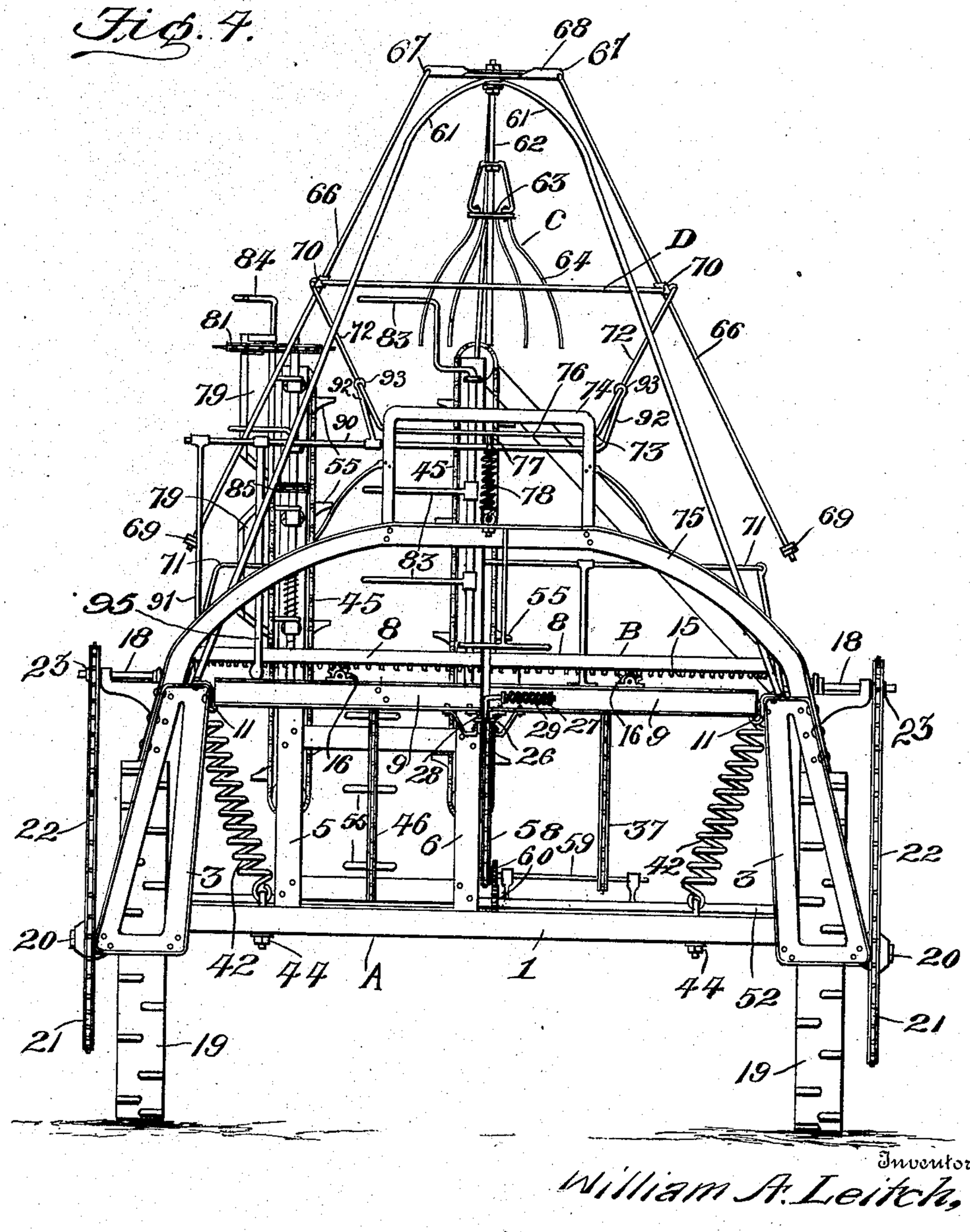
6 SHEETS—SHEET 4.

Fig. 4.



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6 SHEETS—SHEET 5.

Fig. 6.

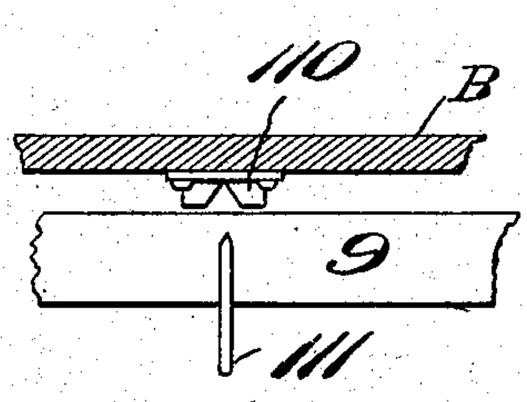


Fig. 7.

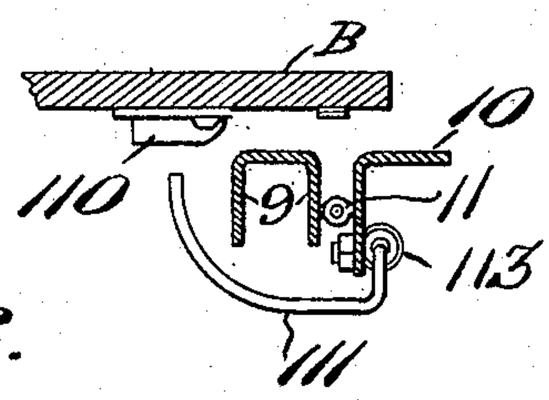


Fig. 8.

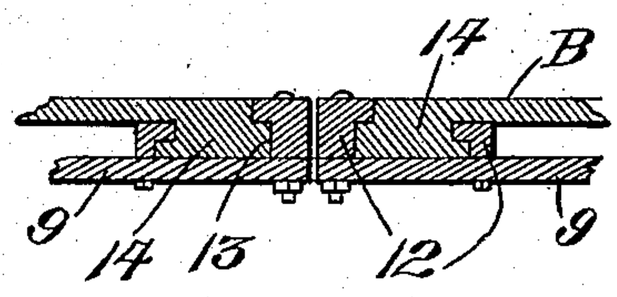


Fig. 5.

Fig. 9

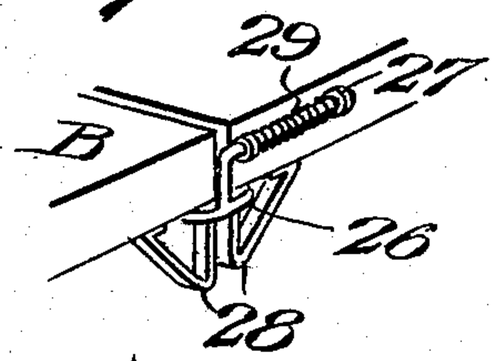


Fig. 10.

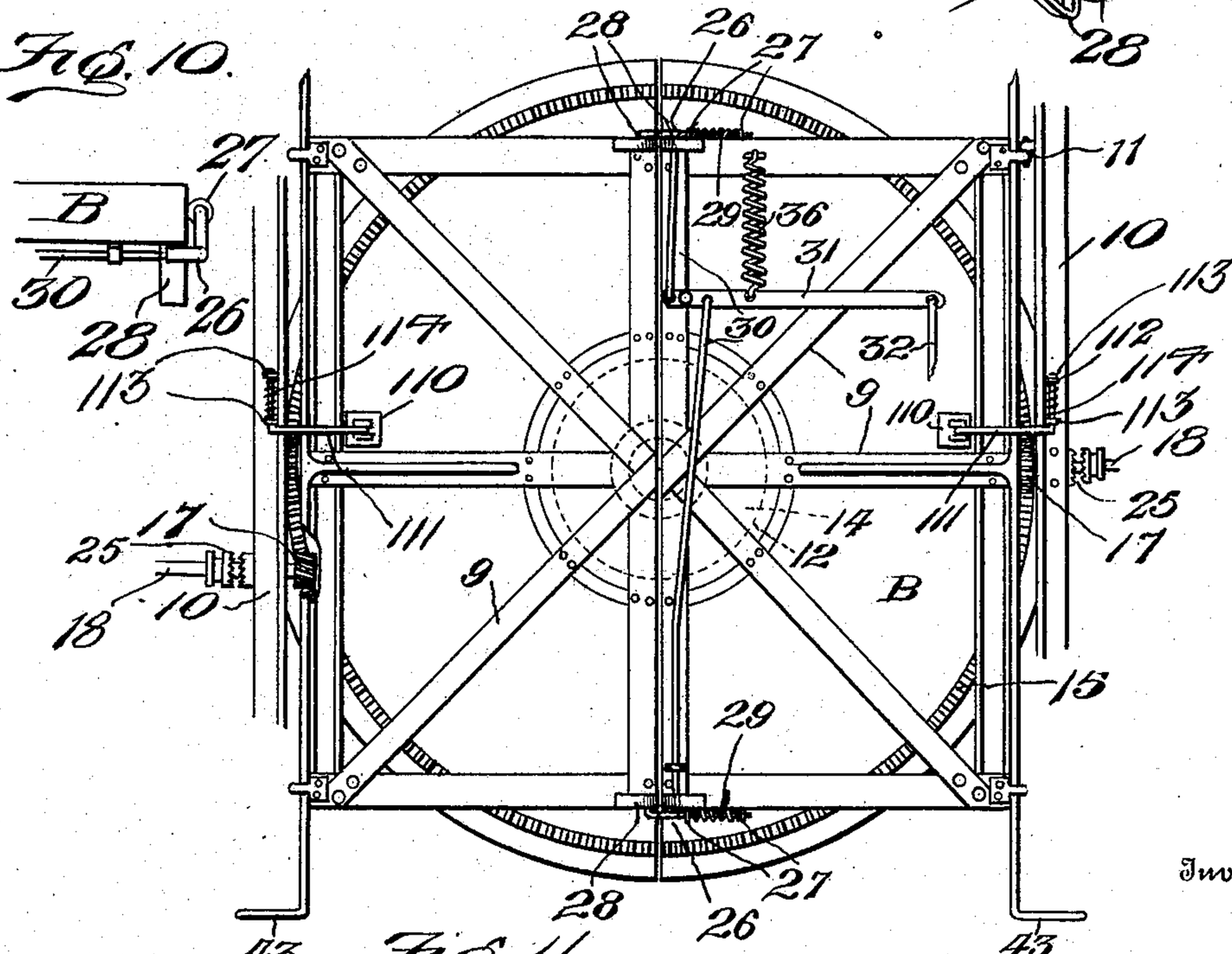
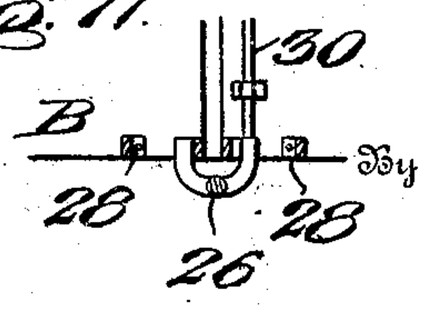


Fig. 11.



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6 SHEETS—SHEET 6.

Fig. 12.

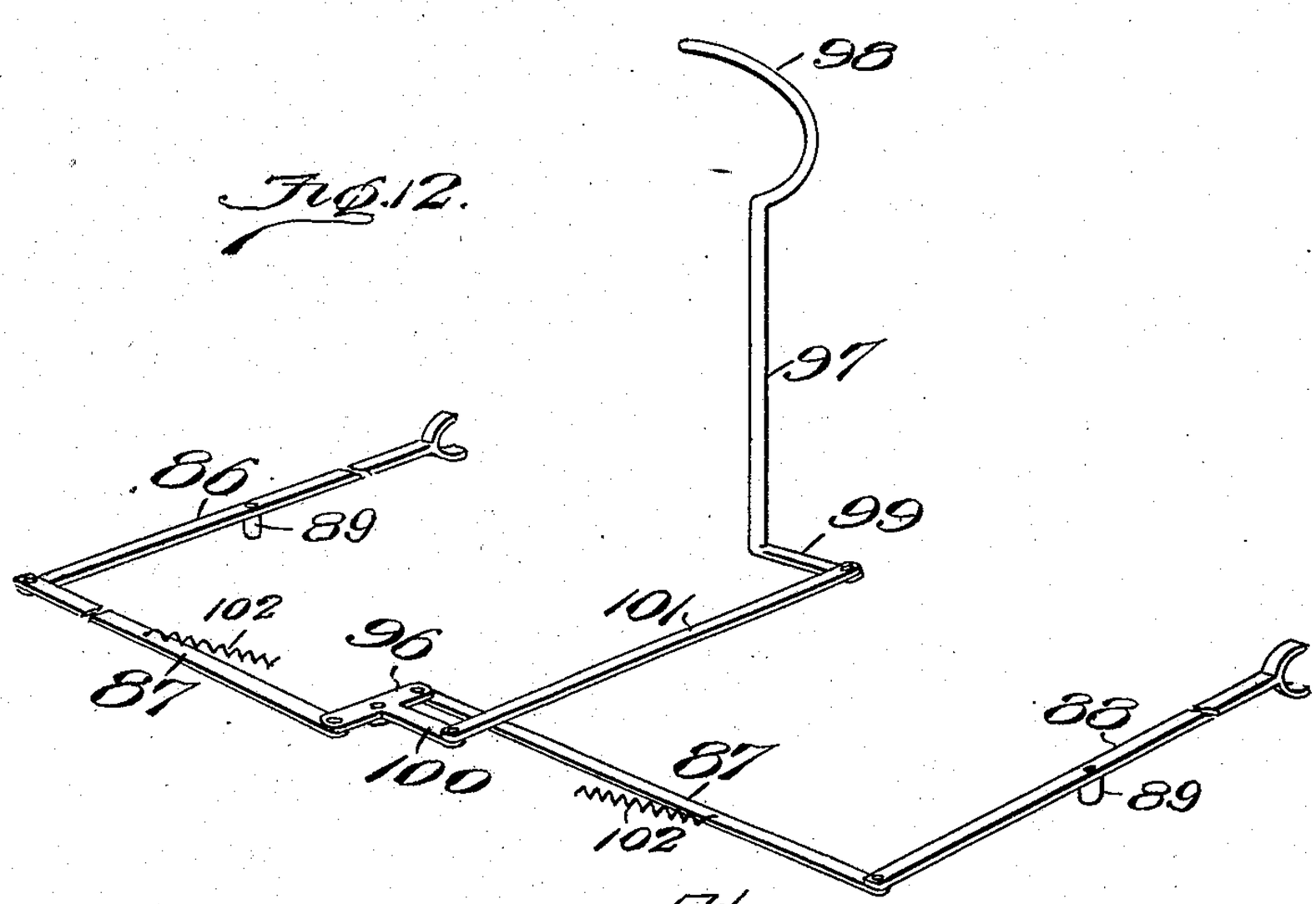


Fig. 13.

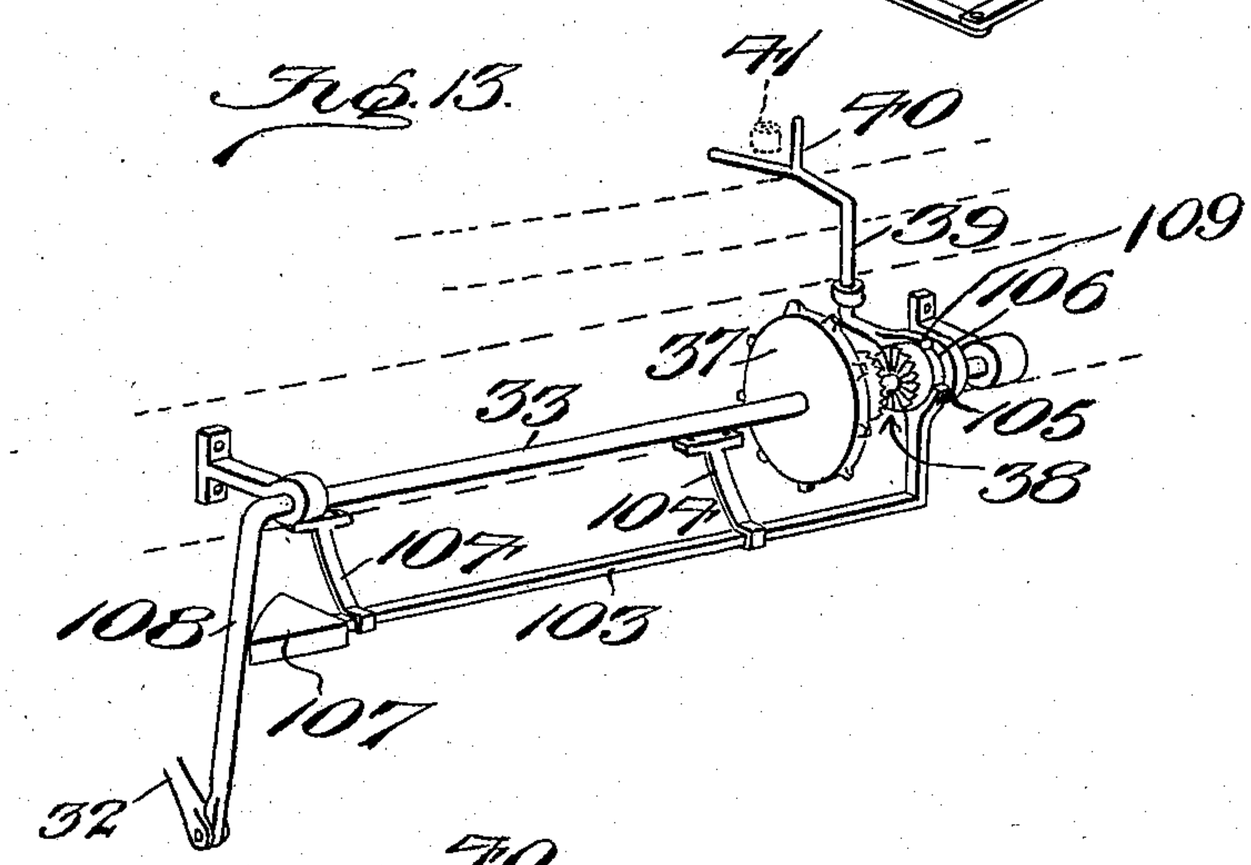
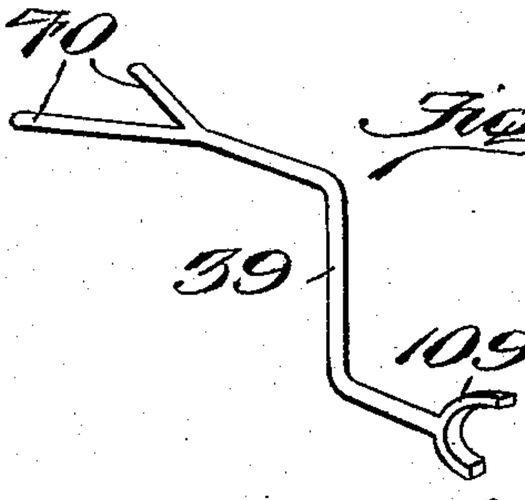


Fig. 17.



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UNITED STATES PATENT OFFICE.

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GRAIN-SHOCKING MACHINE.

No. 900,559. Specification of Letters Patent. Patented Oct. 6, 1908.

Application filed May 16, 1907. Serial No. 374,049.

To all whom it may concern:

Be it known that I, WILLIAM A. LEITCH, a citizen of the United States, residing at Sarles, in the county of Cavalier and State of North Dakota, have invented new and useful Improvements in Grain-Shocking Machines, of which the following is a specification.

This invention relates to a grain shocking machine of that character in which the sheaves are received from the binder to which the machine is attached and whereby the sheaves are formed into a shock and deposited upon the ground as the binder and machine are propelled.

The invention has for one of its objects to improve and simplify the construction and operation of apparatus of this character so as to be comparatively inexpensive to manufacture and keep in repair, thoroughly reliable and efficient in use, capable of harvesting a crop more quickly and with a less number of hands than usual, and requiring comparatively little more power than that necessary for operating the binder.

A further object of the invention is the provision of a rotary table on which the shocks are successively formed, the table being composed of hingedly mounted sections arranged to swing outwardly and downwardly from the center to permit the shock, when completed, to be deposited on the ground during the continued movement of the machine.

Another object of the invention is the employment of a step by step mechanism for rotating the shock-carrying table periodically so as to accommodate the sheaves as they are successively fed thereto, said mechanism including a trip device actuated automatically by the sheaves so as to throw into operation a suitable gearing driven by the land or traction wheels of the machine.

A still further object of the invention is to provide an elevating device for receiving the sheaves from the discharging arms of the binder and for changing them from a horizontal to an upright position before being fed to the rotary table on which the shock is formed.

An additional object is to rotatably mount the shock-carrying table on hinged frames to permit the table to open for the purpose of depositing a shock of sheaves on the ground, the frames being provided with suitable locking means automatically released when the shock is formed so as to permit the table to open under the weight of the shock.

Another object is the employment of a holding device which is automatically raised and lowered simultaneously with the closing and opening of the table for engaging the heads of the sheaves to hold the latter upright as the shock is deposited on the ground.

With these objects in view and others, as will appear as the description proceeds, the invention comprises the various novel features of construction and arrangement of parts which will be more fully described hereinafter and set forth with particularity in the claims appended hereto.

In the accompanying drawings, which illustrate one of the embodiments of the invention, Figure 1 is a plan view of the machine. Fig. 2 is a front elevation thereof. Fig. 3 is a side view. Fig. 4 is a rear view. Fig. 5 is a bottom plan view of the rotary shock-carrying table and the hingedly mounted frames therefor. Figs. 6 and 7 are fragmentary detail views of parts of the tripping device for the vertically movable sheave-holder. Fig. 8 is a sectional view of the pivot construction for securing the sections of the rotary table to the hinged supporting frame. Figs. 9, 10 and 11 are detail views of one of the latches for holding the two sections of the shock-receiving table locked in normal position. Fig. 12 is a perspective view of the sheave actuated clutch-throwing mechanism for controlling the step-by-step movement of the table. Fig. 13 is a detail perspective view of the trip device for controlling the releasing of the latches at the completion of a shock. Fig. 14 is a perspective view of the trip shown in Fig. 13.

Similar reference characters are employed to designate similar parts throughout the several views.

Referring to the drawings, A designates generally the body or supporting structure of the machine and is preferably constructed of iron beams of any desired form. The structure A comprises a bottom rectangular frame 1, an upper rectangular frame 2, and corner standards 3 riveted or otherwise suitably secured to the rectangular frames. Carried by the structure A is a horizontally and forwardly extending secondary frame 4 arranged in line with the frame 1 and constructed preferably in the form of a trapezoid, as shown in Fig. 1. On the front of the structure A are two parallel uprights 5 and 6. The extension frame 4 has its outer end sup-

ported from the uprights 6 by a trussed brace designated generally by 7. The extension frame 4 and uprights 5 and 6 serve to support the endless belts or conveyer chains of the sheave-elevating mechanism.

Arranged above the frame 2 is a table B on which the shocks are successively formed. This table comprises two horizontally disposed semi-circular sections 8 arranged with their diametrical edges facing each other. Each section 8 of the table is arranged to swing downwardly and outwardly from the center to permit the completed shock to be dropped or deposited upon the ground through the supporting structure A. To mount the sections in this manner, hinged frames 9 are disposed under the table and supported on the side beams 10 of the top frame 2 by means of hinges 11. The frames 9 are rectangular and meet at the center of the machine, their meeting edges extending parallel with the line of movement or travel of the machine. As shown in Fig. 5, the frames 9 coöperate to form a square structure and the sections of the table B are rotatably mounted on this structure by means of a pivotal connection. This connection, as shown in Figs. 5 and 8, comprises shouldered annular members 12 that are bolted to the hinged frames 9. The members 12 are so arranged that an annular race 13 is formed half on one frame 9 and half on the other frame. This race 13 receives shouldered semi-annular bosses or projections 14 on the under sides of the two sections 8 of the table B. By this means, the table is free to rotate when the swinging or hinged frames 9 are in a horizontal position and when the sections 8 of the table are arranged with their meeting edges in alinement with the meeting edges of the frames 9, the said sections can swing downwardly and outwardly with the frames for the purpose of depositing a completed shock.

The table B is rotated by means of a circular rack 15 arranged half on one side of the table and half on the other at the under side thereof and inwardly a slight distance from the periphery of the table. Meshing with the rack 15 are a plurality of suitably spaced pinions 16 mounted on the swinging frames 9. Coöperating with the circular rack are pinions 17 mounted on short shafts 18 journaled on the side beams 10 of the top frame 2. These pinions 17 form drivers for rotating the shock-carrying table and they are adapted to be periodically thrown into and out of operation for rotating the table step by step a sufficient distance to receive the successive sheaves fed to the table by the elevating device.

The power for actuating the shock-carrying table B is derived from the land or traction wheels 19 of the machine. These wheels are mounted on short stub axles 20 attached to the side beams of the lower frame 1. Keyed to the axles 20 are large sprocket wheels 21 with which mesh chains 22 that serve to drive various parts of the machine. The shafts 18 are each provided with sprockets 23 that mesh with the chains 22. The chain at the right hand side of the machine passes directly around the sprocket 23 while that at the left hand side passes under the sprocket 23 and the idler 24 is employed for the chain so that the drive pinions 17 turn in the proper direction to rotate the table B. On each shaft 18 is a clutch 25 for clutching the pinion 17 to their respective shafts when it is desired to turn the table B a step equivalent to the space occupied by one sheave. In the present instance, the clutch 25 at the right hand side of the machine is clearly shown in Figs. 1 and 2, but that on the shaft 18 at the left hand side is concealed from view. These clutches are set by a suitable means operated automatically by the successive sheaves as they are fed to the table, which means will be more fully described hereinafter.

The hinged frames 9 are locked in horizontal position by latches 26 arranged at the front and rear ends thereof. These latches are mounted in bearings 27 on one of the frames 9 and they are adapted to engage in keepers or catches 28 on the frame. Each latch has a torsion spring 29 for holding it in normal position. These latches are unlocked by a trip device which is actuated by the table B after the same has rotated twice or any other desired number of times. As shown in Fig. 5, the latches 26 are actuated by pitmen 30 with a lever 31 that is connected by a pitman 32 with a crank shaft 33, the said shaft being clearly shown in Figs. 2 and 13. The shaft 33 is journaled in bearings 34 on the front beam 35 of the upper frame 2. This shaft is rocked in order to actuate the lever 31 and unlock the latches 26. The spring 36 is connected at one end of the lever 31 and anchored at its other end on the adjacent hinged frame 9, the said spring coöperating with the torsional springs 29 to return the latches and hold them in their normal position. A sprocket and chain transmission 37 is employed for rocking the crank shaft 33. The sprocket wheel of this transmission that is mounted on the shaft 33 rotates idly thereon except when it is clutched by means of the clutch 38. This clutch is thrown into and out of operation by a trip 39 that has two arms 40 arranged in the path of a projection or abutment 41 on the table B, as shown in Fig. 1. When the table has revolved once, the abutment 41 strikes one arm and partly actuates the trip and at the end of the second revolution, the abutment fully actuates the trip so that the clutch 38 is thrown into operation and the shaft 33 rocked. This occurs when the table is filled

or a shock finished so that the latches 26 will be withdrawn to permit the sections of the table to swing open. Any suitable means may be employed for returning the trip and throwing the clutch out of operation.

In order to return the hinged frames to their normal position, strong helical extension springs 42 are employed. Each frame 9 has a slotted crank arm 43 at its front to which the upper end of the adjacent spring 42 is linked. The lower ends of the springs 42 are connected by eye bolts 44 arranged on a suitable part of the frame of the machine. As the swinging frames fall or move open under the weight of the shock on the rotary table, the springs 42 expand and the tension thereof causes the frames to swing to normal position after the shock has been deposited on the ground.

The sheave elevating mechanism arranged on the extension frame 4 is designed to receive the sheaves from the binder in a horizontal position and to cause the sheaves as they are conveyed to the table B to assume an upright position. This elevating mechanism comprises a pair of parallel endless conveyers or chains 45 arranged to engage the sides of the sheaves and a third endless conveyer or chain 46. The chains 45 are spaced apart and run along inclined bars 47 extending from the uprights 5 to the inclined bars 48. The chains 45 run around sprockets 49 and 50, the former of which are suitably journaled on the upper ends of the bars 47. The lower sprockets 50 are arranged on inclined shafts 51, Fig. 3, which are geared to a countershaft 52. The shaft 52 is journaled in bearings 53 on the rear of the extension frame 4, as shown in Fig. 1, and at its ends are arranged sprocket wheels 54 that mesh with the main sprocket chains 22, whereby the traction wheels rotate the countershaft 52. The chain 46 passes around sprocket wheels 53 on the short horizontal shafts 54 bearing in the inclined bars 48. The brace 7 and inclined bars 47 and 48 constitute a chute through which the sheaves are elevated by the chains 45 and 46. To assist the chains to convey the sheaves, a plurality of spaced arms 55 are arranged on each chain which engage in the sheaves to move the latter along with the chains. The conveyer chain 46 is adapted to move at a higher speed than the chain 45 so that the sheaves are moved from a horizontal to a vertical position in transit through the elevating mechanism. The machine is connected with a binder by a suitable coupling device 56 shown by dotted lines, Fig. 1. This coupling bar 56 is connected with the draw-bar 57 of the extension frame and connects with the right side of the binder in such a manner that the sheaves discharged by the arms of the binder will deposit into the lower ends of the elevator chute and be immediately acted on by the elevator chains 45 and 46. It is to be understood, of course, that the bundle carrier of the binder is removed and the binder deck projects into close proximity with the elevator chute. The upper shaft 54 of the elevator chain 46 is driven by a sprocket and chain device 58 that connects the said shaft with a small countershaft 59 arranged in suitable bearings on the rear portion of the extension frame 4. The small countershaft 59 is driven from the main countershaft 52 by a gearing 60, Fig. 2. The members of the gearing 60 are so proportioned that the chain 46 moves faster than the chains 45 of the elevator mechanism. The secondary countershaft 59 serves to drive the chain and sprocket device 37 for actuating the rock-shaft 33, as shown clearly in Fig. 2.

Arranged over the structure A is an arched frame composed of three rods 61 arranged one hundred and twenty degrees apart and connected at their upper ends to form a support for the suspension rod 62 on which the reel C is carried. The reel comprises a plate 63 rotatably mounted on the rod 62 and supporting a plurality of outwardly and downwardly curved spaced rods 64 which are adapted to receive the heads of the sheaves. Around the reel and suitably spaced therefrom is a non-rotatable and vertically movable holder D, between which and the reel, the head portions of the sheaves are confined. The holder D comprises a ring or circular rod of suitable diameter and open at 65 for permitting the sheaves to enter. The ring or holder D slides up and down on rods or members 66 that are hinged at 67 on a cross-bar 68, whereby the said members or guides can swing in a vertical plane as the holder moves vertically. On the lower ends of the guide rods are stops 69 in the form of nuts for removably holding the holder in place. Suitable connections 70 are employed for permitting the holder to slide longitudinally of the guide rods 66, while at the same time maintaining the holder in a horizontal position. Slightly above the table B is an iron railing 71 suitably supported on the upper frame of the structure A. This railing extends about three quarters around the table and serves to hold the lower or butt ends of the sheaves from spreading outwardly beyond the table. The holder D is supported on forwardly extending arms 72 hinged at 73 on an inverted U-shaped support 74. This support is attached to the rear beam 75 of the top frame, the said beam being arched, as shown in Fig. 4. The shaft 76 in which the arms 72 are attached is provided with a rearwardly extending arm 77 which connects with a helical extension spring 78 anchored at its lower end on the arched beam 75.

A trip device is employed to actuate the arms 72 and lower the holder D simultaneously with the opening of the table B, so that

the sheaves of the shock will be held in an upright position during the depositing of the shock to the ground. The trip device includes a horizontal shaft 90, as shown in Figs. 1 to 4 inclusive which is journaled at its inner portion on the support 74 and at its outer end on a post 91 mounted on the stationary frame of the machine and the shaft is provided with arms 92 that have a sliding engagement by means of the eyes 93 with the member 72 by which the ring D is raised and lowered. The shaft 90 has a forwardly-extending arm 94 to which is hinged a vertical rod 95 that bears at its lower end against the left-hand frame 9 for the table B. When the table is in normal position, the rod 95 operates to hold the ring D in raised position, and when the table opens upon completion of a shock, the rod 95 will drop, together with the ring D and attached parts by reason of their own weight. As soon as the table returns, the left-hand swinging frame 9 will cause the rod 95 to move upwardly, which in turn, lifts the ring D to its initial position.

At the top of the sheave elevating mechanism is arranged a gate E for guiding the sheaves in upright position to the table B. This gate is composed of sections 79 in the nature of vertical plates hingedly connected with a vertical shaft 80 journaled on the left upright 5 of the machine frame. The gate is disposed in tangential relation to the holder D so as to direct the sheaves immediately from the elevator mechanism into the opening or mouth 65 of the holder. Each plate 79 has a sprocket chain 81 running in a horizontal plane and provided with arms 82 for gripping the sheaves to feed them laterally into the mouth 65 of the holder. The gate is yieldingly held toward the mouth 65 by a suitably arranged spring 80′ or equivalent means. To hold the sheaves in engagement with the gate, a plurality of rearwardly extending horizontal spring guide rods 83 are arranged on the standard 6. On the upper plate 79 is arranged a guide rod 84 which is of sufficient length to extend into the holder D, as shown in Fig. 1, to hold the successive sheaves in position after passing into the holder. The feed chains 81 of the gate are driven by sprockets on the shaft 80 and the latter is driven by a sprocket chain 85, Fig. 3, that connects the shaft with a second vertical shaft 86 mounted at the front of the upright 5 in suitable bearings. This shaft 86 is geared to the upper shaft 54 of the elevator chain 46, as shown clearly in Fig. 3. Thus it will be seen that the feed chains of the gate E move continuously during the travel of the machine.

In Figs. 1 and 12, the apparatus for throwing the clutches 25 into and out of operation is shown. This comprises a lever 96 that is connected with the links 87 for actuating the levers 88, which latter are fulcrumed at 89 on the side beams 10, the T-shaped lever 96 being suitably fulcrumed on the beam 35. On the gate E is journaled a vertical shaft 97, clearly shown in Fig. 3, which, at its upper end, has a presser arm or trip 98 normally located in the path of the sheaves conveyed by the gate onto the table B, whereby the arm is pressed laterally as each sheave passes. The lower end of the shaft has a crank arm 99 connected with the arm 100 of the lever 99 by a horizontal link 101, so that the rocking of the shaft 97 causes the clutches 25 to be thrown into and out of operation. That is to say, when the arm 98 is pressed by a sheave, the clutches will be thrown into operation so as to cause the table B to rotate, and as soon as the sheave passes the arm, the latter will fly back to its normal position and the clutches 25 will be opened, a suitable spring 102 being provided for returning the parts to normal position after a sheave has passed the member 98.

In order to return the table-actuated trip 39 and throw the clutch 38 out of operation, a horizontal push rod 103 is arranged on the main frame of the machine in brackets 104 or other suitable supports and provided with a crotched-arm 105 that engages in a groove 106 of the movable element of the clutch 38 as clearly shown in Figs. 2 and 13. The opposite end of the rod 103 has a suitably shaped cam 107 that is adapted to be struck by the crank-arm 108 of the rock-shaft 33, so that as the parts are returned to their normal position by the spring 36, Fig. 5, the crank arm 108 will engage the cam 107, and move the rod 103 longitudinally, thereby throwing the clutch 38 out of operation. The trip 39 has a crotched end 109 that engages in the groove 106 so that simultaneously with the opening of the clutch 38, the trip will be moved to its initial position for successive actuation by the stop or projection 41 on the table as the latter revolves in the formation of a shock.

As shown in Figs. 5 and 7, a centering device is employed for keeping the two halves of the table B in proper position, while the latter are momentarily hanging as in the depositing of a shock, it being understood that the tables, while hanging in a vertical position, would tend to oscillate by the jolting of the machine and would fail to properly come together were provision not made for preventing such oscillation. For this purpose, the under side of each half of the table B has a notched member 110 with each of which engages a curved lock or catch 111 fulcrumed on the side beams 10 of the main frame to swing on a horizontal axis, whereby the catches will swing downwardly with the table sections and engage at their extremities with the notched members 110 and thereby prevent the table sections from swinging around the central pivot between the table sections and swinging frames 9. Each catch

has a horizontal shaft portion 112 journaled in bearings 113 on the side beams 10 of the main frame, there being stiff torsion springs 114, as clearly shown in Figs. 3 and 5 for returning the hook-shaped catches 111 to their normal position.

From the foregoing description, taken in connection with the accompanying drawings, the advantages of the construction and of the method of operation will be readily appreciated by those skilled in the art to which the invention appertains.

In operation, the sheaves of grain that are successively formed by the binder are delivered to the elevator chute of the shocking machine and the elevator mechanism of the latter conveys the sheaves one after another upwardly to the table on which the shock is to be formed. In transit through the elevator mechanism, the sheaves assume a vertical position so that the butt ends thereof will rest directly on the table. In leaving the elevating mechanism, the sheave passes by the gate which guides it into the holder D above the table. As the sheave passes the gate, the trip device controlling the clutches 25 is actuated so that the driving pinions 17 causes the table to rotate one step. When the sheave moves away from the trip device, the clutches 25 are immediately thrown out of operation so that the table is brought to rest until another sheave causes the trip device to throw in the clutches and thereby move the table another step. In this manner, the table is rotated until step by step two turns are made, whereupon the trip 39 is actuated by the stop 41 and the latches or locks 26 released for permitting the sections of the table B to swing downwardly to an open position for depositing the completed shock. Simultaneously with the downward movement of the shock, the holder D lowers and maintains the sheaves in proper relation to each other. The shock thus deposited is perfect in form and the sheaves thereof are positioned with their heads uppermost in the usual manner. The lower frame 1 of the structure A is open at the rear so that the machine can travel forwardly away from the deposited shock without tearing the latter down. The arched beam 75 of the top frame 2 is high enough at its center to pass over the crown of the shock without touching the latter. As soon as the machine is free from the shock, the sections of the table B return to their normal position by reason of the tension of the springs 42, whereupon the latches are locked automatically. The holder D also returns to its normal position simultaneously with the table. The foregoing operation is repeated periodically to form the shocks as the machine is propelled forward with the binder.

I have described the principle of operation of the invention, together with the apparatus which we now consider to be the best embodiment thereof, but I desire to have it understood that the apparatus shown is merely illustrative and that such changes may be made as desired as are within the scope of the claims.

Having thus described the invention, what we claim is:—

1. The combination of a wheel-supported structure, horizontal frames, hinges connecting the frames with the structure, a rotatable table consisting of sections, a pivotal connection between the table sections and frames, means for holding the frames in horizontal position, and a locking device arranged to be automatically released for permitting the frames and sections to swing open for depositing a shock when each section is supported wholly on its respective frame.

2. In a shocking machine, the combination of a rotatable table composed of sections, a movable supporting member for each section and arranged to permit the sections to move from under a shock formed on the table, and means for moving each section from one member to the other during the formation of a shock on the table, means for supplying sheaves to the table, and a locking device arranged to be automatically released for permitting the table to deposit the shock when the table sections are on their respective members.

3. In a shocking machine, the combination with a rotary table composed of sections, non-rotatable swinging frames, means for movably mounting the table sections on the frames, means for locking the sections together, an automatic means for releasing the sections to deposit the shock, and a mechanism for feeding sheaves to the table.

4. In a shocking machine, the combination of a supporting structure, a rotatable table composed of sections mounted to swing outwardly and downwardly for depositing a shock, a rack composed of parts carried by the sections, a plurality of pinions meshing with the rack when the table is in normal position, and a mechanism controlled by the feed of sheaves to the table for intermittently turning the table.

5. In a shocking machine, the combination of a table composed of sections mounted to deposit a shock formed thereon, frames mounted to swing on horizontal axes, means for rotatably mounting the sections on the frames, means for rotating the table by a step by step movement, and means for feeding sheaves to the table.

6. In a shocking machine, the combination of a rotary table composed of sections, a pair of members for supporting the sections and mounted to carry the latter from under a shock formed on the table for depositing the shock, and a shock holder normally supported in raised position by one of the members

and movable downwardly during the depositing movement of such member.

7. In a shocking machine, a rotary table on which a shock is formed, said table being composed of a pair of sections mounted to swing outwardly and downwardly to deposit the shock vertically, a holder movable downwardly when the shock is deposited, and springs operating to return the sections and holder simultaneously.

8. In a shocking machine, a rotary table on which a shock is formed, said table being composed of semicircular sections arranged with their diametrical edges adjacent each other and mounted to swing downwardly and outwardly to deposit the shock in a vertical direction, movable frames disposed under and carrying the sections, and means for releasably holding the frames in normal position.

9. In a shocking machine, the combination of a supporting structure, hinged frames thereon, a table for receiving the shock, and a pivotal connection between the table and frames.

10. In a shocking machine, the combination of a supporting structure, frames hingedly mounted thereon and arranged to swing outwardly and downwardly to permit a shock to move downwardly between them in the act of depositing, a table composed of sections arranged to move with the frames, and means for rotatably mounting the table on the frames.

11. In a shocking machine, the combination of a supporting structure, hingedly mounted frames thereon, a two-part table arranged to move with the frames for depositing a shock, a pivotal connection between the frames and table, a circular rack on two parts of the table, and pinions meshing with the rack for rotating the table.

12. In a shocking machine, the combination of a table composed of sections hingedly mounted section-carrying frames arranged to deposit a shock vertically, a rack and pinion mechanism for rotating the sections simultaneously, a locking device for holding the parts in normal position, springs for returning the frames and means actuated by the movement of the table for releasing the locking device to permit the sections to deposit the shock.

13. In a shocking machine, the combination of a rotatable table composed of movable sections mounted to deposit a shock by dropping vertically between them, frames for supporting the sections locking devices for holding the frames in normal position, and means actuated by the movement of the table for releasing the locking devices, and devices for preventing the sections from tilting on the frame during the depositing of the shock.

14. In a shocking machine, the combination of a table composed of sections mounted to deposit a shock by moving from under the same, movable frames supporting the sections means for automatically returning the sections to their normal position after the shock is deposited, a shock holder disposed over the table, guiding means for the holder, swinging arms for supporting the holder, and means between the arms and one of the frames and arranged to lower with the latter for permitting the holder to drop automatically during the depositing of a shock and automatically actuated locking means for holding the sections in position during the forming of the shock on the table.

15. In a shocking machine, the combination of a rotary table composed of two sections, hingedly mounted frames for supporting the table arranged to swing from under a shock formed on the table to deposit the shock, a pivotal connection between the table and frames, and springs for returning the frames and table sections to normal position.

16. In a shocking machine, the combination of a rotary table composed of sections, hingedly mounted frames for supporting the sections, a circular rack on the table, pinions on the frame and engaging the rack to support the table adjacent its periphery, and a pivot construction for supporting the center of the table on the frames.

17. In a shocking machine, the combination of an automatically depositing rotatable table on which a shock is formed, a supporting structure, traction wheels mounted thereon, power-transmitting mechanism between each traction wheel and the table for rotating the latter, a shock holder disposed over the table, and means for automatically raising and lowering the holder.

18. In a shocking machine, the combination of a rotatable table composed of tiltable sections, a circular rack under the table, intermittently actuated pinions meshing with the rack for rotating the table means for rotating the same by a step by step movement, an elevating means for feeding the sheaves to the table, a gate for guiding the sheaves to the table, and a trip device associated with the gate to be actuated by the sheaves for controlling the said means.

19. In a shocking machine, the combination of a rotatable table composed of sections, members for mounting the sections to swing for depositing a shock vertically between them, a rack arranged partly on one section and partly on the other, a pinion meshing with the rack for rotating the table sections, an automatic means for intermittently rotating the pinion to move the table with a step by step movement, a continuously operating elevating mechanism for feeding sheaves to the table, a gate coöperating with the said mechanism for conveying the sheaves to the table in an upright position, and a device carried by the gate and ar-

ranged to be actuated by the sheaves for controlling the said means.

20. In a shocking machine, the combination of a supporting structure, traction wheels thereon, a two part rotatable table on which a shock is formed, means for mounting the parts to move outwardly from under the shock formed on the table, driving means between the wheels and table for rotating the latter by a step by step movement, an elevating means for feeding the sheaves, a driving mechanism between the traction wheels and elevating means, a gate between the elevating means and table for guiding the sheaves to the latter, conveying means on the gate for feeding the sheaves on the latter to deposit on the table in an upright position, and a vertically movable holder disposed over and normally supported by the first-mentioned means and arranged to drop when the latter deposits the shock.

21. In a shocking machine, the combination of a supporting structure, traction wheels thereon, a two part rotatable table, means for driving the same from the wheels, hinged members on the structure, means pivotally mounting the parts of the table on the members a secondary frame extending forwardly from the structure, and an elevating mechanism for feeding sheaves to the table, said mechanism comprising a pair of spaced conveyer chains, and a third conveyer chain arranged centrally below said pair.

22. In a shocking machine, the combination of a supporting structure having a forward extension, traction wheels thereon a rotatable table composed of sections hingedly mounted frames carrying the sections and which swing downwardly and outwardly to deposit a shock vertically between them, means for driving the table from the wheels, a sheave elevating mechanism on the extension, power transmitting means between the traction wheels and mechanism for continuously operating the latter, a device for controlling the driving means for the table to actuate the latter by a step by step movement, a holder disposed over and normally supported on the one of the frames for vertical movement and controlled by the movement of the table sections.

23. In a shocking machine, the combination of a supporting structure, traction wheels thereon, a rotatable table composed of hingedly mounted sections which deposit a shock vertically between them, means for rotating the table from the traction wheels by a step by step movement, means for automatically restoring the sections to normal position, an automatic locking device for holding the sections in normal position, and an elevating mechanism actuated from the traction wheels which receive the sheaves in a horizontal position and changes them to an upright position before reaching the table.

24. In a shocking machine, the combination of a supporting structure, traction wheels carrying the same, a rotatable table composed of sections, members mounted on the structure for swinging movement, a pivot carried by the members and on which the table turns, a rack on the under side of the table, pinions on the members rotatably supporting the table, and intermittently actuated driving means for some of the pinions.

25. In a shocking machine, the combination of a supporting structure, traction wheels carrying the same, a rotatable table composed of sections, members mounted on the structure for swinging movement, a pivot between the sections and members and on which the table turns, a rack on the under side of the table, pinions on the members rotatably supporting the table, means for driving one of the pinions from a traction wheel, means for feeding sheaves to the table, and a mechanism actuated by the sheaves for throwing the driven pinion intermittently into and out of operation.

26. In a shocking machine, the combination of a table arranged to move from under the shock formed thereon to permit the latter to drop to the ground, means for conveying sheaves to the table in an upright position, a vertically movable holder arranged above the table and rotatable on a fixed axis to receive the heads of the sheaves to maintain the latter in an upright position, and automatic means for moving the holder simultaneously with the table to deposit the shock.

27. In a shocking machine, the combination of a table composed of movable sections arranged to deposit the shock vertically between them, means for conveying sheaves to the table in an upright position, and a vertically movable holder arranged above the table and rotatable on a fixed axis to receive the heads of the sheaves and maintain the shock in an upright position during the act of depositing, and means for automatically actuating the holder.

28. In a shocking machine, the combination of a rotatable table composed of swinging sections arranged to deposit the shock vertically between them, an approximately circular holder supported permanently over the table and provided with an opening through which the head portions of the sheaves pass, means for guiding the holder to move vertically, and automatic means for actuating the holder simultaneously with the movements of the table sections.

29. In a shocking machine, the combination of a supporting structure, a two-part rotatable table thereon, means connecting the parts of the table with the structure said means permitting the said parts to move outwardly to deposit the shock vertically, a

holder above the table and having a mouth, means for conveying sheaves to the table in an upright position to pass into the holder through the mouth thereof, a reel suspended above the holder, means for guiding the holder to move in a vertical direction, an actuating means for lowering the holder simultaneously with the depositing of the shock from the table, an automatic means for returning the table and holder to normal position.

30. In a shocking machine, the combination of a shock-receiving table composed of independently movable sections, swinging frames on which the table sections are adapted to rotate, and means for preventing the table sections from oscillating on the frames when the latter are in hanging position.

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

WILLIAM A. LEITCH.

Witnesses:

PETER NAISMITH,

HARRY L. HAZLETT.