J. McLEOD.

SHOCKING MACHINE.

APPLICATION FILED APR. 16, 1909.

995,885.

Patented June 20, 1911.

7 SHEETS—SHEET 1.

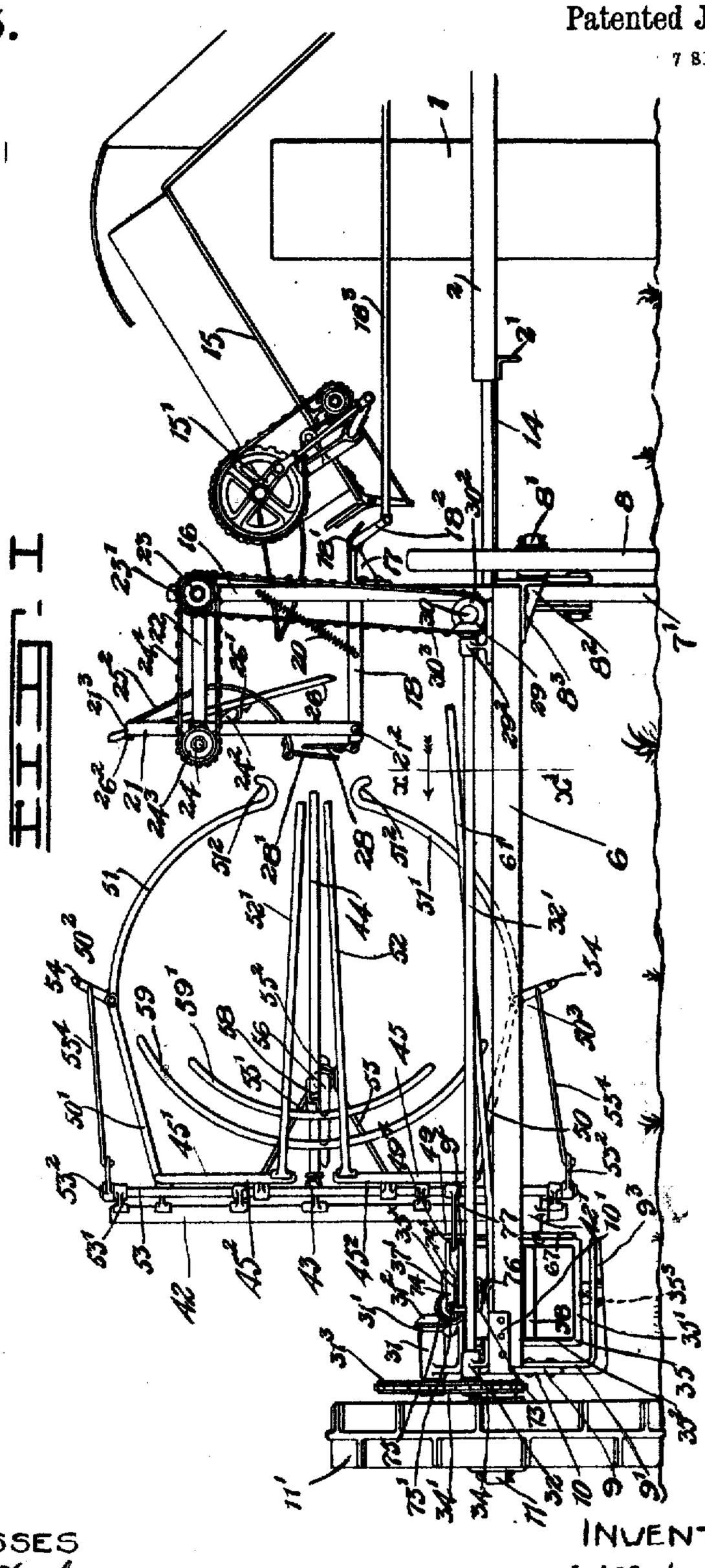

FIG. 1.

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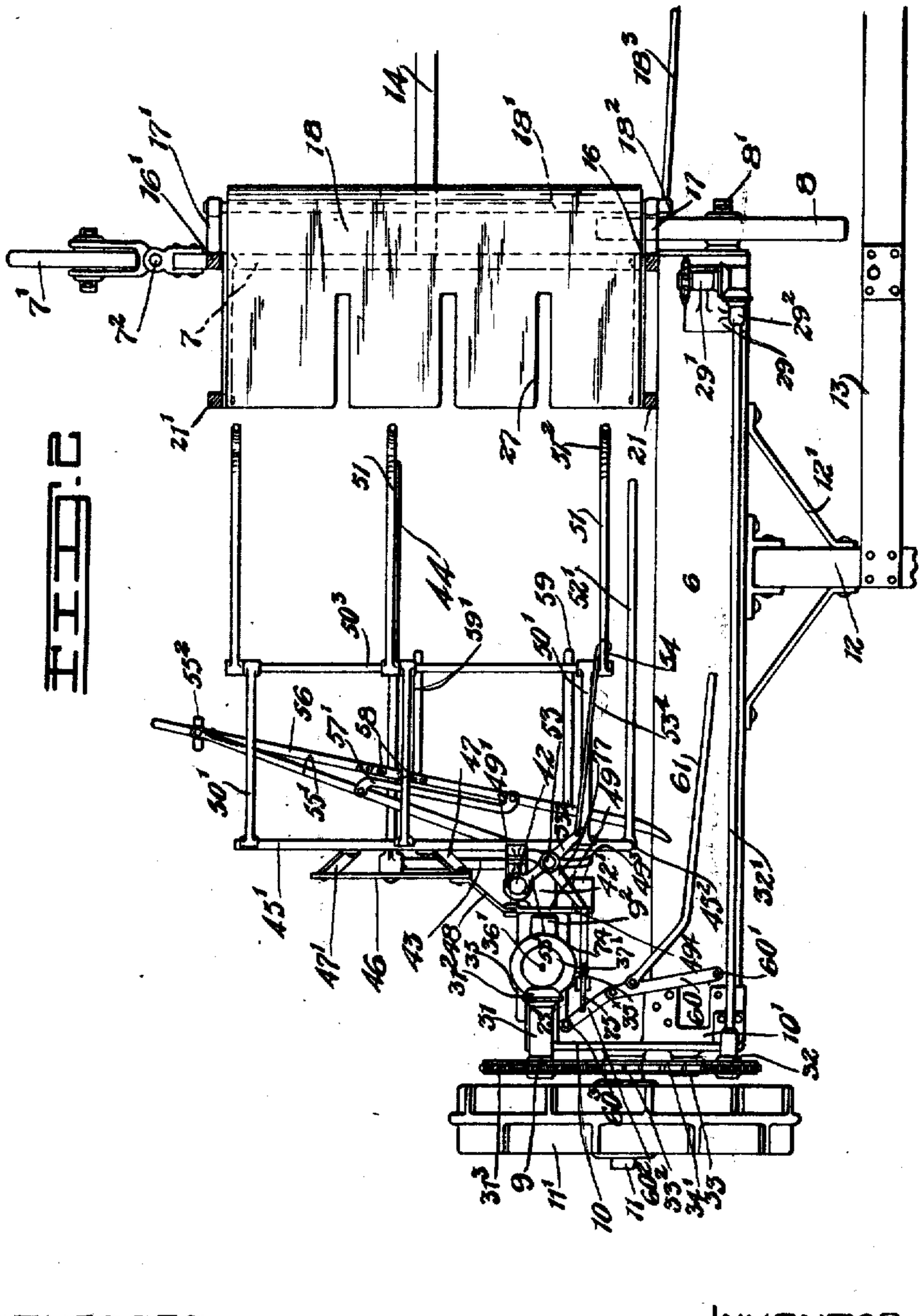
7 SHEETS—SHEET 2.

FIG. 2.



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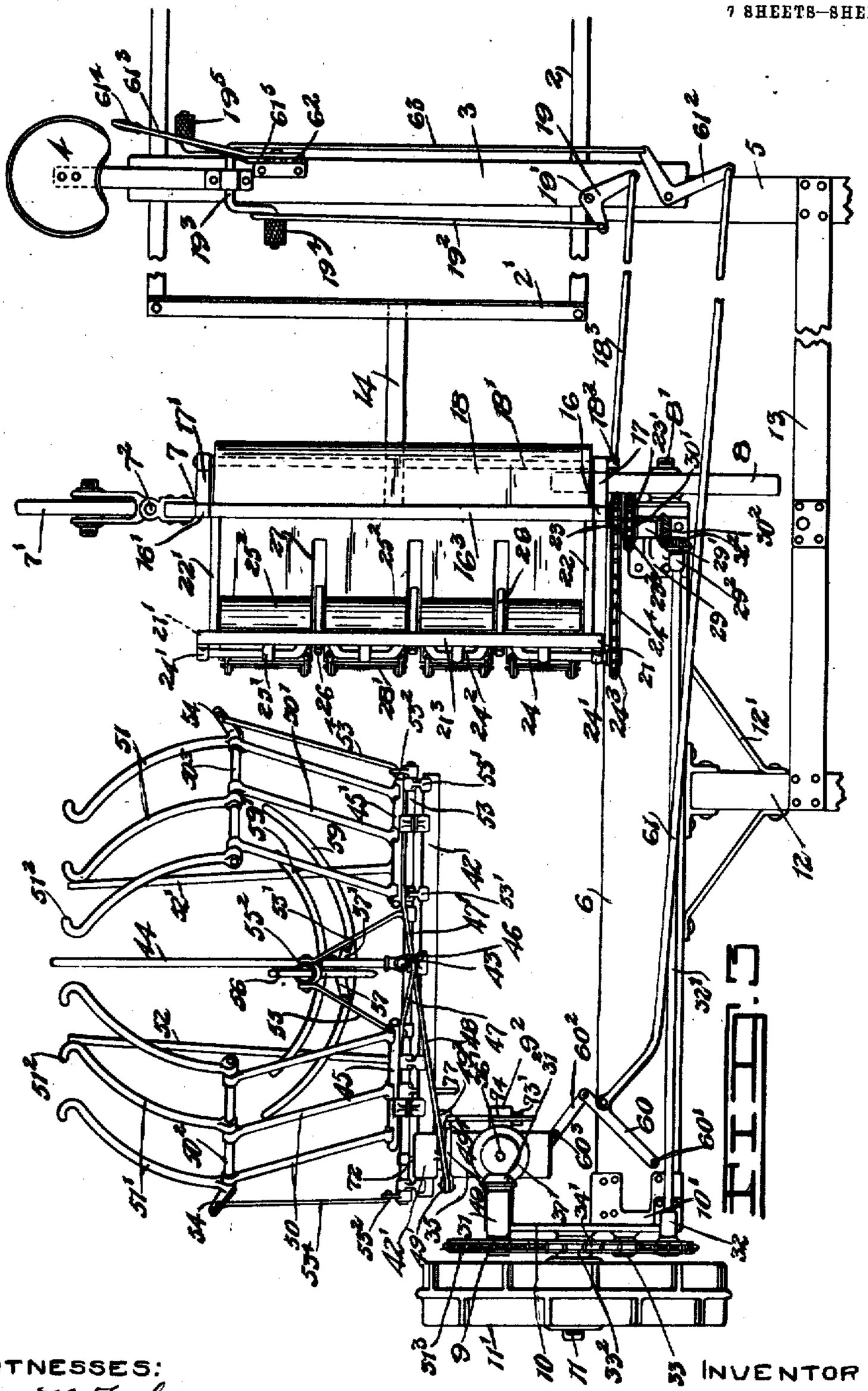

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7 SHEETS—SHEET 4.

FIG. 4

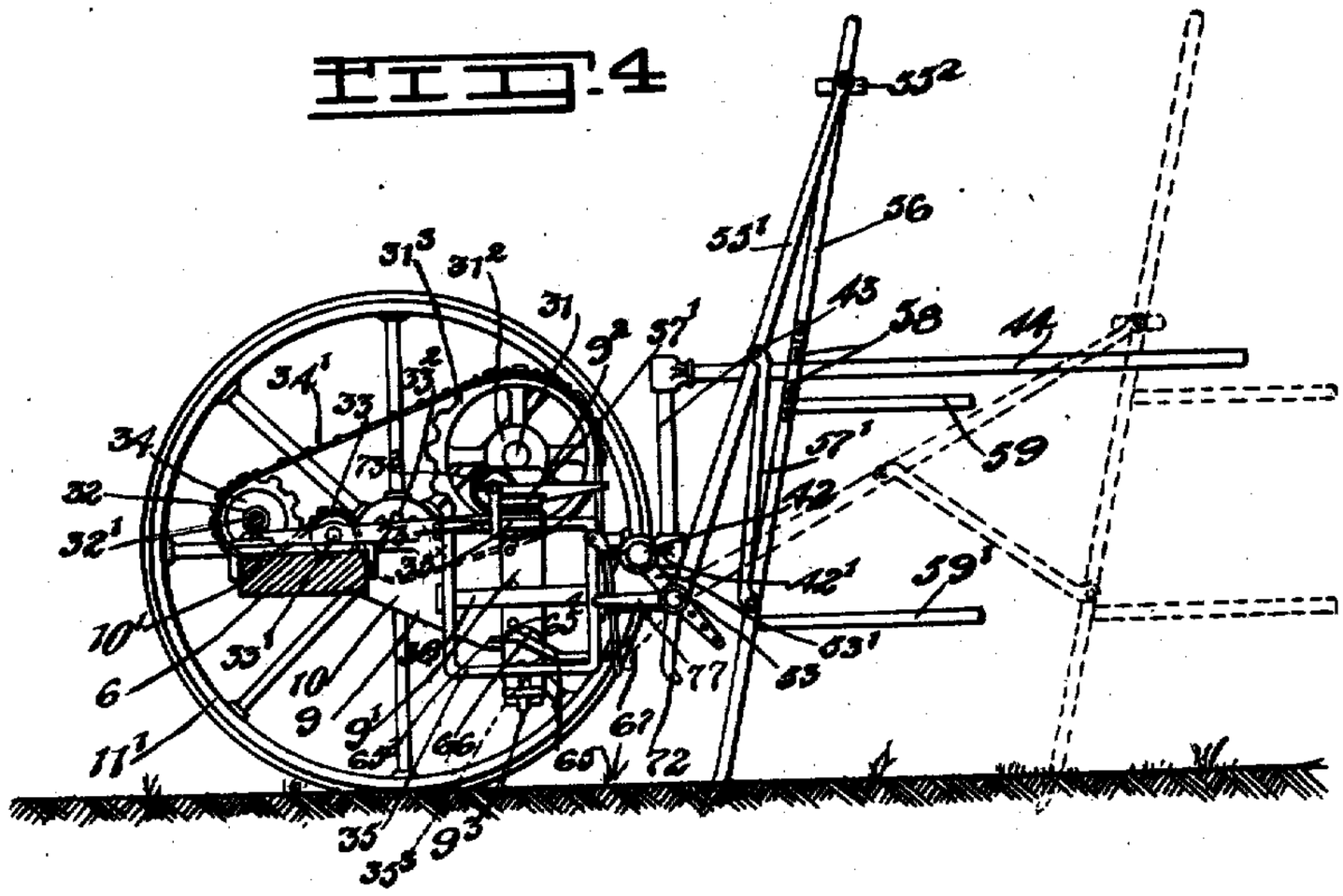
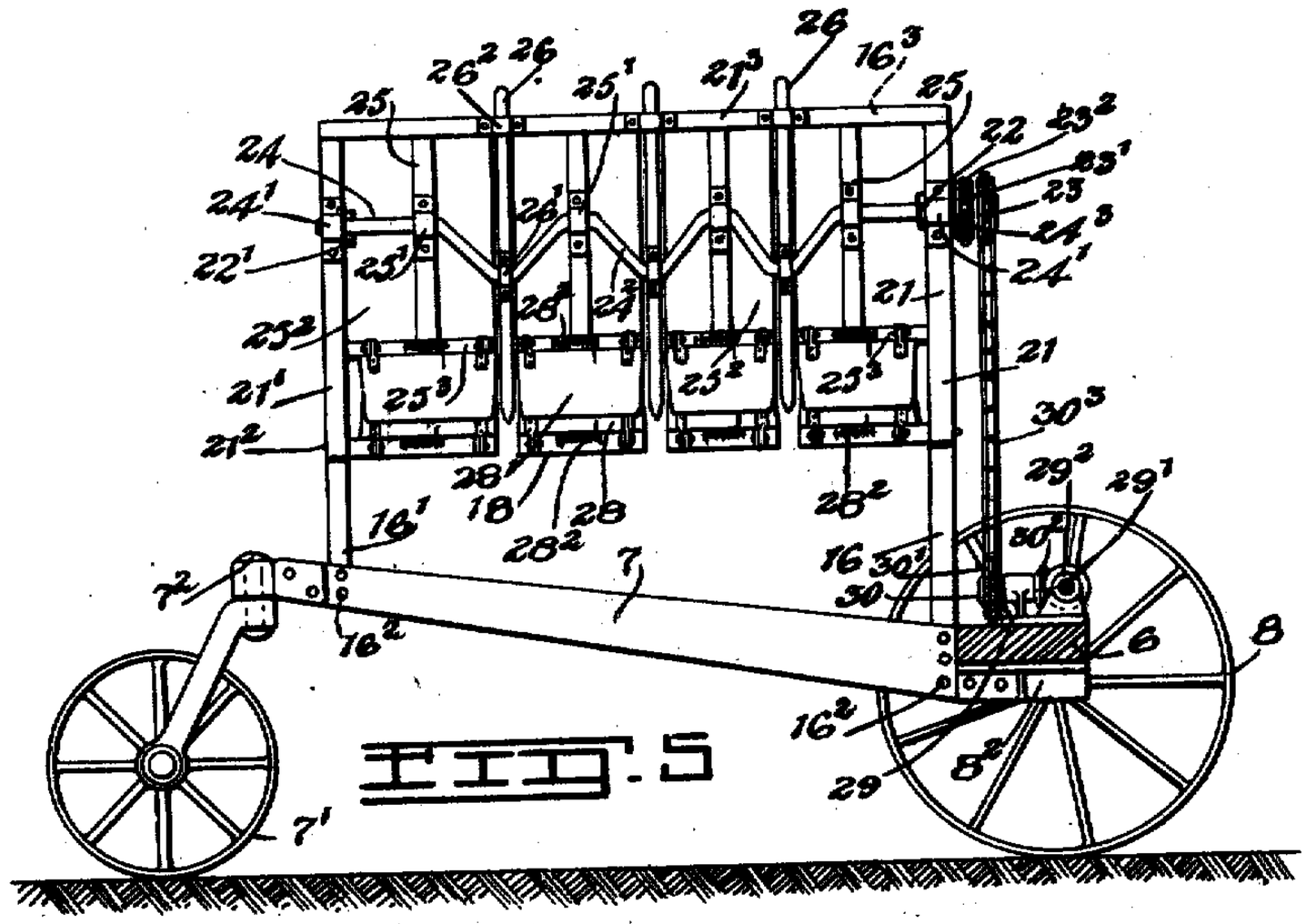


FIG. 5



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7 SHEETS—SHEET 5.

FIG. 6

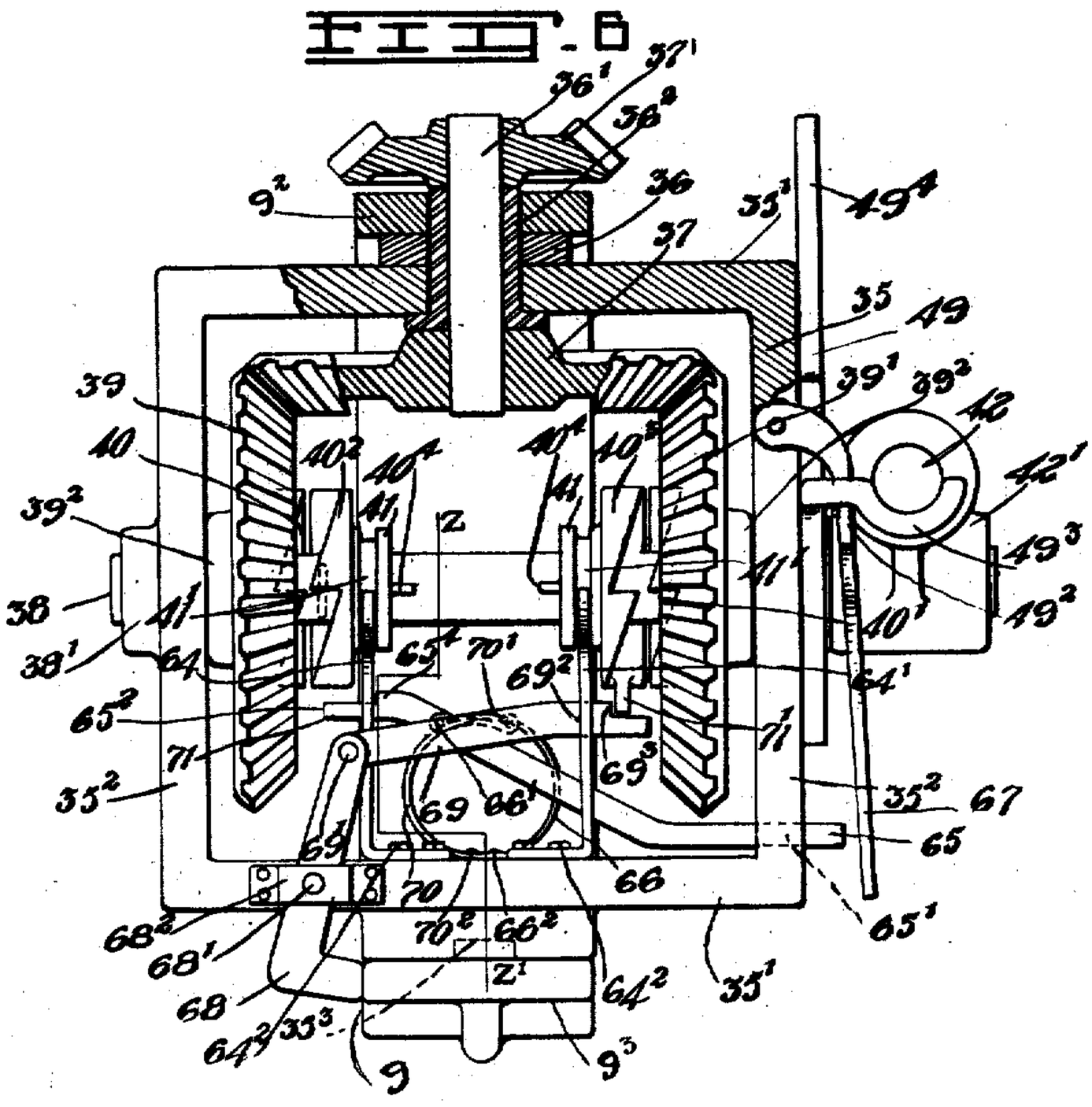
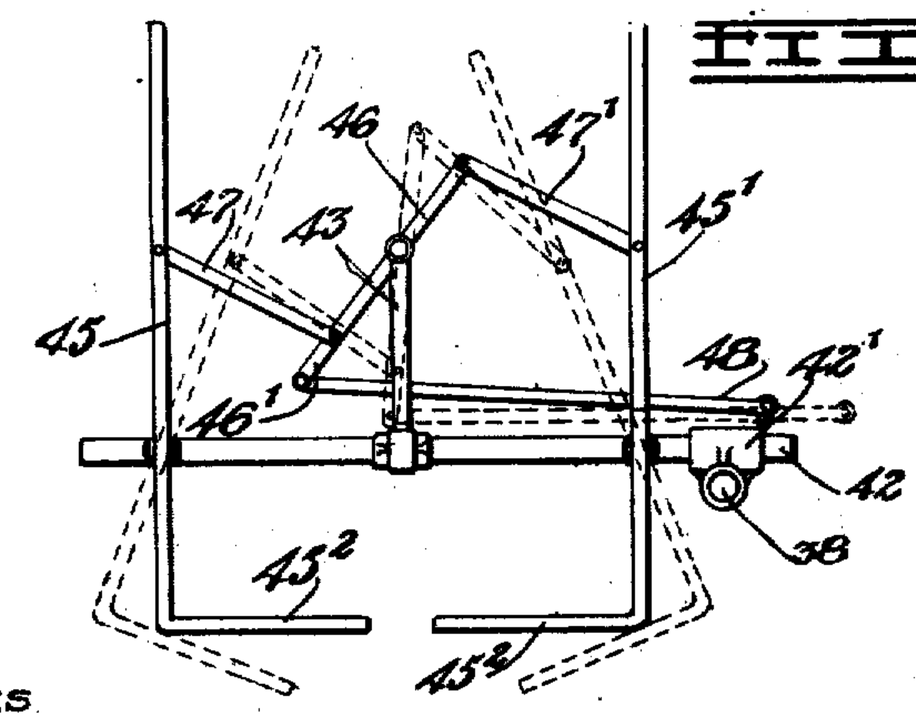


FIG. 7



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7 SHEETS—SHEET 6.

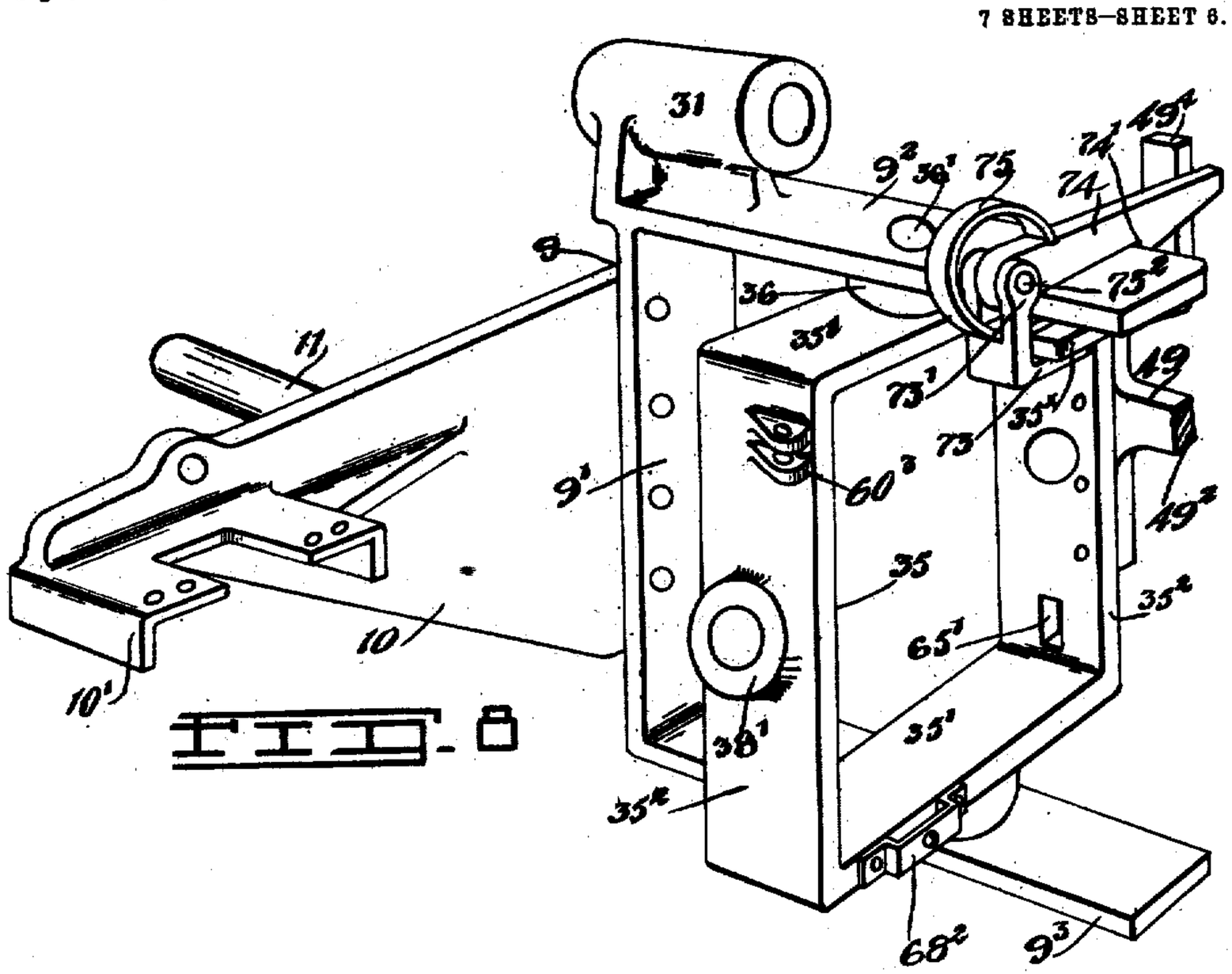

FIG. 8.

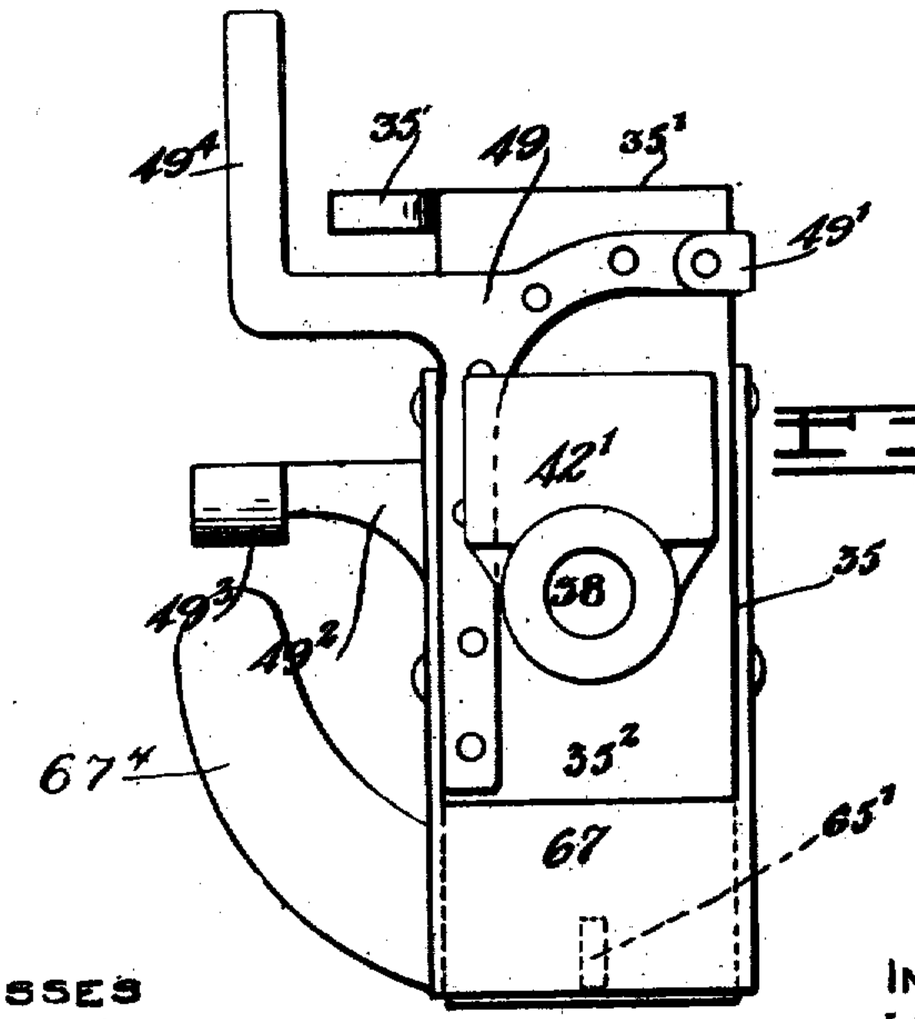

FIG. 9.

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995,885. Patented June 20, 1911.

7 SHEETS—SHEET 7.

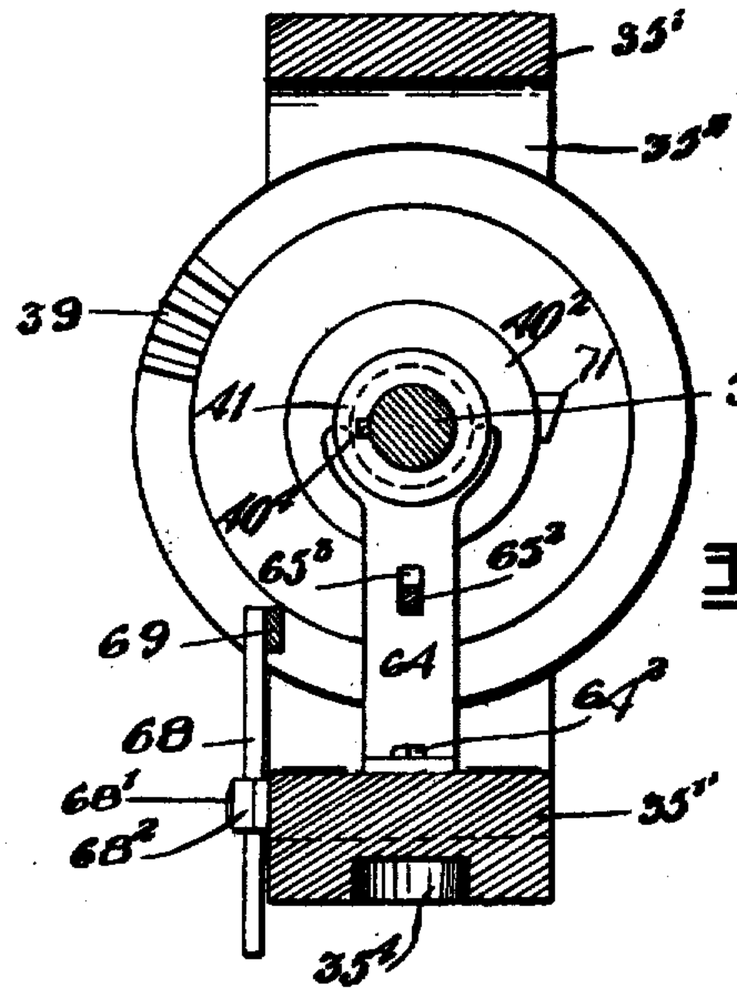
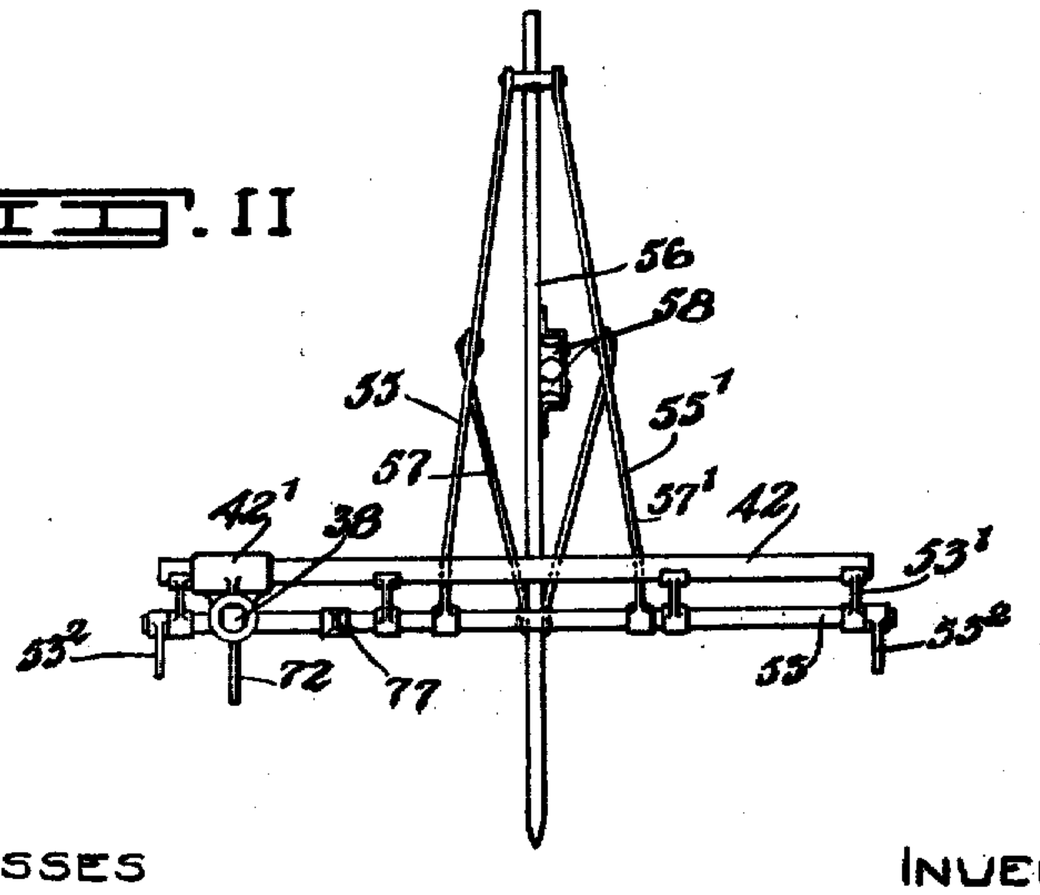


FIG. 10

FIG. 11



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UNITED STATES PATENT OFFICE.

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SHOCKING-MACHINE.

995,885. Specification of Letters Patent. Patented June 20, 1911.

Application filed April 16, 1909. Serial No. 490,347.

To all whom it may concern:

Be it known that I, JOHN McLEOD, of the town of Carberry, in the Province of Manitoba, Canada, have invented certain new and useful Improvements in Shocking-Machines, of which the following is the specification.

My invention relates to shocking machines and the object of the invention is to provide a machine which can be attached to the usual binding machine and be operated thereby and which will receive the sheaves thrown from the binder delivery tray, collect them, and deposit them butts down in a shock on the field, the machine being fully under the control of a single operator.

My invention further specifically resides in the following features of construction, arrangement, and operation, as will hereinafter be set forth, reference being made to the accompanying drawings in which—

Figure 1 is a side elevation of the complete machine as it appears when attached to the binding machine and in a position to receive the sheaves therefrom. Fig. 2 represents a plan view as in Fig. 1, the parts of the binder appearing in Fig. 1 being removed, as also are certain parts adjoining the binder tray. Fig. 3 is a plan view showing the parts as they appear when a shock is being deposited on the ground. Fig. 4 represents a vertical cross sectional view through the machine in the plane denoted by the line X X^1, Fig. 1, and looking in the direction of the arrow, certain parts being omitted for the sake of clearness. Fig. 5 is a vertical cross sectional view in the plane denoted by the line X X^1, Fig. 1, and looking in the opposite direction to that of Fig. 4. Fig. 6 is an enlarged detailed side elevation of the head or frame carried by the casting showing the gears and clutch mechanism located therein. Fig. 7 is a side elevation of the links which carry and control the fingers. Fig. 8 is an enlarged detailed perspective view of the main casting, the head pivotally secured thereto, and the attachments carried thereby. Fig. 9 is an enlarged detailed end view of the main casting or supporting frame. Fig. 10 is a vertical sectional view through the frame 35, the section being taken in the plane denoted by the line Z Z^1, Fig. 6, and looking in the direction of the arrow. Fig. 11 is a detailed side view of the steadier bar and the supporting shafts showing them as they appear when detached from the remainder of the machine.

In the drawings like characters of reference indicate corresponding parts in each figure.

1 represents the main or bull wheel of a binder and 2 the binder frame.

3 is a cross beam carried by the frame on which is secured the usual seat 4. To the cross member 2^1 of the frame I attach my machine in a manner shortly to be described.

5 represents the tongue of the binding machine.

6 represents the main beam of my shocking machine from which extends rearwardly and backwardly at one end a transverse beam 7, said beams being fastened the one to the other in any desired manner.

7^1 is a caster wheel pivotally secured by a pin 7^2 to the free end of the beam 7, it being noticed that the beam inclines slightly upwardly in passing from the beam 6 to the caster wheel.

8 is a carriage wheel mounted in a stub shaft 8^1 extending from a casting 8^2 which is firmly bolted at 8^3 to the main beam. The caster wheel and the wheel 8 are normally in parallel planes.

9 is the main casting which is composed of a vertically extending member 9^1 having two extending and parallel arms 9^2 and 9^3, and has an off set portion 10 which is provided at its extending end with laterally projecting portions 10^1 suitably reinforced and adapted to receive and be secured to the end of the main beam 6. The portion 10 carries an extending axle 11 upon which is mounted the drive or traction wheel 11^1. In this way the shocking machine is carried by three wheels, two at the front, and one at the rear. Centrally of the beam 6 is secured the tongue 12 of the shocking machine suitably reinforced by braces 12^1 which pass between the tongue and the beam.

13 is a cross bar connecting the tongue 5 and the tongue 12. By attaching the draft animals to the bar 13 in any convenient way it is possible to draw the binder and the shocking machine together.

14 is a bar passing from the beam 7 to the cross member 2^1 of the binder frame, thereby uniting such portions firmly together.

15 represents the sheaf delivery tray which is carried by the binder and overhangs the bull wheel 1.

In the binding machine the sheaves are passed over the tray and delivered therefrom, delivery being controlled by an automatic device which allows them to pass from the tray one after another in succession. This device or mechanism is shown at 15^1, but the operation of the parts is not explained, as this forms no part of my invention.

16 16^1 are vertically directed posts secured firmly at their lower ends to the beam 7 by suitable bolts 16^2. The posts 16, 16^1 are united by a cross bar 16^3.

17 17^1 are brackets secured firmly to the posts 16 16^1, respectively, and directly opposite each other in a horizontal plane. The brackets are located almost immediately opposite the lower end of the delivery tray 15, the reason for this being shortly apparent.

18 is a sheaf receiving table pivotally suspended at one side by a cross shaft 18^1 which is carried in suitable bearings formed in the brackets 17 and 17^1, respectively. The shaft is provided with a crank end 18^2 which is united through the link 18^3 with the bell crank 19, pivotally secured at its angle by a pin 19^1 to the beam 3 of the binding machine. The bell crank is connected through a rod 19^2 with the double crank foot lever 19^3 carried on the beam 3 and within convenient range of the seat 4. The link 19^2 is forced in one direction by pressing on the foot rest 19^4, and in the opposite direction by pressing on the foot rest 19^5, as will readily be understood.

20 are spiral springs secured at their upper ends to the posts 16 and 16^1, respectively, and at their lower ends to the sides of the platform, in this way supporting the platform.

21 21^1 are bars passing vertically upwardly from the sides of the platform 18 to which they are pivotally secured by suitable bolts 21^2, the bars being united at their upper ends by a cross bar 21

22 22^1 are horizontal bars pivotally secured at their ends to the bars 21 21^1 and the posts 16 16^1, respectively.

23 is a stub shaft carried by the post 16 toward its upper end and upon the shaft are mounted two chain gears 23^1 23^2, it being understood that the chain gears are keyed on the shaft, and the shaft is free to rotate in suitable bearings formed in the post.

24 is a crank shaft mounted in suitable bearings 24^1 carried by the bars 21 21^1. The shaft is provided with three cranks 24^2 and has a chain wheel 24^3 keyed on one end, said chain wheel being connected through the agency of a chain 24^4 with the chain wheel 23^2.

25 are beams extending downwardly from the cross bar 21^3 to which they are firmly secured there being four such beams spaced at equal distances along the bar. Each beam carries a bearing 25^1 for the shaft 24, the bearing appearing at each side of the cranks 24^2.

25^2 are shields secured at their upper ends firmly to the cross bar 21^3 and at their lower ends to the cross members 25^3 appearing at the lower ends of the beams 25. The shields are bulged or bent considerably and serve to collect the sheaves coming from the delivery tray, at the same time protecting the crank shaft and the parts secured thereto.

26 are bars secured by straps 26^1 to the cranks 24^2 and being slidably received at their upper ends by straps 26^2 carried by the cross bar 21^3. The bars are in this way free to take the motion required by the crank shaft in its rotation. It will be noticed that the bars pass between the adjoining edges of the shields and extend downwardly normally above the platform. The platform is slotted at 27 to allow the points of the bars to pass below the platform in their movement as occasioned by the throw of the cranks.

28 28^1 are sets of flaps those 28 being hinged to the edge of the platform and those 28^1 to the lower end of the shields. The flaps of each set overlap each other and are held in a substantially vertical position by spiral springs 28^2 which allow them to be passed to the horizontal position.

29 is a plate secured firmly to the upper face of the beam 6, said plate being provided with journals 29^1 and 29^2 set at right angles to each other, as best shown in Figs. 2 and 3.

30 is a short shaft mounted in the journal 29^1 and having at its one end a chain wheel 30^1 and at its other end a bevel pinion 30^2. The chain wheel 30^1 is connected to the chain wheel 23^1 by the chain 30^3 so that the motion of the crank shaft is directly controlled by the shaft 30.

31 is a journal formed on the arm 9^2 of the casting 9 and 31^1 is a shaft rotatably mounted in the journal and having a bevel pinion 31^2 secured to its one end and a chain wheel 31^3 secured to its other end.

32 is a journal bolted firmly to the member 10^1 and to the upper side, and 32^1 is a shaft mounted in the journals 32 and 29^2, respectively, said shaft being provided at its one end with a bevel pinion 32^2.

33 is an idler wheel centered on a pin 33^1 carried by the portion 10.

33^2 is a chain wheel on the shaft 11 and rotatable with the traction wheel 11^1. The chain wheels 31^3 and 33^2, and the idler 33 are all in the same plane.

34 is a chain wheel keyed on the end of the shaft 32^1 and in the same plane as the adjoining chain wheels, and 34^1 is a continuous chain passing over the chain wheel 31^3 under the chain wheel 33^2 over the idler wheel 33 and under and around the chain wheel 34, in this way transmitting the motion of the traction wheel to the various chain wheels.

35 is a metallic supporting frame formed from a continuous band having two transversely extending and two vertically extending portions 35^1 and 35^2, respectively. The frame 35 is pivotally secured to the arms 9^2 and 9^3 of the casting 9 in the following manner,—A pivot pin 35^3 passes from the center of the arm 9^3 upwardly and into an opening 35^4 formed in the lower member 35^1 of the frame. A spacing member 36 is introduced between the arm 9^2 and the upper cross member 35^1 of the frame and a pin 36^1 passes downwardly through the arm, the member 36, and frame 35, such pin being rotatable within a bushing 36^2 passing through the aforesaid members. Bevel pinions 37 and 37^1 are secured firmly to the ends of the pin 36^1 so that it is prevented from longitudinal displacement within the bushing. The bevel pinion 37 is located within the frame 35, and the bevel pinion 37^1 without, being directly above the arm 9^2. The bevel pinion 31^2 and the bevel pinion 37^1 are located so that they are in mesh.

38 is a cross shaft mounted in suitable bearings 38^1 formed centrally in the vertically extending side pieces 35^2 of the frame.

39 and 39^1 are bevel pinions rotatable on the shaft 38 and located directly opposite each other, being positioned so that they mesh with the bevel pinion 37 hereinbefore referred to. The shaft 38 passes at right angles to the pin 36^1.

The bevel pinions 39 and 39^1 are provided with shoulders 39^2 which bear against the inner faces of the upright portions 35^2, and accordingly the bevel pinions are prevented from longitudinal displacement on the shaft. The opposing faces of the bevel pinions 39 and 39^1 are supplied with drive members 40 40^1 of a clutch, and upon the shaft 38 are located driven members 40^2 40^3, which are held in slidable relation to the shaft by feathers 40^4. The driven members of the clutches have each an extending portion 41 in which is formed a groove or channel 41^1, the purpose of which will hereinafter be explained.

42 is an extending shaft firmly fastened to the shaft 38 by means of the coupling 42^1. It will be noticed that the shaft 42 passes at right angles from the shaft 38 so that when the shaft 38 rotates the attached shaft is free to swing forwardly and backwardly. Centrally of the length of the shaft 42 I have secured a vertically directed standard 43, such being firmly held to the shaft in any convenient manner.

44 is a bar or rod secured firmly to the upper end of the standard 43 and passing at right angles therefrom, such rod in a certain position of that portion being substantially horizontal or parallel with the ground, as is best shown in Fig. 4. Toward the ends of the shaft 42 and at equal distances from the standard 43 are placed complementary bars 45 45^1, such bars being pivotally secured to the shaft 42 by means of any suitable form of pivot bolt. The bars have one portion 45^2 thereof bent at right angles to the body portion, the purpose of which will be later explained.

46 is a rocker arm pivoted centrally to the upper end of the standard 43, and 47 and 47^1 are links connecting the rocker arm with the bars 45 and 45^1, respectively. The extending end 46^1 of the rocker arm is connected through the link 48 with the casting 49 which is secured to the upright member 35^2 of the supporting frame 35 which is supplied with extending lugs 49^1 to which the link is pinned. The casting 49 is firmly bolted to the frame 35 and is provided with an extending member 49^2 which forms at 49^3 a rest for the shaft 42 in a certain position of the shaft.

50 and 50^1 are sets of arms each secured at one end firmly to the bars 45 and 45^1 said bars carrying in their other ends shafts 50^2 50^3 which unite the bars and are rotatable in the upper ends thereof.

51 51^1 are sets of curved forearms or fingers secured firmly to the shaft and rotatable therewith. The free end of the forearms are turned or hooked backwardly at 51^2 so as to present a blunt end to the arms.

52 52^1 are rods extending at right angles from the ends of the turned portions 45^2 of the bars 45 45^1 respectively.

53 is a shaft adjoining the shaft 42 and running parallel therewith, said shaft 53 being rotatably mounted in bearings formed in brackets 53^1 extending from the shaft 42.

53^2 are arms secured to the ends of the shaft 53 and connected through the links 53^4 to the cranks 54 formed at the ends of the shafts 50^2 and 50^3, respectively. Holes are provided in the cranks 54 for adjustment purposes.

55 55^1 are bars each firmly secured at one end to the shaft 53 and said bars being united at their other ends through a ring or short cylinder 55^2 to which they are both pivotally secured.

56 is a bar which I have termed the steadier bar and it is fastened to the bars 55 55^1 by means of rods 57 57^1 which are pivotally secured to both the steadier bar and the bars 55 55^1. The upper end of the steadier bar passes slidably into the ring 55^2.

The bar 44 carried at the end of the stand-

ard 43 passes between a set of opposing pulleys 58 which are carried by the bar 56.

59 and 59^1 are two arched strips secured firmly to the steadier bar centrally of their length and appearing one directly above the other. The strips are horizontal when the point of the steadier bar is in the ground.

60 is a bar pivotally secured at 60^1 to the upper face of the main beam 6 and 60^2 is a link secured pivotally at one end to the bar and at the other end to the lugs 60^3 supplied on the frame 35.

61 is a rod pivotally secured to the bar 60 and to the bell crank 61^2, said bell crank being pivotally connected to the beam 3. 61^3 is a lever supplied with the ordinary hand latch 61^4 and detent 61^5 operating over the quadrant 61^2 carried by the beam 3.

63 is a rod secured to the lever and to the free arm of the bell crank 61^2.

64 and 64^1 (Fig. 6) are spring bars having their lower ends firmly bolted at 64^2 to the lower cross member 35^1 of the frame 35 and having their upper ends bifurcated and entering the channels 41^1 formed in the portions 41 of the clutches.

65 is an operating bar having its one end passing through a suitable opening 65^1 formed in one of the upright portions 35^2 of the frame 35, and its other end 65^2 received within a rectangular opening 65^3 located in the spring bar 64. A shoulder 65^4 is formed on the bar slightly in from the end 65^2 and the rectangular opening is designed to receive the bar and shoulder slidably.

66 is an arched flat spring secured at 66^1 by a pin to the bar 65 and by rivets 66^2 to the lower member 35^1 of the frame 35. The object of the spring is to press the bar upwardly against the top of the opening 65^1 and at the same time backwardly from the opening.

67 is a plate pivotally connected to the upright portion 35^2 of the frame 35, such plate resting normally against the end of the bar 65 which extends through the opening 65^1.

68 is a bar centered on a pin 68^1 which passes through the strap 68^2 and into the frame 35.

69 is an operating bar bolted at 69^1 to the upper end of the bar 68 and having its free end passing through a rectangular opening at 69^2 in the spring bar 64^1, similar to that at 65^3. A shoulder 69^3 is formed on the bar slightly back from the extending end.

70 is an arched flat spring fastened at 70^1 to the bar 69 and at 70^2 to the portion 35^1 of the frame 35. The tendency of the spring is to withdraw the bar from the opening and at the same time press it upwardly.

71 and 71^1 are lugs extending from the peripheral faces of the female members 40^2 40^3 of the clutches, such lugs being designed to engage with the adjoining end of the bars 65 and 69, respectively.

72 is an arm firmly secured to the shaft 53 and designed in a certain predetermined position of the shaft to engage with and depress the plate 67 thereby actuating the bar 65.

The frame 35 has a projecting portion 35^x passing from the upper cross portion 35^1 thereof and to this portion is secured a plate 73 having lugs 73^1 formed thereon which carry a pin 73^2 on which is pivoted a latch 74 having a notch 74^1 on its lower edge.

75 is a flat spring having its one end arched and fastened or tied to the upper side of the latch and passing over the upper face of the portion 35^x, the opposite end of the spring being bent and fastened at 76 to the under face of such portion.

77 is an arm secured to the shaft 53 and designed in a certain position of the shaft, as will hereinafter become more apparent, to engage with the upwardly directed lug 49^4 formed on the casting 49, and also with the extending end of the latch 74, it being noticed that the latch extends to the side of the lug 49^4.

In order to better understand the shocking machine I will now describe its operation, it being assumed that the parts are in a position as shown in Fig. 1, further assuming that the machine is progressing and that sheaves are being delivered from the binder tray 15 to the platform 18.

The forward motion of the machine causes the shafts 31^1 and 32^1 to rotate by virtue of the chain 34^1. The shaft 32^1 controls the operation of the crank shaft 24 which in its rotation moves the bars 26, they having a forward and backward as well as an upward and downward motion. The sheaves thrown on the platform are carried by the bars 26 forwardly on the platform and pressed through the flaps 28 and 28^1 which return to their normal position as soon as the sheaf is passed from the platform. The operator at this time presses the foot lever 19^3 so as to bring the platform in a direct line with the ends of the set of forearms or fingers 51^1. The sheaves are consequently passed from the platform through the flaps to the fingers 51^1 and below the bar 44, the butts of the sheaves resting against the rods 52 52^1. As soon as the space between the set of fingers 51^1 and the bar 44 is filled the platform is raised by operating the foot lever 19^3 to a position which will place it directly in a line with the bar 44 so that any further sheaves delivered pass to the upper side of the bar and between the bar and the set of fingers 51.

The arched strips 59^1 form a back against which the sheaves are forced and together with the arms form the sheaves into a shock. When the formation of the shock

is completed, that is, when the space between the sets of fingers and the strips is completely filled with sheaves, the operator pulls backwardly on the lever 61^3 which through the bell crank and links swings the frame 35 a quarter turn, in this way swinging the shock away from the platform. The frame 35 then assumes the position shown in Fig. 3, and is locked in this position by the notch in the latch 74 passing over the arm 9^2 (Fig. 8). As the frame 35 swings the quarter turn above mentioned the body of the spring 75 is depressed between the under face of the arm 9^2 and the upper face of the portion 35^x, and this causes the free end of the spring to force the latch downwardly against the arm 9^2, so that it is in this way automatically locked. As the frame 35 is being turned the quarter turn the bar 68 is brought into contact with the edge of the arm 9^3. The bar swings on its pivotal point and forces the actuating bar 69 lengthwise. The shoulder 69^3 of the bar is at this time engaging with the inner face of the spring bar 64^1 so that the spring bar is carried with the actuating bar and, as its forked end is connected with the driven member 40^3 of the clutch, it throws the members of the clutch into engagement.

The bevel pinion 37 is continuously rotated by the bevel pinion 37^1 which is in mesh with the bevel pinion 31^2 on the shaft 31^1 which in turn is operated by the chain 34^1. Consequently as soon as the aforesaid members of the clutch are engaged the bevel pinion 37 which is constantly rotated by the bevel pinion 37^1 carries with it the shaft 38, and the shaft in rotating swings the shaft 42 a quarter turn, this being controlled by the lug 71^1 which at a predetermined instant engages with the extending end of the bar 69 and forces it downwardly. As soon as the bar is pressed downwardly sufficient to allow it to slide through the opening 69^2 the spring bar 64^1 disengages the members of the clutch and assumes the position shown in Fig. 6 thereby stopping the rotation of the shaft.

As the shaft 42 swings a quarter turn the link 48 is actuated in such a manner that the complementary bars 45 45^1 are swung to the position shown in dotted outline in Fig. 7. The sets of fingers 51 and 51^1 and also the rods 52 and 52^1 are then in the position as shown in Fig. 3, and it will be seen that the effect of this movement is to tighten the fingers on the head of the shock and spread the rods at the butt of the shock thereby putting the shock into the best condition for depositing on the ground. Immediately the shaft 42 finishes its movement the point of the steadier bar enters the ground and remains stationary, the remainder of the machine in the forward motion of the draft animals passing on. As the draft animals advance the shaft 53 is rotated by the action of the bars 55 55^1, and the rods 57, 57^1. The rotation of the shaft gradually opens the sets of fore-arms 51 51^1 through the links 53^4 so that the shock is freed. The strips 59 and 59^1 cause the shock to pass away from the fingers and steady it until it is left standing by itself on the ground. The relative position of the steadier bar to the machine at the time the shock is delivered entirely from the fingers is shown in dotted outline in Fig. 4. The same rotation of the shaft 53 as caused by the steadier bar brings the arm 72 into engagement with the plate 67 and forces the plate inwardly toward the frame 35. The plate carries with it the bar 65 and the shoulder 65^4 on the bar engaging with the face of the spring bar forces it toward the bevel pinion 39 so that the driven member 40^2 of the clutch is brought into engagement with the drive member 40. The shaft 38 is rotated by the bevel pinion 39 in an opposite direction to that already described and the shaft 42 is swung one quarter turn in the opposite direction to that hereinbefore stated. When it has been turned one quarter turn (return motion) the lug 71 engages with the adjoining end of the bar 65 and depresses it sufficiently to allow the spring bar 64 to release itself from the shoulder 65^4 and it carries with it the driven member 40^2 of the clutch, and the shaft stops rotating. The arm 72 must not pass off the plate 67 in turning until the shaft has reached the original or upright position for the reason that as soon as the arm passes away from the plate, the spring bar 64 will be free to spring back and disengage the clutch members. This must not take place until the shaft is practically in the upright position. Consequently, the plate 67 is provided with a side extension 67^4 to accommodate the arm. The extended portion of the plate need not pass higher than this before the shaft reaches the vertical position. In the position shown in Fig. 4, it will be noticed that the shaft 53 is approximately level with the shaft 38 and in referring to Fig. 11 it is to be noticed that the arm 72 extends what might be termed radially outwardly from the center of the shaft 38. Consequently the arm 72 virtually turns with the shaft 38 and in a quarter turn from the position shown in Fig. 4 will not pass higher than it.

Just before the driven member 40^2 of the clutch is thrown out of engagement with the male member 40, that is, just before the shaft 42 resumes its normal position, the arm 77 engages with the lug 49^4, and as the shaft 42 continues to swing the shaft 53 is turned through the action of the lug on the arm so as to draw the steadier bar back to

its original position, as it will be understood the point was withdrawn from the ground as soon as the shaft 42 commenced to return. The bar 44 serves as a liner for the steadier bar, as the steadier bar has to move or slide along it on account of the pulleys. At the same time that the arm 77 is engaging with the lug 49^4 it is being gradually slipped toward the end of the lug and accordingly it engages with the latch 74 and raises it so as to free the notch from the arm 9^2. This is done just before the shaft 42 resumes its normal position. The operator now returns the frame 35 to its original position by pressing the foot lever so as to move the rod 61 in an opposite direction to its original movement which swung the frame the first quarter turn, that is, to the position shown in Fig. 3. It would be impossible to swing the frame if the latch 74 were not released as above explained.

The complete operation as hereinbefore described is repeated each time a shock is deposited on the ground.

What I claim as my invention is:

1. In a shocking machine, the combination with the sheaf delivery tray of a binding machine and an adjoining receiving platform carrying means for delivering sheaves from the platform, of means designed to receive the sheaves to form a shock and adapted to be turned one-quarter turn in a horizontal position, and to be swung one-quarter turn in a vertical plane to deposit the shock butt down on the ground, said means being further designed to tighten on the head of the sheaves and loosen the butts of the sheaves forming the shock when being turned in the vertical plane, as and for the purpose specified.

2. In a shocking machine, the combination with the sheaf delivery tray of a binding machine and an adjoining receiving platform carrying means for delivering sheaves from the platform, of means designed in the normal position to receive the sheaves in their horizontal position to form a shock and adapted to be swung one-quarter turn in a horizontal plane and to be turned in a vertical plane thereby depositing the shock butt down on the ground, and means for steadying the shock after it has been deposited on the ground, as and for the purpose specified.

3. In a shocking machine, the combination with the sheaf delivery tray of a binding machine and an adjoining receiving platform carrying means for delivering sheaves from the platform, of means designed to receive the sheaves to form a shock and adapted to be turned one-quarter turn in a horizontal position, and to be swung one-quarter turn in a vertical plane to deposit the shock butt down on the ground, said means being further designed to tighten on the head of the sheaves and loosen the butts of the sheaves forming the shock when being turned in the vertical plane, and means adapted to steady the shock after it is deposited on the ground, as and for the purpose specified.

4. In a shocking machine, the combination with the binding machine frame and sheaf delivery tray, of suitable supporting beams secured to the binding machine frame and adjoining the sheaf delivery tray thereof, of an adjustable horizontally extending platform adapted to receive the sheaves from the tray; bars slidably constrained at their upper ends, a rotatably mounted crank carrying said bars, said bars being adapted to pass the sheaves from the platform; and shields interposed between the bars, as and for the purpose specified.

5. In a shocking machine, the combination with the binding machine frame and sheaf delivery tray, of suitable supporting beams secured to the binding machine frame and adjoining the sheaf delivery tray thereof, of an adjustable horizontally extending platform adapted to receive the sheaves from the tray; bars slidably constrained at their upper ends, a rotatably mounted crank carrying said bars, said bars being adapted to pass the sheaves from the platform; bulged shields interposed between the respective bars; and opposing sets of coöperating spring pressed flaps carried the one by the platform and the other at the lower ends of the shields, as and for the purpose specified.

6. In a shocking machine, the combination with suitable supporting beams extending at right angles the one from the other, of a set of opposing vertical posts secured to one beam; brackets extending from the posts; a platform connected with said brackets; springs supporting the free side of the platform; opposing horizontally extending bars pivotally secured to the upper ends of the posts; vertically directed bars secured pivotally to the platform and to the aforesaid bars; a cross bar connecting the upper ends of said vertically directed bars; a crank shaft carried by the said vertical bars; bars secured to the cranks of the crank shaft and having their upper ends slidably connected with the cross bar uniting the upper ends of the vertical bars; beams extending downwardly from the latter cross bar; cross members supported by the beams; shields interposed between the respective slidable bars and secured at their upper ends to the said cross bar and at their lower ends to the cross members supported by the beams; opposing sets of vertically extending coöperating spring pressed flaps pivotally secured, the one set to the side of the platform and the other to the lower ends of the shields; and means for rotating the crank shaft, as and for the purpose specified.

7. In a shocking machine, the combination

with a binding machine and a sheaf delivery tray and a set of connected beams secured to the binding machine frame, wheels for supporting said beams a receiving platform carried by one of said beams and located adjacent the delivery tray means for delivering the sheaves from the platform, of a main stationary casting secured to the other of the beams and having two parallel arms extending therefrom; a supporting frame pivotally secured between the arms; a cross shaft mounted in suitable bearings formed in the sides of the supporting frame; means for turning the said frame an extending shaft secured to the cross shaft and passing at right angles therefrom; means for rotating the cross shaft and means carried by the extending shaft and adapted to receive the sheaves passed from the platform and form them into a shock, as and for the purpose specified.

8. In a shocking machine, the combination with a binding machine and a sheaf delivery tray and a set of connected beams secured to the frame of the binding machine supporting wheels for said beams a receiving platform carried by said beams and located adjacent the delivery tray and provided with means for delivering the sheaves from the platform, of a main stationary casting secured to one of the beams and having two parallel arms extending therefrom; a supporting frame pivotally secured between the arms means for turning the same; a cross shaft mounted in suitable bearings formed in the sides of the supporting frame; an extending shaft secured to the cross shaft and passing at right angles therefrom; means controlled by the turning of said frame for rotating the cross shaft; and means carried by the extending shaft for receiving the sheaves from the platform and designed to form them into a shock, as and for the purpose specified.

9. In a shocking machine, the combination with a binding machine and its sheaf delivery tray a set of connected beams secured to the binding machine frame, wheels for said beams a receiving platform carried by one of said beams and located adjacent the delivery tray and provided with means for delivering the sheaves from the platform, of a main stationary casting secured to the other of the beams and having two parallel arms extending therefrom; a supporting frame pivotally secured between the arms means for turning the same and locking it in such turned position; a cross shaft mounted in the sides of the supporting frame; an extending shaft secured to the cross shaft and passing at right angles therefrom; means controlled by the turning of said frame for rotating the cross shaft; complementary bars pivotally secured to the extending shaft; arms firmly secured to the bars; cross shafts mounted in the free ends of the arms; fingers carried by said shafts means for swinging the complementary bars on their pivotal points at a predetermined period; and means for rotating the shafts carrying the fingers at a predetermined period, as and for the purpose specified.

10. In a shocking machine, the combination with a binding machine and its sheaf delivery tray a set of connected beams secured to the binding machine frame, wheels for said beams a receiving platform carried by one of said beams and located adjacent the delivery tray and provided with means for delivering the sheaves from the platform, of a main stationary casting secured to the other of the beams and having two parallel arms extending therefrom; a supporting frame pivotally secured between the arms; a cross shaft mounted in the sides of the supporting frame; an extending shaft secured to the cross shaft and passing at right angles therefrom; means for rotating the cross shaft; means for turning the supporting frame and for locking it in such turned position; a pair of complementary bars pivotally secured to the extending shaft and having each an end turned at right angles to the body portion thereof; a standard extending at right angles from the said extending shaft and located midway between the complementary bars; sets of arms secured to the body portion of the complementary bars, rotatably mounted shafts carried by the extended ends of said arms; sets of fingers secured to the shafts; a rocker arm pivotally secured to the standard and connected to the complementary bars; rods extending at right angles from the turned portions of the complementary bars; and a bar connecting the rocker arm with the supporting frame; as and for the purpose specified.

11. In a shocking machine, the combination with a binding machine and its sheaf delivery tray a set of connected beams secured to the binding machine frame, a receiving platform carried by one of said beams and located adjacent the delivery tray and provided with means for delivering the sheaves from the platform, of a main stationary casting secured to the other of the beams and having two parallel arms extending therefrom; a supporting frame pivotally secured between the arms; a cross shaft mounted in the sides of the supporting frame; an extending shaft secured to the cross shaft and passing at right angles therefrom; means for rotating the cross shaft; means for turning the supporting frame and for locking it in such turned position; a pair of complementary bars pivotally secured to the extending shaft and having each an end turned at right angles to the body portion thereof; a standard extending at right angles from the said ex-

tending shaft and located midway between the complementary bars; sets of arms secured to the body portion of the complementary bars rotatably mounted shafts mounted in the ends of said arms; sets of fingers secured to the shafts; a rocker arm pivotally secured to the standard and connected with the complementary bars; rods extending at right angles from the turned portions of the complementary bars; a bar connecting the rocker arm with the supporting frame; a shaft carried by the extending shaft, such shafts being parallel; rods at the end of the latter shaft; cranks at the ends of the shafts carried by the sets of arms links connecting said cranks and rods; and means adapted to rotate the shaft carrying the rods, said fingers and arms being adapted to receive the sheaves passed from the platform to form a shock, as and for the purpose specified.

12. In a shocking machine, the combination with the main beam, of a main casting secured to the beam and provided with arms which extend parallel with the beam; a supporting frame pivotally secured between the arms means for turning the frame a quarter turn; a cross shaft carried by the frame; opposing bevel pinions rotatable on the shaft; a bevel pinion engaging with the aforesaid pinions; means for driving the latter bevel pinion; sets of clutches controlling the operation of the shaft; an extending shaft secured to the cross shaft and fastened at right angles thereto shock forming arms connected with said shaft; a rotatable shaft parallel with and supported from the extending shaft; means adapted to engage with one of the arms of the casting when the frame is turned a quarter turn and throw one of the clutches into engagement thereby rotating the cross shaft; means for disengaging said clutch when the shaft is rotated a quarter turn; means carried by the parallel shaft and adapted to engage with the ground whereby the shaft is rotated in the forward motion of the machine; means carried by the parallel shaft adapted to throw the other of the clutches into engagement and rotate the cross shaft in the opposite or reversed direction; and means whereby the said clutch is throwu out of engagement when the shaft has rotated a quarter turn, as and for the purpose specified.

13. A shocking machine comprising in combination a main and a transverse beam interconnected the one to the other, a carriage wheel, a caster wheel, and a traction wheel supporting the beams, an axle carrying the traction wheel a main casting for the axle secured firmly to the free end of the main beam, the casting being provided with two parallel and extending arms; a drive shaft carried by the upper of the arms; a bevel pinion and a chain wheel at the opposite ends of the shaft; a corresponding chain wheel secured to the traction wheel a chain connecting said wheels whereby the shaft is rotated; a supporting frame upper and lower pivot pins pivotally securing said frame to the arms means for giving the frame a quarter turn; a cross shaft mounted in the sides of the frame; opposing bevel pinions rotatable on the shaft and carrying the male members of a clutch; a bevel pinion secured to the lower end of the upper pivot pin and engaging with the aforesaid bevel pinions; a bevel pinion secured to the upper end of said pin and meshing with the pinion carried by the drive shaft; female clutch members feathered on the cross shaft; an extending shaft secured to the cross shaft and passing at right angles therefrom shock forming arms connected with said shaft; a rotatable shaft parallel with and supported from the extending shaft; means adapted to engage with one of the arms of the casting when the frame is turned a quarter turn, said means being designed to throw one of the female members of the clutch into engagement thereby rotating the cross shaft; a lug extending from such female clutch member and designed to disengage the members of the clutch when the shaft is rotated a quarter turn; means adapted to rotate the parallel shaft immediately the clutch members are disengaged; and means operated by the rotation of the parallel shaft for throwing the female member of the other of the clutches into engagement whereby the cross shaft is rotated in the opposite or reverse direction; and a lug extending from the female member of said clutch and adapted to disengage the clutch when the shaft is rotated a quarter turn, as and for the purpose specified.

14. In a shocking machine, the combination with a suitably supported stationary main casting having two parallel arms extending therefrom, of a supporting frame pivotally secured to and between the arms, means for giving said frame a quarter turn; a cross shaft mounted in suitable bearings carried by the frame, opposing bevel pinions rotatable on the cross shaft and carrying the male members of a clutch; a bevel pinion intermeshing with the aforesaid pinions and provided with suitable driving means; female clutch members feathered on the shaft and engageable with the male members, said female members having extending portions provided with a peripheral groove; spring bars having their lower ends secured to the frame and their upper ends bifurcated and received within the grooves aforesaid, said bars having each an opening therein: a bar pivotally secured to the frame and adapted to engage with the lower of the arms when the frame is turned a quarter

turn; an operating bar pivotally secured to the latter bar and having its extending end passing within the opening in the opposite spring bar, said operating bar being provided with a shoulder; a second operating bar having its one end passing through an opening provided in the frame, and its other end entering the opening in the other of the spring bars, there being a shoulder formed on the operating bar at such end; arched flat springs secured to the operating bars and to the frame, said springs being designed to press the bars away from the spring bars and upwardly; a plate pivotally connected to the frame and overhanging the end of the operating bar which passes beyond the framework; lugs extending from the female members of the clutches and adapted in the rotation of such members to engage with the adjoining ends of the operating bars thereby disengaging the clutches at predetermined instants; a shaft secured to the cross shaft and passing at right angles thereto; shock forming arms connected with the shaft, a rotatable shaft parallel with the extending shaft and carried thereby, means for rotating the parallel shaft at a predetermined period; and an arm extending from the parallel shaft and adapted to engage with the aforesaid plate thereby actuating the adjoining release bar, as and for the purpose specified.

15. In a shocking machine, the combination with a stationary suitably supported casting having a pair of upper and lower parallel arms extending therefrom, of a supporting frame pivotally secured to and between the arms, means for giving said frame a quarter turn; a rotatable cross shaft mounted in the sides of the frame; an extending shaft secured to and passing at right angles from the cross shaft; shock forming arms connected with said shaft, a shaft parallel with the latter shaft and carried thereby; means for rotating the cross shaft to cause the extending and parallel shafts to swing a quarter turn; means carried by the frame and adapted to engage with the upper of the arms when the frame has been swung a quarter turn thereby locking the frame in the turned position; and means extending from the parallel shaft and designed to engage with the aforesaid means and throw it out of engagement with the arm, as and for the purpose specified.

16. In a shocking machine, the combination with the stationary suitably supported casting having a pair of parallel arms extending therefrom, of a supporting frame pivotally secured to and between the arms, means for giving the frame a quarter turn to a position at right angles to the arms; a rotatable cross shaft mounted in the sides of the frame; an extending shaft secured to and passing at right angles from the cross shaft; shock forming arms connected with said extending shaft; a shaft parallel with the latter shaft and carried thereby; means for rotating the cross shaft to cause the extending and parallel shafts to swing a quarter turn and back again to normal position; a latch having a notch therein carried by the frame and designed to engage with one of the arms of the casting and lock the frame to the arm when the frame is turned to a position at right angles to the arms; and an arm extending from the parallel shaft and designed to engage with the latch and release it from the arm when the shafts are swung back to their normal position as aforesaid, as and for the purpose specified.

17. In a shocking machine, the combination with the stationary suitably supported casting having a pair of upper and lower parallel arms extending therefrom, of a supporting frame pivotally secured to and between the arms, means for giving the frame a quarter turn to a position at right angles to the arms; a rotatable cross shaft mounted in the sides of the frame; an extending shaft secured to and passing at right angles from the cross shaft; shock forming arms connected with said extending shaft; a shaft parallel with the latter shaft and carried thereby; means for rotating the cross shaft to cause the extending and parallel shafts to swing a quarter turn and back again to normal position; a plate having lugs extending upwardly therefrom secured to the under face of a portion of the frame adjoining the upper of the arms; a latch having a notch therein pivotally secured to the lugs; a flat spring secured to the upper side of the latch and passing downwardly beneath the arm and fastened to the under face of the plate, such spring being designed to press the latch into engagement with the upper of the arms when the frame is swung to a position at right angles to the arms, and to throw the latch upwardly when the frame is in a plane with the arms; and an arm extending from the parallel shaft and designed to engage with the latch to release it from the arm when the shafts are turned back to their normal position, as aforesaid, as and for the purpose specified.

18. In a shocking machine, means for receiving the sheaves and forming a shock, said means comprising a set of pivotally supported bars, sets of arms extending from the bars; sets of fingers passing from the arms; and means for turning the bars on their pivotal points to close the fingers and arms on the head of the shock and loosen them on the butt, as and for the purpose specified.

19. In a shocking machine, the combination with means adapted to deposit the shock on the ground, of means carried by

the machine and adapted to remain stationary for a short length of time with the deposited shock as the machine progresses and then to return to its original position, as and for the purpose specified.

20. In a shocking machine, the combination with the means designed to deposit a shock on the ground, of means adapted to engage with the ground at a predetermined instant and to remain with the shock when deposited thereby steadying it; and means for returning the aforesaid means to its normal position, as and for the purpose specified.

21. In a shocking machine, the combination with the means adapted to deposit the shock on the ground, of coöperating means adapted to engage with the ground when a shock is deposited and to remain stationary with the shock, supporting it, as the machine advances; and means for returning said latter means to its normal position at the end of a predetermined length of time, as and for the purpose specified.

22. In a shocking machine, the combination with a suitably supported shock forming and depositing means, of a steadier bar having arched strips thereon adapted to partially circumscribe the shock, said steadier bar being supported in such a manner that it engages with the ground and remains stationary with the shock as the machine advances; and means for returning the steadier bar to its normal position, as and for the purpose specified.

23. In a shocking machine, the combination with the means designed to receive the sheaves and form a shock and adapted to be turned in a horizontal and then in a vertical plane to deliver the shock so formed on the ground, of a steadier bar having arched strips secured thereto and designed to partially circumscribe the shock, said steadier bar being adapted to engage with the ground when the shock is deposited and to remain stationary with the shock as the machine advances; and connections adapted to swing the steadier bar upwardly and away from the shock to its normal position when the shock receiving means is turned in a vertical plane, as and for the purpose specified.

24. In a shocking machine, the combination with the means designed to receive the sheaves to form a shock and adapted to be turned in a horizontal and then in a vertical plane to deliver the shock so formed on the ground; of a steadier bar designed to turn with the aforesaid means, and to engage with the ground when the shock is deposited thereon and remain in the stationary position with the shock as the machine advances, said steadier bar being returned to its normal position at a predetermined instant, as and for the purpose specified.

25. In a shocking machine, the combination with a suitably supported shock forming means adapted to be turned horizontally and then vertically to deliver a shock on the ground, of a steadier bar having arched strips secured thereto and adapted to partially circumscribe the shock, said steadier bar being designed to turn with the aforesaid means and to engage with the ground when the shock is deposited and remain stationary with the shock as the machine advances; and means interconnected with the steadier bar whereby said bar is returned to its normal position at a predetermined instant, as and for the purpose specified.

26. In a shocking machine, the combination with the suitably supported sheaf receiving and shock forming means adapted to be swung horizontally and turned in a vertical plane to deposit the shock on the ground, of a shaft, bearings therefor extending from such supporting means; bars secured to the shaft at their one end, a ring connecting their upper ends; a steadier bar, arched strips secured thereto designed to partially circumscribe the shock, rods connecting said steadier bar with the aforesaid bars the upper end of said steadier bar passing slidably through the ring and the lower end thereof being adapted to engage with the ground when the shock is deposited and to remain stationary with the shock; actuating means and means carried by the shaft and adapted to engage with said actuating means for returning the bar to its normal position at a predetermined instant, as and for the purpose specified.

27. In a shocking machine, the combination with a stationary suitably supported casting having a pair of parallel arms extending therefrom and a supporting frame pivotally secured to and between the arms, a rotatable cross shaft mounted in the sides of the frame; an extending shaft secured to and passing at right angles from the cross shaft, a parallel shaft carried by the extending shaft; bars firmly secured each to the parallel shaft at their one end, a ring interconnecting their other ends; a steadier bar, rods pivotally securing said bar to aforesaid bars, said steadier bar having its upper end passing slidably through the aforesaid ring; arched strips secured to the steadier bar, said steadier bar being designed to engage with the ground and remain stationary with the shock as the machine advances; actuating means and means carried by the parallel shaft and engageable with said actuating means for returning the steadier bar to its normal position as and for the purpose specified.

28. In a shocking machine, the combination with a stationary suitably supported casting having a pair of parallel arms extending therefrom and a supporting frame pivotally secured to and between the arms, a rotatable cross shaft mounted in the sides of the frame, an extending shaft secured to and passing at right angles from the cross shaft, means for rotating the cross shaft, brackets carried by said extending shaft, a parallel shaft rotatably mounted in said brackets, bars firmly secured to the parallel shaft each at their one end, a ring connecting their other ends; a steadier bar, converging rods pivotally connecting the steadier bar to the aforesaid bars, the upper end of the said steadier bar passing slidably through the ring; arched strips secured to the steadier bar, said steadier bar being designed to engage with the ground when a shock is deposited and remain stationary with the shock as the machine advances; and means for returning the steadier bar to its normal position, as and for the purpose specified.

29. In a shocking machine, the combination with a stationary suitably supported casting having a pair of parallel arms extending therefrom and a supporting frame pivotally secured to and between the arms, a rotatable cross shaft mounted in the sides of the frame, an extending shaft secured to and passing at right angles from the cross shaft, and clutch controlled means for operating the cross shaft, of a parallel shaft carried by the extending shaft; bars secured at one end to the parallel shaft, a ring connecting their free ends; a steadier bar passing through the ring; rods pivotally connected to the aforesaid bars and to the steadier bar so that the action of the steadier bar will rotate the said parallel shaft; arched strips secured to the steadier bar; a plate pivotally secured to the supporting frame and for throwing the clutch aforesaid into commission; and an arm extending from the parallel shaft and engaging with the plate to operate the clutch when the parallel shaft is rotated by the action of the steadier bar, as and for the purpose specified.

30. A shocking machine comprising a bar 44 extending parallel with the ground, a steadier bar movably supported by said bar, means for forming and depositing a shock from the machine and means holding the steadier bar stationary for a short length of time with the deposited shock as the machine progresses.

Signed at Carberry, in the Province of Manitoba, this 23rd day of March 1909.

JOHN McLEOD.

Witnesses:
FRED HICKS,
HORACE M. BROWN.
