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3 SHEETS—SHEET 1.



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By

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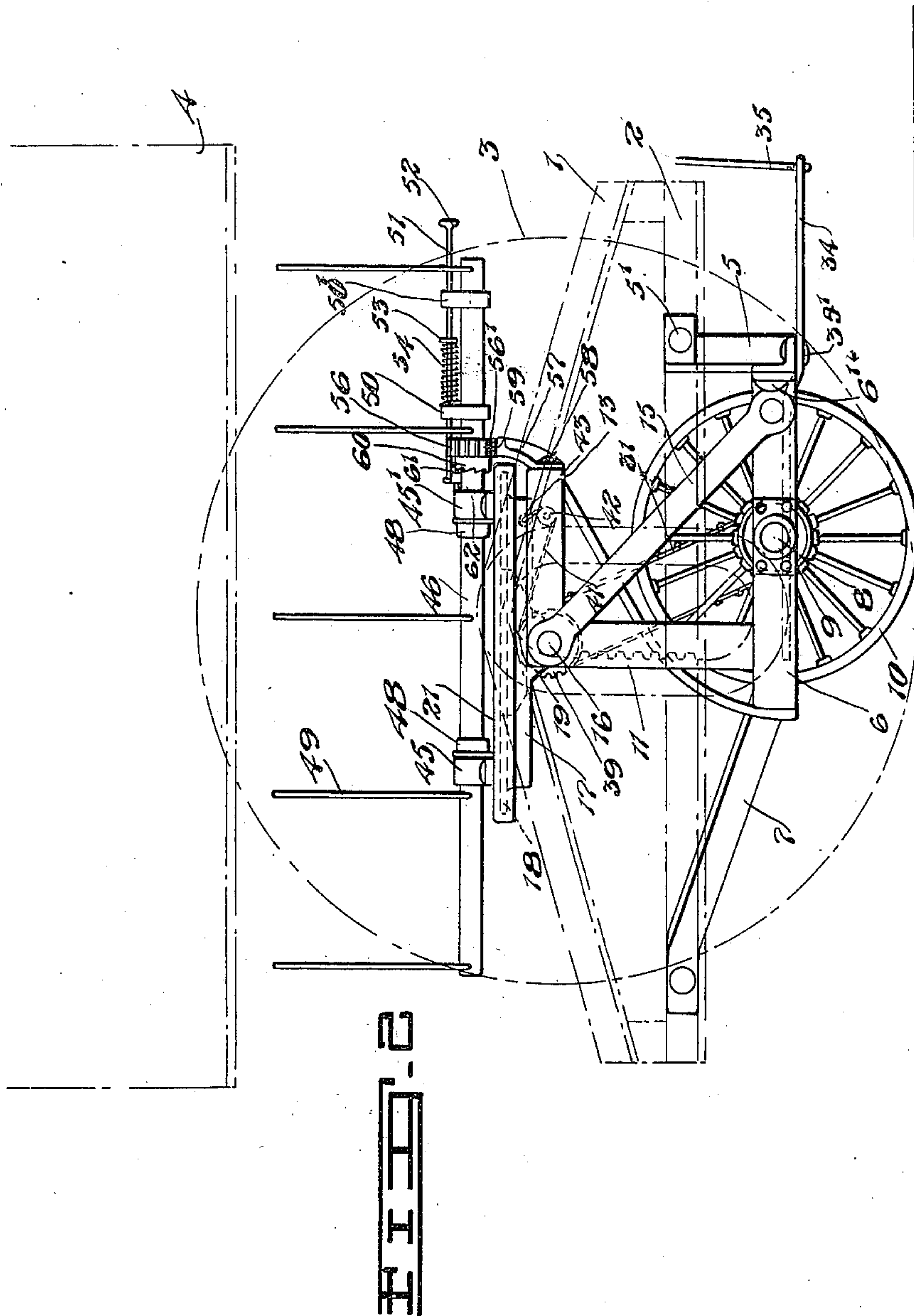
SHOCKING MACHINE.

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964,073.

Patented July 12, 1910.

3 SHEETS—SHEET 2.



WITNESSES

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APPLICATION FILED AUG. 5, 1909.

3 SHEETS—SHEET 3.



By S. Fielding  
Frank J. Luntz Atty



# UNITED STATES PATENT OFFICE.

ALBERT ERNEST WATT AND SAMUEL FIELDING, OF BIENFAIT, SASKATCHEWAN,  
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## SHOCKING-MACHINE.

964,073.

Specification of Letters Patent.

Patented July 12, 1910.

Application filed August 5, 1909. Serial No. 511,300.

*To all whom it may concern:*

Be it known that we, ALBERT ERNEST WATT and SAMUEL FIELDING, of the village of Bienfait, in the Province of Saskatchewan, Canada, have invented certain new and useful Improvements in Shocking-Machines, of which the following is the specification.

Our invention relates to binders, and more particularly to shocking attachments therefor, and has for its object to provide a device of this nature which will receive the sheaves from the binder, gather them horizontally into shocks, and finally deposit the shock in an upright position with its base resting upon the ground after which the mechanism is released from the shock and returned to the original position.

It consists essentially in an extending frame secured to the binder frame and supported by carriage wheels, a tray supported above the extending frame, said tray being adapted to turn on its central point and swing on the supporting shaft; fingers carried by the tray and designed to receive the sheaves to form a shock, means for operating the fingers, and means for operating the tray, the parts being arranged and constructed as hereinafter more particularly described.

Figure 1 is a plan view of our device in position the fingers being open to receive the sheaves and the binder being shown in dotted outline. Fig. 2 is a side elevation of the device as in Fig. 1. Fig. 3 is a front elevation of the machine. Fig. 4 is an enlarged view of the tray and the tray stand. Fig. 5 is a vertical sectional view through the tray and stand, the section being taken in the plane denoted by the line X X', Fig. 4. Fig. 6 is an enlarged detailed end view of the clutch and clutch bar on the upper cross shaft.

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

1 represents the binder of which 2 is the side frame, 3 the main drive wheel, and 4 the deck over which the sheaves are delivered from the binder.

5 is an extending angle iron bar firmly secured at 5' to the frame 2.

6 is a yoke-shaped bar firmly bolted to the bar 5 at 6' and extending in a horizontal plane.

7 is a brace secured to the bar 6 and to the binder frame 2, the bars 5 and 6 and the brace 7 constituting what we term the extending frame.

8 is a shaft suitably mounted in bearings 9 secured to the yoke-shaped bar 6, and 10 is a carriage wheel mounted centrally on the shaft which supports the extending end of the frame.

11 and 12 are vertically directed and opposing standards secured to the bar 6.

13 is a horizontally disposed U-shaped bar secured firmly to the upper ends of the standards 11 and 12, and 14 and 15 are braces fastened at their upper ends to the bar 13 and at their lower ends to the yoke bar 6. An upper rotatable cross shaft 16 is mounted in the extending ends of the standards 11 and 12, such shaft passing also through the bar 13 and the braces 14 and 15 and extending toward the binder at 16'.

17 is a circular stand for the finger tray later referred to. The stand is provided with an outwardly turned flange 18 and lugs 19, the lugs having transverse openings 20 therein which receive the shaft 16 in such a manner that the stand is swingable on the shaft it being understood that it is contained within the U-shaped bar 13.

21 is the finger tray which has its outer edge closed over the flange of the stand 17 so that the tray can be rotated if desired on the stand. The tray is provided with an extending lug 22 which appears at its edge and is designed to engage with the upper end 23 of a clutch bar 24 pivotally secured by a pin 25 through lugs 26 26' to the standard 12. The clutch bar is split at 24' to admit of the female member 27 of a clutch which is slidably secured to the shaft by a feather 27'. The clutch is provided with a circumferentially extending groove 27<sup>2</sup> and receives a strap 28 which carries oppositely directed pins 29 that are received within vertically directed slots 29' appearing in the clutch bar.

30 is a drive gear keyed firmly on the shaft 8 and united through a drive chain 31 with the gear 32 formed on the male member 33 of the clutch, said member being rotatable on the shaft 16.

34 is a bar pivotally secured to the bar 5 at 34' and fastened at its one end to the lower end of the clutch bar 24. A link 35



is secured to the extending end of the bar 34 and passes within convenient range of the operator on the binder.

36 is a bevel pinion firmly secured to the shaft 16 and located so as to mesh with a complementary pinion 37 appearing at the center and upon the lower side of the tray 21.

38 is a drum loosely mounted on the shaft 16 and having secured to its outer face a pinion 39 which is adapted to engage with a rack 40 located on the under face of the tray. The drum and pinion are prevented from moving longitudinally on the shaft by any suitable means such as collars.

41 is a cable firmly fastened at its one end to the drum and having its opposite end passing around a pulley 42 carried by the U-shaped bar 13 and secured to the stand at 43. The pulley is fastened to the bar by brackets 44.

45 45' are suitable opposing bearings mounted on the upper face of the tray and carrying two similar parallel and rotatable shafts 46 and 47 which extend considerably beyond the tray and are prevented from longitudinal displacement by collars 48 which engage with the bearings. Each shaft carries extending arched fingers 49 which are designed to receive the sheaves deposited from the binder deck and from them into a shock when the machine is actuated. The fingers on the respective shafts extend in opposite directions and are arched upwardly and gradually shorten in length so that they pass the heads of the sheaves together in forming the shock when the shafts are rotated toward each other.

50 and 50' are upwardly directed members secured to the shafts 46 and 47 in such a manner that the shafts are free to rotate and the members prevented from longitudinal displacement on the shafts.

51 is a trip bar slidably carried by the members 50 and 50' and having an enlarged end 52 adapted to engage with the ground when the shock is deposited.

53 is a shoulder on the bar appearing between the members 50 and 50'.

54 is a spiral spring encircling the trip bar and having its one end bearing against the shoulder 53 and its other end against the face of the member 50.

55 is a gear wheel firmly keyed to the shaft 47 and between the bearings 45' and the member 50.

56 is a gear keyed on the shaft 46 and having part of the teeth stripped from its face at 56' there being sufficient teeth on the gear to cause it to mesh continuously with the gear 55 for the complete operation of the fingers.

57 is a bracket secured at 58 to the U-shaped bar 13 and having a rack formed at 59 on its upper face said rack being designed

to engage with the teeth of the gear 55 in certain positions of the tray. The reason for stripping the teeth from the gear 56 will now be obvious as it will be seen that if the teeth on both the gears were allowed to engage with the rack the gears would lock and consequently no motion would be given to the rack when the tray turned to a position which would bring the gears in engagement with the rack.

60 is a sleeve located on the shaft and extending from the gear 56. The sleeve is provided with teeth 61.

62 is a dog pivotally secured by a pin 63 to lugs 64 extending from the face of the bearing 45' said dog having the end 65 thereof normally engaging with the teeth formed on the sleeve being held by the pressure of the flat spring 66. The dog is located so that the inner end of the trip bar may engage with it to withdraw the end 65 thereof from the teeth.

67 are strong spiral springs uniting the shafts 45 and 46 and designed to open the fingers together when the shafts are free to rotate.

In order to better understand the shocking machine we will now describe its operation, assuming the parts in the position shown in Figs. 1, 2, and 3 with the fingers filled with sheaves sufficient to form a proper shock and further that the machine is advancing with the binder. The operator pushes on the link 35 and consequently actuates the female member 27 of the clutch throwing it into engagement with the male member 32 thereby rotating the shaft 16. The shaft carries with it the bevel pinion 36 and consequently the tray 21 is rotated and carries with it the fingers and the sheave. Upon the first motion of the tray the gear 55 is passed over the rack closing the fingers carried by the shafts 46 and 47 together so that the sheaves are formed into a shock and held tightly. At the time the gear 56 is being rotated by the gear 55 the dog 62 is operating on the teeth of the sleeve and prevents the fingers from loosening when the gear wheel 55 passes off the rack. The butt of the shock is heavier than the head and as the shock is located centrally on the tray there is continuously a tendency for the butt of the shock to upset or swing the tray on the shaft 16.

As soon as the gear 55 passes from the rack the tray swings downwardly slightly and rests on the U-shaped bar 13 and will remain in its horizontal position till the butt of the shock has sufficiently advanced in the rotation of the tray to cause the tray to upset rearwardly and deposit the butt of the shock on the ground. Before the butt strikes the ground the trip rod 51 engages with it and withdraws the dog from the teeth of the sleeve which frees the shafts to turn and



they are immediately rotated away from each other by the action of the springs 67. This causes the fingers to pass away from the shock at the moment it is deposited on the ground. The tray however continues its rotation and just after the shock is deposited the rack 40 engages with the pinion 39 and rotates the drum winding the cable which causes the stand 17 to resume its original or horizontal position, the fingers at this time being open to receive further sheaves. As the tray passes to its original position the lug 22 engages with the upper end 23 of the clutch bar 24 and withdraws the female member of the clutch from engagement with the male member which stops the rotation of the tray till the operator desires to deposit another shock.

It will of course be understood that the cable is free to unwind from the drum when the tray is upset as the bevel pinion 39 is free of the rack 40 and is rotatable in respect to the shaft.

What we claim as our invention is:

1. In a shocking machine, the combination with the deck of a binder, of a frame extending from the binder at the side adjoining the deck thereof, a tray disposed above the frame and supported therefrom, said tray being rotatable around its central point and swingable upon a horizontal axis, means prohibiting the tray from swinging in one direction, extending fingers carried by the tray and adapted to receive sheaves delivered from the binder deck and form them into a shock, and means for operating the tray, as and for the purpose specified.

2. In a shocking machine, the combination with the deck of a binder, of a frame extending from the binder at the side adjoining the deck thereof, a tray disposed above the frame and supported thereby, said tray being rotatable about its central point and swinging backwardly upon a horizontal axis, extending fingers carried by the tray adapted to receive sheaves delivered from the deck and form them into a shock, means for rotating the tray, and means for returning the tray to its original position when overturned, as and for the purpose specified.

3. In a shocking machine, the combination with the deck of a binder, of a frame extending from the binder at the side adjoining the deck thereof, a carriage wheel supporting said frame, a tray disposed above the frame and supported therefrom said tray being rotatable about its central point and rearwardly swingable around a horizontally disposed axis, extending fingers carried by the tray, means for closing the fingers at a predetermined period in the rotation of the tray, means actuated by the carriage wheel for rotating the tray, means for returning the tray to its original position when swung backwardly, and means for stopping the ro-

tation of the tray at a predetermined instant, as and for the purpose specified.

4. In a shocking machine, the combination with the deck of a binder, of a frame secured to and extending from the binder at the side adjoining the deck thereof, a suitable carriage wheel for the frame, a circular stand located above the frame and swingable rearwardly upon a horizontally disposed axis, a finger tray carried by the stand, said tray being designed to turn about its central point, means actuated by the carriage wheels for rotating the stand, means for returning the stand together with the tray to the original position after being swung backwardly, extending fingers carried by the tray, means for closing the fingers at a predetermined period, and means for stopping the rotation of the tray at a predetermined instant, as and for the purpose specified.

5. In a shocking machine, the combination with the deck of a binder, of a frame extending from the binder at the side adjoining the deck thereof, a horizontal shaft carried by the frame, a carriage wheel on said shaft, a circular stand having an outwardly turned flange disposed above the frame, opposing standards extending upwardly from the frame, a horizontal shaft mounted in said standards and upon which the stand is pivoted, a finger-tray having its outer edge closing over the flange of the stand, means actuated by the carriage wheel for rotating the tray around its central point on the stand, extending fingers mounted upon the tray, means for closing the fingers at a predetermined period during the rotation of the tray, and means for stopping the rotation of the tray at a predetermined instant, as and for the purpose specified.

6. In a shocking machine, in combination, a frame, a horizontally extending shaft mounted in the frame, a carriage wheel on said shaft, a circular stand disposed above the frame, an upper cross shaft upon which the stand is swingable, vertically directed standards extending from the frame in which the cross shaft is mounted, a finger carrying tray carried by the stand and rotatable about its central point, a horizontally disposed bar secured to the standards and adapted to prevent the stand from swinging forwardly, means actuated by the carriage to rotate the upper cross shaft, a bevel pinion keyed on the shaft, a complementary pinion located on the underside of the tray and meshing with the aforesaid pinion, a drum rotatable on the said shaft, a pinion secured to the drum and rotatable therewith, a rack secured to the under face of the tray and engageable with the pinion, a pulley carried by the horizontally disposed bar, and a cable extending from the drum, around the pulley, and secured to the stand, as and for the purpose specified.



7. In a shocking machine, in combination, a frame, a horizontally disposed shaft, a carriage wheel thereon, opposing vertically directed standards extending from the frame, a horizontally disposed U-shaped bar secured to the standards at their upper ends, an upper cross shaft mounted in bearings formed in the standards, a circular stand rearwardly swingable around the upper shaft, a tray carried by the stand and rotatable about its central point, means actuated by the carriage wheel for rotating the tray, a set of similar opposing and parallel shafts secured to the upper face of the tray, fingers extending from each of the shafts, inter-meshing gear wheels secured to the shafts, and means carried by the bar engageable with one of the gear wheels whereby the shafts are closed during a part of the rotation of the tray, as and for the purpose specified.

8. In a shocking machine, in combination, a frame adapted to be secured to a binder, a shaft carried by said frame, a carriage wheel secured to said shaft, opposing vertically directed standards extending from the frame, a horizontally disposed U-shaped bar secured to the standards at their upper ends, an upper cross shaft mounted in bearings formed in the standards, a circular stand rearwardly swingable around the upper shaft, a tray carried by the stand and rotatable about its central point, means actuated by the carriage wheel for rotating the tray, a set of similar opposing and parallel shafts carried by the tray, a set of inter-meshing gear wheels secured to the shafts, one of such gear wheels having a number of the teeth thereof removed, a bracket secured to the bar and having a rack adapted to engage with one of the gear wheels to close the fingers at a predetermined period in the rotation of the tray, means prohibiting the rotation of the gear wheels after having passed out of engagement with the rack, and means designed to engage with the ground and disengage the aforesaid means to allow the shafts to rotate and free the fingers, as and for the purpose specified.

9. In a shocking machine, in combination, a frame adapted to be secured to a binder on said frame, a horizontally disposed shaft, a carriage wheel on said shaft, opposing vertically directed standards extending from the frame, a horizontally disposed U-shaped bar secured to the standards at their upper ends, an upper cross shaft mounted in bearings formed in the standards, a circular stand rearwardly swingable around the upper shaft, a tray carried by the stand and rotatable about its central point, means actuated by the carriage wheel for rotating the tray, a set of similar opposing and parallel shafts carried by the tray, a set of intermeshing gear wheels secured to the shafts one of said gear wheels having a number of the teeth thereof removed and be-

ing provided with an extending sleeve having a toothed edge, a bracket secured to the bar and having a rack formed thereon engageable with one of the gear wheels at a predetermined period in the rotation of the tray, a spring pressed dog normally engaging with the teeth on the sleeve, a suitably mounted trip bar having one end designed to engage with the ground so as to force the other end in engagement with the dog, releasing it from the teeth, and springs secured to the shafts, as and for the purpose specified.

10. In a shocking machine, in combination, a frame, a shaft carried thereby, a carriage wheel secured to the shaft, opposing vertically directed standards extending from the frame, a horizontally disposed U-shaped bar secured to the standards at their upper ends, an upper cross shaft mounted in bearings formed in the standards, a circular stand rearwardly swingable around the upper shaft, a tray carried by the stand and rotatable about its central point, means actuated by the carriage wheel for rotating the tray, a set of similar opposing and parallel shafts carried by the tray, a set of intermeshing gear wheels secured to the shafts one of said gear wheels having a number of the teeth thereof removed and being provided with an extending sleeve having a toothed edge, a bracket secured to the bar and having a rack formed thereon engageable with one of the gear wheels at a predetermined period in the rotation of the tray, a spring pressed dog normally engaging with the teeth on the sleeve, members carried by the shafts, bearings formed in said members carried by the shafts, a trip bar carried by said members, a shoulder on the bar between said members, a spring encircling the bar and bearing against the shoulder and the inner of the members, said trip bar having one end enlarged and engageable with the ground when the stand is swung rearwardly, and the other end engageable with the dog when the bar is moved, and springs interconnecting the shafts, as and for the purpose specified.

11. In a shocking machine, the combination comprising a frame, a transverse shaft carried by the frame, a carriage wheel on said shaft, a finger carrying tray disposed above the platform and rotatable about its central point, said tray having an extending lug passing from the edge thereof, means actuated by the carriage wheel for actuating the tray, and means actuated by the lug for disengaging said actuating means, as and for the purpose specified.

12. In a shocking machine, the combination comprising a frame, a transverse shaft carried by the frame, a carriage wheel on said shaft, an upper horizontally disposed shaft, a finger carrying tray disposed above the frame and rotatable about its center,



said tray being rearwardly swingable around the horizontally disposed shaft, standards extending from the frame carrying the said shaft, said tray having a lug passing from its periphery, a male clutch member rotatable on the upper shaft, a drive chain connecting the male clutch member with the lower shaft, a female clutch member feathered on the shaft and engageable with the male clutch member, and a clutch bar having its upper end designed to engage with the lug extending from the tray thereby disengaging the members of the clutch, as and for the purpose specified.

13. In a shocking machine, the combination comprising a frame adapted to be secured to a binder, a transverse shaft carried by the frame, a carriage wheel on said shaft, an upper horizontally disposed shaft, a finger carrying tray disposed above the frame and rotatable about its center, said tray being rearwardly swingable around the upper horizontally disposed shaft, standards

extending from the frame and carrying the upper shaft, said tray having a lug passing from its periphery, a male clutch member rotatable on the upper shaft, a drive chain connecting the male clutch member with the lower shaft, a female clutch member feathered on the shaft and engageable with the male clutch member, and a clutch bar pivotally secured to one of the standards, said clutch bar being adapted to operate the female member of the clutch and having its upper end engageable with the lug extending from the tray, and means connected with the clutch bar whereby the members of the clutch can be brought into engagement, as and for the purpose specified.

Signed at Bienfait, in the Province of Saskatchewan, this eighth day of June 1909.

ALBERT ERNEST WATT.

SAM. FIELDING.

In the presence of—

J. H. PERRY,

OLIVER OLSON.