M. G. SLAWSON.

GRAIN SHOCKER.

APPLICATION FILED APR. 1, 1910.

985,750.

Patented Feb. 28, 1911.

3 SHEETS—SHEET 1.

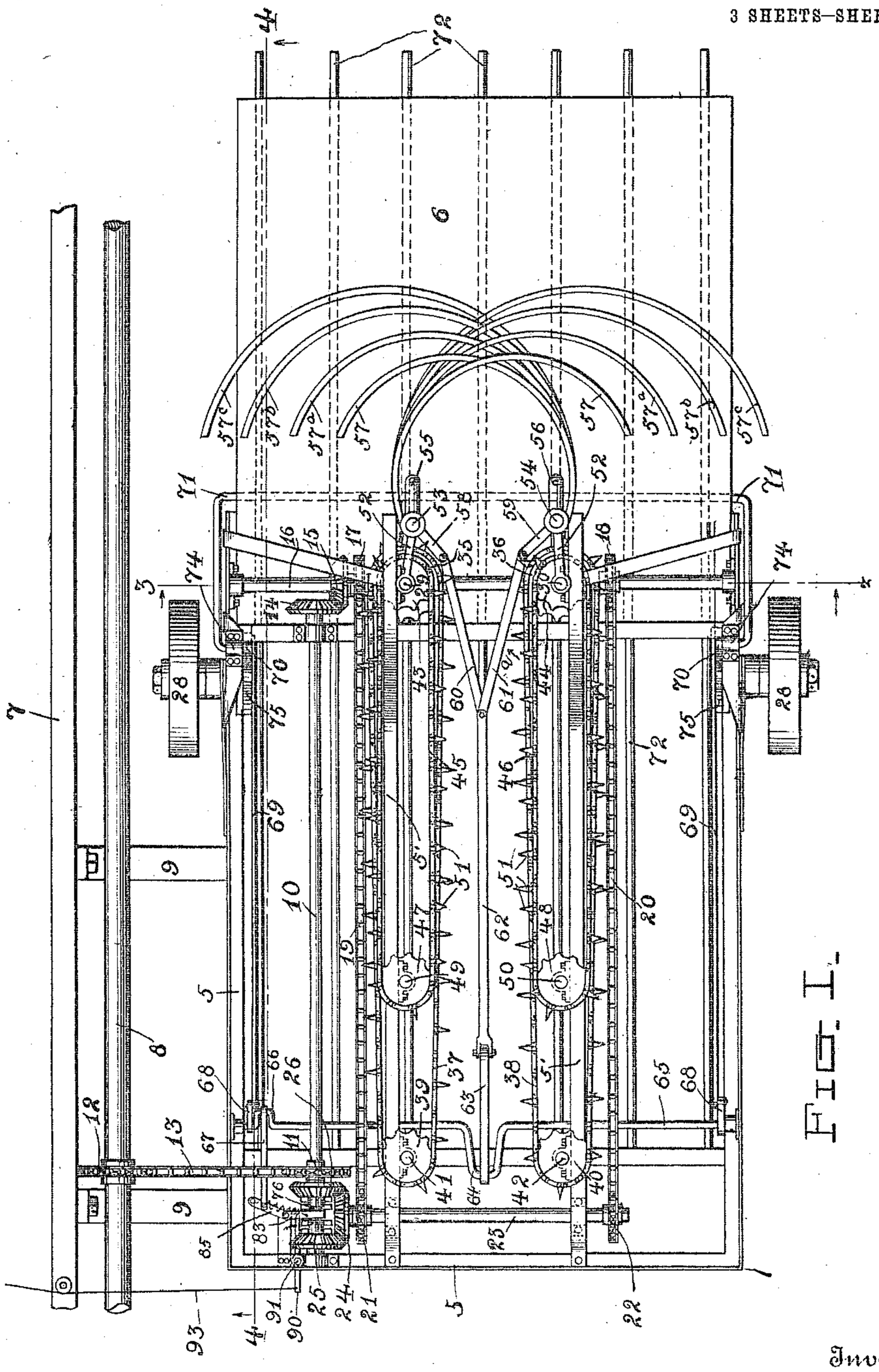


FIG. 1.

Witnesses

J. Milton Jester.

Anna M. Murray.

Inventor

Marion G. Slawson

By Shepherd & Campbell

Attorneys

M. G. SLAWSON.

GRAIN SHOCKER.

APPLICATION FILED APR. 1, 1910.

985,750.

Patented Feb. 28, 1911.

3 SHEETS—SHEET 2.

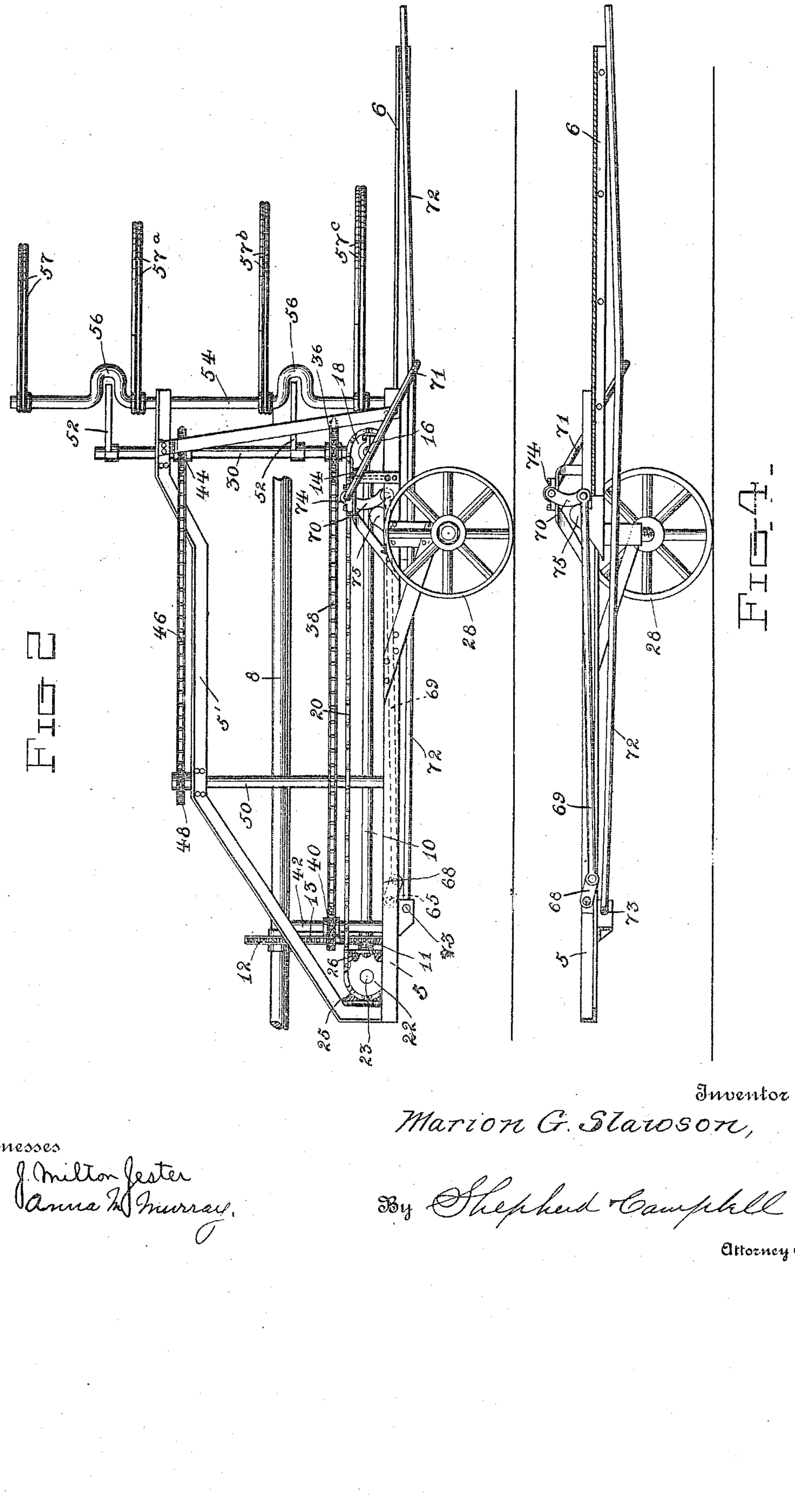


FIG 4.

Witnesses

J. Milton Jester

Anna M. Murray.

Inventor

Marion G. Slawson,

By Shepherd & Campbell

Attorneys

M. G. SLAWSON.

GRAIN SHOCKER.

APPLICATION FILED APR. 1, 1910.

985,750. Patented Feb. 28, 1911.

3 SHEETS—SHEET 3.

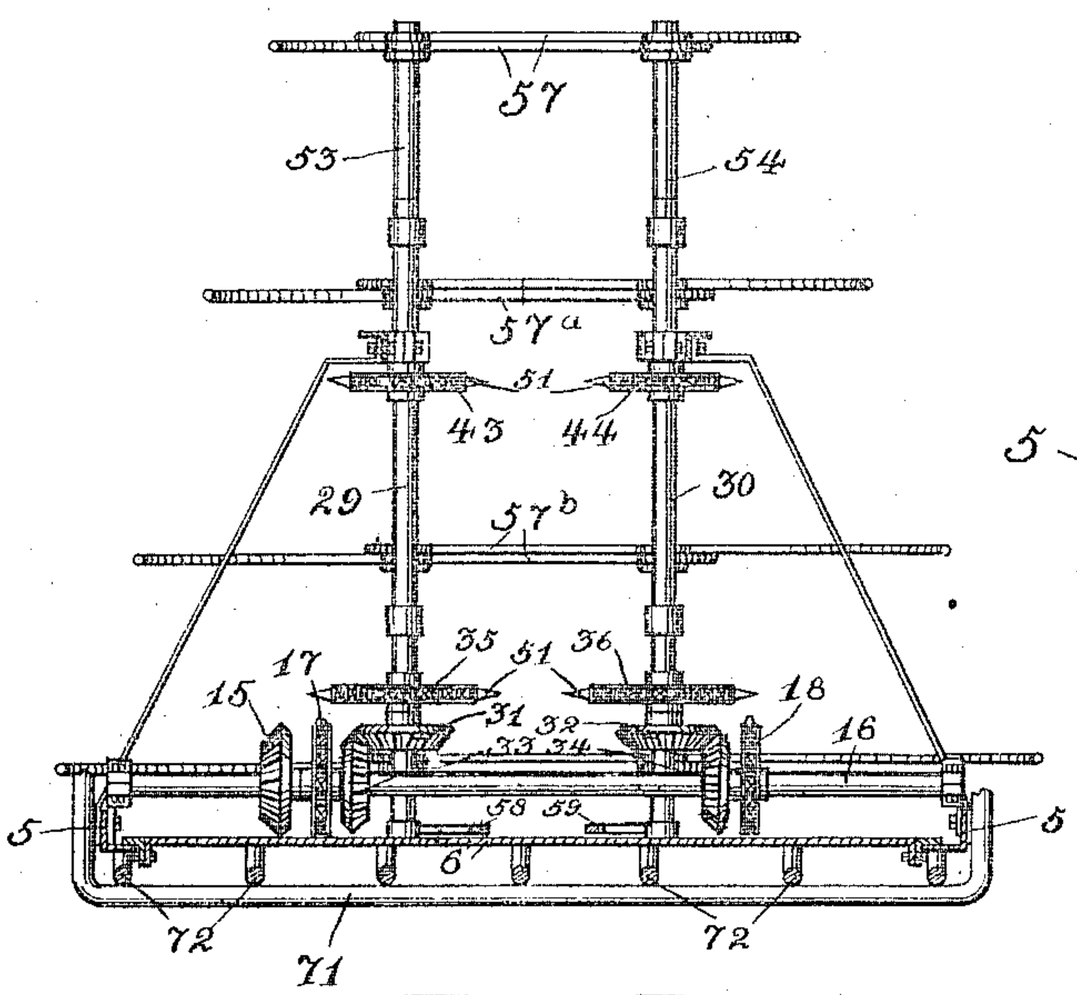


FIG. 3.

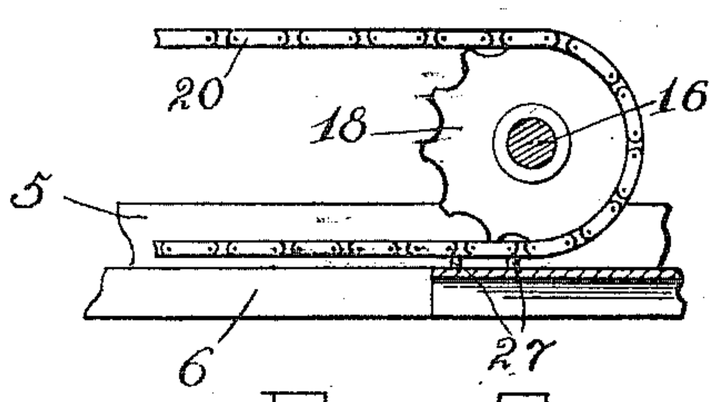


FIG. 7.

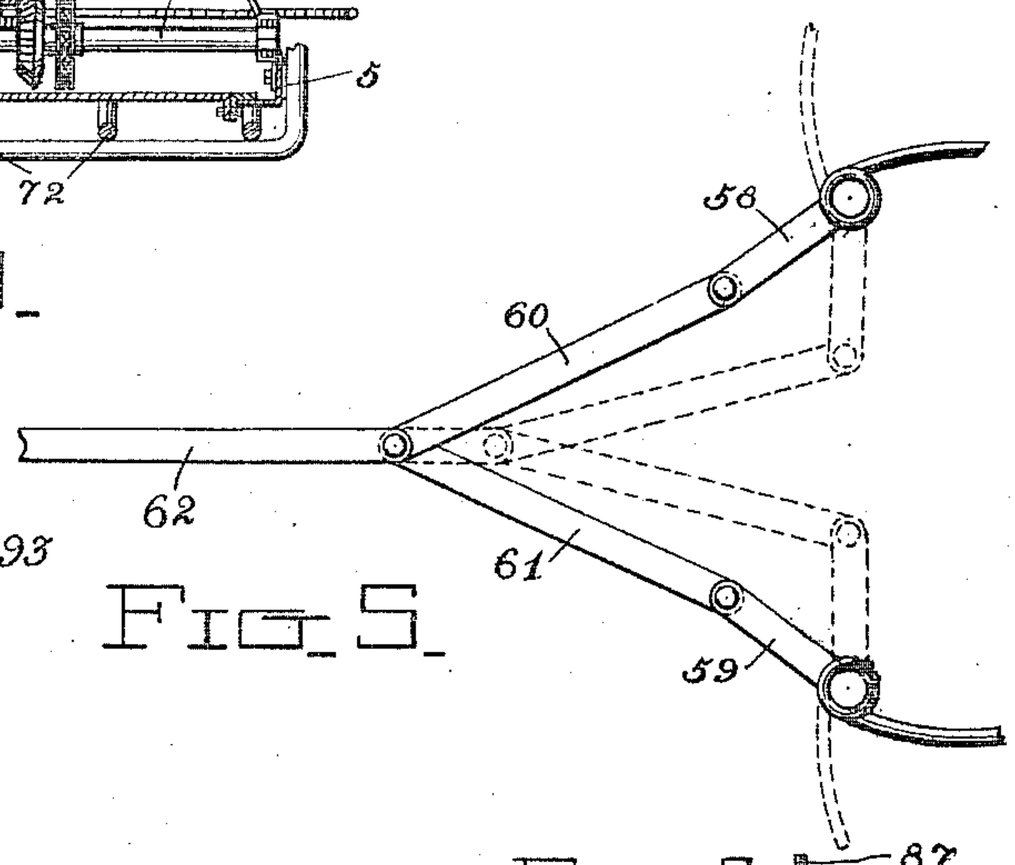


FIG. 5.

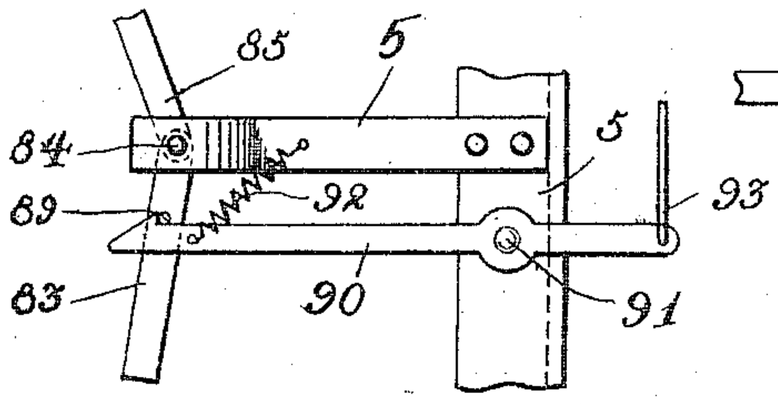
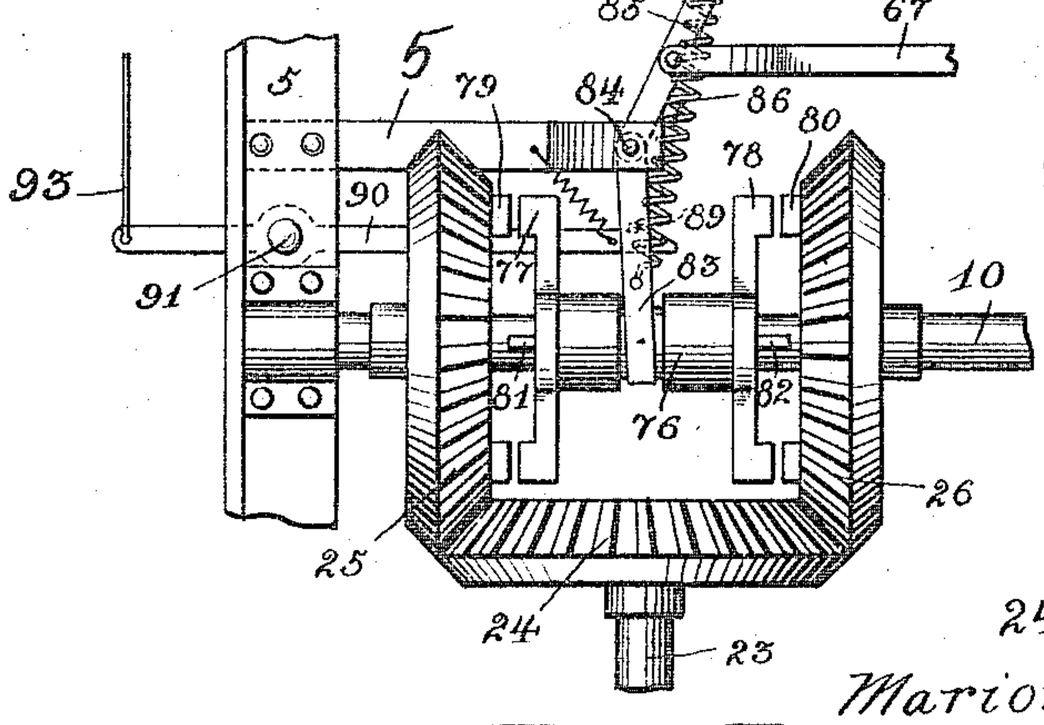


FIG. 9.



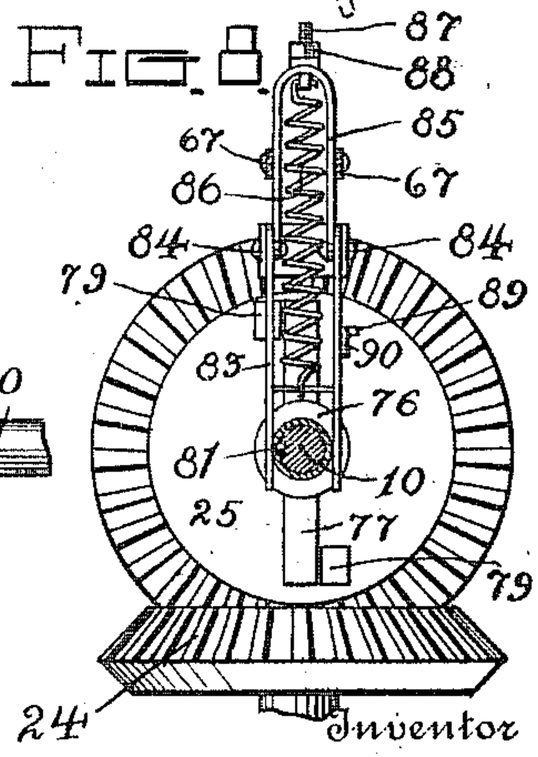


FIG. 8.

FIG. 6.

Witnesses

J. Milton Jester

Anna M. Murray.

Inventor

Marion G. Slawson,

By Shepherd & Campbell

Attorneys

UNITED STATES PATENT OFFICE.

MARION G. SLAWSON, OF GIRARD, KANSAS, ASSIGNOR OF ONE-FOURTH TO CHARLES F. TANNEHILL, OF GIRARD, KANSAS.

GRAIN-SHOCKER.

985,750. Specification of Letters Patent. **Patented Feb. 28, 1911.**

Application filed April 1, 1910. Serial No. 552,818.

To all whom it may concern:

Be it known that I, MARION G. SLAWSON, a citizen of the United States of America, residing at Girard, in the county of Crawford and State of Kansas, have invented certain new and useful Improvements in Grain-Shockers, of which the following is a specification.

This invention relates to grain shockers, the object of the invention being to provide a structure adapted to be secured to and to travel with a grain binder of the usual construction, said shocker receiving the bound bundles of grain from the binder; retaining said bundles until the desired number of bundles have been collected, and then depositing all of said bundles in the form of a shock upon the ground. Broadly speaking, these objects are attained by a structure comprising a frame in which a table is slidably mounted, together with means for conducting the bundles of grain to said table, shock forming arms or fingers for retaining the bundles in an upright position upon said table, means for causing the table to move into the frame and from beneath said bundles at the will of the driver, fingers for supporting the bundles when the table is withdrawn from beneath them, and automatic means for dropping said fingers and opening the shock forming arms when the table reaches its limit of movement toward the front of the machine.

The structure for accomplishing the foregoing objects has been disclosed in the accompanying drawings in which,

Figure 1 is a plan view of a shock former constructed in accordance with the invention, Fig. 2 is a side elevation thereof, Fig. 3 is a section upon line 3—3 of Fig. 1, Fig. 4 is a longitudinal section upon line 4—4 of Fig. 1, Fig. 5 is a detail view of a connecting rod and links for actuating the shock forming arms, Fig. 6 is a detail view of a clutch mechanism hereinafter described, Fig. 7 is a detail sectional view illustrating the sliding table and one of the actuating chains therefor, Fig. 8 is a detail view of a latch mechanism hereinafter described, Fig. 9 is a detail sectional view of a clutch controlling mechanism hereinafter described.

Like numerals designate corresponding parts in all of the figures of the drawings.

Referring to the drawings, the numeral 5 designates a frame in which a table 6 is mounted for sliding movement.

7, (see Fig. 1) designates a part of the frame of a grain binder, and 8, one of the rotative shafts of the grain binder. The shock former is secured to the grain binder frame by bracket arms 9. A longitudinal shaft 10 is supported within the frame 5 and as long as the grain binder is in operation this shaft is driven by means of sprocket wheels 11 and 12 and a sprocket chain 13, from the shaft 8. A bevel gear 14 upon shaft 10 meshes with a bevel gear 15 upon a transverse shaft 16. Loosely mounted upon the shaft 16 are sprocket wheels 17 and 18. Sprocket chains 19 and 20 pass over the sprocket wheels 17 and 18 and also over sprocket wheels 21 and 22, these latter sprocket wheels being fast upon a transverse shaft 23. The shaft 23 has a bevel gear wheel 24 fast thereon and this bevel gear wheel meshes with bevel gear wheels 25 and 26 of a clutch mechanism hereinafter described and better illustrated in Fig. 6.

The sprocket chains 19 and 20 are secured to the front portion of the table frame as indicated at 27 in Fig. 7, so that as the sprocket chains are actuated, the table is drawn into the frame 5 or projected therefrom, according to the direction of movement of said chains.

The frame of the grain shocker is mounted upon wheels 28 which support the majority of the load of the shocker and relieve the grain binder of the side draft that would otherwise be present if the shocker frame were not mounted upon independent wheels.

Mounted in longitudinally extending members 5' of the frame are vertical shafts 29 and 30. These shafts carry bevel gears 31 and 32 which mesh with bevel gears 33 and 34 which are mounted upon shaft 16. The shafts 29 and 30 carry lower sprocket wheels 35 and 36. Sprocket chains 37 and 38 pass around these sprocket wheels and around sprocket wheels 39 and 40 which are mounted upon shafts 41 and 42. The shafts 29 and 30 also carry upper sprocket wheels 43 and 44 around which pass sprocket chains 45 and 46. These sprocket chains 45 and 46 pass around sprocket wheels 47 and 48 which are mounted upon shafts 49 and 50.

The sprocket chains 37, 38, and 45, 46, are provided with teeth 51 to adapt them to engage the bound bundles of grain that are discharged from the grain binder and to carry said bundles rearwardly between them and to discharge said bundles into the shock forming arms hereinafter described. To further assist in the discharge of the bundles of grain into the shock forming arms, the shafts 29 and 30 carry fingers 52 which rotate bodily with the shafts, and to aid in forcing the bundles into the shock forming arms, a pair of vertical shafts 53 and 54 are provided with offset portions 55 and 56 to permit the passage of the fingers 52. The shafts 53 and 54 carry shock forming arms 57, 57ª, 57ᵇ, and 57ᶜ. It will be seen that the arms 57 are of the smallest radius and that the arms 57ᶜ are of the greatest radius, whereby a shock is formed larger at the bottom than at the top which is of course desirable since the shock is caused to stand in an upright position upon the ground when discharged, as hereinafter set forth.

Crank arms 58 and 59 are connected by links 60 and 61 with a connecting rod 62. This connecting rod is in turn connected by a link 63 with a centrally disposed crank 64 of a transverse crank shaft 65. A second crank 66 of this crank shaft is connected by a connecting rod 67 to one of the members of a clutch actuating yoke, hereinafter described. The crank shaft 65 carries cranks 68. Connecting rods 69 are connected to the cranks 68 and to the lower portions of curved levers 70. A yoke 71 (see Figs. 1, 2, 3, and 4) extends entirely across the rear portion of the shocker and serves to support the fingers 72. These fingers are pivotally mounted at their front ends upon a transverse shaft 73. The upper ends of the yoke are inturned and are mounted in bearings 74, and after passing through these bearings they are rigidly connected to the upper portions of the curved levers 70. Cams 75 (see Figs. 1 and 4) are carried by the table and serve a purpose which will be set forth in the operation of the machine.

As is best illustrated in Figs. 6, 8, and 9, the clutch mechanism and the controlling elements thereof are arranged as follows: It is to be understood that the gear wheels 25 and 26 are loosely mounted upon the shaft 10 and that the gear wheel 24 is fast upon the shaft 23. A collar 76 is slidably mounted upon the shaft 10 between the gears 25 and 26, and this collar is adapted when moved longitudinally upon the shaft, to throw the toothed washers 77 or 78 into engagement with the teeth 79 or 80 of the gears 25 or 26. It is to be noted that the washers 77 and 78 are splined upon the shaft 10 by means of keys 81 and 82. The collar 76 is engaged by a forked lever 83. The rear end of this lever is pivoted at 84 to a yoke 85 and both the yoke and the forked lever are pivoted to a portion of the frame 5 (see Fig. 9). One end of a spring 86 is connected to a bolt 87 which passes through the end of the yoke 85, and has a nut 88 threaded thereon, whereby the tension of the spring may be adjusted, and the other end of the spring is connected to the forked lever 83. Projecting from the underside of the forked lever 83, is a pin 89 (see Figs. 8 and 9), and this pin is adapted to be engaged by a latch lever 90, said latch lever being pivoted at 91 to the underside of a portion of the frame 5. A spring 92 is connected to the lever 90 and to the frame 5, and normally tends to draw the latch lever into engagement with the pin 89. A rod or cable 93 is connected to the outer end of the lever 90 and leads to a point adjacent the driver's seat (not shown), of the grain binder.

The operation of the device is as follows: During the time that the shock is being formed, the pin 89 is engaged by the latch lever 90, and the clutch is held in its neutral position. That is, neither of the washers 77, 78, is in engagement with the teeth 79, 80 of the gear wheels 25, 26. During the passage of the grain binder over the field, the sprocket chains 37, 38, and 45, 46, receive the bound bundles from the grain binder, and the teeth of these sprocket chains, engaging the bundles, carry them rearwardly to a point adjacent the entrance to the shock forming arms. The fingers 52 swinging around in the direction of the arrow *a* (Fig. 1), forces the bundles into the embrace of the shock forming arms. This continues until the desired number of bundles have been collected by the shock forming arms, preferably from six to fifteen bundles, whereupon the rod or cable 93 is actuated by the driver of the grain binder. This withdraws the latch 90 against the tension of the spring 92 from its engagement with the pin 89 and permits the spring 86 to act to throw the toothed washer 78 into engagement with the teeth 80 of gear 26. The gear 26 will now rotate with the shaft 10 and actuate the gear 24, shaft 23, and sprocket chains 19 and 20, to draw the table into the frame 5 and from beneath the shock. When the table travels from beneath the shock, the shock is left standing upon the fingers 72. When the table reaches its forward limit of movement, the cams 75 engage beneath the outer ends of the cranks 68 (which are up to this time occupying a past center position), thereby throwing said cranks upwardly and forwardly. This upward and forward movement of the cranks, through the medium of the connecting rods 69, throws the lower ends of the curved levers 70 forwardly and upwardly, and consequently throws the yoke 71 forwardly and downwardly, thereby per-

mitting the fingers 72 to drop. The movement of the crank shaft 65, when the cams 75 engage the cranks 68, results in throwing the crank 64 downwardly and rearwardly, whereupon through the connections described, the crank arms 58 and 59 will be actuated, (see Fig. 5) and the shafts 53 and 54 will be turned upon their axes to swing the shock forming arms to their open position, permitting the passage of the shock from said arms, whereupon the fingers 72 will withdraw from beneath the shock, leaving the shock standing upon the ground in an upright position. The actuation of the crank shaft 65, as hereinbefore set forth, not only accomplishes the foregoing results, but through the medium of the link 67, the yoke 85 is thrown forwardly in Fig. 1, bringing the spring 86 (see Fig. 6) to the opposite side of the pivot point 84, and throwing the forked lever 85 toward the left in Fig. 6. This results in bringing the washer 77 into engagement with the teeth 79 of the gear 25, and reverses the movement of the table and returns the table to its projected position. When the table nearly reaches its outward limit of movement, the cams 75 strike against the levers 70 and throw the yoke 71 to its elevated position, thereby returning the fingers 72 to their elevated position. In addition to this, the curved levers 70 pull upon the connecting rods 69 and throw the crank shaft 65 back to its original position, and this brings the cranks 68 to their past center position (see Fig. 4). It is apparent that when the crank shaft 65 is returned to its original position, the shock forming arms will be closed through the connections described. Upon the return of the crank shaft 65 to its original position, the yoke 85 will also be thrown back to its original position, and this would tend to throw the forked lever 83 into such position as to bring the washer 78 immediately into engagement with the teeth 80 of gear 26; but at this time, the spring 92 interposes the latch 90 in the path of the pin 89 of the forked lever, and the forked lever is prevented from moving far enough for the teeth of the washer 78 to engage with the teeth 80, and the clutch remains in its neutral position, during the time that a new shock is being formed preparatory to repeating the above described operation.

By referring to Fig. 3, it will be seen that the gear wheels 35 and 36 are larger than the gear wheels 43 and 44. Therefore the lower toothed sprocket chains 37, 38 will travel faster than the upper toothed sprocket chains 45 and 46. This will result in bringing the bundle to an upright position by the time that it passes from between said chains. These sprocket chains are close enough to each other to frictionally hold the bundles between them, and to prevent said bundles from dropping through. It will be noted that the upper sprocket chains do not extend as far forward as the lower sprocket chains. This permits the bundle, when delivered from the binder, to fall upon and partially between the lower sprocket chains, and to be carried rearwardly thereby until the upper portions of the bundles are engaged by the upper sprocket chains. As has been before stated, the fact that the lower sprocket chains travel faster than the upper sprocket chains will then serve to cause the bundles to assume a vertical position by the time they are discharged into the shock forming arms.

From the foregoing description, it will be seen that simple and efficient means are herein provided for accomplishing the objects of the invention, but while the elements shown and described are well adapted to serve the purposes for which they are intended, it is to be understood that the invention is not limited to the precise construction set forth, but includes within its purview such changes as may be made within the scope of the appended claims.

Having described my invention, what I claim is:

1. In a device of the character described, the combination with a wheeled supporting frame, of a table mounted to slide into and from said frame, longitudinally extending fingers located beneath said table, means for supporting said fingers, shock forming arms located above said table, horizontally traveling sprocket chains for conducting bundles from a grain binder to said shock forming arms, means for driving said sprocket chains, sprocket chains connected to the table for drawing said table into said frame, means for actuating said last named sprocket chains, a clutch mechanism for controlling said last named sprocket chains, a transversely extending crank shaft, connections between said crank shaft and the shock forming arms, connections between said crank shaft and the clutch, and connections between said crank shaft and the finger supporting yoke.

2. In a device of the character described, the combination with a wheeled supporting frame, of a table mounted to slide into and from said frame, longitudinally extending fingers located beneath said table, means for supporting said fingers, shock forming arms located above said table, horizontally traveling sprocket chains for conducting bundles from a grain binder to said shock forming arms, means for driving said sprocket chains, sprocket chains connected to the table for drawing said table into said frame, means for actuating said last named sprocket chains, a clutch mechanism for controlling said last named sprocket chains, a transversely extending crank shaft, connections between said crank shaft and the shock

forming arms. connections between said crank shaft and the clutch, connections between said crank shaft and the finger supporting yoke, and a member carried by the table and adapted to engage a portion of the crank shaft to actuate the same when the table reaches its forward limit of movement.

3. In a device of the character described, the combination with a wheeled supporting frame, of a table mounted to slide into and from said frame, longitudinally extending fingers located beneath said table, means for supporting said fingers, shock forming arms located above said table, horizontally traveling sprocket chains for conducting bundles from a grain binder to said shock-forming arms, means for driving said sprocket chains, sprocket chains connected to the table for drawing said table into said frame, means for actuating said last named sprocket chains, a clutch mechanism for controlling said last named sprocket chains, a transversely extending crank shaft, connections between said crank shaft and the shock forming arms, connections between said crank shaft and the clutch, connections between said crank shaft and the finger supporting yoke, and a member carried by the table and adapted to engage a portion of the crank shaft to actuate the same when the table reaches its forward limit of movement, and to actuate said connections when the table reaches its rearward limit of movement.

4. In a device of the character described, the combination with a wheeled supporting frame, of a table mounted to slide into and from said frame, longitudinally extending fingers located beneath said table, means for supporting said fingers, shock forming arms located above said table, horizontally traveling sprocket chains for conducting bundles from a grain binder to said shock forming arms, the lowermost of said sprocket chains traveling faster than the upper of said chains, means for driving said sprocket chains, sprocket chains connected to the table for drawing said table into said frame, means for actuating said last named sprocket chains, a clutch mechanism for controlling said last named sprocket chains, a transversely extending crank shaft, connections between said crank shaft and the shock forming arms, connections between said crank shaft and the clutch, and connections between said crank shaft and the finger supporting yoke.

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

MARION G. SLAWSON.

Witnesses:
W. T. GOFF,
OSCAR W. SCHAEFFER.