No. 832,376. PATENTED OCT. 2, 1906.

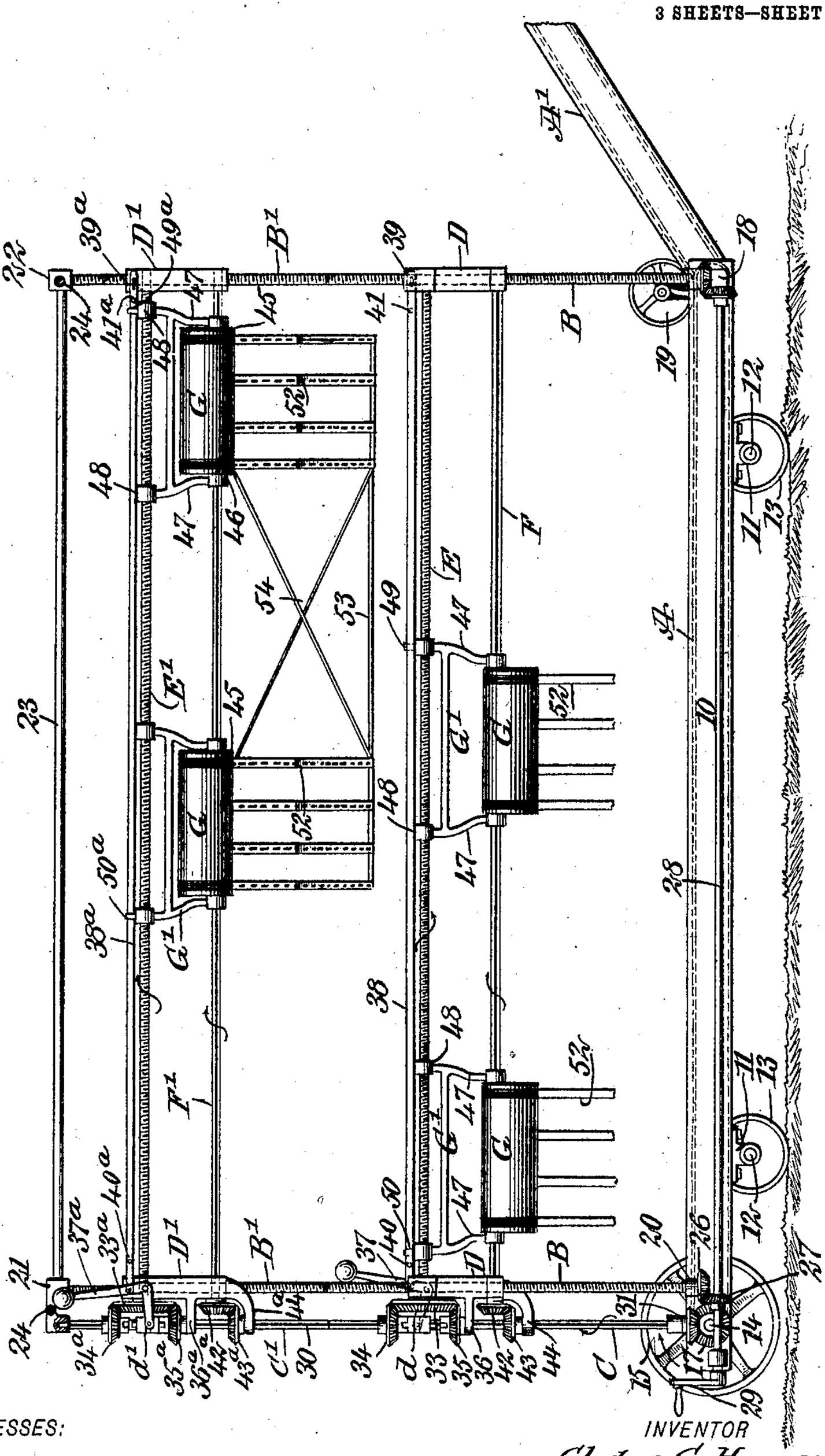
C. G. HAEGERT.

GRAIN FEED.

APPLICATION FILED MAR. 17, 1906.

3 SHEETS—SHEET 1.

Fig. 1.



WITNESSES:

Geo. H. Graves.

J. Fred. Acker.

INVENTOR

Cletus G. Haegert

BY Munn & Co

ATTORNEYS

THE NORRIS PETERS CO., WASHINGTON, D. C.

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3 SHEETS—SHEET 2.

FIG. 4.

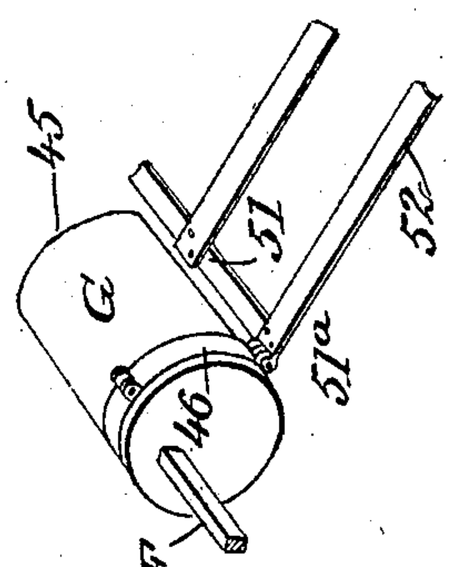
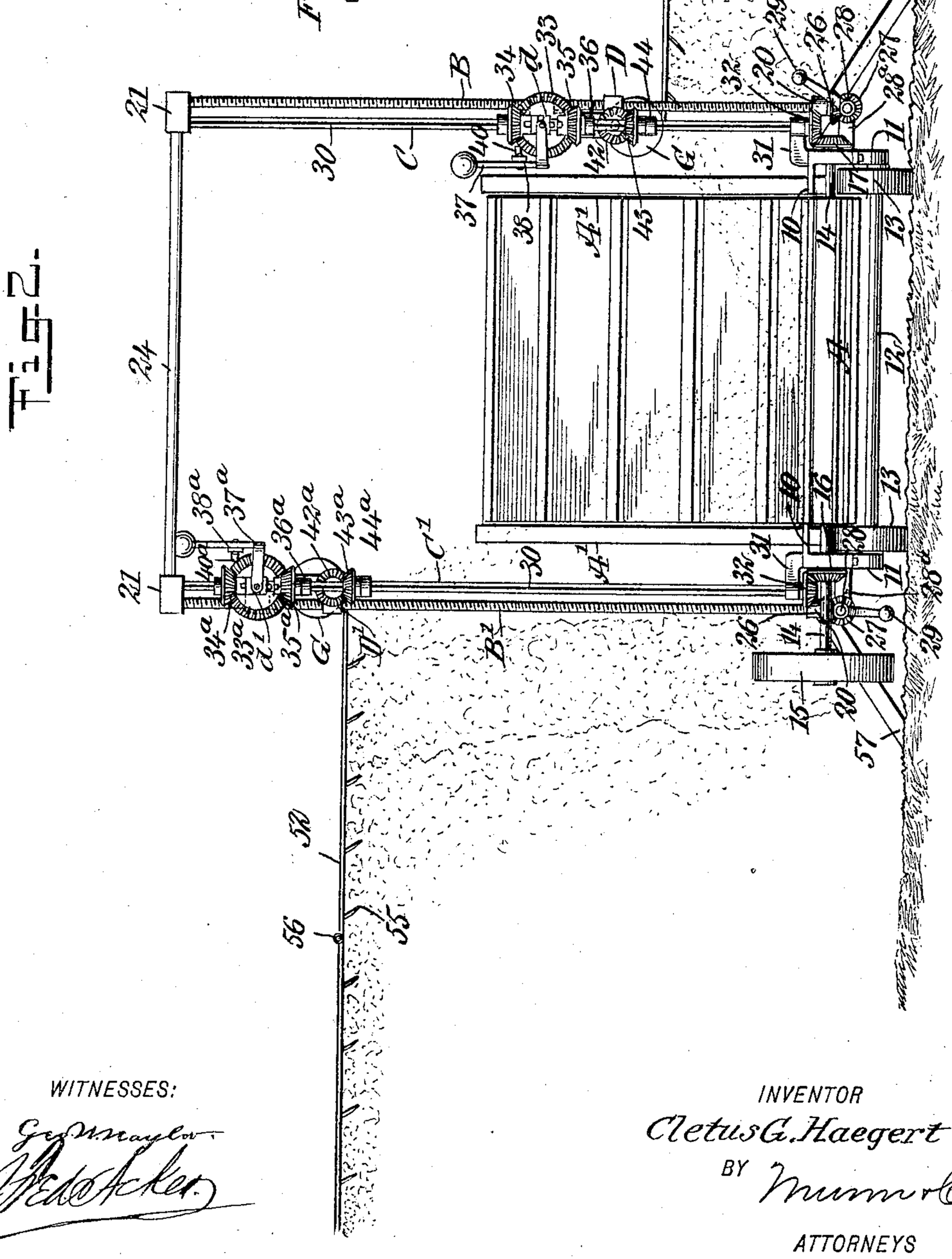


FIG. 2.



WITNESSES:

Geo. W. Naylor

J. Fred Acker.

INVENTOR

Cletus G. Haegert

BY Munn & Co

ATTORNEYS

THE NORRIS PETERS CO., WASHINGTON, D. C.

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3 SHEETS—SHEET 3.

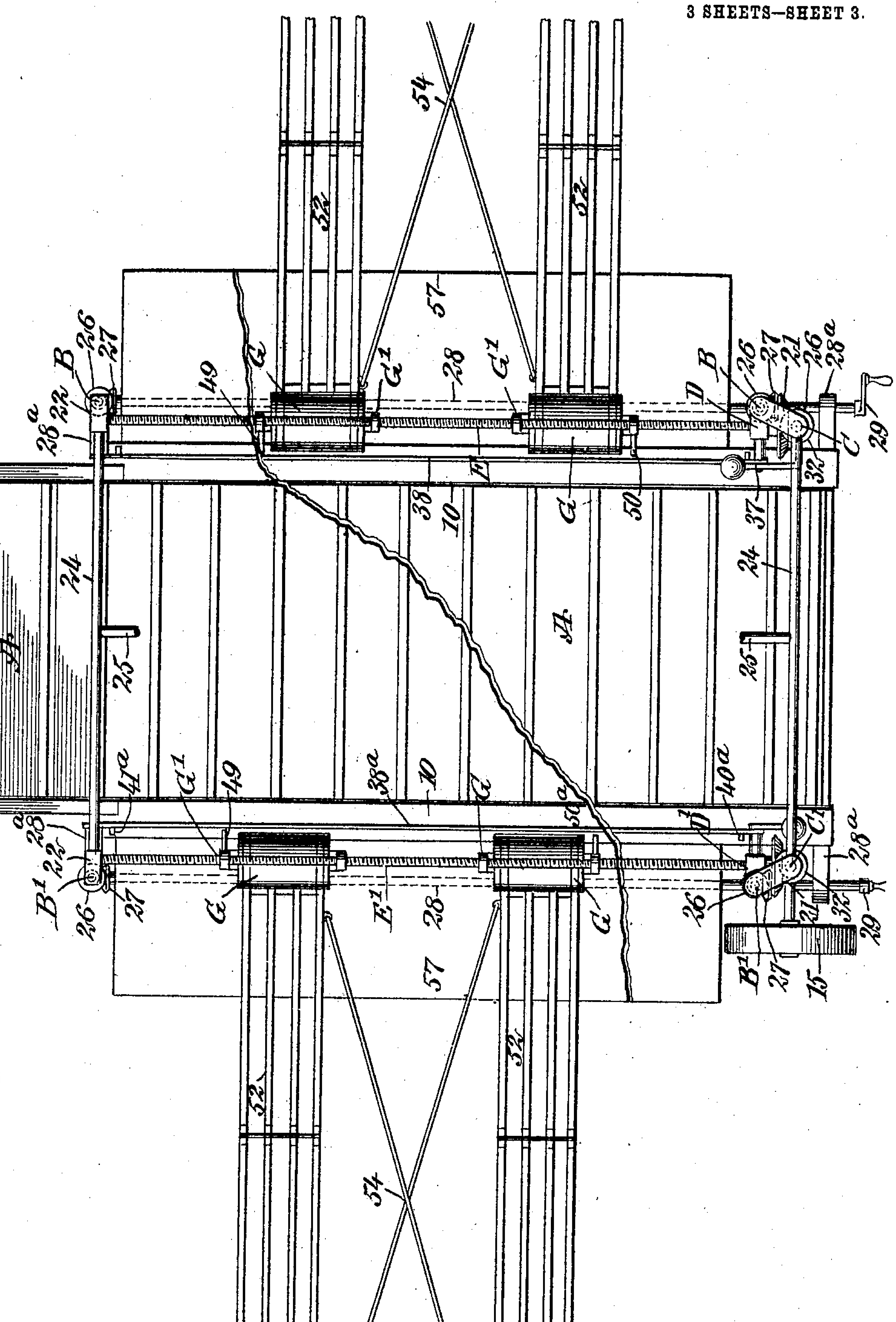

Fig. 3.

WITNESSES:
Geo. W. Naylor.
Fred Acker

INVENTOR
Cletus G. Haegert
BY Munn & Co
ATTORNEYS

THE NORRIS PETERS CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

CLETUS G. HAEGERT, OF HAWLEY, OKLAHOMA TERRITORY.

GRAIN-FEED.

No. 832,376. Specification of Letters Patent. Patented Oct. 2, 1906.

Application filed March 17, 1906. Serial No. 306,576.

To all whom it may concern:

Be it known that I, CLETUS G. HAEGERT, a citizen of the United States, and a resident of Hawley, in the county of Grant and Territory of Oklahoma, have invented a new and Improved Grain-Feed, of which the following is a full, clear, and exact description.

The purpose of the invention is to provide a machine which will take grain either headed or bound from a stack and feed it into a threshing-machine.

A further purpose of the invention is to provide a light and strong portable machine of economic and simple construction which can be drawn between two stacks to operate simultaneously on both and to provide means for independently adjusting the rakes at the sides of the machine to accommodate them to the height of the stack they are operating upon.

Another purpose of the invention is to provide a conveyer to receive the grain and means for automatically imparting to a rake an alternate forward and rearward movement and an alternate gathering and discharging movement.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a sectional side elevation of the machine, showing portions of the vertical shafts at each side of the machine and showing also the horizontal shafts in full at each side of the machine. Fig. 2 is a front elevation of the machine, illustrating the manner in which it operates. Fig. 3 is a plan view of the machine, and Fig. 4 is a detail perspective view of a portion of a rake-carrier and a rake attached thereto.

The frame of the machine consists of two side pieces 10, suitably braced, from which side pieces hangers 11 extend downward, and axles 12 are journaled in the said hangers and provided with suitable supporting-wheels 13. A drive-shaft 14 is journaled in the forward end portion of the frame, extending through both of its sides, and said drive-shaft is provided at one end with a driving-pulley 15 and adjacent to said pulley is also provided with a gear 16, while a similar gear 17 is located at the opposite end of the shaft outside of the frame.

An endless conveyer-belt A is mounted to travel the full length of the side pieces of the frame and likewise along an upwardly-inclined extension A′ from the side pieces at the rear end of the machine, the said extensions A′ being adapted to lead to the feed-table of a threshing or similar machine. The conveyer-belt A is passed around a suitable drum on the drive-shaft 14 and then around a second drum 18, mounted to revolve at the rear portion of the main frame, the upper stretch of the conveyer-belt being held down at this point by suitable guide pulleys or wheels 19, and the said belt is likewise passed over a drum or its equivalent at the upper end portion of the extension A′ from the main frame.

A vertical screw-shaft is located at each corner of the machine, the screw-shafts upon one side of the machine being designated as B and the screw-shafts at the opposite side of the machine being designated as B′, and both sets of screw-shafts are illustrated in Fig. 1. These screw-shafts B and B′ are journaled at their lower ends in bearings 20, extending outward from the frame, and at the forward end of the frame the screw-shafts at that end of the machine are journaled at their upper extremities in diagonal cap-blocks 21, (shown best in Figs. 1 and 3,) while the upper extremities of the screw-shafts at the rear end of the machine are journaled in ordinary blocks 22. Brace-rods 23 connect the cap-blocks 21 and 22 at the side portions of the machine, and corresponding rods 24 connect the blocks at the end portions of the machine, and a further central brace 25 is usually employed, extending from one end brace 24 to the other, as is shown in Fig. 3.

A bevel-gear 26 is secured to each screw-shaft B and B′ at its lower end, and these bevel-gears 26 mesh with gears 27 on the end portions of adjusting-shafts 28, one of which shafts 28 is located at each side portion of the frame, and said shafts are independent of each other and are journaled in suitable bearings 28^a, and at the forward end of the said adjusting-shafts 28 crank-handles 29 or their equivalents are secured, so that the screw-shafts can be manually revolved whenever desired. It is obvious that each side set of shafts B and B′ is independently operated.

At the forward end of the machine vertical driven shafts C and C′ are located parallel with the forward screw-shafts, yet somewhat in advance thereof, and the upper ends of these shafts C and C′ are journaled in the forward end portions of the forward blocks 21, as is illustrated in Fig. 3. The lower ends of the said shafts C and C′ are journaled in bearings 31, extending outward from the side pieces 10 of the machine-frame, as clearly shown in Fig. 2, and each of the driven shafts C and C′ is provided with a longitudinal slot or groove 30, extending the length thereof, and with a bevel-gear 32 at the lower end. The bevel-gear 32 on the shaft C′ meshes with the bevel-gear 16 on the drive-shaft 14, and the bevel-gear 32 of the driven shaft C meshes with the gear 17 on the said drive-shaft, as is shown in Fig. 2.

Each of the screw-shafts B and B′ is provided with a bearing held to travel thereon, the said bearings being provided each with a longitudinally-threaded bore, so that by the rotation of the said screw-shafts the bearings will be made to travel up or down said shafts, according to the direction in which the shafts are turned. The bearings on the shafts B are designated as D and those on the shafts B′ as D′. The bearings for each set of shafts carry the same mechanism.

A horizontal screw-shaft E is mounted to turn in the front and the rear bearings D, and a corresponding shaft E′ is mounted to turn in the corresponding bearings D′. The shaft E at the front is provided with a bevel-wheel 33 and the shaft E′ with a corresponding wheel 33ª. The wheel 33 engages at its upper edge with a bevel-pinion 34 and at its lower edge with a bevel-pinion 35, both of which pinions are free to turn on the driven shaft C, the lower pinion being held in proper position relative to the wheel 33 by an arm 36, extending from the forward bearing D, through which arm the shaft C loosely passes. With reference to the wheel 33ª on the other side of the machine and carried by the screw-shaft E′ it engages at the top with a bevel-pinion 34ª, corresponding to the bevel-pinion 34, and at its lower portion engages with a bevel-pinion 35ª, supported by an arm 36ª from the front bearing D′, it being understood that the pinions 34ª and 35ª are mounted to slide on the driven shaft C′. The opposing faces of the pinions mentioned as on the shafts C and C″ are clutch-faces, and a double-faced clutch *d* is mounted to slide on the driven shaft C between the pinions 34 and 35, being adapted for engagement with either. A corresponding clutch *d′* is similarly mounted on the driven shaft C′, adapted for engagement with either pinion 34ª or 35ª, and the clutches *d* and *d′* are provided with feathers which enter the grooves 30 in their respective shafts. Thus it will be observed that by the up-and-down movement of the clutches *d* and *d′* the screw-shafts E and E′ are turned in one or the other direction and that the screw-shafts at each side of the machine are independently operated.

An elbow-lever 37 is mounted upon the forward bearing D, which lever is weighted at the upper portion of its vertical member and its horizontal member is pivotally connected with the clutch *d*. A similar lever 37ª is mounted upon the forward bearing D′, engaging with the clutch *d′* to operate the same. The clutch *d* is operated by the shifting of a bar 38, which is located above the screw-shaft E, as is shown in Fig. 1, and one end of the shifting-bar is attached to the vertical member of the elbow-lever 37, while the other end is provided with a slot 39, through which a pin is passed into the rear bearing D, and this shifting-bar 38 is provided at its forward end with a horizontal inwardly-extending pin 40 and at its rear end with a corresponding pin 41. The elbow-lever 37ª at the opposite side of the machine is connected with a similar bar 38ª, having a slot 39ª at its rear end, through which a pin is passed into the rear bearing D. This shifting-bar 38ª, which is above the screw-shaft E′, is provided at its forward end with a horizontal inwardly-extending pin 40ª and at its rear end with a corresponding pin 41ª.

A horizontal plain shaft, which may be termed an "agitating-shaft," is journaled at its ends in the lower portions of the bearings D of the screw-shafts B, and said agitating-shaft, which is designated as F, is rectangular or polygonal in cross-section between its ends and is provided at its forward end with a bevel-pinion 42, which meshes with a similar pinion 43, mounted to turn on the driven shaft C and to have vertical movement thereon, having a feather which enters the groove 30 of said shaft, and the pinion 43 is supported in position by a lower arm 44, projected from the said forward bearing D, through which arm the shaft C loosely passes. With reference to the other side of the machine, its construction is duplicated, the agitating-shaft being designated as F′, the pinion of the shaft as 42ª, the pinion on the main driven shaft C′ as 43ª, and the supporting-arm for the pinion as 44ª.

The bearings D and D′ and the shafts which they support may be termed "carriages" for rake-carriers G. Any desired number of these rake-carriers may be employed. In the drawings two are shown at each side of the machine, and these carriers are each in the nature of a cylinder 45, as shown in Fig. 4, and each of the cylinders 45 is provided with a strap 46, mounted to turn thereon near each end. The cylinders 45 are eccentrically mounted on the agitating-shafts F and F′. Each rake-carrier is provided with a hanger G′, having connected vertical arms 47, the lower ends of which are fitted to

freely slide on the shafts F or F′, the said shafts having no influence on the said hangers. The end member 47 of each hanger is provided with an interiorly-threaded attached sleeve 48 at its upper end, and the sleeves of the hangers at one side of the machine may be mounted on the screw-shaft E, and the sleeves of the hangers at the opposite side of the machine are mounted on the screw-shaft E′, as shown best in Fig. 1. The rear sleeve on the rearmost hanger on each sleeve is provided with an upwardly-extending pin, the pin on the sleeves traveling on the shaft E being designated as 49 and the sleeves traveling on the screw-shaft E′ as 49ª. The forward sleeve of the forward hanger traveling in the screw-shaft E is provided with a pin 50, and the sleeve of the corresponding hanger traveling on the corresponding screw-shaft E′ is provided with an upwardly-extending pin 50ª. When the hangers are made to travel in direction of either end of the machine by reason of the rotation of the shafts E, when said hangers reach the rear end of the machine the pins 49 and 49ª strike the pins 41 and 41ª, respectively, and cause the shifting-bars 38 and 38ª to move rearward, and at such time the clutches operated will engage with the upper pinions 34 and 34ª and cause the shaft to reverse its movement and carry the hangers in direction of the forward end of the machine. When such point is reached, the pins 50 and 50ª on the forward hangers engage with the forward pins 40 and 40ª on the shifting-bars 38 and 38ª and again reverse the movements of the screw-shafts E and E′, causing the hangers to again travel rearward, and so on. This alternate forward and rearward movement of the rake-carriers is produced while the machine is in operation. When the shifting-bars 38 and 38ª are moved forward, the clutches *d* and *d′* are brought into engagement with the lower pinions 35 and 35ª and turn the same.

The rake-carriers at both sides of the machine may move simultaneously in the same direction, or, as shown, the rake-carriers at one side of the machine may move forward while the rake-carriers at the opposite side of the machine move rearward. The rakes at each side of the machine are connected in any suitable or approved manner—as, for example, by a longitudinal brace-rod 53 and cross brace-rods 54, as is shown in Fig. 1.

A carrier G is provided for each rake, and each rake consists of a head 51 and any desired number of teeth extending outward from the head in parallelism for any desired distance. The rake-heads 51 have a hinged connection 51ª with the straps 46 on the eccentric carriers, as is illustrated best in Fig. 4. The rake-teeth 52 are provided with sharp spurs 55 upon their under faces, and the said spurs are given an inclination in direction of the rake-head, as is shown in Fig. 2. For convenience in storing the machine when not in use the rake-arms 52, carrying the spurs 55, which are necessarily long, are usually made in sections connected by hinges 56, so that one section can be folded over upon the other and the two sections drop down at the sides of the machine.

It will be observed that by reason of the rakes being attached to eccentrics which are revolved the said eccentrics as the shafts F and F′ are turned, give a raking or a reciprocating motion to the rakes, causing the spurs to travel back over the top of the stack, with which they engage, as is shown in Fig. 2, and then again inward or in direction of the machine, thus compelling the hay or grain which they rake in to drop upon the conveyer A, by means of which it is carried to the feed-table of the thresher.

Inclined platforms 57 are located at the lower side portions of the machine, which platforms extend down to the ground and facilitate the gathering of hay on the rakes, particularly when the crop to be gathered is scanty.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a grain-feed, a supporting-frame, a shaft mounted on the frame, a driving mechanism for the shaft, rake-carriers eccentrically mounted on the shaft, turning therewith and sliding thereon, a feed for the rake-carriers, and rakes having slip connection with the carriers.

2. In a grain-feed, a frame, a shaft mounted on the frame, a driving mechanism for the shaft, rakes, eccentric carriers for the rakes, mounted to turn with and slide on the shaft, a feed mechanism for the rake-carriers, and a reversing mechanism for the feed mechanism.

3. In a grain-feed, a frame, a shaft mounted on the frame, a driving mechanism for the shaft, rakes, eccentric carriers for the rakes mounted to turn with and slide on the shaft, a feed mechanism for the rake-carriers, and a reversing mechanism for the feed mechanism automatically operated by the carriers at points in their travel.

4. In a grain-feed, a frame, a shaft mounted on the frame, a driving mechanism for the shaft, rakes, eccentric carriers for the rakes mounted to turn with and slide on the shaft, a feed mechanism for the rake-carriers, a reversing mechanism for the feed mechanism automatically operated by the carriers at points in their travel, and adjusting devices common to the shaft, the feed mechanism and reversing mechanism to raise and lower the same.

5. In a grain-feed, a frame, feed devices carried by the frame and a carriage operated by the feed devices, including bearings in engagement with the feed devices, a feed-shaft,

an agitating-shaft parallel with the feed-shaft, and independent driving mechanisms for the two shafts, rakes, carriers with which the said rakes have slip connection, the said carriers being eccentrically mounted on the agitating-shaft and adapted to turn therewith and slide thereon, and hangers for the carriers, the said hangers being operated by the said feed-shaft.

6. In a grain-feed, a frame, adjusting-shafts mounted on the frame, a carriage including bearings raised and lowered by the operation of the adjusting-shafts, a feed-shaft, and a parallel agitating-shaft journaled in said bearings, an independent mechanism for each of said shafts, a shifting device for the driving mechanism of the feed-shaft, rakes, carriers for the rakes, eccentrically mounted on the agitating-shaft and adapted to turn therewith and slide thereon, straps loosely mounted on the said carriers, a hinge connection between the straps and the rakes, guide-hangers for the said carriers, which guide-hangers have free movement on the agitating-shaft and are operated on by the feed-shaft, and means carried by the hangers for automatically operating the said shifting device.

7. In a grain-feed, a frame, adjusting-shafts mounted on the frame, a carriage including bearings raised and lowered by the operation of the adjusting-shafts, a feed-shaft, and a parallel agitating-shaft journaled in said bearings, an independent mechanism for each of said shafts, a shifting device for the driving mechanism of the feed-shaft, rakes, carriers for the rakes, eccentrically mounted on the agitating-shaft and adapted to turn therewith and slide thereon, straps loosely mounted on the said carriers, a hinge connection between the straps and the rakes, guide-hangers for the said carriers, which guide-hangers have free movement on the agitating-shaft and are operated on by the feed-shaft, means carried by the hangers for automatically operating the said shifting device, a conveyer located below the carriage, a drive-shaft for the conveyer, and connections between the said drive-shaft and the driving mechanisms for the agitating and feed shafts.

8. In a grain-feed, the combination with a frame, screw-shafts mounted upon the frame, means for turning said screw-shafts, a drive-shaft and a driven shaft parallel with one of the screw-shafts, of a carriage comprising bearings which travel on the screw-shafts, a screw-feed shaft mounted in the said bearings, a parallel polygonal agitating-shaft likewise mounted in the said bearings and independent driving mechanisms for the screw and the agitating-shaft carried by the said driven shaft, a clutch and a connected shifting-lever for the driving mechanism of the feed-shaft, a shifting-bar connected with the said lever and having end movement on the said bearings, which bar is provided with projections at certain distances apart, rakes, carriers for the rakes eccentrically mounted on the agitating-shaft and arranged to turn therewith and slide thereon, straps loosely mounted on the carriers, hinge connections between the straps and the rakes, guide-hangers for the said carriers, loosely mounted on the agitating-shaft and provided with interiorly-threaded sleeves for engagement with the feed-shaft, and pins projecting from the said hangers, adapted for engagement with the projections from the shifting-bar to move the same backward or forward and change the position of the said clutch.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CLETUS G. HAEGERT.

Witnesses:
JOHN F. KIRKPATRICK,
RICHARD B. GOBLE.