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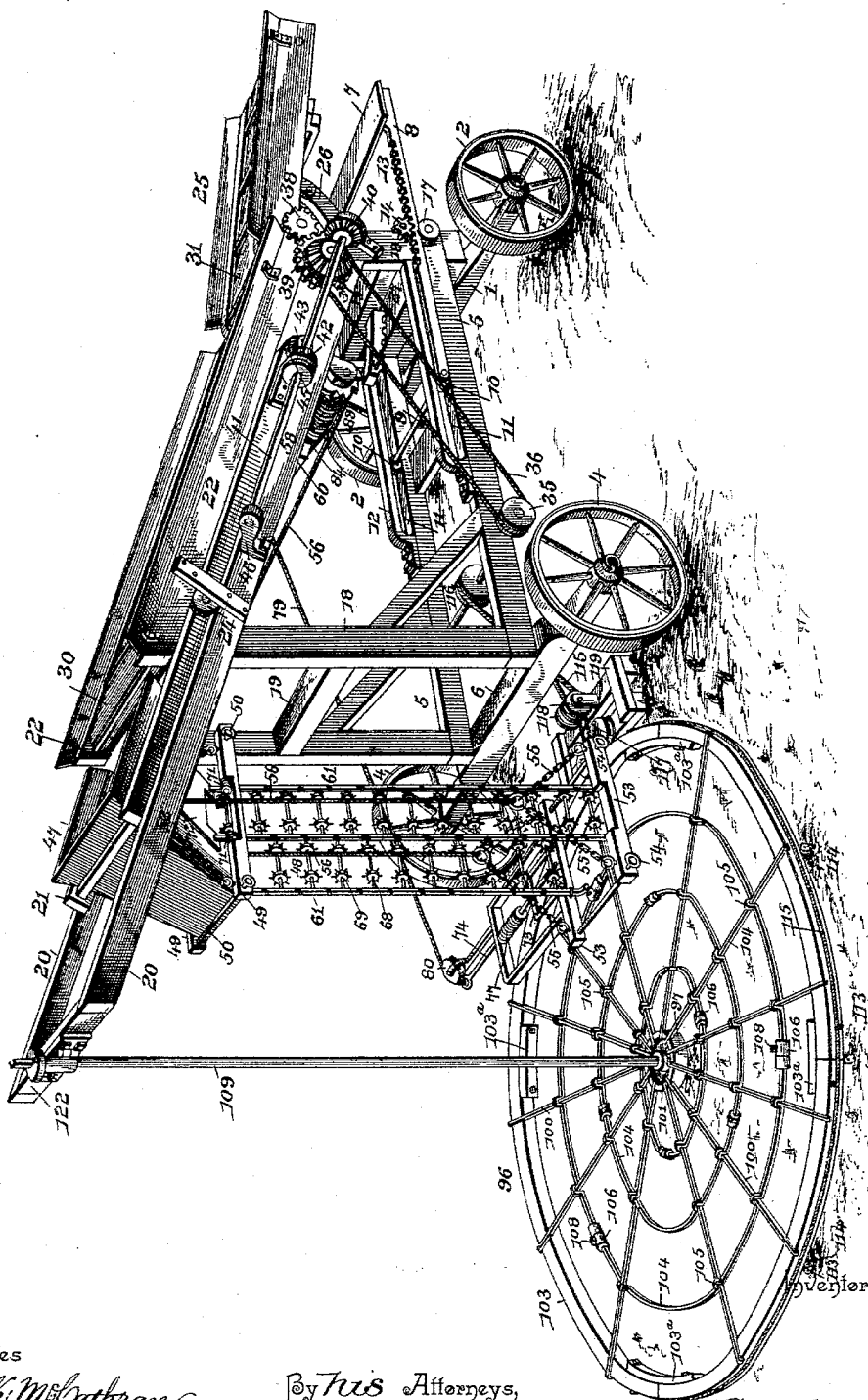
8 Sheets—Sheet 1.

H. F. SPAULDING.
GRAIN BUNDLE STACKER.

No. 571,865.

Patented Nov. 24, 1896.

FIG. 1.



Witnesses

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By *his* Attorneys,

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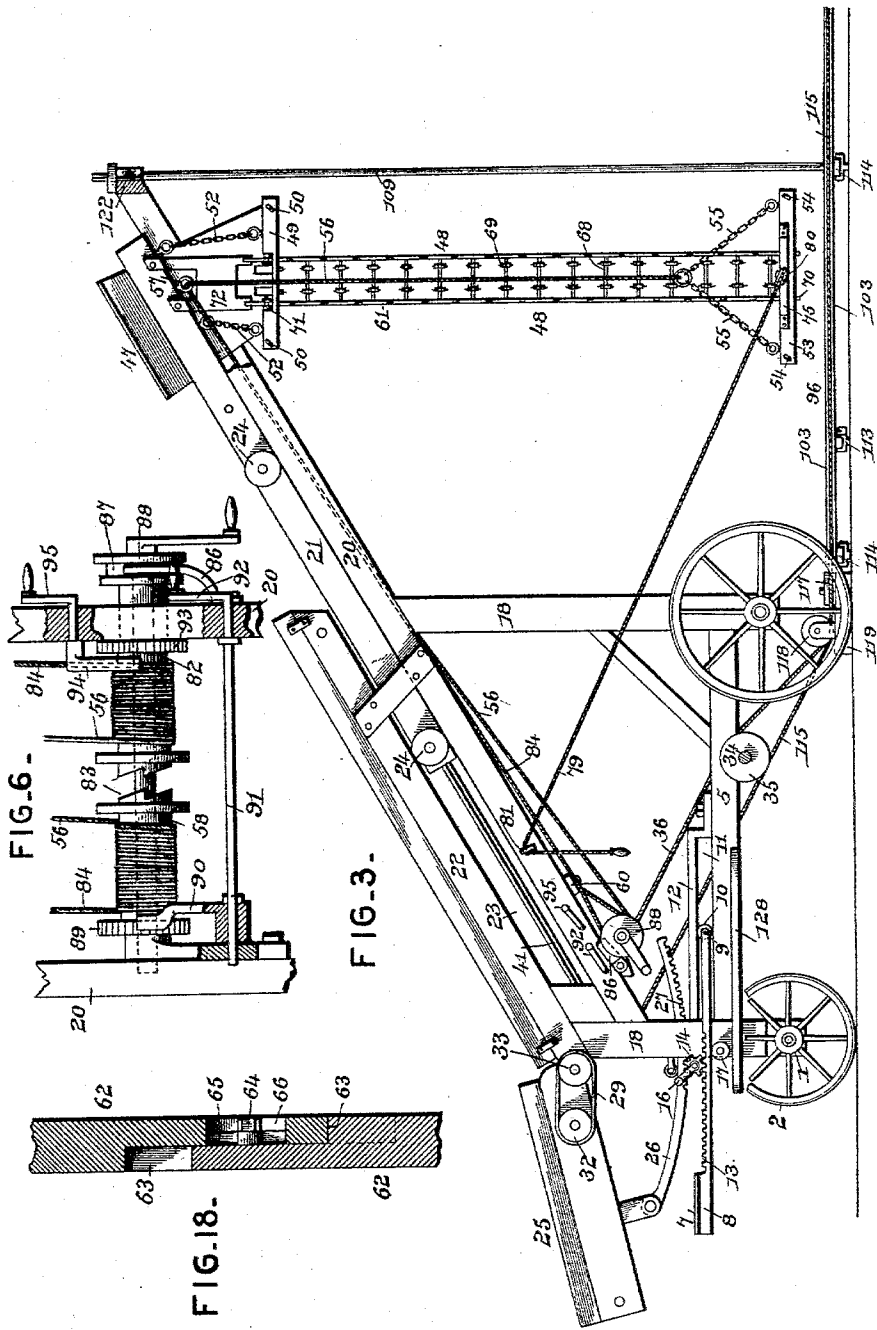
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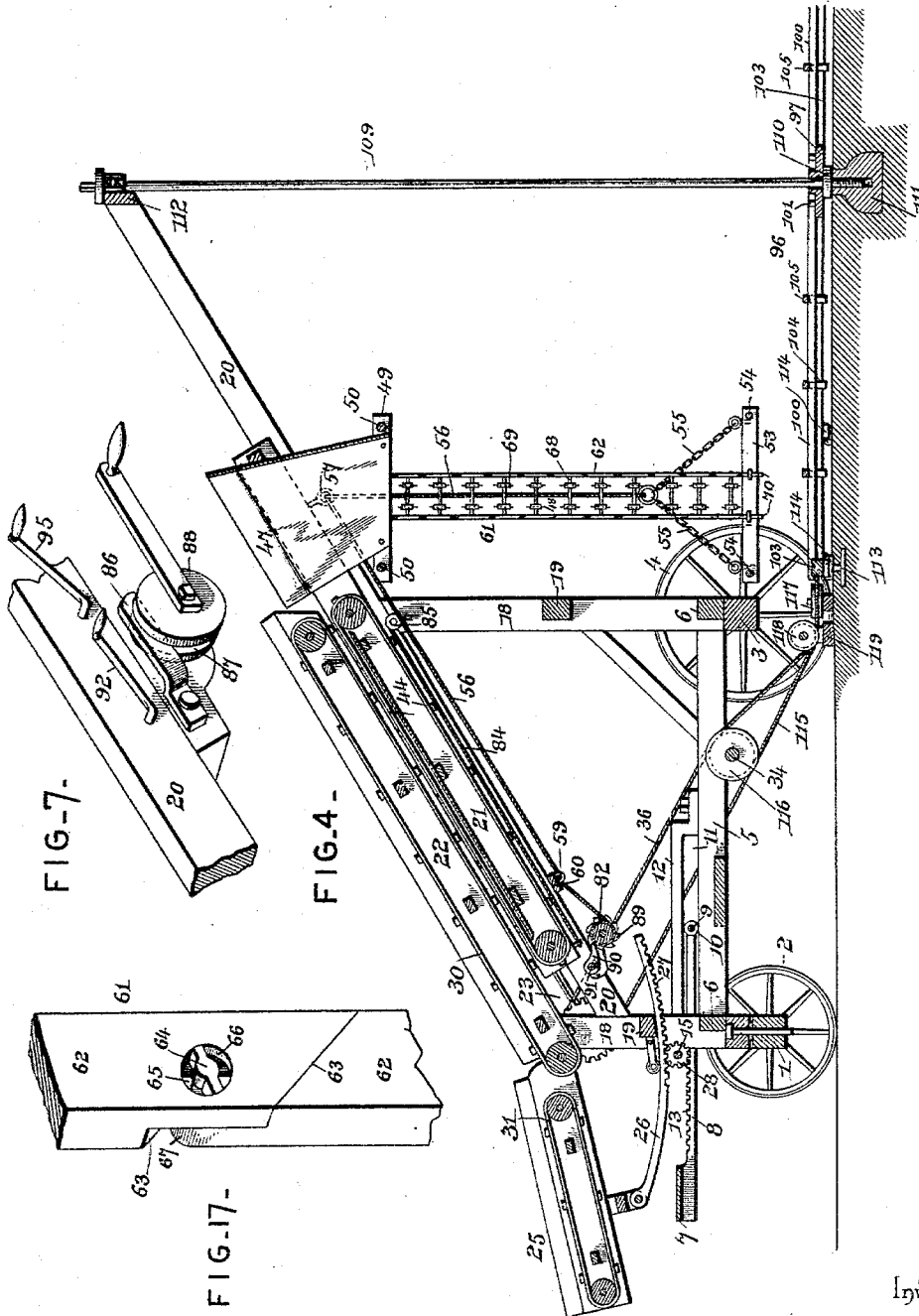
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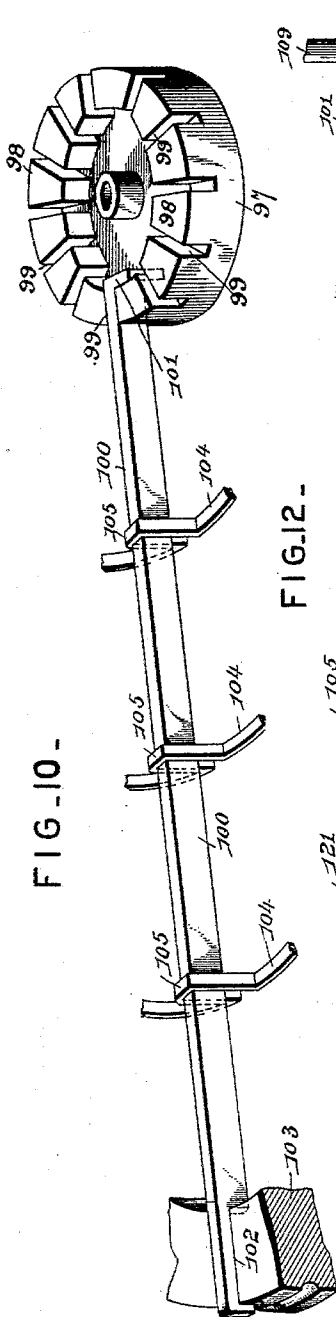


FIG. 10 -

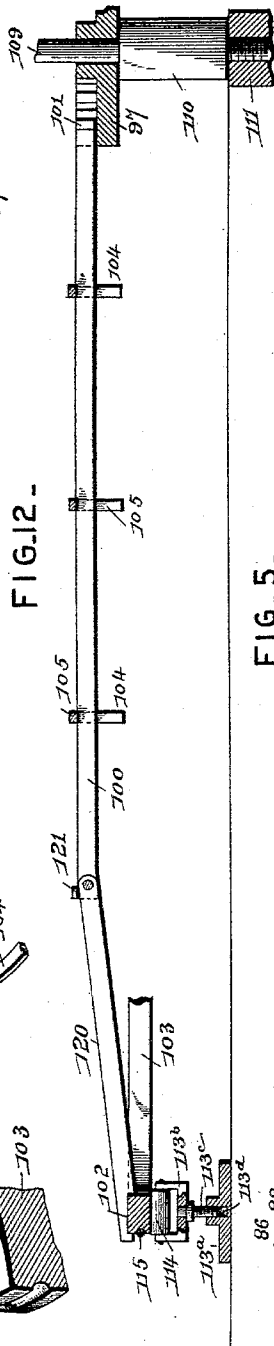
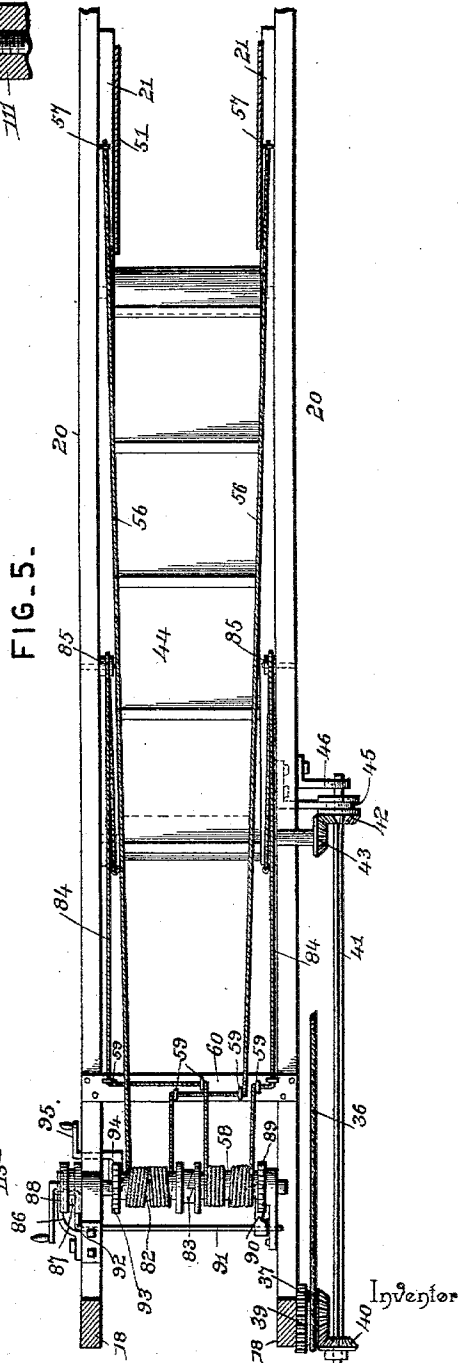


FIG. 12 -



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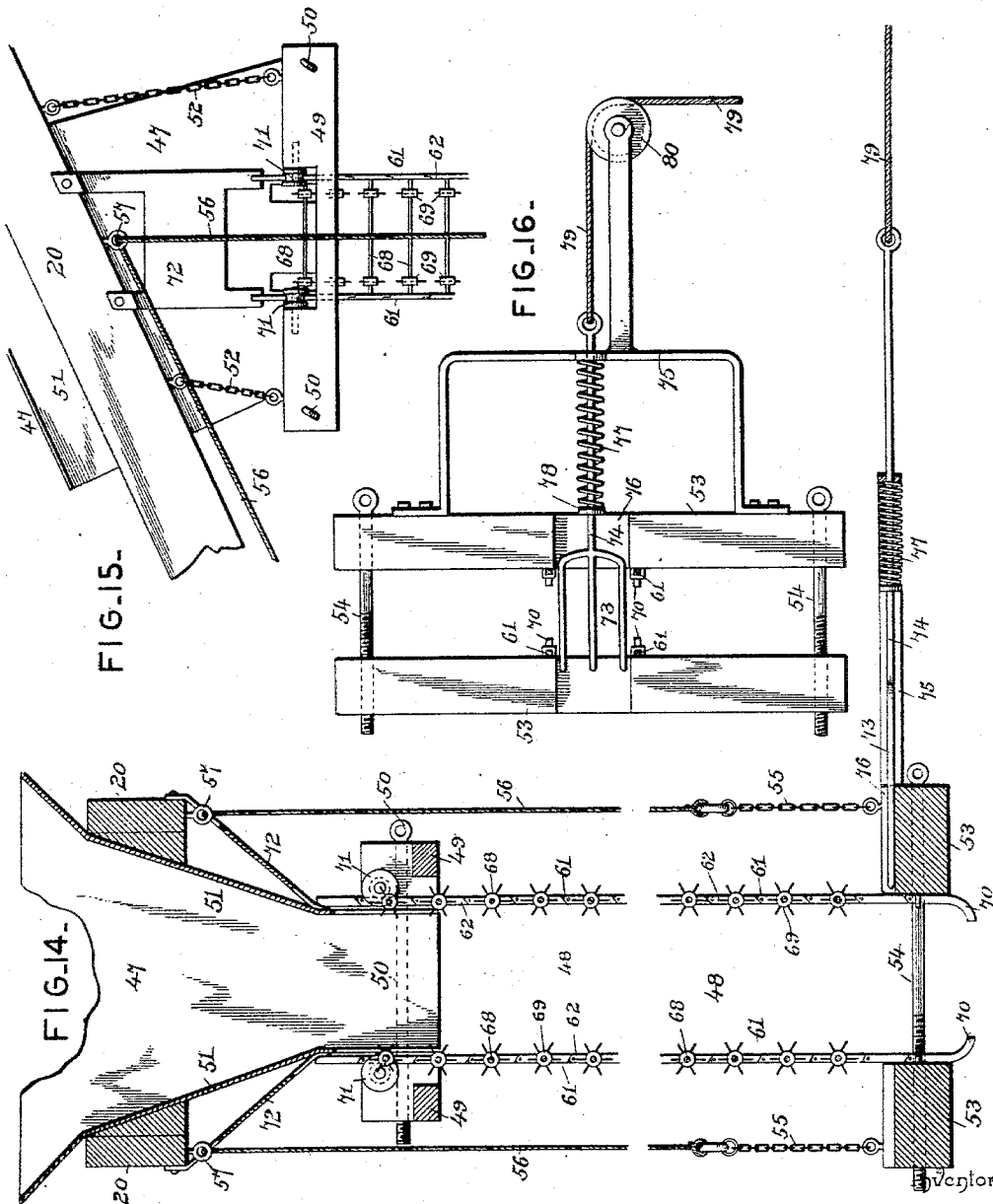
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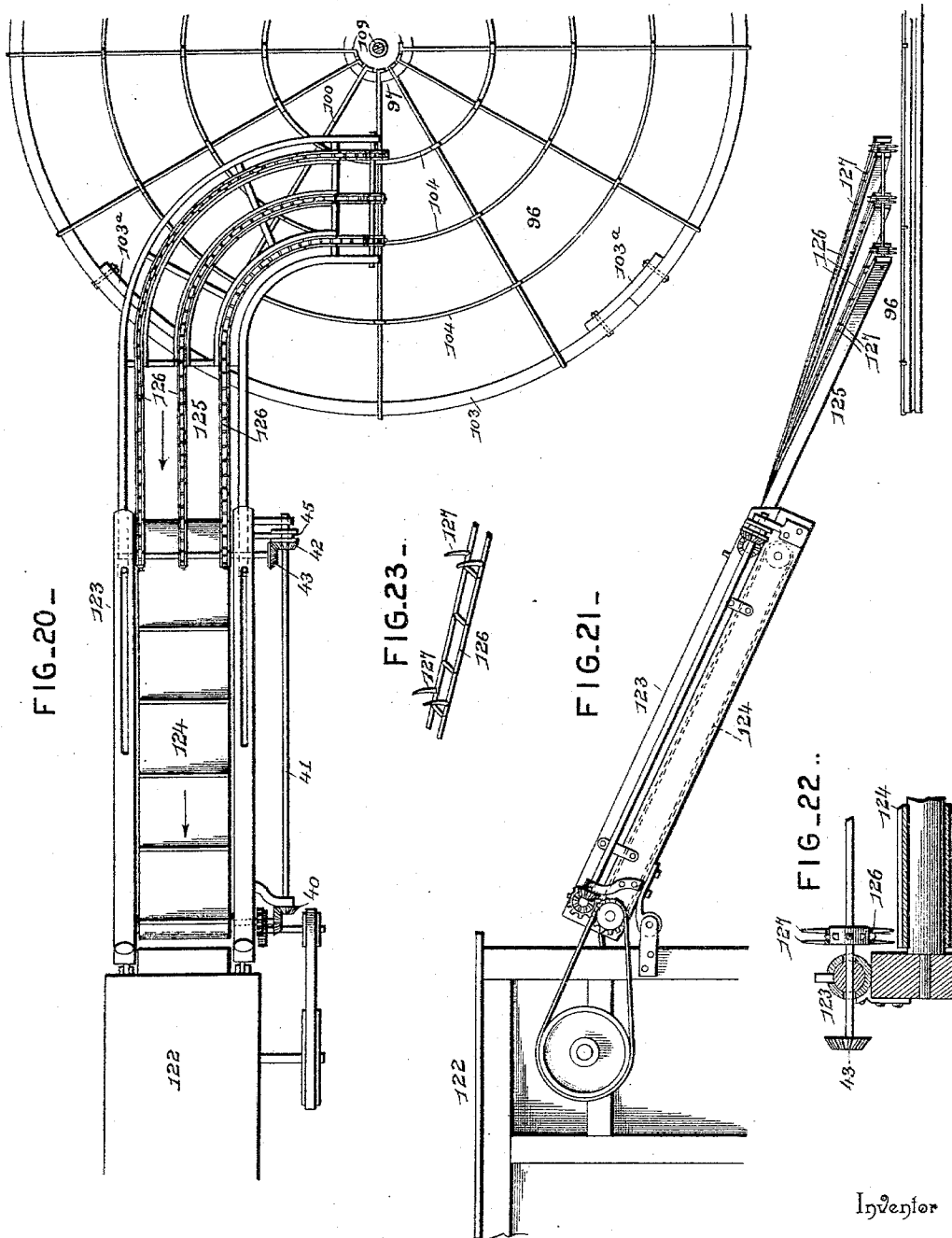
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UNITED STATES PATENT OFFICE.

HENRY F. SPAULDING, OF CANASTOTA, SOUTH DAKOTA.

GRAIN-BUNDLE STACKER.

SPECIFICATION forming part of Letters Patent No. 571,865, dated November 24, 1896.

Application filed January 10, 1896. Serial No. 574,997. (No model.)

To all whom it may concern:

Be it known that I, HENRY F. SPAULDING, a citizen of the United States, residing at Canastota, in the county of McCook and State of South Dakota, have invented a new and useful Grain-Bundle Stacker, of which the following is a specification.

Stacking grain upon low, wet, and damp ground invariably results in a material loss and possibly permanent injury to the lower strata of the grain by reason of dampness and similar causes. The grain also suffers from the inroads of rats and mice, and in order to overcome these objectionable features it has been found expedient to construct the stack upon an elevated base or platform. In order to effect this result practically, the base or platform must be turned so as to admit of the bundles being placed thereon in courses or tiers in the proper formation of the stack. As generally practiced, the bound bundles of grain, straw, or fodder are collected and are carried to the point where it is decided to form the stack, and the bundles are placed by hand so as to occupy a position around a vertical line or axis. This operation is tedious and slow, particularly so after the stack has acquired an elevation of eight or ten feet, as the carrying of the bundles to the remote side of the stack involves both time and the exercise of energy. In order to expedite the building of the stack, a machine has been devised to simultaneously rotate the base or platform step by step and properly place the bundles thereon in rows from the center outward, and vice versa, and in tiers or courses without requiring any especial care on the part of the operator other than is necessary to unload the bundles from the wagon and deposit them upon a conveyer which starts the bundle and through the mechanism of the machine properly positions it upon the base or platform, thereby enabling the stack to be built in far less time than would be possible without the intervention of the machine.

Where the base or platform is stationary, the attendant must traverse the same in order to properly position the bundles, thereby consuming time and rendering the operation fatiguing and irksome. Hence the advantage of turning the base about a vertical axis,

so as to bring a portion thereof opposite the wagon being unloaded. It must be remembered that the base or platform is of large dimensions, being approximately fifteen to twenty feet in diameter, and in order to sustain the weight of the stack the said base is of necessity weighty. Hence to turn the stack requires the application of force other than manual power, and for this reason the stacker forming the basis of this invention is constructed so as to impart movement to the base or platform, the parts being so timed and proportioned that the base is advanced after each bundle is placed in position, and the depositing mechanism is constructed to place the bundles from the center to the outer edge of the stack and in courses automatically, thereby expediting and enabling a stack to be built in a comparatively short space of time when the method generally in vogue is considered.

The machine devised for attaining the objects of this invention comprises in its organization a revoluble base or platform upon which the bound bundles are placed in courses from the center outwardly, or vice versa, as found most convenient, a chute to properly position the bundles, a sectional conveyer to carry the bundles from the wagon to the chute, and actuating mechanism for moving the chute to and from the center of the revoluble base or platform, and for elevating it accordingly as the stack is formed, so that the lower end of the chute will clear the various courses, and for operating the conveyers and turning the base or platform to admit of the bundles being properly positioned.

For a full understanding of the merits and advantages of the invention reference is to be had to the accompanying drawings and the following description.

The improvement is susceptible of various changes in the form, proportion, and the minor details of construction without departing from the principle or sacrificing any of the advantages thereof, and to a full disclosure of the invention an adaptation thereof is shown in the accompanying drawings, in which—

Figure 1 is a perspective view of a bundle-stacker constructed in accordance with the

principles of this invention. Figs. 2 and 3 are elevations thereof viewed from opposite sides. Fig. 4 is a vertical central longitudinal section of the same. Fig. 5 is a bottom view of the conveyer, showing the mechanism for operating the conveyer-sections and the means for transmitting motion to the endless conveyer of the movable section at all stages of its adjustment. Fig. 6 is a detail view of the mechanism for operating the movable conveyer-section and for lengthening and shortening the guide portion of the chute. Fig. 7 is a detail view showing the devices for holding the drums either in or out of gear and the devices for operating the pawls co-operating with the ratchet-wheels of the said drums. Fig. 8 is a plan view of the revoluble stacking base or platform and the actuating mechanism therefor. Fig. 9 is a detail section showing the means for supporting the revoluble stacking-base. Fig. 10 is a detail view showing the manner of constructing the revoluble stacking-base. Fig. 11 is a detail view showing the manner of connecting the ring-sections entering into the construction of the revoluble stacking-base. Fig. 12 shows a construction which admits of the outer portion of the revoluble stacking-base being dipped or tilted when required. Fig. 13 is a detail view of the outer end portion of an arm of the revoluble stacking-base constructed as shown in Fig. 12. Fig. 14 is a vertical section of the chute, parts being broken away. Fig. 15 is a side elevation of the upper portion of the chute. Fig. 16 is a top plan view of the lower portion of the guide, showing the cut-off in operative relation. Figs. 17, 18, and 19 are detail views of the opposing or adjacent ends of the links which enter into the construction of the guide portion of the chute. Fig. 20 is a top plan view of a mechanism for picking up the bundles from the stack and conveying them to a thresher or separator. Fig. 21 is a side elevation of the same. Figs. 22 and 23 are detail views.

The same reference-numerals denote corresponding and like parts in all the figures of the drawings.

The stacker is mounted upon a truck so as to be easily transported or moved over the field from one place to another, and the said truck consists of a front axle 1, having ground-wheels 2, a rear axle 3, having ground-wheels 4, longitudinal beams 5, and cross-timbers 6, the latter connecting the longitudinal beams in such a manner as to provide a substantial base for supporting the operating parts and the superposed structure.

A platform 7 has rearwardly-extending bars 8, which are connected at their rear extremities by means of a cross-rod 9, having pulleys 10, which operate in the space 11, formed between the top side of the longitudinal beams 5 and a guide-bar 12, the latter serving to prevent the upward movement of the cross-rod 9 when a weight is placed upon the platform 7. The platform 7 is adjustable toward and

from the front end of the truck, so that the position of the attendant can be varied to suit the adjustment of the front portion of the conveyer and the height of the load in the wagon, and in order to move the said platform in a convenient way the bars 8 have teeth 13, which are engaged by pinions 14, secured upon a transverse shaft 15, the latter being journaled in suitable bearings provided on the framework. This shaft 15 is provided at one end with a crank 16 as a convenient means for turning it in its bearings when it is required to move the platform 7. A pulley 17 is provided for each bar 8 to support the latter and the platform and is preferably arranged below the shaft 15, so as to hold the teeth of the pinions 14 and the teeth of the said bars 8 in meshing relation when operating the shaft 15 to adjust the platform.

The framework or superposed structure for supporting the conveyer, the chute, and the actuating mechanism therefor comprises corner-posts 18, which are suitably braced from the truck, transverse connecting-bars 19, and inclined beams 20, which form a track for the movable section 21 of the conveyer to travel upon, and these beams 20 incline rearwardly and upwardly at a given inclination and project a proper distance in the rear of the truck, so as to enable the proper formation of the stack. The fixed conveyer-section 22 is placed above and extends parallel with the inclined beams 20, and the movable or adjustable section 21 operates in the space 23, formed between the fixed conveyer-section 22 and the beams 20, and is provided with rollers or pulleys 24, which travel upon the beams 20 and relieve the friction incident to the movement of the said section 21 when traveling on the beams 20. The pivoted conveyer-section 25 is comparatively short and a curved bar 26 has pivotal connection therewith at about a middle point and is toothed for a portion of its length and has its teeth 27 meshing with a pinion 28 on the transverse shaft 15, so that when rotating the latter the section 25 and the platform 7 will be simultaneously and proportionately adjusted, so that the attendant can conveniently unload the bundles of grain from the wagon and place the same upon the conveyer-section 25. Each of the conveyer-sections consists of a suitable frame and an endless carrier, such as usually provided in machines of this and analogous character. A belt 29 transmits motion from the endless carrier 30 of the fixed conveyer-section to the endless carrier 31 of the pivoted conveyer-section 25 and passes over band-pulleys 32 and 33 on the projecting journals of the contiguous rollers supporting the adjacent ends of the endless carriers 30 and 31.

The power-driven shaft 34, which may be operated by horse, steam, or other power, is provided with a pulley 35, around which passes a belt 36 for imparting motion to an idler 37 at the front end of the truck, and which is in mesh with a pinion 38 on the jour-

nal of the lower roller of the fixed conveyer-section 22, and this idler is provided with a crown-gear 39, which is in mesh with a pinion 40, secured upon a shaft 41, extending parallel with and journaled in bearings extending from the contiguous beam 20. A pinion 42 is slidably mounted upon the shaft 41, but is keyed so as to revolve therewith at any adjusted position and is at all times in mesh with a corresponding pinion 43 on the journal of the lower roller of the movable section 21, so as to impart motion to the endless conveyer 44 of the said movable section at any adjusted position. An annular groove 45 is formed in the body of the pinion 42 and receives the cleft end of a bifurcated bracket 46, extending laterally from the movable section 21, and by means of which the said pinion 42 and section 21 move in harmony to attain the desired end. The shaft 41 is made angular, and the pinion 42 has a bore of corresponding shape, but it is obvious that any construction which will admit of the pinion 42 moving upon the shaft 41 and yet rotating therewith can be adopted and is contemplated in the scope of this invention.

The chute for directing the bundles upon the rotary table is attached to the upper or rear end of the movable conveyer-section 21, and consists of a hopper 47 and a guide 48, the hopper comprising side bars 49, which are adjustably connected together by threaded tie-rods 50 and plates 51, secured at their lower ends to the side bars 49, and flaring or spreading at their upper ends, so as to receive the bundles. By a proper adjustment of the side bars 49 the hopper can be regulated to adapt it to the size of the bundles to be stacked. The side bars 49 are suspended from the beams 20 by chains 52 or similar connections, which will admit of the said bars having a limited movement to adapt themselves to the direction of strain. The guide comprises bars 53, extending parallel with the bars 49, and which are adjustably connected together by means of threaded tie-rods 54 in a similar manner to the means employed for adjustably connecting the bars 49 and for a like purpose. The bars 53 are capable of vertical adjustment to adapt the length of the chute to the height of the stack or the course being formed, and chains 55 or like connections have attachment at their lower ends with the terminals of the bars 53 and oppositely inclined and are connected at their upper ends with a rope or cable 56, which passes through a suitable guide 57 at the delivery end of the section 21, thence downwardly and forwardly to a drum 82, located near the front end of the beams 20. It will be understood that a rope or cable 56 will be provided for each bar 53, and since the drum 82 occupies only about half the distance between the beams 20 the left-hand rope is deflected and passes through guides 59 on a cross-bar 60 before reaching the drum 82.

The guide 48 is formed by vertical sup-

ports 61, four in number, and each composed of links 62, which have pivotal connection at their opposing or adjacent ends. The links are similarly formed and their meeting ends are halved and overlap and are formed with oblique shoulders 63, which engage with the inclined ends of the adjacent links, so as to form a stiff joint to prevent the outward movement of the links when subjected to internal pressure. A butterfly projection 64 extends laterally from the reduced end of the links, and a slot 65 is formed in the adjacent end of the links to receive the wings of the projection 64, whereby an interlocking joint is provided, and a recess or countersink 66 is formed in the outer side of the slotted ends of the links to receive the wings of the butterfly projection to admit of the latter coming about flush with the outer side of the supports. That end of the links having the butterfly projection will be rounded, as shown at 67, to admit of the topmost links being deflected outwardly, whereby provision is had for lengthening and shortening the guide to adapt the latter to the length of the chute. By reason of the peculiar formation of the interlocking joint provided between the links the latter can be readily separated and assembled, and a sufficient number of links can be kept within convenient reach to be added, so as to increase the length of the supports 61 when required. The supports 61 are connected in pairs by rods 68, upon which are mounted near their ends toothed wheels 69, which are designed to act as eveners to compel the bundles to descend through the guide 48 in an approximately horizontal position, so as to be deposited properly upon the rotary table. The lowermost links curve, as shown at 70, to insure the proper positioning of the bundles upon the rotary table. Grooved guide-pulleys 71 are located about midway the ends of the bars 49 and support the upper ends of the parts 61, and guards or deflectors 72 are attached to the beams 20 and are approximately H-shaped in side elevation, and their vertical and parallel members engage with the topmost links of the supports 61 and deflect the same outwardly when shortening the chute or guide. These guards 72 flare outwardly at their upper ends, so as to effect the desired result.

A cut-off 73 is provided to extend across the lower end of the chute and support the bundles therein when adjusting the parts for a new course or for any purpose requiring the checking of the feed, and this cut-off appears as a fork, the tines of which extend across the space between the bars 53, and the stem or shank 74 of which operates through an opening in a frame or bar 75, attached to one of the bars 53, and the tines in a guide 76, formed by notching the top side of the bars 53. A coil-spring 77 is mounted upon the stem 74 and is confined between a collar 78 thereof and the outer portion of the frame 75, and its purpose is to project the cut-off across the

chute to stop the feed of the bundles when required.

A rope or cord 79 is connected with the outer end of the stem 74 and passes over a guide-pulley 80 and extends within convenient reach of the attendant, and its free end is adapted to be engaged by a clip 81, fastened to one of the beams 20, so as to hold the cut-off open when the stacker is in operation. Obviously the attendant can exert a pull upon the cord or rope 79, so as to hold the cut-off 73 open when required.

A drum 58 is mounted in line with the drum 82, and a clutch 83 is provided between the adjacent ends of the two drums and when in gear causes them to move in unison. The drum 82 is adapted to have a longitudinal movement to and from the drum 58, so as to ungear the parts of the clutch 83 when it is required to lengthen and shorten the chute without moving the section 21. Ropes or cords 84 are connected at one end to the lower or front end of the movable section 21 and pass over guide-pulleys 85 on the beams 20 about in line with the rear posts 18 and extend forwardly and have connection with the drum 58, so that upon rotating the latter in the proper direction the ropes or cords 84 will be wound thereon and extend the section 21, so as to bring the chute in proper position for depositing the bundles upon the rotary table. A dog 86 is adapted to enter an annular groove 87 in the crank-head 88, so as to hold the parts of the clutch 83 in engagement, and can be caused to engage with the inner end of the said crank-head to hold the parts of the clutch out of engagement when it is required to raise or lower the chute without adjusting the section 21. The drum 58 has a ratchet-wheel 89, which is engaged by a pawl 90, so as to hold the said drum from turning backward when the clutch 83 is unshipped to admit of the lengthening and shortening of the chute, and this pawl 90 is secured to a rod 91, whose bent end 92 is within convenient reach of the attendant, so that the pawl 90 can be thrown either into or out of working position. The drum 82 is supplied with a ratchet-wheel 93, and a pawl 94 is had to engage therewith and is operated by means of a rod having a bent end 95, which is readily accessible for moving the pawl 94 to throw it into or out of engagement with the said ratchet-wheel 93.

The rotary table 96, or, more properly speaking, the revoluble stacking base or platform, is composed of a hub 97, having a vertical flange 98, formed with notches 99, arms 100, having their inner ends fitted into the notches 99 and bent, as shown at 101, and recessed at their outer ends, as shown at 102, a rim 103, grooved in its outer periphery, and a series of rings 104, having loops 105 to receive the arms 100, whereby the latter are braced laterally and held in fixed relation, and these rings 104 also serve to provide a support between the arms 100 for sustaining

the bundles in the formation of the stack. The rings are composed of sections and one end of each section is formed with a socket 106, and the opposite end of the adjacent section is formed with a tenon 107 to enter the socket 106, and a binding-screw 108 is threaded into a side of the socket 106, and is adapted to bear laterally against the tenon 107, so as to secure the sections of the ring when properly fitted together.

The hub 97 is centrally apertured and receives a vertical rod 109, which is threaded at its lower end and provided with a collar 110, the latter engaging with the nether side of the hub and forming a bearing for the revoluble stacking-base to turn upon, and the threaded end of the rod 109 is adapted to screw into a step 111, embedded into the ground at a convenient point in the rear of stacker. The upper end of the rod 109 is mounted in a bearing attached to a cross-bar 112, connecting the rear ends of the beams 20, and its upper end is made angular to receive a wrench or tool by means of which the rod 109 can be turned, so as to screw its lower end into the step 111 or remove it therefrom, as required. Chairs or supports 113 are located at intervals in the length of the rim 103, and these chairs have a broad base to obtain an extended purchase upon the ground and are bifurcated at their upper ends and receive a roller 114, which engages with the under side of the rim 103 and relieves the friction incident to the traveling of the said rim upon the chairs. These chairs are planted in the ground to a proper depth, so as to insure a firm support to the stacking-base in the rotation of the latter when forming the stack. A rope or cable 115 is fitted into the peripheral groove of the rim 103, and is driven from the power-shaft 34 by passing around a pulley 116 thereon, and is given proper direction by passing between horizontally-disposed guide-pulleys 117 and beneath vertically-arranged guide-pulleys 118, which are mounted upon a base 119, located contiguous to the periphery of the revoluble stack-forming base. In some instances it may be desirable to make provision for giving a dip to the outer portion of the stacking-base after the stack is formed, and to effect this result the outer portion of the arms 100 has pivotal connection with the inner or main part, as shown at 120 in Figs. 12 and 13. A lip 121 is provided on the main part of the arm and extends over the inner portion of the part 120, so as to hold the latter in alinement with the body of the arm during the rotation of the stacking-base, but after the stack is formed the outer end of the main part is blocked up or supported in any suitable way, thereby admitting of the outer extremity of the pivoted part 120 to be lowered, so as to attain the desired end.

After the stack has been formed the revoluble stacking-base can be left in position or removed at the option of the farmer, and when

left in position it will support the grain a distance above the ground and protect it from dampness, which is desirable in low and marshy land, and provision is had for the quick feeding of the bundles to the thresher when it is required to thresh the grain, and to effect the latter result a thresher or separator 122 will be provided with a sectional conveyer 123, similarly constructed to that portion of the conveyer comprising the sections 21 and 22, but in this instance the fixed section 124 will be attached to the thresher 122 and the adjustable section 125 will have its front end laterally curved, so as to extend over the stack and catch up the bundles as the stacking-base is revolved and feed the same to the thresher in the ordinary way.

The adjustable or movable section 125 will be channeled or grooved, and endless chains 126 will travel or operate in the said grooves and are guided thereby and are formed at intervals in their length with teeth 127, which engage with the bundles and carry them forward to the thresher in a manner readily comprehended. It will be understood that the adjustable section 125 must be moved to and from the center of the stack in order to pick up the rows of bundles in the order in which they were deposited by the stacker. The actuating mechanism for the endless chains 126 will be substantially the same as the actuating mechanism for the endless conveyer 44. Hence a detailed description of the same is not deemed necessary, since that formerly given will apply, similar and corresponding parts being designated by the same reference-characters.

A platform 128 is provided on the right-hand side of the truck near the front end, so that an attendant perched thereon can control the movements of the machine and have the means for operating the several parts within convenient reach.

In the operation of the invention the revoluble stacking-base is properly assembled and located at the point where it is desired to form the stack, and the stacker is moved to a position so as to cooperate with the base when forming the stack. The feeder, one or more, is mounted upon the platform 7, and after the load of grain is driven to the front end of the machine and beneath the pivoted conveyer-section 25 the attendant unloads the grain from the wagon and places the bundles upon the conveyer-section 25, and the said bundles are carried forward thereby to the chute and are deposited by the latter upon the stacking-base, which latter is revolved slowly, so that the bundles will be placed successively thereon and touch at their longitudinal edges. After one row of a course is completed the section 21 is moved, so that the next row can be formed, and so on until a course is completed, after which the cut-off is released, so as to check the feed, and the chute is shortened sufficient to allow for the formation of the second course,

and this operation is repeated until the stack assumes the proper height, when the machine is moved to form a stack in a new place. The base upon which the stack is built can be removed or left standing, and the removal of the same is facilitated by its sectional construction, as will be readily comprehended.

In the construction of revoluble stacking-base shown in Fig. 12 the chair is composed of a base 113^a, a frame 113^b, carrying roller 114, and an intermediate adjusting-screw 113^c, entering a threaded socket 113^d in the base 113^a, the head of the adjusting-screw having a swivel or loose connection with the frame 113^b. By turning the set-screw the chair can be lengthened or shortened, so as to raise or lower the outer portion of the stacking-base, as will be readily comprehended.

The rim 103 is composed of sections which are secured together in any substantial way so as to admit of the parts being readily separated. As shown, strips 103^e overlap the joints between the sections and are bolted thereto. Having thus described the invention, what is claimed as new is—

1. A revoluble stack-forming base or platform, in combination with a stacker for depositing thereon bound bundles of grain in rows and courses in the formation of a stack, substantially as set forth.

2. A revoluble stacking-base, in combination with a stacker provided with an adjustable conveyer-section bearing a chute movable with the said conveyer-section and adapted to deposit the bound bundles of grain upon the revoluble stack-forming base when building the stack, substantially as specified.

3. A revoluble stacking-base, in combination with a stacker having an adjustable conveyer-section provided with a chute capable of being lengthened and shortened and movable with the said conveyer-section so as to deposit the bundles of grain upon the stacking-base in the formation of the stack, substantially as described.

4. In a stacking-machine, the combination with a conveyer comprising a relatively fixed and a movable section, of a chute carried by the movable section, a drum operatively connected with the movable section for extending it, a second drum for lengthening and shortening the chute, a clutch mechanism for connecting the two drums, whereby the movable section and the chute can be simultaneously actuated and the delivery end of the chute caused to maintain a position in a given plane, and the chute be independently operated so as to be lengthened and shortened, substantially as set forth.

5. The combination with a stacker, of a chute comprising a guide formed by vertical supports composed of links having pivotal connection and arranged to yield outwardly at their upper ends and to resist outward pressure between their ends and to maintain a normal vertical position, substantially as set forth.

6. The combination with a stacker, of a chute comprising vertical supports composed of links having interlocking pivotal joints formed by an approximately butterfly projection on the end of one link and a corresponding slot on the end of the adjacent link to receive the wings of the butterfly projection, substantially in the manner and for the purpose set forth.
7. In a stacker, the combination of a chute comprising vertical supports, and toothed wheels at intervals in the length of the supports, substantially as set forth and for the purpose described.
8. In a stacker, the combination with a hopper, and guards exterior thereto, of a guide comprising vertical supports formed of links pivotally connected together and adapted to have their ends abut, whereby the links are held in alinement against pressure from within the guide and the upper links capable of yielding by engagement with the said guards, substantially as set forth for the purpose described.
9. In a stacker, a chute comprising a hopper, bars adjustably connected together and supporting the sides of the hopper, guards exterior to the hopper, vertical supports composed of pivoted links capable of resisting pressure against their inner sides, lower bars adjustably connected together and having the said supports connected therewith, toothed wheels at intervals in the length of the supports, and means for raising and lowering the lower bars, whereby the chute can be lengthened or shortened, substantially as set forth for the purpose described.
10. In a stacker, the combination of an adjustable platform, a pivoted conveyer-section, and actuating mechanism for simultaneously moving both the platform and the said pivoted conveyer-section, substantially as and for the purpose set forth.
11. In a stacker, the combination of a platform having rearwardly-extending arms provided with teeth, a pivoted conveyer-section, a bar having connection with the pivoted conveyer-section and formed with teeth, and a shaft provided with pinions meshing with the arms of the platform and with the teeth of the said bar, whereby both the platform and the conveyer-section are capable of simultaneous adjustment, substantially as set forth.
12. In a stacker, the combination with a chute comprising parallel bars adjustably connected together and notched to form a guide, and a frame attached to one of the bars, of a fork operating across the space between the bars and moving in the said notches, a spring mounted upon the stem of the fork between the bar and frame, and a rope or cord under the control of an attendant, whereby the said fork can be actuated, substantially as set forth for the purpose described.
13. A revoluble stacking-base comprising a hub, an outer rim, and arms intermediate of the rim and hub, substantially as set forth.
14. A revoluble stacking-base comprising a hub having a vertical flange formed with notches, an outer rim, and arms, the latter recessed at their outer ends to engage with the rim and having lateral extensions at their inner ends to engage with the inner wall of the vertical flange of the hub, substantially as set forth for the purpose specified.
15. A revoluble stacking-base comprising a hub, an outer rim, arms connecting the hub and rim, and intermediate rings formed with loops corresponding in position and number with the said arms and adapted to receive the latter, substantially as set forth.
16. A revoluble stacking-base comprising a hub, an outer rim, and intermediate arms, the latter having their outer portions pivoted to the main body of the arms, whereby the outer portion of the base can be given a dip, substantially in the manner set forth.
17. In combination, a stacking-base, a central support, and outer supports capable of being lengthened and shortened for raising or lowering the outer portion of the stacking-base, substantially as set forth.
18. A stacking-base, in combination with a central support, and outer supports each comprising a base, a frame, and an intermediate set-screw, whereby the frame can be raised or lowered to adjust the outer portion of the stacking-base to the required elevation, substantially as and for the purpose specified.
19. In combination, a revoluble stacking-base comprising a hub, an outer rim, and intermediate arms having their outer portions pivoted, a central support, and outer supports each consisting of a base having a threaded opening, a frame having a roller for the rim to rest upon, and an intermediate set-screw adapted to operate in the threaded opening of the base and having a swivel or loose connection with the frame, substantially as specified.
20. In combination, a stacking-base comprising a hub, an outer sectional rim, strips overlapping the joints between the sections of the rim and secured thereto, arms detachably connected with the hub and rim, and a series of rings of different diameters and concentrically disposed, and having corresponding loops to receive the said arms, and each ring being composed of sections detachably connected together, substantially in the manner set forth for the purpose described.
21. In a stacking-machine, the combination of a conveyer comprising a fixed and a movable section, a chute carried by the movable section and capable of being lengthened and shortened, a drum operatively connected with the movable conveyer-section, a second drum in line with the first-mentioned drum and adapted to have a movement toward and from the said drum and operatively connected with the said chute, half-clutches on the opposing ends of the two drums, means for holding the movable drum in either of its two positions,

and a ratchet-and-pawl mechanism for holding the drums against backward rotation and under the control of the operator so that either one or both may be thrown into or out of operative relation, substantially in the manner set forth for the purpose described.

In testimony that I claim the foregoing as

my own I have hereto affixed my signature in the presence of two witnesses.

H. F. SPAULDING.

Witnesses:

JOHN H. SIGGERS,
E. G. SIGGERS.