No. 864,592. PATENTED AUG. 27, 1907.

S. C. ANDERSON.

CORN HARVESTER.

APPLICATION FILED MAY 12, 1906.

4 SHEETS—SHEET 1.

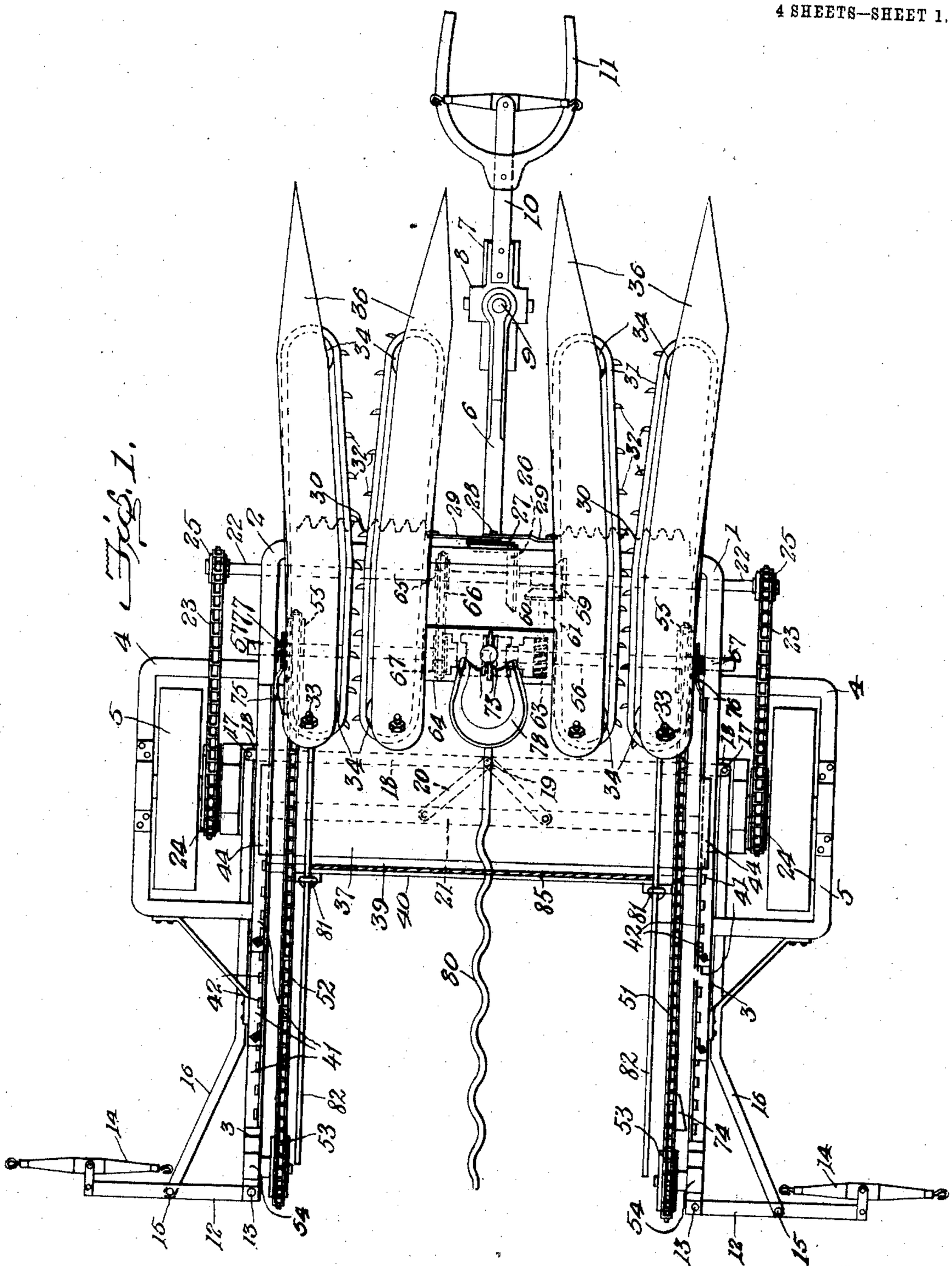

Fig. 1.

Witnesses

G. Howard Walmsley.

Irvine Miller

Inventor

Samuel C. Anderson,

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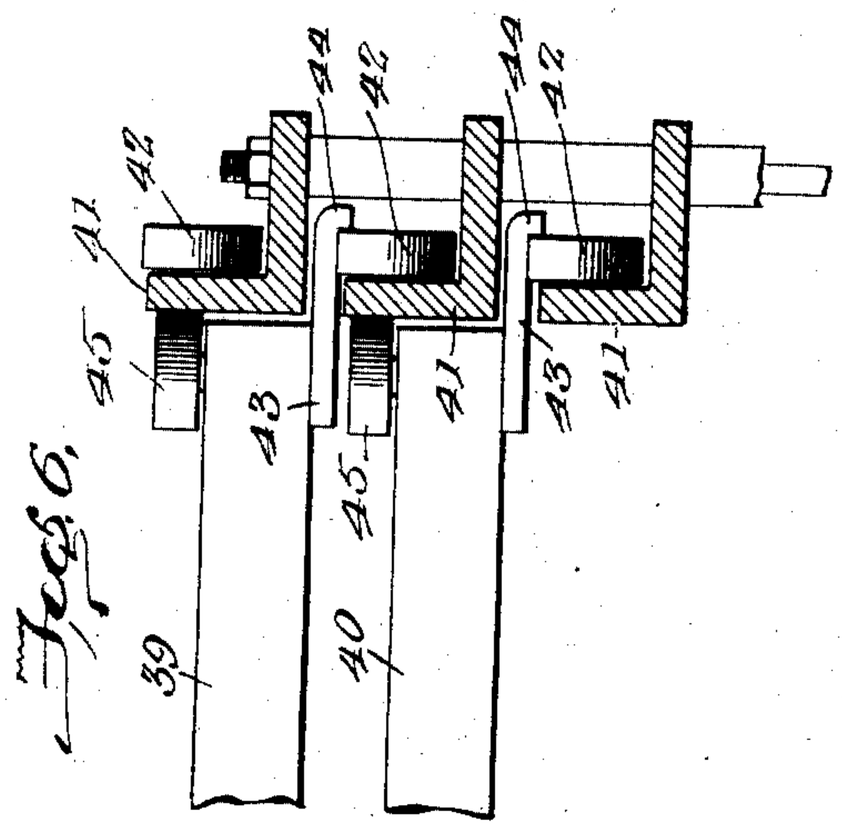

Fig. 6.

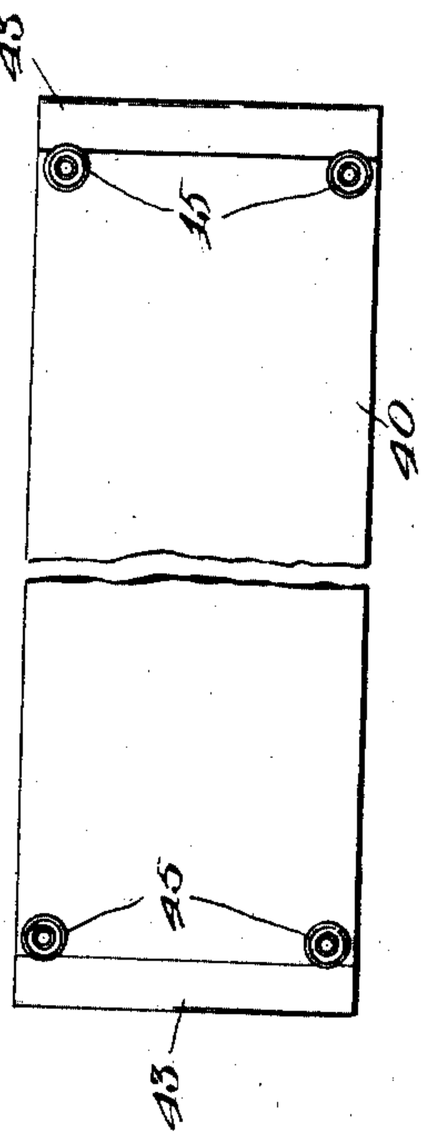

Fig. 5.

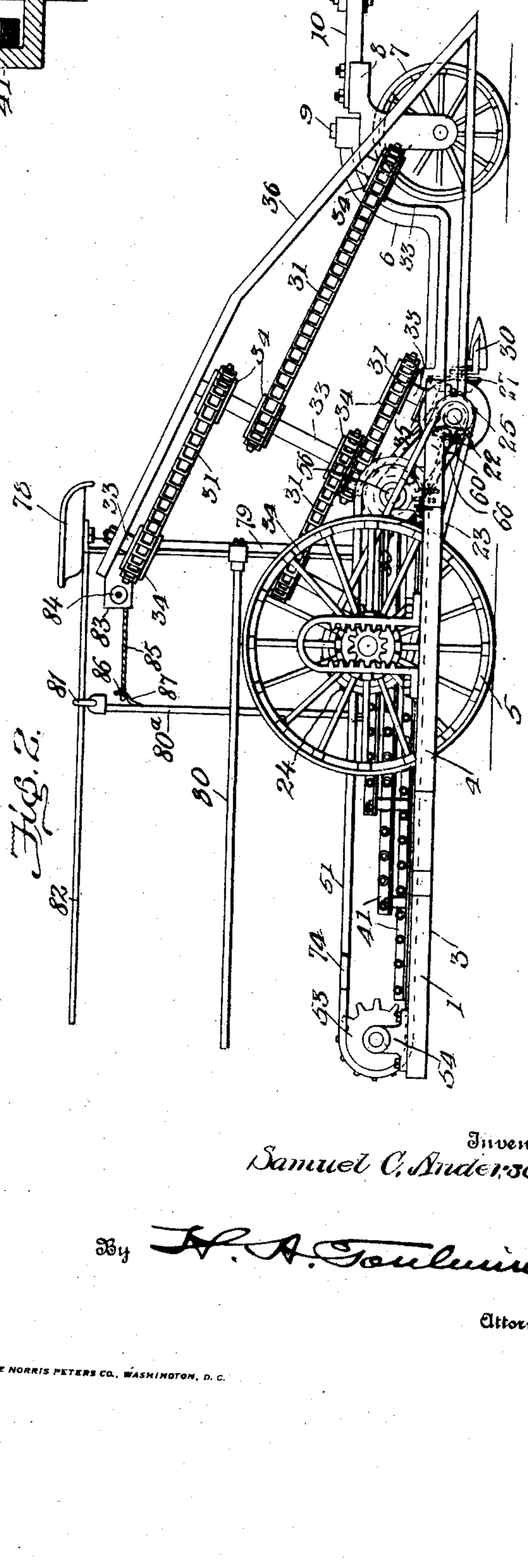

Fig. 2.

Witnesses

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4 SHEETS—SHEET 3.

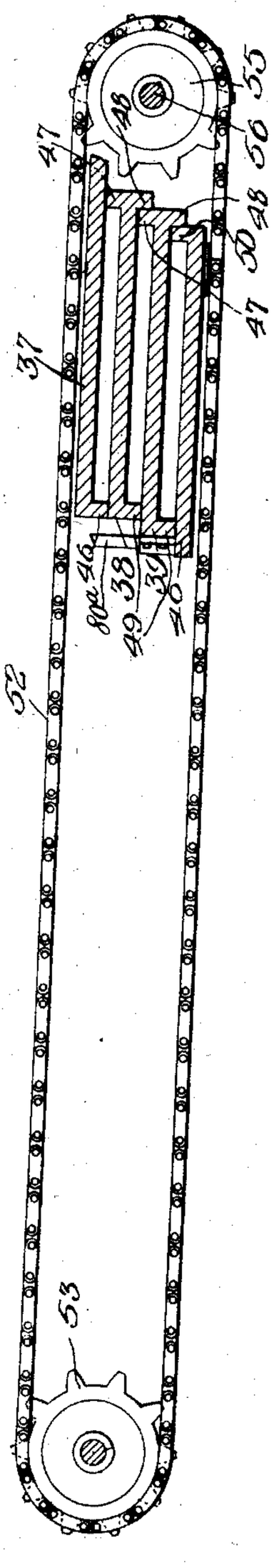

Fig. 3.

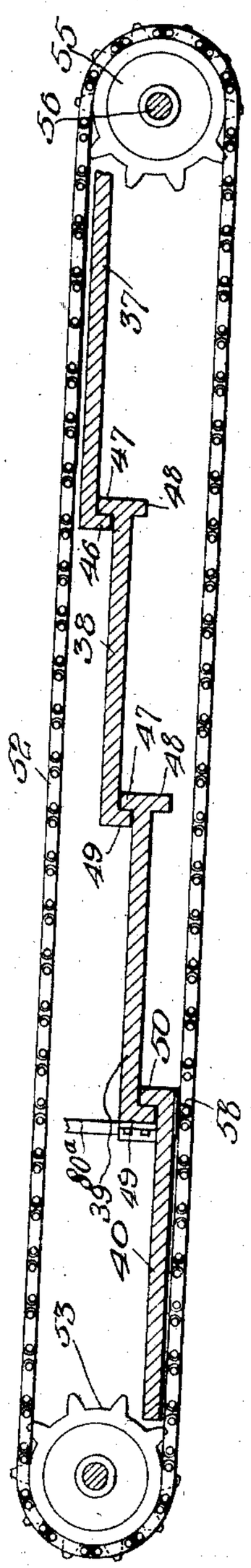

Fig. 4.

Witnesses

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4 SHEETS—SHEET 4.

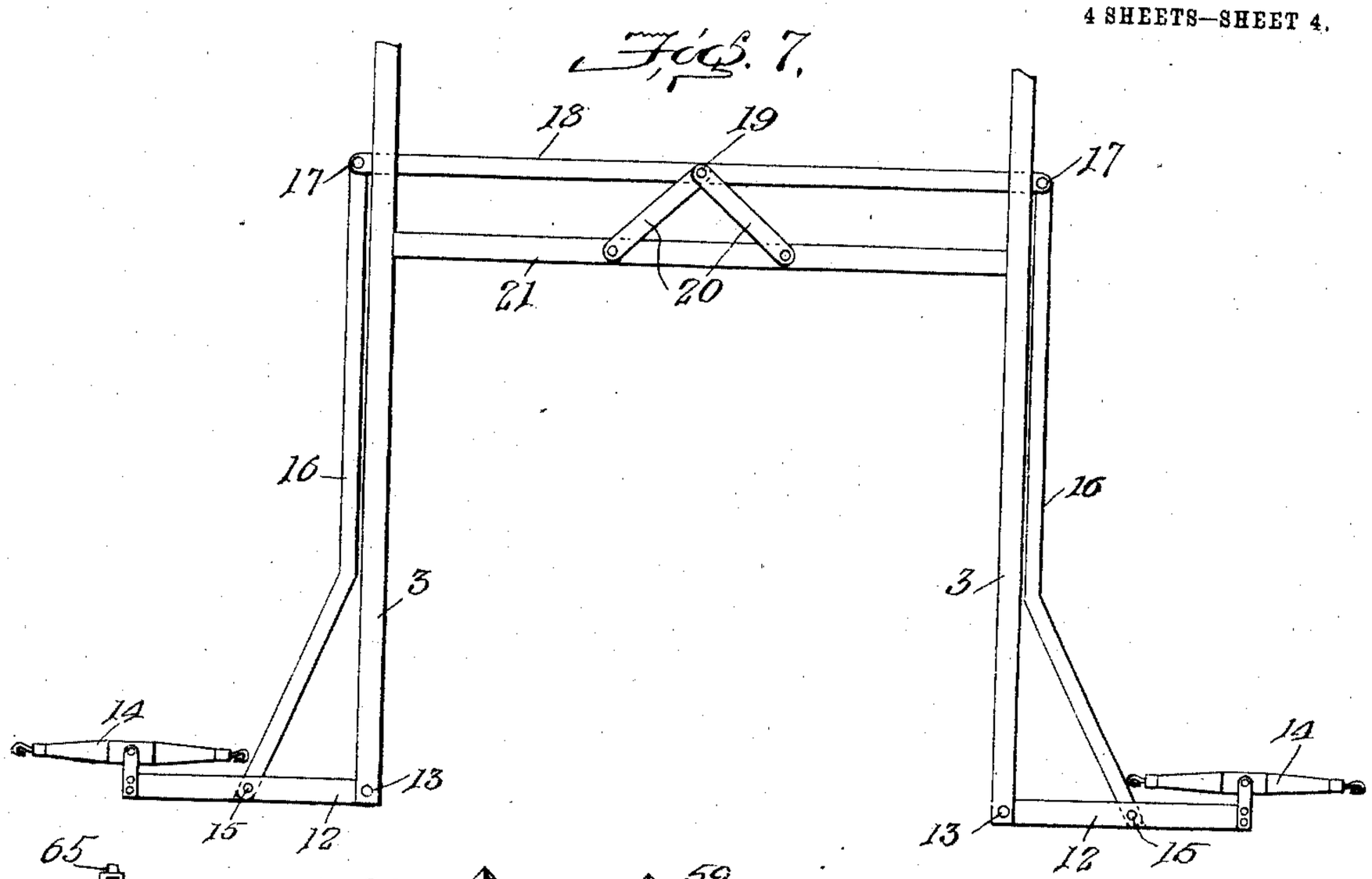

Fig. 7.

Fig. 8.

Fig. 9.

Witnesses

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UNITED STATES PATENT OFFICE.

SAMUEL C. ANDERSON, OF XENIA, OHIO.

CORN-HARVESTER.

No. 864,592. Specification of Letters Patent. Patented Aug. 27, 1907.

Application filed May 12, 1906. Serial No. 316,472.

To all whom it may concern:

Be it known that I, SAMUEL C. ANDERSON, a citizen of the United States, residing at Xenia, in the county of Greene and State of Ohio, have invented certain new and useful Improvements in Corn-Harvesters, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to corn harvesters, and more particularly to that class of corn harvesters in which the severed stalks, while maintained in an upright position, are formed into an upright shock upon a shocking platform forming a part of the machine, which shock, after it has been formed and bound or tied, is deposited in an upright position on the soil.

The primary object of my present invention is to provide a machine of this type which is adapted to form a shock of sufficient size, and to deposit the same upon the ground in an upright position without either tilting the shocking platform or lifting the shock. Where it is sought to deposit the shock upon the ground by tilting the platform on which it is supported, the result sought to be accomplished is not readily attained, nor is the shock always properly deposited in an upright position. Where, on the other hand, it is proposed to lift the shock from the position where it is formed in order to transport it to the place where it is to be dropped, the formation of a shock of the proper size necessitates the lifting of a weight which it is not always convenient to handle.

It is the object of my present invention to avoid these difficulties by the provision of a shocking platform composed of a plurality of telescoping sections arranged to move in parallel planes and provided with mechanism, preferably automatic in its operation, whereby the platform sections are extended rearward as the body of stalks supported thereby increases, until a platform of dimensions such as to support a full sized shock is formed, said sections being subsequently moved forward or in the reverse direction, thereby withdrawing the platform from underneath the shock and depositing the latter upon the ground, said sections telescoping or sliding underneath each other to reduce the size of the platform to its original small dimensions. Provision is made whereby the rearward or extending movement of the platform is relatively slow, to permit the accumulation of stalks and the forming and binding of the shock, while the reverse or contracting movement of the platform is quick, so as to not only promptly discharge the shock, but also quickly restore the platform to its receiving position and thereby prevent any stoppage or interruption in the operation of the machine.

These and other features of novelty will be hereinafter more fully described and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a plan view of a machine embodying my invention in one form; Fig. 2 is a side elevation of the same; Fig. 3 is a central longitudinal sectional view of the shocking platform and a portion of its operating mechanism, the same being shown in contracted position; Fig. 4 is a similar view, showing the platform extended; Fig. 5 is a top plan view of one of the platform sections, detached; Fig. 6 is a detail transverse section through the supporting tracks at one side of the platform; Fig. 7 is a detail view illustrating the hitch; Fig. 8 is a detail plan view illustrating the platform driving mechanism; and Fig. 9 is a detail elevation of a portion of said mechanism.

In the said drawings, in which one embodiment of my invention is illustrated, the machine is shown as comprising a main frame 1, preferably U-shaped and open at the rear, said frame comprising the front cross bar 2 and parallel rearwardly extending side members 3, preferably bent to shape from a single bar or beam. This frame is provided with lateral brackets 4, in which are mounted the main wheels 5, which support and drive the machine. A forward extension 6 of the main frame carries a central supporting wheel 7, mounted in a yoke or frame 8, which is swiveled to the extension 6 by a vertical pivot 9. The yoke 8 has a forwardly extending tongue 10, to which is attached a pair of thills 11 in such a way that the horse which is hitched at this point between the thills will turn the swiveled wheel 7 and guide the machine in accordance with the manner in which this horse is himself guided by the driver.

The machine is organized, in its present form, to operate upon and cut two rows of corn at a time, the horse hitched at the front of the machine walking between said rows. Two other horses are also employed to propel the machine, these latter being hitched one on each side of the machine at the rear thereof.

From an examination of Figs. 1 and 7 it will be seen that there is pivoted to the rear end of each frame member 3 a lever 12, the connection being made by means of a pivot 13 located at one end of the lever. To each lever there is connected at its other end a whiffletree 14, or other suitable draft attachment. Between its ends there is pivoted to each lever at 15 the rear end of a connecting rod 16, which rods extend forward and have their front ends pivoted at 17 to the extremities of an equalizing bar or lever 18. This latter is centrally fulcrumed at 19, being supported by arms 20 from a cross bar 21 forming a part of the main frame. The horses thus hitched at the rear of the machine travel on each side of the two rows of corn which are being operated on, and the arrangement just described is such as to equalize the pull of the two horses and at the same time leave a clear space, open at the rear, for the reception and discharge of the shock.

The machine may be provided with any suitable cutting and gathering mechanism, that illustrated comprising a main shaft 22, driven by sprocket chains 23 from gears 24, to which motion is imparted by the driving wheels 5, the sprocket chains 23 passing around sprocket wheels 25 on the ends of the shaft 22. A bevel gear 26 on the shaft 22 drives a bevel gear 27, supported in suitable bearings on the front frame member 2 and provided on its front face with a crank pin 28, connected by pitmen 29 with the cutter bars 30, which are located on opposite sides of the machine at the front of the main frame. In connection with these cutters I employ conveyers, coöperating with the cutters and shocking platform to gather the stalks and hold them in upright position before and after cutting, delivering them to the shocking platform in this position. In the present instance, these conveyers consist of two pairs, one pair for each cutter, each pair operating upon a row of stalks. These conveyers extend downward and forward from the main frame above and in front of the cutters, and rearward beyond the same to the front edge of the shocking platform. Each conveyer consists of a plurality of sprocket chains 31, provided with suitable projections 32 to engage and carry the stalks upward and rearward, the adjacent faces of the edge of each pair of conveyers lying opposite each other and moving rearwardly so as to present the stalks properly to the cutter and carry them rearward therefrom after they are severed thereby. The chains of each pair are preferably arranged somewhat widely apart at their front ends, from which they converge rearwardly so as to properly receive and gather in the stalks, and the rear portions of each pair lie close together, to properly hold the stalks. As shown, each conveyer is supported and actuated by upright shafts 33, forwardly inclined from bottom to top, and provided with sprocket wheels 34, around which the sprocket chains 31 pass. These conveyers are driven in any suitable manner, preferably by bevel gears 35 connecting one of the shafts 33 with the main shaft 22. Guards 36 are arranged above these conveyers, said guards supporting the upper ends of the shafts 33.

Within the frame 1 is mounted the shocking platform, which is composed of a plurality of sections extending transversely of the machine. In the present instance, the platform is composed of a fixed front section 37, and three sliding or telescoping sections, 38, 39 and 40. These sections are supported at their lateral margins from the main frame 1, which is provided with guides for that purpose. In the present instance, I have shown these guides as composed of angle bars 41, having rollers 42 secured thereto in any suitable manner, but preferably by means of pivot pins passing through the roller and the upright portion of the angle bar. On these rollers rest bearing plates 43, secured to the margins of the platform sections and having depending guard flanges 44. Each movable section is provided with guide rollers 45, mounted to turn on vertical axes and bearing against the inner faces of the angle bars to prevent lateral binding of the sections. The fixed section 37 is provided at its rear margin with a downwardly extending stop 46. Each of the intermediate sections 38 and 39 is provided at its front margin with an upwardly extending stop 47, and with downwardly extending stops 48 and 49 at its front and rear margins respectively. The rearmost movable section 40 has an upwardly extending stop 50 at its front end. These stops are so arranged, as shown in Figs. 3 and 4 of the drawings, that, assuming that the sections are telescoped or slid under each other, as shown in Fig. 3, rearward movement imparted to the lower section 40 will draw it out until its stop 50 comes into contact with the stop 49 of the next section 39. The rearward movement of the section 40 continuing, the section 39 moves rearward with it until its stop 47 engages the stop 49 of the section 38 and draws this latter out rearwardly until the platform is fully extended. Movement of the section 40 forward from this position, shown in Fig. 4, will cause the stop 50 to come into contact with the stop 48 of the section 39 after the section 40 has moved the requisite distance, and the section 39 will then move forward with the section 40, in its turn picking up and carrying forward the section 38 by reason of the contact of the stops 47 and 48 of the sections 39 and 38 respectively. In this way, the platform is again contracted into the position shown in Fig. 3 of the drawings. To effect the necessary movements of the lower section 40, I employ one or more sprocket chains, two being shown in the present instance, indicated respectively by the reference numerals 51 and 52, and located inside of the frame members 3, passing above and below the platform sections, which lie between their upper and lower courses. The sprocket chains are supported at their rear ends on idle sprocket wheels 53, carried by brackets 54 secured to the inner sides of the frame members 3 near their rear ends. The forward ends of the sprocket chains pass around driving sprocket wheels 55, secured to a shaft 56. The shaft 56 is mounted in bearings 57, supported on the main frame, said shaft being capable of a limited longitudinal movement in said bearings. The rear platform section 40 is connected to the lower courses of the sprocket chains 51 and 52, as indicated at 58, so as to move in unison therewith. Provision is made for rotating the shaft 56 first in one direction and then in the opposite direction to impart the necessary movement to the section 40, the rearward movement being relatively slow, to permit the accumulation of the stalks and the formation and binding of the shock, while the forward motion is relatively quick, to promptly discharge the shock and get the platform back to its initial position to receive the stalks for the next shock. To accomplish this, the drive shaft 22 has secured thereon a bevel gear 59, which meshes with a bevel gear 60 on a longitudinal shaft 61, provided with a worm 62. This worm meshes with a worm wheel 63, loosely mounted on the shaft 56 and supported against lateral movement in one direction by a bearing frame 64 and held against movement in the other direction by any suitable means, such as a pin 63^a carried by the frame 64, and engaging the circumferential groove 63^b formed in the hub of the worm wheel 63, as shown in Fig. 8. The drive shaft 22 also has loosely mounted thereon a sleeve 65^a having at one end thereof a bevel gear 65^b meshing with the bevel gear 60 which is operated by the gear 59 and shaft 22. This sleeve has secured thereon a sprocket wheel 65, around which passes a sprocket chain 66, which also passes around a sprocket wheel 67, loosely mounted on the shaft 56 and supported against lateral movement in one direction by the bearing frame 64 and held against movement in the

other direction by any suitable means, such as a pin 67[a] carried by the frame 64, and engaging the circumferential groove 67[b] formed in the hub of the gear wheel 67. The worm wheel 63 and sprocket wheel 67 carry respectively clutch members 68 and 69 on their opposing faces, while the shaft 56 has secured to it between said worm wheel and sprocket gear a clutch sleeve 70, having at its extremities clutch members 71 and 72, adapted respectively to engage the clutch members 68 and 69. When the clutch sleeve 70 is engaged with the worm wheel 63, the shaft 56 is turned slowly in a direction such as to move the platform sections rearward, and when the clutch sleeve 70 is engaged with the sprocket wheel 67, the shaft 56 is turned rapidly in a direction such as to move the platform sections forward. When the clutch sleeve is in a central or neutral position, as shown, the shaft 56 and the parts actuated thereby remain stationary.

The movement of the clutch sleeve 70 may be controlled by a hand lever 73, fulcrumed on the bearing frame 64, or some other suitable support, to permit the movements of the platform sections to be controlled by hand, if desired. Provision is made, however, for the automatic control of these movements, and to this end the sprocket chain 51 has secured thereon a cam 74, the sprocket chain 52 carrying a similar cam 75, reversely and oppositely arranged. The main frame 1 has secured thereto a yielding cam 76, preferably in the form of a spring arm, arranged in the path of the cam 74, said frame also carrying a similar cam 77, arranged in the path of the cam 75. These cams 76 and 77 are arranged directly opposite the sprocket wheels 55, which are secured on the shaft 56, and the cam 74 is secured to the upper reach or course of the chain 51, while the cam 75 is secured to the lower reach or course of the chain 52, said cams therefore moving in opposite directions. Assuming that the forward movement of the platform sections is just reaching its end, and the platform is contracted, the cam 75 comes into contact with the cam 77, which exerts a lateral pressure against the same, said lateral pressure being transmitted through the sprocket wheel 55 to the shaft 56, so as to move this latter endwise. This moves the clutch sleeve 70 out of engagement with the sprocket wheel 67 and throws it into engagement with the worm wheel 63, the engaging pressure being a yielding one owing to the resilience of the spring cam 77, and therefore holding the clutch members in contact until they fully engage, in case they are not in position to interlock at their first contact. As soon as this engagement occurs, the direction of rotation of the shaft 56 is automatically reversed, and the platform sections are moved slowly to the rear. During this movement the cam 74 travels forward, until finally, at the end of the rearward movement of the platform sections, said cam 74 comes into contact with the cam 76, thereby shifting the shaft 56 endwise in the opposite direction, disconnecting the clutch sleeve 70 from the worm wheel 63 and engaging it with the sprocket wheel 67. This again reverses the direction of rotation of the shaft 56, and moves the platform sections forward to contract the platform and withdraw it from under the shock, said forward movement being relatively rapid. These automatic reversals of the direction of travel of the shaft and changes in the speed thereof occur continuously as long as the machine is in operation, unless arrested by the shifting of the clutch sleeve to a neutral position by means of the hand lever 73.

Those portions of the guideways on which the platform sections are supported when the platform is contracted are not provided with antifriction rollers, the rollers 42 being omitted from these portions of the guideways, so that the bearing plates 43 rest directly upon the angle bars 41 when the platform sections are at the front of the ways. This is advantageous for the reason that it prevents accidental slipping or sliding of the sections to the rear if the machine is tilted at an angle, which accidental movement would prematurely project one or more of the upper sections and cause the same to cover or partly cover the section or sections below, thereby preventing the proper distribution of the stalks evenly over all the sections. Such accidental displacement is further prevented by the fact that the two forward rollers 42 of the guideways of each section lie immediately behind the rear margins of said section, projecting somewhat above the angle bars on which said section rests when drawn forward, and these upwardly projecting tops of the rollers form obstructions which also prevent accidental rearward movement of the section, requiring a positive pull to start the section and cause it to ride up on the rollers. After the section is properly started, the lower ends of the stalks which have accumulated on the preceding section prevent any tendency to too rapid rearward movement thereof.

The driver's seat, indicated at 78, is supported on a standard 79 from the main frame, and from this standard there extends rearward along the central portion of the machine, over the space occupied by the shocking platform when extended, a supporting bar or rod 80. This rod extends through the shock which is formed on the platform and is bent into the reverse curves shown in Fig. 1, or is otherwise provided with inequalities or projections to cause it to engage the shock above the base thereof and so retard the movement of the upper part of the shock during its discharge as to support and steady the same and maintain it in upright position.

In connection with the mechanism hereinbefore described, a binding mechanism is employed whereby the shock is bound and tied prior to its discharge from the machine. This binding mechanism forms no part of the present invention, and for purposes of illustration I have shown in the drawings mechanism for supporting the stalks in an upright position until the same can be bound by hand. This mechanism comprises two upright standards 90 secured to the opposite corners of the lowermost section 40 of the shocking platform and provided with rings 81 at the upper end thereof. These standards are of a height approximately equal to the height of the uppermost portion of the guards 36. The two outer guards 36 have secured to the uppermost portion thereof bars 82 extending rearwardly to a point slightly beyond the extreme rearward position of the section 40 of the shocking platform and passing through the rings 81 on the standards 90 which serve both as a support for the bars 82 and as a guide for the standards 90 as they move back and forth with the shocking platform. Secured to the two outer guards 36 or some adjacent fixed portion of the machine are two reel boxes 83 in which are mounted spring-controlled reels 84 to

which are secured the inner ends of a rope or other flexible member 85 which extends rearward substantially parallel with the bar 82 and across the rear of the platform between the standards 90, and is provided with rings 86 which engage the hooks 87 on these standards. The tension of the springs controlling the wheels 84 is such as to overcome the pressure of the stalks against the rearward portion of the rope 85 and to maintain these stalks in an upright position until a sufficient number have accumulated to be bound into a shock. When the shocking platform is retracted and the standards 90 move to their forward position on the machine the reels serve to take up the slack of the rope 85 and maintain the same taut. It will therefore be understood that, in the operation of the machine, the stalks are gathered, cut, and delivered onto the shocking platform in an upright position. As the stalks accumulate, the platform is extended rearward to accommodate the accumulation until a shock of sufficient size is formed and bound. During this period the rearward movement of the sections is slow, so as to give ample time for the formation and binding of the shock. When the shock has been thus formed and bound, the platform is retracted or drawn forward and thereby withdrawn from under the shock, which is deposited on the ground in an upright position. The machine being entirely open at the rear, there is no necessity of stopping it during or after the discharge of the shock, and the machine moves forward continuously, receiving a fresh supply of stalks for a new shock during the actual discharge of the shock last formed. The operation of the machine is entirely automatic, so that it requires only a single attendant to drive the same, the steering being effected by the guiding of the horse connected to the swiveled guiding wheel 7 at the front of the machine.

I wish it to be understood that I do not desire to be limited to the exact details of construction shown and described, for obvious modifications will occur to a person skilled in the art.

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

1. In a corn harvester, the combination, with a frame provided with gathering and cutting mechanism, of a shocking platform comprising a plurality of sections extending transversely of the direction of travel of the machine and slidable in parallel planes longitudinally of the machine to extend or contract said platform, substantially as described.

2. In a corn harvester, the combination, with a frame provided with gathering and cutting mechanism, of a shocking platform comprising a plurality of sections extending transversely of the direction of travel of the machine and slidable in parallel planes longitudinally of the machine to extend or contract said platform, and means for operating said platform sections, substantially as described.

3. In a corn harvester, the combination, with a frame provided with gathering and cutting mechanism, of a shocking platform comprising a plurality of sections extending transversely of the direction of travel of the machine and slidable in parallel planes longitudinally of the machine to extend or contract said platform, and automatic means for operating said platform sections to alternately extend and contract the platform, substantially as described.

4. In a corn harvester, the combination, with a frame provided with gathering and cutting mechanism, of a shocking platform comprising a plurality of sections extending transversely of the direction of travel of the machine and slidable in parallel planes longitudinally of the machine to extend or contract said platform, and means for moving said sections rearward with a relatively slow motion to extend the platform and forward with a relatively quick motion to contract the platform and withdraw the same from beneath the shock, substantially as described.

5. In a corn harvester, the combination, with a frame provided with gathering and cutting mechanism at the front and open or unobstructed at the rear, of a shocking platform comprising a plurality of sections mounted to slide in parallel planes longitudinally of said frame to alternately extend and contract the platform, substantially as described.

6. In a corn harvester, the combination, with a frame provided with gathering and cutting mechanism at the front and open or unobstructed at the rear, of a shocking platform comprising a plurality of sections mounted to slide in parallel planes longitudinally of said frame to alternately extend and contract the platform, and automatic mechanism for causing a slow rearward and quick forward motion of said sections, substantially as described.

7. In a corn harvester, a frame open at the rear and provided on each side with a plurality of superposed parallel guideways, in combination with a shocking platform comprising sections extending transversely to the direction of travel of the machine and arranged to move in parallel planes, having rolling bearings on said guideways, and provided with engaging marginal stops, whereby the movements of the extreme section will extend and contract the platform, substantially as described.

8. In a corn harvester, a frame open at the rear and provided on each side with a plurality of superposed parallel guideways, in combination with a shocking platform comprising sections extending transversely to the direction of travel of the machine and arranged to move in parallel planes, having rolling bearings on said guideways, and provided with engaging marginal stops, whereby the movements of the extreme section will extend and contract the platform, sprocket chains connected to said extreme section, and means for alternately moving said sprocket chains in opposite directions, substantially as described.

9. In a corn harvester, the combination with a platform extensible in the direction of travel of the machine, an operating shaft extending transversely of the direction of travel of the machine and rotatable in opposite directions, and means controlled by said shaft for actuating said platform, of a main shaft parallel to said operating shaft and rotating in one direction, two substantially parallel trains of gearing connecting said main shaft and platform operating shaft, one of said trains of gearing operating to drive said operating shaft in one direction and the other train of gearing operating to drive said shaft in the opposite direction, and means for alternately connecting said trains of gearing with said shafts, substantially as described.

10. In a corn harvester, the combination, with an extensible platform, and a reversible operating shaft for extending and contracting the platform, of a main shaft rotating in one direction, a high speed gear train for driving the reversible shaft from the main shaft in one direction, a low speed gear train for driving the reversible shaft from the main shaft in the opposite direction, and means for alternately causing said gear trains to act as drivers for the reversible shaft, substantially as described.

11. In a corn harvester of the character described, an extensible platform, a rotatable platform-operating shaft, means for operatively connecting said shaft to said platform, a sprocket wheel and a worm wheel carried by said shaft and free to rotate thereon, and an intermediate clutch sleeve rotating with said shaft and adapted to engage either of said wheels, in combination with a main shaft having a sprocket wheel and bevel gear thereon, a sprocket chain connecting the two sprocket wheels, and a worm shaft meshing with the worm wheel and having a bevel gear to mesh with the bevel gear on the main shaft, substantially as described.

12. In a corn harvester of the character described, a main frame, a reversible shaft journaled therein and movable in the direction of its length and having a clutch sleeve secured thereon, and driving members mounted to

rotate in opposite directions on said shaft on opposite sides of the clutch sleeve, said reversible shaft having sprocket wheels, and spring cams carried by stationary parts of the machine and located adjacent to said sprocket wheels, in combination with an extensible platform carried by said main frame, sprocket chains connected therewith and passing around said sprocket wheels, and cam projections carried by said sprocket chains to alternately engage the spring cams and shift the shaft longitudinally, substantially as described.

13. In a corn harvester, the combination, with a main frame, and an extensible shocking platform movable longitudinally of the direction of travel of the machine, of a rearwardly extending supporting bar arranged above said platform and provided with inequalities or projections to engage the shock and steady the same during its discharge, substantially as described.

14. In a corn harvester, a frame open at the rear and provided on each side with a plurality of superposed parallel guide rails extending longitudinally of the direction of travel of the machine and provided, except at their forward portions, with upwardly projecting antifriction rollers, in combination with a shocking platform comprising sections extending transversely of the direction of travel of the machine and arranged to move in parallel planes along said guide rails and provided with engaging marginal stops, whereby the movements of the extreme section will extend and contract the platform, said sections bearing directly on the forward portions of the guide rails when the platform is contracted, substantially as described.

15. In a corn harvester, a frame having an open space at the rear for the discharge of the shock, and a hitch at the rear of said frame on each side, the same comprising a lever pivoted to the frame at one end and having a draft connection at its other end, an equalizing bar mounted on the frame in front of said open space, and rods connecting the ends of said equalizing bar with said levers, substantially as described.

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

SAMUEL C. ANDERSON.

Witnesses:
E. O. HAGAN,
IRVINE MILLER.