

No. 624,024.

Patented May 2, 1899.

A. J. HEINE.

BAND CUTTER AND FEEDER.

(Application filed Apr. 17, 1897. Renewed Apr. 7, 1899.)

(No Model.)

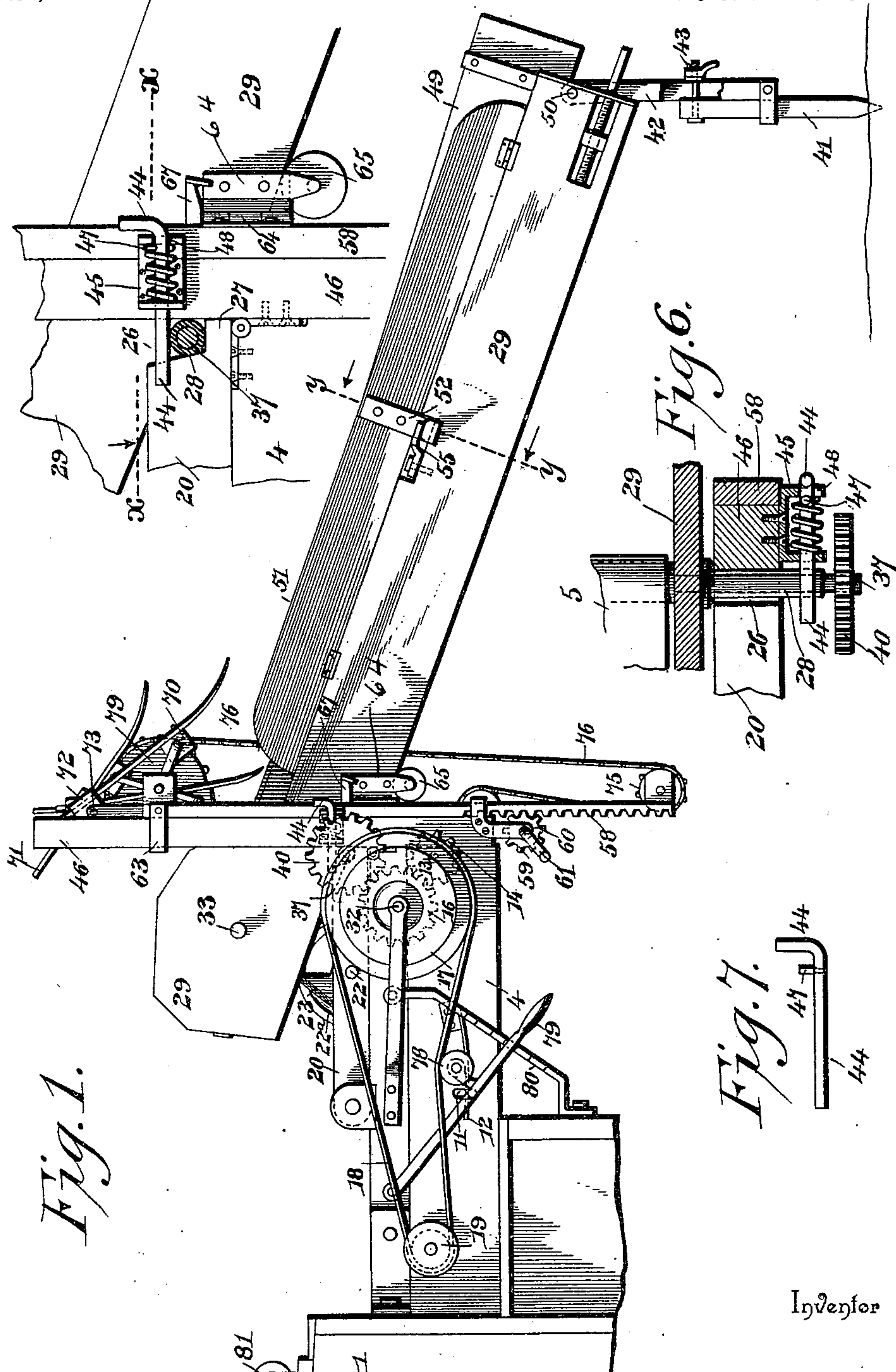
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Fig. 5.

Fig. 6.

Fig. 7.

Fig. 1.



Witnesses

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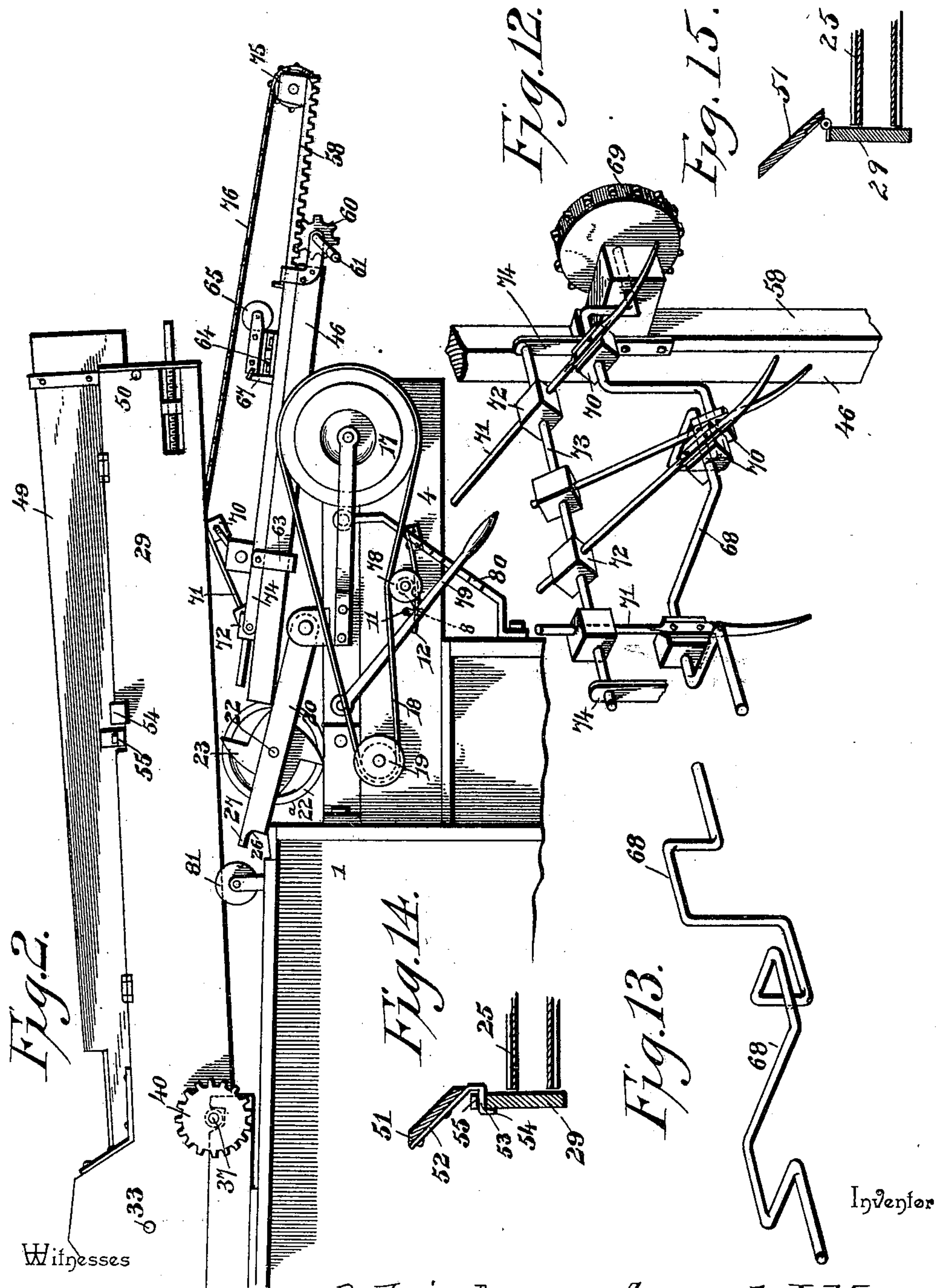
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Fig. 3.

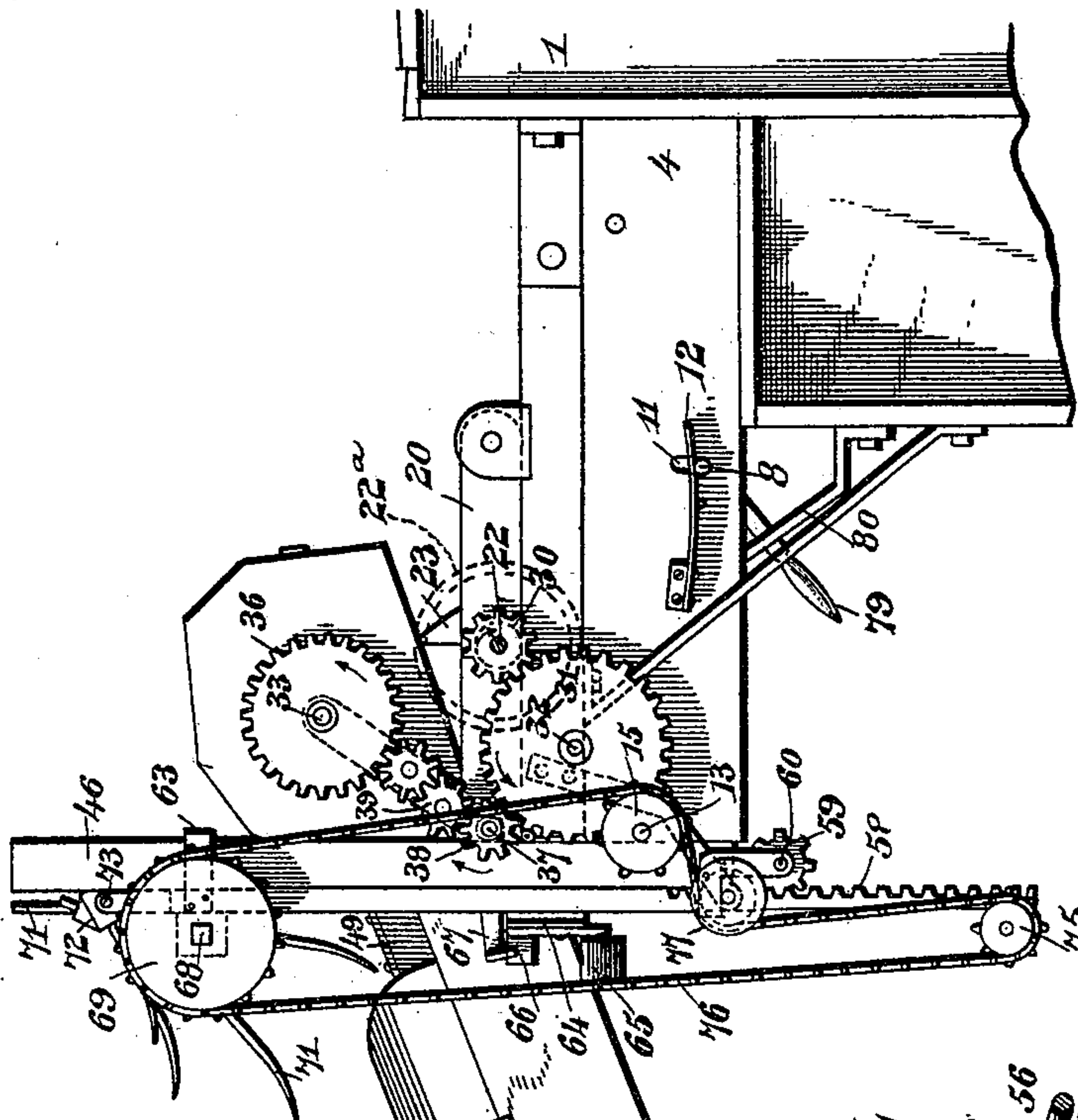


Fig. 10.

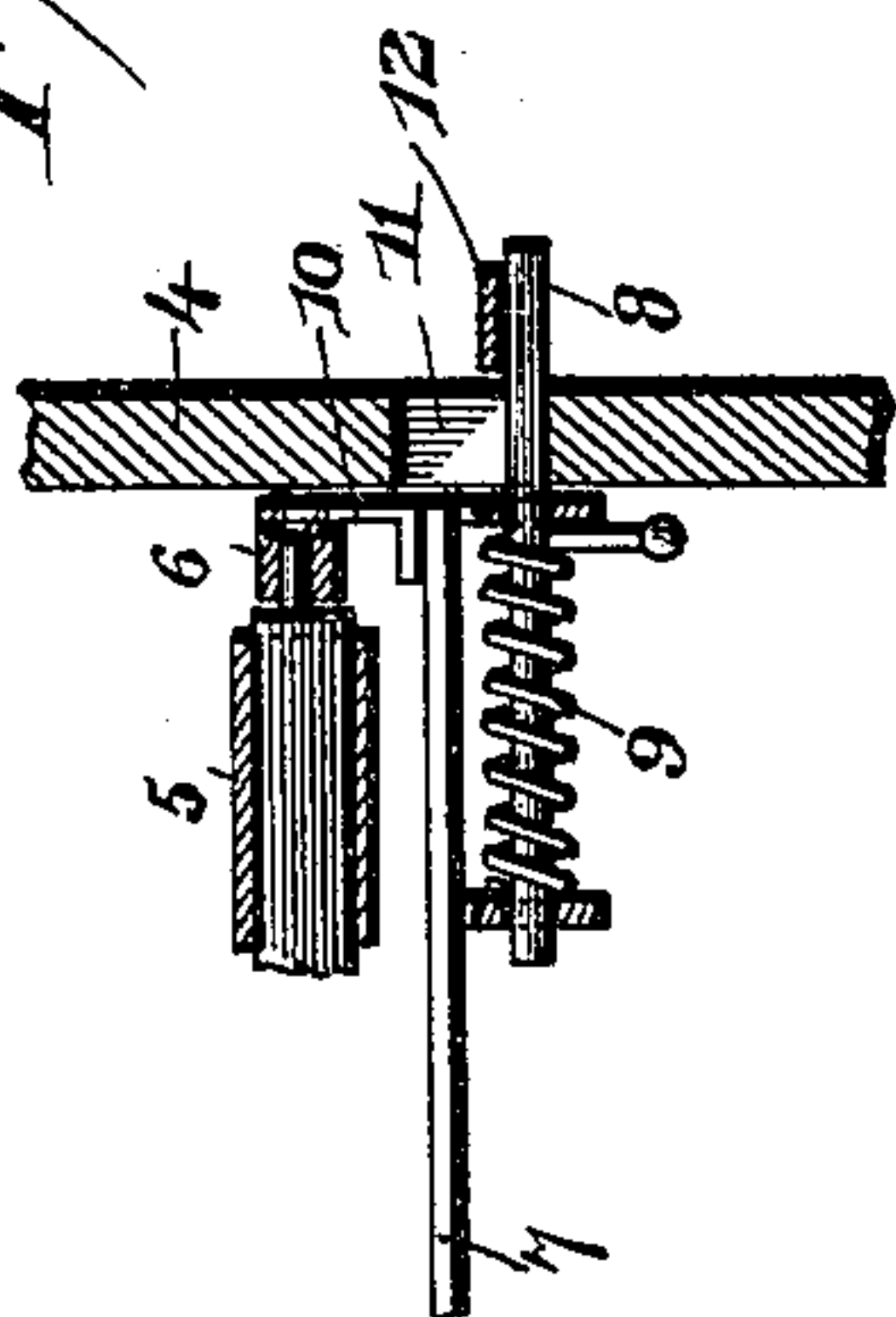
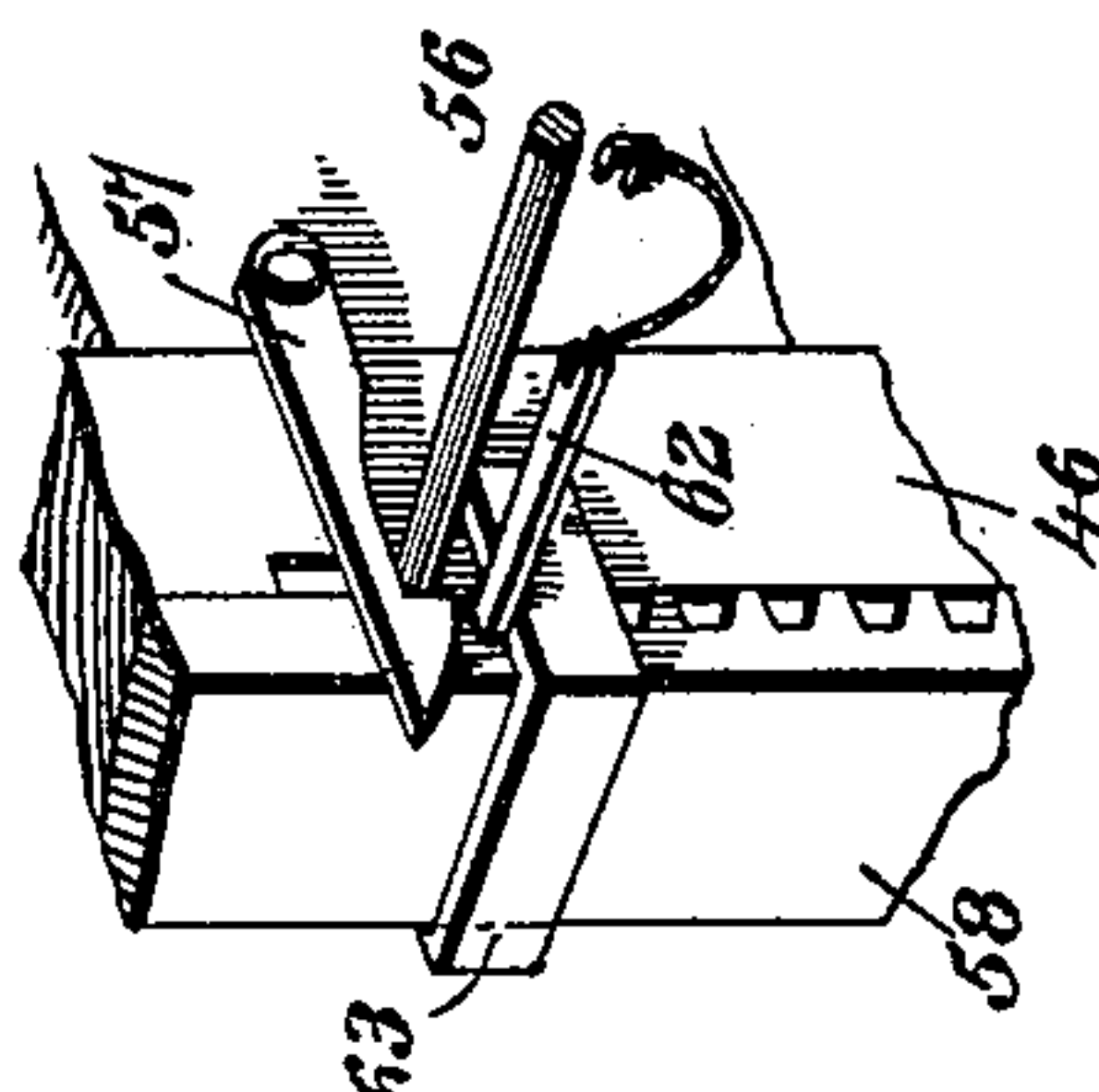


Fig. 11.



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4 Sheets—Sheet 4.

Fig. 8.

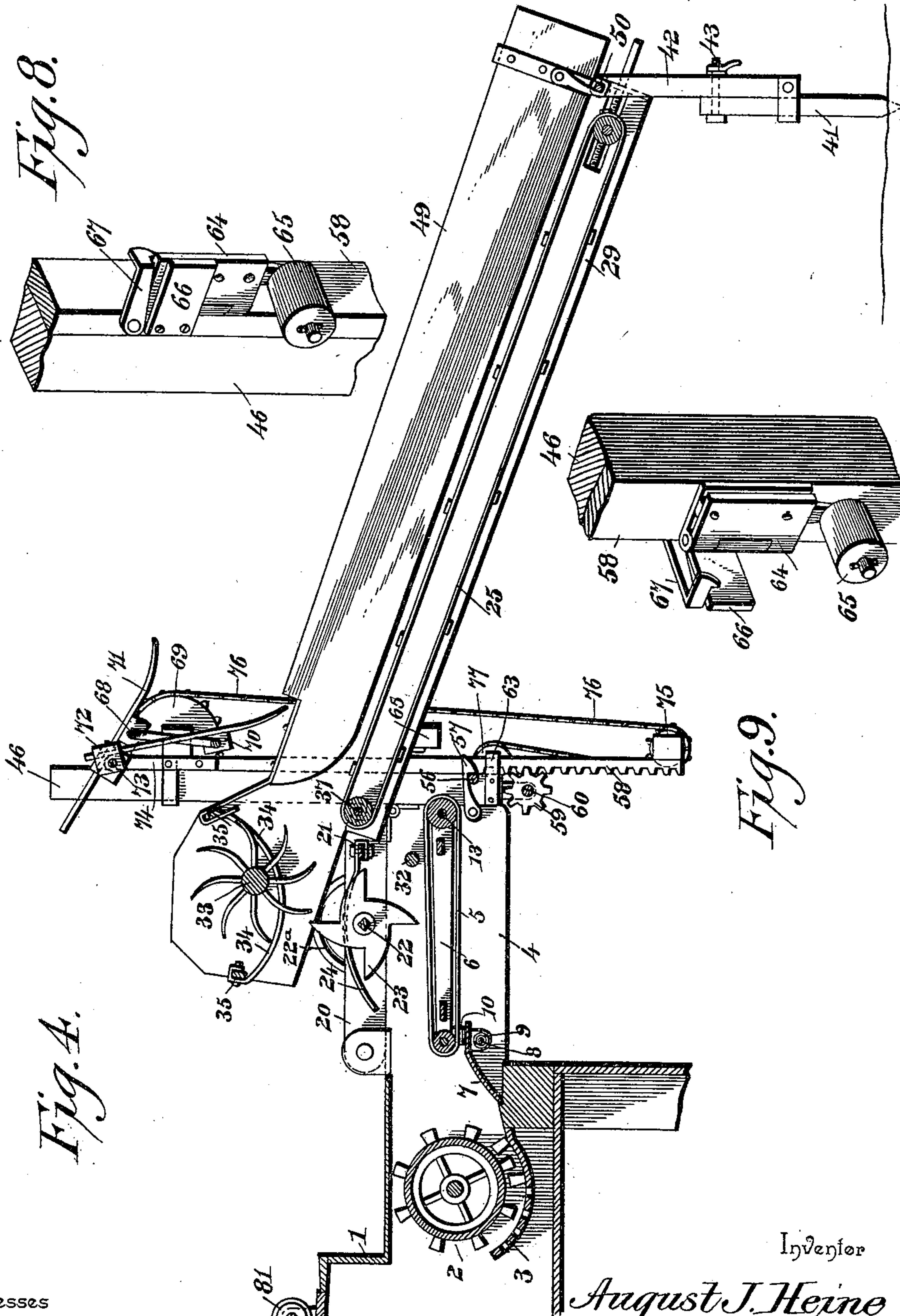
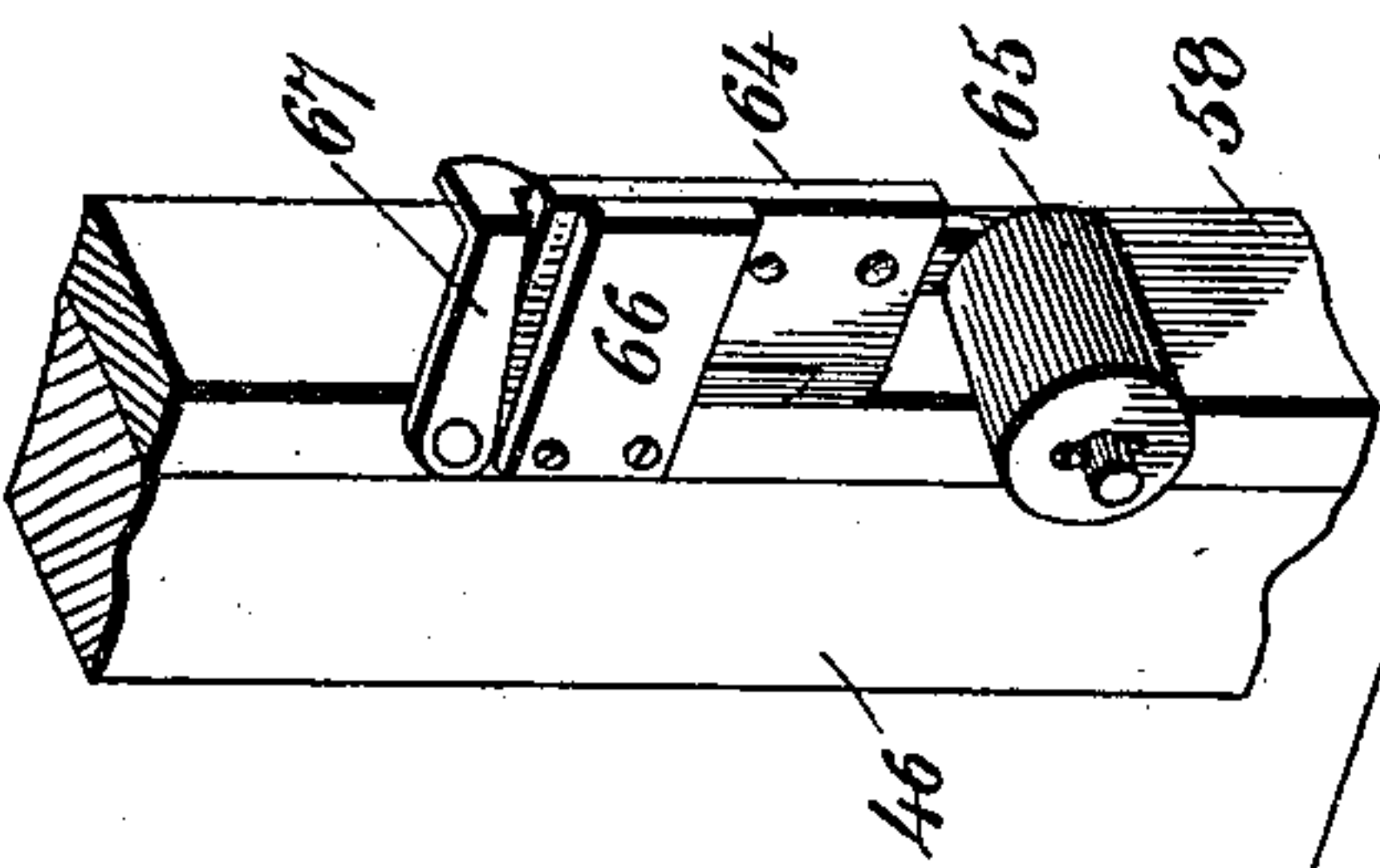


Fig. 9.

Fig. 4.

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AUGUST J. HEINE, OF WAHPETON, NORTH DAKOTA.

BAND-CUTTER AND FEEDER.

SPECIFICATION forming part of Letters Patent No. 624,024, dated May 2, 1899.

Application filed April 17, 1897. Renewed April 7, 1899. Serial No. 712,158. (No model.)

To all whom it may concern:

Be it known that I, AUGUST J. HEINE, a citizen of the United States, residing at Wahpeton, in the county of Richland and State of North Dakota, have invented a new and useful Band-Cutter and Feeder, of which the following is a specification.

The present invention aims to improve the general construction of band-cutting, feeding, and spreading attachments for threshing-machines and to obviate choking of the thresher when the grain is damp and facilitate the work and admit of access being readily had to the working parts for any desired purpose.

A further purpose of the improvement is to combine the parts in such a manner as to admit of their folding into a small compass, whereby the dimensions of the machine may be materially reduced for any purpose required, and in this connection the parts are so related as to admit of inspection and access thereto for cleaning and repairing.

A still further purpose of the invention is to improve the general construction, whereby the efficiency of the attachment is materially increased, convenience and ease of handling attained, and the parts capable of being readily folded and placed in position for use when required.

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 side elevation of the improved band-cutting, feeding, and spreading attachment, showing it in operative relation. Fig. 2 is a view similar to Fig. 1, showing the parts folded. Fig. 3 is a view in elevation of the attachment as seen from the remote side of Fig. 1. Fig. 4 is a longitudinal section, the parts being arranged in the position illustrated in Fig. 1. Fig. 5 is a detail view showing the means for securing the carrier in position when drawn out for service. Fig. 6 is a plan section on the line XX of Fig. 5. Fig.

7 is a detail view of the locking-bolt. Fig. 8 is a detail view of an outer supporting-roller for the carrier, showing it in working position. Fig. 9 is a view of the parts illustrated in Fig. 8, showing the supporting-roller turned out of the way. Fig. 10 is a detail view of the means for supporting the inner or rear end of the endless grain-belt. Fig. 11 is a detail view showing the means for holding the uprights bearing the walking-rakes in position. Fig. 12 is a detail view of the compound crank-shaft, the walking-rakes mounted thereon, and the means for guiding the rakes in their movements. Fig. 13 is a detail view of the compound crank-shaft. Fig. 14 is a section on the line Y Y of Fig. 1. Fig. 15 is a detail view showing the hinge connection between an extension-wing and a side of the carrier-frame.

Corresponding and like parts are referred to in the following description and indicated in the several views of the accompanying drawings by the same reference characters.

The separator or thresher, which may be of any of the usual forms, is indicated by the numeral 1, 2 representing the threshing-cylinder and 3 the concave or breast. The attachment is secured to the receiving end thereof and comprises side pieces 4, to which the operating parts are attached. An endless grain-belt 5 is supported upon rollers at the ends of a frame 6, having pivotal connection at its outer or front end with the forward ends of the side pieces 4, the inner or rear end of the grain-belt and its supporting-frame being free to move vertically or drop, so as to admit of access being readily had to the threshing mechanism. A plate 7 has pendent lugs at each end, in which is slidingly mounted a bolt 8, which is held projected by a spring 9, mounted upon the inner end of the bolt and confined between the inner lug and the finger-piece, by means of which the bolt is withdrawn when it is required to remove the plate to permit the inner end of the frame 6 and grain-belt to drop. A bracket 10, secured to the inner end of the frame 6, rests upon the plate 7 and supports the grain-belt a proper distance therefrom. Each bolt 8 operates in a slot 11, formed in the side pieces 4, and a spring 12, secured at one end to each side piece, exerts a pressure upon the projecting

end of the bolt 8, so as to retain the plate 7 in position. The shaft 13, supporting the outer roller of the grain-belt and having the frame 6 pivotally mounted thereon, is jour-
 5 naled in the side pieces 4 and is provided at its ends with a pinion 14 and a sprocket-wheel 15, the pinion 14 meshing with a gear-wheel 16, secured to or formed with a speed-pulley 17, which is driven by means of a belt 18 from
 10 a pulley 19, secured to the projecting end of the shaft bearing the threshing-cylinder 2.

Bars 20 have pivotal connection at their rear ends with the side pieces 4 and are connected near their front ends by a cross-bar 21 and
 15 support a shaft 22, carrying star-cutters 23, which operate in spaces formed between guards 24, secured at their front ends to the cross-bar 21. The guards 24 are spring-plates about equal in width to the distance between
 20 the star-cutters and spaced apart a proper distance to admit of the star-cutters working freely when the attachment is in operation. The guards or spring-plates 24 support the grain in its passage from the carrier 25 to the
 25 threshing or separator and prevent the winding of the same about the shaft 22. The outer ends of the bars 20 are cut away, as shown at 26, forming a projection 27, over which extends a bearing 28, secured to the framework
 30 29 of the carrier 25, whereby the front ends of the bars 20 are held upon the top edges of the side pieces 4 when the attachment is adjusted to a working position. A pinion 30 is secured to one end of the shaft 22 and meshes
 35 with a gear-wheel 31 on the end of a shaft 32, having the speed-cone 17 secured thereto. By this means the cutting mechanism is driven.

The carrier is of ordinary construction and comprises an endless apron and a framework,
 40 the side pieces 29 of which are extended beyond the inner end of the endless apron to form a support for the spreading mechanism, consisting of a toothed shaft 33, protected by guards 34, supported at their ends by cross-
 45 bars 35, whereby the grain is prevented from winding around or choking the part 33 and the teeth applied thereto. A gear-wheel 36 is secured to a projecting end of the shaft 33 and is driven from a transverse shaft 37 by means
 50 of a pinion 38, secured to the shaft 37 and intermeshing idlers 39. The shaft 37 receives the roller, upon which the endless belt of the carrier is supported and driven, and a gear-wheel 40 is secured to an end of the shaft 37
 55 and meshes with the gear-wheel 16 and receives motion therefrom. The shaft 37 is mounted in a bearing 28, secured to each side of the carrier-framework, and these bearings form trunnions for the carrier 25 to tilt or
 60 turn upon when adjusting its outer end to any required elevation. These trunnions being located a short distance from the inner end of the carrier and the spreader mechanism being supported by the said inner end, it is
 65 obvious that a vertical adjustment of the outer end of the carrier will effect an adjustment of the spreader mechanism toward and from

the cutting mechanism, so as to regulate the distance between them to suit the quantity of grain to be fed to the thresher in a given time. 70
 Adjustable supports are located at the outer end of the carrier and consist of movable sections 41 and 42, which are held in an adjusted position by a clamp-bolt 43. By lengthening and shortening these supports the outer end 75
 of the carrier can be moved to the required elevation and the desired distance between the spreading and cutting mechanism secured. When drawn out to an operative po-
 sition, the bearings 28 drop into the spaces 26 80 and are secured by a lock-bolt 44, slidingly mounted in a keeper 45, fastened to an upright 46. This lock-bolt has a lateral extension 47, which is adapted to pass through a
 notch 48 in the outer member or bent end of 85 the keeper 45, whereby the lock-bolt can be withdrawn from engagement with the bearing 28 or projected across it, as required. When projected, the lock-bolt is turned so that the
 pin 47 will engage with the inner side of the 90 outer member or end of the keeper having the notch, thereby holding the bolt locked. A spring 48, mounted upon the lock-bolt, engages with the pin or lateral extension 47 and holds it against the outer member of the 95
 keeper, so as to prevent accidental slipping when the parts are adjusted to a working position. A divider 49 separates the carrier longitudinally in the ordinary manner and is supported at its front end by the inner cross-bar 100
 35 and at its rear end by a cross-bar 50, upon which the adjustable supports for the outer end of the carrier are mounted. To prevent the grain falling over the sides of the carrier, wings or extensions 51 are provided and 105
 hinged to the side pieces 29, and a strap-iron 52 is secured to the outer side of each wing and has its lower portion bent, as shown at 53, to extend over the top edge of the side 29 and again bent, as at 54, to overlap the outer 110
 side of the part 29, whereby the wing is braced when turned outward to attain the object for which it is provided. A turn-button 55, applied to each side 29, engages with the bent portion 53 of the iron 52 and holds the wing 115
 in proper position. The top edge of the sides 29 is notched to receive the parts 55 and 53, as clearly indicated in the drawings.

The uprights 46 are hinged or pivoted a short distance from their lower ends to the 120
 upper outer corners of the side pieces 4 and are connected near their lower ends by a cross-rod 56, which is engaged by catches 57, pivoted to the side pieces 4 for holding the up-
 rights in proper position. Upon releasing 125 the cross-rod 56 the uprights 46 can be folded, as indicated in Fig. 2, thereby reducing the height of the attachment. Bars 58 are slidably mounted with respect to the uprights 46 and are held thereto by suitable keepers and 130
 have their lower portion toothed and intermeshing with a pinion 59, secured to a shaft 60, journaled in bearings provided on the uprights 46, said shaft having a crank 61 at one

end, by means of which it is turned so as to raise and lower the bars 58 and the walking-rakes applied thereto. The bars 58 are held at the desired elevation by means of a pin 62, which is thrust between teeth thereof and engages with the top side of a keeper 63, through which the respective bars operate. A bracket 64 is hinged to each bar 58 to the front side thereof, and its spindle-arm supports a roller 65, upon which the carrier is supported when moving toward and from a working position. When the carrier is drawn out, each bracket 64 is released and turned so as to throw the roller 65 in front of the bar 58, thereby admitting of the latter being raised and lowered and the bracket and its roller passing by the carrier. A plate 66 is secured to the inner edge of each bar 58 and forms a stop to limit the outward swing of the bracket 64, whereby the roller 65 is held in position to receive the weight of the carrier as may be desired. A pivoted dog 67 is applied to each bar 58, and its outer end is bent to engage with the bracket 64 and hold it open when brought against the stop 66.

A compound crank-shaft 68 is journaled in bearings provided at the upper ends of the bars 58 and is provided at one end with a sprocket-wheel 69, and the crank portions have blocks 70 journaled thereon and to which the walking-rakes 71 are secured, the upper ends of the rakes slidingly operating in blocks 72, mounted upon a rod 73, supported at its ends in plates 74, secured to the upper ends of the bars 58. The blocks 72 rock upon the rod 73 simultaneously with the sliding movement of the rakes 71 therein. The walking-rakes operate toward the receiving end of the carrier and serve to regulate the feed of the grain, the latter operation being accomplished by the raising and lowering of the bars 58, whereby the distance between the endless apron of the carrier and the active ends of the walking-rakes is regulated. A sprocket-idler 75 is located at the lower end of one of the bars 58 and receives a sprocket-chain 76, which passes over the sprocket-wheel 69 and engages with the sprocket-wheel 15, by means of which it is driven, thence over an idler 77, whereby provision is had for the vertical adjustment of the bars 58 and the transmission of power to the walking-rakes.

When the attachment is in the position shown in Figs. 1 and 4, the operating parts are set in motion by the drive-belt 18, the latter being preserved under tension by a roller 78, carried by a lever 79 and engaging with the lower portion thereof, said lever being held in the required position by a notched bar 80. If it be required to throw the feeding mechanism out of gear, the lever 79 is released, thereby permitting the roller 78 to move away from the drive-belt 18, which latter, becoming slack, no longer transmits motion from the thresher to the operating parts of the attachment. The grain to be threshed

is supplied to the carrier in the usual manner and is moved thereby to the band-cutting mechanism and thence to the threshing mechanism. By a proper adjustment of the walking-rakes the feed can be regulated. The grain on its way to the thresher passes over the cutting mechanism and between it and the spreading mechanism, the latter serving to hold the grain against the action of the cutting mechanism and the latter serving, in conjunction with the spreader, to separate and loosen the grain prior to its admission into the separator, whereby the threshing operation is greatly facilitated. The cutting mechanism revolves at a higher rate of speed than the spreading mechanism, and the latter serves to retard the forward movement of the grain, thereby preventing choking of the thresher in the event of the grain being damp. Any grain detached from the straw by the cutting and spreading mechanisms is received upon the grain-belt 5 and moved forward to the thresher, the plate 7 preventing the wasting of the loose grain and directing it into the separator.

When it is required to reduce the size of the attachment so it will occupy the smallest amount of space, the carrier is released by withdrawing the locking-bolt 44, after which the bars 20 and the uprights 46 are folded, as shown in Fig. 2, and the carrier is placed thereover, being supported upon rollers 81, provided on the thresher 1. A balance-wheel 22^a is applied to the cutter-shaft 22 to cause it to run steady.

Having thus described the invention, what is claimed as new is—

1. In combination, a support, a carrier tiltingly mounted upon the support, a cutting mechanism applied to the said support in the rear of the carrier and maintaining a fixed relation to the delivery end of the said carrier under all conditions, and a spreading mechanism applied to the rear portion of the carrier and preserving a fixed relation with reference thereto, and located over the cutting mechanism to coöperate therewith to advance the grain to the threshing mechanism, and adjustable to vary the distance between it and the cutting mechanism by tilting the carrier, substantially as described.

2. In combination, a support, a carrier having its rear portion projecting over the support, a rotary cutting mechanism in the rear of the conveyer portion of the said carrier and below its overhanging part, and a spreading mechanism applied to the overhanging part of the carrier and coöperating with the cutting mechanism, substantially as and for the purpose described.

3. In combination, a carrier, a spreading mechanism applied to the rear end of the carrier, a cutting mechanism in the rear of the conveyer portion of the said carrier and having the spreading mechanism acting jointly therewith, and a grain-belt below the cutting

mechanism and between the threshing mechanism and the conveyer portion of the carrier, substantially as described.

4. In combination, a threshing mechanism, a grain-belt having its upper portion traveling toward the threshing mechanism, a cutting mechanism located directly above the grain-belt and having its active portion movable toward the said threshing mechanism, a carrier adjustable vertically at its delivery end and having its rear portion overhanging the grain-belt, and a spreading mechanism applied to the overhanging portion of the carrier and adjustable vertically therewith and having its lower or active portion movable toward the said threshing mechanism and adapted to act jointly with the cutting mechanism to advance the grain to the threshing mechanism, substantially as set forth.

5. In a band-cutter and feeder, the combination of a grain-belt, a frame therefor pivoted at its outer end, a plate supporting the inner end of the pivoted frame and closing the space formed between the grain-belt and the threshing mechanism, bolts provided on the plate and operating in slots provided in the side pieces of the feeder, and springs engaging with the said bolts, substantially as set forth.

6. In a band-cutter and feeder, the combination of bars pivoted to a stationary part of the frame to be thrown back out of the way and bearing a cutting mechanism, and a carrier having a tilting and a sliding movement independently of the pivoted bars and having portions to automatically engage with and overlap the pivoted bars and hold them and the cutting mechanism from vertical displacement when turned forward and downward into working position, substantially as set forth.

7. In a band-cutter and feeder, the combination of bars pivoted at one end to a stationary part of the frame and having their opposite ends cut away, providing a space and a projecting portion, a cutting mechanism supported by the pivoted bars, and a carrier movable independently of the pivoted bars and having lateral extensions to enter the spaces formed by cutting away the terminals of the pivoted bars and engage with the projecting portions thereof to hold the said bars and cutting mechanism in fixed relation, substantially as set forth.

8. In a band-cutter and feeder, the combination of pivoted bars bearing a cutting mechanism and having their free ends cut away, forming spaces and projecting portions, a carrier movable independently of the pivoted bars and having lateral extensions to enter the said spaces and engage with the projecting portions, and a locking mechanism to engage with one of the lateral extensions to secure the carrier and pivoted bars in place, substantially as and for the purpose set forth.

9. In a band-cutter and feeder, the combination of a movable carrier having lateral ex-

tensions, a plate having bent end portions, one of the end portions being notched, a lock-bolt slidably mounted in the bent ends of the plate and having a lateral extension to pass through the notched bent end thereof, and a spring mounted upon the lock-bolt and adapted to engage with the lateral extension thereof and retain the lock-bolt in position, substantially as set forth.

10. In a band-cutter and feeder, the combination with side pieces, a carrier tiltingly and slidably mounted upon the said side pieces, and cutting mechanism, of uprights hinged to the side pieces and adapted to fold thereon, a cross-rod connecting the lower ends of the uprights, catches pivoted to the aforesaid side pieces and adapted to engage with the cross-rod and hold the uprights in an operative position, bars slidably mounted upon the uprights and bearing walking-rakes, and actuating mechanism for operating the walking-rakes at any adjustment of the sliding bars, substantially as set forth.

11. In a band-cutter and feeder, the combination of a carrier adapted to have a vertical tilting and a longitudinal sliding movement, and a bracket mounted upon a vertical pivot to swing horizontally into and out of the path of the carrier to admit of its vertical adjustment, and bearing a roller for supporting the said carrier during its sliding movements, substantially as set forth.

12. In a band-cutter and feeder, the combination of a carrier adapted to have a vertical tilting and a longitudinal sliding movement, a bracket mounted upon a vertical pivot to swing horizontally into and out of the path of the carrier, and bearing a roller for supporting the carrier during its sliding movements, a stop for limiting the outward movement of the bracket, and a catch for securing the bracket in proper position, substantially as set forth.

13. In a band-cutter and feeder, the combination of the carrier, vertically-movable bars having toothed portions and bearing a feed-regulating mechanism, means for adjusting the bars vertically, and pins adapted to be thrust between teeth of the movable bars and engage with the topside of the keepers through which the bars slide for holding the said bars in an adjusted position, substantially as set forth.

14. In a band-cutter and feeder, the combination with a carrier having sides, and an extension-wing hinged to the top edge of each side to fold over the carrier, of an iron secured to each wing and having its end portion bent to extend over and engage with the top edge of a wing, and having its outer terminal bent to engage with the outer side thereof, and a turn-button or fastening applied to each of the said sides to engage with the bent portion of the irons applied thereto, substantially as shown for the purpose set forth.

15. In a band-cutter and feeder, the combi-

nation of a support, a carrier tiltingly mounted upon the support, a rotary cutting mechanism mounted upon the support in the rear of the delivery end of the carrier and maintaining a fixed relation thereto, a rotary spreading mechanism mounted upon the carrier and located above the cutting mechanism, and acting therewith to move the grain forward, and adjustable supports at the outer end of the carrier for holding it at any required elevation and providing for varying the distance between the cutting and spreading mechanisms, substantially as set forth.

16. In combination, pivoted bars bearing a cutting mechanism, a carrier fulcrumed a

short distance from its inner end and engaging with and holding the pivoted bars in proper position, a spreading mechanism at the inner end of the carrier, and adjustable supports at the outer end of the carrier for varying its elevation and the distance between the spreading and cutting mechanisms, substantially as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

AUGUST J. HEINE.

Witnesses:

A. J. CARTER,
S. H. SNYDER.