(No Model.) 2 Sheets—Sheet 1.

O. ANDERSON.

BAND CUTTER AND FEEDER.

No. 444,478. Patented Jan. 13, 1891.

Fig 1.

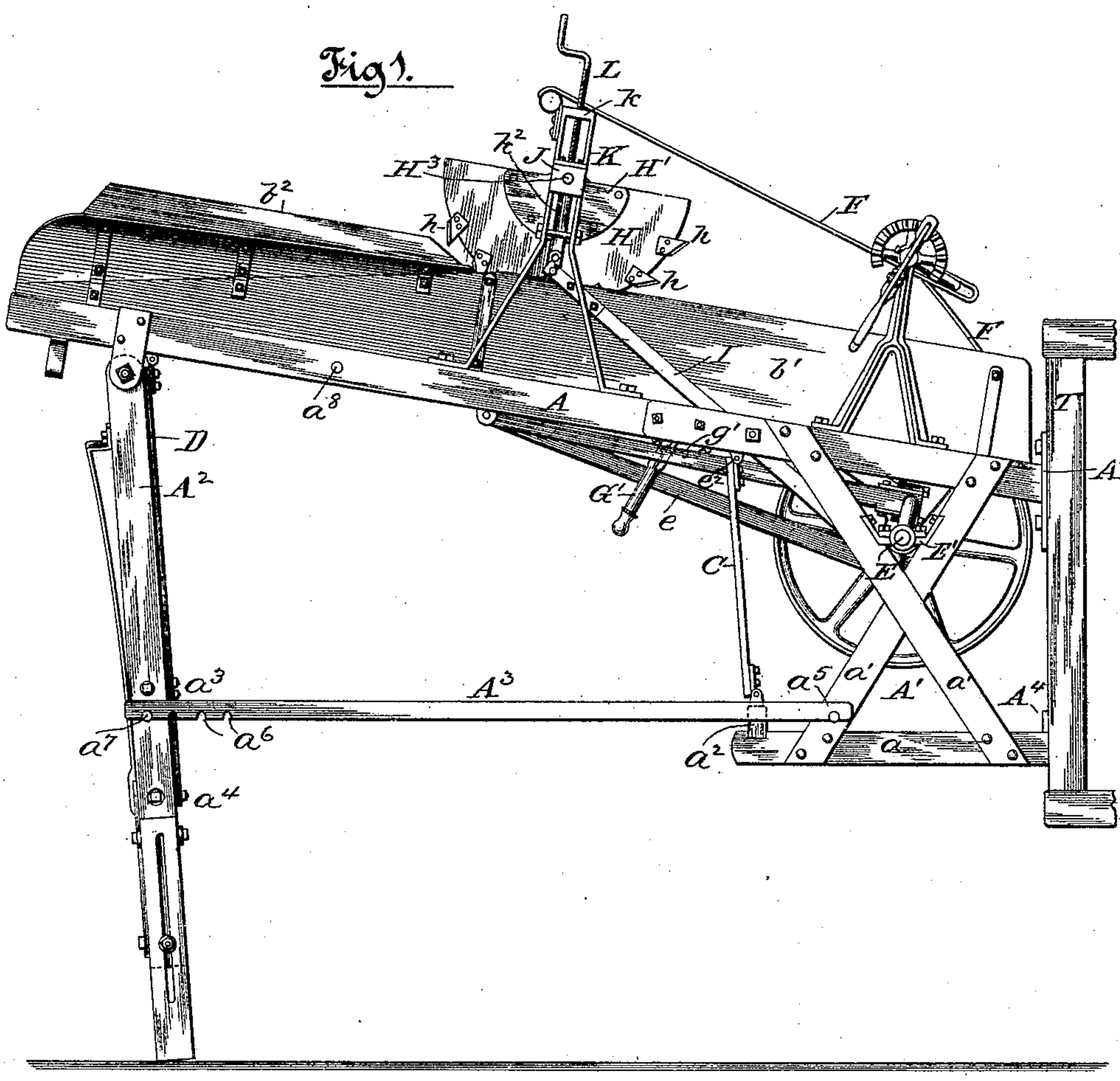
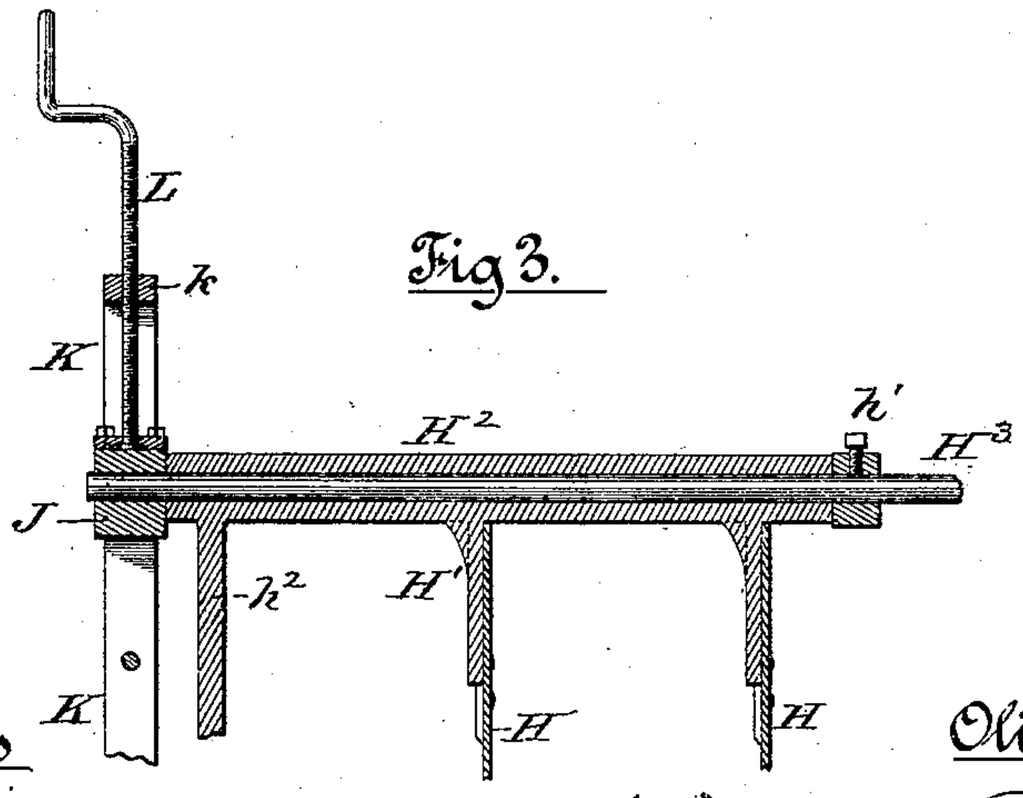


Fig 3.



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(No Model.) 2 Sheets—Sheet 2.

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Fig 2.

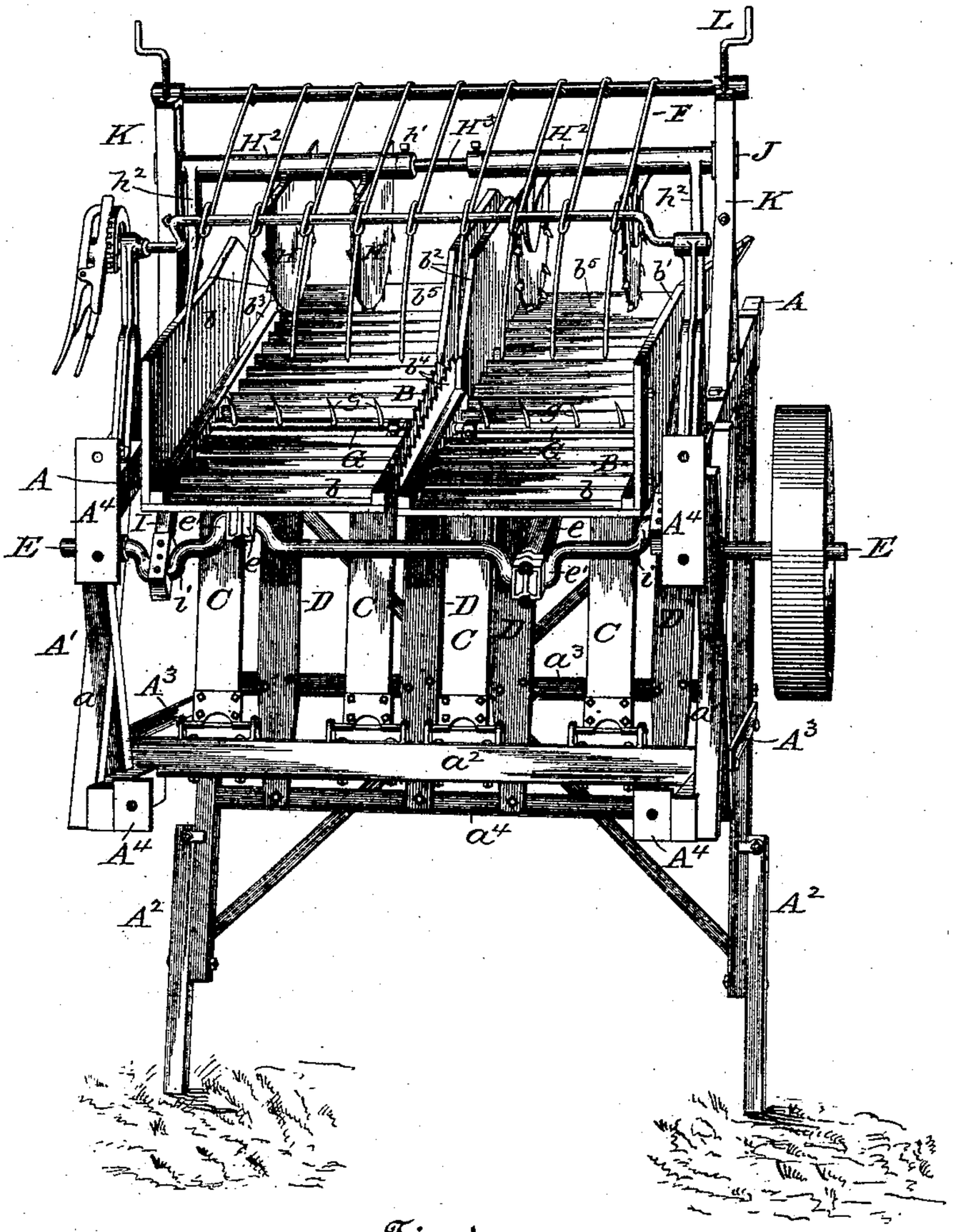
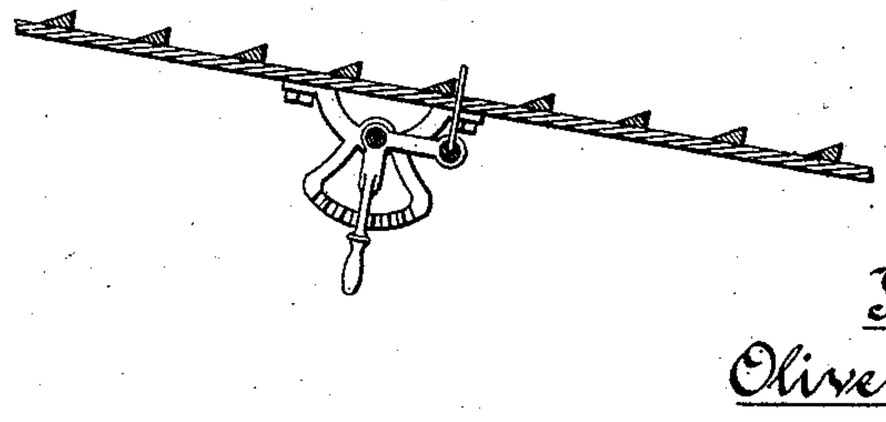


Fig 4.



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UNITED STATES PATENT OFFICE.

OLIVER ANDERSON, OF RACINE, WISCONSIN, ASSIGNOR TO THE ANDERSON BAND CUTTER AND SELF FEEDER COMPANY, OF SAME PLACE.

BAND-CUTTER AND FEEDER.

SPECIFICATION forming part of Letters Patent No. 444,478, dated January 13, 1891.

Application filed May 9, 1889. Serial No. 310,096. (No model.)

To all whom it may concern:

Be it known that I, OLIVER ANDERSON, of Racine, in the county of Racine and State of Wisconsin, have invented certain new and useful Improvements in Band-Cutters and Feeders; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention has for its object to improve in construction and operation the general kind of band-cutter and grain-feeder for attachment to thrashing-machines set forth in Letters Patent of the United States, No. 377,975, granted to me February 14, 1888; and it consists in the various features and combinations of devices hereinafter set forth, and pointed out in the appended claims.

In the accompanying drawings, illustrating my invention, Figure 1 is a side elevation of my improved machine. Fig. 2 is a perspective view, taken from a position in front, of the machine detached from the thrasher. Fig. 3 is a detail in central vertical section. Fig. 4 illustrates a modification of the adjustable feed-regulating device and gavel-breaker.

For convenience of description the lower end of the machine, or that which is attached to the thrasher, will be called its "front" end and the opposite or higher end the "rear" end of the machine.

A A represent longitudinal side bars of the frame, and A′ a depending trussed portion of the frame at the front end of the machine. As here shown, said trussed part A′ of the frame is composed of the horizontal side beams *a*, crossed side bars *a′*, connecting the frame-beams A with the side beams *a*, and cross-beam a^2 connecting the opposite lower side beams *a* with each other at or near their rear ends.

A^2 A^2 are extensible legs beneath the rear end of the frame and pivotally connected at their upper ends with the side bars A. The legs A^2 are connected with each other by means of two cross-bars a^3 a^4, forming what will hereinafter be termed as a whole the "leg structure."

A^3 A^3 are braces by which the legs may be held at variable inclination and also by which the rear end of the frame may be supported from the trussed portion A′ when the machine is attached to a thrasher-frame, and the legs are lifted from the ground for transportation of the band-cutter and feeder with the thrasher. Said brace-bars A^3 are pivoted to the lower part of the trussed portion of the frame A′—as, for example, at a^5—so as to allow their opposite or free ends to be raised and lowered, and they are provided with notches a^6 in their lower edges and near their free ends adapted to engage projecting headed pins a^7 inserted in the legs A^2 and other similar pins a^8 inserted in the side bars A of the frame. At the front ends of the side bars A and *a* are cast-metal brackets A^4, by which the cutter and feeder-frame may be bolted to the end frame-pieces of the thrasher represented at T.

B B are two reciprocating feed-tables arranged side by side between the upper frame-beams A A. Said tables, as here represented, are composed, mainly, of transverse slats *b b*, presenting angular corrugations, outer side boards *b′*, extending the full length of the tables, and inner side boards b^2, extending along the rear portion of the inner sides of said tables. These parts are connected with each other in any suitable manner for strength, longitudinal side bars b^3 being shown in the drawings as the medium of such connection. At the inner margins of the tables, in front of the inner side boards b^2 and in extension of the latter, are metal plates b^4, wider at their rear than at their front ends and having serrations on their upper edges inclined toward the front end of the machine. At the rear ends of the tables are backboards b^5. Each table therefore forms a trough having in its working position a downward inclination from its rear to its front end, where they are substantially in alignment with the feed-table of the thrasher to which the machine is attached.

The tables B are separately supported suitably to allow of their longitudinal reciprocation by means of flexible struts. C C are such struts for the support of the front ends of the

tables, said struts being constructed of wide or laterally-rigid bars having broad hinge-connections with the tables and with the cross-bar a^2 of the frame.

D D are the struts for upholding the rear ends of the tables, consisting of wide flat elastic bars of wood or metal, hinged at their upper ends to the tables and fastened at their lower ends to the two cross-bars a^3 a^4 of the leg structure. The tables thus supported are laterally held in place between and clear of the side beams A A of the frame while they are freely movable lengthwise. By means of the extensible legs A^2 the rear end of the machine may be firmly sustained from the ground with the legs at any desired inclination, while the front end is sustained by the thrasher. The effect of varying the inclination of the leg structure is manifestly to vary the rate of feed by the tables B, since the exact direction of movement of the rear ends of said tables while being reciprocated will depend upon the position or inclination given the leg structure, for the reason that the supports D D are attached to said leg structure. Thus stating the fact with general accuracy, if the feet of the leg structure be set forward the upper ends of the supports D and the rear ends of the tables consequently will move upward on the forward stroke of the table, and if to the rear the rear ends of the tables will move downward on said forward stroke. The spring-supports D desirably stand free from tension at the mid-stroke of the tables.

The tables B are reciprocated by means of a crank-shaft E and pitman *e*, connecting the cranks *e'* of said shaft with the tables. The shaft E is mounted in bearings E', firmly secured to the crossed or truss bars of the rigid frame-extension A', as clearly seen in Fig. 1, and the two cranks *e' e'* thereon for the separate reciprocation of the tables B are turned in opposite directions, so that the forward movement of either table is simultaneous with the backward movement of the other. By this means the tables mutually balance and counteract each other with respect to their tendency to shake the thrasher with which they are connected through the frame. It is for this purpose that I have divided the wide table heretofore used and given the two parts or tables B the separate and opposite motions described, since I have found the single wider reciprocating table to have a very objectionable shaking action upon the thrasher.

F F are the overhead feed-regulating rods shown in my aforesaid patent. For the further regulation of the feed, however, and for the additional purpose of breaking up or opening out tangle-gavels after the bands have been cut I have provided a new device in this class of machines. As shown in Fig. 2, this device consists of a transverse rock-shaft G, supported at or near the surface of each table B, which shaft has laterally-projecting fingers *g g* attached thereto, so that by oscillating or partly rotating the shaft G said fingers will be lifted into the path of the grain and will enter the mass to a greater or less extent, or will be depressed toward or to the level of the table. I call this device a "gavel-breaker," and its action is to arrest or retard the lower part of the mass of grain carried by the table, while the upper part of such mass is thrown forward by the feeding movement of the table. Both as a feed-regulator and as a means for disentangling or breaking up the grain this device has been found in practice highly advantageous. For the purpose of raising and lowering these fingers or teeth *g* each rod G is provided with a hand-lever, of which one is shown at G' in Fig. 1 in reach of the operator, and in connection with a ratchet *g'*, also attached to the table, for locking the lever and finger *g* in any position given them. Another form of the gavel-breaker is shown in Fig. 4, in which the fingers project from a cross bar or rod G, supported below the table on levers g^2, by which the fingers may be raised and lowered in suitable passages through the table. I do not wish to be limited to either of these particular constructions, inasmuch as the device and the function performed by it are entirely new in band cutting and feeding machines.

The band-cutters H of the present machine are of the overhead vibrating character set forth in my aforesaid Letters Patent. They also cut the bands in the back-stroke of the cutting-edges and upon the forward or feeding movement of the subjacent table, as in that patent. They, however, differ from the cutters of the patent referred to in several particulars. For example, in said former patent the curved and cutting edges of the vibrating cutter-plates had only minute serrations, like those of a sickle, (exaggerated in the drawings,) and the points of these were directed toward the rear of the machine. In the present case the cutters are provided with large teeth *h*, having their points directed forwardly and sharpened on their longer, rear, and inclined edges. The object of this improvement is to obtain the effect of one of a series of chopping blows upon the band to be cut, and also to adapt the cutters to act as feeders for the upper part of a mass of loose grain, of which there is always a considerable quantity to be thrashed at the end of work upon the gaveled portion of a crop. It will also be noticed that in the present case the segmental plates of the cutters are shown concentric instead of eccentric, as in the former patent referred to.

An important improvement over the former construction consists in the vertical adjustability of the cutters, by which their distance from the tables may be varied with a view to working upon gavels of widely different sizes or to their operation as feeders of loose grain. To this end the cross-shaft which supports

the cutters is mounted at its ends in boxes which slide vertically in or upon the standards, and screw-rods or other suitable devices enable the operator to set the cutters at any desired elevation above the table. In the particular construction shown for this purpose (and which is preferred and claimed as a separate improvement) the ends of the cutter-supporting shaft or rod H^3 are inserted in blocks J, that are fitted to slide in slots of the standards K, and through the top plates *k* of these standards are threaded the adjusting-screws L, having rotatable connection with the blocks J.

As a further and separate improvement, the cutter-plates H are shown fastened to webs H′, which are cast integral with or are secured to long tubular hubs H^2, rotatably fitted upon the shaft H^3. One of these hubs, with any desired number of cutters thereon, is located over each table B, and it is retained in place by a collar and set-screw *h′*. Each hub H^2 is provided with an arm h^2 near its outer end, which connects by a pitman I with a crank *i* on the drive-shaft E, said pitman passing rearwardly and upwardly from the crank-shaft to the cutter-arm at the outside of the adjacent feed-table B and between the latter and the frame-beam A. The crank *i* for the actuation of each cutter or set of cutters is set opposite the crank *e′*, which actuates the corresponding table in order to give the back or cutting stroke of said cutter upon the forward or feeding stroke of the table.

In the construction herein shown the segmental plates H are made of sheet-steel or other metal and the teeth *h h* are riveted to their edges; but they may manifestly be formed or cut from the same sheet with the plates.

The vertical height given the frame at its front end by means of the rigid trussed portion A′ thereof enables the machine to be transported with the thrasher and without detachment therefrom, while leaving the machine as light as possible at its rear or outhanging portion. In this case, as already pointed out, the brace-bars A^3 should be detached from the legs and attached to the rear portion of the frame-beams A, and the legs swung forward at their lower ends clear of the ground and supported in any suitable manner.

I claim as my invention—

1. In a band-cutter and feeder having one or more reciprocating feed-tables, the combination, with its longitudinal frame-beams, of a trussed downward-extending frame at its forward end and a pivotally-attached leg-frame vertically adjustable upon itself at its rear end.

2. The combination, with the frame having a trussed downward extension at its front end affording wide bearing against the thrasher-frame to which it is to be attached, of extensible legs pivoted to the rear of the frame and a brace or braces movably connected with the lower part of the trussed extension and adapted to detachably connect with both the legs and the rear part of the frame.

3. The combination, with a frame, of a leg structure vertically extensible upon itself and pivoted to the said frame so as to have a variable inclination from front to rear thereof, a reciprocating feed table or tables, and a flexible support or supports pivoted to or near the rear end of the table and to the leg structure above its extensible part.

4. The combination of the frame having at its front end a depending trussed extension embracing a cross-bar, as a^2, in its lower portion, of a reciprocating table having a flexible support or supports at its front end resting on said cross-bar, an extensible leg structure pivoted to the rear part of the frame, and a spring support or supports rigidly connected to the leg structure and pivoted to the rear portion of the table.

5. In a band-cutter and feeder, the combination, with a reciprocating table, of an oscillating cutter-plate having a curved edge, said plate being mounted over the table and provided at its edge with teeth having rearwardly-inclined cutting-edges which have a backward cutting movement simultaneously with a forward and feeding movement of the table and a forward feeding movement simultaneous with the rearward movement of the table.

6. The combination, with the frame-beams A and a reciprocating table or tables B, of standards on the frame-beams, vertically-movable slides fitted to said standards, a shaft mounted in said slides, and an oscillating cutter-plate on the shaft having a curved edge provided with teeth sharpened only on their rear inclined edges.

7. The combination, with the frame-beams A and reciprocating tables B B, of a transverse shaft adjustably supported from the frame-beams A and two separate oscillatory hubs mounted on said shaft and carrying cutters.

8. The combination, with the frame-beams A and reciprocating tables B B, of standards on the frame-beams, blocks vertically movable on or in said standards, means, substantially as described, for raising and lowering said blocks, a shaft supported by said blocks, and two separate oscillatory hubs bearing cutter-plates mounted on said shaft.

9. The combination, with a frame and a reciprocating table, of an overhead oscillating cutter, a rotating drive-shaft mounted on the frame and provided with oppositely-directed cranks imparting power to the table and to the cutter for reciprocating the table and oscillating the cutter, a pitman connecting one of said cranks with the table, and a second pitman connecting the other crank with the cutter.

10. The combination, with the reciprocating table or tables and a longitudinal frame hav-

ing a depending trussed extension A′ at its forward end, said extension comprising horizontal side beams *a*, transverse beams a^2, and the crossed side bars *a*, of a crank-shaft E for reciprocating the table or tables, and bearing-boxes for said shaft, said boxes being secured to the said crossed side bars.

In testimony that I claim the foregoing as my invention I affix my signature in presence of two witnesses.

OLIVER ANDERSON.

Witnesses:
M. E. DAYTON,
TAYLOR E. BROWN.