

(No Model.)

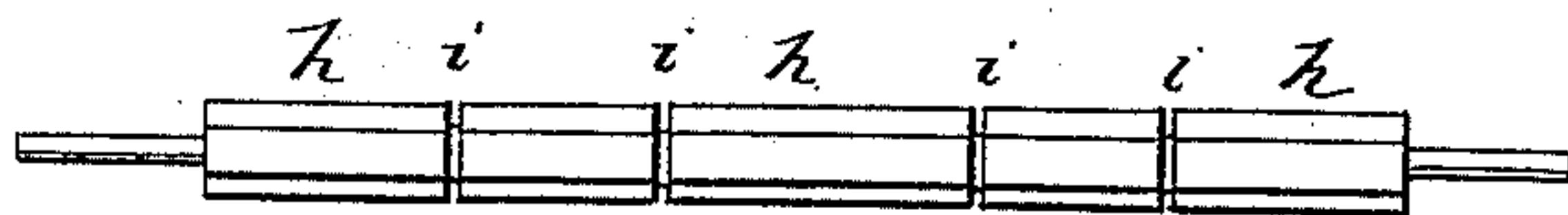
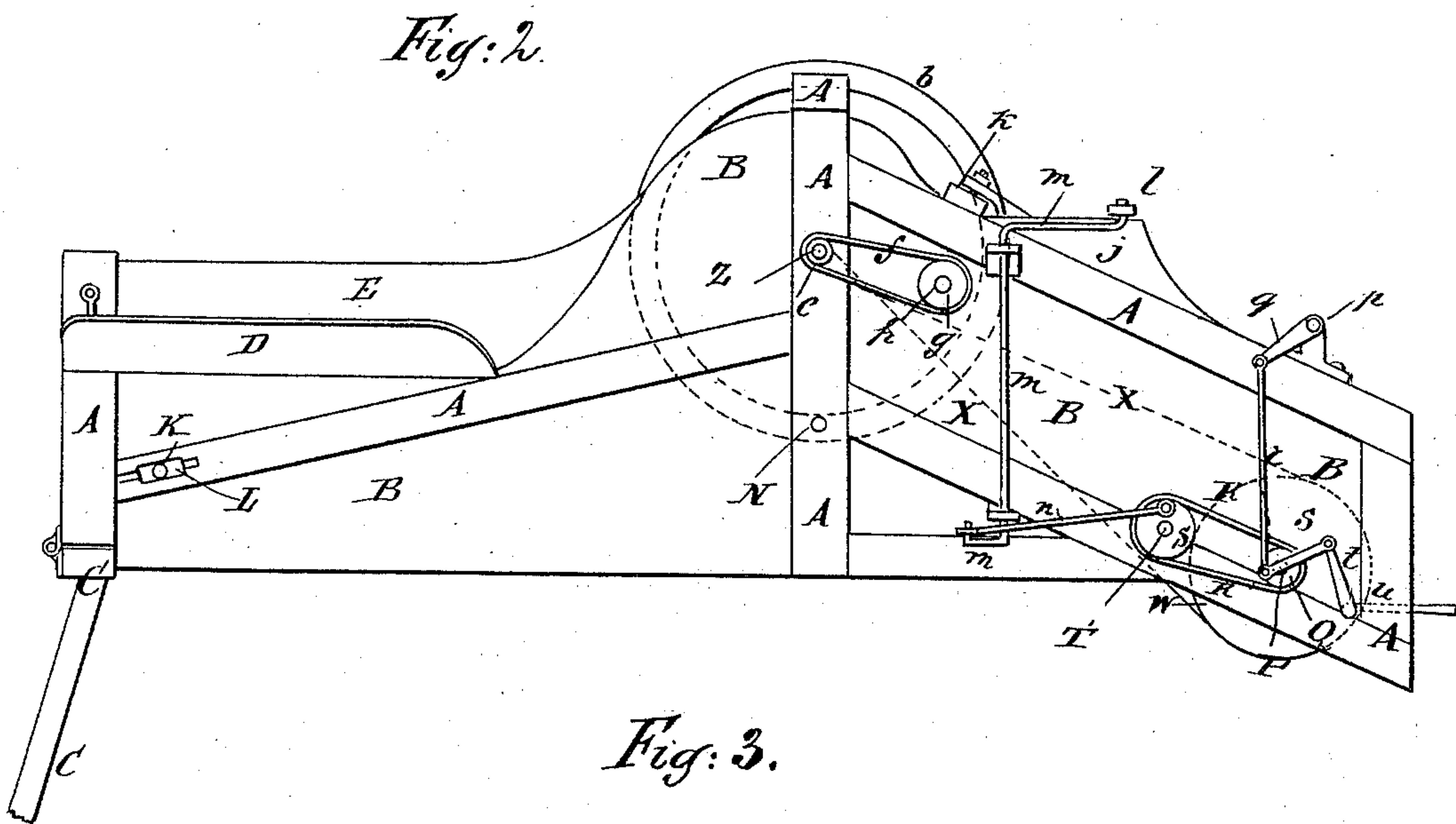
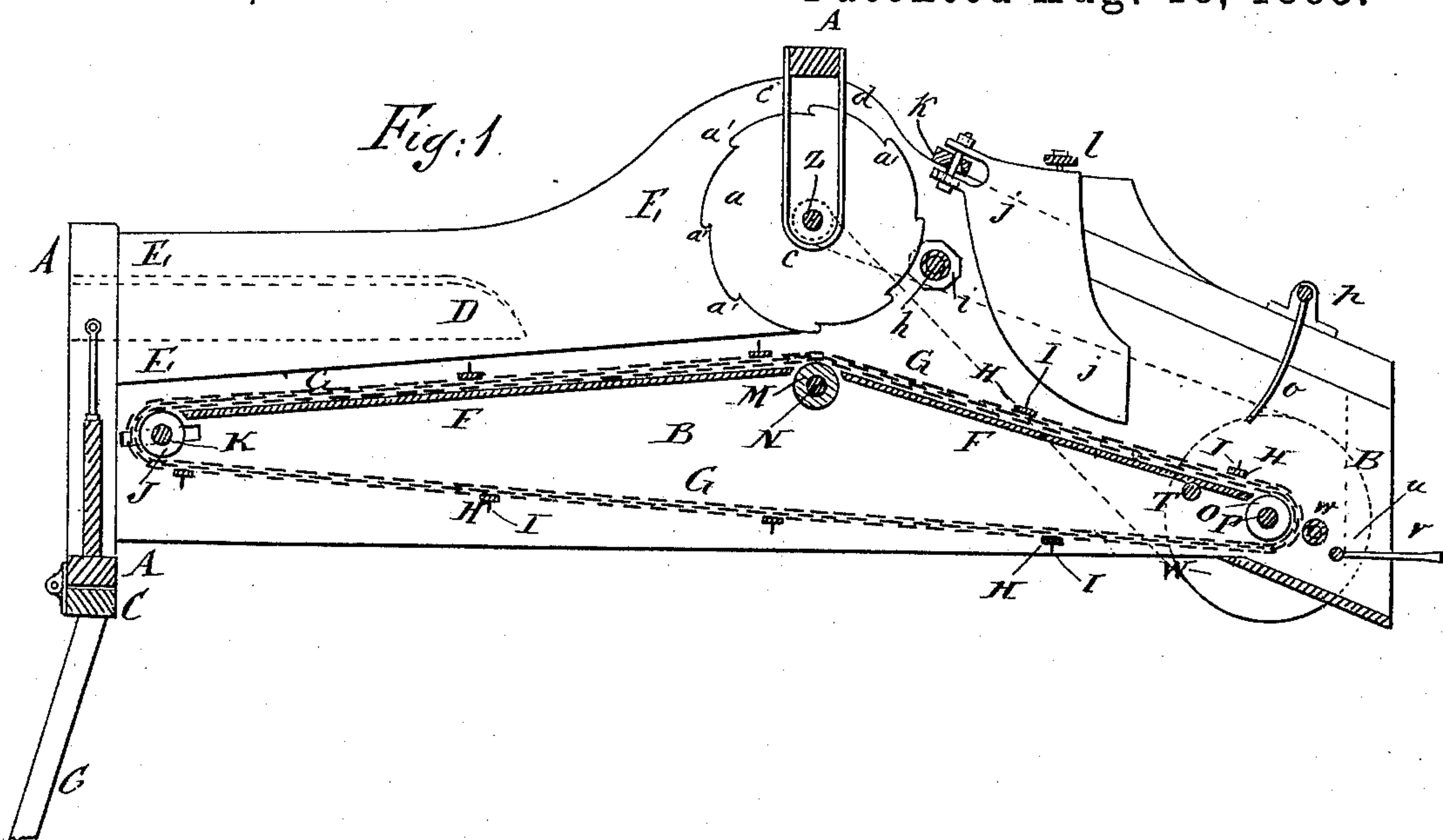
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C. GROVER.

COMBINED BAND CUTTER AND GRAIN FEEDER FOR THRASHERS.

No. 324,767.

Patented Aug. 18, 1885.



WITNESSES:

*Onas. Nida*  
*Chas. Lurcott*

INVENTOR:

*Charles Grover*  
BY *Munn & Co*  
ATTORNEYS.

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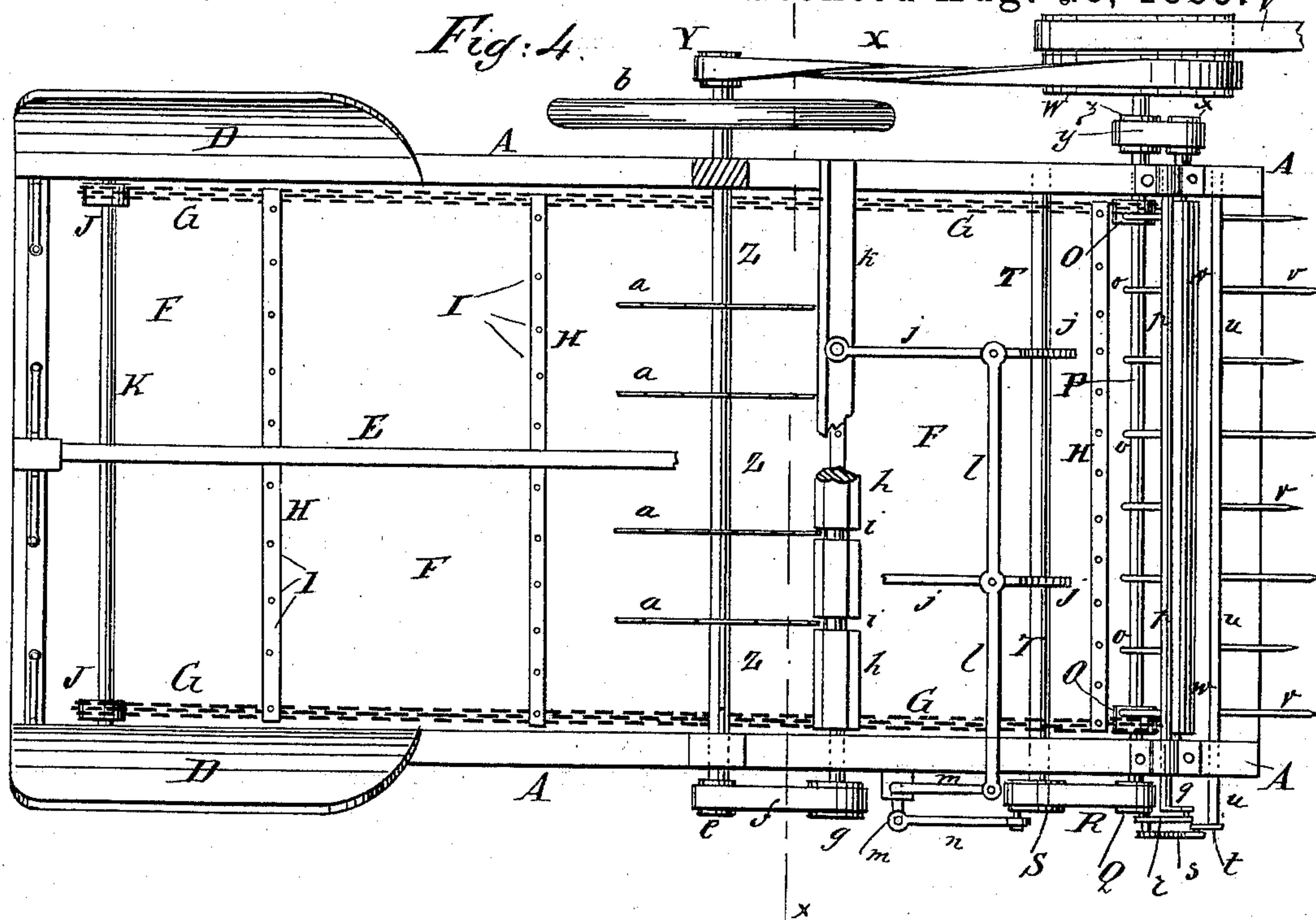
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C. GROVER.

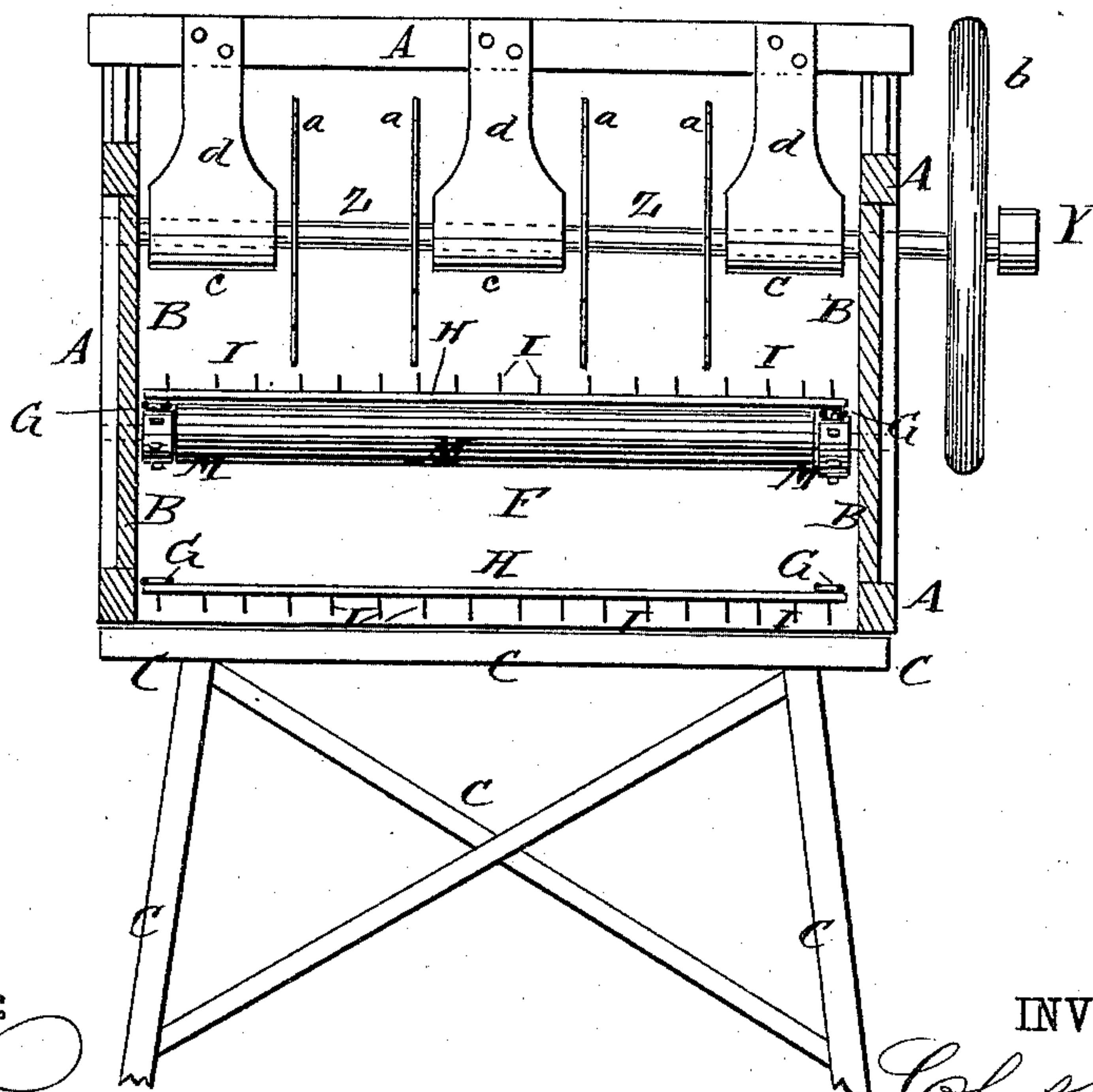
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*Fig. 5.*



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*Chas. Lurcott*

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BY *Munn & Co*  
ATTORNEYS.



# UNITED STATES PATENT OFFICE.

CHARLES GROVER, OF KANSAS CITY, MISSOURI.

## COMBINED BAND-CUTTER AND GRAIN-FEEDER FOR THRASHERS.

SPECIFICATION forming part of Letters Patent No. 324,767, dated August 18, 1885.

Application filed September 15, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES GROVER, of Kansas City, in the county of Jackson, and State of Missouri, have invented certain new and useful Improvements in Combined Band-Cutters and Grain-Feeders for Thrashers, of which the following is a full, clear, and exact description.

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

Figure 1, Sheet 1, is a sectional elevation of my improved machine. Fig. 2, Sheet 1, is a side elevation of the same. Fig. 3, Sheet 1, is a plan view of the knife-clearing grooved cylinder. Fig. 4, Sheet 2, is a plan view of the machine, the knife-fenders and their supporting bar being removed and parts being broken away. Fig. 5, Sheet 2, is a sectional end elevation of the machine, taken through the line *x x*, Fig. 4.

The object of this invention is to provide machines, simple in construction and not liable to get out of order, for cutting the bands of bound grain, and for feeding bound and headed grain to thrashers in uniform quantities and with such rapidity as the said thrashers may require.

The invention consists in the construction and combination of parts, as will be hereinafter fully described and claimed.

A represents the frame of the machine, the sides of which are closed by a casing, B. The delivery end of the frame A is designed to be connected with the receiving end of a thrasher by hooks or other suitable means, and its rear end is supported by legs or a frame, C, the top bar of which is hinged to the end bar of the said frame A, so that the said rear end of the machine can be adjusted higher or lower by varying the inclination of the said legs or frame C.

To the sides of the rear part of the frame A are attached inclined feed-boards D, to guide the grain into place in the machine, and the space between the said feed-boards is divided by a center board, E, so that bundles of grain thrown into the machine will be compelled to take a position upon the feed-apron F lengthwise with the machine, and will be carried forward in that position. G are endless chains

to which, at suitable distances apart, are attached cleats H, provided with teeth I, so that the grain will be carried forward with greater certainty. The lower edge of the center board, E, is at such a height above the receiving part of the feed-apron F that the toothed cleats H will have a free passage beneath the said edge. The feed-apron F is attached to the frame A, and its rear part inclines upward and its forward part inclines downward, as shown in Fig. 1.

The endless chains G at the rear end of the machine pass around wheels J, attached to a shaft, K, the journals of which revolve in bearings L, sliding in slots in the side bars of the frame A, so that the said bearings can be readily adjusted to tighten and slacken the endless chains G as may be required. The bearings L are adjusted and held in place by screws in the ordinary manner, which screws are not shown in the drawings, as there is nothing new in their construction. The endless chains G at their highest point or angle of the feed-apron F pass over a roller, M, the journals N of which revolve in bearings in the frame A. The roller M also prevents the cleats H from being sprung while the knives are cutting the bands. The endless chains G at the forward end of the machine pass around chain-wheels O, attached to the drive-shaft P, the journals of which revolve in bearings in the frame A.

To one end of the shaft P is attached a small pulley, Q, around which passes an endless belt, R. The belt R also passes around a pulley, S, attached to the end of the shaft T, which revolves in bearings in the frame A. To the other end of the shaft P is attached a large pulley, U. Around the pulley U passes an endless belt, V, by means of which motion is given to the shaft P from the driving mechanism of the thrasher.

To the shaft P is also attached a second large pulley, W, around which passes an endless belt, X. The belt X is crossed and passes around a small pulley, Y, attached to the end of the shaft Z, so that the said shaft Z will receive a rapid movement from the slow movement of the driving-shaft P. The shaft Z revolves in bearings in the frame A, is directly over the highest point of the apron F, and to it are secured four (more or less) circular cut-



ters, *a*, the teeth *a'* of which are rounded, as shown in Fig. 1, so that the straw or other material forming the bands will not adhere to them.

5 To the cutter-shaft *Z* is attached a fly-wheel, *b*, to give steadiness of movement to the shaft *Z* and cutters *a*.

To the rear side of the top bar of the frame *A* are attached the upper ends of fenders *c*, which are nearly as wide as the spaces between the cutters *a*. The fenders *c* pass down at the rear side of the shaft *Z*, are curved to pass beneath the said shaft, and their other ends, *d*, or braces attached to the said ends, are at-  
15 tached to the forward side of the top cross-bar of the frame *A*.

To the other end of the cutter-shaft *Z* is attached a small pulley, *e*, around which passes a belt, *f*. The belt *f* also passes around a  
20 pulley, *g*, attached to a journal of the cylinder *h*, the journals of which revolve in bearings in the frame *A*. The cylinder *h* is made of octagonal or other desired form, has annular grooves *i* formed in it opposite the cutters *a*, and is so placed that the edges of the said cut-  
25 ters will be in the said grooves as the cutters and cylinder are revolved, so that the cutters cannot become clogged by the straw or other material upon which the said cutters operate.

30 With this construction, as the bundles are carried forward by the carrier *G H I* they pass beneath the cutters *a*, by which the bands are cut. As the loose bundles pass from the cutters *a* they are spread evenly over the de-  
35 livery part of the apron *F* and the carrier *G H I* by the spreaders *j*, which are attached at their rear upper corners to a cross-beam, *k*, in such a manner that their lower parts can swing up and down to accommodate them-  
40 selves to the thickness of grain passing through the machine. This vertical swinging movement of the spreaders *j* is rendered possible by widening the pivot-apertures in the cross-bar *k* in a downward and forward direction, so  
45 that the shape of the said apertures will be substantially triangular, thus allowing the bolts that secure the spreaders to the bar a forward movement at their lower ends. The spreaders *j* at their forward upper corners  
50 are pivoted to a cross-bar, *l*, so that the said spreaders can be vibrated laterally to spread the grain by the longitudinal movements of the said bar *l*.

To one end of the bar *l* is pivoted the upper  
55 arm of the crank-shaft *m*, which rocks in bearings attached to the frame *A*, and to its lower arm is pivoted the end of a rod, *n*, the other end of which is pivoted to a crank-pin at-  
60 tached to the pulley *S* of the shaft *T*, so that the spreader *j* will be vibrated by the revolution of the said shaft.

The grain is further spread as it reaches the delivery end of the carrier by the prongs or  
65 teeth *o*, attached to the shaft *p*, which rocks in bearings attached to the top of the forward part of the frame *A*. To one end of the shaft

*p* is attached a crank, *q*, to which is pivoted the upper end of the rod *r*.

The lower end of the rod *r* is pivoted to a crank-pin attached to the pulley *Q* of the  
70 drive-shaft *P*. To the crank-pin of the pulley *Q* is also pivoted the end of the connecting-rod *s*, the other end of which is pivoted to a crank, *t*, attached to the end of the shaft *u*. The shaft *u* rocks in bearings in the lower forward  
75 corner of the frame *A*, and to it are attached forwardly-projecting prongs or teeth *v*, by the movements of which the grain as it passes from the carrier is loosed or shaken and has  
80 its butts raised.

As the grain passes from the carrier *G H I* to the agitator *u v*, it passes over a roller *w*, which is journaled to the frame *A* between the drive-shaft *P* and the agitator shaft *u*, to carry the grain from the said carrier to the said  
85 agitator.

To one end of the roller *w* is attached a small pulley, *x*, around which passes a belt, *y*. The belt *y* also passes around a larger pulley, *z*, attached to the drive-shaft *P*, so that the  
90 said roller will be driven from the said shaft.

With this construction bound or headed grain will be fed to the thrasher evenly and uniformly, and at any desired rapidity.

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

1. In a combined band-cutter and grain-feeder, the combination, with the frame *A* and the carrier, of the shaft *Z*, a series of rotary cutters  
100 mounted thereon, the cross-bar *k*, having a series of apertures therein, the spreaders *j*, forked at their upper rear corners, bolts passing through the arms of the forks and the cross-bar *k*, the bar *l*, pivoted to the upper end of  
105 the spreaders, the vertical cranked rock-shaft *m*, connected to the bar *l*, and operating mechanism, substantially as set forth.

2. In a combined band-cutter and grain-feeder, the frame *A*, the carrier, and the ro-  
110 tary cutters, in combination with the cross-bar *k*, provided with a series of pivot-holes widened at their lower ends, as described, the spreaders *j*, forked at their upper ends, the bolts passing through the arms of the forks and said  
115 pivot-holes, the connecting-bar *l*, pivotally connected to the top of the spreaders, and a vibrating mechanism, substantially as set forth.

3. In a combined band-cutter and grain-feeder, the endless carrier and the rotary cut-  
120 ters, in combination with the cranked shaft *p q*, journaled above the delivery end of the carrier, downwardly-projecting prongs *o* thereon, the cranked shaft *u t*, journaled in rear of the delivery end of the carrier, the prongs  
125 *v* thereon, the roller *w* in rear of the shaft *u*, the shaft *P*, crank-pulley *Q*, and the rods *r* and *s*, connecting the said pulley and the cranks *q t*, respectively, as set forth.

Witnesses: CHARLES GROVER.

W. P. CONNER.

D. A. N. GROVER.