



(No Model.)

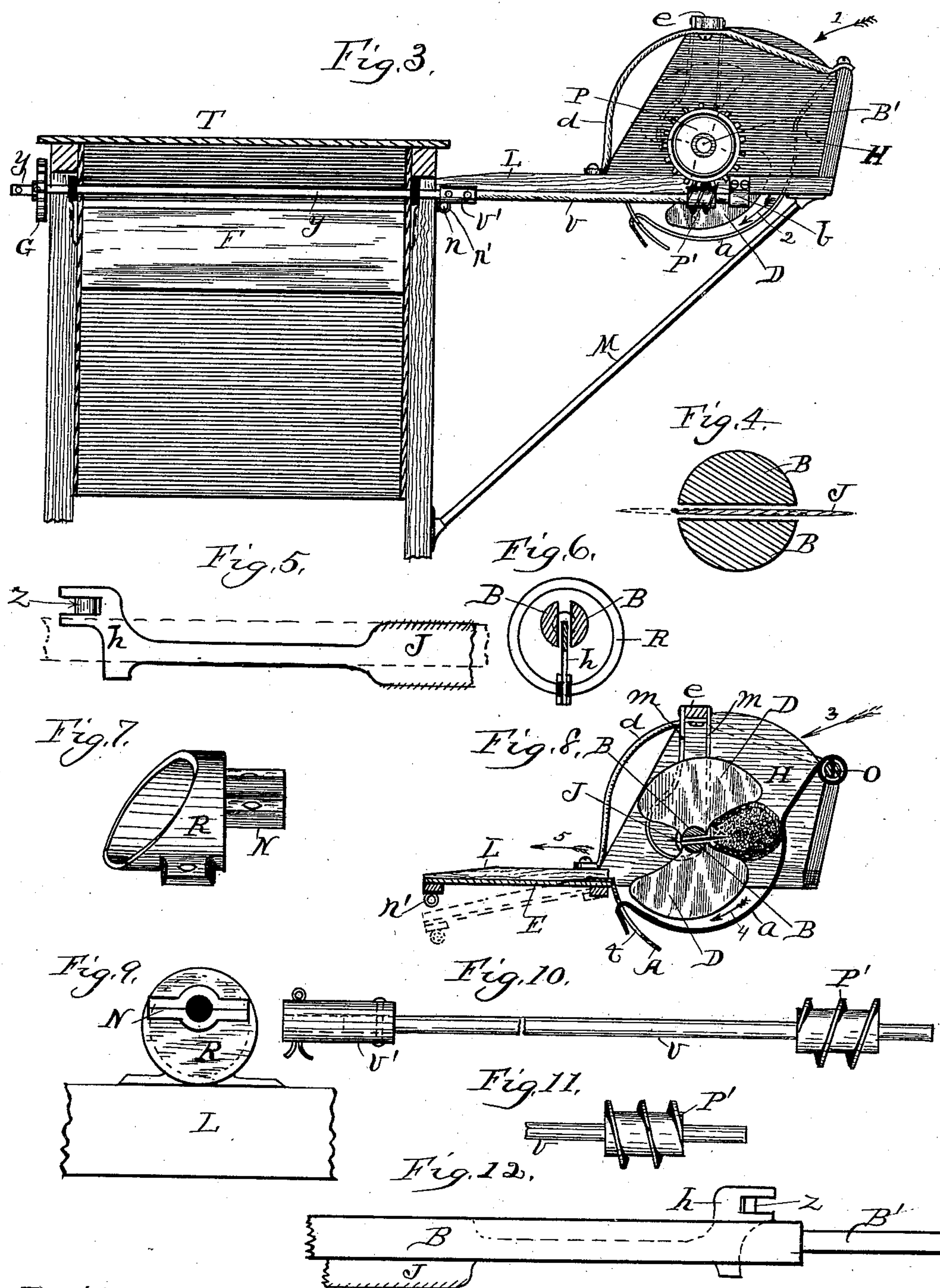
2 Sheets—Sheet 2.

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BAND CUTTING ATTACHMENT FOR THRASHERS.

No. 348,966.

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# UNITED STATES PATENT OFFICE.

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## BAND-CUTTING ATTACHMENT FOR THRASHERS.

SPECIFICATION forming part of Letters Patent No. 348,966, dated September 14, 1886.

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*To all whom it may concern:*

Be it known that I, SETH HARROP, a citizen of the United States of America, residing at Cabery, in the county of Ford and State of Illinois, have invented certain new and useful Improvements in Band-Cutting Attachments for Thrashers, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to certain improvements in band-cutting attachments for thrashing-machines, and is of the class wherein the machinery is operated by means of geared connections with the thrashing-machine, to cut  
15 the bands of bundles of grain and deliver them to the person feeding the thrashing-machine as they are pitched in the hopper of the band-cutter; and it consists in certain novel features of construction and combinations of  
20 parts hereinafter more fully described and then pointed out in the claims.

Reference is had to the accompanying drawings and the letters and figures thereon, which form a part of this specification, in which—

25 Figure 1 is a top plan view of the band-cutting attachment, showing it secured at one side of the feed end of a thrasher and geared therewith. The front part of a thrashing-machine is shown for that purpose. Fig. 2 is a detail view  
30 of the slotted shaft and knife of the band-cutting attachment. Fig. 3 is a rear side elevation of the band-cutting attachment, showing it connected and geared to a thrashing-machine, of which a cross-section of the upper  
35 part is shown, taken on line *x* of Fig. 1. Fig. 4 is a central cross-sectional view of the slotted shaft and knife of the band-cutting attachment. Fig. 5 is a detail view of a portion of the knife of the band-cutting attachment,  
40 showing its tang and its forked beard. Fig. 6 is a detail view showing a face plan of one of the stationary eccentric cams and a cross-section of the slotted shaft, and the tang of the knife of the band-cutting attachment. Fig.  
45 7 is a view of one of the stationary eccentric cams of the band-cutting attachment, showing its face and integral shaft-box. Fig. 8 is a vertical central longitudinal sectional view of the band-cutting attachment and a cross-section of its slotted shaft and knife. Fig. 9 is  
50 a rear view of one of the stationary eccentric cams and shaft-box of the band-cutting attach-

ment. Fig. 10 is a plan view of a shaft having secured thereon a worm-gear and a shaft-coupling, and is for the purpose of driving the  
55 working parts of the band-cutting attachment when connected with the gearing of the thrashing-machine. Fig. 11 is a side view of a worm-gear having its threads arranged at a  
60 reverse angle from those of the gear shown in Fig. 10, to be used as a substitute therefor when the attachment is used on the opposite side of the machine; and Fig. 12 is a detail  
65 view showing a side plan of a portion of the slotted shaft and knife of the band-cutting attachment.

Referring to the drawings, T represents the front end of a thrashing-machine, and F the throat thereof, where the unthrashed grain is fed to the machine-cylinder.

70 *y* represents a shaft properly boxed across the front part of the thrashing-machine in some convenient and suitable position, and has holes through its ends for the reception of a coupling key or pin, so that extension-shafts  
75 may be coupled to it at either end.

G is a spur-gear secured on said shaft and so arranged as to mesh with gearing of the thrashing-machine, from which it receives its motion to drive said shaft and the band-cut-  
80 ting attachment when coupled therewith.

E represents the platform of the band-cutting attachment, and has secured to its ends the beams L L, which extend from the side of said platform and, together with a set of cross-  
85 beams, form the main frame of the said attachment. Upon the extending end of said side beams, L L, are securely bolted the stationary eccentric cams R R, having the integral boxes N N, into which the slotted shaft  
90 B is boxed, as shown in Figs. 1 and 2, the said cams being set eccentrically with said shaft. Upon the extending end of said shaft is secured a pin-wheel, P, and boxed to beam L by box *b*, and coupled to shaft *y* by means of  
95 coupling *v'*, is a shaft, *v*, having secured thereon a worm-gear, P', which meshes with and drives said pin-wheel P, to rotate shaft B and operate the band-cutting attachment. The shaft B, which has been termed the "slot-  
100 ted" shaft, is made from two half-round bars of iron or steel welded together at their ends, so they may be properly turned to form bearings, and arranged a little distance apart



throughout their length, between said end bearings, and in the slot thus formed in said shaft, is arranged the reciprocating knife J, as shown in Figs. 1, 2, 4, 6, 8, and 12. The cutting part or blade of said knife J is double-edged and bearded, and it has a tang extending in each direction in said slot, which tangs terminate in forked heads *h*, said forks being arranged at one side from the center line of said knife as far as one-half the diameter of the cams R and arranged to fork over the peripheral face of said cams and, when turned, to ride thereon and reciprocate said knife and move its cutting-edges laterally in and out from the slot of said shaft B, caused by the opposite arrangement of the forked heads *h* and cams R R, and the eccentric position of said cams relative to shaft B. (See Figs. 2, 6, 9, and 12.) Friction-rollers Z, as shown in Figs. 2, 5, and 12, may be arranged in the forks of heads *h* to engage the cams R, to prevent too great wear of the parts.

D D D D are rotating arms arranged on shaft B, a pair at each end of blade J, as shown in Figs. 1, 2, 3, and 8. The arms of each pair are set so as to be opposite each other on their shaft, and are nearly fan-shaped, as shown particularly in Fig. 8, and so the spaces between them may receive the bundle, as shown in said figure, and their peripheral surfaces hold and support the bundle next succeeding until their rotation permits it to drop between them in like manner as the preceding one, that they may not come in contact with each other during the band-cutting process. The spaces between said arms are arranged in line with the cutting-edges of the blade of knife J, so the bundle may drop down on the edge of the blade, as shown in Fig. 8.

Near each cam R R, and parallel with the sides of arms D, is arranged a dividing-board, H, (see Figs. 1, 3, and 8,) which has openings, through which the shaft B passes, and secured in said openings are sleeves C C, which extend to the arms D D to cover the shaft B each way from the knife, so straw will not wind on said shaft.

Arranged on suitable standards upon the extending end of beams L L is a cross-bar, O, having yieldingly secured thereto the curved guides *a*, which extend down and under the shaft B and carrying arms D D, and which hook into the vertical slots *l* of a depending curved apron, A, which is secured to platform E, as shown in Figs. 1, 3, and 8, said slots permitting vertical movement of that end of said guides, and preventing their ends from being pressed down too far by a bundle.

Upon and across the dividing-boards H H and frame of the attachment is arranged a beam, *e*, properly braced by means of the braces *d d*, one at each end. (See Figs. 1, 3, and 8.) Depending from said cross-beam *e* is a pair of bundle-guards, *m m*, as shown in Figs. 1 and 8, the bottom parts of which are circular about on the arc of a circle eccentric to

shaft B, to operate as an upper guide in conjunction with the lower guides, *a*, and also as a guard to prevent bundles of grain or portions of bundles, after their bands are cut, from being carried by arms D D over to the entrance or hopper again. The guards *m m* gradually force the cut bundles out from between the arms D D, and assist in delivering them to the platform E.

The band-cutter is attached to a thrashing machine, as shown in Figs. 1 and 3, by means of hooks *n* of the thrashing-machine, inserted in eyes *n'* of the attachment, (see Figs. 1, 3, and 8,) and held up to its position by means of braces M (see Fig. 3) and shaft *v*, coupled with shaft *y*, as before stated.

The operation of the band-cutting attachment is as follows: When the thrashing machine is in operation, motion is imparted therefrom to the attachment, which will continuously rotate shaft B and arms D D in the direction indicated by arrows 2 and 4 in Figs. 3 and 8. Bundles of bound grain are pitched in the hopper of the attachment, as indicated by arrows 1 and 3 of Figs. 3 and 8, formed between the guards *m m* and guides *a*, and will lie upon the solid peripheries of the arms D D for an instant, until the space between the arms reaches them, when they will singly drop between said arms and be carried down on the guide *a* and around to the platform E, each rotation taking two bundles, and as they thus pass to the platform E the knife-blade J is forced out into and reciprocated across the band of the bundle and cuts it to open the bundle, as stated, and as each pair of arms and each edge of the knife are alike, each edge of the knife cuts, and the bands of two bundles are cut at each revolution of the shaft. The blade J is long enough to cover fully one-half the length of a bundle of bound grain, so as to positively engage the band wherever it happens to be on the bundle. The guides *a* are made of spring metal, and are yieldingly arranged so as to properly hold a small bundle to the knife-blade, and in case a large bundle should be taken in said guides will spring back and down to permit it to pass.

Fig. 8 shows a bundle of grain in the grasp of the arms D D, and the knife J in the act of cutting its band, and as it is carried around it will be delivered on platform E, as indicated by arrow 5.

The platform E may be arranged to incline, if desired, as shown by dotted lines in Fig. 8.

The knife-blade J is bearded similarly to the sections of a harvesting-machine sickle, so that it will not need guiding to keep in order, and as it is rotated by the shaft B it is caused to reciprocate so that each edge of the knife-blade will each time cut in the same direction and in an opposite direction from its opposite edge; consequently the beards of each edge of said blade are inclined in the direction in which it cuts. When the blade J is in a horizontal position, it is slightly elevated, and when in a perpendicular position it is forced out and will



extend from the slot of said shaft, and is then centrally arranged between cams R R.

The worm-gear P' (shown in Fig. 11) is for the purpose of a substitute for gear P' of Fig. 3, when the attachment is arranged on the opposite side of the thrashing-machine.

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

10 1. In the band-cutting attachment hereinbefore described, the combination, with the slotted shaft B, of the stationary oppositely-arranged cams R R and knife J, having the forked heads *h*, said cams being arranged ec-  
15 centrically to said shaft to reciprocate and at the same time project and retract said knife, in the manner substantially as specified.

2 The combination of a revolving longitudinally-slotted shaft, a pair of oppositely-  
20 arranged stationary cams eccentric to said shaft, a double-edged knife in said slot, having at each end a forked head engaging one of said cams, a pair of carrying-arms secured at each side on said slotted shaft to hold the  
25 bundles, a series of yielding bundle supports and guides, and a delivering-platform, substantially as described.

3. In the band-cutting attachment hereinbefore described, the combination, with the  
30 depending slotted apron A and cross-rod O, of the yielding guide *a*, arranged to hold the bundles against the knife J, substantially as and for the purpose set forth.

4. In a band-cutting attachment for thrash-

ing-machines, the combination, with the plat- 35  
form E, of the rotary slotted shaft B, the arms D D, secured to said shaft, cams R R, having the shaft-boxes N N, knife J, arranged in the slot of said shaft, and yielding guides *a*, con-  
40 structed and arranged substantially as and for the purpose set forth.

5. In the band-cutting attachment shown and described, the combination, with the sta-  
tionary eccentric cams R R, of the revolving  
45 slotted shaft B and knife-blade J, arranged in the slot of said shaft and terminating at each end in a forked head, *h*, forked over the peripheral face of said cams, and arranged to  
50 operate said knife in the manner substantially as specified.

6. The combination, with the platform E, side beams, L L, cross-beam *e*, cross-rod O,  
55 slotted apron A, and dividing-boards H H, of the slotted rotating shaft B, knife J, cams R R, carrying-arms D D, guards M M, and yielding guides *a*, constructed and arranged sub-  
stantially as and for the purpose set forth.

7. In the band-cutting attachment described, the combination, with the slotted shaft B, cams  
60 R R, reciprocating double-edged knife J, having the tangs terminating in the forked heads *h* *h*, and carrying-arms D D, of the sleeves *c* *c* on said shaft, substantially as and for the purpose set forth.

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