

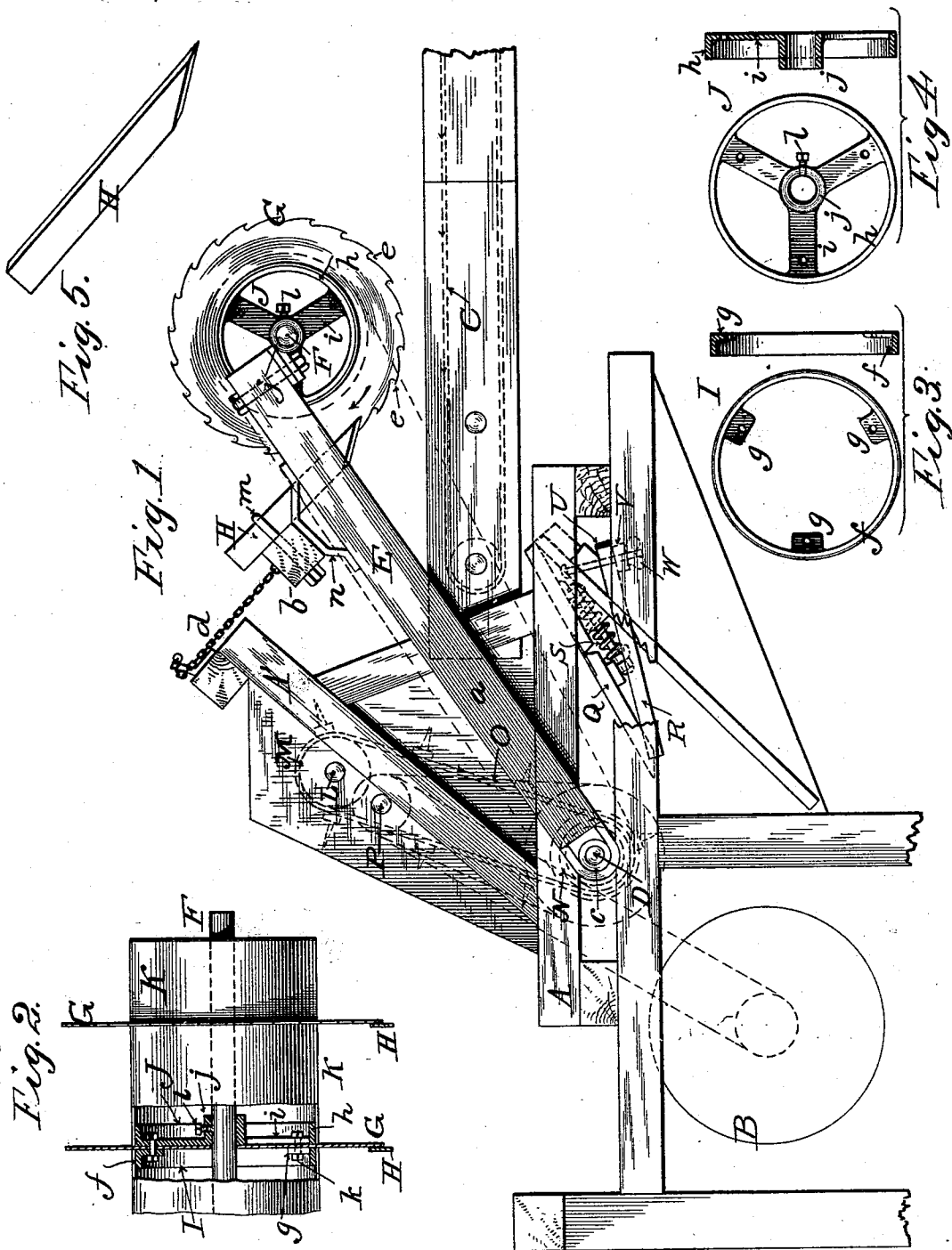
(No Model.)

2 Sheets—Sheet 1.

E. J. VRAALSTAD.
BAND CUTTER AND FEEDER.

No. 521,195.

Patented June 12, 1894.



Witnesses

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C. B. Bull

Inventor.
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(No Model.)

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Fig. 7.

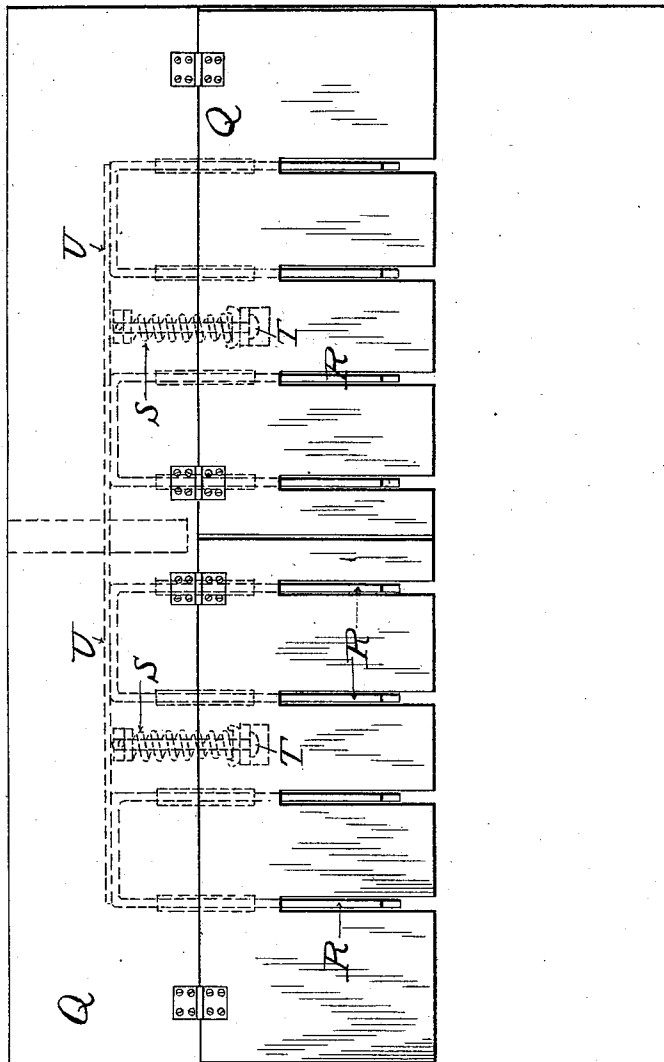
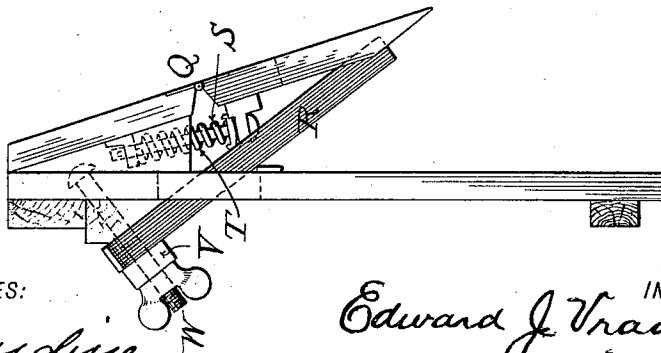


Fig. 6.



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UNITED STATES PATENT OFFICE.

EDWARD J. VRAALSTAD, OF HILLSBOROUGH, NORTH DAKOTA.

BAND-CUTTER AND FEEDER.

SPECIFICATION forming part of Letters Patent No. 521,195, dated June 12, 1894.

Application filed January 16, 1894. Serial No. 497,089. (No model.)

To all whom it may concern:

Be it known that I, EDWARD J. VRAALSTAD, a citizen of the United States, residing at Hillsborough, in the county of Traill and State of North Dakota, have invented certain new and useful Improvements in Band-Cutters and Feeders, of which the following is a specification.

My invention relates to band cutters and feeders for thrashing machines, and has reference more particularly to a novel construction and arrangement of the devices as hereinafter set forth and claimed.

In the accompanying drawings,—Figure 1 is a side elevation of my improved machine; Fig. 2 a face view of the feed-disks (which co-operate with the fixed knives), with their hubs and attaching devices in section; Figs. 3 and 4, views of the disk-attaching and sleeve-supporting devices; Fig. 5, a face view of one of the knives; and Figs. 6 and 7, respectively, end and plan views of the hinged board.

A indicates the main frame, B the thrasher cylinder, and C a horizontal endless apron upon which the bound bundles of grain are placed preparatory to the severing of the band. Pivoted to the main frame, or to a shaft D therein, is a hinged frame E, comprising the inclined side bars *a*, and the connecting cross-bar *b*, the upper end of the said frame E overhanging the delivery end of the belt or apron C, as clearly shown in Fig. 1. The side bars or arms *a* of the frame E are provided at their lower ends with sleeves *c* through which the shaft D passes. The upper end of the frame E is held loosely at any desired distance from the endless carrier C by means of chains or cords *d* which are fastened at one end to said pivoted frame E and at the other end to a bracket or upward extension *A'* of the main frame. While these chains or connections *d* limit the approach of the frame (and the devices carried thereby) toward the carrier C, they leave the frame free to rise in case an undue amount of grain should find its way beneath the frame.

Journalled in suitable boxes or bearings at the upper or outer end of frame E is a shaft F upon which is secured any desired number of disks G shown in Figs. 1 and 2. These

disks are preferably made of steel, and are about sixteen inches in diameter and one-eighth of an inch in thickness. They are provided on the periphery with hooks or teeth *e* arranged about two inches apart, and about five-sixteenths of an inch in depth, the said hooks or teeth being adapted to catch into the band and lift it up into contact with the fixed knives hereinafter referred to.

Disks G are perforated centrally to receive the shaft F, and are provided, on their respective faces, with castings I and J, shown in detail in Figs. 3 and 4. Casting I comprises merely a circular rim or band *f* with short inwardly projecting lugs *g*; while casting J comprises a corresponding circular rim *h*, a central hub *j*, and suitable connecting arms or spokes *i*. These castings are placed upon opposite faces of the disks and are united thereto by bolts or rivets *k*, Fig. 2, passing through the lugs *g*, spokes *j*, and the intervening body of the disk. A set screw *l* passing through the hub *j* of casting J bears upon the shaft F and thus holds the disks in proper position thereon. The disks are separated from each other a distance of from six to eight inches and extending from one to the other are the enlarged sleeves K of the same diameter as the castings I and J, which support the enlarged sleeves in the manner indicated in Fig. 2. The enlarged sleeves K will also extend from the outer face of each end disk.

The knives H to which reference has already been made, and which are shown in Figs. 1 and 5, are carried or supported by the cross bar *b* of the pivoted frame, with their flat faces close to the faces of the disks and with their cutting edges in position to receive the band when the latter is raised thereby by the disks. Knives H are clamped to the cross bar by means of the eye bolts *m* encircling the knives and passing through the cross bar.

In order to raise the cross-bar *b* high enough to allow the grain to pass thereunder without clogging, it will advisably be supported upon brackets *n* secured to the side bars *a*.

Above and slightly in advance of the shaft D is a shaft L carrying a sprocket wheel M, about which wheel and a corresponding wheel

N on shaft D, passes the upright, but slightly inclined, endless toothed belt or rake O. This rake O is set away from the delivery end of the endless carrier C and extends from a point 5 above to a point below said carrier, whereby the grain projecting beyond the end of carrier C is positively tipped by the rake and properly fed to the cylinder.

Motion is transmitted from the thrasher-cylinder-shaft to a countershaft P in the upward extension of the main frame, and from the countershaft to the shaft D. Suitable belts or chains extend from the shaft D to the shaft F carrying the disks, and to one of the 15 shafts of the endless carrier C, but as the belting *per se* forms no part of the present invention, and may obviously be modified almost indefinitely, (besides obscuring other parts of the drawings) I have not illustrated 20 it, believing that the explanation given will enable any one skilled in the art to practically carry out my ideas.

Q indicates an inclined board extending from the delivery end of carrier C toward the 25 lower end of the rake or carrier O. This board, which is made in two parts, has its lower part hinged to the upper fixed part; said hinged part being normally inert; that is to say, it is not actuated by mechanical 30 means, but is free to swing or move away from the lower end of rake or carrier O when an undue amount of grain is fed into the space between the board and the rake. Projecting up through the board Q, at its lower end, is a 35 series of arms or pins R, which, when the board is in its elevated or normal position, do not project materially, if at all, above the face of the board. When, however, the board is depressed, by the pressure of the grain 40 thereon, these arms R intercept the grain and retard the flow thereof.

Springs S are employed to hold the hinged part of the board Q in its proper working position, said spring, which encircles a pin or 45 bolt T, and bearing at one end against a lug on the fixed part of the board, and at the other end against a lug on the hinged section, as shown in Figs. 1, 6 and 7. These arms R are preferably made of strap iron, bent 50 into U-form, united in any suitable manner to a bar or rod U shown in Figs. 6 and 7, said bar U extending lengthwise beneath the board Q. Resting upon the under side of these arms R is a bar V, through which, and 55 the frame, pass the clamping bolts W. By releasing these bolts W, the bar U to which the arms R are secured, may be moved or adjusted bodily with the attached arms, with reference to the hinged section of board Q, to 60 adapt the machine to the particular work in hand. The hinged section of board Q is slotted, as in Fig. 7, to allow the arms R to project upward therethrough; and said board is, furthermore, divided transversely so that 65 when two bundles of grain are fed into the machine, one section may yield independently of the other.

The operation of the machine is as follows: Bound bundles of grain being placed upon the carrier C, are carried along to the disks 70 G whose hooks or teeth *c* catch into the band, draw it taut and raise or carry it up to the lower inclined cutting edge of the knives H. This cutting edge is set at such an angle to the disk as to cause the band to be drawn 75 along the edge of said knife and severed while held by the disks. The enlarged sleeves K travel at about the same surface speed as the carrier C, thus clamping the sheaf between them and preventing the latter from being 80 raised up off the carrier as the disks (whose hooks *c* have a greater peripheral speed than the sleeves K) catch hold of and draw taut the band. Should an unusually large sheaf 85 be placed upon the carrier, the upper or outer end of the frame E, carrying the knives and the disks, will rise slightly, owing to the use of the flexible chains and connections *d*, but will return, immediately the sheaf has passed, to normal working position. This rising and 90 falling of frame E in no way affects the action of the disks and the knives. After the band has been severed, the loose grain is carried forward and is struck on the ends by the slats of the upright rake O, and caused to fall 95 endwise into the contracted throat formed by said endless rake or carrier O and the inclined board Q. The grain passes from the board Q to the thrasher cylinder in an even stream, any undue feeding or crowding of the grain into 100 the cylinder being prevented by the arms R.

It is to be noted that the disks G do not have any cutting edges to cover the band, which act is performed by the fixed knives H, although it will be found advisable to have 105 the hooks or teeth *c* cut square across in order to act in conjunction with the fixed knives and thus effect a clean shear cut.

Having thus described my invention, what I claim is— 110

1. In a band cutter and feeder, the combination of an endless carrier C; means for cutting the bands; a toothed endless carrier or rake O set away from the delivery end of carrier C and extending from a point above 115 to a point below said carrier C; and a normally-inert, inclined, yielding board Q extending from just below the delivery end of carrier C toward the lower end of rake O, to form, in connection with the rake, an inclined 120 throat into which the grain is tipped after the band has been cut, all substantially as shown and described.

2. In a band cutter and feeder, the combination of a carrier C to receive the bound bundles of grain; the toothed disk G adapted to take hold of and elevate the grain band and to present it to the knife; and the fixed knife H arranged above the lower edge of the disk and at the rear side of the latter, all substantially as shown and described. 125 130

3. In combination with the carrier C, the overhanging frame E having the fixed knives H; and the shaft F provided with disks G

having hooks or teeth c, said knives being located close to the side faces of the disks, and in rear of the shaft.

4. In combination with the carrier C; the 5 overhanging frame E having the fixed knives H; and the shaft F located in advance of the knives and provided with toothed disks G and enlarged sleeves K between the disks, whereby the sleeves will hold the grain upon 10 the carrier while the disks are drawing the band taut and raising it to the knives.

5. In a band cutter and feeder, the combination of a carrier C; a shaft F located above 15 the same and provided with enlarged sleeves and with the toothed disks; and a fixed knife arranged in rear of the shaft, with its lower cutting edge substantially in the same horizontal plane with the lower face of the sleeve, whereby the knife is prevented from interfering 20 with the feed of the grain.

6. In combination with the board Q having its upper end rigid and its lower end hinged or pivoted, the spring S to sustain the lower end of said board and extending from the upper end to the lower end thereof; and the 25 stationary arms R adapted to project above or through the board when the latter is depressed.

7. In combination with a hinged board Q slotted as shown; a series of arms R projecting 30 into the slot, and connected to a bar or rod, a support for said bar and arms independent of the board and means for clamping the bar and its arms in different positions.

In witness whereof I hereunto set my hand 35 in the presence of two witnesses.

EDWARD J. VRAALSTAD.

Witnesses:

JOHN B. OLMSTED,
S. G. VAN ARNAM.