(No Model.) 3 Sheets—Sheet 1.

V. E. CALDERWOOD & A. LE SUEUR.

FEEDER AND BAND CUTTER FOR THRASHING MACHINES.

No. 458,334. Patented Aug. 25, 1891.

FIG-6-

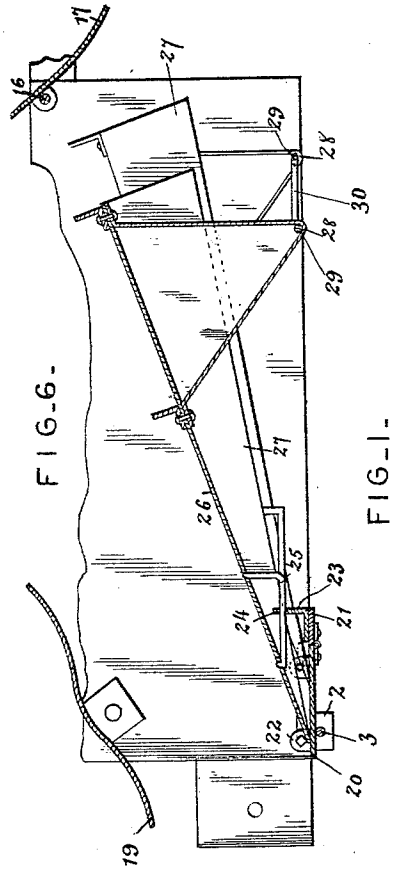


FIG-1-

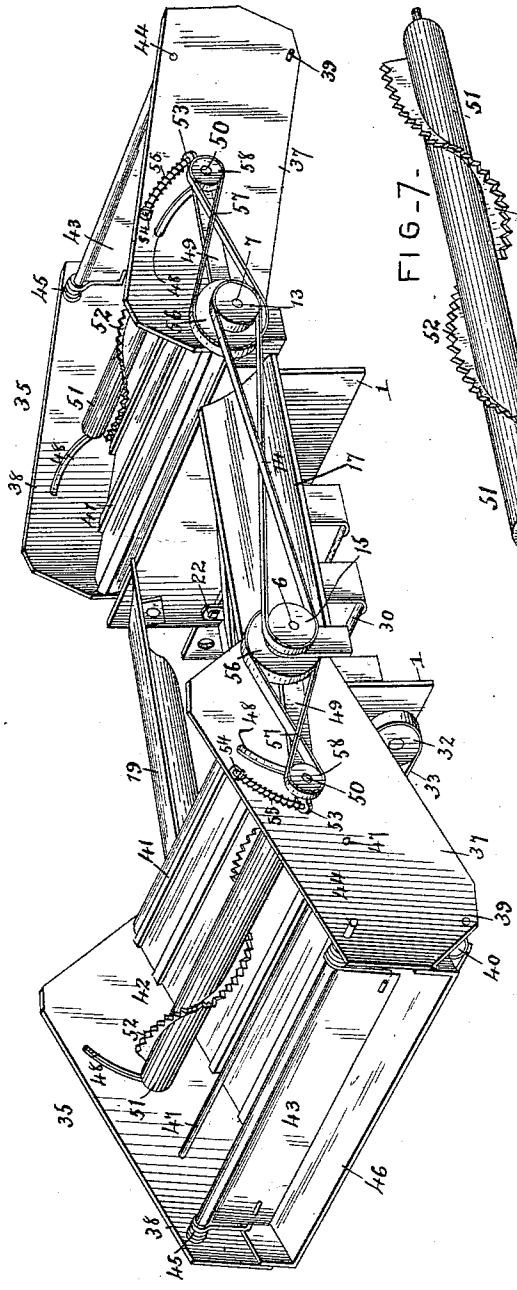


FIG-7-

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FIG. 2.

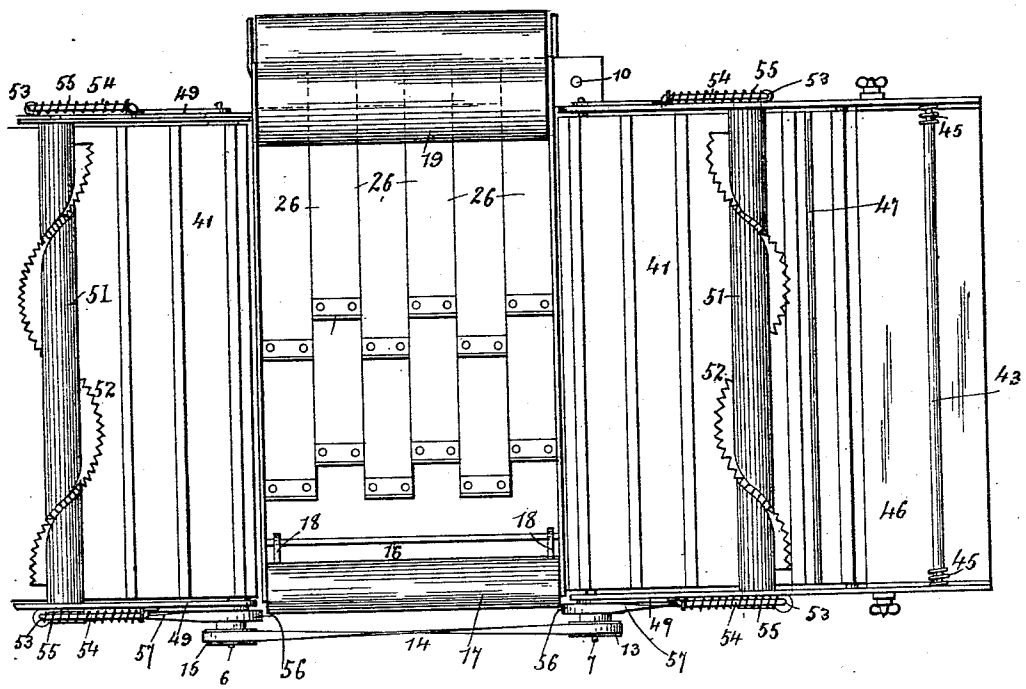
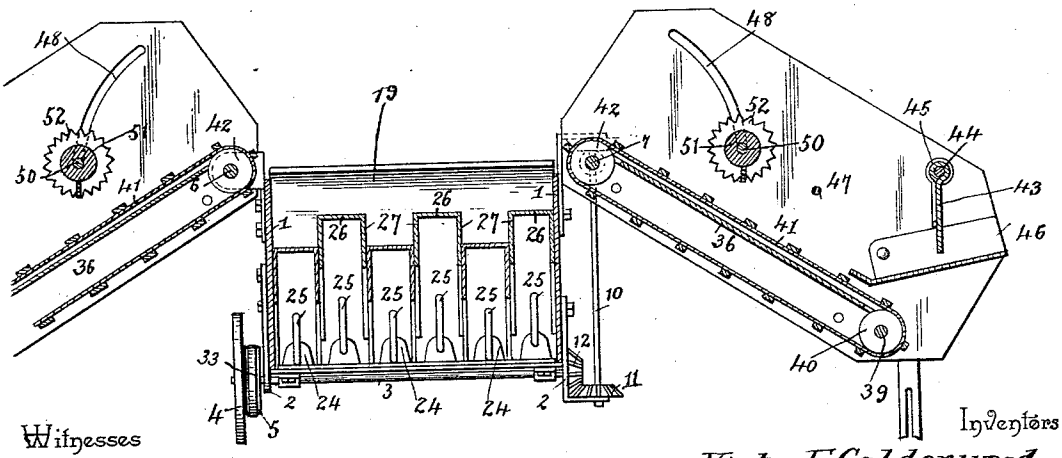


FIG. 3.



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FIG-4-

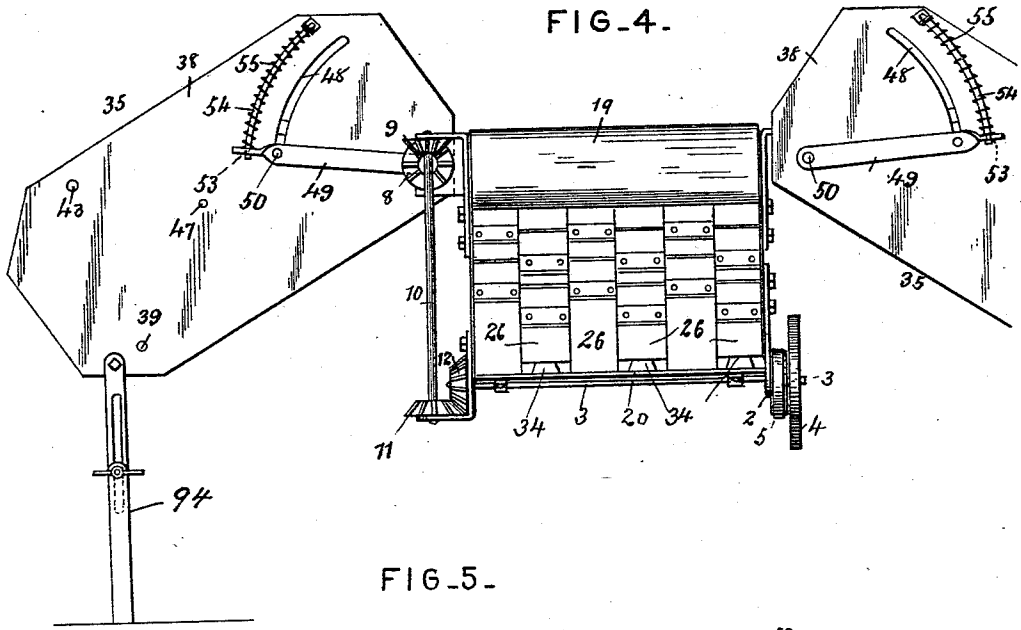
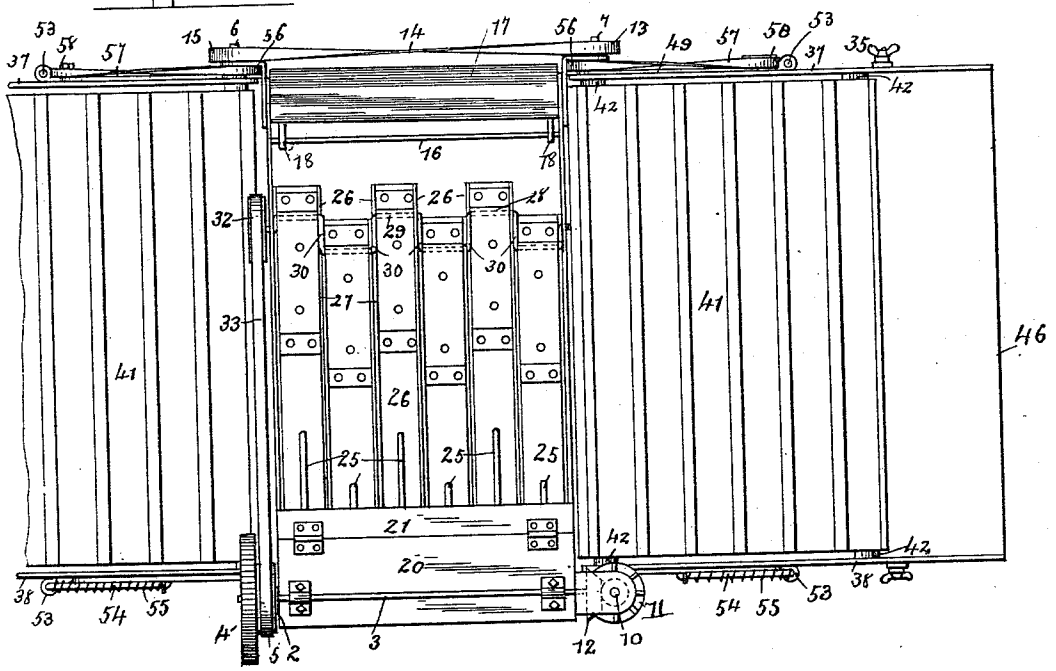


FIG-5-



Witnesses

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UNITED STATES PATENT OFFICE.

VICTOR E. CALDERWOOD AND ARTHUR LE SUEUR, OF ARVILLA, NORTH DAKOTA.

FEEDER AND BAND-CUTTER FOR THRASHING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 458,334, dated August 25, 1891.

Application filed October 30, 1890. Serial No. 369,828. (No model.)

To all whom it may concern:

Be it known that we, VICTOR E. CALDERWOOD and ARTHUR LE SUEUR, citizens of the United States, residing at Arvilla, in the county of Grand Forks and State of North Dakota, have invented a new and useful Feeder and Band-Cutter for Thrashing-Machines, of which the following is a specification.

This invention relates to automatic feeding and band-cutting attachments for thrashing-machines; and it has for its object to construct a device of this class by means of which the sheaves may be fed from both sides of the machine, the bands be severed, and the grain properly supplied to the thrashing mechanism.

The invention consists in the improved construction, arrangement, and combination of parts, which will be hereinafter fully described, and particularly pointed out in the claims.

In the drawings hereto annexed, Figure 1 is a perspective view of a combined feeding and band-cutting apparatus embodying our improvements. Fig. 2 is a top plan view of the same. Fig. 3 is a vertical transverse sectional view of the same. Fig. 4 is a rear elevation. Fig. 5 is a bottom plan view. Fig. 6 is a longitudinal vertical sectional view taken through one of the feeder-bars. Fig. 7 is a perspective detail view of one of the band-cutting knives.

Like numerals of reference indicate like parts in all the figures.

Our improved attachment for thrashing-machines is composed of a feeding device proper and band-cutting and feeding devices, the latter of which are in the nature of attachments to the former. The feeding device comprises a casing, which is composed of side pieces 1 1, which are provided at their lower edges and near their rear ends with boxes or bearings 2 for a transverse shaft 3, which is provided at one end with a band-wheel or pulley 4, adapted to receive motion from the operating mechanism of the thrashing-machine, to which this device is in practice attached for operation. The sides 1 of the casing are provided at their upper edges with boxes or bearings for the longitudinal shafts 6 and 7, the latter of which is provided at its rear end with a bevel-pinion 8, which meshes with a pinion 9 upon the upper end of a shaft 10, which is journaled vertically in suitable bearings at one side of the frame or casing. The lower end of the shaft 10 carries a pinion 11, meshing with a pinion 12 on one end of the shaft 3, from which motion is thus communicated to the horizontal longitudinal shaft 7. The latter is provided at its opposite end with a band-wheel 13, which is connected by a crossed band 14 with a similar drum or pulley 15 at the end of the horizontal longitudinal shaft 6. It will thus be seen that by power received from the thrashing-machine to which the apparatus is applied the shafts 6 and 7 will be rotated simultaneously in opposite directions. The side pieces 1 1 are connected at their upper edges and near their front ends by a transverse rod or shaft 16, upon which is mounted a shield 17, having arms 18 mounted upon the said rod and serving to admit of the adjustment of the said shield to various positions. A shield 19 is similarly mounted at the rear end of the feeder-casing.

To the under side of the feeder-casing, at the rear end of the latter, is attached a longitudinally-adjustable plate 20, having a hinged section 21, and which is mounted to slide upon suitable supporting-flanges 22, enabling the said feed-plate to be adjusted at a greater or less distance from the cylinder of a thrashing-machine, as may be desired. Upon the upper side of the plate 21 is mounted a guide-plate 23, having boxes or bearings 24 for the guide-bars 25 of the longitudinally-reciprocating feeder-bars 26. The latter, which are preferably constructed of sheets of light boiler-iron, are provided with downwardly-extending flanges 27, (see Fig. 3,) between the rear ends of which are mounted the boxes or bearings 28, which are journaled upon a crank-shaft 29, the ends of which have suitable bearings in the side pieces 1 1 of the frame or casing. The crank-shaft 29 is formed with cranks 30, that extend in opposite directions from the axis of the shaft, so that the feeder-bars actuated thereby shall be reciprocated and oscillated in opposite directions. The feeder-bars are provided on their upper sides with transverse ridges or flanges, by means of which

the grain which is operated upon is fed in the direction of the cylinder of the thrashing-machine. The guide-bars 25, upon the under sides of the rear ends of the feeder-bars, have a free movement in the boxes provided for their accommodation upon the guide-plate 23, and the latter will readily accommodate itself to the various positions of the parts of the device, which may thus be operated easily and effectively.

The crank-shaft 29, from which the feeder-bars receive their longitudinal reciprocating motion, is provided at one end with a pulley or band-wheel 32, which is connected by a band 33 with a suitable pulley 5 upon the shaft 3, from which motion is thus communicated to the said crank-shaft and to the reciprocating feeding-bars.

Suitably mounted or hinged upon the shafts 6 and 7, at the sides of the feeder-casing, are the carrier-casings, which are designated by 35, each of said casings being composed of a bottom plate 36 (see Fig. 3) and the sides 37 and 38. The sides of the casing are provided at the outer ends with bearings for the shafts 39, having drums or rollers 40, which are connected by endless carriers 41 with similar drums or pulleys 42 upon the shafts 6 and 7. The said endless carriers are constructed in the usual manner of belts or bands, connected by slats, to carry in an upward direction the sheaves which may be placed upon the said endless carriers.

Between the sides of each of the carrier-frames is arranged a pivoted board or deflector 43, mounted upon a rock-shaft 44 and actuated by springs 45 to force its lower edge in a downward direction. Shields or end boards 46 are also pivoted adjustably at the outer ends of the carrier-frames under the pivoted boards or deflectors 43.

In feeding the sheaves of grain to the device they are placed between the shields 46 and the boards or deflectors 43, and they are thus, when seized by the endless carriers, compressed and flattened to such a shape as to be readily acted upon by the band-cutting knives, which will be presently described. The pivoted boards or deflectors 43 and 46 have the additional function of protecting the operator from the bolt while feeding to the machine. The front and rear ends of the carrier-casings are connected by means of stay rods or braces 47.

The sides of the feeder-casings are provided with curved slots 48, which are concentric with the shafts 6 and 7, respectively, upon which the said feeder-casings are mounted. Arms 49, that are mounted upon the said shafts 6 and 7, are provided at their free ends with bearings for the shafts 50, carrying drums or rollers 51, which are provided with the spirally-arranged band-cutting knives 52. The outer ends of the arms 49 are provided with eyes or openings 53, mounted upon curved rods 54, that are concentric with the shafts 6 and 7 and with the slots 48. Springs 55 are coiled upon the curved arms 54 and press in a downward direction against the outer or free ends of the arms 49, carrying the shafts having the spiral cutters, which latter are thus forced in a downward direction against the sheaves which are being conveyed by the endless carriers to the feeding mechanism of the apparatus. The shafts 6 and 7 are provided with band-wheels or pulleys 56, connected by crossed bands 57 with corresponding pulleys 58 upon the ends of the shafts carrying the spiral cutters, to which motion is in this manner communicated.

The operation is as follows: The sheaves, which are deposited under the pivoted boards or deflectors at the outer ends of the frames having the endless carriers, are immediately seized and carried in an upward direction under the said pivoted boards and under the revolving shafts having the spiral cutters, by means of which the bands of the sheaves are severed. The band-cutting shafts are intended to be geared to revolve at a considerable rate of speed, so that the bands of the sheaves shall be sure to be acted upon by the spiral cutters. The cutter-shafts, it will be observed, are capable of adjusting themselves vertically to sheaves of different dimensions, and the springs 55 serve to hold them in contact with the said sheaves, so as to cause the bands of the latter to be acted upon with certainty. The loose grain which passes from the carriers to the feeding device is immediately taken up by the longitudinally reciprocating and oscillating feeder-bars and is fed under the shield 19 into the thrashing-machine. The shield 17 at the front end of the feeder-casing engages the butt-ends of the stalks of grain, the bundles being fed sidewise to the main feeder, and it will be observed that the said butt-ends are elevated by the oscillatory movement of the front ends of the feeder-bars, so as to pass the heads of the grain downwardly and under the shield 19 at the rear end of the feeder-casing in exact imitation of the movement which is always resorted to when grain is fed by hand into a thrashing-machine.

In the general construction of our invention we may at times find it desirable to make various changes and modifications, and we reserve the right to any such changes as may be resorted to without departing from the spirit of our invention. Thus, for instance, the means for transmitting motion to the feeding and band-cutting mechanisms may be altered and a carrier may be arranged on each or on both sides of the feeder-casing, as may be found desirable and expedient. We also prefer to provide the wings of the feeding device with adjustable legs, such as shown at 94 in Fig. 4, in order that the said wings may be adjusted to and supported at any desired inclination. We also desire to state that it may be found preferable to construct the flanges 27 of the feeder-bars 26 of separate pieces instead of integrally, as shown in

the drawings, in order to make tight joints between the said feeder-bars.

Having thus described our invention, we claim and desire to secure by Letters Patent of the United States—

1. The combination of the feeder-casing, the longitudinally-reciprocating feeder-bars having downwardly-extending flanges and provided with longitudinal guide-bars upon their under sides near their front ends, the crank-shaft having arms or cranks journaled in boxes or bearings upon the under sides of said feeder-bars, and a hinged plate having suitably-arranged boxes or bearings for the guide-bars at the rear ends of said feeder-bars, substantially as and for the purpose set forth.

2. The combination of the feeder-casing, the longitudinally-reciprocating feeder-bars having downwardly-extending flanges, a shaft having arms or cranks journaled in boxes arranged between the flanges upon the under sides of said feeder-bars, the longitudinal guide-bars at the front ends of said feeder-bars, and a feed-board arranged adjustably at the rear end of the feeder-casing and having boxes or bearings for the said guide-bars, substantially as set forth.

3. The combination of the feeder-casing, the longitudinally-reciprocating feeder-bars having guide-bars, a feed-board at the rear end of the casing, a plate hinged to said feed-board and having boxes or bearings in which the guide-bars of the feeder-bars are slidingly mounted, and the shields mounted at the front and rear ends of the casing, substantially as set forth.

4. The combination of the feeder-casing, the feed-board at the rear end of the same, the supplemental board hinged to the said feed-board, the longitudinally-reciprocating feeder-bars having their front ends connected with cranks upon a revolving shaft, and the guide-bars upon the under sides of the rear ends of said feeder-bars, mounted slidingly in boxes upon the hinged supplemental feed-board, substantially as and for the purpose set forth.

5. In a feeding device for thrashing-machines, the combination, with a suitable casing, of the longitudinally-reciprocating feeder-bars having their rear ends mounted slidingly in a feed-board which is adjustable in said casing, substantially as herein set forth.

6. In a feeding device for thrashing-machines, the combination of a suitable casing, the longitudinally-reciprocating feeder-bars provided at their front ends with boxes journaled upon the cranks of a shaft mounted transversely in said casing, and a longitudinally-adjustable board having a hinged supplemental board with which the rear ends of said feeder-bars are slidingly connected, substantially as set forth.

7. The combination, with the main feeder-casing provided at the upper edges of its side pieces with longitudinal shafts, of the carrier-frames hinged upon said shafts and having curved slots, the arms pivoted upon the ends of said shafts, the knife-carrying shafts journaled at the outer ends of said arms, and means for transmitting motion to the said knife-carrying shafts, substantially as and for the purpose set forth.

8. The combination of the main feeder-casing having the longitudinal shafts at the upper edges of its side pieces, the carrier-frames hinged upon said shafts and provided at their outer ends with longitudinal shafts, the endless carriers mounted upon the shafts at the inner and outer ends of the carrier-frames, and the pivoted arms having the revoluble shafts provided with spirally-arranged serrated knives or cutters, substantially as and for the purpose set forth.

9. In a band-cutting attachment for thrashing-machine feeders, the herein-described knife-carrying shafts mounted in pivoted arms and having spirally-arranged serrated knives or cutters, in combination with suitably-arranged springs to force the said knife-carrying shafts into engagement with the sheaves, substantially as set forth.

10. The carrier-frames having the endless carriers, the pivoted end boards, and the pivoted spring-actuated boards or deflectors, substantially as and for the purpose herein set forth.

11. The combination, with the carrier-frames having the vertically-movable spring-actuated shafts provided with spirally-arranged knives or cutters, of the pivoted end boards and the spring-actuated deflectors arranged below and in front of the said cutter-shafts, substantially as and for the purpose set forth.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in presence of two witnesses.

VICTOR E. CALDERWOOD.
ARTHUR LE SUEUR.

Witnesses:
L. K. HASSELL,
M. A. SHIREY.