

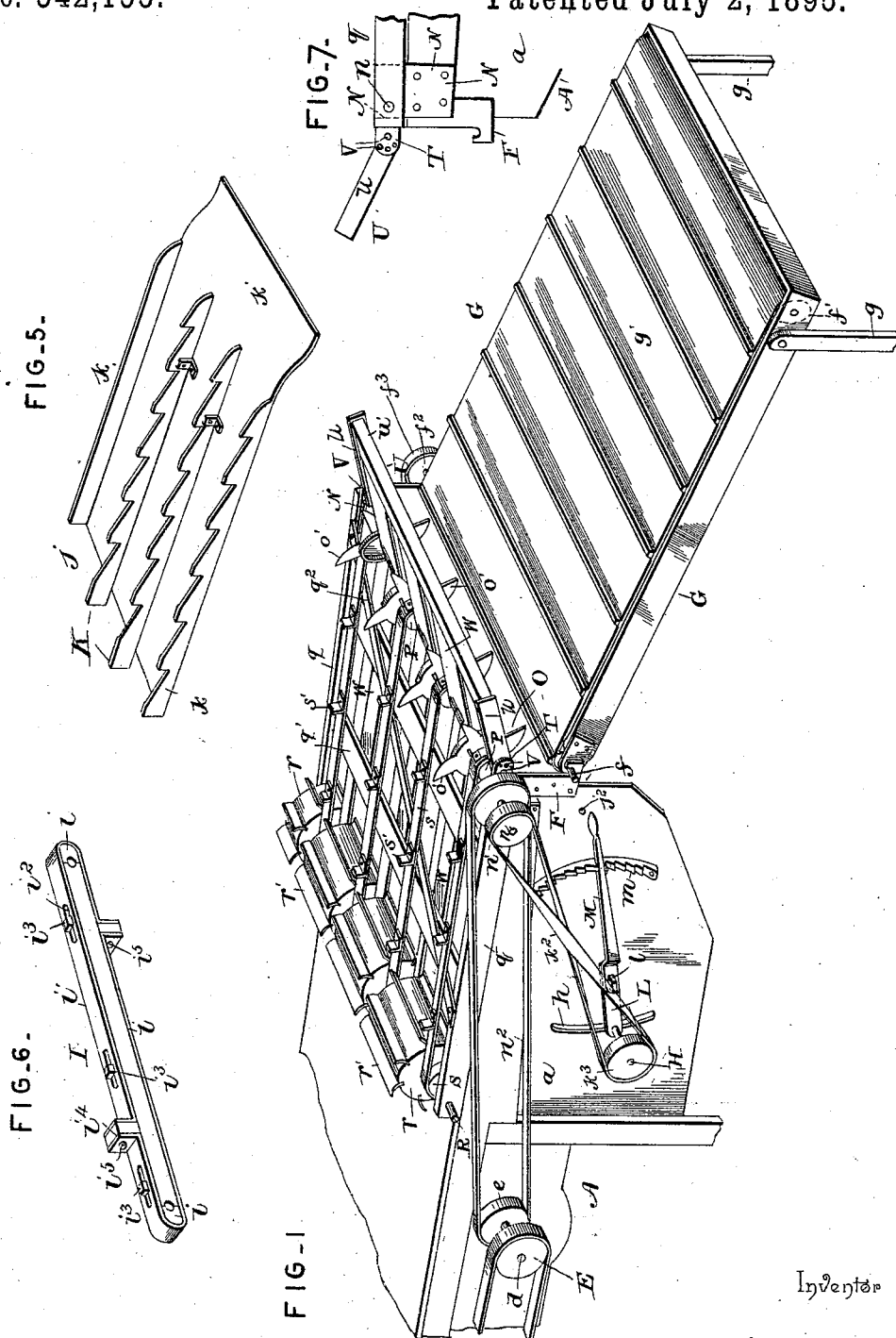
(No Model.)

2 Sheets—Sheet 1.

W. T. FLICKINGER.
BAND CUTTER AND FEEDER.

No. 542,155.

Patented July 2, 1895.



Inventor

William T. Flickinger

By His Attorneys,

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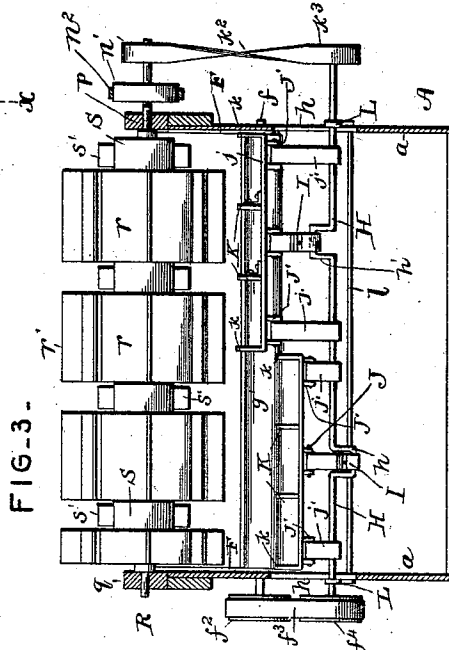
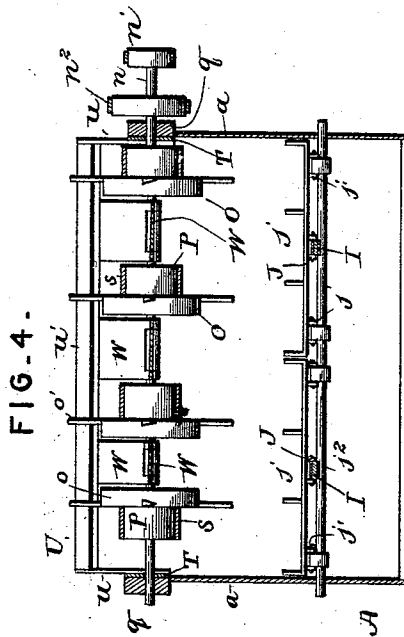
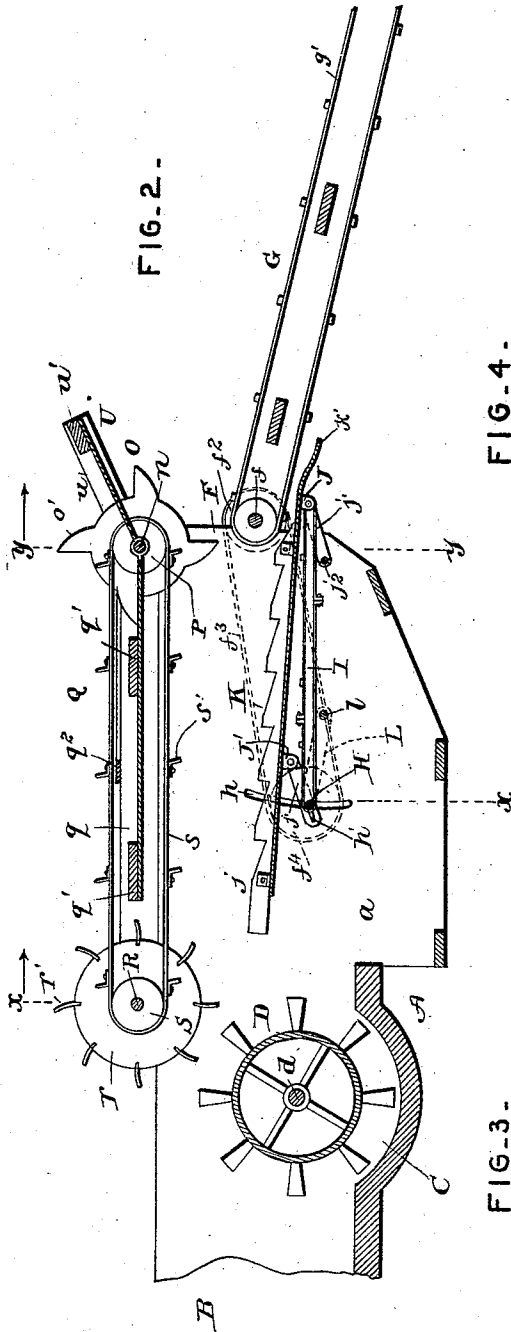
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UNITED STATES PATENT OFFICE.

WILLIAM THOMSON FLICKINGER, OF McPHERSON, KANSAS.

BAND-CUTTER AND FEEDER.

SPECIFICATION forming part of Letters Patent No. 542,155, dated July 2, 1895.

Application filed November 9, 1893. Renewed May 25, 1895. Serial No. 550,720. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM THOMSON FLICKINGER, a citizen of the United States, residing at McPherson, in the county of McPherson and State of Kansas, have invented a new and useful Band-Cutter and Feeder, of which the following is a specification.

This invention relates to band-cutters and feeders; and it has for its object to provide certain improvements in machines of this character, whereby headed and bundled grain may be automatically fed into the cylinder of a thrashing-machine.

To this end the main and primary object of this invention is to provide certain improvements in band-cutters and feeders to render the same more effective in the work required of them, while at the same time simplifying and improving upon the working parts which make up the machine.

With these and other objects in view, which will readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination, and arrangement of parts hereinafter more fully described, illustrated, and claimed.

In the accompanying drawings, Figure 1 is a perspective view of a band-cutter and feeder constructed in accordance with this invention, being located at one end of an ordinary thrashing-machine. Fig. 2 is a central vertical longitudinal sectional view of the same. Fig. 3 is a vertical sectional view on the line *xx* of Fig. 2. Fig. 4 is a similar view on the line *yy* of Fig. 2. Fig. 5 is a detail in perspective of one of the vibrating feed-boards. Fig. 6 is a detail in perspective of one of the pitmen. Fig. 7 is a detail elevation of one extremity of one of the main feeder-frame sides.

Referring to the accompanying drawings, A represents the main feeder-frame comprising the opposite sides *a*, which form extensions from one end of an ordinary thrashing-machine B. At the inner end of the main feeder-frame A is arranged the usual cylinder-concave C, above which is mounted the thrashing-cylinder D, carried on the cylinder-shaft *d*, which carries at one end the main drive-pulley E, which receives motion from the power-engine, while on the same or other end of the cylinder-shaft *d*, at the opposite

side of the main feeder-frame, are arranged suitable pulleys *e*, from which motion can be communicated to the parts of the feeding and cutting devices comprising the band-cutter and feeder.

The main feeder-frame A is provided at the front extremities of its opposite sides with the notched supporting-plates F, which removably receive and form supports and bearings for the apron-shaft *f* journaled in one end of the bundle-carrier frame G. The bundle-carrier frame G is suitably supported in an approximately-horizontal position beyond one end of the main feeder-frame, with which it is connected, by the suitable supporting-legs *g*, and said frame accommodates therein the bundle apron or carrier *g'*, passing over the apron-shaft *f* at one end thereof and the apron roller *f'* in the opposite outer end of the frame, and said apron-shaft *f* carries at one end a pulley *f*², over which passes a drive-belt *f*³, communicating motion to the bundle-carrier and driven by the pulley *f*⁴, secured on one end of the double crank-shaft H.

The double crank-shaft H has the opposite extremity thereof work in and project through the vertical slots *h*, formed in the opposite frame-sides *a* intermediate of their ends, and said double crank-shaft is provided intermediate of its ends with separated cranks *h'*, arranged so as to be alternately disposed and adapted to loosely receive one end of the pitmen I. The pitmen I are provided at opposite ends thereof with the movable half-boxes *i*, which are embraced and held properly in position on the parts with which they are connected by means of the adjusting-strips *i'*. The adjusting-strips *i'* encircle opposite sides of the pitmen from end to end and are provided with slots *i*² working over retaining-pins *i*³, and at their extremities are flanged, as at *i*⁴, to receive the adjusting-bolts *i*⁵, which, when tightened, necessarily tighten up the boxes at the ends of the pitmen so as to take up any wear on the parts with which such pitmen are connected, the space between the flanges *i*⁴ being adapted to receive a flexible washer or spacer, as shown. The other ends of the pitmen I, not connected with the double crank-shaft H, are connected to the brackets J, secured to the bottom of the vibrating feed-boards *j* near the outer ends thereof, and

near to both ends of said feed-boards are attached similar brackets J' , which have connected thereto one end of the hanger-links j' , the other ends of which are loosely connected, respectively, to the straight portions of the crank-shaft and to the stationary supporting-rod j^2 , mounted in the opposite frame-sides a near their outer extremities. The vibrating feed-boards j are provided with a series of longitudinal notched feed-strips K , which, when the boards are in vibration, serve to force the grain into the machine-cylinder D , located just beyond the inner ends of the feed-boards, and the latter are further provided at their outer edges with the plain upwardly-disposed retaining-flanges k , which serve to hold short or headed grain onto the boards, while such grain is being worked into the thrashing-machine cylinder. The vibrating-boards j are provided with outer curved feed-lips k' , which work under the inner end of the bundle-carrier g' , and thereby assist to receive and catch all the grain which is fed from the bundle-carrier frame into the main feeder-frame located just beyond the thrashing-machine cylinder. Motion is communicated to the double crank-shaft H , and therefore to the vibrating feed-boards, by means of the belt k^2 , having one end thereof passing over the pulley k^3 , secured to one end of the shaft H .

The extremities of the double crank-shaft H , which work in the vertical slots h in the opposite frame-sides a , are journaled in one end of the short adjusting-arms L , located outside of the opposite sides of the main feeder-frame, and squared at one end to fit over the opposite squared extremities of the adjusting rock-shaft l . The adjusting rock-shaft l is journaled in the opposite frame-sides a adjacent to the slots h , and has attached to one extremity thereof the adjusting-lever M , which works at one side of and engages the notched segment m , secured to one side of the main feeder-frame, and providing means for holding the multiple crank-shaft in any adjusted position. By reason of this adjustment of the inner ends of the feed-boards, supported on and vibrated by the double crank-shaft, means are provided for properly feeding both headed grain and bundle-grain into the thrashing-machine cylinder. In feeding headed grain into the cylinder the feeding-boards should be lowered to their lowest limit by means of the lever M , so that the headed grain will be forced directly onto the cylinder, and in feeding bundle-grain the feeding-boards are elevated or raised in order to put the grain on end as it is forced into the cylinder, which is the natural way a person feeds bundle-grain by hand.

Short bearing-brackets N are secured to the main feeder-frame A at the front upper corners thereof and form bearings and supports for the transverse knife-shaft n . The transverse knife-shaft n is provided at one end with adjacent pulleys n' , one of which

receives one end of the belt k^2 , which drives the multiple crank-shaft, and the other of which receives one end of the drive-belt n^2 , which is driven by one of the pulleys e at one end of the cylinder-shaft d . The transverse knife-shaft n carries a series of parallel knife-disks O , which knife-disks are provided at their edges with the press-flanges o , which not only serve to stiffen the disks but also press the grain down onto the feed-boards, and said knife-disks have attached thereto a radial series of band-cutting knife-blades o' , which travel in a direction to cut the bands from the bundles of grain just as they are delivered onto the feeding-boards from the bundle-carrier. The knife-disks O are further provided at one side thereof with the integral circular pulley-hubs P , which have an important function in connection with the auxiliary feeding devices, which I shall now proceed to describe.

Arranged over the main feeder-frame A is the self-adjusting auxiliary feed-frame Q . The self-adjusting frame Q comprises the opposite side pieces q , connected by the transverse strips q' , and diagonal braces q^2 , and the opposite side strips q of said self-adjusting frame are pivotally mounted at one end on the transverse knife-shaft n , whereby the said feed-frame is free to adjust itself to the quantity of grain being fed into the cylinder by the vibrating feed-boards. The frame Q carries in the free end thereof the roller-shaft R , on which is mounted the force-feed roller r , which roller is provided with a series of curved force-feed teeth r' , which are disposed or curved in a direction away from the direction of rotation of the roller, so as to not only force the grain to the cylinder but also to check the grain from clogging up the machine when damp, inasmuch as said teeth hold onto the grain until the cylinder strips the same off of them. The toothed force-feed roller R is provided at regularly-spaced points thereon with reduced pulley portions S , which receive one end of the auxiliary feed-belts s , the other ends of which pass over the pulley-hubs P of the knife-disks and are driven thereby, so as to communicate motion to the force-feed roller. The said feed-belts s are also provided throughout their entire length with flanged feed-fingers s' , which work in conjunction with the feed-boards directly thereunder to force the grain to the cylinder.

The inner pivoted ends of the feed-frame Q carry the offstanding arms T , to which are adjustably connected the inner ends of the adjustable automatic regulator-frame U . The automatic regulator-frame U , which is carried on the pivoted end of the feed-frame Q , comprises the opposite frame arms u , connected at their outer ends by the transverse frame-bars u' , and the frame-arms u are connected to the offstanding arms T by the adjustment bolts V , which provide means for adjusting the regulator-frame at any set angle with respect to the self-adjusting feed-frame

Q. Parallelfender-strips W are secured to the feed-frame Q intermediate of the knives at one end thereof and are connected at their outer ends to the frame-bar u' of the regulator-frame U, so as to be adjusted therewith, and such fender-bars serve to prevent the grain from being carried around by the band-cutting knives and also serve to direct the grain under the knives by being connected to the regulator-frame.

Now, it will be apparent that when the cutter and feeder is feeding ordinary quantities of grain to the thrashing-cylinder, the self-adjusting feed-frame works sufficiently inside of the main feeder-frame, so that the feed-belts and force feed-roller will work directly on top of the grain on the feeding-boards; but said self-adjusting feed-frame is limited to a movement by the side frame-pieces thereof, so that it will not interfere with the movement of the feed-boards. As any extra quantity of grain accumulates between the feeding-boards and the self-adjusting frame, the latter automatically raises and therefore lowers the regulator-frame U down in front of the band-cutting knives, so as to reduce or cut off the feed from the bundle-carriers to the band-cutting knives until the feed-boards and belts have worked the grain beyond the band-cutting knives into the thrashing-machine cylinder. The angle of set of said automatic regulator-frame U depends on the size of bundles or character of grain being fed into the thrasher.

Changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

Having thus described the invention, what is claimed, and desired to be secured by Letters Patent, is—

1. In a feeder for thrashing machines, the main feeder frame, the bundle carrier connected to one end of said main feeder frame, vibrating feed boards working inside of the main feeder frame, and an auxiliary self-adjusting feed device pivotally mounted on the main feeder frame at one end over the feed boards and carrying at its pivoted end an off-standing regulator frame working beyond the outer ends of the feed boards and disposed upwardly and outwardly at an angle, substantially as set forth.

2. In a band cutter and feeder for thrashing machines, the main feeder frame having feeders therein, an auxiliary self-adjusting feed device pivotally mounted at one end on the main feeder frame over the feeders therein, and carrying a series of parallel toothed auxiliary feed belts an automatic regulator frame adjustably connected to the pivoted end of the self-adjusting feed device and projected outwardly and upwardly therefrom, and the rotating band cutters arranged over the outer ends of the feeders in the main frame, at the point of connection between the

regulator frame and said feed device substantially as set forth.

3. In a feeder for thrashing machines, the main feeder frame extended beyond the thrashing machine cylinder, vibrating feed boards loosely connected to a fixed support at one end and provided with a series of longitudinal notched feed strips and plain upwardly disposed retaining flanges at their edges, a vertically adjustable double crank shaft journaled in the main feeder frame under the inner ends of said feed boards, adjustable pitmen connected to the cranks of said shaft and to the bottom of the feed boards near their outer ends, link supports for the feed boards, and means for adjusting the double crank shaft, substantially as set forth.

4. In a feeder for thrashing machines, the frame having vertical slots in its opposite sides, a stationary supporting rod mounted in the frame near its outer end, separate vibrating feed boards arranged to work inside of the frame, links loosely connected to the feed boards near each end and to said stationary rod and an opposite shaft, a double crank shaft having its extremities working in the vertical slots of the frame, adjustable pitmen connected to the crank shaft and to the feed board, an adjusting rock shaft journaled in the frame, short adjusting arms connected at one end to the opposite ends of the rock shaft and at their other ends loosely receiving the double crank shaft, and an adjusting lever connected to one end of said rock shaft, substantially as set forth.

5. In a band cutter and feeder, the main feeder frame having the feeders therein, the bundle carrier connected to one end of the main feeder frame, a transverse knife shaft journaled at one end and on the top of the main feeder frame, a series of band cutting knives mounted on said knife shaft, a self-adjusting feed device pivotally mounted at one end on the knife shaft leaving the other end free to work inside of the main feeder frame, and an automatic regulator frame adjustably connected to the pivoted end of the self-adjusting feeding device, substantially as set forth.

6. In a band cutter and feeder, the main frame having feeders therein, the bundle carrier, a transverse knife shaft journaled on top of the main feeder frame, a series of knife disks mounted on the knife shaft and having knife blades and pulley hubs at one side, a feed frame pivoted at one end to the extremities of the knife shaft, a toothed force feed roller journaled at the free end of the feed frame and having pulley portions, and auxiliary feed belts passing over the pulley portions of the roller and the pulley hubs of the knife disks, substantially as set forth.

7. In a band cutter and feeder, the main frame having feeders therein, the bundle carrier, a transverse knife shaft journaled on top of the main feeder frame, a series of flanged knife disks mounted on the knife shaft and