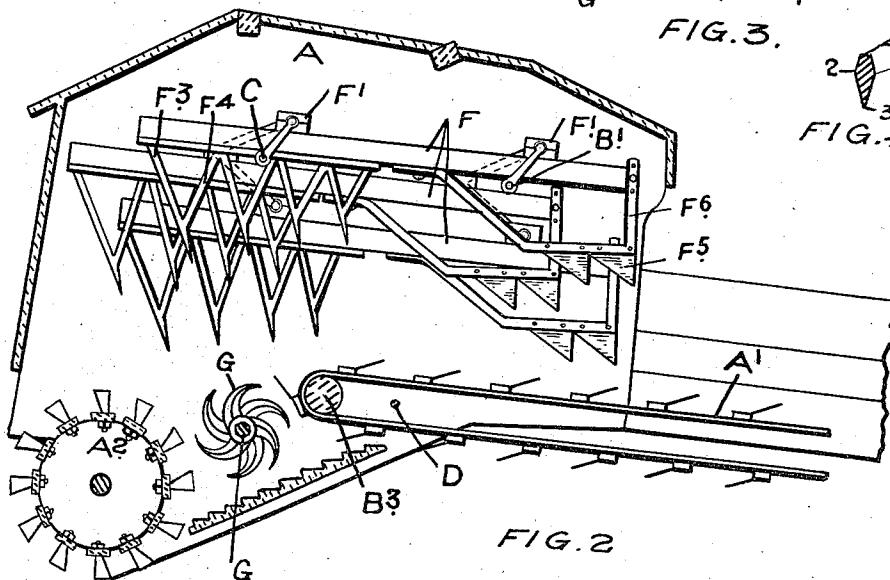
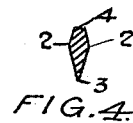
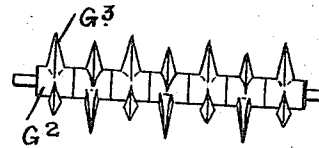
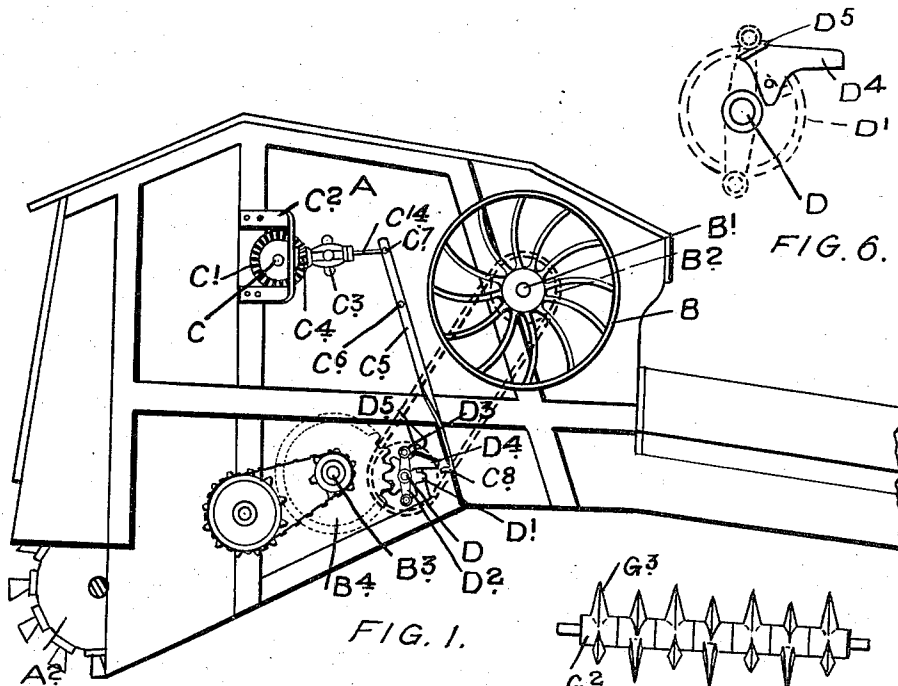


J. R. EBERSOL.
FEEDING MECHANISM FOR THRESHING MACHINES.
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WITNESSES.

H. Young
W. Hurd

INVENTOR.
J. R. EBERSOL.

by J. B. Hetherington
ATTY.

UNITED STATES PATENT OFFICE.

JOHN RIEHL EBERSOL, OF MILVERTON, ONTARIO, CANADA.

FEEDING MECHANISM FOR THRESHING-MACHINES.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOHN RIEHL EBERSOL, of the town of Milverton, in the county of Perth, in the Province of Ontario, Canada, have invented certain new and useful Improvements in Feeding Mechanism for Threshing-Machines, of which the following is a specification.

My invention relates to improvements in feeding mechanism for threshing machines, and the object of the invention is firstly to provide a simple means of starting and stopping the feeding mechanism in a minimum period of time, secondly to improve the construction of the feeding fingers, and at the same time give them such a motion as will more effectually feed the straw more loosely and evenly than heretofore, and thirdly to so improve the construction of the retarder that it will retard the straw more effectually until the discharge point is reached when the straw will be rapidly freed and discharged, and it consists essentially—firstly—of a pinion mounted loosely on a supplemental shaft and meshing with the ordinary driving gear of the elevator carrier, such pinion being connected to the ordinary governing mechanism whereby the elevator is started or stopped to equalize the feed of the straw passing thereover, secondly of a front and rear three-way crank journaled in the casing of the machine, bars connecting such front and rear cranks together, picking fingers secured in proximity to the rear ends of such bars and band cutters secured to the front end of such bars,—thirdly—of retarders, the sections of which are formed with blades the sides of the blades being inclined from the center of the blade toward the front and rear of such blades as hereinafter more particularly described by the following specification.

Figure 1, represents a side elevation of my machine with the front portion of the elevator broken away. Fig. 2, is a longitudinal section through Fig. 1. Fig. 3, is a detail view of the retarders shown in elevation. Fig. 4, is an enlarged sectional plan view through one of the retarder blades. Fig. 5, is a detail of the three-way crank. Fig. 6, is a detail of the connecting clutch and pinion.

In the drawings like letters of reference indicate corresponding parts in each figure.

A is the casing of the machine.

A' the endless band elevator by which the straw is fed into the machine.

A² is the threshing cylinder mounted in the front of the threshing machine and located to the rear of the feed and to which the straw is fed from the elevator A'.

B is the main driving pulley mounted on the front three-way crank shaft B'. The opposite end of the shaft B' is provided with a pulley B² shown by dotted lines in Fig. 1.

B³ is a driving shaft of the endless elevator A'. Upon the driving shaft B³ is mounted the gear wheel B⁴.

C is a rear three-way crank shaft at one end of which is secured the beveled gear wheel C'.

C² is a supporting bracket in which is supported the governing mechanism C³, such mechanism being rotated by the beveled gear pinion C⁴ driven by the bevel gear C'. By the expansion and contraction of the governing mechanism the spindle C⁴ is given longitudinal movement.

C⁵ is a trip lever pivoted intermediately of its length at C⁶. The upper end of the trip lever C⁵ is pivotally connected at C⁷ to the longitudinal movable spindle C⁴. The lower end of the trip arm C⁵ is provided with a hooked end C⁸.

D is a supplemental cross shaft and D' is a pinion loosely mounted thereon and meshing with the gear wheel B⁴. The shaft C is driven from the shaft of the cylinder A² through the wheel B, crank shaft B', bars F, and cranks mounted on the shafts B' and C.

D² is a cross arm secured centrally of its length to the supplemental shaft D. The ends of the cross shaft are provided with suitable rollers D³.

D⁴ is a trip arm pivotally connected at one end to the pinion D'. The trip arm D⁴ is provided with a laterally extending projection D⁵ which is designed to be normally held in engagement with one of the rollers D³ of the arm D². Such governing mechanism as I have described together with the trip lever C⁵ and trip arm D⁴ and the co-acting arm D² is not new in itself, I have only described the same to show how it co-acts with the pinion D' to control the feed elevator A', such mechanism being heretofore applied directly to the shaft B³ of the elevator.

So that the operation of my device may be more clearly understood I will now describe how the governing mechanism operates. Should the threshing cylinder A² slacken in speed due to irregularity of the feed, or clogging of the cylinder, lack of power to drive the cylinder, or from overfeeding of the cylinder, or from any other cause, the governor C³ will thereby be retarded. The governor being retarded contracts so as to carry the spindle C¹⁴ longitudinally and also carry the lower hooked end of the trip lever C⁵ into the path of the trip arm C⁴ connected to the revolving pinion D'. The pinion D' continues to revolve until the trip arm engages with the hooked end C⁵ and is tilted upwardly on its pivot carrying the lateral projection D⁵ of such arm out of engagement with the contact rollers D³ of the arm D². By this means the driving connection between the arm D² and the pinion D' is broken and the elevator A' thereby stopped. Upon the machine being freed of the clogging straw the speed of the crank shaft C is increased as hereinafter shown, the governor C³ is expanded thereby carrying the spindle C¹⁴ in the opposite direction to that which has already been described and thereby carries the lower hooked end of the trip lever C⁵ out of engagement with the trip arm. This operation allows of the lateral projection D⁵ engaging with the rollers D³ thereby again forming a driving connection between the shaft D and the pinion D' so as to drive the elevator. By connecting the above described mechanism to the supplemental shaft D instead of directly to the shaft B³ I am enabled to start and stop my elevator much more quickly. It will be seen that by the above arrangement the travel of the trip arm D⁴ is greatly increased in speed and therefore such arm when freed completes a revolution in much less time and is therefore ready to be brought more immediately into engagement with the trip lever C⁵. It will be readily understood that if the trip mechanism D⁴ was mounted on the shaft B³ it would rotate at the same rate of speed as the gear wheel B⁴. It will also be readily understood that by driving the gear wheel B⁴ through an intermediate pinion D' such pinion must travel at a greatly increased speed to maintain the normal speed at which the gear wheel B⁴ rotates. By mounting the trip mechanism upon a supplemental shaft D, such trip mechanism is rotated much more quickly than if mounted upon the shaft B³ and therefore provides for a much quicker starting and stop action for the feed conveyer.

I will now describe the construction of my feeding fingers and how the same are operated. F are a series of bars which connect together the front and rear three-way

cranks B' and C. Such bars are suitably mounted upon the cranks by suitable bearings F'. F³ are the picking fingers which are secured in proximity to the rear end of the bars F and are arranged in a longitudinal zig-zag row each finger reducing in length from front finger to rear finger. The fingers F³ are arranged in an inclined direction and are provided with suitable bracing portions F⁴. F⁵ are band cutters mounted on suitable bars F⁶ secured to the main bars F. The pickers F³ and the band cutters F⁵ being mounted on the bars F which are carried by the revolving three-way cranks B' and C are given circular movement in a vertical plane so that the pickers F³ engage the straw as it passes over the end of the feeding carrier A' so as to keep such straw well stirred up to pass freely to the threshing wheel A² without any danger of clogging thereby insuring of loose free and regular feed. Should the straw through dampness or any other cause become clogged when passing to the threshing cylinders the pickers will of course naturally become retarded to some extent in their motion in consequence of the retarded motion of the threshing machine cylinder necessitating the decrease of speed at which the crank shaft C rotates and the bevel gear C' mounted at the end thereof and which drives the governing mechanism C³ as before described. By means of the reduction of the speed of the crank shaft as we have already described the governor is contracted and thereby the mechanism connecting the same to the pinion D tripped so as to temporarily stop the feeding conveyer A'. The pickers of course will continue to operate thereby freeing the straw and as the straw becomes freed the crank shaft C increases in speed so as to expand the governing mechanism and thereby again throw the feeding apron A' into connection with the driving mechanism. G are my retarders which are mounted on the shaft G' journaled at each end in the casing of the machine. Such shaft is located slightly below the level of the feeding conveyer A' and intermediately between the feeding conveyer and the threshing cylinder. G² are the retarder sections each of which are provided preferably with three blades G³. The blades G³ are formed with sides which incline from a point 2 centrally of a blade to the front and rear edge 3 and 4 of the blade respectively. This form of blade is particularly shown in Figs. 3 and 4 of the drawings. The front of the blade G³ is sharpened and the back of the blade is formed flat. By this means the straw passes over the retarder effectually retarding the straw and at the same time preventing such straw from wrapping around the hubs of the retarder sections in close proximity to the blades which would of

course cause the mechanism to clog and prevent its proper operation.

From this description it will be seen that I have devised a very simple means whereby the feeding mechanism may be quickly stopped immediately the machine is clogged by straw and immediately started again as soon as the machine is freed of such straw. Also by my construction the motion of the feeding fingers is increased so as to more freely feed the straw from the feeding conveyer to the threshing cylinder and it will be further seen that by my improved construction of retarder I am enabled more effectively to retard the straw without any danger of such retarder being clogged by any straw wrapping around the same.

What I claim as my invention is:

1. In a threshing machine, the combination with the threshing cylinder and drive thereof, the governor driven from the cylinder drive, the governor operated lever, the feeding conveyer shaft, and a gear secured to the feeding conveyer shaft, of a supplemental shaft, a pinion loosely mounted thereon and meshing with the aforesaid gear, a trip mechanism connecting the pinion and supplemental shaft together, and having a trip arm designed to revolve with

the pinion to engage the lever of the governing mechanism when brought into the path of the arm to release the pinion from the supplemental shaft and stop the conveyer, as and for the purpose specified.

2. In a threshing machine, the combination with the threshing cylinder and feeding conveyer, of a rotary retarder comprising a series of curved blades designed to enter the body of the straw to prevent bodily forward movement of a matted bunch of straw to the cylinder, such retarder being located between the feeding conveyer and the threshing cylinder, bars and pickers connected thereto and located directly above the retarder, means for imparting horizontal movement to the bars toward the cylinder, then an upward movement free of the straw, then a horizontal movement and a lastly downward movement into engagement with the straw whereby the pickers co-act with the retarder to gradually tear off the matted straw from the bunch held by the retarder so that the straw is fed evenly to the cylinder, as and for the purpose specified.

JOHN RIEHL EBERSOL.

Witnesses:

B. BOYD,

R. COBAIN.