

UNITED STATES PATENT OFFICE.

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FEED-CUTTER.

935,947.

Specification of Letters Patent.

Patented Oct. 5, 1909.

Application filed March 1, 1909. Serial No. 480,733.

To all whom it may concern:

Be it known that I, WILLIAM THURMAN, a citizen of the United States, and resident of Plymouth, in the county of Sheboygan and State of Wisconsin, have invented certain new and useful Improvements in Feed-Cutters; and I do hereby declare that the following is a full, clear, and exact description thereof.

The object of my invention is to provide simple and effective feeding means for hay, straw cutters, or the like, the invention being particularly applicable to that type of feed cutters employing a double set of feed-rollers, such for instance as patented by me June 9, 1908, No. 890,385. In the feed-cutter disclosed in said patent, the upper auxiliary feed-roller depends upon the force of gravity to provide the feeding pressure, which force under ordinary care and conditions is sufficient to draw the hay or straw between the auxiliary rollers, but when an abnormal thickness or bunch of material is drawn toward the faces of said auxiliary rollers, the gravity force exerted by the upper roller, in some instances, is not sufficient to cause its peripheral surface to bite or feed, thus permitting the material to bunch or choke. Hence my present invention contemplates providing means whereby hay or straw may be thrown into the trough and be fed by the carrier chain to the rollers without regard to its thickness or bulk, the invention consisting in certain peculiarities of construction and combination of parts as hereinafter fully described and claimed, reference being had to the accompanying drawings.

In the drawings: Figure 1 represents a side elevation of a portion of a feed-cutter embodying the features of my invention, with parts broken away and parts in section to better illustrate the details of construction; Fig. 2, a transverse section of the same, as indicated by line 2—2 of Fig. 1, and Fig. 3, a detail sectional view, as indicated by line 3—3 of the preceding figure.

Referring by numerals to the drawings, 1 indicates the side sills of a frame, supporting a feed trough 2, over the bottom of which trough is arranged to travel an endless lagged chain 3 constituting a conveyer. Abutting the trough ends and secured to the sills, are a pair of side plates 4 provided with bearings, both for a rotary cutter (not shown) and trunnions of fixed lower main feed and

auxiliary rollers 6 and 7 respectively. The lower auxiliary feed-roller 7 in addition to receiving the material, also serves as a driver for the lagged chain, which chain is mounted upon the same and conveys said material from the trough thereto, the lower main feed-roller 6 being located forwardly or intermediate of said lower auxiliary feed-roller and the rotating cutter. Mounted directly over the main feed-roller 6 is an upper main feed roller 8 having trunnions 9, which extend through sector slots 10 in the side plates. The trunnions of the main upper feed-roller 8 are engaged by the upper looped ends of stirrups 13, which stirrups have depending rod portions that are in adjustable connection with the ends of spring bars 14. These spring bars serve to exert a downward pressure upon main upper feed-roller in opposition to the main lower feed-roller 6, and through its connection with the upper feed-roller the latter is free to rise and fall or wobble, depending upon the variation in the bulk of material being fed thereunder.

An upper auxiliary floating feed-roller 16 is mounted over the lower auxiliary roller 7 having trunnions 18 projecting through slots 19 of the side plates. The trunnions of this upper auxiliary feed-roller having their bearings in eyes of links 20, the opposite ends of which links have similar eyes engaging the trunnions of the upper main feed-roller 8, the eyes at each end of the links being elongated and formed with slightly convex bearing faces for the trunnions in order to permit the same to rock or assume various angles without liability of binding. The links just described serve as keepers for both the upper main and auxiliary feed-rollers, the latter being capable of a floating motion at the free ends of said links independent of the spring-tension exerted upon the upper main feed-roller. The upper auxiliary roller is preferably larger in diameter than the feed-roller 8 so as to more readily ride over and engage the loose straw or material being fed thereunder. The weight of this auxiliary roller is sufficient to exert a feeding-grip on the material under all normal conditions to thereby cause the same to be delivered between the feed rollers 6 and 8, which rollers, owing to the spring-tension device, compress said material into a compact flat mass preparatory to being cut. Should the mass of material be distributed unevenly

under the auxiliary and upper feed rollers the same are free to assume relative angular positions in keeping with said material.

Studs 17 project from the side plates, directly under the throat-portions of the slots 19, upon which studs are pivoted keepers 21, each being provided with side bars 21^a that straddle the trunnions of the upper auxiliary feed-rollers. Fitted to the side bars of the keepers are cross-heads 22, which cross-heads constitute contact-plates and are seated upon shoulders 23 of said side-bars at a predetermined distance above the upper auxiliary feed-roller trunnions, whereby the latter are permitted to rise a certain distance before engaging the cross-heads.

Each cross-head has a centrally disposed stem 24 in threaded connection therewith, which stem projects through a thimble 25 that is in adjustable screw-threaded engagement with an apertured head 26, the head being a cross-connection between the keeper side-bars. Interposed between the bottom face of each thimble and upper face of the cross-head is a spiral-spring 27, which spring encircles the stem 24 and is arranged to oppose the upper auxiliary feed-roller trunnion, when said feed-roller rises to a certain predetermined distance.

The shanks of links 20, which encircle the trunnion of the upper auxiliary feed-roller, are provided with inwardly extending lugs 28 that form extensions of the eyes and have concavo-convex surfaces that bear upon the trunnions. These lugs 28 are alined with the cross-heads 22 and are arranged to contact therewith in preference to direct contact of the trunnions, in order to avoid wear or grind of the latter.

While I have shown and described thimbles for the purpose of adjusting the tension of the coil-springs 26, in some instances it is understood the same may be dispensed with.

From the foregoing described structure of keeper, it will be seen that the latter will not only prevent the trunnions 18 from rising out of their slots 19, but the yielding cross-head thereof will act to produce a supplementary pressure upon the upper auxiliary roller, when the latter has been lifted by an abnormal thickness of material, this supplementary pressure being sufficient to cause said roller to bite upon the material and force the same thereunder. Thus the upper

auxiliary feed-roller will act, by gravity, to perform its function under normal conditions, and if subjected to greater strain by uneven feed, the springs will act coincident to a predetermined rise of the roller, and thereafter gradually increase the tension thereon proportionately to the increase of the layer of hay or straw.

Owing to the pivotal-connection between the keepers and side-frames, the said keepers will rock so as to assume a position at right-angles to the power applied thereto, whereby the spring pressure maintains its direct action.

I claim:

In a feed-cutter having slotted side-plates, fixed main and auxiliary feed-rollers mounted in the side-plates, an upper main feed-roller having trunnions extending through one set of the side-plates, the upper main roller being disposed above the fixed main roller, an upper auxiliary feed-roller having trunnions extending through a second set of the side-plate slots, the upper auxiliary roller being normally under gravity-control, eyed-links fitted over the upper main and auxiliary feed-roller trunnions, a yielding tension device in connection with the upper main feed-roller independent of the upper auxiliary feed-roller, and pivoted keepers adapted to straddle said upper auxiliary feed-roller trunnions; the combination of slidable crossheads carried by the pivoted keepers, the crossheads being disposed at a predetermined distance above the aforesaid auxiliary feed-roller trunnions, guide-stems for the crossheads, the guide-stems being in slidable-engagement with the pivoted keepers, and coil-springs surrounding the guide-stems between said crossheads and keepers, the coil-springs being adapted to exert an increasing supplementary pressure upon the upper auxiliary feed-roller in addition to the uniform gravity-pressure of the aforesaid roller after a predetermined rise of the roller is effected.

In testimony that I claim the foregoing I have hereunto set my hand at Plymouth, in the county of Sheboygan and State of Wisconsin in the presence of two witnesses.

WILLIAM THURMAN.

Witnesses:

H. W. HOSTMAN,
R. W. Dow.