(No Model.) 2 Sheets—Sheet 1.

G. N. JOSS.

FODDER CUTTER.

No. 357,009. Patented Feb. 1, 1887.

Fig. 1.

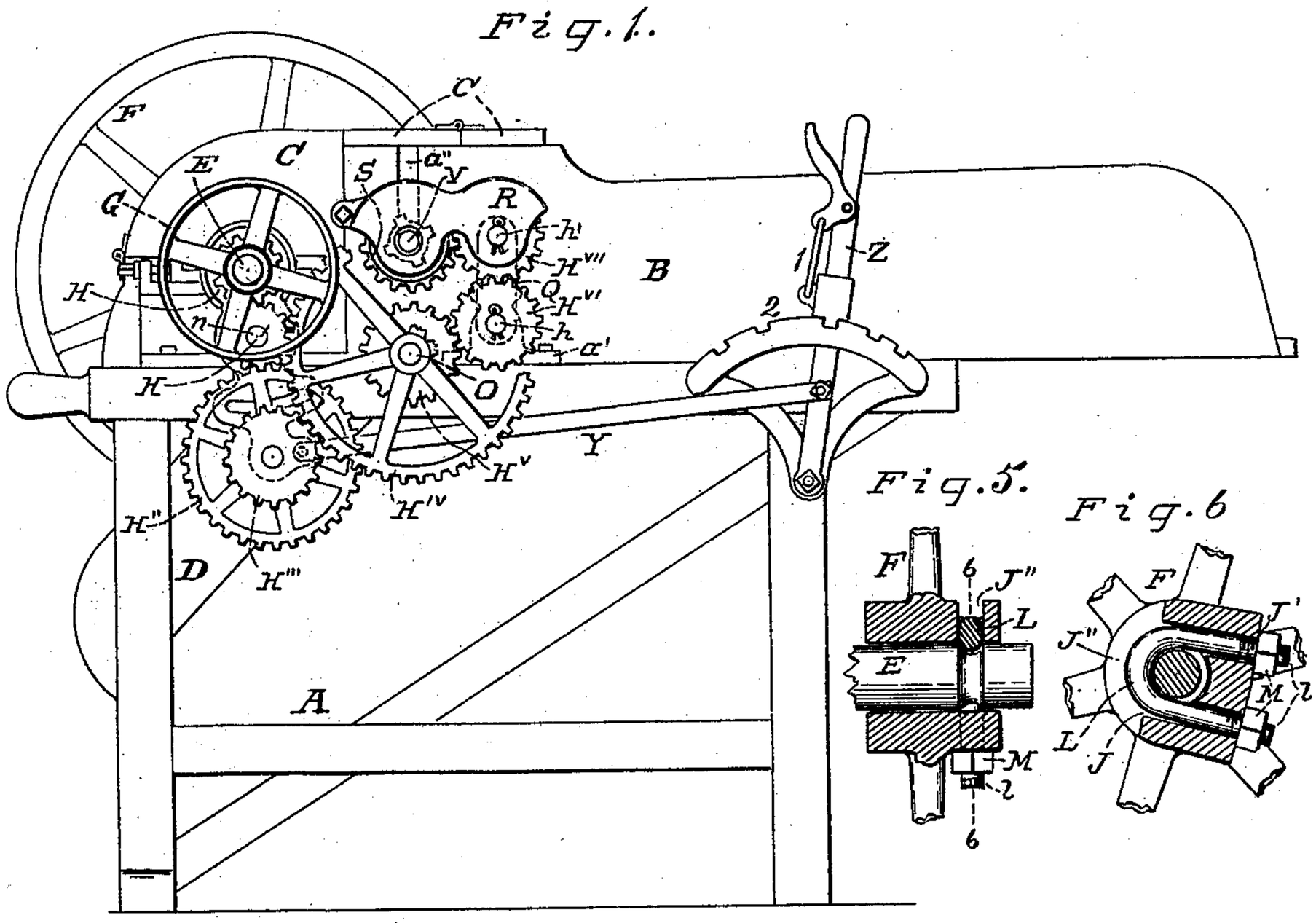
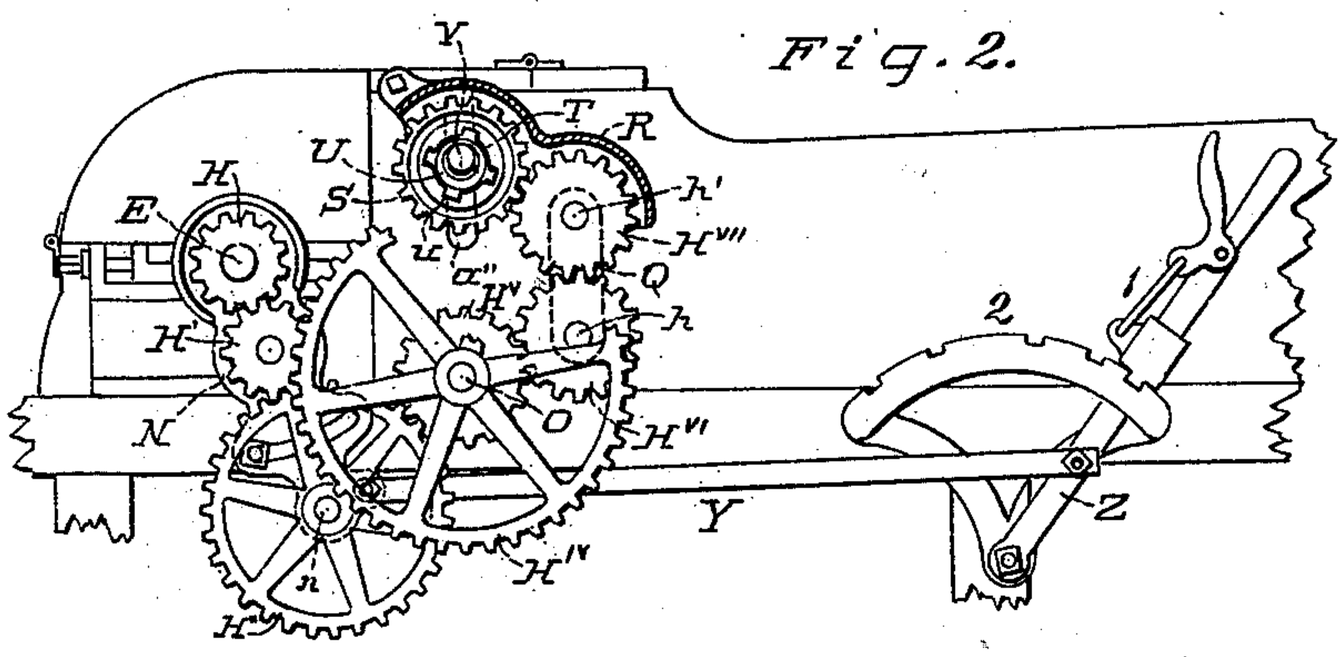


Fig. 5.

Fig. 6

Fig. 2.



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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

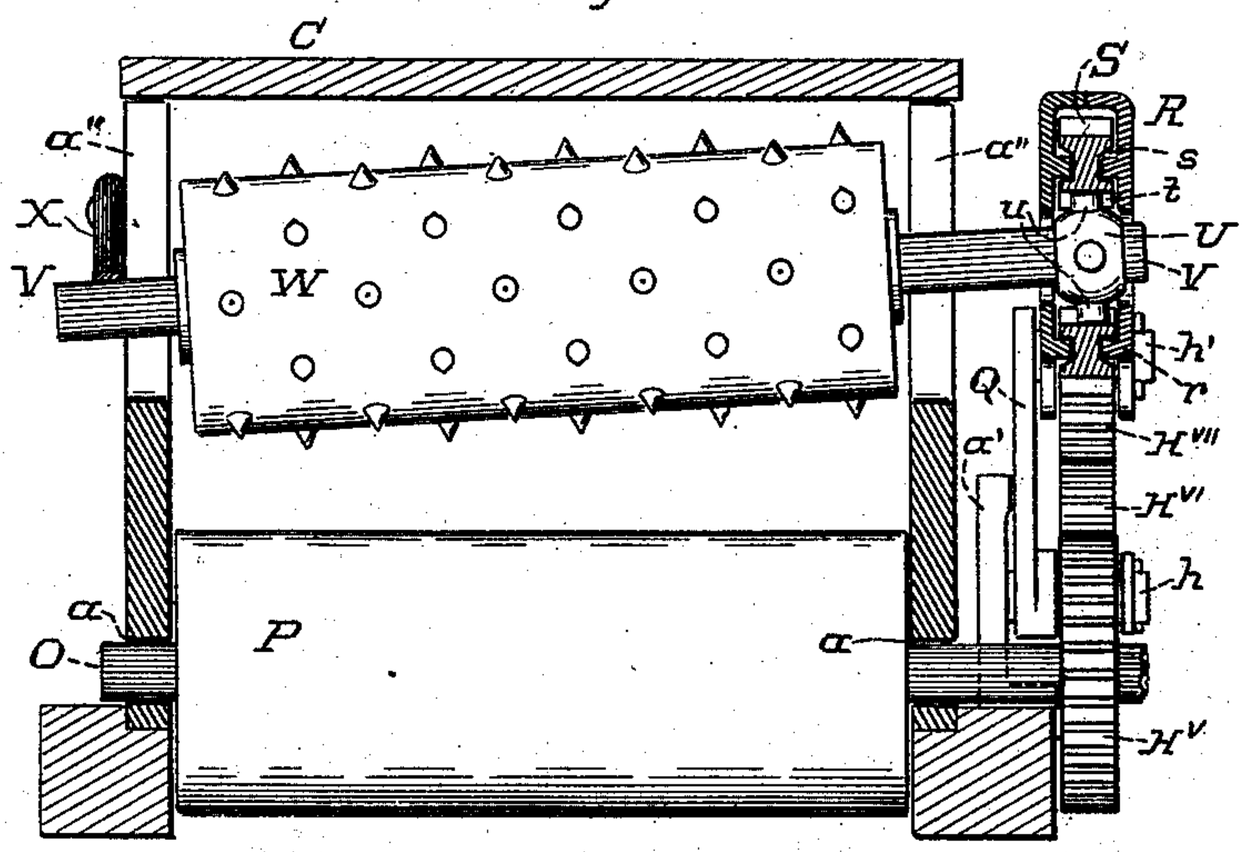


Fig. 4.

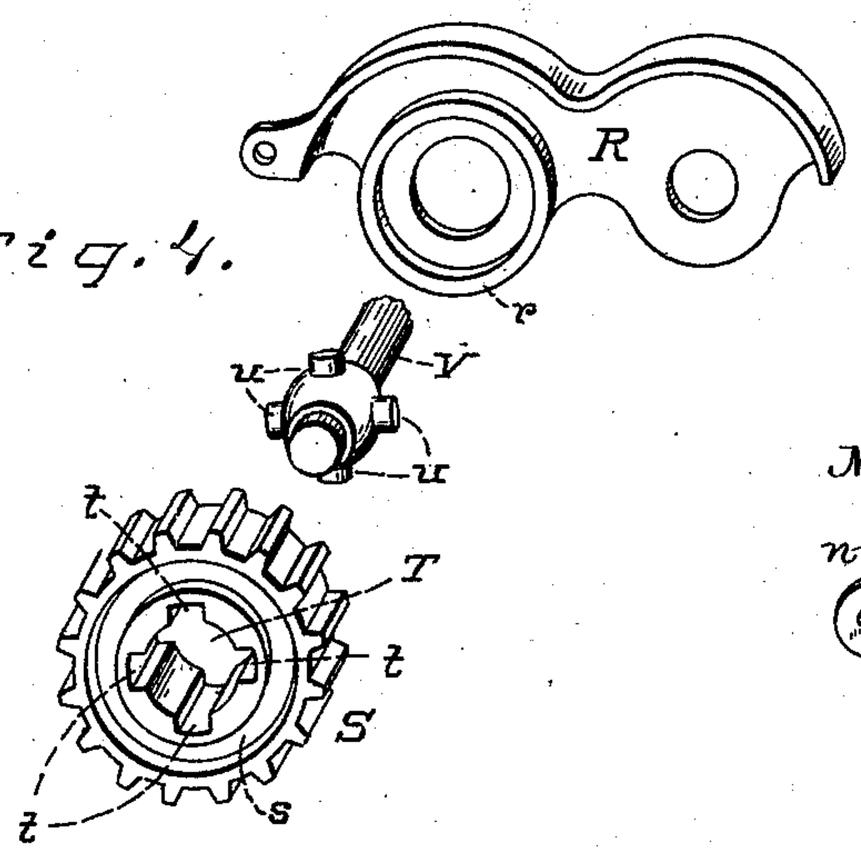
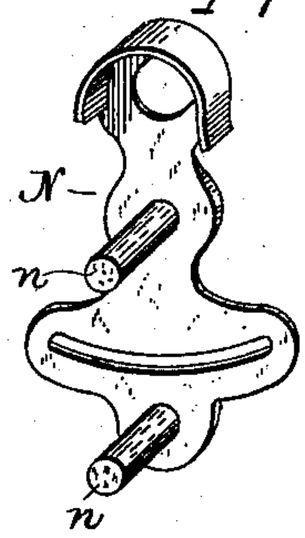


Fig. 7.



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UNITED STATES PATENT OFFICE.

GEORGE N. JOSS, OF LANCASTER, OHIO, ASSIGNOR TO THE EAGLE MACHINE COMPANY, OF SAME PLACE.

FODDER-CUTTER.

SPECIFICATION forming part of Letters Patent No. 357,009, dated February 1, 1887.

Application filed July 29, 1886. Serial No. 209,440. (No model.)

To all whom it may concern:

Be it known that I, GEORGE N. JOSS, of Lancaster, Fairfield county, Ohio, have invented a new and useful Improvement in Fodder-Cutters, of which the following is a specification.

My invention relates to improvements in machines which, under various designations of "cutting-boxes," "feed-cutters," &c., are employed to reduce cornstalks, wheat-straw, and like fodder crops to convenient lengths for fodder purposes.

The first part of my invention relates to a form of coupling between the upper feed-roller and its driving mechanism, which permits any changes of elevation and angle of such roller without change of rotation.

The second part of my invention consists in a means of setting the machine for production of coarser or finer feed.

In the accompanying drawings, Figures 1 and 2 are side elevations of a fodder-cutter embodying my invention, portions being broken away in both figures. In Fig. 1 the machine is shown set for the manufacture of fine, and in Fig. 2 for coarse, chop-feed. Fig. 3 is a section in the plane of the axes of the feed-rollers, the upper roller being shown uplifted and tilted. Fig. 4 consists of detached representations of the driving-pinion and portions of the flexible coupler and of the guiding-bearing of the upper feed-roller. Figs. 5 and 6 are respectively an axial section, and a section on the line 6 6 of Fig. 5, of a friction-coupling of the fly-wheel to the drive-shaft. Fig. 7 is a perspective view of the hanger on the drive-shaft.

A may represent any suitable stand or supporting-frame, and B, C, and D may respectively represent customary or any suitable feed-box, box-covers, and discharge-spout. Journaled horizontally in said frame is a drive-shaft, E, whose ends extend beyond the sides of the frame for attachment at one end of a heavy fly-wheel, F, and at the other end of a driving-pulley, G, and a cog-wheel, H, and for suspension of an adjustable hanger, N.

The office of the fly-wheel F is accumulation of momentum sufficient to carry the knife through thick and refractory objects, such as knotty stalks, corn-cobs, nubbins, &c.

To guard against liability to destruction of the cutter by the accidental presence of so obdurate an object as a stone or an iron bolt, the attachment of the said fly-wheel to its shaft is purposely such as to slip or give way under excessive resistance. With this object in view the said fly-wheel, instead of being keyed firmly to the shaft E, is attached as follows: The hub of the fly-wheel has two orifices, J J′, which, commencing at one side, which is made flat, pass entirely through the hub, and at the other side of the hub are broadened, so as to coalesce and form a single wide opening, J″. The shaft E has a circumferential groove, K.

L is a U-formed screw-bolt having nuts M.

The fly-wheel having been placed in position on the shaft E, and the bolt L being inserted in the cavity J J′ J″, the nuts M are applied and are screwed home with force sufficient to secure the desired friction of the curved portion of the bolt against the grooved part of shaft E. This friction may manifestly be modified at any time by simply tightening or slackening the nuts M.

Depending from and capable of free vibration on shaft E is a hanger, N, upon whose studs *n* are journaled a train of cog-wheels, H^{I} H^{II} H^{III}, of which the last-mentioned gears to a cog-wheel, H^{IV}, secured upon shaft O of the lower feed-roller, P, which shaft revolves in stationary bearings *a* in the frame or box. A cog-wheel, H^{V}, on the shaft O gears with a cog-wheel, H^{VI}, journaled on a stud-projection, *h*, from a bracket, *a′*. A link, Q, is pivoted on stud *h*, and has at its upper end a stud, *h′*, on which is journaled a cog-wheel, H^{VII}, which gears with cog-wheel H^{VI}. The cog-wheel H^{VII} is also journaled in a guiding-bearing, R, which is pivoted on stud *h′*, and whose annular interior flanges, *r*, engage in corresponding grooves, *s*, in a cog-wheel, S, which is thereby maintained in accurate mesh and alignment with its driver H^{VII}.

The cog-wheel S has a central orifice, T, which is occupied by a spherical or rounded knob, U, on one extremity of shaft V of the upper feed-roller, W. Spurs *u* from the knob U, occupying cavities or indentations *t* in the orifice T, compel corotation of feed-roller W with that of the cog-wheel S, whatever angular

position the said feed-roller may from time to time assume. While angular changes of said feed-roller are thus provided for, changes in height are permitted by the described link and guiding-bearings Q and R. Slots *a''* in the box restrict the shaft V to vertical displacements, while the walls of the guiding-bearing R co-act with the spurs *u* to limit the longitudinal displacements of the feed-roller W.

On the side of the box remote from the driving-gearing the shaft V protrudes sufficiently to receive a downwardly-pressing spring, X.

For the manufacture of the coarser kinds of chop-feed the wheel H^{III} may be taken off, so as to bring the wheel H^{II} in direct mesh with the wheel H^{V}. In this arrangement of the driving-gears the wheel H^{IV} becomes an "idler".

To enable the movable train of cog-wheels H^{I}, &c., to be readily shifted and securely held to the desired mesh with the stationary train, the hanger N is connected by rod Y to a lever, Z, which is retained to any particular adjustment by engagement of a spring-catch, 1, in the appropriate notch of a segment-rack 2.

By substituting cog-wheels of diverse diameters in place of the wheel H^{III} the machine may be adapted for any variety of coarse or fine cutting. By removing said cog-wheel H^{III} and retracting the lever Z the cog-wheel H^{II} may be brought directly into gear with the cog-wheel H^{V}, thereby giving a largely-increased speed of feed-rollers relatively to that of the cutter and fitting the machine for production of correspondingly coarser chop-feed.

I claim herein as new and of my invention in fodder-cutting machines—

1. The combination, with the box or frame, of upper feed-roller W and its shaft V, said frame being provided with vertical slots *a''*, occupied by said shaft, rounded knob U, armed with spurs *u*, cog-wheel S, having an indented orifice, T *t*, occupied by said knob, and annular grooves *s*, guiding-bearing R, having flanges *r* corresponding to and received by said annular grooves, cog-wheel H^{VII}, intermeshing with cog-wheel S, cog-wheel H^{VI}, having connection with said cog-wheel H^{VII} by link Q, and gearing connecting cog-wheel H^{VI} with the drive-shaft, substantially as set forth.

2. In a feed-cutter, the combination, with the cutter-shaft, the lower feed-roller shaft, and gearing situate between the two, of the upper feed-roller shaft provided with a spur-wheel, a cog-wheel having a central orifice and indentations arranged around the sides of said orifice and adapted to receive the spurs on said spur-wheel, gearing situate between the lower feed-roller and said cog-wheel, a guide-bearing loosely connected with the upper feed-roller shaft, and within which is received the said cog-wheel, and a link pivoted to the frame of the feed-cutter and to said guide-bearing, substantially as set forth.

3. In a feed-cutter, the combination, with the cutter-shaft, the lower feed-roller shaft, and gearing situate between the two, of the upper feed-roller shaft provided with gearing, a stud on the frame of the machine, a cog-wheel thereon engaged by the gearing on the lower feed-roller shaft, a link pivoted also to said stud, a stud on said link on which is mounted a cog-wheel, which latter is engaged by the gearing on the upper feed-roller shaft, and a guide-bearing pivotally connected with the latter shaft and with the stud on said link, substantially as set forth.

In testimony of which invention I hereunto set my hand.

GEORGE N. JOSS.

Attest:
J. P. OUTCALT,
C. B. WHILEY.