

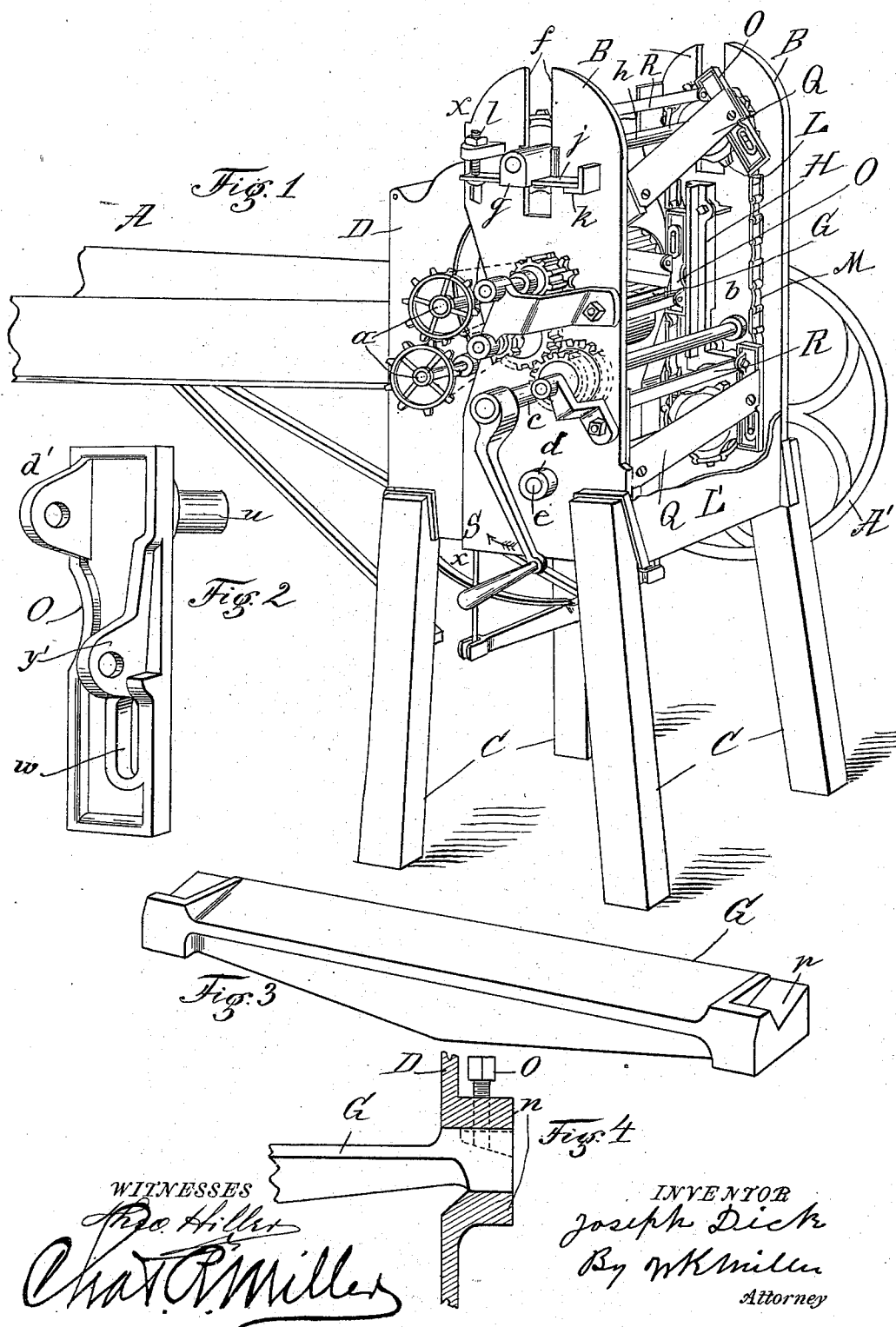
(No Model.)

4 Sheets—Sheet 1.

J. DICK.
FODDER CUTTER.

No. 562,512.

Patented June 23, 1896.



WITNESSES
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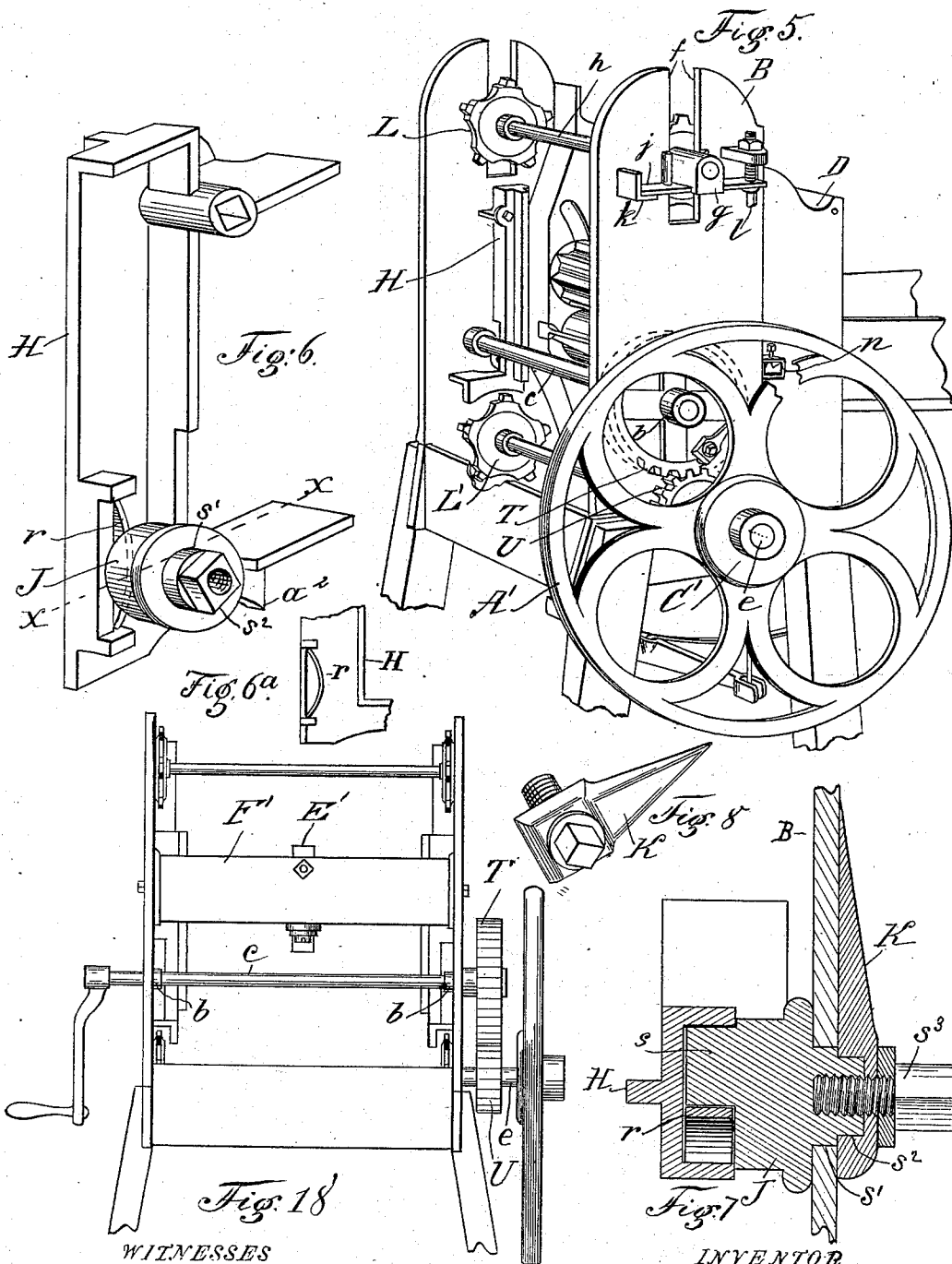
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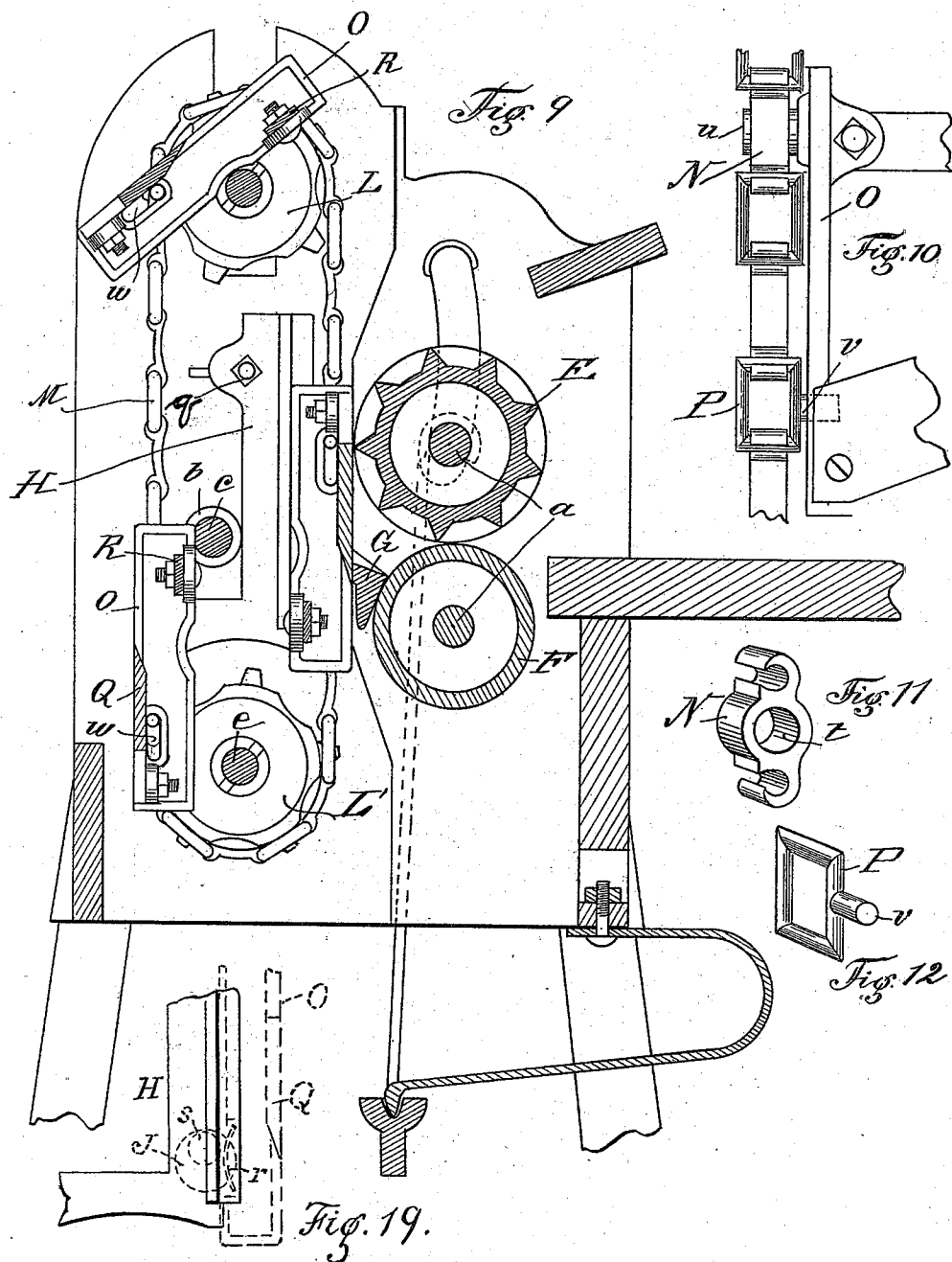
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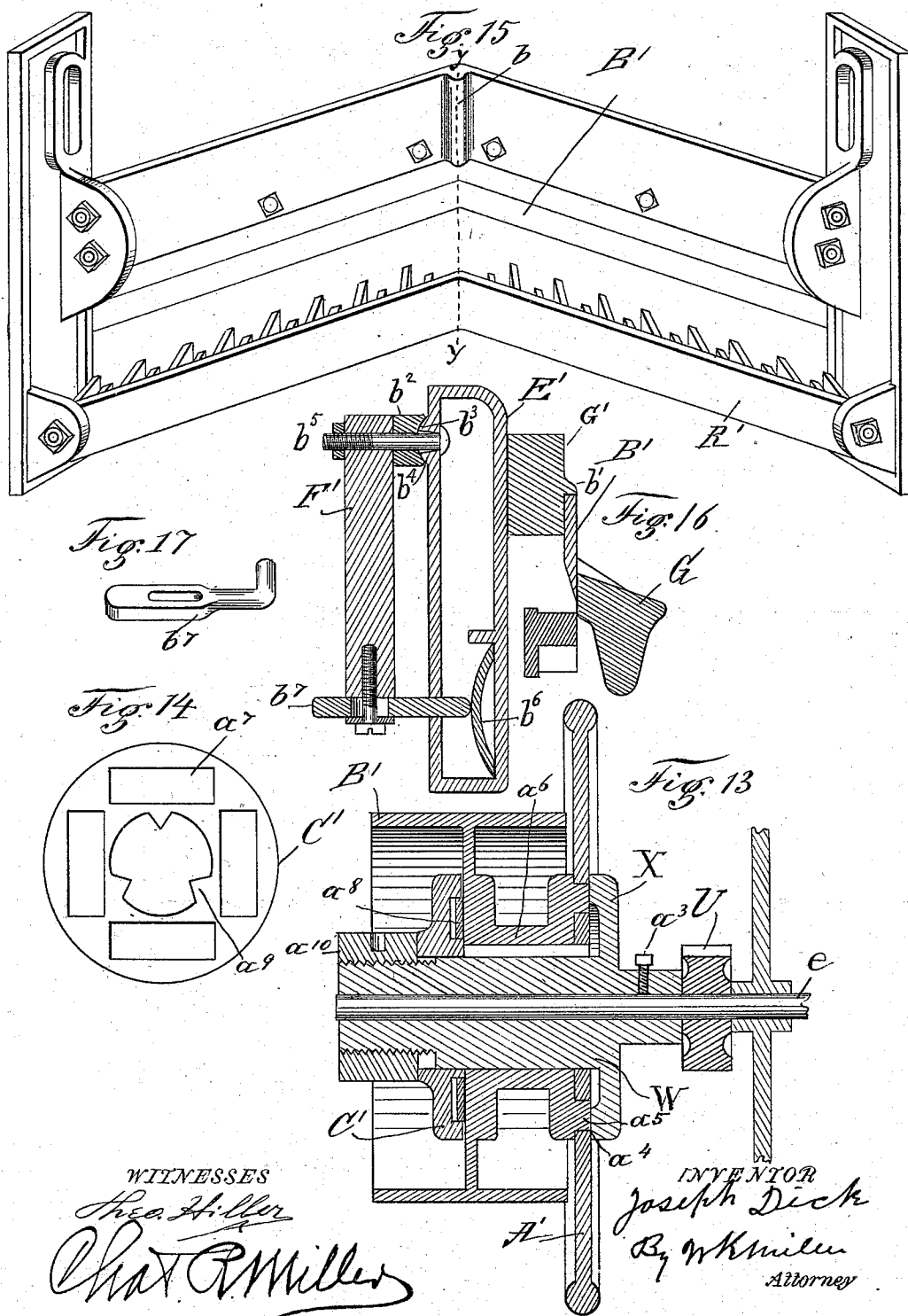
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JOSEPH DICK, OF CANTON, OHIO.

FODDER-CUTTER.

SPECIFICATION forming part of Letters Patent No. 562,512, dated June 23, 1896.

Application filed April 22, 1895. Serial No. 546,644. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH DICK, a citizen of the United States, and a resident of Canton, county of Stark, State of Ohio, have invented a new and useful Improvement in Fodder-Cutters, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification.

My invention relates to an improvement in fodder-cutters; and it consists of certain features of construction and combination of parts as will be hereinafter described and claimed.

Figure 1 of the accompanying drawings is a view in perspective illustrating my invention from right-hand side. Fig. 2 is a similar view of a cast-metal piece by which one end of the knife is supported and secured to the drive-chain. Fig. 3 is a similar view of the stationary knife. Fig. 4 is a side view of one end of stationary knife and a section of a fragment of the side plate, showing the manner of securing the knife. Fig. 5 is a perspective from left-hand side, with drive-chain and knives removed, showing chain-guides, chain-wheels, and fly-wheel. Fig. 6 is a perspective view of a chain-guide and a rotative head and spring employed in connection therewith. Fig. 6^a illustrates the chain-guides, showing the inside of the lower part of one of them. Fig. 7 is a cross-section on line *x x*, Fig. 6, showing a regulating and yielding mechanism for holding the movable knife against the stationary knife. Fig. 8 is a perspective of register-pointer or index-finger. Fig. 9 is a vertical section showing the parts in operative position. Fig. 10 is a view, partly in perspective and partly in plan, of a fragment of the drive-chain, the knife-holder, and an end portion of the knife and cross-bar attached. Fig. 11 is a perspective of a chain-link, showing the journal-box therein. Fig. 12 is a similar view of a chain-link having a guide-pin projected therefrom. Fig. 13 is a section through the drive-pulley and fly-wheel shown in Fig. 6. Fig. 14 is a plan view of the inside face of the clamping or friction plate. Fig. 15 is a perspective showing a V-shaped knife, a splitter, and knife-holder. Fig. 16 is a section on line *yy*, Fig. 15. Fig. 17 is a perspective of a gage-pin shown at

lower end of Fig. 16; and Fig. 18 is a front elevation showing the parts when adapted for the use of V-shaped knives, as shown in Fig. 15. Fig. 19 further illustrates the chain-guides.

A denotes the feed-box, and B cast-metal sides, which are similar in form, but made in pairs. The sides form the frame and support for the mechanism, and are supported on legs C. The sides B have offset portion D on line *x x*, Fig. 1, by which the front portion of the frame is reduced to the width of the rear end of the feed-box A, or substantially so, the rear end of the side boards of the feed-box being secured on the inside of the front portion D of the frame. In this portion of the frame are provided journal-boxes for the feed-roller shafts *a*. There are also provided in the front lower portion sockets for the front legs C.

In the rear portion of the frame B are provided journal-boxes *b*, in which are journaled driving-shaft *c* and journal-boxes *d*, in which is journaled the lower chain-wheel shaft *e*. At the top portion of the frame side B are provided slots *f*, in which are placed vertically-slidable journal-boxes *g*, in which is journaled the upper chain-wheel shaft *h*. The journal-box is supported on a tension-spring *j*, one end of which is supported on an outwardly-projecting lug *k*, the other end supported on a tension-screw *l*.

At the rear side of the feed-rollers E and F is secured by its end portions to the front portion D of the sides B the stationary knife G. Gear-wheels and chains of the usual and well-known form are applied to connect the roller-wheels *a* and rollers E and F with a driving mechanism in any of the usual and well-known ways, by which rollers the fodder is fed rearwardly upon and over the stationary knife G, the ends of which are passed through the portion D of the sides B, and between lugs *n*, projected forwardly from the offset or shoulder, as shown in Fig. 4, and secured by the set-screw *o*, turned onto the inclined surface of the recess *p* in the end of the knife.

To the inside face of the frame sides B are pivotally secured slides or guideways H by the bolt *q* at the upper end portion of the guide. At the lower end portion is provided a spring *r*, resting on lugs on the guide. (See Figs. 6 and 7.) Against this spring is ro-

tated a crank portion or pin s on a head J , that is journaled in the sides B , on the outer end of which is secured a pointer or register K , which will be explained hereinafter.

5 The journal s' of the head J has a squared portion s^2 , on which is placed the pointer K , which is secured by a screw s^3 , which enters a threaded aperture in the journal, as seen in Fig. 7.

10 In the shafts h are mounted chain-wheels L , and on shaft e are mounted similar wheels L' , about which are placed chains M , in which are placed at desired intervals links, as N , having therein centrally thereto a lateral circular aperture t , that serves as a journal-box for the pin or journal u , projected from the side of the knife holder or bearer O , (see Figs. 2 and 10,) and at other desired intervals links, as P , having a laterally-projected pin v , adapted to pass into the slot w in the knife-bearer. On the inner face of the knife-bearer is provided an inwardly-projected ledge y' , to which the knife Q is secured. The knife-bearers are similar in form, but made in pairs to adapt them for use on the two sides of the machine, and to secure the desired angle of the cutting edge of the knife Q as it passes the stationary knife G the links N and P are placed forward or back in the chain, and by the same manipulation of said link the angle of the knives Q may be set to cut in opposite directions or parallel with the stationary knife. At the forward end of the knife-bearer O is provided a lug d' , to which is secured a cross-bar or spreader R , as shown in Fig. 1.

The chains M are placed about the chain or sprocket wheels L and L' , the knife-bearers with knives secured thereto, as hereinbefore described.

To operate the machine by hand, a crank S is placed on the right-hand end of shaft c , and on the opposite is mounted a gear-wheel T , that engages a similar wheel U on shaft e , that carries chain-wheels L' , by turning shaft c by the crank in the direction indicated by the arrow. The chain-bearers with the knives secured thereto will be carried up over and down between the guides H and the fixed knife G , to sever the fodder that has been passed over the knife G , by the rollers E and F , as hereinbefore stated, and to provide against accident, or the knives Q striking too violently against the knife G , and to secure a desired adjustment, the spring r and crank-pin s (shown in Figs. 6 and 7) are provided, as hereinbefore mentioned. By turning the pin s against the spring, the pressure of the knife Q against the knife G may be regulated.

The heads J are journaled in the sides B of the frame, at points opposite the lower parts of the guides H , the latter being pivotally connected, at their upper ends, with the sides by bolts g , and the crank-pin s of each head extends into one of said guides and is adapted to bear against the spring r when

the head is turned in one direction, and thus move the guide to press the knife-bearers in their descent to the stationary knife, the said spring affording a yielding pressure of the guide against the knife-bearers. By turning the head J in the opposite direction, the guide may be moved from the path of the knife-bearers. The index-pointer K , outside of the frame, is used to turn the head J and also to indicate the adjustment of the head. In Fig. 19, which illustrates the guide, the spring s and head J are indicated in dotted lines.

There is provided at the lower end of the guide H a side projection a^2 , circular on its under side, that serves as a cover and protection to the top portion of the chain-wheels L' .

When the machine is operated by power, a sleeve W is placed on the left-hand end of shaft e , and secured thereto by a set-screw a^3 . On the sleeve W and against the flange X is placed a fly-wheel A' , having about its central portion a series of apertures a^4 , adapted to receive a series of pins a^5 , on the inner face of the hub a^6 of the driving-pulley B' . Against the outer face of the hub a^6 of the pulley B' is placed a plate C' , having in its inner face recesses a^7 , in which is placed a circular or segmental spring a^8 , the crowning-face to rest against the hub of the pulley, as shown in Fig. 13.

The plate C' is held against rotation on the sleeve by V-shaped ribs adapted to the V-shaped grooves a^9 in the hub of the plate. On the end of the sleeve is provided a screw-thread on which is turned a nut a^{10} , against the outside of the plate C' , by which the friction on the ends of the pulley-hub may be adjusted and regulated between the flange X and the springs a^8 in the plate C' , by which a desired amount of driving-power may be secured to drive the knives through the fodder and to allow them to stop and the wheels A' and pulley B' continue to rotate in case some hard substance should pass in with the fodder, and thus prevent violence or damage occurring to the knives, the knife-driving power being limited to the friction between the flange X and springs a^8 on the wheel A' and the hub of the pulley B' .

To increase the cutting capacity of the machine, the width of the box and length of the knives are increased, and in that case I prefer a bent or V-shaped knife B' , substantially as shown in Fig. 15, in which case I provide a central support E' , secured to a cross-piece F' . (See Fig. 18.)

G' denotes a cast-metal knife-support having a central rib b' to rest against and slide upon the face of the support E' . In this form of construction it is desirable to have the central support E' a distance from the knife G to allow the cut fodder to fall unobstructed onto a carrier or other receptacle.

To provide against damage to the knife B' or the stationary knife G , the support E' has a hinged or yielding connection with the cross-piece F' , comprising block b^2 , having in

its outer face a recess b^3 , circular in cross-section, adapted to receive a circular projection b^4 on the side of the support E' , through which is passed the bolt b^5 , by which the support is secured to the cross-bar F' in a yielding rocking relation.

At the lower end of the support E' is provided a spring b^6 , that rests against an adjustable slotted pin b^7 , secured to the bar F , as shown in Fig. 16. The object of this construction is to adjust the central portion of the knife similar the adjustment provided, and hereinbefore described, for adjusting the end portions of the movable knives to the stationary knife.

When it is desired to split the fodder before cutting, the cross-bar R , as shown in Fig. 1, may be removed and a similar bar substituted, having splitting-knives similar to those shown on bar R' , Fig. 15.

Having thus fully described the nature and object of my invention, what I claim is—

1. In a fodder-cutter, the combination with a frame and feed-rollers journaled therein, of a stationary knife, chain-wheels mounted on shafts, one of which is above and the other below the plane of said stationary knife, endless chains connecting said chain-wheels, knife-bearers carried by said chains, knives carried by said bearers and guides secured to said frame, and adapted to hold said bearers and knives in operative position in their descending movement, substantially as and for the purposes described.

2. The combination with a frame and feed-box, of two feed-rollers journaled in said frame, a stationary knife, adjustably mounted in said frame, knife-bearing chains mounted on chain-wheels, knife-bearers pivotally connected with said chains, knives carried by said bearers, and guides, adapted to hold the knives carried by said bearers in operative position, against the stationary knife, in their downward movement, substantially as set forth and described.

3. The combination, with the frame of a fodder-cutter, of a stationary knife, chain-wheels on shafts, mounted in said frame, endless chains on said wheels, a series of knife-bearers connected with said chains, guides for said knife-bearers, and adjusting devices adapted to engage said guides whereby the knives on said bearers may be adjusted to and held with a yielding pressure in their downward movement, against said stationary knife, substantially as and for the purposes described.

4. The combination with the frame of a fodder-cutter, of the rotative shafts and chain-wheels thereon, chains on said wheels, knife-bearing devices carried by said chains, guides pivotally connected at the upper ends with said frame, springs placed in said guides at their lower ends, rotative heads J , provided with crank-pins and adapted to engage the said guides, substantially as set forth and described.

5. The combination with a supporting-frame, of a stationary knife, chain-wheels on shafts mounted in said frame, chains on said shafts, a series of knife-bearers carried by said chains, knives carried by said bearers, guides secured to opposite sides of said frame, and a central guide adapted to act against the central portion of the knives carried by said bearers and provided with adjustable, yielding mechanism whereby said central guide may be adjusted to hold the knives carried by said chains in operative position in relation to the stationary knife, substantially as set forth and described.

6. The combination, with a supporting-frame, rotative shafts and chain-wheels thereon, of a series of knife-bearers and knives carried by said chains, a stationary knife, a central knife-guide E' , provided with a convex portion b^3 , a cross-bar F' , a block b^2 , provided with a concave surface to receive the convex part b^3 , a bolt by which the guide E' is movably connected with said cross-bar, a spring b^6 located in said guide, and a slotted pin b^7 adjustably secured to said cross-bar and adapted to press against said spring, substantially as set forth and described.

7. The combination, with a frame, of rotative shafts mounted therein, chain-wheels on said shafts, chains on said wheels, having links provided with laterally-projecting pins, and other links formed to receive pins extending therein, and knife-bearing devices each of which is provided with a laterally-projecting pin to connect with one link and an elongated aperture to receive a pin extending laterally from another link, substantially as set forth and described.

8. The combination, with a frame having vertical slots f , an upper and a lower rotation-shaft, journal-boxes of said upper shaft having vertical movement in said slots, springs j , supporting said journal-boxes, lugs and adjusting-screws carried by said frame and supporting said springs, chain-wheels on said rotative shafts, chains on said wheels and knife-bearers carried by said chains, substantially as set forth and described.

9. The combination with the frame of a fodder-cutter, having apertures and lugs forming knife-bearings in opposite sides of said frame, of a stationary knife, the ends of which are formed with recesses having inclined surfaces and extend through the sides of said frame and between said lugs, adjusting-screws adapted to bear on said inclined surfaces, and vertically-movable knives and mechanism to actuate the same, substantially as set forth and described.

10. The combination in a fodder-cutter, of the shaft e , sleeve W , having a flange X , a fly-wheel having apertures a^4 , a driving-pulley having on its hub, projections a^5 , to enter apertures a^4 , a plate C' , springs a^3 , and means for adjusting said springs against the hub of the pulley, whereby the fly-wheel and pulley are held in frictional engagement with

the flange X, substantially as described for the purposes set forth.

11. The combination, with the frame of a fodder-cutter of rotative shafts, chain-wheels
5 thereon, knife-bearing devices carried by said chains and spreaders R carried by said knife-bearers, substantially as set forth and described.

12. The combination with a frame, of rota-
10 tive shafts mounted therein, chain-wheels on said shafts, endless chains, knife-bearers, each of which is provided with a projecting pin and an elongated aperture, links in each
15 of said chains being adapted to connect with a knife-bearer, one link being provided with a pin to extend into said elongated aperture and another link being provided with an aperture to receive the pin on said knife-bearer, substantially as set forth and described.

13. The combination with the frame of a 20 fodder-cutter of rotative shafts and chain-gearing connected therewith, knives carried by endless chains, a stationary knife and a yielding guide for the other knives in their downward movement, substantially as and 25 for the purposes described.

14. The combination in a fodder-cutter of two rotative shafts and chain-gearing thereon, knife-bearing devices each of which is provided with an elongated aperture to re- 30 ceive a projection on a link of a chain, substantially as set forth and described.

In testimony whereof I have hereunto set my hand this 17th day of April, A. D. 1895.

JOSEPH DICK.

Witnesses:

W. K. MILLER,

CHAS. R. MILLER.