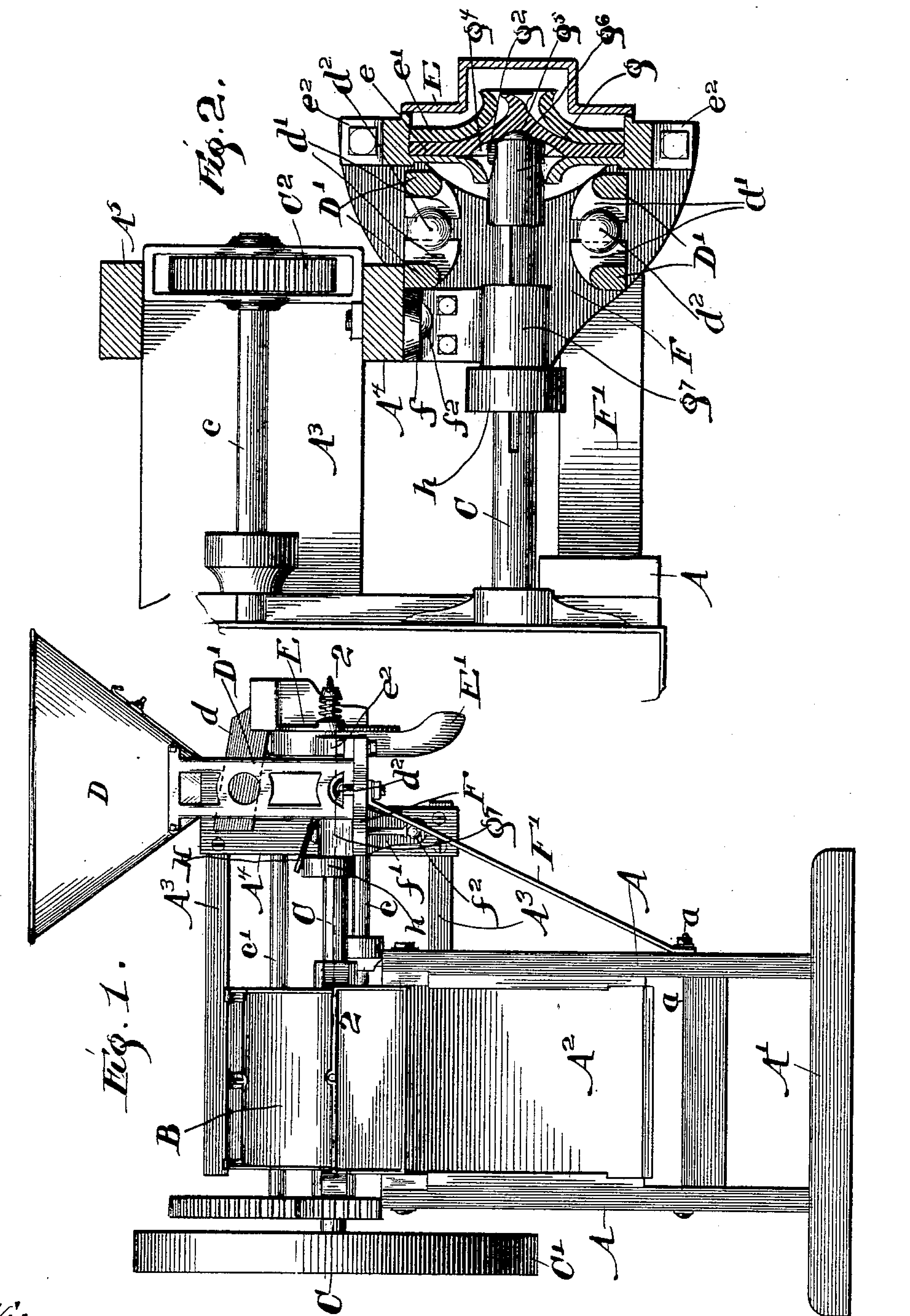
(No Model.) 3 Sheets—Sheet 1.

LE GRAND KNIFFEN.

STOCK FEED MACHINE.

No. 593,380. Patented Nov. 9, 1897.



Witnesses:
Chas. O. Shervey
M. L. Sheahan

Inventor;
Le Grand Kniffen
by Wiles, Greene & Bitner
Attys.

(No Model.) 3 Sheets—Sheet 2.

LE GRAND KNIFFEN.

STOCK FEED MACHINE.

No. 593,380. Patented Nov. 9, 1897.

Fig. 7.

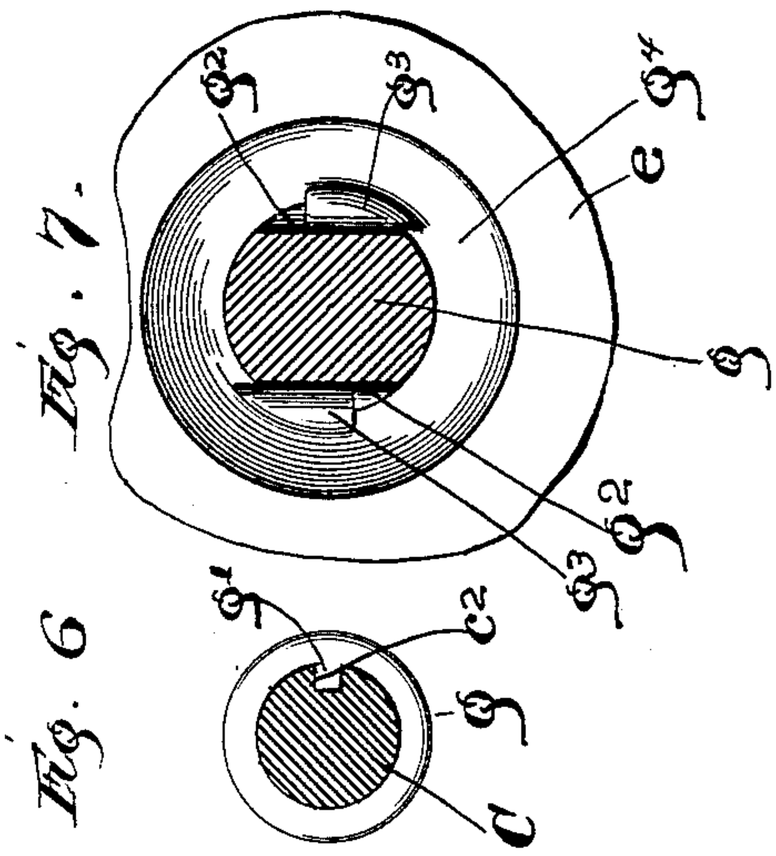
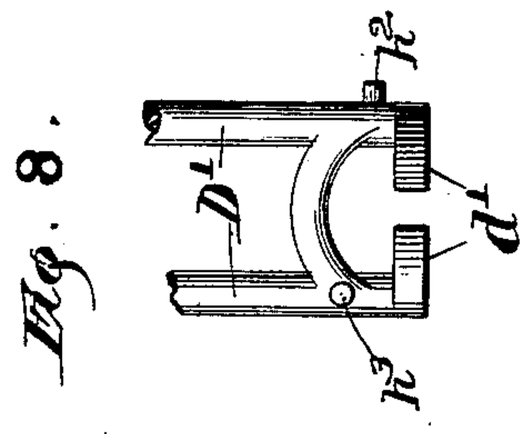


Fig. 6

Fig. 8.



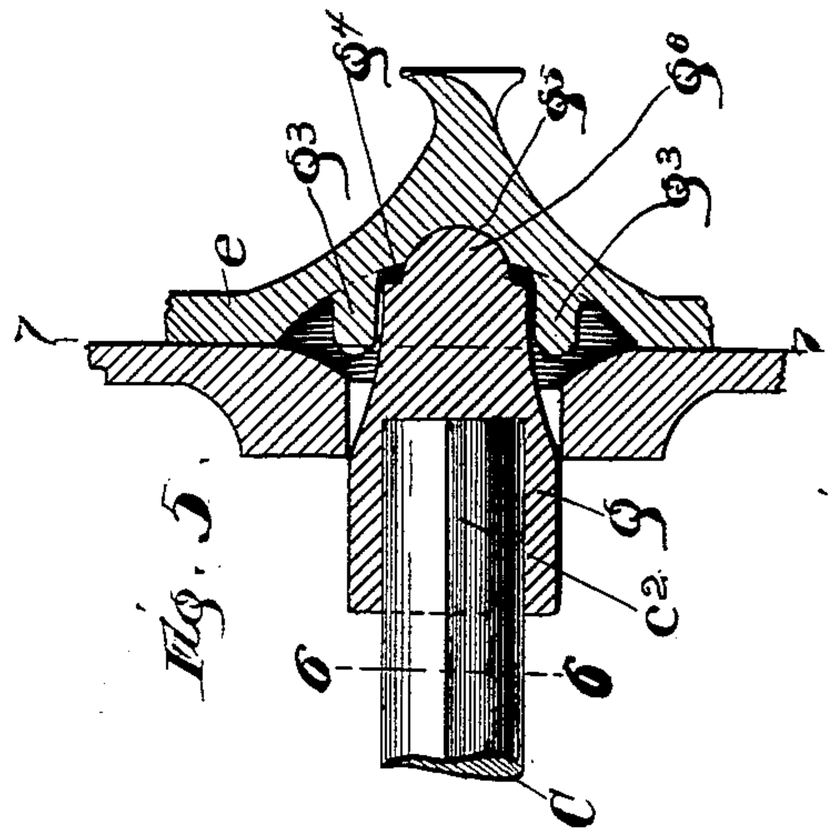


Fig. 5.

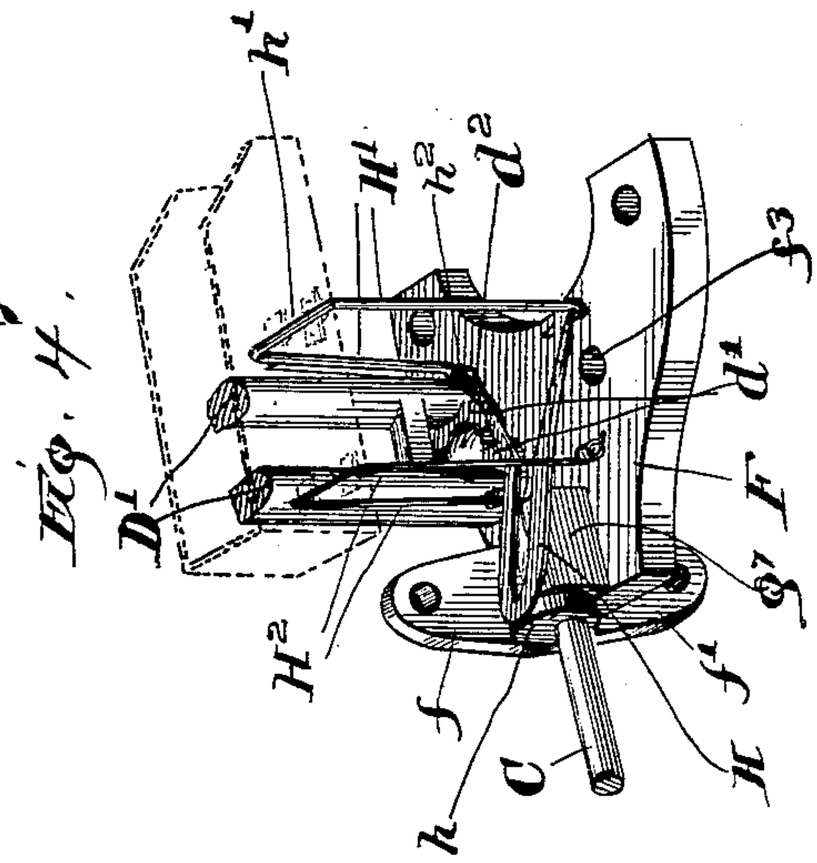


Fig. 4.

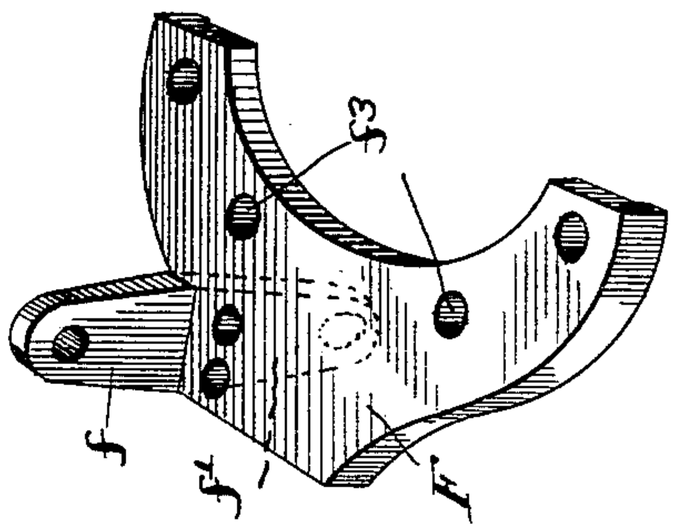


Fig. 3.

Witnesses:
Chas. O. Shervey.
M. L. Sheahan

Inventor:
Le Grand Kniffen
by Wilkes, Gunnell & Pistell
Attys

(No Model.) 3 Sheets—Sheet 3.

LE GRAND KNIFFEN.

STOCK FEED MACHINE.

No. 593,380. Patented Nov. 9, 1897.

Fig. 10.

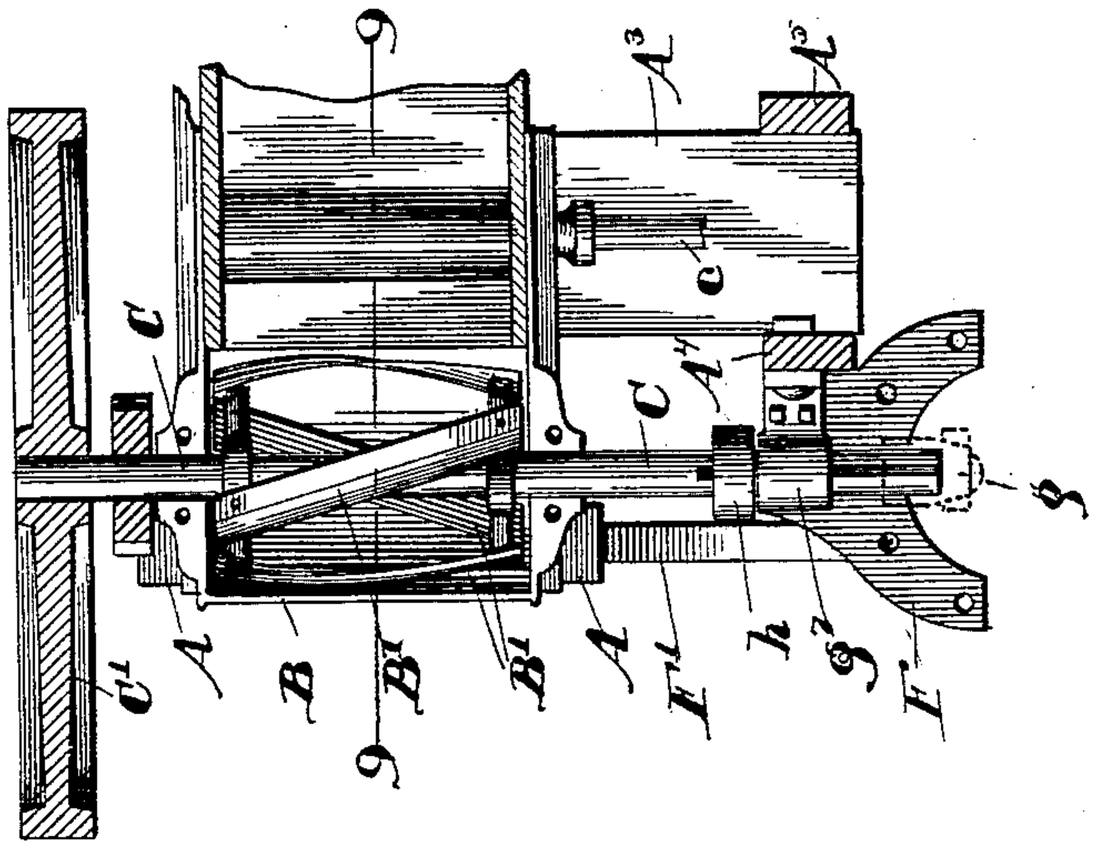
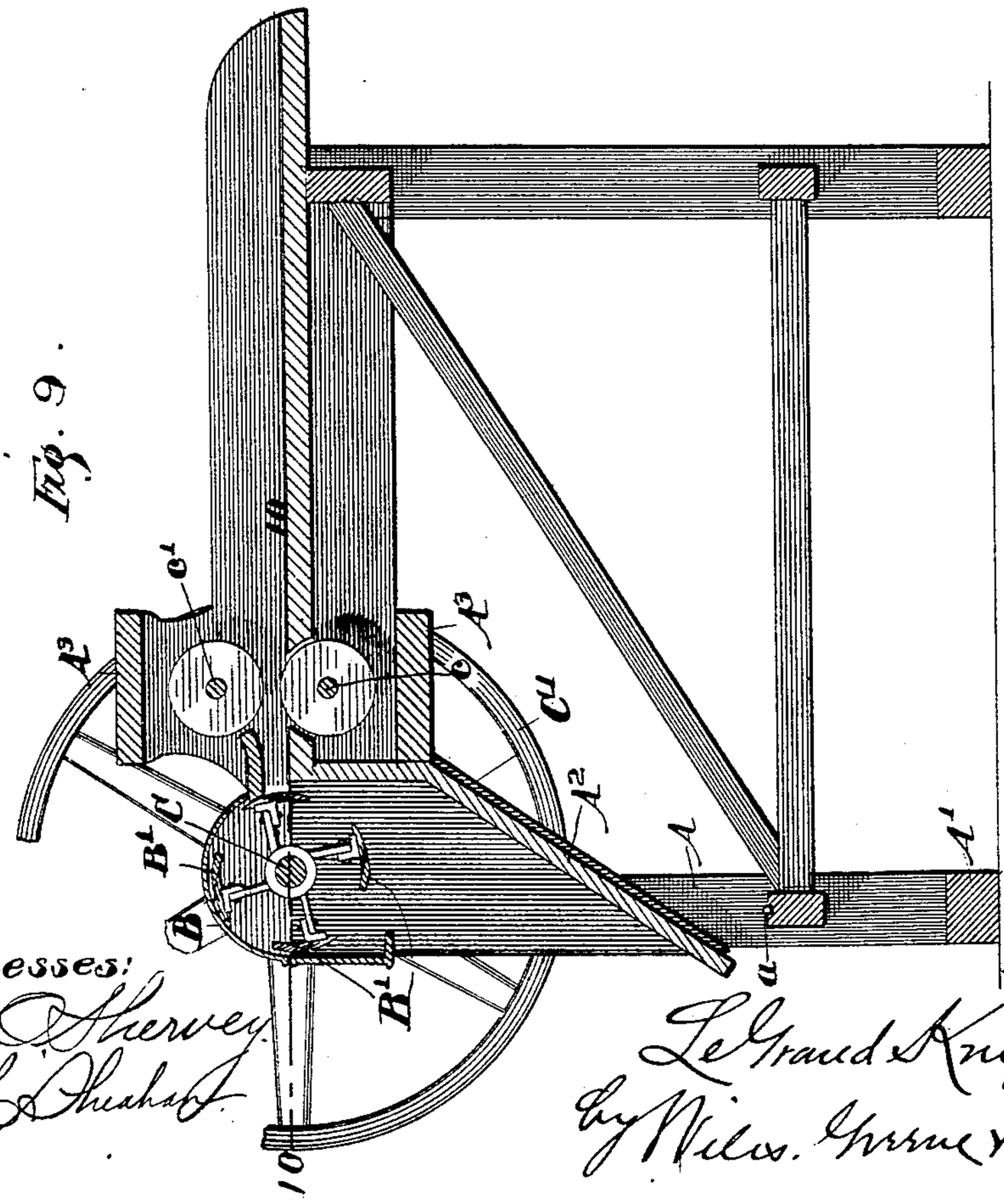


Fig. 9.



Witnesses:
Chas. D. Shervey.
M. L. Thrasher.

Inventor:
LeGrand Kniffen
by Niles, Greene & Bitzer
Attys

UNITED STATES PATENT OFFICE.

LE GRAND KNIFFEN, OF CHICAGO, ILLINOIS.

STOCK-FEED MACHINE.

SPECIFICATION forming part of Letters Patent No. 593,380, dated November 9, 1897.

Application filed August 26, 1896. Serial No. 603,956. (No model.)

To all whom it may concern:

Be it known that I, LE GRAND KNIFFEN, a citizen of the United States of America, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Stock-Feed Machines, of which the following is a specification.

My invention relates to certain improvements in stock-feed machines, the object being to connect a feed-cutter and feed-grinding machine in such a manner that both will be supported by one main framework and driven by a single drive wheel and shaft, thus doing away with the necessity of using two separate shafts and driving-pulleys, as in independent machines of this class.

To such end the invention consists in certain novel features of construction, which will be fully described in the specification and particularly pointed out in the claims.

In the drawings presented herewith, Figure 1 is an end view of a feed-cutter and feed-grinder connected by my improved connecting devices. Fig. 2 is a view thereof, partly in plan and partly in horizontal section, the section being taken through the line 2 2, Fig. 1. Fig. 3 is a perspective view of a bracket used in connection with my invention. Fig. 4 is a perspective view of the bracket, showing also the means for vibrating the feed-chute used in the feed-grinder. Fig. 5 is a detail section of a grinding-bur used in the feed-grinder and showing the means for connecting the bur with the main driving-shaft of the feed-cutter. Fig. 6 is a detail cross-section through the line 6 6, Fig. 5. Fig. 7 is a similar view through the line 7 7, Fig. 5. Fig. 8 is a detail front view of one of the standards which supports the hopper of the feed-grinder. Fig. 9 is a central longitudinal section through the line 9 9, Fig. 10; and Fig. 10 is a horizontal section through the line 10 10, Fig. 9.

In order to properly illustrate my invention, I have shown a feed-cutter of that class in which the stock is continuously fed into the same from one end and cut into small particles such as will be desirable for feed for cattle. A feed-grinder is also shown in the drawings which is adapted to grind kernels of corn, oats, &c., into very small particles. These two machines taken separately are of known forms, but are the most suitable for my purpose.

In Figs. 1, 9, and 10, A A A′ represent two vertical members and the base, respectively, of the framework of a feed-cutter, and A^2 the spout or chute through which the cut feed is discharged. B represents the concave in which rotatable cutters B′ are arranged, these cutters being adapted to cut the stock into small particles and receiving their rotating motion from a shaft C, upon which is mounted a wheel C′, which may either be used as a fly-wheel or belt-wheel, as may be desired. In this class of feed-cutters the other operating portions of the machine are driven by gearing the same to the shaft C, and I have shown a gear-wheel upon this shaft which may evidently rotate the other gears, thus imparting the motion to the other operating portions of the feed-cutter.

To the framework of the feed-cutter are secured two beams A^3 A^3, one arranged above the other and extending laterally from the machine, the ends of these beams being connected by two vertical beams A^4 A^5, thus making a perfectly-rigid framework capable of sustaining a considerable weight. The object of this framework is to support two gear-wheels, one of which is seen at C^2, (see Fig. 2,) secured upon a shaft *c*, the other gear being in mesh with the gear C^2, arranged above the same and fast upon a shaft *c′*, extending into the feed-cutter. The shafts *c c′* are adapted to carry feed-rollers which feed the stock into the machine.

The grinder is seen in Figs. 1 and 2, and comprises, with other elements, a hopper D, in which grain—such as corn, oats, &c.—may be placed, and a vibrating feed-chute *d*, located immediately below the spout of the hopper D and vibrated by means of a device hereinafter described, this vibrating chute being adapted to discharge the grain into the grinding-mill proper, E, which is provided with two grinding-disks *e e′*, of ordinary construction, such as are used in grinding-mills of this class. A discharge-spout E′ is formed upon the lower portion of the grinding-mill and is adapted to deliver the ground feed into suitable receptacles provided therefor.

The feed cutter and grinder thus far de-

scribed are of the most suitable kind upon which to apply my improved connecting devices and have been described very briefly for the reason that they are of well-known forms, and therefore it is not thought necessary to explain them in detail. I will now proceed to describe the devices used to connect these machines.

Fig. 3 represents a bracket which is used to connect the frames of the two machines and which consists of a yoke-shaped portion F and two laterally-extending ears f f'. The bracket F is secured to the upright A^4 by means of bolts f^2, passing through the ears $f f'$, and a diagonal brace F' is provided to support one end of the bracket. As seen in Figs. 1 and 2, the brace F' extends diagonally from the bracket to one of the upright members A of the feed-cutter frame and is secured thereto by means of the bolt a, which is ordinarily used to connect the upright members A A. The hopper D is supported by two standards D' D', the lower ends of which are bifurcated and formed into two flanges d' d', upon which rests the head of a bolt d^2 d^2, which passes through holes in the bracket provided therefor, as seen at f^3, Fig. 3. One of the bolts d^2, besides securing the standards D' D' to the bracket, passes through one end of the brace F', thereby securing it to the under side of the bracket.

The grinding-mill proper, E, is provided with a pair of radially-extending lugs e^2 e^2, and these lugs rest upon the extreme ends of the bracket, the same being provided with holes through which bolts pass to secure the mill in the proper place upon the bracket and in its proper relation to the other portions of the feed-grinder. The drive-shaft C of the cutter extends beyond the same and is concentric with the grinding-disks of the feed-grinder. The bur e' of the mill is stationary and is held in place by the casing of the mill, but the bur e is rotatable and receives such motion from the shaft C of the feed-cutter. To connect the shaft C with the grinding-bur e, a thimble g is slipped upon the end of the shaft C, said shaft being provided with a key-seat c^2, and a feather g' being formed upon the thimble and adapted to be seated in the key-seat c^2, thereby securing the thimble upon the shaft, so as to be rotatable therewith, but still to have a slight longitudinal motion thereon. As seen in Fig. 7, the end of the thimble is formed with two parallel faces, and upon these faces are formed two lugs g^2 g^2, resting against corresponding lugs g^3 g^3, formed upon the face of the grinding-bur e, and, as shown, this bur is formed with a concave face g^4, in the center of which is a socket g^5, in which rests the convex end g^6 of the thimble. This convex and concave connection between the grinding-bur and the thimble is for the purpose of centering the disk, so that it will rotate in the proper manner. The shaft is journaled near its end in a bearing g^7, which is bolted to the bracket, as seen in Fig. 2, and adjacent to the bearing-block g^7 an eccentric h is secured to the shaft C, this eccentric being adapted to oscillate a U-shaped arm H of a bell-crank lever, the arms H' of which extend upward and are connected by a transverse member h', hinged to the bottom of the vibrating chute d. The bell-crank oscillating lever H H' is pivoted upon lugs h^2 upon the standards D' D', and a yoke-shaped support H^2 is pivoted upon lugs h^3, also formed upon the standards D' D'. It will thus be seen that as the eccentric h rotates with the shaft C the U-shaped portion of the oscillating lever H will be oscillated, thereby causing a vibratory motion to the chute d.

From the above it will be clearly seen that the connecting devices are extremely simple, yet perfectly capable of performing the functions required of them, that through their use the two machines are so combined that they may be operated singly or jointly, and that in such combination the supporting-frame and main shaft of the feed-cutter are made to perform the same functions for both machines, thereby effecting a considerable saving in the cost of production of the two machines.

Having now described and explained my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a stock-feed machine, a shaft, C, a stationary grinding-bur, e', a rotatable bur, e, formed with the socket, g^4, and lugs, g^3, and a socketed thimble, g, adapted to be slipped endwise upon the shaft and formed with lugs, g^2, upon its outer end adapted to engage the lugs upon the bur, e, said shaft and thimble being formed with engaging devices adapted to prevent the rotation of one upon the other.

2. In a stock-feed machine, a main driving-shaft, C, formed with a key-seat upon its end, a stationary bur, e', a rotatable bur, e, formed with the lugs, g^3, and a socketed thimble, g, adapted to be slipped endwise upon said shaft and formed with lugs, g^2, upon its outer end adapted to engage the lugs upon the rotatable bur, and formed with the key, g', in its socket adapted to be seated in the key-seat in the shaft; substantially as described.

3. In a device of the class described, the combination with a feed-cutter having a suitable receiving and discharge chute and the laterally-extending frame A^3, A^4, A^5, a grinding-mill having the standards D', and the shaft C, adapted to carry suitable cutters in the feed-cutter and engaging one of the grinding-burs in the feed-grinder, of a bracket F, having the ears f, f', secured to the laterally-extending frame, and the brace F', connecting the bracket with the frame of the feed-cutter, the standard D', being secured to the bracket and supported thereby; substantially as described.

4. The combination with a grinding-mill comprising a hopper, vibrating chute d, a stationary grinding-bur and a rotatable bur, a

discharge-chute and standards D′, having bifurcated flanges d', of means for connecting the same with a feed-cutter of the class described whereby both may be operated by a common driving-shaft, said means consisting substantially of a thimble keyed upon the end of the shaft and formed with ears d^2, adapted to engage corresponding ears upon the rotatable grinding-bur, a bracket F, secured to the feed-cutter and supported thereby and adapted to support the feed-grinder; substantially as described.

LE GRAND KNIFFEN.

Witnesses:
CHAS. O. SHERVEY,
M. L. SHEAHAN.