

(No Model.)

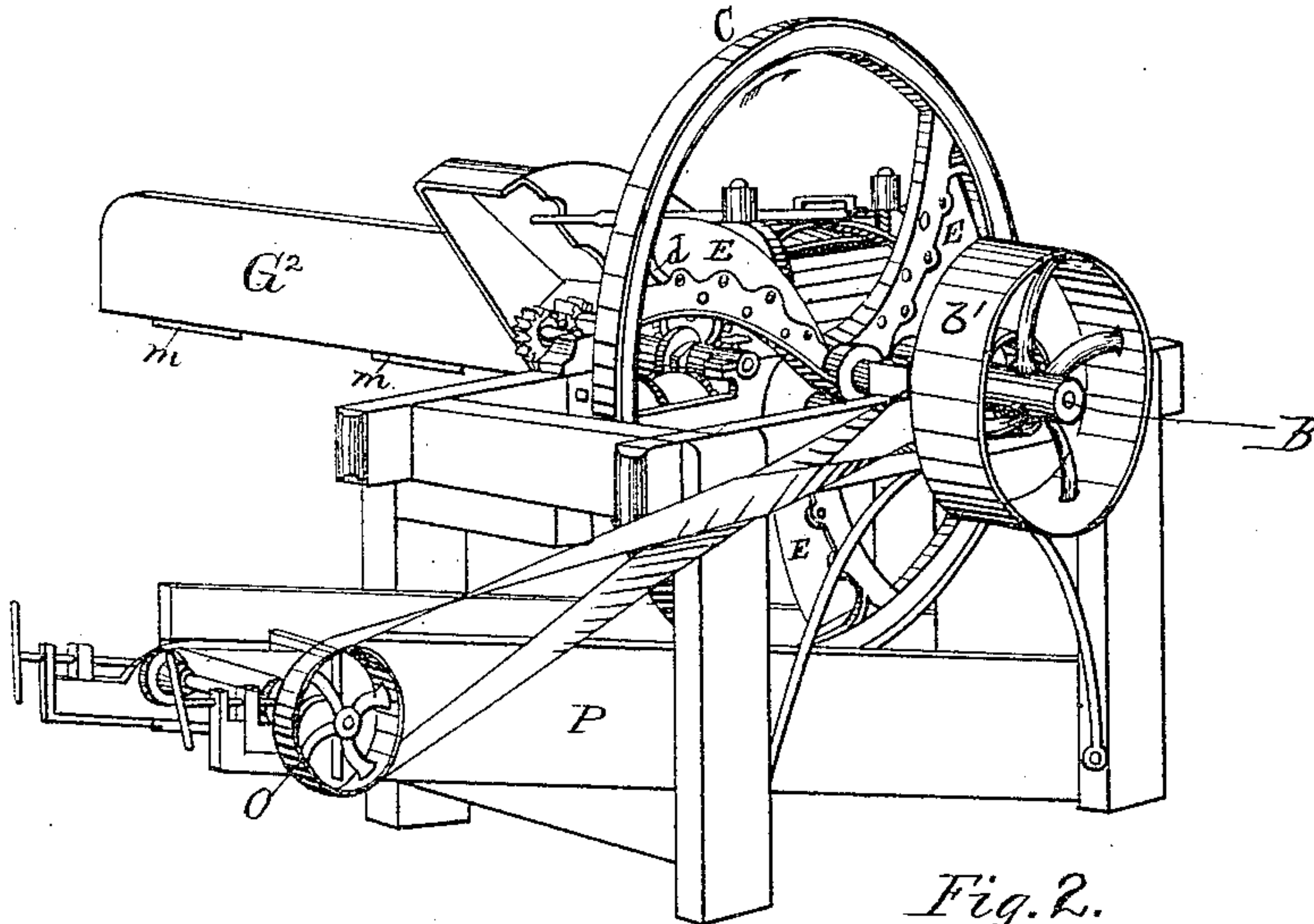
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J. B. BROWN, J. W. DOUGLASS & J. PENTREATH.  
ENSILAGE AND FODDER CUTTER.

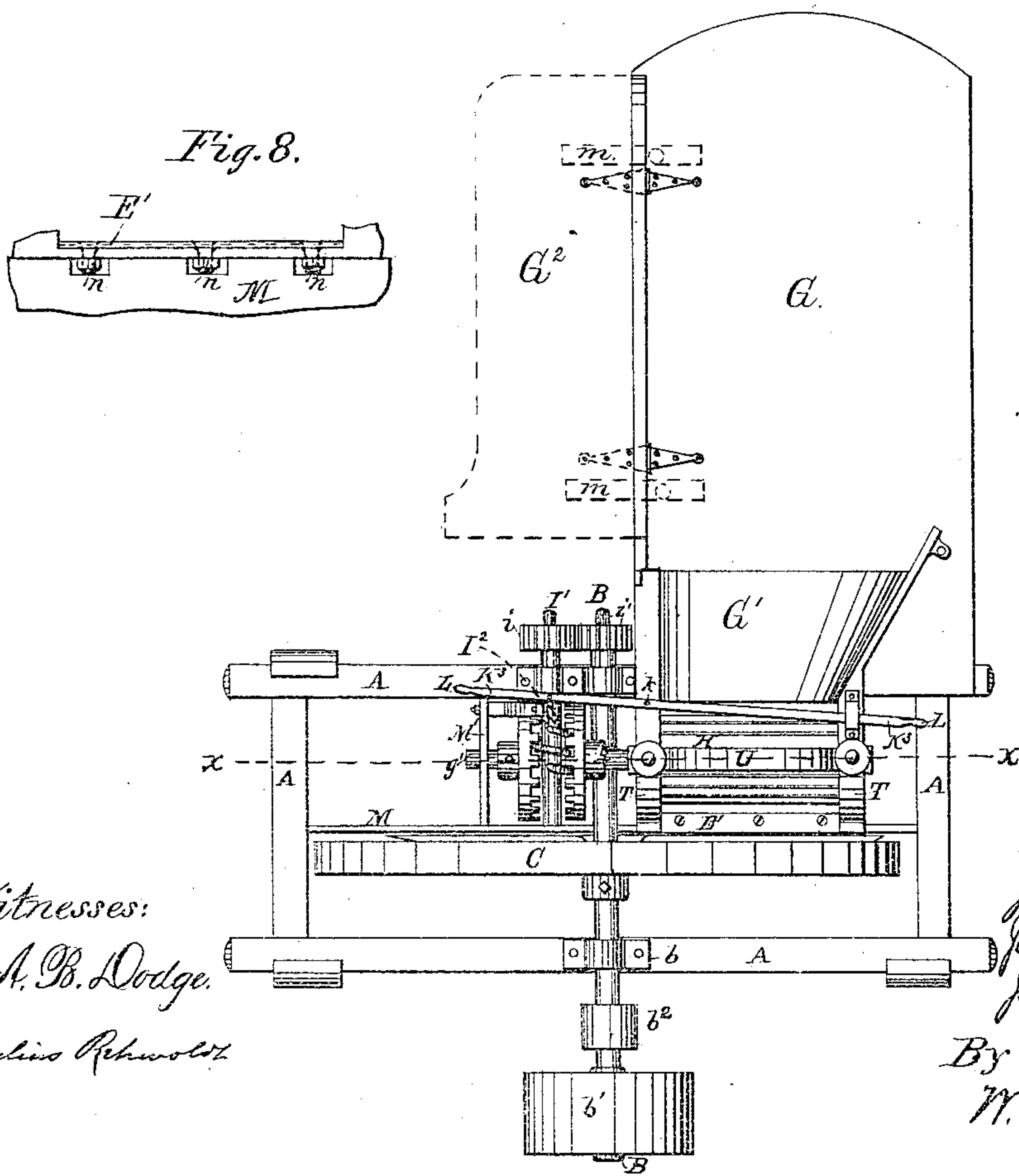
No. 332,698.

Patented Dec. 22, 1885.

*Fig. 1.*



*Fig. 2.*



*Fig. 8.*

Witnesses:

A. B. Dodge.

Julius Rehnoldt.

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James B. Brown.

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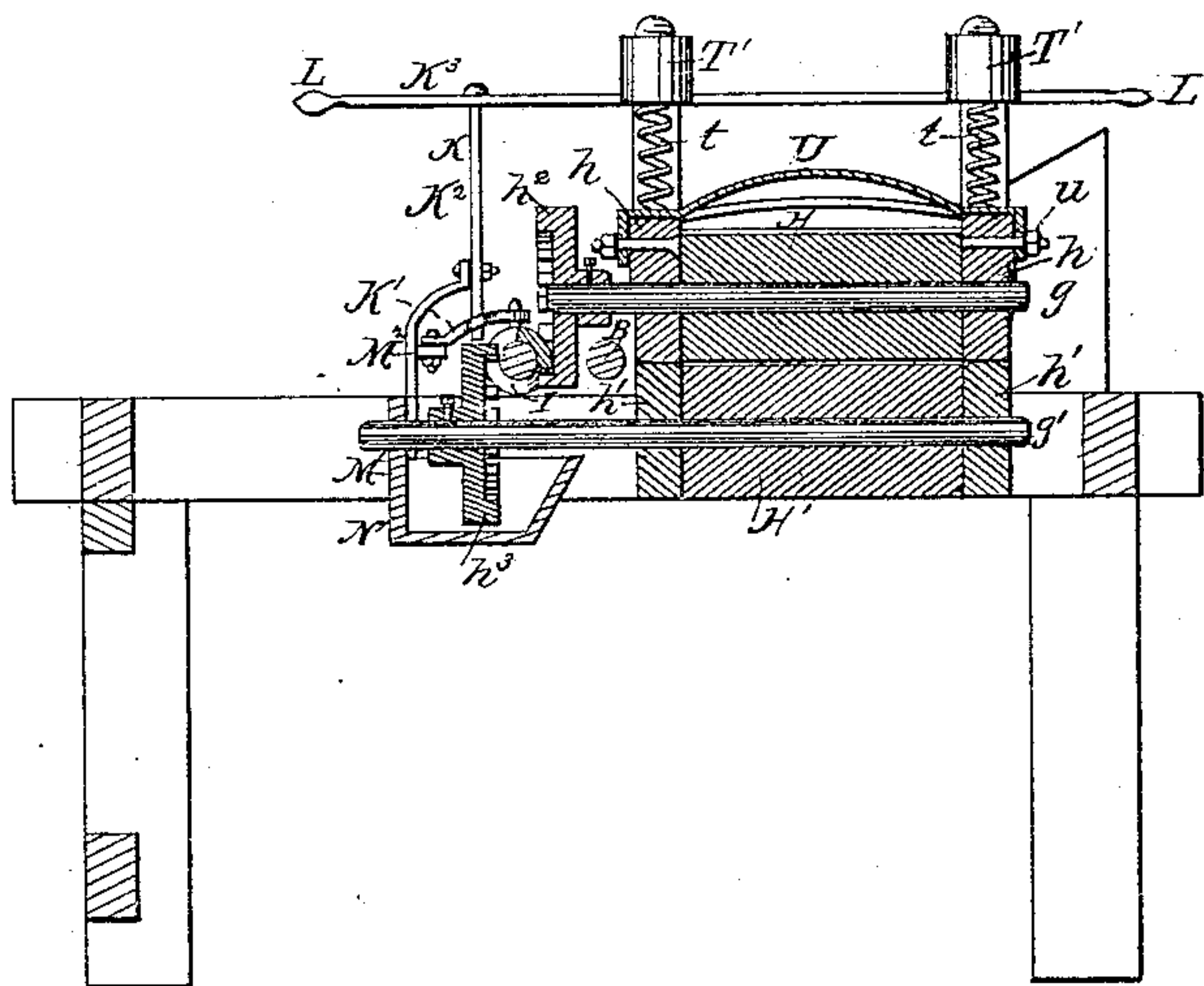
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J. B. BROWN, J. W. DOUGLASS & J. PENTREATH.  
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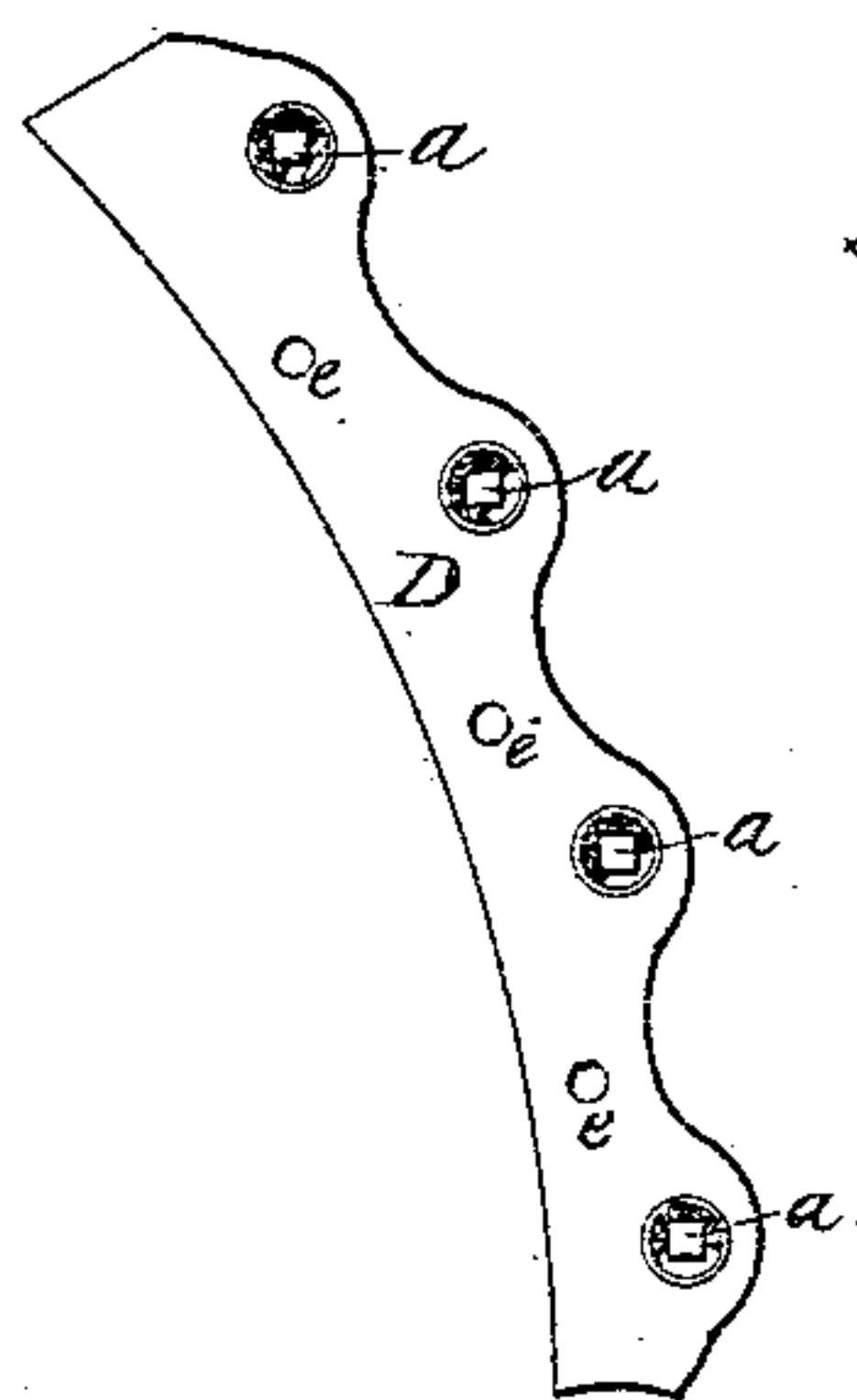
No. 332,698.

Patented Dec. 22, 1885.  
*Fig. 3.*

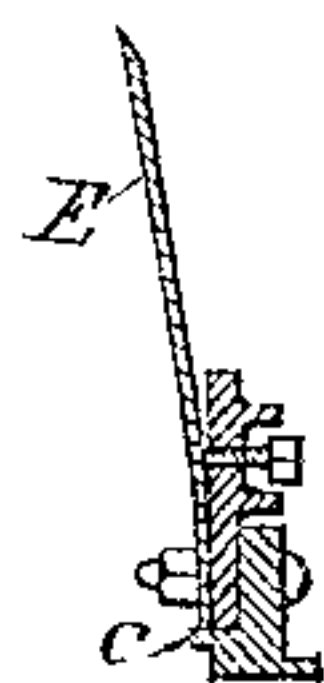
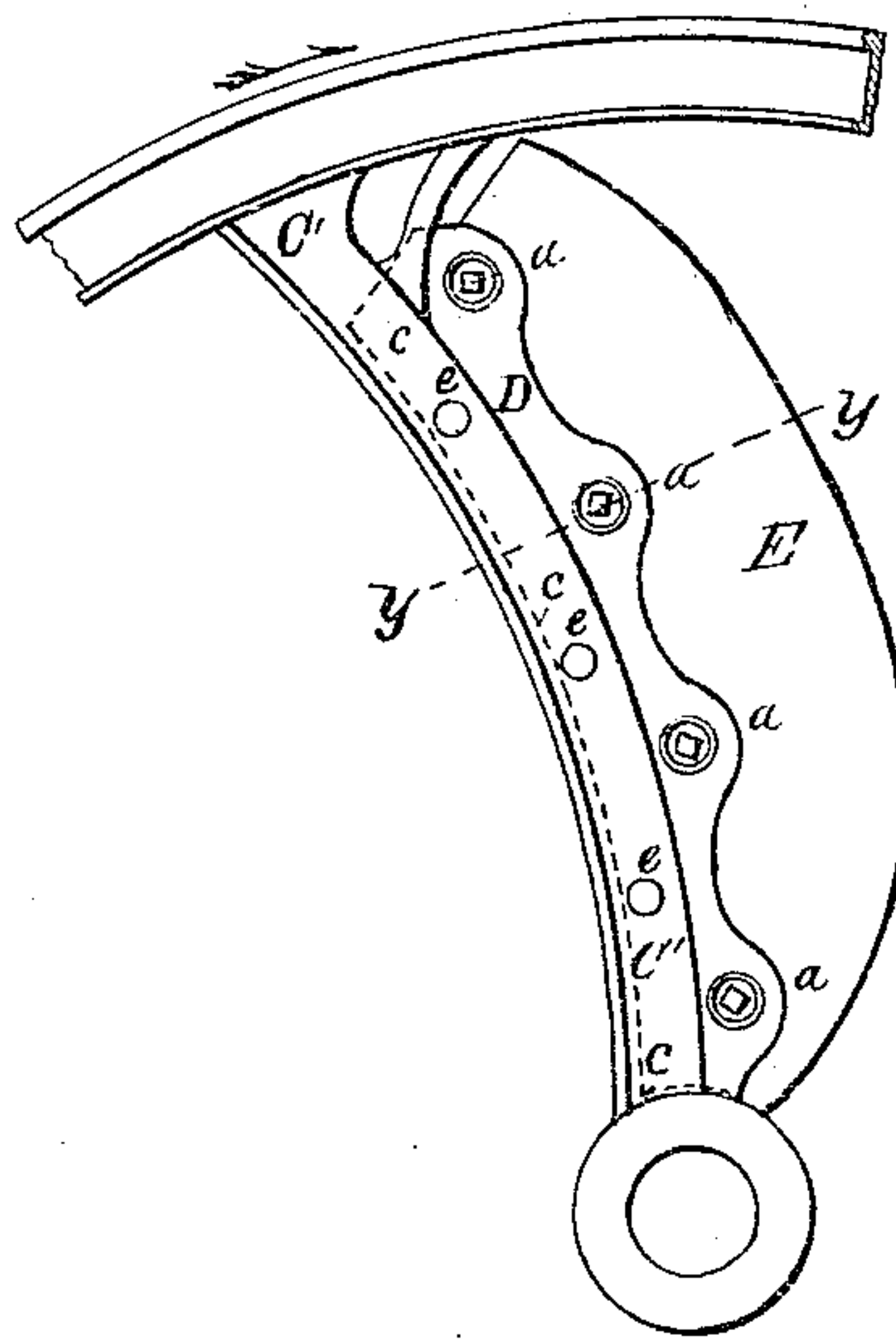
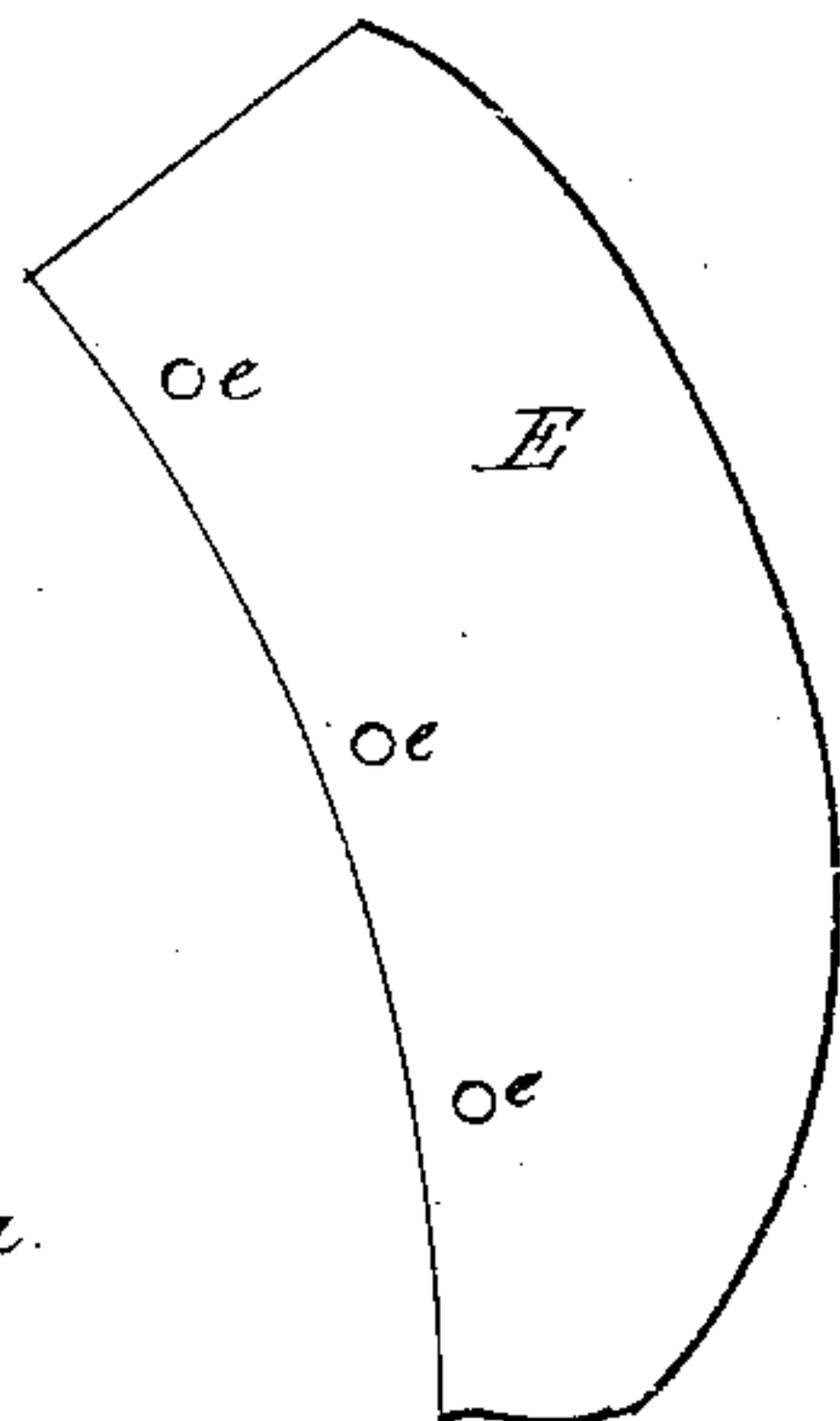


*Fig. 4.*

*Fig. 6.*



*Fig. 7.*



*Fig. 5.*

Witnesses:

*A. B. Dodge.*

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# UNITED STATES PATENT OFFICE.

JAMES B. BROWN, OF NEW YORK, JOHN W. DOUGLASS, OF BROOKLYN, AND  
JOHN PENTREATH, OF YONKERS, N. Y.

## ENSILAGE AND FODDER CUTTER.

SPECIFICATION forming part of Letters Patent No. 332,698, dated December 22, 1885.

Application filed January 5, 1885. Serial No. 152,099. (No model.)

*To all whom it may concern:*

Be it known that we, JAMES B. BROWN, of the city, county, and State of New York, JOHN W. DOUGLASS, of Brooklyn, in the county of Kings and State of New York, and JOHN PENTREATH, of Yonkers, in the county of Westchester, in the State of New York, have invented certain new and useful Improvements in Ensilage and Fodder Cutting Machines, which improvements are fully set forth and described in the following specification and accompanying drawings.

The object of our invention is to provide an ensilage or fodder cutter simple, durable in construction, and easily operated even by inexperienced persons.

The invention consists of certain improvements in the construction of several parts, which will be hereinafter set forth in the specification in connection with the drawings, and specifically embodied in the several clauses of claims.

In the drawings similar letters of reference indicate like parts.

Figure 1 is a perspective view of an ensilage or fodder cutter in which our improvements are embodied, all the parts being in proper relation the one to the other. Fig. 2 is a plan view of the same. Fig. 3 is a vertical section taken at the line  $x x$  of Fig. 2. Fig. 4 is an enlarged vertical view of a section of the fly or cutter wheel, one of the knives and its back being attached to the wheel-arm. It also shows the spur of the arm extending to the rim and over the knife-head. Fig. 5 is a cross-section of Fig. 4, taken at the line  $z z$  of said figure. Fig. 6 is a front view of one of the knife-backs removed from its connections. Fig. 7 is a front view of one of the knives removed from its back. Fig. 8 is a front view of a section of the rail M.

In the drawings, A A A A is a strong frame constructed as is usual, and gives bearings to all the various parts of the machine.

B is the main shaft, extending from front to back of the frame, and journaled in the adjustable pillow-blocks  $b b$ . At its front end it is provided with the driving-pulley  $b'$ , and between it and its front journal it has a small pulley,  $b^2$ , by which the elevator is driven, as hereinafter described.

C is the fly or cutter wheel, located about midway of the shaft B, and in front of the other mechanism.

C' C' are the arms of this wheel, (see Fig. 4,) which is constructed in the usual way, except that each arm is provided at its outer end with a spur or slight branch arm,  $d$ . Said spur  $d$  is rounded on its face, and acts to prevent any lodgment of ensilage on the wheel so as to clog it.

D is the knife-back. (See Fig. 6.) It is provided with a series of set-screws,  $a a a a$ , by which the cutting-edge of the knife E is adjusted with the cutting-bar E'. It is also provided with the bolt-holes  $e e e$ , which correspond to similar holes in arm C' and the knife E, through which bolts are passed to confine the knife to its back and attach both to the wheel-arm C'.

By reference to the drawings it will be seen that the fly or cutting wheel turns to the right when the machine is in operation, as is shown by the arrows.

Directly behind the right side of the machine is located the feed-table G and its head or funnel G', at the front of which are placed the feed-rolls H and H', H being the upper one and H' the lower one, which is plain on its face, while the upper one is fluted or corrugated. (See Figs. 2 and 3.)  $g$  and  $g'$  are the shafts of these rolls, to which they are attached by keys or otherwise. Said shafts journal in the boxes  $h$  and  $h'$ , and are of such length as to project to the left of the machine beyond said boxes, the shaft  $g$  being mounted with the worm-gear  $h^2$  and the shaft  $g'$  with the worm-gear  $h^3$ , as shown in Fig. 3, by reference to which it will be seen that the lower shaft,  $g'$ , is much longer than the upper one,  $g$ , and that the wheels  $h^2$  and  $h^3$  face each other, so that the lower cogs of  $h^2$  and the upper ones of  $h^3$  engage and are driven by the worm I on the shaft I'. The worm I is not fixed on its shaft, but is provided with a clutch, I<sup>2</sup>, by which it is placed in or out of gear. The rear end of worm-shaft I extends beyond the rear of frame A, and is mounted on its end with a pinion,  $i$ , which meshes into the cog-wheel  $i'$  on the rear end of the main shaft B. These wheels are removable and also interchangeable with others of various diameters, so that



the rolls H and H' can be driven at a greater or less rate of speed, whereby the length of cut of the ensilage is made long or short, as may be desired. The clutch I<sup>2</sup> is thrown in or out of gear by the clutch-lever K', operated by the short vertical lever K<sup>2</sup>, which is connected to and operated by the long horizontal lever K<sup>3</sup>, which has its fulcrum k, as shown in Fig. 2. This lever K<sup>3</sup> is made of such length that it will extend from one side to the other over the rolls and worm-gear, and is provided at each end with a suitable handle, L, so that the feed-gear can be thrown into or out of gear by the operator, no matter which side he may be on, and with perfect safety.

G, Fig. 2, is the table on which the material to be cut is placed. G<sup>2</sup> is its side or back, Fig. 1, hinged to the table G, so it can be turned down and form an extension-leaf, and also permit of an operator working on each side of the table when the machine requires rapid feeding. This side or leaf G<sup>2</sup> is supported by the flies m m (see Fig. 2) when turned down as an extension, and when in a vertical position, as shown in Fig. 1, it is held in place by a button or hook or any other similar device at its front end, where it connects with the side of the trough G'.

The trough or funnel-head G' is formed in the usual manner for conducting the material from the table G to the feed-rolls.

T T are housings, in which the journal-boxes h of the upper feed-roll, H, can move up or down. Said boxes are connected the one with the other by the steel arch or bow U, which is slightly elastic. It is connected to the boxes h h by its ends passing over the tops of the boxes and down on the outside of the same and terminating just above the journal, and is secured to said boxes by the bolts u u. Spiral springs t t are placed above said boxes h h in the housings, and secured by the caps T' T'. Said springs act to force the roller down to its work when raised by the material passing through or between the rolls. At the same time the spring-arch U produces a uniform action in the movement of the boxes, and prevents their being broken by any inequality in the rising or falling of the ends of the roller H.

M is an iron rail, which extends from one side of the frame A to the other, just back of the fly-wheel and under the front of the mouth of the feed box or trough, which it supports. It also gives bearing to the front end of the worm-shaft I', and by a short rail, M', (projecting from it back to frame A, with which it connects,) to the end of shaft g'. Near the rear end of this short rail M' is bolted a standard, M<sup>2</sup>, which extends up and over the worm-shaft, and provides fulcrums for the horizontal clutch-lever K' and the short vertical lever K<sup>2</sup>. (See Fig. 3.)

The mouth of the feed box or trough is provided with the cutting-bar E', before men-

tioned. This bar we make removable by notching out the upper edge of the rail M, so as to give room for the wrenching up of the nuts n of a series of bolts which pass through and secure this bar to the bottom of the feed box or mouth. This cutter-bar we make of steel, and corresponds in length to the width of the box-mouth in which it is seated. Said bar is about one-half of an inch in thickness and, say, one and a half inch wide, and has its bolt-holes countersunk, and the rear portion is beveled down so as to meet the floor of the feed-box, while its front is ground up so as to form a sharp square edge, which is highly necessary in ensilage-cutters, and requires frequent attention.

Directly under the worm-gearing we place a lubricating-box, N, in which is placed oil or other lubricating material. This box is of such proportions as to admit the lower portion of worm-wheel h<sup>3</sup> to freely move therein and come in contact with the oil. Thus the oil is conveyed by it to the worm, and by the worm to the worm-wheel h<sup>2</sup>. It will be seen by reference to Fig. 3 that the right side of the box N flares so as to project under the worm I and worm-wheel h<sup>2</sup>, and thus conducts any drip from these parts back to wheel h<sup>3</sup>.

P, Fig. 1, is the elevator for conveying the ensilage or cut fodder away from the machine. It is constructed in the usual manner, the driving-pulley O being placed at the upper end of the elevator, and the power is taken direct from the pulley b<sup>2</sup> on the main shaft B.

In the foregoing specification we have given a description of a complete ensilage or fodder cutting machine, but do not wish to be understood as broadly claiming all of the various parts described; but

What we do claim as new, and desire Letters Patent for, is—

1. In an ensilage or fodder cutting machine, the spring-arch U, attached to sliding boxes h h of the upper feed-roller, constructed and operating as and for the purpose described.

2. In an ensilage or fodder cutting machine, the upper roller journaled in sliding boxes h h, connected by spring-arch U, all constructed as and for the object specified.

3. In an ensilage or fodder cutting machine, the combination, with the shaft B, revolving knives E, and rail M, of the beveled steel cutting-bar E', detachable from the mouth of the feed-box, to which it is attached by bolts, which pass through the bottom of said box and enter notches in the rail, substantially as described, for the purpose set forth.

JAMES B. BROWN.  
JOHN W. DOUGLASS.  
JOHN PENTREATH.

In presence of—

W. M. CUTHBERT,  
J. H. SIMONSON.