

No. 617,519.

Patented Jan. 10, 1899.

J. L. CANHAM.  
HAT SIZING MACHINE.

(Application filed July 7, 1898.)

(No Model.)

2 Sheets—Sheet 1.

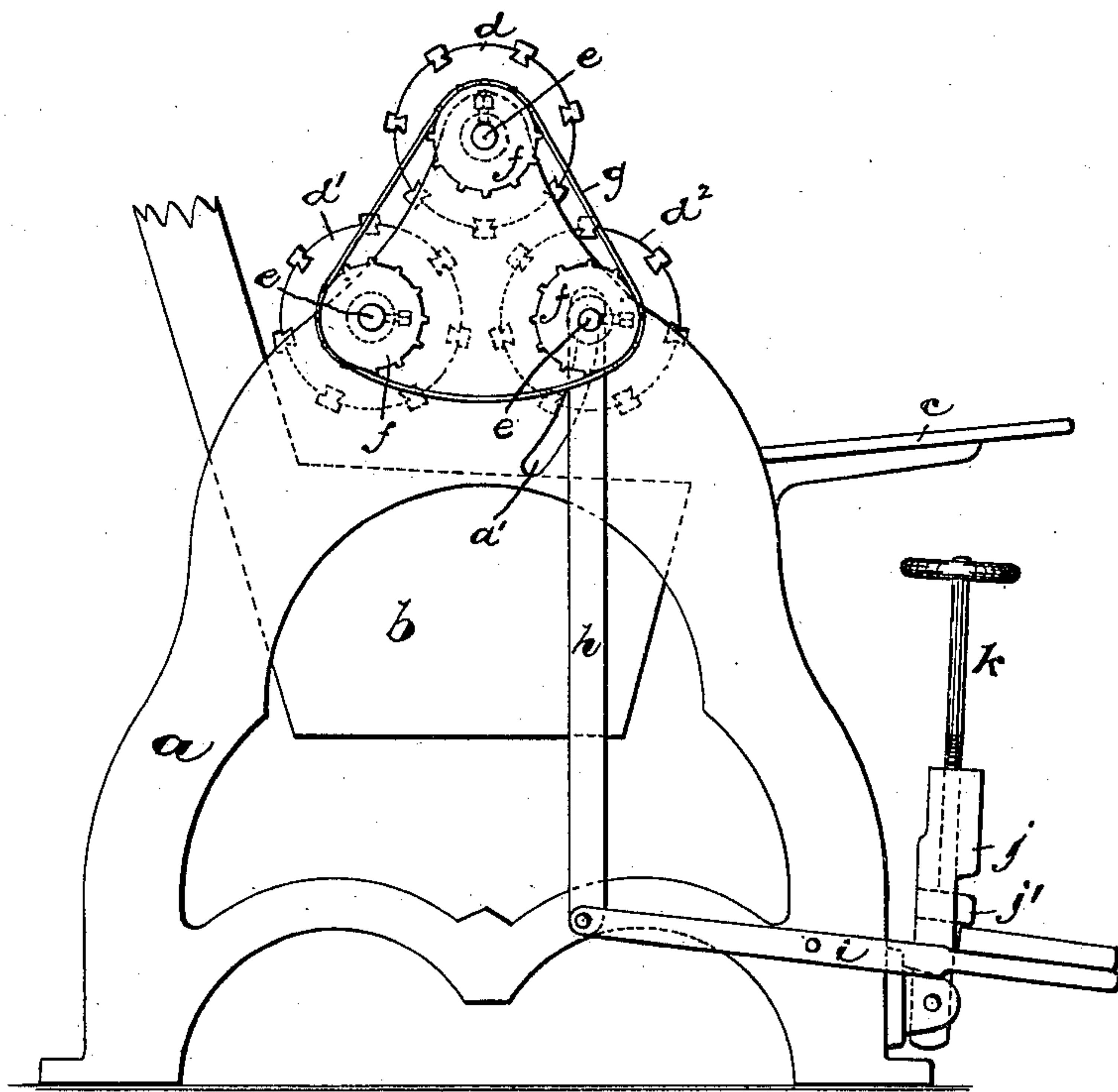


Fig. 1.

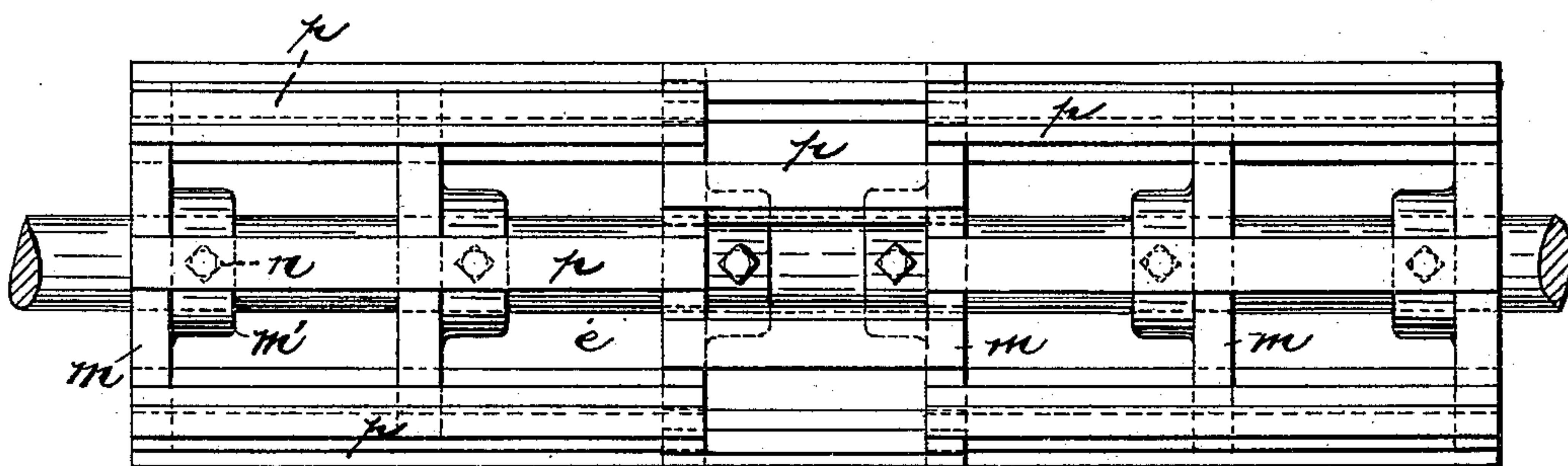


Fig. 2.

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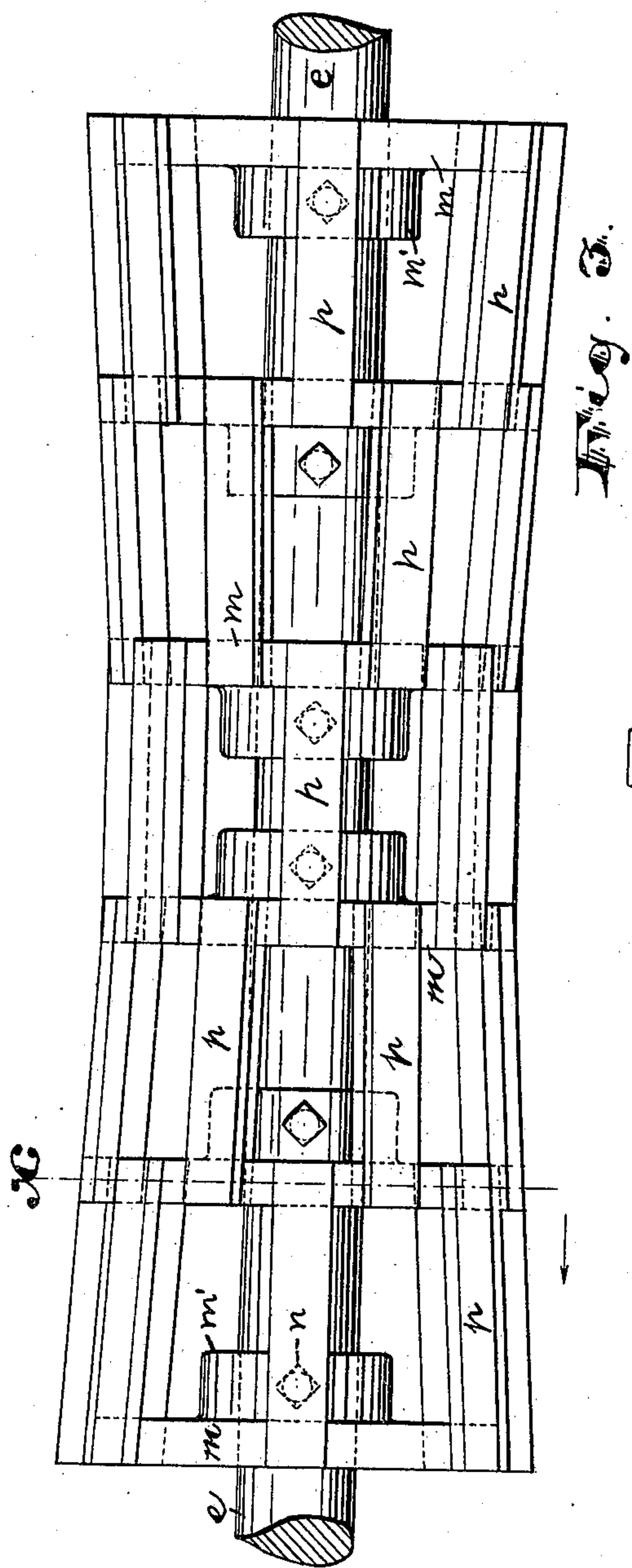


Fig. 3.

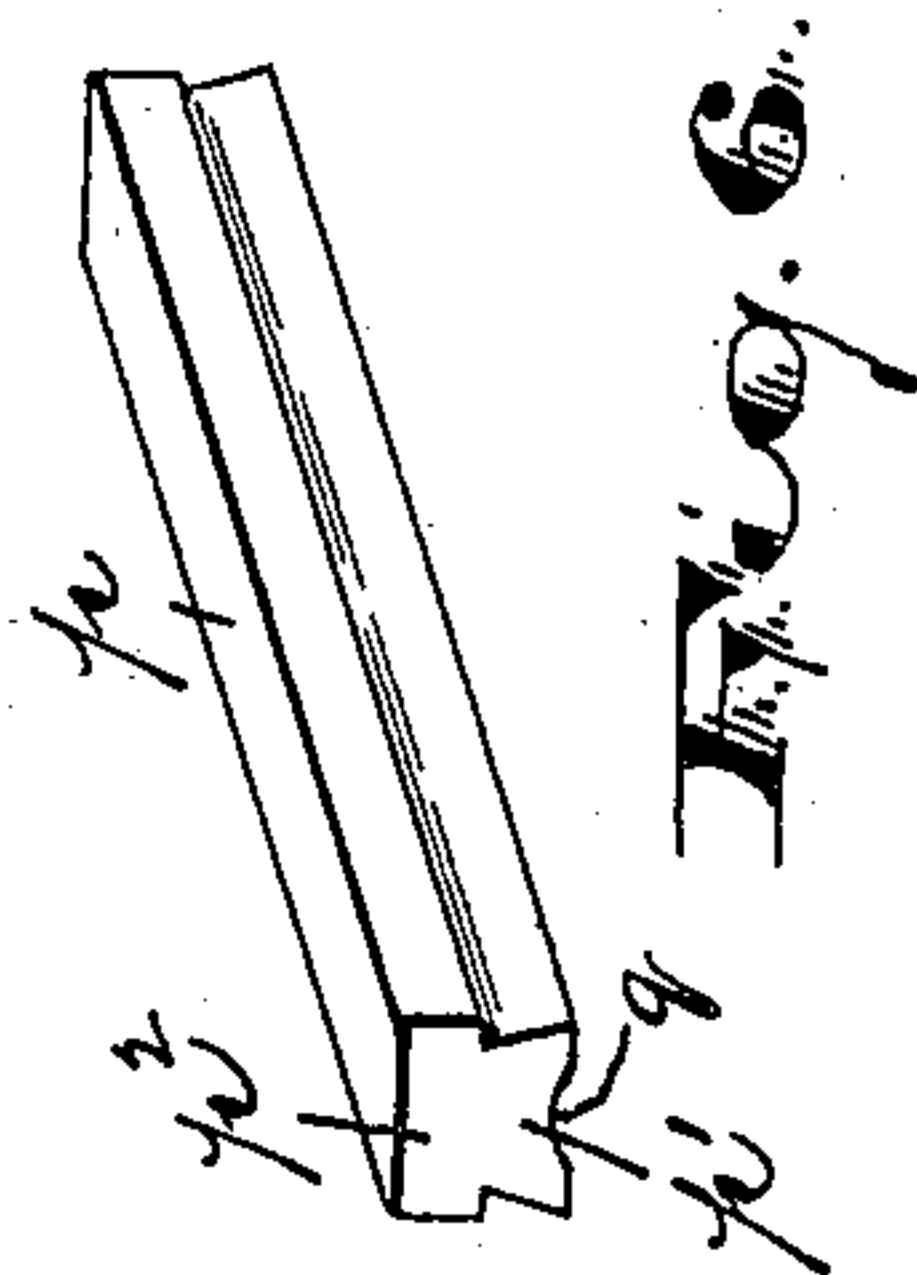


Fig. 6.

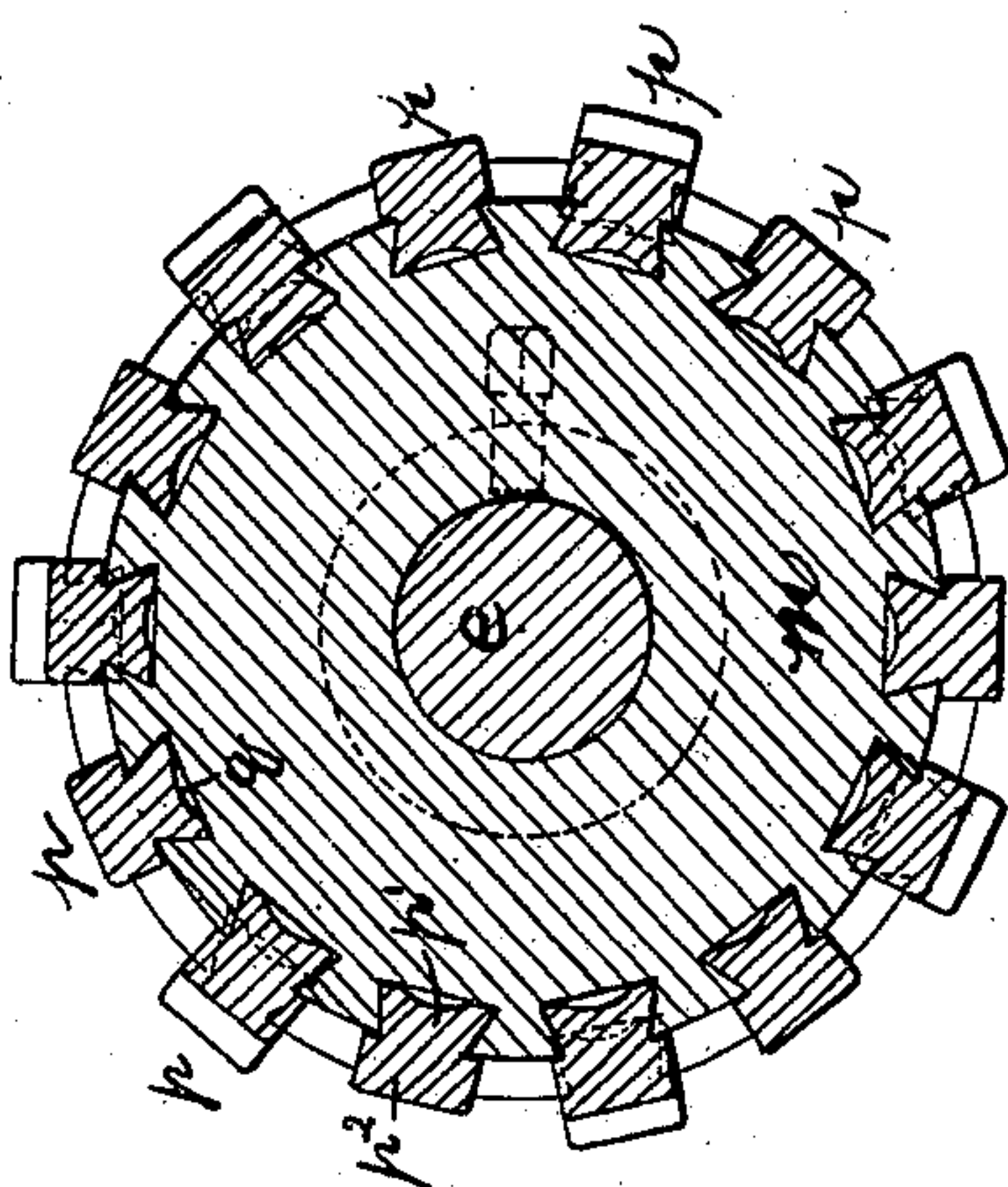


Fig. 4.

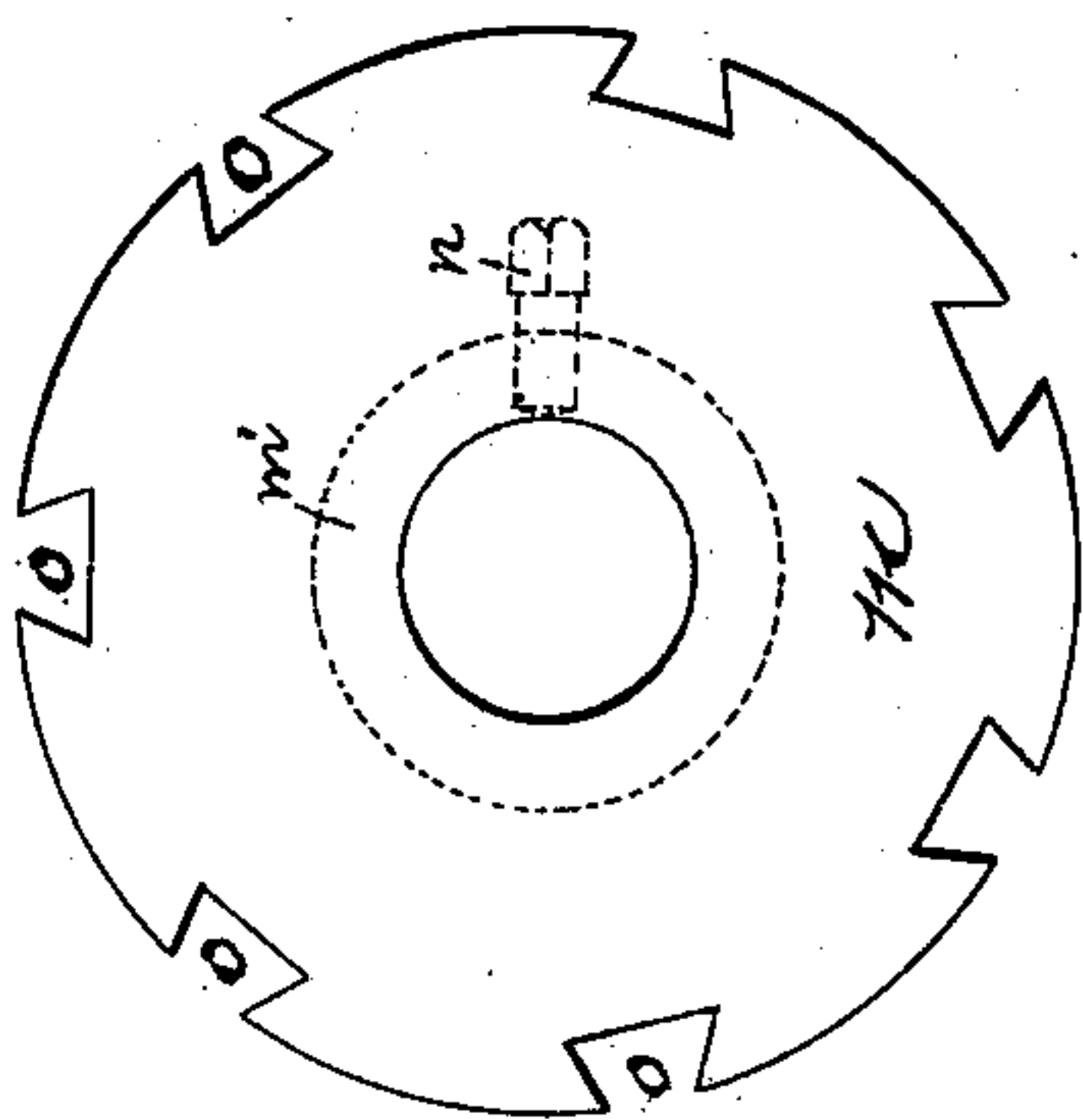


Fig. 5.

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# UNITED STATES PATENT OFFICE.

JAMES L. CANHAM, OF ORANGE, NEW JERSEY.

## HAT-SIZING MACHINE.

SPECIFICATION forming part of Letters Patent No. 617,519, dated January 10, 1899.

Application filed July 7, 1898. Serial No. 685,314. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES L. CANHAM, a citizen of the United States, residing at Orange, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Hat-Sizing Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

This invention relates to certain improvements in that class of hat-sizing machines in which a group of three or more rollers, either straight or centrally concave, are employed to reduce or shrink the felt, the invention more particularly relating to the construction of the said rollers.

The objects of the invention are to reduce the cost of construction, to enable the steam to get more perfect and free access to the shrinking hat-body, to reduce the cost of repair and to facilitate the same, and to secure other advantages and results, some of which may be referred to hereinafter in connection with the description of the working parts.

The invention consists in the improved hat-sizing machine, in the improved roller, and in the arrangements and combinations of parts of the same, all substantially as will be hereinafter set forth, and finally embraced in the clauses of the claim.

Referring to the accompanying drawings, in which like letters of reference indicate corresponding parts in each of the several views, Figure 1 is a side elevation of the improved hat-sizing machine. Fig. 2 is a detail view of one of the rollers therefor, showing a straight form of the construction. Fig. 3 is another detail showing the concave form of the construction. Fig. 4 is a transverse section of the said roller, taken at line *x*, Fig. 3. Fig. 5 is a detail view of one of the lag-supporting plates, and Fig. 6 is a detail perspective view of one of the lags.

In said drawings, *a* indicates one of the side standards of the framework of the machine, *b* the tank, and *c* the table, all said parts being of ordinary construction. Roll-

ers *d* *d'* *d''* are pivoted at their opposite ends in bearings in the upper parts of the side standards *a*, as usual, and the shafts *e* of said rollers project beyond the side standards *a* to receive sprocket-wheels *f*, keyed to said shafts. A chain *g* passes around said sprocket-wheels, whereby the rollers are caused to rotate uniformly together.

Two of the rollers, as *d'* *d''*, are arranged in substantially the same horizontal plane, forming a hat-roll-receiving depression between, in which the said hat-roll revolves during the felting or sizing process. The third roller *d* is disposed directly above said depression to engage the top of the hat-roll.

The lower roller *d''*, next to the table *c*, has its journals arranged in a slot *a'* and connected by a rod *h* to a lever *i*, adapted to be operated by the foot, as is common in the art, to throw the roller *d''* toward or away from the other rollers when the hat-roll is inserted or removed.

A catch or detent *j* is pivoted at the front of the machine, by means of which the outer end of the lever *i* may be held down and the roller maintained in operative position. The engaging portion *j'* of said catch *j* is capable of being moved vertically by means of the screw *k* to adjust the roller *d''* closer to the other rollers as the hat-roll decreases in size as the felting process continues.

Having now briefly described those parts common in all machines of this class, I will proceed to point out the peculiar construction of the rollers in my improved machine, in which rollers my invention more particularly inheres.

Each roller comprises the shaft *e*, upon which is arranged a series of disk-like plates *m*. These plates *m* are centrally perforated to receive the shaft *e* and are preferably provided with a hub *m'* and a set-screw *n* by means of which they are fixed upon the shaft *e*, though any other suitable means may be employed to secure them firmly in place. Any desired number of plates may be used. These plates I prefer to have of various sizes, small ones being placed on the middle part of the shaft and those toward the ends being of larger diameter, as shown in Fig. 3. This construction gives to the roller a longitudinally-concaved periphery, as will be understood; but



the plates may be all of the same diameter, making the roller longitudinally straight at its periphery, as shown in Fig. 2. At their peripheries the said disk-like plates *m* are  
 5 provided with undercut or dovetailed notches *o*, those in any given plate being preferably at uniform distances apart. In said notches are seated the lags *p*. These lags have at their lower portion longitudinal shanks *p'*, which fit  
 10 closely within the dovetailed notches *o* in the periphery of the plate *m*. The upper portion *p<sup>2</sup>* of the lags projects above the peripheries of the disks and provide the felting or sizing surfaces which engage the roll or bundle of  
 15 hats in the ordinary manner. Said lags are preferably inserted in place in the notches *o* when in a dry state and are made to nicely fit the notches when thus dry, so that when wet by steam or water the said lags will  
 20 swell and be held in position with great firmness and security. I thus dispense with all fastening apparatus and lessen the danger of injury to the hands and breakage or splitting of the lags. When the lags become worn  
 25 or for any other reason require renewal, they are very conveniently removed by drawing or forcing them longitudinally out of the notches *o*. By doing this when the parts are dry very little force is required. Fur-  
 30 thermore, by making the lags short or discontinuous in their extension from end to end of the roller and by extending them only from plate to plate the same can be quickly forced out of their bearings when worn, and  
 35 with equal ease new ones can be quickly inserted longitudinally into position in the plates of varying diameters to produce the desired concavous form of roller. By alternating the lags, as shown, those in the center  
 40 of the roll, where the wear is much the greatest, the short center lags when worn can be removed and replaced by new ones without disturbing the end lags of the roll, and thus an ordinary hatter without skill in machinery  
 45 or carpentry can quickly repair his machine without material loss of time on his part or the need of the expert help of a machinist. After the lags are fitted when dry and swollen by the dampness they are so firmly fixed in  
 50 the notches or sockets of the plates as to cause a great injury to them in the event of removal. By employing short lags in the center of the roll at the point of greatest wear their removal and replacing without removing the  
 55 end lags conduces greatly to economy.

Any number of lags may be used to form the circumference of the roller, but prefer-

ably seven. The best results are obtained by having several series of short lags, those of one series alternating with those of the next, 60 as shown in Fig. 3, or long lags may be used at each end of the roller and a series of short ones in the middle, alternating with the long ones. The under surface of the shanks *p'* of the lags may be concaved or grooved, as at *q*, 65 in order to facilitate the fitting together of the parts.

Having thus described the invention, what I claim as new is—

1. The improved hat-sizing machine herein 70 described, comprising a suitable frame, rollers and operating means, the said rollers each comprising a series of plates the peripheries of which are provided with undercut notches, and short lags fitted within said notches, the 75 said lags extending from one plate to the next in order and ending thereat, substantially as set forth.

2. The improved roller for hat-sizing machines herein described, comprising a shaft, 80 a series of plates fixed thereon, each plate being provided with undercut or dovetailed notches, and series of short, discontinuous lags having dovetailed longitudinal shanks and longitudinal heads, the said shanks fitting 85 closely within said notches and said heads projecting above the peripheries of the plates, substantially as set forth.

3. The improved hat-sizing machine herein described, comprising a frame, rollers pivoted 90 therein and means for operating said rollers, each of said rollers consisting of a shaft *e*, and a series of disk-like plates *m*, fixed on said shaft, and each plate having undercut or dovetailed notches *o*, cut in its periphery, and series of lags extending from plate to plate, said 95 lags having longitudinal dovetailed shanks *p*, fitting into said notches *o*, and the lags of one series alternating in position with those of the next, substantially as set forth. 100

4. In a hat-sizing machine, the improved sizing-roller comprising a series of notched plates and discontinuous lags arranged in the notches, the center lags being removable independent of the end lags, substantially as 105 set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 2d day of June, 1898.

JAMES L. CANHAM.

Witnesses:

CHARLES H. PELL,  
C. B. PITNEY.