

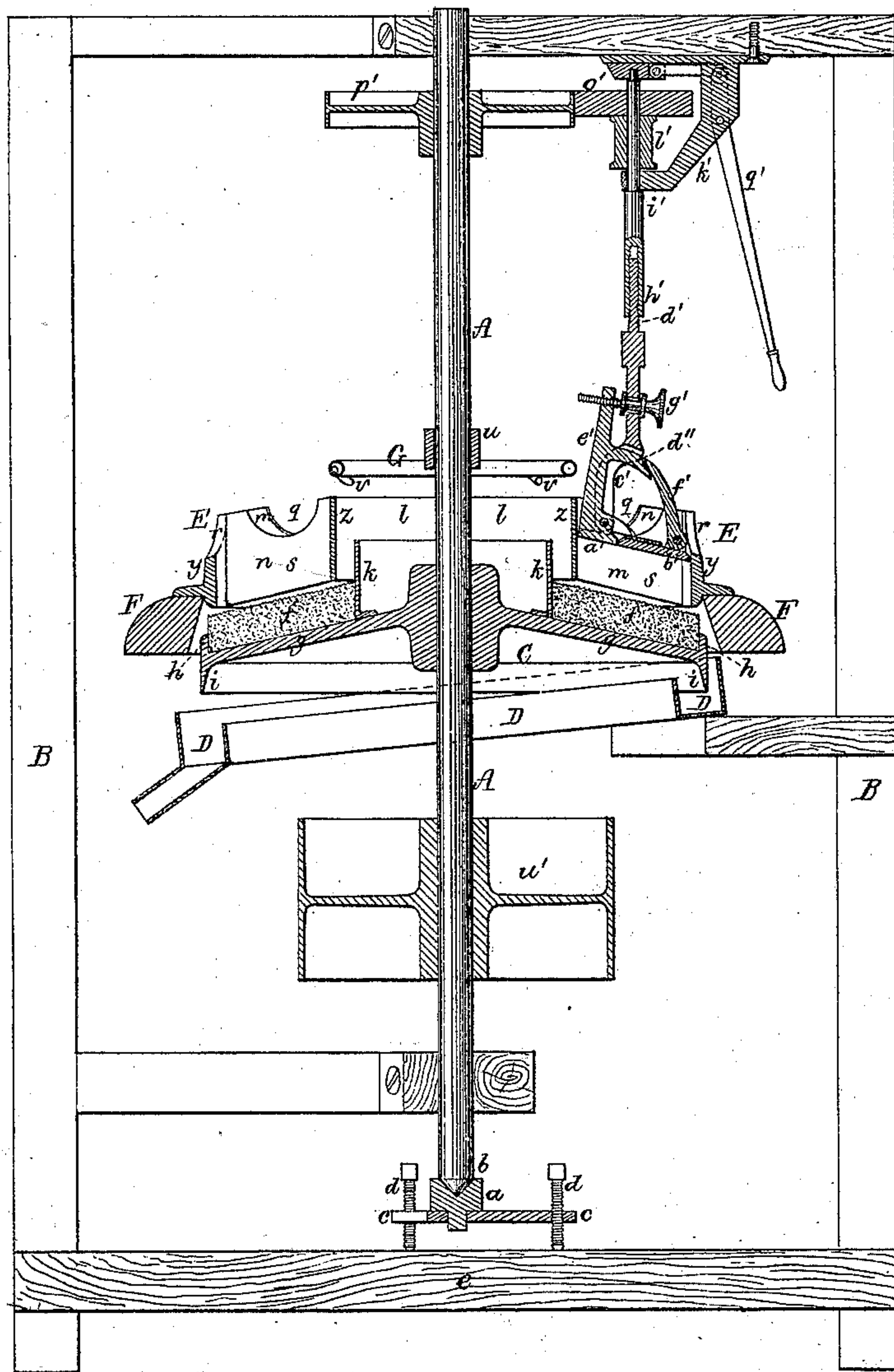
A. K. GILMORE.

Improvement in Machines for Preparing Wood for Pulp.

No. 127,337.

Patented May 28, 1872.

Fig. 1.



Witnesses.

S. N. Piper.
L. N. Möller.

Alven K. Gilmore.

by his attorney.

R. M. Eddy

A. K. GILMORE.

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Fig. 2.

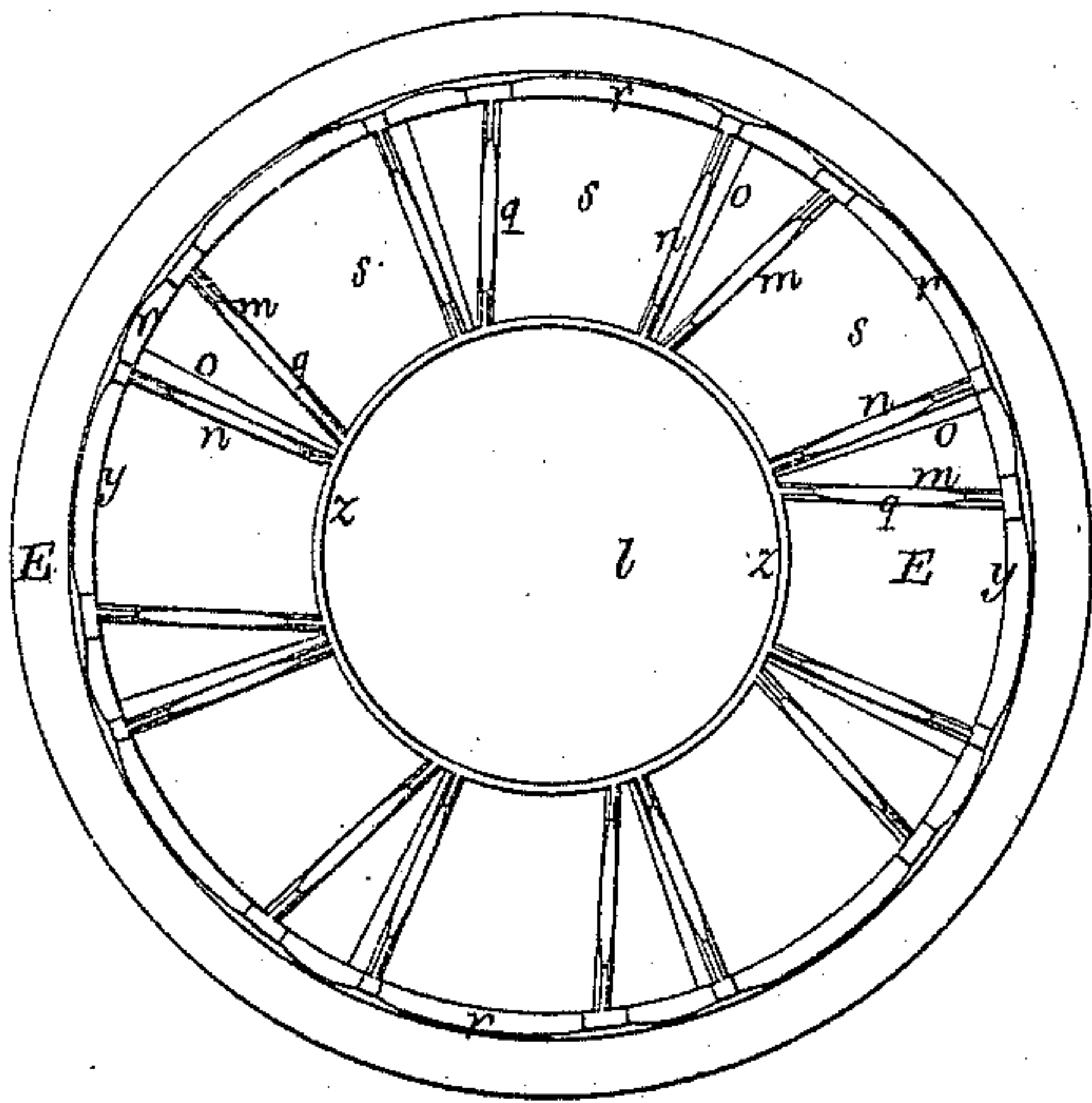


Fig. 3.

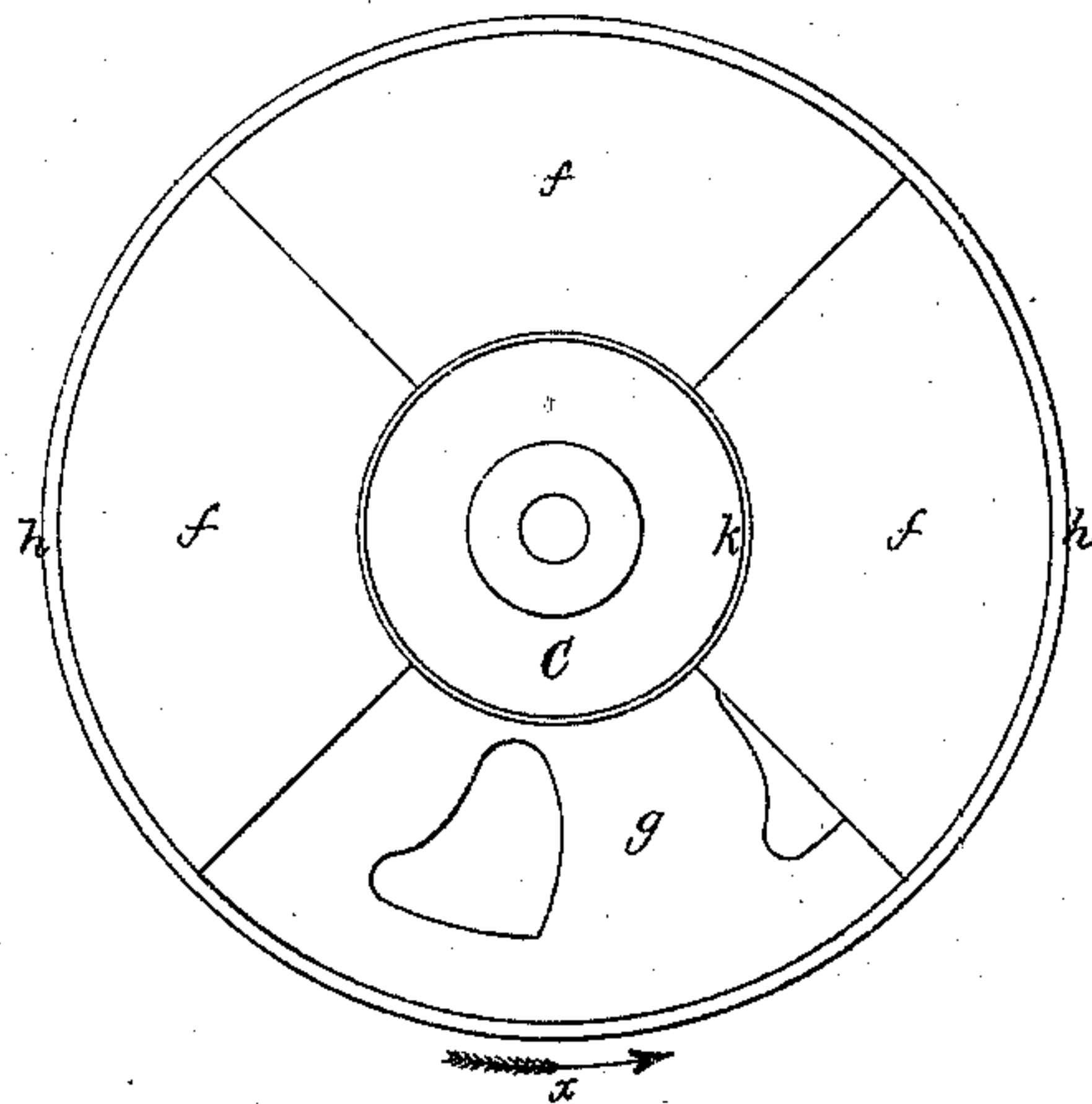


Fig. 5.



Fig. 6.

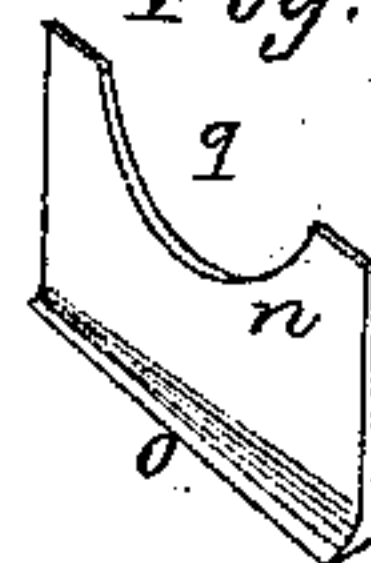


Fig. 7.

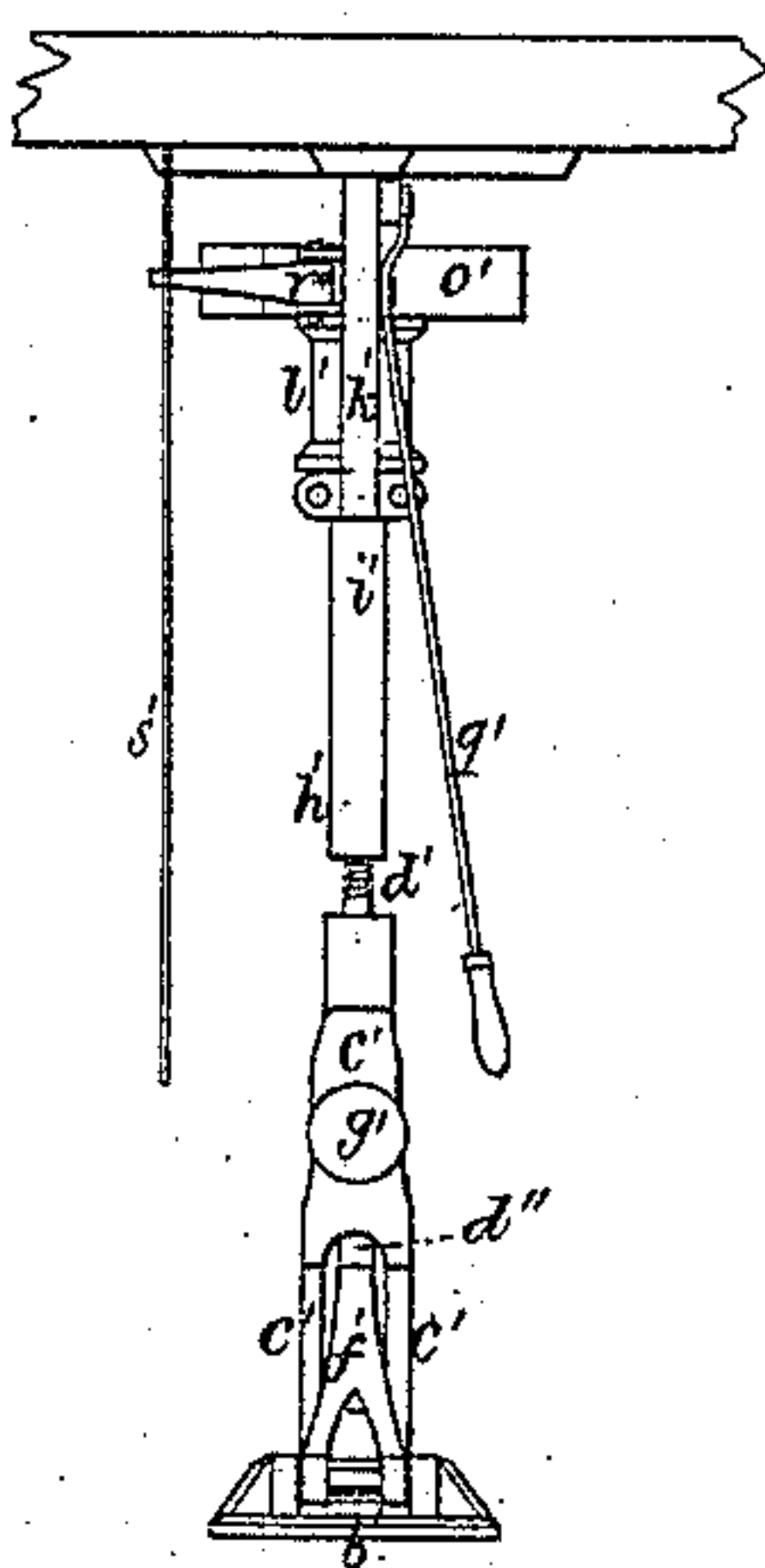


Fig. 8.

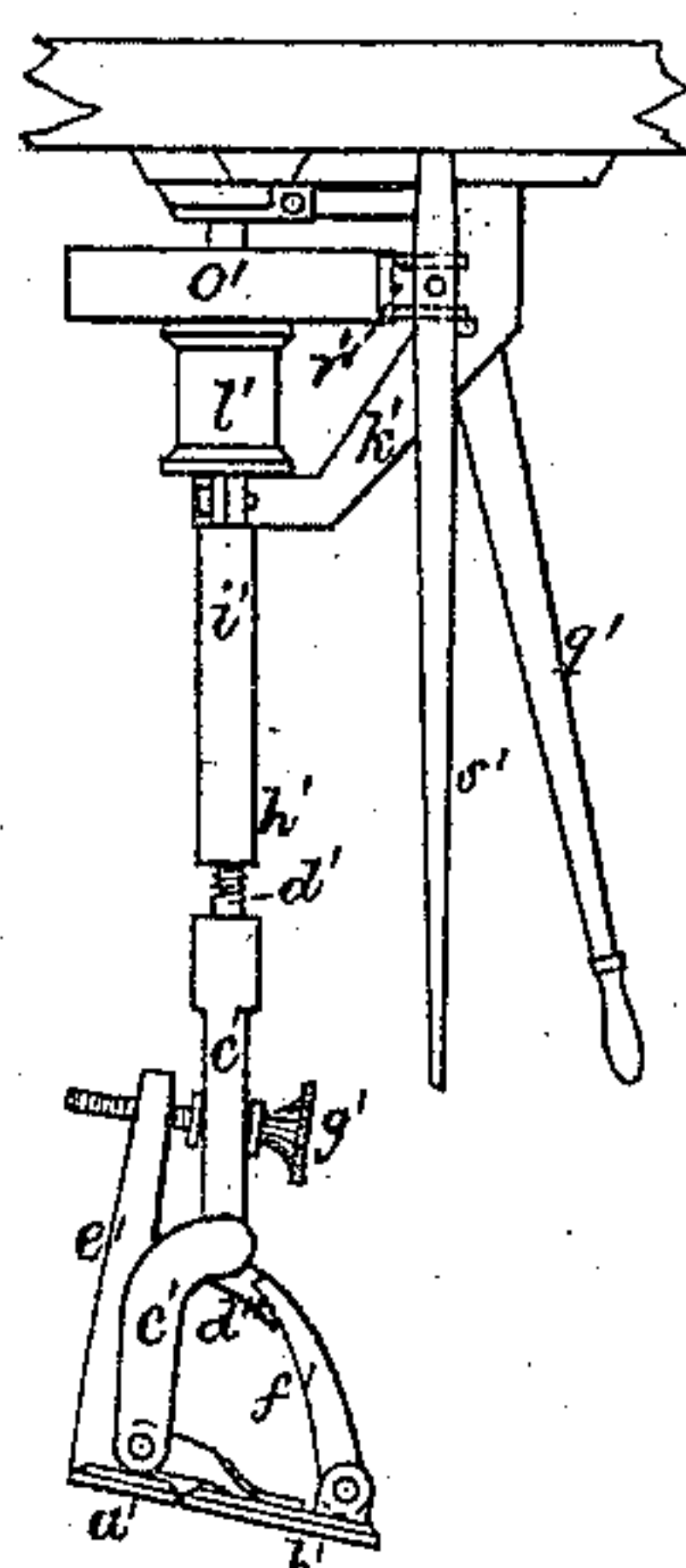
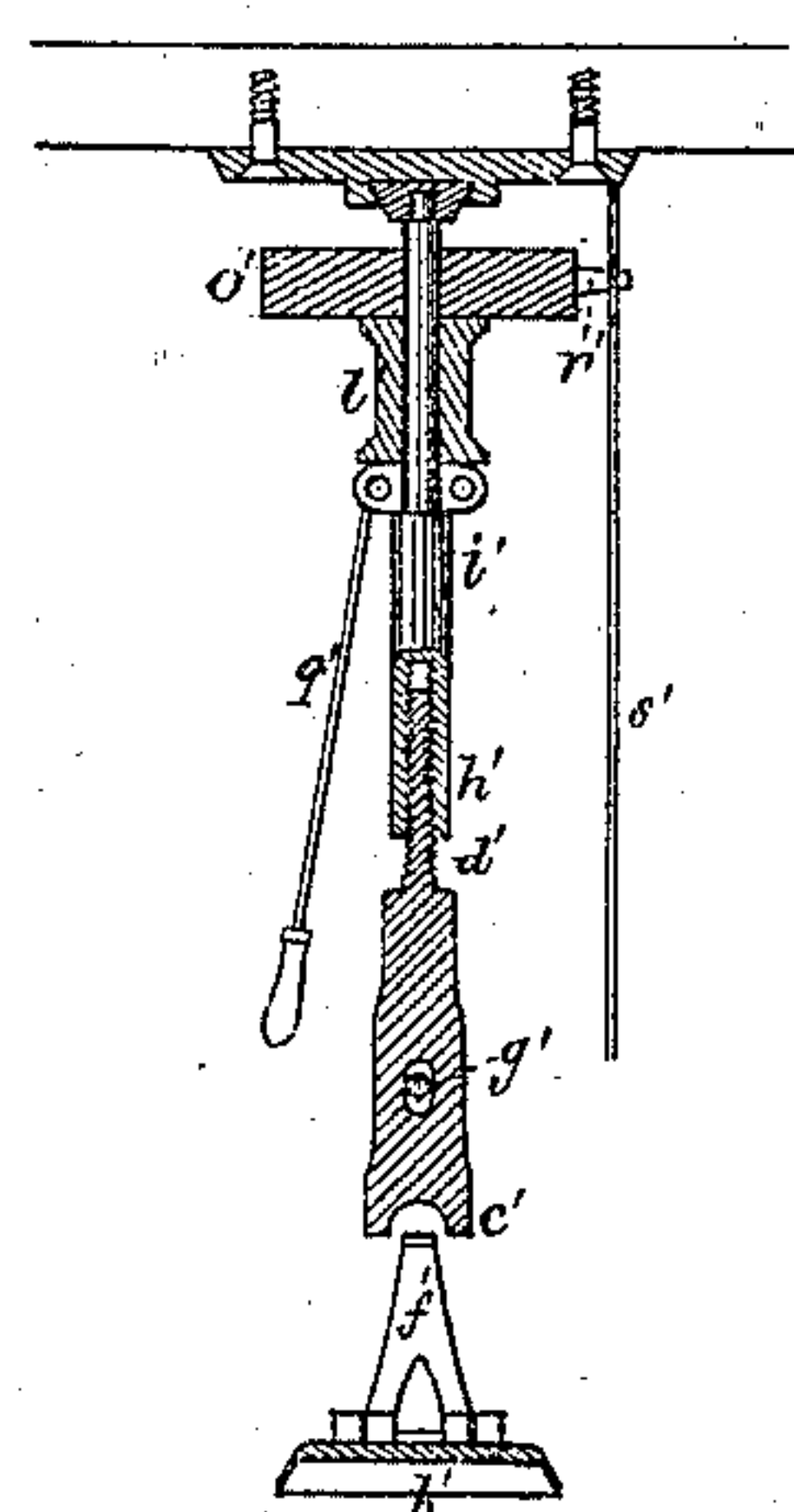


Fig. 9.



Witnesses.

S. N. Piper
L. N. Möller.

Alven K. Gilmore.

by his attorney.

R. M. Ewing.

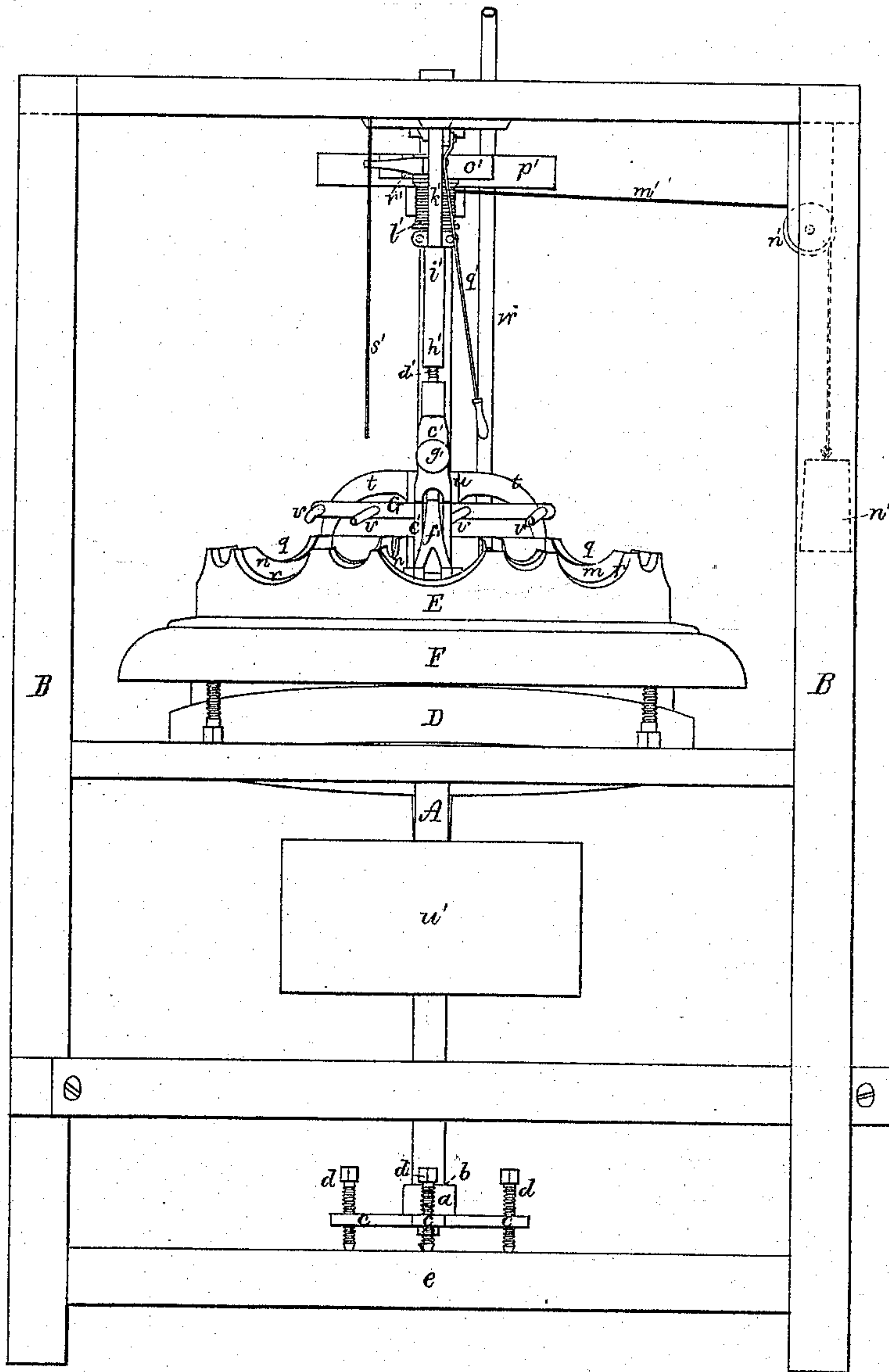
A. K. GILMORE.

Improvement in Machines for Preparing Wood for Pulp.

No. 127,337.

Fig. 4.

Patented May 28, 1872.



Witnesses.
S. N. Piper
L. N. Moller

Alven K. Gilmore.
by his attorney.
R. M. Waddy

UNITED STATES PATENT OFFICE.

ALVEN K. GILMORE, OF EAST TURNER, ASSIGNOR TO HIMSELF, SAMUEL R. JACKSON, OF BRUNSWICK, AND SANDFORD A. PERKINS, OF TOPSHAM, MAINE.

IMPROVEMENT IN MACHINES FOR PREPARING WOOD FOR PULP.

Specification forming part of Letters Patent No. 127,337, dated May 28, 1872.

To all persons to whom these presents may come:

Be it known that I, ALVEN K. GILMORE, of East Turner, of the county of Androscoggin, of the State of Maine, have invented a new and useful or Improved Machine for Reducing Wood for its Conversion into Pulp for the manufacture of paper; and I do hereby declare the same to be fully described in the following specification and represented in the accompanying drawing, of which—

Figure 1 is a vertical section of it; Fig. 2, a top view of the wood carrier or holder; Fig. 3, a top view of the grinder, exhibiting it as it appears with one or more of the grinding-stones removed from it. Fig. 4 is a front elevation of the machine. Fig. 5 is an end view, and Fig. 6 a perspective view of one of its centrifugal scrapers.

My improvements have reference to the grinding and the block-holding and pressing mechanisms of a machine for the conversion of wood into pulp.

In the said drawing, A denotes a vertical shaft, having the stop *a* of its pivot *b* supported by three arms, *c c c*, radiating from it, and provided with adjusting-screws *d d d*, which screw through the arms, respectively, and rest on or in the base *e* of the frame B of the machine. The purpose of the screws is to effect the vertical adjustment of the shaft and that of the grinder C. This grinder has the shape of a conic frustum, and is composed of a single conic stone or a series of conic segments or sections, *f f*, of stone, and a metallic conical wheel, *g*, furnished with an annular flange or lip, *h*, which is extended up from the periphery of the wheel in manner as shown. The said wheel, also, has another or lesser lip or flange, *i*, projected down from it at or near its periphery, and going entirely around it. This latter lip I term the "drip-flange," its purpose being to intercept water and woody fibers and cause such to drop into an annular trough, D, arranged below or with respect to the grinder, in manner as represented. The object of the first or upper annular lip or flange *h* is to support the stone or stones against the centrifugal force, tending to throw it or them outward while the grinder may be in rapid

revolution. Extending around the inner periphery of the conical stone or stone segments, and about it or them, in manner as shown, is a tube or tubular neck, *k*, which rests on and is secured to the wheel *g*, and projects upward into the eye I of the wood carrier or holder E.

The said carrier or holder, arranged over the grinder in manner as shown, and sustained by an annulus, F, encompassing the stone, and duly supported by the frame B, is composed of two circular, concentric, and short tubes, *y z*, united by a series of partitions, *m m m*, arranged at equal distances apart, each being vertical and oblique to a radial plane going through its inner end. Next to each of the said partitions, and arranged in a radial plane, is one of a series of "centrifugal scrapers," *n*, the arrangement of the partitions and scrapers being as represented, and each scraper at its lower edge being provided with a scraping lip or flange, *o*. Each scraper, as well as each partition, is recessed at its upper edge, as shown at *q*, and recesses of like kind are also found in the front of each wood-holding space of the wood carrier or holder, the same being as shown at *r*. The purpose of the said front recesses is to facilitate the introduction of the block or pieces of wood into the receiving-chambers or spaces *s s s* of the wood-holder.

In order to preserve the said holder in its due relation or normal position with the grinder, provided the latter should at any time sway laterally, an arched or centralizing bar or connection arch, *t*, is extended across and above the eye of the wood-carrier, and at its middle is provided with a hole or bearing, *u*, for reception of the shaft A, which fits to such bearing. A tubular annulus, G, provided with educts *v v* and an induction-tube, *w*, encompasses the shaft A, and is arranged above the wood-holder, and is for the purpose of supplying water to the latter while the machine may be in operation.

I would remark that the arrangement of each of the partitions *m m* in the oblique manner described, and as shown with respect to the direction in which the grinder is to be revolved, (such position being indicated by the arrow *x*,) causes the wood, while being in the

compartments of the holder, and the grinder may be in revolution, to be forced centerward of the machine or toward the shaft A. In other words, the said arrangement of the partitions is to overcome the tendency of the grinder to crowd outward the blocks of wood. It also causes the grinder to reduce the wood obliquely to the direction of its grain. Thus there is a centrifugal action exerted on the blocks to prevent them from being crowded against the outer rim of the holder, so as to generate a friction to operate against the action of the presser, to be hereafter described.

The blocks, by being held obliquely to the direction of motion of the grinder, will be reduced to better advantage, and the pulp made will be better than would be the case were the block to stand square to the direction of such motion.

The scrapers, owing to their position and construction, gather the fibers, prevent them from being reground, and cause them to be thrown off centrifugally into the trough.

To each of the wood-supporting compartments of the wood-holder there is to be a mechanism for retaining the wood therein and pressing it downward in order that it may be continuously reduced by the grinder.

In the drawing I have shown but one of such mechanisms, which may be described as follows:

Fig. 7 is a front view, Fig. 8 a side elevation, and Fig. 9 a vertical section, of the said pressure mechanism.

The pressure of the said mechanism, or the part to rest on the wood, is composed of two plates, *a' b'*, hinged together and to a furcated standard, *c'*, from whose upper end a male screw, *d'*, is extended vertically. From the inner of the plates *a' b'* a post, *e'*, rises, and is provided with a notched arm, *d''*, extended from it, as shown. This notched arm is to receive the end of a pawl, *f'*, which is hinged to the outer plate *b'*, and arranged as shown, the arm *d''* going through the bifurcation of the standard *c'*. An adjusting-screw, *g'*, also going through the said standard, and applied thereto so as to be immovable therewith, except in being capable of being revolved therein, screws into and through the post *e'*. The purpose of the screw is to vary the inclination of the plates *a' b'*, in order to cause the pulp to be ground finer or coarser, as occasion may require. The more the wood is inclined to the reducing face of the grinder the finer and shorter will be the fibers. This, experience has fully demonstrated. The male screw *d'* screws into a sleeve or tube, *h'*, projecting from the lower end of a shaft, *i'*. The journals of the said shaft are sustained by a bracket, *k'*, arranged and fastened to the frame B, as shown. A drum or pulley, *l'*, fixed on the shaft *i'*, has fastened to its periphery a line or rope, *m'*, which, extending partially around a guide-

pulley or wheel, *n'*, descends therefrom, and is provided with a weight, *n''*. The object of the weight *n''*, rope *m'*, drum *l'*, sleeve *h'*, and screw *d'* is to feed the presser downward upon the wood with a constant pressure as the wood may be reduced.

There is combined with the pressure mechanism a mechanism for effecting the winding of the weight-rope on the drum *l'*. This mechanism may be thus described. There is fixed upon the shaft *i'* a wheel, *o'*, and there is also fixed on the shaft A a larger wheel, *p'*, the whole being as shown. The shaft *i'* has a lever, *q'*, applied to it and the bracket, so as to enable such shaft, by such lever, to be moved in a manner to throw the peripheries of the wheels *o' p'* either into or out of contact. As the wheel *p'* revolves with and is turned by the shaft A, it, when in contact with the wheel *o'*, will put the latter in revolution, and, as a matter of course, the drum *l'* at the time will be revolved so as to wind up the rope. There is applied to the periphery of the wheel *o'* a friction-brake, *r'*, provided with an actuating lever, *s'*, the purpose of such brake and lever being to hold the wheel from revolving and the sleeve from turning while the presser may be raised in order for its compartment to be supplied with wood. A driving wheel or pulley, *u'*, is fixed upon the shaft A. This wheel, by means of a belt from a proper motor, serves to revolve the shaft and thereby cause the grinder to be put in motion.

The wood to be reduced is to be put in the compartments of the holder and to be subjected to the action of the pressers. The fibers separated will be discharged into the trough, and from thence may be removed through a nose or spout leading therefrom.

Having explained the aforesaid machine, what I claim therein as of my invention may be thus described:

1. I claim the grinder-stone supporter or wheel as made or provided with the flange *h*, and with the stone or stones arranged with such wheel and the flange *h*, substantially as specified.

2. I also claim the grinder as provided with the drip-flange or lip *i*, arranged as explained.

3. I also claim the wood-holder as made of the inner and outer tubular rims, the oblique partitions and the scrapers, arranged substantially as specified.

4. I also claim the pressure mechanism, substantially as described, composed of the plates *a' b'*, the furcated standard *c'*, the screw *d'*, the post *e'*, arm *d''*, pawl *f'*, screw *g'*, screw-sleeve *h'*, shaft *i'*, pulley *l'*, rope *m'*, and its weight *n'*, arranged, combined, and supported as explained.

5. In combination with the said pressure mechanism I claim the mechanism for effecting the winding of the weight-rope on the drum *l'*, such consisting of the wheels *o' p'*

and the lever q' , or mechanism for moving the shaft i' , so as to carry the said wheels either into or out of contact, as set forth.

6. I also claim the brake mechanism, as described, or its equivalent, in combination with the pressure mechanism and the mechanism, as explained, for effecting the winding of the weight-rope on its drum.

7. I also claim the wood-holder as provided with the recesses rr arranged in its outer rim, substantially in manner and with respect to

the wood-receptacles, and for the purpose as set forth.

8. I also claim the combination and arrangement of the connection-arch t with the wood-holder and the grinder and its shaft, all being substantially as and for the purpose as set forth.

ALVEN K. GILMORE.

Witnesses:

R. H. EDDY,
J. R. SNOW.