

F. L. BLAIR.
Machines for Cutting Corks.

No. 152,545.

Patented June 30, 1874.

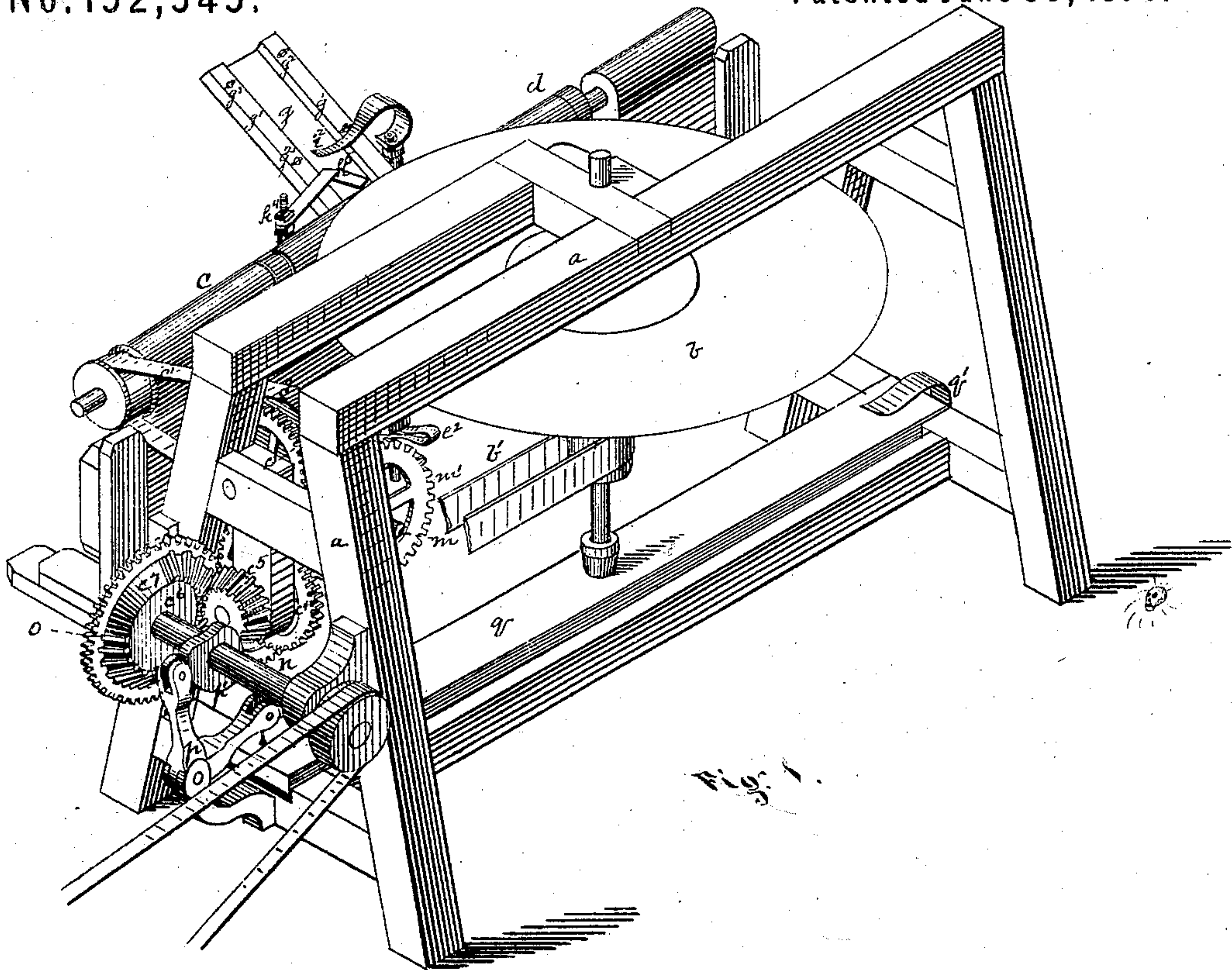


Fig. 1.

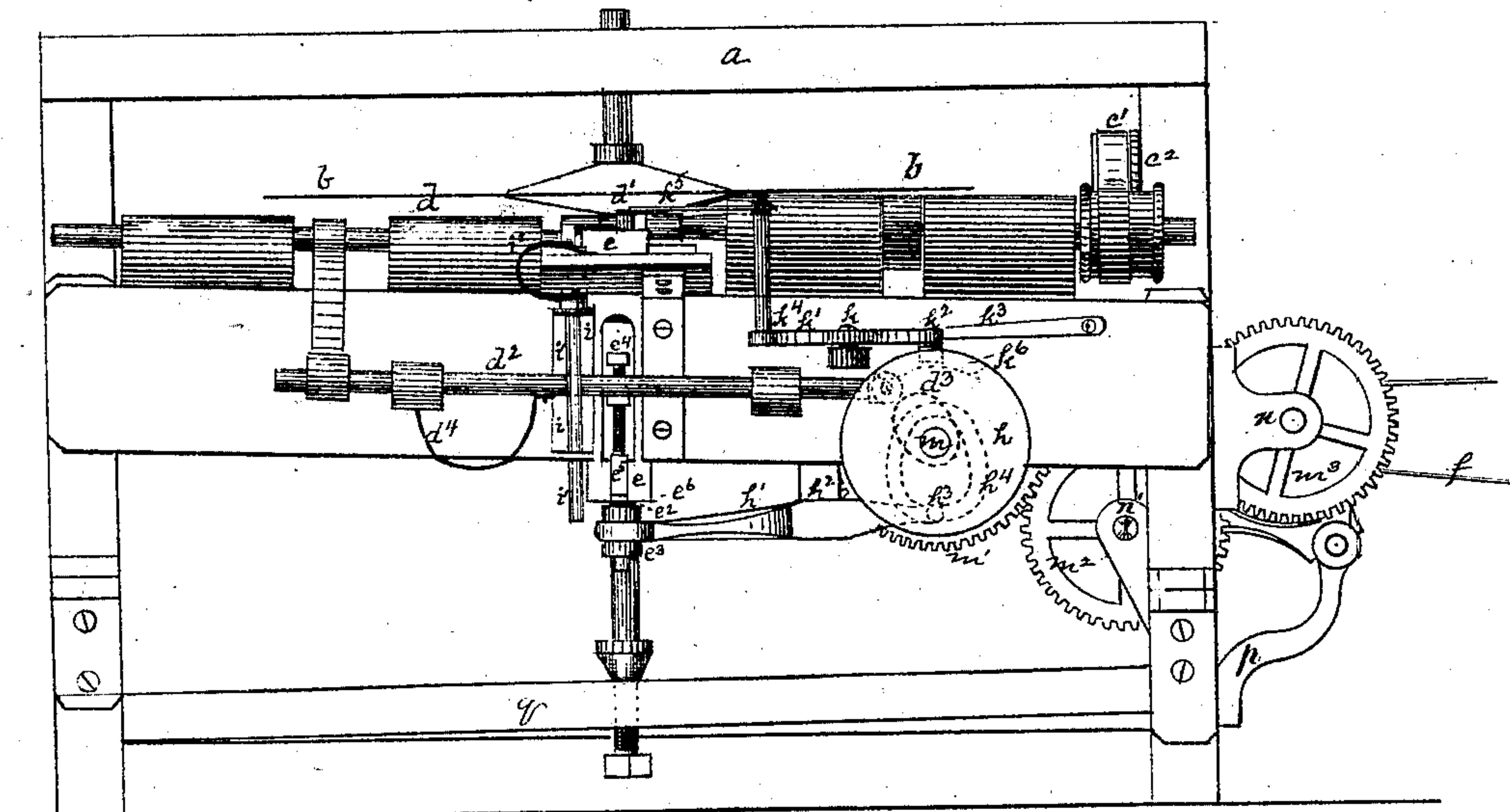


Fig. 2.

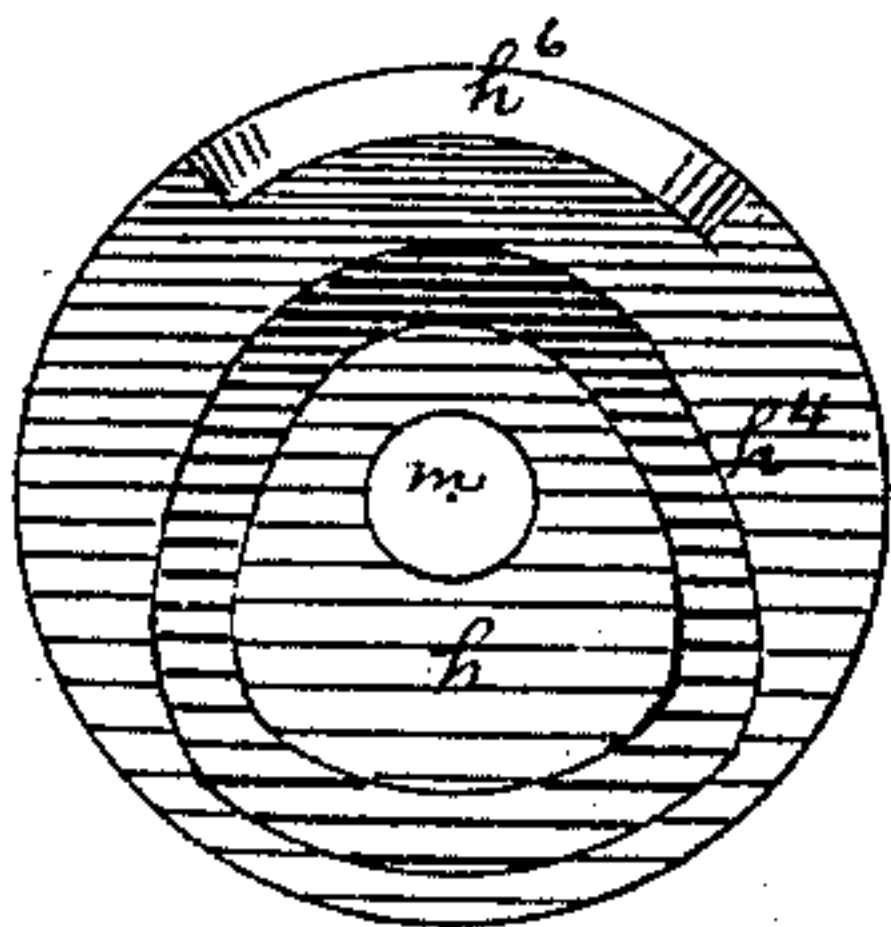
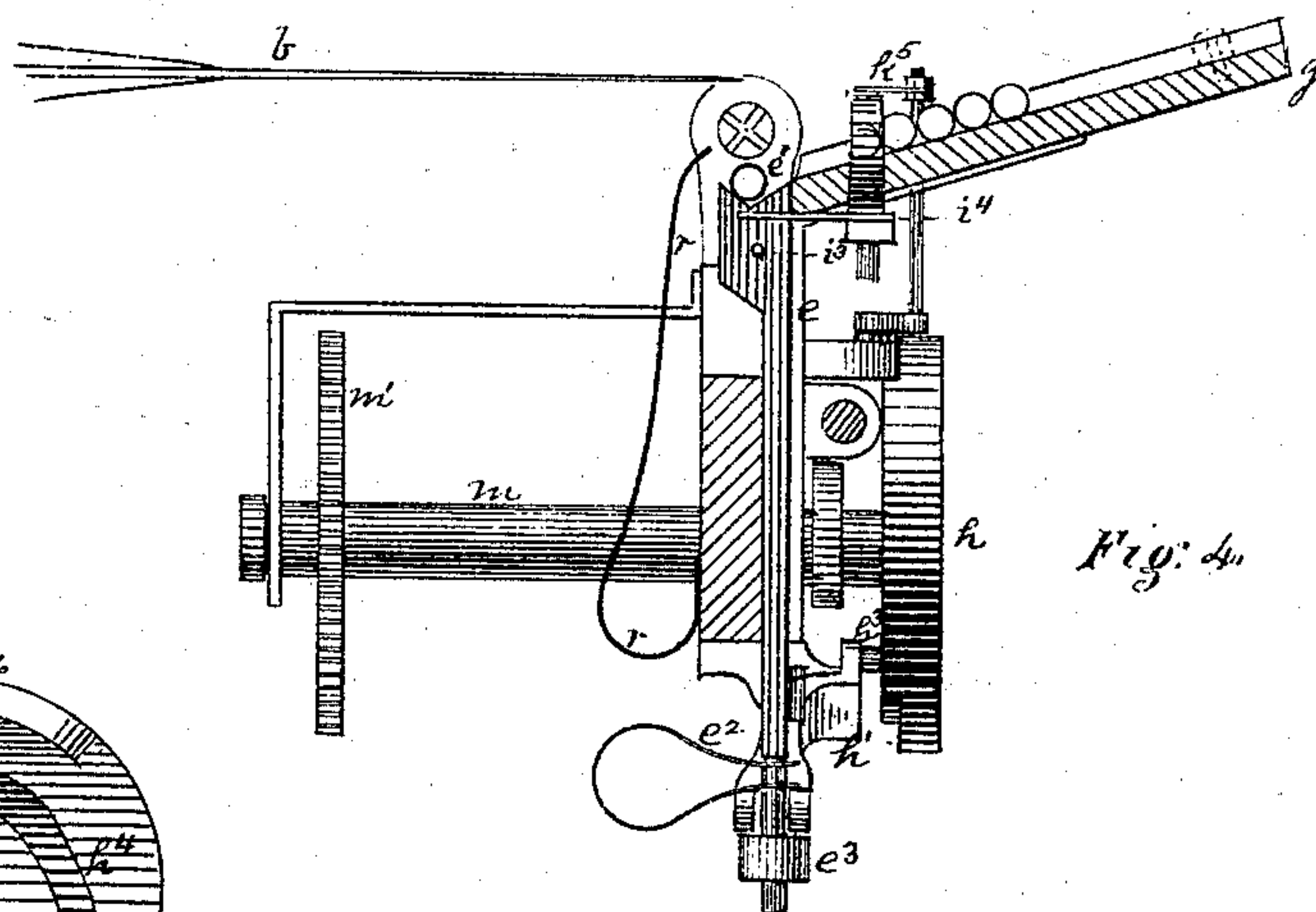
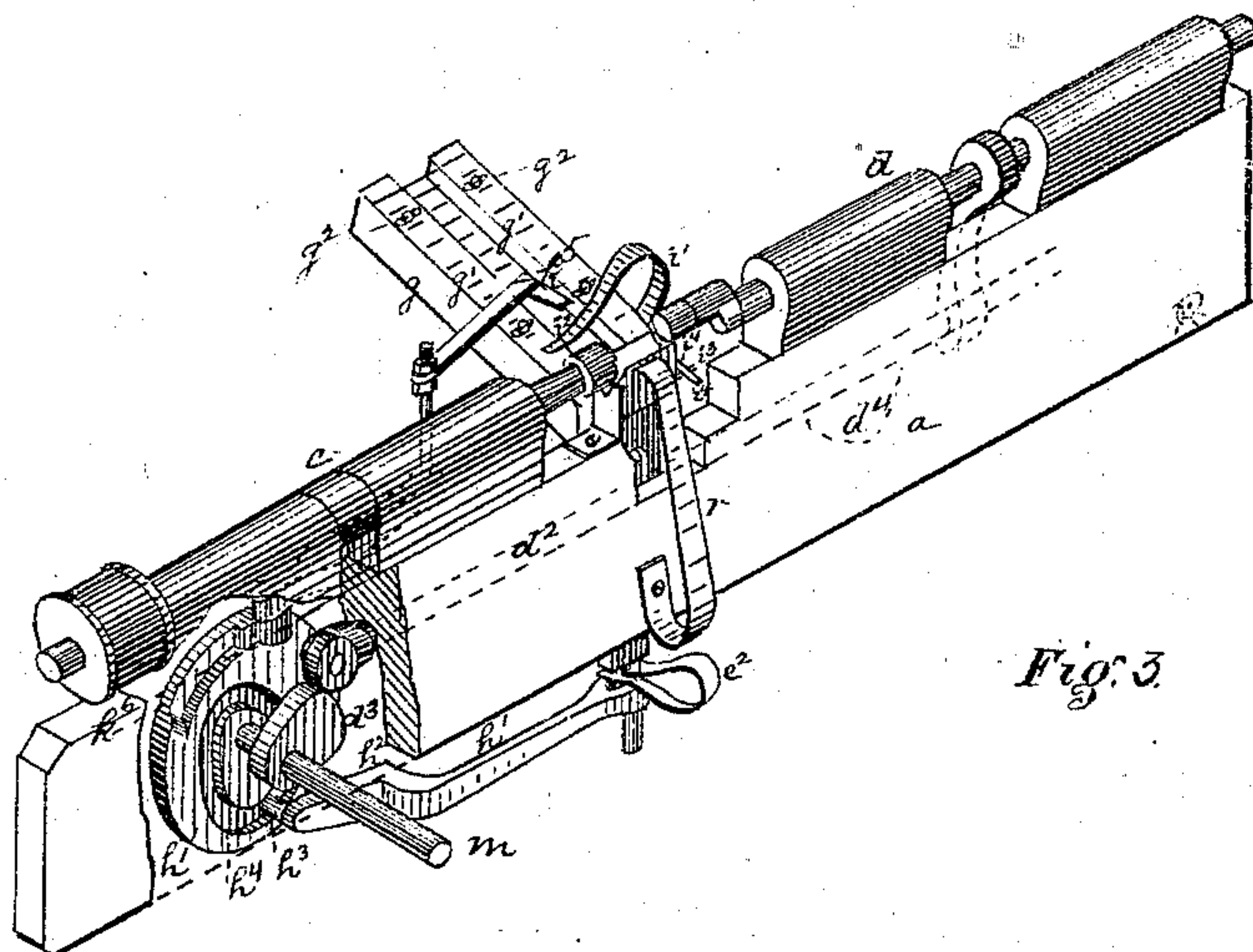
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Witnesses
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UNITED STATES PATENT OFFICE.

FRANK L. BLAIR, OF ALLEGHENY CITY, PENNSYLVANIA.

IMPROVEMENT IN MACHINES FOR CUTTING CORKS.

Specification forming part of Letters Patent No. **152,545**, dated June 30, 1874; application filed March 7, 1874.

To all whom it may concern:

Be it known that I, FRANK L. BLAIR, of Allegheny City, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Machine for Cutting Corks; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawing forming a part of this specification, in which—

Figure 1 is a perspective view of my improved cork-tapering machine. Fig. 2 is a side elevation; and Figs. 3, 4, and 5 are detail views.

Like letters of reference indicate like parts in each.

My invention consists in causing the centering device to move always in the same vertical plane, passing centrally between the spindles, so that its adjustment shall depend simply on lengthening or shortening its movement. It also consists in an improvement in the feeding device.

To enable others skilled in the art to make and use my improvement, I will describe its construction and mode of operation.

Upon a frame, *a*, of the usual construction, I mount the operative parts of my machine. This machine has a knife, *b*, and spindles *c* and *d* of the usual form, and is operated by a power-belt, *f*. Fastened to the side of the machine, opposite to the inner ends of the spindles *c* and *d*, is an inclined spout, *g*, for feeding the corks in a continuous row. This spout is, preferably, fitted with adjustable sides *g*¹, adjustable by slots and screws *g*², to suit different sizes of corks. Without the adjustable sides it is necessary to have a number of different-sized spouts, which are interchangeable. Mounted in grooves in the side of the frame *a*, just below the end of the spout *g*, is a slide, *e*, having a V-shaped receiver or groove, *e*¹, in its upper end. This slide is moved vertically by the lever *h*¹, which has its fulcrum at *h*², and is operated by the cam *h*. The pawl *h*³ of the lever enters and travels in the groove *h*⁴. The other end of the lever *h*¹ extends around the lower end of the slide *e*, and raises and lowers it by its alternate pressure against the spring *e*² and the collar *e*³. The function of the slide *e* is to receive the feed-cork at its upper end as it comes

from the spout *g*, and then to carry it up between the grasping ends of the spindles *c* and *d*, so that it shall be grasped between them. The movement of the slide is regulated by means of the screw *e*⁴ operating upon the stop *e*⁵, so as to center corks of various sizes between the grasping-points of the spindles. The adjustment of this slide is a matter of great nicety, as the difference between the sizes of the corks to be tapered is in some cases extremely slight. It is, therefore, evident that the slide *e* must hold the cork at the exact point to be properly grasped by the spindles, or the cork will be cut imperfectly. As the throw of the lever *h*¹ remains the same, whatever may be the movement of the slide *e*, (unless the cam *h* is changed for one of a different size, such size corresponding to the exact movement of the slide,) I have placed a spring, *e*², between the end of the lever and the square shoulder of the slide *e*⁶. Then when the slide has been raised until the stop *e*⁵ encounters the screw *e*⁴, the lever *h*¹ operates upon and compresses the spring *e*² without affecting the farther elevation of the slide. By this means I am enabled to take up the surplus motion of the lever *h*¹, and to make one cam, *h*, answer in the operation of tapering all sizes of corks.

As the machine can only operate upon one cork at a time, it is necessary to prevent the feeding of more into the receiver *e*¹. For this purpose I have mounted in the bracket *i* an arm, *i*¹, the point *i*² of which extends over into the lower end of the feeding-spout *g*. At the side of this arm *i*¹, and extending into the path of the pin *i*³, which is mounted on the slide *e*, is an arm, *i*⁴, which is for the purpose of raising the finger *i*² during the upward movement of the slide *e*, to permit the passage of one cork into the receiver *e*¹. The finger *i*² comes down upon the next cork and holds it stationary until again raised, as described. Mounted on the side of the machine, at *k*, is a lever, *k*¹, having at its outer end a friction-wheel, *k*², which is pressed against the inner face of the wheel *h* by the spring *k*³. At the other end of the lever *k*¹ is an arm, *k*⁴, which carries at its upper end a bent spring, *k*⁵. The forward end of this spring extends over the top of the slide *e* and above the end of the feeding-spout *g*. The cam *h* is planed out on its inner face, at *k*⁶,

so that in its rotation the forward end of the lever k^1 , being pressed by the spring k^3 , is thrown outwardly so as to throw the spring k^5 inwardly directly over the top of the slide e . The function of the spring k^5 is to hold the cork which has been fed into the slide e in place while being grasped by the spindles. The spindle c is rotated by the belt c^1 . The spindle d is stationary, and is provided at its outer end with a loose spool, d^1 , which rotates with the cork and with the spindle c . The spindle d has a reciprocating motion communicated to it by the rod d^2 , cam d^3 , and spring d^4 , in the usual way. This reciprocating motion of the spindle d enables a cork to be grasped by the spindles and held during the operation of tapering, and loosened and discharged when finished.

The devices just described are all operated by power from the shaft m , excepting the spindle c , the operation of which has been described. On the outer end of the shaft m is a spur-wheel, m^1 , which is operated by power from the shaft n by the spur-wheels m^2 and m^3 . The belt c^1 is operated by power through the band-wheel c^2 , gear-wheels c^3 and c^4 , bevel-gears c^5 and c^6 . As the spindles are only designed to rotate during the tapering of the cork, and not during the operation of centering the same, their operative power is intermittent. To accomplish this I plane off a segment of the beveled gear-wheel c^6 , as seen at c^7 , so that during the passage of the plane portion c^7 , the spindles are at rest and free to discharge the finished cork and grasp the next one.

It is necessary that the operation of taking up the power from the bevel-gear wheel c^5 should be exact. I have therefore cut off the upper half of the first tooth, o , of the bevel-gear wheel c^6 . By this means I am enabled, with accuracy, to cause the wheels c^5 and c^6 to mesh into each other in the proper manner. At each revolution the half-tooth o , turning past the first tooth, adjusts the wheel c^6 , so that the next tooth of the wheel shall mesh with accuracy into the wheel c^5 .

In order that the knife b , which is rotated with great speed all the time by means of the belt b' , shall not interfere with the operation of centering the cork between the spindles, I attach to the front end of the machine a bent lever, p , one end of which operates against the cam p' , and the other end of which is attached to the pivoted cross-bar q , which carries the knife-arbor. The operation of the cam against the lever causes the cross-bar q to be raised during one-half the rotation of the shaft n , so that it shall clear the spindles, as indicated in Fig. 4. Then, when the cork has been properly centered, the further rotation of the cam p' lowers the knife b into cutting position. As

the knife b is very heavy, and the fall of the bar q is apt to rack the machine, I have pivoted the bar to the spring q' at the rear end of the frame for counterbalancing the weight of the knife and cushioning its fall.

The spindles c and d are set, as usual, at an inclination, so that the cork is presented to the knife in an inclined position for the purpose of being properly tapered. When the cork has been cut it is released from the spindles by the withdrawal of a spindle, d , in the manner described, and, falling down, is deflected, by means of the plate or spring r , into a proper receptacle. This plate is very flexible, so that on the rise of the slide e it bends backward out of the way, and upon the lowering of the slide springs forward under the cork to catch it on its fall from the spindles.

The operation of this machine is as follows: The knife rotates all the time. While the spindles are at rest the corks are fed down the inclined spout until they encounter the finger i^2 . The rising of the slide e causes the finger to rise and permit the passage of one cork into the receptacle e^1 . The spring k^5 then, moving forward, rests upon and holds the cork firmly in place in the receptacle e^1 . The spindles coming up, the cork is grasped between them, being properly centered in the receptacle e^1 . During this operation the knife is elevated in the manner before described, but when the cork has been grasped it descends, and, power being communicated to the spindles, the cork is caused to rotate against the edge of the rotating knife. The inclined position of the cork causes it to be cut into a tapering form. The knife is then elevated and the spindle d withdrawn, discharging the cork onto the plate r , which guides it to a proper receptacle.

The great advantages arising from this machine are the mechanical certainty of its automatic feed and centering apparatus, and the rapidity of its operation, enabling me to accomplish a saving, in the tapering of corks, in time and labor.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The slide e , provided with a groove, e^1 , and having a directly vertical movement and a like adjustment, so that it may be suited to any sized cork by lengthening or shortening the stop e^5 , as and for the purpose described.

2. The stop or finger i^2 , moving vertically to permit the passage of one cork at a time.

In testimony whereof I, the said FRANK L. BLAIR, have hereunto set my hand.

FRANK L. BLAIR.

Witnesses:

E. C. FITLER,
T. B. KERR.