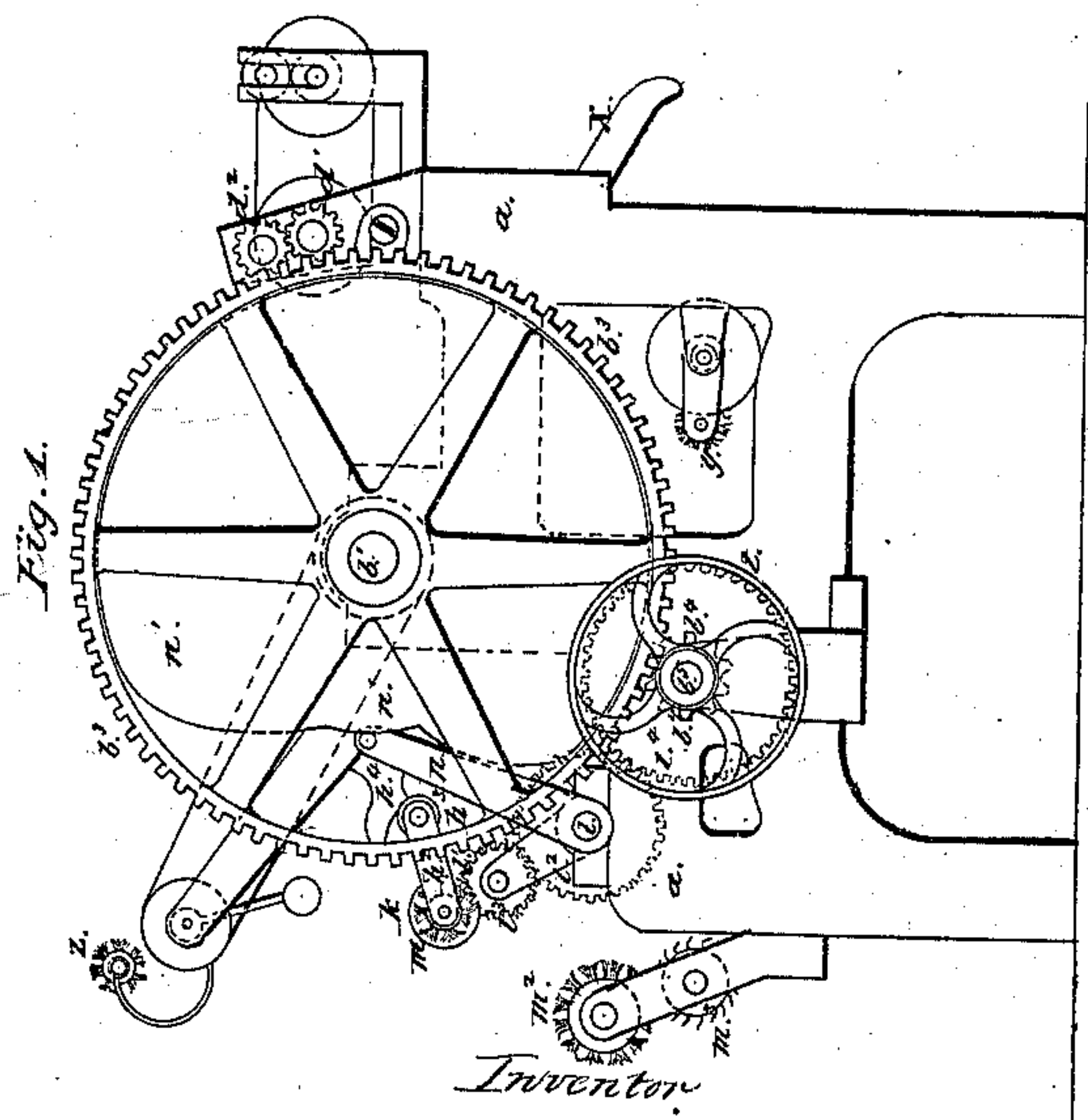
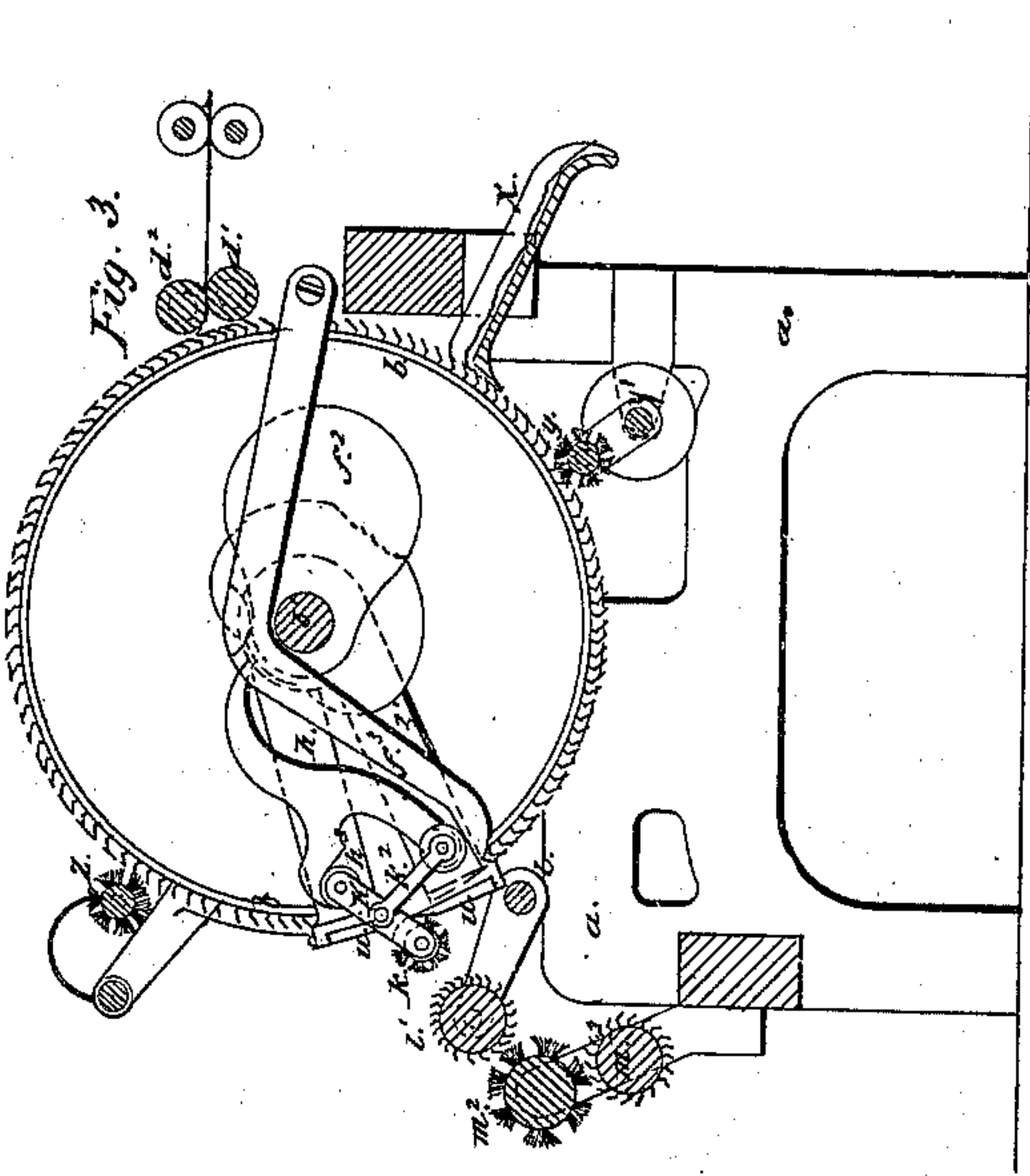
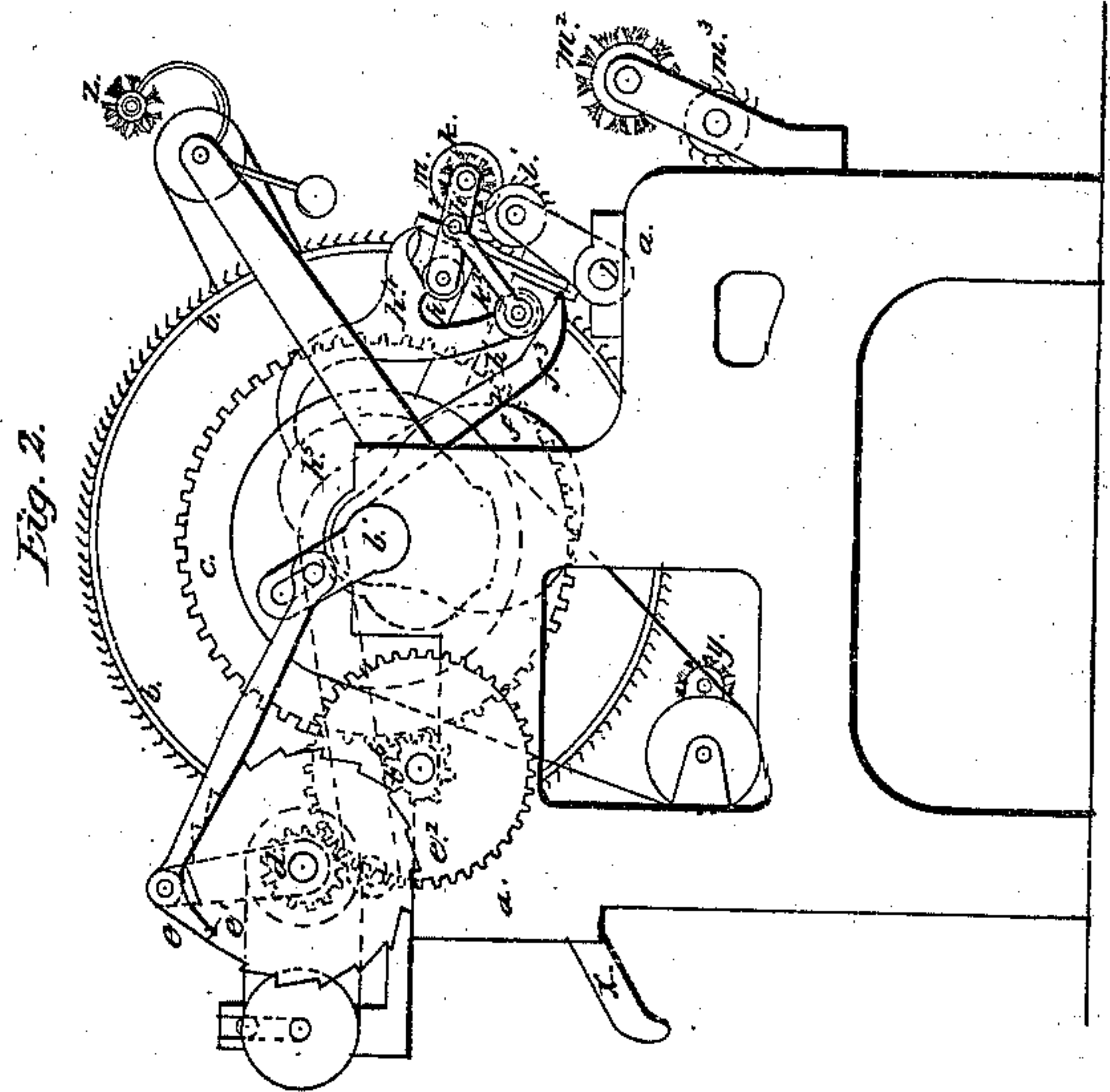
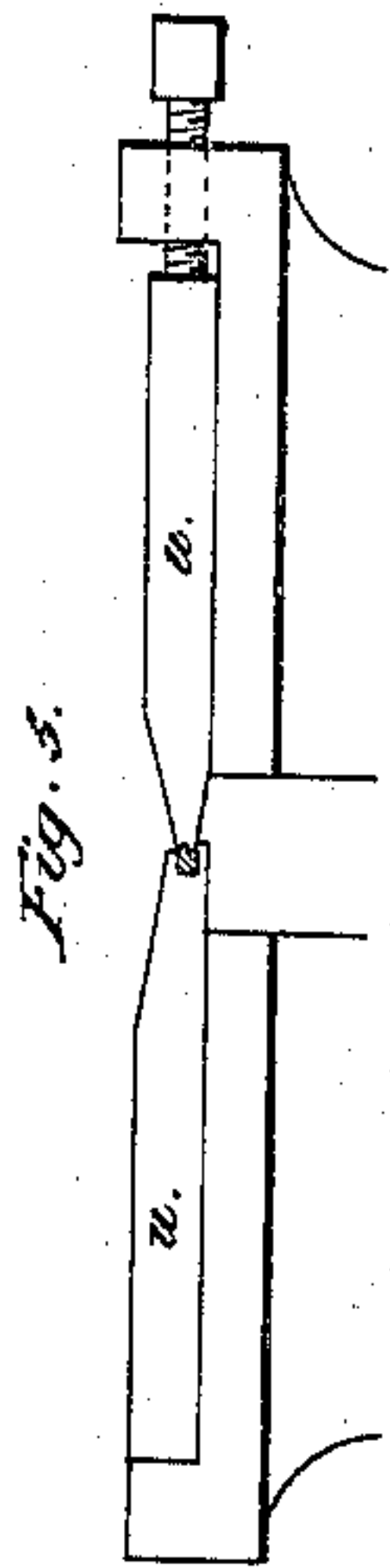
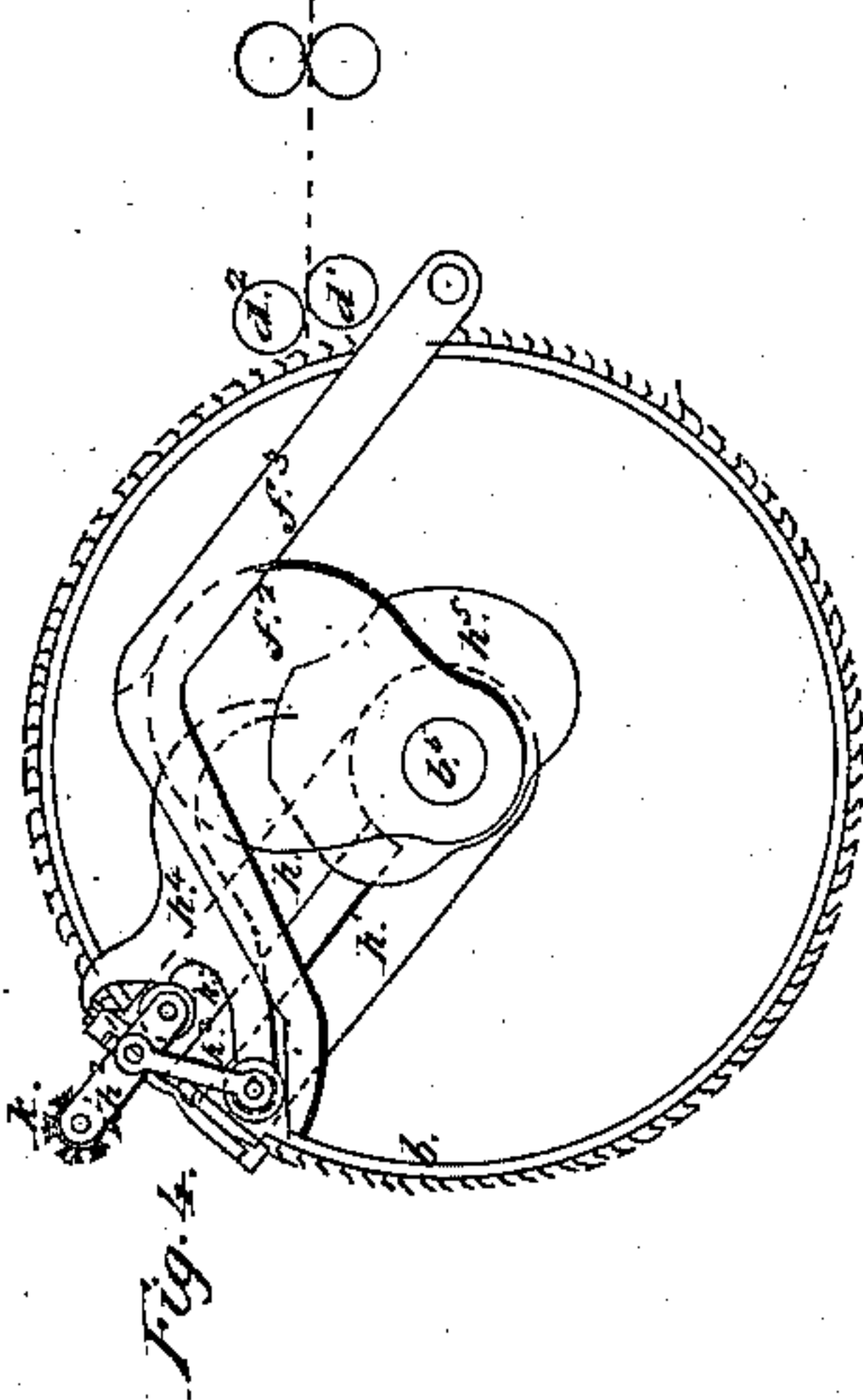


C. Whipple.
Wool Combing Mach.

N^o 17,244.

Patented May 5, 1857.



Inventor
Callen Whipples

UNITED STATES PATENT OFFICE.

CULLEN WHIPPLE, OF PROVIDENCE, RHODE ISLAND.

MACHINE FOR COMBING WOOL.

Specification of Letters Patent No. 17,244, dated May 5, 1857.

To all whom it may concern:

Be it known that I, CULLEN WHIPPLE, of Providence, in the county of Providence and State of Rhode Island, have invented a useful Apparatus for Combing Fibrous Substances; and I do herein set forth the manner the same is to be performed and the machinery therefor, reference being had to the accompanying drawing, in which—

Figure 1 is an end view. Fig. 2 is an elevation of the opposite end. Fig. 3 is a section transverse through the machine. Fig. 4 is a detached view of the cylinder and nippers. Fig. 5 a section of the nippers enlarged.

My invention has for its object improvements in machinery for preparing and combing fibrous materials. For this purpose the machinery is so arranged that the fibrous materials (previously brought into a sliver or sheet by suitable means as well understood) is fed onto a cylindrical, or other suitable surface covered with teeth in such manner as to be embedded among the teeth. The forward ends of the fiber are then raised by a rotating brush out of the teeth in a line across the cylinder or surface between the jaws of the nippers and the raised portion of the fibers is thereby held while it is cleaned and freed from all foreign matters and short fibers by a rotating cylinder or other sufficient apparatus covered with teeth or their equivalents, after which the nippers take hold of such protruding and cleaned ends of the fibers, which are by the working of the machine moved a sufficient distance to draw out the other or uncleaned ends of the fibers from the original fiber through the teeth on the cylinder or surface, and thus a quantity of fiber is prepared or cleaned and separated or drawn out from among the other fibers which have not been so treated, and this is done without removing the fibers from among the teeth. The forward ends of each cleaned and prepared quantity of fibers overlap and piece up with the ends of the previous take, which has just been carried forward. The nippers are by the working of the machinery then moved back, together with their brush, by which a fresh quantity of fiber is raised in a line across the lower jaw of the nippers and is treated as that before described. The toothed cylinder or surface is caused to move forward at intervals slowly and the cleaned fibers as they reach

the draw-off rollers are doffed from the cylinder by the rollers. By this arrangement of machinery it will be noticed that although the fibers are drawn through the cylinder teeth to be cleaned, by the nippers, they do not leave them until the fibers are thoroughly prepared or combed and are made up into a sliver.

Having thus stated the nature of my invention I proceed to describe its construction and operation referring to the drawing in illustration in which the same letters indicate the same parts in all the figures.

a is the framing which is made of any convenient form and dimensions sufficient to support the machinery.

b is a cylinder covered with suitable teeth. It may be here stated that the cylindrical form for this part is preferable. It is not essential that such should be the case, but if of other form the other parts working therewith must correspond as will be readily known by a competent mechanic.

The shaft *b*⁵ is the main driving shaft. On one end is fixed a pulley *f* to receive the driving strap (see Fig. 1.) A pinion *b*⁴ is fixed upon this shaft to transmit the motion to the several parts. This pinion *b*⁴ works into and drives a large spur wheel *b*³ which is fixed upon the outer end of the shaft *b*¹. This is the shaft upon which the cylinder is supported and has an independent motion apart from the shaft at the other end of the shaft *b*¹ there is a crank arm *b*² (see Fig. 2) which is connected with a pawl *e* that works into a ratchet wheel *e*¹ on the shaft of which there is a pinion *d* that gears into a spur wheel *e*² to which is affixed a pinion *b*⁶ that gives motion to the cylinder *b* through a large wheel *c* that is fastened to the arms of the cylinder. The pinion *d* is on the same shaft as the lower draw off roller *d*¹ and moves with it so that this roller turns at its surface with the same velocity as the cylinder *b* an upper draw off roller *d*² gears with the lower one and another set behind them are geared with the first to convey off the completed combed sliver. The motion of the cylinder *b* it will be observed is at intervals and much slower than the shaft *b*¹ on which it turns. The apparatus that works the nippers is vibratory in its action and centers upon the shaft *b*¹. It is located between the ends of the cylinder *b* and the frame *a*. The arms *h*, *h*¹ to which the nip-

per bars are affixed and by which they are operated are centered upon the main shaft b' . This passes through the nave or hub of the arm h and the nave or hub of arm h' is fixed to move on the nave of the other arm h upon the outer ends of these arms (duplicates of each of which are at either end of the cylinder b) the nipping bars are fastened and extend across the cylinder b from end to end; these nipping bars are opened by a spring not shown in the drawing and are closed by cams h^5 and levers h^4 . A curved or hooked projection is formed on each lever h^4 which when the tails of the levers rest on the risers of the cams h^5 fixed on the shaft b' act on the rollers h^3 on the arms h so as to bring the edges of the nipping bars into close proximity and hold the fibers perfectly fast until the tail ends of the levers h^4 descend into a depression of the cam.

The whole of this apparatus is made to vibrate by cams f^2 on the main shaft b' which actuates the levers f^3 (one at each end) that are connected with the arms h' at the outer end so as to cause the nipping bars to move back to take hold of a fresh quantity of fibers. Attached to the nipper arms h is a brush k by means of two short arms h^2 so that it can be moved in a curved direction toward or from the cylinder b . The arms h^2 are connected by links k^2 with the arms h' so that when the arms h , h' , separate the brush k will be drawn down between them upon the cylinder as seen in Fig. 3. The brush k is made to revolve on its axis rapidly by any sufficient gearing as at m connecting it with the driving power; by means of this brush the noil, &c., is removed from that portion of the teeth on cylinder f over which it passes and by it the ends of the uncombed fibers are brushed up out of the teeth and made to project over the upper edge of the lower nipper bar. A guard plate p extends across the whole length of the cylinder, if used, and is fastened to the upper jaw of the nippers. Its purpose is to prevent the ends of the combed fibers from rising after the nippers leave them. The ends of the fibers not embedded in the teeth of the cylinder when left by the nippers are laid down by the rotating brush z hereafter described.

Above the lower rail of the frame a there is a shaft l from which two radial arms project that support a small cylinder l' clothed with suitable teeth for the purpose of combing or preparing the ends of the fibers made to protrude over and beyond the upper edge of the lower jaw as above described; this small combing cylinder l' is driven by a pinion l^3 on its shaft or axis taking into a cog wheel l^2 which is driven by the wheel l^4 on the shaft l^5 this cylinder l' is vibrated on shaft l toward and from the cylinder b at proper intervals to perform required service by means of an additional arm n affixed to

the shaft l (see Fig. 1) bearing a roller at its outer end that traverses the exterior surface of a revolving cam n' on the main shaft by this cylinder l' the first ends of the fibers are combed, and by it also the brush k is stripped and on the return of the cylinder l' back from the combing operation above named it comes in contact with a cylindrical brush m^2 in rapid revolution which cleans it, and the noil, &c., is from this brush m^2 finally transferred to the doffing cylinder m^3 from wherever it is discharged in any of the usual ways.

Figs. 3 and 4, d' , d^2 , are the doffing or drawing off rollers for the combed and finished sliver from which it passes into cans or is otherwise disposed of.

The working of the machinery is as follows. The fibers, of whatever kind operated upon pass into the machine over an apron x to the teeth upon the surface of the cylinder b and the fibers are then pressed in between the teeth of the cylinder by a brush y supported on two arms affixed to the shaft y' around which it revolves with a planetary motion and at intervals comes in contact with the surface b and perfectly embeds the fibers in the teeth. The fibers are thence carried around to point where the nippers take them, the forward ends are raised by the brush k as before described and seized by the nippers and carried forward after the first ends are cleaned by drawing them forward through the teeth of cylinder b and then when combed the nippers open and leave the cleaned fiber to return for the next quantity and by this operation repeated the continuous sliver is made, each quantity taken being made to overlap the preceding and the fibers themselves are not removed from between the teeth on the cylinder from the time they are fed in until they leave perfectly combed, except a small portion of their outer ends sufficient to be grasped by the nippers.

Having thus described the nature of my invention for combing fibrous substances and the manner of performing the same I would have it understood that I do not limit myself to the construction and special arrangement of the parts so long as the peculiar mode of operation herein described is attained and the fibers are retained between the teeth of the surface b while being combed nor do I claim the mechanical parts separately or confine myself to the details herein described but

What I do claim is—

The combining machinery as herein described whereby the fibers after being fed into or received among teeth (set in a suitable surface) have their ends raised out from the teeth and held by nippers while the ends are cleaned; the cleaned ends of the fibers being then nipped and drawn among the teeth in

order to clean the other end and also to separate this quantity of fibers from the other fibers among the teeth the protruding ends are then deposited amid the teeth in such manner that they overlap the ends of the quantity of fibers which have been just previously similarly treated thus admitting

of the prepared or combed fibers being doffed or drawn off from the teeth in a continuous sliver as above explained.

CULLEN WHIPPLE.

Witnesses:

J. J. GREENOUGH,
JOHN POST.