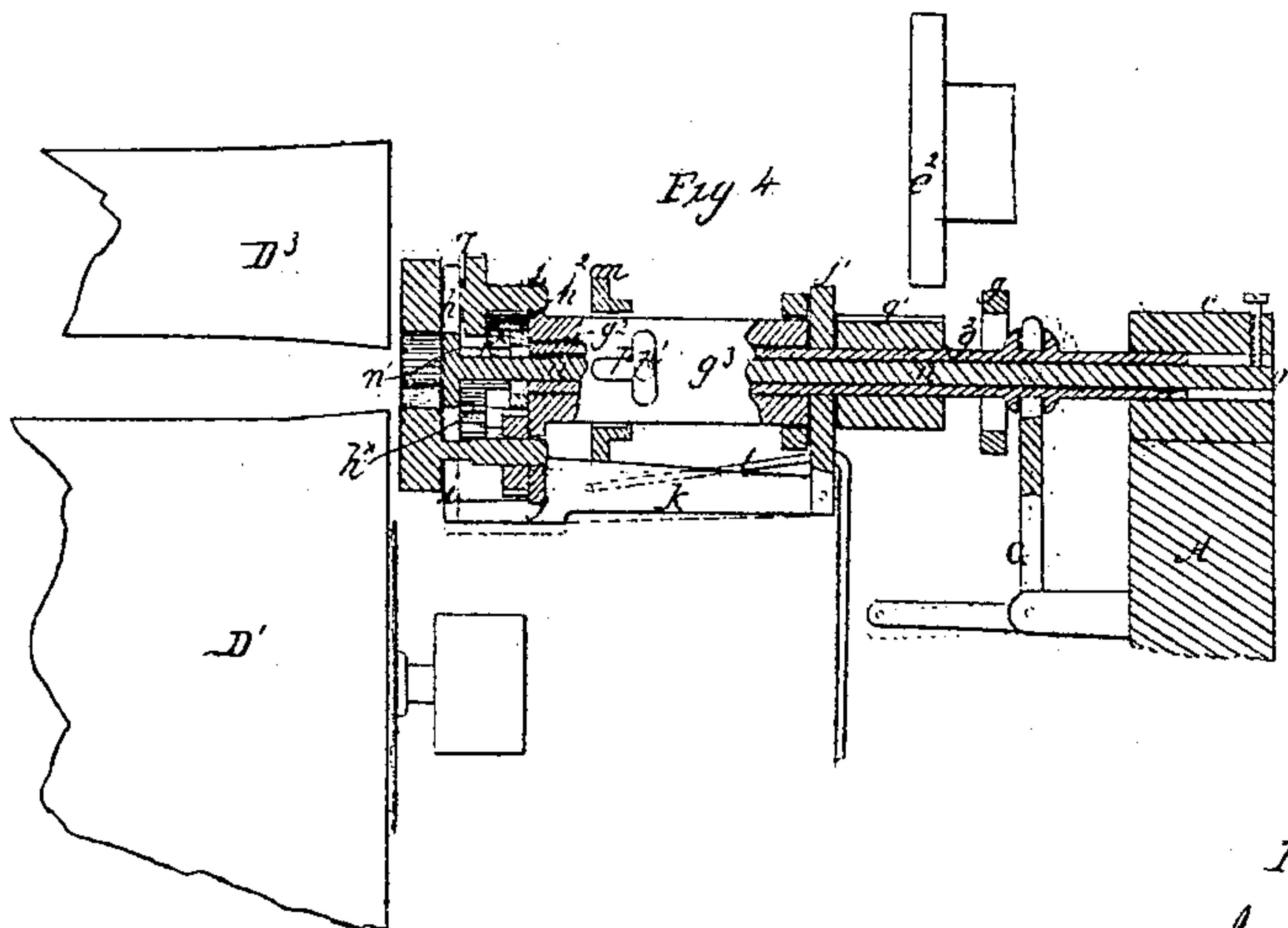
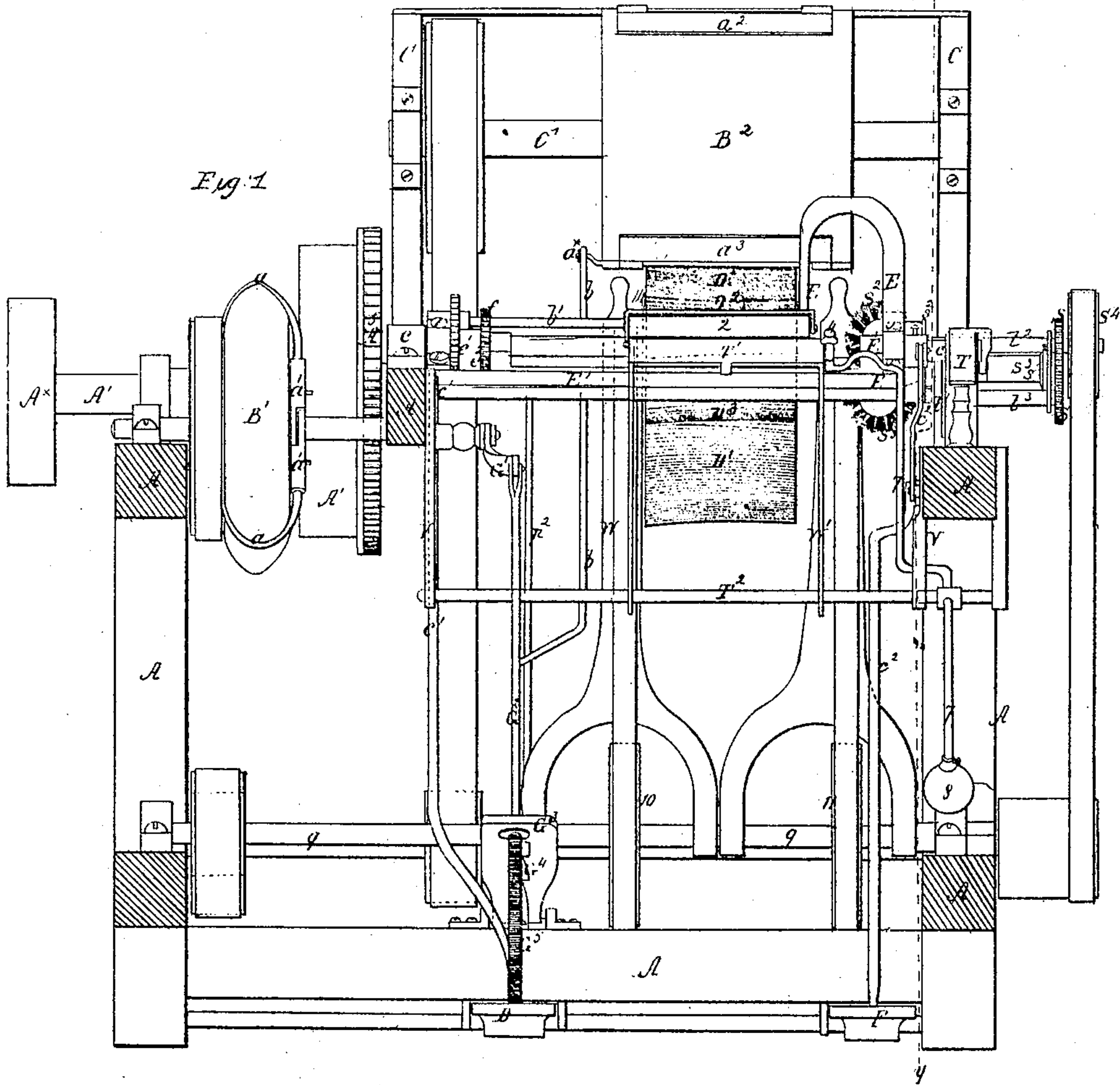


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Cigar Mach.

Nº 42,946.

Patented May 31, 1864.



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Sheet 4. 5 Sheets.

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Fig. 13.

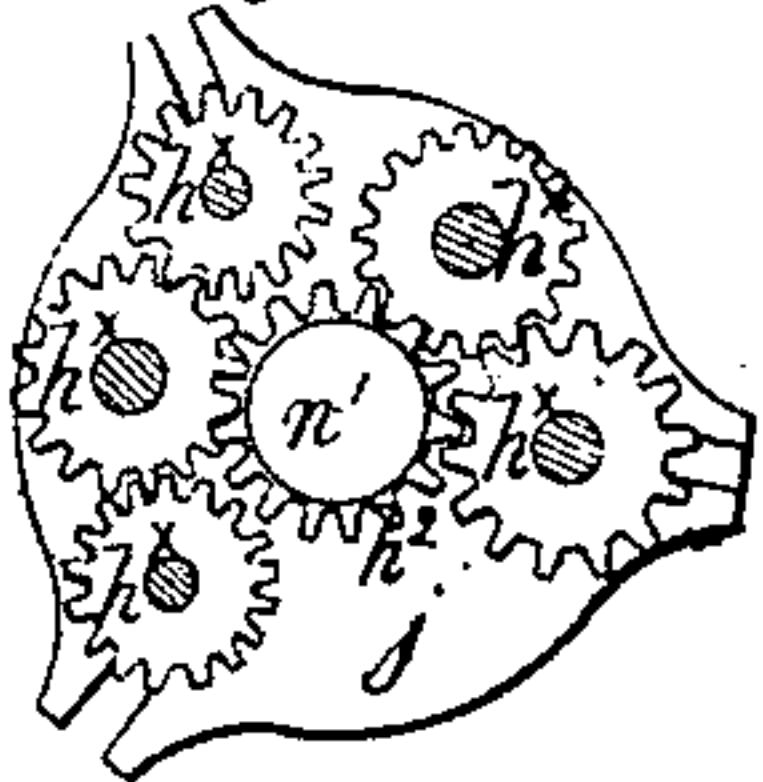
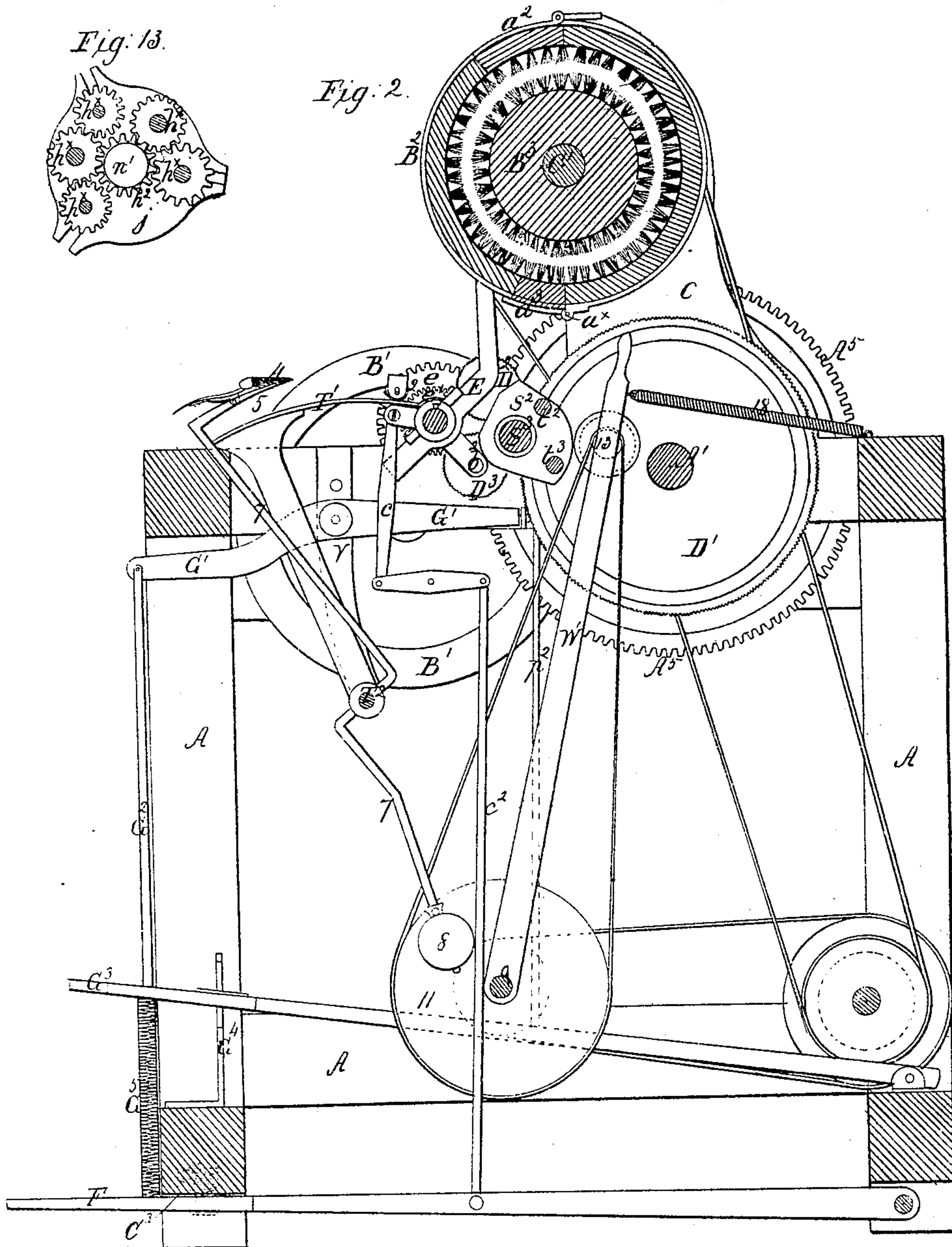


Fig. 2.



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Fig. 3.

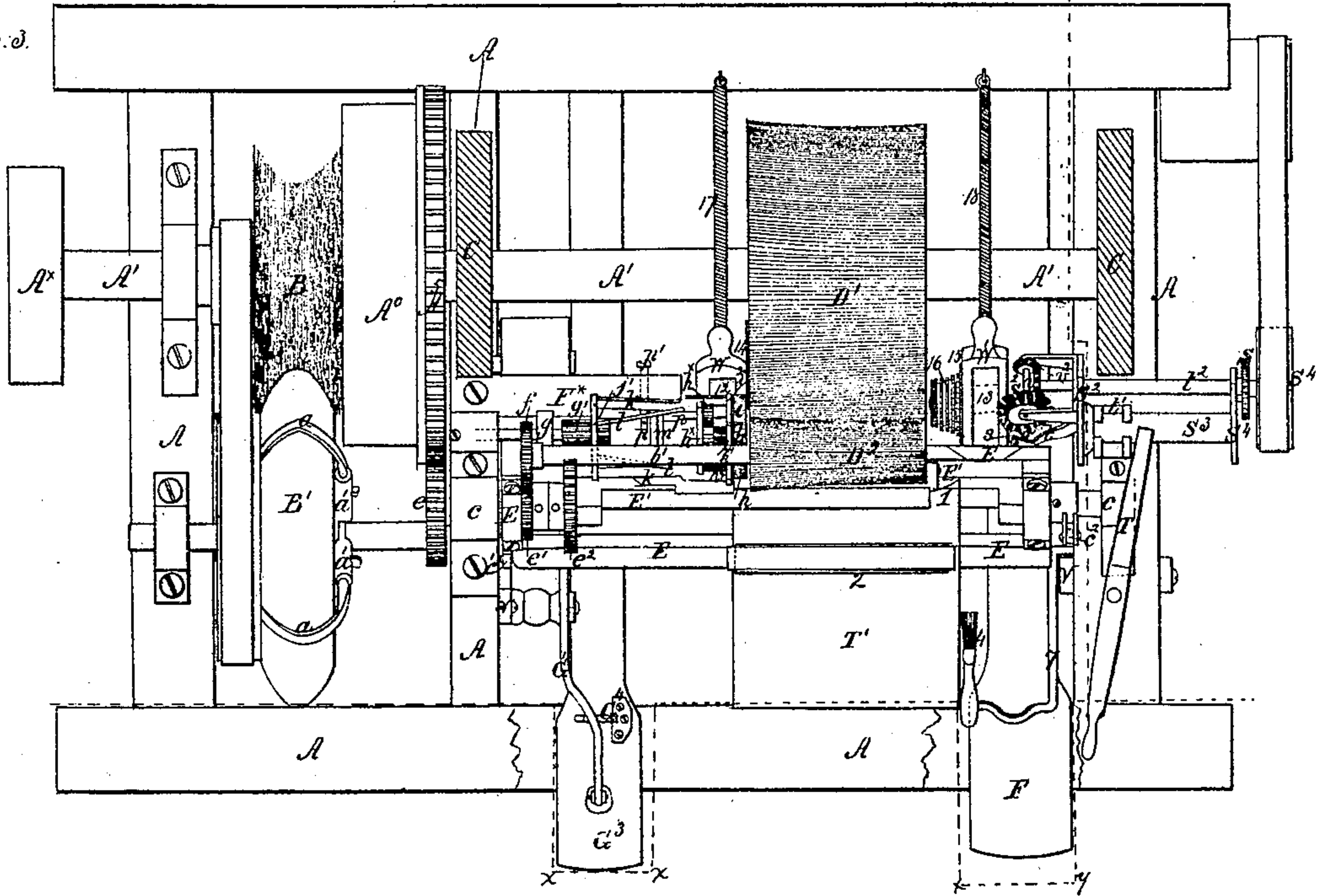


Fig. 7.

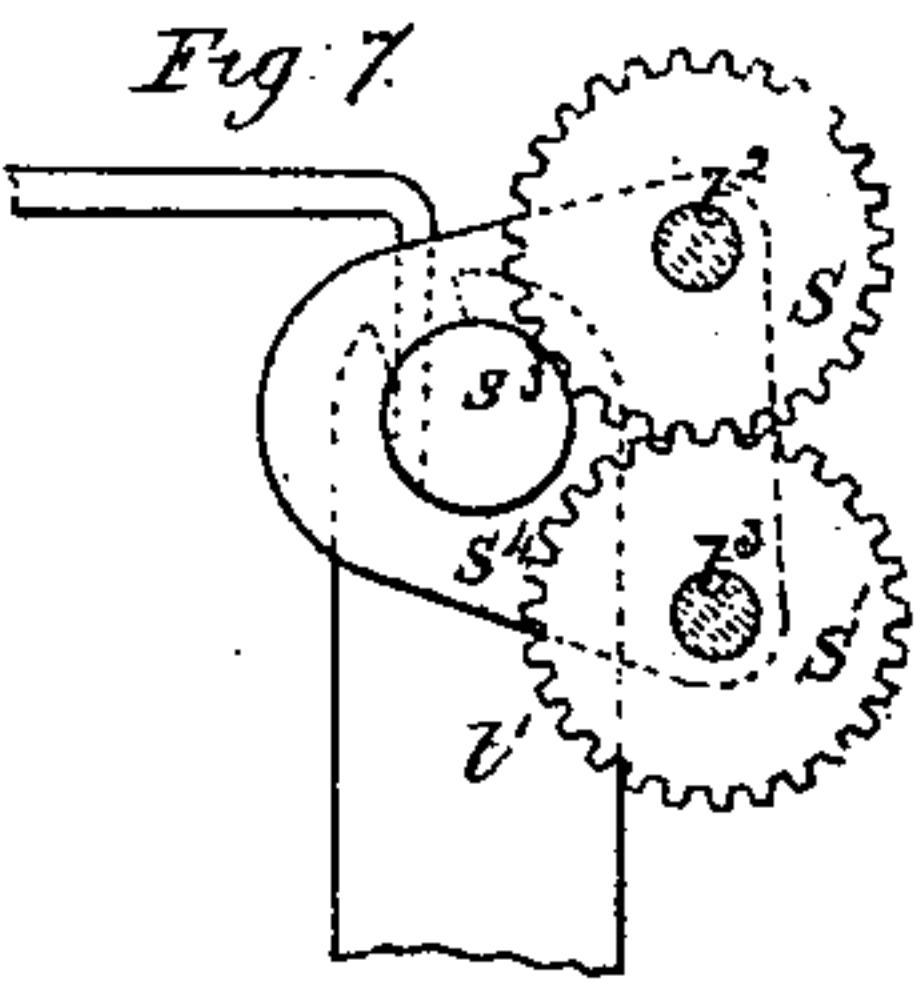


Fig. 6.

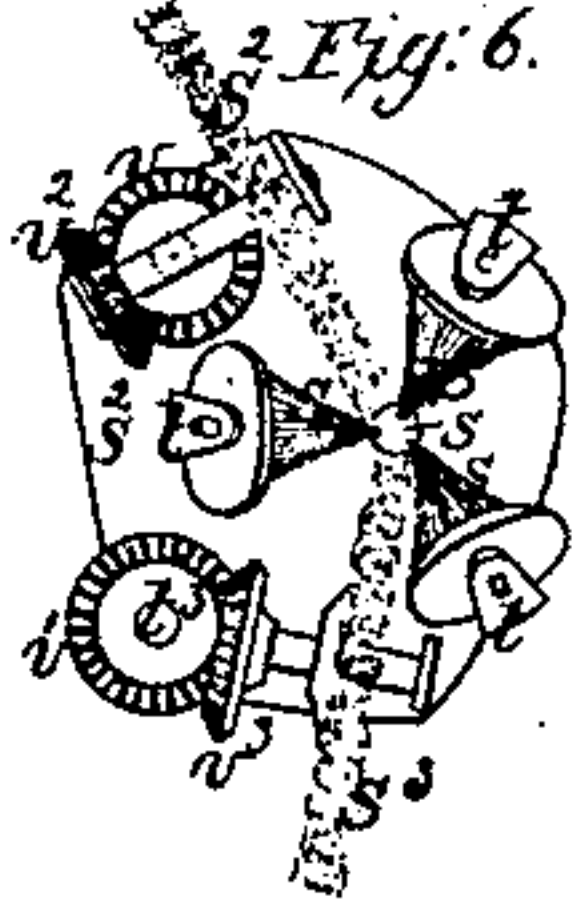


Fig. 5.

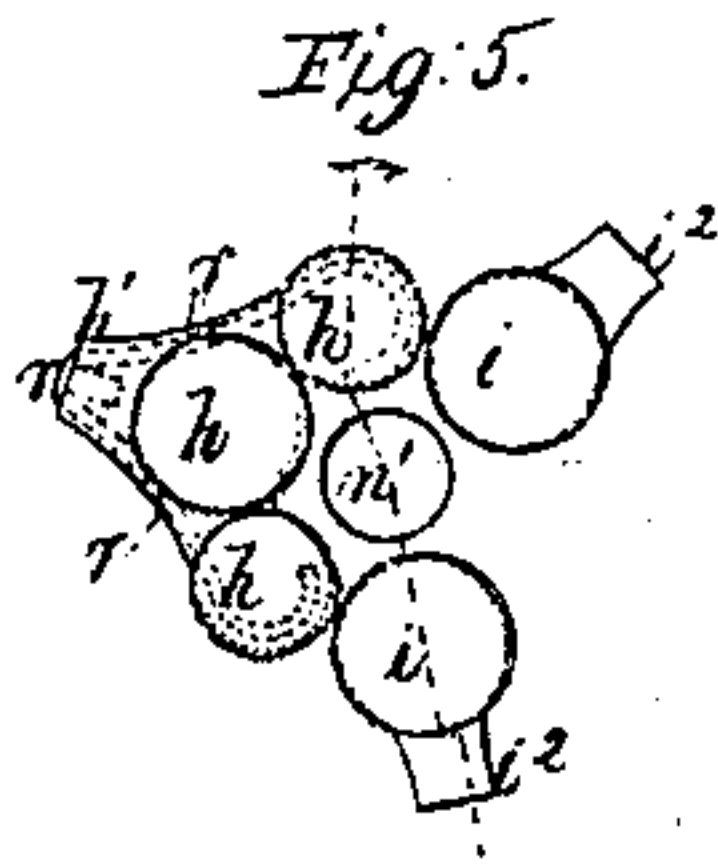


Fig. 8.

Fig. 9.

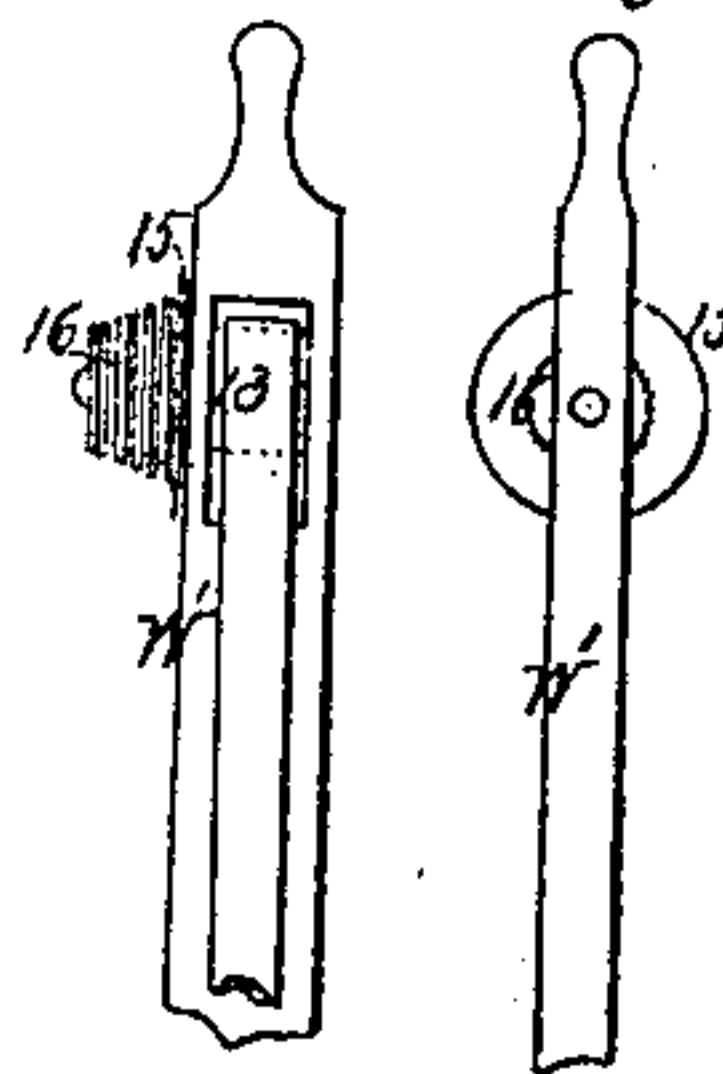
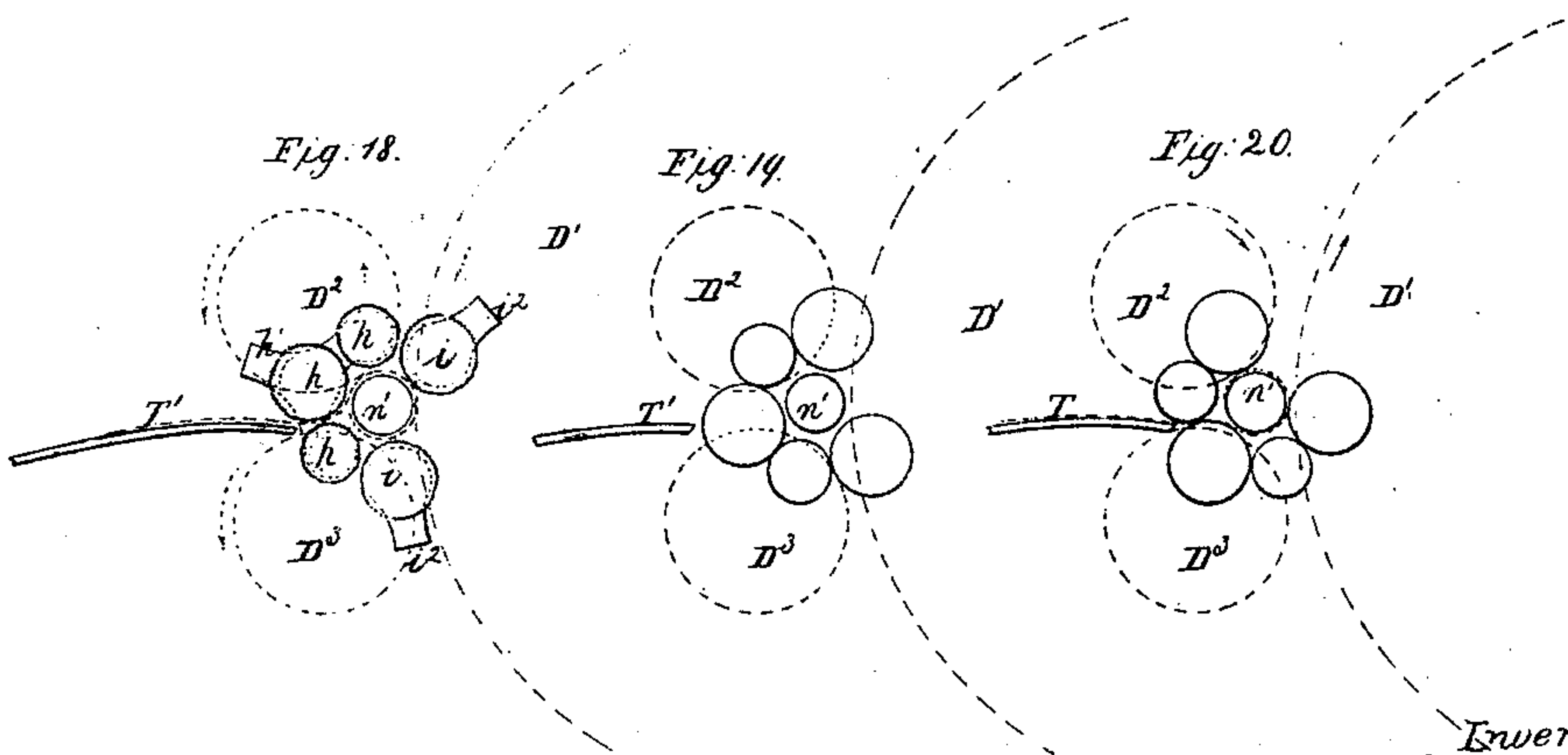


Fig. 18.

Fig. 19.

Fig. 20.



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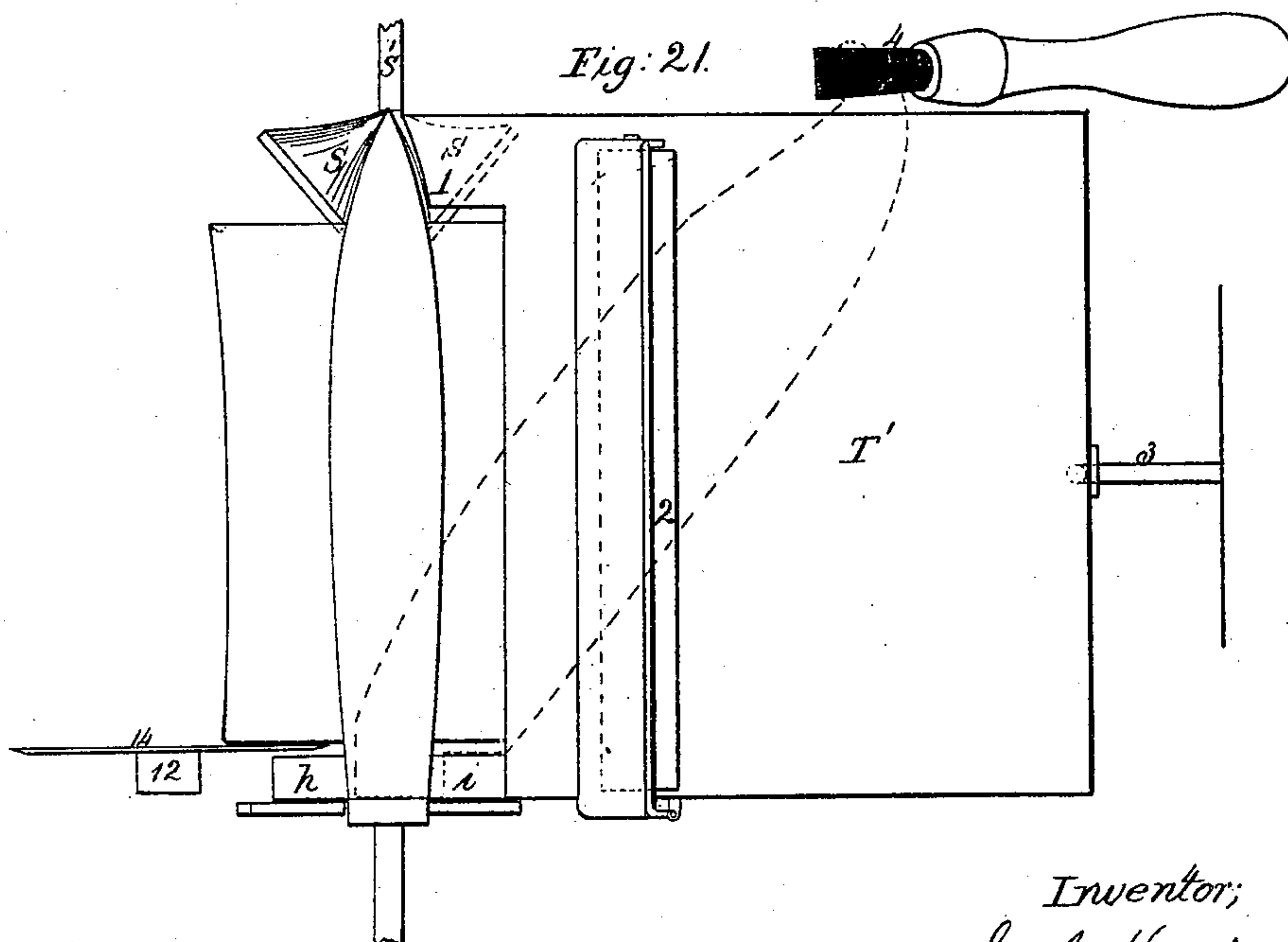
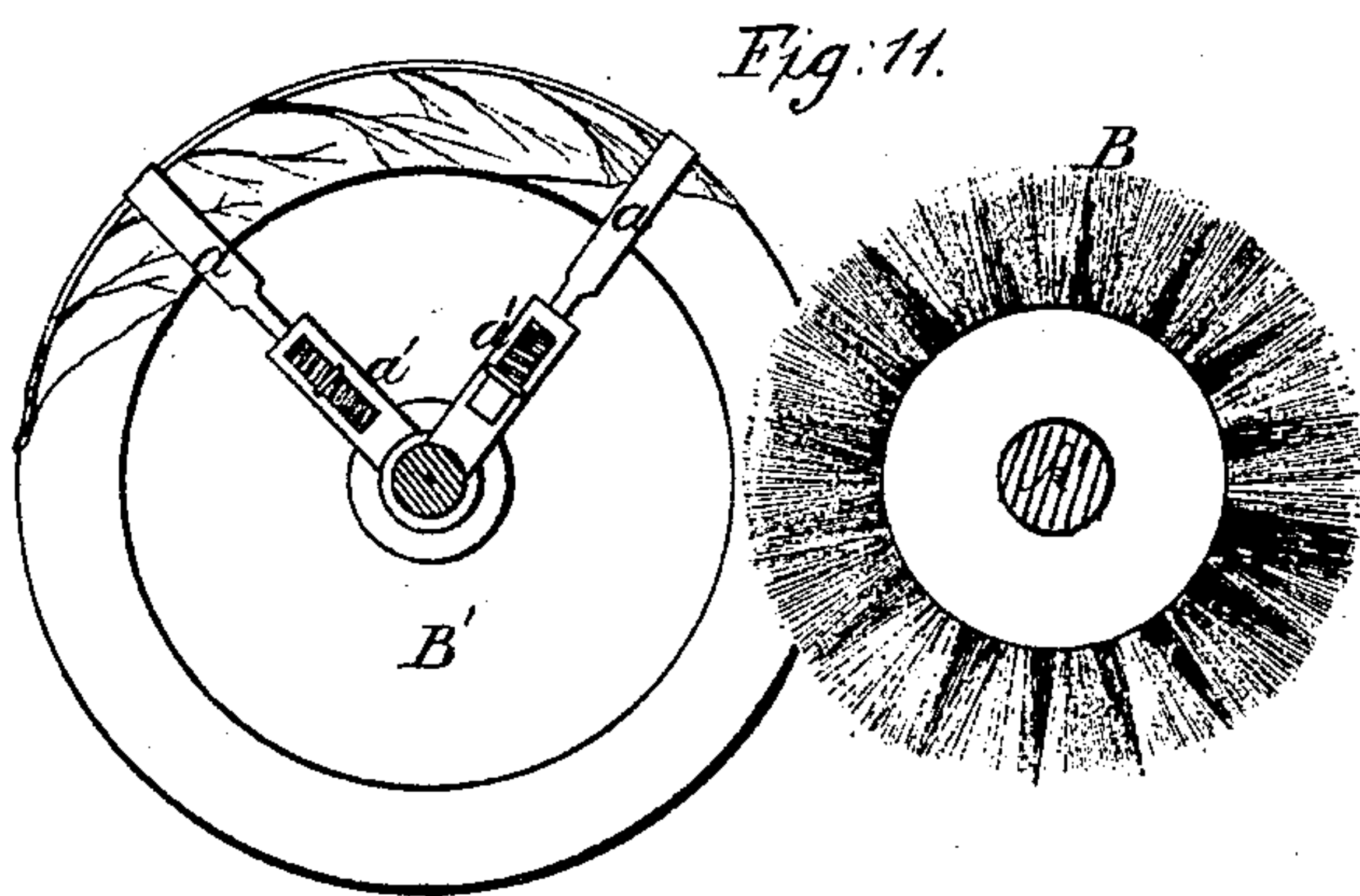
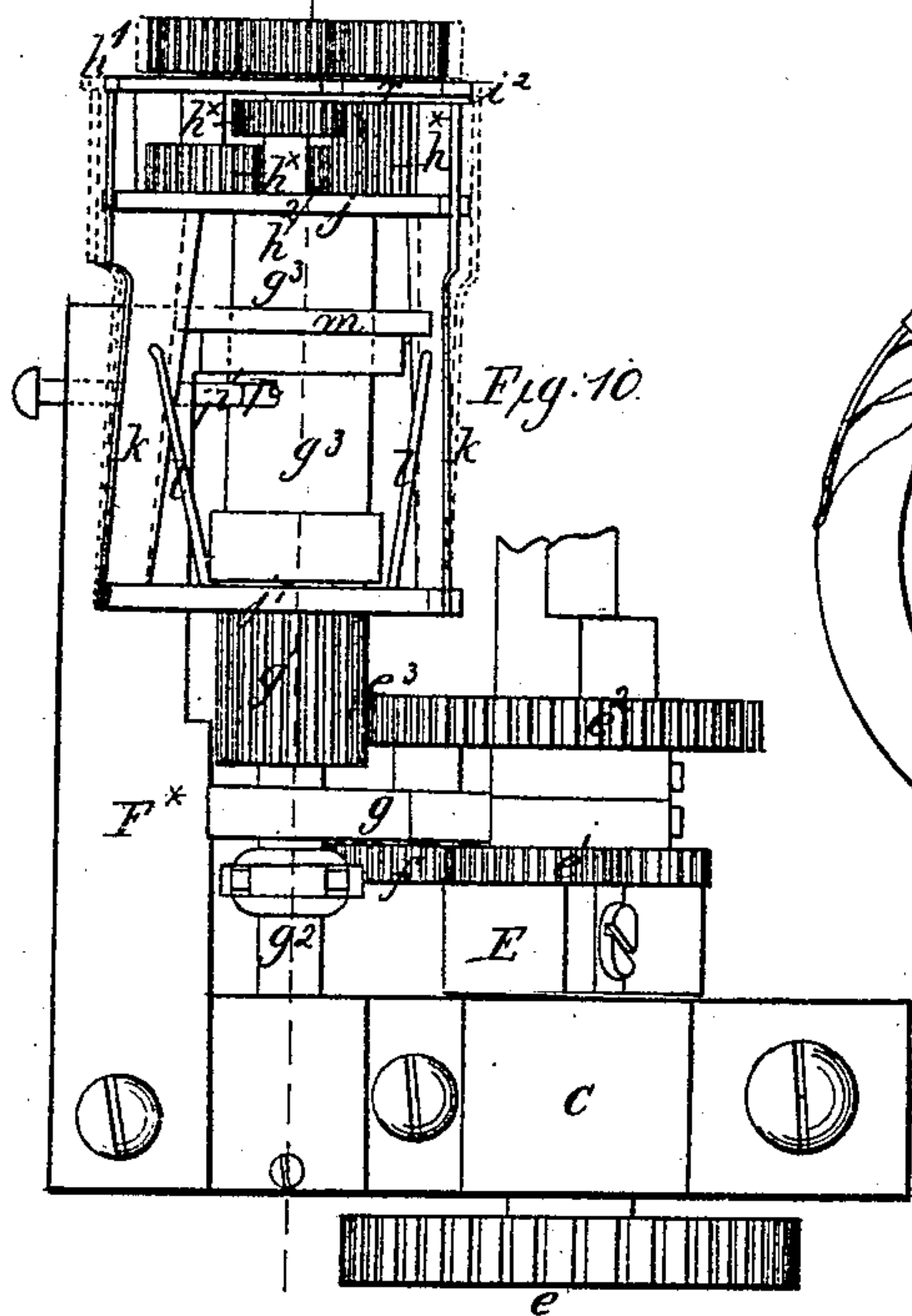
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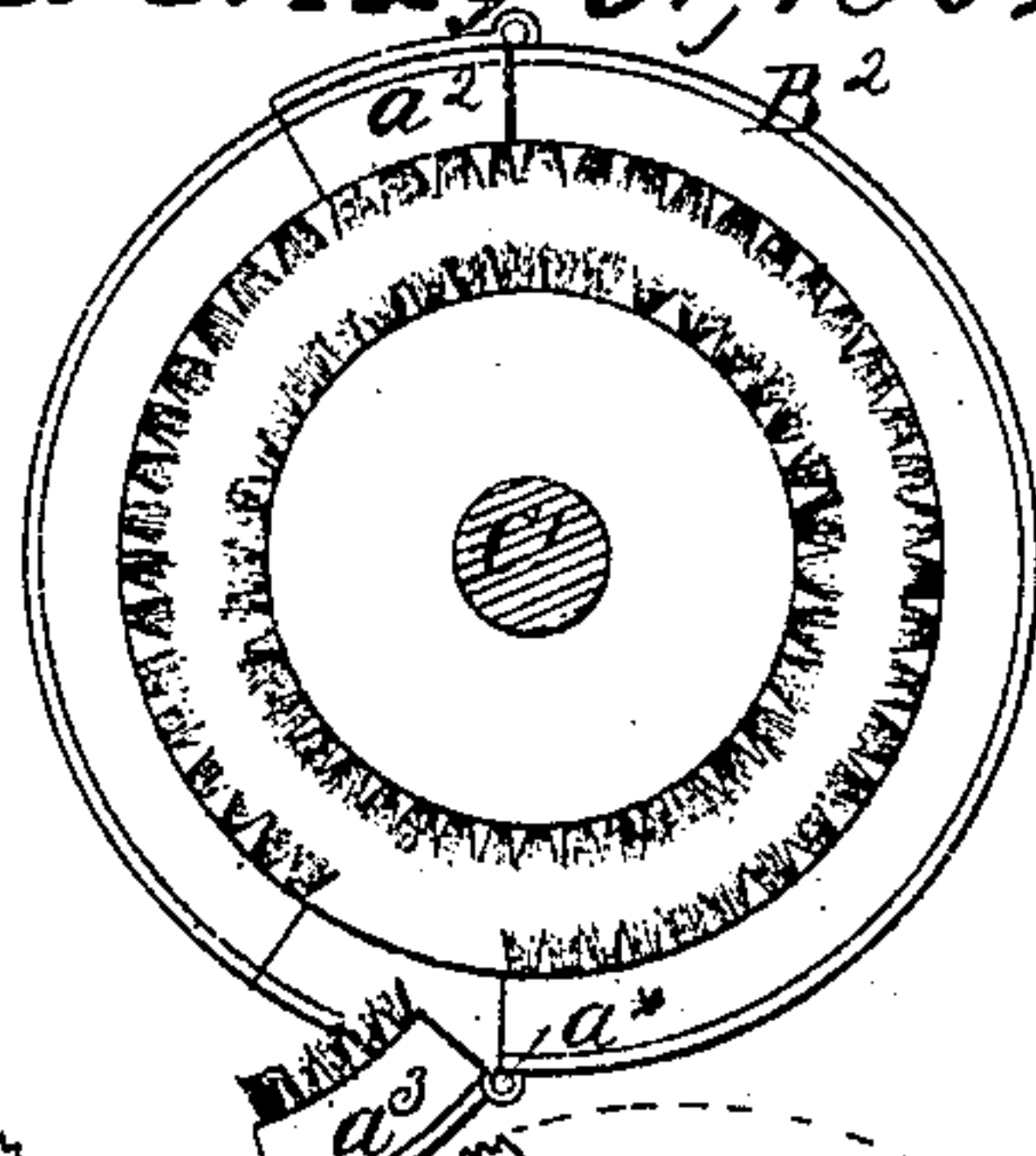
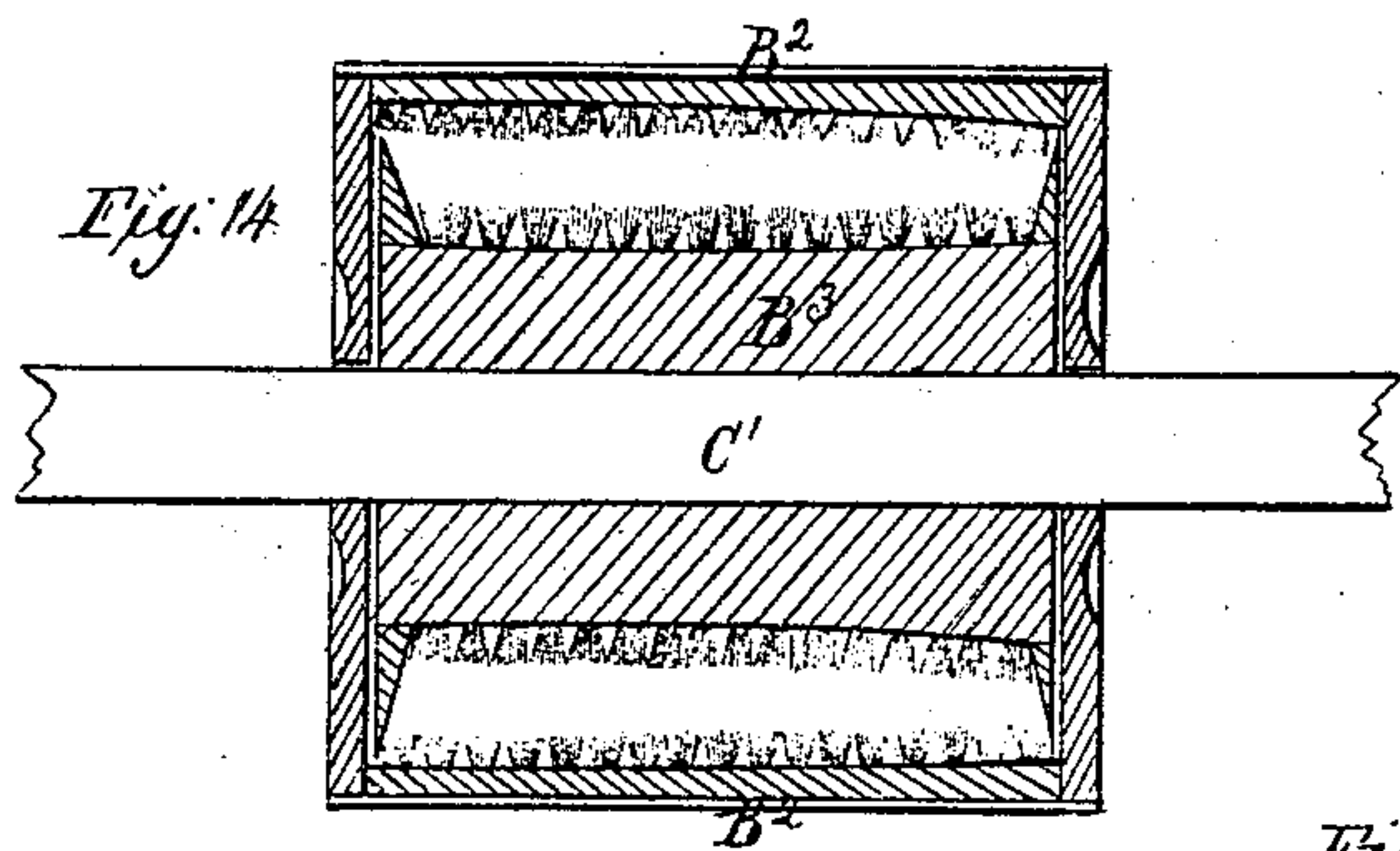


Fig. 16.

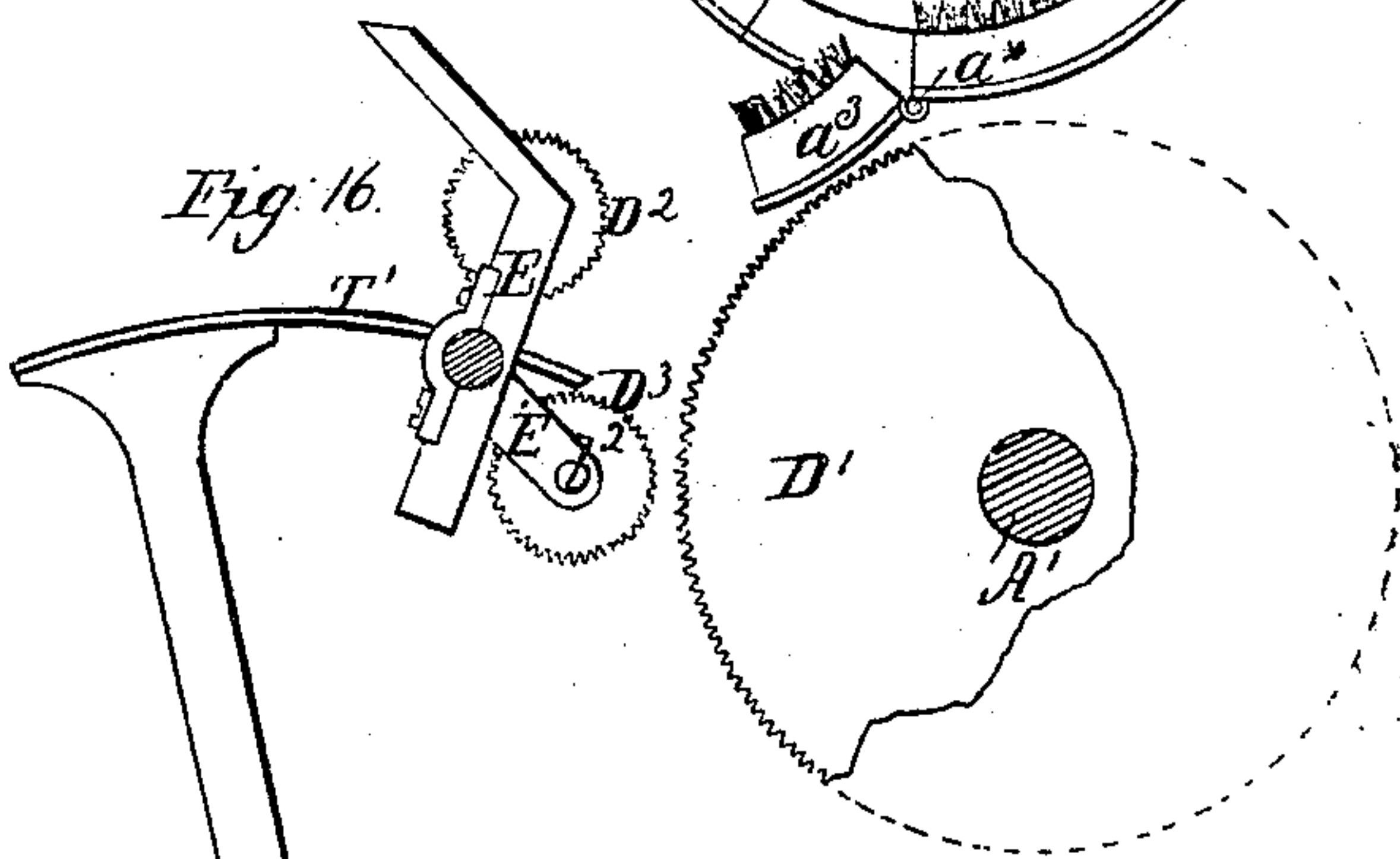


Fig. 17.

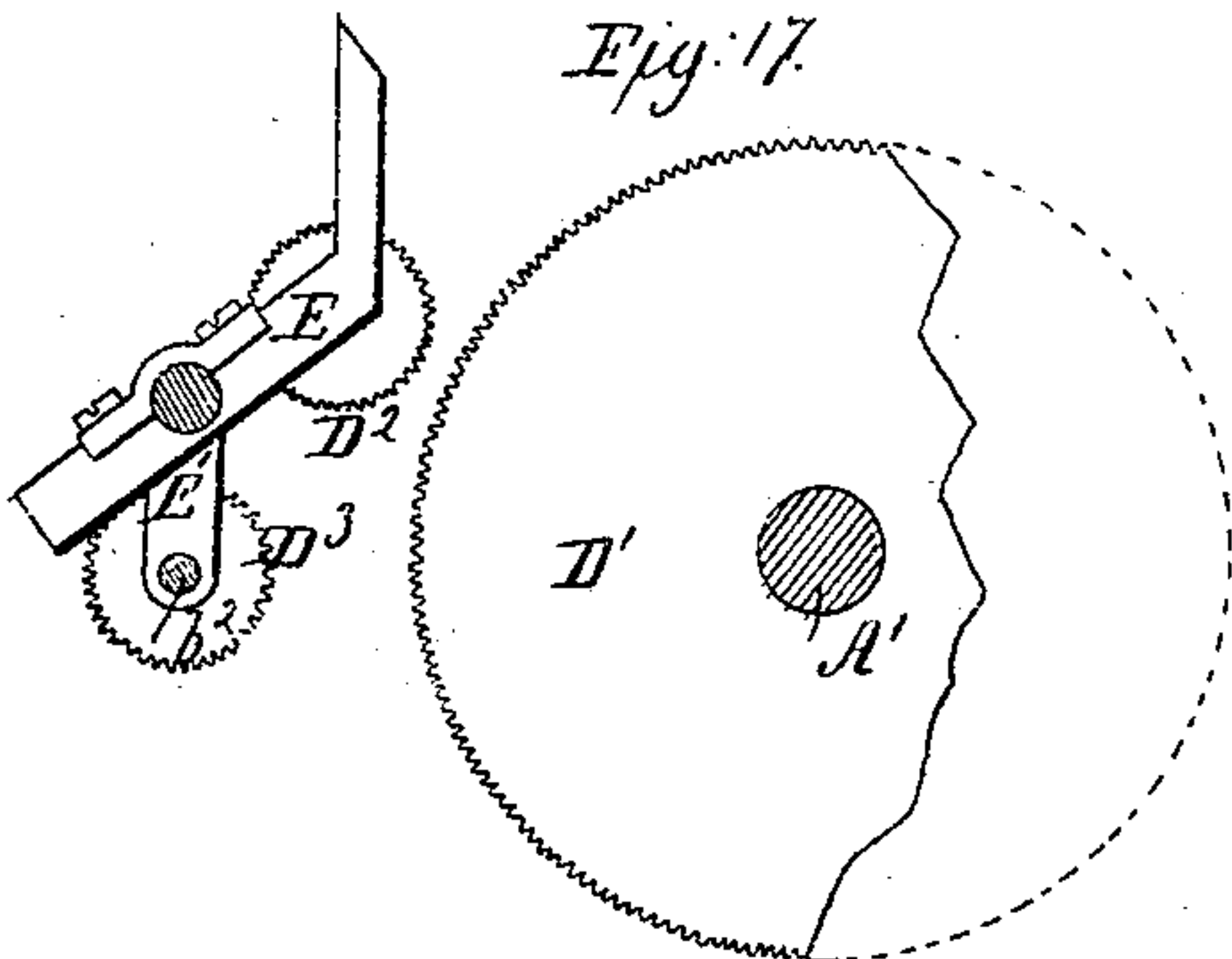


Fig. 15.

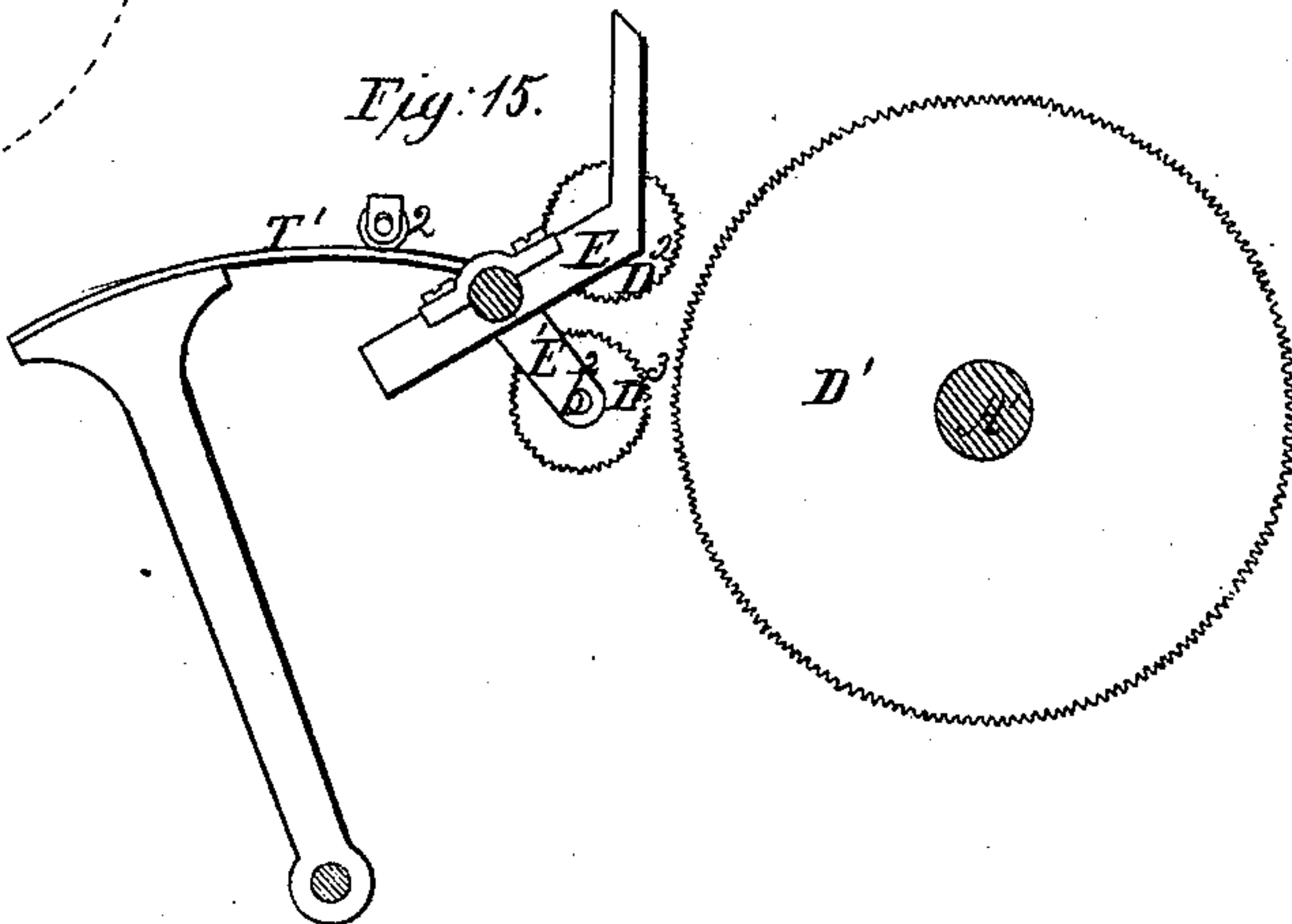
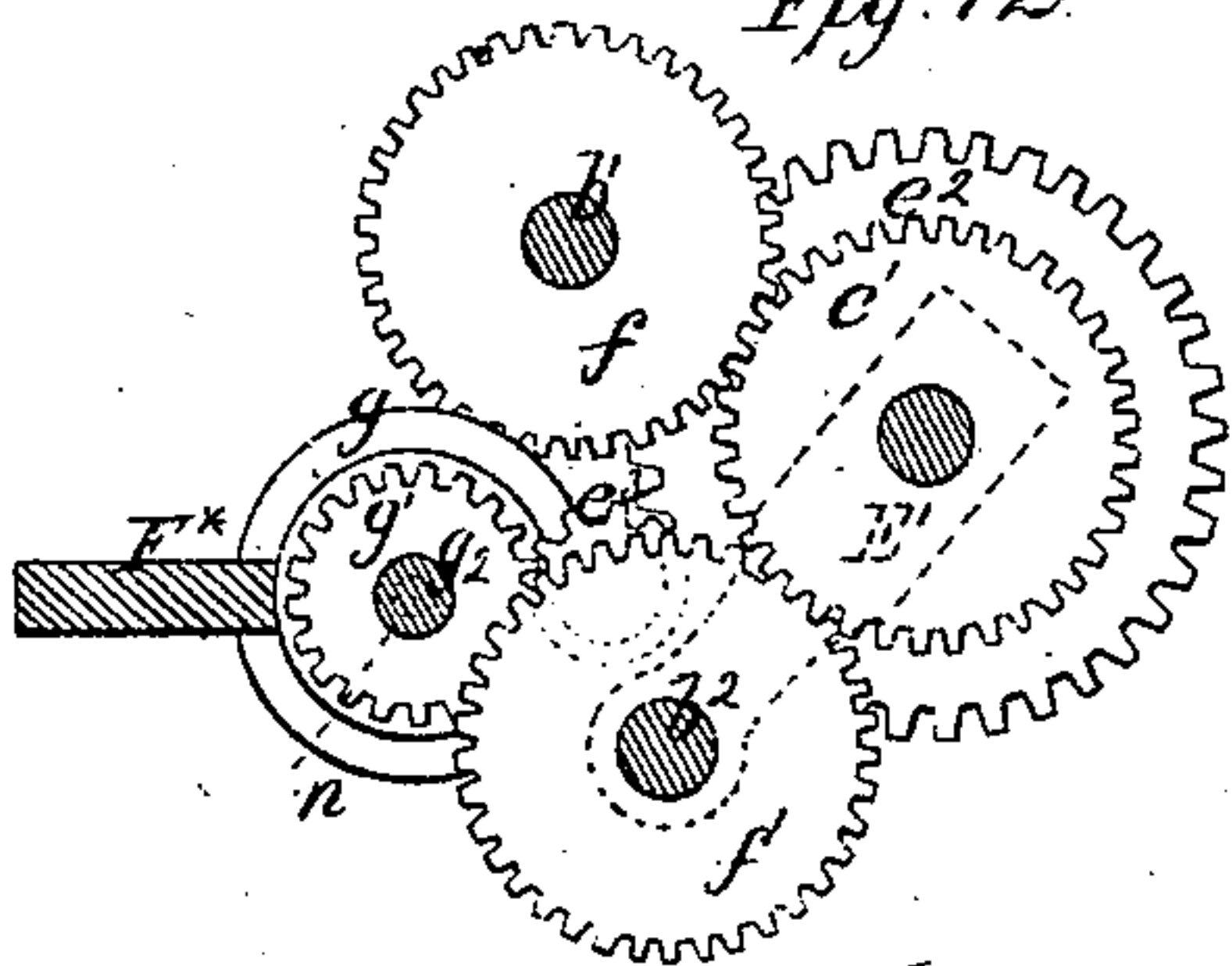


Fig. 12.



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UNITED STATES PATENT OFFICE.

I. A. HEALD, OF CARLISLE, MASSACHUSETTS.

IMPROVEMENT IN CIGAR-MACHINES.

Specification forming part of Letters Patent No. 42,946, dated May 31, 1864.

To all whom it may concern:

Be it known that I, I. A. HEALD, of Carlisle, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Machinery for Making Cigars; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a longitudinal section through the improved machine, taken in the vertical plane indicated by red line *x x* in Fig. 3. Fig. 2 is a transverse section through Figs. 1 and 3, taken in the vertical plane indicated by red line *y y* thereon. Fig. 3 is a top view of the machine with the brush-cylinder, which makes the "filler" removed. Fig. 4 is a sectional view representing the mechanism used for starting the "wrapper" around the filler for holding the blunt end of the cigar while the wrapper is being put on and the "tail" cut off, and thrusting out the tails. Fig. 5 is an end view of the small wrapping-rollers and the plunger for pushing out the tails when these rollers recede from the main rollers. Fig. 6 is an end view of the cones and brushes for forming the point or "head" on the cigar. Fig. 7 shows the gearing which give motion to the pointing-brushes. Fig. 8 shows the serrated rasp for pointing the end of the filler preparatory to wrapping it. Fig. 9 is an end view of Fig. 8, showing the circular knife for cutting off the pointed end of the filler. Fig. 10, Sheet 2, is an enlarged top view of the mechanism which commences the operation of putting on the wrapper, and also the spur-wheels which communicate motion to the same. Fig. 11 shows in detail the brushes, wheel, and spring-holding straps for smoothing the leaves of tobacco for wrappers. Fig. 12 is an end view of the gearing which gives motion to the mechanism for starting the wrapper around the filler, and which also actuates the smaller rollers that roll the cigar. Fig. 13 is a sectional end view of the spur-wheels, which give motion to the small rollers which grip the end of the wrapper and commence the operation of winding the wrapper around the filler. Fig. 14 is a longitudinal central section through the brush-cylinder which prepares the filler. Figs. 15, 16, and 17 represent the three different positions of

the two small rollers, which roll the cigar, for receiving the filler from the brush-cylinder and discharging the finished cigar. Figs. 18, 19, and 20 show the three different positions of the starting-rollers with relation to the main rollers, which latter are indicated by the red lines. Fig. 21 is a detail showing the shape of the wrapper and the method of applying it to the filler.

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates to certain new improvements in cigar-making machinery, which performs the several operations of smoothing the stock preparatory to cutting out the wrappers, rolling and forming the filling or filler and depositing it between rollers which continue to roll it, rasping and reducing one end of the filler to a point suitable for receiving the wrapper and making a neat point on the cigar, delivering the wrapper to the filler, wrapping it, cutting off the tail, and finally discharging the finished cigar.

The nature of my invention consists: first, in the use of a revolving brush-wheel for the purpose of smoothing wrinkles out of the stock preparatory to cutting the "wrappers" therefrom; secondly, in a revolving-wheel, of suitable dimensions and form, on which to fasten material for cigar-wrappers while the wrinkles are being taken out; thirdly, in the employment of spring-straps, in conjunction with a wheel, for the purpose of retaining the leaves in place during the operation of the brush-wheel upon them; fourthly, in preparing the fillers by means of bristles or points, made of any suitable material, inserted in or fastened on the outside surfaces of cylinders, rollers, or the inside of their casings or whatever gives motion to the material for the cigar to be rolled, so that the ends of the points opposite the ends fastened shall come in contact with the substance to be rolled, the object of which is to form a rough and, if necessary, flexible surface, in order to prevent the slipping and insure a more certain gathering and rolling of the material for cigar-fillers; fifthly, in the employment of fluted or corrugated surface cylinders or rollers in a cigar-machine, for the purpose of giving a peculiar form to, or insuring a more certain rotation of, the cigar or filler when in contact with and between said rolling surfaces; sixthly, in the

employment of a rocking frame and rocking shaft adapted to receive and to support the smaller rollers, which roll the filler before and after it is wrapped for the purpose of allowing the filler to be introduced into its proper place to be wrapped, and also for discharging the finished cigar; seventhly, in a series of revolving guide-rollers, which guide the end of the wrapper around the end of the filler, at the commencement of wrapping the same, and prevent the end of the wrapper from running out at the spaces between the large rollers, or whatever revolves the filler; eighthly, in so arranging said series of guide and feed rollers that two act as feed-rollers, and draw in the wrapper at or before the time it commences to wind around the end of the filler; ninthly, in a stationary piece, arranged at that end of the cigar to be cut off, which prevents the portion cut off from being drawn back with and from remaining in or between that portion of the machinery which encompasses it, as the guide-rollers are drawn back from the end of the cigar to give room for surplus length of another filler to drop into its place; tenthly, the employment of brush-wheels, arranged at the pointed or last-finished end of the cigar, for the purpose of facilitating the wrapping operation at this point; eleventhly, fluted or smooth conical rollers or revolving cones for the purpose of pointing the cigar and wrapping the point, as will be hereinafter described; twelfthly, in the use of a vibrating table on which to lay the wrapper preparatory to its being presented to the filler, when said table is constructed in the form of the arc of a circle, as will be hereinafter described; thirteenthly, in the use of a pressure-roller, applied to the vibrating table in such a manner as to smooth the wrapper and to give the desired tension to it while winding around the filler; fourteenthly, bristles or flexible points of any other suitable material attached to a finger-guide or other such device, and of a suitable form and tension to give the desired bearing on one or both sides of the wrapper, in order to lessen its liability to tear as it is drawn from the bristles or points and wound on that end of the cigar last covered by it; fifteenthly, in the employment of a pendulum-rod, to which the spring-finger is attached, for the purpose of keeping the end of the wrapper last wound around the filler under proper tension during the operation of forming the point on the cigar; sixteenthly, in severing the tail or surplus end of the cigar from the latter, by means of a revolving knife or circular cutter; seventeenthly, in the employment of a reciprocating frame for carrying the small feed and guide-rollers, for the purpose of allowing that portion of the filler which projects from the main rollers to be received between the guide rollers at the commencement of the operation, and to be discharged therefrom at the conclusion of the operation; eighteenthly, in giving a rocking motion to said roller-carrying

frame and confining it in any desired position, as will be hereinafter described; nineteenthly, in a sliding cone-frame, which allows the filler to be introduced between the main rollers, the filler pointed, and then can be brought up to a position for causing the cones to act upon the cigar in the finishing operation.

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

In the accompanying drawings, A represents the frame-work of the machine for containing and supporting the several parts thereof.

A' is the main driving shaft, which receives motion from any convenient prime motor, and on this shaft A', at one side of the machine, a brush wheel, B, is keyed, the brushes of which impinge upon the convex periphery of a wheel, B', as shown in Fig. 3, which wheel is adapted to receive on its circumference leaves of tobacco, which are confined in place by means of the spring-straps *a a*, two or more of which may be used. These straps are curved to conform to the surface of the wheel B', and one end of each strap is inserted within a spring-box, *a'*, which is pivoted to the shaft of wheel B in such a manner that the straps can be adjusted on the wheel and set at any desired point thereon.

B² represents a cylinder which is mounted in the upper frame, C, as shown in Figs. 1 and 2, and suitably secured to this frame so that this cylinder will be immovable.

Within the cylindrical casing B² a solid brush-cylinder, B³, is arranged concentrically with it and keyed to a horizontal shaft, C', which receives a rotary motion from pulleys and belts arranged as shown in the drawings. The interior surface of the casing B² as well as the exterior surface of the cylinder B³ are armed with brushes, as shown in Figs. 2 and 14, leaving a space between the ends of the brushes for receiving a suitable quantity of tobacco-leaves to form a core or filler. The brush-backs of both the cylinder B³ and casing B² are of such a shape longitudinally as to give a tapering form to the filler, which is rolled between these brushes. The upper part of the casing B² is furnished with a door, *a*², opening outward to allow of the insertion between the brushes of the material to form a filler. The lower part of casing or shell B² is also furnished with a door, *a*³, which opens outward for the purpose of discharging the filler, when it is properly formed, into the cigar-forming mechanism, as will be hereinafter described. A short crank is formed on one end of the pintle *a*^{*} of the lower door-hinge, (shown in Fig. 1,) to which is connected a vertical rod, *b*, which is pivoted at its lower end to the treadle D, so that by pressing on this treadle the lower door *a*³ will be opened and the filler will be discharged from the casing B² between the rollers D¹ D² D³, as shown in Fig. 16. These rollers consist of a large one, D', which is keyed on the main

shaft A', and two smaller rollers, D² D³, which are keyed to independent shafts b' b². The shaft of roller b' has its bearings in a rocking frame, E, which is supported in a horizontal position in bearings on the rocking shaft E', while the shaft b² of roller D³ has its bearings in a rocking shaft, E', which is supported also in the bearings c c. The two frames E E' have independent movements, the former being moved by means of a rod, c', and treadle D, and raised to the position shown in Fig. 16 for receiving the filler between the three rollers D' D² D³, and the latter frame, E', being depressed, as shown in Fig. 17, for discharging the finished cigar, by means of a treadle, F, and connecting-rods c², Fig. 1; and it will here be seen that the downward movement of treadle D will raise the roller D² up, and at the same time open the lower door a² to discharge the filler. The treadle D is furnished with a spring, c³, Fig. 2, for returning the parts to their former position. (Shown in Fig. 15.) The large roller D', being keyed to the main driving shaft, receives its motion directly from this shaft, but the small rollers being keyed to separate shafts they receive their motions through the medium of spur-wheels, (shown in Fig. 12,) from the main spur-wheel A⁵, which is keyed to the main shaft A', as shown in Figs. 1, 2, and 3. This train of wheels is arranged as follows: The pinion-spur e (shown in Figs. 2 and 3, but not in Fig. 12) engages with the teeth of spur A⁵ and drives the two spurs e' e², which have their bearings on one of the gudgeons of rocking frame E'. The spur-wheel e' engages with the teeth of the twin-roller spur-wheels f f', and as the axis of e' is in common with the axis of motion of both frames E E', the rotary motion of the rollers D² D³ is not stopped when these frames are moved about their center. The large spur-wheel e² (see Fig. 10) engages with a pinion, e³, which has its bearings in a circular bracket, g, fixed to the bearing-plate F*, and this pinion e³ engages with a long spur-wheel, g', which is keyed to a sliding tubular shaft, g², as will be hereinafter fully described. The rollers D' D² D³ have their surfaces shaped so as to conform to the tapering outline of a cigar, as shown in Figs. 1 and 3 of the drawings. The surfaces of these rollers are also corrugated or fluted, as shown in the cross-sections Figs. 2, 15, 16, 17, for the purpose of taking hold of the filler or cigar, and insuring its rotation when confined within the space between these three rollers. It has been found that smooth-surfaced rollers allow the cigar, during the operation of putting on the wrapper, to slip sometimes, thus making an imperfect cigar, but with the rough-surfaced rollers there will be no liability of the filler slipping, and a steady rotary motion is given to the filler while it remains between the rollers.

At one end of the rollers D' D² D³ I have arranged a series of guide and feed rollers, the space inclosed by which coincides with

the space between the three large rollers D' D² D³, as shown in Figs. 18, 19, and 20 of Sheet 2, in which the red circles indicate the large rollers and h h h i i represent the small guide and feed rolls. These feed and guide rolls have their outer bearings in plates h i² i² and their inner bearings in the head plate j of a sliding tubular shaft, g³, as clearly shown in Figs. 4, 5, 10, 13, and 18. The short shafts of the guide and feed rolls each carry a small spur wheel, h*, and three of these spur-wheels engage with and receive their motions from a central spur-wheel, h², which is keyed to the end of tubular shaft g², as shown in Figs. 10 and 13, sheet 2, which is partially inclosed within the tubular slide g³. The outer ends of the shaft of rolls h h h i i are caused to recede from a common center at one point in the operation of the machine, hereinafter to be explained, by means of jointed arms k k k, which are pivoted at their rear ends to the collar j' of cylinder g³, guided in slots in plate j, and connected at their forward ends to the three bearing-plates h' i² i². The springs l l l keep the arms k k k down, and the rolls h h h i i together, and the stationary ring m, which encompasses the cylinder g³, forces the arms k k k apart and separates the rolls h i, when they are caused to recede from the ends of the large rollers D' D² D³. The stationary ring or collar m is attached to plate F*, and this ring forms the inner support for the sliding mechanism above described, while the outer end of plate F* forms a bearing for the outer end of the sliding tubular shaft g². Within this tubular shaft g² is a stationary rod, n, which is fixed at one end to the plate F*, and has on its opposite end a circular disk, n'. (Shown in Figs. 4, 5.) This disk forms a plunger or piston for thrusting out of the space inclosed by the small feed and guide rolls h h h i i, shown in Fig. 4, that portion of the cigar-filler which is cut off. This is done when the rolls h h h i i are caused to recede from the large rolls, as above described. This sliding motion is given to the rolls h i by means of a right angular lever, G, Fig. 4; a lever, G', Figs. 2 and 3, and a connecting-rod, G², which is connected at its lower end to the treadle D. The depression of this treadle D therefore causes three movements—viz., it opens the lower door a³ for discharging a filler, raises the upper roller D² to receive the filler, and slides the feed and guide rolls h i back to allow the filler to drop in its proper place between the large rollers D' D² D³. These movements are simultaneous, and the rotation of the parts are in no manner affected thereby. But in order for these movements to be made it is necessary that the upper treadle G³ be set in the middle notch of an upright notched plate, G⁴, (shown in Figs. 1, 2, and 3), on the lower cross-bar of the front of frame A. When the treadle G³ is in the middle of the plate G⁴, or rather in the middle notch in this plate, the longitudinal slot of a T-slot, p, in sliding tube g³

will be in a line with the fixed pin p' in plate F , (shown in Figs. 4 and 10;) but when the pin p' is in the vertical transverse slot in the cylinder g^3 it will be seen that the pin p' will not allow the rolls $h i$ to be moved back nor the treadle D to be depressed. A rod, p^2 , connects the plate j' with the upper treadle G^3 , and the outer end of this treadle rests upon a coiled spring, G^5 , which forces the treadle upward. Now, when this treadle is raised to the uppermost notch in plate G^4 the pin p' will be at the lower end of the transverse slot p . Then by depressing the treadle to the lowermost notch the cylinder g^3 , with its rolls h and i , will be moved round on the tubular cylinder or shaft g^2 a distance which is equal to the diameter of one of the feed-rolls at one-half the distance; or when the treadle is moved from an upper or lower notch to the middle notch the cylinder g^3 will move but half the distance. These movements of the rolls $h i$ are indicated by the three positions in which they are shown in Figs. 18, 19, 20. In these views the relation of the rolls $h i$ to the larger rollers $D^2 D^3$ differ, and the object of these movements is to enable the person attending the machine to introduce the wrapper between a feed and guide roll and then to move these rolls either up or down, depending upon which direction they are rotated, so as to start the wrapper around the end of the filler and prevent the end of the wrapper from being carried through or between the spaces in the series of rolls $D' D^2 D^3$. When the treadle G^3 is fixed in the middle notch of plate G^4 and pin p' is opposite the longitudinal portion of slot p , the feed and guide roller h , which is between the two feed-rolls $h h$, will be opposite the space between the small rollers $D^2 D^3$, and when the treadle G^3 is in the upper notch in plate G^4 the space between the upper feed-roll h and middle guide and feed-roll h will be opposite the space between the two rollers $D^2 D^3$. The space between the lower feed-roll h and middle roll h is brought opposite the space between the rollers $D^2 D^3$ when the treadle G^3 is in the lowermost notch, Fig. 18. The two outer feed-rolls $h h$ are keyed to shafts which have a slight play in their outer bearing-plate h' , and the bowed spring r , shown in Figs. 4, 5, 10, keep the surface of the outer rollers $h h$ in contact with the surface of the middle-roll h , and at the same time allow these rollers $h h$ to yield outward when a wrapper-leaf is introduced between them. All of these feed and guide rolls or cylinders $h i$ are fluted on their peripheries, and they are intended for commencing the operation of putting the wrapper around the tail end of the cigar, and for this purpose I have made middle-rollers $h h$ spring pressure-rollers, as above described.

At the opposite end of the large rollers $D' D^2 D^3$ there are arranged three cones $s s s$, whose axes are inclined or rather diverge from a central bearing, s' , as shown in Fig. 6. This central-bearing stem s' is coincident with

the space between the rollers $D' D^2 D^3$ and also that between the rollers $h i$, as shown in Fig. 21, Sheet 2. These cones have their apex-bearings in stem s' and their base-bearings in curved plates $t t t$, which latter are affixed to the plates s^2 . The plate s^2 is secured to the inner end of a slide-bar, s^3 , and passes through the split bearings of standard t' , (shown in Figs. 3 and 7,) and is connected at its outer end to a plate, s^4 . The two plates $s^3 s^4$ are the bearings for two horizontal shafts, $t^2 t^3$, which carry on their outer ends twin spur-wheels $S S'$ and on their inner ends, inside of plate s^3 , small bevel-spurs $v v'$, (shown clearly in Fig. 6,) which engage with the spurs $v^2 v^3$, which are keyed to the shafts of brush-wheels $S^2 S^3$. The shaft t^2 carries on its extreme outer end a pulley, S^4 , over which a belt passes, as shown in Fig. 1, that communicates with a corresponding belt-wheel, which is on a shaft at the rear end of the machine. The curved lever T , (shown in Fig. 3,) is used to move the cones s , together with their frame brush-wheels, &c., back and forth for throwing these cones into and out of action as it may be desired.

The table upon which the wrappers are put in order to present them properly to the rotating filler consists of a curved or convex plate, T' , supported by arms which are secured at their lower ends to a rock-shaft, T^2 , which, being in a horizontal position, is supported in the two hanging bearings $V V$, Fig. 1. This table is constructed in the form of the arc of a circle, concentric with the axis of the rock-shaft T^2 , and the arms of the table T' are of such a length as to allow the edge of the table nearest to the rollers $D^2 D^3$ to be brought up between the space between these two rollers, as shown in Figs. 18, 19, 20, Sheet 2. This edge of the table last referred to is straight for a considerable distance, and terminates at one side in a projecting lip, 1, which has a curved edge conforming to the curved surfaces of the cones $s s s$. (Shown in Fig. 21.) The width of this table is equal to the distance between the inner surface of the bearing-plate of the small rolls $h h h i i$ and the apex of the cones s , as shown in Fig. 21, when these parts are in a position for finishing a cigar. Table T' has a hinged pressure-roller, 2, on its upper surface, which may be raised up to allow a wrapper to be adjusted in a proper position on the table and then returned to its former position for keeping the wrapper smooth and under proper tension while it is being wound around the filler. This table when it is moved back out of the way, as shown in Figs. 1, 2, and 3, rests against the upper rail of frame A , and when thrown forward, as shown in Fig. 21, is caught by a stop-hook, 3.

On the right-hand side of the table T' is a spring brush-finger, 4, consisting of a narrow curved plate, 5, to which is pivoted a key, carrying on its end a brush, 4, Fig. 2. This device is connected to the upper end of a pendulum-rod, 7, which carries on its lower end

an adjustable weight, 8. The rod 7 is so curved that the weight is forward of the pivot upon which the rod is hung. This causes weight 8 to keep the spring brush-finger back in the position shown in Figs. 2 and 3, unless acted upon by the wrapper, as will be hereinafter described. The point end of the wrapper is held between the bristles of brush 4 and the smooth surface of plate 5 only sufficiently tight to allow the point end of the wrapper to be presented to the pointed end of the filler in completing the operation of wrapping. For this purpose the brush-finger is in such a relation with the apices of the cones *s*, when these cones are in a position for pointing the cigar, that it will retain the wrapper in its grip until the cigar is nearly pointed and the small end of the wrapper is about to be folded back. When the wrapper leaves the finger 4, this finger is immediately thrown back to its former position by the weight 8.

W W' are two vibrating arms which are pivoted to the driving shaft 9. (Shown in Fig. 1.) These arms are arranged, one on each side of the large roller *D*, and forward of the shaft of this roller. They are furnished on their upper ends with handles, by which they can be drawn forward or toward the small rollers *D² D³*. The lower ends of these arms *W W'* are forked and stride belt-wheels 10 11, over which belts pass communicating with and giving a rotary motion to small pulleys 12 13, which are situated near the upper ends of their respective arms. The shaft of belt-wheel 12 carries on its end nearest the large roller *D'* a circular knife, 14, which is arranged in such a relation to the axis of the cigar confined between the small and large rollers that when this knife is brought up to the cigar it will cut off the surplus material, leaving the end flat or square and the cigar of the proper length. This operation is performed while both knife and cigar are rotating. The arm *W'* carries on its upper pulley-shaft a gang of circular plates, the edges of which are serrated, as shown in Figs. 2, 8, and 9. This forms a circular rasp, which is made tapering or conical, the largest end being nearest the arm *W'*, and the smallest end near the large roller *D'*. A circular knife, 15, is interposed between the base or largest end of this rasped cone 16 and the side of arm *W'*, and keyed to the shaft of the cone, so that the rasp and knife both rotate together. The object of the rasp is to reduce that portion of the end of the filler which projects from the right-hand side of the rollers *D' D² D³*, and to form a tapering point thereon, while the knife 15 cuts off the surplus material at the point, thus preparing the filler for receiving the wrapper and to allow the cones *s* to form a neat point on this end of the cigar. The two arms *W W'* are held back out of the way, when they are not in immediate use, by the springs 17 18. (Shown in Figs. 2 and 3.)

The operation of the machine is as follows:

Power being applied to pulley *A⁰*, a leaf is placed upon wheel *B'* under clamps *a a*, when the wrinkles are smoothed out by revolving in contact with the brush *B*, after which the leaf is removed and a wrapper of the desired form and size is cut from it. Sliding bar *s³* is thrown from the rollers *D' D² D³* and a sufficient quantity of leaves are then put into aperture *a²* in the top of cylinder casing *B²*, to form the core or filler of a cigar, which are rolled and formed in a proper shape between the brushes of cylinder *B³* and casing *B²*. Treadle *D* is then depressed, (treadle *G³* being in the middle notch of *G⁴*), which at the same time opens door *a³*, throws roller *D²* up and off from large roller *D'*, and slides the guide and feed rollers *h i* off from the large rollers *D' D² D³* all a sufficient distance to let the filler with extra length (and size in its unfinished state) out from between the upper brush-cylinder and its casing, when it drops into the space between the large rollers *D' D² D³*. Treadle *D* is now released and allowed to resume its former position, shutting door *a³*, letting roller *D²* back on the filler, and sliding guide and feed rolls back up to the rollers *D' D² D³*, inclosing the end of the core or filler by the guide and feed rolls. The rasping-cutters 16 are now brought up in contact with the opposite end of the filler, which projects out from the large rollers *D' D² D³*, and the filler is shaped (pointed) and cut off the proper length by knife 15, when the rasping-cutters are let back to their former position. The cones *s s s*, with their brushes *S² S³*, are moved up to the large rollers *D' D² D³* by means of lever *T*. Table *T'* being drawn out from rollers *D² D³*, Fig. 2, paste is applied to that end of the wrapper last wound on the cigar, when frame or roller 2 is thrown up and the wrapper laid on the table *T'* at a proper angle and position, when roller 2 is brought back on the wrapper, and the end to be last wound on the filler is put between spring finger-guide 4 5. The table *T'* is now gradually moved up between rollers *D² D³* until the end of the wrapper next to the filler comes in contact with, and is drawn between, the middle and lower feed-rollers *h h* when the machine runs in the direction indicated by the arrows in Fig. 18, Sheet 2, and between the middle and upper rolls *h h* when the motion of the machine is reversed. It is necessary to change the motion of the parts in using right and left hand wrappers. The guide and feed rollers *h i* now being in the position shown in Fig. 18, and consequently treadle *G³* in the lowermost notch of plate *G⁴*, this treadle should be raised and set in the middle notch of plate *G⁴* before the end of the wrapper reaches the upper guide-roller, which brings the guide-rollers all in their proper positions opposite to keep the end of the wrapper from running out of the spaces between the large rollers *D' D² D³*. The rotation of the filler now draws the wrapper around itself and off from the table *T'* and pressure-roller 2, drawing the brush-finger

and the upper end of its pendulum-rod with it, holding, guiding, and giving proper tension to the wrapper until it is drawn between cones *s s s*, and from under the finger-brush 4 on and around the pointed end of the filler. Sliding bar *s*³, together with its brushes and cones *s*, are pushed back from the point of the cigar, and the circular knife 14, at the opposite end of roller *D'*, is brought in contact with and squares off that end of the cigar, which, being now finished, the treadle *F* is depressed throwing roller *D*³ down and off from roller *D'*, and letting the finished cigar drop out, when this treadle and its connections resume their former positions. Leaves for another filler having been previously introduced within casing *B*², treadle *D* is again depressed, and stationary rod *n*, with its disk *n'*, thrusts out the end cut from the cigar, as above described, from between the guide and feed rollers, as they are again slid from the ends of rollers *D' D*² *D*³. The next filler then drops between these rollers when treadle *D* is let back to its former position, and the finishing process is gone through with as before.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The rotating brush *B*, constructed and operating for the purpose of smoothing leaves of tobacco, substantially as herein described.

2. The combination of circular leaf-holding wheel *B'* with the brush-wheel *B*, substantially as described.

3. The spring clamps or straps *a*, in combination with the leaf-holder *B'* and circular brush-wheel *B*, substantially as described.

4. The employment of a brush-cylinder, *B*², and concave or brush casing *B*³, or their equivalents, substantially as and for the purposes described.

5. Constructing the brush-drum *B*³ with annular flanges near its ends, which bevel outward, for the purpose of allowing the filling to escape from the cylinder *B*² more readily, substantially as described.

6. The combination of rocking frame *E* and rocking shaft *E'*, substantially as and for the purposes described.

7. The guide-rollers *i i i*, arranged and operating substantially as described.

8. The feed-rollers *h h h*, arranged and operating substantially as described.

9. The stationary rod *n*, arranged and operating as herein described, or in any equivalent manner.

10. The use of revolving brushes *S*² *S*³ for the purpose of smoothing the leaf and assisting in finishing the point of the cigar, substantially as described.

11. The conical rollers *s s s*, arranged and operating substantially as and for the purposes herein described.

12. The curved table *T'*, constructed and operating substantially as herein described.

13. The pressure-roller 2, when hinged to table *T* and operating substantially as described.

14. The bristles or elastic points 4, in combination with a finger-guide, 5, constructed and operating substantially as herein described.

15. The combination of pendulum-arm 7, weight, and brush finger-guide 4 5, operating substantially as herein described.

16. The combination of treadles *D F* with rocking frames *E E'*, substantially as and for the purposes herein described.

17. Trimming the ends of cigars during the rotation of the same by means of circular knives applied to a reciprocating frame and operating substantially as herein described.

18. The notched plate *G*⁴, treadle *G*³, connecting-rod *p*², and T-slotted cylinder *g*³, in combination with stop-pin *p*, arranged and operating substantially as described.

19. Confining the surplus end of the cigar between rollers *h i i*, or their equivalents, during the operation of cutting off this end, substantially as described.

20. Starting the wrapper around the cigar by means of feed-rollers, which have independent bearings of those which support and rotate the body of the cigar, substantially as herein described.

21. In a single machine, preparing the filler for receiving the wrapper or cover and then applying the wrapper to it, substantially as described.

Witnesses:

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