

G. S. COLBURN.
Machine for Scraping and Stripping Rattan.
No. 221,720. Patented Nov. 18, 1879.

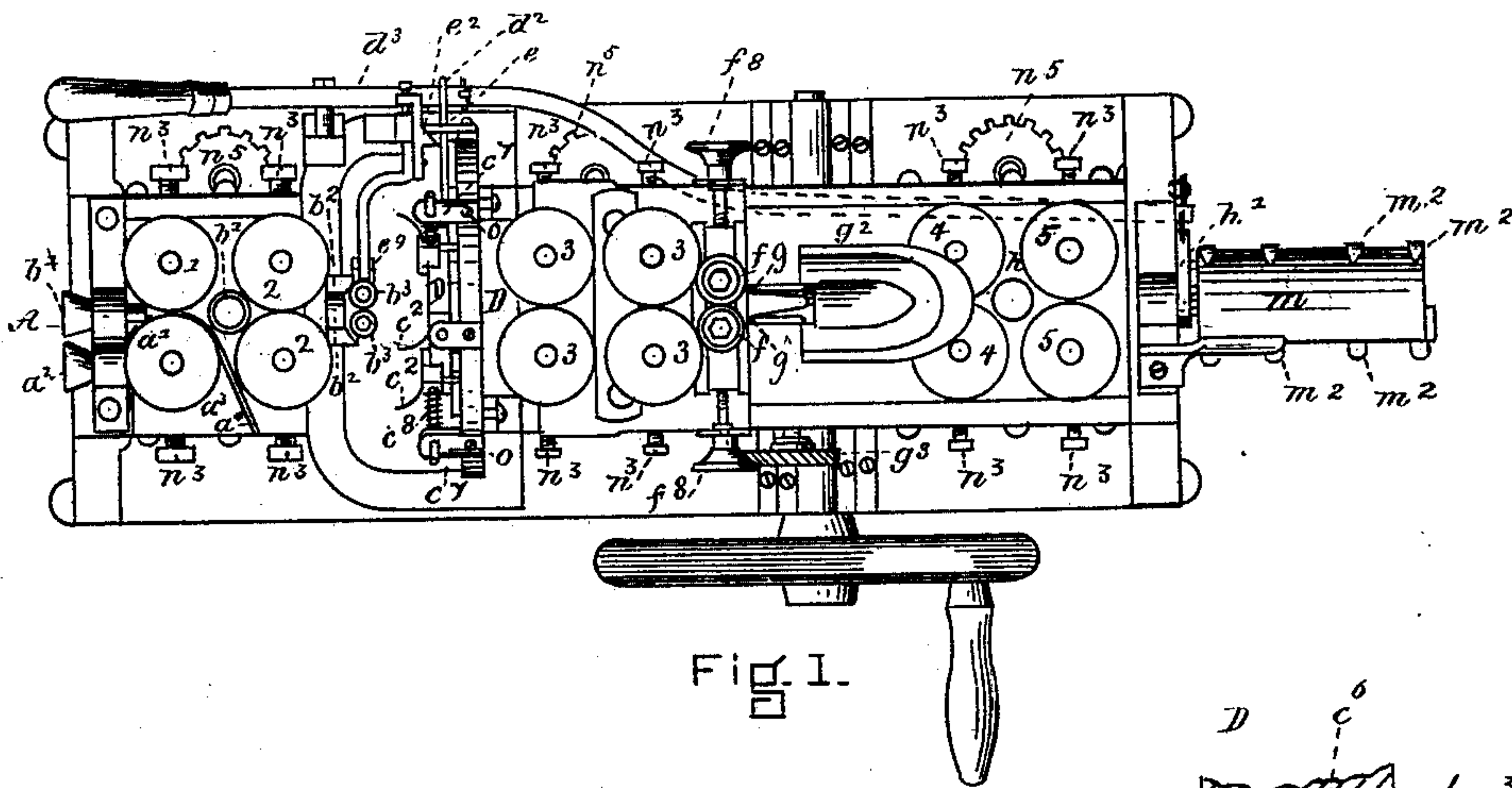


Fig. 1.

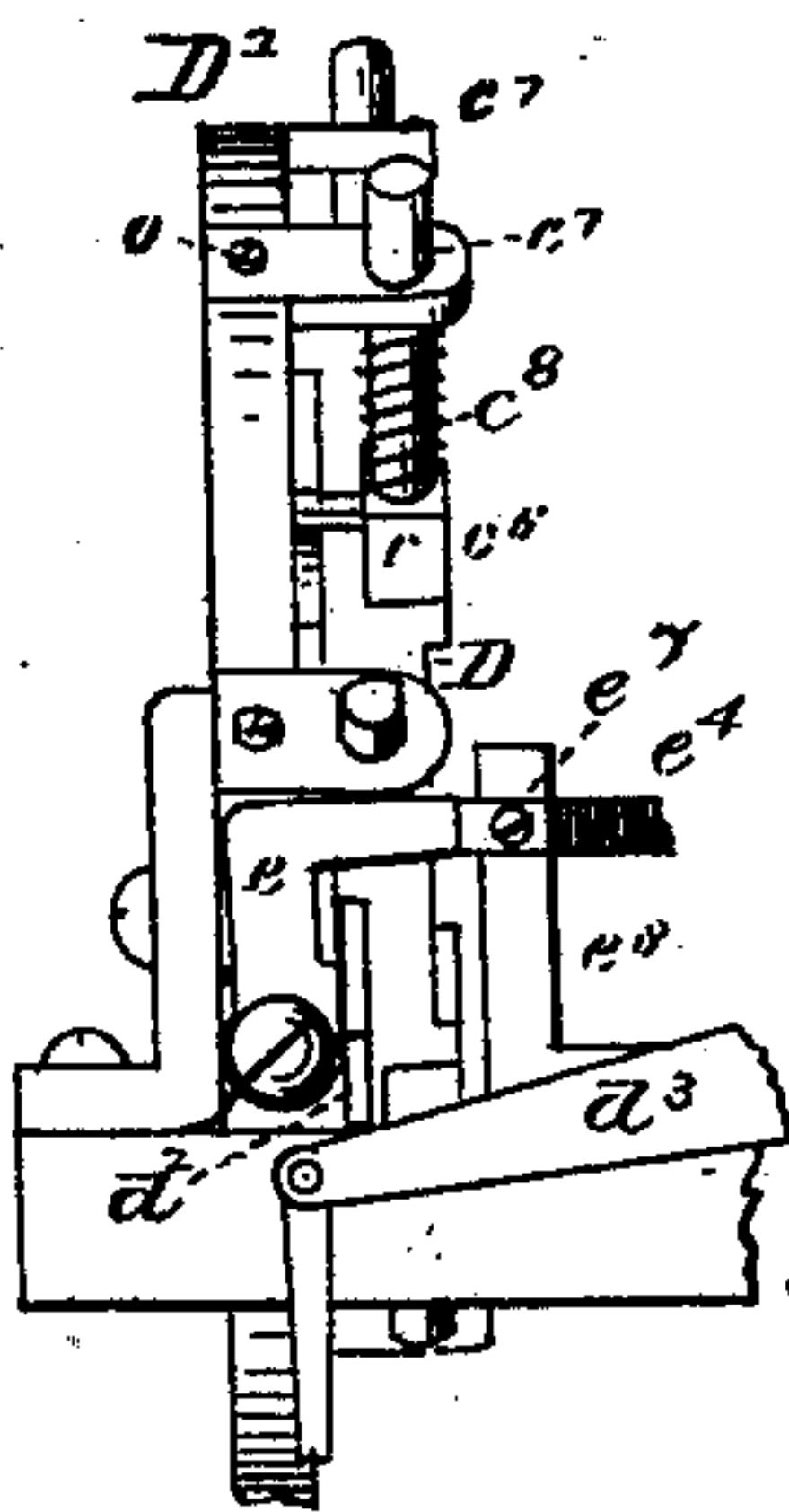


Fig. 4.

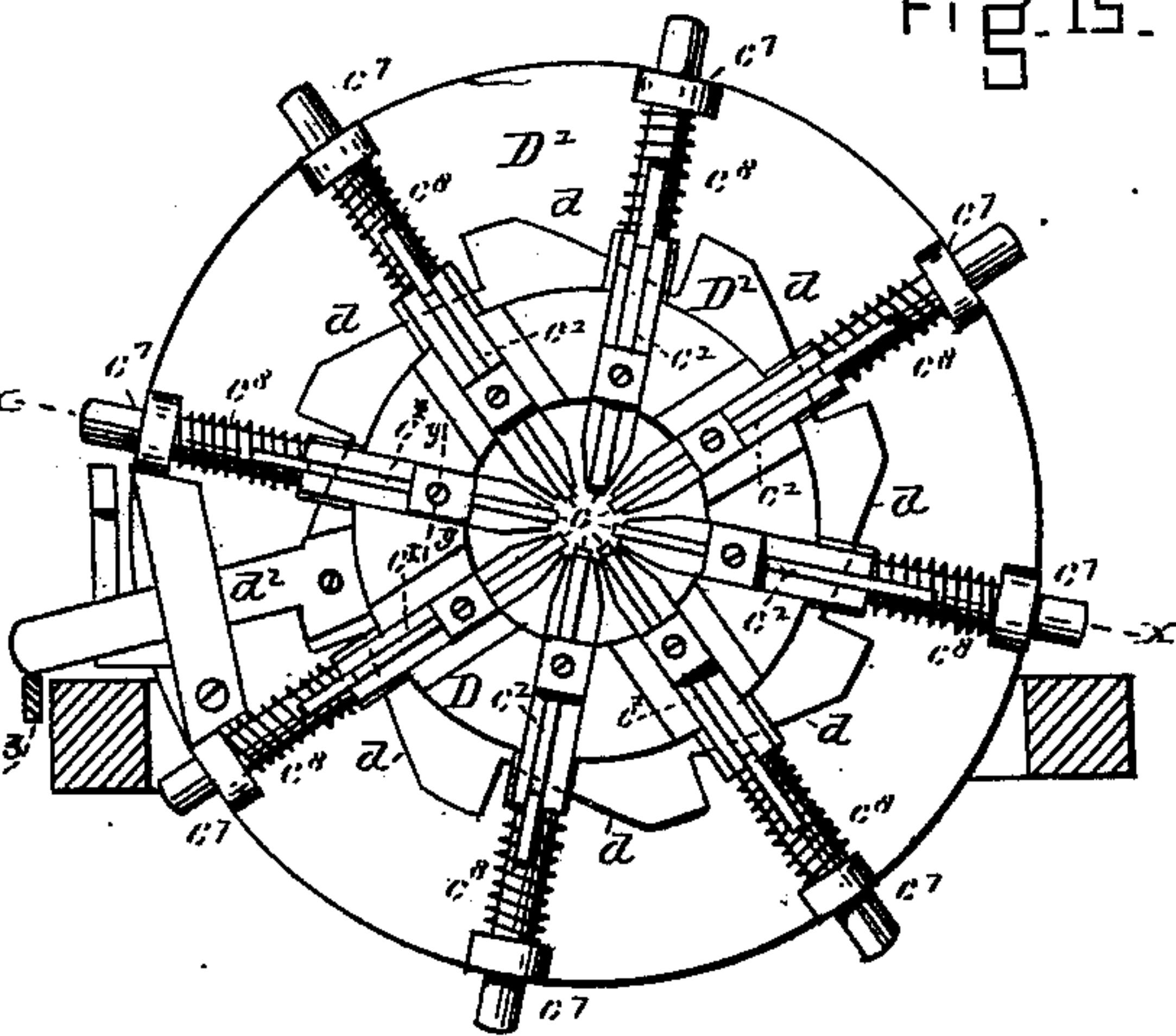


Fig. 2.

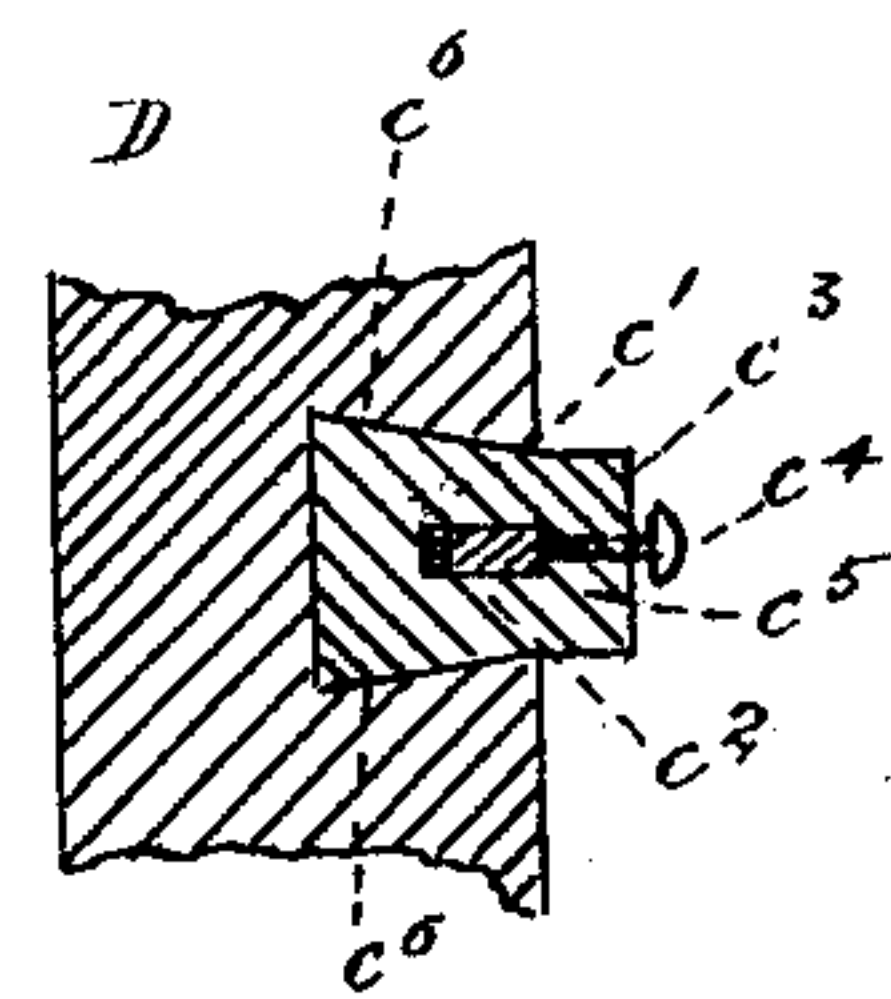


Fig. 15.

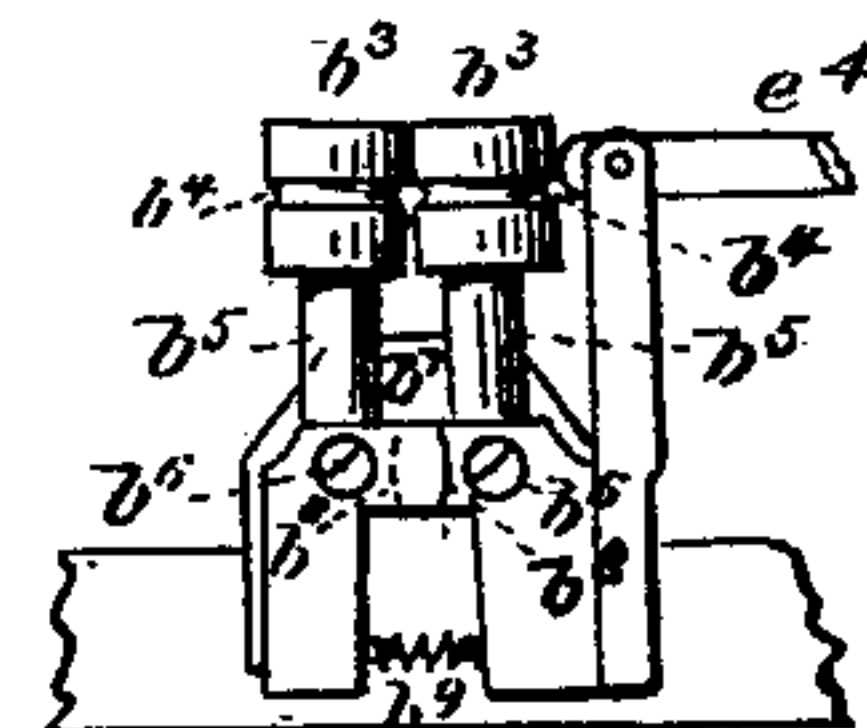


Fig. 5.

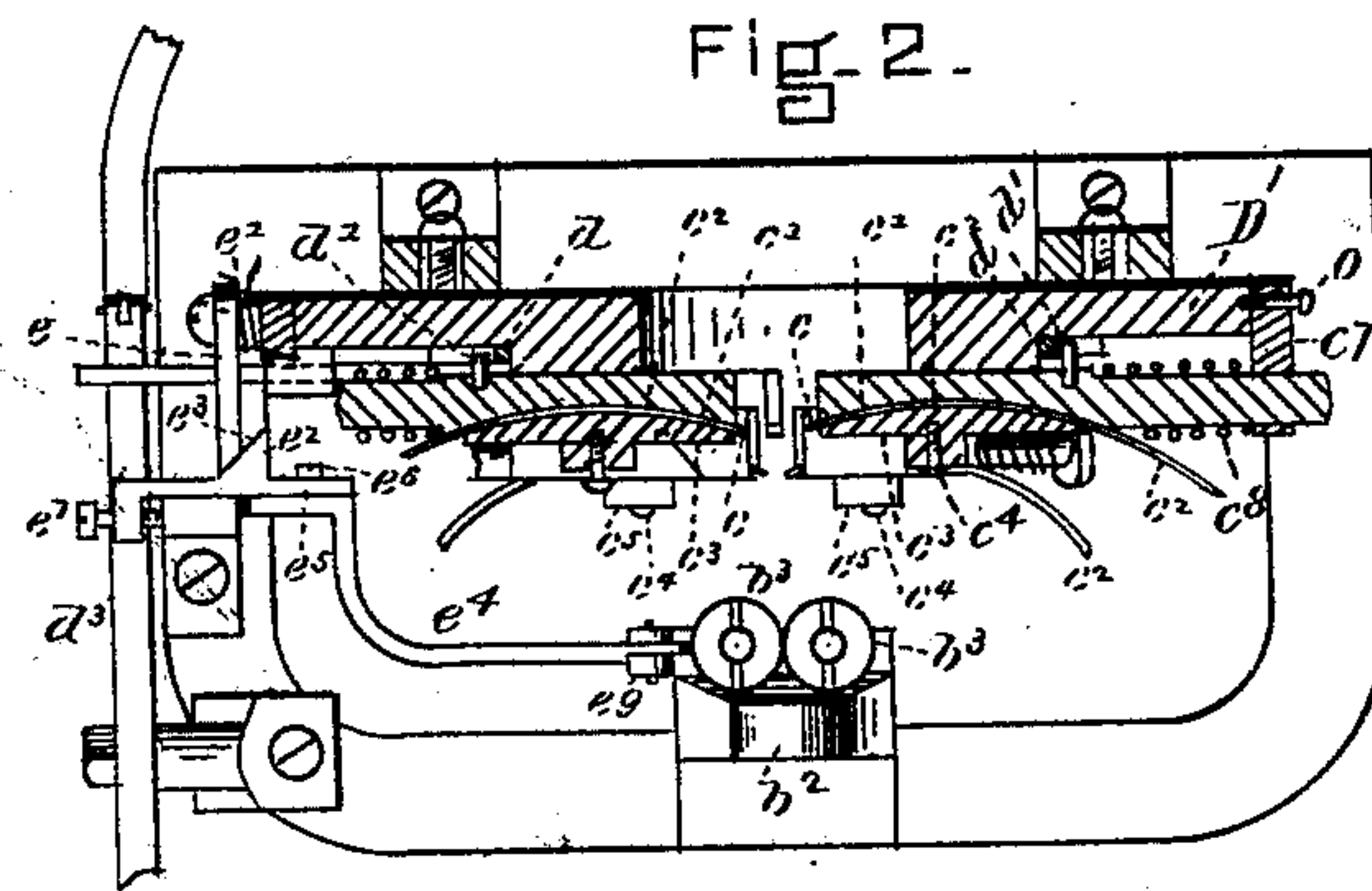


Fig. 3.

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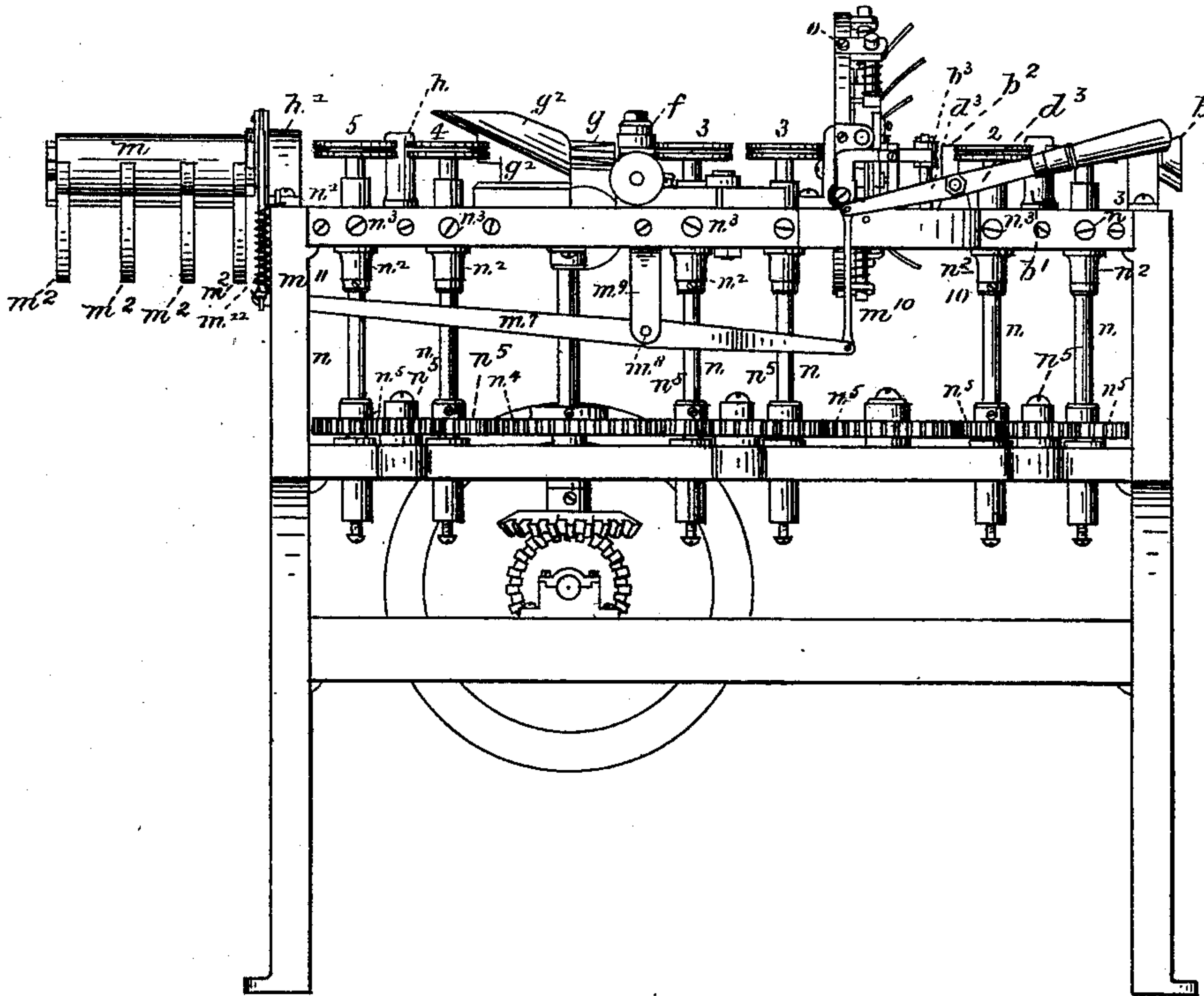


Fig. 6.

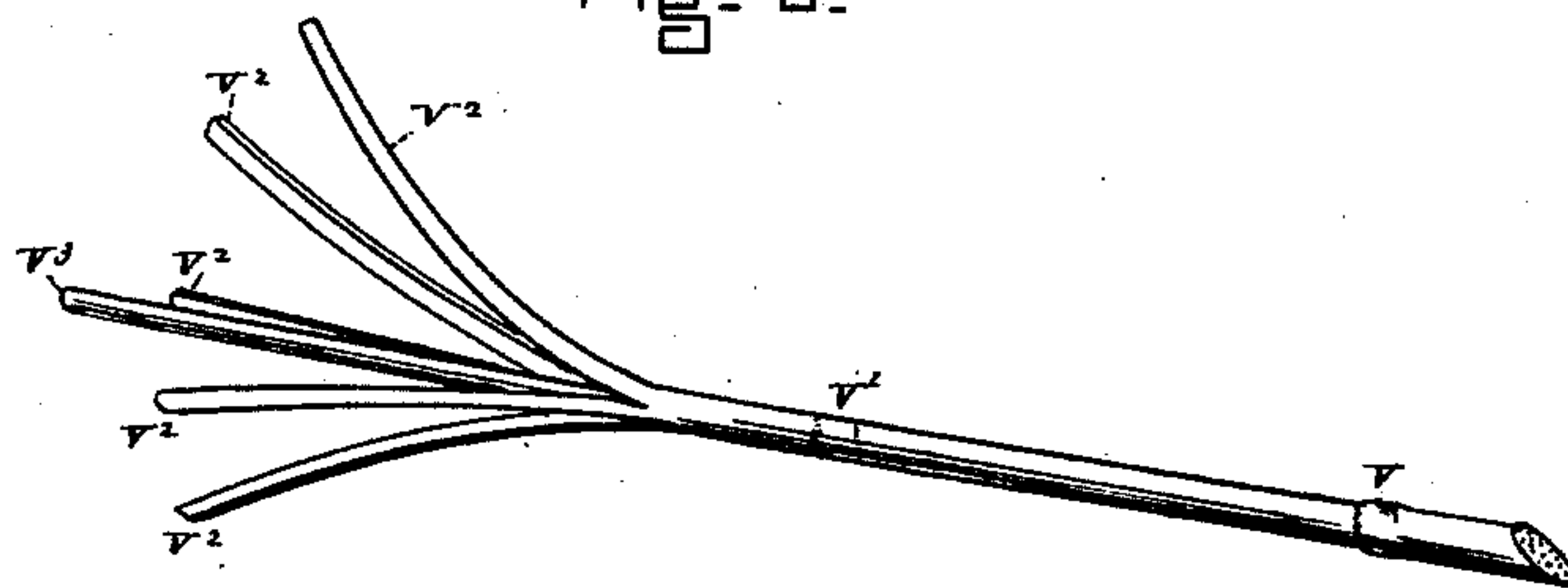


Fig. 12.



Fig. 13.



Fig. 14.

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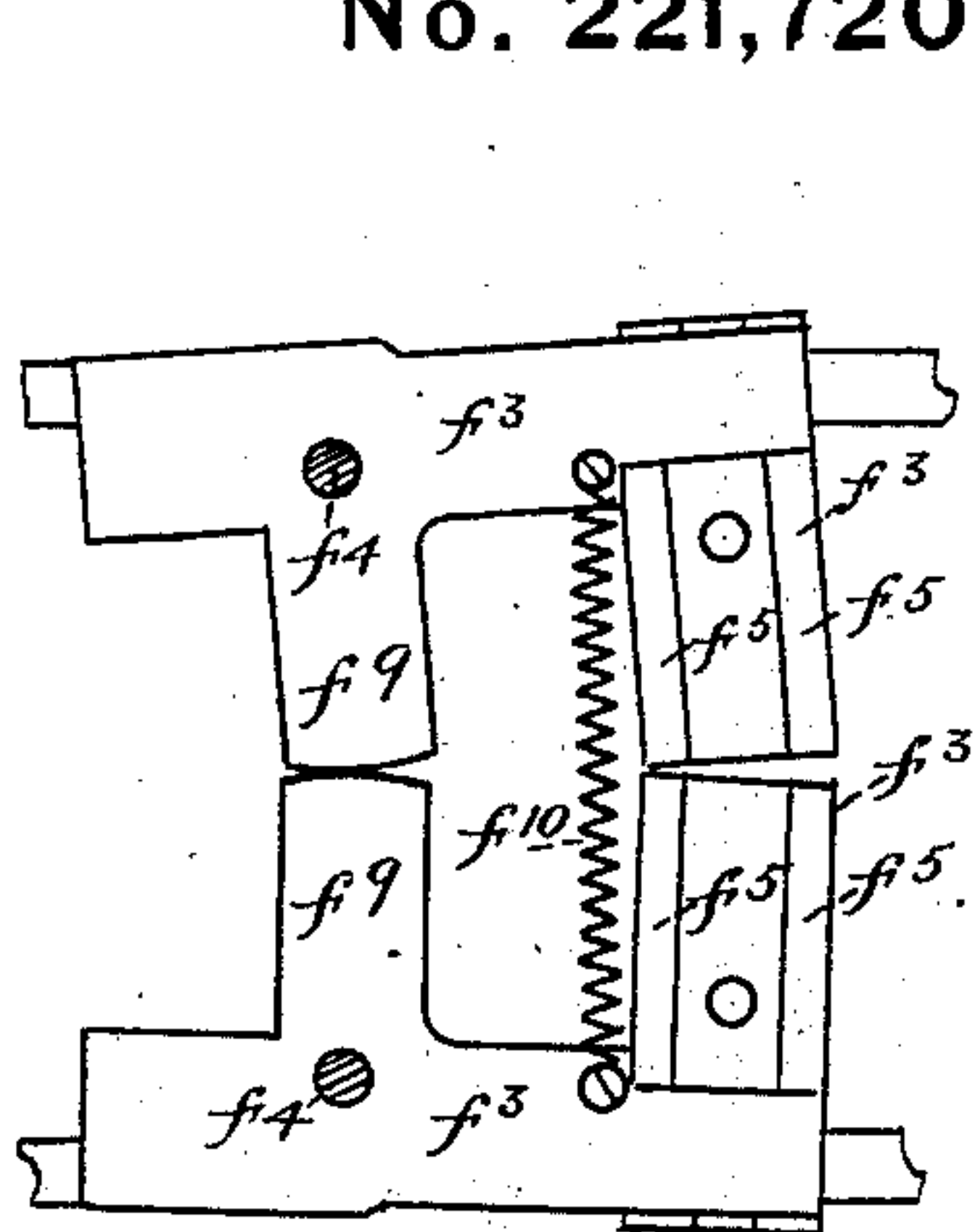


Fig. 16.

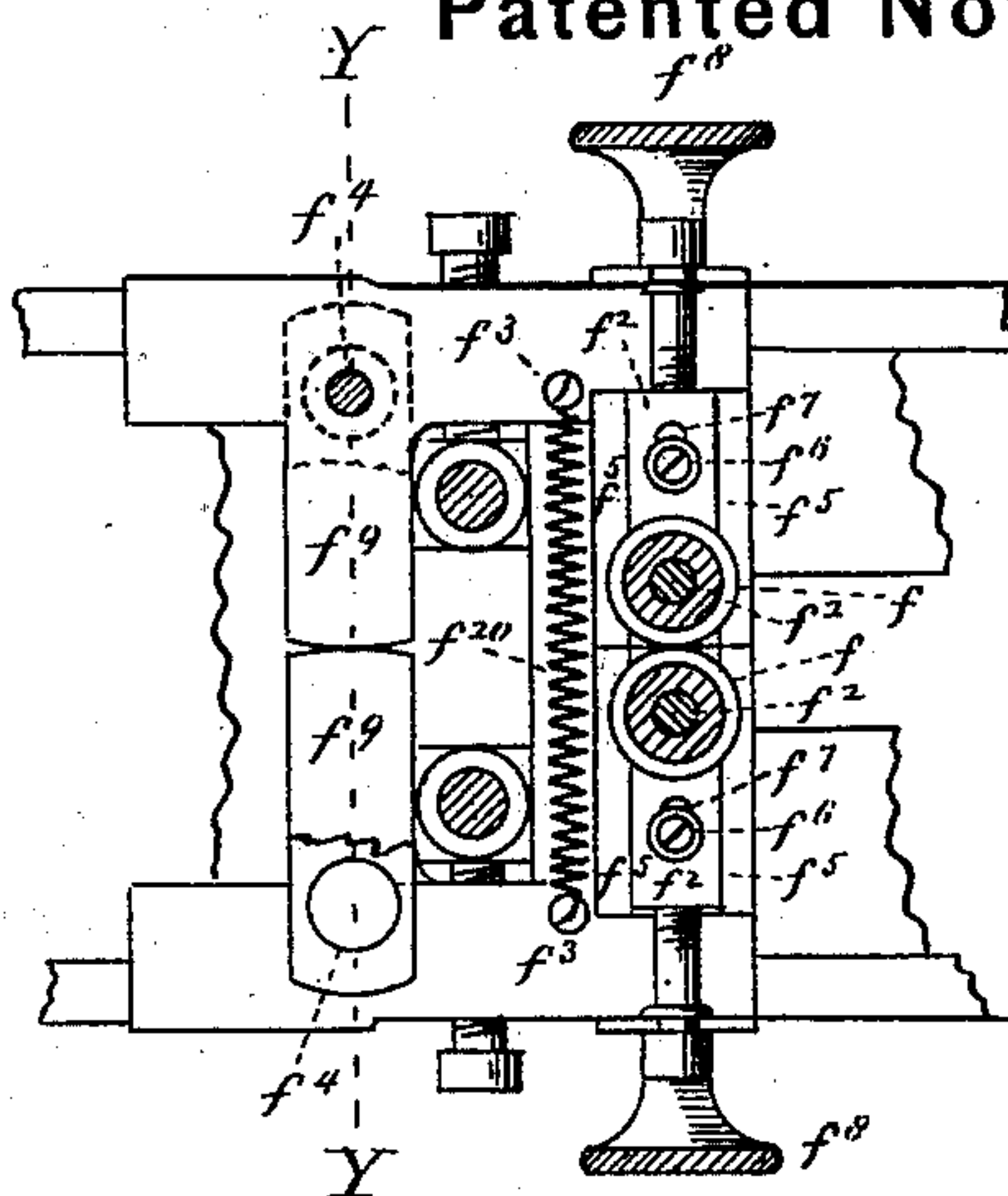


Fig. 7.

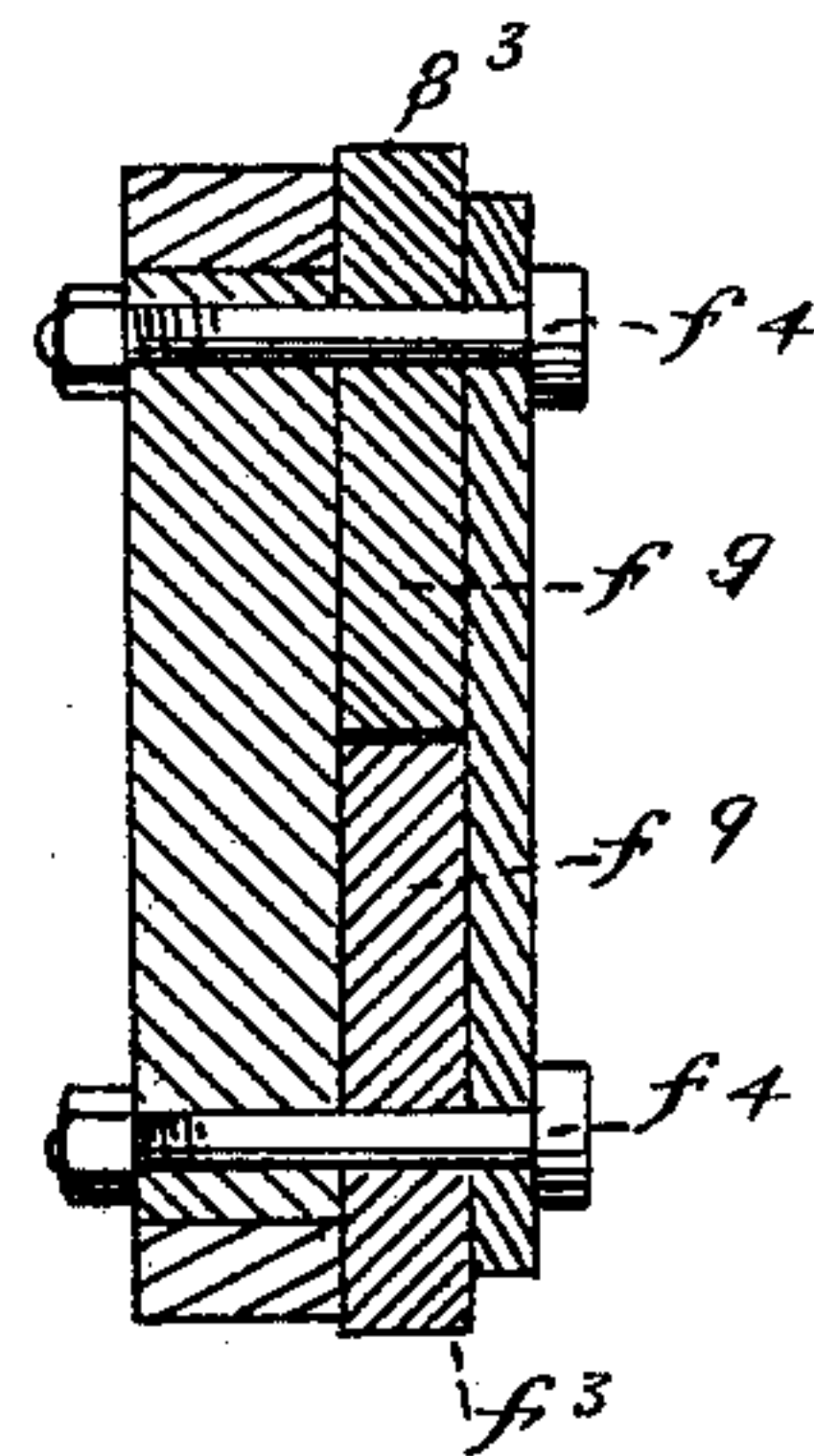


Fig. 17.

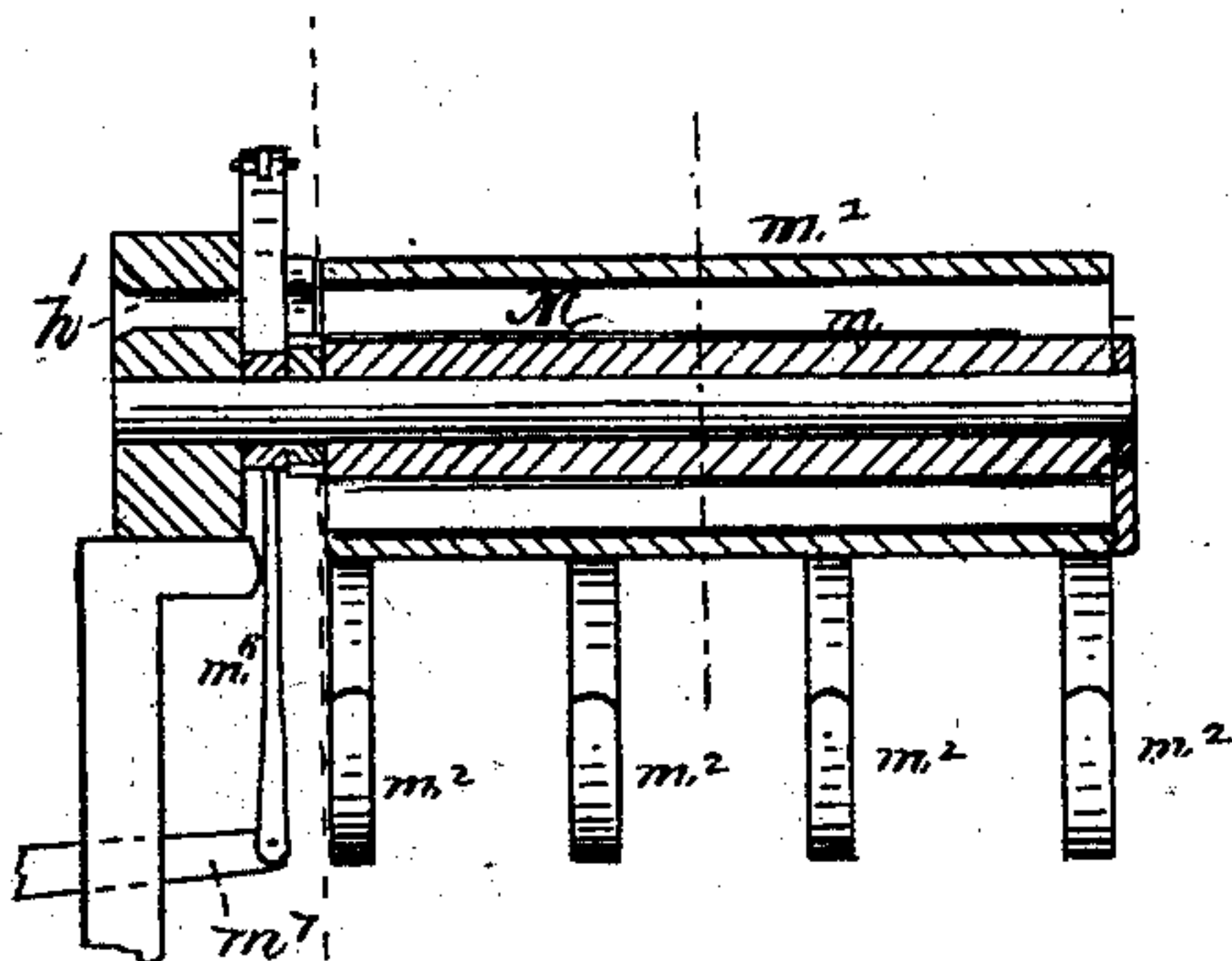


Fig. 8.

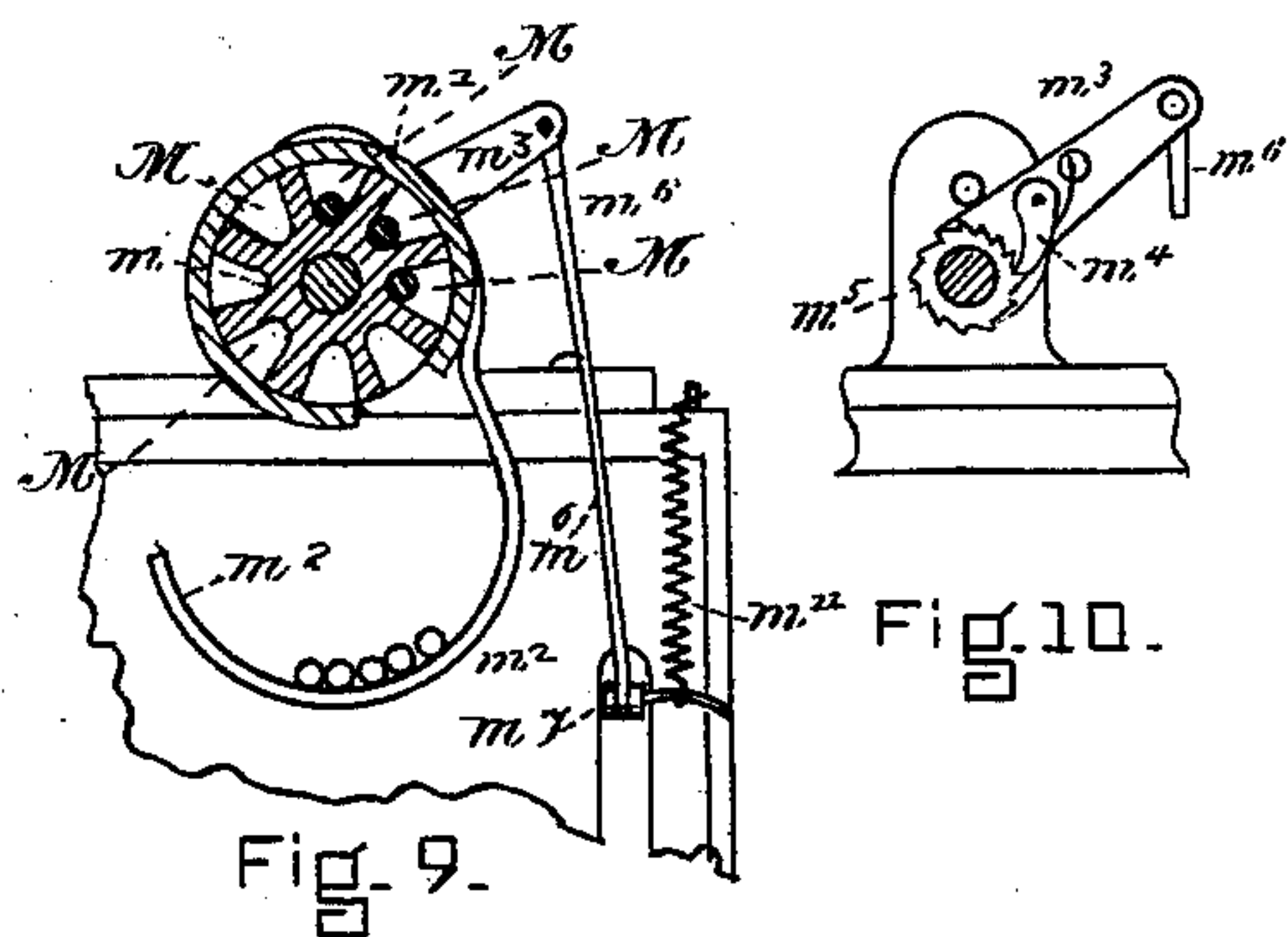


Fig. 9.

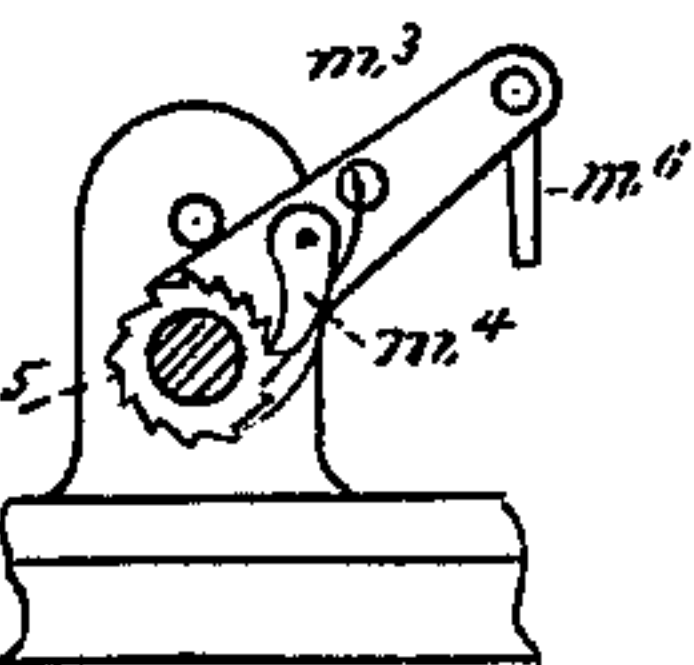


Fig. 10.

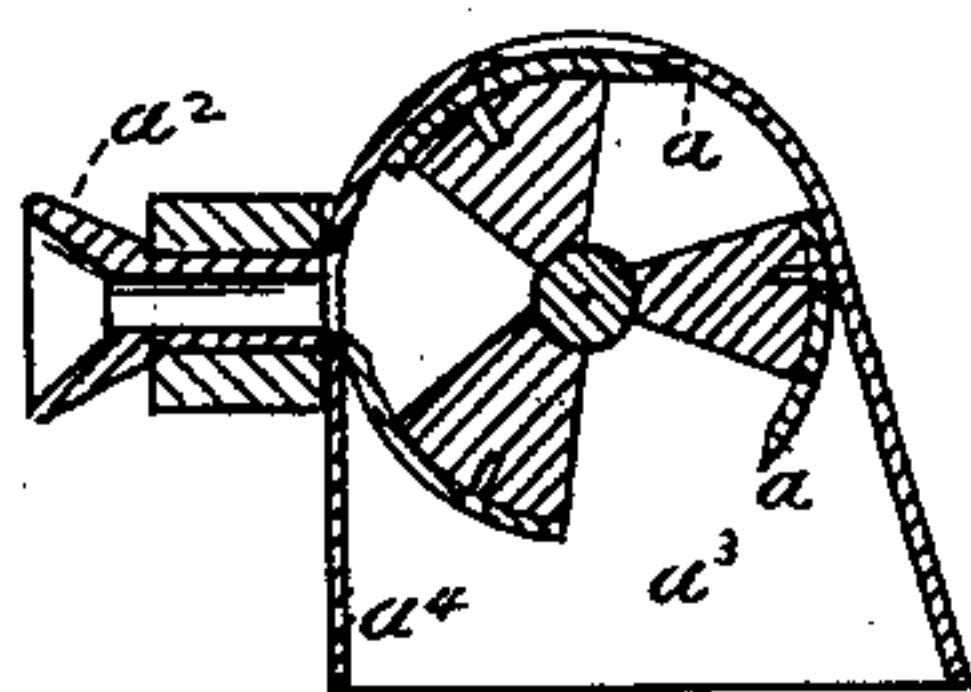


Fig. 11.

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UNITED STATES PATENT OFFICE.

GEORGE S. COLBURN, OF GARDNER, MASSACHUSETTS.

IMPROVEMENT IN MACHINES FOR SCRAPING AND STRIPPING RATTAN.

Specification forming part of Letters Patent No. **221,720**, dated November 18, 1879; application filed June 20, 1879.

To all whom it may concern:

Be it known that I, GEORGE S. COLBURN, of Gardner, in the county of Worcester, in the Commonwealth of Massachusetts, have invented an Improvement in Machines for Scraping and Stripping Rattan, of which the following is a specification.

This invention has for its object, first, means for squaring the end of the cane before it is fed to the scraping and stripping mechanism; second, devices for so presenting the cane to the scraping mechanism that all its joints are uniformly scraped; third, a peculiar arrangement of the scraping-knives in pairs, whereby the eight knives used are brought so closely together that they act conjointly, and by a unison impossible to attain from any other arrangement; fourth, automatic means for guiding or centering the cane in relation to the scraping-knives and to the stripping device; fifth, means for receiving the pith portion or reed, and for delivering it regularly and uniformly to a cradle or other receiver.

Heretofore the scraping-knives have been so arranged as to automatically close upon the cane upon the tripping or release of certain mechanism for holding the knives open; but the mechanism for operating the tripping device was located between the scraping and stripping contrivances, and, as it was actuated by contact of the front end of the cane therewith, quite a percentage of the cane passed beyond the scraping-knives before they were closed upon it, and consequently such portion left the machine unscraped, and was substantially of no value.

I have ascertained that by arranging the device actuating the tripping mechanism in front of the scraping-knives so that the end of the cane comes in contact therewith before it reaches the scraping-knives, thereby causing the tripping mechanism to release the knives upon the very end of the advancing cane, all the joints in the cane may be scraped, and a very slight loss, if any, incurred from unscraped joints.

The scraping-knives have also been arranged in groups of three or even four; but I have discovered that by arranging them in groups of two, one opposite the other, their interval of action can be concentrated, and

that they co-operate in their work more successfully, and that thereby they will act upon the entire circumference of the joint almost simultaneously, and in a superior manner.

Heretofore the pith, as it left the machine, was thrown upon the floor, and no device has ever been used for collecting it automatically as it leaves the machine into uniform order in a condition for being united into bundles.

Reference is made to the accompanying drawings in explaining the nature of my invention, in which—

Figure 1 is a plan of my improved machine. Fig. 2 is a front elevation of the scraping-knives and their operative mechanism. Fig. 3 is a cross-section thereof on the line *x x* of Fig. 2. It also shows the centering-guides and tripping mechanism, hereinafter explained. Fig. 4 is an enlarged detail view, illustrating the tripping mechanism. Fig. 5 is an elevation of the centering-guides. Fig. 6 is a side elevation of the machine. Fig. 7 is a plan representing the construction of the centering mechanism for guiding the cane to the scraping-knives. Figs. 8, 9, and 10 represent the construction and operation of the device for receiving and delivering the pith. Fig. 11 is a view, part in plan and part in section, illustrating the device for squaring the end of the cane. Fig. 12 illustrates the cane as operated upon by the machine, *v* representing an unscraped joint, *v'* a straight joint, *v²* the strands removed by the stripping mechanism, constituting the exterior of the cane, and *v³* the pith. Fig. 13 represents the cane with an unsquared end, and Fig. 14 the cane with a squared end, *v⁴*. Fig. 15 is a cross-section on the line *y y* of Fig. 2, representing the manner in which the strands forming the knives are fastened in their blocks, and the way the said blocks are shaped and secured in their support. Fig. 16 is a plan representing the shape of the arms which support the blocks carrying the mechanism for centering the cane to the stripping device. Fig. 17 is a cross-section on the line *Y Y* of Fig. 7.

The end of the cane is squared by means of the revolving cutters *a*, which are fastened upon the under side of the feed-wheel *a'*, or to the shaft operating it, and the cane is presented thereto through the feedway in the

mouth-piece a^2 . The knives revolve upon the table a^3 , surrounded upon its inner edge by a wall, a^4 , which prevents the severed ends from dropping into the machinery. The cane thus prepared is then fed through the feedway A in the mouth-piece b , and is seized by the grooved feed-rolls $a' 1$, and by them advanced through guide b' to grooved feed-rolls 2, which, co-operating with the first pair of rolls, feed the cane through guide b^2 to an automatic centering device consisting of the yielding upright rolls b^3 , each of which has an opposing circumferential groove, b^4 , forming the continuation of the feedway, and each is supported upon a post, b^5 , pivoted at b^6 to the block b^7 , carrying the guide b^2 , and provided with the arms b^8 , which extend by each other and bear against a shoulder formed in the other in such a manner as substantially to constitute a loose joint or hinge. These arms should project on a line with the pivotal points, and should be so curved or rounded upon the ends contacting with the shoulders that any movement of one post causes its companion post to move a like distance, but in the opposite direction. A spiral spring, b^9 , unites the posts, holds the rolls together, or serves to keep one or both of them constantly in contact with the cane as it is passing between them.

As one roll cannot be moved without the other being moved a like distance in an opposite direction, the cane, if a little out of line or crooked, will bear upon one of the rolls more strongly than upon the other, and in so doing will move the last-named roll away from it, so that there will be nothing to oppose the tendency of the first roll to straighten the cane and to return it to its correct position, in which both rolls bear with equal force upon it. The cane is then presented to the action of the scraping-knives c . These knives are arranged to surround the feedway, are eight in number, are divided into four sets, in each of which one knife is opposite the other, and the various pairs are arranged one behind another in such a manner as to entirely encircle the cane, so that all portions of the circumference of the joint or protuberance which need to be removed or scraped off by the successive action of each pair of knives are operated upon. By thus arranging the knives in pairs they can be brought so closely together that their combined action, while made by the successive manipulation of the four pairs, amounts in effect almost to a simultaneous operation thereof; and it can be stated as a general rule that the more the groups, whether of two, three, or four knives, are separated the poorer the scraping and the harder the work upon each knife.

The knives project downwardly from their supporting-blocks c' , and each block is provided with a curved recess for receiving the steel strand c^2 , the end of which constitutes the knife. A block, c^3 , corresponding in curvature with that of the recess, fits therein, and is held thereto by the set-screw c^4 , which passes through

a nut, c^5 , secured to the outer face of the block c' , to lay over the knife-holding recess.

Each block c' is made somewhat larger at its inner edge, and is arranged to slide radially in the undercut recess or ways c^6 , of similar shape, in the circular block D. Each block is also provided with a rod or spindle, which passes through a collar, c^7 , fastened to the circumference of the disk D' , and is surrounded by a spiral spring, c^8 , arranged to bear upon the collar and a shoulder on the block. The object of this construction is to give the knife-carrying blocks, and consequently the knives, a yielding radial movement sufficient to enable them to be separated and held apart, in order that the end of the cane may be inserted between them, and then to be automatically closed thereon. This opening or outward movement of the knives is effected by means of the wheel D^2 , which surrounds the block D, and has formed upon its circumference an incline or cam, d , for each block, so arranged as to contact with the pin d' projecting toward the disk D' therefrom. An arm, d^2 , and the operating-lever d^3 serve to move the cam-wheel sufficiently to cause the inclines to move the knife-blocks outwardly against the stress of the springs c^8 . In order, however, that the knives may be automatically closed upon the cane, I have provided a tripping mechanism, which is operated by one of the pivoted guide-rolls b^3 , and for this purpose I pivot the latch e to the circumference of the disk D' , and provide it with a spring, e' , which keeps it constantly in contact with the side of the arm d^2 . Upon the lifting of the arm by the lever d^3 the latch catches and retains it until thrown back by the advance of the incline e^2 , which, contacting with the opposing inclined face of the projection e^3 extending from the latch, forces the latch backward or away from the arm, thereby releasing it and permitting the knife-blocks to simultaneously close under stress of their actuating-springs c^8 .

The block upon which the incline e^2 is formed is secured upon the bar e^4 by means of a slot, e^5 , and set-screw e^6 , and it is adjusted thereon by screw e^7 . The bar is provided with suitable bearings on the post e^8 , and is pivoted to a support, e^9 , which is fastened to one of the pivoted posts b^5 .

It will readily be seen that the end of the cane will cause the guide-roll, and consequently its post and the bar e^4 , to move outwardly, and this movement causes the incline e^2 to operate the latch, as indicated.

To set the knives for the reception of the cane, the lever d^3 is moved sufficiently to cause the arm to be caught by the latch, and the opening of the guide-roll, on the advance of the cane, causes the tripping of the latch and the closing of the knives upon it.

The cane, passing through the scraping mechanism, is advanced by the grooved yielding feed-rolls 3 to the centering device for presenting the cane to the slitting and stripping knives. It consists in the two upright

grooved rolls f , each of which is fastened to a post, f' , projecting upwardly from a block, f^2 , by a collar.

The blocks f^2 are each supported by an arm, f^3 , shaped as represented in Fig. 16, and pivoted at f^4 to the frame of the machine, and each block is provided with adjustment thereon to and from each other within the ways f^5 by means of the set-screw f^6 and slot f^7 and the adjusting-screw f^8 .

The arms f^3 are each provided with a projecting bar, f^9 , arranged to contact either at their ends or at some other point adjacent thereto, and which are somewhat rounded, and a coiled spring, f^{10} , serves to keep the rolls f together when not in action—that is, the rolls are separated by the rattan against the stress of this spring. The bars f^9 project from the pivoted points of each bar toward each other. By this construction one roll cannot be moved without moving the other a like distance in the opposite direction, as the movement of one lever is communicated by the bar f^9 to the other. The operation of these rolls as a centering mechanism in guiding the cane to the stripping-knives is identical with that of the rolls b^3 in connection with the scraping mechanism.

The device for slitting and stripping the rattan consists in a cylindrical knife, having radial knives g projecting therefrom at a proper distance in relation to each other to divide the cane removed from the pith into the desired widths. It is similar in construction to knives already employed for this purpose, and need not further be described.

The pith is drawn through the hole g' , forming an extension of the feedway, by means of the yielding grooved rolls 4. The pith, passing between these rolls and through the guide h' , and between the grooved rolls 5, is advanced through the guide h' to one of the series of chambers M in the circumference of the long wheel or roll m . This chambered roll is supported in any desirable way, and is surrounded, except upon its under portion, by the covering or box m' , to which a series of curved supports, m^2 , constituting a cradle or receiver for the pith, is attached.

The chambered wheel, by means of the lever m^3 , carrying a pawl, m^4 , and the ratchet-wheel m^5 , the connecting-rod m^6 , lever m^7 , which is pivoted at m^8 to a bracket, m^9 , depending from the frame of the machine, a connecting-rod, m^{10} , which connects the end of the lever with the end of the operating-lever d^3 , is revolved in an intermittent manner by the same lever that operates to set the scraping-knives.

As the roll revolves each chamber receives a strand of pith from the feedway, and it is advanced thereby until it is dropped therefrom through the opening in the box into the cradle or receiver as each chamber reaches it, and the strands are thus uniformly arranged to be conveniently tied into bundles and removed.

A spring, m^{11} , serves to automatically return and maintain the operating-lever d^3 in an elevated position after each downward movement thereof. This is necessary in order that the operating end of the lever may be moved from the path of the arm d^2 when it is released by the latch.

The feed-rolls are each supported at the upper end of a vertical shaft, n , and each shaft is arranged to yield against the pressure of a spring, n' , which bears against a box, n^2 , through which the shaft passes. The tension of each spring is adjusted by a screw, n^3 .

Power is communicated to the various shafts by means of the driving gear-wheel n^4 and the train of connecting-gear n^5 . The lower end of each shaft is provided with any suitable bearing, and as this method of supporting the feed-rolls and of actuating them is not new, it is not necessary to further describe the construction and operation of this portion of the operating mechanism.

The stripping-knife is supported upon a block, g' , from which projects an upwardly-curved guide, g^2 , for throwing off from the machine the exterior of the cane as it is stripped therefrom. The knife and guide are made laterally adjustable by means of the screw g^3 .

The operation of this machine other than that of the parts constituting the improvement, and which has been mentioned collaterally with their description, is like that of the machine ordinarily employed for this work, and the advantage of the improvements is obtained from the general organization of the machine, as described, whereby all waste of cane by the causes which existed in the old machines for scraping and slitting is obviated, the cane more easily centered in the scraping and slitting knives, and the pith collected in a condition to be tied into bundles.

By the method herein shown of holding the scraping-knife supporting-block, the block can be readily and quickly removed from the machine by simply unscrewing the screw o , which fastens the collar c^7 to the disk D' , the knife-supporting block being so shaped that it can be moved outwardly from its supporting-block D . This construction is very desirable, as it is necessary to frequently remove the knives from the machine for the purpose of sharpening them.

It will be observed that in operation the scraping-knives are open, or set before the rattan is fed, and by the contact of the forward end of the advancing cane with the centering-rolls, arranged in advance of the scraping-knives, they are automatically closed upon the end of the rattan. The distance between the centering device and the scraping-knives and the speed with which the rattan is fed should be so regulated that the end of the cane shall have passed between the knives before they are closed. In some instances the centering device and the connecting mechanism may be so arranged that the first joint

upon the cane will affect the automatic closing of the scraping-knives in lieu of the extreme end of the cane.

In ordinary rattan machinery the cane is fed with very great rapidity; but the centering device should be located as near the scraping-knives as practicable.

Having thus fully described my invention, I claim and desire to secure by Letters Patent of the United States—

1. In a rattan scraping and stripping machine, the combination of a feed-wheel, a' , provided with the cutters a , with the mouth-piece a^2 , provided with a feedway substantially parallel with the main feedway A , all arranged substantially as and for the purposes described.

2. In a rattan scraping and stripping machine, the combination of the revolving cutters a , secured to the under side of the feed-wheel a' , or to the shaft operating it, the horizontal table a^3 , the wall a^4 , extended around the inner edge of the table, as described, and the mouth-piece a^2 , provided with a feedway, all arranged in relation to each other, and in relation to the feedway A of the rattan-machine, substantially as and for the purposes described.

3. The combination, in a rattan scraping and stripping machine, of two guides, b^3 , supported upon the posts b^5 , pivoted as described, and provided with the arms b^8 , with the spring b^9 , all arranged to operate substantially as described.

4. The combination, in a rattan scraping and stripping machine, of two guides, f , supported upon the posts f' , as described, each of which is provided with the arm f^3 , having a projecting bar, f^9 , which come in contact and are somewhat rounded upon their contacting ends, as described, and the spring f^{10} , all arranged to operate substantially as set forth.

5. In a rattan scraping and stripping machine, the combination of a centering device consisting of the two guiding-rolls b^3 , adapted to be moved to and from each other, as specified, with the scraping-knives c , adapted to be set or opened before the feeding of the cane, and to be closed automatically upon the outward movement of either of the two guides by connecting mechanism, substantially as described, all substantially as and for the purposes set forth.

6. In a machine for scraping rattan, the scraping-knives c , arranged in successive pairs in such a manner as to entirely encircle the cane, and adapted to be separated and held apart before the feeding of the cane, and to be automatically closed upon the extreme end of the cane by suitable springs, which springs are thrown into operation by the mechanism described, and which also provide the knives with a yielding adjustment when closed, all substantially as and for the purposes described.

7. In a rattan-stripping machine, as a means for setting or opening the scraping-knives preparatory to the feeding of the cane, the combination of the knives c , their supporting-

blocks c' , each provided with the pins d' , the cam-disk D^2 , provided with the arm d^2 , with the lever d^3 , and the latch e , substantially as and for the purposes described.

8. The combination, in a rattan-scraping machine, of the knives c , arranged to be opened by the mechanism described, and held open against the stress of the springs c^8 by means of the latch e , with the guides b^3 , arranged in front of said knives, and adapted to move the latch e upon the contact of the front end of the cane therewith, whereby the knives are closed upon the extreme end of the passing cane, all substantially as described, and for the purposes set forth.

9. The combination of the disk D^2 , provided with the cams or inclines d and the arm d^2 , the knife-supporting blocks c' , and springs c^8 with the latch e and operating-lever d^3 , all arranged in relation to each other to operate substantially as described.

10. The combination of the adjustable tripping-block e^2 , its supporting-bar e^4 , and post e^8 , all arranged to be operated by the movement of one of the guides b^3 , substantially as and for the purposes described.

11. The combination, in a rattan-stripping machine, of the latch e , adapted to automatically engage with and hold the arm d^2 projecting from the disk carrying the cams or inclines operating the knife-supporting blocks in the manner indicated, with the wedge-shaped block e^2 , adapted to engage with said latch and to be operated by the movement of one of the guides in the manner specified, substantially as described.

12. The combination of a support fastened to the pivoted post carrying one of the guides b^3 , and movable therewith, with the bar e^4 , tripping-block e^2 , and latch e , all arranged to operate substantially as and for the purposes described.

13. In a rattan-machine, the combination of the stripping device for removing the exterior of the cane from the pith, the feeding-rolls for advancing the pith to the receiving and transferring chamber, and the said receiving and transferring chamber M , adapted to be revolved as described, all substantially as and for the purposes set forth.

14. The combination, in a rattan-machine, of the roll m , provided with the chambers M , arranged at the end of the machine and adapted to receive the pith in the manner indicated, with the described means for intermittently revolving the roll, all substantially as and for the purposes described.

15. The combination of the roll m , provided with the chambers M , partially inclosed by the box m' , with the curved arms or cradle m^2 and means for revolving the roll, all arranged to operate substantially as described.

16. The combination, in a rattan-machine, of the roll provided with the pith-receiving chambers M , adapted to be successively brought in line with the feedway of the rat-

tan-machine, with the lever d^3 and the connecting mechanism described, substantially as and for the purposes described.

17. In a rattan scraping and stripping machine, the combination of feeding-rolls for advancing the cane to a centering device and scraping-knives, said centering device and scraping-knives arranged to be opened and held open, and to be automatically closed upon the rattan, as described, feeding-rolls for advancing the cane to a centering device and

stripping mechanism, and a roll provided with chambers for receiving the pith and for delivering it from the machine, all combined and arranged to operate in an organized machine, substantially as and for the purposes described.

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Witnesses:

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