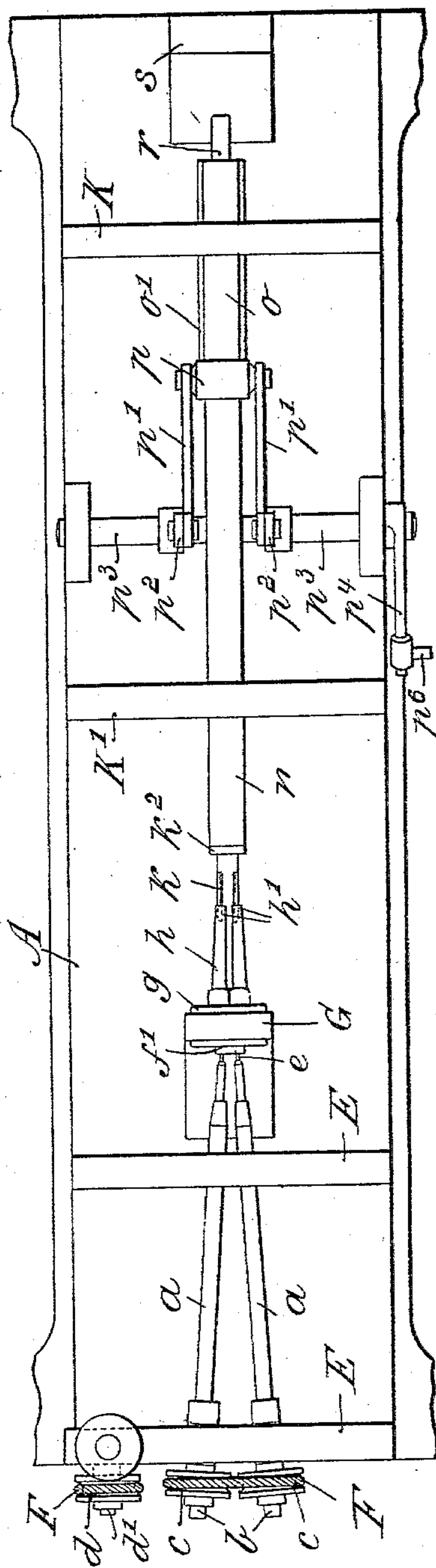


2 Sheets—Sheet 1.

No. 556,734.

Patented Mar. 24, 1896.



Witnesses:
Thomas M. Smith.
Richard C. Maxwell.

Inventor:
 Marcus Chernie,
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 Attorneys.

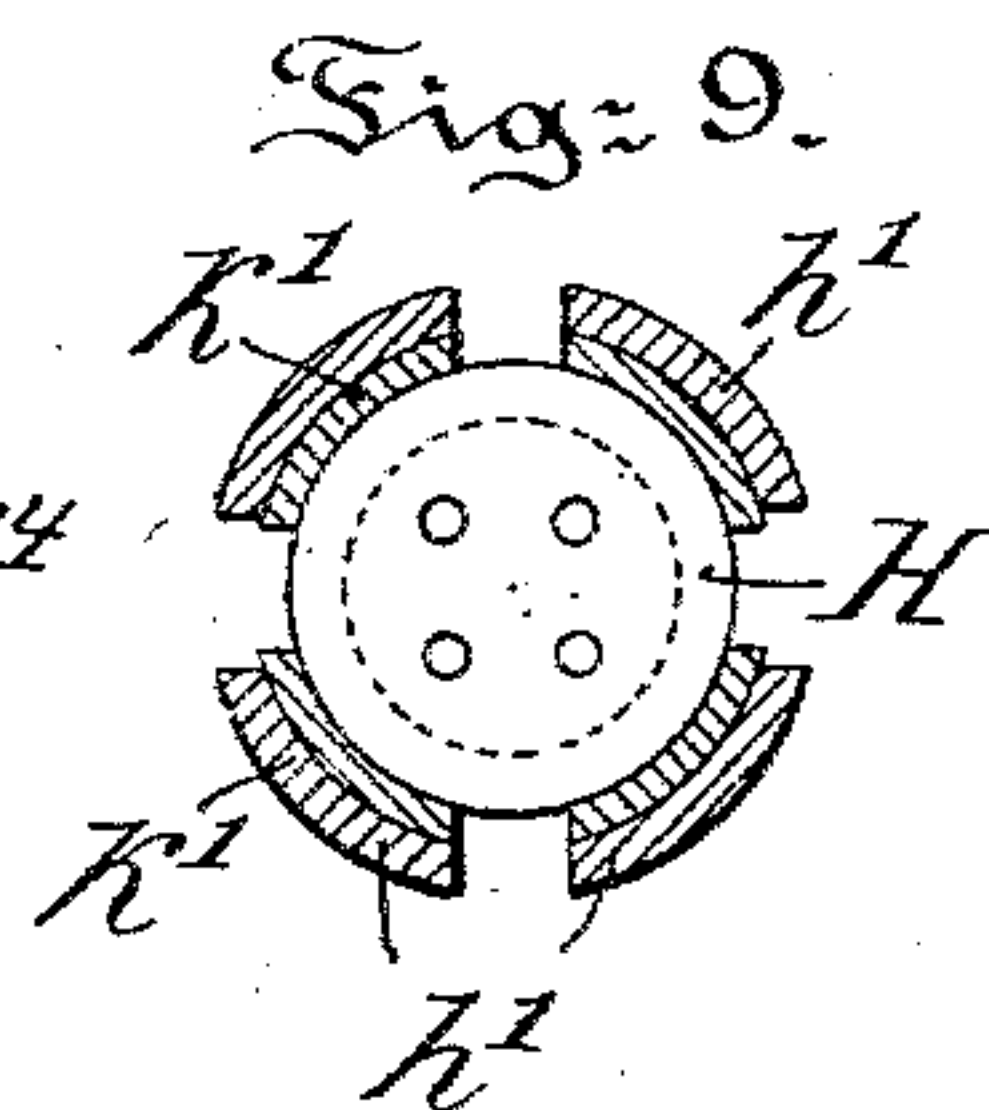
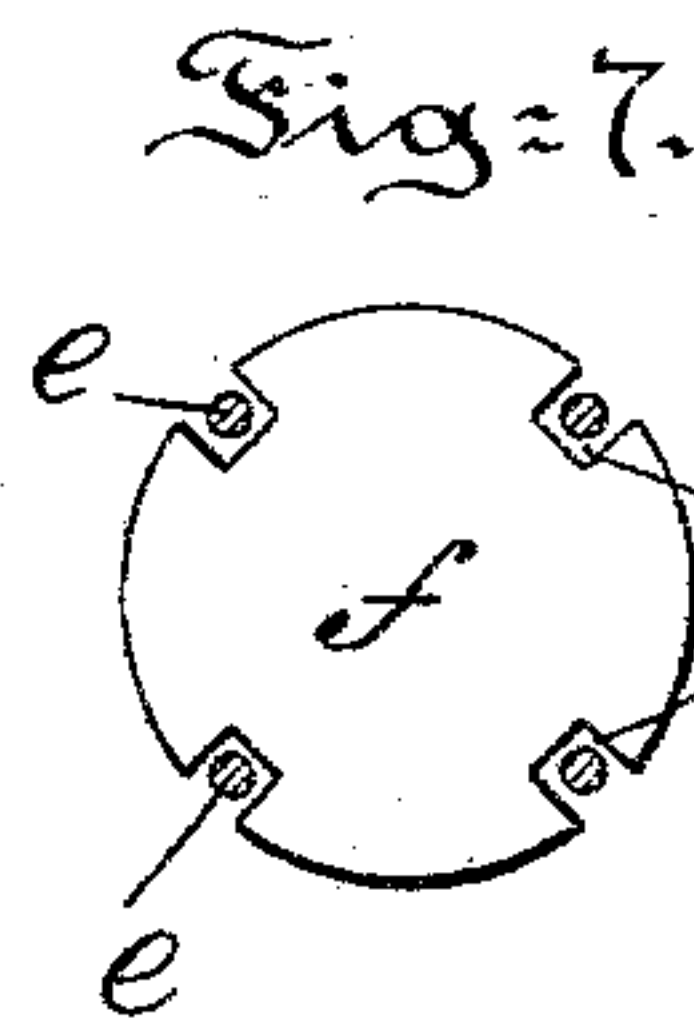
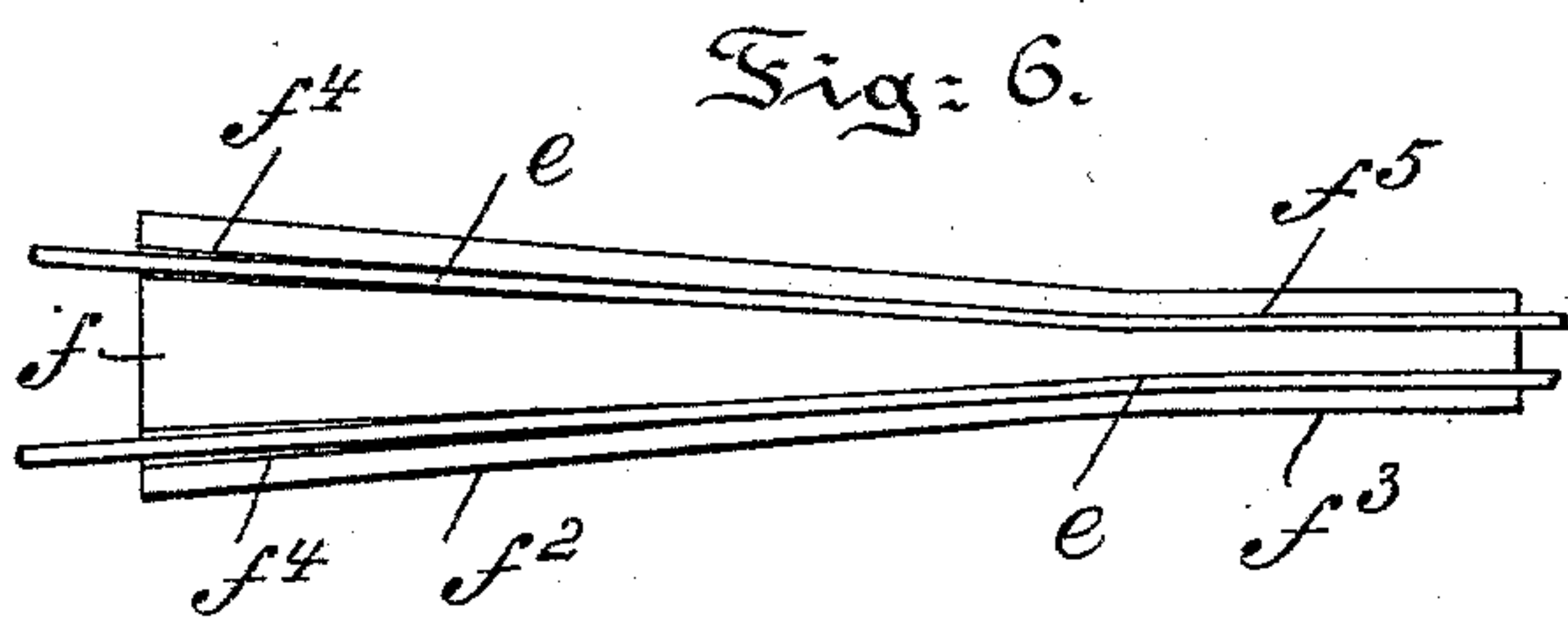
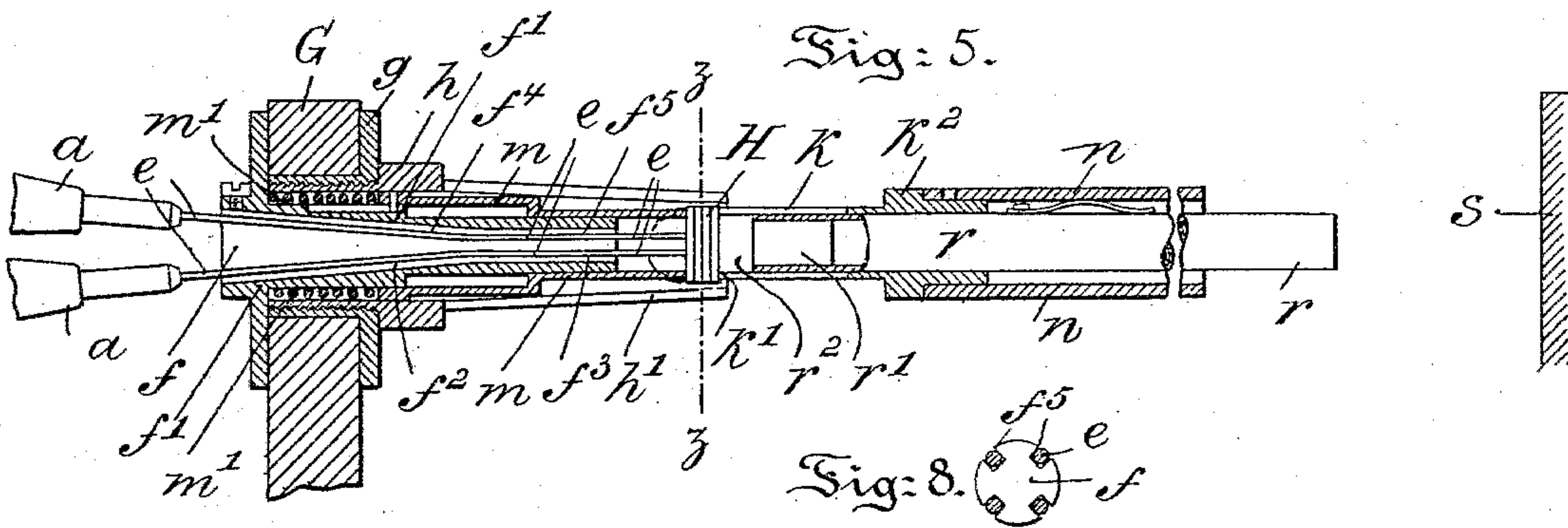
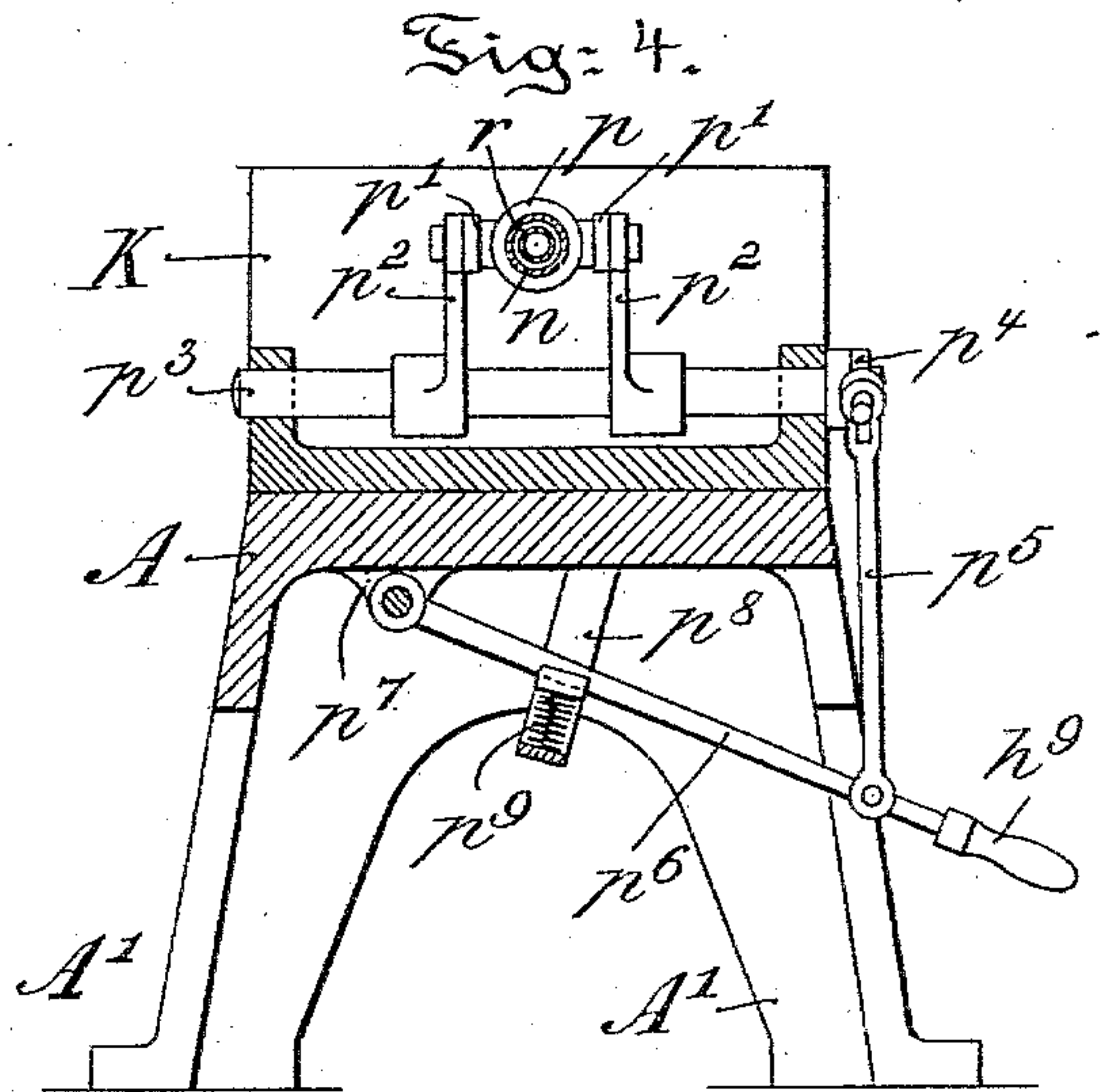
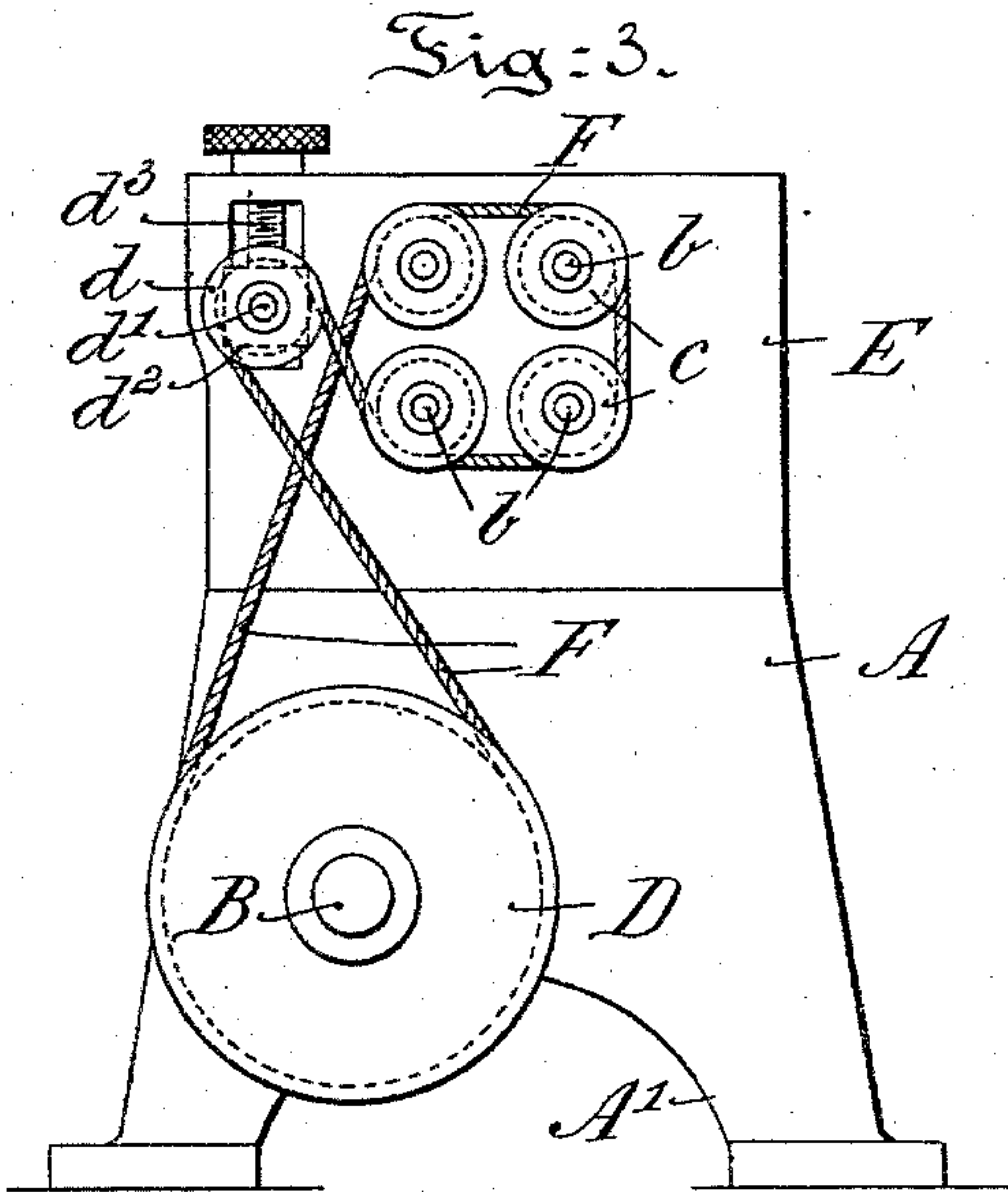
(No Model.)

2 Sheets—Sheet 2.

M. CHERNIC.
BUTTON DRILLING MACHINE.

No. 556,734.

Patented Mar. 24, 1896.



Witnesses:
Thomas M. Smith.
Richard C. Maxwell.

Inventor:
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UNITED STATES PATENT OFFICE.

MARCUS CHERNIC, OF PHILADELPHIA, PENNSYLVANIA.

BUTTON-DRILLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 556,734, dated March 24, 1896.

Application filed July 13, 1895. Serial No. 555,852. (No model.)

To all whom it may concern:

Be it known that I, MARCUS CHERNIC, a subject of the Czar of Russia, residing at the city of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Button-Drilling Machines, of which the following is a specification.

My invention has relation to a button-drilling machine of the class known as "multiple drills," in which one or more button-blanks are simultaneously pierced by two or more drills; and in such connection it relates more particularly to the construction and arrangement of such a machine.

The principal objects of my invention are, first, to provide a multiple drill for piercing button-blanks, which shall be simple in construction, reliable, efficient and durable in operation; second, to provide a button-drilling machine in which the chuck receiving the button-blanks to be pierced is adapted to be fed gradually or quickly to or from the drill-points.

My invention, stated in general terms, consists of a button-drilling machine constructed and arranged in substantially the manner hereinafter described and claimed.

The nature, characteristic features and scope of my invention will be more fully understood from the following description, taken in connection with the accompanying drawings, forming part hereof, and in which—

Figure 1 is a side elevational view of a button-drilling machine embodying features of my invention. Fig. 2 is a top or plan view of the same. Fig. 3 is an end elevation of the power end of the machine. Fig. 4 is a vertical section taken on the line $x x$ of Fig. 1. Fig. 5 is an enlarged longitudinal section taken on the line $y y$ of Fig. 1. Fig. 6 is an enlarged side elevational view of the grooved guide. Fig. 7 is an end elevation of the larger end of said guide. Fig. 8 is a similar view of the smaller end of said guide, and Fig. 9 is a cross-sectional view taken on the line $z z$ of Fig. 5.

Referring to the drawings, A represents the bed-plate of the button-drilling machine supported upon standards A'. At one end of the machine, in one of the standards A' and hanger A², is mounted a shaft B, provided

with fast and loose power-pulleys C and C'. On the end of the shaft B is also mounted a grooved pulley D. Upon suitable uprights or standards E and E are supported in converging planes the drill-spindles a , the butt-ends b of which are provided with grooved pulleys c , which are connected to each other and the grooved pulley D on the power-shaft by means of an endless band or belt F, substantially as indicated in Figs. 1 and 3 of the drawings. The band or belt F passes also over a tension pulley or roll d , interposed between the pulleys c and the power-pulley D. This tension pulley or roll d is mounted upon a shaft d' , which has an adjustable bearing d^2 in the upright E, and the bearing d^2 is controlled by an adjusting-screw d^3 .

In the ends of the spindles a are secured the drill-points e , which are received and supported in a grooved guide f and confined thereto by a sleeve f' , substantially as illustrated in Fig. 5. The guide f and sleeve f' are both supported in a standard or upright G. The base f^2 of the guide f is conical and terminates at its forward end in a cylindrical or straight portion f^3 . The conical section f^2 is grooved with square or substantially square channels f^4 , slightly wider than the diameter of the drill-points e , and inclined at the same plane of inclination as said drills to receive the converging drill-spindles a . These channels f^4 are continued in the straight portion f^3 in a horizontal plane, as indicated at f^5 , and the width of the channels in the straight portion is the same or approximately so as the diameter of the drill-points e . The drill-points e are confined in the channels of the guide by the sleeve f' , and are bent from converging planes to horizontal parallel planes and presented in the latter position to the button-blanks H. Surrounding the sleeve f' , and secured to the standard G, is a screw-threaded collar g , on which is adapted to be secured one end of a split thimble or sleeve h , which projects beyond the free ends of the drill-points. This thimble h is preferably made of spring metal, and its end h' receives the end of the chuck.

The chuck for the button-blanks H consists of a split thimble or sleeve k of spring metal, the end k' of which enters the end h' of the thimble h , and is compressed thereby. In

the chuck k are introduced one or more button-blanks H , of slightly larger diameter than the internal diameter of the chuck k , so that the blanks when placed in position must be pushed in against the spring tension of the chuck and are confined in the same under spring tension.

The drill-points e project beyond the end of the guide f a distance sufficient to penetrate or pierce the button-blanks held in the chuck. It frequently happens that if these projecting drill-points are left unprotected they will be easily broken off by feeding the button-blanks too quickly or otherwise, and hence to protect the points use is made of a sleeve m , which projects to the ends of the drill-points and has a range of longitudinal or horizontal movement on the sleeve f' , being normally thrown outward to the end of the drill-points by means of a spring m' . This spring m' is coiled around the sleeve f' and abuts against an extension of the said sleeve secured in the standard G . The movable spring-sleeve m is located within the thimble h , and when the chuck k enters this thimble the said spring-sleeve is gradually forced backward by the chuck to expose the drill-points more and more as the chuck and button-blanks are advanced.

The chuck k terminates in an enlargement k^2 , which is secured by a pin or otherwise to a hollow shaft n , the rear end of which terminates in a box o , having exterior guides or keys o' , adapted to slide in corresponding guideways or keyways o^2 of a support or standard K . The hollow shaft n is guided and supported in a standard or upright K' and slides back and forth therein when advanced toward or away from the drill-points e , as hereinafter described. The hollow shaft n is secured to or formed integral with a cross-bar p , which in turn is pivotally secured at either end to one end of a link p' . The free end of the link p' is pivotally secured to an arm p^2 of a shaft p^3 , which extends above the bed-plate A , crosswise of the machine. To the shaft p^3 and on one side of the machine is also secured a crank-arm p^4 , which is pivoted to one end of a link or rod p^5 . The other end of the said link or rod p^5 is pivotally secured to one end of a lever or treadle-arm p^6 , which lever-arm p^6 is pivoted at the other end in a bracket p^7 depending from the under side of the bed-plate A . The lever p^6 is guided in a bracket p^8 and is normally thrown upward under the tension of a spring p^9 , one end of which is secured in the said bracket p^8 , while the other end abuts against the lever p^6 , as illustrated in Fig. 4. When the lever p^6 is depressed against the tension of its spring, the link or rod p^5 is lowered, thereby depressing the crank-arm p^4 , which actuates the shaft p^3 and depresses the arms p^2 . These arms p^2 , through the links p' and cross-arm p , slide the shaft n longitudinally toward the drill-points to feed the chuck and button-blanks up to the drill-points. When the lever p^6 is

released, the spring p^9 throws the lever upward, thereby, through the connections hereinbefore explained, returning the cross-arm p and the shaft n to their normal positions—that is to say, the position in which the chuck is drawn out of the thimble h and away from the drill-points.

Within the chuck k , hollow shaft n and box o extends a hollow or partially hollowed-out rod r , the end of which adjacent to the drill-points being provided with a removable plug r' , which rests immediately behind the button-blanks H . The other end of this rod r extends beyond the box o , so that when the box and rod are drawn back to their normal positions away from the drill-points this end of the tube will strike against a plate s , secured to the bed-plate and extending upward at right angles thereto. The tube or rod r is held frictionally within the shaft n and the box o , and when it strikes against the plate s the plug end r' will knock against the button-blanks H and will eject the same from the chuck. To accommodate a greater or less number of button-blanks in the chuck, the plug r' may be removed and another with a thicker or thinner head, r^2 , substituted therefor.

In operation the chuck k is normally withdrawn from the thimble h and drill-points by the spring p^9 , by the lever p^6 . By depressing the handle h^9 of the said lever p^6 the chuck k is caused to approach the thimble and the drill-points, as hereinbefore explained. Such movement given to the chuck is gradual or rapid according to the movement of the lever p^6 , which is under the control of the operator. If for any reason, such as the breaking of a drill-point or the dislodging of a button-blank, the chuck should be quickly retracted from the drill-points, the lever p^6 can be released and its spring, as hereinbefore explained, will then throw it upward to thus, through the various connections, retract the chuck from the thimble h . When the chuck is thus advanced in the thimble h against the drill-points, the spring-sleeve m is gradually forced backward over the sleeve f' , exposing more and more of the drill-points to the buttons. At the same time the chuck is telescoped in the thimble and is compressed thereby, the button-blanks being thus more and more tightly clamped in the chuck, as they are fed farther and farther onto the drill-points. After the blanks have been pierced the lever p^6 is released and the chuck and shaft are retracted until the tube or rod r strikes against the plate s , and the plug r' of the said rod r then ejects the blanks from the chuck.

I do not in the present application claim the arrangement of the drill-spindles converging from end to end, in combination with the grooved guide and sleeve adapted to receive the converging drill-points, adapted to bend the same into horizontal parallel operative position. Neither do I claim herein the fea-

ture of adjusting the ejecting-plug traversing the chuck to permit of the reception and ejection of more or less blanks in and from the chuck, as both of the said features form the subject-matter of another application for a patent filed by me under date of July 15, 1895, and serially numbered 556,055.

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

1. In a drilling-machine of the character described, a chuck adapted to receive blanks to be pierced, a support for said chuck, a shaft carrying said chuck and movable in said support, a cross-arm secured to said shaft, a link pivotally connected at one end to said cross-arm, a crank-arm pivotally attached at the other end of said link, a shaft carrying said crank-arm, a second crank-arm secured to said shaft, a rod pivotally connected with one end of said second crank-arm and a lever adapted to raise and lower said rod, substantially as described.

2. In a drilling-machine of the character described, a chuck adapted to receive blanks to be pierced, a hollow shaft carrying said chuck, a support for said shaft, a cross-arm

secured to said shaft, a link pivotally secured at one end to said cross-arm, a crank-arm pivotally secured to the other end of said link, a shaft carrying said crank-arm, a second crank-arm secured to said shaft, a rod pivotally secured at one end to the free end of said crank-arm, a lever pivoted at one end to the machine and at the other end to said rod, a guide-bracket for said lever, a spring interposed between the bracket and the lever and adapted to elevate said lever in said bracket, all arranged so that when the lever is depressed against the tension of said spring the shaft and chuck, through the connecting mechanism, are advanced in their support, and when the lever is released the said lever is elevated by said spring to thereby retract said chuck and shaft, substantially as and for the purposes set forth.

In testimony whereof I have hereunto set my signature in the presence of two subscribing witnesses.

MARCUS CHERNIC.

Witnesses:

J. WALTER DOUGLASS,
WILHELM VOGT.