

No. 626,385.

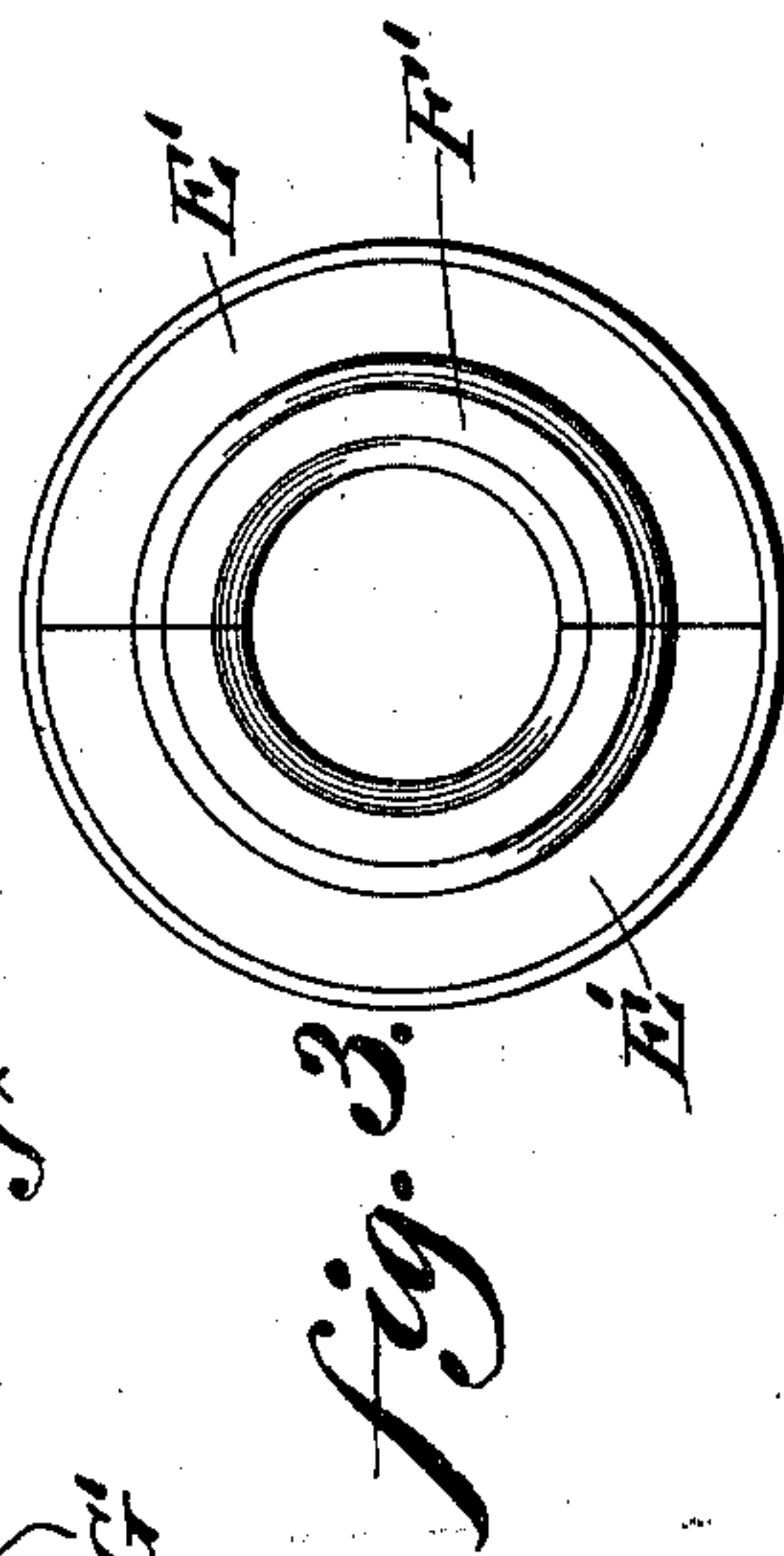
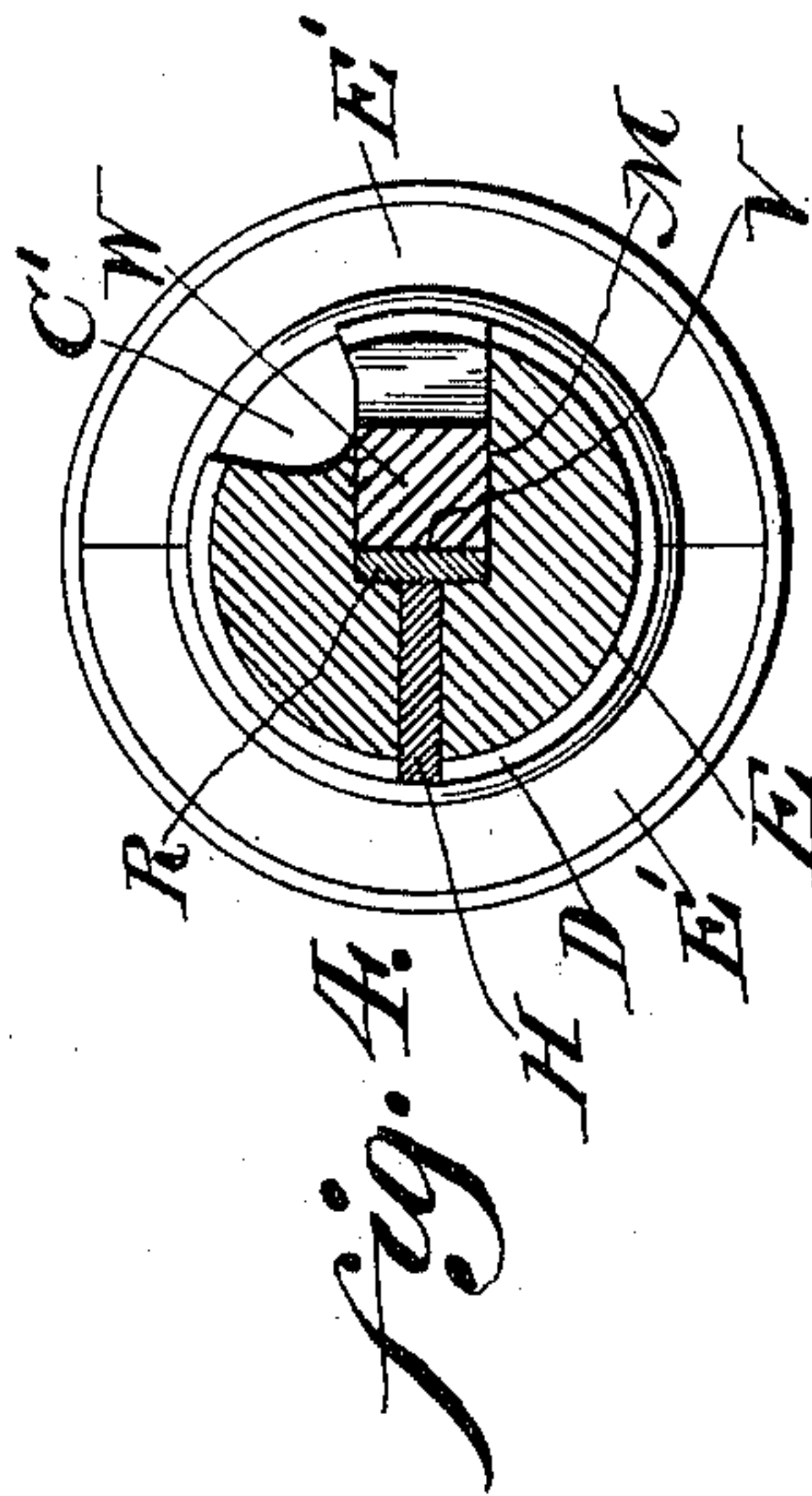
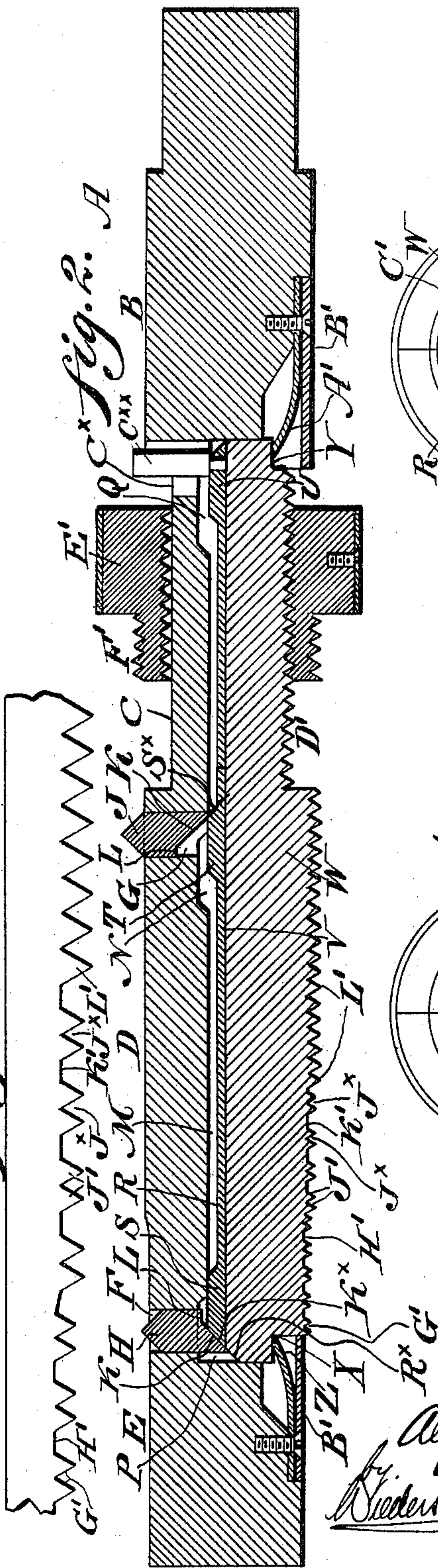
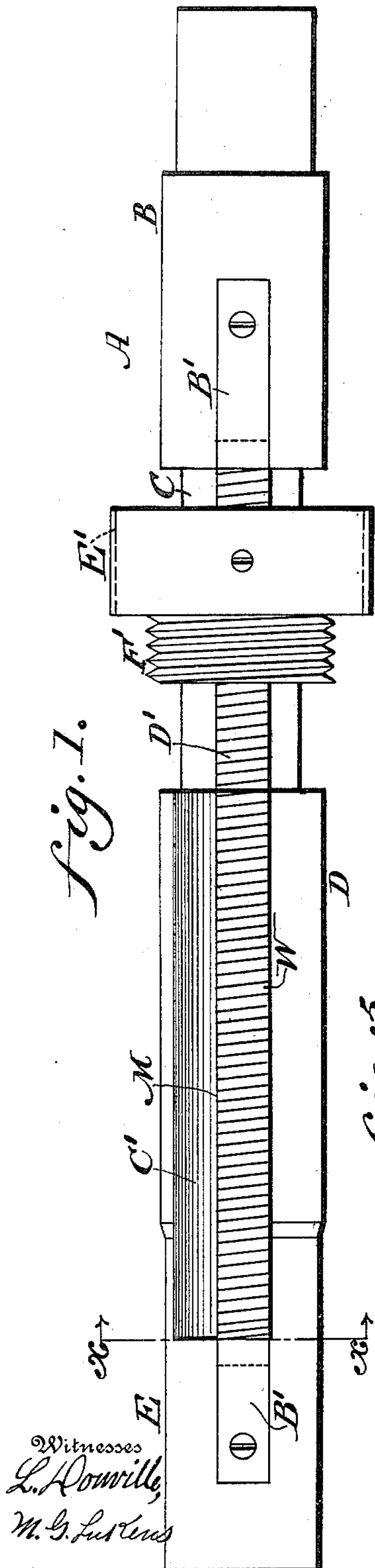
Patented June 6, 1899.

A. JOHNSON.

TAP.

(Application filed Aug. 3, 1898.)

(No Model.)



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UNITED STATES PATENT OFFICE.

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TAP.

SPECIFICATION forming part of Letters Patent No. 626,385, dated June 6, 1899.

Application filed August 3, 1898. Serial No. 687,593. (No model.)

To all whom it may concern.

Be it known that I, ALFRED JOHNSON, a subject of the King of Sweden and Norway, (having resided in the United States one year last past and having declared my intention of becoming a citizen thereof,) residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in Taps, which improvement is fully set forth in the following specification and accompanying drawings.

My invention consists of an improved construction of tap, by means of which I am enabled to effect the cutting of threads in an expeditious and effective manner, means being also provided for enabling the tap to be quickly withdrawn by a rectilinear movement without necessitating a reverse rotary movement, as is the custom in taps now in use.

It further consists of a novel configuration of threads on the tap, whereby I have found that best results have been attained.

It further consists of novel details of construction, as will be hereinafter fully set forth, and particularly pointed out in the claims.

Figure 1 represents a plan view of a tap embodying my invention. Fig. 2 represents a longitudinal section of Fig. 1. Fig. 3 represents an end view of the tap. Fig. 4 represents a section on line xx , Fig. 1. Fig. 5 represents a side elevation of a portion of the tap, the same being shown in detached position.

Similar letters of reference indicate corresponding parts in the figures.

Referring to the drawings, A designates the body of the tap, the same having the portion B extending therefrom, which is provided with the part C of reduced diameter, said part C being continued, as at D, from which point it continues, as indicated at E, the latter portion being of slightly-reduced diameter.

F and G designate openings or sockets in the portion D, the same containing therein the pins H and J, the construction of which will be understood from Figs. 2 and 4, each of said pins being provided with a conical or tapered outer portion and having their inner extremities chamfered or beveled, as indicated at K, said beveled portion terminating in the shoulder L, it being noted that the

chamfered or inclined portions K of each of said pins incline toward each other.

M designates a recess or ways in the portion D of the tap, the same being provided with the seat or deepened portion N, which is located in proximity to the pin J, it being noticed that a similar deepened portion P is located to the left of the seat N, while the right-hand extremity of the recess M also has a seat Q, the relative position of all of which will be understood from Fig. 2.

R designates a strip or bar which is located in the recess M and is provided with the abutments or thickened portions S, T, and U, which are adapted at the proper intervals to enter the seats P, N, and Q, respectively, it being noticed that the side V of the strip R has a plane surface and contacts with the blade W, which latter is seated in the recess M and is provided with the shoulders X and Y, against which contact the free ends of the springs Z and A', respectively, the latter being held in position by means of screws or other fastening devices and being covered by means of the strips B'.

K^x and S^x designate beveled portions of the abutments S and T, which are adapted to contact with the adjacent pins, as will be explained.

R^x designates a beveled end of the threaded bar or blade W, which is adapted to contact with the beveled surface K of the pin H.

C' designates a longitudinally-extending groove or recess within the portion D of the tap, the relative extension and location thereof being evident from Figs. 1 and 4.

D' designates the portion of the threaded bar or cutting device W which is of reduced thickness and provided with screw-threads, which are engaged by threads on the collar E', said collar having a portion F' of reduced diameter which is provided with exterior screw-threads.

It will be noted that the screw-threads upon the bar or blade W are of peculiar construction, the same being arranged in couples G', beginning with the left-hand portion of said bar and having spaces H' therebetween, said threads then being of increased diameter, as indicated at J', and then continued in pairs having spaces K' therebetween up to the point

L', where the maximum diameter of the tap is attained.

The operation is as follows: The tension of the springs Z and A' serve to hold the threaded bar W tightly against the strip R, and when it is desired to use the tap the tapered pin H assumes substantially the position seen in Fig. 2, its apex being on substantially a line to the periphery of the portion E, as is evident. The tap is now inserted into the hole which has been drilled or otherwise formed and rotated in the usual manner, whereby it will be seen that the thread will be effectively cut and all clogging will be prevented, since the chips readily escape into the longitudinally-extending groove C', adjacent the cutting-bar W. When the hole has been tapped to the desired extent, or, in other words, when a maximum diameter or width of the bar W has been reached, it will be evident that a wall of the tap-hole will bear against the apex or beveled portion of the pin J, and upon further rotation of the tap said pin will be forced inwardly and the inclined portion K of said pin J will bear upon the shoulder S^x, thus moving the portion K^x of the strip R against the pin H and simultaneously pushing said pin outwardly, about which time the thickened portions S, T, and U will seat in the recesses Q, N, and P, respectively, and by reason of the resiliency of the springs A' and Z the bar W will move inwardly and the tap can be readily and expeditiously withdrawn from the tapped hole by a rectilinear movement and without necessitating rotating of the tap, as is customary in the taps now in use. When the bottom or inner side of the hole is reached, the pin H, which, it will be understood, projects from the opening F after the strip R is moved to its extreme left-hand position, will be forced inwardly and the parts will assume the position seen in Fig. 2 again and be in operative position for further use.

It will be evident that my invention is especially useful in tapping plates or heads in which a tapped hole is desired which is to be in alinement with a hole already tapped, in which case the tapped hole and the hole to be tapped are placed in alinement and the threaded portion F' of the collar E' is screwed into the tapped hole. The tap is now rotated, and since it has a positive bearing in the collar E' it will be apparent that the hole which is to be tapped will also be in alinement therewith in every instance.

Should it be desired to move the bar R by hand, I provide the part C with the slot C^x, through which passes the handle C^x, which may be engaged by the thumb or fingers of the operator, the effect of which is evident.

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

1. A tap consisting of a body portion having a laterally-movable cutting-blade, a laterally-movable bar acting upon the same, and

means for moving said bar laterally to retract said blade controlled by a lateral projection on the body portion of the tap that is adapted to engage the piece of work being acted upon.

2. A tap consisting of a body portion having a recess or way, a laterally-movable cutting-blade situated therein, a laterally-movable bar situated between said blade and the rear wall of the recess or way, and means for moving said bar to impart a lateral movement to and to retract said blade controlled by a lateral projection on the body portion of the tap that is adapted to engage the piece of work being acted upon.

3. A tap consisting of a body portion having a recess or way, a laterally-movable cutting-blade situated therein, a laterally-movable bar situated between said blade and the rear wall of the recess or way, means for moving said bar laterally to force the blade outwardly, a spring for moving said blade inwardly when the bar moves in the opposite direction and means for moving said bar laterally to retract the blade controlled by a lateral projection on the body portion of the tap that is adapted to engage the piece of work being acted upon.

4. A tap consisting of a body portion having a recess or way, a laterally-movable cutting-blade situated therein, a laterally and longitudinally movable bar situated between said blade and the rear wall of the recess or way, means for imparting a lateral movement to said bar by reason of its longitudinal movement and means for moving said bar longitudinally to retract said blade controlled by a lateral projection on the body portion of the tap that is adapted to engage the piece of work being acted upon.

5. A tap consisting of a body portion having a recess or way provided with seats, a longitudinally and laterally movable bar situated therein and having abutments adapted to slide upon the rear wall of said recess and to enter said seats, whereby the longitudinal movement of the bar imparts a lateral movement thereto, a laterally-movable cutting-blade situated within said recess or way and adapted to be moved by said bar, and means for moving said bar longitudinally.

6. A tap consisting of a body portion having a recess or way, a laterally-movable cutting-blade situated therein, a laterally and longitudinally movable bar situated between said blade and the rear wall of the recess or way, means for imparting a lateral movement to said bar by reason of its longitudinal movement, and laterally-extending and longitudinally-movable pins extending through said body portion and having inclined or beveled heads to engage and move said bar longitudinally.

7. A tap consisting of a body portion having a recess or way provided with seats, a longitudinally and laterally movable bar situated therein and having abutments to enter said seats, whereby the longitudinal move-

ment of the bar imparts a lateral movement thereto, said abutments having inclined or beveled faces, a laterally-movable cutting-blade situated within said recess or way and adapted to be moved by said bar, and laterally-extending and longitudinally-movable pins extending through said body portion and having inclined or beveled heads to engage the corresponding portions of said abutments to move said bar longitudinally.

8. In a tap, a body portion having a suitable recess therein, a longitudinally-extending strip located in said recess, said strip having abutments adapted to enter deepened portions or seats in said recess, pins having beveled heads located in proximity to said abutments, a bar in contact with said strip and having threads cut thereon and springs for holding said bar in position.

9. A tap consisting of a suitable body portion D having openings F and G therein, pins having beveled outer extremities located in said openings, the inner portions of said pins

having the inclined portions K and shoulders L, a longitudinally-extending recess M in said body portion, said recess having seats Q, N and P, a strip R having abutments S, T and U, the same being adapted to enter said seats, a bar W having threads cut in its outer portion, and shoulders at its extremities, springs having their free ends bearing on said shoulders whereby said bar is held in position and means for securing said springs to the body of the tap.

10. In a tap, a movable bar having the threaded portions G' near the end of lesser diameter, said threaded portions being separated by spaces H', the threaded portions J' of greater diameter from which point extend the pairs of threads J^x separated by spaces K' and the threads L' of maximum diameter.

ALFRED JOHNSON.

Witnesses:

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