

(No Model.)

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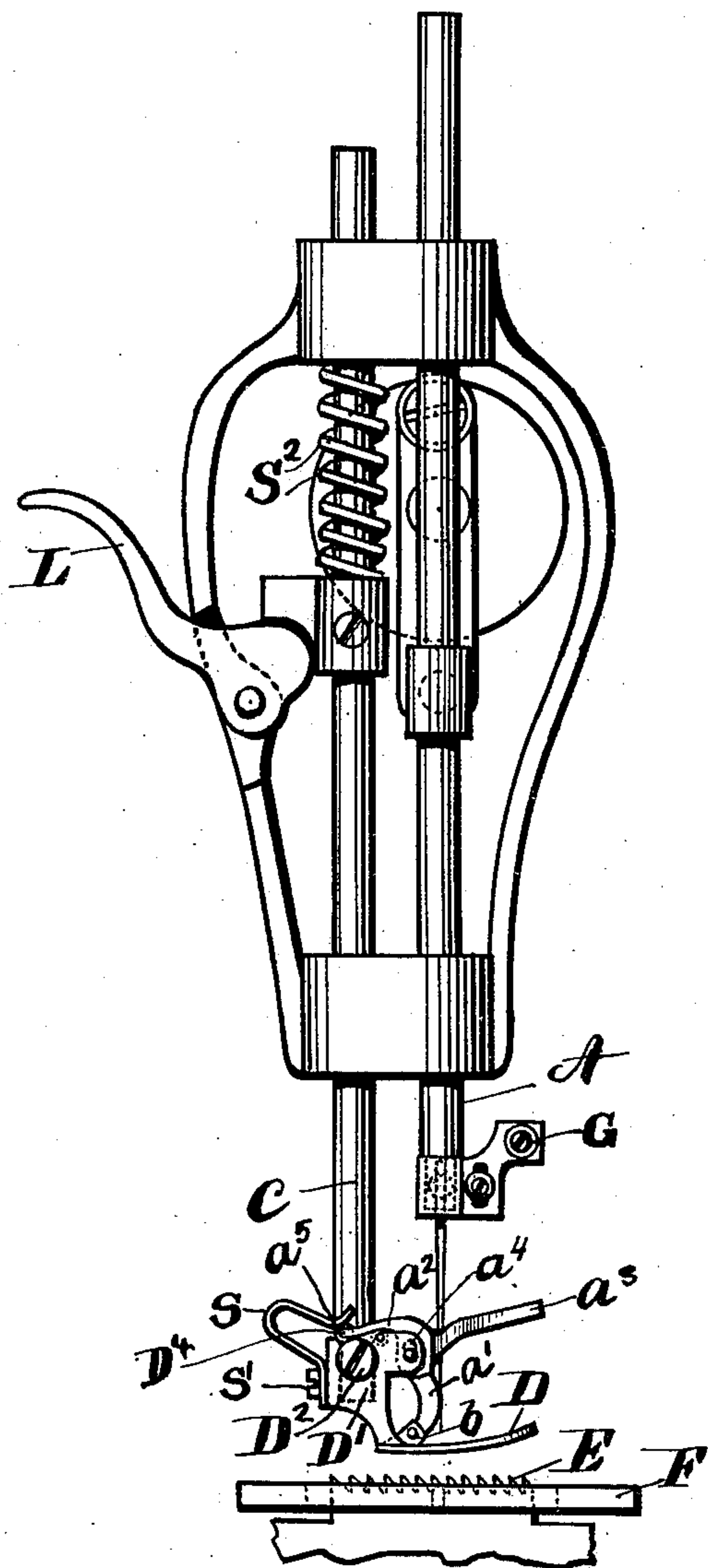
S. D. TUCKER.

FEEDING ATTACHMENT FOR SEWING MACHINES.

No. 376,122.

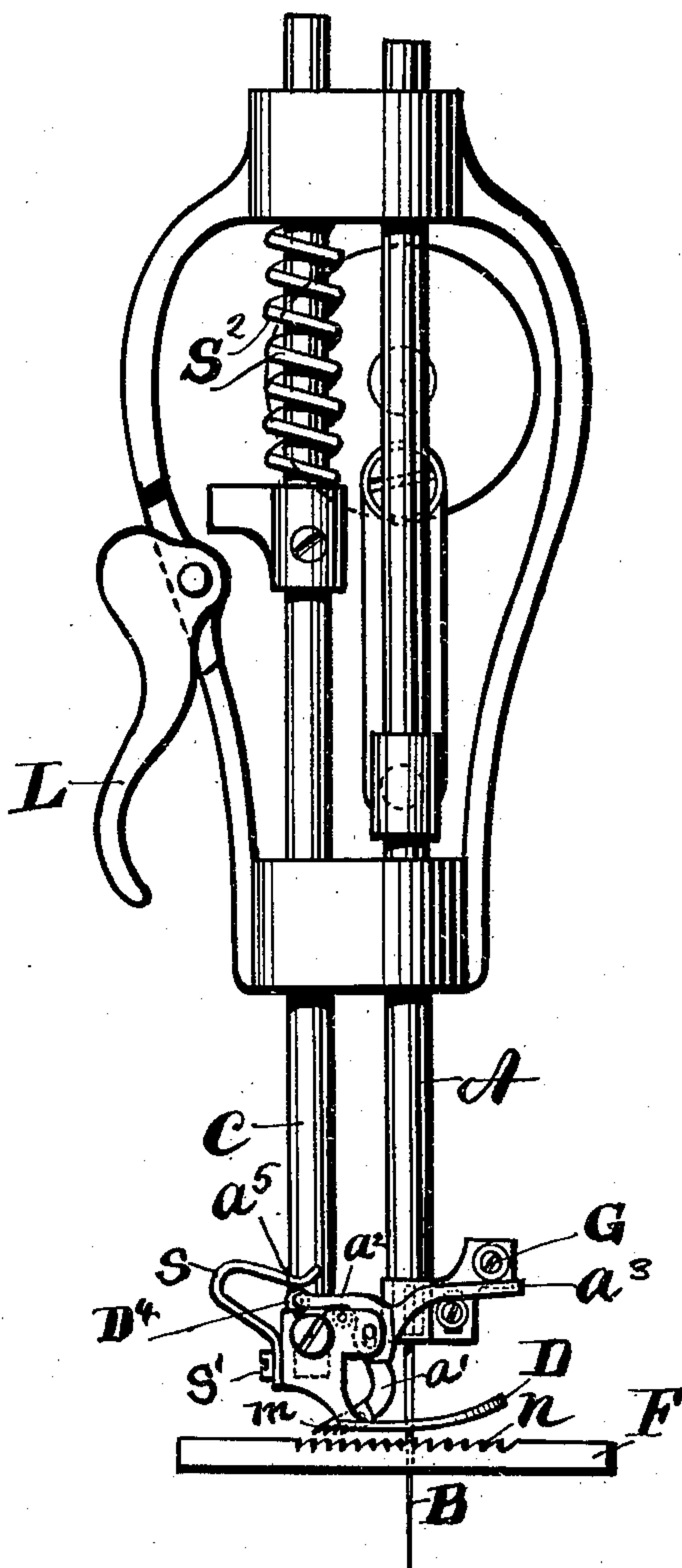
Patented Jan. 10, 1888.

Fig. 1.



Witnesses:
Reinhardt Keller.
John T. Doak.

Fig. 2.



Inventor.
Sidney D. Tucker
by Geo. A. Mosher
att'y.

(No Model.)

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Fig. 3.

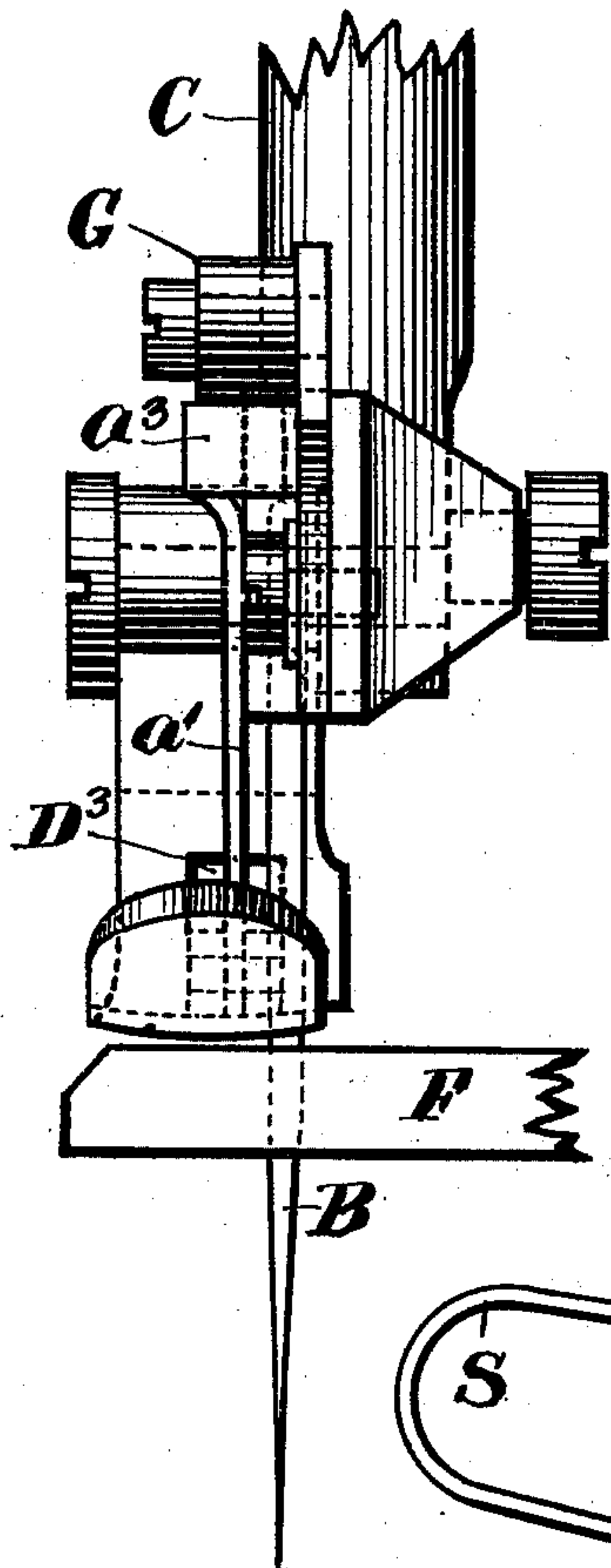


Fig. 4.

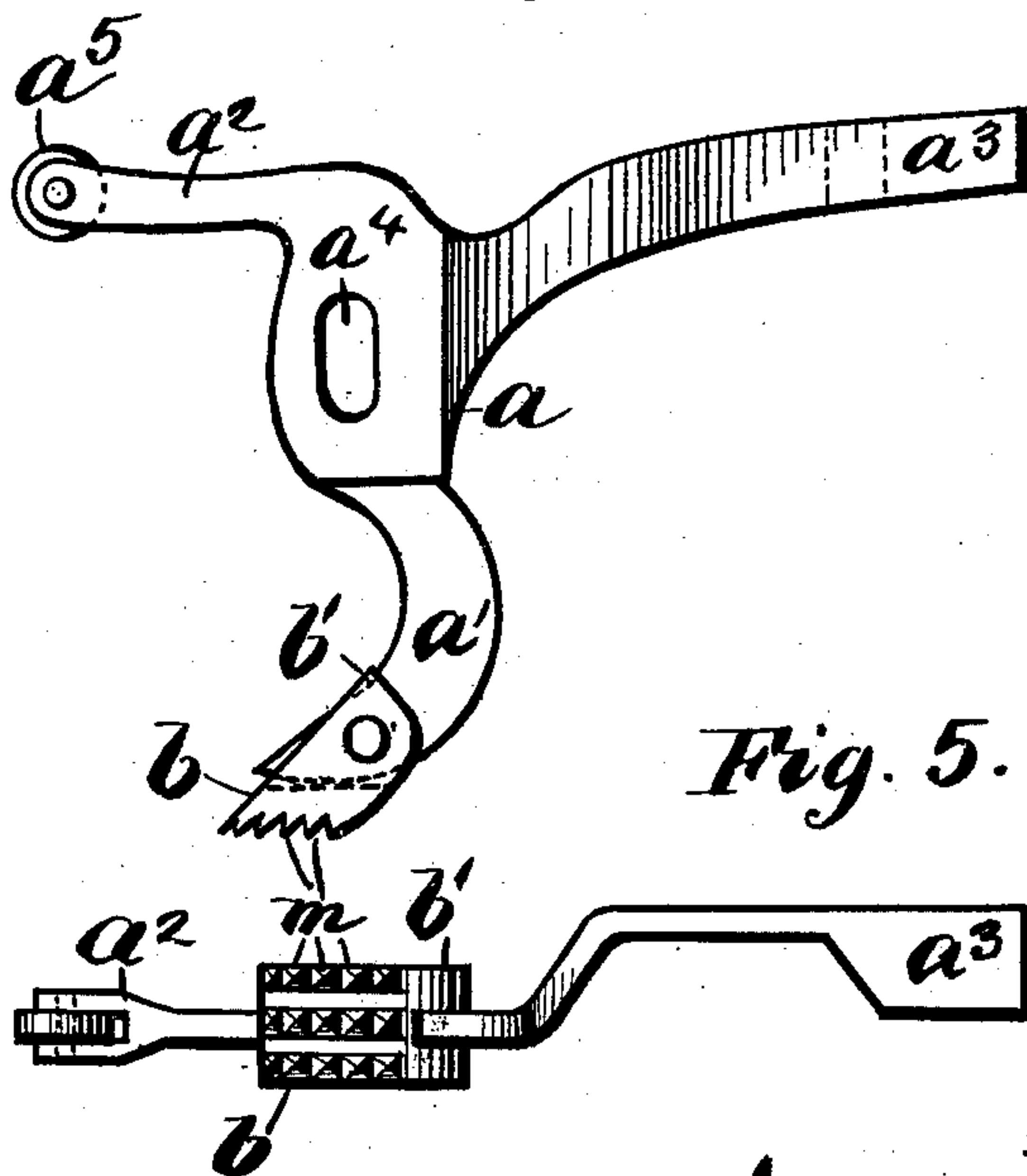


Fig. 5.

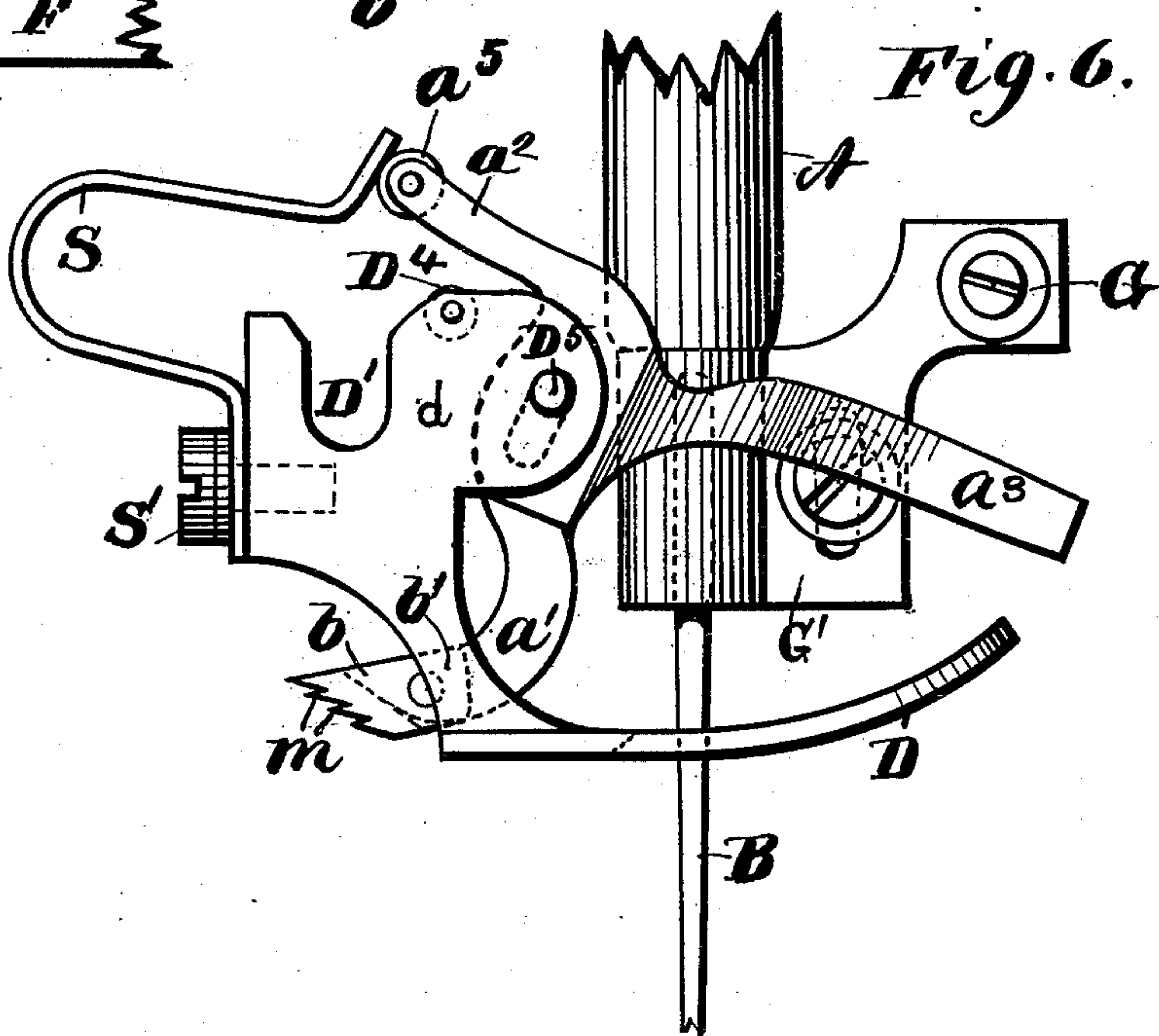


Fig. 6.

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(No Model.)

3 Sheets—Sheet 3.

S. D. TUCKER.

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Fig. 7.

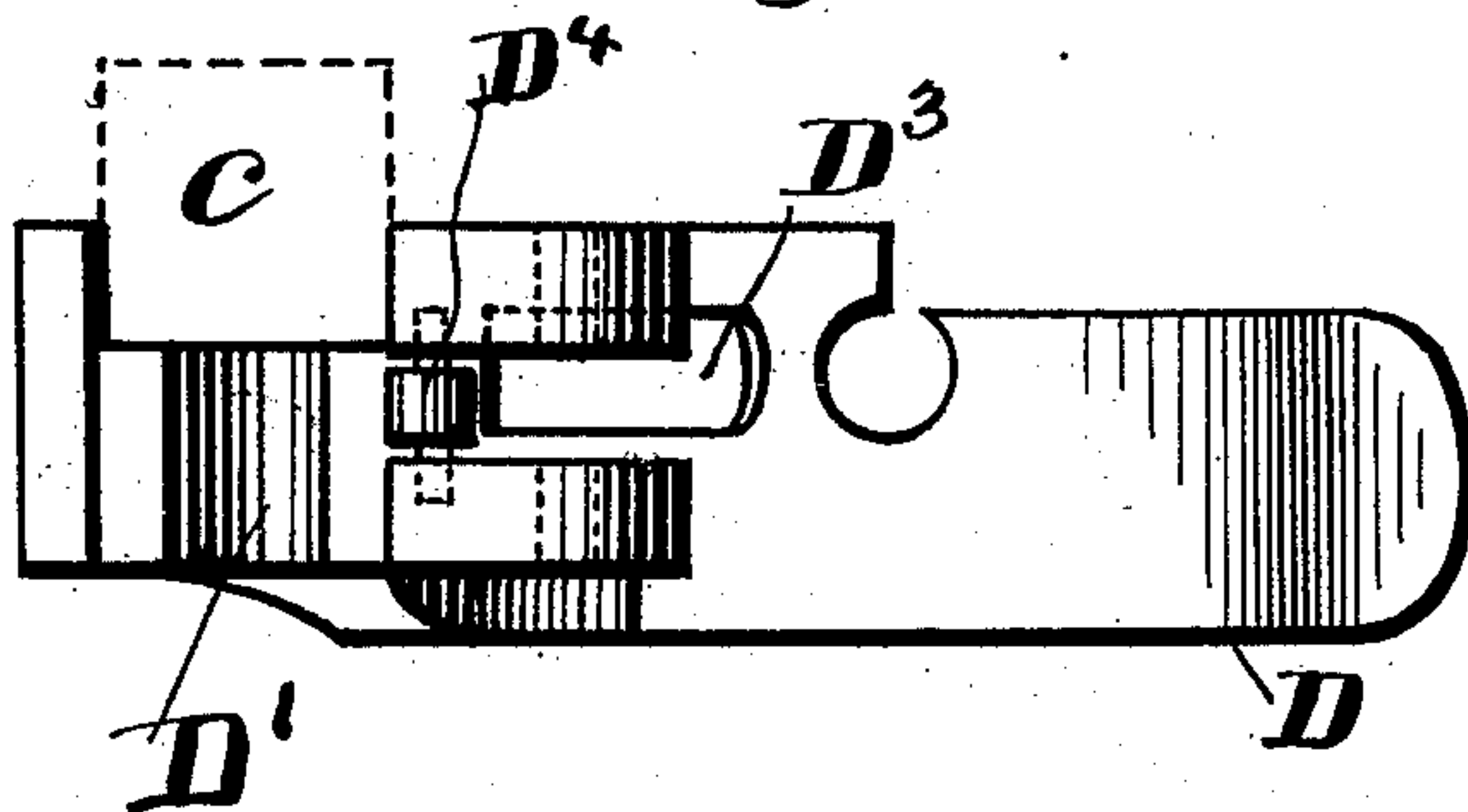


Fig. 8.

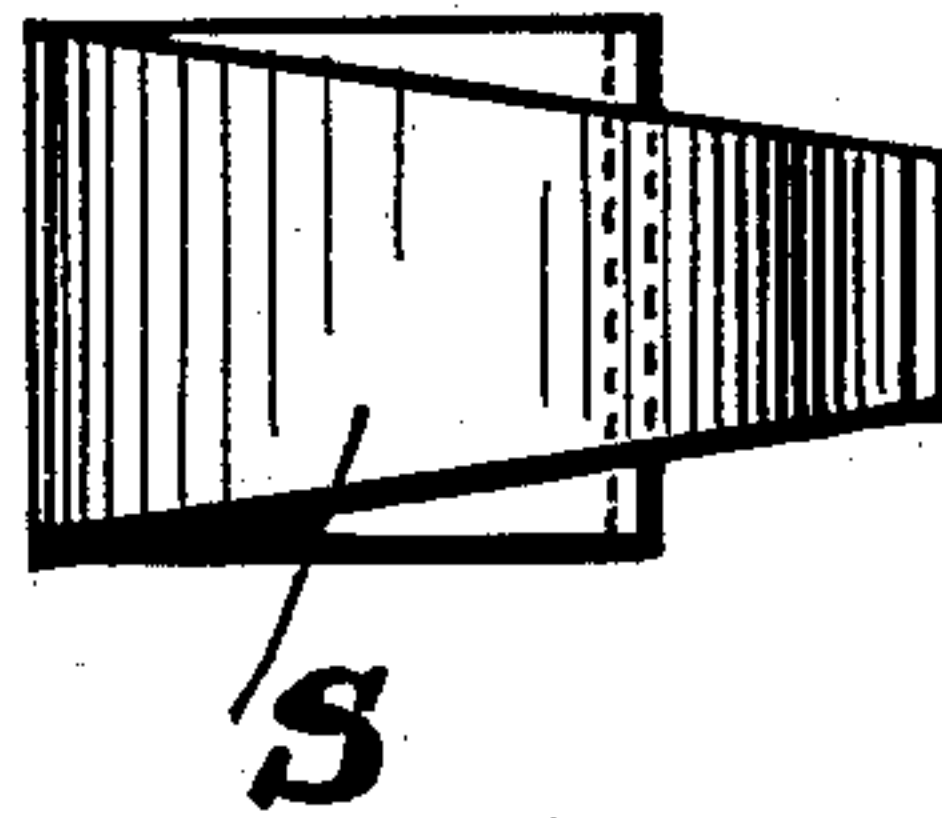


Fig. 9.

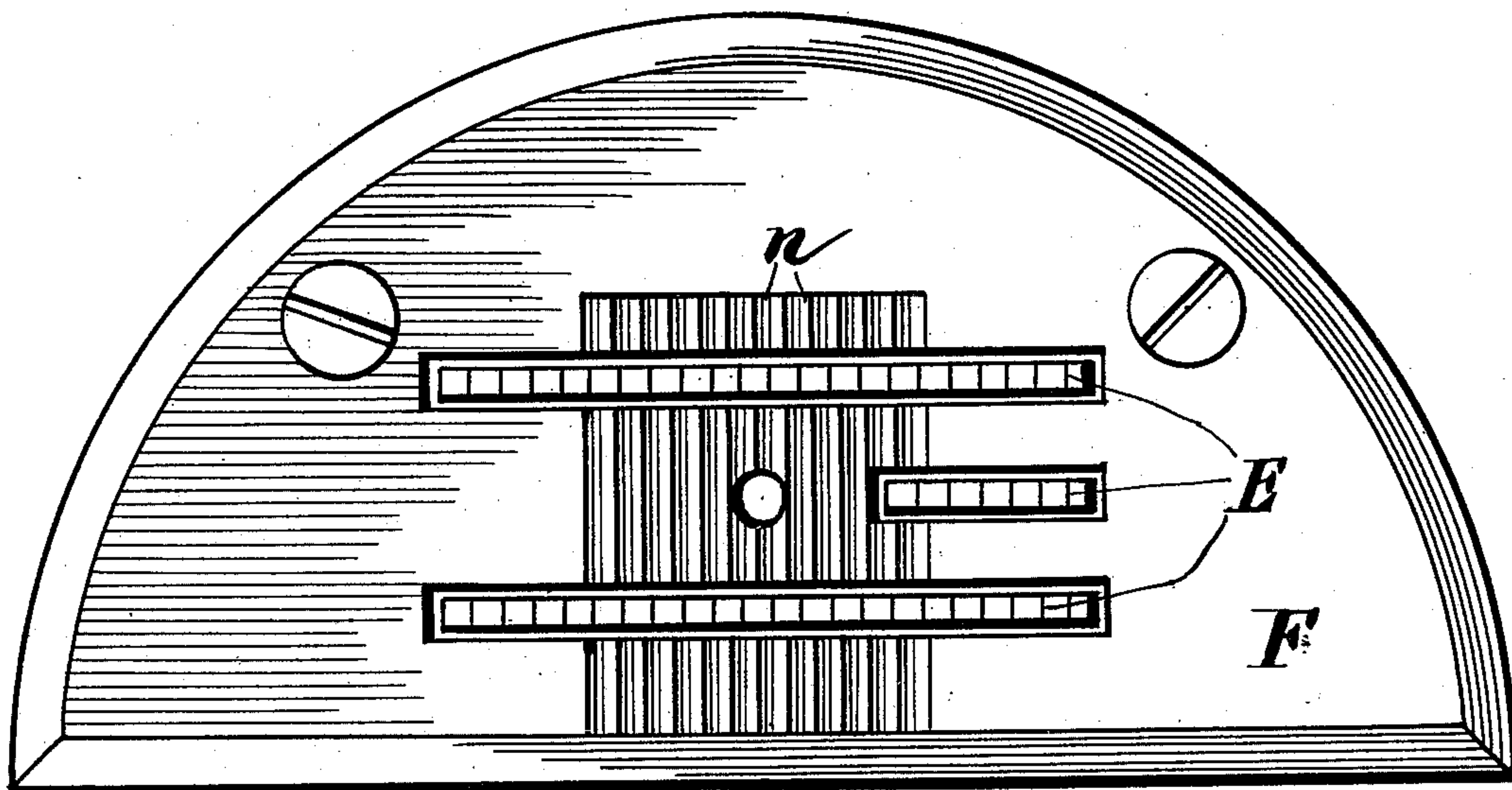
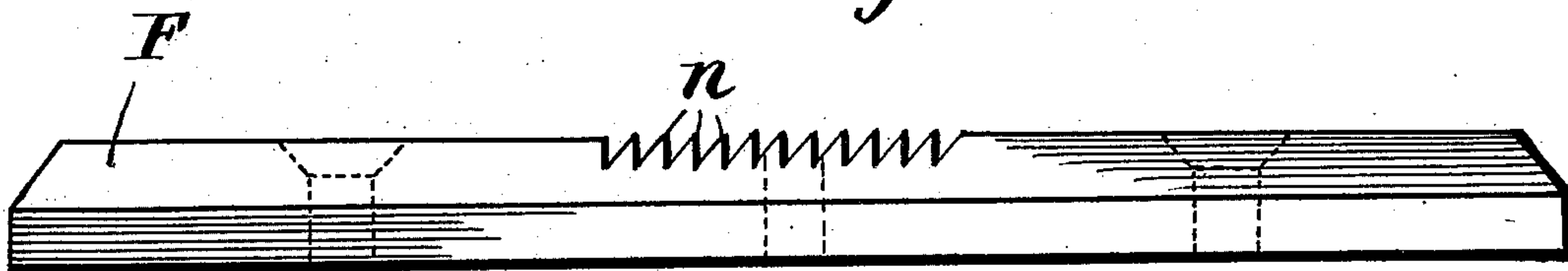


Fig. 10.



Witnesses:
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John L. Booth

Inventor.
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UNITED STATES PATENT OFFICE.

SIDNEY D. TUCKER, OF TROY, NEW YORK.

FEEDING ATTACHMENT FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 376,122, dated January 10, 1888.

Application filed February 26, 1887. Serial No. 228,937. (No model.)

To all whom it may concern:

Be it known that I, SIDNEY D. TUCKER, a resident of the city of Troy, in the county of Rensselaer and State of New York, have invented certain new and useful Improvements in Feed Attachments for Sewing-Machines; and I do hereby declare that the following is a full, clear, and exact description of the invention, that will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

Similar letters refer to similar parts in the several figures therein.

My invention relates to improvements in sewing-machines; and it consists of the novel construction and combination of parts hereinafter described, and pointed out in the claims.

The object of the invention is to control the movements relatively to each other or the needle of two or more plies of fabric laid one upon another during the operation of stitching said plies together in a sewing-machine.

Figure 1 of the drawings is a front elevation of a sewing-machine head with the front plate removed to show the needle and presser bars and operating mechanism, and showing my improved feed attachment secured to the presser-foot, the position of the bars being that of their upward limit of vibration. Fig. 2 is a similar view showing the position of the parts when the bars are at the limit of downward vibration. Fig. 3 is a side elevation of some of the parts in the position shown in Fig. 2. This and the remaining figures are drawn upon a larger scale than that shown in Figs. 1 and 2. Fig. 4 is a side elevation of a portion of the upper feeding mechanism detached. Fig. 5 is a bottom plan view of the device shown in Fig. 4. Fig. 6 is a front elevation of the device shown in Fig. 3 and representing the upper feed out of action. Fig. 7 is a top plan view of the presser-foot detached from its supporting-bar and divested of the feeding mechanism. Fig. 8 is a top plan view of the controlling-spring of the upper feed mechanism. Fig. 9 is a top plan view of the sewing-machine cloth-plate. Fig. 10 is a front edge view of the plate shown in Fig. 9.

A is the needle-bar of a common sewing-machine, carrying needle B; and C is the presser-bar, supporting a presser-foot, D, over the serrated feed-dog E, shown partly in dotted lines projecting up through the cloth-plate F.

As is well known, the office of the presser-foot is to hold the fabric to be stitched down upon the feed-dog E, which feeds the fabric intermittingly to the needle.

It is also well known that when two thick plies of fabric are thus fed along the ply in contact with the operating feed-dog will be fed faster than the upper ply, unless the two plies are carefully basted together, partly on account of the retarding influence of the presser-foot and the yielding nature of the fabric. To compensate for this retarding influence of the presser-foot I make use of the foot *b*, having the fabric-engaging teeth *m* and pivoted upon arm *a'* of the three-armed lever *a*. The lever is pivoted upon the shank *d* of the presser-foot by pivot *D⁵*, passing through the slot *a⁴*. The arm *a²* is acted upon by the spring *S* to hold the foot *b* in engagement with the fabric when in use and in the relative positions shown in Fig. 2, and also to hold the foot out of engagement when not in use and in the relative position shown in Fig. 6. The other arm, *a³*, projects past the needle-bar in the position to engage with stop *G* on the needle-clamp *G'*, secured to the needle-bar.

The spring is secured to the foot-shank by screw *S'*. The shank is provided on its back side with a slot adapted to receive the presser-bar *C*, as shown by dotted lines in Fig. 7, and with another slot, *D'*, adapted to receive a set-screw, *D²*, by which the presser-foot is adjustably secured to the bar. The shank is provided with the slot *D³*, (shown in Fig. 7,) adapted to receive the arm *a'*, and with the friction-pulley *D⁴*, with which the arm *a²* engages during a part of its vibratory movements.

In conjunction with the parts hereinbefore described, I make use of a serrated cloth-plate provided with the teeth *n*. They are shown in Fig. 2, but not in Fig. 1, while the feed-dog E is shown in Fig. 1, but not in Fig. 2.

It should be observed that the teeth in the cloth-plate and those in the feed-dog are beveled to point in opposite directions, those in the feed-dog pointing in the direction the fabric trav-

els and those in the cloth-plate in the opposite direction.

The operation of the machine in stitching together two or more plies of fabric superimposed one upon another is as follows: The fabric being inserted between the presser-foot and feed or cloth plate, the lever-eccentric L is thrown over from the position shown in Fig. 1 to that shown in Fig. 2, whereupon the spring S² forces the presser-foot down firmly upon the fabric. The sewing-machine is then started and the needle descends through the fabric until the stop G strikes the arm a³, which acts, first, to force the lever a from the position shown in Fig. 1 to that shown in Fig. 2, it being observed that, as shown in Fig. 1 partly by dotted lines, the spring S, pressing upon the end of arm a² which rests upon the fulcrum D⁴, lifts the lever a until the lower end of the slot a⁴ bears up against the pin D⁵, while, as shown in Fig. 2, the stop G has, by engagement with arm a³, forced the lever down until the upper end of slot a⁴ bears down upon pin D⁵, which movement of the lever has been almost a vertical one, forcing the foot b down into engagement with the fabric, and, secondly, as the needle continues to descend the further movement of the arm a³ by stop G serves to force the arm a' and foot b back to the left, which of course tends to move the upper ply of the fabric with it, while the teeth n in the cloth-plate, pointing in the opposite direction, hold the lower ply of the fabric and prevent it from partaking of the movements of the upper due to engagement with toothed foot b. When the needle and its bar rise again, arm a³ is released and the spring restores the lever a to the position shown in Fig. 1, while the upward movement of the feed-dog lifts the lower ply of the fabric from the teeth n in the cloth-plate and carries the fabric freely over them the distance required for the next stitch, whereupon it drops and the presser-foot presses the lower ply firmly down upon the teeth in the cloth-plate, the operation above described being repeated at each successive stitch.

It must be borne in mind that the entire action of the toothed foot upon the fabric takes place while the needle is in the fabric, and cannot, therefore, vary the length of the stitches, the toothed foot having released the fabric and been withdrawn from engagement therewith in advance of the needle.

The office of the toothed foot is to compensate for the excessive action of the feed-dog E upon the lower ply of the fabric, with which ply only it comes in contact, the upper ply being retarded by frictional contact with the presser-foot.

In my improved device the serrated or toothed cloth-plate engages with and holds the lower ply, while the toothed foot slips the upper ply along upon the lower to compensate for its lost motion above referred to. By thus providing the cloth-plate with a serrated or toothed surface, which holds the lower ply from slipping, a very slight movement of the

toothed foot is required, which enables me to employ a very simple, light, and easily operated device, although it is obvious that any of the well-known devices for effecting an upper feed could be successfully employed in combination with my toothed or serrated cloth-plate in an under-feed sewing-machine, provided that the feed mechanisms act independently of each other and at relatively alternate intervals.

As both the fabric-plies are pinned and held fast by the needle while the toothed foot is in action, it is manifest that the upper ply can be slipped along upon the lower only by stretching the fabric in the immediate vicinity of the needle more in the upper than in the lower ply; and when the cloth-plate is provided with the well-known smooth surface the lower ply would slip so easily thereon that the upper ply could not be made to slip or gain upon the lower without great strain upon the needle and fabric, which caused the parts to wear and greatly increased the resistance of the machine.

By having the surface of the cloth-plate serrated or toothed, as I have explained, the lower ply is prevented from slipping, and a very slight movement of the upper ply is sufficient, and is easily accomplished by my improved device without appreciable strain upon the needle or fabric.

The distinct vertical and horizontal movements of the toothed foot afford a simple four-motion auxiliary upper-feed movement especially applicable to accomplish the results above set forth.

The lever a³ can easily be depressed and secured in a position out of engagement with the stop G by forcing the end of arm a² up against the end of spring S, which throws the foot b up above the presser-foot in a position such that the heel b' (shown by dotted lines in Fig. 6) strikes the top of slot D³ and lifts the toe of the foot, as shown.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with a sewing-machine provided with upper and under feed mechanisms arranged to act independently of each other and at relatively alternate intervals, of a sewing-machine cloth-plate having a toothed or serrated cloth-engaging surface, substantially as described, and for the purposes set forth.

2. The combination, with an under-feed sewing-machine provided with a presser foot and bar and a reciprocatory needle-bar, of a sewing machine cloth-plate having a toothed or serrated cloth-engaging surface, and a feed-dog pivoted upon said presser foot or bar and provided with a needle-bar-engaging lever for the purpose of actuating said feed-dog during the downward movements of the reciprocatory needle-bar, substantially as described, and for the purposes set forth.

3. In a sewing-machine provided with an under feed mechanism and a reciprocatory

needle-bar carrying a stud, G, a lever-actuating spring, S, secured to the presser-foot shank, an upper auxiliary four-motion feed mechanism consisting of a fulcrum, D⁵, secured upon
5 the presser-foot shank, a slotted three-armed lever, a, pivoted through its slot upon the presser-foot shank, one of the lever-arms, a', supporting a toothed fabric-engaging foot or
10 dog, b, another of said lever-arms, a², engaging with an actuating spring, S, and another

of said lever-arms, a³, being located in the path of an actuating stop or stud, G, secured to the needle-bar, substantially as described, and for the purposes set forth.

In testimony whereof I have hereunto set
my hand this 18th day of February, 1887.

SIDNEY D. TUCKER.

Witnesses:

GEO. A. MOSHER,

W. H. HOLLISTER, Jr.