

No. 679,703.

Patented July 30, 1901.

J. M. J. PHELAN.
MITERING AND TOOL GUIDING DEVICE.

(Application filed Mar. 13, 1900.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1

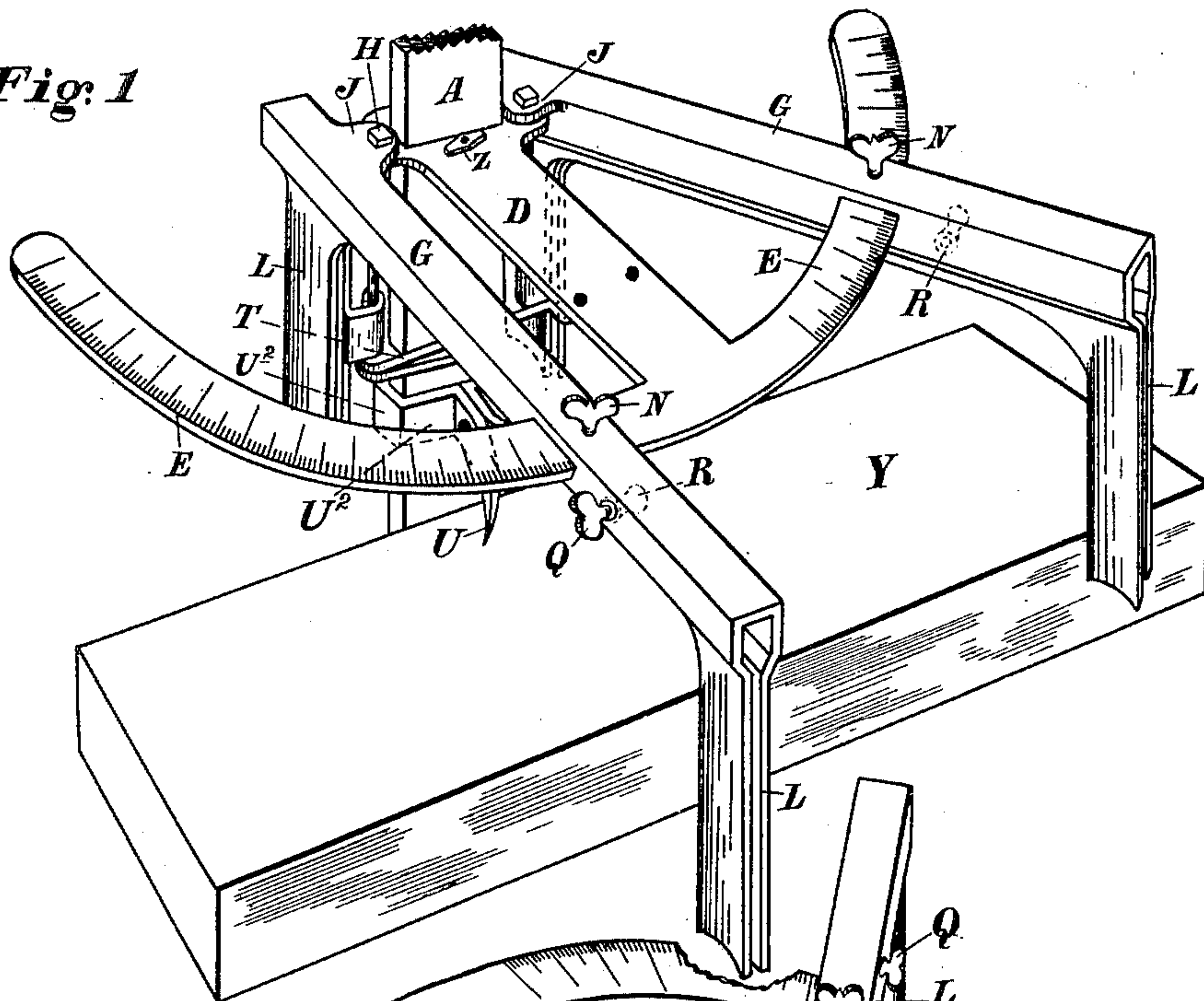


Fig. 2

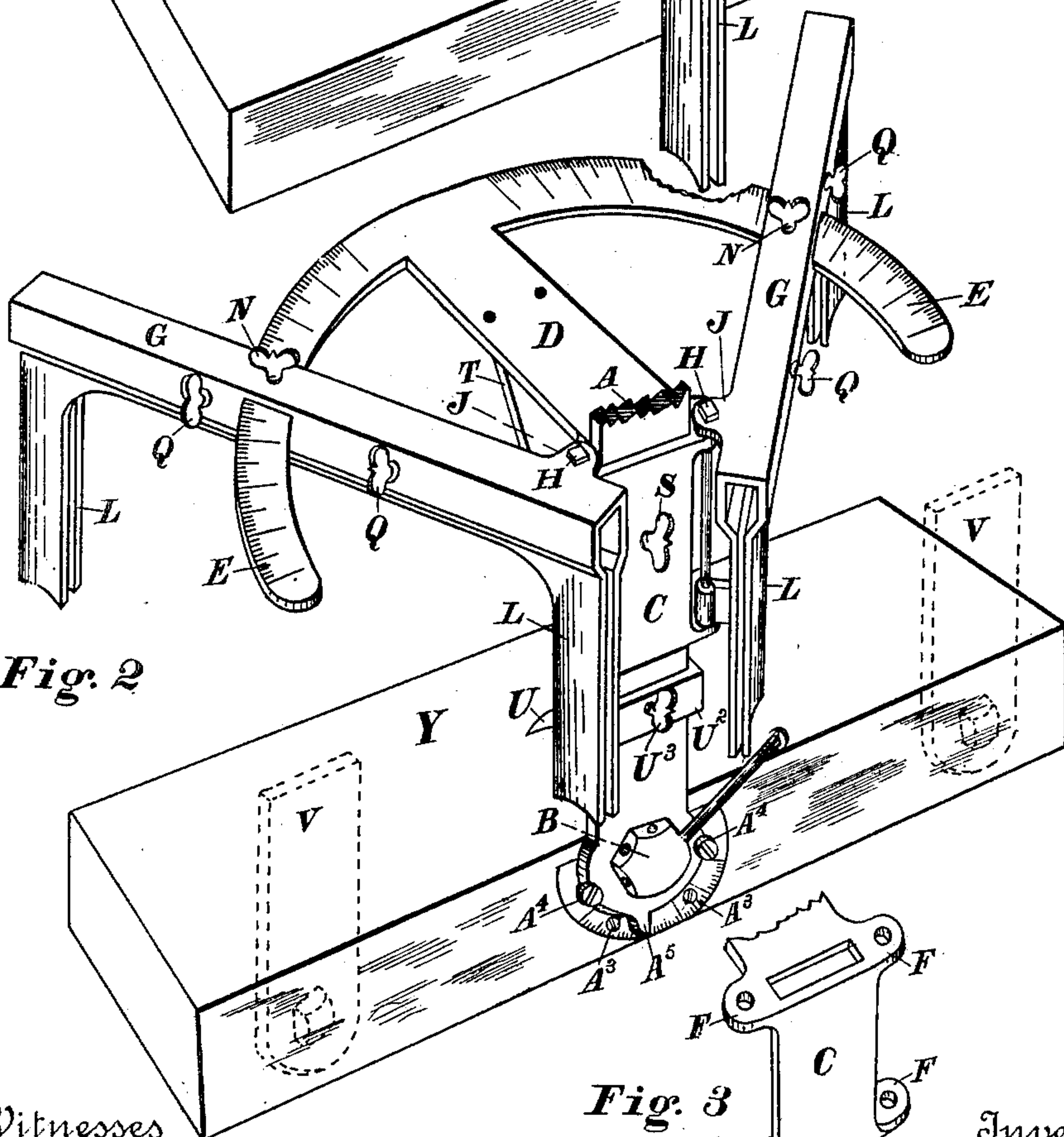
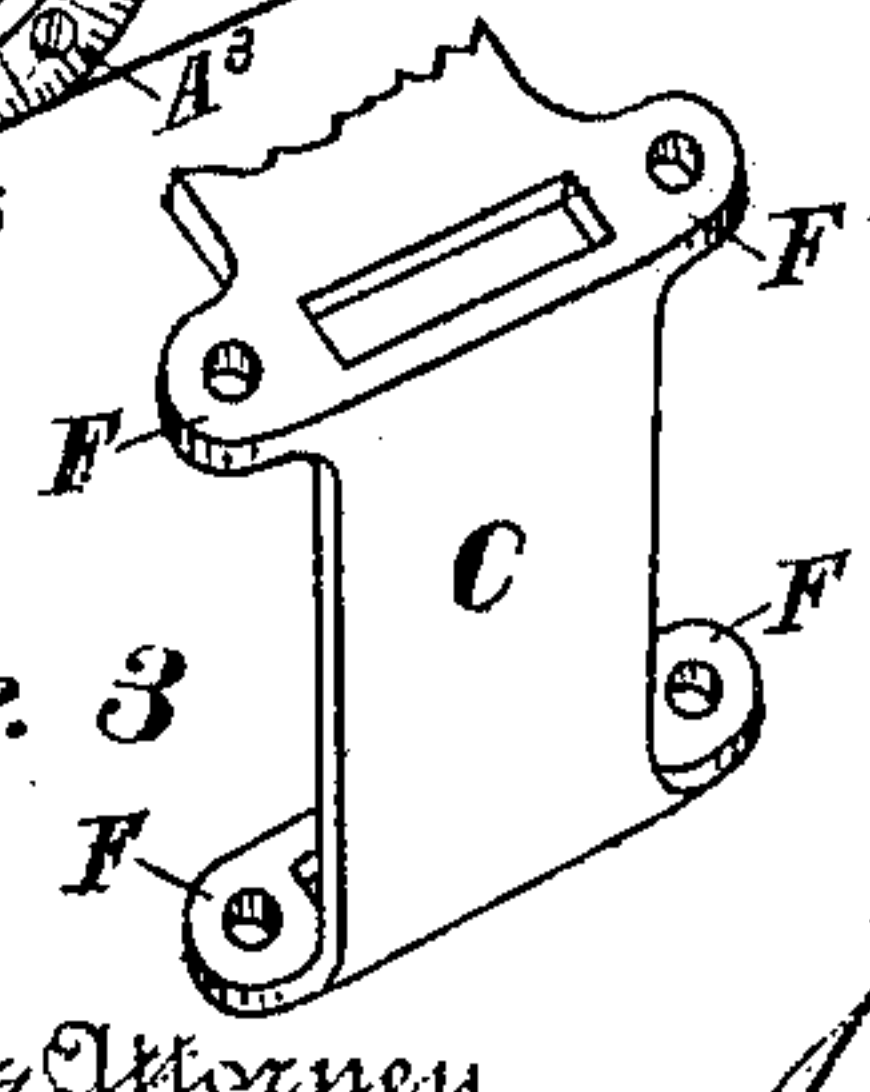


Fig. 3



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2 Sheets—Sheet 2.

Fig. 4

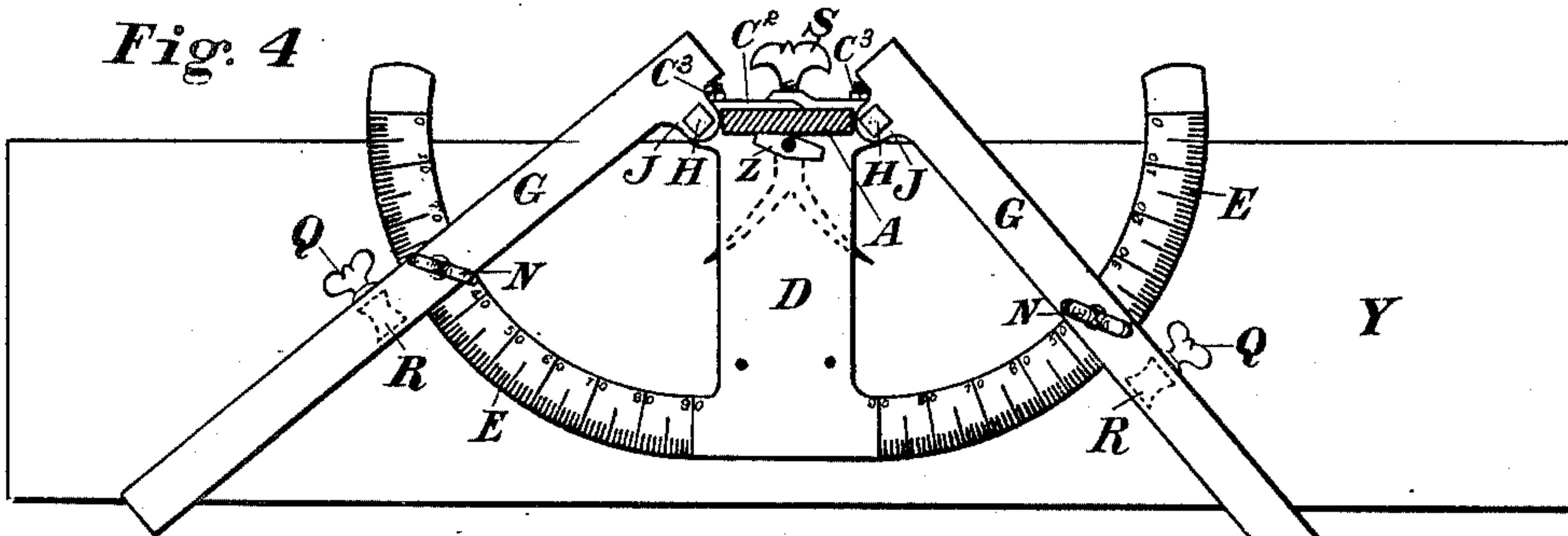


Fig. 5

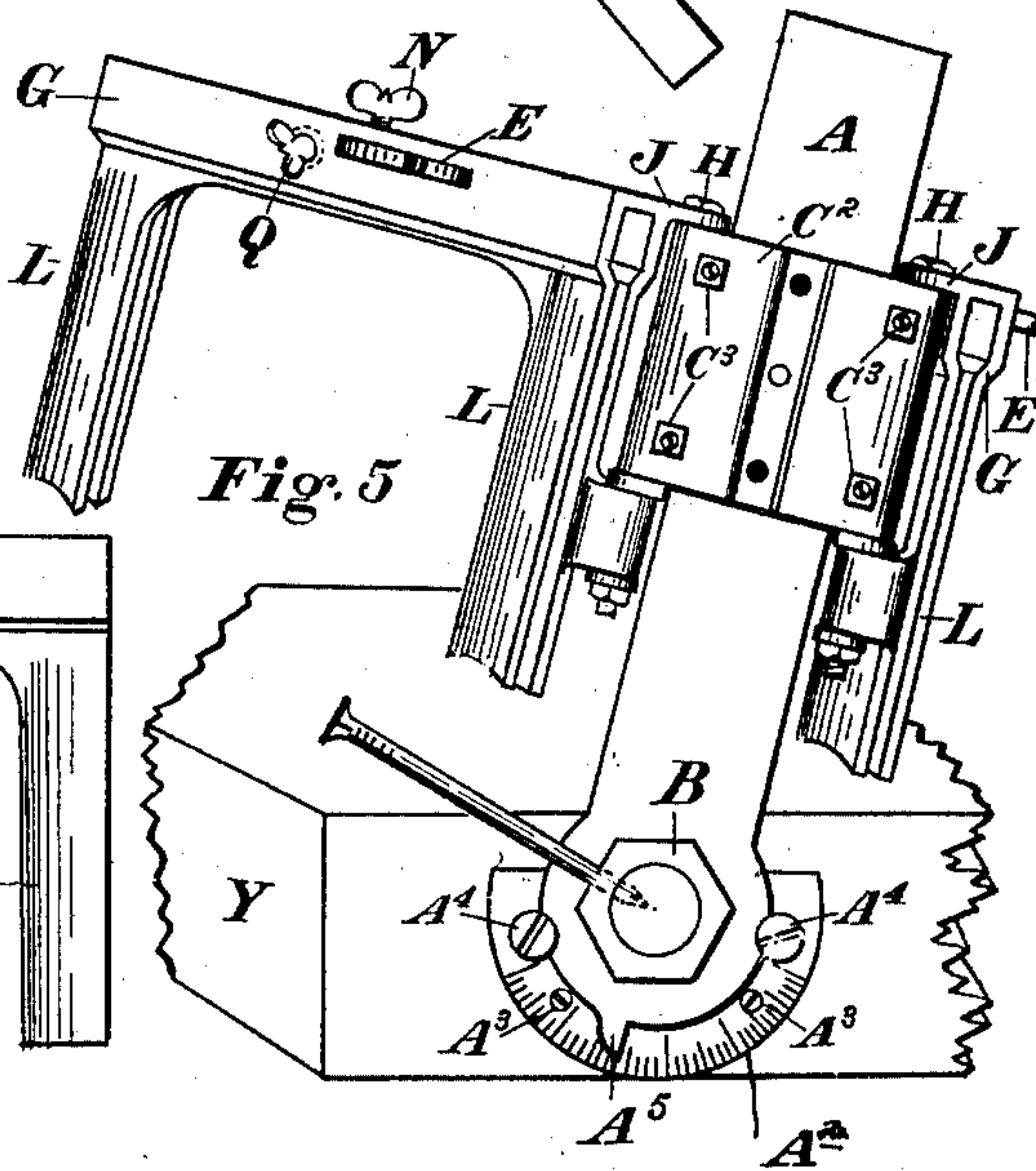


Fig. 6

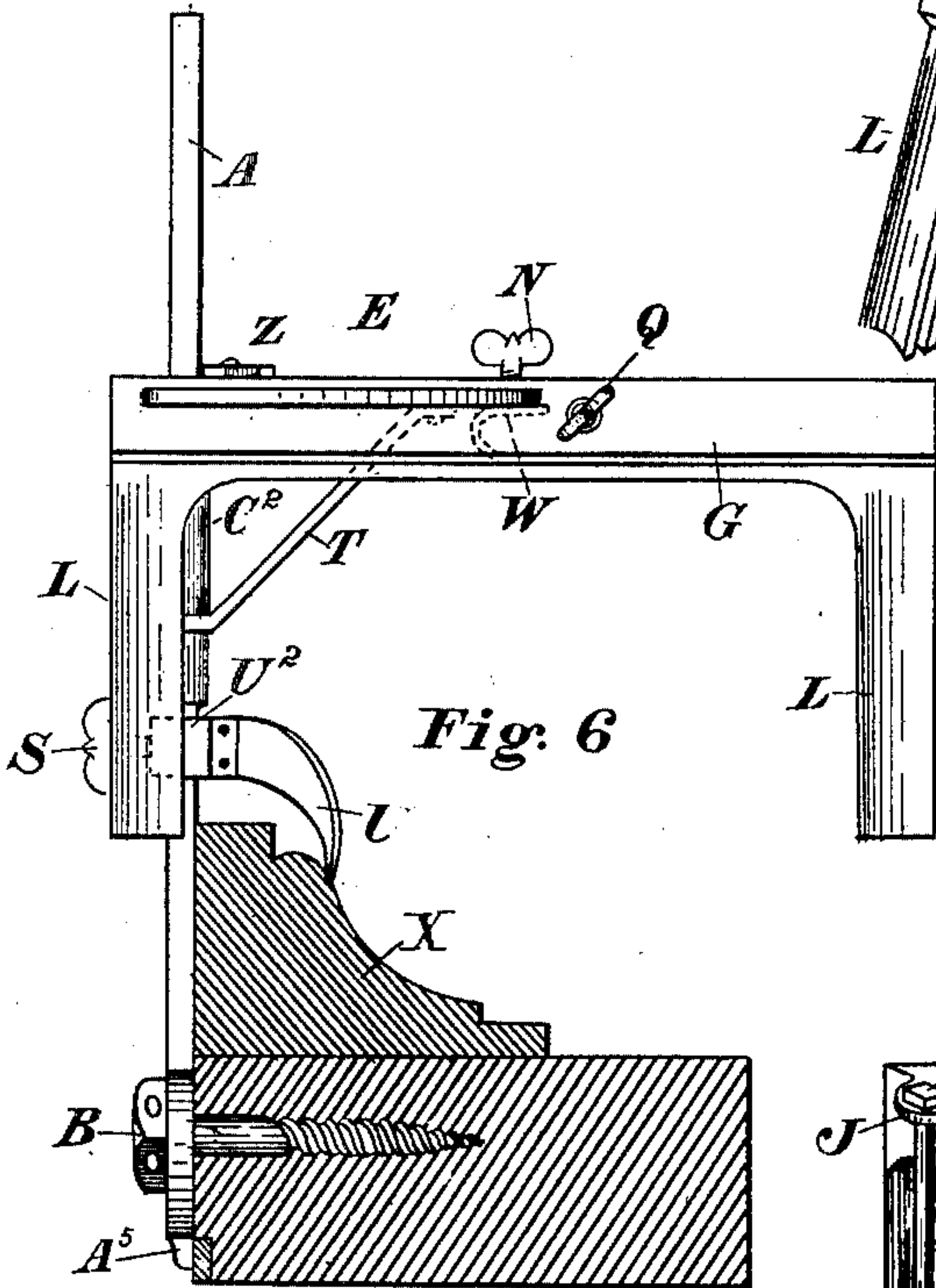


Fig. 7

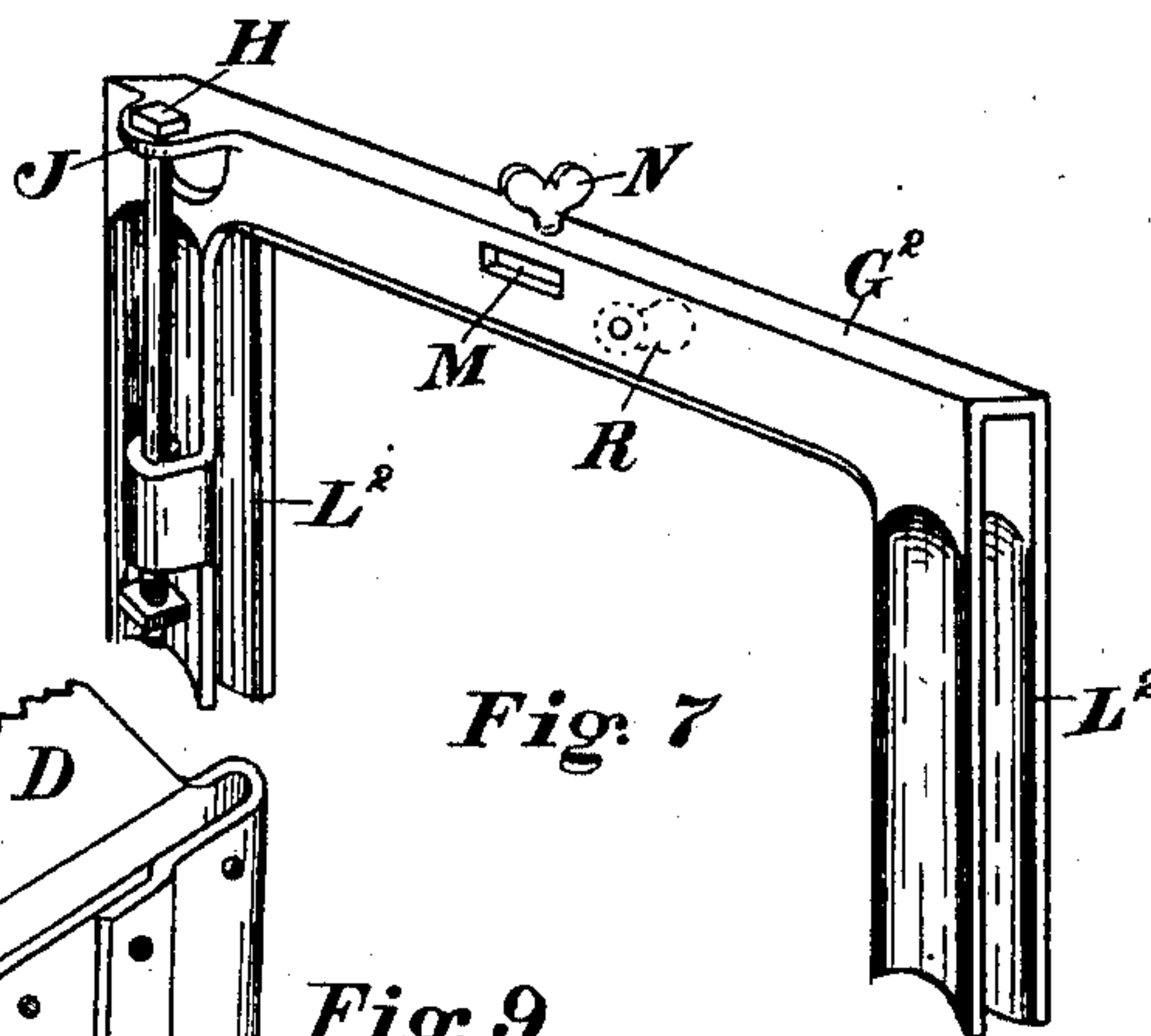


Fig. 9

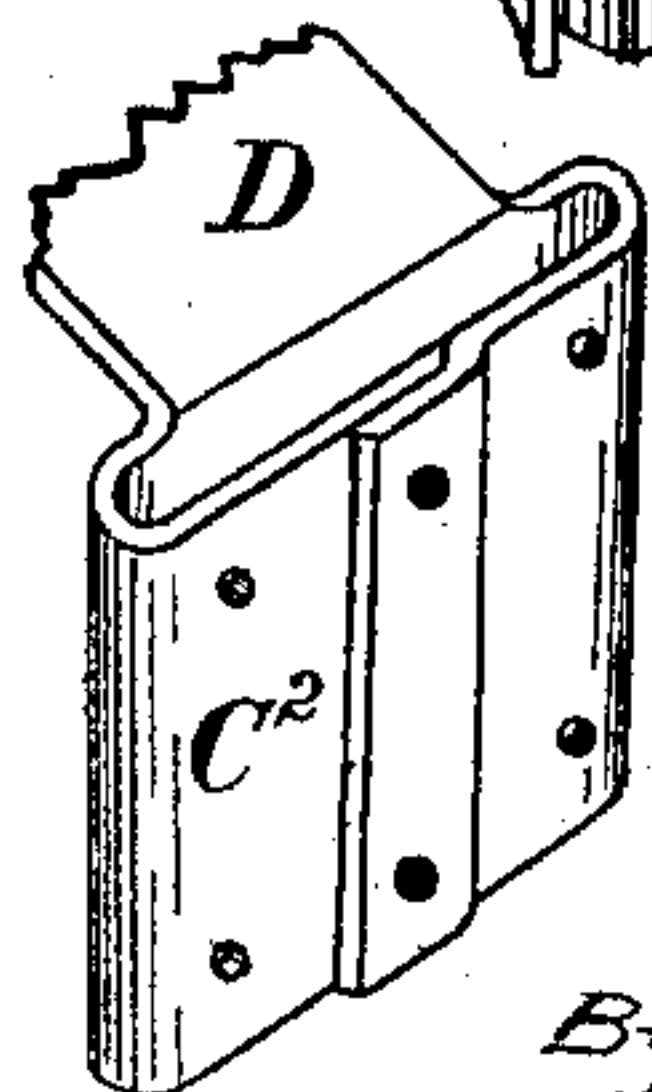
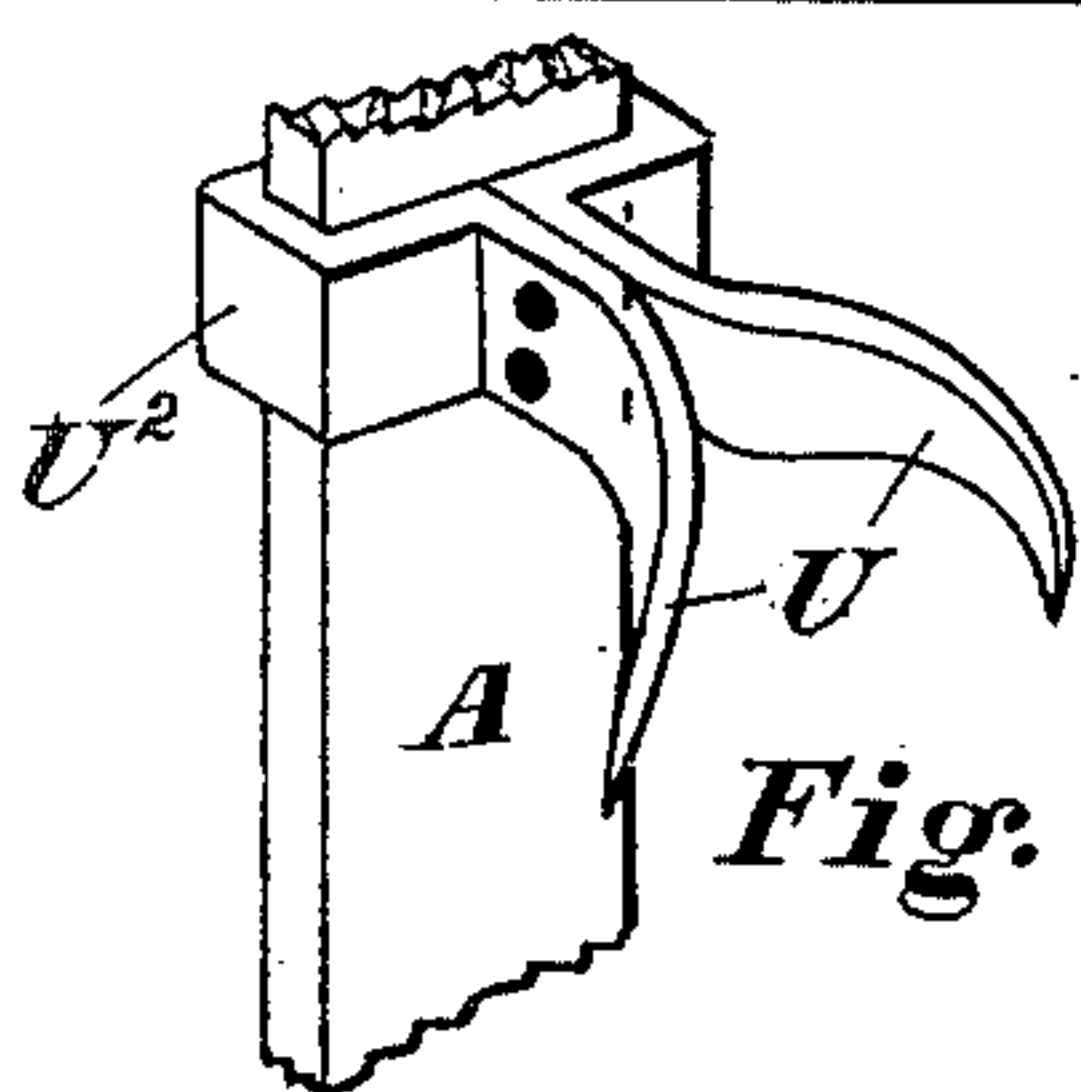


Fig. 8



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UNITED STATES PATENT OFFICE.

JOHN M. J. PHELAN, OF SAN FRANCISCO, CALIFORNIA.

MITERING AND TOOL-GUIDING DEVICE.

SPECIFICATION forming part of Letters Patent No. 679,703, dated July 30, 1901.

Application filed March 13, 1900. Serial No. 8,547. (No model.)

To all whom it may concern:

Be it known that I, JOHN M. J. PHELAN, a citizen of the United States of America, and a resident of the city and county of San Francisco, State of California, have invented certain new and useful Improvements in Mitering and Tool-Guiding Devices, of which the following is a specification.

This invention is especially provided to supply the essential facilities of adjustment and adaptability for determining and cutting with any ordinary saw any and all angles and bevels, however complex, and the miters thereof, (largely without calculation.) It is unlimited in the performance of these functions by the size, form, or disposition of the stock to be operated on or by the dimensions of the bed to which the device may be attached. Furthermore, it is conveniently portable, all of which will be sufficiently explained herein.

In the accompanying drawings, which are hereby specifically referred to and made a part of this specification, Figure 1 is a front perspective of my improved device, showing the invention complete, except that the upper part of the standard A thereof is broken away. Fig. 2 is a rear perspective of my device in the same condition as shown in Fig. 1. In Fig. 2 are also shown two stock posts or guides, represented by dotted lines. These are not essential to my invention, and hence are thus represented. Fig. 3 is a detailed view in perspective of a form of collar that is used in the construction of my invention shown in Figs. 1 and 2. It slides up and down on the standard. Fig. 4 is a plan of my invention. Fig. 5 is a perspective rear view showing the standard inclined to one side instead of standing perpendicular to the bed to which it is attached and upon which the work is placed. Fig. 6 is a side elevation of my mitering device, showing a piece of stock (molding in this case) in position on the bed. The bed and the stock are here shown in section. Fig. 7 is a perspective of a modified form of one of the saw-guiding arms of my mechanism. Here is shown in detail the hinge device by which these arms are fastened to the collar. Fig. 8 is a detail of a stock-holding hook that may be used in connection with the device. This view shows a

part of the standard upon which the said hook works. Fig. 9 is a perspective view of a modified form of the collar. This form of collar is also shown in Figs. 4 and 5.

Throughout the specification and drawings similar letters of reference refer to similar parts.

Wherever I use the word "stock" in this specification, I refer to the molding or lumber which it is desired to miter, as the molding X in Fig. 6.

The word "bed" as used in this specification refers to the scantling or plank or other base to which my mitering and tool-guiding device is attached—for example, the part Y, shown in Figs. 1, 2, 4, 5, and 6.

The standard A is fastened to the bed Y by a lag-screw B, as best shown in Fig. 6, which passes through one end of said standard, allowing the other end to stand upright. This standard may be of any desired length. It is preferably made of a flat steel bar, say from one-eighth to one-quarter inch thick by about one and a half inches wide, and is usually about two feet long. These details and dimensions all depend upon the kind of work to be done by the person using my device. If it is to cut only molding, it may be smaller; larger for heavier work.

My main reason for preferring a flat-faced standard to other forms is that I intend that it shall perform the function of a central stock-guide post. As seen in the drawings, I have shown this standard flat-faced on both sides, which is the most convenient form. However, it will be understood that the near side only need be flat. The other side may be flat or otherwise without changing the nature or scope of my invention.

A collar (represented herein in two different forms C and C²) is made so as to fit around and to slide up and down on the standard A, as is best shown in Figs. 1, 2, and 5. The collar C (shown in detail in Fig. 3) is formed at one end of a piece of thin steel plate the central portion of which constitutes the neck D of my instrument and the other end of which is an arc E. It may be made by bending one end of this plate at right angles, punching a hole in the end so bent over, again bending the plate a couple of inches farther up, so as to have it extend parallel with the

end first bent, and punching another hole in the part last bent, coinciding with the first hole, so that when the collar thus formed is slid down over the standard the neck D and arc E will extend forward at right angles from the same. The arc E extends somewhat over ninety degrees on each side of the neck D in order to admit of a full quadrantal swing of the guide-arm G, hereinafter described. The collar C, the neck D, and the arc E may be each made separate and fastened together; but I find it expedient to stamp them out of the same plate of metal in one piece and then bend them into the desired shapes. The degrees and their groupings are marked on the arc E, as illustrated in Fig. 4.

Lugs F are formed upon each side of the collar C, to which are hinged the saw-guiding arms G by means of hinge-pins H, which pass through said lugs F and through corresponding lugs J upon each of said saw-guiding arms. These arms are attached, respectively, to the right and left side of the collar C and extend forward in the same plane as the neck D and the arc E. Each of the said arms G is represented as having four saw-guiding fingers L—two at the front end of the arm and two at the rear end near the standard A. These fingers L are so arranged that a saw can pass between the two front fingers and also between the two back ones, and thus be snugly held in position in any desired plane parallel with the edge of the standard A. Holes M are punched through the arms G, so as to allow the horns of the arc E to pass through them, as shown in Figs. 1, 2, and 4. Set-screws N are placed in the top of the two said arms above the arc E, so that they may be set at the desired angle and held there by the said set-screws. These saw-guiding arms G and their fingers L are preferably stamped out of one piece of metal and bent over, so as to press upon each side of the saw and hold it snugly in its place. Bolts Q are passed through each of the arms from side to side for the purpose of adjusting the saw-guiding fingers to different saw thicknesses and also to strengthen the arm and to prevent the fingers on the opposite sides of the saw from being strained apart. These bolts Q are provided with heads at one end and thumb-nuts at the other end, of such shape that they can be tightened by the fingers at pleasure. A roller R (represented by dotted lines in Figs. 1, 4, and 7) is placed within the arm G upon each of these bolts Q. The back of the saw bears upon these rollers R and lessens friction and also prevents the saw from wearing upon the arc E or any other part of the mechanism.

To prevent the collar C from becoming too loose upon the standard A, I provide a set-screw S, which passes through said collar and bears against said standard, as shown in Fig. 2.

To stiffen the neck D and the arc E at-

tached to it and also the saw-guiding arms G, two bracing-rods T are provided, extending one from each side of the lower end of the collar C to the other end of the neck D near the arc E.

To hold the stock to be mitered in position, as shown in Fig. 6, I have a stock-holding hook U, that is connected with the standard A by a separate collar U². This hook U is preferably composed of two prongs that extend forward from the collar U² on the standard A, their points being turned downward. When the stock X is in place, as shown in Fig. 6, this hook U is slid down upon it and held there by the set-screw U³, which passes through the back of said collar U and bears upon the standard A. This stock-holding hook is shown in detail in Fig. 8.

It will be seen that my instrument is held erect on the bed Y by a single lag-screw B. By loosening this lag-screw the whole saw-guiding device may be inclined to obtain any desired angle with relation to the bed Y, and by tightening the screw again it can be held at that angle, as is shown in Fig. 5. The artisan can thus cut his stock at any hopper-cut (or complex) bevel, such as is required for the rafters and cornice of hip-roofs and pediments, for crown and bed mold, &c., and while so doing he can keep the standard in vertical position by simply raising and blocking up or otherwise propping that end of the bed toward which the standard leans.

To indicate the angle at which the standard A is inclined, as just described, I have provided a semicircular plate A², with the degrees and their groupings marked upon it. This plate A² is secured to the bed Y by screws A³, and its graduations are concentric with the lag-screw B of said standard. It is countersunk flush with the side of the bed Y in order to enable the standard A to perform its additional function of central stock-guide post. It is further held in position by the auxiliary screws A⁴, that pass down by the side of the circular head on the lower end of standard A, through the said plate A², and into the bed Y. These screws A⁴ are so close to the circular head of the standard A that they bear against it and their heads press down upon it, as shown in Figs. 2 and 5, thus serving the additional purpose of steadying said standard. The angle to which the standard A is inclined is shown by a finger A⁵, that points to the scale on the semicircular plate A². This finger A⁵ is formed on the lower end of the standard A.

The lag-screw B may be tightened or loosened by using a wrench, by inserting a nail into holes in its sides, as shown in Figs 2 and 4, or by any other convenient means.

The stock when in place rests upon the bed Y and bears against the standard A. Extra posts V are secured to the bed Y on each side of the said standard, as shown by dotted lines in Fig. 2, to assist in keeping the stock properly alined.

The modified form of collar C² shown in

detail in Fig. 9 is made by wrapping a strap of steel around the standard A and riveting the ends of the strap together. This form of collar C² may be kept snug upon the standard A by a set-screw similar to that used in connection with the collar C, or it may be provided with small bolts C³, that pass through said collar C² on each side of the standard A, as shown in Fig. 5, in which latter case the riveting is better omitted. The heads of these bolts C³ are at the back of the collar, so that they can be easily got at. By tightening them the collar C² is compressed upon the standard. Thus means are provided to compensate for wear by friction and springing between the collar and standard.

G² is a modified form of saw-guiding arm. (Shown in Fig. 7.) This arm is similar to the arms G, except that its fingers L² are not set so close together as the fingers L, heretofore described. They are, however, curved inward like the fingers L in such a way that their middle portions almost touch throughout their length while their edges are spread out. This is done to lessen friction with the saw.

Another modification of a detail of my invention is shown in Fig. 6. There is provided a spring W within the saw-guiding arm G and beneath the arc E. This spring is to bear against the lower surface of said arc and hold the saw-guiding arm in the position desired without the use of the set-screw N. When it becomes necessary to move the saw-guiding arm to another angle, this spring W can be released by a suitably constructed lever. (Not shown.)

As a convenience to keep the saw-guiding arms G and their connected parts up out of the way while placing the stock in position, I have provided a small stop or button Z on the upper side of the neck D, close to the standard A, as shown in Figs. 1, 4, and 6. This stop operates as follows: I raise the collar C, so that the upper surface of the neck D is just above the top of the standard A, and I turn the button in a position parallel with neck D. Then a portion of said stop or button Z extends across and rests upon the top of the standard and supports the parts attached to it until the stop is turned back to its original position, as shown in Fig. 1, when the arms slide down to a position ready for use.

The double arm and scale of the instrument are especially designed for obtaining the opposite miter-cuts of odd angles, such as inside and outside corners, which is done by setting a bevel-square to the supplement of such inside or outside corner and then setting the arms to this supplement so that they shall read alike, each on its respective scale.

It will now be observed that my invention is designed to supply a long-felt want in one of the wood artisan's most indispensable tools, affording the heretofore-unattained advantages of universal adjustability and adaptability, together with convenient portability.

My improved mitering and tool-guiding device can be carried in the pocket, (very long standards alone excepted,) and it is therefore portable, which is essential to the itinerant mechanic. It is conveniently and illimitably adjustable without calculation with the aid of an accompanying manual to any and all angles, bevels, and miters, simple and complex, including pitches of common, hip, octagon, and other polygon roofs, polygon angles and miters, hopper-cut bevels, &c. It is unlimited by any width, height, or form of stock—that is to say, casings and wide finish, rafters, joists, and other wide plank, as well as timbers of any form or thickness. Any such stock can be conveniently squared, mitered, or beveled, whether it is placed flatwise, edgewise, or otherwise. It is securable to any bed of any form, size, or length, (by a single screw or by any desired number of screws,) and thus can be conveniently used to cut rafters, joists, or other stock regardless of length, and it will be seen that by using one of these tool-guiding devices at each end of the rafter or long stock it would obviate the necessity of handling an inconvenient and cumbersome pattern to mark each piece to be cut, as is usually done. It can be used with any saw or a toothless blade and is adjustable to the thickness thereof. Its standard and saw-guiding arms clamp at any desired degree or angle at which placed. It is adjustable to compensate for wear by friction, thus insuring stability and perfect action at all times, as well as regulating the descent of the saw-guiding arms down the standard, &c.

Although I have shown my mitering device as applied to the remote vertical face of the bed and with saw-guides and arcs extending forwardly over the work, this being the most practical disposition, yet it is quite evident to any skilled mechanic that fairly good results could be attained by having the saw-guides and arcs extending rearwardly from the bed. I therefore do not confine myself to the exact construction shown, but reserve all rights to each and every possible modification, change, or variation that comes within the scope of my invention.

Having now described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. A mitering and tool-guiding device comprising a bed, a standard adjustable laterally at various angles with relation to the bed on which the work is laid, a slide on said standard so as to be laterally immovable but free to slide up and down thereon, and one or more saw-guides hinged to said slide, substantially as described.

2. A mitering and tool-guiding device, comprising a bed, a standard adjustable laterally at various angles with relation to the bed on which the work is laid, a slide on said standard so as to be laterally immovable but free to slide up and down thereon, a neck extending laterally from said slide and carrying a

graduated arc are at its outer end, and one or more saw-guides hinged to said slide and supported at its or their outer end or ends by said arc, substantially as described.

5 3. A mitering and tool-guiding device comprising a standard adjustable laterally at various angles with relation to the bed on which the work is laid, a collar fitted on said standard so as to be laterally immovable but free
10 to slide up and down thereon, and one or more saw-guides hinged to said collar, substantially as set forth.

4. A mitering and tool-guiding device comprising a standard adjustable laterally, substantially as described, oppositely-disposed
15 saw-guides on each side thereof, means for flexibly connecting said saw-guides with said standard and so they can slide up and down along the same, and a graduated arc for the
20 saw-guides, said arc having a scale for each guide, substantially as set forth.

5. A mitering and tool-guiding device comprising a standard pivoted or hinged to the bed that the work rests on, a collar fitted on
25 said standard, a neck projecting from said collar, a graduated arc carried by said neck, saw-guides hinged to opposite sides of the collar and arranged to swing laterally on said arc, and means to clamp the saw-guides, or
30 either of them, in a given position, as indicated by the graduations of the arc, substantially as set forth.

6. A mitering and tool-guiding device comprising a standard pivoted or hinged to the
35 bed on which the stock is placed, said standard acting as a central stock-guide post, a plate countersunk in the bed under the pivoted or hinged end of the standard and having graduations disposed concentrically with
40 relation to the standard-pivot, one or more saw-guides flexibly connected with the standard and extending forwardly therefrom over the stock, a pointer indicating on the graduated plate the lateral position of the standard
45 with relation to the bed and stock, and means for securing the standard in its adjusted position, substantially as set forth.

7. A mitering and tool-guiding device comprising a standard adjustably secured to the
50 bed by a centrally-disposed screw, one or more saw-guides connected with the standard and extending therefrom over the work on the bed, and auxiliary screws driven into the bed and arranged so their heads can impinge on
55 the edges of that part of the standard through which the central screw passes, substantially as set forth.

8. A mitering and tool-guiding device comprising a standard adjustably securable to the
60 bed on which the stock is placed, the same acting as a central stock-guide post, one or more saw-guides flexibly connected with said standard and extending over the stock, and a stock-holder fitted so as to slide on the standard and clamp the stock in position on the
65 bed, substantially as set forth.

9. A mitering and tool-guiding device com-

prising a standard adjustable laterally, substantially as described, with relation to the bed on which the stock is placed, a collar
70 slidable on said standard, one or more saw-guides hinged to said collar, a neck projecting from the collar, a graduated arc supported by said neck and passing transversely through the saw-guide or saw-guides, and a
75 stop secured to said neck and adapted to be turned across the top of the standard, substantially as set forth.

10. In a device of the kind described, a saw-guide consisting of a single piece bent to form
80 the wide trough-shaped arm G and depending fingers L, and means, as a bolt, connecting the opposite sides of the arm, for strengthening the arm and adjusting the fingers to different saw thicknesses, substantially as
85 described.

11. A mitering and tool-guiding device comprising a standard, one or more saw-guides connected therewith having fingers between
90 which a saw can be placed, a finger-adjusting bolt located above the saw, a graduated arc crossing the saw-guide or saw-guides above said bolt, and a roller on the finger-adjusting bolt operating to keep the saw back off this bolt and off the graduated arc, sub-
95 stantially as described.

12. In a device of the kind described a saw-guide consisting of a single piece bent to form a wide trough-shaped arm and depending
100 fingers, a bolt connecting the opposite sides of the arm for strengthening the arm and adjusting the fingers to different saw thicknesses, and a roller sleeved on said bolt, substantially as and for the purposes specified.
105

13. A mitering and tool-guiding device comprising a standard securable to the bed on which the stock is placed, an arm connected with said standard having pendants to grasp
110 a saw, a graduated arc passing transversely through said arm, means for adjusting the arm-pendants to the thickness of the saw, and a roller mounted within the arm operating to limit the inward movement of its pendants and to prevent the saw from bearing either
115 on the graduated arc or on the arm, substantially as described.

14. A mitering and tool-guiding device comprising a flat-faced standard, a correspondingly-shaped compressible collar slidable
120 thereon, one or more saw-guides carried by said collar and standard, and means for adjustably compressing the collar on the standard and compensating for the wear by friction or springing therebetween, such as bolts
125 passing through the collar by the edges of the standard, on opposite sides thereof, substantially as described.

Signed by me at San Francisco, California, this 5th day of March, 1900.

JOHN M. J. PHELAN. [L. S.]

Witnesses:

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CHAS. T. STANLEY.