

(No Model.)

2 Sheets—Sheet 1.

T. S. SMITH.

MACHINE FOR UNITING KNIT FABRICS.

No. 389,533.

Patented Sept. 11, 1888.

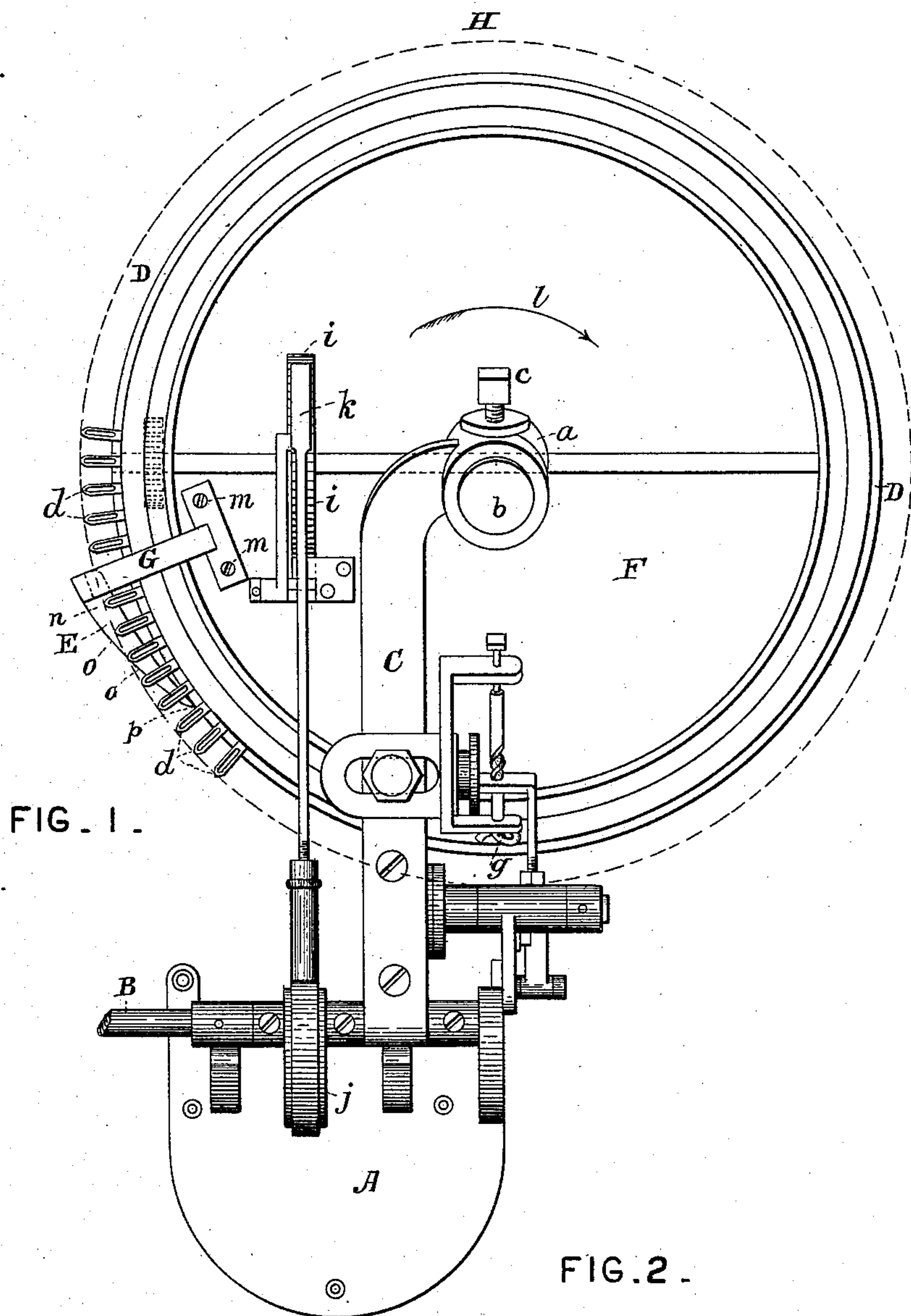
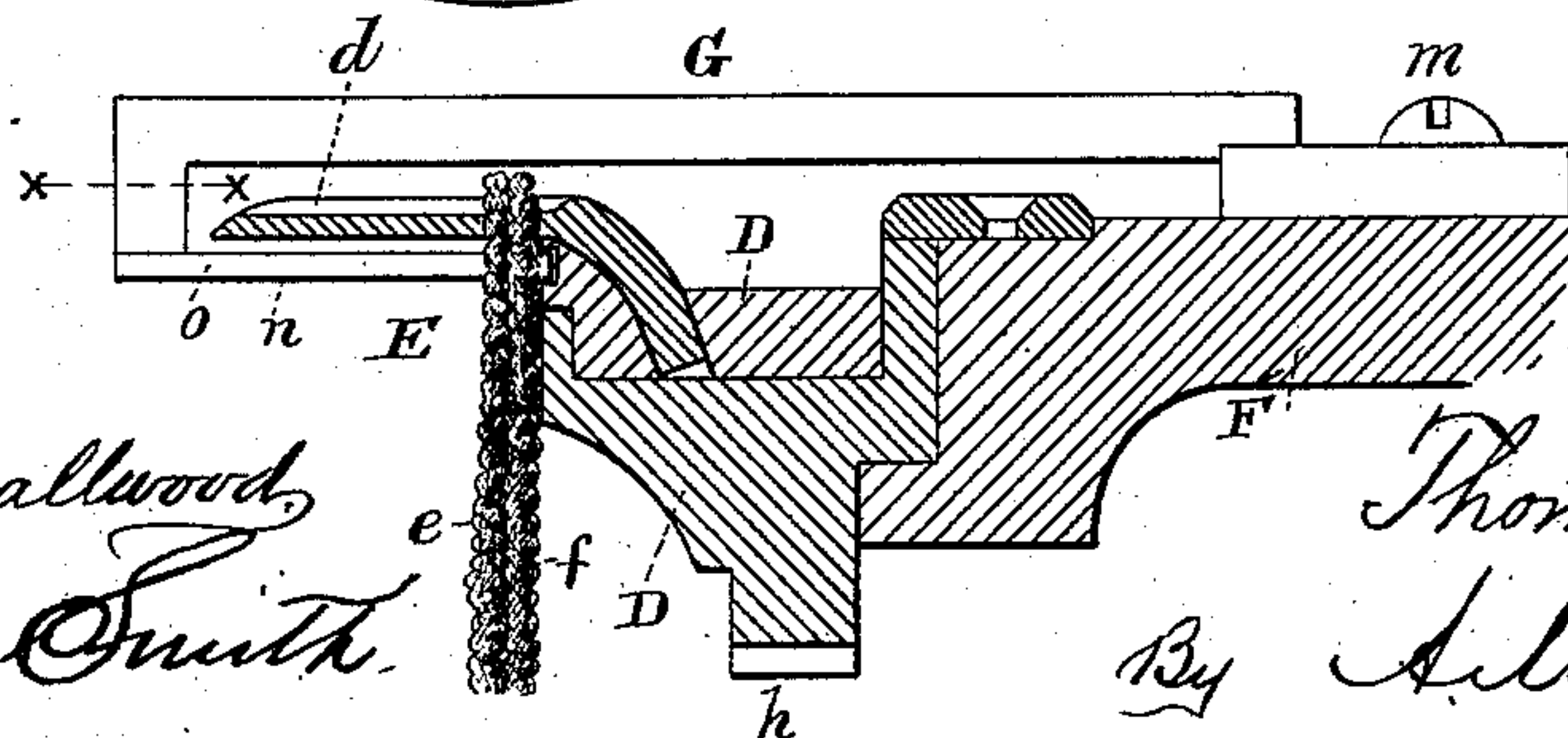


FIG. 1.

FIG. 2.



Attest:
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Inventor:
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By A. M. Smith, atty.

(No Model.)

2 Sheets—Sheet 2.

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FIG. 3.

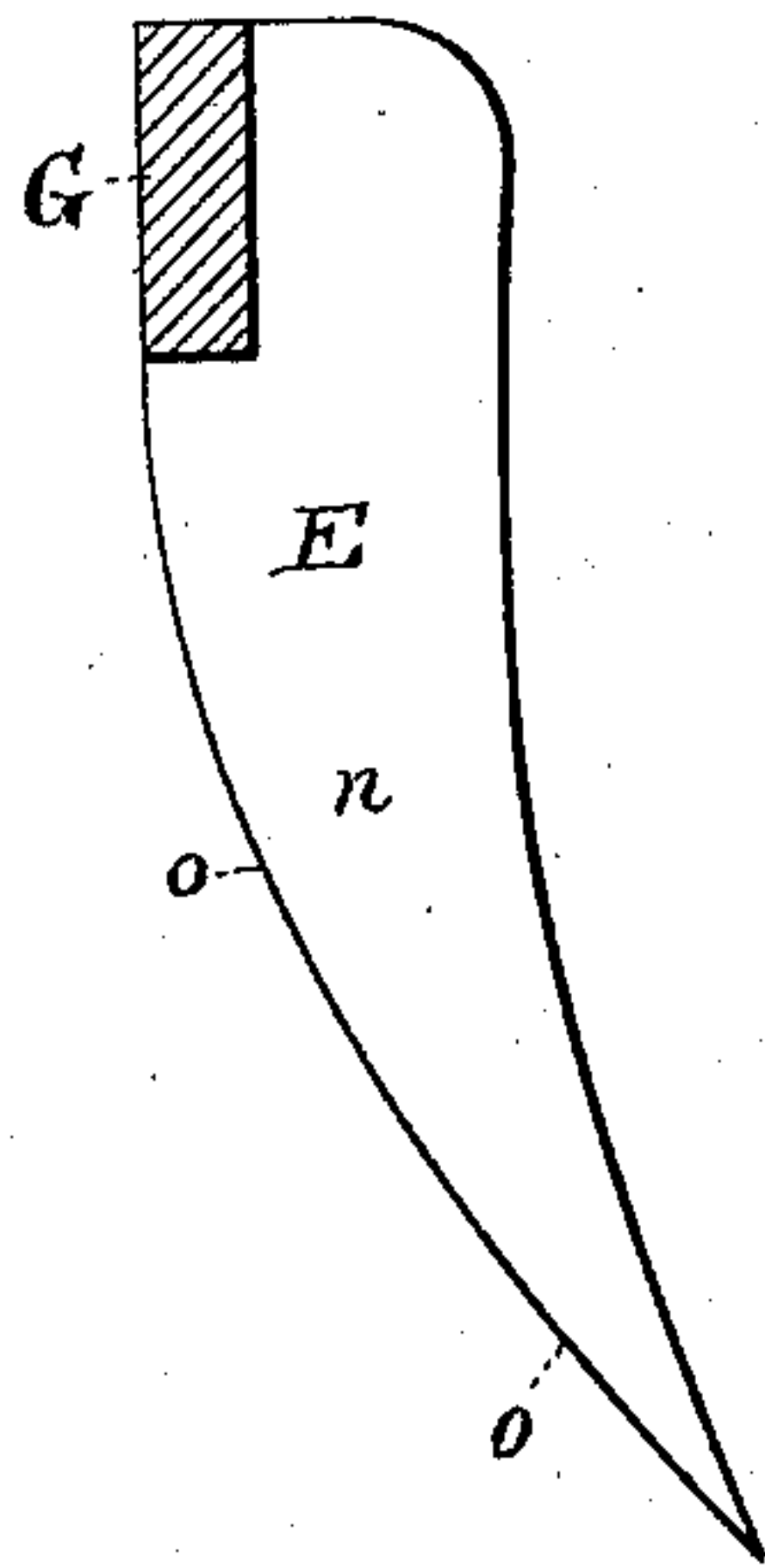


FIG. 6.

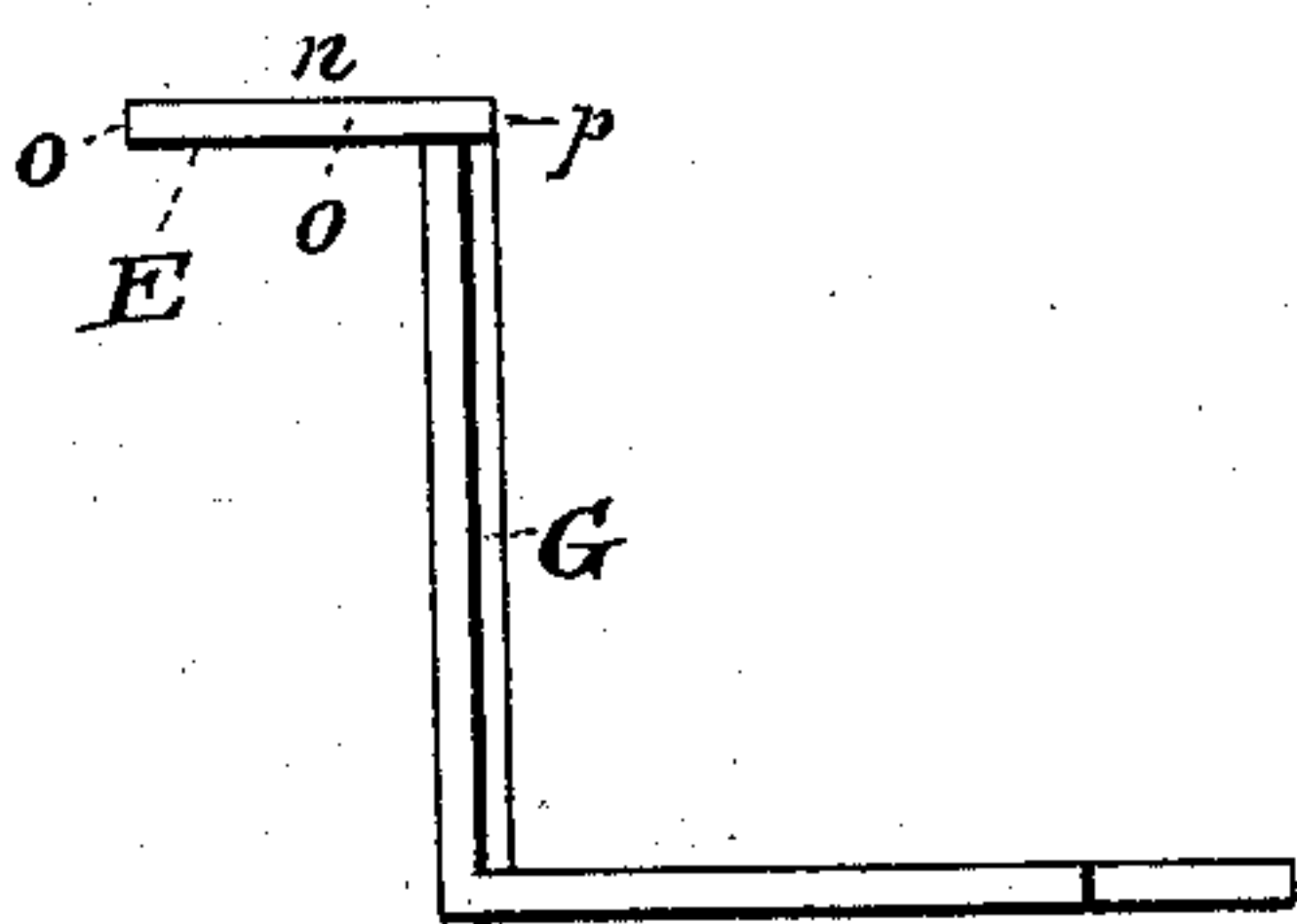
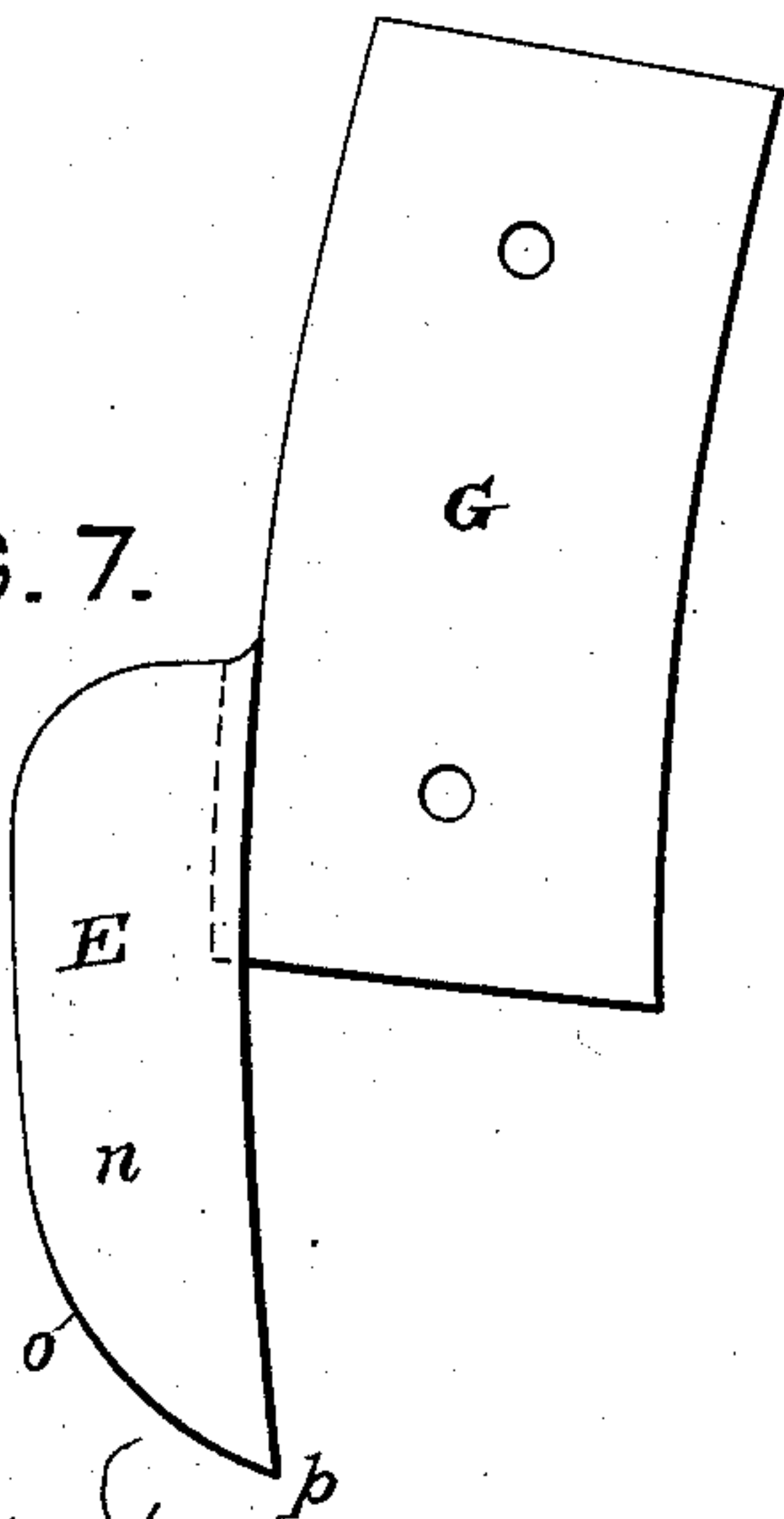


FIG. 7.



attest:
Geo. T. Smallwood.
Per M. Smith.

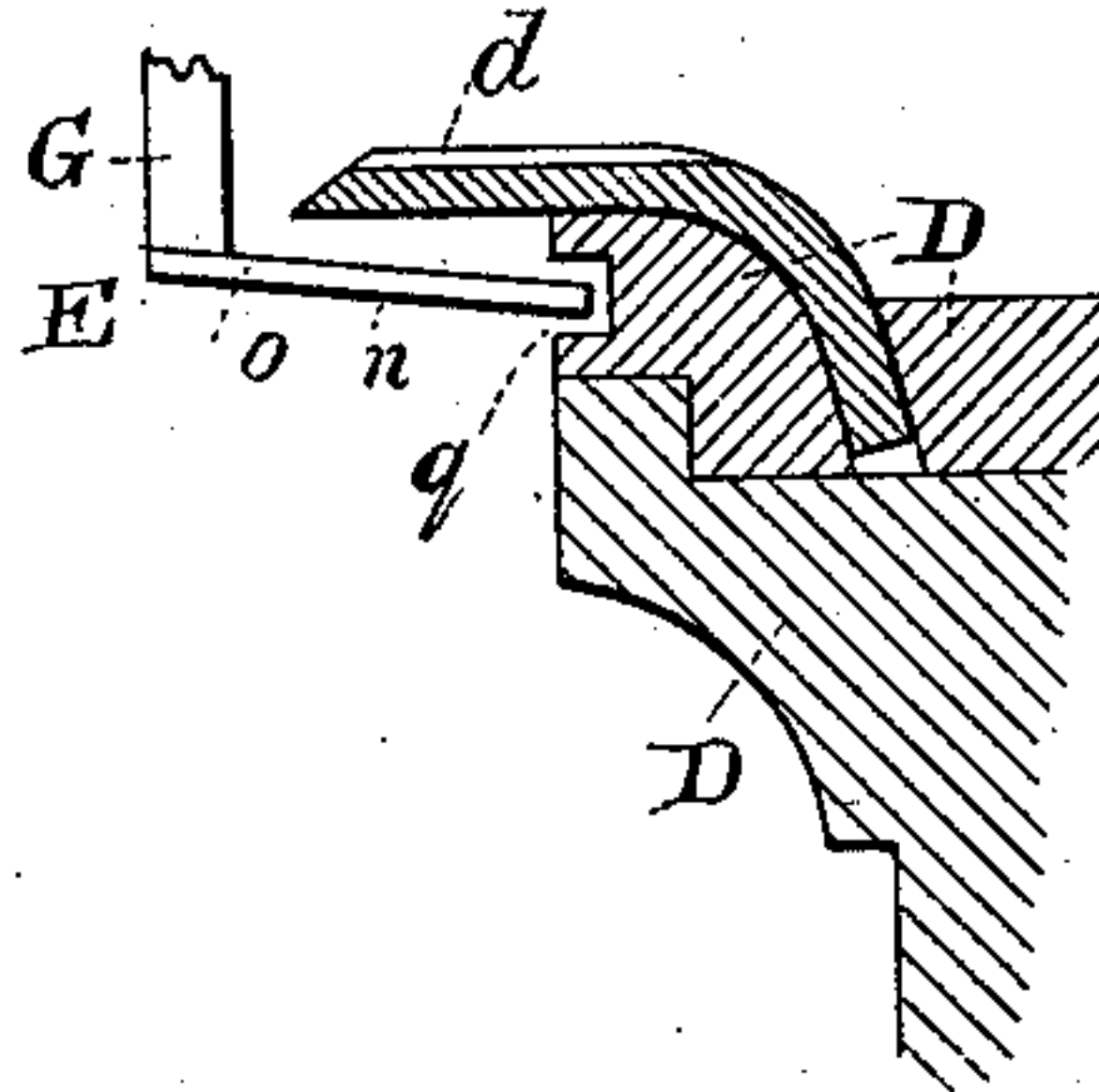


FIG. 4.

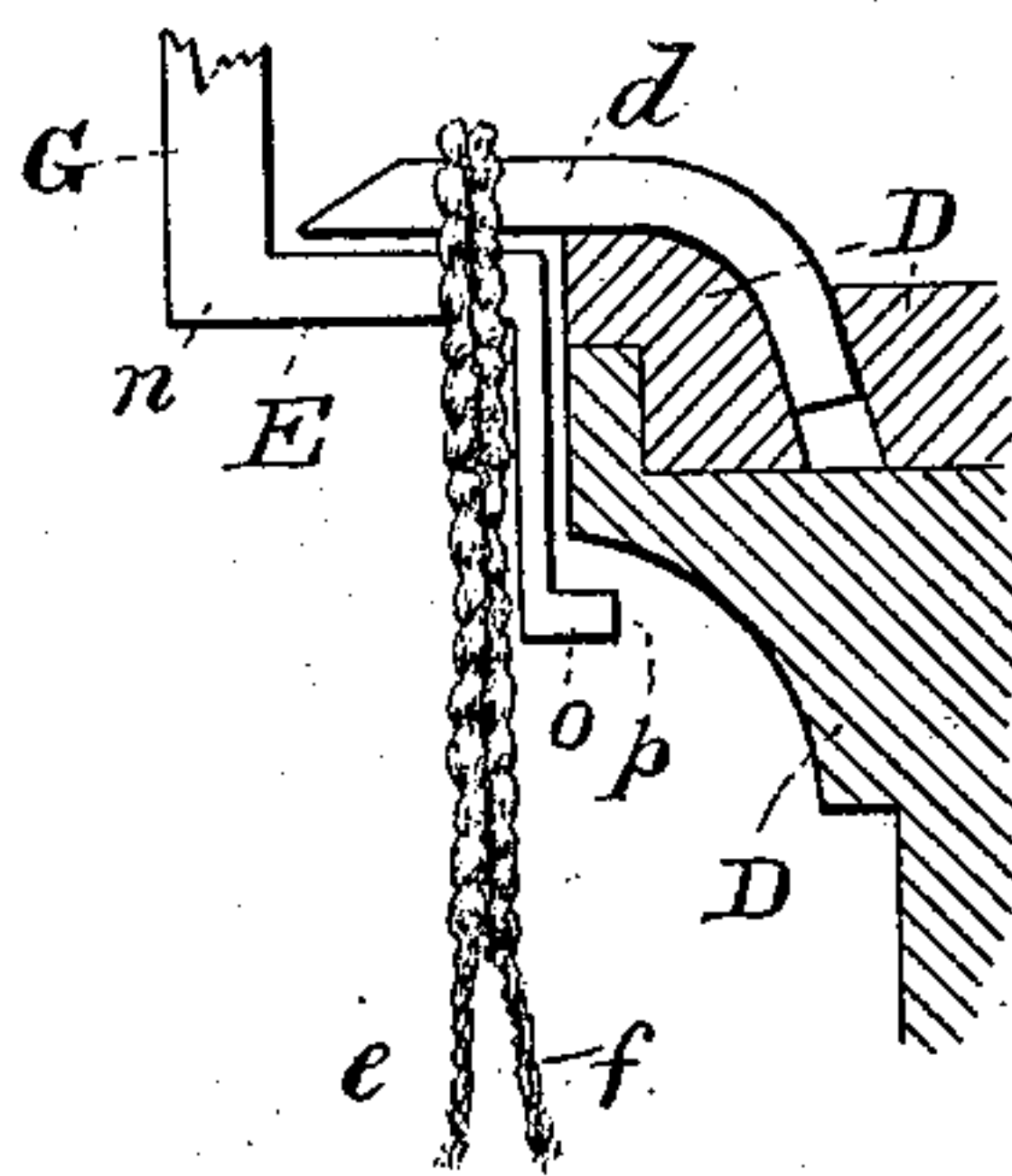


FIG. 5.

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UNITED STATES PATENT OFFICE.

THOMAS S. SMITH, OF WATERFORD, NEW YORK.

MACHINE FOR UNITING KNIT FABRICS.

SPECIFICATION forming part of Letters Patent No. 389,533, dated September 11, 1888.

Application filed October 17, 1887. Serial No. 252,519. (No model.)

To all whom it may concern:

Be it known that I, THOMAS S. SMITH, of Waterford, county of Saratoga and State of New York, have invented a new and useful Improvement in Machines for Uniting Knit Fabrics, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification.

My invention relates to that class of machines for uniting knit fabrics, known as "circular turning-off machines," which have for their object the sewing together of the edges of pieces of knit or looped fabrics.

The object of my invention is to provide a device for automatically pushing or throwing the fabrics off of the "points" after the edges have been stitched together; and my invention consists of the combination, with a turning-off machine having a ring provided with a peripheral groove or recess and radially-disposed points, of a throwing-off device having a suitable working-edge, the point of which lies in the said peripheral groove or recess in such position that the pendent fabric when carried by the revolving ring and points against and along the said working-edge will be forced by the pressure of the edge from the ring outward toward and off of the extremities of the points, and means by which the device may be attached to a stationary part of the turning-off machine.

In the accompanying drawings, Figure 1 is a plan view of a turning-off machine, with my invention attached to the upper stationary plate thereof. Fig. 2 is a vertical diametrical section, on an enlarged scale, of a part of the "ring" and top plate, showing one point in longitudinal section, with two pieces of knit or looped fabrics impaled thereon, and showing in elevation the throwing-off device and hanger, as represented in plan in Figs. 1 and 3. Fig. 3 is a plan view of the throwing-off device, as shown in Figs. 1 and 2, exhibiting the hanger in horizontal section on line $x x$ of Fig. 2. Fig. 4 is a vertical diametrical sectional view of parts of a similar turning-off machine, showing the groove to receive the point of the throwing-off device, and showing also a point in section and a modification of the throwing-off device and part of the hanger. Fig. 5 is a similar vertical sectional view of

the same parts of a turning-off machine without the groove, showing a point in elevation, two pieces of pendent fabric, an equivalent construction of the throwing-off device, and a part of the hanger. Fig. 6 is an end elevation of a modification of the throwing-off device, with a bracket or hanger by means of which the device may be attached to a stationary plate or projection on the under side of a turning-off machine. Fig. 7 is a plan view of the device shown in Fig. 6.

In the several drawings like letters of reference indicate the same or similar parts.

The turning-off machine, of which a plan view is given in Fig. 1, is fully described and illustrated in Letters Patent No. 354,374, dated December 14, 1886, issued to William Beattie.

Details of this machine are here introduced for the purpose of explaining my invention, which may be applied to any machine of that class. Other details are omitted as being too well known to require description here.

In the drawings, A is the stationary base of the machine, carrying the driving-shaft B and projecting arm C. The projecting end of the driving-shaft B carries a driving-pulley. The outer or overhanging end of arm C is provided with a hub or bored to receive the cylinder-axle b , which is secured in its proper position by the set screw c .

The ring D is of suitable form and construction, and carries the radially-arranged points d , in the usual manner. The dotted circle in Fig. 1 is the circle of the outer extremities of the points d , upon which the two pieces of fabric to be sewed together are impaled, as illustrated by the pieces e , e , f , and f in Figs. 2 and 5.

g is the "circular needle," which is employed in this machine in combination with a straight or curved needle (which does not appear in the drawings,) to stitch or sew together the two edges of the two pieces of impaled fabrics. The ring D is provided on its lower side with teeth h , forming an annular rack driven by a pinion on the transverse shaft of the ratchet-wheel i . The pinion and axle are not seen in the plan. The ratchet-wheel I is moved by the eccentric j and pawl k . When the driving-shaft B revolves, the eccentric j will cause the pawl k to engage the teeth of the ratchet-wheel i , and, through the pinion,

rotates the ring D, carrying the point *d* with it in the direction indicated by the arrow *l*. My invention applies equally well to all turning-off machines in which the points project thus radially from a circular ring to receive and hold the fabrics to be united, the revolving ring carrying the points successively to and from the point at which the sewing is done by the needles.

E is the throwing-off device attached in Figs. 1 and 2 to the stationary top plate, F, by screws *m* passing through suitable holes in the hanger G. In using the throwing off machine the operator sits or stands facing the machine, on the side indicated by the letter H, and places the pieces of knitted or looped fabrics on the projecting points, and the revolving ring carries them around beneath the needles, the velocity of the points corresponding to the rapidity with which the stitches are formed in sewing the looped edges together. The fabric moves on with the points after the sewing is accomplished until it is cast off by the throwing-off device. The impaled fabric carried by the points passes outside of the point of the throwing-off device, and, passing along the working-edge of the device, is forced away from the ring and out along the points to and off of their extremities, and, being thus automatically forced off from the points, drops to the floor or into a suitable receptacle.

The throwing-off device E consists of a suitable cam or edge-piece, *n*, upon which a suitable outwardly-inclined working face or edge, *o*, is formed, means being provided for placing and supporting the same in a suitable position below the needles, as I shall now proceed more minutely to describe.

The edge-piece *n* may be of sheet metal, or it may be of any suitable material, to carry or have formed upon it the working-edge *o*. It may sometimes be formed of a piece of wire. The working face or edge is so formed upon the edge-piece that when in its proper position below the points the fabric, when moving along it, as hereinafter specified, will be forced away from the ring D and outward toward and off the extremities of the points.

In Figs. 1, 2, and 3 the edge-piece *n* is formed

of a flat metallic plate having the curved working edge or face *o* on its outer border. It is located nearly or quite horizontally beneath the points in such manner that its point *p* lies within a groove, *q*, in the outer face of the ring D. It is evident that were the working-edge *o* perfectly straight instead of curved, as shown, it would do the work nearly or quite as well. In the form of my invention shown in Figs. 1, 2, 3, and 4 a groove, *q*, is formed in the ring D, quite around the ring and concentric with it. To utilize this recess or groove *q*, the edge-piece *n* is inclined downward, as shown in Fig. 4, and the point *p*, entering the groove *q*, will be protected thereby, and cannot catch the passing fabric.

Fig. 5 illustrates a construction, equivalent to that above described, in which the point of the cam or edge-piece, instead of lying in the groove in the ring D, is bent or formed so as to lie under or project beneath the outer portion of said ring. It will be apparent that this arrangement will accomplish the same result.

Figs. 6 and 7 illustrate a modification in the form of the hanger or support for the edge-piece, whereby the same may be attached to and supported from a point beneath the ring D on the turning-off machine.

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

The combination, with a turning-off machine having a ring, D, provided with a groove or recess, *q*, in its periphery, and radially-disposed points *d*, of a throwing-off device, consisting of the plate G, for securing said device to a stationary support, and the cam or edge-piece E, connected with the same by means of the interposed web or arm, said cam or edge-piece having its point lying within the groove or recess *q* in the ring D.

In testimony whereof I have hereunto set my hand this 14th day of October, A. D. 1887.

THOMAS S. SMITH.

Witnesses:

DAVID R. SMITH,
ELI M. POWELL.