

No. 722,015.

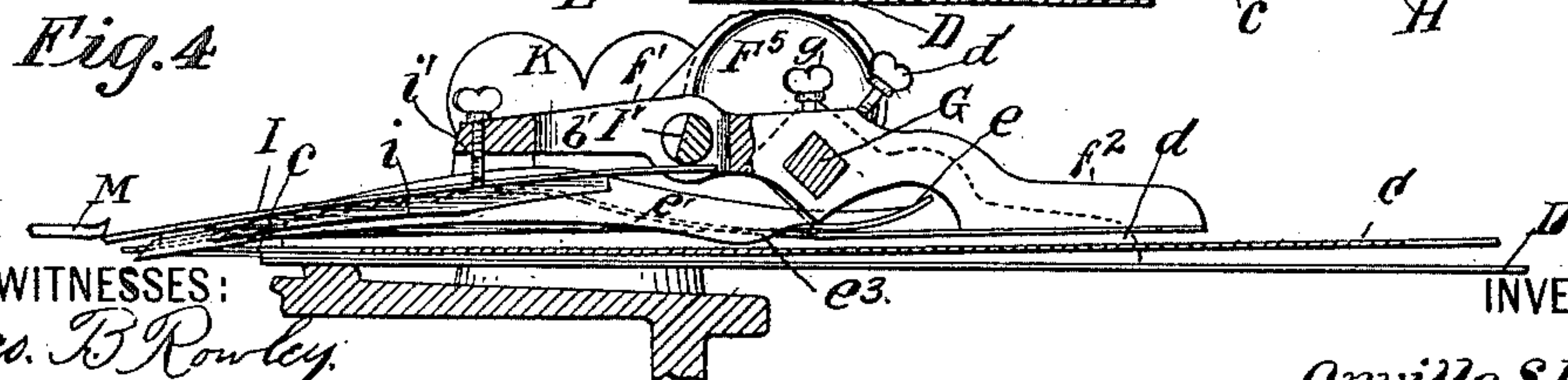
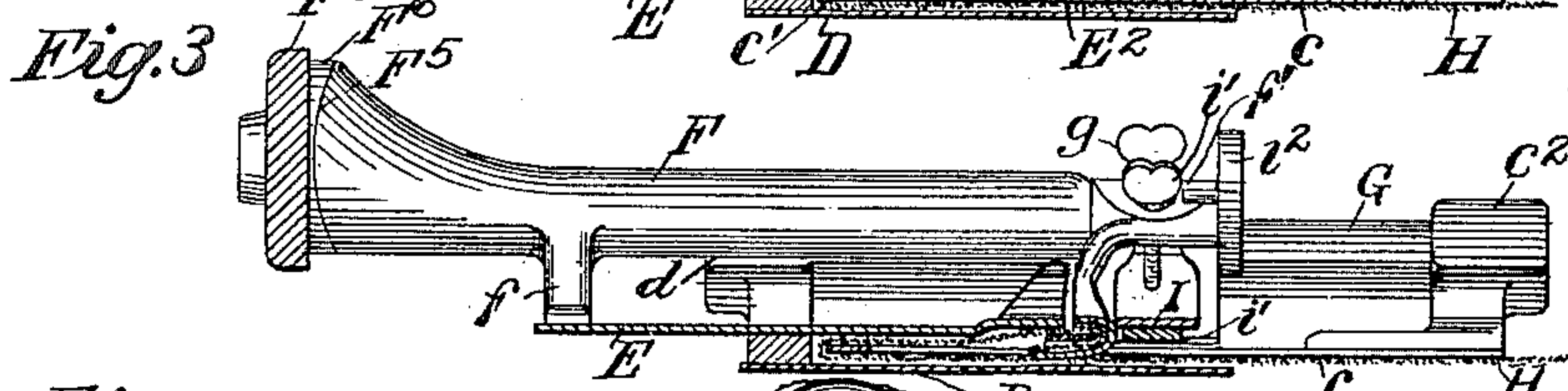
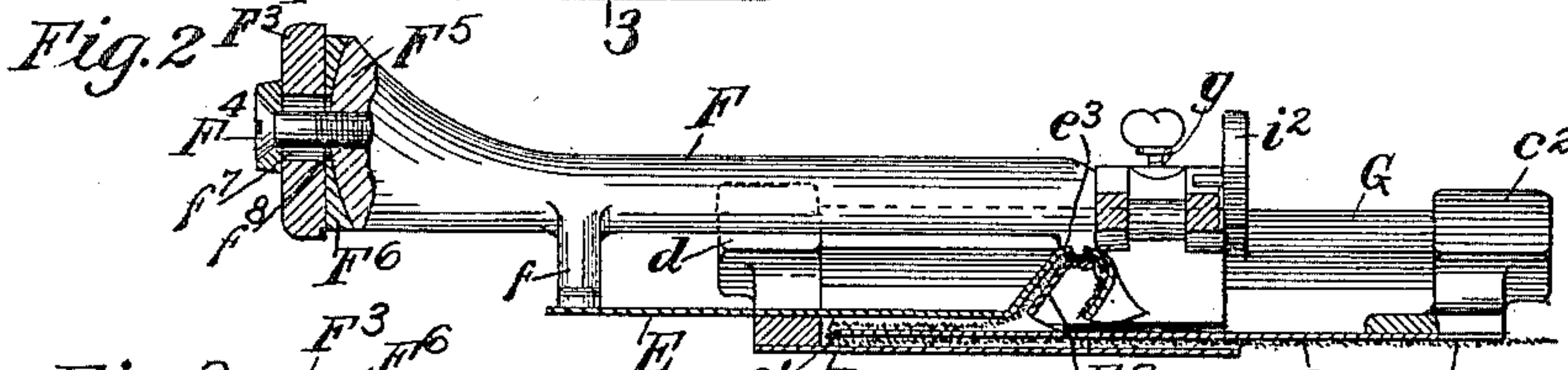
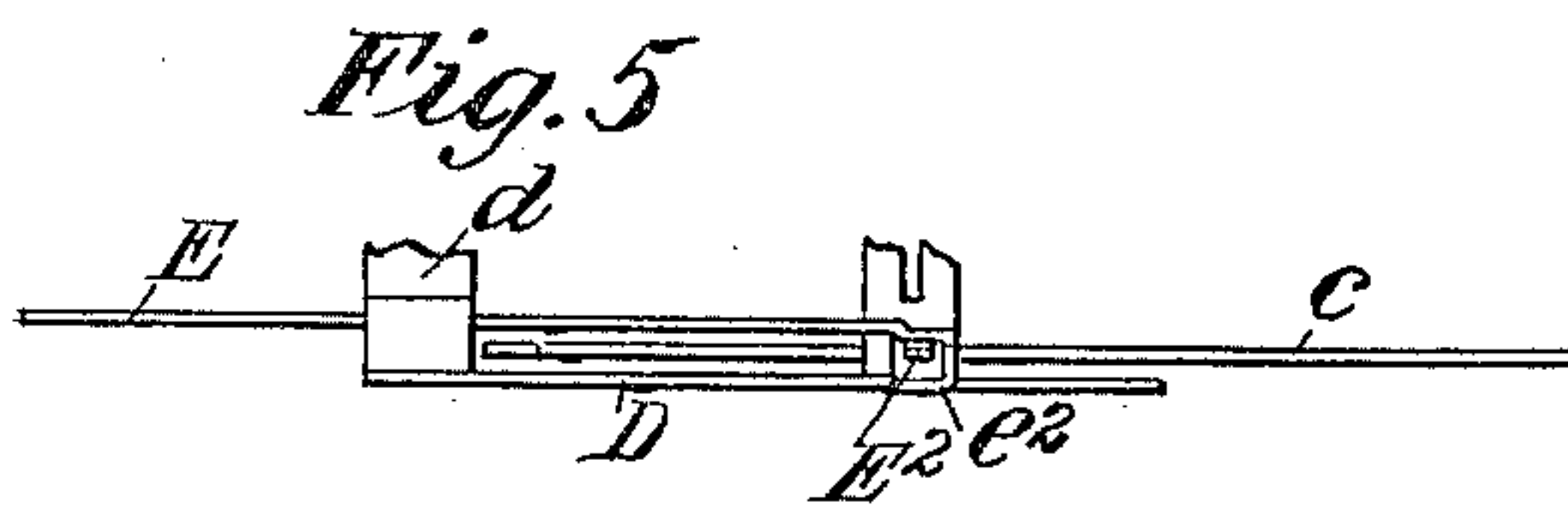
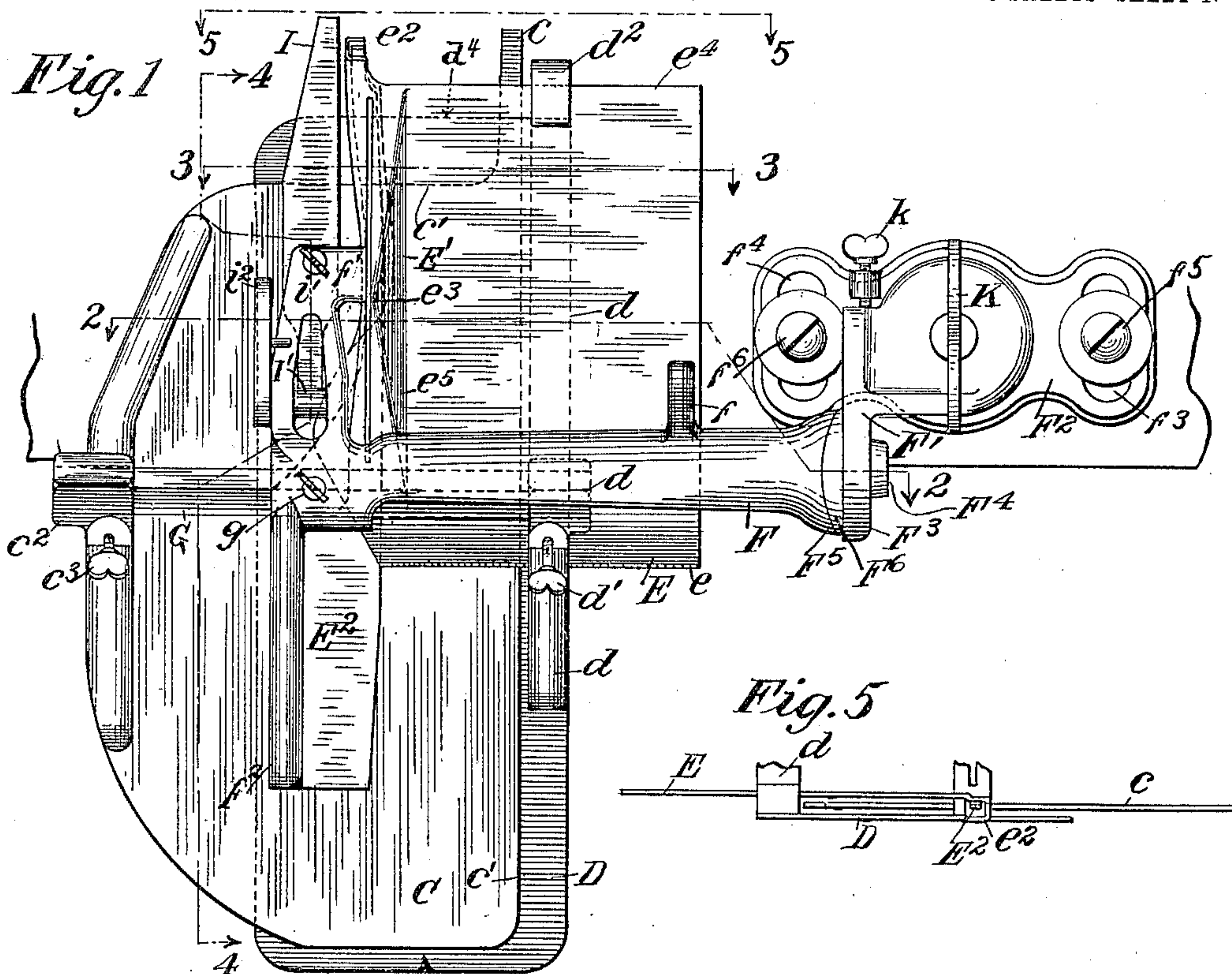
PATENTED MAR. 3, 1903.

O. S. HARMON.  
HEMMER FOR SEWING MACHINES.

APPLICATION FILED MAR. 20, 1901.

NO MODEL.

3 SHEETS—SHEET 1.



WITNESSES:

Geo. B Rowley.

Charles D. Jones.

INVENTOR

*Orville S Harmon.*

BY

Dickerson, Brewster & Rogers

HIS ATTORNEYS.

No. 722,015.

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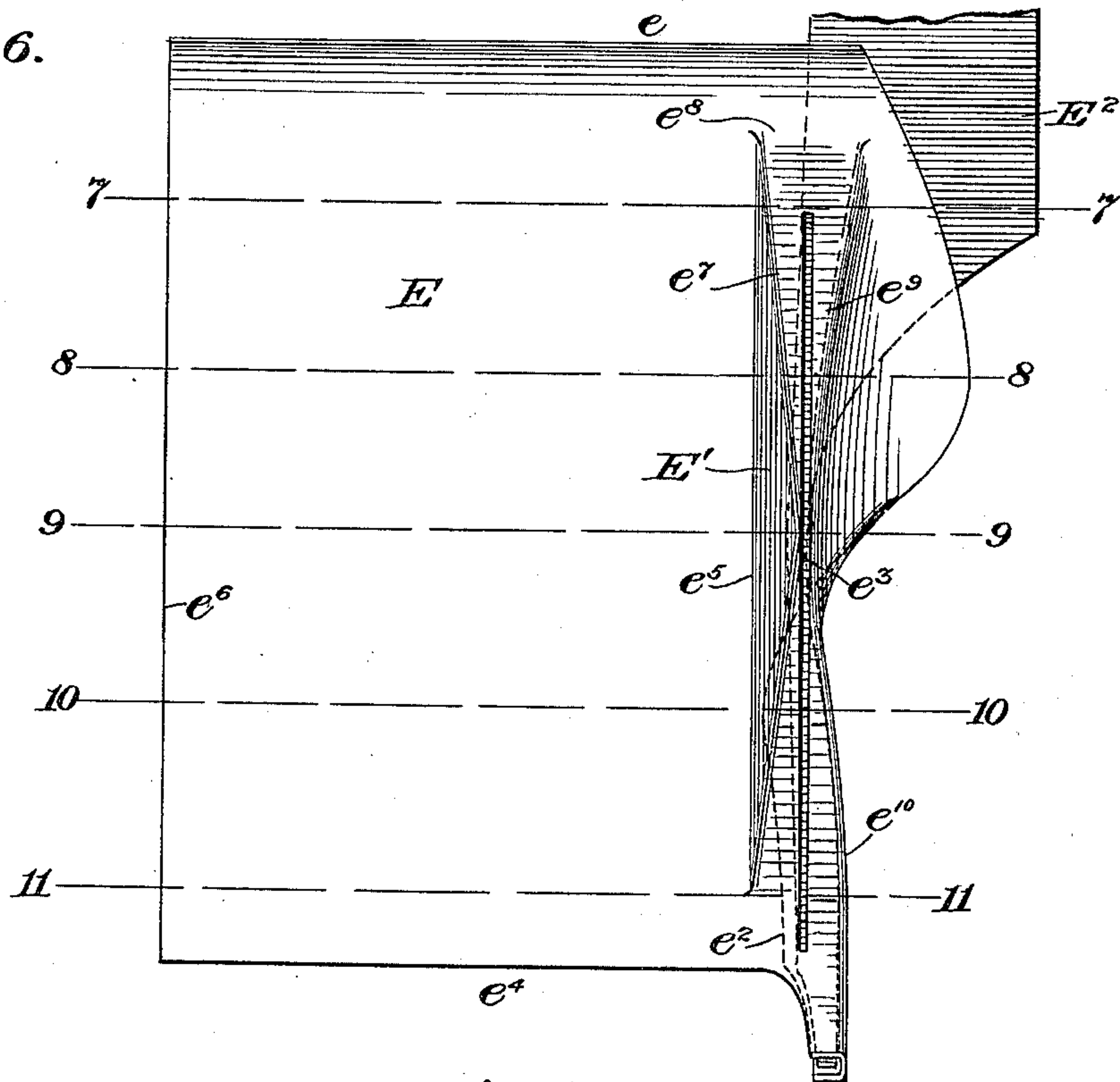
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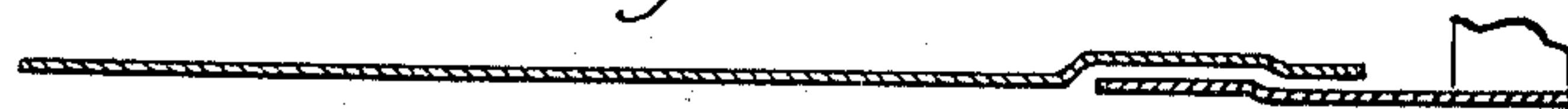
NO MODEL.

3 SHEETS—SHEET 2.

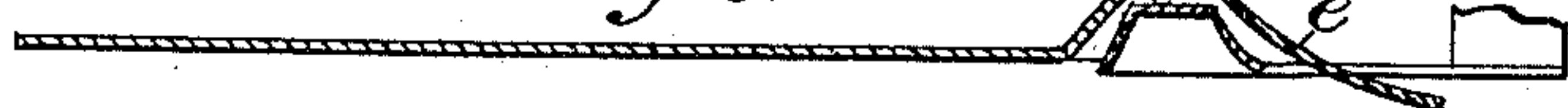
*Fig. 6.*



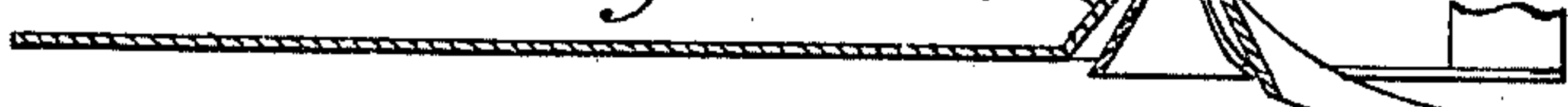
*Fig. 7.*



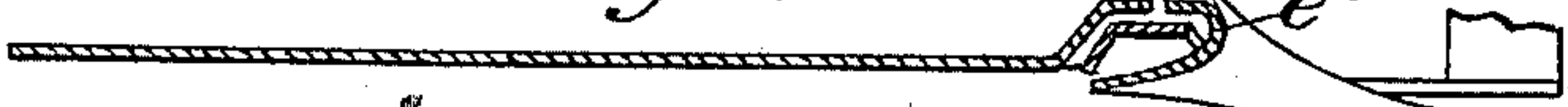
*Fig. 8.*



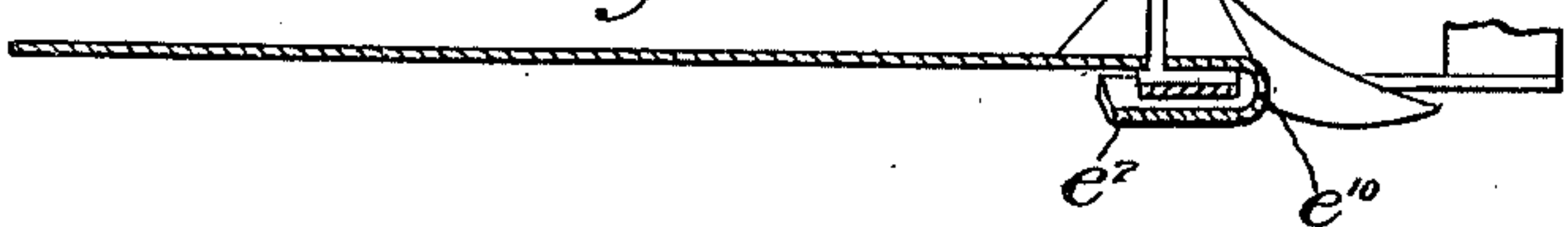
*Fig. 9.*



*Fig. 10.*



*Fig. 11.*



WITNESSES:

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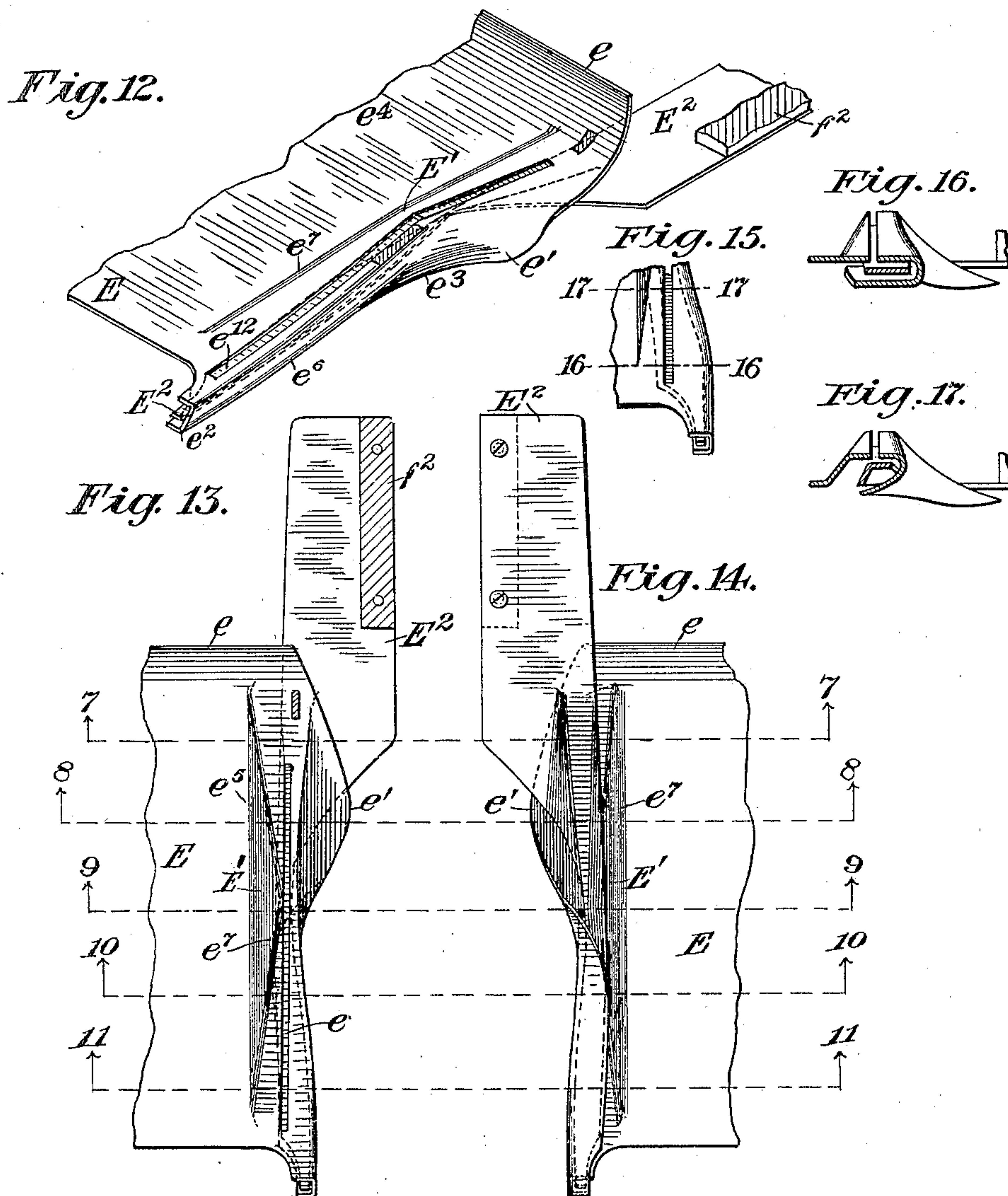
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3 SHEETS—SHEET 3.



WITNESSES:  
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# UNITED STATES PATENT OFFICE.

ORVILLE S. HARMON, OF BROOKLYN, NEW YORK.

## HEMMER FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 722,015, dated March 3, 1903.

Application filed March 20, 1901. Serial No. 52,014. (No model.)

*To all whom it may concern:*

Be it known that I, ORVILLE S. HARMON, a citizen of the United States, residing in the borough of Brooklyn, county of Kings, city and State of New York, have invented a new and useful Hemmer for Sewing-Machines, of which the following is a specification.

My invention relates to hemmers for sewing-machines; and it consists in a novel form of scroll, together with a peculiar arrangement of the several parts of the hemmer, and is arranged to produce a more perfectly formed hem in respect to uniformity in the width of the cloth between the first and second folds of the hem, also between the second fold and the edge of the cloth, as well as in folding the cloth squarely over upon itself at both the first and second folds.

In order that my invention may be more readily understood, I will describe somewhat in detail certain features that exist in all the best hemmers as heretofore constructed so far as I know, with the reasons for so constructing them. At the front where the cloth enters the hemmer the curve of the scroll is about the same as that of a circle of three-eighths or one-half of an inch in diameter and tapers down gradually to near where the cloth leaves the hemmer, where it is just large enough to allow of the free movement of the cloth between the scroll and the tongue which is within the scroll. A line drawn from end to end of the scroll through the centers of the curves would be for the most part a substantially straight line. The scroll is made large to allow of free movement of the cloth, the object being to effect the turning of the cloth to form the hem with the smallest possible amount of friction upon the cloth, for this friction tends to retard the movement of the cloth through the hemmer. Even when this friction has been reduced to a minimum enough remains to require the skilful use of the prodder to secure the even feeding of the cloth.

A serious objection to the large scroll is that it allows of a too free lateral movement of the cloth, which causes a variation in the width of the cloth turned in at the second fold, inasmuch as the formation of the second scroll is such that as it begins to turn the cloth it tends to crowd the cloth over later-

ally as well as downward, consequently requiring constant attention and skill on the part of the operator to so hold the cloth as to counteract the tendency to lateral movement. As the edge of the cloth is turned by the scroll there is a tendency to stretch the very edge.

Another serious difficulty with all hemmers known to me as heretofore constructed is that the cloth is not turned over squarely upon itself by the second scroll. I will define what I mean by "turned over squarely." Suppose a piece of cloth one foot square to be cut squarely with the warp and woof and a square fold is made 1-4" from the edge the whole length of one side of the piece of cloth. At the same instant the first thread in the edge of the cloth will be turned right over upon itself, so that the 1-4" of the end of the thread will lie parallel with the next 1-4" of the same thread, and the same with each succeeding thread to the last thread in the other edge of the piece of cloth. If the hemmer could turn the whole length of one foot at the same instant, it is apparent that it would make a square turn; but as it begins at one corner and starts the turn the first thread falls behind, so that when it is folded down the end of the thread instead of lying parallel will lie at its very end several threads behind where it ought to lie, and so with each succeeding thread to the last, and the ends of the last few threads at the end of the hem will project beyond the edge of the cloth. This difficulty is increased by the tendency of the hemmer to stretch the very edge of the 1-4" of cloth. Another serious objection to so much space between the tongue and the scroll, both above and below the tongue, is that it allows the cloth to wrinkle more or less in lines running parallel with the hem, said wrinkles causing a variation in the width of the hem between the first and second folds.

When set for the narrowest hem, the tongue within the one scroll lies close upon the tongue of the other scroll and separates the space above from the space below the tongues; but when set for a wide hem the upper and lower spaces are opened into one space, thus increasing the space difficulty.

My invention will be understood by ref-



erence to the accompanying drawings, in which—

Figure 1 is a top view of my improved hemmer; Fig. 2, a sectional view on the plane of the line 2 2 of Fig. 1. Fig. 3 is a sectional view on the plane of the line 3 3 of Fig. 1. Fig. 4 is a view on the plane of the line 4 4 of Fig. 1. Fig. 5 is an end view looking in the direction of arrows 5 5 of Fig. 1. Fig. 6 is a top view of the scroll formed in one of the plates of my hemmer, the tongue also being shown. Figs. 7, 8, 9, 10, and 11 are sectional views, respectively, on the planes of the lines 7, 8, 9, 10, and 11 of Fig. 6. Fig. 12 is a perspective view of the scroll. Figs. 13 and 14 are top and bottom plan views, respectively, of the scroll, being so shown side by side for clearness of illustration. Fig. 15 is a detail view showing a slight modification in the form of the scroll, and Figs. 16 and 17 are sectional views thereof.

Similar letters of reference indicate similar parts in the several views.

My improved hemmer comprises three plates C, D, and E, having the relation to each other shown in the drawings and supported on the frame F. The intermediate plate C is made with an outwardly-projecting finger  $c$ , consisting of a continuation of the edge  $c'$ , along which the first fold of the cloth is made. The bottom plate D serves as a support and guide for the cloth, and the upper plate E is provided with a folding-scroll, by which the second fold of the hem is made. The frame F has a depending lug  $f$  and outwardly-projecting arms  $f'$  and  $f''$ . The plate E is secured by suitable means, preferably by soldering, to the lug  $f$  and the arm  $f'$ . The tongue  $E^2$ , inclosed within the scroll of the plate E, is secured to the arm  $f''$ . Through an opening in the arm  $f''$  extends a bar G, preferably square in section, and on this bar the plates C and D are adjustably supported, the plate D being below the plate C.

In order to turn the goods over squarely to form the second fold of the hem, I have fixed a scroll of peculiar form. (Illustrated fully in Figs. 6 to 11.) This scroll is formed in the plate E and is confined between the line  $e^5$  and the contiguous edge of said plate. This scroll begins at about the line  $e^3$  a short distance from the plane of the line 7 7 of Fig. 6, the top wall rising and gradually diminishing in width until the maximum height of the scroll is reached at  $e^3$ . (See Fig. 9.) The top wall then descends and gradually widens out until it merges into the plane of the plate E at about the line 11 11 of Fig. 6, the said wall, however, projecting a slight distance beyond the back edge  $e^4$  of the plate E and lying slightly below the plane of said plate. The side wall  $E'$  of the scroll is defined by the base-line  $e^5$ , lying in the plane of the plate E, and by the line  $e^7$  the inner edge of the top wall of the scroll. The remaining walls of the scroll are formed by bending the metal from the line  $e^9$  of the top wall of the scroll, so

that the metal between said line and the edge  $e'$  will extend downwardly and then inwardly, so that the under wall or turned-in portion  $e^2$  will approach the forward-projecting portion of the top wall and be substantially parallel thereto when the formation of the scroll is completed, as indicated in Fig. 11. As shown in the successive sectional views Figs. 7 to 11, inclusive, the line  $e'$ , defining the outer edge of the top wall of the scroll, is curved slightly inward from the plane of the plate E to about the point of the maximum depth of the scroll, and from that point on, where the metal is turned inward, the side wall  $e^{10}$ , constituting the bend in the plate, does not extend in a straight line parallel with the line  $e^5$  of the plate E, but is bowed out slightly, as indicated by curved line in Fig. 6, the maximum width being about at the line where the top wall of the scroll merges into the plate E, as indicated on the line 11 11 of Fig. 6.

The construction of the scroll is such that the fold in the cloth will be completed at about the time the cloth reaches the edge  $d^4$  of the lower plate D. The lower wall of the scroll at its projecting end extends slightly below the plane of the plate D, as shown in Fig. 4, so as to deliver the goods to the needle close to the bed of the machine.

A tongue  $E^2$  within the scroll is made to conform to the shape of the scroll, there being room just sufficient between the tongue and the scroll to allow the cloth to pass freely. This tongue is secured by suitable means to the arm  $f''$  of the supporting-frame F.

In the present form of hemmer the cloth, that is about a quarter of an inch from the side edge of the goods, is caused to travel up and over the incline. The very edge of the cloth does not travel over the incline, so that said edge has a shorter distance to travel than the line of the goods about a quarter of an inch from the edge. In consequence of this there is an extra quantity of cloth, which puckers and which will naturally push ahead and straighten itself out, resulting in the cloth being turned over squarely upon itself.

The bar G, as before stated, is preferably square in section. It is so made to prevent turning of the plates mounted thereon and to keep the plates always in alinement and in the same relative position. The binding-screws  $c^3$ ,  $g$ , and  $d'$ , each bearing upon a corner of the bar, accomplish this result quicker and more accurately than can be done with either a round or flat bar. By using a metal core the square hole may be cast in the several pieces better than could be done if a flat bar were used. This bar supports the plates C and D through suitable brackets  $c^2$  and  $d$ , respectively, and they may be adjusted along said bar by means of the screws  $d'$  and  $c^3$ . The bracket  $d$  of the plate D is extended along the edge of said plate to  $d^2$  of Fig. 1, where it is turned back upon itself over the plate E to form a guide  $d^2$  for the edge  $e^4$  of the plate E. The plates C and



D when once adjusted on the bar G remain in the same position to each other and to the bar G. When it is desired to change the width of the hem, the bar G is released by loosening the screw *g*, thereby permitting the bar to be moved in its seat in the frame F. This movement adjusts the plates C and D relatively to the plate E, altering the distance between the bracket *d* and the arm *f*<sup>2</sup>.

To facilitate the entrance of the cloth into the hemmer, the front edge *e* of the plate E is flared upward and the front edge of the plate D is flared downward.

The most effective hemmer with which I am acquainted employs a semicircular-shaped guide or former to make the first fold of the hem and substantially the same in making the second fold of the hem. When these are adjusted to make a narrow hem, they are in each other's way, moving as they do on nearly the same plane, and if dressed off, so as to come together for a narrow hem, then there is not enough of them to control the cloth when they are moved out for a wider hem, and the various appliances that are used to remedy this difficulty do so very imperfectly. When the parts are assembled as shown in the drawings, there is just space enough between the plates to allow the cloth to pass freely without puckering or wrinkling, and this condition obtains whether the hemmer is set for a narrow, medium, or wide hem. The cloth being entered between the plates C and D in the direction of the arrow 3, the first fold is made not by a scroll, as is customary, but by the operator bending the cloth over the edge *c'* of the plate C, allowing sufficient cloth on the top side of said plate to reach to the arm *f*<sup>2</sup>, which serves as a guide for the edge of the goods. The space between the edge *c'* and the bracket *d* is sufficient to permit the goods to pass freely. The plate D extends in front beyond the plate C for convenience in wrapping the cloth around the edge *c'* of the plate C and in pushing the cloth into and through the hemmer.

It will be noticed that the first inclination to turn the cloth for the second fold of the hem is effected not by pressing down upon the corner or very edge of the cloth and that, too, in a scroll where the cloth has large room to twist out of its place, but the turn is started and effected by causing the cloth, a short distance from the edge, to start and pass over an inclination, then down again to or below the plane on which it started. The very edge of the goods is not allowed to pass over this inclination, but is kept nearly on a straight line with the plane from which it started. The result is that not only is the edge of the goods not stretched and the ends of the threads not turned back out of place, but the edge of the cloth is actually puckered, inasmuch as the distance which the very edge of the cloth travels on nearly a straight line is less than the distance up, over, and down the inclination, the path which the cloth, a short

distance from the edge, has to take. The readiest and only relief that the cloth can get for this puckered condition is that the threads push ahead and lie over squarely upon themselves, where they belong. It will be noticed also that in this method of forming the folds of the hem there is almost no tendency to lateral movement of the cloth. This, together with the control of the cloth at the first and between the first and second folds, renders it possible to produce a hem more uniform in width between the first and second folds and between the second fold and the edge of the goods than has been possible heretofore without the exercise of a high degree of skill on the part of the operator.

Where a large semicircular guide or former is used for making the first fold of the hem, it will readily be seen that little resistance is offered thereby to a lateral movement of the cloth. In my device the first fold is formed by wrapping the cloth around the edge of a plate of sheet metal, and it enters the hemmer with only enough room above, below, and at the edge of said plate to allow the cloth to pass freely, and this condition remains the same whether the hemmer is set for a narrow or wide hem.

While the goods are passing through the hemmer, the friction upon the under piece necessary to secure the proper presentation of the goods to the needle is obtained through the operation of the presser-foot M on the end of a spring I, Fig. 4. This spring rests on a stiff piece of metal *i*, which may be adjusted up and down by means of a screw *i'*, seated in an arm *f'* and taking into a screw-threaded recess in the piece *i*. The inner end of the spring I is under the control of a cam I', seated in said arm *f'* and having a suitable operating-handle *i*<sup>2</sup>. These means cause the underside of the scroll at *e*<sup>2</sup> to bear down upon the cloth, and it is found that the friction is equalized between the upper and lower portions of the hem, securing thereby an even and perfect alinement of the edges of the hem at the end of the same. As the presser-foot M descends during the sewing operation it bears upon the end of the spring I, thereby depressing the scroll and causing its end *e*<sup>2</sup> to bear down upon the under fold of the cloth.

It is found that in order to do the most perfect work the plates of the hemmer, and especially the back edge, should be held in a certain definite position relative to the face and throat plates, near which they are held—namely, substantially parallel—with just enough space between to allow the cloth to pass freely. When properly adjusted, this should be the normal position of the hemmer, and it should retain this position, except when changed through the action of the adjustable friction-controlling spring heretofore described. In order to secure substantial parallelism of the several plates with the face and throat plates of the machine, I provide a universal adjustment, so that the hem-



mer may be accurately adjusted to any position. This universal adjustment is rendered necessary by reason of the unevenness of the surface, which is an unfinished casting where  
 5 the base  $F^2$  is fastened to the face of the machine. I accomplish this adjustment by the following means:  $F^2$  designates a base-piece having openings  $f^3 f^4$  therein, through which  
 10 screws taking into screw-threaded seats in the bed-plate of the machine.

The base-piece  $F^2$  serves as a seat for a bracket  $F'$ , the said base-piece and bracket being clamped together by means of the screw  
 15 K. The bracket  $F'$  is extended upwardly, forming a head  $F^3$ , and to this head is clamped the supporting-frame  $F$  by means of a screw  $F^4$ , a screw-threaded seat being provided in the end of said frame, as shown in Fig. 2.  
 20 The face  $F^5$  of the frame is made convex, and interposed between the upwardly-turned part of the bracket  $F^3$  is a washer  $F^6$ , having an inner face concaved to correspond to the convex face  $F^5$ , against which it bears. The up-  
 25 wardly-extending portion  $F^3$  is slotted at  $f^7$ , and the washer  $F^6$  is slotted at  $F^8$ .

It will thus be seen that the hemmer may be adjusted vertically from the bed-plate or inclined thereto at a greater or less angle by  
 30 adjusting the screw  $F^4$ , which permits of the movement of the frame  $F$  in the directions indicated. If it is desired to adjust the hemmer either crosswise or lengthwise of the bed-plate, this may be done through the screws  $f^5$   
 35 and  $f^6$ . A slight adjustment is also permitted by means of the screw  $k$  bearing against the bracket  $F'$ . When it is desired to swing the hemmer out of the way for any purpose, the operator merely loosens the screw K, and  
 40 the hemmer may be turned around to entirely clear the face-plate.

With the hemmer above described I have made a seven-eighths-inch hem, turning in  
 45 one-fourth of an inch of cloth at the second fold on goods over fourteen yards in length, all at one sewing operation, the hem having an even edge at the end of the seam with no projecting corner. This has been done without the use of a prodder or the exercise of any  
 50 skill on the part of the operator after the hem has once started.

The hemmer heretofore described may be used on any suitable form of sewing-machine.

The first fold of the cloth being made  
 55 around the straight edge  $c'$  of the plate C, there is no opportunity for the goods to move laterally. Hence when the goods have been entered into the hemmer the bend should continue along the line of the thread, which  
 60 lies upon the very edge  $c'$  of the plate C. Likewise the turn in the cloth, which is occasioned by the bend at  $e^5$  of the plate E, will continue along the same thread, and the thread starting in at  $e^{11}$  should follow along  
 65 the edge of the tongue until it leaves the hemmer at  $e^2$ .

As shown in Figs. 6 and 13, the lines where

the top wall merges at the front and back into the plate E are substantially the same width. With certain goods, however, it may  
 70 be found advisable to bow the wall  $e^{10}$  a little further than shown in Fig. 6. This may be done, as indicated in Figs. 15 to 17, without departing from the spirit of my invention.

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

1. In a sewing-machine hemmer the combination of a plurality of substantially parallel plates the upper plate having a portion contiguous to one of its edges bent upwardly to  
 80 and converging in an apex and then downwardly and inwardly into a plane below the level of the lower plate at a point where it projects beyond the lower plate so as to form a scroll, and a tongue lying substantially cen-  
 85 tral of the scroll, substantially as described.

2. In a sewing-machine hemmer the combination of a plurality of substantially parallel plates the upper of said plates having a scroll the top wall of which rises from the plane of  
 90 the plate gradually diminishing in width to the maximum height of the scroll above the plate, then descending and gradually increasing in width to the plane of the plate and turned inwardly to form a scroll and a tongue  
 95 lying substantially central of the scroll, substantially as described.

3. In a sewing-machine hemmer the combination of a plurality of substantially parallel plates the upper of said plates having a scroll the top wall of which rises from the plane of  
 100 the plate gradually diminishing in width to the maximum height of the scroll above the plate, then descending and gradually increasing in width to the plane of the plate, the edge of the upper plate being bent from the  
 105 top wall of the incline downwardly and then inwardly so that the under wall approaches the forwardly-projecting portion of the top wall of the scroll, and a tongue lying substantially central of said scroll, substantially  
 110 as described.

4. In a sewing-machine hemmer, the combination of a plurality of horizontally-disposed substantially parallel plates, maintained at a  
 115 uniform distance apart, sufficient to exert pressure simultaneously upon opposite sides of the surface of the cloth passed between said plates, at substantially all points between the two folds of the hem, the upper of said plates  
 120 having formed thereon a scroll, and means for adjusting said plates horizontally relative to each other, substantially as described.

5. A sewing-machine hemmer comprising a supporting-frame having a bracket, a plate  
 125 secured to said bracket, said plate having one of its side edges formed into a scroll, a spring also supported by said bracket and adapted when in use to be acted upon by the presser-foot of the machine to cause said scroll-plate  
 130 to bear firmly down upon the under fold of the cloth, substantially as described.

6. In a sewing-machine hemmer the combination with a scroll and plate to secure the



necessary folds in the goods, of means to cause that portion of the hemmer in proximity to the feed-plate of the machine and near the needle to bear down upon the cloth as the cloth  
5 passes beneath the hemmer in proximity to the feeding-plate of the machine and means to vary the amount of such pressure, substantially as described.

7. In a sewing-machine hemmer the combination with a scroll and plate to secure the necessary folds in the goods, of means to cause that portion of the hemmer in proximity to the feed-plate of the machine and near the needle to bear down upon the cloth as the cloth  
15 passes beneath the hemmer in proximity to the feeding-plate of the machine, a lever pivoted to the frame of the hemmer, said lever being adapted to be thrown into and out of engagement with said pressure-producing device, so as to apply or release the pressure of the hemmer upon the lower fold of the cloth,  
20 substantially as described.

8. In a sewing-machine hemmer, the combination with a scroll and plate to secure the necessary folds in the goods, of means to cause that portion of the hemmer in proximity to the feed-plate of the machine and near the needle to bear down upon the cloth as the cloth  
25 passes beneath the hemmer in proximity to

the feeding-plate of the machine, means to 30 vary the amount of such pressure, and means for applying such pressure upon the under fold of the cloth without disturbing the adjustment, substantially as described.

9. The combination of a sewing-machine 35 hemmer comprising means to secure the necessary folds in the cloth, a supporting-frame for such hemmer adapted to be attached to the bed of the machine and a universal-joint connection between said hemmer and frame 40 substantially as described.

10. A sewing-machine hemmer comprising a plate having a portion bent upwardly to and converging in an apex and then downwardly and inwardly to form a scroll, and a tongue 45 lying substantially central of the scroll whereby, when forming the second fold of the hem, the portion of the folded goods passing over the incline is puckered, while the extreme marginal edge is not stretched but kept in a 50 straight line.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ORVILLE S. HARMON.

Witnesses:

GEO. E. CRUSE,  
CHARLES S. JONES.