

(No Model.)

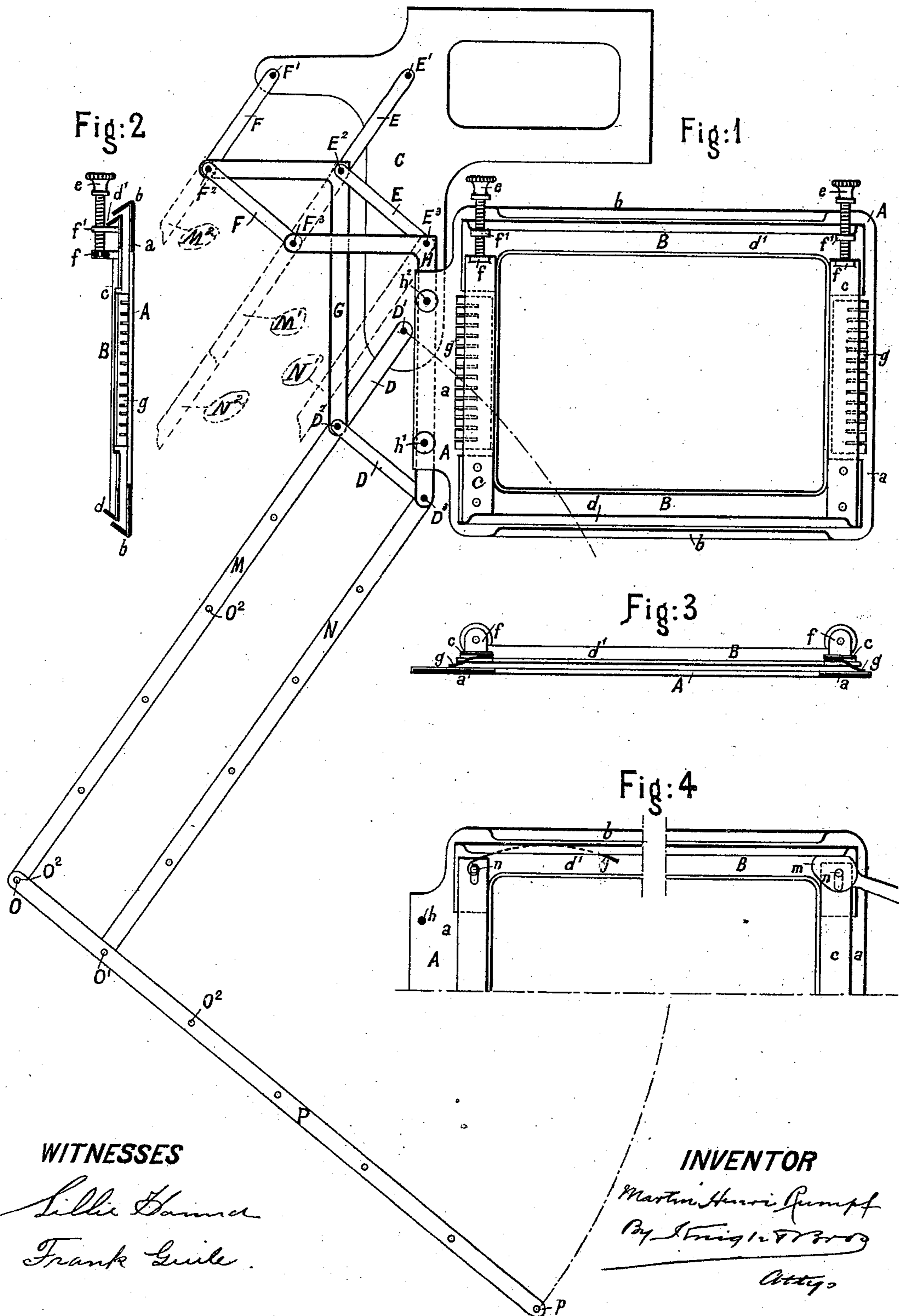
3 Sheets—Sheet 1.

M. H. RUMPF.

FABRIC GUIDING DEVICE FOR EMBROIDERING MACHINES.

No. 486,355.

Patented Nov. 15, 1892.



WITNESSES

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(No Model.)

3 Sheets—Sheet 2.

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Fig: 6

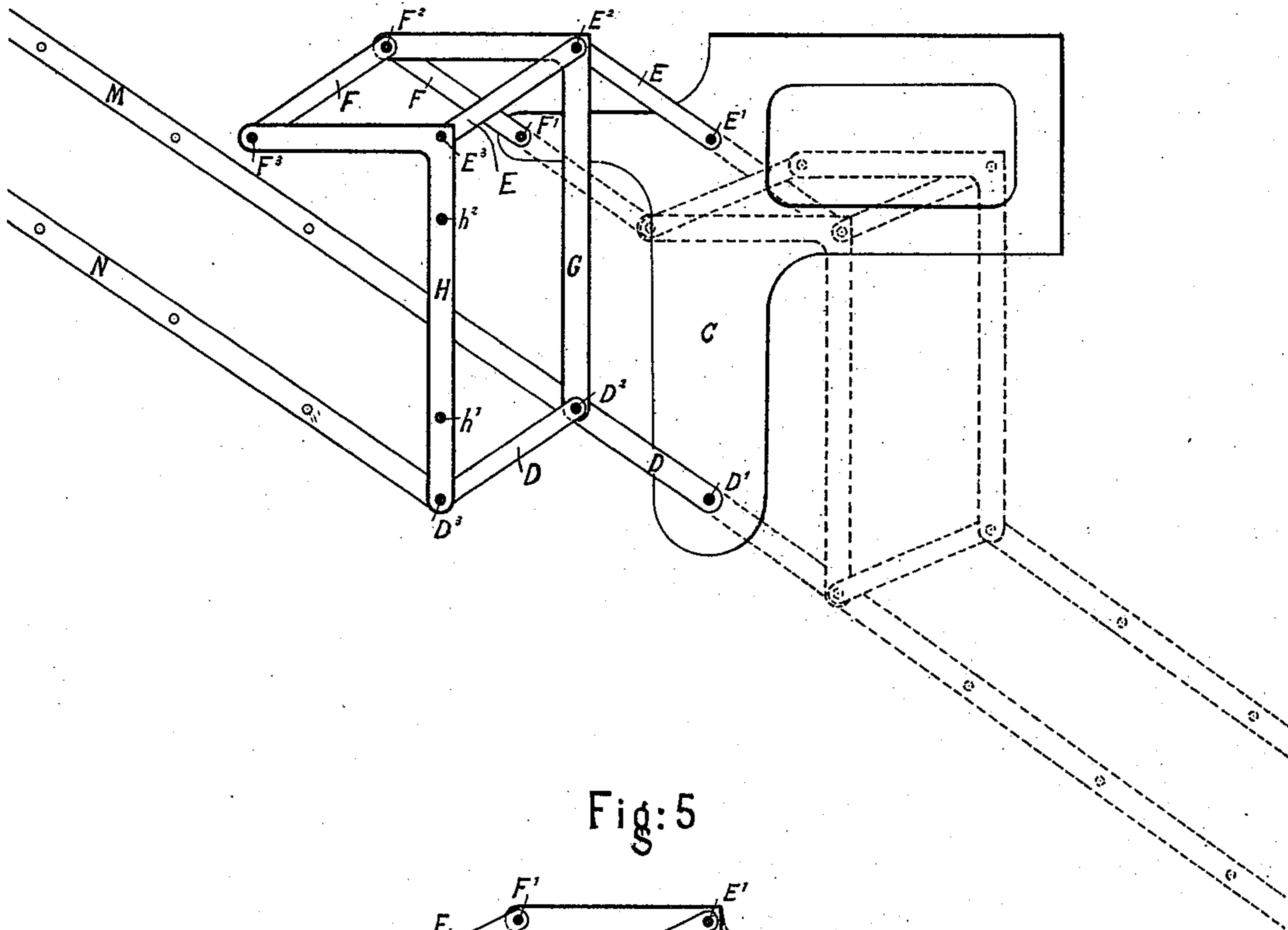
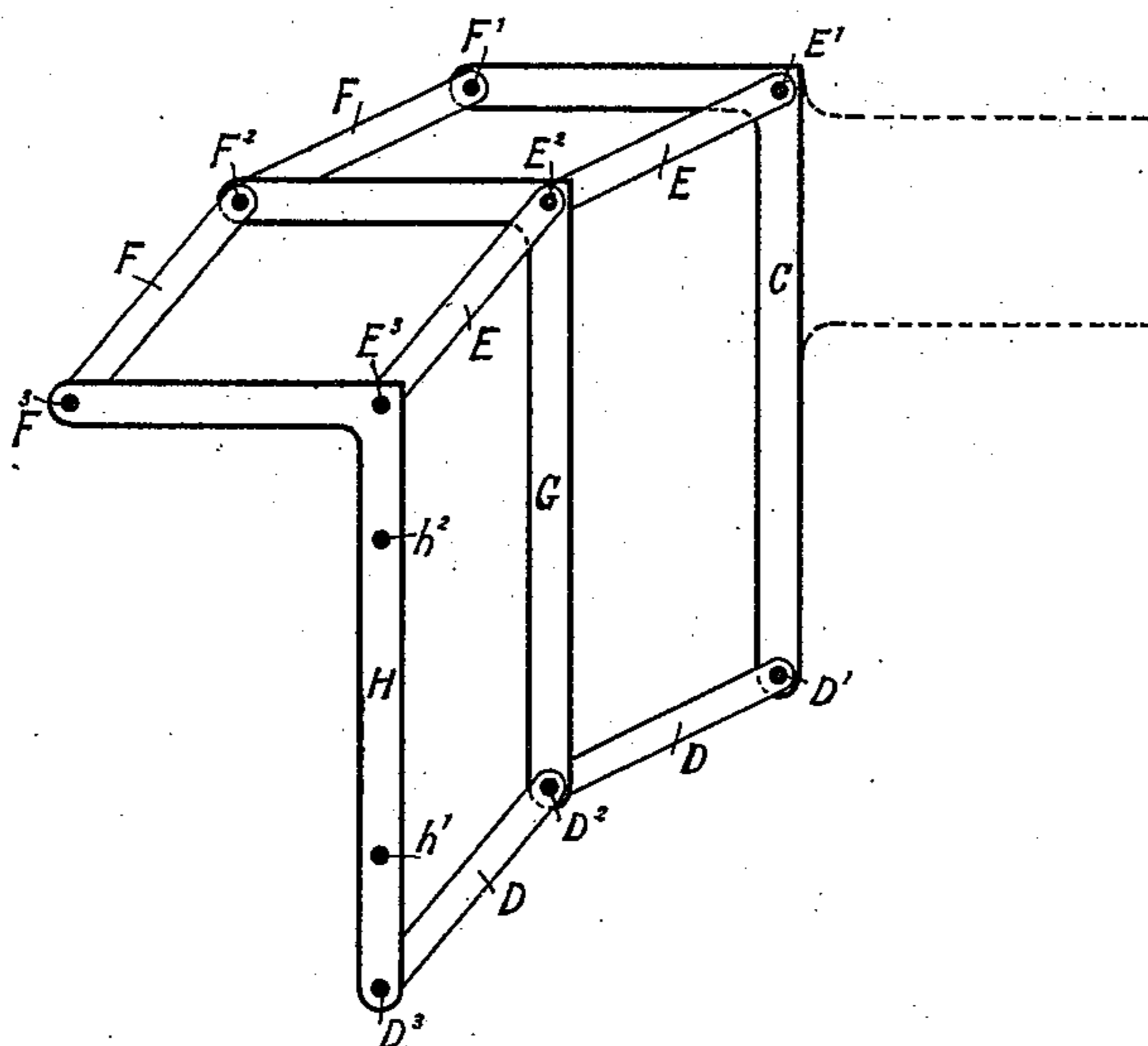


Fig: 5



WITNESSES

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(No Model.)

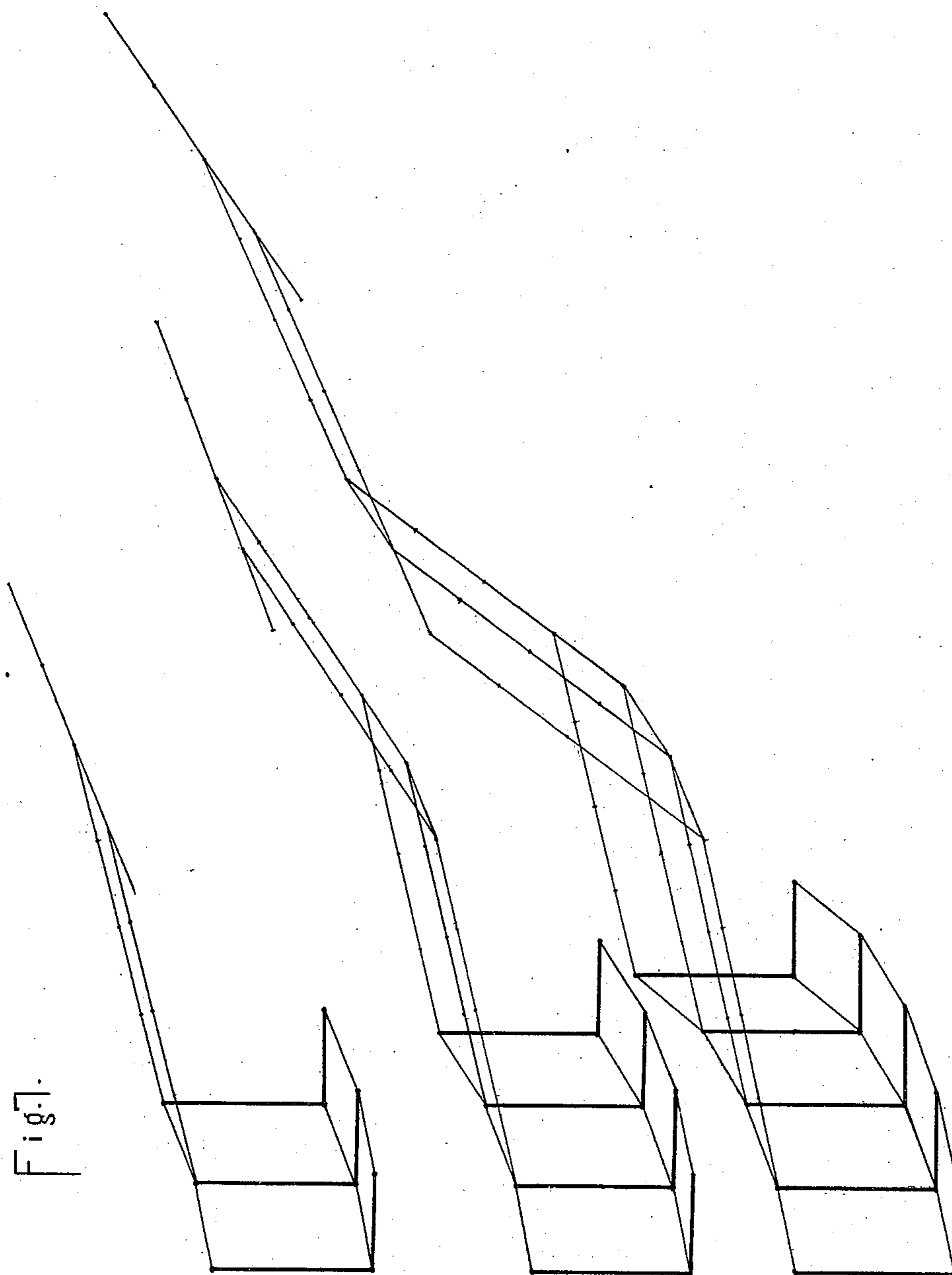
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Witnesses

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MARTIN HENRI RUMPF, OF PARIS, FRANCE.

FABRIC-GUIDING DEVICE FOR EMBROIDERING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 486,355, dated November 15, 1892.

Application filed November 20, 1890. Serial No. 372,033. (No model.)

To all whom it may concern:

Be it known that I, MARTIN HENRI RUMPF, manufacturer, a citizen of the United States of Brazil, and a resident of Paris, in the Republic of France, have invented certain new and useful Improvements in Embroidering Appliances, of which the following is a specification.

This invention relates to that class of apparatus employed mainly for embroidering by means of sewing-machines and comprises a guiding device intended to transmit to a fabric-holding frame a movement reproducing on the same scale or on a reduced scale the pattern to be embroidered.

This invention provides a simple and compact mechanism whereby a movement can be imparted to the said frame as extensive as may be necessary, and, finally, it enables the scale or proportion to which the pattern to be embroidered is to be reproduced to be exactly regulated. In Letters Patent No. 464,442, dated December 1, 1891, I have claimed the fabric-holding frame herein shown and described.

My invention relates to an improved pantograph device; and my improvements consist in novel features of construction hereinafter described and claimed.

In the annexed drawings, Figure 1 is a plan of the whole apparatus. Fig. 2 is a transverse section of the frame holding the fabric. Fig. 3 is a longitudinal section. Fig. 4 represents two variations in the construction of the frame. Fig. 5 is a view showing the principle of construction of the jointed guide. Fig. 6 is a plan view of the guide developed. Fig. 7 is a diagram illustrating the use of two, three, or four angle-pieces and the forms assumed thereby.

The fabric-holder herein described is formed of two rectangular frames, one being rigid and the other capable of extension, the two corresponding sides of which are arranged in such a way as to fit in with one another. It is composed of a rigid metal under frame A, the two opposed edges *a* of which are flat and the two other edges *b* bent up near the top, and of a second upper extensible frame B, the two corresponding edges *d d'* of which are arranged in such a way as to fit into the concave part of the turned-up edges *b* of the

under frame. For this purpose one of the sides *d'* of the upper frame B is movable and secured by means of screws *e*, capable of being revolved in lugs *f*, arranged on the fixed sides *c* of the upper frame, and engaging in similar lugs *f'*, fixed on the movable side *d'*, or vice versa.

The fabric having been placed on the under frame A, it will suffice to cover it by means of the extensible upper frame B and to screw up the pressure-screws *e* to cause the sides *d d'* of the same in separating one from the other to stretch the fabric and hold it firmly, the degree of extension of the upper frame being sufficient to allow of the employment of very thick fabrics and even of leather and other supple materials.

Each of the fixed sides *c c* of the upper extensible frame B carries a thin and flexible plate *g*, having, preferably, a toothed part so arranged that at the moment when the two frames approach one another the flexible teeth of this plate force the fabric to stretch itself on the smooth sides *a a* of the under frame. The extending of the frame may, if desired, as shown in Fig. 4, be produced by means of blade-springs *j*, attached to the extremities of the fixed sides *c c* of the upper frame B or by means of eccentrics *m* or other mechanical equivalents.

The pantograph device or jointed guide which is capable of great extension and, if desired, of adjustment, is mounted on a fixed piece C, intended to be fitted on a sewing-machine. This piece, as shown in Fig. 5, has three joints or pivot-points *D' E' F'*, to which are connected two or more angle-pieces G H of the jointed apparatus. The angle-pieces G H, have, respectively, pivot-points *D² E² F²* and *D³ E³ F³*, corresponding in their relative positions exactly to the points *D' E' F'* of the said support C, and these three parts C G H are connected by means of connecting-rods D E F, the length of which is the same for each of the angle-pieces G and H, and care must be taken that the first of these pieces G can fit (that is, coincide with, as regards its pivots) on the fixed supporting part C and that the second piece H can in its turn fit on the first piece G. Further, the three pivot-points *D' E' F'* of the support can be placed at any angle with respect to each

other, and it is sufficient if the movable pieces G and H have a shape corresponding exactly to this angle. Similarly it will be understood that, theoretically speaking, the number of these angle-pieces can be increased, as illustrated in Fig. 7, which shows a diagram and the forms that the parts of the pantograph device should assume, according to whether two, three, or four angle-pieces are employed, each of them bearing the same relation to the succeeding one as the fixed support C does to the first piece G.

The above - described guiding apparatus has the following important characteristic—namely, that while capable of traversing freely in every direction, the pieces G and H remain always parallel to each other in any position they may occupy.

In the arrangement shown on the drawings the frame carrying the fabric is fixed by means of screws, bolts, or pins h' h^2 to the angle-piece H, and it is evident that if the tracing-point of the guide were fastened to this piece H an embroidery would be obtained having the same dimensions as the model. In order, however, to obtain a reduction from the size of the model, three branches or levers M N P are fitted to the apparatus, arranged in the following manner:

One of the rods D is prolonged outward to a certain extent and forms one of the principal levers M of the guide, the other lever N being jointed at the lower end D^3 of the angle-piece H, and these two levers are connected by pivot-joints O O' with an arm P, carrying the tracing-point p in such a way as to form a guiding parallelogram or pantograph. Further, the first lever M could also be formed by prolonging the intermediate or upper connecting-rod E, as shown in dotted lines marked M' , or rod F, as shown in dotted lines marked M^2 , only in this case the second lever N must be respectively connected with the middle joint E^3 , as shown in dotted lines marked N' , or the upper one F^3 , as shown in dotted lines marked N^2 , of the second angle-piece H. As in this system of guide the relation between the distances traversed by the embroidery-frame and by the tracing-point is exactly proportionate to their respective lever-arms, it suffices, in order to obtain a given amount of reduction to form in the principal levers M and N as well as in the pointer-arm P, a cer-

tain number of apertures O^2 O^3 for the purpose of receiving the joint-pins O O' of these three parts. It must, however, be noted that whatever position may be given to the pointer or tracer arm P, its length must always be such that its effective length O p shall equal the length O D' of the first lever M.

The total displacement of the embroidery-frame, when regulated by the arrangement of jointed guide shown in Fig. 6, amounts to four times the length of the connecting-piece D, E, or F, above named, and the displacement would amount to six times this length if three movable angle-pieces were used, the reducing and supporting parallelograms being arranged accordingly, and so on for any number of angle-pieces. Guiding devices can thus be arranged of small dimensions, and consequently little in the way, although they allow of a sufficiently-large surface being embroidered without rendering it necessary to alter the position of the fabric in the machine. It is obvious that the application of this sort of jointed guide is not limited to the rectangular embroidery-frame above described, but that it can be applied equally well to ordinary circular looms used for embroidery or to other kinds of embroidery-frames.

I declare that what I claim is—

1. The combination of the support C, having fixed pivots D' E' F' , arranged as shown, the angle-piece G, having pivots D^2 E^2 F^2 , corresponding to the pivots of the support, the angle-piece H, having pivots D^3 E^3 F^3 , corresponding to the pivots of the support, rods D, connecting the pivots D' D^2 D^3 , rods E, connecting the pivots E' E^2 E^3 , rods F, connecting the pivots F' F^2 F^3 , and the levers M N, having arm P, substantially as described.

2. The combination of the fixed support C, having pivots D' E' F' , arranged as shown, the angle-piece G, having pivots D^2 E^2 F^2 , the angle-piece H, having pivots D^3 E^3 F^3 , rods D E F, levers M N, and arm P, substantially as described.

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

MARTIN HENRI RUMPF.

Witnesses:

EUGENE DUMAL,
CHARLES BAILLY.