

No. 692,467.

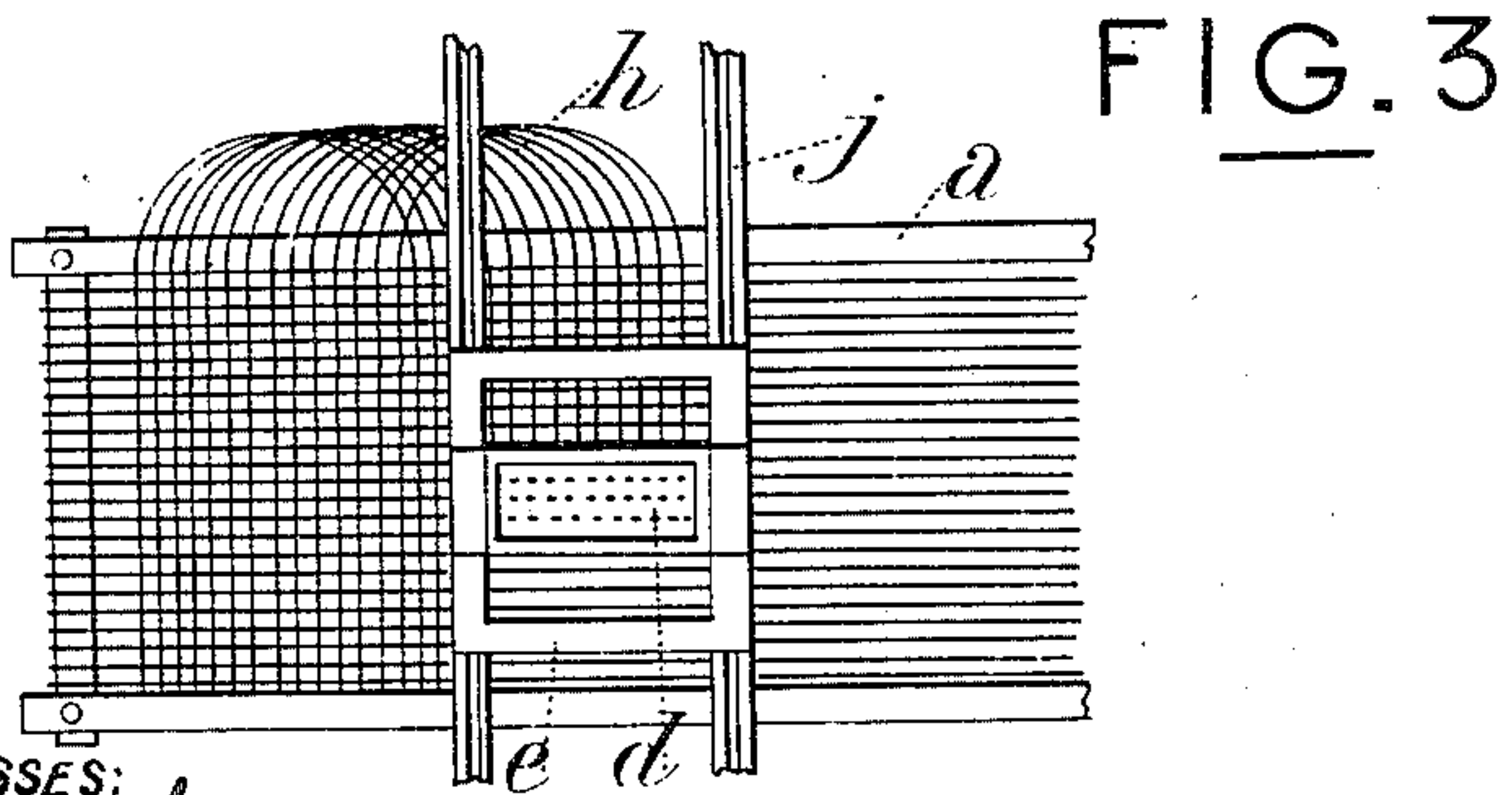
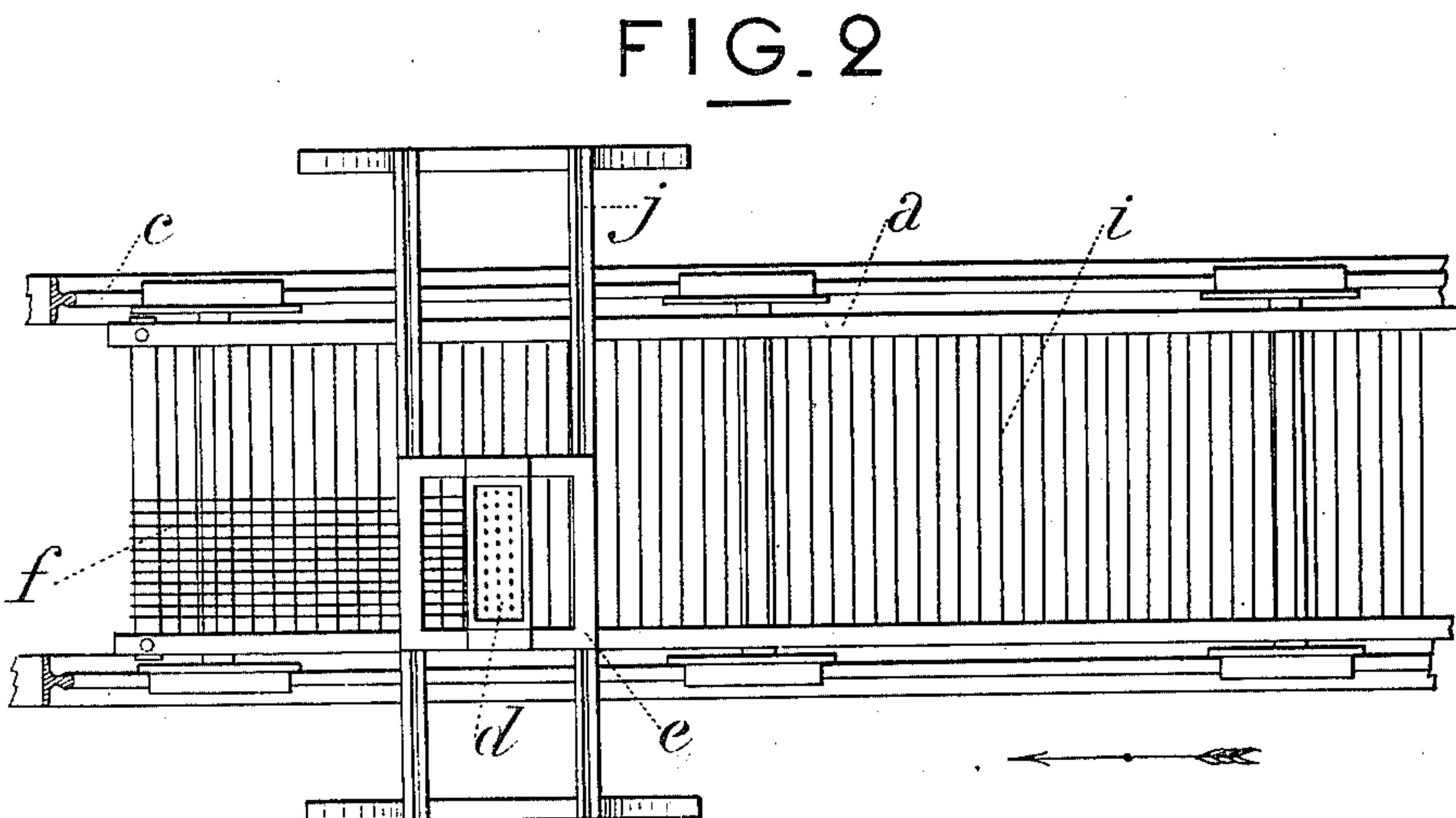
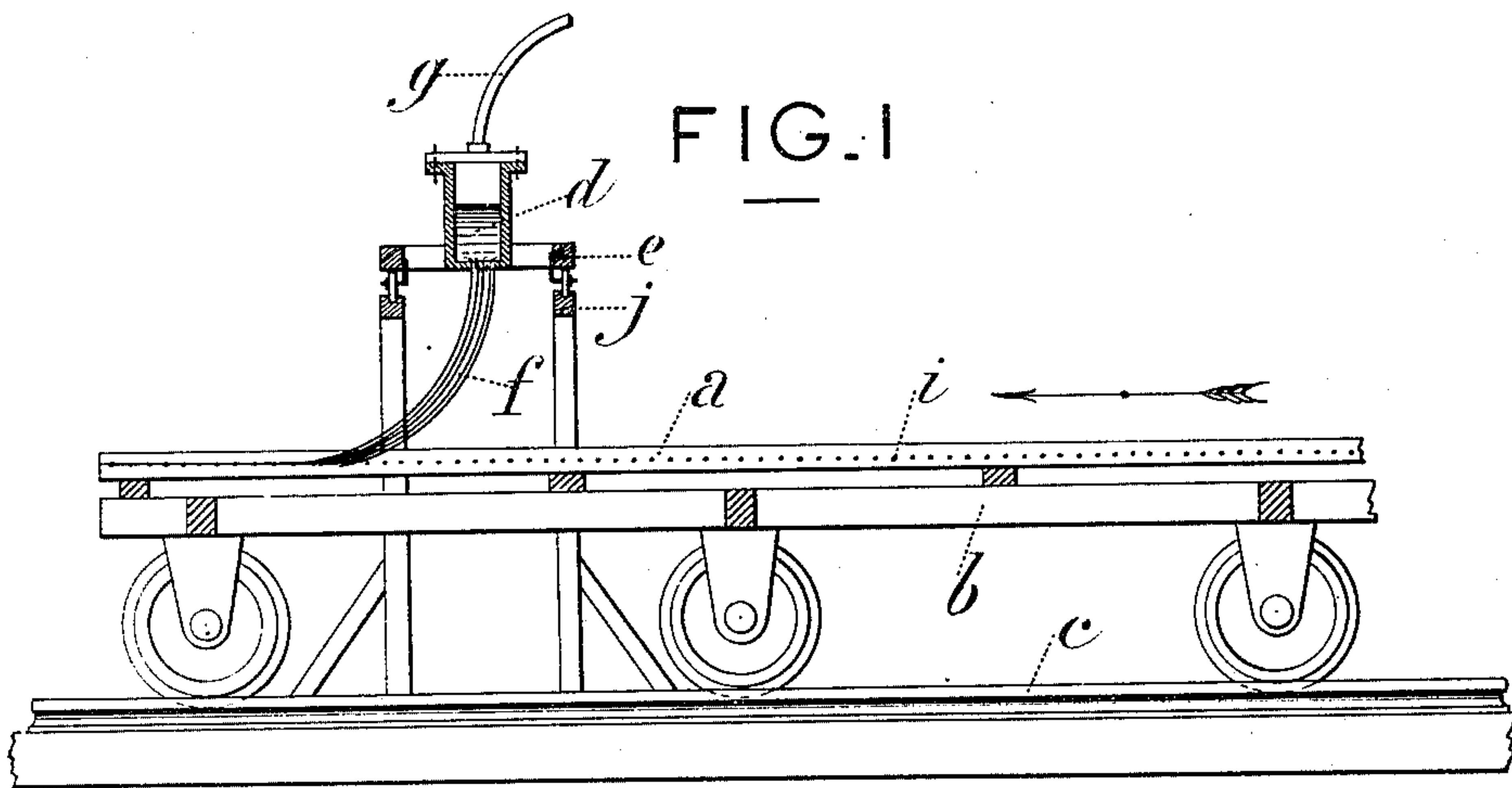
Patented Feb. 4, 1902.

J. MUGNIER.

FABRIC.

(Application filed May 28, 1901.)

(No Model.)



WITNESSES:

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# UNITED STATES PATENT OFFICE.

JOSEPH MUGNIER, OF LYONS, FRANCE.

## FABRIC.

SPECIFICATION forming part of Letters Patent No. 692,467, dated February 4, 1902.

Application filed May 28, 1901. Serial No. 62,264. (No specimens.)

*To all whom it may concern:*

Be it known that I, JOSEPH MUGNIER, a citizen of France, residing at Lyons, France, have invented certain new and useful Improvements in Fabrics, of which the following is a full, clear, and exact description, and for which I have made application for patent in Great Britain on May 7, 1901, and in France on January 12, 1901, No. 307,000.

The fabrics forming the object of the present invention have the appearance of light fabrics—such as tulle, gauze, muslins, crape, &c.; but they differ from them by their composition and mode of manufacture. The liquid employed forms a thick and hot bath, which is introduced into a receptacle closing hermetically by means of a screw-cover. The receptacle is provided at its lower part with holes or drawing-apertures, through which the liquid escapes in the form of very fine threads. The flow is determined by air-pressure, preferably hot, pressed upon the liquid by means of a pump placed in communication with the receiver by means of a flexible tube. On leaving the receptacle the hot liquid, which flows in the form of threads, is acted upon by the external cold air, which immediately hardens it. It then assumes a consistence in proportion as evaporation is effected. The dimensions of the receptacle, as also the number of the draw-holes therein, will vary according to requirements. The diameter of the latter will vary according to the size desired to be given to the threads.

In order to obtain the fabric, I use an apparatus which can be arranged in the manner as represented in the accompanying drawings.

Figure 1 shows a longitudinal section of the apparatus. Fig. 2 represents a plan view of the apparatus working the fabric in the dimension of length. Fig. 3 is a plan view of the same working the fabric in the dimension of width.

The fabric is produced on a light frame *a*, supported by carriage *b*, which rolls on rails *c*. On frame *a* are fine threads *i*, spread in the direction of its width and in spaces of one or five centimeters, according to the nature of the fabric which has to be obtained. The vessel *d*, containing the viscous liquid, is supported by a carriage *e*, rolling on rails *j*, which

are arranged transversely above the frame *a*. It can also pivot on itself in such a manner as to be placed in the two rectangular positions, Figs. 2 and 3. Compressed air is furnished to it by means of the flexible pipe *g*. When the threads *f* have left the vessel, they are arranged longitudinally on the frame, Figs. 1 and 2, to which purpose the vessel *d* has been placed transversely to the frame *a*. The latter is put in motion in the direction of the arrow, and the threads are laid down on it parallel in the longitudinal direction. Each time that this operation is repeated the vessel *d* has to be advanced until the threads have been deposited upon the whole width which has to be given to the fabric. Thereupon the vessel *d* is pivoted so that it is placed parallel to frame *a*, Fig. 3, and a transverse to-and-fro motion is imparted to it, while at the same time the frame *a* is made to advance with each backward-and-forward movement so far as to equal the width of the sheet of threads which have been deposited. In this manner a regular layer of threads is obtained, which cross the first ones at a right angle and are united with them on account of their adhesiveness. The course over which the vessel has to travel is longer than the width of the fabric, so that the loops *h h*, which are formed by the changes of direction, remain on the outside and can easily be removed after the operation.

Many layers of threads can be superposed, thus enabling the thickness and strength of the fabric to be increased at will. The framing can be jointed, so as to form a parallelogram, thus when the layers are deposited enabling the form to be changed by making lozenge-shaped meshes of greater or less length in imitation of the meshes tulle or other open-work fabric. When evaporation is complete, a fabric is obtained which is light, flexible, glossy, and may be finer than those obtained by the aid of textile materials employed in manufactures. The fabric is removed without difficulty, the adhesion on the threads of the framing being obviated by a fatty body with which they are slightly covered.

The process can also be applied to the decoration of ordinary fabrics, and thus constitute a new dressing or finishing process. To realize this application, it is only necessary



to place the piece of material to be decorated or finished on a framing and to distribute the liquid upon the said material, as above explained. Thus a new fabric is obtained, as the threads added by this process to the fabric it is desired to decorate transform the latter by giving it a completely-different appearance from that which it first had. This transformation is also increased if various colors are deposited at the same time, which can be obtained by causing several receptacles supplied with differently-colored liquids to work simultaneously. The obtaining of designs is thus reduced to the arrangement to be given relatively to the draw-holes.

The bath employed is principally composed of vegetable substances soluble in hot or boiling water, producing a thick mucilage, which becomes a stiff jelly on cooling. These substances should have after evaporation when they have been converted into fabrics both strength and flexibility. They are chosen from mucilages extracted from various lichens, such as lichenin, from the gelatinous principles which exist in the fleshy parts of various plants, in fruits, and certain roots denominated "pectine," in extract of carrageen, in cerasin, or principle of gums insoluble in cold water, in the extracts of Jafna, Java, or Ceylon moss, gelatinous principle derived from various algæ, denominated "cellose" by Payen and known in commerce by the names of "agar-agar," "haithas," "Japanese gum," &c.

Various effects naturally result from mixtures and combinations made by means of the substances above mentioned with respect to flexibility, solidity, appearance of the filaments, and their production. It is essential when these or other similar substances have been converted into jelly by means of hot or boiling water to rework this jelly if it has not the desired consistency, to wash it carefully with cold water to expel from it the part which is soluble in a cold state, and to then press it in order to leave in it only the water necessary for its use. Other substances can also be added to the bath. Casein and gluten give thickness and facilitate the operation of dyeing. Isinglass, gelatin, and other glues give strength to the fabric. Glycerin gives it flexibility. Certain salts, such as borax, facilitate the transformation of the bath into threads. All these results and others which cannot be noted belong to the domain of the practical workman.

The following bath may be employed at the temperature of 70°: A solution in hot water is prepared of well-washed gelose, containing five to six per cent. of the latter. To this is added from three to four per cent. of borax, one and a-half per cent. of gluten di-

luted in three times its weight of alcohol, and one per cent. of gelatin and as much glycerin. The dyeing is obtained by adding to the viscous bath soluble coloring materials or ground non-soluble powders. Dyeing may also be done in the piece. The piece desired to be dyed is wound upon an open-work cylinder. It is placed between two very light cloths previously coated with a spirit varnish. Then it is plunged for several hours in water. It is submitted to this washing with a view to expel from the fabric the soluble bodies which might injure its solidity or interfere with the dyeing process. The piece is then passed, if required, into a bath containing a mordant, then into the dye-bath. If the piece is not to receive any color, it is submitted to a simple washing.

An arrangement which has some importance consists in placing on the cylinder and between the two cloths several pieces of the new fabric one on another and in contact with each other. After the drying which follows the operations of washing and dyeing these pieces, whatever may be their number, will become attached to each other, so as to form only a single fabric. Fabric or textile materials forming designs or other substances insoluble in cold water may also be placed in the center of the pieces to be connected together, thus enabling various effects to be produced. By these means the improved fabric after its manufacture can be given whatever strength, thickness, or appearance it may be desired to obtain.

For the drying the piece is unwound upon a suitable surface, keeping it until completely dried between the two open-work cloths between which it has been placed.

This new fabric may be employed in millinery for trimming hats and other ornaments for robes, &c.

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

1. As an article of manufacture, a fabric consisting of a plurality of threads of a viscous liquid secured together solely by the natural viscousness of the material before drying, substantially as described.

2. A fabric consisting of a plurality of threads of a viscous liquid secured together solely by the natural viscousness of the material before drying, and combined with another layer of fabric, substantially as described.

In witness whereof I have hereunto set my hand in presence of two witnesses.

JOSEPH MUGNIER.

Witnesses:

GASTON JEAUNIAUX,  
MARIN VACHON.