

(No Model.)

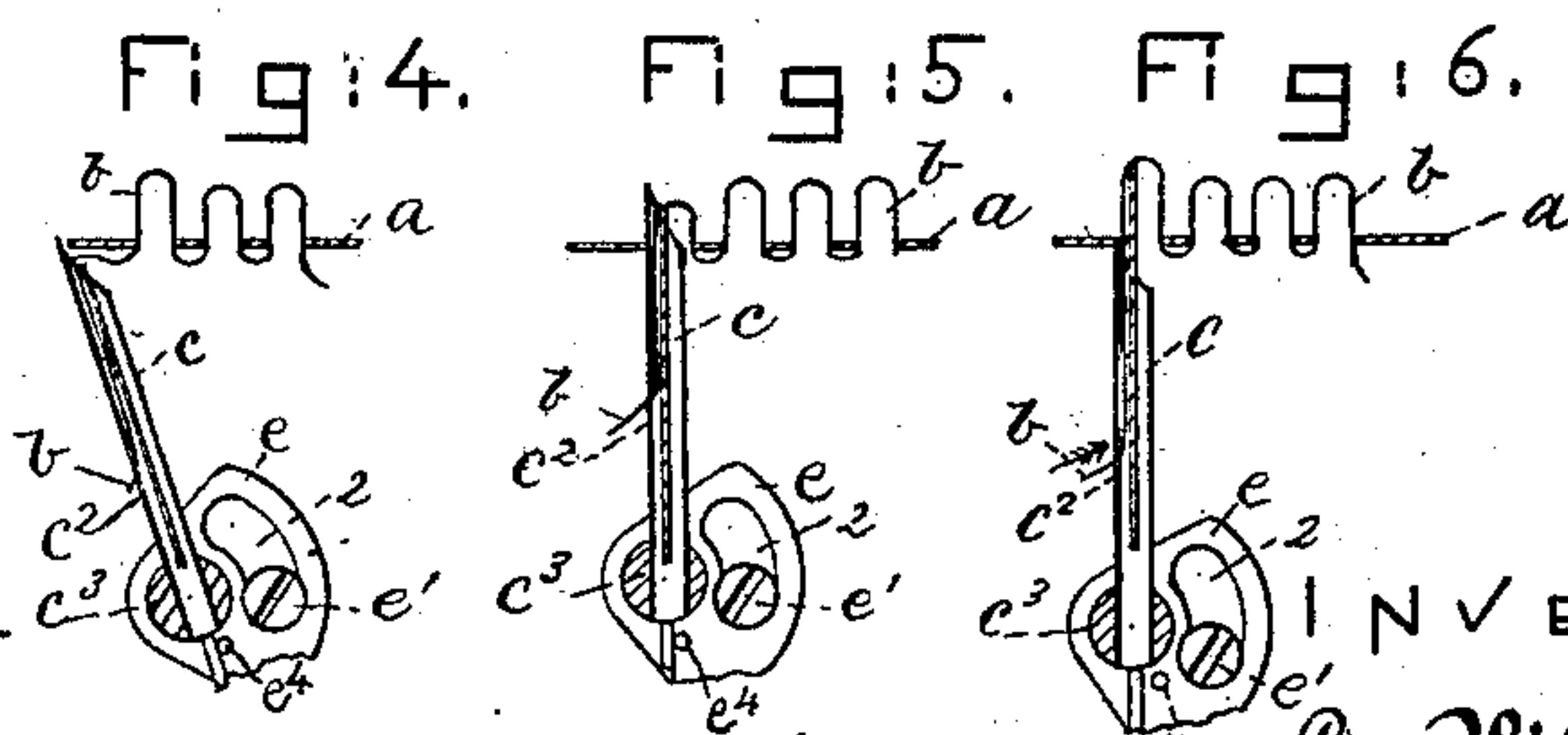
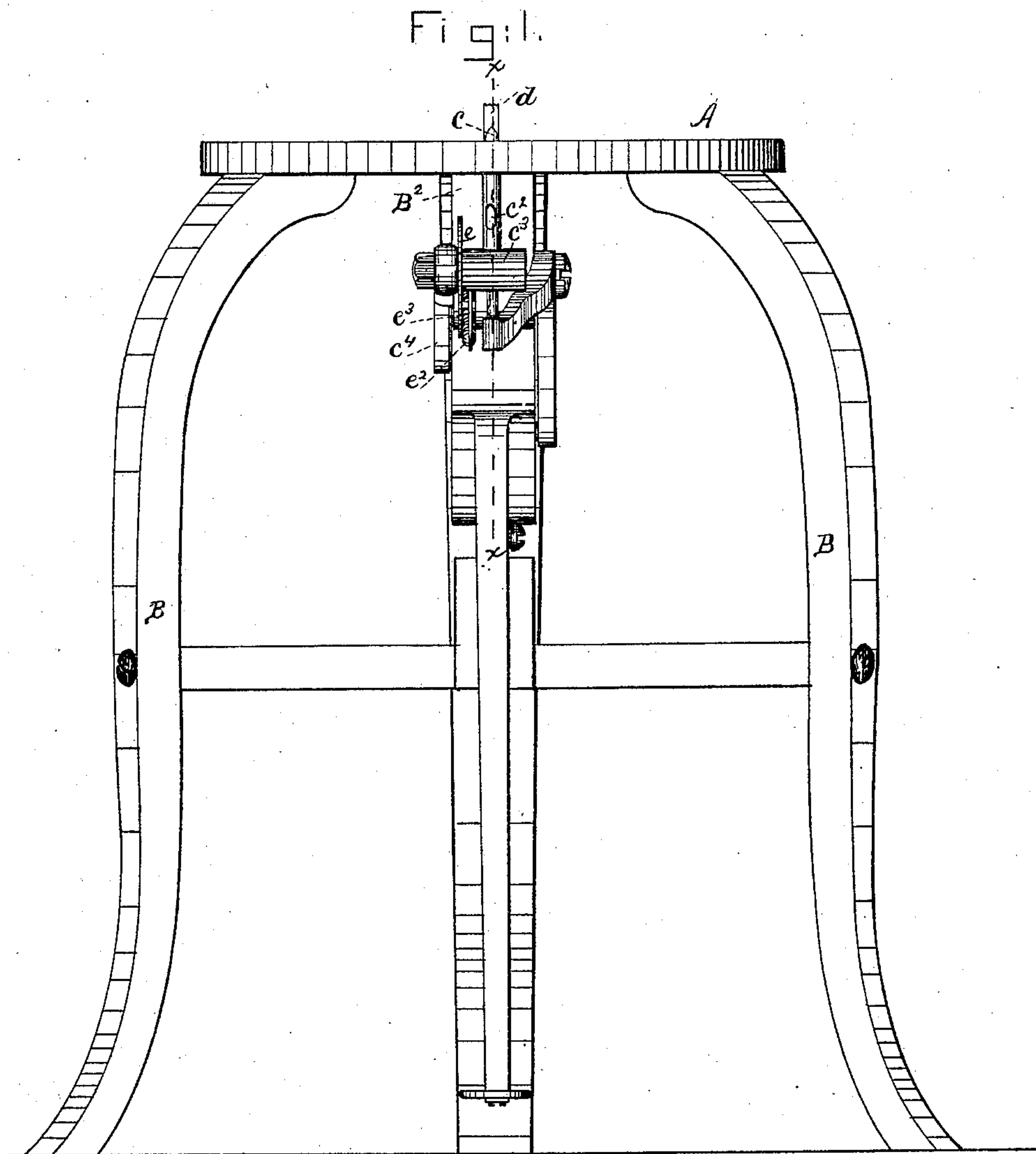
2 Sheets—Sheet 1.

G. W. GRIFFIN.

MACHINE FOR FORMING PILE ON WOVEN FABRICS.

No. 246,005.

Patented Aug. 23, 1881.



WITNESSES—  
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*Attys.*

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Fig:2.

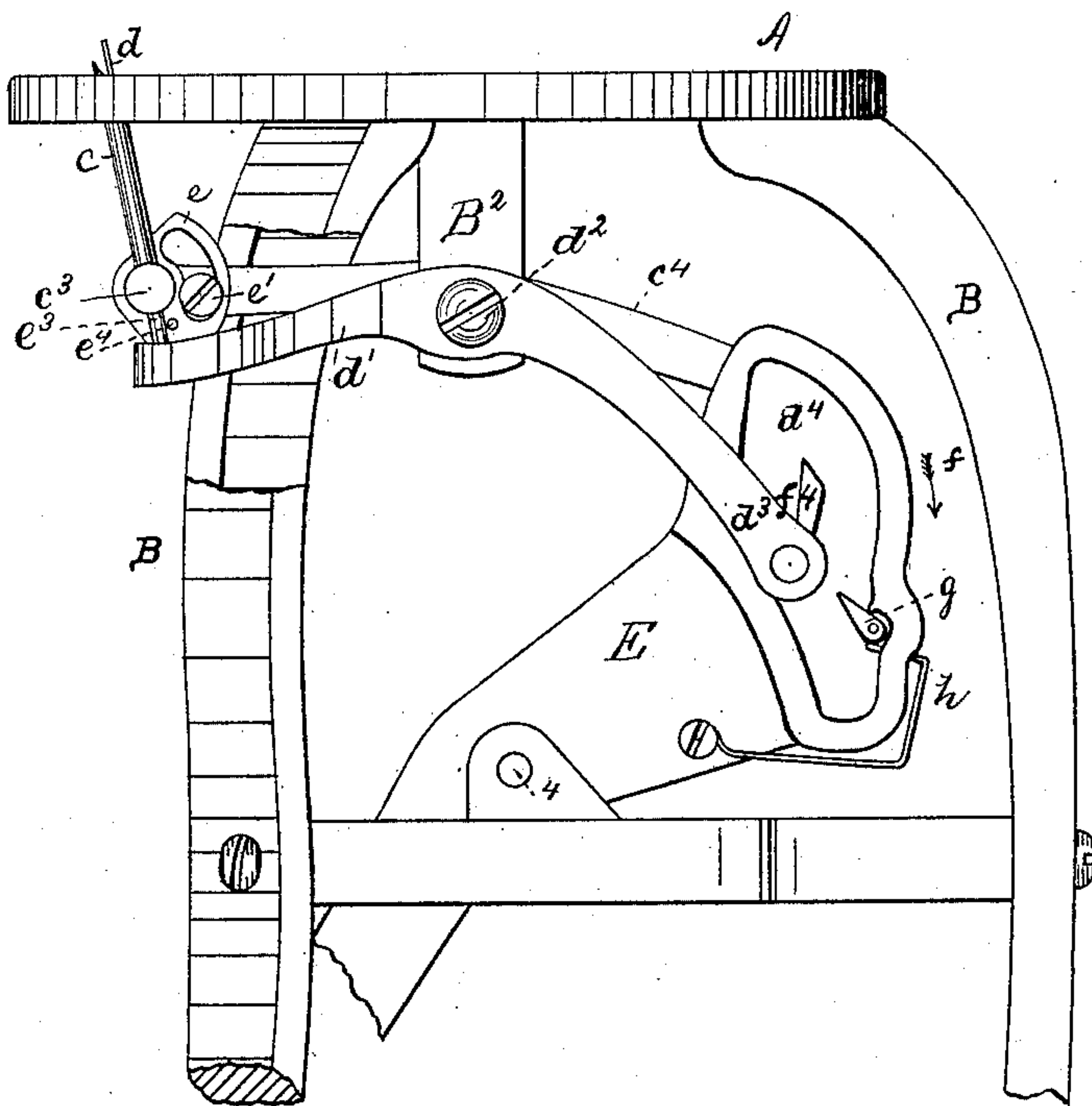


Fig:3.

WITNESSES.

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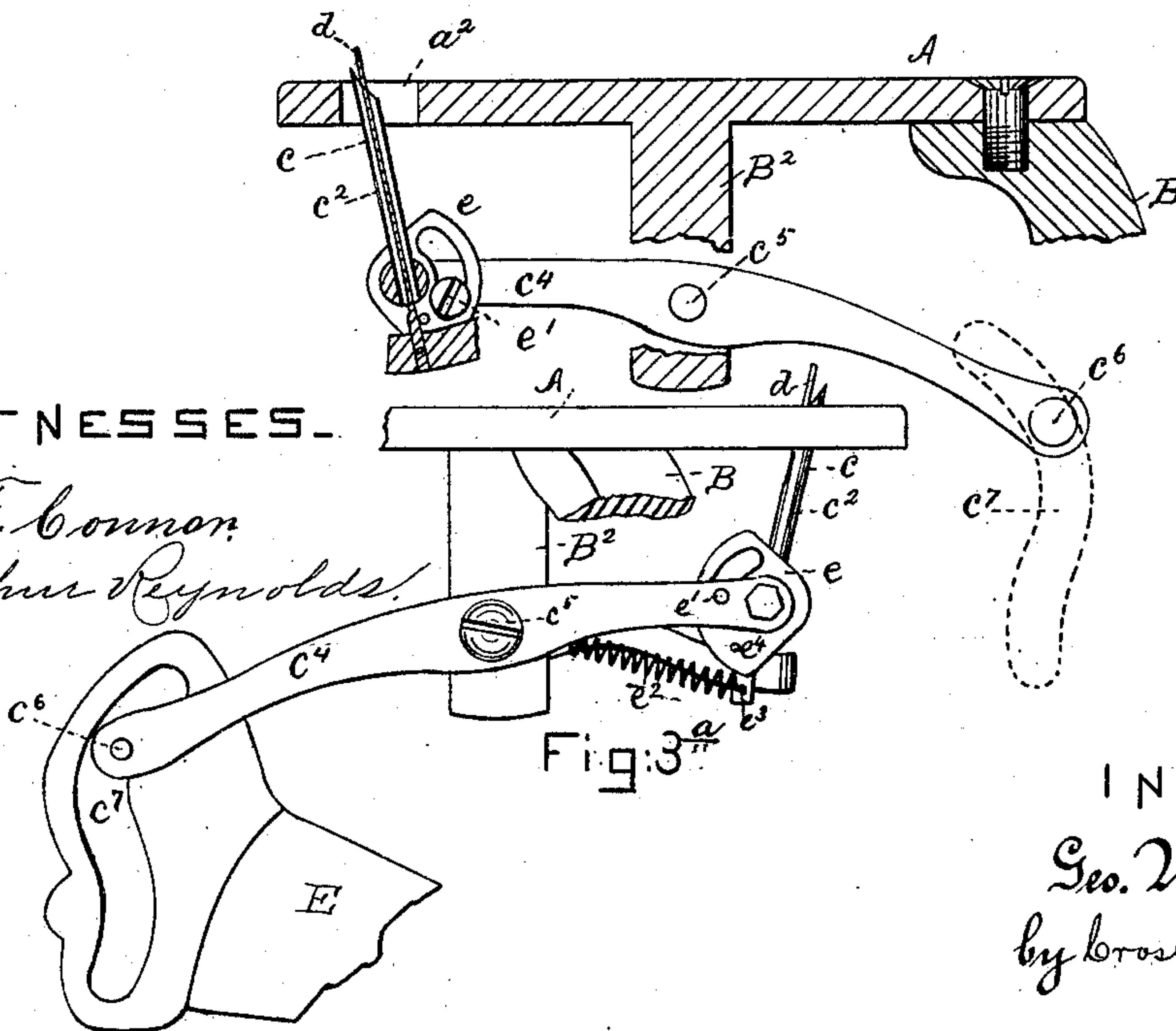


Fig:3.

INVENTOR

Geo. W. Griffin,  
by Crosby & Gregory  
Attys.



# UNITED STATES PATENT OFFICE.

GEORGE W. GRIFFIN, OF FRANKLIN FALLS, NEW HAMPSHIRE, ASSIGNOR  
OF ONE-HALF TO PARKER C. HANCOCK, OF SAME PLACE.

## MACHINE FOR FORMING PILE ON WOVEN FABRICS.

SPECIFICATION forming part of Letters Patent No. 246,005, dated August 23, 1881.

Application filed March 21, 1881. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE W. GRIFFIN, of Franklin Falls, county of Merrimack, State of New Hampshire, have invented an Improvement in Machines for Forming Pile on Woven Fabrics, of which the following description, in connection with the accompanying drawings, is a specification.

This invention relates to a machine for forming a pile on a woven fabric, and is chiefly designed for manufacturing rugs, &c., from rags or thrums or any usual carpet-yarns.

In the class of rug or carpet to be made by my mechanism or apparatus the foundation is usually composed of a woven fabric of jute or hemp of coarse texture, printed or stamped on one side, in accordance with the design or outline of the figure to be wrought upon the foundation of the pile. In accordance with my invention this fabric is laid upon the supporting-table, and is moved or fed along thereon in the proper direction to place the stamped or printed lines correctly above the perforating-needle and pile-inserting instrument when the former is forced upward through the fabric, making a hole for the passage of the pile-inserting instrument, it forming a pile-loop in and above the fabric, after which the needle and then the pile-inserting instrument will be withdrawn, leaving a pile-loop to be subsequently cut, if desired.

Figure 1 represents, in front elevation, mechanism embodying my invention; Fig. 2, a right-hand-side elevation of Fig. 1, the lower framework being broken away; Fig. 3, a partial section on the line  $xx$ , Fig. 1; Fig. 3<sup>a</sup>, a partial left-hand-side elevation of Fig. 1. Figs. 4, 5, 6 are details representing the perforating-needle and pile-inserting instrument in different positions.

In the drawings, A represents a supporting-plate for the fabric  $a$ , (see Figs. 4 to 6,) in which the pile  $b$  is to be inserted in the form of loops, the said pile being composed of what is known as "carpet-rags," or "thrums," or "carpet-yarn." This supporting-plate A, sustained by a suitable frame-work, B, is provided with a throat,  $a^2$ , through which the perforating-needle  $c$  and the pile-inserting instrument

$d$  may pass to enter the fabric  $a$ . The perforating-needle  $c$ , made as a small tube of steel, and having at one side an eye,  $c^2$ , for the reception of the pile material  $b$ , is secured to a block,  $c^3$ , fitted loosely in a hole made in the end of the lever  $c^4$ , pivoted at  $c^5$  on the depending bracket B<sup>2</sup>, extended downward from the supporting-plate A, the said lever having a pin or stud,  $c^6$ , which is acted upon by the cam  $c^7$ . (See Fig. 3<sup>a</sup> and dotted lines, Fig. 3.) The lever  $c^4$ , which carries the needle, has connected with it an adjusting-plate,  $e$ , provided with a slot, 2, through which is extended a set-screw,  $e'$ , the said set-screw being screwed into the lever  $c^4$  and holding the plate  $e$  in adjusted position. This needle  $c$  penetrates the fabric  $a$ , making a hole for the reception of the pile-loop  $b$ , and also serves, during such operation, to feed the fabric forward the length of the stitch or the distance required between adjacent loops of pile.

It will be obvious that the extent to which the fabric  $a$  will be moved as it is being penetrated by the needle  $c$  will depend upon the angular position of the needle with relation to the lever  $c^4$ , for the more the needle is held toward the left, Fig. 3, or the more obtuse the angle formed by a line parallel with the axis of the needle with a line drawn from the center of the block  $c^3$  to the center of the pivot  $c^5$ , the greater the feed-stroke, so that by adjusting the position of the needle  $c$  with relation to the lever  $c^4$  by the screw  $e'$  the length of the feed may readily be regulated. A spring,  $e^2$ , Figs. 1 and 3<sup>a</sup>, connected with an arm,  $e^3$ , of the block  $c^3$ , draws it toward the pin  $e^4$  connected with the adjusting device  $e$ , but permits the said arm  $e^3$  to recede from the pin  $e^4$ , as shown in Fig. 6, when the needle is withdrawn from the fabric, so that the said needle passes out therefrom without moving it backward, as shown in Figs. 5 and 6, after which the spring  $e^2$  brings the arm  $e^3$  again in contact with the said pin  $e^4$ , changing the angle of the needle so that it enters the fabric at a point forward of that at which it left it, as shown in Fig. 4, and as the said needle passes through in inserting the pile it feeds the fabric forward, owing to the fact that when in its normal posi-



tion with the arm  $c^3$  against the pin  $c^4$  the point of the needle is farther than its shank from its center of movement  $c^5$ .

The pile material  $b$  inserted in the eye of the needle, and along out through the needle, is passed over the end of the pile-inserting device  $d$ , and while the needle is rising, as in Fig. 4, and is penetrating the fabric, as in Fig. 5, the pile-inserting device also moves upward to project the material for the pile up through the hole made in the fabric by the needle, and while the needle  $c$  is drawn down by the cam  $c^7$  the pile-inserting device retains the pile, as in Fig. 6; but after the needle arrives below the fabric the pile-inserting device is drawn down and the needle is thrown back into the position, Fig. 4, ready to be again elevated or projected through the fabric.

The pile-inserting device is connected with the lever  $d'$ , pivoted at  $d^2$ , and having a pin or stud,  $d^3$ , which is entered within the cam  $d^4$ , suitably shaped to impart to the said lever  $d'$  and pile-inserting device movements in the order specified.

The two cams referred to are placed at opposite sides of the end of the lever  $E$ , having its fulcrum at 4, the lower end of the said lever being moved by the foot or pedal in any usual way.

In the drawings, Fig. 2, the cam  $d^4$  is supposed to be moving in the direction of the arrow  $f$ , the center part,  $f^4$ , descending to the right of the stud  $d^3$ ; but as the cam reaches its lowest position the said stud will be forced past or across the top of the part  $f^4$ , so that as the cam  $d^4$  is elevated the center part,  $f^4$ , passes to the left of the said stud, the latter being

caused to travel down between it and the switch-cam  $g$ , held up by the spring  $h$ , the switch turning down for the passage of the stud below it, and as soon as the stud passes the point of the switch-cam the latter is quickly thrown upward by the spring, so far closing the space between its point and the piece  $f^4$  as to prevent the stud  $d^3$  from passing upward between them.

I do not desire to limit my invention to the exact construction of devices for moving the needle and pile-inserting instrument.

I claim—

1. The open-ended hollow or tubular needle  $c$  with an eye at one side, combined with the pile-inserting instrument located within the said needle, and with means to move the needle to perforate the fabric, and then move the inserting-instrument through the hole made in the fabric by the needle, substantially as described.

2. The needle-carrying lever and needle pivoted thereon, and the pile-inserting device, combined with the adjusting-plate, adapted to be fixed on the said lever to control the position of the needle, and the spring  $e^2$ , whereby the said needle and pile-inserting device are caused to enter and leave the fabric at different angles thereto, for the purpose of feeding it, substantially as described.

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

GEORGE W. GRIFFIN.

Witnesses:

ALEXIS PROCTOR,  
FRANK PROCTOR.