

W. J. Horstmann
Pile Fabric Loom

No. 15,295.

Patented Jul. 8, 1856.

Fig. 1.

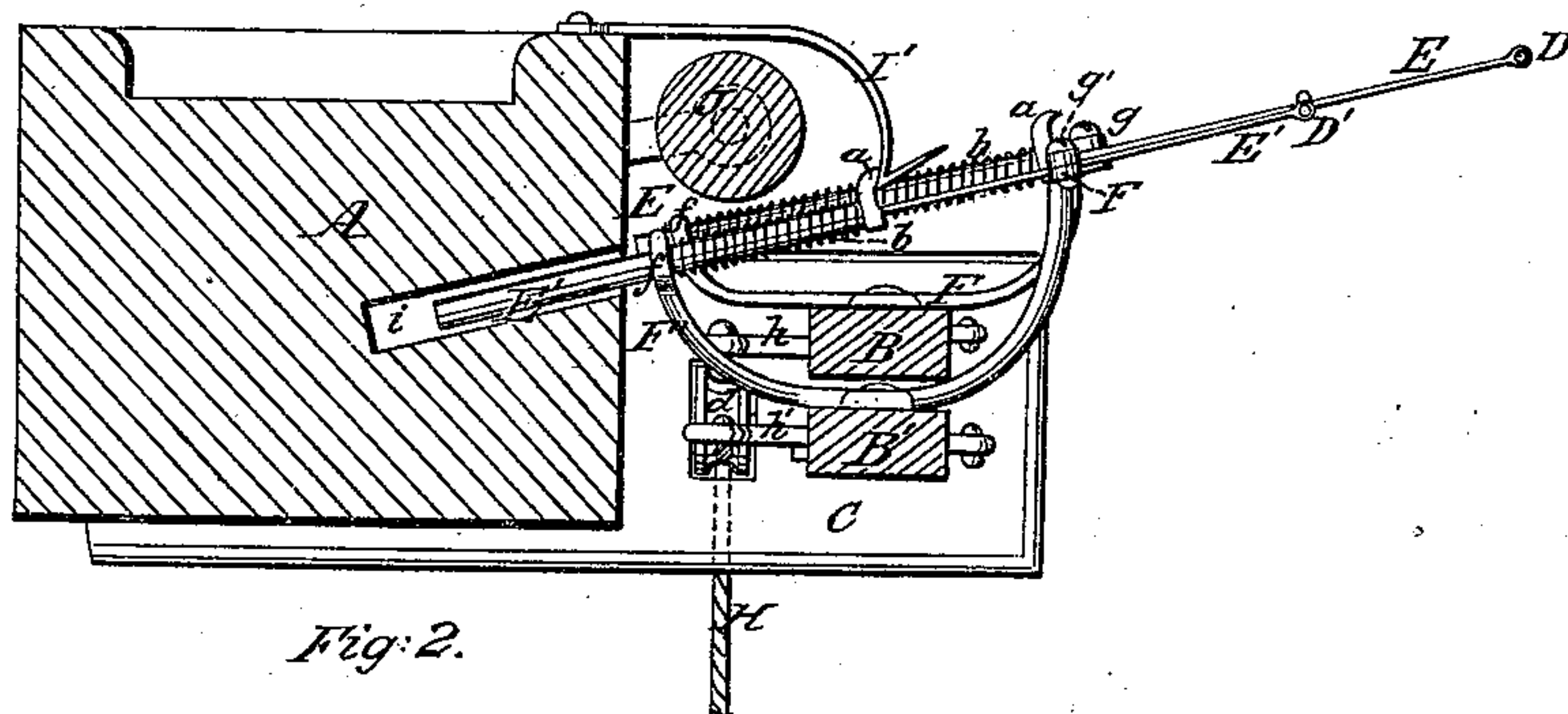
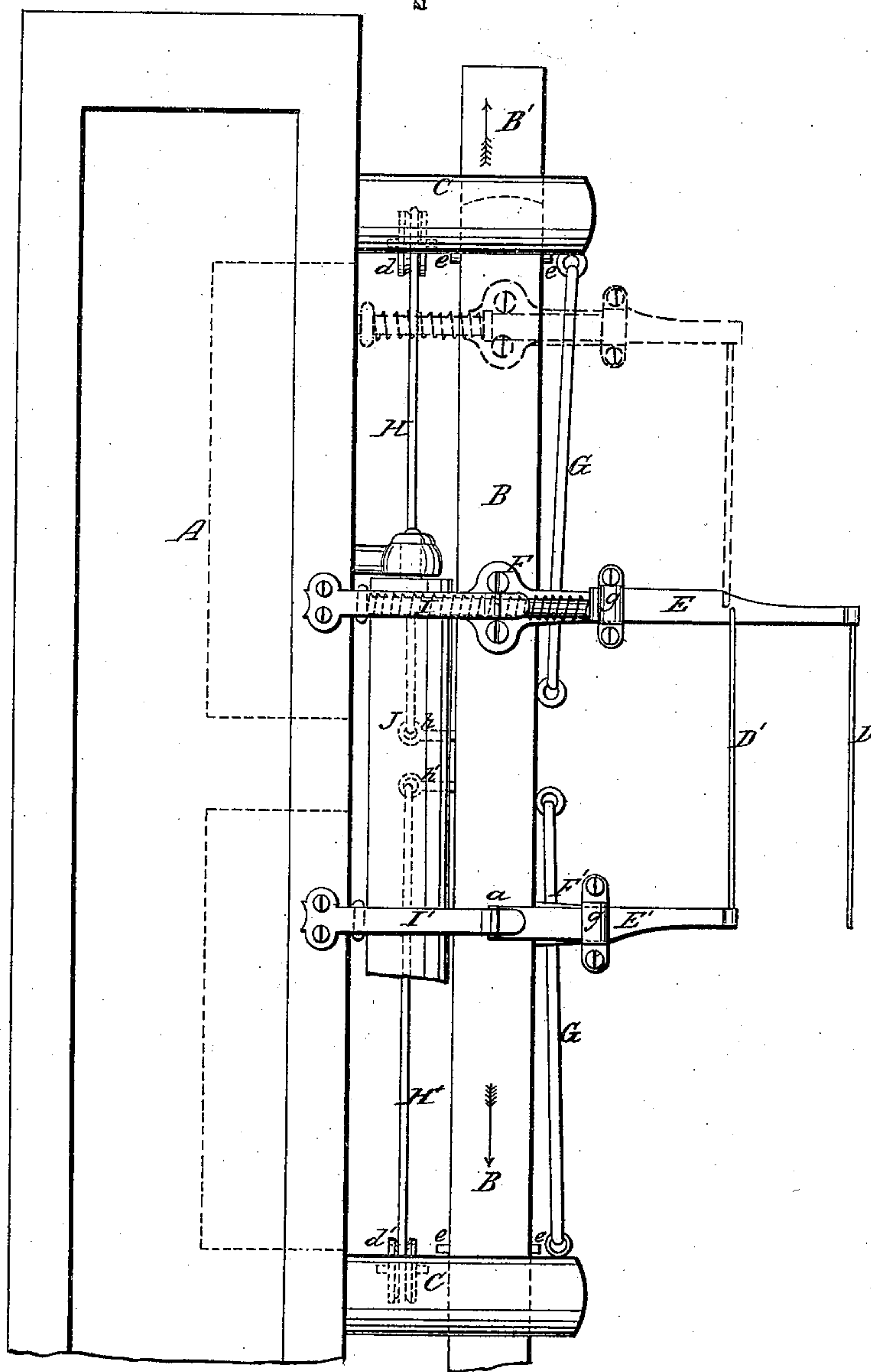


Fig. 2.



UNITED STATES PATENT OFFICE.

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LOOM.

Specification of Letters Patent No. 15,295, dated July 8, 1856.

To all whom it may concern:

Be it known that I, W. J. HORSTMANN, of the city of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in Power-Looms for Weaving Piled Fabrics; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1, is a transverse vertical section of the breast beam of a loom, showing also the application of my invention. Fig. 2 is a plan of the same.

Similar letters of reference indicate corresponding parts in both figures.

This invention relates to a novel mode of applying and operating the pile wires in looms for weaving piled fabrics. The invention is principally designed to be applied to looms for weaving narrow goods, as coach lace, trimmings, etc.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

The drawing represents the application of the invention to a loom for narrow weaving and though only one set of pile wires and their appendages is shown, it may be supposed that, and will be explained how, several sets of needles are applied, each set operating in a separate web.

A, is the breast beam of the loom.

B, B', are two horizontal bars arranged one above the other behind and parallel with the breast beam and fitted to work longitudinally in guides C, C, secured to the back of the breast beam. These bars are for the purpose of carrying the several sets of pile wires and their appendages and are intended to be nearly or quite of the full length of the breast beam in order to carry a number of sets of wires equal to the greatest number of pieces that can be woven in the loom at the same time.

D, D', are the two pile wires constituting one set; each of these is attached permanently and rigidly by one end to a separate steel rod E, or E', so as to stand at right angles to the said rod. The rods E, E', are made flat, thin and elastic for some distance from the back ends to which the wires are attached and the remaining portions are made round and large enough to be stiff. The rod E, carrying the wire D, is fitted to

work in two guides *f, g* in opposite ends of a supporting piece F, attached to the top side of the upper box B, and the rod E', carrying the wire D', is fitted to work in a supporting piece F', of similar character to F, attached to the top side of the lower bar B'. The supporting pieces F, F', are set to give the rods a slight inclination downward toward the end next the breast beam but to keep them parallel with each other and keep the wires parallel with each other. The wires stand on the contiguous sides of the two rods, that is to say, the sides which are opposite each other. Each rod is provided with a shoulder or collar *a*, between which and the rear guide *f*, of its supporting piece, is coiled a spiral spring *b*, which acts to throw the rod backward or from the breast beam. Mortises, or other suitable cavities, are made in the front of the breast beam, as shown at *i, i*, for the front ends of the rods to work into and thus allow the bars B, B', to be brought near the breast beam.

G, and G', are springs of india-rubber connecting the bars B and B', with the guides C, C', or other stationary part of the loom, the said springs acting by their tension to draw their respective bars in the direction of the arrows marked on them in Fig. 2, and thus draw the rods E, E', toward each other, but these rods are not allowed to approach within a distance of each other equal to the width of the fabric to be produced, being prevented from a nearer approach by stop pins *e, e*, see Fig. 2, secured on the sides of each bar to come in contact with the guides C, C.

H, H', are cords attached to staples *h, h'*, secured in the bars B, B', and passing over pulleys *d, d'*, in the guides C, C, to connect with treadles or other suitable devices to move the bars in opposition to the springs G, G', for the purpose of moving the rods E, E', from each other. The connections of these cords with the means of operating them does not require to be explained, as the operation may be effected in many ways.

I, I', are two spring latches attached to the breast beam for the purpose of engaging with the collars *a, a*, or shoulders on the rods E, E', to prevent the rods and wires moving back from the breast beam. The rod E', is represented in both figures as being held by the latch I', but the rod E, is represented as being free from its latch I, and thrown back by its spring *b*, as far

as is allowed, the backward movement being limited by the shoulder *a*, coming in contact with the front guide *g*, of its supporting piece *F*.

5 J, is a small roller fitted to bearings secured in the rear of the breast beam, which the woven fabric passes over on its way to the breast beam.

The operation of inserting and withdrawing the wires is performed in the following manner. During the opening of the shed on or other of the bars *B*, *B'*, is acted upon by the mechanism connected with the cords *H*, *H'*, and moved in such a direction as to draw its respective rod, *E*, or *E'*, away from the other rod far enough for its respective wire to clear the selvage threads of the warp, as is illustrated by the position of the rod *E*, and wire *D*, shown in red color in Fig. 2. The wire *D*, before this operation has been confined in the web, immediately in front of the position now occupied by *D'*, by the shed having crossed over it, but being now liberated, is quickly thrown backward by the action of the spring *b*, on its rod, till the shoulder *a*, strikes the front guide *g*. Immediately after the rod has been driven back by the spring, the bar *B* is liberated by its treadle or other device ceasing to draw on its cord *H*, and left free to be acted upon by the spring *G*, which pulls it in the direction indicated by the arrow marked upon it and thus carries the wire *D*, into the now open shed. In this position it is shown in black outline in Fig. 2. The advance of the lay causes the reed to drive back the wire *D*, and its rod *E*, and after the shed has crossed over it, the other wire *D'*, which during the above described operation of *D*, has been in the web, is drawn out by the movement of the bar *B'*, produced by the traction of the cord *H'*. The wire *D'* now goes through the same operation as that just described, of the wire *D*, and after it has been carried forward by the reed and had the shed crossed over it, the wire *D* is withdrawn and its operation repeated. In this way the operation continues, the wires operating alternately and each having the shed crossed upon it before the other is withdrawn.

The object of the spring latches *I*, *I'*, is to retain the bars *E*, *E'*, and wires *D*, *D'*, after having been driven forward. These are not absolutely indispensable to the operation of the wires, as the wires are retained by the crossing of the shed, but they serve to relieve the tufts or pile threads of the tension produced by the springs, *b*, *b'*, and also retain the wires in proper position at the commencement of the web. The rods *E*, *E'*, are drawn away from the latches *I*, *I'*, and liberated almost as soon as their respective bars *B*, *B'*, commence their movement to withdraw the wires.

It is obvious that any number of sets of wires *D*, *D'*, rods *E*, *E'*, and their appendages may be attached to the same pair of bars *B*, *B'*, and operated in the same manner, and in looms for narrow weaving only one pair of bars is necessary to carry the wires, etc., for any number of webs. For wide weaving, precisely the same arrangement of parts as is shown in the drawing may be made, due allowance being, of course, made for the width of the web.

I will here remark that the web bars *B*, *B'*, may be arranged side by side, instead of one above the other as shown in the drawings, and further that the springs, *G*, *G'*, may be of steel instead of india-rubber.

What I claim as my invention and desire to secure by Letters Patent, is,

1. The permanent attachment of the pile wires, by one end, to independent sliding rods which are carried each on one side of the warp and controlled by springs, in such a manner as to allow them, an independent movement longitudinally to the warp, by transversely sliding bars *B*, *B'*, the said rods, bars and springs, being operated and operating in combination with each other substantially as herein set forth.

2. And I also claim the spring latches *I*, *I'*, acting in combination with the rods *E*, *E'*, of the pile wires, substantially as and for the purpose set forth.

WM. J. HORSTMANN.

Witnesses:

C. BRAZER,
COLLIN PULLINGER.