

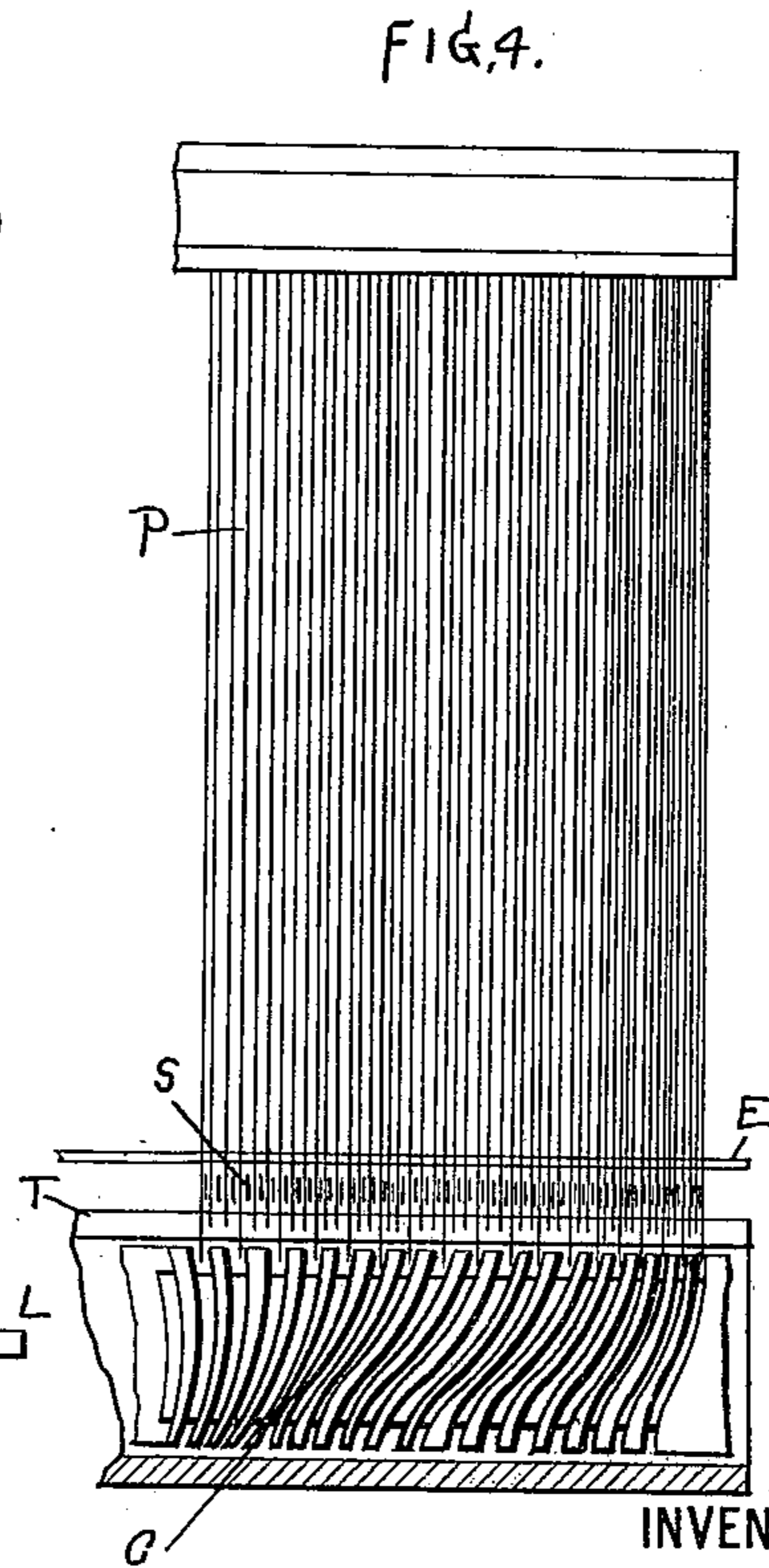
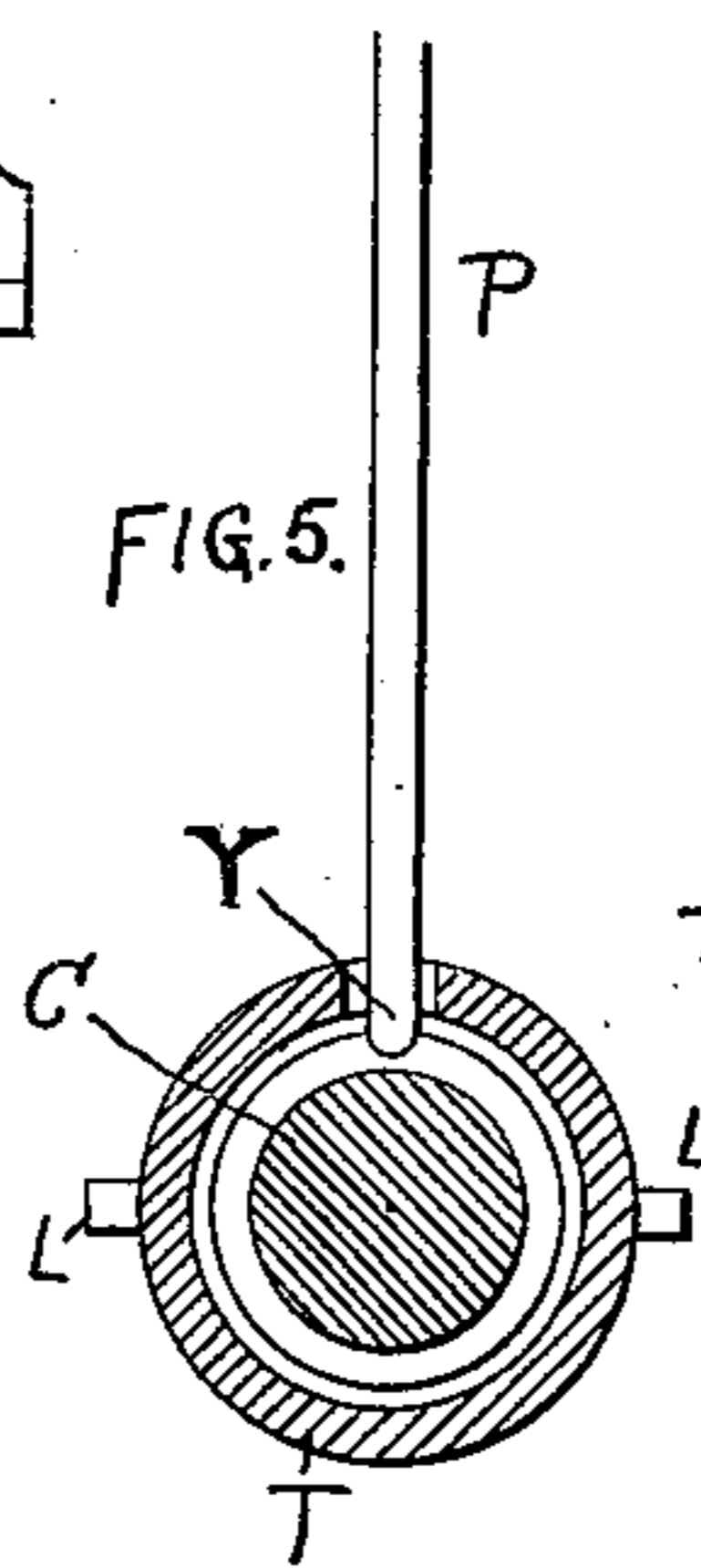
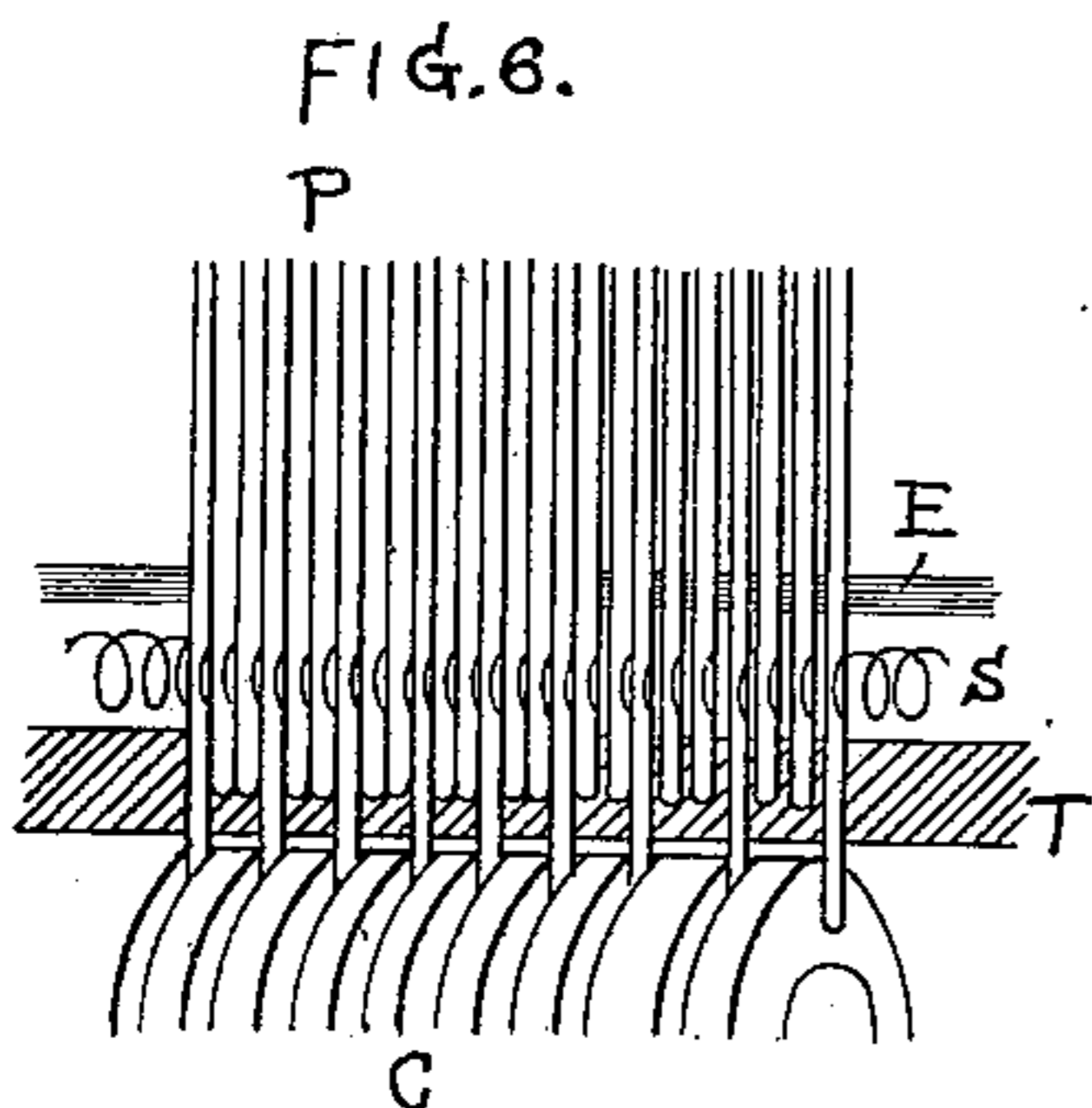
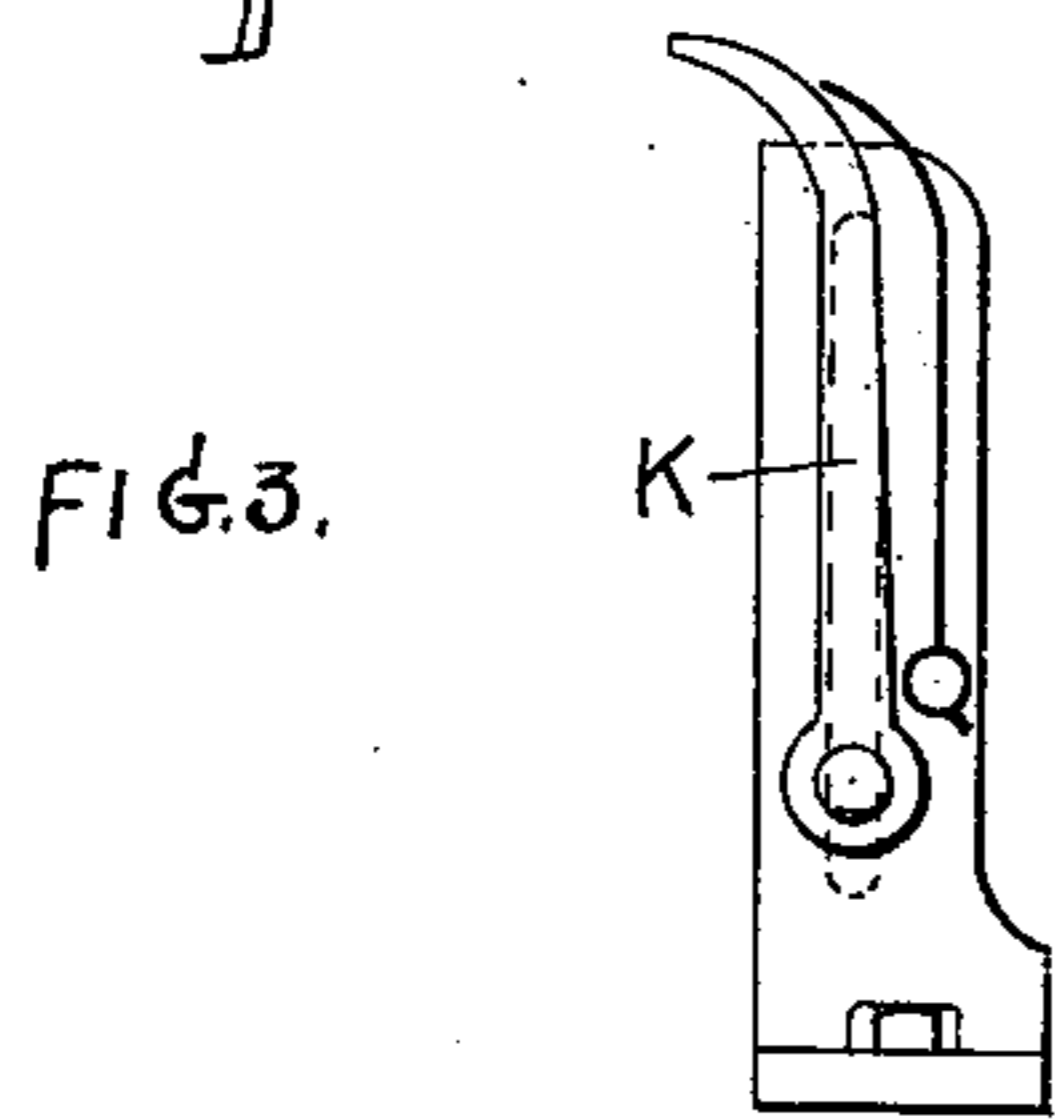
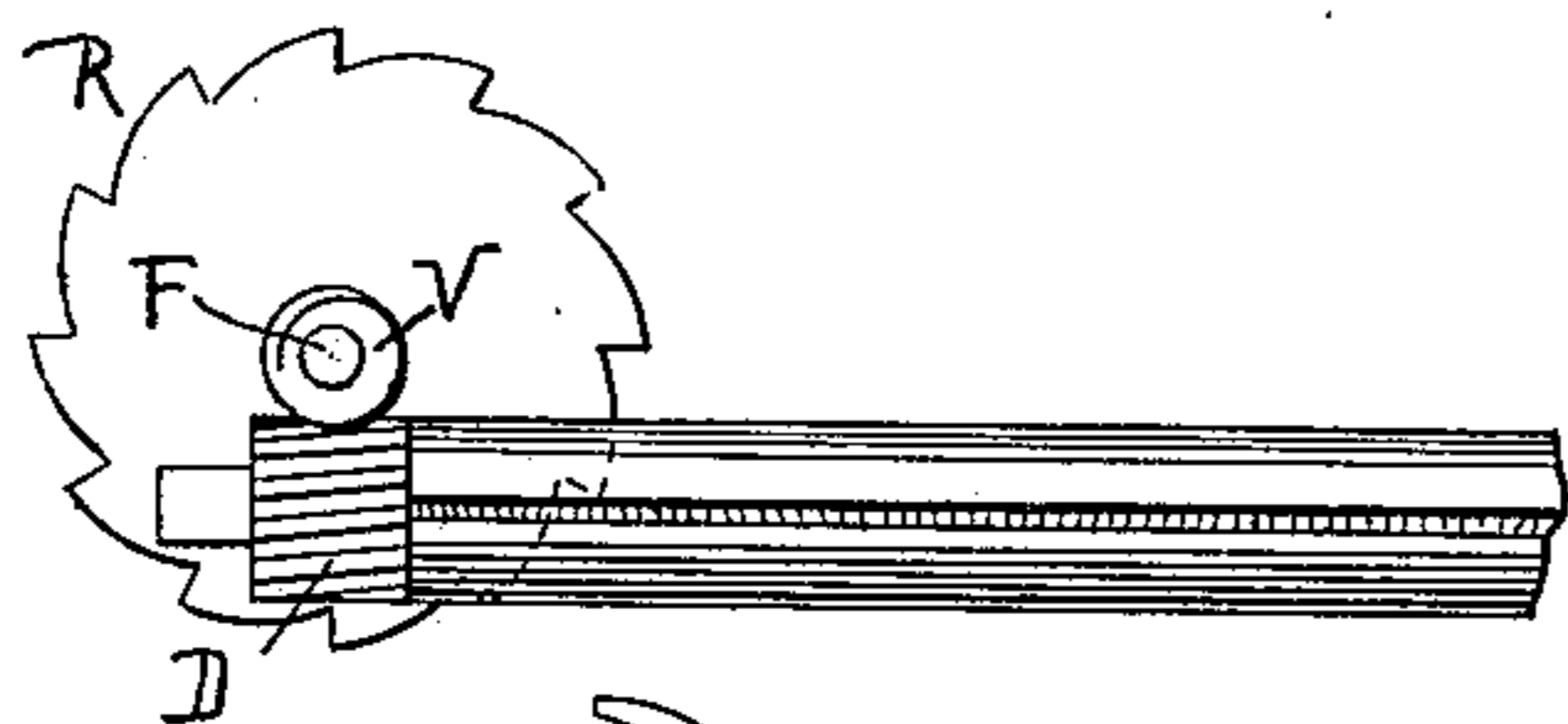
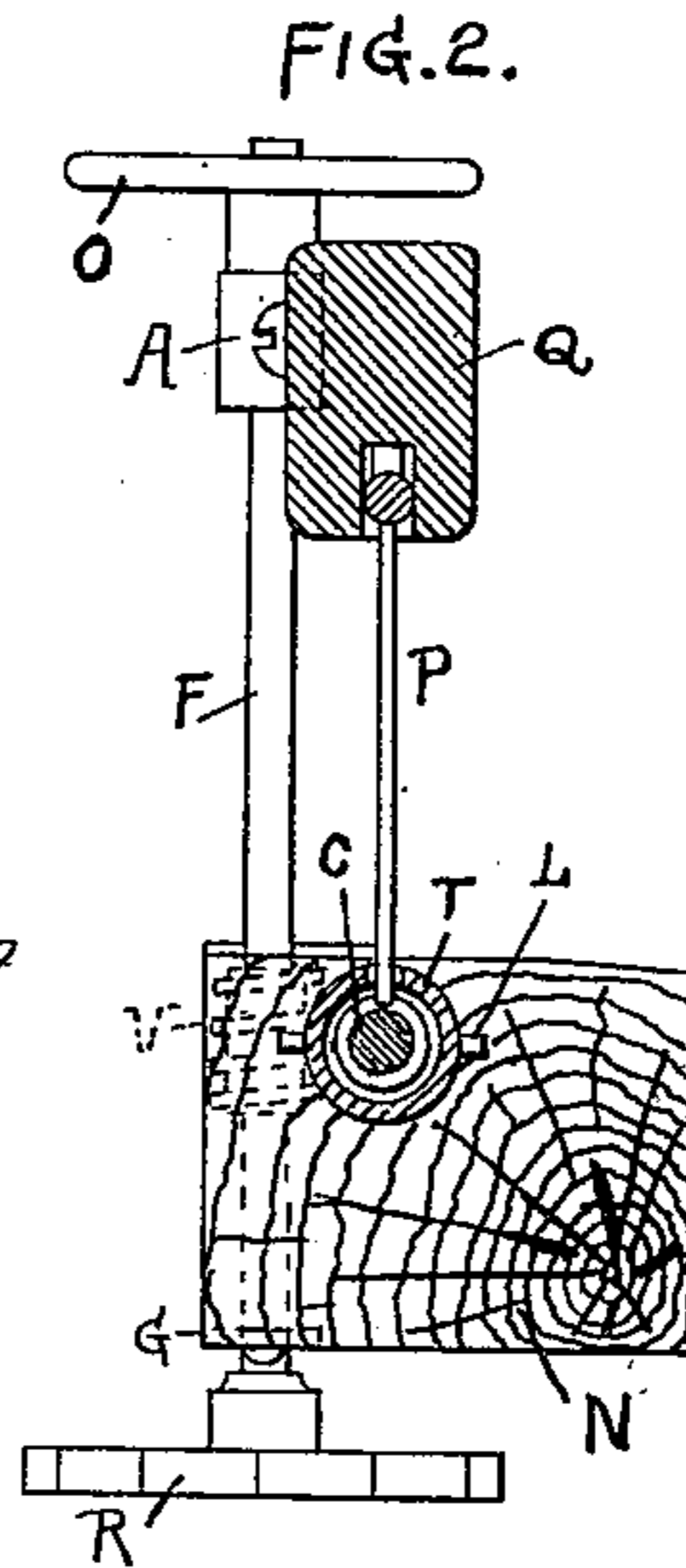
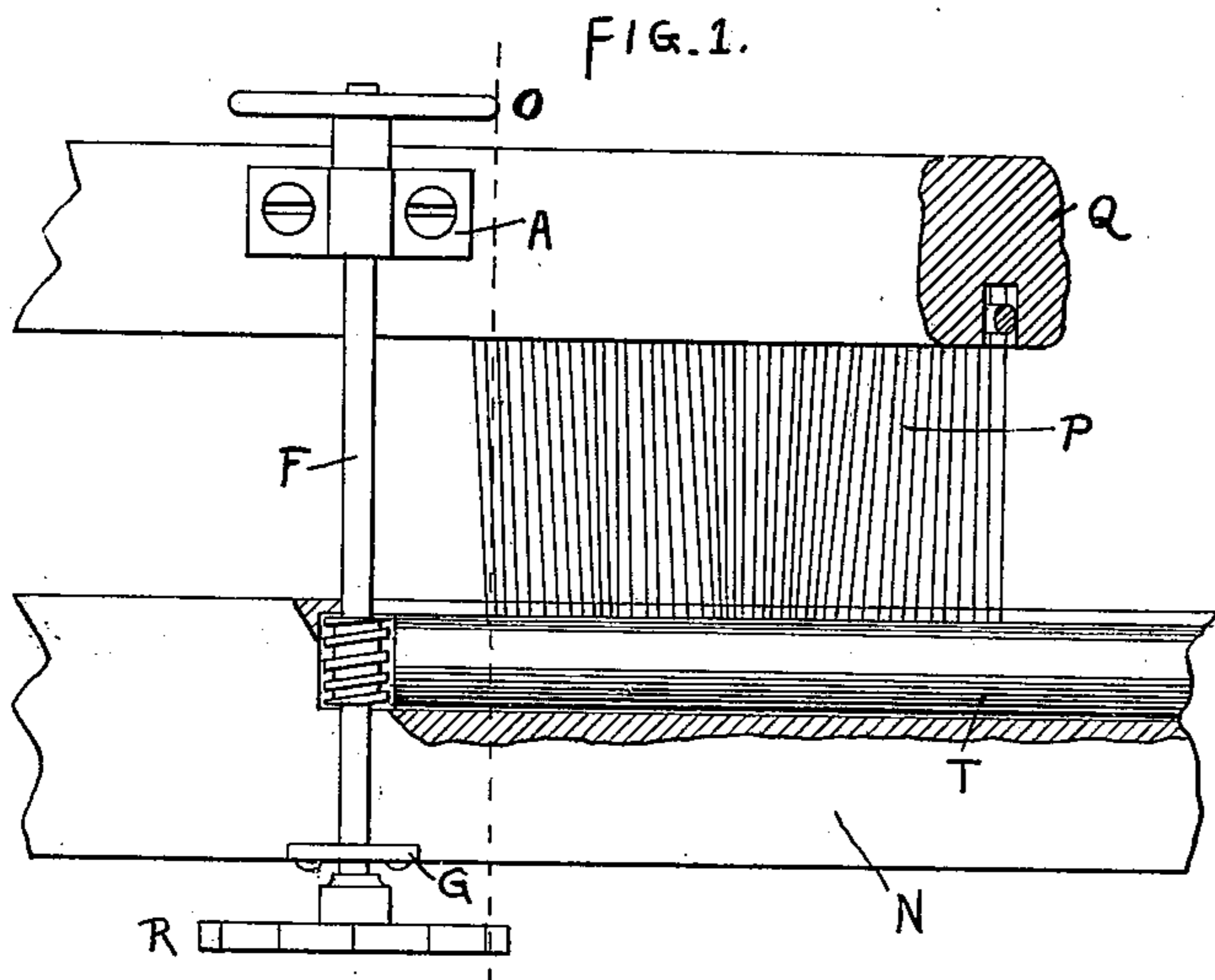
No. 627,440.

Patented June 20, 1899.

G. PATRONE.  
LOOM FOR WEAVING.

(Application filed Oct. 18, 1898.)

(No Model.)



WITNESSES:

*F. W. Wright.*  
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BY  
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HIS ATTORNEYS

# UNITED STATES PATENT OFFICE.

GIUSEPPE PATRONE, OF TURIN, ITALY.

## LOOM FOR WEAVING.

SPECIFICATION forming part of Letters Patent No. 627,440, dated June 20, 1899.

Application filed October 18, 1898. Serial No. 693,883. (No model.)

*To all whom it may concern:*

Be it known that I, GIUSEPPE PATRONE, a subject of the King of Italy, and a resident of Turin, Province of Turin, Italy, have invented certain new and useful Improvements in and Relating to Looms for Weaving, (for which I have obtained Letters Patent in France, No. 276,259, dated March 24, 1898, and filed applications for patent in Germany, March 23, 1898; in England, No. 11,361, May 18, 1898; in Switzerland, June 16, 1898; in Austria, July 20, 1898; in Russland, July 26, 1898, and in Italy, September 21, 1898,) of which the following is a specification.

The object of this invention is to produce in all fabrics manufactured with heddles or with jacquard mechanism a novel effect resulting from an assemblage of the threads at various points in the surface of the fabric in a manner which is not uniform by means of a novel device enabling a greater or smaller number of threads to be brought together independently of the tying up or arrangement of the threads of the fabric itself and in any desired manner in accordance with a predetermined design in one part of the fabric rather than in another, thus forming figures in which will be found a larger number of threads than in the ground of the fabric. These effects may be equally well combined with those of heddle or jacquard tying up, special effects being obtained in each case. Of the various effects obtainable in fabrics by means of this mechanical device one of the most in vogue and the most readily produced is a diagonal—in a cloth fabric, for example—in which there may be from twenty-four to twenty-six warp-threads per centimeter, while there are only about twenty or twenty-one in the ground, and if the diagonal effect is not sufficiently visible it may be rendered more obvious by employing different colors for the different warp-threads. With this method also crepon effects are obtained according to the design desired, and for this purpose it is only necessary to increase the number of weft-threads inserted per centimeter or to otherwise increase the weight of the fabric. This effect may likewise be obtained in accordance with the design itself by assembling so many threads in a small surface of the fabric that it is forced to crimp.

The invention is illustrated in the accompanying drawings, which are given by way of example only, and in which—

Figure 1 is a front elevation, partly in section, of the lathe or batten of a weaving-loom provided with my novel device. Fig. 2 is a vertical cross-section of the same on the line 2 2, Fig. 1. Fig. 3 is a plan view of the novel device. Figs. 4 and 5 are respectively a front elevation and a vertical cross-section, upon a larger scale, of a modification of this novel device. Fig. 6 is a perspective view of such modification upon a still larger scale.

The novel device consists, essentially, of a weaving-comb P, provided with flexible teeth, soldered or otherwise connected together in series at their upper extremities only and free at their lower extremities, which terminate in points, and of a cylinder C, upon the surface of which is formed a series of sinuous grooves, the path of which is determined in accordance with the design required for the fabric. The lower and free extremities of the teeth of the comb P engage in the corresponding grooves upon the cylinder C, passing through a longitudinal slot formed in the tube T, which envelops and protects the cylinder C for its entire length, leaving it free, however, to rotate upon itself.

The comb P is arranged upon the lathe or batten N in the same position that it occupies in all weaving-loom, and the tube T is arranged beneath the comb in a mortise expressly formed in the batten itself and is provided with ribs L to prevent it from rotating.

The cylinder C is provided at one of its extremities with the pinion D, having helicoidal teeth, actuated by the endless screw V, rigidly fixed upon the shaft F and provided at its lower extremity, which rests freely beneath the batten N, with a ratchet-wheel R, fixed by means of a pin. Below the breast-beam of the loom and in front of the ratchet-wheel R is arranged a pawl K, which is adjustable in the direction of its length and spring-operated in the usual manner. At each forward stroke the batten causes the ratchet-wheel R to strike against the pawl K, thus causing it to advance one or more teeth at each blow, and thereby forcing the cylinder C to rotate upon itself through a certain angle each time. Owing to this partial and inter-

mittent rotation of the cylinder C the points of the teeth of the comb P, which engaged in their grooves, are forced to become displaced more or less toward either the right hand or the left, according to the path of the grooves themselves. A lever or handle O, fixed upon the upper extremity of the shaft F, enables the operative to actuate the cylinder C by hand, and thus bring back the design to its exact position when it has become displaced by any means. The support A, screwed to the top Q of the comb P, and the support G, screwed beneath the batten N, retain in position the shaft F, which is, however, free to rotate. The same partial and intermittent rotation of the cylinder C may be equally well obtained by connecting this latter with the jacquard mechanism when the loom is of that type or by any other suitable device or arrangement, the substance of the invention not being thereby affected.

The lower extremities of the teeth of the comb P which strike the chute, being situated at a distance which varies continually, guide the warp-threads in a sinuous direction in the plane of the fabric. This latter will thus have a different number of threads in various places. The weft-threads, pressed back more or less in the fabric by the varying number of warp-threads, also assume a sinuous position in a manner similar to the warp.

When the complication of the design is such that a number of grooves equal to the number of teeth in the comb necessary for and corresponding to the fabric which it is desired to manufacture cannot be formed around the cylinder C, and also when (in order to reduce the cost of production of the said cylinder) it is desired to diminish the number of such grooves, the modification illustrated in Figs. 4 and 6 may be applied. In this modification a portion only of the teeth extend to and enter with their lower point the grooves corresponding to the said reduced number of teeth, the intermediate teeth being cut somewhat shorter, connected, and caused to participate in the lateral movement of the teeth of normal length by means of a spiral spring S, each convolution of which is introduced at the rear

between two adjacent teeth and which is held in position by means of a block E, which is screwed to the batten.

In the figures described is represented the arrangement consisting of one normal tooth and two shorter teeth in succession; but it is obvious that this proportion may be varied to a greater or less extent at will, according to the degree of complication of the design. In this manner and owing to the elasticity of the spiral, which maintains the shorter teeth equidistant between the two normal teeth which bound them, it is apparent that the shorter teeth are influenced not less than the normal teeth by the path of the corresponding grooves, and therefore assist in the formation of the design upon the fabric, although they are not acted upon directly, as are the normal teeth, by the path of the grooves in the cylinder C.

I claim as my invention—

1. A loom-batten carrying a comb provided with laterally-adjustable and independently-movable teeth and means for moving said teeth, and thereby the warps, to the right or left.

2. A loom-batten carrying a comb with laterally-adjustable and independently-movable teeth and means for moving said teeth, and thereby the warps, to the right or left, and devices adapted to actuate said means during the operation of weaving.

3. A loom-batten carrying a comb having flexible teeth fixed at their upper ends and means for displacing their lower ends, and thereby the warps, to the right or left, as and for the purpose described.

4. A loom-batten carrying a comb, a cylinder having sinuous grooves by which the teeth of the comb are guided and means for rotating said grooved cylinder to move the teeth of the comb and thereby the warps, to the right or left, substantially as described.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

GIUSEPPE PATRONE.

Witnesses:

EUGENIO G. B. CASSETTA,  
RAFFAELE ROSSE.