

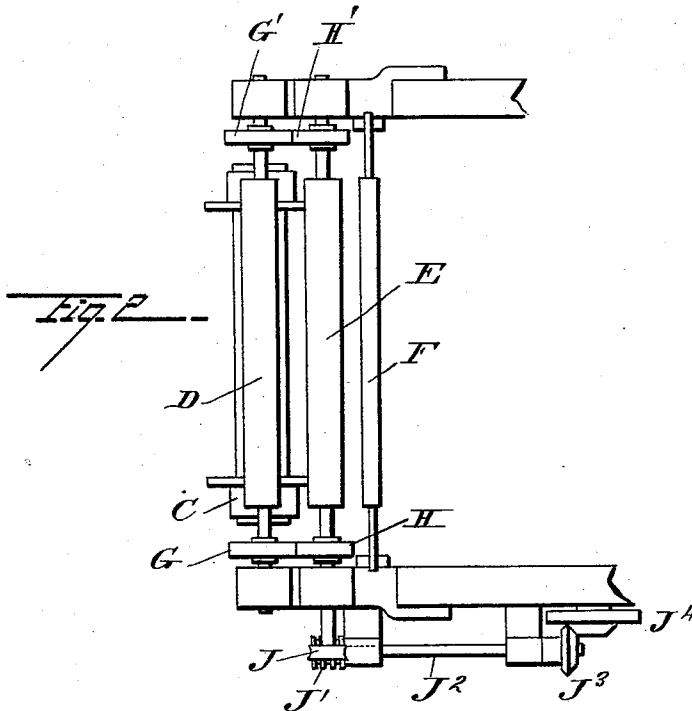
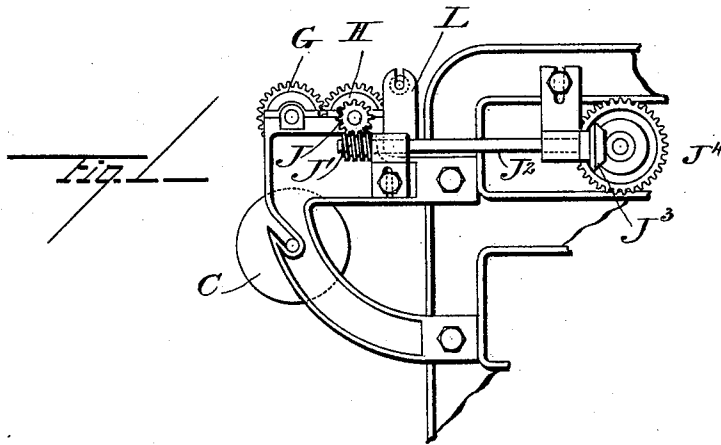
(No Model.)

M. LEACH, J. HEATON & J. BENTLEY.

LET-OFF MECHANISM FOR DOUBLE PILE FABRIC LOOMS.

No. 479,372.

Patented July 19, 1892.



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LET-OFF MECHANISM FOR DOUBLE-PILE-FABRIC LOOMS.

SPECIFICATION forming part of Letters Patent No. 479,372, dated July 19, 1892.

Application filed March 23, 1890. Serial No. 345,677. (No model.)

To all whom it may concern:

Be it known that we, MARK LEACH, JOHN HEATON, and JOHN BENTLEY, subjects of the Queen of Great Britain, residing at Bradford, England, have invented certain new and useful Improvements in Let-Off Mechanisms for Double-Pile-Fabric Looms, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

Our invention relates to looms for weaving double pile fabrics; and it consists of improved let-off mechanism for the pile-warp, as hereinafter fully described.

In the accompanying drawings, illustrating our invention, Figure 1 is a side view of that end of the frame of the loom containing the improved let-off mechanism, and Fig. 2 is a plan view thereof.

It is important to a successful operation of looms of this character that the warp-threads forming the pile of the fabric should be fed forward with unvarying regularity and uniformity, and, as this is accomplished on all such looms by means of frictional contact with the surface of covered rollers, that such rollers should be operated with precision and at the same time so arranged that they will present the largest possible frictional contact-surface to the pile-warp threads passing over them. To effectuate these objects is the design of our present invention, which consists, mainly, in the mechanism employed for driving the covered rollers uniformly.

Referring to the drawings, C is the warp-beam supported upon a shaft resting in bearings in the loom-frame, and upon it are wound the pile-warp threads which are fed forward by the let-off mechanism to the shedding mechanism of the loom. It is so unwound merely by the pull of the threads themselves occasioned by the frictional contact thereof with the covered rollers.

D and E are horizontally adjacent covered feed-rollers, and F is a guide or friction roller, these being arranged in the order and in the relative position shown in the drawings, although the outer covered roller D need not

necessarily be in the same horizontal plane with the covered roller E, but may be in the same vertical plane therewith, either above or below it or obliquely thereto. These covered rollers D and E are provided with shafts having their bearings in the loom-frame and are geared together by cog-gears G and H on the shafts which carry them, and may be also supplied with a second pair of such cog-gears G' and H', if desired. These feed-rollers D and E are of uniform diameter, and the gears are adapted to revolve them at a uniform speed, and they are preferably placed not so close as to cause them to contact, so as to avoid injury to their covered surface from such attrition. The shaft of the inner or actuating covered roller E is extended through its gear-wheel H and through the frame of the loom and terminates in a worm-wheel J, which gears with the worm J' on the end of a continuously-driven shaft J², which at its other end is provided with beveled gearing J³, meshing with gearing J⁴ on the end of the picker or other shaft driven mediately or immediately from the main shaft of the loom. The worm-screw employed must be either right or left hand, depending upon the position of the roller D relatively to the roller E. For instance, if they are horizontally adjacent, as shown in the drawings, the worm-gearing J is of such character that the rotation of the cog-gearing G and H will be inwardly and not outwardly, and so that the covered rollers D and E will rotate in opposite directions and toward each other. Other driving mechanism may be substituted for the worm-gearing J and the driving-shaft J², provided the inner feed-roller is driven in the direction mentioned relatively to the other parts, and the shaft substituted for J² is a continuously-driven shaft. An upright bracket L, rising from the loom-frame immediately in front of and on a line parallel with the inner feed-roller, supports a plain friction-roller or guide-post F, set slightly above or at least as high as the top of the inner feed-roller. The function of this roller F is to properly guide the warp from the last-covered roller and to the heddles or to the tension mechanism be-

tween the same, and also to check the vibration in the pile-warp, consequent on the beat of the lay, and prevent it from embedding itself in the soft covering of the last-covered roller. The pile-warp is wrapped on the beam C, and the quantity thereof required in the operation of the loom is drawn off by passing the same upward and over and partially around the first feed-roller D, and thence to and under and partially around the second feed-roller E, and then to and over the guide or friction roller F, and thence to the heddles. It will be seen that by this arrangement of feed-rollers and guide-rollers a very large frictional contact-surface thereof with the pile-warp is obtained without complicated mechanism directly applying to both rollers to revolve said rollers in contrary directions. The usual and customary tension mechanism for the pile-warp threads located between the final guide-roller F and the shedding mechanism may be employed as in other looms of this character. As the principal design of our invention is to operate these covered feed-rollers in contrary directions from each other, but with uniformity and precision, and without the use of complicated mechanism applied to the axes of both feed-rollers to rotate them in that manner, the essence of our improvement lies in adapting to covered rollers of uniform size cog-gearing on the axes of the shafts of such rollers adapted to revolve them with uniform speed and applying to the extended shaft of one of such rollers worm-gearing or other suitable actuating mechanism to rotate the inner covered roller either to the right or left, depending upon the position relatively thereto of the other of the pair of covered friction-rollers, and also in the combination, with said covered rollers and the mechanism for rotating the same in opposite directions to each other, of a guide-roller located and arranged between the final covered roller and the tension mechanism of the loom, for the purposes hereinbefore mentioned.

Having thus described our invention, what we claim as new is—

1. The combination, with the loom-frame and the warp-beam C, of a pair of covered friction-rollers D and E of uniform size, arranged parallel and adjacent to but separate from each other, with connecting actuating-gearing on the axes of their shafts, said gearing being adapted to revolve them at a uniform speed, but in opposite directions to each other, the shaft of one of said rollers being extended and provided with mechanism to rotate the same, and a continuously-driven actuating-shaft with driving-gearing actuating the said shaft, whereby the pile-warp fed from the beam may pass over and partly around the first feed-roller, and then to and under and partly around the second feed-roller, substantially as described.

2. The combination of mechanism for supplying, delivering, and guiding pile-warp to the weaving mechanism, consisting of a warp-beam, a pair of separated covered rollers of even diameter, and their shafts, with cog-gears on the ends of said roller-shafts engaging with each other and adapted to revolve said rollers at a uniform speed, but in opposite directions to each other, a continuously-driven shaft with actuating-gearing thereon meshing with gearing on the end of the shaft of one of said covered rollers, and guiding devices between the delivering covered roller and the weaving mechanism, said parts being constructed, combined, and arranged relatively to each other, substantially as and for the purposes set forth.

In testimony whereof we have hereunto affixed our signatures this 15th day of November, A. D. 1889.

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