W. P. CLEMENTS & J. H. CAGLE.

Hand-Looms.

No. 196,137. Patented Oct. 16, 1877.

Fig. 1

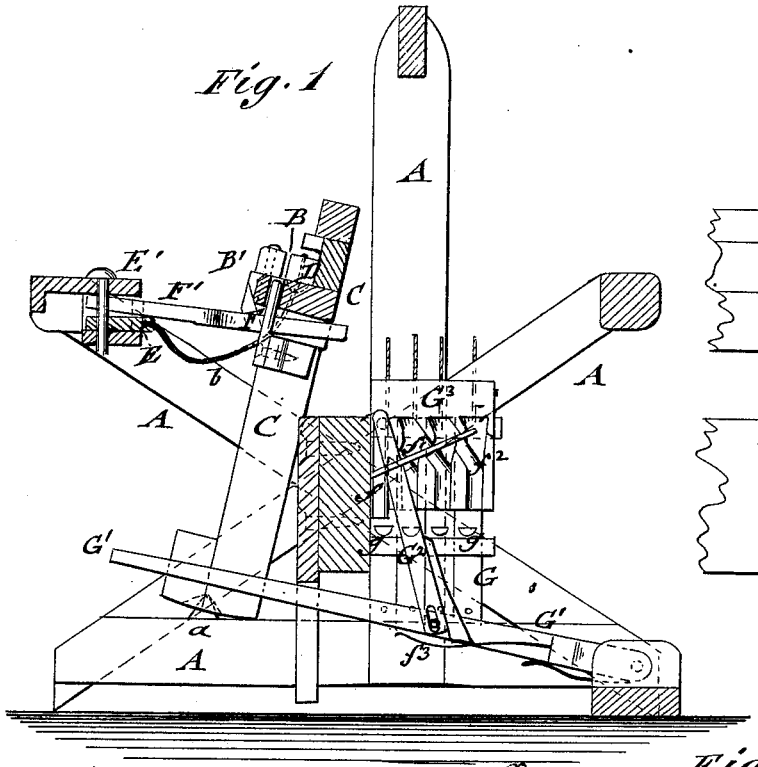


Fig. 3.

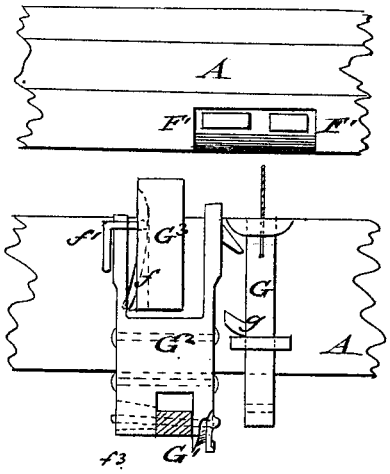
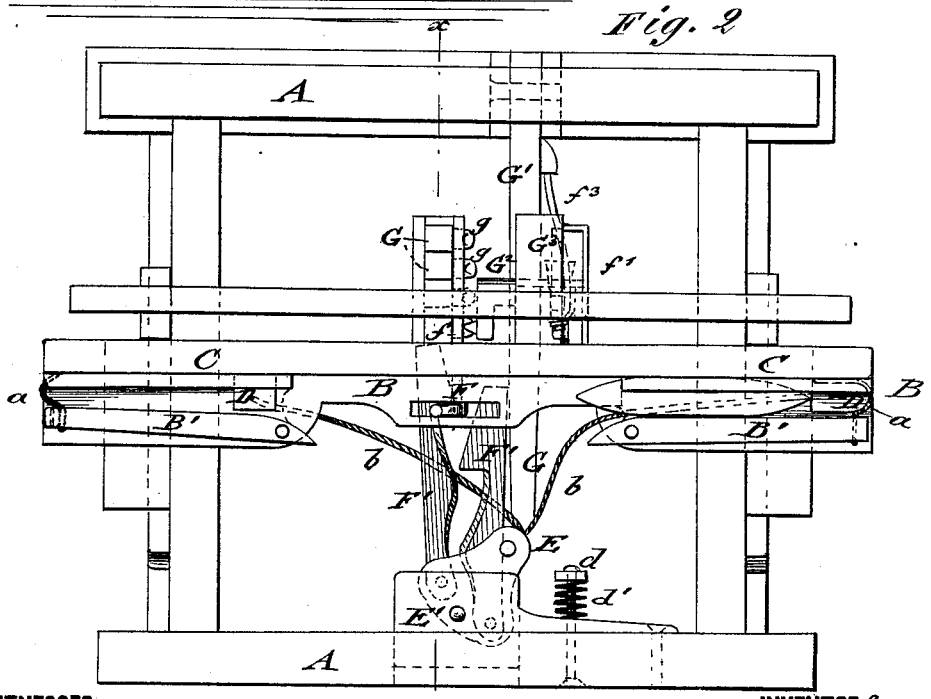


Fig. 2



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WESLEY P. CLEMENTS AND JAMES H. CAGLE, OF DAVIDSON RIVER, N. C.

IMPROVEMENT IN HAND-LOOMS.

Specification forming part of Letters Patent No. **196,137**, dated October 16, 1877; application filed May 21, 1877.

To all whom it may concern:

Be it known that we, WESLEY P. CLEMENTS and JAMES H. CAGLE, of Davidson River, county of Transylvania, and State of North Carolina, have invented a new and useful Improvement in Hand-Looms, of which the following is a specification:

In the accompanying drawing, Figure 1 represents a vertical transverse section of our improved hand-loom on line *x x*, Fig. 3. Fig. 2 is a plan view of the same, and Fig. 3 a detail rear view of the harness or heddle arrangement.

Similar letters of reference indicate corresponding parts.

The invention relates to improvements in hand-looms, by which they may be worked with greater efficacy, rapidity, and reliability; and it consists, essentially, of an improved shuttle-box and throwing apparatus, and of an improved harness or heddle construction.

In the drawing, A represents the supporting-frame of our improved hand-loom, which is constructed, without mortise-and-tenon connection, in simple and suitable manner, and so as to give access to all the parts needing adjustment, without requiring the operator to crawl in and out of the frame. The shuttle-race B is arranged on the top of the vibrating batten C, which is seated on knife-edged bottom pivots *a* of the frame. The shuttle-boxes are formed at both ends of the race by pivoted clamp-pieces B′ at the front part of the box, which exert a pressure on the shuttle without springs or screws. The outer tapering ends of the clamp-pieces B′ are adjusted to different sizes of shuttles by lengthening or shortening the strings *a* at the outer extremity of the shuttle-boxes. The strings act also as regulators of pressure, as they are tightened when the picker-blocks D are thrown against the strings, so as to draw the pivoted clamp-pieces with greater or less pressure on the shuttle in proportion to the velocity with which it is thrown. If the shuttle is thrown lightly, it is lightly clamped; if with greater force, it is clamped with increased power. When the batten strikes the cloth, the weight of the shuttle and clamp-piece relieves all pressure from the shuttle, so as to facilitate the throwing of the same with less power than in the common hand-looms.

The throwing apparatus for the shuttle consists of alternately-sliding picker-blocks D, which are connected, by leather or other cords *b* passing along and through the depressed and perforated batten of the shuttle-boxes, to the end of the oscillating or wag staff E, that is centrally pivoted to a recessed box, E′, at the front piece of frame A. The box E′ is applied, by a screw, *d*, with spiral spring *d′* and head, to the front piece, the spring checking the backward motion of the batten, preventing any jarring, and facilitating the forward motion of the same.

The batten is provided at the center with an oscillating finger, F, that is guided along a slotted center part of the same, and placed between the two slides or hooks F′, having cam-shaped edges, and pivoted to the oscillating finger E′. The slides or hooks F′ are guided in a recess of the batten below the finger-guide, and are made with a hook at the outer end and a swell or enlarged part back of the same, as shown in Fig. 2. The oscillating finger engages, by the forward motion of the batten, alternately the hooks of the slides, carrying the slide with which it has engaged forward, and throwing the wag-staff and shuttle by the connection with the sliding blocks.

The guide or pattern plate G^3 and the set of jacks G, to which the heddles are connected by cording, in the ordinary manner, are placed at right angles to the frame and batten, in line with the transverse axis of the loom, in place of the longitudinal position of the old style of heddle devices, that are operated by an equal number of treadles, which cause inconvenience and delay. The heddle-jacks G are all operated by one treadle, G^1, which is spring-acted, and provided with a forked and pivoted hook-piece, G^2, that runs, by its hook or pin ends, along a grooved guide-piece, G^3, parallel to and corresponding in size and subdivisions with the number of heddles, and simultaneously along the steps of the heddle-jacks. The forked hook-piece G^2 is pivoted in such a manner that it has a side play when thrown over by the action of a grooved spring, *f*, at the end of the guide-piece G^3, adjoining the

center-piece of frame A, so as to be conducted by the return motion of the treadle along an inclined guide-rod, f^1, and be thrown, on arriving at the upper end of the same, into the outer guide-groove f^2, which is accomplished by a second bottom spring, f^3, the swinging motion of the guide-piece being permitted by its slotted or widened pivot-hole. The second hook end of the forked piece G^2 passes then, by the depressions of the treadle, along the heddles, and engages successively the steps g of the same, so as to lower them. The end of the hook-piece passes, on the release of the treadle, from the first guide-groove, along a connecting side groove at the upper end, into the second groove, and from the same, in similar manner, into the third groove, and, finally, along the grooved spring, lowering thus consecutively the different heddles. The use of one treadle avoids the shifting of the foot from one treadle to the other, by which frequently a wrong heddle is brought down, so as to make a balk in the cloth.

When the operator has to stop to tie a thread, or for any other cause, he can instantly go on with the work without being required to find the treadle in which he left off work. The loom can thereby be stopped and started without a moment's delay, and run with less labor than in the common looms in use.

Having thus fully described our invention, we claim as new and desire to secure by Letters Patent—

1. The combination of the shuttle-boxes, sliding picker-blocks, connecting-cords, oscillating or wag staff, and slides or hooks, having cam-shaped edges, with the central oscillating finger of the batten, substantially in the manner described, and for the purpose specified.

2. The combination of the oscillating staff and slides or hooks, having cam-shaped edges, with the recessed and spring-cushioned supporting-box, substantially as described.

3. The combination, in a hand-loom, of the heddle-jacks G and guide-block G^3, placed at right angles to the batten, and operated by a single treadle, G^1, and suitably-operating mechanism, as and for the purpose set forth.

4. The combination of spring-acted treadle G^1, pivoted and laterally-swinging hook-piece G^2, grooved guide-piece G^3, having grooved end spring f and guide f^1, and heddle-jacks G, having steps g, to work the heddles successively by one treadle, substantially as described, and for the purpose specified.

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