(No Model.)

C. COUPLAND.

LOOM FOR WEAVING DOUBLE PILE FABRICS.

No. 294,968. Patented Mar. 11, 1884.

Fig 1

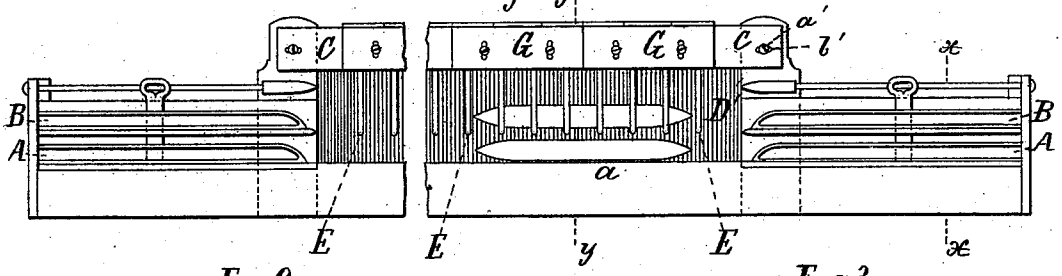


Fig 2

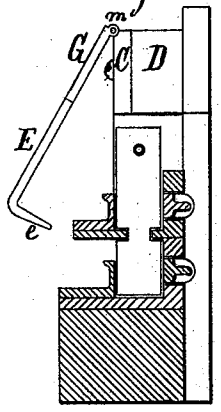


Fig 3

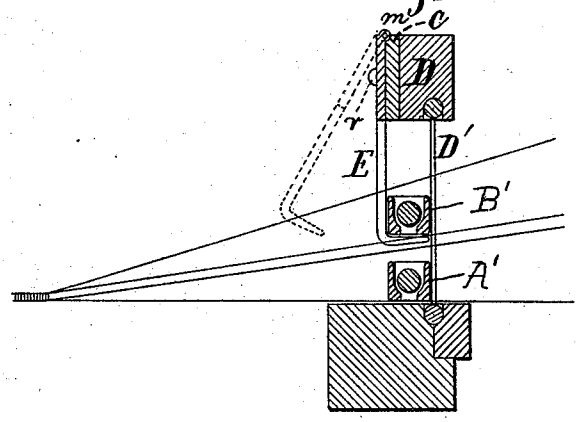


Fig 4

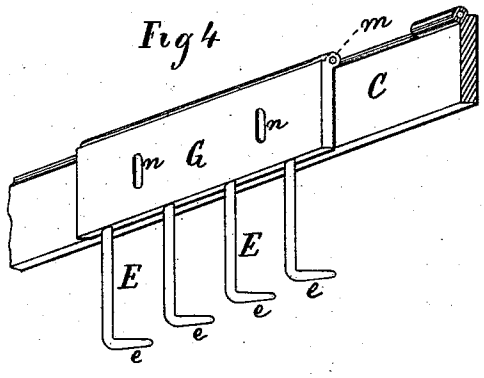
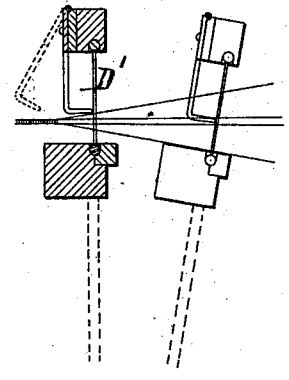


Fig 5



Witnesses
Rudolf. Bellman
Edward A. Holley

Inventor
Charles Coupland
per
James Aylesworth
Attorney

N. PETERS. Photo-Lithographer. Washington, D. C.

UNITED STATES PATENT OFFICE.

CHARLES COUPLAND, OF SEYMOUR, CONNECTICUT.

LOOM FOR WEAVING DOUBLE PILE FABRICS.

SPECIFICATION forming part of Letters Patent No. 294,968, dated March 11, 1884.

Application filed March 29, 1883. (No model.)

To all whom it may concern:

Be it known that I, CHARLES COUPLAND, of Seymour, in the county of New Haven and State of Connecticut, have invented certain Improvements in Looms for Weaving Double Pile Fabrics, of which the following is a specification.

This invention relates to looms for the manufacture of "double pile fabrics," so called, which are composed of duplicate foundation webs or fabrics united by intersecting or intermediate threads, which, when subsequently divided, form two single fabrics, each having a pile or velvet-like surface, and is more particularly designed as an improvement to that class of looms employing two shuttles which are thrown simultaneously, one of the shuttles of which is carried upon a skeleton raceway, as represented in my application for Letters Patent filed on or about November 7, A. D. 1882, for improvements in looms for weaving double fabrics; and its object is to provide an improved means of attaching the skeleton race in place, and of providing for its adjustment and for its temporary or incidental change of position with reference to the lay and to the warps, as circumstances shall require.

Figure 1 is a front view of part of the lay of a loom constructed according to my said invention. Figs. 2 and 3 are transverse sectional views thereof on a larger scale, and taken in lines *x x y y* of Fig. 1. Fig. 4 is a perspective view, also on a larger scale, of one portion of the apparatus included in my said invention; and Fig. 5 is a detail diagram taken in a plane at right angles to Fig. 1 and on substantially the same scale as said Fig. 1.

Before proceeding to describe specifically the combination of parts comprised in my present invention, it is preferable to describe in general those parts of the loom in relation with which my said present invention is more particularly intended to operate.

The loom at each end of the lay is provided with a pair of shuttle-boxes, A and B, each of the boxes of each pair being designed for the reception of a separate shuttle, one of said shuttle-boxes—as, for example, B—being placed over the other box, A. The shuttle from the lower boxes, A, is arranged to traverse the lower shuttle-race, *a*, the said lower boxes being arranged in the same relation with the said race *a* as the ordinary shuttle-boxes of a loom are arranged with reference to the usual single raceway. D is the top rail of the lay of the loom. D′ is the reed.

E is a series of prongs or fingers, the attachment of which to the top rail, D, and the special features of which are hereinafter more fully particularized. The lower ends of the prongs or fingers E are bent inward or backward to a horizontal position, as more fully represented in Figs. 2 and 4, so that, these lower horizontal ends, *e*, of the fingers E being all in substantially the same horizontal plane, and this plane being substantially the same as that occupied by the bottoms of the upper boxes, B, the said lower portions of the said fingers E constitute a skeleton race, over which the shuttle from the upper boxes, B, may traverse in the same relation to the upper warp as the shuttle from the lower boxes, A, traverse the race *a* in relation to the lower warps, the skeleton form of the race permitting the same to operate as such without interfering with the movement of the warps, the prongs or fingers E being placed at such distance apart that their lower portions, *e*, will support the shuttle, as just described. The skeleton race provides an effective means whereby the flight of the upper shuttle, when operated for forming the upper web of the fabric, is permitted without allowing the said upper shuttle to run in direct contact with the upper warp. The lower parts, *e*, of the skeleton race are constructed and arranged in such manner that the lower warp may run between them during the operation of weaving, and are preferably made somewhat tapering, in order that the warps may not catch in passing between them. The rearmost ends of the parts *e* are placed at some little distance in front of the reed, to permit the filling from the upper shuttle to draw down, as will be readily understood by those conversant with the construction and operation of looms.

The two shuttles A′ and B′ are designed to be simultaneously projected over the two races, as represented in Fig. 1, the shuttle-boxes themselves being of such construction

as to permit this, and the said boxes being provided with suitably-arranged pickers of any appropriate kind for throwing the shuttles. The skeleton race aforesaid is formed in sections, each composed of any desired number of the prongs or fingers E, attached at their upper ends to a plate, G, which is hinged at *m*, at its upper edge, to a flat bar, C. This hinging may be done by means of any suitable devices—as, for example, by a bolt passing through lugs provided on the upper edge of each plate, and coincident ears provided upon the upper edge of the bar C, the said lugs and ears being fitted together to form the two parts of the hinge, and connected by the bolt passing through them. The bar C is attached, as hereinafter explained, to the front of the top rail, as more particularly represented in Figs. 2, 3, and 4. The plates G are placed with their ends adjacent to each other—in other words, along and parallel with the front of the top rail, D, as represented in Fig. 1. Each of the said plates is provided with one or more slots, *n*, through which are passed bolts or set-screws *r*, which work in suitably-threaded sockets or nuts provided in the top rail, D. When these set-screws *r* are screwed home to their places, their broad heads, resting upon the outer surfaces of the plates G, compress the latter snugly against the bar C, and consequently hold the same rigidly in place with reference to the said bar. The bar C is attached at the front of the top rail, D, of the reed by suitable bolts and nuts, or by other appropriate means—as, for example, by broad-headed set-screws *a'*, passed through longitudinal slots *b'*, formed in the end of the said bar, the said screws *a'* passing into suitable threaded sockets or nuts formed either in the top rail, D, or in the frame-work at the ends thereof, as indicated in said Fig. 1. Inasmuch as the slots *b'* are lengthwise of the bar C, it follows that the said bar may be longitudinally adjusted and fixed in position with the prongs or fingers E of the skeleton race in due relation with the warps, while the plates G, being permitted as described, may be swung forward or backward to bring the rearmost ends of the fingers or prongs E to the requisite distance from the reed, and affixed in such position by inserting thin leaves or plates of sheet metal or even of paper or other leaf material behind them. Furthermore, when for any reason it is desired to examine or to polish or to change the angle of the portion *e* of the fingers or prongs E, it is only necessary to withdraw the set-screws *r* in order to swing forward the plates G and bring the prongs E wholly within access. It is of course to be observed that this backward and forward movement or adjustability of the skeleton race could be obtained if the said race were made all in one instead of in sections, and pivoted direct, to the top rail, D, instead of to the intermediate plate, C, and such a construction or arrangement would be possessed of material advantage. A much more easy manipulation and adjustability of the parts is, however, obtained by the construction and adjunctive combination of parts hereinbefore described.

What I claim as my invention is—

1. The combination, with the top rail of the reed of a loom, of a skeleton race having pivotal connection with said top rail, and bolts or set-screws *r*, for retaining said skeleton in fixed position during the normal use and operation of the loom, all substantially as and for the purpose herein set forth.

2. The combination, with the top rail of the reed of a loom, of a longitudinal adjustable bar, C, and a skeleton race pivotally attached to the said bar, all substantially as and for the purpose herein set forth.

3. The combination, with the top rail of the reed of a loom, of a skeleton race formed in sections, each composed of a plate, G, and a number of prongs or fingers, E, attached to the said plate, a longitudinally-adjustable intermediate bar, C, and hinges or pivots connecting the aforesaid sections to the said bar, all substantially as and for the purpose herein set forth.

4. The combination, with the top rail of the reed of a loom, of a skeleton race formed in sections, each composed of a vertically-slotted plate, G, and prongs or fingers E, attached to said plate G, a bar, C, longitudinally adjustable with reference to the top rail, hinges or pivots connecting the said sections to the said bar, and bolts or set-screws arranged to pass through the vertical slots of the plates of the sections and hold the latter in due relation with the bar C, all substantially as and for the purpose herein set forth.

5. The combination, with the top rail of the reed of a loom, of a bar, C, formed with longitudinal slots, bolts or set-screws *a'*, constructed and arranged to pass through said slots and retain the said bar in due relation with the top rail, a skeleton race pivoted to the bar C, and bolts or set-screws for fixing said skeleton race in firm relation with the bar, all substantially as and for the purpose herein set forth.

6. The combination, with the top rail of the reed of a loom, of the skeleton race, formed of sections, each composed of a vertically-slotted plate, G, and prongs or fingers E, attached to said plate G, the bar C, having the longitudinal slots *b'*, the bolts or set-screws *a'*, for retaining the bar C in due relation with the top rail, hinges or pivots *m*, for connecting the plates G to the bar C, and bolts or set-screws *r*, for fixing the plates G in due relation with the bar, all substantially as and for the purpose herein set forth.

CHARLES COUPLAND.

Witnesses:
S. H. CANFIELD,
S. HART CULVER.