

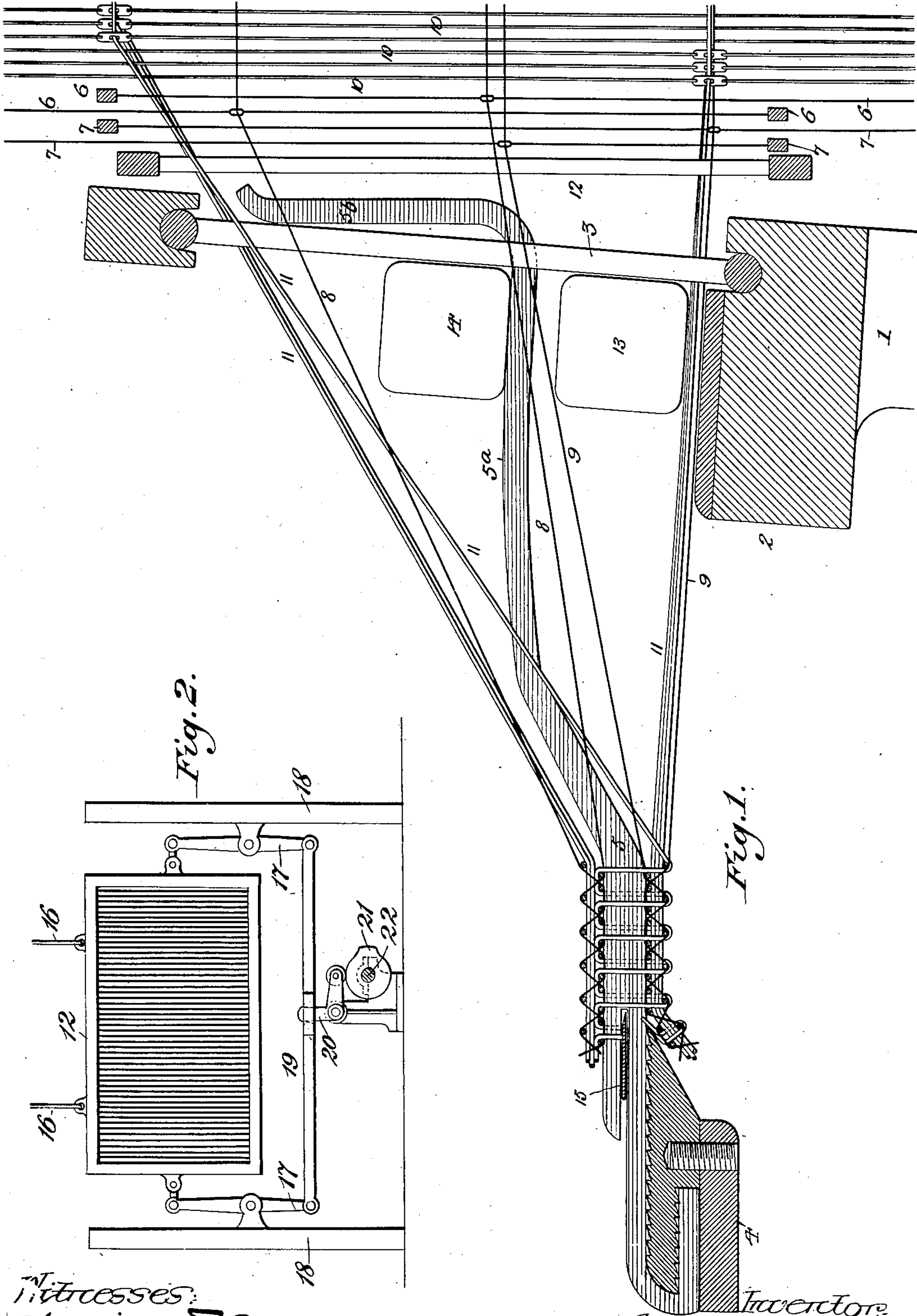
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A. HEALD.

LOOM FOR WEAVING DOUBLE PILE FABRICS.

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UNITED STATES PATENT OFFICE.

ALFRED HEALD, OF PHILADELPHIA, PENNSYLVANIA.

LOOM FOR WEAVING DOUBLE-PILE FABRICS.

No. 862,968.

Specification of Letters Patent.

Patented Aug. 13, 1907.

Application filed June 8, 1905. Serial No. 264,305.

To all whom it may concern:

Be it known that I, ALFRED HEALD, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Looms for Weaving Double-Pile Fabrics, of which the following is a specification.

My invention relates to that class of looms for weaving double pile fabrics in which two backing webs are formed, one above and one below a series of interposed separator plates, the pile-forming warp threads being carried back and forth in the spaces between said separator plates and being interwoven, first with one backing web, and then with the other, so that when they are severed at a point midway between the two webs two cut pile fabrics will be produced.

The object of my invention is to so weave such a double pile fabric as to relieve the weft threads of the backing fabrics from any strain upon them due to the tension exerted upon the pile warp threads, thereby preventing the backing weft threads from being drawn into the spaces between the separator plates, so as to slacken said backing webs or shorten the length of the pile threads. This object I attain by lapping the pile-forming warp threads over or around the separator plates as well as interweaving them with the backing webs, so that said separator plates resist the tension upon the pile warp threads and prevent the same from displacing the weft threads of the backing webs from their proper planes.

In the accompanying drawing Figure 1 is a longitudinal section illustrating, in a diagrammatic way, the various threads employed in weaving a double pile fabric in accordance with my invention, and the necessary parts of the loom employed in effecting such weaving operation, and Fig. 2 is a view illustrating means which may be employed for operating one of the parts of the loom.

1 represents part of the swinging lay of the loom with its shuttle race 2 and reed 3 and 4 represents part of the breast beam or other fixed transverse bar of the loom to which are rigidly secured the outer ends of the separator plates 5, which are interposed between the two backing webs, these separator plates projecting from the breast beam or other bar 4 towards the swinging lay 1, and being of such length that their inner ends will project through the spaces of the reed 3 when said swinging lay 1 is in its retracted position, so as to prevent any accident such as might be caused by contact of the bars or dents of the reed with the inner ends of the separator plates, if the latter terminated in advance of the reed.

The intermediate portions of the separator plates 5 are elevated in respect to their outer portions, so as to form an elevated shuttle race 5^a, and the inner ends of the separator plates are still further raised as shown at 5^b, and are unconfined, so that the pile-forming warp

threads can be shifted from one side of the same to the other in order to be lapped over or around them.

Two pairs of heddle frames 6—6, and 7—7 control respectively the binding warp threads 8 and 9 for the upper and lower backing webs, and a series of harness cords 10 control the pile forming warp threads 11.

The lift of the heddles which control the upper warp threads 8 is never high enough to carry said warp threads above the tops of the inner ends 5^b of the separator plates 5, so that said binding warp threads are always shed in the same spaces between said plates, but the harness cords 10 which control the figuring warp threads 11 have a higher lift, so that said figuring warp threads can be raised above the tops of the elevated inner ends 5^b of the separator plates, and can thus be shifted from one side of the latter to the other, so that a figuring warp thread can be lapped over or around a separator plate in a way which has heretofore been practiced in weaving single pile fabrics, the lateral shifting of the figuring warp threads on each shedding of the same being effected by any suitable means, as for instance, by a supplementary reed 12 located in the rear of the main reed, and having lateral movements of the necessary extent imparted to it at the proper intervals, or, if the separator plates are not free at their inner ends, by any suitable form of doup heddle.

As one means for laterally shifting the reed 12, I may refer to Fig. 2, in which the reed is shown as suspended by cords or wires 16, and is connected at each end to a lever 17, hung to a side frame 18 of the loom, the lower ends of said levers being connected by a bar 19, with which engages a lever 20 acted upon by a cam 21 on a longitudinal shaft 22, to which rotary motion can be imparted from any other available rotating shaft of the loom.

The weft threads which are to be interwoven with the binding warp threads 9 to form the bottom web are introduced by a shuttle 13 traveling across the shuttle race 2, and the weft threads which are to be interwoven with the warp threads 8 to form the upper web are introduced by a shuttle 14 traveling on the elevated shuttle race 5^a formed by the raised intermediate portions of the separator plates, so that each weft thread will be interwoven only with its own appropriate binding warp threads, the shuttles being shot across the lay either simultaneously or successively.

If the inner ends of the separator plates are controlled by heddles, as in prior double pile weaving looms, a shuttle can be introduced alternately above and below said inner ends of the plates.

When, in a fabric of this character, the figuring warp threads are lapped over or around the separator plates, the latter prevent said warp threads from exerting upon the binding weft threads of either web any strain due to the tension upon said figuring warp threads, and

which would tend to deflect said weft threads from their normal and proper planes, hence the close weaving of each backing web is insured, and a pile of full length is produced upon each of the fabrics formed by cutting apart the double web by means of a transversely moving knife 15 traveling in slots in the separator plates.

Having thus described my invention, I claim and desire to secure by Letters Patent:

10 1. The combination, in a loom for weaving double pile fabrics, of means for interweaving warp and weft threads to form two separated webs, said means including separator plates interposed between the said webs, and means for shedding the pile warp threads so as to interweave them first with a weft thread of one web and then with a weft thread of the other web, and lap them over or around the interposed separator plates, substantially as specified.

15 2. The combination, in a loom for weaving double pile fabrics, of means for interweaving warp and weft threads to form two separated webs, said means including separator plates interposed between the said webs and free at their inner ends, and means for shedding the pile warp threads so as to interweave them first with a weft thread of one web and then with a weft thread of the other web, and lap them over or around the interposed separator plates, substantially as specified.

20 3. The combination, in a loom for weaving double pile fabrics, of means for interweaving warp threads and weft threads to form two independent webs, said means including separator plates interposed between the said webs and having elevated intermediate portions forming an elevated shuttle race, and means for shedding pile warp threads so as to interweave them, first, with a weft thread of one web and then with a weft thread of the other web and lap them over or around the interposed separator plates, substantially as specified.

25 4. The combination, in a loom for weaving double pile fabrics, of a reed, means for interweaving warp threads and weft threads to form two independent webs, said means including separator plates interposed between the said webs and having elevated intermediate portions projecting through the spaces of the reed when the latter is fully retracted and forming an elevated shuttle race, and means for shedding pile warp threads so as to interweave them first, with a weft thread of one web and then with a weft thread of the other web and lap them over or around said separator plates, substantially as specified.

30 5. The combination, in a loom for weaving double pile fabrics, of a reed, means for interweaving warp threads and weft threads to form two independent webs, said means including separator plates interposed between the said webs and having elevated inner ends projecting through the spaces of the reed when the latter is fully retracted and free at such inner ends, and means for shedding pile warp threads so as to interweave them, first with a weft thread of one web and then with a weft thread of the other web, and lap them over or around said separator plates, substantially as specified.

35 6. The combination, in a loom for weaving double pile fabrics, of means for interweaving warp threads and weft threads to form two independent webs, said means including separator plates interposed between the said webs, and

means for shedding pile warp threads so as to interweave them, first, with a weft thread of one web and then with a weft thread of the other web and lap them over or around said separator plates, the latter having elevated inner ends which project above the highest point of shedding of the binder warp threads of the upper backing web but terminate below the highest point of shedding of the pile warp threads, substantially as specified.

70 7. The combination, in a loom for weaving double pile fabrics, of a reed, means for interweaving warp threads and weft threads to form two independent webs, said means including separator plates interposed between the said webs and having elevated inner ends projecting through the spaces of the reed when the latter is fully retracted, and means for shedding pile warp threads so as to interweave them, first, with a weft thread of one web and then, with a weft thread of the other web and lap them over or around said separator plates, the elevated inner ends of the latter being higher than the highest point of shedding of the binder warp threads of the upper web but lower than the highest point of shedding of the pile warp threads, substantially as specified.

85 8. The combination, in a loom for weaving double pile fabrics, of means for interweaving warp threads and weft threads to form two independent webs, said means including separator plates interposed between the said webs and having unconfined and elevated inner ends, and means for shedding pile warp threads so as to interweave them, first, with a weft thread of one web and then with a weft thread of the other web, and lap them over or around said separator plates, the free inner ends of the said separator plates terminating above the highest point of shedding of the binder warp threads of the upper web but below the highest point of shedding of the pile warp threads, substantially as specified.

95 9. The combination, in a loom for weaving double pile fabrics, of a reed, means for interweaving warp threads and weft threads to form two independent webs, said means including separator plates interposed between the said webs and having elevated inner ends projecting through the spaces of the reed when the latter is fully retracted and free at such inner ends, and means for shedding pile warp threads so as to interweave them, first, with a weft thread of one web and then with a weft thread of the other web and lap them over or around said separator plates, the free and elevated inner ends of said separator plates terminating above the highest point of shedding of the binder warp threads of the upper web but below the highest point of shedding of the pile warp threads, substantially as specified.

100 10. The combination in a loom for weaving double pile fabrics of means for interweaving warp and weft threads to form two separated webs, said means including separator plates interposed between the said webs, and having portions forming an elevated shuttle race, and means for shedding pile warp threads so as to interweave them first with a weft thread of one web, and then with a weft thread of the other web, substantially as specified.

115 120 In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

ALFRED HEALD.

Witnesses:

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WM. E. SHUPP.