

R. KELLETT.

SELVAGE FORMING MECHANISM FOR DOUBLE PILE FABRIC LOOMS.

No. 468,770.

Patented Feb. 9, 1892.

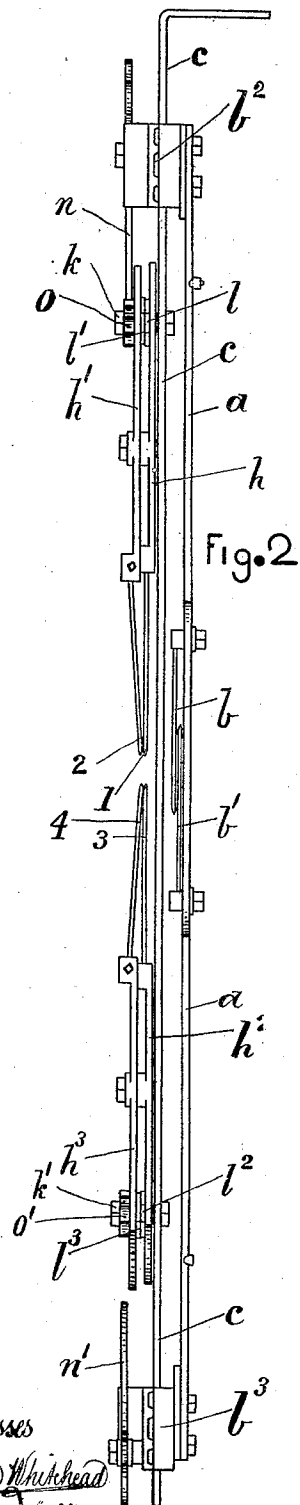


Fig. 2

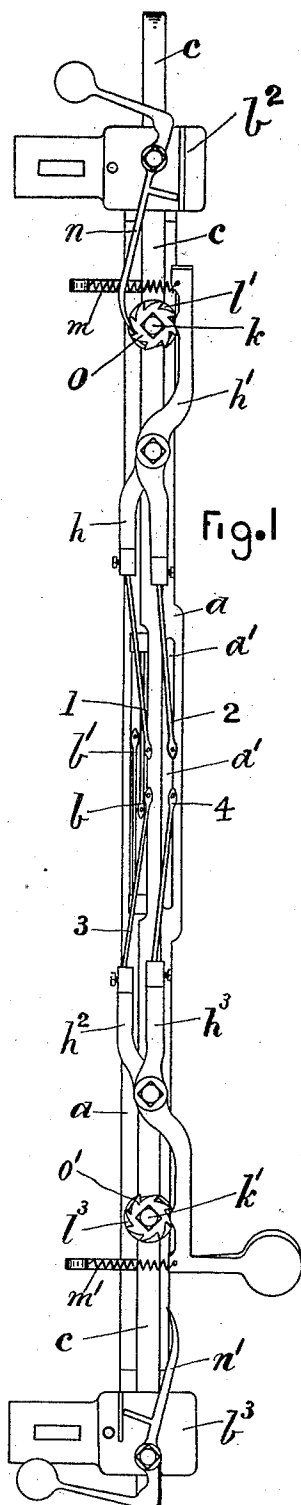


Fig. 1

Fig. 4

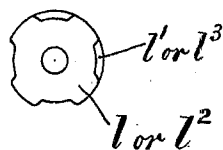


Fig. 5

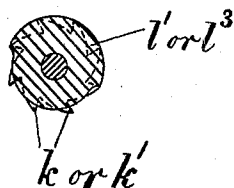
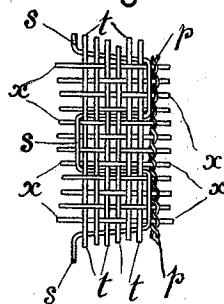


Fig. 8



Witnesses
John Whithead
Henry Ellison

Inventor
Rufus Kellett
Per Samuel H. [Signature]
Attorney

(No Model.)

2 Sheets—Sheet 2.

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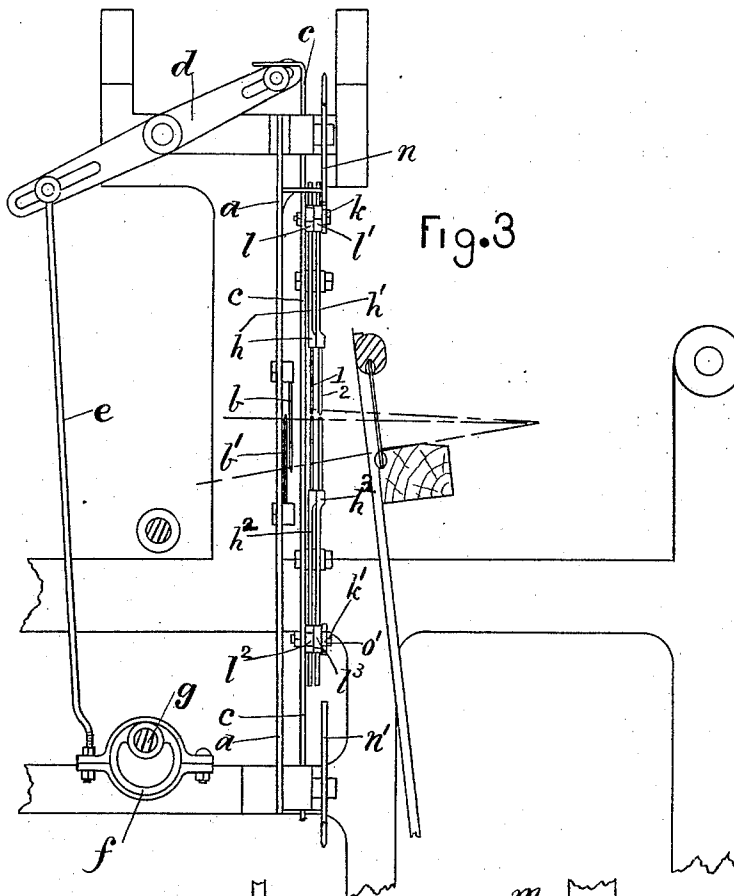


Fig. 3

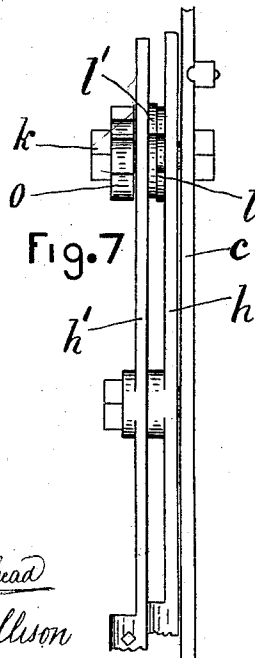


Fig. 7

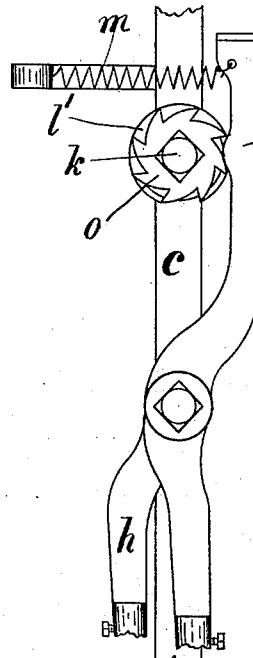


Fig. 6

Witnesses
John Whitehead
Henry Ellison

Inventor
Rufus Kellett
Per Samuel Hey
Attorney

UNITED STATES PATENT OFFICE.

RUFUS KELLETT, OF BUTTERSHAW, ASSIGNOR TO RICHARD LONGDEN HATTERSLEY AND HENRY KAY, OF KEIGHLEY, ENGLAND.

SELVAGE-FORMING MECHANISM FOR DOUBLE-PILE-FABRIC LOOMS.

SPECIFICATION forming part of Letters Patent No. 468,770, dated February 9, 1892.

Application filed May 25, 1891. Serial No. 394,022. (No model.)

To all whom it may concern:

Be it known that I, RUFUS KELLETT, a subject of the Queen of Great Britain, residing at Buttershaw, in the county of York, England, have invented a new and useful Improvement in Selvage-Forming Mechanism for Double-Pile-Fabric Looms, of which the following is a specification.

My invention relates to improvements in selvage-shedding mechanism for double-pile-fabric looms, in which looms cutting mechanism is employed for severing the pieces of pile fabrics, the natural selvages of both the pieces of fabric thus produced being by this severing completely destroyed; and it consists in arranging and constructing the parts forming the shedding mechanism for operating the threads of warp at the outer edges of these fabrics in such a manner that these threads are so operated as to form an artificial selvage sufficiently strong to withstand any forces that may be brought to act thereon through tentering and otherwise during the process of finishing. This object I attain by the mechanism and in the manner hereinafter described, and as illustrated by the accompanying drawings.

Figures 1 and 2 are front and side views, respectively, of my improved mechanism; and Fig. 3 is a sectional end view of a portion of a loom, reduced scale, showing the application thereto of my said invention. Figs. 4 and 5 are drawings in detail, enlarged scale, of parts hereinafter described, while Figs. 6 and 7 are also detail drawings to a similar scale, showing more clearly the relative arrangement of certain of the parts. Fig. 8 is a top view, highly magnified, showing the relative positions of the several threads as arranged to form the artificial selvage.

For each edge of each piece of fabric being produced I employ a separate set of vertically-operating needles, the two sets of these needles which are to operate the threads in the respective edges of the upper piece being woven being placed above said piece, while those that are to operate the threads on each of the outer edges of the lower piece are placed below said piece, and from the description of one of each of these upper and lower sets of needles and their mode of operation

the operations of the other will readily be understood.

Upon the fixed bearing *a* I rigidly mount the vertical needle *b*, which extends downward sufficiently far to hold the thread of warp passing through the small opening at its extremity low enough for all the threads of weft to pass over it at all times, while on the same bearing *a* I mount in like manner the vertical needle *b'*, which extends upward so as to allow all the shots of weft or weft-threads to pass beneath it, the former thread (passing through needle *b*) forming part of the edge of the bottom piece being woven and the latter (passing through needle *b'*) forming part of that of the upper piece being woven.

In the bearings *b*² *b*³ I mount the sliding rod *c*, which is operated through the lever *d* and rod *e* by the eccentric *f*, mounted upon the loom's rotary shaft *g*, said operations of the eccentric *f* effecting an upward movement of the said rod *c*, while its downward movement is effected by gravity, or any suitable mechanism may be employed for imparting this vertically reciprocatory motion to said rod *c* from any other motor part of the loom.

On the sliding rod *c* are mounted the two pairs of levers *h h'* and *h*² *h*³, carrying at their lower and upper extremities, respectively, the needles 1, 2, 3, and 4, at the extremity of each of which is made an opening for the passage of a thread of warp, which may be of the ordinary kind, forming the piece; or it may be from a separate bobbin and specially prepared to form a stronger selvage than would the fiber used to form said piece of fabric. The levers *h h'* and *h*² *h*³ extend in opposite directions, so that their respectively extending arms may reach into contact with the cams *l l'* and *l*² *l*³, (see, also, Figs. 6 and 7,) mounted upon the studs *k* and *k'*. These cams *l l'* and *l*² *l*³ impart motion to the said levers in one direction laterally, while the springs *m m'* (each of which has one of its respective ends attached to one of these levers, while its other is attached to its respective projection formed on bearing *a*, a separate spring being used for each lever) operate them in the other direction. Rotary motion is imparted to the cams *l l'* and *l*² *l*³ by

the pawls $n n'$ operating the wheels $o o'$, (to which the cams $l l'$ and $l^2 l^3$ are respectively attached, as by being riveted thereto or formed integrally therewith,) said pawls $n n'$ effecting said operations by being hinged to the fixed bearings $b^2 b^3$ and being arranged to lie in the path of motion of said wheels $o o'$ as they rise and fall with the rod c .

The object attained by the actions of the above-described parts or mechanism may be described as follows: As the rod c continues to rise and fall, carrying with it the needles 1 and 3, which have also lateral movements imparted to them by the actions of the cams l and l^2 , respectively, the threads of warp passing through them are carried thereby, first, down or up one side of those threads of warp that pass through the needles $b b'$ and then down or up the other side of those same threads, with the result that by a pick or shot of weft having passed between those respective threads during each of their said movements each thread in each pair of these threads crosses the other between each shot of weft, as is shown by the threads p in Fig. 8, which represents only one piece of the fabric, each pair of needles 1 b' and 3 b producing this effect in each piece (upper and lower) woven.

The operations of the cams l' and l^3 upon the needles 2 and 4 are such as only to effect the changes in their lateral positions after a certain number of movements up and down of the rod c , so that they carry their respective threads of warp for a certain number of shots of weft to pass over and beneath them when performing their vertical movements in one vertical plane, while when their positions are altered laterally, so that their path of motion is in the other vertical plane, a similar number of shots of weft are thrown in during the movements in this position, and the space between the two vertical paths of motion of these needles 2 and 4 is occupied by a number of threads of warp, which are operated by the usual shedding mechanism of the loom to which this selvedge shedding mechanism is applied and which are made to pass through the slot a' , so as to be guided by the said slot a' , formed in the bearing a , such number being regulated as desired.

In Fig. 8 the thread of warp carried by the needle 2 or 4 is indicated at s , while those at $t t t$ are the threads that pass through the slot a' , and the picks or shots of weft are shown at $x x x$. The crossing of the threads $t t t$ by the thread s , as shown, secures the attachment of these threads to the shots of weft $x x x$, so that the finishing of the fabric having an artificial selvedge formed in this manner may be proceeded with without its said selvedge having to undergo further preparation.

I claim—

1. The combination of the needle b , securely attached to the bearing a , said bearing a , the sliding bar c , mounted upon the bearing a to operate in proximity with said needle b , means for imparting vertically-reciprocating

motion to said bar c , the lever h , pivoted on a stud on the bar c and having needle 1 attached to it, the spring m , the cam l , mounted on the bar c , and spring m and cam l being respectively attached to and in operating contact with the lever h , as described, the toothed wheel o , attached to said cam l and mounted to rotate about the axial pin k , and the pawl n , which acts in conjunction with the wheel o , each and all of these parts being formed and arranged to operate substantially as specified.

2. The combination of the needles b and b' , which are securely attached by their rear ends to the bearing a , the former being arranged to extend downward while the latter extends upward, so that their extending ends are in such relative positions as to hold their respective threads of warp sufficiently apart to allow the passage of a shuttle between them, the sliding bar c , mounted upon the bearing a to operate in suitable proximity with the said needles b and b' , means for imparting vertically-reciprocating motion to said bar c , the levers h and h^2 , pivoted on the bar c and having their respective needles 1 and 3 attached to them, the needle 1 being located so that its extending end reaches downward to operate in conjunction with the needle b' , while the needle 3 is located so that its extending end reaches upward to operate in conjunction with the needle b , the springs m and m' , the cams l and l^2 , and cams being attached to and in contact with the levers h and h^2 , as described, the toothed wheels o and o' , which are attached to said cams l and l^2 , and the pawls n and n' , mounted in the paths of motion of said wheels $o o'$, in conjunction with which toothed wheels $o o'$ said pawls $n n'$ act, each and all of these several parts being formed and arranged to operate substantially as specified.

3. The combination of the needle 2, the lever h' , said needle 2 being attached to said lever h' , which is pivoted to the bar c , said bar c , means for imparting reciprocatory motion to this bar c , the bearings a , upon which the bar c is mounted to slide and in which a slot a' is formed, the cam l' , the spring m , attached to the lever h' , and the projection on the bearing a , the toothed wheel o , attached to said cam l' and mounted to rotate about the axial pin k , and the pawl n , which acts in conjunction with the wheel o , each and all of these several parts being formed and arranged to operate substantially as specified.

4. The combination of the needles 2 and 4, the levers h' and h^3 , said needles 2 and 4 being respectively attached to said levers h' and h^3 , which are pivoted to the bar c , the former, needle 2, extending downward to operate in connection with threads of warp beneath the pivot of its lever, while the latter, needle 4, extends upward to operate in connection with threads of warp above the pivot of its lever, the relative positions of these needles being such as to enable them to act in connection with the upper and lower warps in a loom

when weaving two distinct pieces of fabric one above the other, the said bar *c*, means for imparting reciprocatory motion to this bar *c*, the bearings *a*, upon which the bar *c* is mounted to slide and in which a slot *a'* is formed for the purpose described, the cams *l'* and *l''*, the springs *m* and *m'*, attached to the levers *h'* *h''* and the bearings *a*, the toothed wheels *o* and *o'*, respectively attached to said cams *l'* and *l''* and mounted to rotate above the axial pins *k* and *k'*, and the pawls *n* and *n'*, which act in conjunction with said wheels *o* and *o'*, each and all of these several parts being formed and arranged to operate substantially as specified.

5. The combination of the needle *b'*, the same being securely attached to the bearing *a* and in such a position that its outer end, which extends upward, will hold its thread of warp so that the shuttle carrying the weft may always pass beneath it, the said bearing *a*, the sliding bar *c*, mounted upon the bearing *a* to operate in proximity with the needle *b'*, means for operating said bar *c*, the levers *h* *h'*, pivoted to said bar *c*, needles 1 and 2, which are attached to said levers *h* and *h'*, respectively, both of these needles 1 and 2 being made to extend downward, the former to operate in connection with the needle *b'*, the latter with the threads of warp passing through the slot *a'*, the springs *m*, attached to said levers *h* and *h'*, the cams *l* and *l'*, the toothed

wheel *o*, to which said cams *l* and *l'* are attached, and the pawl *n*, mounted upon the bearing *a* to act in conjunction with the said wheel *o*, each and all of these several parts being formed and arranged to operate substantially as specified.

6. The combination of the needles *b* and *b'*, which are securely attached to the bearing *a*, said bearing *a*, the sliding bar *c*, mounted upon the bearing *a* to operate in proximity with the needles *b* and *b'*, means for operating said bar *c*, the levers *h*, *h'*, *h''*, and *h'''*, pivoted on a stud on said bar *c*, needles 1, 2, 3, and 4, which are attached to said levers *h*, *h'*, *h''*, and *h'''*, respectively, the two springs at *m*, one of which is to retract the lever *h'*, the other, which is behind the former, being to retract the lever *h*, the two springs at *m'*, arranged one behind the other to retract the two levers *h''* and *h'''*, the cams *l*, *l'*, *l''*, and *l'''*, the toothed wheels *o* and *o'*, to which said cams *l* and *l'* are attached, and the pawls *n* and *n'*, mounted upon the bearing *a* in position for acting in conjunction with the wheels *o* and *o'*, respectively, each and all of these several parts being formed and arranged to operate substantially as specified.

RUFUS KELLETT.

Witnesses:

HERBERT SUTCLIFFE,
SAMUEL HEY.