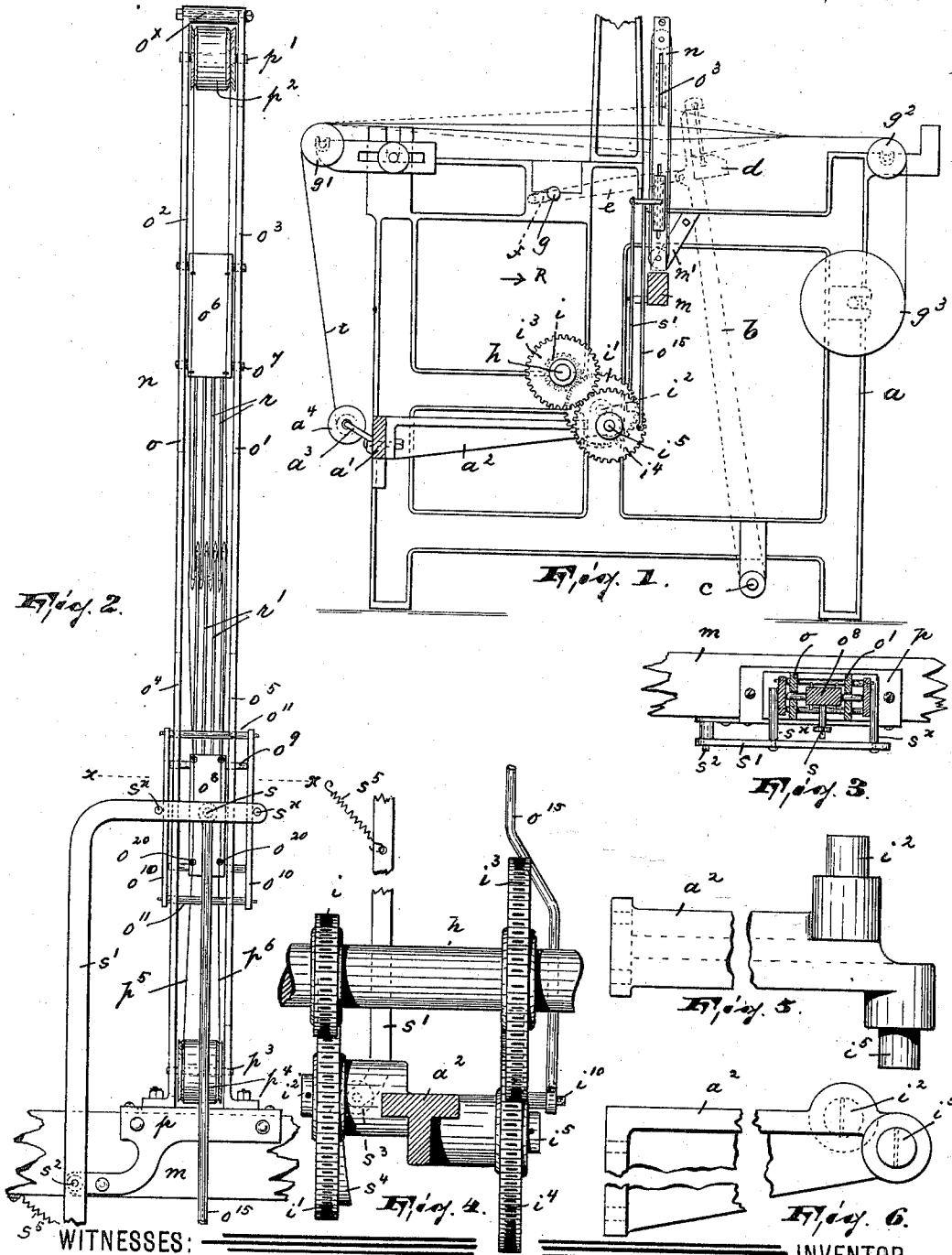


(No Model.)

W. CRUTCHLOW.  
DOUPING ATTACHMENT FOR LOOMS.

No. 584,576.

Patented June 15, 1897.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

WILLIAM CRUTCHLOW, OF PATERSON, NEW JERSEY, ASSIGNOR OF  
ONE-HALF TO GEORGE W. FULTON, OF SAME PLACE.

## DOUPING ATTACHMENT FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 584,576, dated June 15, 1897.

Application filed January 23, 1897. Serial No. 620,313. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM CRUTCHLOW, a subject of the Queen of Great Britain, residing in Paterson, county of Passaic, and State of New Jersey, have invented certain new and useful Improvements in Douping Attachments for Looms; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

The object of my present invention is to provide a douping attachment for looms, and by means of which attachment an inner or intermediate selvage can be woven into the fabric or cloth, thus permitting the latter to be cut into narrow sections or pieces, each having selvages, after having been woven in full width. The douping attachment is of simple, strong, and durable construction, reliable in operation, and can easily be arranged on looms of any construction or make, and as it is operated from the picker-shaft complicated connections with the Jacquard mechanism are avoided.

The invention consists in the improved douping attachment, its connection with the loom and its picker or cam shaft, and in the combination and arrangement of the various parts thereof, substantially as will be hereinafter more fully described and finally embodied in the clauses of the claim.

Referring to the accompanying drawings, in which like letters of reference indicate corresponding parts in each of the several views, Figure 1 is a central section through a loom of ordinary construction and provided with my improved douping attachment, only those parts of the loom and of said attachment being shown which are necessary to fully illustrate the nature of my said invention. Fig. 2 is an enlarged rear elevation of the douping attachment, viewed in the direction of arrow R, Fig. 1, the supporting-frame and a certain connecting-rod and lever being broken away; Fig. 3, a sectional view on line *x x* of Fig. 2; Fig. 4, an enlarged inside view of the driving and operating mechanism, also viewed

in the direction of the arrow R, Fig. 1, and is a continuation of Fig. 2; and Figs 5 and 6, a top plan view and side elevation, respectively, of a certain bracket used in connection with my improved douping attachment.

In said drawings, *a* represents the frame of a loom; *g*, the main driving-shaft, transmitting motion through crank *f* and pitman *e* to the lay *d*, which latter is supported by sword *b*, fulcrumed at its lower end, as at *c*, to the loom-frame. The rollers *g'* and *g''* and the take-up roller *g'''* are of usual construction and arranged in the well-known manner.

To the rear portion of the loom-frame is secured the brace or bar *a'*, carrying the forwardly-projecting bracket *a''*, in which latter and at right angles thereto are arranged the horizontal stub-shafts *i''* and *i'''*. On the stub-shaft *i''* is mounted a gear-wheel *i'*, meshing into pinion *i*, secured on the picker or cam shaft *h*, the latter receiving its motion from the main driving-shaft *g* through a train of gears of usual construction, and therefore not illustrated in the drawings. On the picker-shaft *h* is also secured a gear-wheel *i''*, meshing into gear-wheel *i'''*, mounted on stub-shaft *i'''*, all as clearly shown in Figs 1 and 4.

Traversing the loom and secured by means of brackets *m'* or in any desired manner is arranged the bridge or brace *m*, adapted to support my improved douping attachment *n*. Said attachment or device consists of the two parallel uprights *o* and *o'*, connected at their upper ends by a rod or block *o''* and secured with their lower ends to an angle-plate *p*, mounted on the bridge or brace *m*. (See Fig. 2.) Said uprights are provided with elongated slots *o''* *o'''* and *o''''* *o'''''*, adapted to guide the pins *o''* and *o'''*, respectively, which pins are arranged in and project at right angles from the vertically-reciprocating blocks *o''* and *o'''*. At or near the upper end of said uprights is arranged a shaft *p'*, carrying a grooved roller *p''*, while on the shaft *p'* at or near the lower end of said uprights is arranged a grooved roller *p'''*, connected with the upper roller by the endless cords or belts *p''''* and *p'''''*. The reciprocating block *o''* is secured to the front portions of the cords or belts *p''''* and *p'''''*, while the block *o'''* is secured to their rear portions, as at *o''''*, Fig. 2, for a

purpose hereinafter described. The block  $o^8$  is narrower than the space between the uprights  $o$  and  $o'$ , and its pins  $o^9$  project through the elongated slots  $o^4$  and  $o^5$  and are engaged by and bear against the plates  $o^{10}$   $o^{10}$ , held together by rods  $o^{11}$   $o^{11}$ , penetrating the said uprights and permitting a lateral movement of the said side plates  $o^{10}$ . By this arrangement the block  $o^8$  is shifted from right to left, Fig. 2, and vice versa, when the side plates  $o^{10}$  are moved and operated. Secured to the block  $o^6$  and projecting downward therefrom are a series of (four) needles  $r$ , alternately arranged with a series of (four) needles  $r'$ , projecting upward from and secured to the block  $o^8$ . The side plates  $o^{10}$  are engaged by the pins  $s^x$ , projecting horizontally from the upper end of the lever  $s'$ , fulcrumed, as at  $s^2$ , to the angle-plate  $p$  and carrying on its lower free end an antifriction-roller  $s^3$ , adapted to engage and be operated by a cam projection  $s^4$ , arranged on the gear-wheel  $i'$ . A spiral spring  $s^5$ , secured to said lever  $s'$  below its pivot, and also to the brace or bridge  $m$ , controls the return movement of said lever  $s'$ .

At about the center of the block  $o^8$  is pivotally secured, as at  $s$ , one end of an arm or lever  $o^{15}$ , the other end of which is pivotally secured to a pin  $i^{10}$ , eccentrically arranged on and projecting from the gear-wheel  $i^4$ . The dimensions of the various gear-wheels  $i$ ,  $i'$ ,  $i^3$ , and  $i^4$  are such that when the picker or cam shaft  $h$  makes one revolution to every two revolutions of the main driving-shaft  $g$  the gear-wheel  $i^4$ , carrying the eccentrically-arranged pin  $i^{10}$ , makes one complete and the gear-wheel  $i'$  one-half revolution. On the brace or rod  $a'$  is also secured a bracket  $a^3$ , carrying a spool or roller  $a^4$ , on which are arranged a series of (eight) selvage or doup threads  $t$ , passing through the eyes of the needles  $r$  and  $r'$ , respectively.

In operation when the connecting rod or lever  $o^{15}$  is moved downward by means of the eccentrically-arranged pin  $i^{10}$  it carries the block  $o^8$  along with it, and as the latter is connected to the rear portion of the endless cords  $p^5$   $p^6$  the block  $o^6$ , which is secured to the front portions of said cords, is moved upward simultaneously. By this operation the needles are moved apart and the selvage-threads carried by said needles form a shed through which the loom-shuttle passes. During the downward movement of the block  $o^8$  it is gradually shifted from right to left, Fig. 2, which shifting is accomplished through the fulcrumed lever  $s'$ , the antifriction-roller  $s^3$  on the free end of said lever being operated by the cam projection  $s^4$  on the gear-wheel  $i'$ . After the shuttle has passed through the shed formed by the selvage-threads the block  $o^8$  is again moved upward through its lever connection  $o^{15}$ , causing the block  $o^6$  to move downward. The needles, as the block  $o^8$  has been shifted, will now pass each other on their opposite sides and the shuttle is thrown through the shed so formed,

whereby the selvage-stitch is completed. When the blocks  $o^8$  and  $o^6$  are again moved apart, the block  $o^6$  is shifted from left to right, Fig. 2, and the above-described operation is repeated indefinitely.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A douping attachment, consisting of a frame, of two blocks arranged in said frame and in alinement with each other, a series of needles on each of said blocks, the series of needles on one block being arranged alternately with the series of needles on the other block, a roller at or near each end of the frame, a series of endless cords passing over said rollers and secured with their front portions to one, and with their rear portions to the other one of said blocks, means for reciprocating said blocks, and means for laterally shifting one of said blocks, all said parts, substantially as and for the purposes described.

2. A douping attachment, consisting of a frame provided with elongated slots, two blocks arranged in said frame and guided by said slots, a roller at each end of said frame, a series of endless cords passing over said rollers and secured with their front portions to one and with their rear portions to the other one of said blocks, a series of needles carried by each block and arranged alternately with each other, means for reciprocating said blocks, a fulcrumed lever connected with one of said blocks for laterally shifting the same, and means for operating said lever, all said parts, substantially as and for the purposes described.

3. The combination with the loom-frame and the picker-shaft, of a bracket in said loom-frame, a gear-wheel on the picker-shaft, a gear-wheel carrying an eccentrically-arranged pin mounted on said bracket and meshing with the gear-wheel on the picker-shaft, a pinion also secured on the picker-shaft, a second gear-wheel mounted on the bracket and meshing into said pinion and provided with a cam projection, an upright frame supported in said loom-frame, two blocks arranged in said upright frame and adapted to be reciprocated simultaneously to and from each other, a series of needles carried by each of said blocks and arranged alternately with each other, a rod fulcrumed with one end on one of said blocks and having its other end pivoted on the eccentrically-arranged pin, a fulcrumed lever carrying at one end an antifriction-roller adapted to be operated by the cam projection, and a connection of the other end of said fulcrumed lever with one of said blocks, all said parts, substantially as and for the purposes described.

4. The combination with the loom-frame and the picker-shaft, of a bracket in said loom-frame, a gear-wheel on the picker-shaft, a gear-wheel carrying an eccentrically-ar-

5 ranged pin mounted on said bracket and  
meshing with the gear-wheel on the picker-  
shaft, a pinion also secured on the picker-  
shaft, a second gear-wheel mounted on the  
10 bracket and meshing into said pinion, and  
provided with a cam projection, an upright  
frame supported in said loom-frame, two  
blocks arranged in said upright frame, a  
roller at or near each end of the upright  
15 frame, a series of endless cords passing over  
said rollers and secured with their front por-  
tions to one and with their rear portions to  
the other one of said blocks, a series of needles  
carried by each block and arranged al-  
ternately with each other, a rod fulcrumed  
with one end on one of said blocks and hav-

ing its other end pivoted on the eccentrically-  
arranged pin, a fulcrumed lever carrying at  
one end an antifriction-roller adapted to be  
operated by the cam projection, and a con- 20  
nection of the other end of said fulcrumed  
lever with one of said blocks, all said parts,  
substantially as and for the purposes de-  
scribed.

In testimony that I claim the foregoing I 25  
have hereunto set my hand this 14th day of  
January, 1897.

WILLIAM CRUTCHLOW.

Witnesses:

WM. D. BELL,  
ALFRED GARTNER.