

C. HICKTON.
 TWIST LACE MACHINE.
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921,698.

Patented May 18, 1909.

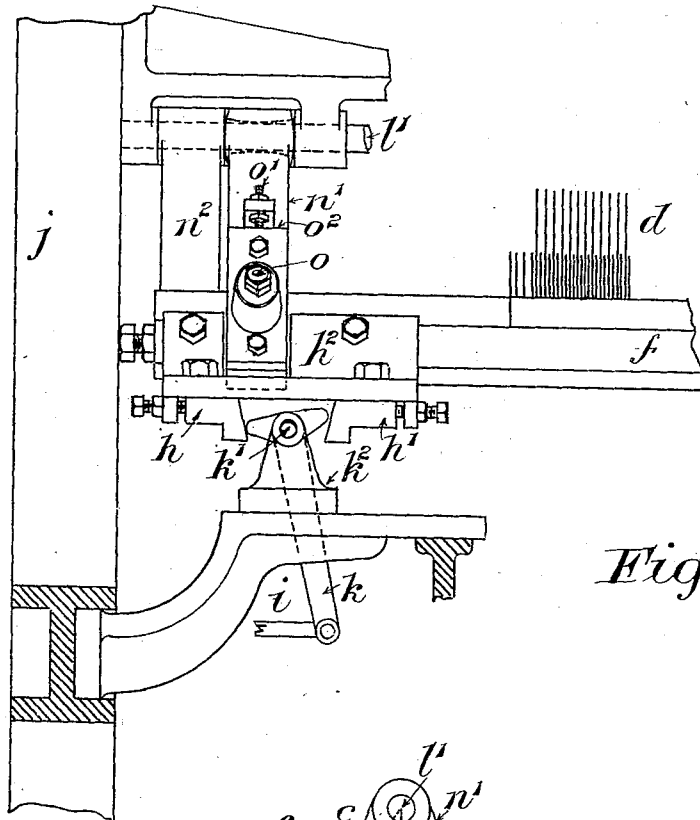


Fig 1

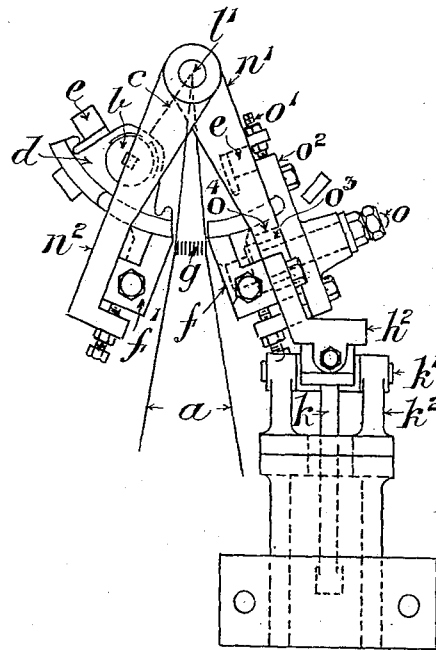


Fig 2

WITNESSES

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 BY Richard D. [Signature]
 ATTYS.

UNITED STATES PATENT OFFICE.

CHARLES HICKTON, OF LONG EATON, ENGLAND.

TWIST-LACE MACHINE.

No. 921,698.

Specification of Letters Patent.

Patented May 18, 1909.

Application filed November 27, 1906. Serial No. 345,325.

To all whom it may concern:

Be it known that I, CHARLES HICKTON, a subject of the King of Great Britain, and resident of Long Eaton, in the county of Derby, England, have invented Improvements in Twist-Lace Machines, of which the following is a specification.

The object of this invention is improvements in the construction of twist lace machines of the levers and go-through type whereby such machines can be so worked that approximately equal lengths of yarn are drawn off each of the bobbins, more lace made from each set of full bobbins and a considerable saving in time and material is effected.

In the drawings attached to this specification Figure 1 is a part back elevation of a go-through lace machine, showing the applications of the means employed for carrying out this invention. Fig. 2 is an end elevation of part of the machine with the standard removed.

In machines of the type herein referred to the vertical threads a are drawn from warp beams, independent beams, spools or the like and are hereinafter referred to as warp threads. The bobbin threads c are carried by thin bobbins b which are fitted to revolve in carriages d and these are moved from the front to the back of the machine, and vice versa, between the warp threads a , by catch bars e . During the actual making of the lace these bobbins and carriages always move in the same vertical plane and are guided by tricks or combs in the back comb bar f and front comb bar f' . The number of warp threads for each breadth of the lace is varied according to the character of the lace to be made, and the number of warp threads to each bobbin thread in a breadth of lace is varied according to the design. The warp threads are passed through guide bars g which are connected to the jacquard, and the pattern and lace effects are produced by moving the warp threads to the right and left of their own bobbin threads between each to and fro movement of the bobbins and carriages.

In an ordinary breadth of lace the pattern is usually at one side, in the center or unequally distributed across the breadth, and a greater length of bobbin thread is required for the making of the pattern, that the net adjacent to such pattern and consequently the bobbins used for making the pattern are

emptied sooner than the bobbins used for the net. In some classes of lace the bobbin threads themselves are also used in the production of the pattern, and therefore are emptied sooner than in the previously described arrangement. When, according to the ordinary method of working, any considerable number of bobbins in the machine become empty, the whole of the empty and the part empty bobbins are exchanged for a full set, and at each change of bobbins the machine remains unproductive and there is also a considerable waste of yarn unwound from the bobbins removed from the machine.

In a machine constructed for carrying out this invention the back comb bar f is pivotally attached at both ends to carrying arms n^1 and the holes and end faces at the upper end of the arms are rounded as shown so that the arms can be rocked on their carrying axles l to permit of the comb bar f being moved longitudinally for traversing the carriages and also be swung away from the center of the machine to allow of the bars g being threaded and for other purposes. In addition the bar f must be vertically adjustable on its carrying arms n^1 so that it can be fixed vertically relatively to the front bar f' . The pivoted and adjustable connection between the bar f and its carrying arm n^1 , as shown in the drawing, comprises an axle o which is fixed to the bar f and has a bearing in a bracket o^2 which can be adjusted on the face of the arm n^1 by means of the screw o^1 . This bracket is made with a boss o^3 which is fitted to slide in a slot o^4 in the arm n^1 and thus afford the longest possible bearing for the axle o . The front comb bar f' is adjustably connected to its carrying arm n^2 in the usual manner and both bars are connected to carrying arms at both ends of the machine and such connections and arms are constructed and arranged as herein shown and described with reference to one end of each bar. Attached to one end of the bar f there is a bracket h^2 fitted with two adjustable blocks h and h^1 which have cam shaped surfaces and working in conjunction with these surfaces there is a T ended lever k , fulcrumed at k^1 on a bracket k^2 carried by the standard j , and connected by a link i to the hand operating lever, or to an automatic operating mechanism which is under the control of the jacquard, and by the T ended lever the back comb bar can be moved to and fro longitudinally a distance of one gait, that is, a distance

equal to the distance between any two adjacent bobbin threads.

When a machine is fitted with the mechanism herein described and it is desired to traverse the bobbins and carriages toward the left hand end of the machine, the machine is brought to rest when the carriages are in the back combs and these combs are then moved one gait toward the left after which the carriages are brought into the front combs and the back combs are returned to their normal position. If it is desired to move the bobbins and carriages toward the right hand end of the machine, then the back combs are moved toward the left when the carriages are in the front combs and is returned to its normal position after the bobbins and carriages have been moved into it. These movements are repeated as often as may be desired and consequently the bobbins and carriages may be traversed any number of gaits in either direction and to allow of this being carried out there may be a number of empty combs at one end of the machine and a corresponding number of extra bobbins and carriages at the other end of the machine, or if the combs are filled, then the bobbin and carriage thrown out of work at one end of the machine is removed by hand from the machine and inserted at the other end of the machine.

By means of the traverse of the bobbin threads as herein described, every bobbin thread embraced by a width of lace is used for every part of the pattern in a breadth, either in the breadth which embraces the bobbin threads on an adjacent breadth and therefore approximately equal lengths of yarn are drawn from each bobbin enabling a longer piece of lace to be made from a full set of bobbins than has hitherto been possible, and effecting also a greater saving of time and material.

What I claim is:—

In levers and go through lace machines, the combination of a comb bar with comb bar arms fitted to rock and turn on their carrying axles, jointed connections between the said bar and arms, a bracket attached to the bar, cam shaped blocks adjustably attached to the said bracket and a T ended lever co-acting with the said blocks for giving end movement to the comb bar, substantially as herein set forth.

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

CHARLES HICKTON.

Witnesses:

WILLIAM H. POTTER,
JOHN ARCHER.