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W. WHITELEY & W. WHITELEY, JR.

ELECTRICALLY OPERATED CLIP FOR TENTERING MACHINES.

(Application filed July 27, 1900.)

(No Model.)

Fig. 1.

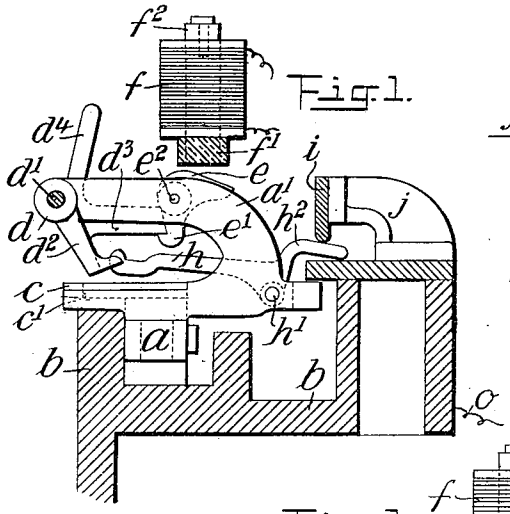


Fig. 2.

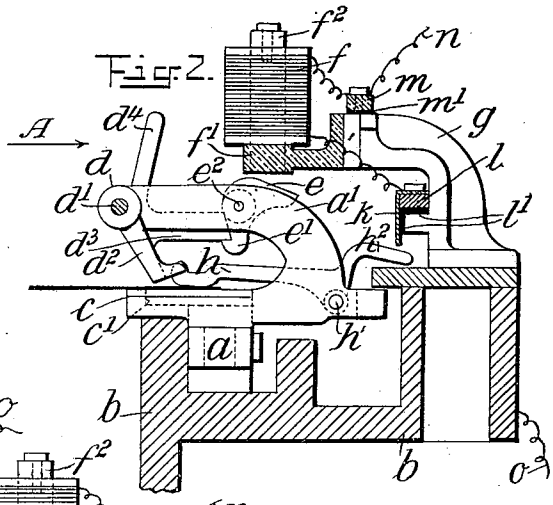


Fig. 3.

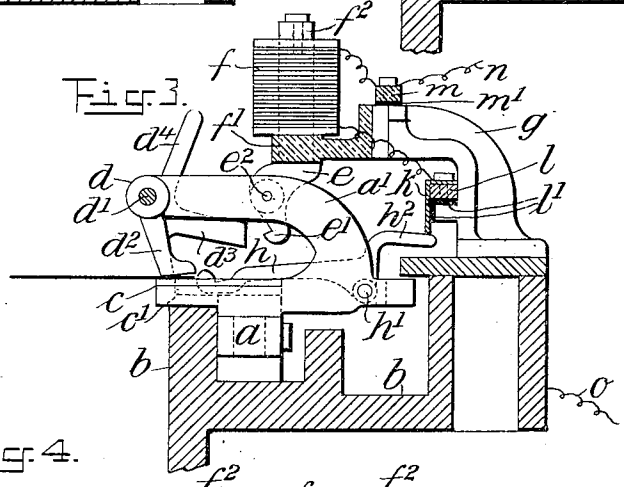
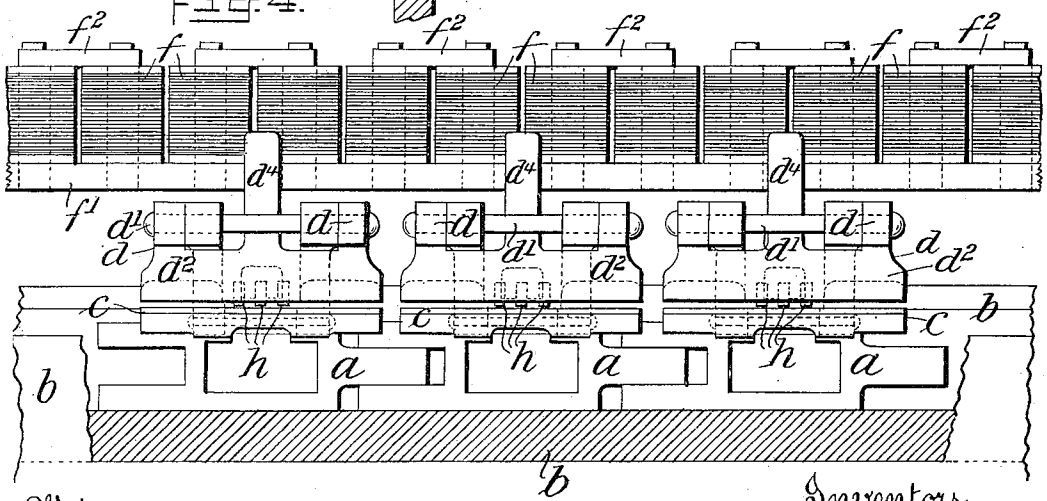


Fig. 4.



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UNITED STATES PATENT OFFICE.

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ELECTRICALLY-OPERATED CLIP FOR TENTERING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 663,528, dated December 11, 1900.

Application filed July 27, 1900. Serial No. 25,016. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM WHITELEY and WILLIAM WHITELEY, Jr., subjects of the Queen of Great Britain, residing at Huddersfield, in the county of York, England, have invented certain new and useful Improvements in Electrically-Operated Clips for Machines for Tentering, Stentering, and Stretching Fabrics; and we 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.

This invention relates to clips employed in tentering, stentering, and stretching machines for gripping the selvages of woven fabrics to hold the fabric distended or to stretch it transversely while traversing it through the machine.

The object of our invention is to provide an electrically-operated stentering-clip actuated at the proper time by the making or breaking of an electric circuit to cause the clip to seize hold of the selvage of the fabric fed into the machine.

To the aforesaid purpose our invention consists in the novel and peculiar construction of the parts and application of apparatus for electrically actuating same, as will be hereinafter fully described.

In the accompanying drawings, illustrating our invention, Figure 1 is a transverse section of the chain-slide of a stentering and stretching machine, showing mounted thereon in end elevation a clip-link of the respective chain and electromagnet and connections embodying our improvements, the operative parts of the clips being shown in position for receiving a wet or fresh supply of fabric. Fig. 2 is a similar part-sectional elevation showing the feeler of the clip resting on the edge of the freshly-introduced fabric. Fig. 3 is another similar view showing the upper gripping-jaw closed upon and gripping the selvage of the fabric. Fig. 4 is a side elevation of Fig. 2 looking in the direction of arrow A, same figure.

Like letters of reference indicate corresponding parts throughout.

Referring to the drawings, letter *a* designates the body or link of the stentering-chain, a series of which links are connected together by rivets or pins to form an endless chain which works in a race in the chain-slide *b*, all as ordinarily.

c represents the lower jaw of the clip, made integral with the link *a*, and *d* the upper gripping-lever, mounted on a short shaft or pin *d'*, journaled in bearings in overhanging arms or standards *a'*, rising up from and integral with the link *a*. The base of the depending arm d^2 of the gripping-lever *d* forms the nipping-jaw, and said lever has a rearwardly-extending arm d^3, having its extremity formed to engage with a catch or locking-dog *e'* on an armature *e*, hinged on a pin e^2, secured in the overhanging arms *a'*, said armature being adapted to be actuated by electromagnets *f*, attached to a bar *f'*, supported by a bar or pedestal *g*, bolted to the chain-slide *b*.

h is the feeler, which is swung on a stud or pin *h'*, secured to link *a*, and is of the ordinary three-pronged type. At the rear of the feeler and integral therewith is an upwardly-branching extension or arm h^2, adapted to engage at the proper time the under surface of an incline *i*, secured to a bracket *j*, bolted to the chain-slide *b*, which said incline holds the feeler in suspension, as shown in Fig. 1, until the cloth or fabric is fed in, when it passes clear of the incline and allows the feeler to fall upon the fabric, as shown in Fig. 2.

k is a brass contact-plate carried on a bar *l*, supported by bracket or pedestal *g* and each insulated therefrom at *l'*.

The electric circuit is formed by wires *n* and *o*, led from dynamos, batteries, or other source of electrical energy, one pole being connected to a bar or conductor *m*, secured to the bracket *g* and insulated from it at *m'*, and the other pole to the framework of the machine—as, for instance, to the chain-slide *b*.

The action of the electric stentering-clip is as follows: During the time of feeding the fabric into the machine the rear arm h^2 of the feeler *h* is depressed by the incline *i* and the feeler raised and held clear of the fixed jaw *c*, as shown in Fig. 1, the gripping-lever *d* meanwhile being held suspended clear of the fabric, as also shown in Fig. 1, by the catch

e' on armature e. After the introduction of the fabric underneath the feeler h the arm h^2 thereof passes clear of the incline i and allows the feeler to fall onto the fabric, as in Fig. 2, and when the fabric is withdrawn from under the feeler in the usual way the said feeler drops instantly into the grid c' in the bottom fixed jaw c, thereby bringing its arm h^2 into contact with the brass contact-plate k and causing a current of electricity to flow through a wire leading from bar l to the electromagnet f, then through the wires around the coils of the magnet to the bar m, and from bar m by wire n to one terminal of the batteries. This current of electricity causes the magnet f to exert at the extremities of its cores which pass through the bar f' a strong magnetic force, which attracts the armature e into contact therewith, thereby drawing the catch e' away from the arm d^3 of the gripping-lever d and releasing said lever, which at once falls upon and grips the selvage of the fabric, as shown at Fig. 3. At the end of the machine, after the fabric has been dried or otherwise treated, an incline (not shown) contacts with an upright arm d^4 on the gripping-lever d, thereby producing two results—namely, the release of the fabric and the reinstating of the gripper-lever d in the position shown at Fig. 1—in doing which the end of arm d^3 of said lever pushes past the catch e' on the armature e and is thereupon engaged by the catch as it rides under the arm d^3 in regaining, by gravity, its normal position and suspends the gripping-lever d in position for feeding again. The feeler h is reinstated in the position shown in Fig. 1 by the incline i, which causes the circuit to be broken and the armature e released.

The electromagnets are arranged in pairs placed in a fixed position at the feeding end of the machine, each pair having a yoke or bar f^2, connecting them and making the magnets into horseshoe-magnets. These magnets, of which any suitable number may be employed, as may be required for feeding, are placed close together, as illustrated in Fig. 4, so that immediately the feeler falls, as in Fig. 3, and makes contact with the bar or plate k the armature e is instantly attracted to withdraw the catch e' thereon from under the arm d^3 of the gripping-lever d and release said lever.

By the employment of electricity for actuating the clips they can be made very light and sensitive.

If desired, an electromagnet could be applied to each clip-link and travel therewith, instead of mounting a number of magnets in a fixed position at the feeding end of the machine.

We may vary the details of construction of the clip and parts to adapt ordinary clips to be placed in and actuated by the making and breaking of an electric circuit.

We claim as our invention—

1. The combination, with a traveling chain, and a clip moving with the chain and provided with a pivoted jaw; of a catch which normally holds the said jaws open, and an electromagnet operating when energized to retract the said catch and release the said pivoted jaw, substantially as set forth.

2. The combination, with a traveling chain, and a clip moving with the chain and provided with a pivoted jaw; of a catch also traveling with the chain and normally holding the said jaws open, and a stationary electromagnet arranged adjacent to the path of the said catch and operating, when opposite to it and energized, to retract it and thereby release the pivoted jaw, substantially as set forth.

3. The combination, with a traveling chain, and a clip moving with the chain and provided with a pivoted jaw; of a pivoted feeler and a pivoted catch for the said jaw also traveling with the chain, an electromagnet for retracting the said catch and releasing the pivoted jaw, and electric contact mechanism arranged in the path of the said feeler and operating to permit the electromagnet to be energized when the clip reaches a prearranged position, substantially as set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

WILLIAM WHITELEY.
WILLIAM WHITELEY, JUNIOR.

Witnesses:
HERBERT HANSON,
THOMAS A. BARRON.