

No. 616,390.

Patented Dec. 20, 1898.

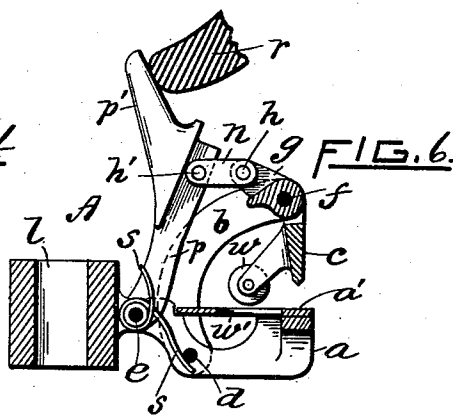
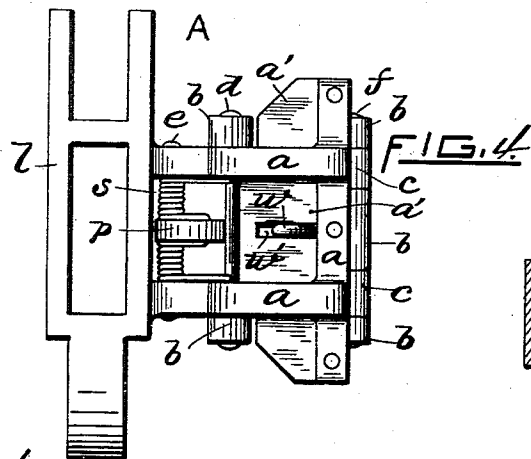
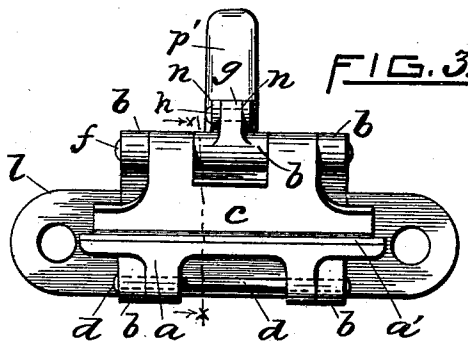
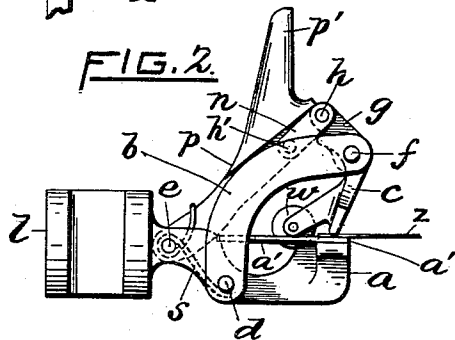
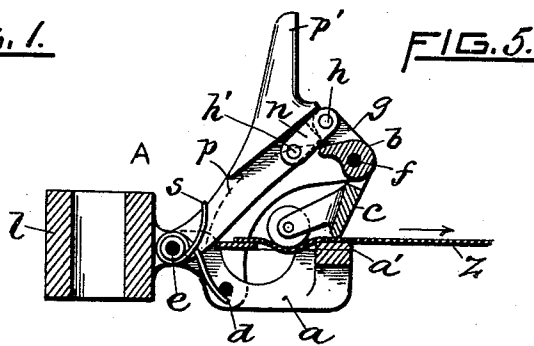
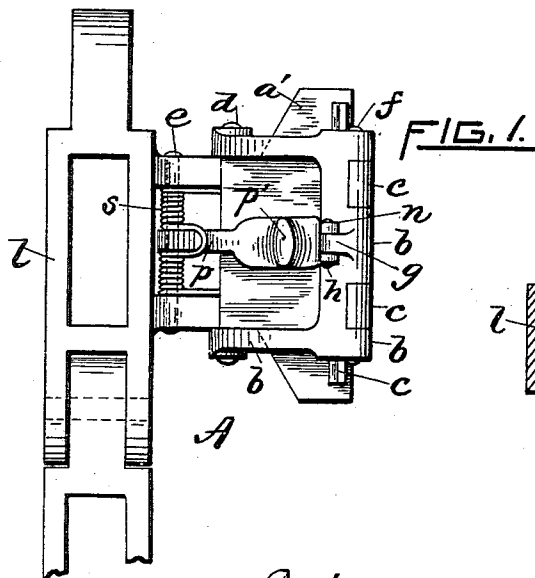
A. W. C. ARNOLD.

CLOTH CARRIER CHAIN FOR TENTERING MACHINES.

(Application filed Jan. 15, 1898.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES.

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2 Sheets—Sheet 2.

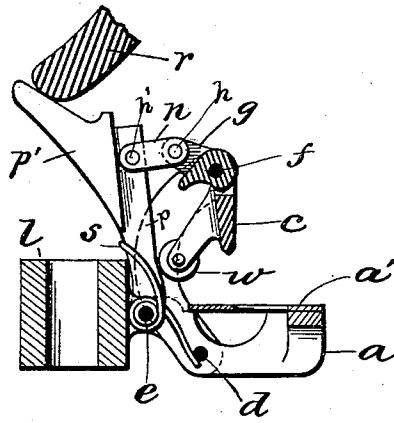


FIG. 7.

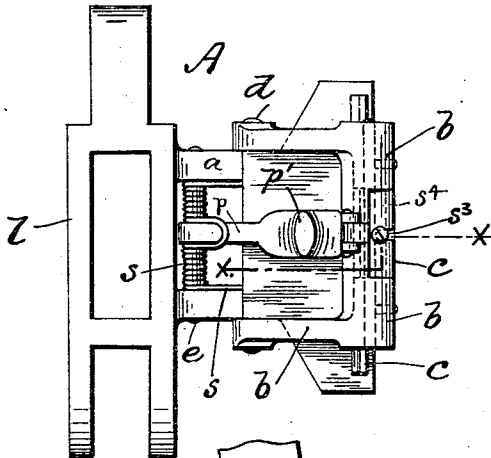


FIG. 9.

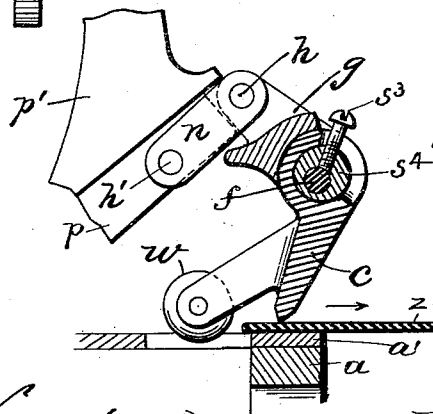


FIG. 8.

WITNESSES.

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UNITED STATES PATENT OFFICE.

AMOS W. C. ARNOLD, OF PROVIDENCE, RHODE ISLAND.

CLOTH-CARRIER CHAIN FOR TENTERING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 616,390, dated December 20, 1898.

Application filed January 15, 1898. Serial No. 666,756. (No model.)

To all whom it may concern:

Be it known that I, AMOS W. C. ARNOLD, a citizen of the United States of America, and a resident of the city and county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Cloth-Carrier Chains for Tentering-Machines, of which the following is a specification, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

The invention forming the subject of my present application for patent relates to carrier-chains of tentering-machines, and more particularly to the automatic clip or clamp portion of such chains; and it consists, essentially, in the novel construction and arrangement of the parts forming the said clamp portion, all as fully hereinafter set forth and claimed.

In United States Patent No. 568,508, issued to me September 29, 1896, is shown and described certain improvements in cloth-tentering machines, including the conveyer-chains therefor. In my present improvement the chain-links are provided with cloth-controlled clips arranged so that the holders or frames of the upper members of the clips are rigidly locked automatically when in the normal operative position, while at the same time the upper or swinging jaw members themselves of the clips are free to act upon the cloth resting on the lower or stationary jaw, since the locking device is not controlled by the cloth.

In some prior forms of tenter or conveyer chains of the class above referred to the upper jaw members of the clamps have been so connected or jointed to locking devices that the latter become operative only through the medium of the cloth, or, in other words, the locking devices are cloth-controlled. Such former clips, too, are not readily adaptable to receive fabrics varying greatly in thickness and weight, the construction being such as to materially enhance the cost of production.

In the accompanying two sheets of drawings, Figure 1 is a plan view of a tenter-chain link provided with my improved clip or clamp. Fig. 2 is an end view showing the parts in the normal operative position. Fig.

3 is a corresponding side view. Fig. 4 is an inverted plan view. Fig. 5 is a transverse sectional view taken on line *x x* of Fig. 3. Fig. 6 is a corresponding sectional view showing the movable jaw and its connections partially elevated, as in receiving or releasing the cloth. Fig. 7 is a similar section, the clip being fully elevated. Fig. 8 is an enlarged partial cross-section showing the upper jaw provided with means for adjusting its height relatively to the lower or stationary jaw, and Fig. 9 is a plan view of the thus modified link and clip.

A in the drawings indicates a conveyer-chain link embodying my improvement. The link members proper, *l*, may be made substantially as usual, if desired, and jointed together to form an endless chain. To one side of the link-body *l* is cast or secured the laterally-extending double arm or base *a*, on the upper side of which is fixed a flat plate *a'*, forming the stationary jaw portion of the clip or clamp and adapted also to support the cloth. The other or swinging upper jaw member *c* is loosely mounted on a pin *f*, fixed in the outer or free end of the bent swinging frame *b*, the latter being pivoted or hinged to a short shaft *d*, extending through the said arm *a* and parallel with the link, the arrangement of the said two jaws being such that they coact to form a clamp for holding the cloth between them. The link is further provided with the central lever or locking arm *p*, mounted to swing on the pin or shaft *e*, the latter passing transversely through the arms *a* at a point near the side of the link-body, as clearly represented. The lever *p* is maintained in the normal or dropped position (shown in Figs. 2 and 5) by means of the spring *s*. The upper end of the lever is prolonged at *p'*, so as to form a dog adapted to be engaged by a suitable cam, as *r*, when in use in the machine, the cam being arranged in the path of the traveling chain, substantially as common, thereby opening the jaws of the clamps at the proper time for the introduction of the cloth. Figs. 6 and 7 show the corresponding open position of the lever and jaws of the clamp. As the dog *p'* moves past the cam (indicated at *r*) the spring *s* gradually forces the locking-lever *p* downwardly to the said normal or lowest position.

It will be seen that the said frame and lever members are connected at their upper ends by means of a pair of short links n , thus forming a double hinge or toggle joint. The frame b has a short central extension or ear g , through which the link-pin h passes.

The relative proportions and arrangement of the swinging members b and p to each other and to the plate or jaw a' are such that they move together at irregular rates of speed, since their radii are unequal, the connecting-links n at the same time serving to further increase the ratio of variableness in the movements of the two pivoted members b and p . As drawn, the distance between the centers d and h of the frame b is substantially the same as the distance between the three centers e , h' , and h when the parts are in the closed or normal position shown in Figs. 2 and 5. Therefore the radius of the frame b described from the pivot d through the center h exceeds that of the lever p described from pivot e through the short link center h' by a distance equal to the length of the link n . The upper end of the lever p is adapted to just pass the under side of the said ear g of the frame b and bear against the latter, substantially as represented in Fig. 5. When in this normal working position, the link-pin h' should be in line with or little below a line passing through the centers e and h , thus insuring the locking together of the members b and p . In order to insure that the lever p returns quickly and positively to its normal position, I employ a spring s , arranged substantially as shown.

I may add that the parts b and p are so constructed and connected together that they are self-supporting, each forming a stop or check upon the other when closed or locked, as shown in Figs. 2 and 5, thus preventing them from accidentally moving in either direction, or, in other words, they are not arrested by nor do they rest against the stationary portion of the link, but are simply pivoted to the latter on the shafts d and e .

When the clip is opened, by forcing the lever p rearwardly the desired distance through the medium of a suitable dog or cam, as r , as common, (see Fig. 7,) the device is in position to permit the cloth to be removed or in a position to receive it upon the plate or lower jaw a' . In the latter event the spring operates to quickly swing the members b and p ahead to the normal limit (shown in Fig. 5) after the extension p' has traveled past the corresponding cam r , the upper clip member c meanwhile being free to swing on its axis by gravity and wholly independent of the action of the clip holder or frame b .

Extending from the back of the clip member c is a central arm or projection carrying a loosely-turning guide-roll w . The latter extends below the edge of the clip and is adapted to bear upon the surface of the cloth or fabric z , passing through the machine, as clearly shown in Fig. 5. Now in adjusting

the cloth laterally the latter is drawn slightly in the arrow direction, thus drawing it past the said roll, at which instant the clip c will swing further ahead by gravity, thereby grasping or clamping the cloth between it and the surface of the lower jaw. Meanwhile the roll will drop into an opening w' , formed in the bottom jaw-plate. (See Fig. 2.) The automatic or gravity action of the clip-jaw c is not new, but is common to various kinds of tenter-chains.

In Figs. 8 and 9 I have shown the upper or movable clip c mounted on a sleeve or bushing s^4 , which in turn is drilled eccentrically to receive the pivot or holding pin f , the parts being secured together after adjustment by means of a set-screw s^3 . As thus constructed it will be seen that the lower edge of the jaw is capable of being adjusted vertically within fixed limits with respect to the face of the lower jaw by simply loosening the screw s^3 and turning the sleeve s^4 axially the desired distance, followed by resetting the screw. By this arrangement provision is made not only for wear, but also providing means whereby the clips may be readily adapted to goods varying greatly in thickness.

I claim as my invention—

1. In a carrier or tenter chain link arranged to form a cloth-clip and having a stationary plate or cloth support, forming the lower jaw member of the clip, the combination therewith of a swinging frame, a swinging upper jaw member c jointed to and depending from the free end of said frame, and a movable spring-pressed arm or lever having its upper end linked to the corresponding portion of the swinging frame, arranged whereby the said frame and arm members are automatically locked together when in the normal or lowest position, while at the same time the upper jaw is adapted to independent movement by gravity so as to clamp the cloth between the jaws, substantially as described.

2. In a cloth-clamping device for the chains of tenter-machines, the combination with the lower or stationary jaw member of the clip, of the frame b and arm p mounted to swing on independent shafts or centers, links jointed to and uniting the upper portions of said frame and arm members, arranged to automatically lock the parts together when dropped to the lowest or normal position and a swinging jaw member c jointed to and depending from the free end of said frame, substantially as described.

3. In a cloth-carrier chain, a link having a lower jaw stationary therewith, independently-mounted swinging frame and arm members, b , p , having their upper ends jointed together, and an upper swinging jaw member c pivoted to the free end of said frame b , its movements being independent of that of the frame and capable of being controlled by the cloth, substantially as described.

4. In an automatic clip for tenter-chains, the combination with the lower or stationary

jaw, of the swinging frame and lever members, *b*, *p*, connected together at the upper or free ends and forming a self-locking device when dropped to the normal working position, 5 and a swinging gravity-acting cloth-controlled upper jaw member *c* pivoted to said frame *b*, substantially as set forth.

5. An automatic clip for tenter-chains, comprising a stationary jaw member, a swinging 10 upper jaw member, a swinging frame or holder carrying the said upper jaw, an adjustably-secured eccentric sleeve or bushing mounted in said holder arranged whereby the relative

distance between the said two jaws may be varied within fixed limits, a swinging arm 15 member, and links jointed to and uniting the upper portions of said frame and arm members, constructed, arranged and adapted for operation substantially as hereinbefore described. 20

Signed by me, at Providence, Rhode Island, this 13th day of January, 1898.

AMOS W. C. ARNOLD.

Witnesses:

GEO. H. REMINGTON,
REMINGTON SHERMAN.