No. 844,316. PATENTED FEB. 19, 1907.

W. BIRCH.

APPARATUS FOR OPENING AND STRETCHING FABRICS.

APPLICATION FILED DEC. 6, 1905.

Fig. 1.

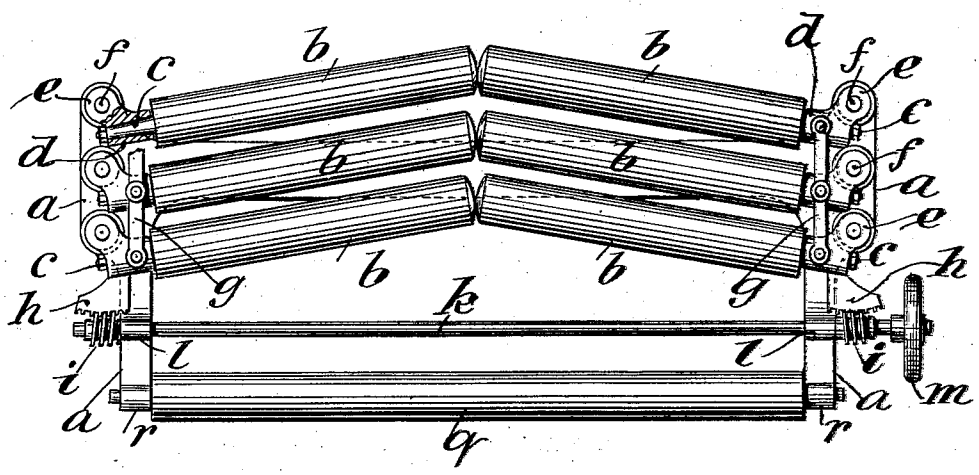


Fig. 2.

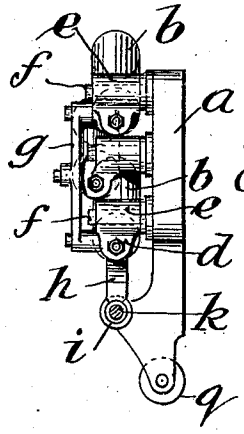
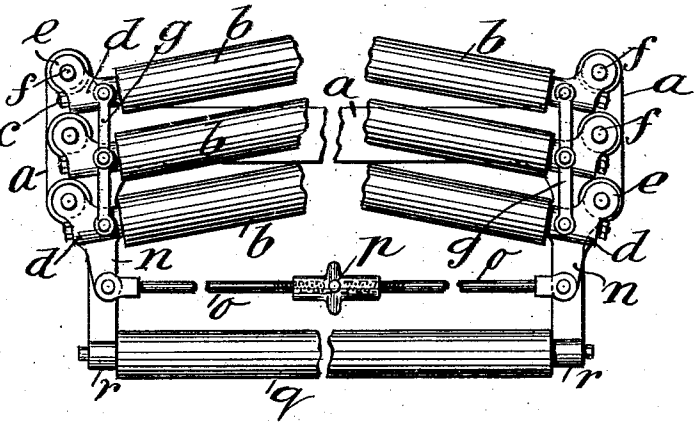


Fig. 3.



Witnesses:

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UNITED STATES PATENT OFFICE.

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APPARATUS FOR OPENING AND STRETCHING FABRICS.

No. 844,316. Specification of Letters Patent. Patented Feb. 19, 1907.

Application filed December 6, 1905. Serial No. 290,645.

To all whom it may concern:

Be it known that I, WILLIAM BIRCH, subject of Great Britain, residing at Lower Broughton, in the county of Lancaster, England, have invented new and useful Improvements in Apparatus for Opening and Stretching Fabrics, of which the following is a specification.

This invention relates to improvements in that type of apparatus for opening and stretching fabrics in which a set of rollers arranged at an angle are employed. To permit of the angular adjustment of these rollers, hitherto it was necessary to have a gap between their inner ends—that is to say, to keep the roller ends apart from each other—which in practice has been found to distort the weft, and thus damage the fabric passing over the rollers.

The object of my invention is to provide means which dispense with the necessity of the said gap and will cause the inner ends of the rollers always to abut against each other in whatever position the said rollers are set, thereby obviating the said defects. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figures 1 and 2 are respectively a plan and an end view of an apparatus for opening and stretching fabrics constructed in accordance with my invention, and Fig. 3 a plan of a modification thereof.

Similar letters refer to similar parts throughout the several views.

In carrying out my invention, and, referring to Figs. 1 and 2, *a* is the frame of the apparatus, and *b* the rollers, each upon a separate shaft *c*, one end of which projects from the outer end of the roller and is secured into a socket *d*. This socket has at its side at a right angle an eye *e*, adapted to receive a stud *f*, by which it is fulcrumed to the frame *a* of the apparatus. This eye is so positioned in relation to the roller-shaft socket *d* that when turning the sockets on their studs for the purpose of varying the relative angle of two rollers the inner roller ends will move in a parallel line, and thereby always abut against each other, thus preventing the roller ends leaving each other and cause a gap between them.

Each set of sockets *d* is suitably coupled together by a link *g*, and those of the outer set of rollers have each a worm-segment *h* in gear with worms *i*, secured upon a shaft *k*, mounted in bearings *l* on the frame *a* of the apparatus, one of the said worms and segments being formed left and the others right hand. The said shaft at one end is furnished with a hand-wheel *m*, whereby it can be turned and through the medium of the said worms, segments, and links the said sockets simultaneously turned on their fulcrums and the angular position of the said rollers thereby varied at will without the inner roller ends leaving each other, causing a gap between them, and which operation can be performed without stopping the apparatus. In lieu of the said segment and worm-gear the sockets *d* may each have an arm *n* and a rod *o* pivoted thereto, as shown in Fig. 3, the end of one rod being screw-threaded left and that of the other right hand to engage in a correspondingly-threaded nut *p*. The said rollers may be either cylindrical or conical and plain or serrated on their periphery, and the inner ends thereof are slighly rounded off. In front of the angular rollers described I also employ a straight guide-roller *q*, mounted in bearings *r* on the frame *a*.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In an apparatus for opening and stretching fabrics, a rigid frame, a series of sockets at each end of the said frame each of which sockets is independently fulcrumed thereto, shafts journaled in the said sockets and a roller carried by each of the said shafts, all substantially as and for the purpose set forth.

2. In an apparatus for opening and stretching fabrics, a rigid frame, a series of sockets at each end of the said frame each of which sockets is independently fulcrumed thereto, shafts journaled in the said sockets and a roller carried by each of the said shafts, a link for each of the said series of sockets connecting them together and means for jointly turning the latter on their fulcrums, all substantially as and for the purpose set forth.

3. In an apparatus for opening and stretching fabrics, a frame, a series of sockets fulcrumed to each end thereof, shafts journaled therein, a roller carried by each of the said shafts, a link for each of the said series of

sockets connecting them together, a wheel-segment on the outer of the said series of sockets, a hand-actuated shaft and a worm secured at each end thereof in gear with the said segments, substantially as and for the purpose specified.

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

WM. BIRCH.

Witnesses:
ALFRED BOSSHARDT,
STANLEY E. BRAMALL.