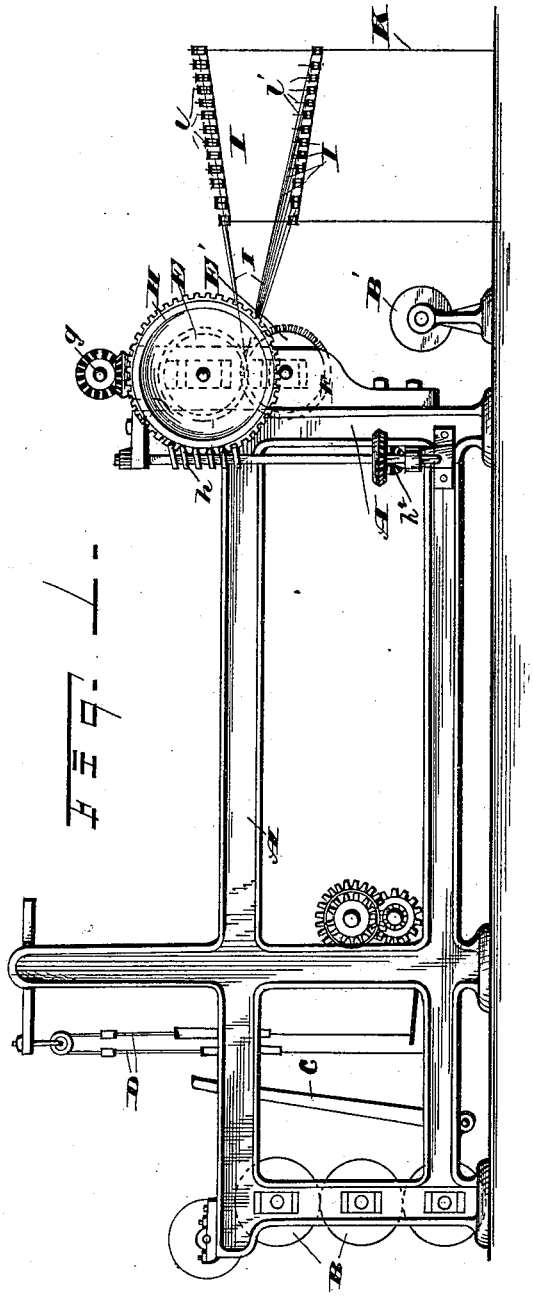
(No Model.) 2 Sheets—Sheet 1.

J. W. WHITE.

TENSION REGULATING ROLLS FOR WIRE LOOMS.

No. 348,081. Patented Aug. 24, 1886.



WITNESSES

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(No Model.) 2 Sheets—Sheet 2.

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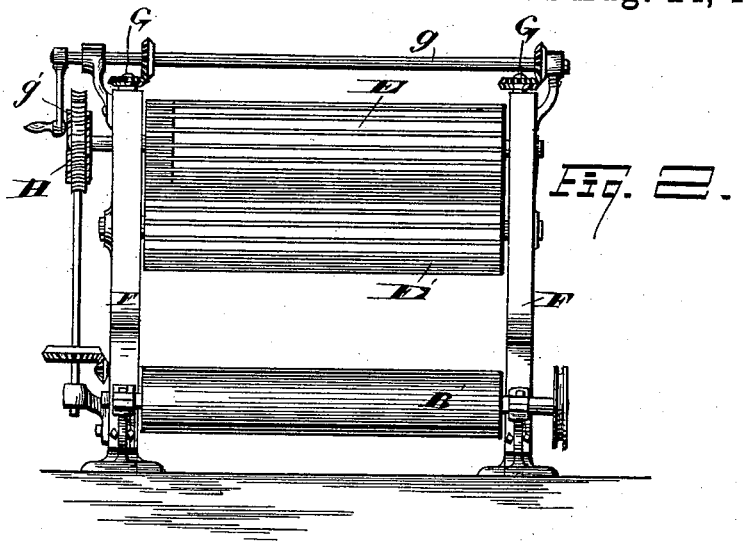


Fig. 2.

Fig. 3.

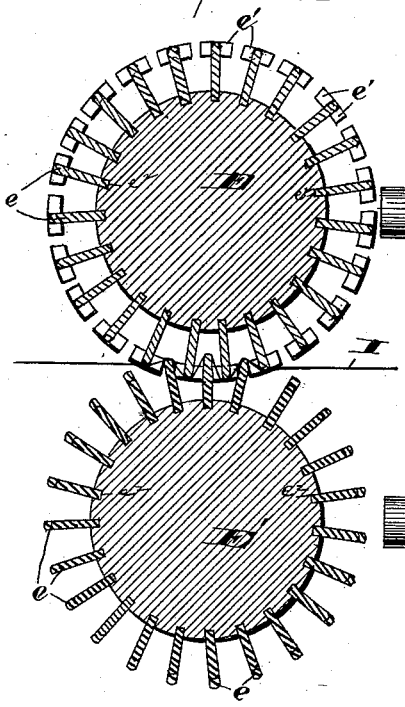
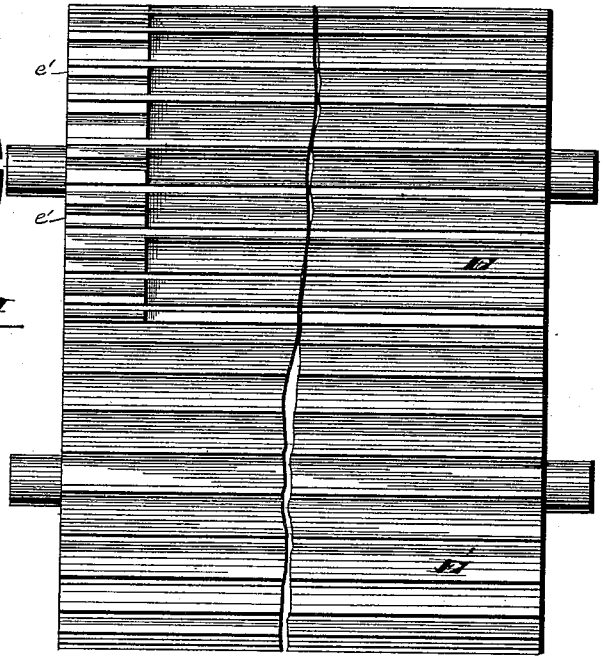


Fig. 4.



WITNESSES

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UNITED STATES PATENT OFFICE.

JOSEPH W. WHITE, OF CLEVELAND, OHIO, ASSIGNOR OF ONE-HALF TO WASHINGTON S. TYLER, OF SAME PLACE.

TENSION-REGULATING ROLLS FOR WIRE-LOOMS.

SPECIFICATION forming part of Letters Patent No. 348,081, dated August 24, 1886.

Application filed June 5, 1885. Serial No. 167,734. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH W. WHITE, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Tension-Regulating Rolls for Wire-Looms, &c.; 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 pertains to make and use the same.

My invention relates to improvements in wire-tension-regulating mechanism, designed more especially for wire-cloth looms; and it consists in a series of spool-holders and a tension-regulating device consisting of two rolls, each having wings on the periphery thereof, the wings of one roll being provided at one end with plates adapted to engage the wings of the other roll, substantially as set forth.

Heretofore in weaving wire-cloth the spools containing the wire for the warp were usually arranged on spindles, and tension was had by applying some brake or friction device to each spool. It is evident that with such arrangement the leverage of the wire on the spool would be greater when the spool was full than when the spool was nearly empty, and thus the tension on each spool would constantly vary, being least when the spool was full. Sometimes the wire would draw in between the coils on the spool and cause an extra friction that would vary the tension. With the large number of spools required, in all stages of depletion, it was found that an even tension of the warp could not be had.

With my improved tension-regulating rolls the wires, as aforesaid, being always subject to the same conditions, the tension is even throughout. The movement of the tension-rolls is regulated to feed the wires according to the "take-up" of the cloth.

In the accompanying drawings, Figure 1 is a side elevation of an ordinary loom for weaving wire-cloth with my improvements attached. Fig. 2 is a rear end elevation of the same. Fig. 3 is a view in transverse section, and Fig. 4 a view in elevation, of the tension-regulating rolls.

A represents the frame-work of the loom. B are the take-up rolls, and B′ the gathering-roll on which the cloth is wound. C is the oscillating lay, and D the harness, all of the ordinary construction. These looms are so well known that it is not considered necessary to further describe them, more especially as my improvements are equally applicable to about all of the looms of this class.

E and E′ are the tension-rolls, the trunnions of which are journaled in suitable boxes, that are set in vertical slots in the housing F, the latter being bolted to the frame A. The boxes of the upper rollers are supported by screw-rods G, that are intergeared, as shown, with the shaft *g*. The latter is provided with a crank, *g′*, by turning which the upper roller is raised or lowered, as desired. This mechanism for journaling the rolls and raising the boxes by screw-rods for adjusting the rollers is of the ordinary construction and is found in a variety of machinery.

Upon the trunnion of one of the rolls is mounted the worm-gear H, engaging the worm *h*, the shaft of which is intergeared and connected in any suitable manner with the driving-shaft h^2 of the loom, or with other intermediate mechanism.

The rolls E and E′ have wings *e*, set radially and extending longitudinally the length of the respective rolls. These wings are preferably flat steel bars set edgewise in grooves e^2, made in the rolls. A driving fit is all that is necessary to secure the wings, as the pressure is toward the center of the respective rolls. With such construction the wings, when they become worn, may be easily removed and the rolls supplied with new ones without removing the rolls from the machine or stopping the loom but a short time. The removed wings may have the outer edges dressed and be again used on the rolls, and, as this may be done a number of times, two sets of wings are likely to last as long as the loom. Of course these wings may be cast integral with the rolls, if preferred, but I do not recommend such construction. The outer edges of the wings are rounded, so as not to cut or kink the wire in its passage between them. At one end and on either side of the wings on one roll are secured the plates *e′*. The adjacent plates *e′*, or (that is) the plates located between two adjacent wings, are separated sufficiently far to permit of the easy entrance of the wings of the

other roll, and are constructed to engage the wings of the said other roll and form the gearing or connection between said rolls, thereby causing both rolls to move in unison. By reason of the wings being thus separated and having their edges rounded the wires are not flattened, kinked, or otherwise injured, but are discharged from the rolls straight and in good condition, showing no signs of their encounter with the latter.

One of the warp-wires, I, is shown in Fig. 3. A supporting-frame, K, is arranged at the rear of the loom, with spindles *l*, on which the spools *l'* are mounted loosely. The movement of the warp-wires I as they are drawn along by the advance of the cloth on the take-up rolls would turn the tension-regulating rolls. The worm and worm-gear act therefore only as a brake to restrain the movement of the tension-regulating rolls, and as aforesaid, are arranged to automatically feed the wires as required. The size of the rollers, the distance between the wings, and the distance that the wings interlock will vary according to the size of the wires. Larger wire will require larger spaces between the wings, to avoid making such sharp bends in the wires as would not readily straighten. The wings should only interlock far enough to prevent the wire from slipping.

The tension-regulating rolls that I employ when the warp-wires range in sizes from No. 18 to No. 30 are usually about ten inches in diameter, and of course longer or shorter, according to the width of the loom. The wings are about five-eighths by one and one-fourth inches in cross-section, and are set about one-half inch (more or less) apart. If the rolls are of larger dimensions, they will operate equally well on larger or smaller wire by setting the wings a suitable distance apart, according to the size of the wire.

I have chosen to illustrate my improved tension-regulating rolls in connection with a loom, but do not wish to be understood as limiting my invention to looms, as they are equally well adapted to various other purposes.

I am aware that rolls for crimping wire for numerous purposes are in common use, and therefore I make no claim to such devices.

What I claim is—

The combination, with a series of spool-holders, of a tension-regulating device consisting, essentially, of two rolls, each having wings on its periphery, the wings of one roll being provided at one end with plates *e'*, adapted to engage the wings of the other roll, substantially as set forth.

In testimony whereof I sign this specification, in the presence of two witnesses, this 26th day of May, 1885.

JOSEPH W. WHITE.

Witnesses:
CHAS. H. DORER,
ALBERT E. LYNCH.