Sept. 5, 1939. F. F. SCHMIEGE 2,172,037

WIRE-WEAVING MACHINE

Filed Jan. 29, 1937

Fig. 1.

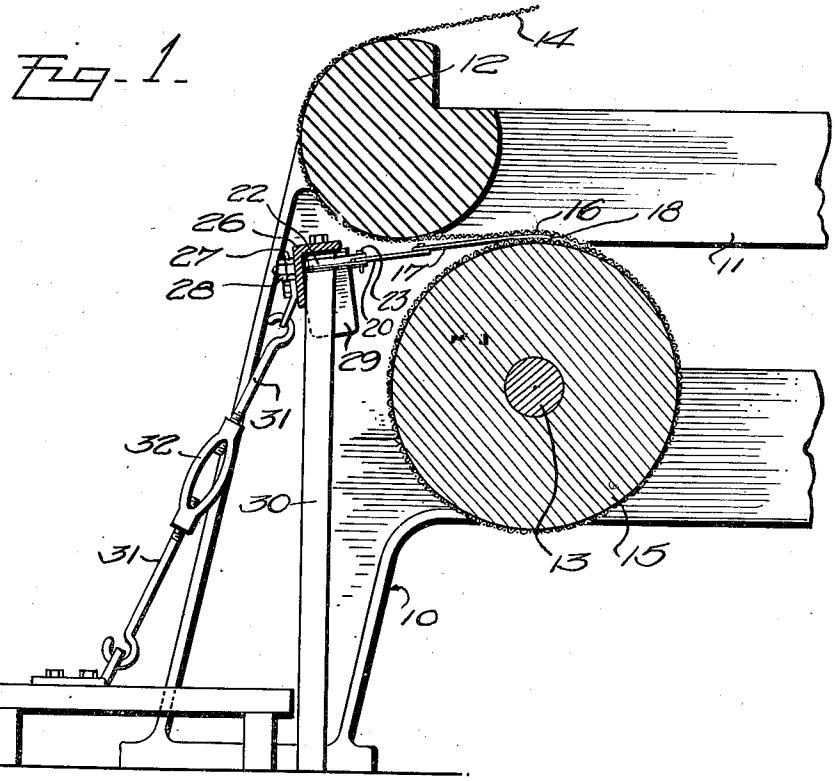


Fig. 2.

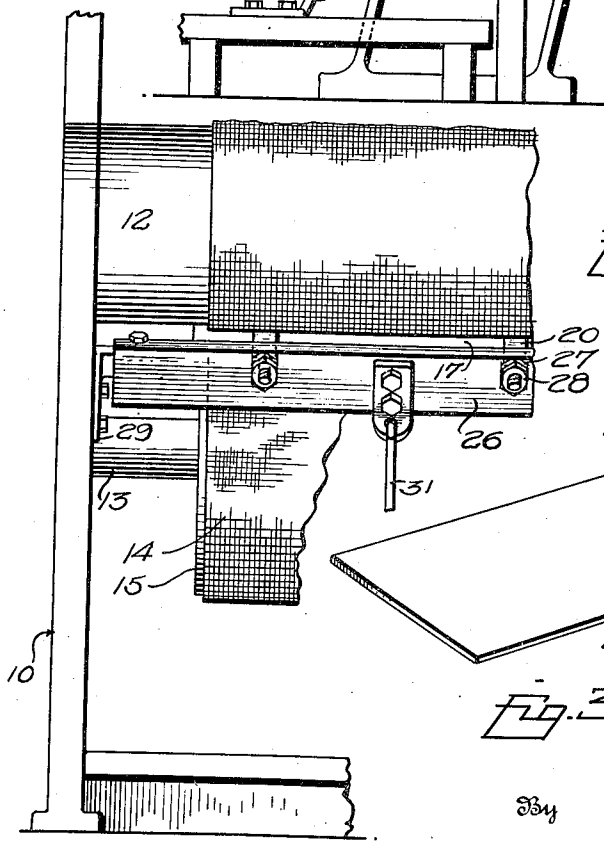
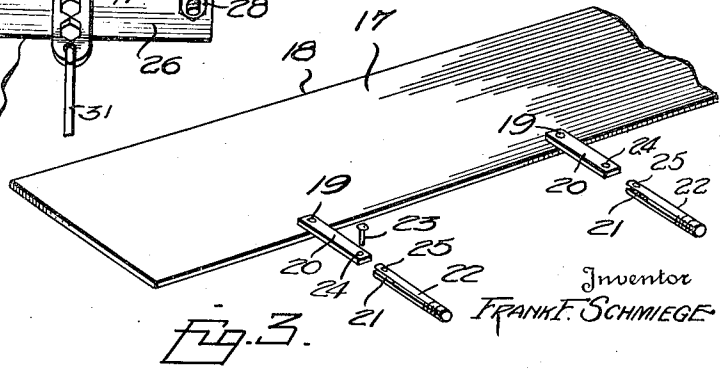


Fig. 3.



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WIRE-WEAVING MACHINE

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Application January 29, 1937, Serial No. 123,047

1 Claim. (Cl. 139—291)

This invention relates to wire weaving machines, and more particularly to improved means for winding the wire cloth on rolls after the weaving operation has been completed.

In the manufacture of wire cloth, for example the cloth used on Fourdrinier machines, it is necessary that the finished cloth be very smooth. Substantial difficulty has been encountered in providing a uniformly smooth cloth with the machines employed for weaving the cloth and then winding the finished cloth on rolls.

In most wire weaving machines, the wire cloth, after the weaving operation is completed, is passed around a breast beam and then wound on a cloth roll while the cloth is held under substantial tension. At the point where the woven cloth initially contacts with the cloth previously wound on the roll, the knuckles of the cloth on the roll contact with the incoming cloth, thus causing the latter to "climb" the knuckles of the previously wound cloth. This action causes one or both of the edge portions of the cloth to move laterally inwardly and results in the longitudinal wrinkling or puckering of the cloth. These wrinkles or puckers may continue to form for a few inches of the length of the cloth and very often extend through several feet, the action referred to continuing until the tension on the cloth is released and the woven wire again spread out.

An important object of the present invention is to provide a device for preventing the wrinkling or puckering of wire cloth under the conditions referred to.

A further object is to provide a novel device engageable between the cloth on a roll and the strip of incoming cloth about to be wound on the roll, to cause the incoming cloth to be wound perfectly flat on the roll without the formation of puckers or wrinkles.

A further object is to provide a novel device of extremely simple construction comprising a plate of resilient smooth material such as polished spring steel, arranged to engage beneath the incoming cloth at the point where it normally initially contacts with the cloth roll to prevent the knuckles of the wound cloth from destroying the smooth continuity of the incoming cloth.

Other objects and advantages of the invention will become apparent during the course of the following description.

In the drawing I have shown one embodiment of the invention. In this showing:

Figure 1 is a vertical sectional view of the front portion of a wire weaving loom,

Figure 2 is a fragmentary end elevation of the same, and,

Figure 3 is a fragmentary perspective view of the resilient plate forming the principal subject matter of the present invention.

Referring to Figure 1, the numeral 10 designates the main frame as a whole of a conventional wire weaving loom having side frame members 11 between which is mounted a conventional breast beam 12. The side frame members also support a rotatable shaft 13. The woven wire cloth is indicated by the numeral 14, and in accordance with conventional practice, the cloth, while being held under tension, passes around the breast beam 12 and then around a roll 15 supported on the shaft 13. As is well known the roll 15 is advanced automatically by a suitable step by step movement to wind the cloth on the roll a distance equal to the distance between each adjacent pair of shute wires, as each successive shute wire is driven into position in the weaving operation.

The cloth passing around the breast beam 12 initially contacts with the roll along a line which has been indicated in Figure 1 by the numeral 16. This line, of course, will be the line at which the plane of the cloth between the breast beam and the winding roll is tangent to the roll 15, or the successive turns of cloth thereon. The difficulty now experienced in producing smooth woven wire cloth is due to the action which occurs along the line 16, the knuckles of the wound cloth causing lateral displacement of portions of the incoming wire and creating the highly undesirable puckers or wrinkles in the cloth.

The present invention provides means for preventing the knuckles of the wound cloth from causing any portions of the incoming cloth from "climbing" the knuckles of the wound cloth along the line 16. A resilient plate 17, preferably formed of polished spring steel, is supported in the position shown in Figure 1, the inner edge 18 of the plate extending approximately one inch beyond the line 16. Accordingly it will be apparent that the incoming wire is supported adjacent the line 16 around the perfectly smooth surface of the plate 17, the resiliency of this plate between the line 16 and the inner edge 18 of the plate permitting the plate to flex downwardly to generally coincide with the shape of the roll 15 or the successive turns of cloth thereon.

The forward or outer edge portion of the plate 17 is riveted or otherwise secured as at 19 to a plurality of holding members 20, preferably in the form of flat shanks. The members 20 may be

spaced apart any suitable distance and in practice it has been found that they preferably should be spaced apart approximately eighteen inches. The free ends of the members 20 are respectively receivable in slots 21 formed in the inner ends of supporting bolts 22. When the parts are thus assembled, connecting pins 23 are adapted to be inserted in registering openings 24 and 25 formed respectively in the members 20 and bolts 22.

The forward ends of the bolts 22 are threaded and extend through a suitable brace member 26 extending transversely of the machine. The brace 26 may be formed of angle section as shown in Figure 1, and the threaded ends of the bolts 22 extend through suitable openings in the depending portion of the brace 26. Each bolt 22 is preferably provided with an adjusting nut 27 and a jamb nut 28 for holding the adjusting nut against turning, as will be apparent. The brace 26 may be secured at its ends to the side frame members by means of suitable brackets 29, and one or more posts 30 may be employed for rigidly supporting the brace 26 intermediate its ends. Rods 31 and turnbuckles 32 may be employed for rigidly fixing the brace 26 against inward movement incident to the pull exerted on the plate 17 in a manner to be described.

The operation of the device is as follows:

The cloth is woven in the loom in the usual manner, the cloth advancing upon the driving of each shute wire into position. The cloth 14 passes around the breast beam 12 and then inwardly to be wound upon the roll 15, the wire being maintained under tension in the usual manner. In the absence of the plate 17, the highly undesirable wrinkling or puckering of the cloth would occur, as in the usual practice.

With the present invention, the inner end of the plate 17 is arranged between the roll 15 and the incoming cloth and preferably has its inner edge 18 extending approximately one inch beyond the line 16. The distance that the plate extends beyond the line 16 is not critical, and satisfactory results can be obtained if the edge 18 extends somewhat more or less than an inch beyond the line 16. A projection of one inch is preferred, for the reason that it provides perfect results and for the additional reason that the extension of the edge 18 further inwardly results in the transmission of excessive pull on the plate 17 incident to the frictional grip exerted upon opposite faces of this plate adjacent the inner end thereof when the winding operation is taking place.

The plate 17 is preferably formed of thin, polished spring steel, and while the thickness of the plate is not critical, it has been found that excellent results are obtained with a plate of about .015 inch thickness. When a suitable plate is employed and is projected beyond the point 16 in the manner stated, the hardness of the plate and the polishing of the surfaces thereof permits the wire cloth to slide freely over the end of the plate without being injured in any way, the plate serving to maintain the incoming cloth perfectly flat from edge to edge. Beyond the plate 17, there is no tendency for the cloth to contract laterally and thus pucker or wrinkle, and accordingly the functioning of the plate perfectly prevents the winding of defective wire cloth.

The pins 23 loosely connect the shanks 20 to the bolts 22, and the bolts are loosely mounted in the brace 26, the nuts 27 merely limiting the inward movement of the bolts, and consequently of the plate 17. Thus the plate 17 is free to move at least to a certain extent in every direction except in the direction of movement of the cloth as it is wound upon the roll. This mounting of the plate provides for a perfectly free and uniform feeding of the wire cloth to the roll 15. The pins 23 are removed upon the complete winding of each roll of the cloth to permit the removal of the plate 17. The plate is replaced for the winding of the next roll, and the initial winding operation will draw the plate inwardly to its proper limit of movement as defined by the position of the adjusting nuts 27. As previously stated, the uses to which most wire cloth is put require that the cloth be perfectly flat, and this is particularly true in Fourdrinier machines. The making of uniformly flat wire cloth has been found impossible with ordinary loom constructions for the reason that the incoming cloth "climbs" the knuckles of the previous turns of cloth wound upon the roll. The present invention provides an extremely simple and effective means for preventing the wrinkling and puckering of the cloth, thus permitting the making of a wire cloth which is uniformly perfectly flat.

It is to be understood that the form of the invention herewith shown and described is to be taken as a preferred example of the same and that various changes in the shape, size and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the subjoined claim.

I claim:

The combination with a wire cloth weaving loom having a breast beam and a cloth receiving roll to which the cloth from said breast beam passes tangentially, of a thin, smooth, hard, nonstretchable plate arranged in the angle between the roll and the cloth moving thereto, the inner edge portion of said plate only slightly extending across the line at which the cloth moving to the roll is tangent thereto, the inner extremity of said plate being substantially parallel to such line, a transverse brace rigidly connected to the frame of the loom, and means for loosely connecting said plate to said brace, said means being operative for limiting the movement of said plate in the direction of movement of the cloth toward said roll, and for providing limited movement of said plate at right angles to said direction.

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