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E. J. TRAINOR

APPARATUS FOR WEAVING ASBESTOS CLOTH

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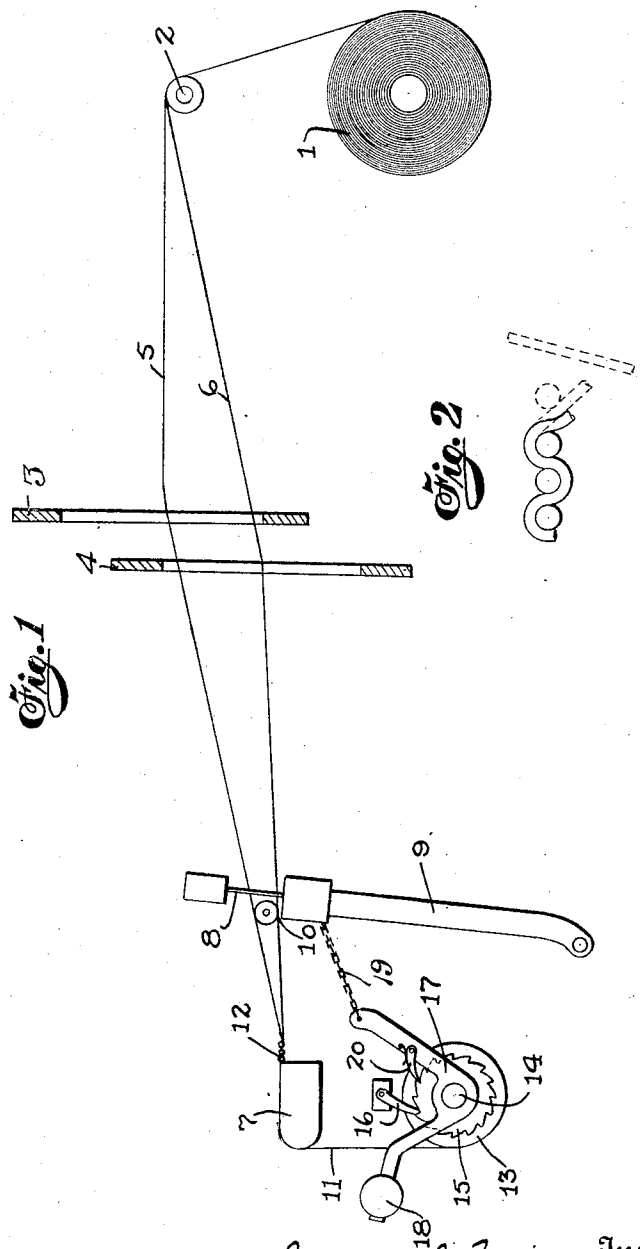


Fig. 1

Fig. 2

Edward J. Trainor Inventor

By his Attorney Ramsey Koguet

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EDWARD J. TRAINOR, OF COHOES, NEW YORK, ASSIGNOR TO ASBESTOS SPINNING AND WEAVING CORPORATION, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

APPARATUS FOR WEAVING ASBESTOS CLOTH.

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My invention relates to a method of and apparatus for weaving fabrics having a wire warp and is particularly adapted to fabrics in which the weft strands are not uniform but may differ widely in diameter. I find my invention of particular utility in weaving asbestos cloths having a wire warp in which the diameter of the asbestos weft strands varies between relatively wide limits, it being impossible to spin asbestos threads with the uniformity of textiles, and in which it is desirable to secure as close as possible a weave, in fabrics such as those intended for brake linings or filter cloths.

In weaving fabrics of this character great difficulty has been experienced in obtaining a close weave of the fabric, because of the fact that the wire warp strands do not conform readily to the curvature of the weft, the warp strands in a closely woven fabric being obliged to bend sharply in opposite directions about adjoining weft strands, a condition difficult if not impossible to secure in forms of loom and by the methods with which I am familiar.

Owing to the variation in the diameter of the weft strands it is impossible, if a closely woven fabric is to be obtained, to advance the warp at a predetermined uniform rate, and I have therefore devised a fabric take-up mechanism which operates at a non-uniform rate and the advance of which is dependent upon and varies with the diameter of the weft strands as the same are woven into the fabric.

In the drawings which illustrate my invention diagrammatically, it being understood that it is applicable to a very large number of different looms, I have shown:

In Figure 1, a diagram of a loom embodying my invention, including the work take-up mechanism referred to;

In Figure 2, a diagrammatic representation of a cross section of the fabric produced.

The loom may be of any suitable construction having a roll 1 upon which the warp is wound, a whip roll 2 over which the warp passes, heddles 3 and 4 of any suitable character engaging the upper and lower sheds 5 and 6, a breast beam 7, and a lay 8 operated by suitable mechanism illustrated diagrammatically at 9. It will be noted that the whip roll is located substantially above the level of the breast beam and that by reason of this arrangement the upper shed 5 of the warp is always substantially looser than the lower shed 6, the lower shed being preferably maintained at a relatively high tension depending upon the character of the warp wire. A shuttle 10 is caused to move backward and forward between the strands of the warp in any suitable manner, leaving a weft strand which is moved into position by the lay 8. The arrangement of the lay with respect to the work 11 is such that the movement of the lay is arrested by the bringing up of the strand laid by the shuttle against the preceding strand of the warp shown at 12. The lay is preferably heavy enough and is driven with sufficient force so that the weft strand is driven with considerable force against the wires of the warp instead of being merely laid in position in accordance with the usual practice. This driving effort causes a sharp bending of the loose wires of the upper shed of the warp, causing them to be sharply bent about the weft strand. The tightening of the warp when the sheds reverse position causes a further bending about the weft strand, the result being a series of sharp bends of the warp wires closely encircling and contacting with the weft.

The fabric 11 is accumulated on a suitable roll 13 mounted on shaft 14, or geared thereto as desired, the roll 13 carrying the ratchet wheel 15 cooperating with the pawl 16 attached to some stationary part of the machine. Loosely mounted upon the shaft 14 is the bell crank 17 carrying at one end the weight 18 and connected with the lay or other suitable moving part of the machine by means of a flexible connection such as the chain 19. Bell crank 17 is adapted to be engaged with the ratchet wheel 15 by means of pawl 20.

In the operation of the machine it will be understood that the tension of the fabric tends to unroll the roll 13, but is prevented from so doing by the engagement of the pawl and ratchet 15 and 16. The weight is elevated by throwing the bell crank about the shaft 14 during the backward movement of the lay and is held in the elevated position shown in Fig. 1 by means of the engagement of pawl 20 with the ratchet 15. The weight of weight 18 is so regulated that in the position illustrated it causes no movement of the fabric. When, however, the

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lay moves forward, driving a weft strand into position as described above, the work is by the driving effort relieved of its tension and under the influence of the weight moves forward a distance determined by the thickness of the weft strand. The momentum acquired by the weight in this movement tends to tighten the work to the desired tension. It must be seen that the distance fabric roll 13 is moved in each step is determined by the thickness of the weft thread and that the weight is brought into action by the driving effort of the lay against the finished fabric.

While I have only described one form of my invention, it will be understood that many modifications may be made without departing from its spirit. I therefore do not intend to confine myself to the particular modification shown and described.

What I claim is:

In a loom of the character described, a fabric take-up comprising a fabric roll, a ratchet secured to said fabric roll, a pawl engaging said ratchet whereby to prevent rotation of said fabric roll under tension of the fabric, a bell-crank connected to and oscillatable about said fabric roll and provided with a weight at one end thereof, a lay, a flexible connection between said lay and the other end of said bell-crank and a pawl secured to said bell-crank and engaging said ratchet to rotate the latter and said fabric roll forwardly upon the lowering of said weight.

In testimony whereof, I have signed my name to this specification this 2d day of October, 1922.

EDWARD J. TRAINOR.

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