Feb. 19, 1935. J. H. FENNER 1,992,062

IMPREGNATION OF TEXTILE FABRICS

Filed Sept. 4, 1931 2 Sheets-Sheet 1

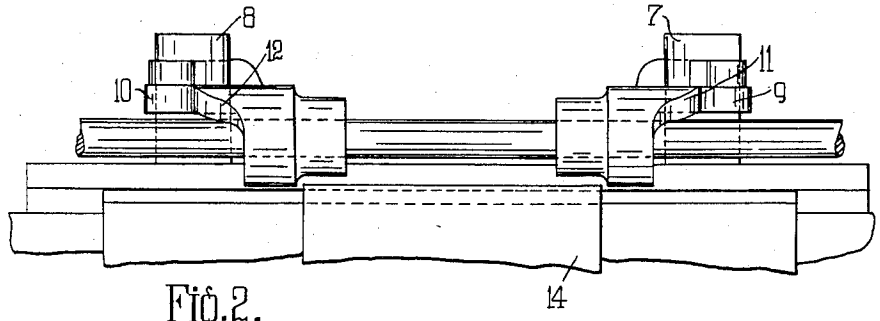


Fig. 2.

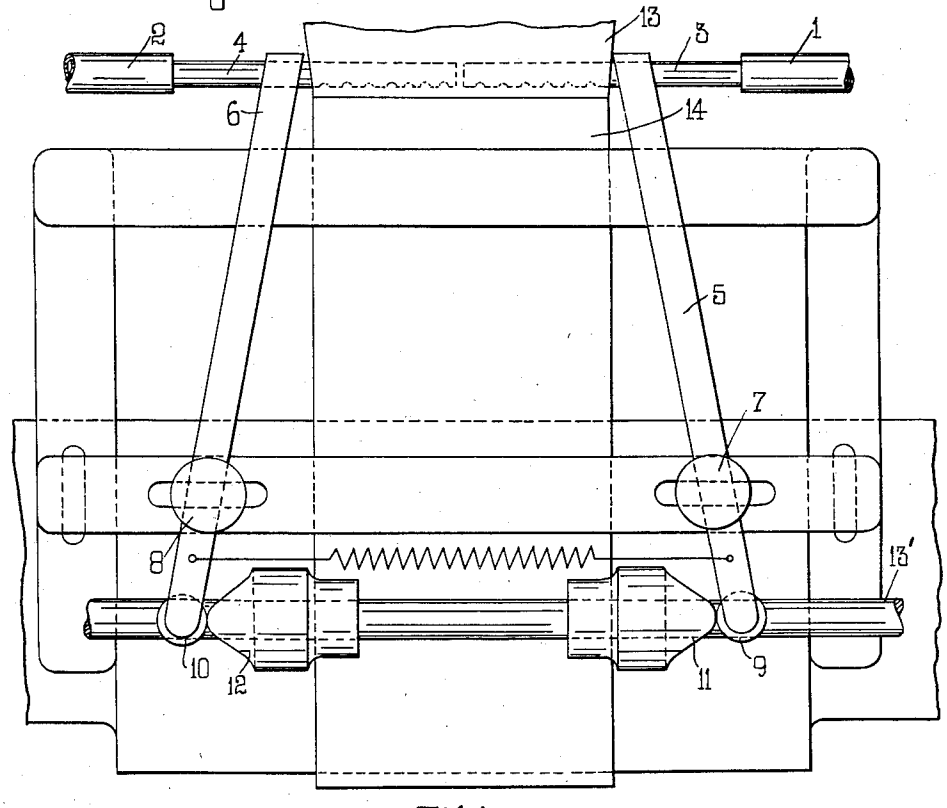


Fig. 1.

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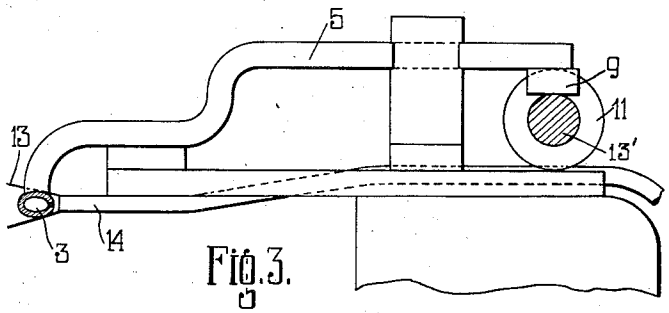


FIG. 3.

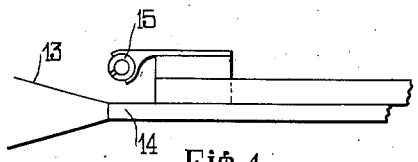


FIG. 4.

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UNITED STATES PATENT OFFICE

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IMPREGNATION OF TEXTILE FABRICS

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Application September 4, 1931, Serial No. 561,267
In Great Britain September 4, 1930

2 Claims. (Cl. 139—36)

The present invention relates to improvements in the impregnatioin of textile fabrics and is more particularly suitable for the impregnation of multiple ply woven textile material suitable for use as machine belting and the like purposes.

Various devices are known for conditioning yarns prior to weaving by damping or sizing.

According to the present invention impregnating material preferably rubber latex is applied to the warp and weft or the warp alone or the weft alone in the shed of a loom during the weaving process of a textile fabric.

The invention is more particularly described with reference to the accompanying drawings in which:—

Figure 1 is a diagrammatic plan view of a loom having the impregnation device of the present invention.

Figure 2 is a corresponding partial end view.

Figure 3 is a corresponding partial side view.

Figure 4 is a detail side view of a modification.

Stabilized rubber latex, rubber solution or other impregnation material in liquid form is passed to flexible pipe connections 1, 2 of a pair of spraying nozzles, 3, 4, which are mounted on arms 5, 6, respectively pivoted adjustably on pivots 7, 8, and having at their inner ends rollers 9, 10 adapted to engage with cams 11, 12 respectively on a shaft 13' rotated constantly or intermittently from the main driving shaft of the loom. The cams 11, 12 are so timed that the spraying nozzles on the ends of the pipes 3, 4 are moved into the shed usually immediately after each pick of the shuttle, and as soon as the shuttle is clear of the shed, the flexible pipes 1, 2 being connected to a pump, feeding rubber latex or the like impregnation material so that the nozzles on the ends of the pipes 3, 4 spray impregnation material upon the textile fabric at the beat-up place. The warp is shown diagrammatically at 13, and the finished textile fabric at 14.

In certain cases either additionally to or alternatively to the nozzles 3, 4 external fixed nozzles 15 may be used, either above or below the woven fabric 14.

In the case of multiple ply fabric a plurality of spraying nozzles may be swept over the area between the raised and lower warp of each ply and also on the outer or exterior surface of the warp at each pick. The spray of latex may further if desired be arranged to impregnate simultaneously the weft of the preceding pick.

Alternatively, instead of spraying stabilized rubber latex other impregnating materials may be used, such as vulcanized or unvulcanized rubber in a solvent, such as naphtha, or bituminous preparations in solvents or other suitable waterproofing or impregnating materials.

It will be preferred that the spraying or treatment of the fibre with the impregnating compound by insertion of the spraying nozzle into the shed takes place immediately prior to the beating-up.

Either the warp or the weft yarns or both may be pretreated with material having a cooperative action with the impregnating substance, that is to say, for instance, in the case of latex the warp or weft yarns or both may be pretreated with sulphur or sulphur compounds which will assist in the self-vulcanization of the rubber in the latex.

Where rubber latex is used this may either be the ordinary stabilized rubber latex of commerce or vulcanized and stabilized rubber latex.

As above stated, in shedding, the dwell may be such as to allow full time for the passage of the shuttle, and for the nozzles 3, 4 or alternatively, the shed may remain open for two strokes of the crank-shaft; that is to say that on the making of the shed the shuttle passes through and the beat-up takes place, the shed remaining open, then the reed recedes, the spraying-nozzles enter and withdraw from the shed, and the beat-up is repeated.

The reed recedes again, the next shed is formed and the cycle of operations repeats.

With the illustrated form, in withdrawing, the levers 5, 6 entirely remove the nozzles 3, 4 from the shed prior to the next pick of the shuttle, so that there is no danger of collision between the shuttle and the spraying nozzles. Also, the nozzles and pipes are removed from the path of the shuttle and reed prior to the operation of these structures. For this purpose, the shed-controlling mechanisms permit a dwell during which the nozzles are inserted, the impregnating substances sprayed, the nozzles withdrawn and the second beating by the reed accomplished, in addition to the usual dwell for the shuttle movement and the first beating.

The spraying nozzles, such as 3, or 4 may be inserted from one side only of the shed, or again, the spraying nozzles may be arranged upon a reed made hollow for this purpose.

I declare that what I claim is:—

1. A method of impregnating textile fabrics consisting in pre-treating certain of the yarns with a cooperative vulcanizing material and then applying impregnating material adapted to be vulcanized by said pre-treating material, to the yarns forming the fabric in the shed of a loom during the weaving process.

2. A textile weaving loom including fabric weaving devices, spraying nozzles for impregnation material and means to move said nozzles into the warp shed in timed sequence with the fabric weaving devices.

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