J. A. BUTLER.

MACHINE FOR STRETCHING FELT.

APPLICATION FILED JAN. 31, 1916.

1,238,742.

Patented Sept. 4, 1917.

2 SHEETS—SHEET 1.

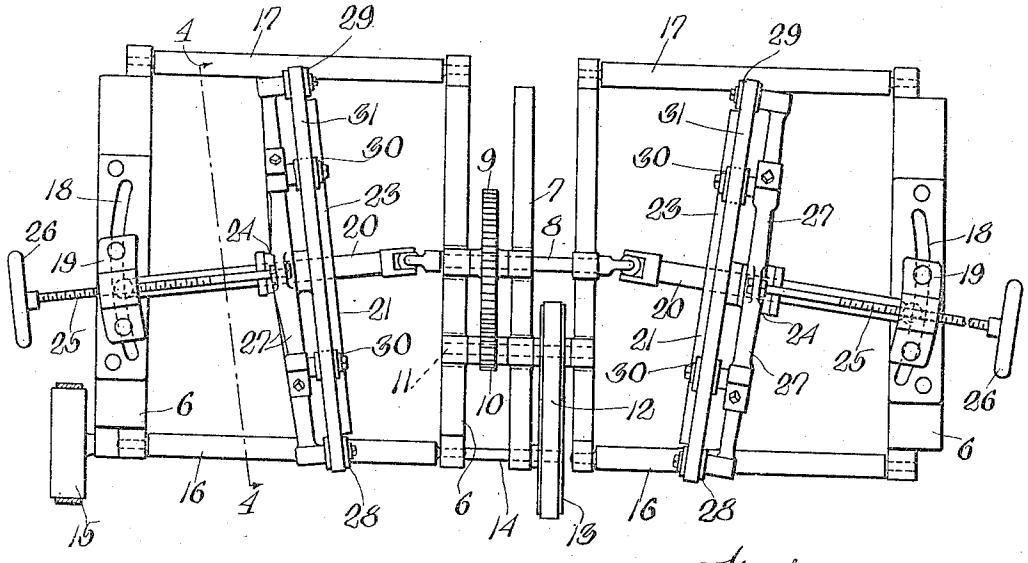


Fig. 1.

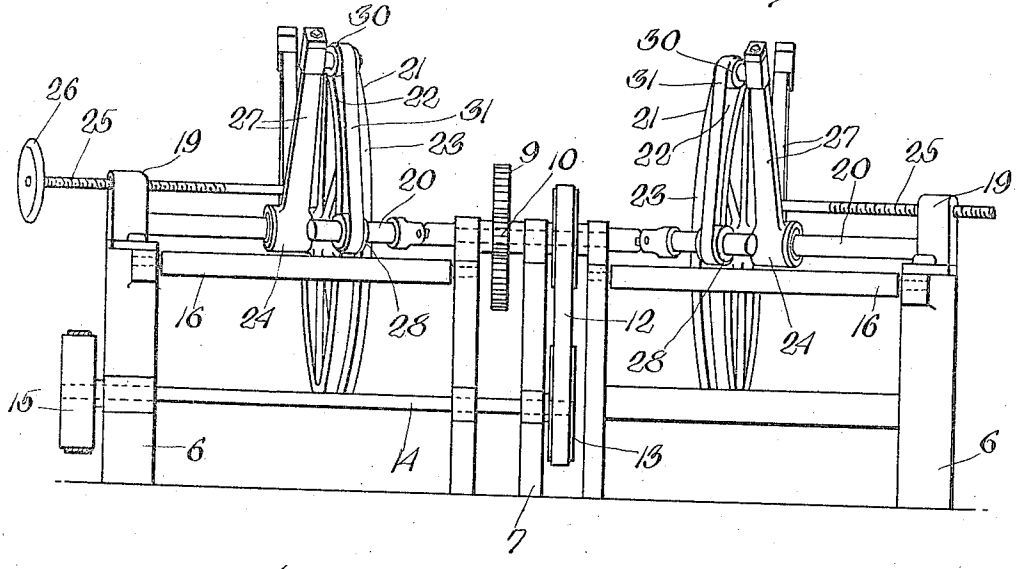


Fig. 2.

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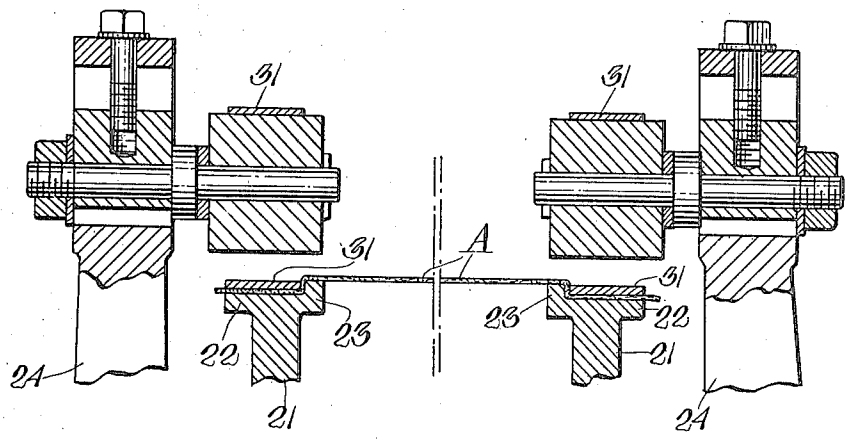
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2 SHEETS—SHEET 2.

Fig. 3.



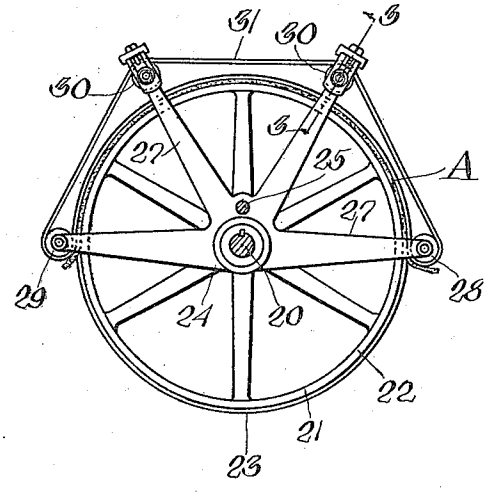


Fig. 4.

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UNITED STATES PATENT OFFICE.

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MACHINE FOR STRETCHING FELT.

1,238,742. Specification of Letters Patent. Patented Sept. 4, 1917.

Application filed January 31, 1916. Serial No. 75,368.

To all whom it may concern:

Be it known that I, JAMES A. BUTLER, a citizen of the United States, residing at Wollaston, in the county of Norfolk and State of Massachusetts, have invented a new and Improved Machine for Stretching Felt, of which the following is a specification, reference being had to the accompanying drawings, forming part thereof.

This invention has reference to improvements in machines for operating on felt or felted fabric to stretch the same and one of the objects of the invention is to provide a machine whereby a sheet or strip of felt material may be acted upon to progressively stretch the same.

Another object of the invention is to so construct a machine of this nature that a piece, sheet or strip of felt or felted material may be received by the machine, parts of the same engaged by the machine members and the piece, sheet or strip of felt or felted material subjected to a progressively increasing stretching operation during its passage through the machine.

Another object of the invention is to provide for the adjustment of the means for effecting the stretching operation.

The invention consists in the means to progressively exert a strain on the material.

The invention also consists in such other novel features of construction and combination of parts as shall hereinafter be more fully described and pointed out in the claims.

Figure 1, represents a plan view of the improved machine.

Fig. 2, represents a front elevation of the same.

Fig. 3, represents a sectional view on line 3—3 Fig. 4 to show details of construction.

Fig. 4, represents a sectional view taken on line 4—4 Fig. 1.

In the manufacture of felt or felted material in which suitable proportions of wool, hair, fur or other materials are operated upon to provide a fabric in which the main portion of its constituents are matted together or in adhering engagement the resulting product usually is unduly fulled and it is customary to manually pull said product material to increase its lateral dimensions, to reduce its thickness and, in some cases it is or may be desirable to loosen the fibers or material somewhat.

As shown in the drawings in its preferred form 6, 6 designate main frames connected by the central frame 7. In this central frame is journaled the central shaft 8 having the gear 9 which is driven by the gear 10 of the drive shaft 11 journaled in bearings of said frame 7 and driven by belt 12 from pulley 13 of the shaft 14 which is journaled in one of the main frames 6, 6 and has the pulley 15 which is adapted to be driven by any suitable means at the desired speed.

The main frames 6, 6 have at their upper portions the front rolls 16, 16 and the rear rolls 17, 17 and have also the guide slots or guides 18, 18 along which are adjustable the bearing members 19, 19. Pivotally connected with the central shaft 8 are the shafts 20, 20 the outer end portions of which are journaled in the bearing members 19, 19 so that by the adjustment of these members 19, 19 along the slots 18, 18 the shafts 20, 20 may be brought into alinement with the shaft 8 or may be disposed at suitable angles with said shaft, and such adjustment may be accomplished while said shafts are in operation.

Slidably mounted on each of said shafts 20, 20 and keyed thereto to be rotated thereby are the pulleys 21, 21 having the flange 22, 22 furnished with the peripherally disposed lips or members 23, 23 preferably positioned at the inner edges of said flanges 22, 22 so that these members 23, 23 in combination, may constitute a pair of progressively diverging traveling engaging means. Adjustment of the pulleys 21, 21 along their shafts 20, 20 to increase or diminish the space between the traveling members 23, 23, without necessarily varying their angle of divergence, is effected by the engagement of the hubs of said pulleys 21, 21 with the frames 24, 24 having the adjusting screws 25, 25 extending through threaded bores of the members 19, 19 and having at their outer ends the hand wheels 26, 26. Mounted on the frames 24, 24 are the radially extending arms 27, 27 having at their outer end portions the guide rolls 28, 29, 30, 30 for the belts 31, 31 one reach of each of said belts between the rolls 28, 29, bearing against the peripheries of the pulley flanges 21, 21 adjacent the lips or members 22, 22.

After the pulleys 21, 21 have been approximately adjusted by the swinging of their shafts 20, 20 relative to the shaft 8

shaft 14 is operated and motion is transmitted therefrom through its pulley 13, belt 12, shaft 11 and gears 10 and 9 to the central shaft 8 whereby rotation is imparted to the shafts 20, 20 and their pulleys 21, 21.

The material A, to be operated on, may be of any nature but usually is some kind of felt and a piece, sheet or strip of such material is led over the rolls 16, 16 and is engaged between the belts 31, 31 and the peripheries of the flanges 22, 22 of the pulleys 21, 21 from which line of bearing the material A extends upward and over the lips or members 23, 23 which members assist in the engagement of the material and cooperate with the flanges of said pulleys 21, 21 and the belts 31, 31 to effect a stretching action on said material as the material is carried forward, such stretching action progressively increasing with the divergence of said pulleys or at least with the diverging traveling engagements constituted by the members 23, 23 coöperating with the belts 31, 31. This stretching action operates to stretch the fabric or material and increase the lateral dimensions of felt material or the result of the working action of the machine on material passing therethrough may depend upon some other structural characteristic of the material.

In addition to their operation of the material A the members 23, 23 are or may act as guides to limit the lateral movement of the belts 31, 31 relative to the pulley flanges 23, 22.

If, during the progressive movement of the material it is found that the divergence of the stretching devices exerts a greater or less action on the material than is required these devices may be adjusted to vary the stretching action on the material without stopping the machine as this adjustment may be effected by moving the bearing members 19, 19 along their slots.

Having thus described my invention I claim as new and desire to secure by Letters Patent.

1. An apparatus of the nature described comprising a frame having a centrally disposed horizontal drive shaft, shaft elements coupled to the ends of said shaft for universal adjustment, slidable adjustable blocks carrying the outer ends of said shaft elements, pulleys on said shaft elements having flanges, and belts and carriers therefor coöperating with said pulley flanges to grip between said belts and the faces of said pulleys the fabric to be stretched and to bend said fabric over said flange.

2. An apparatus of the nature described comprising a frame, a pair of shafts mounted in said frame to swing and rotate, a pulley slidable on each said shaft, means to slidably adjust said pulley, arms extending from said means, a traveling belt sustained by members of said arms and having a bearing against said pulley, and means to drive said shaft.

3. An apparatus of the nature described comprising a frame, a shaft journaled in said frame, means to drive said shaft, a pair of shafts pivotally connected with said first shaft and having their free ends journaled in bearing members adjustable tranversely of the axis of said first shaft, pulleys slidable on and rotatable with said pivoted shafts, said pulleys having flanges having projecting members, frames slidable on said pivoted shafts and engaged with said pulleys, said latter frames having arms, guides on said arms, belts on said guides and having bearing against said pulley flanges, and means to adjust said slidable frames.

JAMES A. BUTLER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."