Sept. 8, 1936. F. KORNICHUK 2,053,669

CLOTH STRETCHING APPARATUS

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Fig. 1.

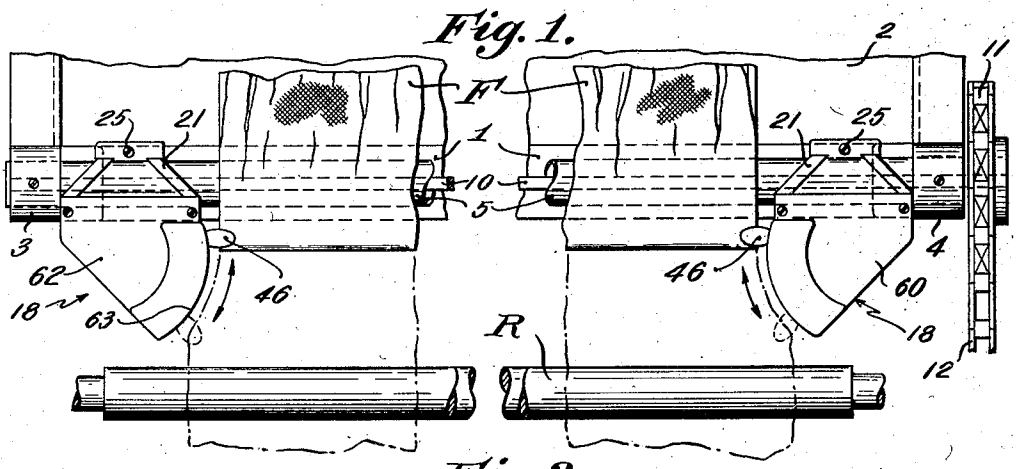

Fig. 2.

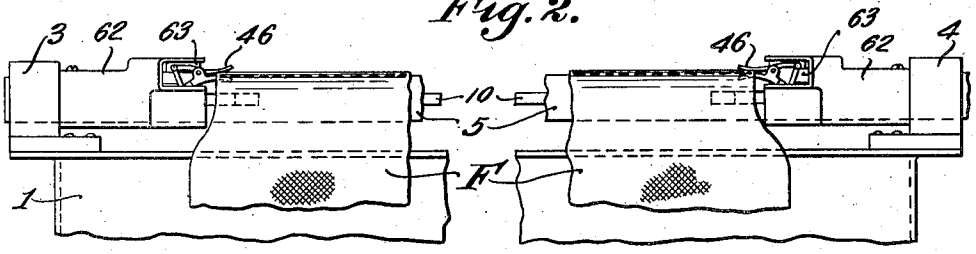

Fig. 3.

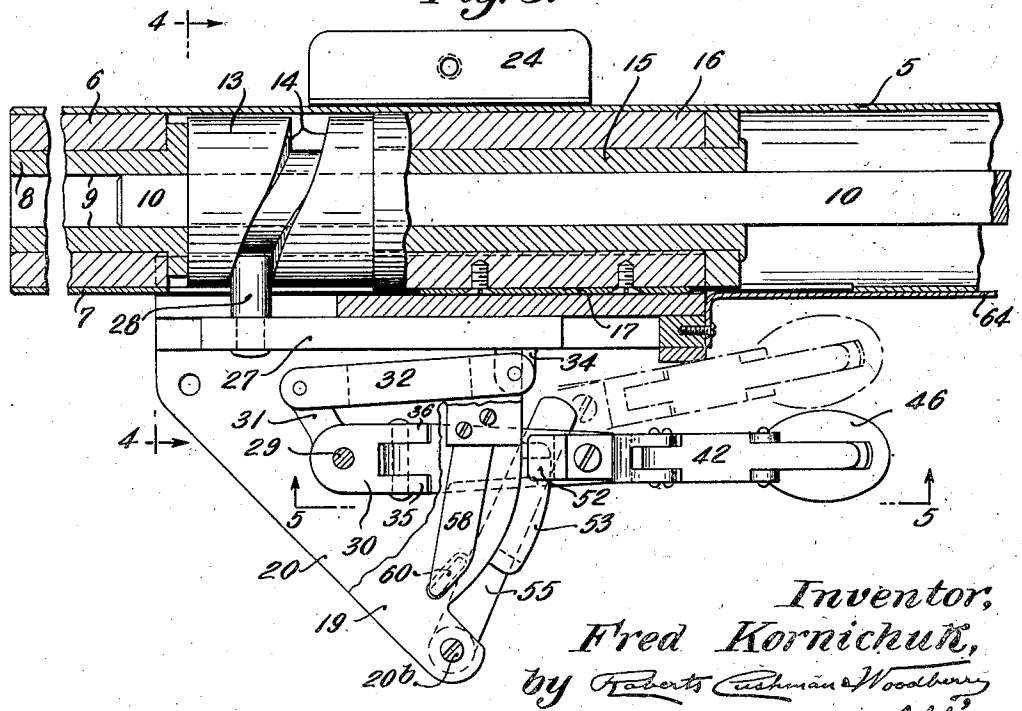

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Fig. 4.

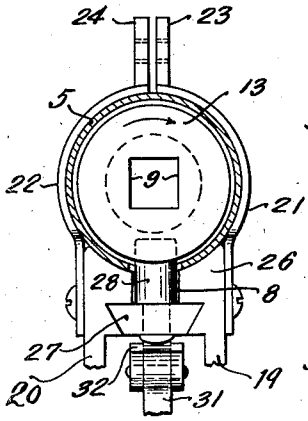


Fig. 5.

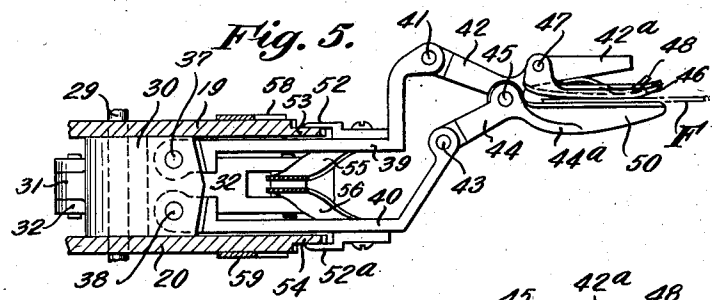


Fig. 7.

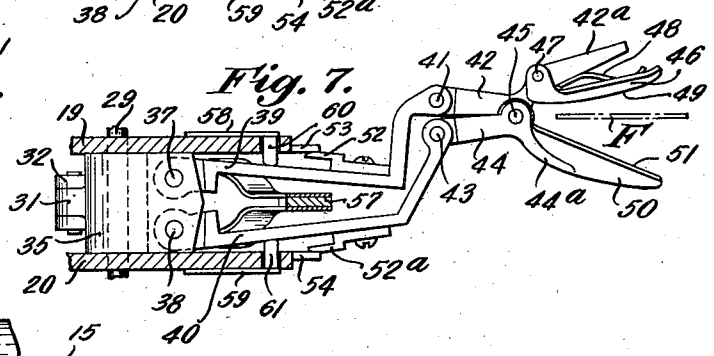


Fig. 6.

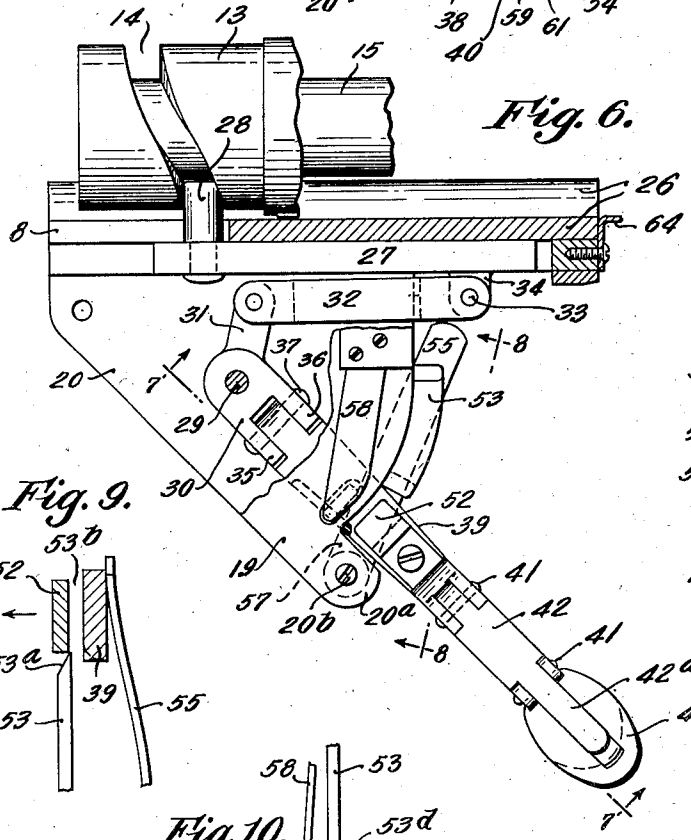


Fig. 8.

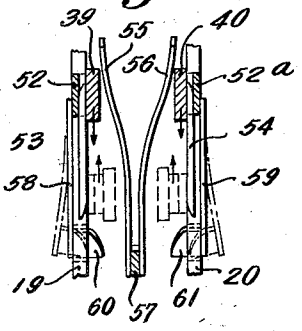
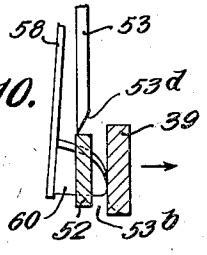


Fig. 9.

Fig. 10.



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Patented Sept. 8, 1936

2,053,669

UNITED STATES PATENT OFFICE

2,053,669

CLOTH STRETCHING APPARATUS

Fred Kornichuk, Pelham, N. H.

Application August 13, 1935, Serial No. 36,040

19 Claims. (Cl. 26—57)

This invention pertains to cloth stretching apparatus and is designed more particularly for stretching textile fabrics during or at the completion of a wet treating process, for example, soaping, dyeing, bleaching or the like. In undergoing such operations as those just suggested the fabric usually assumes a more or less rope-like form, being irregularly folded and compacted so that it has but a small fraction of its usual width. However, it is customary to pass the fabric through squeeze rolls as it emerges from the vat, in order to express excess liquid, and in order to obtain effective results, it is desirable that the fabric reassume substantially its full width before entering the bite of the squeeze rolls. Quite commonly the transverse stretching of the material as it emerges from the vat, has been carried out as a hand operation, the operator gripping the wet fabric between the thumbs and fingers of his two hands near its opposite edges, and pulling it widthwise substantially to its full width as it approaches the rolls, then releasing it and again gripping it at a point nearer the vat and again stretching it and repeating the operation throughout the entire length of the piece of material. This manual stretching operation is slow and laborious, it is somewhat dangerous, since the hands must be carried so near to the squeeze rolls, and it does not produce so uniform a result as is desirable. The principal object of the present invention is to provide mechanical and preferably power driven means for performing the operation ordinarily carried out by hand, as above outlined. With this and other objects in view and as more fully disclosed in the following detailed description, I have devised the apparatus herein described and claimed and which is illustrated in the accompanying drawings, wherein

Fig. 1 is a fragmentary plan view of the improved apparatus shown as applied to the top edge of one side of a vat or the like;

Fig. 2 is a front elevation of the apparatus shown in Fig. 1;

Fig. 3 is a fragmentary horizontal section, to large scale, illustrating the actuating mechanism of the left-hand gripper device of Fig. 1, such gripper being disposed substantially at the position which it occupies at the beginning of its stretching stroke;

Fig. 4 is a section on the line 4—4 of Fig. 3;

Fig. 5 is a fragmentary section substantially on the line 5—5 of Fig. 3, showing the gripper jaws closed upon the fabric;

Fig. 6 is a fragmentary view generally similar to Fig. 3 but showing the gripper device substantially as it is disposed at the end of its stretching stroke;

Fig. 7 is a section substantially on the line 7—7 of Fig. 6, the gripper jaws being open to release the fabric;

Fig. 8 is a section substantially on the line 8—8 of Fig. 6;

Fig. 9 is a fragmentary section (to somewhat larger scale) showing the parts at the upper left hand corner of Fig. 8 in the position which they occupy at the instant before the gripper jaws close; and

Fig. 10 is a view similar to Fig. 9 but showing the parts at the lower left hand corner of Fig. 8 at the instant at which the gripper jaws open.

Referring to the drawings the numeral 1 designates the side wall of a vat, tank or other receptacle 2 in which fabric F is subjected to some wet process, for example dyeing, and from which the fabric is drawn out and delivered to the squeeze rolls R designed to express excess fluid. The wall 1 of the tank is provided, adjacent to its opposite ends, with brackets 3 and 4, respectively, which support the tubular guide or casing 5 over which the fabric passes on its way from the vat to the squeeze rolls. In accordance with the present invention, this tubular guide 5 is provided adjacent to its opposite ends with bushings 6 which are kept from turning within the casing by means, for example, of splines 7 which fit within elongate slots 8 in the wall of the casing.

The bushings may be prevented from moving longitudinally by set screws or other appropriate means. Each bushing constitutes a bearing for a rotary sleeve 8, preferably having a polygonal bore 9 which receives a drive shaft 10. This drive shaft extends longitudinally of the casing and as shown in Fig. 1 projects from the right hand end of the casing where it is furnished with a sprocket wheel 11 adapted to receive a drive chain 12 which may be driven continuously from any suitable power source, for example from the same shaft which drives the squeeze rolls R.

Adjacent to each end of the casing 5, and normally adjacent to the inner ends of the respective bushings 6, are arranged cylindrical cams 13 having cam slots 14 for the reception of cam followers, hereinafter referred to more particularly. Each of the cams 13 is preferably provided with a tubular hub 15 of smaller diameter than the main body of the cam, such hub turning within a bearing sleeve 16 provided with a spline 17 which fits within the slot 8 in the casing thereby to prevent the bearing sleeve from turning. The hub 15 is provided with a polygonal bore (similar to

that of the sleeve 8) which receives the shaft 10 so that as the shaft turns the cams 13 are likewise turned, the cams at opposite ends of the casing thus being driven at the same speed.

Adjacent to each end of the casing 5 there is fixed thereto a bracket 18 (Fig. 1) comprising substantially parallel spaced plates 19 and 20 which at their outer ends are held in properly spaced relation by means of a spacer sleeve 20^a and a bolt 20^b. Each bracket 18 is provided with curved arms 21 and 22 constituting the opposite halves respectively of a split sleeve which embraces the casing 5, the arms 21 and 22 being furnished with substantially parallel ears 23 and 24 having aligned openings which receive a clamping screw 25 whereby the bracket structure may be secured to the casing 5 but permitting the bracket to be adjusted longitudinally of the casing by relaxing the screw 25 and then tightening it again when the bracket has been placed in its new position of adjustment. The drive shaft 10 slides freely within the hubs 15 of the cams so that such adjustment of the bracket and the parts carried thereby is freely permissible.

The inner ends of the plates 19 and 20 are united either integrally or otherwise to the block 26 (Fig. 4) which has an arcuate surface adapted to fit snugly against the outer surface of the casing 5 and which is provided with a dovetailed guideway within which is arranged the slide member 27. This slide member carries a cam follower 28 which may, if desired, comprise a freely turning roller fitting within the cam groove 14 of the cam 13.

A pivot pin or shaft 29 extends through aligned openings in the plates 19 and 20 of each bracket, such pin forming a pivotal support for a rocker member 30 having an arm 31 to which is pivotally connected one end of a link 32. The opposite end of this link is pivotally secured by a pin 33 to an arm 34 projecting from the corresponding slide 27. Each rocker 30 is preferably bifurcated at its outer end to provide the spaced parallel arms 35 and 36. Pins 37 and 38 extend between the arms 35 and 36 and form pivotal supports, respectively, for the gripper arms 39 and 40. The arm 39 is provided with a pivot pin 41 to which is pivotally secured one arm 42 of a gripper jaw 42^a. Likewise to the pin 43 is pivotally secured the arm 44 of a gripper jaw 44^a. The arms 42 and 44 are pivotally united at 45. Preferably the gripper jaw 42^a has associated with it a yieldable pad 46 pivoted at 47 to the jaw 42^a and having a spring 48 interposed between it and the jaw 42^a. The pad 46 has a fabric engaging surface 49, while the jaw 44^a has a pad 50 provided with a fabric engaging surface 51. When the jaws are closed they are operative to clamp the marginal portion of the fabric F between the surfaces 49 and 51,—the yieldable pad 46 insuring a firm grip regardless of the thickness of the material and without the necessity of extreme accuracy of construction or adjustment.

The gripper arm 39 is provided with a thin-edged cam follower 52 which cooperates with a fixed elongate plate cam 53 carried by the bracket plate 19. Likewise the gripper arm 40 is provided with a similar cam follower 52^a adapted to cooperate with the fixed elongate plate cam 54 carried by the bracket member 20. The plate cams 53 and 54 are provided at their opposite edges with oppositely bevelled cam surfaces, such surfaces of cam 53 being indicated at 53^a and 53^d in Figs. 9 and 10, respectively.

Jaw closing springs 55 and 56 are rigidly supported upon a member 57 fixed to the spacer sleeve 20^a. The springs 55 and 56 are here shown as leaf springs having their free ends so disposed as normally to press against the inner surfaces of the gripper arms 39 and 40 thereby tending to swing the free ends of said arms away from each other.

Springs 58 and 59 are secured, respectively, to the outer surfaces of the bracket plates 19 and 20. The springs 58 and 59 are also leaf springs, and are furnished at their free extremities with cam elements 60 and 61, respectively, which are adapted to project inwardly through openings in the plates 19 and 20. The members 60 and 61 are disposed just below the lower edges (as viewed in Fig. 8) of the cam plates 53 and 54. Preferably the mechanism above described is housed in a suitable casing 62 having a slot in its curved edge 63 through which the gripper jaws project.

Assuming that the end of the fabric F has been drawn out of the tank and after passing over the outer surface of the casing 5 has been stretched out by hand and inserted between the squeeze rolls, the above described mechanism operates substantially as follows to stretch the fabric to its full width as it is drawn forward toward the squeeze rolls.

Considering the gripper device at the left hand end of the casing 5, and assuming that the cam 13 occupies the position shown in Fig. 3, in which the slide 27 has been moved to its extreme left hand position, the link 32, actuated by the slide 27, will have swung the rocker 30 in a counter-clockwise direction (Fig. 3) to such an extent that the gripper jaws will occupy substantially the position indicated in broken lines in Fig. 3. At this instant the gripper arm 39 will have been swung to the position indicated in Fig. 9 wherein the cam follower 52 is shown as just above the extreme upper edge of the plate cam 53. During the movement of the gripper arm 39 in this direction, the corresponding spring 55 will have been tensioned, and when the member 52 reaches the upper extremity of the cam plate 53, the spring 55 will quickly force the gripper arm to the left as viewed in Fig. 9, while at the same time the opposite gripper arm 40 will be moved by its spring 56 to the right (Fig. 8). Such opposite movement of the gripper arms 39 and 40 quickly closes the gripper jaws so that the jaws seize the margin of the fabric F between them at the time when the gripper devices at opposite ends of the casing 5 are at their point of nearest approach. It being assumed that the cam 13 is continuously turning, the rocker 30 now begins its oscillation in a clockwise direction, (Fig. 3) thus beginning to move the gripper jaws from the broken line position toward the full line position in Fig. 3. As indicated in Fig. 9 the upper edge of the cam plate 53 is outwardly bevelled at 53^a and as the arm 39 begins to move downwardly the follower 52 first slides down this bevelled surface 53^a thereby positively pulling the corresponding arm 39 outwardly, while at the opposite side the arm 40 is likewise positively moved outwardly by the corresponding cam plate, thus positively holding the gripper jaws closed during the completion of this stroke of the rocker 30. During this period, the cam plate 53 occupies the space 53^b between the arm 39 and its corresponding follower 52 and the jaws are held closed until the rocker completes

its oscillation in a clockwise direction. During this time the gripper jaws continue to grip the fabric and as the jaws are now swinging away from each other in an arcuate path, the fabric is transversely tensioned so that it enters the squeeze rollers in laterally stretched and unwrinkled condition.

As the rocker **30** nears the end of its clockwise oscillation and the cam follower **52** reaches the lower extremity of the cam plate **53** (Fig. 10) the spring-supported cam member **60** is first pressed outwardly by engagement with the cam follower 52 and then, as the latter reaches the lower extremity of the plate **53**, the spring **58** suddenly pushes the cam follower **52** to the right as viewed in Fig. 10, and at the same time the cam follower 52[a] is moved to the left (Fig. 8) by the spring **59**, thereby suddenly opening the gripper jaws and releasing the fabric. As the cam follower **52** moves inwardly or to the right (Fig. 10) it passes the extreme lower edge of the plate **53**. This lower edge portion is bevelled at 53[d] oppositely to the bevel **53**[a] in its upper edge, and as the rocker now begins its reverse oscillation, the left hand face of the follower plate **52** engages the right hand face of the plate **53** (Fig. 10) and in this position the parts continue as the rocker **30** completes its counterclockwise oscillation. The jaws are thus positively held open as they return to their initial position, whereupon the sequence of operations above described is repeated, it being understood that the gripper devices at opposite ends of the casing **5** are both actuated in the manner just described, except that they oscillate simultaneously in opposite directions.

Since, as above noted, the brackets which carry the stretching mechanism may be adjusted longitudinally of the casing **5**, the apparatus may readily be adapted for stretching fabrics of different widths. Preferably, in order to prevent fluid from entering the slot **8** when the brackets are separated to their widest extent, a shield member **63** may be secured to each bracket member, such shield member covering the slot **8** where such slot would otherwise be exposed.

While the apparatus herein described is of particular utility for the purposes mentioned, it is to be understood that it may be used for stretching sheet material, whether textile or otherwise, and for any purpose for which such stretching is desirable. It is further to be understood that while a specific embodiment of apparatus has herein been described by way of example as illustrative of the invention, the invention is not to be limited to the particular form of apparatus herein shown but that any desired variations in shape, size and proportion of parts, as well as the substitution of equivalent elements are to be regarded as within the purview of the invention as expressed in the appended claims.

I claim:

1. In combination with a fabric treating vat and squeeze rolls adjacent to the vat, fabric stretching apparatus arranged to stretch fabric on its way from the vat to the squeeze rolls, said apparatus comprising a pair of gripper devices disposed adjacent to opposite margins respectively of the fabric to be stretched, each gripper device comprising a pair of cooperable gripper jaws designed to grip the fabric between them, a rotary cam for oscillating each gripper device in an arcuate path substantially in the plane of the fabric, spring means operative, as the gripper device begins its fabric stretching stroke, to close the gripper jaws thereby to grip the fabric between them, means operative positively to hold the jaws closed during the stretching stroke of the gripper device, and spring means operative as the gripper device nears the end of its fabric stretching stroke mechanically to open the jaws of the grippers thereby to release the fabric.

2. Fabric stretching apparatus comprising a pair of gripper devices disposed adjacent to opposite margins respectively of the fabric to be stretched, each gripper device comprising a pair of cooperable gripper jaws designed to grip the fabric between them, power driven rotary cams operative simultaneously to oscillate the two gripper devices in opposite directions in paths substantially in the plane of the fabric, spring means operative to close the jaws of said gripper devices to seize the fabric between them just at the beginning of the fabric stretching stroke of each gripper device, means operative positively to hold the jaws closed during the stretching stroke, and means operative to open the jaws of the respective gripper devices when each gripper device nears the end of its fabric stretching stroke thereby to release the fabric.

3. Fabric stretching apparatus comprising an elongate support having bearings adjacent to its opposite ends, a cam device arranged to turn in the bearings adjacent to each end of the support, a bracket mounted upon the support adjacent to each end of the latter, a gripper device supported by each bracket, each gripper device being designed and arranged to oscillate in an arcuate path and comprising a pair of complemental relatively movable fabric gripping jaws, and means actuable by each cam for swinging the corresponding gripper device in such arcuate path and to open and close the gripper jaws.

4. Fabric stretching apparatus comprising an elongate support having bearings adjacent to its opposite ends, a cam device arranged to turn in the bearings adjacent to each end of the support, a bracket mounted upon the support adjacent to each end of the latter, a gripper device supported by each bracket, each gripper device being designed and arranged to oscillate in an arcuate path and comprising a pair of complemental relatively movable fabric gripping jaws, and means actuable by each cam for swinging the corresponding gripper device in such arcuate path and to open and close the gripper jaws, the brackets and cams being adjustable longitudinally of the elongate support to accommodate fabric of different widths.

5. The combination with a fabric treating vat and a set of squeeze rolls, of fabric stretching apparatus interposed between the vat and squeeze rolls and comprising an elongate support having bearings adjacent to its opposite ends, a cam device arranged to turn in the bearings adjacent to each end of the support, a bracket mounted upon the support adjacent to each end of the latter, a gripper device supported by each bracket, each gripper device being designed and arranged to oscillate in an arcuate path and comprising a pair of complemental relatively movable fabric gripping jaws, means actuable by each cam for swinging the corresponding gripper device in such arcuate path and to open and close the gripper jaws, and a shaft extending longitudinally of the elongate support and operative to turn both cams simultaneously at the same speed.

6. Fabric stretching apparatus comprising an

elongate support designed and arranged for attachment to the edge of a fabric treating vat, said support having bearings adjacent to its opposite ends, a cam device arranged to turn in the bearings adjacent to each end of the support, a bracket mounted upon the support adjacent to each end of the latter, a gripper device supported by each bracket, each gripper device being designed and arranged to oscillate in an arcuate path and comprising a pair of complemental relatively movable fabric gripping jaws, means actuable by the respective cams to oscillate the corresponding gripper devices simultaneously in opposite directions, and means operative as said devices near the respective ends of their paths of oscillation respectively to close and open the gripper jaws.

7. Fabric stretching apparatus comprising an elongate support having bearings adjacent to its opposite ends, a cam device arranged to turn in the bearings adjacent to each end of the support, a bracket mounted upon the support adjacent to each end of the latter, a gripper device supported by each bracket, each gripper device being designed and arranged to oscillate in an arcuate path and comprising a pair of complemental relatively movable fabric gripping jaws, connections actuated by the respective cams for swinging the gripper devices simultaneously in opposite directions respectively, means operative to close the gripper jaws of each gripper device as the gripper device reaches one end of its path of movement, and means operative positively to hold said gripper jaws closed as the gripper device moves in the opposite direction.

8. Fabric stretching apparatus comprising an elongate support having bearings adjacent to its opposite ends, a cam device arranged to turn in the bearings adjacent to each end of the support, a bracket mounted upon the support adjacent to each end of the latter, a gripper device supported by each bracket, each gripper device being designed and arranged to oscillate in an arcuate path and comprising a pair of complemental relatively movable fabric gripping jaws, connections actuable by the respective cams for moving the gripper devices simultaneously in opposite directions respectively, means operative to open the gripper jaws of each gripper device as the latter reaches one end of its path of movement, and means operative positively to hold said jaws open as the gripper device moves in the opposite direction.

9. Fabric stretching apparatus comprising an elongate support having bearings adjacent to its opposite ends, a cam device arranged to turn in the bearings adjacent to each end of the support, a bracket mounted upon the support adjacent to each end of the latter, a gripper device supported by each bracket, each gripper device being designed and arranged to oscillate in an arcuate path and comprising a pair of complemental relatively movable fabric gripping jaws, connections including a link and lever actuable by the respective cams for swinging the gripper devices simultaneously in opposite directions respectively, spring means tending to close the gripper jaws of each gripper device as the latter reaches one end of its path of movement, and a cam member operative to hold the gripper jaws closed as the gripper device moves in the opposite direction.

10. Fabric stretching apparatus comprising an elongate support having bearings adjacent to its opposite ends, a cam device arranged to turn in the bearings adjacent to each end of the support, a bracket mounted upon the support adjacent to each end of the latter, a gripper device supported by each bracket, each gripper device being designed and arranged to oscillate in an arcuate path and comprising a pair of complemental relatively movable fabric gripping jaws, connections actuable by the respective cams for moving the gripper devices simultaneously in opposite directions respectively, spring means tending to open the gripper jaws of each gripper device as such device reaches one end of its path of movement, and a cam member operative to hold the gripper jaws closed as the gripper device moves in the opposite direction.

11. The combination with a fabric treating vat having a side wall, of fabric stretching apparatus comprising spaced bearings adjacent to opposite ends of said wall, a rotary cam device arranged adjacent to each set of bearings, a bracket adjacent to each set of bearings, a gripper device supported by each bracket, each gripper device being designed and arranged to oscillate in an arcuate path and comprising a pair of complemental relatively movable fabric gripping jaws, link and lever connections actuable by the respective cams for swinging the gripper devices simultaneously in opposite directions respectively, each gripper device comprising a pivotally mounted jaw-actuating arm, spring means tending to move said arm toward jaw-closing position, means operative to prevent such closing of the gripper jaws by the spring means until the gripper device reaches the end of its path of movement in one direction, and means operative to prevent opening of the gripper jaws as the gripper device moves in the opposite direction.

12. Fabric stretching apparatus comprising an elongate support having bearings adjacent to its opposite ends, a cam device arranged to turn in the bearings adjacent to each end of the support, a bracket mounted upon the support adjacent to each end of the latter, a gripper device supported by each bracket, each gripper device being designed and arranged to oscillate in an arcuate path and comprising a pair of complemental relatively movable fabric gripping jaws, connections actuable by the respective cams for swinging the gripper devices simultaneously, each gripper device comprising a pivotally mounted jaw-actuating arm, spring means for moving said arm toward jaw-closing position, means operative to prevent such movement of the jaw-actuating arm by said spring means until the gripper device reaches one end of its path of movement, and means operative to prevent closing movement of the jaw-actuating arm as the gripper device moves in the opposite direction.

13. Fabric stretching apparatus comprising a pair of spaced rotary axially aligned cam devices, a pair of gripper devices, each gripper device being designed and arranged to oscillate in an arcuate path and comprising a pair of complemental relatively movable fabric gripping jaws, means actuable by the respective cams for swinging their gripper devices simultaneously, each gripper device comprising a pivotally mounted jaw-actuating arm, a fixed elongate cam adjacent to each arm, a cam follower device carried by the arm and arranged, as the gripper device oscillates, to engage opposite faces respectively of the fixed cam, and means operative, as the gripper nears opposite ends of its path of travel, automatically to swing the jaw-actuating arm thereby to cause its

cam follower to shift from one side of the fixed cam to the other.

14. Fabric stretching apparatus comprising an elongate support having spaced bearings, a cam device arranged to turn in each set of bearings, a bracket mounted upon the support adjacent to each set of bearings, a gripper device supported by each bracket, each gripper device being designed and arranged to oscillate in an arcuate path and comprising a pair of complemental relatively movable fabric gripping jaws, means actuable by the respective cams for swinging their gripper devices simultaneously in opposite directions, each gripper device comprising a jaw-actuating arm pivoted to swing in a plane substantially perpendicular to the plane of oscillation of the gripper device as a whole, a cam follower carried by the arm, a fixed elongate cam disposed adjacent to the arm and extending substantially parallel to the plane of oscillation of the gripper device, a spring operative as the gripper device reaches one end of its path of oscillation to swing the arm thereby to engage the cam follower with one face of the fixed cam, and spring means operative, as the gripper device reaches the other end of its path of oscillation, to swing the arm thereby to engage the cam follower with the opposite face of the fixed cam.

15. Fabric stretching apparatus comprising an elongate support having bearings adjacent to its opposite ends, a cam device arranged to turn in the bearings adjacent to each end of the support, a bracket mounted upon the support adjacent to each end of the latter, a gripper device supported by each bracket, each gripper device being designed and arranged to oscillate in an arcuate path and comprising a pair of complemental relatively movable fabric gripping jaws, connections actuable by the respective cams for swinging the gripper devices simultaneously in opposite directions respectively, each gripper device comprising a jaw-actuating arm pivoted to swing in a path substantially perpendicular to the plane of oscillation of the gripper device as a whole, a cam follower carried by the arm, a fixed elongate cam disposed adjacent to the arm and extending substantially parallel to the plane of oscillation of the gripper device, resilient means operative, as the gripper device reaches the respective ends of its path of oscillation, to swing the arm thereby to open and close the gripper devices respectively, the cam follower and fixed cam being so designed and arranged that as the arm is swung in one or the other direction the cam follower is automatically shifted from one side to the other of the fixed elongate cam.

16. Fabric stretching apparatus comprising an elongate substantially cylindrical casing designed to be mounted in substantially horizontal position in proximity to a fabric treating vat, the central portion of the casing constituting a guide for fabric which is being drawn from the vat and which is on its way to squeeze rolls, a rotary shaft extending axially of the casing, a drive element disposed within the casing adjacent to each end of the latter, said drive elements being turned simultaneously and at the same speed by said shaft, a bracket normally fixed to the casing adjacent to each end respectively of the latter, an oscillatory gripper device carried by each bracket, and means actuable by the respective driven elements simultaneously to oscillate the gripper devices, each gripper device comprising a pair of relatively movable fabric gripping jaws.

17. Fabric stretching apparatus comprising an elongate substantially cylindrical casing designed to be mounted in substantially horizontal position in proximity to a fabric treating vat, the central portion of the casing constituting a guide for fabric which is being drawn from the vat and which is on its way to squeeze rolls, a rotary shaft extending axially of the casing, a drive element disposed within the casing adjacent to each end of the latter, said drive elements being turned simultaneously and at the same speed by said shaft, a pair of spaced brackets adjustably clamped to the casing and movable toward and from each other to accommodate fabric of different widths between them, a gripper device mounted on each bracket, each gripper device being arranged to oscillate in a path substantially in the plane of the fabric and each gripper device comprising a pair of relatively movable fabric gripping jaws, and means operable by the respective driven elements simultaneously to oscillate said gripper devices.

18. Fabric stretching apparatus comprising an elongate substantially cylindrical casing designed to be mounted in substantially horizontal position in proximity to a fabric treating vat, the central portion of the casing constituting a guide for fabric which is being drawn from the vat and which is on its way to squeeze rolls, a rotary shaft extending axially of the casing, a drive element disposed within the casing adjacent to each end of the latter, said drive elements being turned simultaneously and at the same speed by said shaft, a pair of spaced brackets adjustably clamped to the casing and movable toward and from each other to accommodate fabric of different widths between them, a gripper device mounted on each bracket, each gripper device being arranged to oscillate in a path substantially in the plane of the fabric and each gripper device comprising a pair of relatively movable fabric gripping jaws, means operable by the respective driven elements simultaneously to oscillate said gripper devices, and means operative as the gripper devices reach their position of nearest approach to close the gripper jaws upon the fabric.

19. In combination with a fabric treating vat and squeeze rolls adjacent to the vat, fabric stretching apparatus comprising an elongate substantially cylindrical casing designed to be mounted in substantially horizontal position in proximity to the vat, the central portion of the casing constituting a guide for fabric which is being drawn from the vat and which is on its way to squeeze rolls, a rotary shaft extending axially of the casing, a drive element disposed within the casing adjacent to each end of the latter, said drive elements being turned simultaneously and at the same speed by said shaft, a pair of spaced brackets adjustably clamped to the casing and movable toward and from each other to accommodate fabric of different widths between them, a gripper device mounted on each bracket, each gripper device being arranged to oscillate in a path substantially in the plane of the fabric and each gripper device comprising a pair of relatively movable fabric gripping jaws, means operable by the respective driven elements simultaneously to oscillate said gripper devices, and means operative as the gripper devices reach their point of greatest separation to open the gripper jaws to release the fabric.

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