

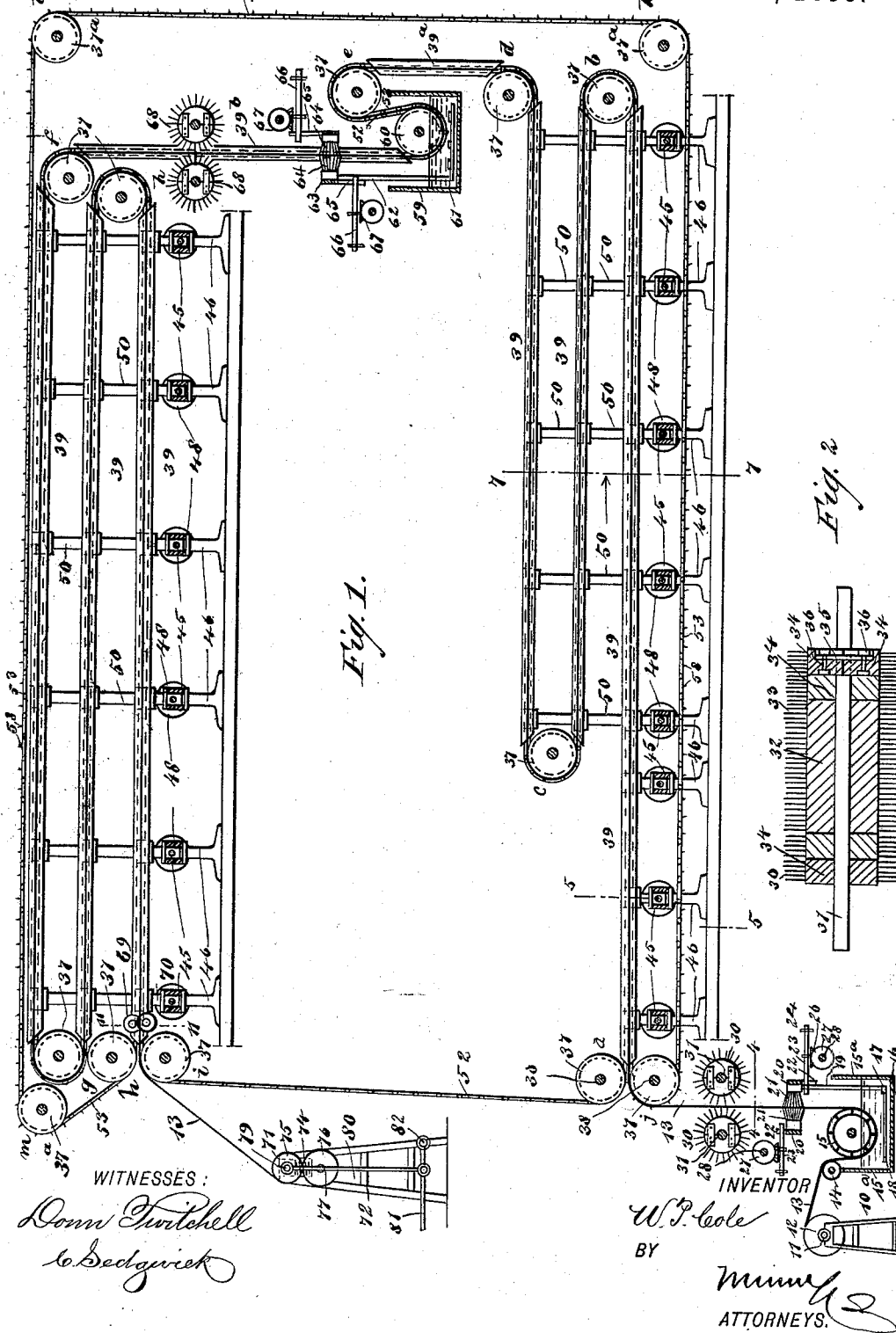
(No Model.)

2 Sheets—Sheet 1.

W. P. COLE.
MACHINE FOR PREPARING SHADE CLOTH.

No. 533,349.

Patented Jan. 29, 1895.



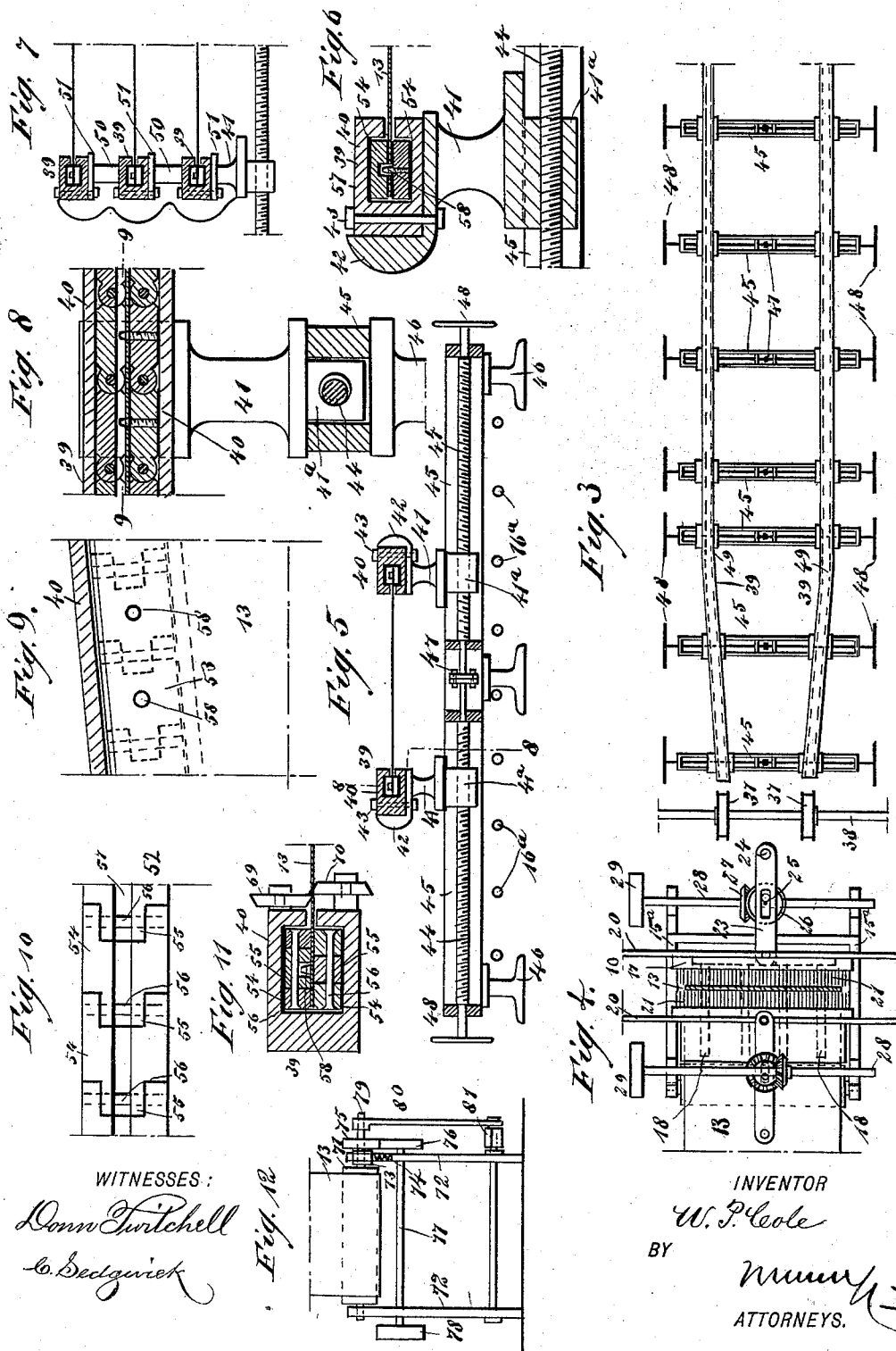
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WITNESSES:

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WILLIAM P. COLE, OF MONTREAL, QUEBEC, CANADA.

MACHINE FOR PREPARING SHADE-CLOTH.

SPECIFICATION forming part of Letters Patent No. 533,349, dated January 29, 1895.

Application filed March 26, 1892. Serial No. 426,542. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM P. COLE, of Montreal, in the Province of Quebec and Dominion of Canada, have invented a new and Improved Machine for Preparing Shade-Cloth, of which the following is a full, clear, and exact description.

My invention relates to improvements in a machine for preparing cloth to fit it for use in making window shades and more especially opaque shades, although the machine may be used for treating fabric which is to be sized or painted or both and which is to be used for purposes other than window shades. In preparing fabric of this kind, it is necessary to give the cloth a coating of size or paint, or both; and the object of my invention is to produce a simple machine by means of which a roll of fabric may be automatically dipped in size and paint, may be stretched and dried, may be brushed so as to spread the size and paint smoothly and remove all surplus material, and which will finally deliver the prepared fabric in a roll.

To this end my invention consists of certain features of construction and combinations of parts, which will be hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures and letters of reference indicate corresponding parts in all the views.

Figure 1 is a sectional elevation of the entire apparatus, the view being also a diagrammatic view to show the relative position of the various parts of the course of the fabric. Fig. 2 is a longitudinal section of one of the rotary brushes. Fig. 3 is a broken detail plan view of the clamping chain guides and the fabric stretching mechanism. Fig. 4 is a sectional plan of the brushing and dipping apparatus on the line 4—4 in Fig. 1. Fig. 5 is an enlarged cross section on the line 5—5 in Fig. 1. Fig. 6 is an enlarged detail cross section through the clamping guide and chain, showing also the screw for moving the guide. Fig. 7 is a broken enlarged cross section on the line 7—7 in Fig. 1. Fig. 8 is a broken longitudinal section on the line 8—8 in Fig. 5. Fig. 9 is a broken sectional plan on the line 9—9 in Fig. 8, showing the lateral

incline or bend of the chain guide. Fig. 10 is a broken inverted plan of the grooved clamping chain. Fig. 11 is a cross section on the line 11—11 in Fig. 1, showing the mechanism for trimming the fabric; and Fig. 12 is a detail front elevation of the winding mechanism for winding up the fabric after it has been treated.

At one end of the apparatus and at the bottom is a supporting frame 10, carrying a shaft 11 on which a roll 12 of the fabric 13 to be treated is secured, and this fabric extends forward over a guide roller 14 and around the lower side of the drum 15 which revolves in a tank 15^a containing a size, and the fabric then continues onward through the remainder of the apparatus, as hereinafter described. Beneath the size tank 15^a are steam pipes 16, by means of which it is kept warm. Within the tank is an agitator to prevent the size from settling, this comprising a bar 17 which reciprocates in the tank bottom near one side, arms 18 secured to the bar and extending crosswise through the tank near the bottom, and a standard 19 which is fixed to the bar and extends vertically upward.

The upper end of the bar 19 is secured to a reciprocating and horizontal rod or bar 20 which is held above the tank 15^a and which carries a brush 21 adapted to be moved back and forth against one side of the fabric 13. The bar 20 has a depending arm 22 which is pivoted to an oscillating lever 23, the lever having its outer end pivoted, as shown at 24, and the lever is slotted longitudinally near the center and receives a crank 25 on a gear wheel 26, which gear wheel rotates horizontally and is driven by a bevel gear wheel 27 on the horizontal shaft 28 which shaft extends parallel with the tank and with the bar 20 and has a suitable driving pulley 29 at one end. The shaft 28 is journaled in suitable supports and the lever 23 has its outer end pivoted to any convenient support, although no support is shown in the drawings.

On the opposite side of the fabric and above the tank 15^a is a similar reciprocating brush 21 which moves exactly opposite the brush already described, and similar mechanism is employed to reciprocate the brush as shown in Figs. 1 and 4. The only difference being, as shown in said figures, one shaft 28 is above

its adjacent brush and the opposite shaft is below it. This arrangement is arbitrary, however, and any suitable mechanism may be employed to move the brushes.

5 The fabric is drawn upward between the brushes and the movement of the brushes is such that they cover the entire width of the fabric, thus rubbing the size and removing any surplus, which will fall back into the
10 tank beneath. Above the brush 21 is a pair of rotary brushes 30, adapted to turn on horizontal axes and arranged to strike both sides of the fabric so as to thoroughly brush the same, and the brushes are mounted on shafts
15 31 which may be turned by any suitable mechanism. The brushes 30 each consist of a central core 32 having projecting bristles 33 and a plurality of detachable two-part sections 34, the parts being connected by a plate 35
20 which is bolted to the sections by bolts 36, as shown in Fig. 2, thus clamping the two sections to the shaft. As shown in the drawings, the clamping plate and bolts are only applied to one section 34, but it will be understood that it may be applied to all. The
25 object of having the brush made up in sections in this way, is to enable it to be made of the right width to fit the fabric.

After passing through between the brushes
30 30, the fabric 13 passes between pairs of vertically aligning pulleys 37 which are arranged one above the other and turn upon suitable shafts 38, and the fabric then enters the chain guides 39, being held therein by chains as described below, and the chains act as carriers
35 to feed the fabric forward. The guides 39 are arranged in pairs like a track, so as to align horizontally, as shown in Fig. 3, and they are arranged in tiers one above another, there
40 being two groups of these tiers arranged one above another, as shown in Fig. 1. The guides 39 consist of elongated guides 40 of rectangular cross section, as best shown in Figs. 6 and 11, the guides being slotted longi-
45 tudinally on their inner sides so that the fabric may be carried forward through them. Each guide 40 is carried upon a suitable base 41 which has one side 42 extended upward to fit against the outside of the guide 40, and the
50 guide 40 is secured to the base by bolts 43 or similar means.

The base 41 has a depending bottom portion 41^a which extends into a transverse slideway 45, the base having a flange above the
55 slideway to ride upon the top of the latter, as shown in Figs. 6 and 8, and the lower portion 41^a of the base 41 has a screw 44 extending through it, by means of which the base and the guide carried thereby may be moved. By
60 turning the screws and moving the bases or supports and the guides carried thereby, the guides may be adjusted in relation to each other and thus adapt the machine to carry cloth of any width. The slideways 45 are
65 supported upon suitable hangers or pedestals 46, and the opposite guide supports 41 are provided with screws having an opposite

pitch, that is, one is a right-hand screw and the other a left-hand, as shown in Fig. 5, the screws being coupled together in the middle,
70 as shown at 47, and the outer ends of the screws terminating in hand wheels 48 by means of which the screws may be turned and the bases 41 and guides 40 forced toward each other or apart, as desired.

75 The lower pair of guides 39 are bent outward, as shown at 49 in Fig. 3, near their forward ends, and this provides for gradually stretching the cloth carried between them so as to hold it perfectly taut and enable it to
80 dry smoothly and be properly prepared for the paint or other coating.

The lower guides 39 of the two groups shown in Fig. 1, are supported on pedestals 46, as described, and the guides above are supported
85 on extensions 50 which project upward from the bases 41, the guides being bolted to ledges 51 and the said extensions 50, as shown in Fig. 7. The guides are provided at the ends with pulleys 37, and placed parallel with the
90 pulleys and near the corners of the whole apparatus are similar guide pulleys 37^a, the pulleys 37 and 37^a serving to guide the carrying chains 52 and 53 which are arranged one within the other and which run double
95 through a portion of their length, that is, through the parts moving through the guides 40, the chains being adapted at these points to clamp the edges of the cloth between them.

To enable the course of the chains to be
100 clearly followed and understood, I have used letters as described below.

The course of the chain 52 is over the guide pulleys 37 at *a*, thence over similar pulleys at *b* at the opposite end of the lower guide,
105 thence through the guides 39 above and over pulleys 37 at *c*, thence through the next upper guides, thence over pulleys 37 at *d*, thence upward through vertical guides 39^a and over pulleys 37 at *e*, thence downward over a drum
110 in the paint tank, as described below, and upward through vertical guides 39^b, thence over pulleys 37 at *f*, thence through the upper guides 39 of the upper group and over pulleys 37 at *g*, thence through the middle
115 guides of the upper group and over pulleys 37 at *h*, thence through the lower guides of the upper group and over pulleys 37 at *i*, back to the pulleys 37 at *a*.

The course of the chain 53 is as follows: It
120 meets the chain 52 at *a* passing over pulleys 37 at *j*, thence through the lower guides 39 of the lower group of guides, thence over the pulleys 37 at *b*, *c*, *d*, *e*, *f*, *g* and *h*, to the end of the lower guide of the upper group of
125 guides, where it leaves the chain 52 and passes upward at *n* over guide pulleys 37, thence upward over pulleys 37^a at *m*, thence above the upper guides 39 of the upper group over guide pulleys 37^a at *l*, thence downward
130 over guide pulleys 37^a at *k*, and back to the first mentioned pulleys 37 at *j*, the outer portion of the chain 53 thus passing around nearly the entire apparatus. The chains 52

and 53 are each made up of a series of links 54 each link having a tongue 55 fitting into a central recess in the adjacent link, as shown in Fig. 10, and the links are pivoted together by pins 56 passing through the tongues and the over-lapping parts of the links.

The side of the chain 52 which comes next to the chain 53 is provided with a longitudinal groove 57 extending through the several links, and the adjacent surface of the chain 53 is provided with projecting spurs 58 which are adapted to enter the groove, and consequently when the fabric 13 passes between the rollers 37 at the point *a, j*, the opposite sides of the fabric will be clamped between the converging chains, the spurs projecting through the fabric and into the grooves above and the fabric will thus be firmly held and carried forward with the chains.

A paint tank 59 is arranged between the upper and lower group of guides 39, as shown in Fig. 1, and in this tank is a revolving drum 60 over which the chains 52 and 53 pass, thus carrying the fabric with them, and as the tank is partially filled with paint in a liquid state, the fabric will be thoroughly coated. Within the tank is a reciprocating agitator 61 substantially like the agitator used in the tank 15^a and described above, as the agitator has an upwardly extending standard 62 which is secured to a reciprocating bar 63 moving horizontally above the tank 59, and the bar carries a brush 64 which impinges on one side of the fabric, the brush being held to move between the vertical guides 39^b.

The bar 63 has an arm 65 which connects with an oscillating lever 66 rocked by gears 67, this construction not being shown in detail as it is like that shown in Fig. 4 and described above.

There is a brush 64 on each side of the fabric over the tank 59, and these brushes serve to spread the paint upon the fabric and also to remove the surplus. Above the reciprocating brush 64 are rotary brushes 68 which are arranged in the path of the fabric and on opposite sides thereof, these brushes being exactly similar to the brushes 30 already described.

At the delivery end of the lower guides 39 of the upper groups of guides are cutting disks 69 and 70, there being a pair of these disks on each guide, and the disks are arranged above and below a slot in the guide, as shown in Fig. 11, so that their cutting edges will extend by each other and these serve to trim the fabric so as to leave its edges perfectly smooth. After passing out between the rollers 37 at the point *i, h*, the fabric is rolled upon a roller 71 which is held in the frame 72 and it has one bearing 73 pressed upward by a spring 74 and the shaft 79 of the roller is provided with a friction pulley 75 which is adapted to engage a friction pulley 76 below it, this pulley 76 being fixed to the driving shaft 77 which has a pulley 78 at one end. The shaft 79 is normally raised by the

spring 74 so that the pulleys 75 and 76 will not touch, but the shaft is connected by a connecting rod 80 with a treadle 81 which is pivoted on the frame 72, as shown at 82, and by pressing downward on the treadle, the friction pulleys 75 and 76 are forced into engagement and the roller 71 started so as to roll up the fabric 13.

In the drawings I have not shown driving mechanism for operating the several pulleys 37, neither have I shown the supports for the same, the views being made to show the relative position of the parts, but it will be understood that any suitable driving mechanism or supports may be employed.

The operation of the machine is as follows:—The roll of cotton or other fabric which is to be treated is placed in the frame 10, and the fabric passed over the pulley 14 around the drum 15 between the brushes 21 and 30, and is entered between the pulleys 37 at the point *a, j*, so that its edges will be clamped between the moving chains 52 and 53. The cloth will then be drawn forward being sized and brushed as described, and the heat radiated by the pipes 16 will cause the size or other coating to quickly dry. As the fabric is carried forward it is dipped in the tank 59 in the manner described and after it has passed through the tank, the paint or other coating is nicely spread by the brushes 64 and 68. The fabric is then carried through the upper group of guides 39, is trimmed by the cutting disks 69 and 70, and is delivered in a compact roll upon the roller 71.

It will be seen that the guides may be adjusted in relation to each other so that the cloth will be held very tightly and that the diverging parts of the guides, as shown in Fig. 3, will cause the cloth to be gradually stretched without injury.

I have shown a convenient mechanism for carrying the fabric through the sizing and painting tanks and for drying, brushing, and trimming the fabric, but I do not confine myself to the mechanism shown, as the several parts may be greatly modified without departing from the principle of my invention.

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

1. An apparatus of the character described, comprising a fabric holding support, a tank arranged adjacent thereto and having a drum therein, parallel chain guides, pairs of parallel clamping chains held to move over suitable pulleys and adapted to pass in pairs through the guides, with the fabric clamped between their adjacent faces, and brushes arranged between the guides and the tank and in the path of the fabric, substantially as described.

2. An apparatus of the character described, comprising parallel slotted guides, pairs of parallel carrying-chains adapted to fit together on their adjacent faces and pass in pairs through the guides with the fabric

clamped between their interlocking surfaces, a fabric-holding support at one end of the guides, a tank arranged between the guides and the support, means for immersing the fabric in the tank as it passes from the support to the guides, and movable brushes arranged between the tank and the guides and in the path of the fabric, substantially as described.

10 3. An apparatus of the character described, comprising groups or series of longitudinally slotted guides, pairs of parallel carrying-chains adapted to travel in pairs through the guides and to clamp the fabric between them, 15 a sizing tank arranged at the forward end of the first group of tanks, means for immersing the fabric in the sizing tank, a paint tank arranged between the two groups of guides, means for immersing the fabric in the tank, 20 brushes arranged adjacent to the tank and in the path of the fabric, and a winding device to receive the fabric as it comes from the guides, substantially as described.

4. An apparatus of the character described, 25 comprising parallel longitudinally slotted guides movable back and forth in relation to each other, clamping chains held to move lon-

gitudinally through the guides and adapted to hold the fabric between them, a tank arranged at the forward end of the guides, a drum mechanism for forcing the fabric into the tank, and movable brushes arranged between the tank and the guides, substantially as described.

5. In an apparatus of the character described, the combination with the parallel guides having longitudinal slots on their inner sides, of the carrying chains adapted to pass together through the guides, one chain being longitudinally grooved and the other having projecting spurs to fit in the groove, substantially as described.

6. In an apparatus of the character described, the carrying mechanism comprising longitudinally slotted parallel guides adjustable to and from each other, and the pairs of parallel clamping chains adapted to move together in pairs through the guides and clamping the edges of the fabric between their adjacent faces, substantially as described.

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Witnesses:

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