

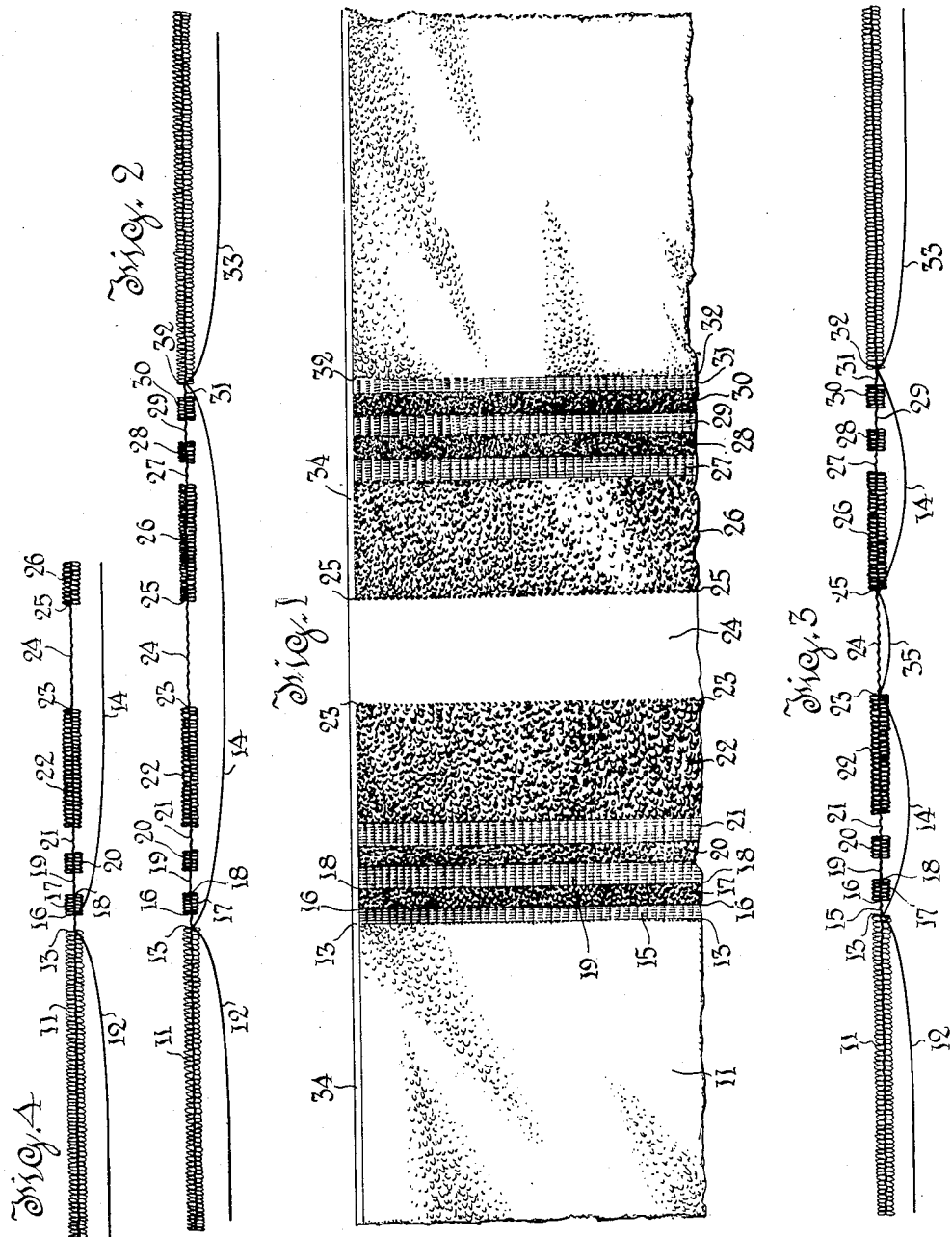
March 6, 1934.

S. P. PARKER
WEAVING TERRY FABRICS

1,949,579

Filed Dec. 9, 1931

3 Sheets-Sheet 1



Inventor
Samuel Pinkney Parker
By *W. A. J. J.*
Attorneys

March 6, 1934.

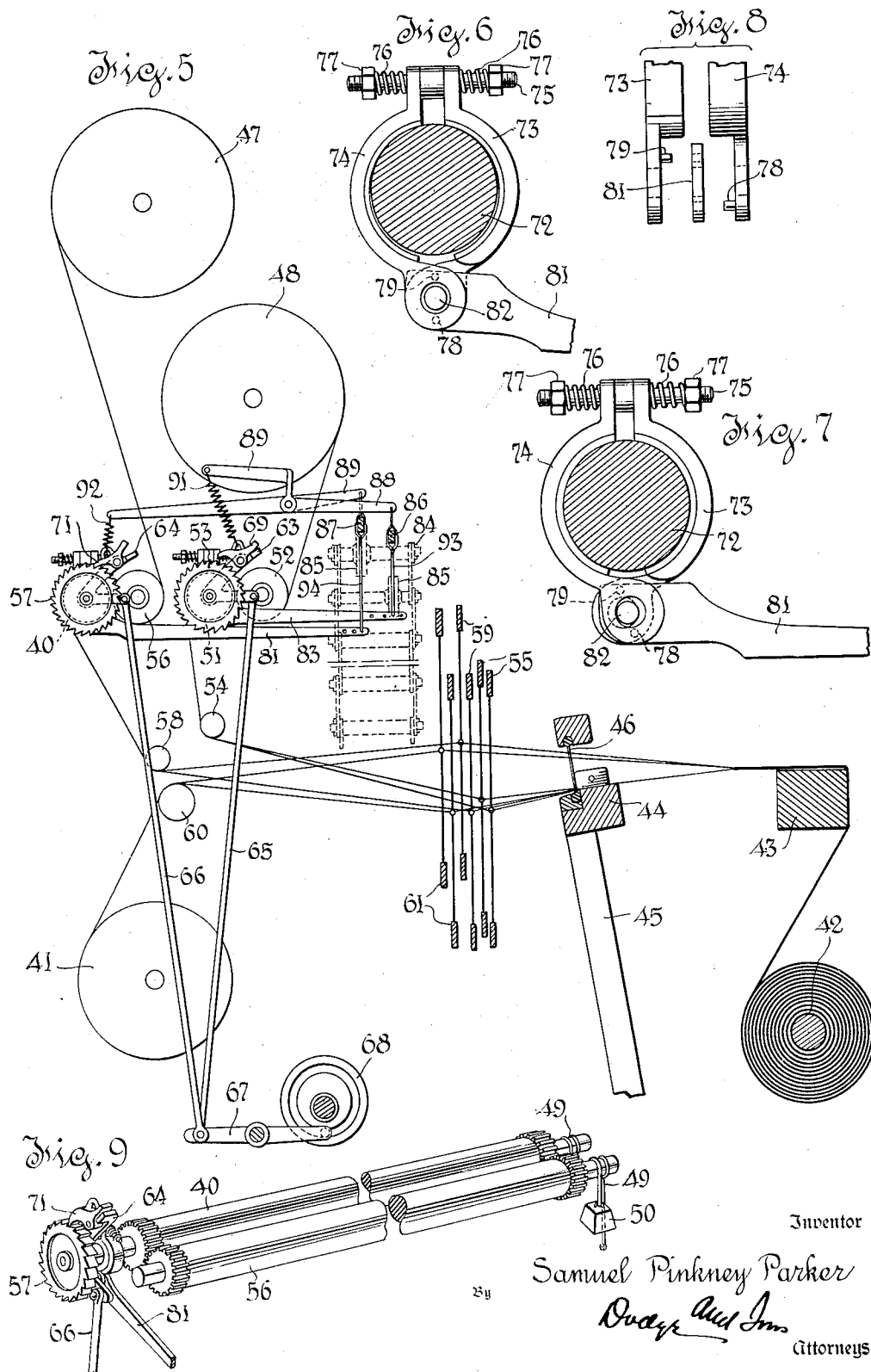
S. P. PARKER

1,949,579

WEAVING TERRY FABRICS

Filed Dec. 9, 1931

3 Sheets-Sheet 2



Inventor

Samuel Pinkney Parker

By *Quay & Co.*

Attorneys

March 6, 1934.

S. P. PARKER

1,949,579

WEAVING TERRY FABRICS

Filed Dec. 9, 1931

3 Sheets-Sheet 3

Fig. 10

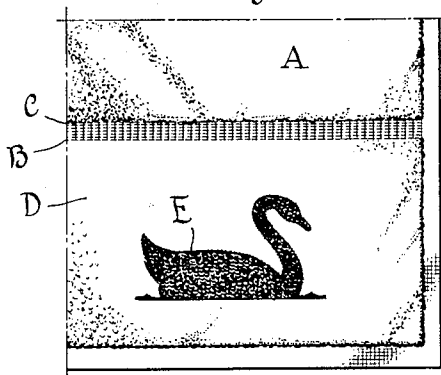


Fig. 11

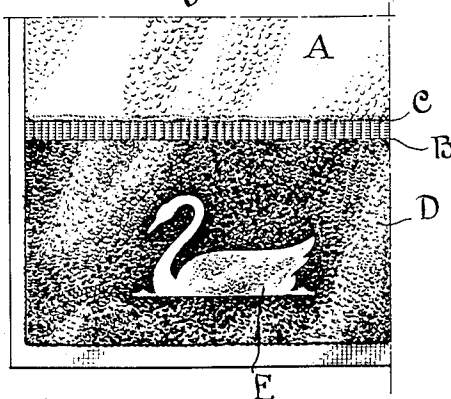
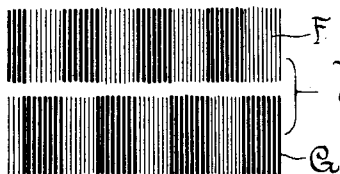


Fig. 12

Fig. 13

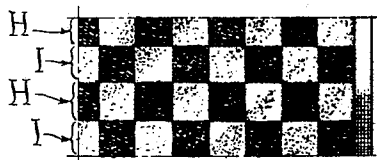


Fig. 14

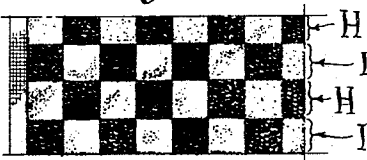


Fig. 15

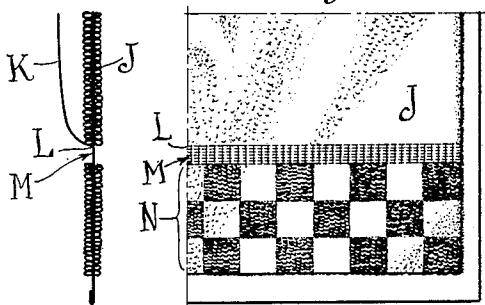


Fig. 16

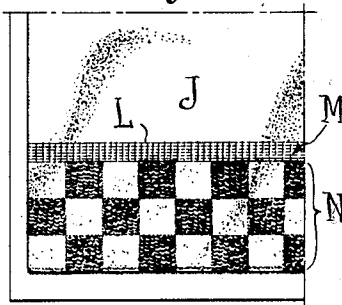
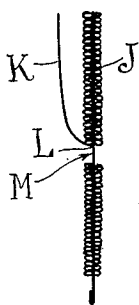


Fig. 17



Inventor
Samuel Pinkney Parker

By

Dodds and Son

Attorneys

UNITED STATES PATENT OFFICE

1,949,579

WEAVING TERRY FABRICS

Samuel Pinkney Parker, Franklinton, N. C.

Application December 9, 1931, Serial No. 579,926

17 Claims. (Cl. 139—25)

This invention relates to textile fabrics and particularly to terry fabrics having colored patterns formed in the terry itself.

The term terry fabric as here used is not intended to include looped pile fabrics in which the loops are formed over wires which are subsequently withdrawn.

In the ordinary grades of terry towels colored cross borders have been formed by the use of colored filling. In such towels the colored stripes appear only in the plain weave portions at the ends of the towel or in the ground weave under the terry. There is a demand, particularly in the better grades, for a towel with a colored cross border in which the colored border is in colored terry loops.

The only practicable way of producing such a towel prior to the present invention was to weave the towel crosswise of the loom, that is, with the filling running lengthwise of the towel and the warp running transversely. This arrangement permitted the use of terry warp having colors planted in stripes. The final product is not entirely satisfactory for the reason that the selvage extends across the ends of the towel so that the side edges of the towel must be hemmed. A towel of this description neither folds nor hangs as well as a towel having selvage side edges and hemmed ends.

The present invention provides a towel having selvage side edges and hemmed ends with colored cross borders in terry, and accomplishes the desired result very simply and economically. The loom required corresponds in width to the width of the towel.

Generally stated, the invention contemplates the use of two or more terry warps, at least one of which is floated in and out. Probably the most common case is where two warps are used and are woven in alternation with each other.

Another feature of the invention is that the contrasting or color warp is or may be woven in throughout the length of the border portion so that the principal terry warp, which we may designate as the white terry warp, need be floated out only once (or, in a modified procedure, only twice) for each towel length. This saves a great amount of hand labor in clipping the floats, and is made possible by the use of a corded weave construction in non-terry portions intervening between the colored stripes, the corded weave being so constructed that the filling alone is visible; that is, the filling masks and entirely conceals the colored terry warp. The corded weave

serves another useful purpose by affording a definite line for shearing.

Another important advantage is that the corded weave when used embraces one or both of the terry warps adjacent the line or lines where the floats are sheared, thus protecting the terry loops against pulling out.

The invention will now be described with reference to the accompanying drawings, in which,—

Fig. 1 is a fragmentary view of the end portions of two joined terry towels as they appear woven in a continuous piece.

Fig. 2 is a longitudinal section through this fabric prior to the shearing away of the floats.

Fig. 3 is a view similar to Fig. 2 showing a slightly modified arrangement of the floats.

Fig. 4 is a similar view of a further modification of the arrangement of the floats.

Fig. 5 is a diagrammatic view, partly in elevation and partly in section, indicating how a terry loom is rigged to weave the fabric.

Fig. 6 is a view of the variable brake mechanism used on the terry warp beams, the brake being shown in released condition.

Fig. 7 is a similar view showing the brake applied.

Fig. 8 is an enlarged fragmentary view showing the components of the toggle mechanism forming part of the brake.

Fig. 9 is a perspective view of one pair of let-off rolls and associated parts.

Figs. 10 and 11 are respectively face and rear views of a towel woven according to the invention and having a border pattern produced by substituting and manipulating a warp having alternate ends presenting a color contrast.

Fig. 12 shows the two interchangeable terry warps laid in stripes and used to produce checked and similar patterns identical on both face and back.

Figs. 13 and 14 show respectively the face and back of a checked pattern fabric made by interchanging the warps of Fig. 12.

Figs. 15 and 16 are respectively face and rear views of the patterned end portion of a towel in which the normal terry warp weaves throughout and a secondary terry warp is woven in in the border, both warps being there manipulated to produce a pattern.

Fig. 17 is a view similar to Fig. 2 but showing the procedure used in making the towel of Figs. 14 and 15.

The invention is applicable where a pattern is produced by any visible contrast between two portions of the terry. The pattern effect can be

expressed in black and white, white and one or more colors, black and one or more colors, in various colors, and generally in any visibly different terry yarns. The word "contrast" is used in this broad sense throughout.

For purposes of explanation merely, it will now be assumed that the article to be produced is a white towel with colored cross stripes at the ends. For the intended effect the ground warp and the filling would each be white, so as to present no contrast to the normal terry warp which is white. The other or border terry warp is colored. All three warps pass together through a single reed. The two terry warps are, however, handled by separate harnesses, which are controlled to bring them into action for weaving at appropriate times. When the white warp is being woven in to form white terry, the colored warp is inactive and floats (preferably on the back of the goods). When the colored warp is being woven to form terry the white warp floats on the back of the goods.

Assume that white warp is being woven into terry as indicated at 11 in Figs. 1 and 2. At such time the colored warp is floated, as indicated at 12.

When the weaving reaches the commencement of the border, at the line 13, 13, the white warp is floated out as indicated at 14, and the colored warp is woven in but is not woven to form terry. Instead it is woven to form a longitudinally corded white fabric 15 in which the colored warp and the ground warp are completely masked and concealed by the white filling. This is a weave in which the warp yarns are shedded in groups and the filling weaves over and under, giving a double faced longitudinal cord effect.

This corded weave continues to the line 16, 16, at which point the character of weave changes and the colored warp is caused to form the terry loops producing a colored terry stripe 17.

This continues to the line 18, 18, when the white corded weave is resumed, producing a white corded stripe 19; and so on, alternating a colored terry stripe 20, a corded white stripe 21, and a colored terry stripe 22, until the line 23, 23, is reached. While the use of the corded weave is preferred, the invention is not limited to its use as other weaves may be used with success.

At this point the character of the weave again changes, and the white ground warp, colored terry warp, and the filling are closely interwoven in a closely woven area 24, which is later severed between towels and folded and hemmed. At the line 25, 25, terry weaving of the colored terry warp is resumed.

Thereafter stripes are produced in the reverse order, that is, a colored terry stripe 26, a white corded stripe 27, a colored terry stripe 28, a white corded stripe 29, a colored terry stripe 30, a white corded stripe 31. At the line 32, 32, the white terry warp is again brought into action to weave terry and the colored terry warp is floated out as indicated at 33.

It will be observed that as usual in terry fabrics there is a woven selvage 34 of any approved selvage weave.

The arrangement of floats above described with reference to Fig. 1 is illustrated in Fig. 2 and is the simplest known, for the reason that the white or main terry warp floats at 14 continuously from the commencement of the border of one towel, at the line 13, 13, to the completion of the border of the adjacent towel at the line 32, 32.

There is one possible objection, which is that the colored terry warp is interwoven with the

ground warp and filling in the area 24, and is not masked. Consequently, it gives to the area 24 a weak color tint which is distinguishable from the color of the selvage 34.

This can readily be overcome as indicated in Fig. 3. Here the terry warps are interchanged between the lines 23 and 25 so that the white or main terry warp is interwoven with the ground warp and filling to produce the area 24, and the colored warp floats over this area, as indicated at 35. Consequently, area 24 matches the selvage 34 perfectly in color. In Fig. 3 the floating white or main warp is indicated at 14, as before.

Another practicable procedure is to float out both terry warps.

In the various cases above discussed, the corded fabric of the strips 15, 19 and 21 matches the color of the body of the towel (it having been assumed that the filling matches the main terry warp) and forms a very satisfactory way of spacing the colored terry into stripes without requiring the interchange of terry warps. However, the use of corded separating area is not essential in all cases as the different colored terry areas need not be separated at all.

The corded stripes 15 and 31 which intervene between the end of the white terry area and the commencement of the colored terry, perform a very useful function. In the arrangement shown in Figs. 2 and 3, they serve to bind the ends of the colored terry warp so that the tendency of the colored terry loops to pull out is minimized.

Advantage may be taken of this possibility to bind the ends of both terry warps. Such a construction is illustrated in Fig. 4. Here the colored terry warp 12 floats to the line 13, 13, but the white terry warp does not start to float until the weaving reaches the line 16, 16. Consequently, in the stripe 15, between the lines 13, 13, and 16, 16, the ground warp and both terry warps are bound by the filling in the corded weave. The effect is to make the corded weave a little more plump in the stripe 15 than it is in stripes such as 19 and 21, but aside from this there is no objection to this arrangement.

The above description is directed to the production of cross borders which may be woven according to the invention. That is to say, a cross-border might be of colored or other contrasting terry and subdivided into stripes by interweaving stripes of corded or other non-terry weave.

Many other effects are possible. For example, by interchanging the filling and using a colored filling in the stripes, such as those appearing at 15, 19 and 21, for example, additional colored effects can be secured, for the reason that the filling imparts its color to the corded weave portion.

Furthermore, in any area in which the contrasting or colored terry warp is being woven in, it is possible to adopt various jacquard or dobby pattern effects which have heretofore been used in terry weaving. For example, if the so-called "contrasting" warp be made up of ends of two contrasting colors, these may be sent selectively to opposite sides of the terry fabric and thus produce the reversed patterns familiar in the art.

This is shown by way of example in Figs. 10 and 11, in which A shows the normal terry loops (say white) forming the body of the towel and made from a warp floated out at B. A contrasting warp made up of alternating yarns of two contrasting colors is floated in at C and is manipulated by any pattern mechanism to produce a cross border background D with a contrasting Figure E. The colors of the background and figure are reversed

on the back as indicated. (Compare Figs. 10 and 11).

By using two distinct terry warps in which the colors are planted in the warps in stripes, checked effects can be produced by interweaving the warps selectively in alternation with each other, each warp floating while the other weaves in.

This is shown in Figs. 12 to 14. Here two terry warps F and G are used, made up of two contrasting yarns planted in stripes. The arrangements of the stripes in the two warps are reversed and complementary, as shown in Fig. 12. The warps are interchanged, one being floated out as the other is floated in. The portions H extending the width of the fabric are woven with warp F as the terry warp and the alternating portions I are woven with the warp G as the terry warp. In this case the colors on face and back are not reversed but are identical. (Compare Figs. 13 and 14).

Another useful effect can be produced by floating in a contrasting warp without floating out the normal terry warp, and thereafter manipulating the normal warp and the contrasting warp so as to send them selectively to opposite sides of the fabric and thus producing various reversed patterns. One advantage of this last procedure is that in the pattern area there is a greatly increased number of loops so that the fabric in the pattern area is peculiarly firm and has an increased ability to maintain the crispness of the pattern outlines. The increased body in the fabric causes it to stand out, giving a desirable accent to the pattern. It also weights and stiffens the end of a towel causing it to hang well.

A white towel having a color patterned cross border of this type is illustrated in Figs. 15 to 17. The normal (white) terry loops in the body of the towel appear at J. The warp from which they are formed is not floated out. A contrasting warp shown floating at K (Fig. 17) is floated in at L where it enters a corded weave M. Below this the normal warp and the contrasting warp are both used to form terry loops, contrasting loops being distributed between face and back by any suitable pattern mechanism to form the pattern N here shown as a check. The colors in this pattern are reversed on the back. (Compare Figs. 15 and 16).

Substantial difficulty is encountered in weaving fabrics such as above described, for the reason that special provision is necessary to ensure that the tension on a terry warp at the moment it commences to interweave is correct.

Successful use is being made of a loom in which there are two positive let-offs, one for each of the two terry warps. Automatic means are provided to disengage the feed pawls of the positive let-offs selectively. At the same time that the feed pawl of one let-off is disengaged, the retarding braking action on the let-off roll is diminished. When the pawl is again allowed to engage the brake is simultaneously applied. The effect of this arrangement is to free the terry warp so that it may be drawn off by the pull of the warp when not weaving terry and yet will not impose sufficient load on the warp to pull out previously formed terry loops. By applying at such time a slight retarding force or braking action to the let-off rolls it is possible to produce exactly the correct condition of the inactive warp so that it is always in condition to again commence terry weaving.

In practice there is a brake associated with each positive let-off, which brake is completely released when the positive let-off is released, and

in addition a conventional weighted strap brake which acts all the time and gives the desired slight retardation when the other brake is released.

Referring now to Fig. 5, 41 represents the ground warp beam, 42 the cloth beam, 43 the breast beam, 44 the lay, 45 one of the swords, and 46 the reed. The mechanism for retracting the reed, which is common in terry looms, is not illustrated and may follow any suitable construction.

The white or main terry warp beam is indicated at 47 and a colored or contrasting terry warp beam is indicated at 48.

The yarn from the beam 48 passes beneath the let-off roll 52 and up between it and a companion roll 51 driven by the ratchet wheel 53, thence downward around the guide 54. From this it passes through the two forward heddle frames 55, and thence through the reed.

Yarn from the beam 47 passes around the lower side of the let-off roll 56, upward between it and a companion roll 40 driven by a ratchet wheel 57, then downward and around a guide 58 and forward through the two heddle frames 59, and through the reed.

Yarn from the ground warp beam 41 passes over guide 60 and through the two heddle frames 61 and through the reed. The heddle frames 61 are actuated in any ordinary manner and the two sets of frames 55 and 59 are actuated and controlled by any suitable pattern mechanism to cause their yarns either to weave into the fabric or to float, as required. The mechanism for accomplishing this function need depart in no respect from those known in the weaving art, and hence is not illustrated.

Swiveled to turn coaxially with the ratchet wheels 53 and 57 are arms 63 and 64. These are driven by links 65 and 66 from a rocking arm 67 which is oscillated by the rotating cam 68. The arm 63 carries a pawl 69 and the arm 64 carries a pawl 71. Thus when the loom is in motion the arms 63 and 64 are constantly oscillating and if their respective pawls are allowed to engage their ratchets, the let-off rolls will be driven. These two let-off mechanisms will be recognized as conforming to known practice.

Resisting the rotation of the ratchets 53 and 57 are releasable brake mechanisms, one of which is shown in Figs. 6 and 7. These two mechanisms are identical and one will be described. This comprises a drum 72 turning with the ratchet wheel 57 and its connected roller, and encircled by a brake band made up of two arcuate brake shoes 73 and 74. The brake shoes are connected by the rod 75, thrust springs 76 and adjusting nuts 77. The nuts may be turned to adjust the maximum clamping force of the brake bands 73, 74 on the drum 72. The arcuate brake shoe members 73, 74 are also connected by a sort of toggle mechanism made up of a pin 78 on the member 74, and a diametrically off-set pin 79 on the member 73. The pins 78 and 79 engage holes formed in a lever 81, which lever is pivoted at 82.

The parts are so arranged that when the lever is allowed to descend by gravity the brake is released (see Fig. 6) and when the lever is lifted the brake is applied (see Fig. 7). The force with which it is applied is determined by adjusting nuts 77.

The brake mechanism for the roll 52 and ratchet 53 is indicated in Fig. 5 by the numeral 83 applied to its lever, it being understood that the levers 81 and 83 are identical in function and substantially identical in form.

When either brake is released a brake strap 49 with weight 59 exercises a moderate braking force, necessary to hold the floating warp in condition to start weaving (see Fig. 9).

5 A pattern chain is indicated at 84, and may or may not be a part of the pattern mechanism which controls the action of the heddles 55 and 59. It must function in timed relation to such pattern mechanism, but it is immaterial whether
10 it be the same or a related mechanism. This chain is provided with suitably located rollers 85 which cooperate with levers 86 and 87. These levers actuate corresponding rock arms 88 and 89, which are connected through yielding connections such as the springs 91 and 92 with the
15 pawls 69 and 71 respectively. The levers 86 and 87 are also connected by the links 93 and 94 with the levers 83 and 81 respectively.

It will be observed that when lever 87 is lifted
20 the brake is applied to the drum on same shaft containing ratchet 57, and at the same time the corresponding pawl 71 is lowered to active position. The operation of the lever 86 is functionally similar.

25 The levers 86 and 87 correspond to the two terry warps and the location of the rollers 85 is such that the lever 86 or 87, as the case may be, will be lowered when its corresponding warp is to cease weaving terry. At such time the positive let-off action is freed so that the warp may
30 be drawn off as a floating warp under a tension appropriate to the immediate resumption of terry weaving.

While I prefer to use positive let-offs for both
35 terry warps, satisfactory results are being secured with an arrangement in which a positive let-off is used only for one terry warp, and a simple friction let-off is used for the other terry warp. The positive let-off should be used for that terry warp
40 which is woven in in the area 24.

While the invention has been described with reference to towels, and was developed primarily for towel manufacture, it is not limited in utility to that field. General application wherever useful is contemplated.
45

It should be noted that various fancy effects, in addition to the simple striped border, are possible.

The interposition of plain woven stripes between terry stripes may be dispensed with as explained. The pattern mechanism for controlling the terry warp may be of any of the well known types, the jacquard and the dobby being those most commonly used. While I have described the invention as applied to cross borders,
50 it is applicable throughout the terry area, or at intervals throughout the same.

What is claimed is,—

1. The method of producing pattern effects in terry fabrics, which consists in providing a ground warp, a main terry warp and a contrasting terry
60 warp, interweaving filling with the ground warp, and one of said terry warps to form terry loops, and causing the other of said terry warps to interweave as an entirety to form terry loops in certain areas and float as an entirety in intervening areas.
65

2. The method of producing pattern effects in terry fabrics, which consists in providing a ground warp, and two beamed contrasting terry warps,
70 interweaving filling with the ground warp and one of said terry warps to form terry loops, and causing the other of said terry warps to interweave to form terry loops in areas extending transversely to said warps, and to float between such
75 areas.

3. The method of producing pattern effects in terry fabrics, which consists in providing a ground warp, and two beamed contrasting terry warps, interweaving filling with the ground warp and one of said terry warps to form terry loops, causing the other of said terry warps to interweave to form terry loops in areas extending transversely to said warps, and to float between such areas, and manipulating said terry warps to produce pattern effects in the areas in which said second
80 warp is woven in.
85

4. The method of producing pattern effects in terry fabrics, which consists in providing a ground warp, and two terry warps contrasting one with the other, interweaving filling with the ground
90 warp, at one time causing one of said terry warps to interweave to produce terry loops, while the other terry warp floats, and at another time causing that other terry warp to interweave to produce terry loops while the first-named terry warp
95 floats.

5. The method of producing pattern effects in terry fabrics, which consists in providing a ground warp, and two terry warps contrasting one with the other, interweaving filling with the ground
100 warp, at one time causing one of said terry warps to interweave to produce terry loops, while the other terry warp floats, and at another time causing that other terry warp to interweave to produce terry loops while the first-named terry warp
105 floats, and during such weaving maintaining the floating warp under tension insufficient to pull out loops already formed and sufficient to permit immediate resumption of the interweaving of such
110 warp.

6. The method of producing pattern effects in terry fabrics, which consists in providing a ground warp, and two terry warps contrasting one with the other, interweaving the filling with the ground
115 warp, at one time causing one of said terry warps to interweave to produce terry loops, while the other terry warp floats, and at another time causing that other terry warp to interweave to produce terry loops while the first-named terry warp floats, and during such weaving positively letting off the
120 terry warp which is being interwoven to form loops, and frictionally letting off the floating warp under tension insufficient to pull out loops already formed, and sufficient to permit immediate resumption of the interweaving of such warp.
125

7. The method of producing pattern effects in terry fabrics, which consists in providing a ground warp, and two terry warps contrasting one with the other, interweaving the filling with the ground
130 warp, at one time causing one of the terry warps to interweave to produce terry loops while the other terry warp floats, at another time causing at least one of the terry warps to interweave with the ground warp and filling to produce a non-terry fabric, and at another time causing the
135 other of said terry warps to interweave to produce terry loops, while the first-named terry warp floats.

8. The method of producing pattern effects in terry fabrics, which consists in providing a ground warp, and two terry warps contrasting one with the other, interweaving the filling with the ground warp, at one time causing one of the terry
140 warps to interweave to produce terry loops while the other terry warp floats, at another time causing both of the terry warps to interweave with the ground warp and filling to produce a non-terry fabric and at another time causing the other of said terry warps to inter-
145

weave to produce terry loops, while the first-named terry warp floats.

9. The method of producing pattern effects in terry fabrics, which consists in providing a ground warp, and two terry warps contrasting one with the other, interweaving the filling with the ground warp, and at one time causing one of the terry warps to interweave to produce terry loops while the other terry warp floats, at another time causing at least one of the terry warps to interweave with the ground warp and filling to produce a corded fabric in which the filling masks the warp yarns, and at another time causing the other of said terry warps to interweave to produce terry loops, while the first-named terry warp floats.

10. The method of producing pattern effects in terry fabrics, which consists in providing a ground warp, and two terry warps contrasting one with the other, interweaving the filling with the ground warp, at one time causing one of the terry warps to interweave to produce terry loops while the other terry warp floats, at another time causing both of the terry warps to interweave with the ground warp and filling to produce a corded fabric in which the filling masks the warp yarns, and at another time causing the other of said terry warps to interweave to produce terry loops while the first-named terry warp floats.

11. A double-faced terry fabric composed of ground warp, filling and at least two independent terry warps contrasting in color one with another, said fabric having contrasting terry areas which are identical in color on both faces of the fabric at the same point in the fabric, only one of the terry warps being interwoven with the ground warp and filling in each of the respective contrasting areas.

12. A double-faced terry fabric composed of ground warp, filling and at least two independent terry warps contrasting one with another, said fabric having contrasting terry areas which present identical contrasts on both faces of the fabric, only one of the terry warps being interwoven with the ground warp and filling in each of the respective contrasting areas, and said areas being separated by intervening plain weave areas in which the ground warp and filling are interwoven with at least one of the terry warps.

13. A double faced terry fabric composed of

ground warp, filling and at least two independent terry warps contrasting one with another, said fabric having contrasting terry areas which present identical contrasts on both faces of the fabric, only one of the terry warps being interwoven with the ground warp and filling in each of the respective contrasting areas, and said areas being separated by intervening plain weave areas in which the ground warp and filling are interwoven with all of the terry warps.

14. The fabric defined in claim 12, further characterized in that said plain weave area is of a type in which the filling interweaves with grouped warp yarns and masks the same.

15. The fabric defined in claim 13, further characterized in that said plain weave area is of a type in which the filling interweaves with grouped warp yarns and masks the same.

16. The method of forming contrasting cross borders on terry towels and the like, which consists in providing a normal terry warp for the body portion, a ground warp, filling, and a second terry warp contrasting with said normal terry warp, interweaving said terry warps selectively with the ground warp and filling the normal terry warp being woven to form terry loops throughout the body portion, while the second terry warp floats, and the normal terry warp floating in the border portions while the second terry warp is woven in alternately in two different weaves, one a plain weave in which the filling masks the warps and imparts its own appearance, and the other in which the second terry warp forms terry loops.

17. The method of forming contrasting cross borders on terry towels, and the like, which consists in providing a normal terry warp, a non-contrasting ground warp, a filling, and a second and contrasting terry warp, interweaving said terry warps selectively with the ground warp and filling, the normal terry warp being woven to form terry loops throughout the body portion, while the contrasting terry warp floats, and the normal terry warp floating in the border portion while said contrasting terry warp is woven in alternately in two different weaves, one a plain weave in which the filling masks the warps and imparts its own appearance, and the other in which the contrasting terry warp forms terry loops and imparts its contrasting appearance.

SAMUEL PINKNEY PARKER.

80

85

90

95

100

105

110

115

120

125

130

135

140

145

150

55

60

65

70

75