July 18, 1944. R. H. WINDHAM ET AL 2,354,166

MARKING MACHINE

Filed June 6, 1941 5 Sheets-Sheet 1

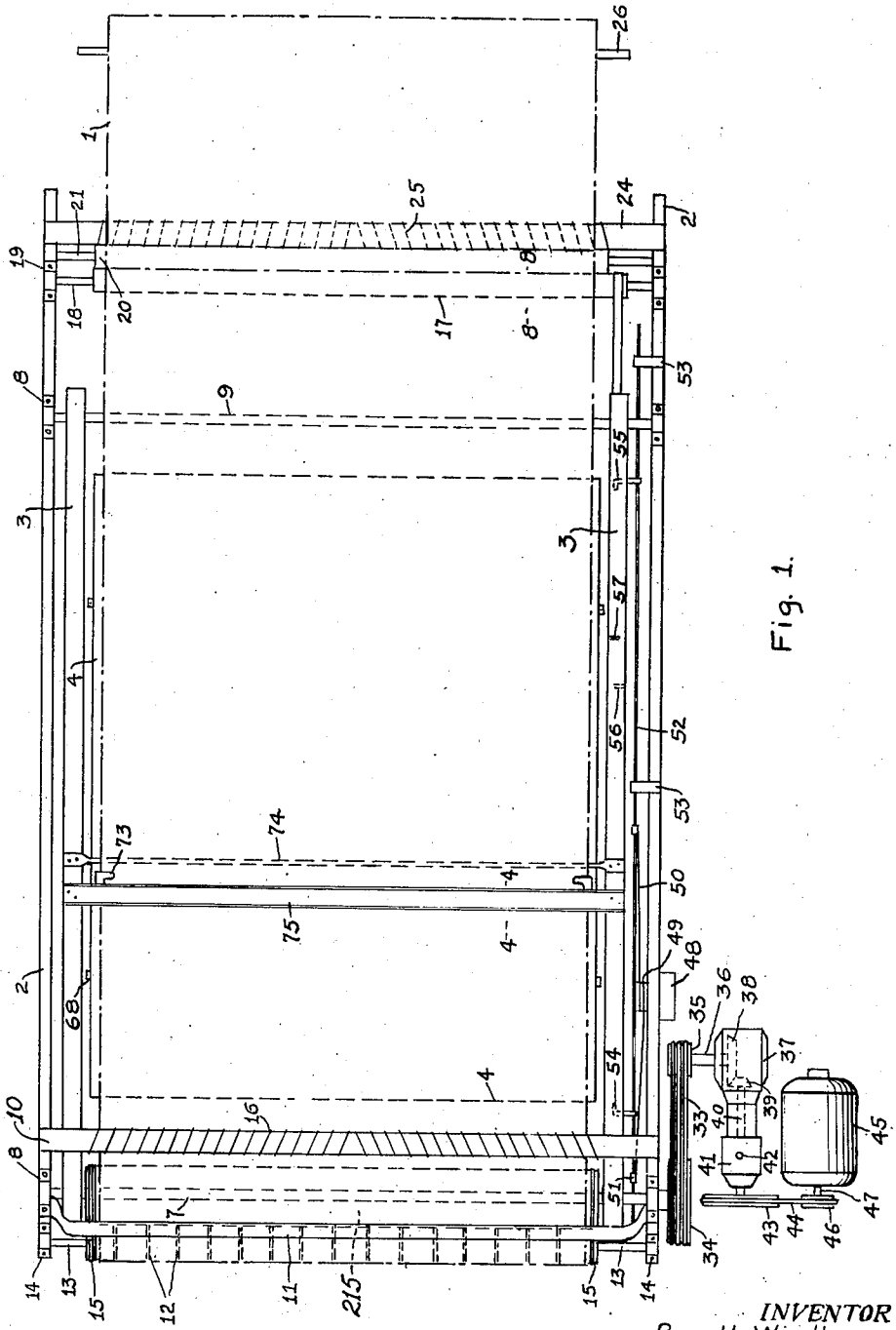


Fig. 1.

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MARKING MACHINE

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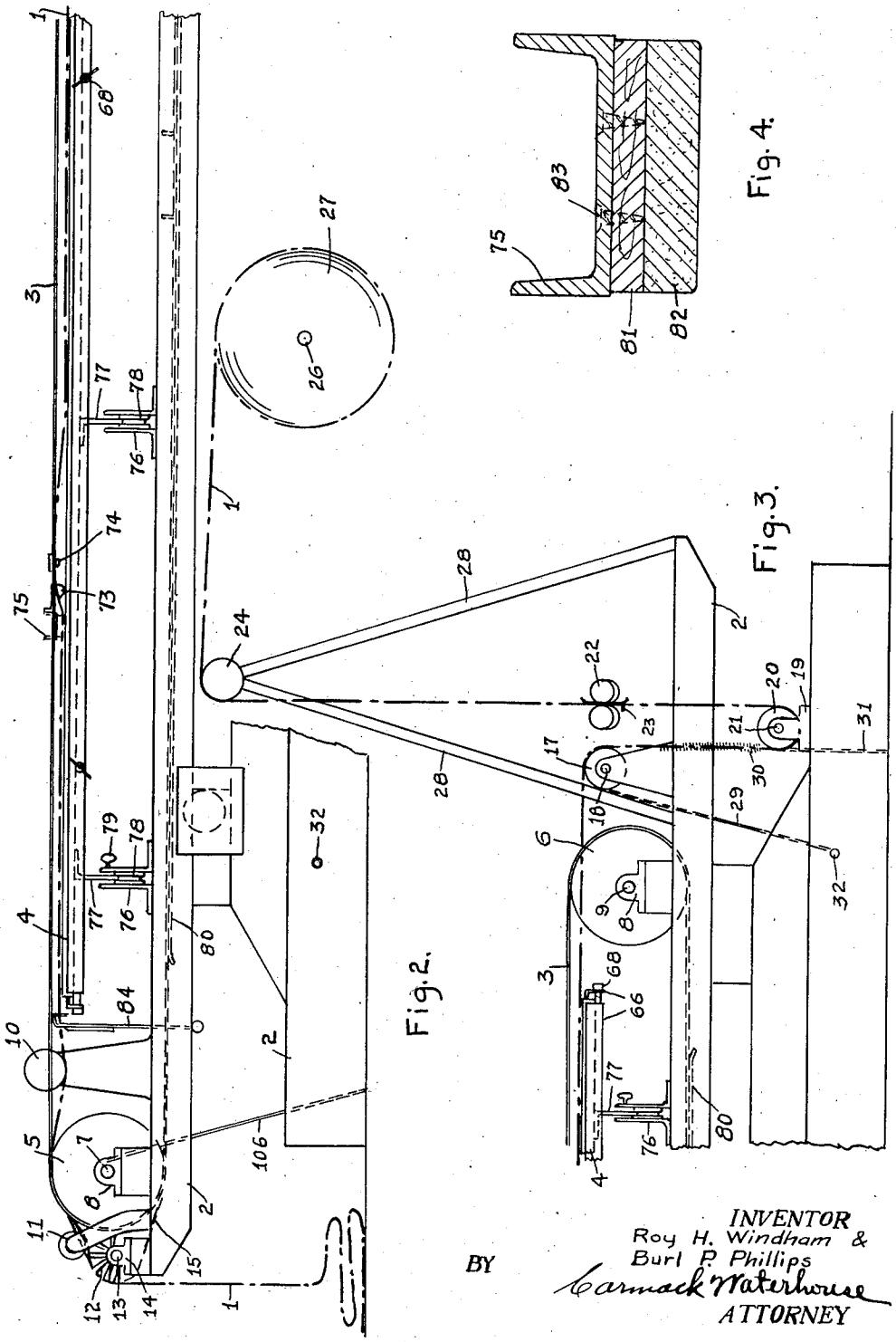


Fig. 2.

Fig. 4.

Fig. 3.

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MARKING MACHINE

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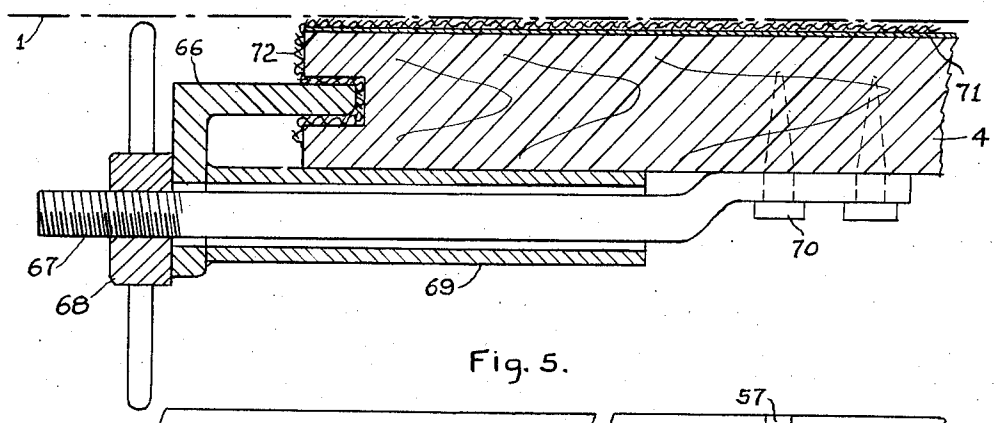


Fig. 5.

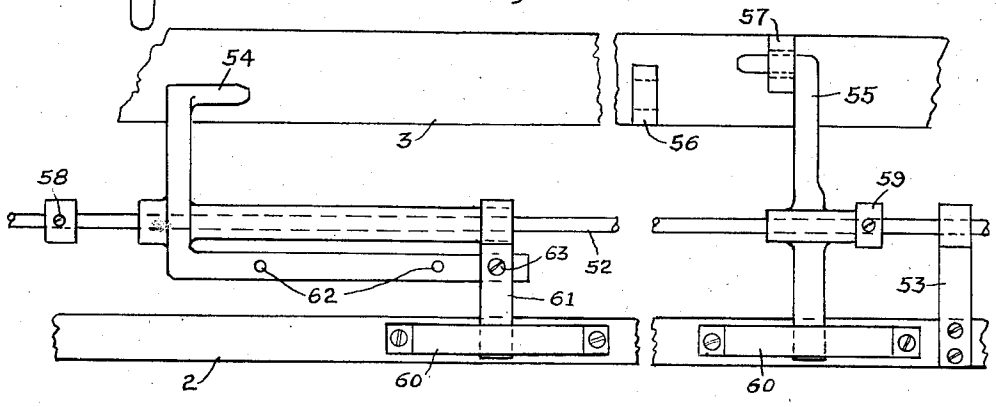


Fig. 6.

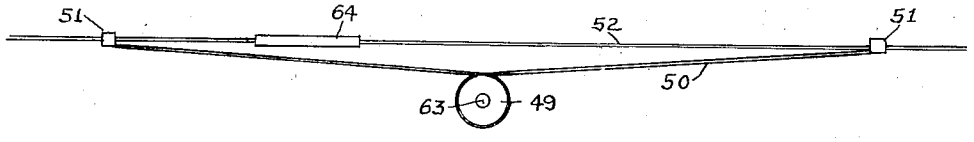


Fig. 7.

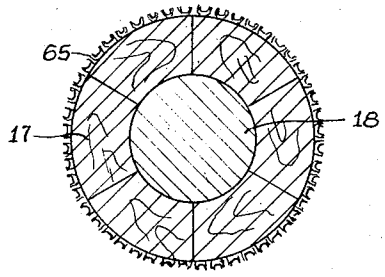


Fig. 8.

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MARKING MACHINE

Filed June 6, 1941 5 Sheets-Sheet 4

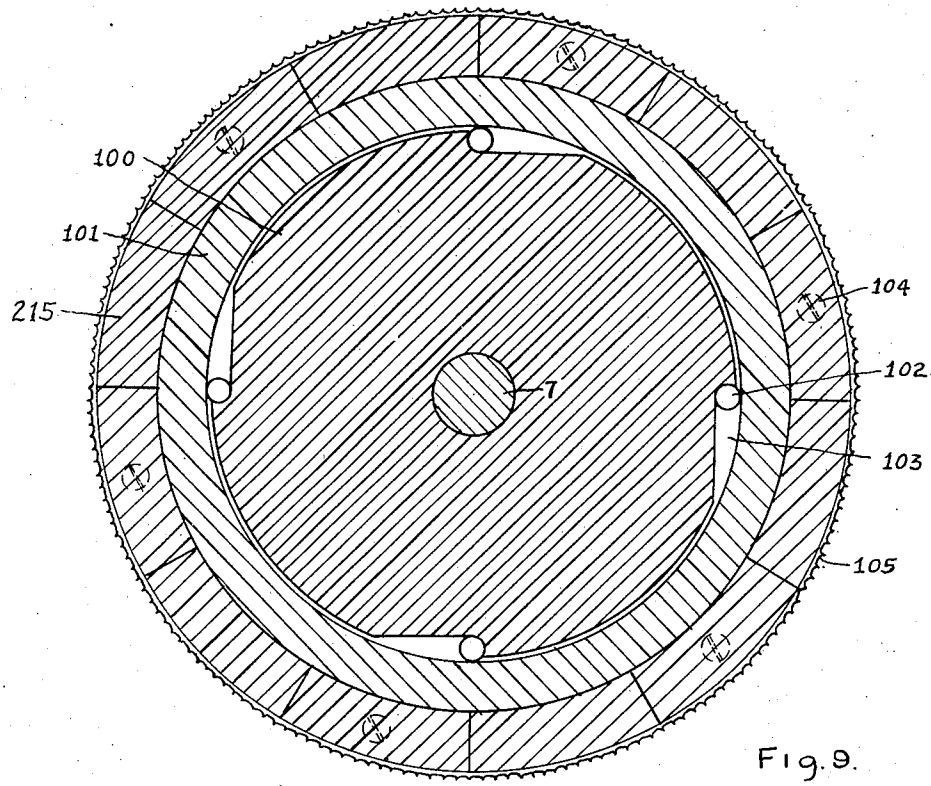


Fig. 9.

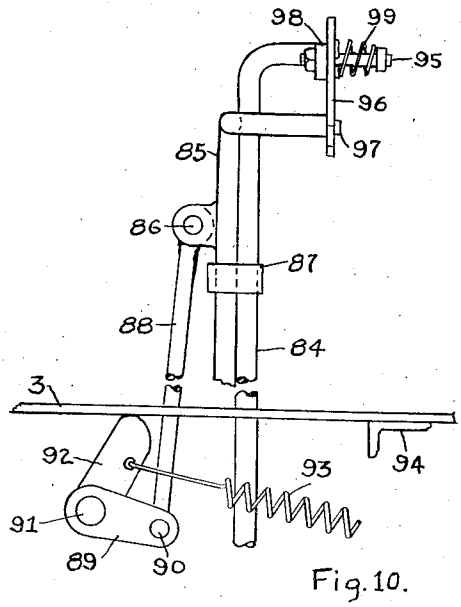


Fig. 10.

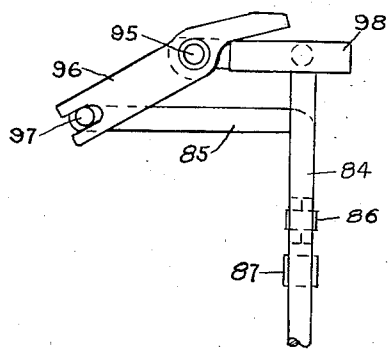


Fig. 11.

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MARKING MACHINE

Filed June 6, 1941 5 Sheets-Sheet 5

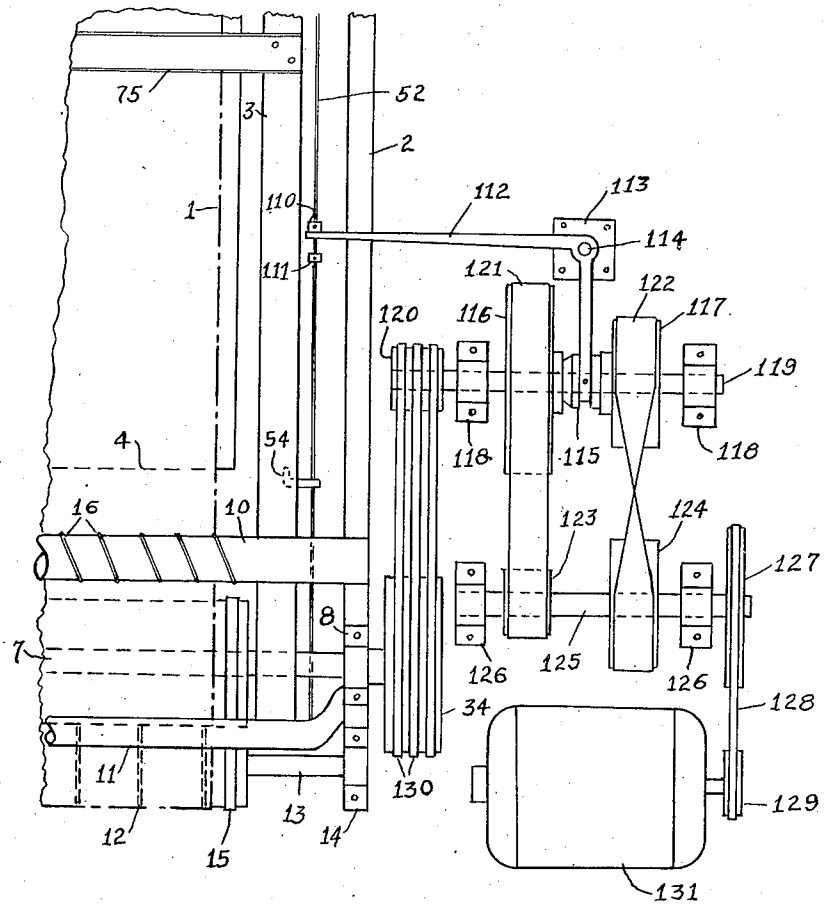


Fig. 12.

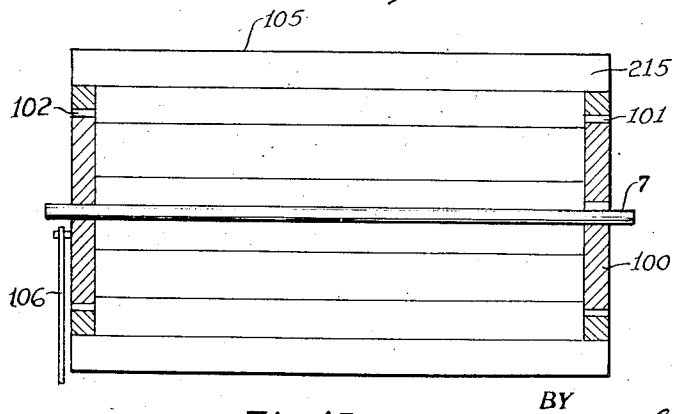


Fig. 13

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Patented July 18, 1944 2,354,166

UNITED STATES PATENT OFFICE

2,354,166

MARKING MACHINE

Roy H. Windham and Burl P. Phillips, Rome, Ga., assignors to B. J. Bandy, Dalton, Ga.

Application June 6, 1941, Serial No. 396,899

16 Claims. (Cl. 101—1)

Our invention relates to marking machines, and more particularly to a machine for marking successive outlines of a design on a relatively long section of cloth or other flexible material and has particular usefulness in outlining designs on bed spreads, bath mats, and the like to which chenille is to be applied.

In the prior art of marking the backing or base fabric of bed spreads, bath mats and the like for application of chenille thereto it has generally been the practice to spread the pattern having the design formed therein in raised stitches of thread, on a flat surface such as a table, then lay the backing to be marked on the pattern, stretching it out and smoothing it to remove wrinkles, then rubbing a block of conventional marking material over the backing thus producing marks on such fabric at the places overlying the raised stitches and thereby transferring the design from the pattern to the backing. This marking material ordinarily comes in relatively long, narrow blocks and is of the solid type being mounted on a backing or support of wood or composition. Such marking material as this has been used in the industry for a good many years and may consist of stearic acid, clay, soap, colored fugitive dye stuff, usually acid color, and possibly some tallow wax. The backing is then placed on a sewing machine and the operator follows the lines marked thereon inserting chenille to form the design. By washing the articles the marking material is removed therefrom.

While this process of laying out patterns is accurate and provides a true reproduction of the design on the fabric, the production is so small that a vast number of these tables and markers is necessary to supply the requirements of a large plant. The average production of a marking table with two men runs only about 250 to 300 spreads per day.

Some efforts have been made to provide a machine for marking these articles where a great many outlines of the same designs are required. Examples of these machines are found in Beall 2,054,591 and Hamrick 2,209,520. These machines attempt to dispense with a flat surface such as a table for supporting the fabric to be marked and also attempt to substitute therefor a pattern drum of cylindrical configuration upon which the pattern may be mounted. To mount the pattern it is wrapped about the outer surface or circumference of the drum and the meeting ends are anchored in a longitudinal slot therein. The section of cloth to be marked is moved over the outer surface of the drum and solid marking blocks or a roller is employed to engage the upper surface of the cloth and urge it against the raised stitches of the pattern on the drum as such drum rotates with and under the frictional influence of the moving section of cloth. However, the curved surface of the drum makes it difficult to obtain uniform pressure on the cloth and pattern by the marking material and often produces nonuniform marking. Since in producing the marking it is necessary to continuously rotate the large heavy marking drum through frictional engagement of the cloth with the pattern on the drum, great stress is placed on the cloth and large power equipment for driving the machine and for overcoming the momentum of starting must be supplied. Furthermore, it has been found that the cloth will not feed evenly to these machines and that they are only adapted to mark simple patterns, and that proper feeding of the cloth is only obtained by the addition of expensive cloth guides and other supplemental feeding equipment not shown in these patents. Since the pattern is wrapped about the circumference of the pattern drum, it is necessary to provide a separate drum for each length of pattern. Furthermore, due to variations in widths of cloth marked and unevenness of winding thereof, such cloth moves back and forth across the drum, from end to end, beyond the permissible corrective limits of cloth guides and produces unsymmetrical outlines on the cloth. And to change the patterns it is necessary to unthread the section of cloth from the machine, so that the time consumed is very great. Additionally it requires a great amount of time to properly position the pattern on the marking drum, and in doing this the operators must climb around on the machine.

While some efforts have been made in the screen printing art to outline from a stencil on stock set on a flat surface through the medium of ink, the principle of application is entirely different and the use of solid marking material is not contemplated. Those machines function more nearly like printing presses wherein a new piece of stock is inserted upon removal of the old piece on each operation and such stock is moved in against the stencil screen so that the ink may be applied therethrough. Examples of such machines are found in the patents to Aldcroftt et al., 1,843,116; Kem et al., 2,039,909; Tate et al., 1,898,406.

Applicants with a knowledge of all these defects in and objections to the prior art have for an object of their invention the provision of a stationary pattern support which eliminates the stress on the cloth marked and the power necessary to operate a moving pattern support.

Applicants have as another object of their invention the provision of a marking machine employing a stationary pattern support upon which backing to be marked is maintained in stationary position during the marking thereof thereby eliminating the possibility of slipping or relative movement between the cloth and the pattern

ordinarily present in marking machines employing a revolving pattern drum actuated solely through frictional contact with the section of cloth to be marked.

Applicants have as a further object of their invention the provision of a marking machine having a flat pattern supporting surface to support a pattern against the uniform pressure of solid marking material rubbing across its surface to provide uniform and even outlining of the design upon the section of cloth.

Applicants have as a further object of their invention the provision of a marking machine having a table which will accommodate different sizes of designs and will outline spreads of varying lengths without the necessity of using tables of different sizes or lengths.

Applicants have as another object of their invention the provision of a marking machine which will deposit the cloth on the floor after stamping or laying out so that it may immediately be torn into pieces and thus eliminates the rolling up of the cloth into rolls after stamping, which operation prevents the tearing apart of the pieces until the whole length of cloth has been run through the machine after which it must be unrolled again and then torn into pieces.

Applicants have as a further object of their invention the provision of a marking machine having a table which may be adjustably positioned with respect to the cloth moving through the machine to properly center the pattern with respect thereto during variations of the cloth beyond the permissible limits of control of the cloth guides which results from unevenness in winding and variations in width.

Applicants have as a still further object of their invention the provision of a marking machine having a flat top pattern table over which the cloth to be marked progressively passes, which table is removably positioned so that it may be removed from the machine and the pattern changed and then replaced with a new pattern thereon for further operations without unthreading the cloth from the machine.

Other objects and advantages of our invention will appear in the following specification and accompanying drawings and the novel features thereof will be particularly pointed out in the annexed claims.

In the drawings Fig. 1 is a plan view of our improved marking machine. Fig. 2 is a front side elevation of a portion of the same machine. Fig. 3 is a front side elevation of the balance of said machine. Fig. 4 is a detail cross section of the carriage for carrying the solid marking material and is taken along the line 4—4 of Fig. 1. Fig. 5 is a detailed sectional view of a clamp for positioning the pattern on the table. Fig. 6 is a detail plan view of the reversing rod which cooperates with the carriage belt. Fig. 7 is a detail of the reversing switch and associated elements connecting it to the control or reversing rod.

Fig. 8 is a sectional detail of the idler roller for maintaining the cloth extending across the marking table taut. Fig. 9 is a cross section of a feed roller having overrunning clutches for feeding the cloth through the machine. Fig. 10 is a front elevation of the mechanism for clipping the margin or selvedge of the cloth which passes through the machine. Fig. 11 is a side view of a portion of the mechanism of Fig. 10. Fig. 12 is a fragmental plan view of a modified form of driving mechanism for our machine. Fig. 13 is a longitudinal sectional view of the feed roller.

Referring to the drawings in detail, 2 designates a frame of fabricated steel, preferably made up of spaced longitudinal beams bridged by a series of spaced transverse steel rods and/or angular structure. This frame is preferably mounted on legs or other appropriate supporting structure. However, this frame may be altered if desired since its particular form or construction is not an essential characteristic of the present invention. Adjacent the upper end of the frame 2 is a roll 27 of cloth 1 whose width is the nominal width of the bed spread, bath mat or other articles to be outlined and this roll is pivotally mounted on a bar or shaft 26 which is appropriately supported by conventional bearings or standards (not shown) for free rotation thereabout.

The cloth 1 extends over the top of a stationary guide 24 mounted on converging standards 28, 28 on each side of frame 2 adjacent the upper end thereof. The outer surface of the transversely extending guide 24 is of cylindrical configuration and has two sets of helical ribs extending in opposite directions from the central portion thereof for spreading the cloth and removing wrinkles as it passes over said guide. The cloth 1 then extends down between sets of cloth guides or magnetically controlled angularly positioned rollers 22 on each side thereof. The operation of the rollers is controlled by levers engaged and displaced by the edge of the cloth as it moves over towards them on from one side of the machine to the other, as will be more fully described hereinafter. The cloth passes on down under idler roller 20 mounted on shaft 21, journaled in bearings 19 on one end of the frame 2 and preferably carried in ball bearings to reduce friction. This roller 20 extends transversely across the frame of the machine. The cloth then passes up over tensioning roller 17 to take up the slack due to sudden stops of the machine. This roller is made up of sectors mounted to turn on shaft 18 and having a serrated, knurled, or roughened outer surface preferably formed of pressed out walls of numerous small openings in a sheet metal covering which portions seat in the cloth and tension and retard its movement during the stopping operations. The retardation is controlled by the action of strap 29 anchored at one end to the frame 2 as indicated at 32 and passing over a pulley or groove in roller 17 and then to a tension spring 30 and on to the frame 2 by extension 31. By stretching the spring 30 the tension of the brake can be adjusted.

The cloth 1 then passes across the top of table 4 where it is removed in the manner hereinafter described. The table is rectangular and is preferably made of wood, although it may be made of composition or other appropriate material. Its upper surface is preferable roughened by gluing or otherwise securing sandpaper 71 of preferably rough grain to the upper surface thereof. This causes the pattern to adhere closely to the surface of the table and eliminates wrinkles therein. About the outer edges of the table is formed a substantially continuous peripheral groove and in that groove is seated one member or arm of an L shaped angle iron 66 forming the clamp. Mounted on the under side of the table adjacent the edges thereof and at spaced intervals are one or more retainer bolts 67 having flattened inner ends mounted through screws 70 on such table but having the shank thereof spaced from the lower surface of the table and extending on beyond the edge thereof and screw threaded for cooperation with a wing nut 68. Each of the

ends and sides of table 4 is preferably provided with one or more of the aforesaid angular clamping elements 66 with their lower portions turned downwardly and having openings therein for registration with the shanks of the retainer rods 67 and projecting inwardly from said angular elements 66, secured integrally thereto and in registration with their openings are sleeves 69 for telescoping over the shanks of the retainer bolt 67 to prevent turning or angular movement of the clamping elements 66 during the clamping operation when they are forced into the peripherial groove in table 4 by the action of the nuts 68. Passing transversely across the table 4 and frame 2 and secured to the under surface of the table 4 at intervals along the length thereof are a plurality of angle irons 77, 77 having one leg turned downwardly to form a track for cooperation with grooves in the outer peripheries of rollers 78 mounted in brackets 76 on the top of each of the longitudinal or side members of the frame 2. These track members 77 project slightly over the frame on each side thereof to facilitate transverse movement of the table 4 with respect to the frame 2 to compensate for variations in the width and position of the cloth and when so moved may be held in adjusted relation by thumb screws 79 carried by and socketed in brackets 75 and whose ends are engageable with track members 77 to prevent relative movement. The track 77, 77 and rollers 78, 78 also facilitate the removal of the table without unthreading the machine to remove or replace patterns. This is accomplished by the use of rollers set on spaced pedestals in front of the machine and in alinement with rollers 78, 78 so that the table may be pulled forwardly until the forward ends of the track 77, 77 engage and rest upon the rollers of these pedestals and support the table out of engagement with the cloth 1. In such position the patterns may be removed or replaced, after which the table may be moved back into position and out of engagement with the rollers of the pedestals.

After leaving the table 4, the cloth 1 passes under a guide 10 mounted on standards and extending transversely across the frame 2. Formed on the outer surface of the guide 10 are two or more sets of helical ribs 16 extending in opposite directions from the central portion thereof for spreading the cloth to avoid or remove wrinkles.

The cloth then passes over feed roller 215 mounted in bearings 8 on each side of frame 2 on shaft 7. Fig. 9 shows a detail cross section of the feed roller made up of outer segmental portions of wood or fiber mounted at either end on a metallic ring 101 which are in turn loosely mounted on circular heads 100 at each end of the feed roller. Formed in the outer peripheries of the heads 100, 100 are a series of tapered grooves 103 for the reception of cylindrical keys 102 so that rotation of a head in one direction will cause the keys 102 to ride up the slanting walls of the grooves, engage the inner walls of ring 101, and lock or key the head 100 to the ring 101 so that the head and ring and in turn the feed roller rotates as a unit. Rotation of the head 100 in the other direction causes the keys 102 to ride down the slanting walls of the grooves 103 and disengage the ring 101 from the head so that the head 100 moves freely with respect thereto. On the front or transmission side of the frame the head 100 is keyed directly to the shaft 7 and moves with it while at the opposite end of feed roller 215 the head 100 is not keyed to the shaft 7 but freely rides or floats thereon. On the rear side of the frame the head 100 is rigidly fixed to rod 106 which is in turn joined at its lower end to the supporting surface or floor and this rod prevents rotation of the head 100 during movement of the shaft 7. It will also be seen that the grooves 103 in the outer peripheries of the head on the rear end of roller 215 are tapered in the opposite direction to those of the front head in order to lock the feed roller 215 against rearward rotation. Thus it will be seen that the front head 100 on the transmission side of the frame, interlocks with its ring 101 to provide counterclockwise rotation of the feed roller 215 and when disengaged therefrom when the shaft 7 comes to rest or rotates in the opposite direction and simply moves with the shaft with the front ring 101 floating upon it. After reversal and during clockwise rotation of the shaft 7 while the front ring 101 is floating on the front head 100, the feed roller is prevented from rotating in a clockwise direction by locking of the rear ring 101 with the rear head 100 through pins 102 at the rear end of the feed roller 215. Thus it is seen that the feed roller is only free to rotate in a counterclockwise direction and at intervals. The outer surface 105 of the roller 215 is of sheet material or other appropriate material and is punched or pressed outwardly in a series of places or otherwise roughened, serrated, or knurled, to seat in or adhere to the cloth and pull it through the machine.

A stationary retainer or keeper 11 is mounted adjacent one side of feed roller 215 to prevent disengagement or separation of the cloth 1 from the feed roller 215 by the brushes to be described hereinafter. The retaining element 11 has arms extending downwardly and engageable with the frame 2 to mount it thereon. It extends transversely across the frame adjacent the feed roller 215 and the cloth passes under it through the machine.

Adjacent the roller 215 and in rubbing engagement therewith are a series of spaced brushes 12 mounted on and rotatable with shaft 13 which is journaled in bearings 14, 14 on each side of an end frame 2. If desired, shaft 13 may be driven from a pulley or otherwise on feed roller 215 by means of belt 15 so that the feed roller 215 and brushes 12 rotate together and in the same direction. The brushes 12 pull the cloth 1 away from the feed roller 215 up to the point where retainer 11 limits their action. The cloth 1 passes over these brushes 12 and on to the floor where it may be continuously or intermittently torn into backing of the proper lengths.

Mounted on each side of the frame 2 are a pair of spaced pulleys 5, 6. Each of the pulleys 6, 6 are rigidly mounted on a shaft 9 bridging the sides of the frame 2 adjacent the upper end of the table 4 and rotatably positioned in bearings 8 mounted on the sides of the frame 2. Pulleys 5, 5 are mounted on shaft 7 adjacent either end of the feed roller 215 and adjacent the opposite end of the table from rollers 6, 6. Rollers 5, 5 are rigidly mounted on the shaft 7 and rotate with it.

Bridging the pairs of pulleys 5, 6 on either side of the frame 2 and joining them together are a pair of endless leather or other appropriate belts 3, 3. Mounted on and bridging the belts 3, 3 and overlying table 4 is a channel shaped carriage 75 of steel or other appropriate material. Fig. 4 shows a detail of this carriage in section. Mounted on the lower face of the carriage 75

through a wooden backing 81 and by means of wood screws 83 which pass through carriage 75 and seat in the backing is a block or blocks of solid marking material of conventional character heretofore referred to. This material has rubbing contact with the outer surface of the cloth and the pressure thereagainst may be altered by inserting or removing weights from the upper cupped portion of the channel carriage 75.

Mounted on the lower surface or inner face of the front belt 3 are spaced lugs 56, 57, particularly shown in Fig. 6, for engagement respectively with spaced fingers 54, 55 mounted on a reciprocating control rod 52, through floating sockets and engageable with fixed collars 58, 59 mounted on the rod 52 to move it back and forth. In order to properly position the fingers 54, 55 for engagement with lugs 56, 57, straps 60, 60 are joined through screws to frame 2 to act as a guide for extensions of fingers 54, 55 for reciprocation back and forth thereover. Adjustment for the proper position of finger 54, is provided by openings 62, 62 therein for coaction with extension 61 and screw 63 which may seat in any one thereof.

The control rod 52 is slidably mounted in spaced bearings or straps 53 carried by the frame 2. Also connected to the ends of a flexible cord or other member at spaced points 51, 51 are connecters. The central portion of the cord 50 is wrapped around the central knob or pulley 49 of a reversing switch 48 on shaft 63 so that the reciprocation of the rod 52 operates the reversing switch 48 and controls the direction of the rotation of motor 45.

The machine receives its power from and is operated by an electrical motor preferably of the AC induction type 45, having shaft 47 and pulley 46 mounted thereon. The pulley 46 is connected through belt 44 to pulley 43 on shaft 40 of a transmission system housed in housing or casings 41, 40, and 37 and controlled by gear shift lever 42 which changes the gear ratios of gears 38, 39, etc., and the speed of rotation of the shaft 36. This transmission may be of the same conventional type as used on automobiles. Its only function is to perform that of a speed changing mechanism. On shaft 36 of the transmission is mounted a V belt pulley 35 joined through one or more V belts 33 to a drive shaft 34 mounted on feed shaft 7.

In the operation of the machine the table 4 is moved out from over the frame 2 and on to the pedestals heretofore referred to but not shown herein. A pattern in preferably the form of a sheet of material with stitches of thread or chenille formed therein is used as a pattern. The chenille side or face of the fabric is turned downwardly and the stitched portion thereof is faced upwardly. The cloth pattern is spread out over the table with its edges overlapping the edges thereof and marginal portions of the pattern are pressed into the peripherial groove in the table 4 about the entire outer edges of said table. Then the clamping elements 66 are telescoped with their sleeves 69 over the retainer rods 67 and the wing nuts 68 applied thereto. These nuts are tightened up until one portion of the clamping element 66 seats in the peripherial groove of the table 4 and clamps the marginal portions of the pattern 72 against the walls of said groove thereby locking the pattern in position upon the upper surface of the table 4, and the roughened or sandpapered surface 71 of the table will prevent relative movement of the pattern 72 thereon. After the pattern has been clamped into position the table 4 is then moved back to its position bridging the members of the frame and under the cloth 1 threading the machine.

The source of electrical energy may then be connected to the motor 45 causing it to transmit power through pulley 46, belt 47, and pulley 43 of the transmission and then from pulley 35 of the transmission to belt 33 and driving pulley 34 of the machine. This causes the driving pulley 34 of the machine to rotate in a counterclockwise direction and turn front ring 101 of feed roller in that direction causing the keys 102 to ride up the tapered wall of slot 103 of the front head 100 and lock the ring 101 to the head causing them to rotate as a unit counterclockwise. The knurled surface 105 of the feed roller pulls the cloth 1 through the machine since such cloth adheres to such knurled surface.

This causes the cloth 1 to be payed off of roll 27 over guide 24 and down through cloth guides 22 on each side of the machine. These cloth guides consist of floating rollers 22 engageable with opposite faces of the cloth near the marginal edges on each side and these rollers are urged together under the action of an electromagnet which receives a low voltage D. C. current from a rectifier or generator or other source of electrical energy. This causes the rollers 22, 22, set at an angle, to tightly engage the cloth on each side and pull it towards the side of the frame upon which the guide is mounted. After the cloth has been pulled over the proper distance it engages a pivoted lever 23 and swings it towards that side of the frame thereby breaking contact with the electromagnet and releasing the grip of the rollers 22, 22 on the cloth. In this way the cloth guide is rendered inoperative after the cloth has been pulled over a certain distance. The cloth is then pulled to the opposite side of the machine by the cloth guide which has not been rendered inoperative and this continues until the cloth engages the lever 23 of that cloth guide and releases its rollers. These cloth guides, however, are of conventional construction and may be purchased on the open market, which the applicant so purchased and applied to his machine. Accordingly a detailed explanation of the specific structure of such conventional cloth guide is not thought to be necessary. From the cloth guides on each side of the frame the cloth 1 passes on around idler roller 20 and slack roller 17 and on to the table as heretofore pointed out. The cloth 1 then moves across the table and with it moves the carriage 75 carrying the solid marking material so that during the movement of the cloth 1 and carriage 75 together no marking occurs. The movement of the carriage 75 is accomplished by movement of the belts 3, 3 which receive their power from pulleys 5, 5 on drive shaft 7 actuated by drive pulley 34. They move the carriage from the upper to the lower end of the table. Upon reaching the lower end of the table or some desired position near the lower end of the table the lug 56 engages finger 54 and moves control rod 52 towards the lower end of the table. This in turn pulls one side of the flexible cord 50, rotates pulley 49 and operates the reversing switch 48 which changes the direction of the flow of energy through the motor 45. If desired, additional braking mechanisms may be employed on the motor for stopping its operation and proper adjustments of the collars 58, 59 may be made on the rod 60 to control its operation.

Upon reversing the flow of energy through the motor its direction of rotation is reversed and

the rotation of pulley 34 is likewise reversed thereby causing the shaft 7 to rotate in a clockwise direction. This causes head 100 at the forward end of the feed roller 215 to rotate in the opposite direction and disengages the keys 102 from the ring 101 permitting it to float on the head. This action, however, would tend to cause some rotation due to frictional contact between the ring and head of the feed roller in a counterclockwise direction, but as previously pointed out the rear head 100 on the back side of the feed roller 215 floats on shaft 7 and is held against rotation by means of rod 106. During this tendency to rotate in a clockwise direction the key elements 102 in the rear clutching mechanism lock the head 100 thereof with the ring 101 and prevent any backward movement of the feed roller. However, since the pulleys 5, 5 on shaft 7 are rigidly mounted on said shaft they rotate in a clockwise direction moving the belts 3, 3 and pulleys 6, 6 in the opposite direction. This disengages lug 56 from finger 54 and moves the carriage 75 from the rear end of the table 4 over and with respect to the portion of cloth lying on table 4 and creates a rubbing action with respect thereto between the solid marking material 82 carried by the carriage and the sheet so that as it rotates over the cloth supported on the pattern having raised portions it marks such cloth over those raised portions and outlines the design of the pattern thereon. When the carriage reaches the opposite end of the table or some desider position adjacent thereto depending upon the size of the pattern, lug 57 on belt 3 engages finger 55 and moves it towards the upper end of the machine bringing it into engagement with collar 59 on control rod 52 and moving such control rod so that the opposite end of the flexible cord 50 is moved and in turn rotates reversing switch pulley 49 in the opposite direction thereby reversing switch 48 and again reversing the motor causing it to change the direction of rotation and to again rotate the feed shaft 7 in a counterclockwise direction and to again engage the front head 100 with the front ring 101 of the feed roller 215 thereby rotating the feed roller in a counterclockwise direction again and causing it to move the marked portion of cloth over the table and to return the carriage 75 to the lower end of the table so that it may be in position to mark a fresh portion of cloth. This cycle is repeated over and over again as each new outline is formed on the long section of cloth.

The cloth then moves on over the brushes 12 and on to the floor where it may be torn into pieces of the size of a bed spread, bath mat or other article.

In Fig. 12 an alternative driving mechanism for the machine is shown. This mechanism is controlled mechanically by a clutch instead of electrically by a reversing switch. In this way it is possible to continue the operation of the motor at uniform speed and thus eliminate the starting and stopping operations thereof which tend to greatly increase the power consumption and heat up the motor. The reciprocating control rod 52 remains the same in this modification with spaced collars 110, 111 mounted thereon for engagement with the end of a pivoted rod 112 which rod 112 is pivotally mounted at 114 on a support 113 which is in turn mounted on the floor or otherwise. The other end of the rod 112 is pivotatlly joined through pins or otherwise to a clutch 115 consisting of a floating sleeve having opposite beveled or clutching faces for coaction with elements to expand them and key either pulley 116 or pulley 117 to collars on the shaft 119 to control the direction of rotation of said shaft.

Motor 131 is controlled from a manually operated switch and is connected through its driving pulley 129 and belt 128 to pulley 127 upon supplemental shaft 125 journaled in bearings 126, 126. Mounted on supplemental shaft 125 are pulleys 123, 124, one larger than the other, to give a speed differential in forward and backward movement. Pulleys 123, 124 are joined through belts 121, 122, the latter of which is crossed, to pulleys 116, 117 on control shaft 118, which pulleys normally idle on such shaft. Shaft 119 is journaled in bearings 118, 118 and carries pulley 120 rigidly mounted on one end thereof. Pulley 120 is joined to drive pulley 34 on shaft 7 of the machine through a series of V belts 130 for driving the machine in the usual manner.

The operation of the machine is somewhat as follows: Motor 131 is connected manually to a source of electrical energy causing it to rotate at a constant speed driving pulley 127 from its pulley 129 through belt 128. This causes shaft 125 to rotate in a counterclockwise direction and since clutch 115 is acting on pulleys 116 power is transmitted through belt 121 and on through pulleys 116, 120 and through belts 130 to the drive pulley 34 causing the drive shaft 7 to rotate in a counterclockwise direction and moving the cloth from front to the rear of the machine. This causes belts 3, 3 to move over the pulleys 5, 6, 5, 6 and carry the carriage 75 towards the lower end of the marking table 4. Lugs on the upper inner face of the forward belt 3 engage with control rod 52 and move it through finger 54 towards the lower end of the machine causing collar 110 to swing arm 112 counterclockwise about its pivot thereby disengaging clutch 115 from pulley 116 and bringing clutch 115 into engagement with pulley 117. This leaves pulley 116 free to float on the shaft and due to the fact that belt 122 is crossed it will turn shaft 119 in a clockwise direction. This will rotate pulley 120 and drive pulley 34 on shaft 7 in a clockwise direction thereby moving the carriage 75 back to the upper end of the machine but will not rotate the feed roller so that the cloth 1 remains stationary during the operation as heretofore described in connection with the previous modification. Upon the carriage reaching the desired position near the other end of the machine another lug on the inner face of the upper portion of the forward belt engages with the other finger (not shown) on control rod 52 causing the control rod to move towards the upper end of the machine and bringing the collar 111 into engagement with arm 112 causing it to rotate in a clockwise direction about pivot 114 thereby disengaging clutch 115 from pulley 117 and re-engaging it with pulley 116 to start the cycle all over again.

From the foregoing it will be seen that as the carriage and cloth move towards the lower end of the table 4 the movement is slow by reason of the ratio of the size of the large and small pulleys 123, 116 while movement of the carriage 75 in the opposite direction under the influence of pulleys 124, 117 is very rapid due to the fact that both pulleys are very near the same size. Under the circumstances it may be desirable to take up some of the impact and energy in stopping the carriage to reverse it at the upper end and this may be done by means of springs or

spring arms or both which engage the carriage before it comes to rest. This feature is not shown since it is only optional.

As additional equipment it may or may not be desirable to have a clipper mounted on the frame 2 for clipping the edge or selvedge of the backing or fabric to indicate the place where it should be torn, and to assist in the completion of the tearing. The clipper is mounted through rod 84 adjacent the rear end of the table 4 and extends forwardly from the frame and terminates in a cross block 98 which projects across the path of travel of an edge of the cloth 1. The upper edge of this block is sharpened to cooperate with the lower moving edge of pivoted cutter 96 which cutter is pivoted intermediate its ends through pin 95 on flattened side of block 98. The other end of cutter 96 is slotted for the reception of pin 97 carried by the horizontal or bent end of reciprocating rod 85 carried by connector 87 mounted on rod 84. Integrally mounted on rod 85 intermediate its ends is a bracket pivotally joined through pivot pin 86 and link 88 whose opposite end is pivotally joined at 90 to arm 89 pivotally mounted on frame 2 at 91 and biased to lowered position by extension 92 and spring 93. Extension 92 is adapted to be engaged by lug 94 on belt 3 for oscillating arm 89, reciprocating rod 85 and opening and closing cutter blade 96. Interposed between the cutter 96 and the end pin 95 is a spring 99 to bias said cutter against block 98.

It will be understood that the cloth extends over the upper cutting edge of block 98 as it progressively moves through the machine. When the carriage 75 has reached its lowermost position and started its rearward movement across the cloth and after the cloth has come to rest, forward belt 3 carrying lug 94 brings it into engagement with extension 92 and rocks arm 89 about pivot 91 and raises and lowers rod 85 by means of link 88 in order to swing the cutter 96 to closed position thereby clipping the selvedge or margin of the cloth. As soon as the machine reverses itself and the belt moves in the opposite direction, lug 94 is brought out of engagement with extension 92 permitting the spring 93 to swing the cutter 96 back to open position.

If desired, rollers 17, 20 may be eliminated and a double set of rollers mounted on a swinging arm and suspended from the lower portion of the frame 2 may be employed to tension the cloth during the starting and stopping operations. It will be seen that the roller which swings about the arm would through gravity tension the cloth when the pull was removed therefrom by the machine.

If desired, a guide rod 74 bridging belts 3, 3 may be positioned just rearwardly of the carriage 75 as will be seen from Fig. 1, so that cloth 1 may pass over it and under carriage 75. It moves with the carriage and with respect to the cloth 1 towards the upper end of the table 4 smoothing the wrinkles out of the cloth just prior to marking by the material of the carriage 75.

When the load on feed roller 215 is too great, cloth pullers 73, 73 mounted on carriage 75 may be employed to supplement feed roller 215. They are of conventional form employing rollers on either side of the cloth controlled by clutching mechanism which locks them against rotation in one direction and permits their free relative movement in the opposite direction. They are locked during the movement of the carriage 75 with the cloth 1 and unlocked when the carriage is moved in the opposite direction relative to the cloth, and this clutching action is accomplished by means of overrunning clutches.

Having thus described our invention, we claim:

1. A machine for marking a relatively long section of cloth for producing such articles as bed spreads, bath mats, and the like comprising a supporting structure, a pattern table mounted on said supporting structure, a flexible pattern having a design thereon detachably mounted on said table, feed means for progressively moving said cloth across said pattern, said table and pattern being stationary with respect to the path of movement of the cloth and means having rubbing engagement with said cloth for outlining the design of said pattern thereon.

2. A machine for marking a relatively long section of cloth for producing such articles as bed spreads, bath mats, and the like comprising a supporting structure, a table having a flat top mounted on said supporting structure, a pattern having a raised design thereon positioned on said flat top, means for intermittently moving said cloth with respect to and across said pattern, and means having rubbing engagement with said cloth for outlining the design of said pattern thereon.

3. A machine for marking a relatively long section of cloth for producing such articles as bed spreads, bath mats and the like, comprising a supporting structure, a pattern table movably mounted on said supporting structure, a pattern having a raised design thereon mounted on said table, feed means for intermittently moving said cloth across said pattern, and means for moving a solid marking material over said cloth while it is at rest for outlining the design of said pattern thereon.

4. A machine for marking a relatively long section of cloth for producing such articles as bed spreads, bath mats and the like, comprising, a flat top table, a pattern having a raised design positioned on said table top, work feed means for intermittently moving said cloth across said design on said pattern table, a support for a marking material, and means for reciprocating the marking material across said table in rubbing engagement with the raised portions of cloth while it is stationary for outlining the design of said pattern thereon.

5. A machine for marking a relatively long section of cloth for producing such articles as bed spreads, bath mats and the like, comprising a supporting structure, a flat top table carried by said supporting structure, a pattern having a raised design positioned on said table top, work feed means for intermittently feeding said cloth through said machine and across said pattern, a support for a marking material, and means for moving said marking material movable longitudinally with respect to said cloth while it is at rest for outlining the design of said pattern thereon.

6. A machine for marking a relatively long section of cloth for producing such articles as bed spreads, bath mats and the like, comprising a supporting structure, a pattern table mounted on said supporting structure and movable transversely thereof for compensating for variations in said cloth, a removable pattern having a raised design positioned on said table, work feed means for progressively moving said cloth across said table in engagement with said pattern, and a

solid marking material support mounted for movement across said cloth for outlining the raised design thereon.

7. A machine for marking a relatively long section of cloth for producing such articles as bed spreads, bath mats and the like, comprising a supporting structure, a pattern table having a flat top mounted on said supporting structure, a pattern having a raised design thereon positioned on said table top, work feed means for intermittently moving said cloth progressively in one direction across said table and in contact with said pattern, a support for solid marking material and means for moving said marking material with said cloth during its movement, and for moving it with respect to and across said cloth when said cloth is at rest upon said pattern, whereby to outline the design of said pattern on said cloth.

8. A machine for marking a relatively long section of cloth for producing such articles as bed spreads, bath mats and the like comprising a supporting structure, a table having a flat top for supporting a pattern, a flexible pattern having a raised design positioned on said table, work feed means for intermittently moving said cloth across said table progressively in one direction, said pattern and table being movable transversely of the path of work feed to compensate for variations in said cloth, a reciprocating carriage carrying solid marking material for moving over said table, said carriage moving with the cloth during its movement, and in the opposite direction during the intervals when said cloth is at rest, whereby to outline said design on said cloth.

9. A marking machine of the character described comprising a marking table having a flat top, a flexible pattern having a raised design thereon removably positioned on said table, work feed means for progressively moving said cloth across said pattern and in engagement with the raised design thereof, a carriage for mounting solid marking material, and means for reciprocating said carriage back and forth along portions of said cloth in engagement with said design to outline the design thereon.

10. A marking machine of the character described comprising a table having a flat top, a flexible pattern having a raised design removably positioned on said table top, work feed means for progresssively moving a section of cloth across said table in engagement with said pattern, continuous belts on either side thereof for reciprocation in time relation with said work feed means, and a carriage bridging the belts and mounted on them for carrying solid marking material over said cloth and in engagement with it for outlining said design thereon.

11. A marking machine of the character described comprising a table having a flat top, a flexible pattern having a raised design thereon removably positioned on the flat top of said table, work feed means for progressively moving said cloth across said table and pattern, means for moving solid marking material across said cloth in wiping engagement therewith for outlining said design thereon, and means for successively clipping an edge of said section to indicate the line of separation of articles.

12. A machine for marking a relatively long section of cloth for producing articles such as bed spreads, bath mats and the like comprising a table having a flat top, a flexible pattern having a raised design thereon removably positioned on said table top, work feed means including a revolving roller having a roughened outer surface for engagement with the cloth, and means engageable with said surface of said roller and said cloth to disengage the cloth therefrom, and a support for a solid marking material for rubbing engagement with the cloth to outline the design of the pattern thereon.

13. A machine for marking a relatively long section of cloth for producing articles such as bed spreads, bath mats and the like comprising a table having a flat top, a flexible pattern having a raised design thereon removably positioned on said table top, work feed means including a revolving roller having a roughened outer surface for engagement with the cloth, and means engageable with said surface of said roller and said cloth to disengage the cloth therefrom, said means comprising a series of spaced revolving brushes for rotation in the same direction as said roller, and a support for a solid marking material for rubbing engagement with the cloth to outline the design of the pattern thereon.

14. A marking machine of the character described comprising a table having a flat top, a pattern having a raised design thereon removably positioned on the flat top of said table, work feed means for progressively moving a relatively long section of cloth through said machine, a carriage for reciprocating solid marking material across said cloth to outline the design thereon, belts on either side of said table for transporting said carriage, a source of power for said belts, and means engageable with said belts at predetermined times to reverse said source of power and in turn the movement of said belts.

15. A marking machine of the character described comprising a table having a flat top, a pattern having a raised design thereon removably positioned on the flat top of said table, work feed means for progressively moving a long section of cloth across said table, a support for a solid marking material mounted on a carriage for engagement with the cloth to outline a design thereon, means for reciprocating said carriage across said cloth including belts mounted on either side of said table for back and forth movement, a source of power for said belts, and clutch means responsive to movement of said belts to a predetermined position to reverse the application of said source of power and in turn the movement of said belts.

16. A machine for marking a relatively long section of cloth to produce articles such as bed spreads, bath mats, and the like comprising a supporting structure, a table having a flat top mounted on said supporting structure, said top being roughened to cause the pattern to adhere thereto, a flexible pattern having a raised design thereon positioned on the table, a peripherial groove in said table top for reception of the overlapping portions of said pattern, clamping means seated in said groove for clamping said pattern portions against the walls of said groove, work feed means which progressively move the cloth through the machine, and a support for a solid marking material for rubbing engagement with the cloth to outline the pattern thereon.

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