(No Model.) 2 Sheets—Sheet 1.

M. CAMERON.

FABRIC TURFING MACHINE.

No. 492,780. Patented Mar. 7, 1893.

Fig. 1.

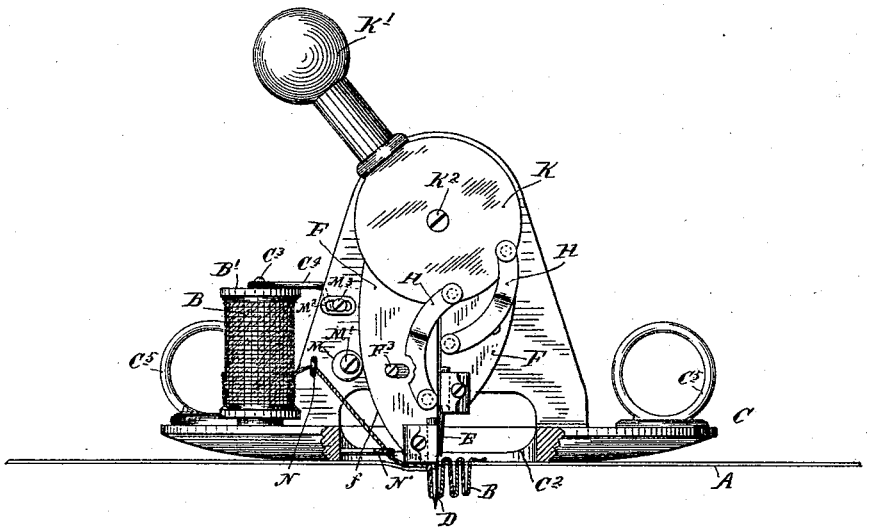
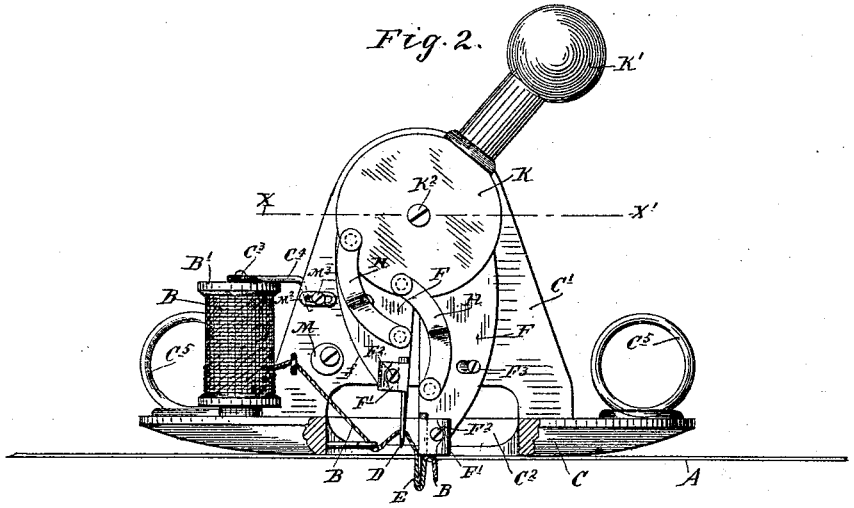


Fig. 2.



Witnesses.
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E. F. Elmore

Inventor.
Murdick Cameron
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(No Model.) 2 Sheets—Sheet 2.

M. CAMERON.

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Fig. 3.

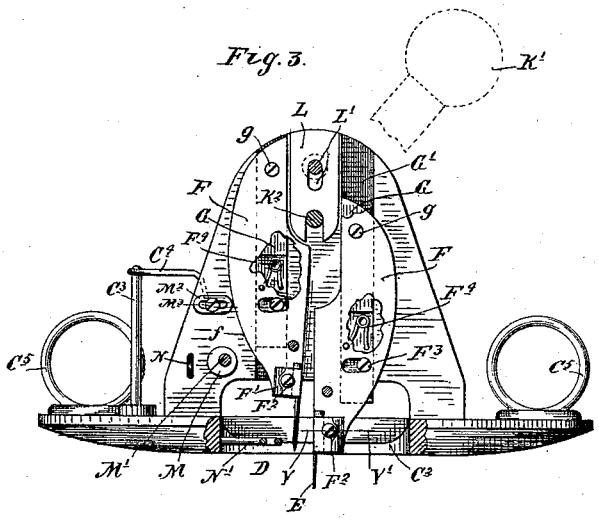


Fig. 5.

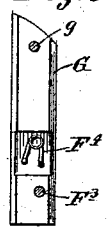


Fig. 4.

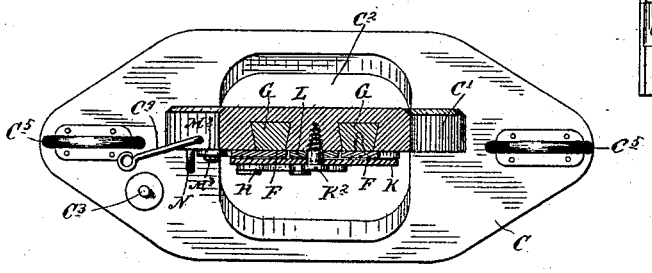


Fig. 7

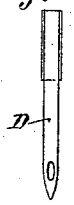


Fig. 6.

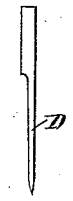


Fig. 8

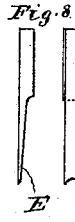


Fig. 9.

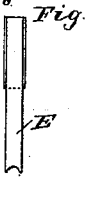


Fig. 10.

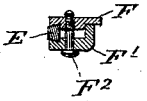
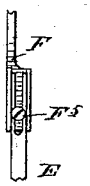


Fig. 11.



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By his Attorney.
Jas. F. Williamson

UNITED STATES PATENT OFFICE.

MURDICK CAMERON, OF MINNEAPOLIS, MINNESOTA, ASSIGNOR OF ONE-HALF TO ANGUS McDONALD, OF SAME PLACE.

FABRIC-TURFING MACHINE.

SPECIFICATION forming part of Letters Patent No. 492,780, dated March 7, 1893.

Application filed July 5, 1892. Serial No. 438,923. (No model.)

To all whom it may concern:

Be it known that I, MURDICK CAMERON, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Fabric-Turfing Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention is in the nature of a fabric turfing machine, adapted for use in the manufacture of rugs, mats and articles of that class. As is well known, in the manufacture of these rugs, especially in the grades which are generally known as "hand or home-made rugs," the rug is formed by interweaving into a fabric or textile ground work, with a loop-like stitch, a thread-like turfing material. This process, which is known as "turfing," gives the pliable turf-like body to the rug.

The object of my invention is to provide a simple and efficient machine, by the use of which these rugs &c. may be made with an increased facility and at a relatively low cost.

To this end, I employ a device, the preferred form of which is illustrated in the accompanying drawings. This preferred construction, which is in the nature of a hand device, was designed especially for general domestic use.

In the accompanying drawings like letters referring to like parts throughout the several views,—Figures 1 and 2 are views in side elevation, some parts being broken away, showing the machine as at work, and illustrating the extreme positions of the turfing mechanism, under the action of the machine. Figure 3 is also a side elevation, corresponding in positions of the parts to Fig. 2, certain of said parts being broken away and others being removed. Fig. 4 is a horizontal section of the machine taken on the line X X′ of Fig. 2. Fig. 5 is a detail of one of the slides used in connection with the turfing mechanism. Figs. 6 and 7 are respectively a side and a rear elevation of the turfing needle; and Figs. 8 9 are respectively, a side and a front view of the loop-holder. Fig. 10 is a horizontal section taken on the line Y Y′ of Fig. 3, showing the form of clamp used for securing the needle and the loop-holder to their respective carrying arms. Fig. 11 illustrates a modified construction, by means of which the needle and loop-holder may be secured to their carrying parts.

A represents the fabric forming the ground work for the rug or similar article, and B represents the yarn-like turfing material, as shown, wound upon a spool B′.

C C′ is a movable support, of which C is the base, and C′ a vertical standard rising therefrom. The base C is cut away at C^2, to provide a central passage for parts of the turfing mechanism.

The spool B′ holding the turfing material is carried by the support C C′, being mounted at the forward part of the base C, on a suitable spindle C^3 and held in position under a slight friction against rotary motion, by means of the spring finger C^4, pivoted to the vertical standard C′.

D is the needle and E is the loop-holder, working through the central opening C^2 of the base C; both of which parts are removably and adjustably secured one to each of the lower ends of a pair of carrying arms F. As shown, they are secured to the arms by means of clamps F′ and clamp-screws F^2. It may be here noted, that the shanks of both the needle and the loop-holder and the engaging portions of the clamp F′ and the arm F are beveled forming a dove-tail joint when the said parts are clamped together; thus securing the same against lateral displacement. As is evident, with this form of clamps, both the needle and the loop-holder may be vertically adjusted, to give the desired depth of stroke through the fabric requisite for the production of a turf body, of the desired thickness.

The arms F are both pivoted at their upper ends, as shown at *g* to independent vertically movable slides G, working in dove tailed grooves G′ cut in the vertical standard C′. At their lower ends, these arms F are permitted a limited oscillatory motion, by means of the slot and screw engagement F^3 with the lower ends of the said slides G. Normally, these arms are both held in their extreme forward positions, as shown in Figs.

2 and 3, by means of the springs F^4 secured at one end to the said slides and at their other ends to the respective arms F. These arms F together with their respective plungers G, are given their vertical reciprocations, moving in reverse directions, through the connecting links H, connecting the same to a common oscillating operating lever K. This oscillating lever K is provided with a handle K′ and its pivot screw K^2 is secured to the vertical standard C′.

L is a vertically adjustable stop-plate, adjustably secured to the standard C′, by means of the slot and screw engagement L′. By means of this stop-plate the upward strokes of both the needle and the loop-holder carrying-arms, may be limited, to adapt the same to the variable strokes, required under the adjustments of the needle and the loop-holder.

It may be here observed, that, to prevent the drawing of the turfing material, and hence to preserve an equal body to the rug, the loop-holder should be held in its lowermost position or at a constant depth through the fabric ground work, during all of the time the needle is receiving its stroke.

It should be noted that the pivotal connections of the links H with the lever K are below and on opposite sides of the fulcrum of said lever; and hence reverse movements of the needle and loop-holder with respect to each other will be produced under any movement of the said lever. More particularly stated, the relations of the pivot connections of the links H to the lever K and the arms F, are such, that, under the operating motion of the said lever K, the needle and the loop-holder will be given their reciprocating motions, up and return in succession; the one receiving its motion while the other, remains substantially stationary in its lowermost position. This is possible in virtue of the fact, that the pivotal connections of the links are, during the greater part of the movement of the lever, being moved in the vicinity of the dead center or transversely to their respective links. A slight movement is of course, given the lowered arm F during the reciprocation of the other arm F. To prevent the drawing of the turfing material under this slight action, the clamps F′ of the carrying arms F are thrown, when in their lowermost positions, below the lower edge of the support C, so as to slightly depress the fabric ground work A, and cause the same to follow in contact therewith, during the short interval of time, in which the absent member is receiving its reciprocation. Hence, the one clamp F′ will be brought into contact with the fabric ground work, before the other is raised from the same, thus insuring an equal depth of turfing.

The needle carrying arm F has a cam surface *f* on its forward edge, which when the arm is thrown down is brought into engagement with a resistance block M, and by the camming action of said engagement, the said arm with the needle is thrown into its rearmost position, as shown in Fig. 1 of the drawings.

The resistance block M is, as shown, in the form of an eccentric which is held in position against the side of the vertical standard C′, by means of a set-screw M′. This eccentric affords a means of adjustment, to compensate for the wear on the parts, as well, as in the initial setting of the same. This eccentric which throws the needle to the rear, by its engagement with the cam surface *f* of the needle carrying arm on its down stroke, is set in such a position, as will permit the maximum forward throw of the said needle, under the upward movement of its said carrying arm, which may be required to give the coarsest desired feed. This forward movement of the needle arm is variably intercepted, to vary the step of the feed, by an adjustable stop, as shown, in the form of a slotted block M^2 secured by means of a set-screw M^3, to the side of the vertical standard C′.

The turfing material, in passing from the spool to the needle is guided through the eyes N N′ projecting respectively from the vertical standard C′ and the base C. The base C is also preferably provided with finger-pieces C^5, by means of which the machine may be more readily guided when at work.

In the modification shown in Fig. 11, both the needle and loop-holder, are slotted at their upper ends and are secured to their respective arms F, by means of screws F^5.

The operation of the machine is as follows;—The needle having been threaded for use, may be started to work by moving the parts into the position shown in Fig. 1. Then, by reversing the lever K K′, as shown in Fig. 2, the loop-holder will be thrown down through the perforation formed by the needle, holding the loop and preventing the same from following the needle on its up stroke. As the needle on its up stroke is withdrawn from the fabric, it will be thrown forward by the spring F^4 against the stop M^2; and hence, on the next succeeding down stroke of the needle, it will enter the fabric, a step in advance of the loop-holder, which is then in its lower position extending through the fabric. On the down stroke of the needle and after the same has passed through the fabric, the cam surface *f*, of the needle carrying arm F, is brought into contact with the resistance block M, and the needle will be forced to the rear with reference to the support. Or more properly speaking, as the needle in the fabric serves as a base of resistance, the support will be drawn forward with reference to the needle, thus giving the advancing movement to the machine. During almost the entire advance movement of the support, the loop-holder is held from moving therewith, by its engagement with the fabric, its spring F^4 yielding to permit the support to advance. At the final upward movement of the loop holder, it will be disen-

gaged from the fabric when it will be immediately thrown forward into its normal position by its spring. By continuing this action, through the hand-lever K K′, the turfing yarn will be looped through the fabric and the machine be advanced over the same, producing the turf-like body on the other side of the fabric.

It is obvious that the machine may be readily made to follow any pattern or design, which may be marked upon the ground work or back of the fabric, producing a corresponding design on the face of the rug. In this way, rugs or mats may be readily and cheaply made of any desired design. The machine could also be employed in many kinds of fancy work, such as embroidery. It will also be readily understood, that while my invention as shown and described, is in the nature of a hand operated device, the principles of the same might be embodied into machines to be worked by means of power appliances; and also that the machine instead of being movable over the fabric, might be stationary, and the said fabric be made to travel under the action of the feed. It should be further noted that the sliding base C of the support, is made convex in form, so as to bear on the fabric at the edge of the central opening C^2. In virtue of this feature, the support will slide freely over the fabric and the draw on the fabric in the turfing action of the needle and loop-holder will be at the margin of the central opening C^2.

What I claim, and desire to secure by Letters Patent of the United States, is as follows:

1. A fabric turfing machine comprising the support adapted to rest upon and be moved over the fabric, the reversely reciprocating arms carrying one the needle and the other the loop-holder, and provided each with an enlargement or presser foot and means for reciprocating the arms constructed to throw the presser feet below said support against the back of the fabric for alternately limiting the depth of the loop and holding the fabric to prevent the withdrawal of the loop, substantially as described.

2. In a fabric turfing machine, the combination with the needle and the loop-holder, of the reversely reciprocating arms carrying the same and having an advancing step-by-step motion with respect to each other, and an oscillating lever and links connecting said arms to said lever at points below and on opposite sides of its fulcrum, whereby one of said points will be moving in the vicinity of its dead center, while the other is moving at a point remote from its dead center, and one of said arms will be held in its lower position, while the other is raised and again lowered, substantially as and for the purpose set forth.

3. In a fabric turfing machine, the combination with a suitable support, of the slides G, the needle D, the loop-holder E, the reversely reciprocating arms F, carrying one the needle and the other the loop-holder, the springs F^4 interposed between the slides and the arms, a resistance block as M M′ engageable with the cam surface *f* on the needle carrying arm, and an adjustable stop, as M^2 M^3, arranged and operating substantially as and for the purpose set forth.

4. In a fabric turfing machine, the combination with a supporting frame having vertical guides, of slides reciprocating in said guides, vibrating arms pivoted to the slides, and carrying respectively a needle and a loop holder, and springs interposed between the slides and the arms, substantially as described.

5. The combination with a suitable support, of the vertically movable slides G, the reciprocating arms F, carrying one the needle and the other the loop-holder, having their upper ends pivoted to said slides, the springs F^4 tending to throw said arms forward on the support and an adjustable stop, as M^2 M^3, for variably limiting the advance or feed movement of the needle, the cam surface *f*, on the needle bearing arm and the resistance block M M′, operating substantially as described.

6. The combination with the support C C′, having the central passage C^2, of the needle D, the loop-holder E, the arms F, carrying one the needle and the other the loop-holder, the slides G to which said arms are pivoted, the springs F^4 the slot and studs F^3, the cam surface *f* on the needle bearing arm, the resistance block M M′, the oscillating lever K K′ and the links H, and the stops M^2 M^3, operating substantially as and for the purpose set forth.

7. A fabric turfing machine, comprising a frame or support provided with an expanded base, C, adapted to ride upon the fabric and be self-supporting when the fabric is in a horizontal position, having an enlarged central passage C^2, and the vertical standard C′, rising from the base and located slightly to one side of its longitudinal center, so as to expose the passage C^2, and the reversely reciprocating arms, carrying one the needle, and the other the loop-holder, and provided each with an enlargement or presser foot, adapted to work through the said passage, in alternate order, for the purposes set forth, whereby the said machine is self-supporting on the horizontal fabric, the slack will be taken up, the loop will be held, and the work may be seen through the said passage, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

MURDICK CAMERON.

Witnesses:
JAS. F. WILLIAMSON,
EMMA F. ELMORE.