

(No Model.)

2 Sheets—Sheet I.

C. W. WOOD.

MACHINE FOR TURFING FABRICS.

No. 269,770.

Patented Dec. 26, 1882.

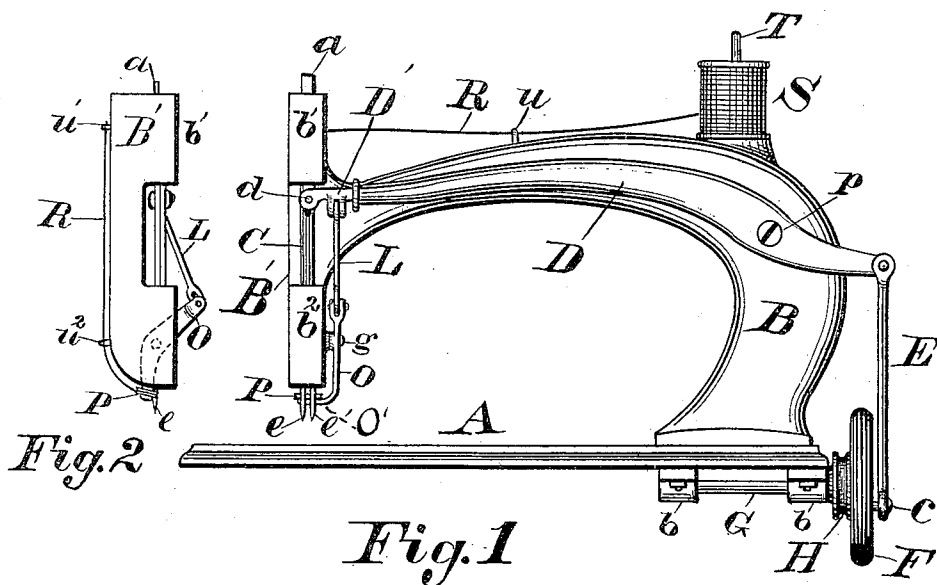


Fig. 10

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(No Model.)

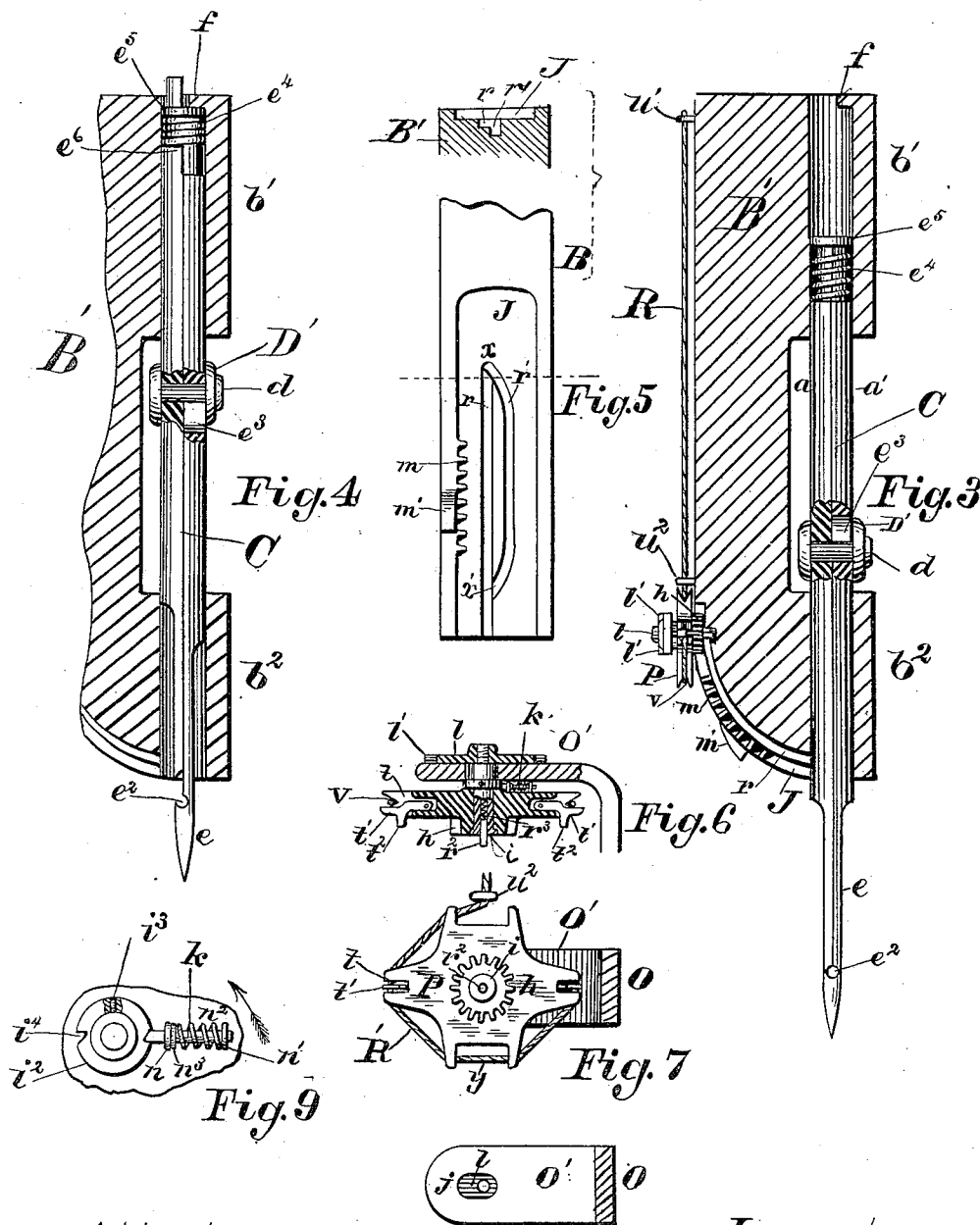
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UNITED STATES PATENT OFFICE.

CASPER W. WOOD, OF BISMARCK, ILLINOIS.

MACHINE FOR TURFING FABRICS.

SPECIFICATION forming part of Letters Patent No. 269,770, dated December 26, 1882.

Application filed December 6, 1881. (No model.)

To all whom it may concern:

Be it known that I, CASPER W. WOOD, a citizen of the United States, residing at Bismarck, in the county of Vermillion and State of Illinois, have invented a new and useful Machine for Turfing Fabrics, of which the following is a specification.

My invention relates to a machine for producing on cloth or other textile fabrics a thick woolly surface by looping yarn or similar material through the cloth, leaving the ends free and protruding. This process, known as "turfing," has been employed with very beneficial results in the making of mittens and similar articles of apparel, and adds greatly to the warmth and wearing qualities of said articles; but as heretofore accomplished by hand it is a very tedious operation, and so much time is consumed in the making of the articles as to render them very expensive. My object is therefore to provide a machine whereby the operation of turfing may be rapidly and accurately performed, and thus cheapen fabrics of this class. This object I attain by the mechanism shown in the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a side elevation of my machine; Fig. 2, a front elevation of the head of the same. Fig. 3 is a sectional elevation of the head; Fig. 4, a similar view, showing the needle in a different position. Fig. 5 is a detail view of the cam-grooves and toothed rack which operates the threading device, shown as developed on a straight line, and also showing a section of the same at the upper point of intersection of the grooves. Figs. 6, 7, 8, and 9 are detailed views of the threading device, referred to hereinafter; and Fig. 10, a view showing the manner in which the yarn is looped through the fabric.

Similar letters refer to similar parts throughout the several views.

In the drawings, A represents the table of the machine, on which is the main frame B. Secured to the under side of the table A are bearings *b b*, in which is supported a shaft, G, carrying at one end a wheel, F, provided on its inner side with a grooved wheel or pulley, H, to which the power to drive the machine is supplied by means of a belt from any convenient source.

On the outer face of the wheel F is a crank-pin, *c*, to which is connected one end of a pitman, E, connected at its other end to a lever, D, pivoted at *p* to the main frame B, and provided at its outer end with a block or pin, D', which is bifurcated at one end and connected by a pin, *d*, to the needle C, which reciprocates vertically in bearings *b'* and *b''* on the head B' of the main frame B. The block D' slides into the end of the vibrating lever D, which is bored out to receive it, and is thus enabled to adjust itself longitudinally to permit the needle C to move or reciprocate vertically, while the end of the vibrating lever D describes the arc of a circle. The needle C for the greater portion of its length is made round, but is bifurcated at the lower end, forming two prongs, *e* and *e'*, each of which is pointed and provided with an eye, *e''*. These eyes *e''* are formed on one edge of the prong, as shown in Fig. 4, and are partially open on one side. They are so arranged on the edges of the respective prongs as to be closed by the lower forked end of part *a* of the needle when said part *a* is depressed, as shown in Fig. 3. The upper portion of the needle C is composed of two parts, *a* and *a'*, in the one, *a*, of which is a round hole, in which fits the pin *d*, which connects it with the block D', while the other part, *a'*, is provided with a slot, *e''*, which allows a slight vertical movement of the pin *d* and part *a* of the needle C, while the part *a'* remains at rest. A spring, *e''*, at the upper end of the needle, one end of which rests against a collar, *e''*, on the part *a'*, and the other against a shoulder, *e''*, on part *a*, serves to hold the parts *a* and *a'* together, with the pin *d* at the lower end of the slot *e''*, and the eyes *e''* of the needle closed, as shown in Fig. 3.

Pivoted at *g* to the head B' of the main frame B is a lever, O, the end O' of which is bent at right angles and carries the threading device, hereinafter more fully described, the other end being connected by a connecting link or rod, L, to the block D'.

P is a threading-disk, which is provided at one side with a pinion, *h*. This disk is provided with prongs, shaped as shown in Fig. 7, and turns on a stud, *i*, which is shouldered at one end, and after passing through a slotted opening, *j*, in the arm O' is screwed at the other end into a sliding piece, *l*, working in slides *l'* on the arm O'.

Secured to the stud *i*, between the disk P and the arm O', by a small set-screw, *i*³, (see Fig. 9,) is a collar, *i*², provided with notches *i*⁴, diametrically opposite each other, with one of which a pawl or sliding bolt, *k*, working in lugs *n* and *n'* on the side of the disk P, and pressed forward by a spring, *n*², pressing against a collar, *n*³, on the bolt *k*, engages at each half-revolution of the disk P, which is thus held temporarily at rest. The disk P is prevented from turning backward by the peculiar shape of the end of the bolt *k* and the corresponding notch, *i*⁴, each of which has one side beveled off, as shown, whereby said bolt is forced back and out of the notch when the disk is turned forward.

Around the edge of the disk P, which consists properly of a number of prongs, provided with a V-shaped groove, V, is wound the yarn or material with which the turfing is done preparatory to being put into the needle, in the manner hereinafter set forth. In a slot, *t*, at each end of the disk P is pivoted a knife, *t'*, the edge of which stands just below the yarn when wound around the disk. The lower end of the head B' is rounded off on one side on the arc of a circle struck from the point *g* as a center, and is provided with a recess, J, on one side of which are a number of teeth, *m*, with which the teeth of the pinion *h* on the disk P engage, and of which there is a sufficient number to turn said disk one-half of a revolution.

In the bottom of the recess J are two cam-grooves, *r* and *r'*, which come together in the points *x* and *x'* above and below the line of the teeth *m*, the one, *r*, being straight and the other, *r'*, curved. These cam-grooves gradually increase in depth throughout their length, the one *r'* having its deepest point at *x* and the one *r* at *x'*. In these grooves *r* and *r'* works a pin, *r*², fitted in the end of the stud *i*, which is bored out and supplied with a spring, *r*³, against which the end of the pin *r*² rests, and which tends to keep said pin forced outward and against the bottom of the cam-grooves *r* and *r'*.

R is the yarn, which is held on a spool, S, which sets on a spindle, T, on the main frame B, and extends through the eyes *u*, *u'*, and *u*², and is wound partly around the disk P, as shown in Fig. 7, the end being pressed firmly into and held by the groove V.

The operation is as follows: The yarn having been placed in the disk P, as described, with the needle and disk in the relative positions shown in Fig. 3, the wheel F is turned a half of a revolution, thus bringing the needle C to the upper limit of its stroke. The part *a'* on striking the projection or stop *f* is retarded, while the part *a* is carried on, thereby opening the eye *e*² of the needle, as shown in Fig. 4. The disk P is at the same time carried down by the lever O. The pin *r*² in the bottom of the stud *i* moves in the cam-groove *r'*, and throws the disk over until the teeth of the pinion *h* clear those on the side of the recess

J and brings a projection, *t*², on the knife *t'* in line with a lug, *m*, on the head B', thus causing the knife to sever the yarn. The disk P is held from turning by the bolt *k*, engaging with the notch *i*⁴ in the collar *i*² on the stud *i*, and is carried forward until the piece of yarn R', which in the meantime has been cut off from the supply by the projection *t*² of the knife *t'* striking the lug *m'*, is brought into the eye *e*² of the needle C at the point *y*. It will be seen that the projection *t*², coming in contact with the lug *m'*, causes the knife to close, thereby cutting the yarn. The work or material to be turfed is now placed on the table under the needle, and the machine started. As the lever D starts down the eyes of the needle are closed on the piece of yarn R' by the spring *e*⁴, before described, the lever O and disk P remaining stationary during this operation on account of the arm or link L being slotted where it connects with the lever O. As the needle descends the piece R' (of yarn) is pulled from the disk and carried down, and the two ends carried through the cloth or other material by the prongs *e* and *e'* of the needle. As the needle continues to descend the ends of the yarn are drawn from the eyes of the needle, and remain in the cloth or other material when the needle is withdrawn. The disk in the meantime, carried by the lever O, operated by the link L from the block D', has returned to its former position. During this return movement the pin *r*², following the cam-groove *r*, causes the pinion *h* to engage with the teeth *m*, and turns the disk a half-revolution, winding the yarn on the other side, ready to be put into the needle, as before set forth. The cloth or other material is moved slightly at each stroke until the whole surface is covered or turfed, a piece of yarn being cut off, placed into the needle, and looped through the cloth or other material at each revolution of the wheel F.

With this machine the material for a pair of mittens, or for a hood, may be turfed in a few minutes, which would require by the old method days of labor.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. A threading-disk, P, provided with a cutter or cutters, *t'*, whereby the yarn or equivalent is cut in lengths preparatory to threading, substantially as described and shown.

2. A threading-disk, P, provided with a pinion, *h*, and a sliding bolt, *k*, in combination with the head B', having teeth *m*, and the stud *i*, provided with a collar, *i*², having notches *i*⁴, and means for supporting and reciprocating the disk, whereby said disk is turned a part of a revolution and then held temporarily at rest, substantially as shown and described.

3. The combination of the disk P with the stud *i*, sliding piece *l*, and supporting-lever O, substantially as shown and described.

4. The threading-disk P, provided with the

pinion *h*, cutters *t'*, and sliding bolt *k*, the stud *i*, having collar *i*², formed with notches *i*⁴, and provided with a pin, *r*², and spring *r*³, and the slide *l*, in combination with the frame having the teeth *m*, lug or projection *m'*, and cam-grooves *r* and *r'*, and means for supporting and reciprocating the disk, substantially as shown and described, and for the purpose set forth.

5 5. The needle C, composed of the two parts *a* and *a'*, and provided with a spring, *e*⁴, and the block D', connected to said needle, in the manner described, in combination with the head B', having bearings *b'* and *b*², and stop *f*, substantially as shown and described.

6. The combination of the needle C, made in two parts, *a* and *a'*, and provided with a spring, *e*⁴, the block D, means for operating the same, connecting-link L, lever O, carrying at one end the threading device, substantially as set forth, and the head B', having bearings *b'* and *b*², and stop *f*, and rounded off at the lower end, and provided with the teeth *m*, projection *m'*, and cam-grooves *r* and *r'*, substantially as described and set forth.

CASPER W. WOOD.

Witnesses:

FRANK JOHNSON,
CHAS. A. KRESSMAN.