(Model.)

2 Sheets—Sheet 1.

M. F. CONNETT, Jr.

MACHINE FOR TURFING FABRICS.

No. 332,639. Patented Dec. 15, 1885.

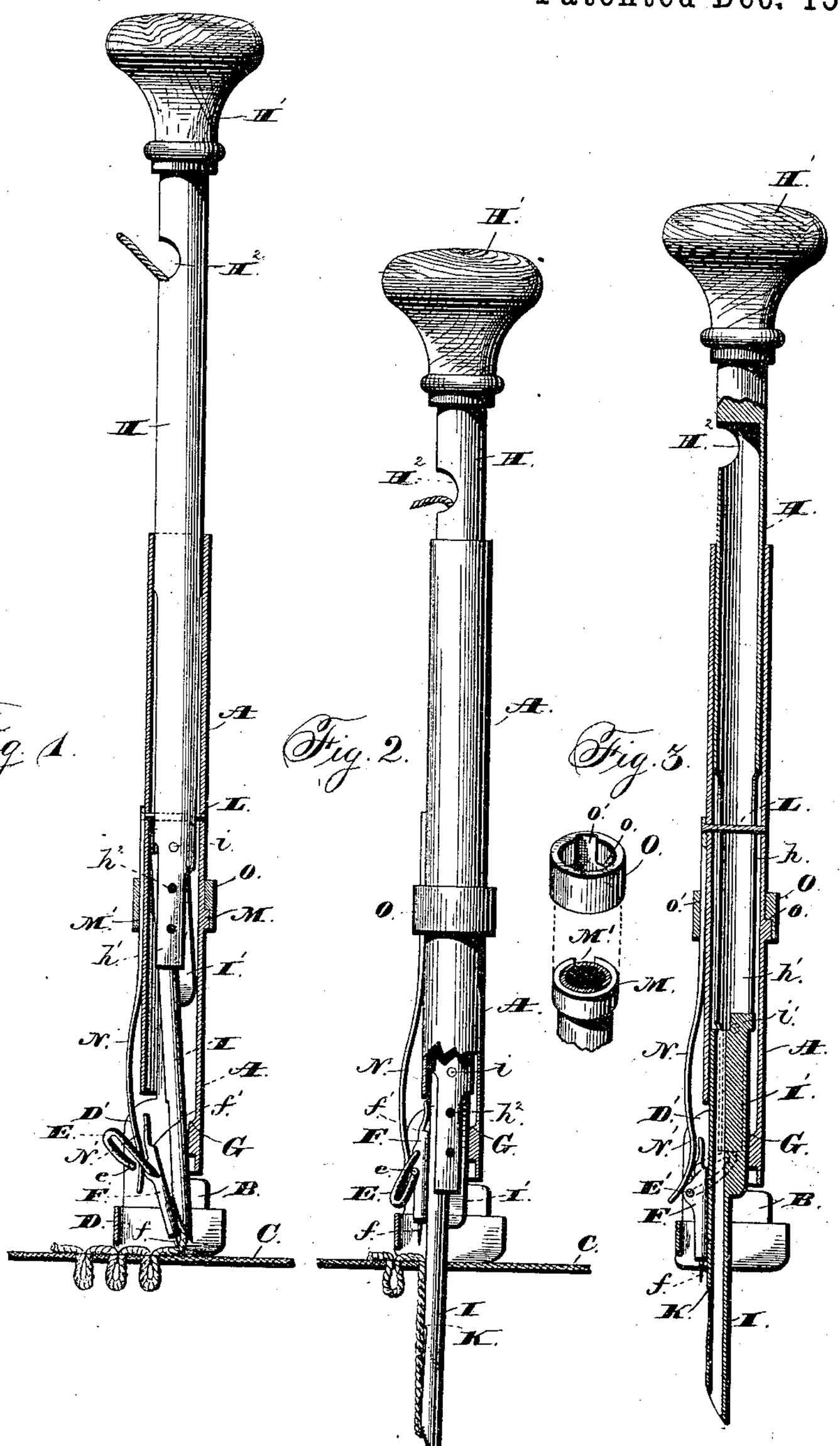

Fig. 1.

Fig. 2.

Fig. 3.

Witnesses:
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(Model.)

2 Sheets—Sheet 2.

M. F. CONNETT, Jr.

MACHINE FOR TURFING FABRICS.

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Fig. 4.

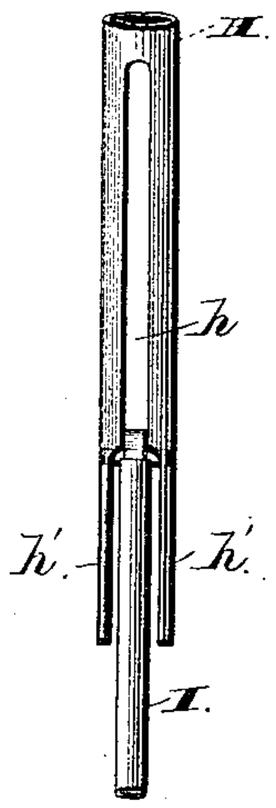


Fig. 5.

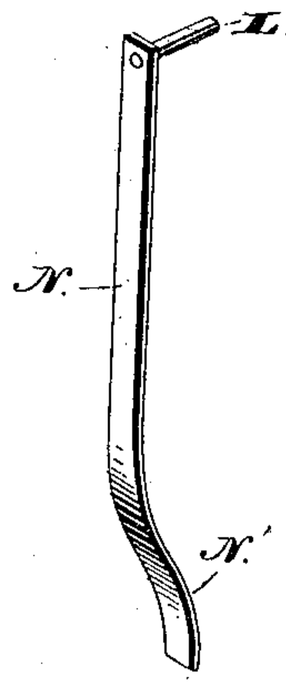


Fig. 9.

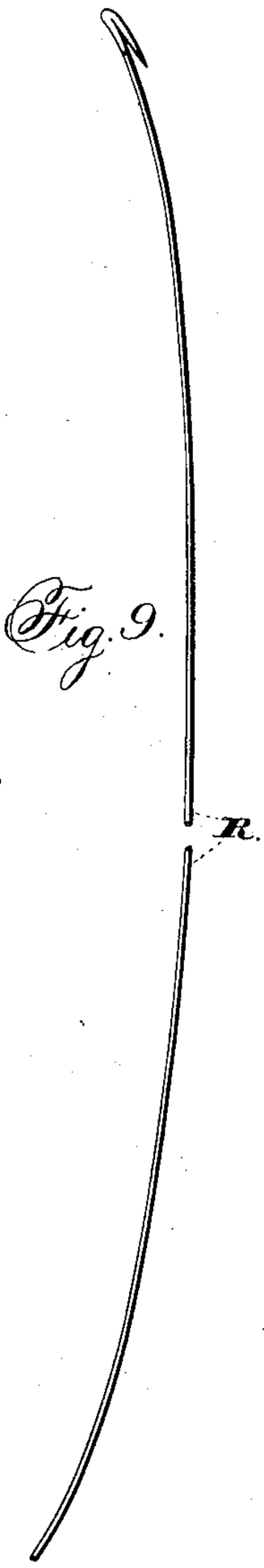


Fig. 6.

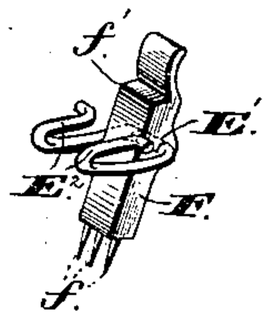


Fig. 7.

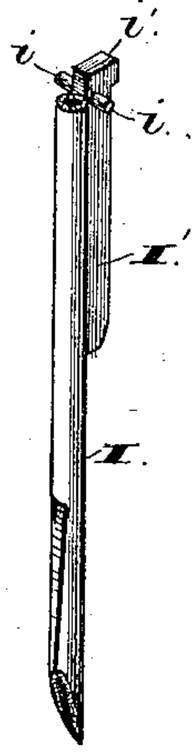
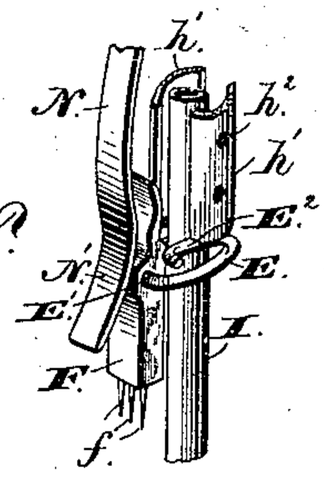


Fig. 8.



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UNITED STATES PATENT OFFICE.

MATTHEW FRANKLIN CONNETT, JR., OF SPRINGFIELD, ILLINOIS.

MACHINE FOR TURFING FABRICS.

SPECIFICATION forming part of Letters Patent No. 332,639, dated December 15, 1885.

Application filed March 11, 1885. Serial No. 158,459. (Model.)

To all whom it may concern:

Be it known that I, MATTHEW F. CONNETT, Jr., of Springfield, in the county of Sangamon and in the State of Illinois, have invented certain new and useful Improvements in Machines for Turfing Fabrics; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which—

Figure 1 shows a view in side elevation of my turfing-machine as ready for action, the needle-bar and needle being raised and a portion of the outside tube being broken away; Fig. 2, a similar view of the machine with the needle-bar and needle thrust down; Fig. 3, a longitudinal sectional view of the machine with the needle-bar and needle in a position between that shown in Figs. 1 and 2; Fig. 4, a view in side elevation of the needle-bar and needle; Fig. 5, a detail view of the spring and attached needle-retaining pin removed from the outside tube or sheath; Fig. 6, a detail perspective view of the impaling-foot; Fig. 7, a detail view of the needle; Fig. 8, a similar view showing the parts in position as where the ends of the fork on the needle-bar end engage the arms of the revolving part or carrier of the impaling-foot, and Fig. 9 a detail view of the needle-threading device which I use with my machine.

Letters of like name and kind refer to like parts in each of the figures.

The object of my invention is to provide an improved machine for turfing fabrics; and to this end it consists in the construction, arrangement, and combination of parts, as hereinafter specified.

In the drawings, A designates the sheath or tubular handle of the machine. This sheath is, as shown, provided at its lower end with the parallel lugs or ears B B, which are intended to rest upon the fabric C to be turfed, and are rounded at their ends, so that the fabric can be fed or passed freely under them without catching. The opening between the lower ends of these lugs is, as shown, closed at its rear end by the plate D, forming a brace between the lugs. The rear of the tube above such lugs is provided with a slot or opening, D′, and the lugs B B are continued upward alongside such slot or opening. In the upper portions of the lugs, to the rear of the passage through the tube A, are journaled the pivots *e e* of the rotary carrier E for the impaling-foot F, to be described more fully hereinafter. The lower end of the tube A, just above the lugs B B, is provided within on its forward side with the shoulder or cam G, whose upper end is beveled or inclined, as shown best in Fig. 3. Fitting and sliding within the sheath or tube A is the tubular needle-bar H, at its upper end provided with a head or handle, H′, and near such end having the opening H^2, through which the yarn or other material used is introduced and fed down through the bar. The needle-bar is at its lower end provided with the longitudinal slot *h*, extending through it from front to rear, and from its lower end up to a point about midway of its length. The arms *h′ h′* of the fork, thus formed, are provided with series of corresponding holes, h^2 h^2, in which can be journaled the opposite ends of the pivot *i* on the upper end of needle I. This needle, which, as shown, is tubular, is at its lower end cut away at an angle to form a point, the edges thus formed being rounded, so that they will not cut the fabric through which the point is thrust. At its upper end the needle has attached to it, and extending down along its front side, the longitudinal rib or lug I′, the lower end of which is beveled or inclined from its outer side inward to the needle. This lug or rib projects above the upper end of the needle, and such projecting portion *i′* has its upper end squared or formed with its top at right angles to the needle, as shown best in Fig. 7. At the top of the needle, in a line to the front of the needle-bore, are the pivots *i i*, adapted to be journaled in either of the pairs of opposite holes in the fork-arms *h′ h′* on the needle-bar. About midway between the plane of the lower end of the lug I′ and the needle-point said needle is notched on its rear side, so as to form the shoulder K at the upper end of the notch. The lower side of said notch is not abrupt, but sloping, as shown in the drawings.

To limit the play of the needle-bar and needle within the sheath A a pin, L, is provided, extending across the sheath and through the slot in the needle-bar. The downward throw of

the bar will then be limited by the striking of the upper end of the slot against the pin, and the upward throw by the contact of the upper end of the lug I′ therewith. Obviously, then, by journaling the pivots of the needle in higher or lower pairs of the journal-openings h^2 h^2 in the bar the amount of play of the bar and needle can be adjusted. By the same means the extent to which the point of the needle will project beyond the lower end or foot of the sheath-tube when the bar is thrust down can also be regulated or adjusted. Upon the outer side of the tube A, below the pin L, is a fixed collar, M, which, in line with said pin, is notched or cut away at M′. Attached to the end of the pin and adapted to extend down along the tube when the pin is inserted in place is the spring N, which is bent so as to tend to stand outward from the tube, except at its lower end, N′, which is bent inward, so as to bear against the outer side of the impaling-foot F at the point at which it is pivoted upon the cross-bar E′ of the rotary carrier E. The spring then tends to keep the cross-bar, and, consequently, the impaling-foot pivoted thereon, pressed inward toward the center of the sheath-tube A.

To keep the spring in place with its operative end bearing strongly inward, a sleeve, O, is placed on the tube and adapted to be slid down over the spring and the collar M, so as to force and hold the spring down in the notch of the collar. This sleeve is formed within with a flange, *o*, cut away at *o′* to admit the passage of the spring. This flange comes in contact with the upper edge of the collar M when the sleeve has been slid down in place over such collar.

As shown in Fig. 6, the rotary carrier E is in general form U-shaped, the cross-bar E′ forming the bottom of the U. The pivots *e e* extend outward from the arms E^2 E^2 of the carrier on a line near the cross-bar E′, and in a plane below that of the cross-bar where the carrier stands with the bar at the inmost point of its travel.

The impaling-foot proper consists of the bar F, pivoted upon the cross-bar E′ of the carrier, and provided at its lower end with a series of needle-points, *f f f*. Its upper end above the pivoted point is on its inner side formed with the shoulder *f′*, adapted to be engaged by the shoulder or abrupt end of the notch on the needle when the latter descends. The action of the spring end when the needle is up keeps the foot normally swung inward and bearing against the needle, so that the shoulder on the foot is in position to be surely engaged by that on the needle as the needle-bar and needle are moved down in the tube A′. By the continued downward movement of the needle after the two shoulders are in engagement the foot is carried downward and then outward, revolving the carrier until the cross-bar thereon carrying the foot is nearly in a vertical plane through the pivots of the carrier. The inclined lower end of the lug I′ on the front side of the needle then strikes the inclined shoulder G within the tube A and rides down over it, so that the needle, as it continues to move down, is swung rearward on its pivots. This swing of the needle forces the foot F farther out, swinging the cross-bar end of the carrier outward and rearward until the ends of the arms E^2 E^2 of the carrier are swung inward and forward into the track of the lower ends of the fork-arms *h′ h′* on the needle-bar. The continued downward motion of the needle-bar then carries the ends of the arms E^2 E^2 downward and outward until the other end of the carrier, upon which the foot F is carried, is above the line between the point of pressure of the spring on the foot and the axis of rotation of the carrier. The pressure of the spring will then carry the foot quickly inward, completing the revolution of the carrier and bringing the foot again against the side of the needle. As the needle now rises and the lug or rib on it passes up off of the shoulder within the tube A, the action of the spring forcing the foot F forward against the needle causes the latter to swing forward on its pivot into its original position. With this construction, the one spring serves to assist in properly actuating and moving the carrier and foot, and to keep the needle normally pressed forward.

The operation of my turfing-machine is as follows: The yarn or other material to be used is threaded through the needle-bar and needle by the threading-wire R, which at one end is hooked or barbed, as shown in Fig. 9. The end of the wire is passed through the needle and needle-bar and out through the opening in the side of the upper end of the bar. The yarn is then hooked or engaged by the barb, and the wire is then pulled down and out, drawing the yarn with it. The fabric which is to be turfed is, as usual, to be stretched on a frame. The needle-bar and needle being retracted, the sheath-tube A is placed with its lugs B B resting on the fabric. Both the needle-point and the impaling-points on the impaling-foot are now raised above and out of contact with the fabric. The end of the yarn extending beyond the needle-point rests upon the fabric below the impaling-foot. The needle-bar is now thrust down, piercing the fabric and carrying the yarn down through it. After the needle has descended a short distance the shoulder on it strikes the shoulder on the impaling-foot, and thus causes the foot to move down until its impaling-points *f f* impale the yarn end lying on the fabric. This yarn end is thus held from being pulled down through the fabric by the continued downward movement of the needle. The lug on the needle now comes in contact with the shoulder within the front of the sheath-tube, and the needle is thus swung back to feed the fabric along for another stroke. As the needle is swung back the impaling-foot, as described, moves back with it, thus keeping the

impaling-points at the same distance from the needle as at first. By the continued rearward swing of the needle as the latter moves farther downward the impaling-foot is carried backward and outward, and the carrier is rotated until the ends of its arms are swung inward under the descending fork-arms h^2 h^2 on the end of the needle-bar. These carrier-arms are then struck and forced downward by the end of the needle-bar. This swings the end of the carrier upon which the foot is pivoted rearward and upward, thus lifting up or retracting the foot, so that its impaling-points are withdrawn from the yarn on the fabric. As soon as the cross-bar on the carrier rises above the line between the point of contact on the spring and the pivotal axis of the carrier, the spring will force the foot and bar inward and upward, causing the carrier to complete its revolution quickly. The needle-bar and needle are then raised, leaving a loop of yarn on the under side of the fabric. As soon as the needle clears the fabric, which, as described above, has been moved or fed rearward by the swing of the needle, the spring N causes it to swing quickly forward in position for another stroke to form another loop. As the needle descends each successive time, the impaling-foot impales with its points the yarn between the last loop formed and the needle, so that the passage of the needle downward will not pull out such preceding loop, but the yarn will be compelled to feed down through the bar and needle enough for the new loop.

As indicated hereinbefore, the extent to which the needle will project through the fabric can be regulated by journaling the needle-pivots higher or lower in the needle-bar fork. The size of the loop can thus be regulated as desired.

Instead of making the needle-point by cutting away the lower end of the needle at an angle, I contemplate using a hollow needle with solid point, an opening being provided in the side of the needle near its point for the passage of the yarn.

In the drawings the carrier is shown as being formed of a small metal rod or wire having its main portion bent into a U shape, with the bottom of the U made straight, to form the cross-bar pivot for the impaling-foot. The outer ends of the U are bent backward parallel with the arms, and then outward at right angles to form the pivots for the carrier. I do not limit myself to such construction, as the carrier can obviously be made in other ways, as by bending a bar of metal into U shape and fixing or attaching the pivots to its arms in any desired way.

The brace D, as the carrier rotates with the impaling-foot, serves the purpose of restraining the outward swing of the lower portion of the foot, so as to keep such portion substantially parallel to the needle. As the foot rises it slides up along the inner side of this brace.

Instead of making both arms of the U-shaped rotary carrier long enough to be engaged, as described, by the ends of the fork-arms of the needle-bar, one only of the arms of it can be made long enough to be struck by the bar end.

Having thus described my invention, what I claim is—

1. In a turfing-machine, in combination with the tubular needle, the tubular needle-bar provided at or near its upper end with a side opening for the passage of the yarn or other material, substantially as and for the purpose described.

2. In a turfing-machine, in combination with the tubular needle, the tubular needle-bar provided at its upper end with a knob or handle and near such end with a side opening for passage of the yarn or other material used, substantially as and for the purpose described.

3. In combination with the tubular sheath, the lug within the sheath on its front side near its lower end, the needle-bar sliding within the sheath, and the needle pivoted on the bar and provided on its forward side with a cam-lug, substantially as and for the purpose described.

4. In combination with the tubular sheath, the lug within it on its forward side having its upper end inclined, the needle-bar sliding within the sheath, the needle pivoted in the lower end of the bar, the cam-lug on the forward side of the needle, and a spring adapted to swing the needle forward on its pivot, substantially as and for the purpose described.

5. In a turfing-machine, in combination with the needle provided with pivot lugs or pins, the needle-bar slotted or forked at its lower end and provided with a series of holes in its forked arms, adapted to receive the pivot-lugs on the needle, substantially as and for the purpose described.

6. In a turfing-machine, in combination with the tubular needle provided with pivot lugs or pins on opposite sides at or near its upper end, out of line with its bore, the tubular needle-bar forked at its lower end and provided with one or more pairs of opposite holes in the fork-arms, to receive the pivot lugs or pins on the needle, substantially as and for the purpose described.

7. In combination with the tubular handle or sheath, the needle-bar slotted or forked at its lower end, the needle pivoted in the fork of the bar, and a pin passing across the sheath and through the slot in the needle-bar, substantially as and for the purpose described.

8. In combination with the tubular sheath, the slotted needle-bar sliding therein and the needle pivoted on the bar, the stop-pin passing through the sheath and the slot in the needle-bar, and the spring attached at one end to the pin and at the other adapted to apply its force to swing the needle on its pivot, substantially as and for the purpose described.

9. In combination with the stop-pin and the spring N, attached thereto and extending along

the tubular sheath A, the collar on the sheath cut away to admit the passage of the spring, and the sleeve on the sheath adapted to be slid over the spring, and the collar to hold the spring pressed down into the cut or notch in the collar, substantially as and for the purpose described.

10. In a turfing-machine, an impaling-foot provided with a series of impaling-points, in combination with means for causing the impaling-points to impale the yarn in the rear of the needle, substantially as and for the purpose described.

11. In combination with the needle of a turfing-machine, the impaling-foot, and means, substantially as shown, whereby the foot is caused to descend to impale the yarn between the needle and the loop last formed as the needle descends, and is retracted as the needle reaches the end of its downward stroke, substantially as and for the purpose described.

12. In a turfing-machine, the combination, with the needle, of the impaling-foot, and a rotary carrier on which the foot is pivoted, substantially as and for the purpose described.

13. In combination with the sheath, the needle-bar, and the needle provided with a notch or shoulder, the rotary carrier pivotally attached to the sheath, the impaling-foot pivoted on the carrier, provided on its inner side with a shoulder, and adapted to be engaged by the notch or shoulder on the needle as the needle moves downward, substantially as and for the purpose described.

14. In a turfing-machine, in combination with the reciprocating and swinging needle provided with a notch or shoulder, the rotary carrier, the impaling-foot pivoted thereon and provided on its face toward the needle with a shoulder adapted to be engaged by the notch or shoulder on the needle in the downward stroke of the latter, and a spring adapted to keep the foot normally pressed against the needle, substantially as and for the purpose described.

15. In combination with the tubular sheath provided with an internal lug on its forward side near its lower end, the rotary U-shaped carrier pivoted in lugs on the rear of the tube, the impaling-foot pivoted on the cross-bar of the carrier, the spring pressing inward upon the foot at its pivotal point, the reciprocating needle-bar within the sheath, and the needle pivoted to the bar and provided with a cam-lug adapted to engage the lug within the sheath-tube, substantially as and for the purpose described.

16. In a turfing-machine, in combination with the sheath or tubular handle provided with an internal lug near its lower end, the needle-bar within the tube forked at its lower end, the needle pivoted in this fork and provided with a lug inclined on its lower end, to engage the lug on the tube, and with a notch or shoulder on the opposite side from the lug, the U-shaped rotary carrier pivoted in lugs on the tube, the impaling-foot provided with a shoulder adapted to be engaged by the notch or shoulder on the needle, and a spring pressing inward against the foot at the point at which it is pivoted on the carrier, substantially as and for the purpose described.

17. In combination with the reciprocating needle-bar forked at its lower end, the needle pivoted at or near its upper end in the fork of the bar, and provided with a cam-lug and with a notch or shoulder on its opposite side, the tubular sheath, the lug within the sheath, the lugs or ears extending outward from the opposite slotted side of the sheath, the U-shaped rotary carrier pivoted in such lugs or ears, the impaling-foot pivoted upon the cross-bar of the carrier and provided with a shoulder on its side toward the needle, the spring pressing the foot inward toward the needle, and the brace and guide-plate D, substantially as and for the purpose described.

In testimony that I claim the foregoing I have hereunto set my hand this 4th day of March, 1885.

MATTHEW FRANKLIN CONNETT, JR.

Witnesses:
J. WILL BROWN,
I. K. BRADLEY.