(No Model.)

2 Sheets—Sheet 1.

O. HUFF.

RUG MAKING MACHINE.

No. 272,697. Patented Feb. 20, 1883.

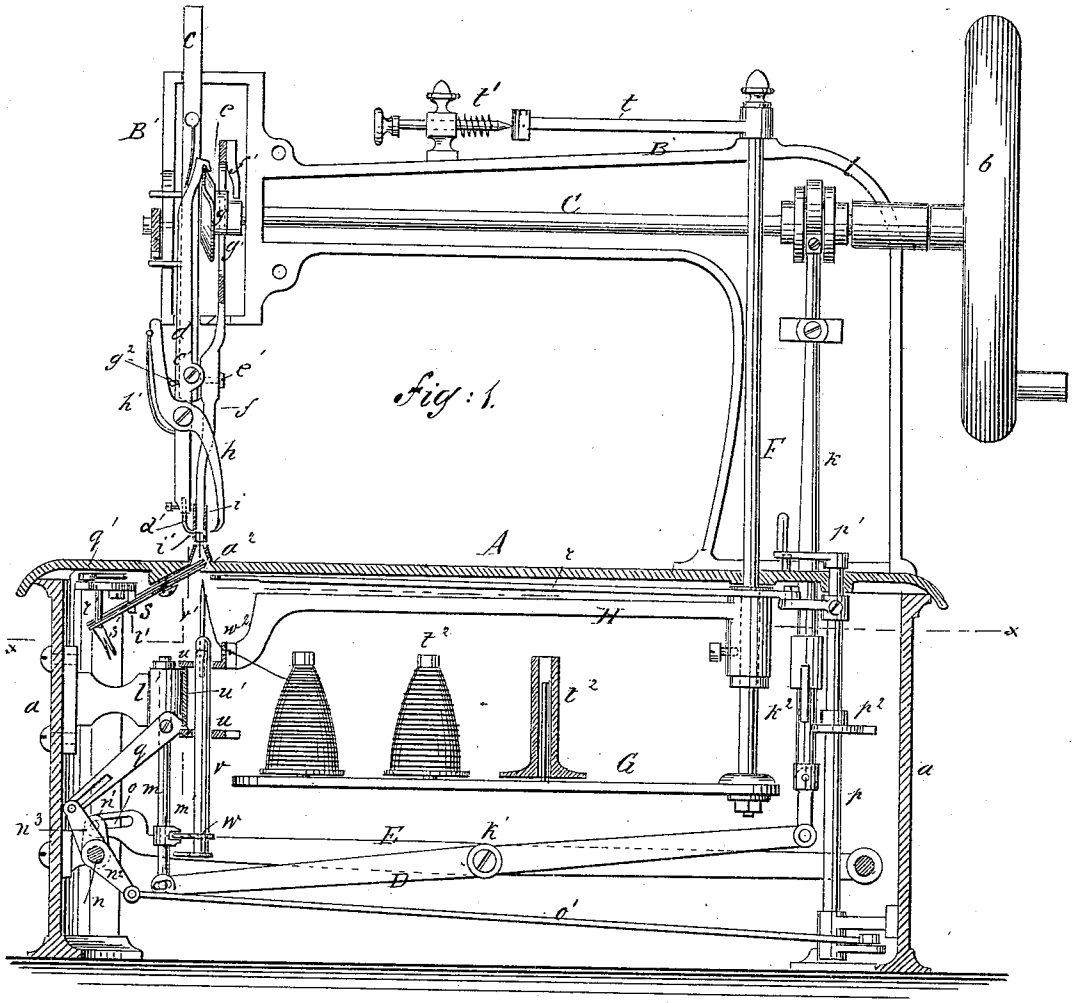
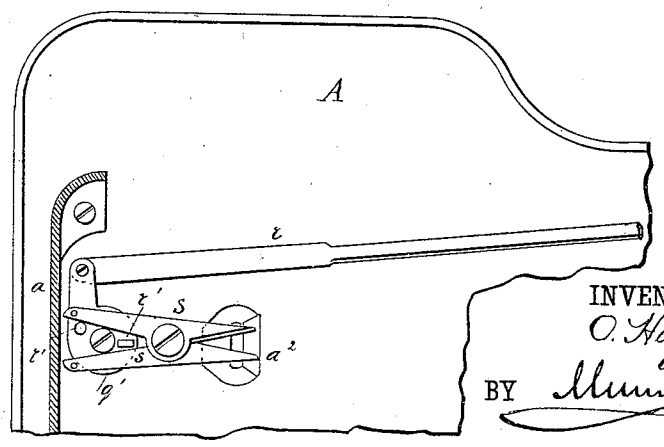


Fig: 1.

Fig: 2.



WITNESSES:

Chas. Nida.

C. Sedgwick

INVENTOR:

O. Huff

BY Munn & Co

ATTORNEYS.

N. PETERS, Photo-Lithographer, Washington, D. C.

(No Model.) 2 Sheets—Sheet 2.

O. HUFF.

RUG MAKING MACHINE.

No. 272,697. Patented Feb. 20, 1883.

Fig: 3.

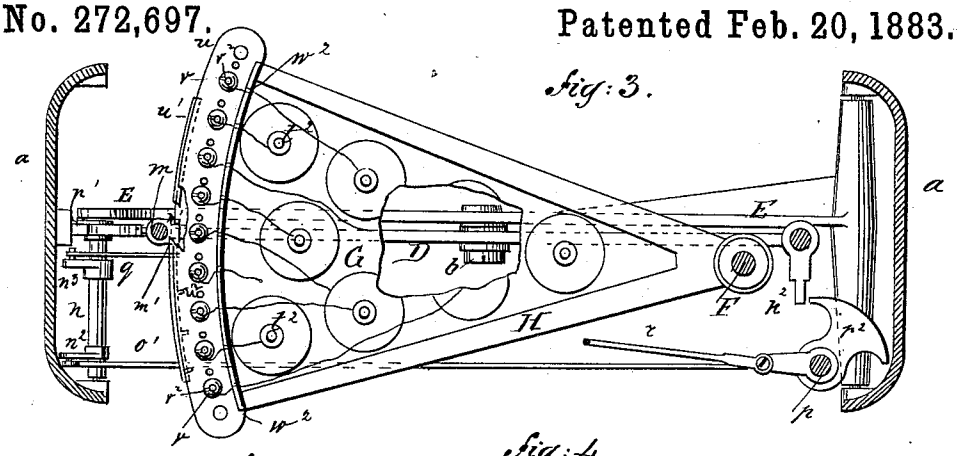


Fig: 7.



Fig: 4.

Fig: 5.

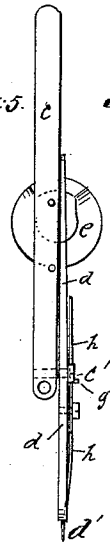


Fig: 6.

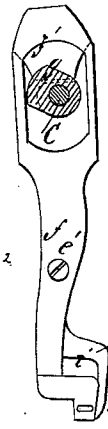


Fig: 8.

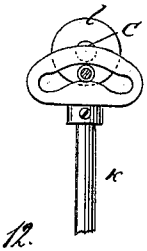


Fig: 13.

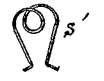


Fig: 12.

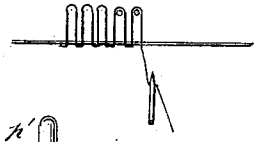


Fig: 11.

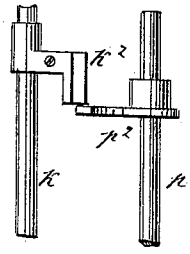


Fig: 9.

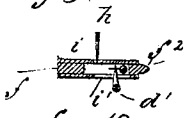
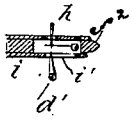


Fig: 10.



WITNESSES:

Chas. Nida.

H. Sedgwick

INVENTOR:

O. Huff

BY Munn & Co

ATTORNEYS.

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

ORISON HUFF, OF GOODWIN'S MILLS, MAINE.

RUG-MAKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 272,697, dated February 20, 1883.

Application filed December 13, 1881. (No model.)

To all whom it may concern:

Be it known that I, ORISON HUFF, of Goodwin's Mills, in the county of York and State of Maine, have invented a new and useful Improvement in Rug-Making Machines, of which the following is a full, clear, and exact description.

My improvements relate to machines for the manufacture of rugs in which a piled surface of yarn or worsted is formed upon a backing of canvas or similar material; and the invention consists in the mechanism for forming the loops or stitches, and for changing the yarn so as to vary the colors, as hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a vertical longitudinal section of the machine. Fig. 2 is a partial inverted plan of the bed. Fig. 3 is a horizontal section on line *x x* of Fig. 1. Fig. 4 is a view of the machine in section transversely. Fig. 5 is an elevation of the looping-hook and carrier. Fig. 6 is a side view of the feed-bar. Fig. 7 shows the lifting-cam of the feed-bar. Fig. 8 shows the pitman-connection of the needle-driver. Figs. 9, 10, and 11 are details views; and Fig. 12 represents a piece of fabric having a series of loops formed thereon.

A is the bed, supported by pillars *a a* at its ends, and formed with a needle-slot, a^2, and with a hollow arm, B, at its upper side, in which the main shaft C is carried.

b is a crank-wheel on the shaft, by means of which the latter may be turned.

On the end of arm B is a hollow head, B′, carrying the feed and hooking mechanism, as next described.

c is a guide-bar, fitted for vertical movement in head B′.

d is a bar pivoted by a pin, *c′*, at the lower end of bar *c*, and provided at its lower end with a hook, *d′*.

e is a cam-disk on the end of shaft C, having its edge engaged by a grooved or hook-shaped flange on the upper end of bar *d*, by which the cam vibrates the hook-bar in a plane at right angles to the feed.

f is the feed-bar, also pivoted by a pin, *e′*, on the lower end of bar *c*.

g is a cam on shaft C, working in a slot of feed-bar *f*, (see Figs. 1 and 6,) for vibrating the bar laterally on its pivot *e′*, and *g′* is a second cam on the shaft, (shown in Figs. 1 and 7,) taking beneath an arm, *f′*, on the end of bar *f*, to raise the bar, and consequently serving to raise the bar *c* and its attached parts. These cams give to the bar *f* the four motions required for the feed, the hook-bar *d* partaking of the rising and falling motions, besides having its separate vibrating movement.

On the vibrating bar *d* is pivoted a hook, *h*, extending at the side of the feed-bar opposite to hook *d′*, and engaged at its upper end by a spring, *h′*, attached on bar *d*, the spring tending to move the hook *h* toward hook *d′*, the movement being limited by a pin, g^2, on bar *d*.

To the lower end of feed-bar *f* curved plates are attached to form a hollow foot, *i*, one side of which has a slot, *i′*, for the hook *d′* to enter, while the other side has a small aperture for the end of hook *h*. A bent arm, f^2, attached on bar *f*, extends in front of the foot *i*.

The needle and other mechanism are mainly located beneath bed A, and are as follows:

D is a rocking lever, pivoted at *k′*, and operated by a pitman, *k*, extending from the rear end of the lever upward to and connecting by a yoke (shown in Fig. 8) with a crank, *l*, on shaft C.

m is a rod pivoted to the forward end of lever D, and extending upward through a fixed guide, *l′*.

m′ is a collar on rod *m*, formed with a horizontal slot, for engaging the needle-holders.

The lever D is pivoted on a second lever, E, which is pivoted by its T end in the back pillar *a*, while its forward end extends to near the opposite pillar *a*, where a horizontal rock-shaft, *n*, sustained in suitable bearings, engages by a crank-arm, *n′*, a slot, *o*, formed in the end of lever E. A rod, *o′*, from a second arm, n^2, on shaft *n* passes to and is connected to a vertical crank-shaft, *p*, that extends above bed A, where it is provided with a handle, *p′*. A third arm, n^3, on shaft *n* connects by a pin and slot with an arm, *q*, pivoted on guide *l′*, for purposes hereinafter described. A rod, *r*, from an arm on shaft *p* passes to and is connected to a turning-plate, *q′*, attached beneath bed A, (see Fig. 2,) which plate has pins *r′ r′*, taking between two shear-blades, *s s*, that

are pivoted upon the bed A in position for cutting the yarn at the needle-slot a^2. The shears are opened by a spring, s', (see Fig. 13,) and closed by the movement of plate q'. There is also fixed on shaft p an arm, p^2, that is moved when the shaft is partially rotated, as hereinafter described, beneath a projection or flange, k^2, on the pitman k, (see Fig. 11,) so as to arrest the downward movement of the pitman while the needles are being changed. Through the connections, as described, the movement of shaft p, by means of handle p', a quarter-turn (more or less) carries lever E down, and with it the lever D. It also moves the plate q', thereby closing shears s; and, further, it moves the arm q out of one of the notches, u^2, hereinafter referred to, so as to allow the shifting of the needle-frame.

F is a vertical post extending from the top of arm B down through the bed A, and carrying at its lower end a bobbin-holder, G, and needle-frame H.

On the upper end of the post F is fixed a quadrant, t, having notches in its outer end, corresponding in number with the bobbins, and engaged by a spring-acted retaining-pin, t', mounted in a lug on arm B.

The bobbin-holder G is a plate hung to swing loosely on post F, and provided with pins t^2, that carry the bobbins, as shown.

The needle-frame H (shown most clearly in Fig. 3) is fixed on post F by the set-screw shown in Fig. 1, or other suitable means, to swing with it, and is provided at its outer end with rails u u, curved in the arc of a circle described from the post F as a center, the upper rail resting for support on a plate, w', fixed on the guide l'.

The needle carriers or holders consist of rods v, extending through the rails u, so that the rails serve as guides in which the rods slide. The needles v' are set in recesses in the upper ends of rods v, and are held by set-screws v^2, (shown in Fig. 4,) countersunk, in order that the said rod v may slide through the rail u. On the lower ends of rods v are flanges or projections w, for engaging the slotted collar m' of rod m.

On the needle-holders v are attached guide-pins w', extending through the lower rail, u, to prevent any turning movement. The lower rail, u, as shown most clearly in Fig. 4, has notches or slots u^2 between the needle-holders, for engagement, by the inner end of arm q, before mentioned, when the parts are in operative position, so as to hold the carrier H securely. The upper rail is fitted with a plate, w^2, (shown in Figs. 1 and 3,) apertured to serve as a guide for the yarns, which pass from the several bobbins through plate w^2 to the eyes of needles v'.

In the operative position of the parts, as shown in Fig. 1, the lever E is in a raised position, and needle-lever D being also raised, the needle-holder that is engaged with the reciprocating rod m is sustained slightly above the holder not in use. The change from one yarn to another is made during the stoppage of the machine as follows: The handle of shaft p is first turned by hand to the left, shaft n is thereby turned through the connections hereinbefore described, and by the connections of the shaft n to the lever E the lever is carried down. The lever D moving down with the lever E, the previously-used holder is brought down from the slightly-elevated position shown in Fig. 1 into line with the other holders. The movement of shaft n, before described, also turns the arm q out of the notch u^2 in the rail u. At the same time the shaft p, acting through the rod r, gives a partial revolution to the plate q', and the pins r' on the plate moving the shears s, the yarn is cut. Simultaneously with these movements the arm p^2 on the shaft p is carried beneath the projection k^2 on the rod k, and thereby prevents any downward movement of the rod while the needles are being adjusted. The carrier H can then be moved by taking hold of quadrant t, after pulling back the pin t', and either of the needle-holders can be brought into connection with the collar m', which being done the pin t' is released to hold the parts. The shaft p is then to be turned back to cause the parts to resume the operative position shown in Fig. 1.

In the operation of the machine, after the foundation fabric is passed underneath the presser-foot i, the yarn is carried by the needle through the slot a^2 upward through the fabric and into the hollow foot i. The hook d' is carried by the action of the cam e through the aperture i' in the side of the presser-foot and catches the loop of yarn, as shown in Fig. 9. The presser-foot is then moved forward by the action of the cam g upon the bar f, while the loop is held by the hook d', and the needle at the same time drops, thus drawing the yarn out to the length required for the stitch. The feed-bar f and its attached parts then rise, and the presser-foot moves backward, the hook d' moves outward, and at the same time the hook h is carried into the presser-foot i, as shown in Fig. 10, to engage with the loop as it is released from the hook d'. The hook h, being of flexible material, bends to accommodate the forward movement of the presser-foot, at which time the two hooks occupy the relative position shown in Fig. 10, after which the presser-foot moves back, the hook d' withdraws, and hook h enters in order to hold the old loop while a new one is being formed. It will be understood that hook h, being carried on the bar d, will always maintain its distance from hook d', and the alternate in and out movement of the two hooks is thus insured. In this manner a row of loops or stitches is formed across the face of the foundation fabric, as shown in Fig. 12. The fabric is then to be turned around and a second row formed, and so on to the extent required. In this manner, by changing the yarn, striped and other figured rugs can be manufactured.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination of feed-bar *f*, having apertured foot *i*, looping-bar *d*, hook *d'*, spring-acted retaining hook *h*, reciprocating needle *v'*, and mechanism for operating the needle and vibrating the feed-bar and hooks, substantially as shown and described.

2. The pivoted hook *h* and spring *h'*, in combination with the vibrating hook-bar *d*, feed-bar *f*, and means for operating the bars *d* and *f*, substantially as shown and described, for operation as set forth.

3. The combination of guide-bar *c* with the pivoted feed-bar *f*, pivoted hook *h*, hook *d'*, bar *d*, and shaft C, provided with cams *e g g'*, substantially as shown and described, for operation as set forth.

4. The combination of post F, quadrant *t*, spring-acted pin *t'*, frame H, having rails *u*, needle-holders *v*, and mechanism for engaging and reciprocating either needle-holder according to the adjustment of the frame, substantially as shown and described.

5. The swinging bobbin-carrier G, pivoted frame H, carrying the needle-holders, and mechanism for reciprocating the needle-holders, substantially as shown and described, combined for operation as set forth.

6. The lever D, means for vibrating the same, and rod *m*, fitted to actuate the needle-holders, combined with the lever E, means whereby the latter may be adjusted, pivoted frame H, and needle-holders *v*, substantially as shown and described.

7. The crank-shaft *n*, rock-shaft *p*, and means for connecting the said shafts, lever E, crank-arm *n'*, pivoted lever D, rod *m*, slotted collar *m'*, needle-holders *v*, and adjustable frame H, having rails *u*, substantially as shown and described, combined for operation as set forth.

8. The combination of shaft *n*, arms n^2 n^3, rod *o'*, shaft *p*, pivoted arm *q*, swinging frame H, having notched rail *u*, and needle-holders *v*, substantially as and for the purposes set forth.

9. The combination of rock-shaft *p*, rod *r*, cam-plate *q'*, shears *s*, and spring *s'*, substantially as shown and described, with the reciprocating needle *v'* and looping devices *d d' i h*, for operation as set forth.

10. The combination, with the shaft C, crank *l*, the lever D, rod *m*, the slotted collar *m'*, and the needle-holders *v*, provided with flanges *w*, of the pitman *k*, provided with the arm k^2, and the rock-shaft *p*, provided with the arm p^2, substantially as described, and for the purpose set forth.

ORISON HUFF.

Witnesses:
J. M. G. EMERSON,
JOS. M. CLEAVES.