(Model.)

3 Sheets—Sheet 1.

J. O'NEIL.

CARPET SEWING MACHINE.

No. 260,601. Patented July 4, 1882.

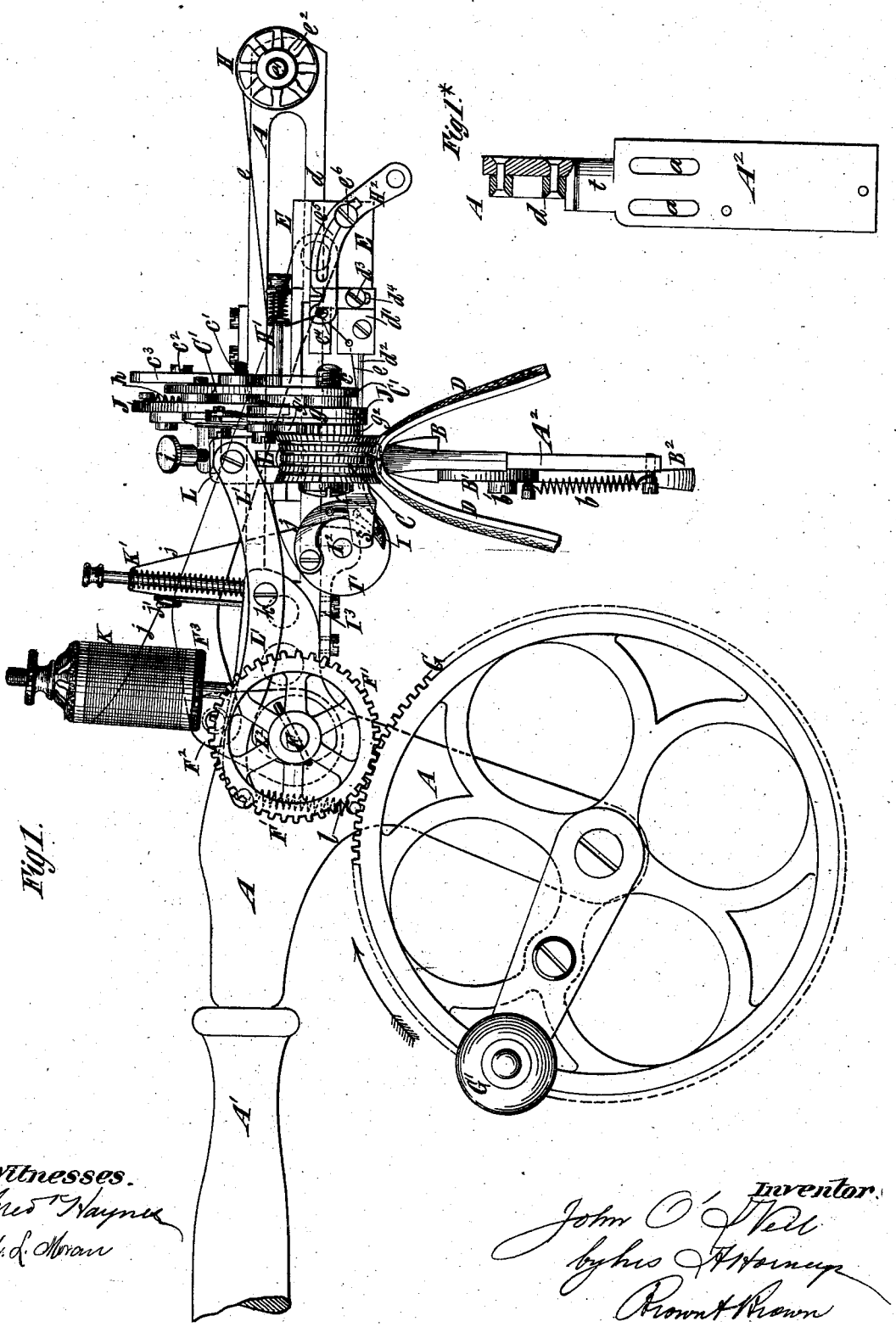

Fig. 1.

Fig. 1.*

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(Model.) 3 Sheets—Sheet 2.

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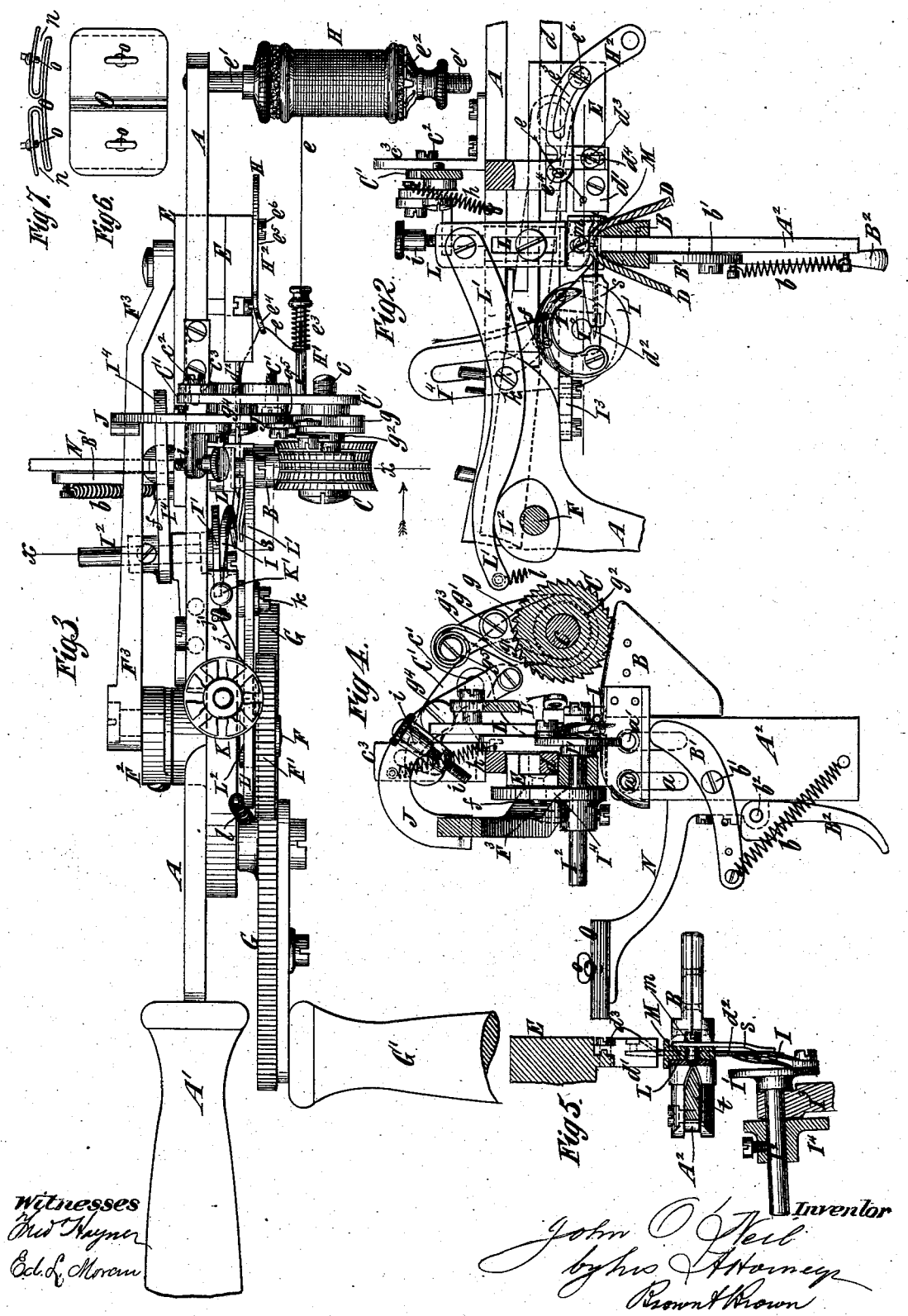

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(Model.) 3 Sheets—Sheet 3.

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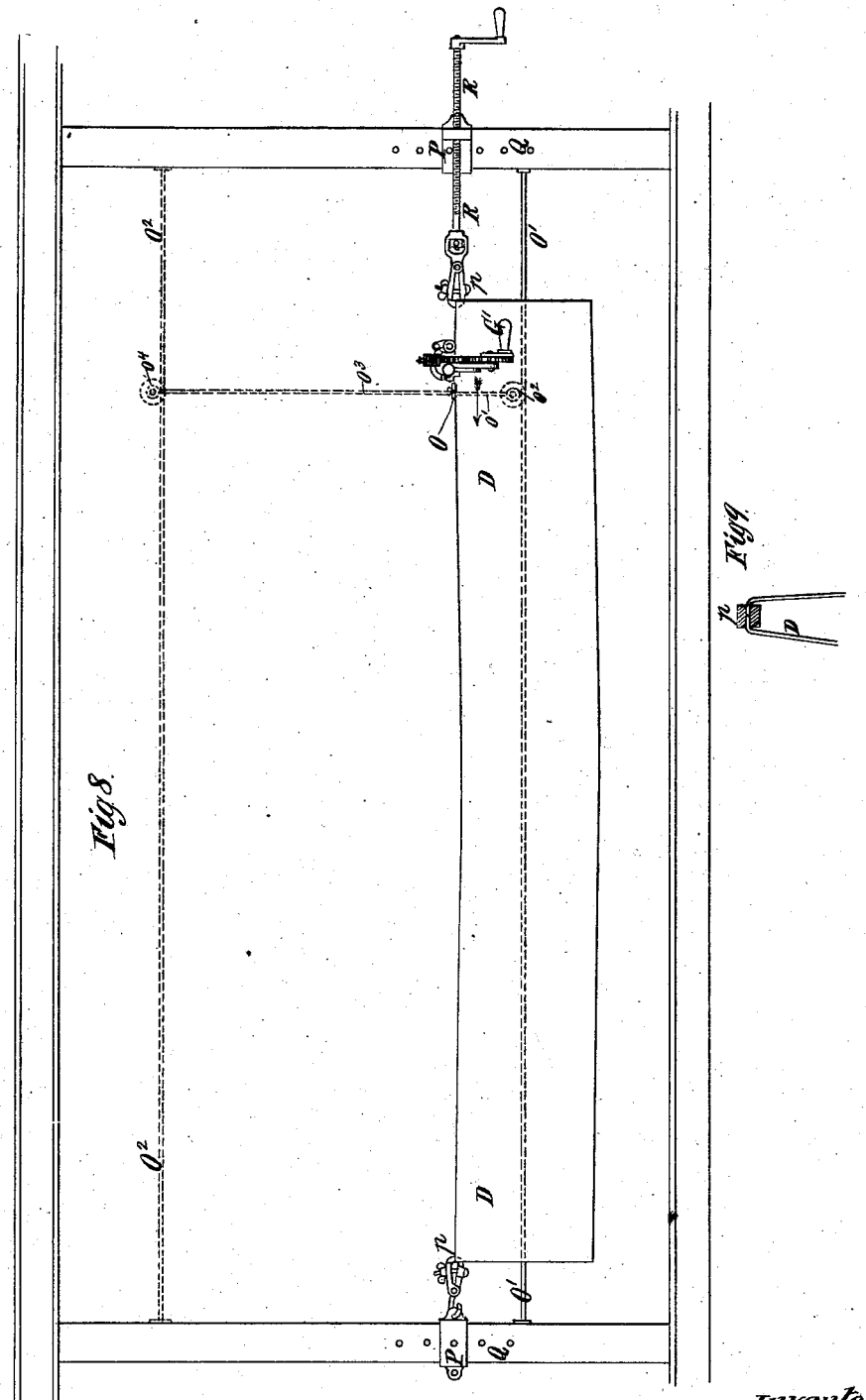

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UNITED STATES PATENT OFFICE.

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CARPET-SEWING MACHINE.

SPECIFICATION forming part of Letters Patent No. 260,601, dated July 4, 1882.

Application filed February 4, 1882. (Model.)

To all whom it may concern:

Be it known that I, JOHN O'NEIL, of the city and county of New York, in the State of New York, have invented certain new and useful Improvements in Carpet-Sewing Machines, of which the following is a specification.

In sewing carpets by sewing-machines in which the needle passes through both breadths of carpet at once the two breadths of carpet are placed face to face and the needle passes directly through them at right angles to the faces. This is objectionable, because when the carpet is turned and laid down the two edge portions beyond the seam form a ridge, which causes the carpet along the seam to wear much more rapidly, and a pile carpet thus sewed will soon have the pile worn off along each seam, while the other parts of the carpet are not worn to any considerable extent.

In sewing with my improved machine, as with other machines of the same class, the carpet or material to be sewed is secured by clamps at each end or at points a considerable distance apart, and is then placed under tension, and in sewing the machine is fed along the seam.

An important object of my invention is to enable carpets and other pieces of material to be sewed by stitches passing through both breadths or pieces, with the pieces to be joined placed edge to edge, and by means of stitches passing obliquely through the material, so that there will be no ridge formed by the seam and the stitches will not be noticeable on the face.

The invention consists in the combination, with a cloth plate or bed upon which the two pieces of carpet or material are supported so that they diverge downward from their edges, which are in contact on the top of the plate or bed, of a needle working horizontally over the top or apex of the cloth plate or bed, a thread-locking device consisting of an oscillating hook or shuttle working in conjunction with the needle, and operating mechanism for both the needle and the hook or shuttle. The cloth bed or plate may be adjustable upward and downward to suit different thicknesses of material.

The invention also consists in the combination, with the above, of a feed wheel or device above the cloth plate or bed, and in such a combination the adjustable cloth plate or bed may be kept up to press the material against the feed wheel or device by a spring, so as to readily accommodate itself to different thicknesses of carpet or material.

The invention also consists in the combination, with the above-described cloth plate or bed and feed-wheel, of a throat-plate or needle-guide adjustable up and down, and a needle-holder capable of adjustment upward and downward upon the needle-carrier, so that the needle will pass through the material more or less above the top of the bed or plate, and provision is afforded for sewing, so that the thread will not be visible on the face of the material.

The invention also consists in the combination, with the above-mentioned oscillating hook, of a guard projecting beyond the nose thereof to prevent it from catching in the material.

The invention also consists in the combination, with the above-described yielding cloth plate or bed and feed-wheel, of a reciprocating presser and mechanism for moving it toward the cloth plate or bed when the needle enters the material and for moving it in the opposite direction when the needle leaves the material and the machine is to be fed forward.

The invention also consists in the combination, with the machine, of a gage which is carried by and moves in front of the machine, and which keeps the edges of the material in proper relation to each other.

The invention also consists in various novel details of construction and combinations of parts, whereby the needle, the oscillating hook, the presser, and the feed-wheel are operated and adjusted.

In the accompanying drawings, Figure 1 represents a front view of my improved machine and two pieces of material, which are in position to be sewed together, the needle being shown as it is entering the material. Fig. 1* represents an end view of the frame of the machine alone. Fig. 2 represents a front view and partial section of a portion of the machine, the needle being shown at the end of its forward movement into the material. Fig. 3 represents a plan of the machine. Fig. 4 repre-

sents a transverse section on the line x x, Fig. 3. Fig. 5 represents a partly-sectional plan of the cloth-plate, hook, presser, needle-carrier, and appurtenances. Fig. 6 represents a plan of the gage which is carried in front of the machine. Fig. 7 represents an edge view thereof. Fig. 8 represents a side view of the devices employed for holding the material under tension, and of a piece of material with the machine in position for work; and Fig. 9 represents a section of two pieces of material and the clamp for holding them.

Similar letters of reference designate corresponding parts in all the figures.

A designates the main frame of the machine which is to be as light as is consistent with the necessary strength, and A′ designates a handle fixed thereto and serving to steady the machine while in use and to hold it in proper position vertically as it moves along the carpet or material.

B designates what I term a "cloth" plate or bed, which is fitted upon an upright bar, A^2, forming part of the frame A, so that it may be adjusted upward and downward thereon. The bar A^2 is joined to the main frame A by a neck or portion, t, of reduced size, as shown in Figs. 1* and 5, and which passes between the two breadths of material in front of the needle. The bar is shown as provided with slots a, which receive pins or screws a' inserted through the plate or bed, and the latter can therefore move up and down upon said bar. When not depressed the plate or bed B is held in an elevated position by a spring, b, acting through a lever, B′, which is fulcrumed to the bar A^2 at b', and the end of which bears against the under side of the cloth plate or bed; and it will be seen, therefore, that the said plate or bed is capable of yielding to accommodate different thicknesses of material.

In adjusting the machine in position for work and in removing it from the work it is desirable to hold the cloth plate or bed down away from the work, and to do this I provide a lever, B^2, pivoted at b^2, and having a cam-head bearing on the lever B′, as shown in Fig. 4.

Above the cloth plate or bed is a rotary feed-wheel, C, between which and said plate or bed the material is held, and this wheel has its periphery roughened or serrated to give it a good hold upon the material. The journal c of the feed-wheel C is carried at one end of a lever or arm, C′, which is fulcrumed at c' to a bracket projecting from the frame, and is securely clamped at the other end by a screw, c^2, to a slotted post or arm, c^3. By slackening the screw c^2 the lever or arm C′ is free to be swung upon its fulcrum to move its feed-wheel C toward or from the cloth plate or bed, and by tightening said screw the feed-wheel may be securely held in the position to which it is adjusted.

As clearly shown in Figs. 1 and 2, the top of the cloth plate or bed B is rounded or arched and the sides diverge downward.

The periphery of the feed-wheel C is concaved or recessed correspondingly to the curved or arched top of the cloth plate or bed B, and consequently the two pieces of material D to be sewed, when placed between the plate or bed and feed-wheel are held, as shown clearly in Fig. 2, with their edges in contact and their edge portions held tightly against the rounded or arched top of the cloth plate or bed B by the feed-wheel C.

E designates the needle carrier or slide, which is adapted to be reciprocated horizontally upon a bar, d, in the frame, and d' designates the needle block or holder in which the needle d^2 is rigidly fixed, and which is secured to the carrier or slide by a screw, d^3, passing through a slot, d^4, in said block or holder. The needle d^2 works horizontally over the top of the cloth plate or bed B, and by loosening the screw d^3 the block or holder may be adjusted up or down, so as to cause the needle to move close to or slightly distant from the cloth plate or bed. The yielding of the said plate or bed increases the distance between it and the feed-wheel C and adapts the machine for sewing thicker material, and as the needle d^2 passes obliquely through the carpet or other material it is very desirable to have the vertical adjustment of the needle, for if the needle were not capable of such adjustment the stitches would be very noticeable on the face of thin carpet or material, while they would not be visible at all on a very thick carpet or material. When the needle-block is capable of such adjustment the needle can be made to carry the thread just as near the face of the material as it is desired, whether it be thin or thick, and without having the stitches show on the face of the material.

F designates the driving-shaft of the machine, which is rotated by a large wheel, G, which engages with a smaller wheel or pinion, F′, on the said shaft. The wheel G is provided with a handle, G′, whereby it may be turned to operate the machine.

Upon the shaft F, at the back of the frame A, is a crank, F^2, and F^3 designates a connecting rod or pitman, through which the said crank operates the needle carrier or slide E to reciprocate the needle d^2.

H designates the spool which carries the needle-thread e, and which is mounted on a pin, e', projecting from the frame A, and is acted upon by a tension-spring, e^2, or other equivalent device. From the spool H the thread is taken first through a slack take-up, H′, and thence through a thread-controller, H^2, before it reaches the needle d^2.

The take-up H′ consists of a slotted pin or stud having a spiral spring, e^3, upon it, and the thread-controller H^2 consists of a piece of metal having an eye, e^4, for the thread, and a slot, e^5, through which passes a screw, e^6, whereby it is attached to the needle carrier or slide E. As the needle moves into the cloth the slack in the thread e is taken up by the spring e^3, so as to prevent entanglement. When it is desired to have the needle draw more

thread from the spool H at each movement, the screw e^6 is loosened and the controller H^2 is drawn back to move its eye e^4 away from the eye of the needle, and an increased length of thread equal to twice the distance of adjustment of the controller will be drawn off the spool. When it is desired to have less thread drawn off, the controller H^2 is shifted so as to bring its eye e^4 nearer to the eye of the needle.

I designates a thread-locking device, here represented as consisting of an oscillating hook upon the opposite side of the cloth plate or bed from the needle, operating in conjunction with the needle to form a double chain stitch. The hook I is attached to a guard or shield, I′, which projects beyond its nose, as seen in Fig. 1, and is mounted on a short shaft, I^2, which is journaled in a bearing, I^3, attached to the frame A.

The screws which secure the bearing I^3 to the frame pass through slots, as shown in dotted lines in Figs. 1 and 2, and afford provision for adjusting the hook toward or away from the needle. The projecting guard or shield I′ prevents the nose of the hook I from catching into the material.

I^4 designates a slotted arm fixed upon the shaft I^2 on the back of the frame A, and *f* designates a pin on the needle carrier or slide E, which engages with the slot in said arm and by its reciprocation oscillates the shaft I^2 and hook I. A shuttle might be substituted for the hook I as a thread-locking device.

In front of the needle is a projecting finger or keeper, *s*, which bears against the front of the needle, as shown in Fig. 5, and insures the thread being enchained by the hook I.

I will now describe how the feed-wheel C is operated.

Upon the journal *c* of the feed-wheel is loosely mounted a lever, *g*, by which is carried a pawl, *g′*, that is pressed into engagement with ratchet-teeth g^2 upon the feed-wheel by a spring, g^3.

J designates a lever, which is pivoted at g^4, and the inner end of which is connected with the loose lever *g* by a link, g^5. The opposite end of the lever J projects in the way of the connecting-rod F^3, and as said rod vibrates up and down it acts upon the lever J, and through it the link g^5, and lever *g* actuates the pawl *g′* to rotate the feed-wheel C and drive the same ahead. After being acted upon by the rod F^3 the lever J is returned by a spring, *h*, and the length of stitch can be regulated by limiting this return movement of the lever J. Upon said lever is a thumb-screw, *i*, and this lever is drawn down by the spring *h* until the screw *i* strikes the top of the frame A. Hence it will be seen that by unscrewing the screw *i* the spring will draw down the lever farther and provide for a greater movement of the feed-wheel C, while by screwing in the screw the lever will be given a less movement by the rod F^3, and a less movement of the feed-wheel will result.

K designates the spool which carries the thread *j*, which supplies the hook I. From the spool the thread *j* is conducted through an eye, *j′*, thence through a slack take-up, K′, similar to the take-up H′ before described, and to the hook I.

For holding the material D tightly upon the cloth plate or bed B while the needle d^2 enters, I employ a presser, L, which is operated by a lever, L′, to one end of which it is connected, and which is fulcrumed at *k*. The lever L′ is actuated to move the presser down upon the cloth by a cam, L^2, on the driving-shaft F, and it is actuated by a spring, *l*, to raise the presser from the cloth, and thus permit the feed to operate.

To the presser L a throat-plate or needle-guide, M, and the finger or keeper *s* are attached by means of a screw, *m*, passing through a slot in the throat-plate or guide, and the said throat or guide may be adjusted up or down to conform to the up-and-down adjustment of the needle.

N designates a bracket, which projects from the front of the machine, as shown in Fig. 4, and which carries a gage, O, the form of which is best shown in Figs. 6 and 7. The gage O is composed of sheet metal folded so as to form two channels, *n*, for the reception of the edges of the two pieces of material which are to be sewed together, and this gage moves in front of the machine and adjusts the two edges of the material into proper position to be taken between the cloth-plate B and feed-wheel C.

I provide the gage O with set-screws *o*, and in case the figures in the two pieces of carpet do not properly match, one of the screws may be turned into the carpet, and will have a tendency to stretch that side, and thereby make the figures of the pattern properly coincide.

Turning now to Fig. 8, D designates the carpet, to which are attached vise-clamps *p* at the opposite ends. These clamps are adapted to hold the two pieces of carpet in edge-to-edge contact, as shown in Fig. 9, and are attached to two brackets or collars, P, which are adapted to be adjusted up and down upon posts Q, and secured by pins passed through the bracket or collar and one of a number of holes in the post. One of the clamps is connected directly with bracket or collar, while the other is connected by a screw, R, and by turning the screw any desired amount of tension may be applied to the carpet. The machine is placed upon the stretched carpet, and the two edges of the pieces to be sewed together are adjusted between the cloth plate or bed and feed-wheel, as seen clearly in Figs. 1 and 2. The edges of the two breadths are then properly adjusted in the two channels *n* of the gage, and the machine is then ready for operation.

It will be seen that by my invention I form a perfectly flat seam, as the two breadths of the carpet are sewed edge to edge, and consequently such a carpet will not have the pile worn off at the seam any quicker than at any other part.

I am aware that a carpet-sewing machine has been made in which all the parts of the machine are carried by a saddle of inverted-V shape, which straddles and rides upon the edges of the carpet when two breadths are placed face to face, and in which the needles work directly through the two breadths at right angles to the carpet. My machine differs from this in that I employ a cloth plate or bed over which the carpet is placed, and the two breadths, instead of being placed face to face, are supported on top of the cloth plate or bed in edge-to-edge contact, thereby enabling the needle to pass obliquely through both breadths of the carpet at once, and forming a seam which is no thicker than the carpet itself, and which will lie perfectly flat, without forming any ridge which will increase the wear at the seam.

I am also aware that a machine for sewing carpets has been provided with a cloth plate or bed on which the two breadths are to be supported in edge-to-edge contact; but in such machine the needle works vertically directly through the carpet at right angles to the face, and the needle-bar has an oscillating motion imparted to it to enable the needle to pass through the breadths one at each downward movement and alternately.

In order to prevent the weight of the machine from causing the carpet to sag in sewing I may provide the gage O with a downwardly-extending leg, o', (shown dotted in Fig. 8,) and carrying a roller, o^2, which runs upon a track, O′, which consists of a rod or wire having a tensile strain applied to it. By this means the portions of the carpet which are in edge-to-edge contact are sustained through the gage O, and sagging is prevented.

In lieu of the track O′, I may employ an overhead track, O^2, as shown dotted in Fig. 8, and the gage may be suspended by a rod or device, o^3, from a roller, o^4, also shown dotted in Fig. 8.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, with a cloth plate or bed on the top of which two pieces of material are to be supported in edge-to-edge contact, of a needle working horizontally over the apex of said plate or bed and adapted to penetrate the material obliquely to the face thereof, a thread-locking device, and operating mechanism for said needle and thread-locking device, substantially as specified.

2. The combination of a cloth plate or bed on top of which two pieces of material are to be supported in edge-to-edge contact, a feed-wheel above said plate or bed, a needle working horizontally over the apex of said plate or bed, a thread-locking device, and operating mechanism for said feed-wheel, for said needle, and for said thread-locking device, substantially as specified.

3. The combination, in a sewing-machine, of a cloth plate or bed on top of which two pieces of material are to be supported in edge-to-edge contact, and which is capable of adjustment upward and downward relatively to all the other parts of the machine, a needle working horizontally over the apex of said plate or bed, a thread-locking device, and operating mechanism for said needle and said thread-locking device, substantially as specified.

4. The combination of the vertically-yielding cloth plate or bed on top of which two pieces of material are to be supported in edge-to-edge contact, and a spring for elevating said plate or bed, a needle working horizontally over the apex of said plate or bed, a thread-locking device, and operating mechanism for said needle and for said thread-locking device, substantially as specified.

5. The combination of the cloth plate or bed B, having a curved or arched apex, the lever B′, the spring b, the feed-wheel C, the needle d^2, the thread-locking device, and operating mechanism for said feed-wheel, needle, and thread-locking device, substantially as specified.

6. The combination of the yielding cloth plate or bed on top of which two pieces of material are to be supported in edge-to-edge contact, a needle working horizontally over the apex thereof and adjustable upward and downward, a thread-locking device, and operating mechanism for said needle and for said thread-locking device, substantially as specified.

7. The combination of the yielding cloth plate or bed B, the feed-wheel C, the adjustable throat-plate M, the needle d^2, adjustable upward and downward, a thread-locking device, and operating mechanism for the said wheel, needle, and thread-locking device, substantially as specified.

8. The combination, with the cloth plate or bed adapted to support two pieces of material in edge-to-edge contact, of a needle working horizontally over the apex of said plate or bed, the oscillating hook, a guard plate or shield projecting beyond the nose of the hook, and operating mechanism for said needle and hook, substantially as specified.

9. The combination, with a yielding cloth plate or bed on top of which two pieces of material are to be supported in edge-to-edge contact, a needle working horizontally over the apex thereof, a feed-wheel, and a reciprocating presser above said plate or bed, a thread-locking device, and operating mechanism for said needle, feed-wheel, presser, and thread-locking device, substantially as specified.

10. The combination, with the yielding cloth-plate B, needle carrier or slide E, and hook I, of the driving-shaft F, wheel F′, crank F^2, and connecting-rod F^3 for operating said carrier or slide, substantially as specified.

11. The combination, with the needle-carrier E, and shaft F, crank F^2, and rod F^3, of the feed-wheel C, and the lever g, pawl g', ratchet-wheel g^2, lever J, link g^5, spring h, and adjusting-screw i, substantially as specified.

12. The combination, with the needle carrier

or slide E and the crank F^2 and rod F^3 for operating it, of the feed-wheel C, the lever J, adapted to be actuated by the vibration of said rod, and mechanism through which a step-by-step motion is imparted from said lever to said feed-wheel, substantially as specified.

13. The combination, with the needle carrier or slide E and the crank F^2 and rod F^3 for reciprocating it, of the hook I, the shaft I^2, slotted arm I^4, and the pin *f* upon the needle carrier or slide, engaging with said slotted arm, substantially as specified.

14. The combination, with the cloth plate or bed upon the top of which two pieces of material are to be supported in edge-to-edge contact, and the feed-wheel and mechanism for operating it, of a gage carried in front of said cloth plate or bed and said wheel and adapted to hold the edges of the pieces of material in proper relation to enter between said plate or bed and said wheel, substantially as specified.

15. The gage O, comprising channels *n* and set-screws *o*, substantially as specified.

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