(Model.)



G. GRISEL.

CARPET SEWING MACHINE.

No. 296,744. Patented Apr. 15, 1884.

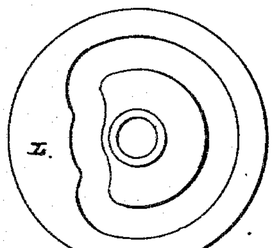


Fig. 2.

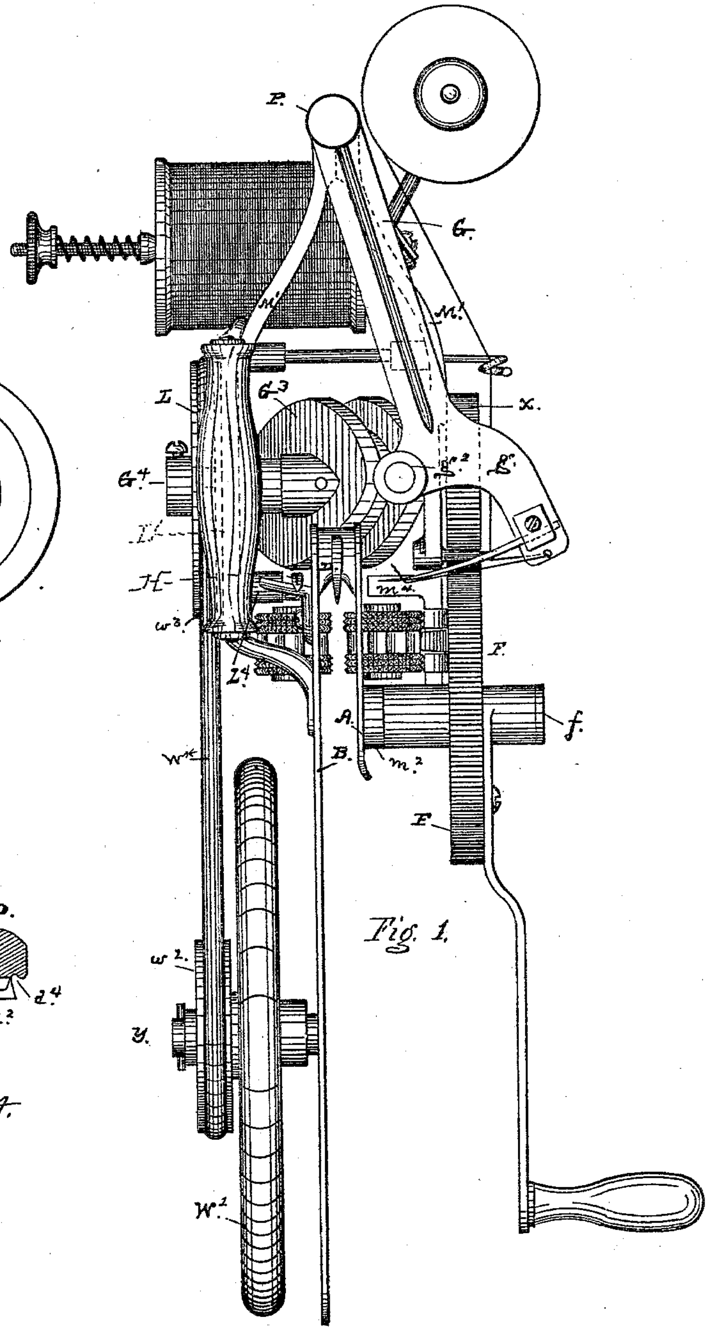
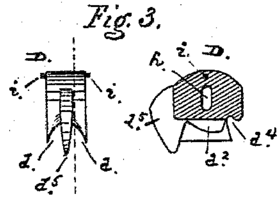


Fig. 1.

Fig. 3.



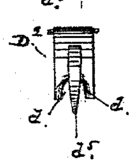


Fig. 4.

WITNESS:

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E. Patten

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George Grisel

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Edward L. Osborn

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

(Model.)



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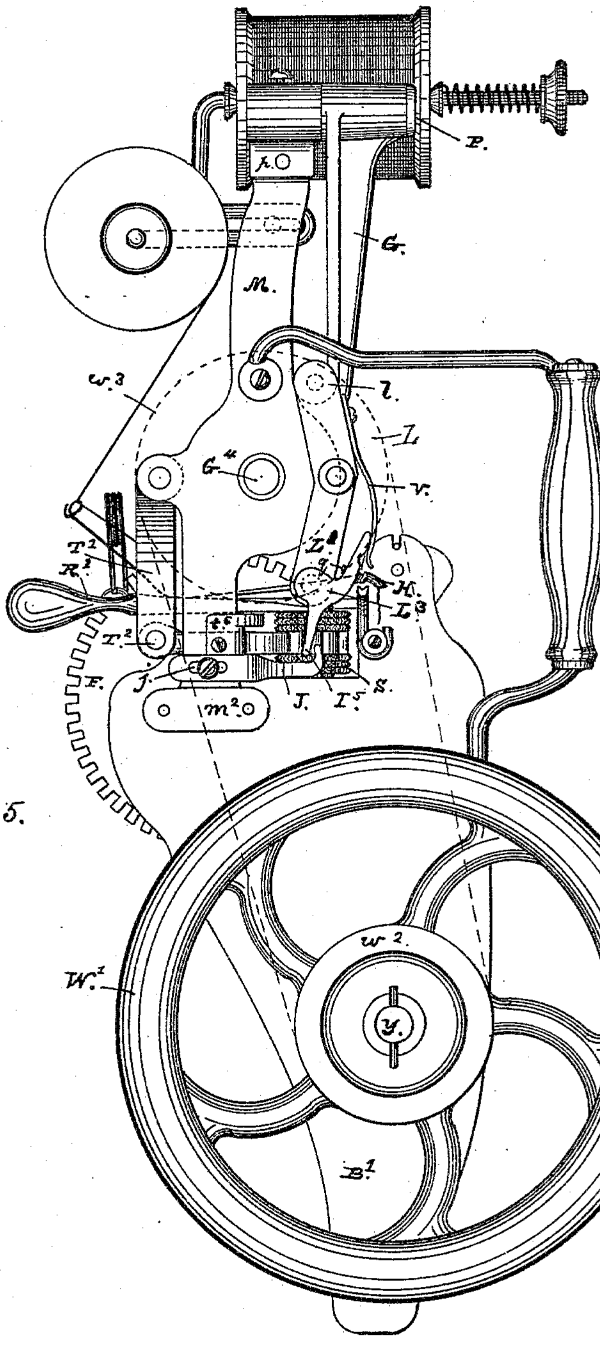


Fig. 5.

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(Model.) 4 Sheets—Sheet 3.

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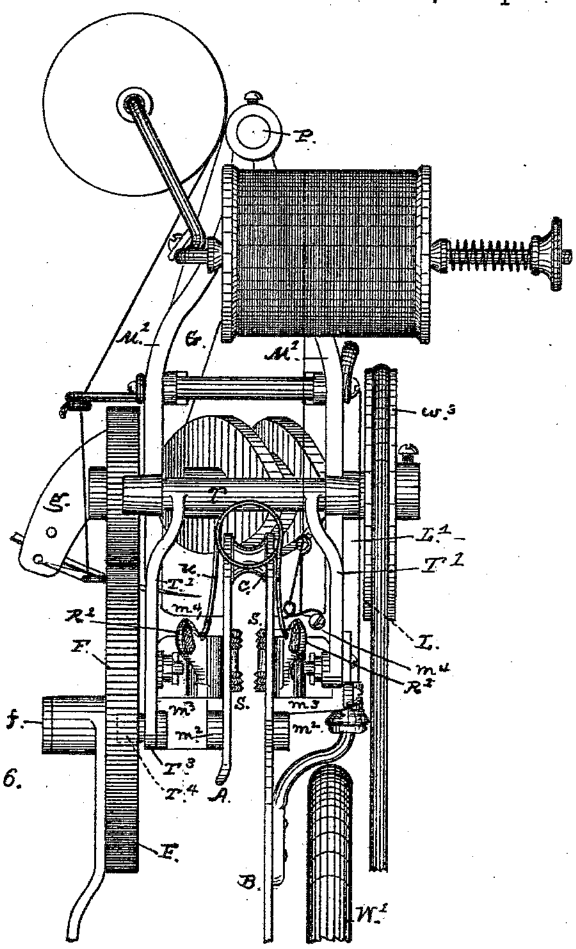
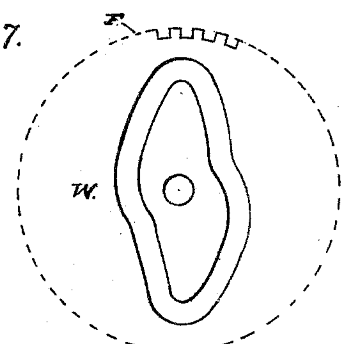


Fig. 6.

Fig. 7.



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(Model.)

4 Sheets—Sheet 4.

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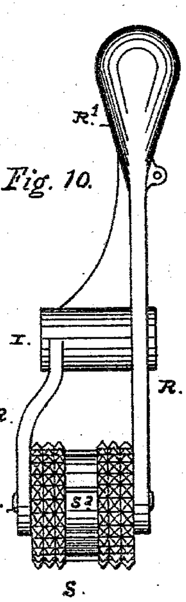


Fig. 10.

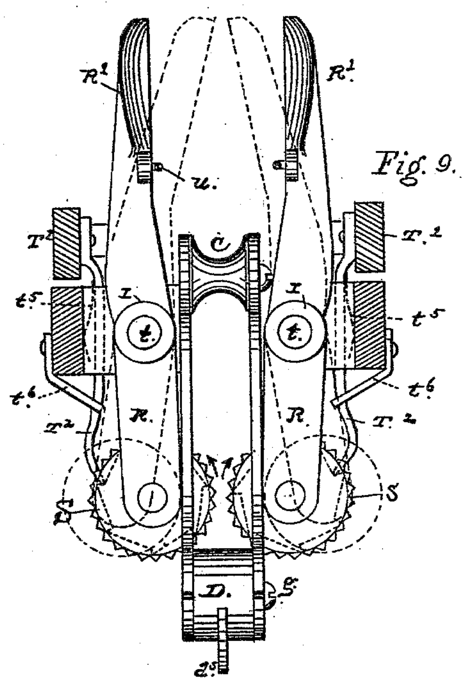


Fig. 9.

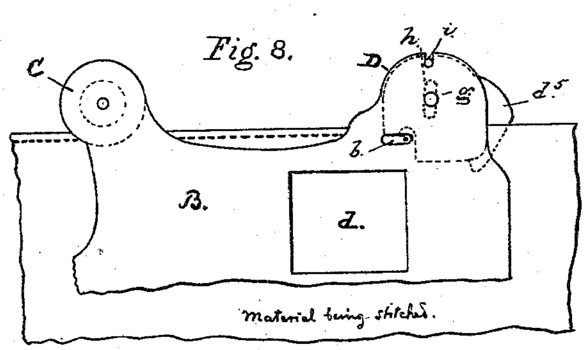


Fig. 8.

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# UNITED STATES PATENT OFFICE.

GEORGE GRISEL, OF OAKLAND, CALIFORNIA.

## CARPET-SEWING MACHINE.

SPECIFICATION forming part of Letters Patent No. 296,744, dated April 15, 1884.

Application filed May 31, 1883. (Model.)

*To all whom it may concern:*

Be it known that I, GEORGE GRISEL, a citizen of the Republic of France, residing at Oakland, Alameda county, State of California, have made and invented certain new and useful Improvements in Carpet-Sewing Machines; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings.

My invention relates to a sewing-machine of the kind specially constructed and adapted for uniting the edges of carpets, sail-cloth, and other like heavy class of material. The object sought to be attained is to produce a machine that has the capacity to work on both heavy or thick and light or thin character of material, and that combines also great simplicity of construction and cheapness of manufacture.

The improvements include a novel construction of frame, certain novel construction and combination of needle-operating mechanism, feeding mechanism, and looper mechanism, and a device for controlling the edges of material along the seam to produce a smooth seam on the right side of the material. All the working mechanism is so mounted and arranged upon the frame of the machine that the weight is as nearly as possible equally disposed on opposite sides of a vertical plane passing through the center of the frame. The frame is formed of two upright metallic plates placed face to face, with a space between them of sufficient width to take in the thicknesses or layers of material to be stitched, and a yoke or arched bracket, in which are mounted, pivoted, and otherwise fixed all the working parts of the feeding and stitch-forming mechanism. The two plates are entirely disconnected, excepting at the upper corners, so that the top is left practically open and the line of seam is exposed to view at all times. The attachment of the two plates together is made by small blocks interposed between the adjacent upper corners. One of these is permanently fastened in place; but the other is adjustable vertically, and also interchangeable, to permit different forms or sizes to be used. This movable block constitutes a turning-guide to turn in and otherwise control the projecting ends of threads along the edge of the material in advance of the operation of the stitch-forming mechanism. The needle is curved, and is carried in a path of corresponding curvature from a center of oscillation located above its line of travel. Its carrying-arm is pivoted at the upper end to the top of the arched bracket, to bring the center of motion directly over the center of the frame. The needle then moves in an upwardly-curving path, and passes through the middle of the thickness of material somewhat below its point of first penetration at one side and its subsequent outward passage at the other side. The advantages of this operation are that the line of loops is laid in the middle below the turned-in threads and portions of the edges, and the right side of the seam presents a smooth finished face when the material is turned and opened. The feed device consists of two wheels or rollers with roughened peripheries working on vertical axes through slots in the plates from opposite sides of the frame, so as to grasp the material between them. Such principle of feed, however, is already in use; but in its application heretofore the adjustment of the rollers to accommodate and act upon different thicknesses of material was effected by the operator. In the operation of setting the rollers to and from each other the parallel relation of the adjacent faces was disturbed, so that the edges and not the whole length of face bore against the material. This part or feature of my improvement provides an automatic adjustment of the feed-rollers and a position of face or feed surface at all times vertical and in contact for its full length of face with the material. The looper is of the oscillating kind, and co-operates with the needle to produce a double-loop stitch. A take-up device is used for the looper-thread; but the needle-thread is controlled by the oscillating needle in such manner that no take-up is required therefor.

The following description explains the nature of my said improvements and the manner in which I proceed to construct and apply the same.

In the drawings referred to by figures and letters, Figure 1 is a front elevation of the machine set ready for use; Fig. 2, a detail view of the looper-cam. Figs. 3 and 4 are details of the adjustable turning-guide. Fig. 5 is a side elevation of the machine, taken from the left-hand side of Fig. 1. Fig. 6 is a rear view of the upper structure; Fig. 7, a detail of the feed-actuating cam. Fig. 8 is a detail view, showing the form of the top portion of the plates A B. Fig. 9 is a plan of the feeding device; Fig. 10, a detail view of one of the feed-levers.

Two plates, A B, are fixed and held in upright position parallel with each other by means of an arched upright bracket, M, consisting of two curved sides, M′ M′, having ears $m^2$ on lugs or inwardly-turned ends $m^3$, and above them two similar lugs, $m^4$. By means of screws passing into these lugs the two plates and brackets are firmly fastened together. The shape of this bracket is such that while affording bearings for all the operative mechanism, excepting the balance-wheel, it brings the principal weight of the parts directly over the center of the machine. The two curved sides or parts M′ M′ are secured together at the top by a screw, *p*. At this point a stud, P, forms a pivot for the needle-arm. In the space between the two lugs or feet on the ends of the bracket M are pivoted two levers, R R, having thumb pieces or handles on the rear end, and on the front each is bifurcated to form arms R′ R′, to receive the feed-rollers S between them. The hubs I correspond in length to the space between the lugs $m^3$ $m^4$, and turn upon pivots *t t*. These two levers then constitute a pair of jaws, and by means of a spring, *u*, their inner or roller-bearing ends are forced toward each other with constant pressure, the strength of which is regulated by changing the character of the spring. Large rectangular openings *d d* in the side of the two plates admit the sides of the feed-rollers into the space traversed by the material within the frame. The levers R R thus mounted are free to yield to changes in thickness of the material, and yet to maintain regular contact and continual grasp of the material to effect the required intermittent progress of the machine. This manner of mounting the feed-rollers insures true parallelism and regular contact of the rollers for the whole length of face of material being stitched.

A rock-shaft, T, is supported on the frame, and is provided with vibrating arms or levers T′, each of which carries a feed-pawl, $T^2$, for engagement with a rack provided on the feed-rollers. The levers T′ are located far enough apart on the shaft T to bring the pawls $T^2$ outside of the plates A and B. This rock-shaft obtains motion from the cam W, Figs. 6 and 7, on the inner face of the driving-gear F, the connection being made by the rocking lever $T^3$ and stud $T^4$. Contact of the feed-pawl with the ratchet-surface on the feed-roller is maintained by a spring, $t^5$, and the pawl is confined during reciprocation by the fixed guide-plate $t^6$. The ratchet-surface $s^2$ upon the feed-roller for the pawl to act against is formed on the center part of the periphery, the outer edges of the rollers being suitably serrated or armed with blunt projections to engage with the material. The pressure of the pawl is thus applied midway between the bearing parts of the roller, there is less strain upon the feed-pawl, and a corresponding equality of action upon the rollers is obtained in a much better manner than where the force to rotate the roller is applied at one end.

The feed mechanism is carried entirely in parts of bridge or bracket M, the driving-gear F being mounted on a stud, *f*, secured in the lower end or extension of the bracket.

The needle-arm G is a straight bar, with a curved offset, *g*, at one side, to carry a clamp for the needle, and an ear or short lug, $g^2$, on the opposite side of the center line, to take a stud projecting into the groove of the cam $G^3$. The pivot at the top of the bracket affords a long bearing for the arm. Vibration upon this center is produced by the action of the oblique needle-cam $G^3$ upon the stud. This cam is fixed on a shaft, $G^4$, to which continual motion is imparted from the driving-gear through the pinion *x*. The movements of these parts are so timed that the needle-arm is swung inward over the center of the pawl at the time the crank-handle is raised. The gears and mechanism are kept close to the frame, while the needle and crank are free to pass each other. The needle-cam shaft operates the looper through the medium of a disk-cam, L, on the end of the shaft outside of the frame, and a vibrating lever, L′, pivoted at *l*, and having oscillation from the pivot forward and back. The lower end of the lever carries a hinged finger, $L^3$, fixed rigidly on the outer end of a short stud or pin, $L^4$, that is free to turn in the end of the lever. A socket in the end of the stud holds the looper H. The arm L′ then gives general motion of oscillation to the looper across the path of the needle, while the rocking finger-piece acts to depress the point of the looper at the end of the forward throw. This depression is effected by contact of the end of the projection $I^5$ of the piece $L^3$ with the fixed catch J on the side of the bracket-frame. The looper, being fixed on the stud $L^4$, which is free to move in the end of the arm L′, and which is moved by the contact of the point $I^5$ with the stud J, will be depressed at the forward part of the throw, as just described. This movement of depression is necessary in order to bring the needle into the loop, or above that portion of the looper-thread which extends from the eye of the looper back to the stitch last formed. An adjustable stop, *q*, controls the position of the piece $L^3$, and a spring, V, raises and keeps the looper in position during the general oscillation. The catch J is held by a set-screw passing through a slot, *j*, so that its action can be adjusted, and thereby the action of the looper timed.

The plate B, on that side of the frame opposite to the driving-crank, has a vertical limb or prolongation, B′, on which is provided a stud, Y, to carry a balance-wheel, W′. Connection of the principal shaft is then made with the balance-wheel by grooved pulleys $w^2$ $w^3$ and a belt, $w^*$. The peculiar form or structure of the frame enables me to carry the principal shaft directly across the top to operate the looper, and this arrangement permits the balance-wheel to be located opposite to the crank. By this arrangement the weights are equally distributed and the machine well balanced.

The frame of the machine has two points of bearing or contact upon the edge of the material. These are the blocks C D at the outer corners. The sides of the plate between these points are carried down below the line of the seam, as before described, to give a clear, unobstructed view of the condition of the work. The rear block is permanently fixed, but the front one, D, is of peculiar construction, to form a turning-in guide. It is adjustable vertically, to regulate the distance of the line of seam from the edge of the material, and it is also removable and interchangeable, to accommodate and properly act on materials of different thickness. This construction is illustrated in Figs. 3 and 4, where two kinds or sizes are shown—one, D, suitable for thick material, and the other, D′, for material of less thickness. The lower face of this block has concave guiding-surfaces $d$ $d$ on either side of a downwardly-projecting fin or blade, $d^2$, extending longitudinally along the bottom in the center of the groove or concave. This blade terminates just at the transverse groove $d^4$ for the needle, and it operates just between the extreme edges of the two pieces or thicknesses of material, to confine the ends of the threads and ragged parts of the edges until by the completion of the stitch the edges are held. In the center of the block, at the front, a separating horn or blade, $d^5$, is fixed in line with the turning-down blade $d^2$. The blades $d^5$ and $d^2$ may be integral or separately formed, if desired. This blade $d^5$ is pointed at the end, and its front edge is inclined and beveled or rounded. Its office is to separate the two thicknesses of material and guide them into the grooves on either side, so that the two edges of the material may be exactly set in line in passing through the groove and be brought at the needle into exact line with each other. The position of this block determines the distance of the line of stitching from the edge. It is therefore capable of vertical adjustment by means of a screw, $g$, passing through the plates A B and through a slot, $h$, in the block, and its proper upright position is controlled by two steady-pins, $i$ $i$, working in open slots in the plates A B. One block or guide is substituted for another, according as the material to be stitched is of greater or less thickness.

The gearing F and $x$ and handle are attached to the short plate A, while the weight of this side is balanced by the long plate B and its attached fly-wheel W′ on the other side, so that the machine will ride evenly upon the material.

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

1. The combination of the arched bracket M, parallel plates A B, having transverse needle-apertures $b$ $b$, cut-away sides, and blocks C D, with the feed and stitch-forming devices carried thereby, substantially as described.

2. The combination, with the plates A B, having needle-throats, of the needle-arm G, pivoted in the top of the bracket M, and needle secured in the lower end of the needle-arm below the cam, the transverse shaft having needle-actuating cam $G^3$ and looper-cam L, and means for rotating said shaft, constructed as described.

3. The combination, with the plates A B, having transverse needle-throats and cut-away sides, of the transverse shaft $G^4$, carrying the needle-actuating cam $G^3$, and the oscillating needle-arm G, having a center of motion above the shaft, and bracket-arms M′ M′, united at the top and forming the support for the pivot of the needle-arm at that point, substantially as described.

4. The combination of the frame A B, oscillating needle-arm G, driving-gears F and $x$, cam $G^3$, transverse shaft $G^4$, cams L W, and the balance-wheel W′ upon the side of the frame opposite to the driving-gear, and connections between the parts, substantially as described.

5. The horizontal rock-shaft T, levers T′ T′, feed-pawls $T^2$ $T^2$, springs $T^5$, and means for operating the rock-shaft, combined with the feed-levers and feed-rollers, substantially as described.

6. The parallel plates A B, connected together only at their upper outer corners, in combination with the arched bracket M, having lugs $m^3$ $m^4$, and with the feeding and stitch mechanisms carried thereby, substantially as set forth.

7. The combination, with the parallel plates A B, having cut-away sides, and connected together only at their upper outer ends, of the blocks C D, one fixed and the other adjustable, and the stitch-forming and feeding mechanisms, substantially as described.

8. The combination, with the parallel plates A B, having cut-away sides, and connected together only at the outer corners, of the adjustable and removable turning-in guide D, substantially as described.

9. The combination, in a suitable frame, of the pivoted feed-levers, carrying revolving feed-rollers S, with ratchet portions $s^2$ formed in the center of the rollers, with feed portions on each side, the vibrating levers and pawls T′ $T^2$, and mechanism for actuating said levers and pawls, substantially as described.

10. In a carpet-sewing machine, the combination, with the feed-operating mechanism,

of revolving feed-rollers having feeding portions, S, and the intermediate ratchet portion, $s^2$, formed in the center of the rollers between the two feed portions, substantially as described.

11. The roller-carrying levers pivoted to the frame, having thumb-pieces R′, arms R R, and hub I, and the revolving feeding-rollers, in combination, substantially as described.

12. The automatic yielding gripper-feed, consisting of the combination of the pivoted levers R R, revolving feeding-rollers S, having central ratchet portions, $s^2$, spring U, feed-pawls $T^2$, and mechanism for actuating said pawls simultaneously, substantially as described.

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Witnesses:

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E. PATTEN.