(No Model.) 4 Sheets—Sheet 1.

H. K. CRISSEY.

BROOM SEWING MACHINE.

No. 457,850. Patented Aug. 18, 1891.

FIG. 1.

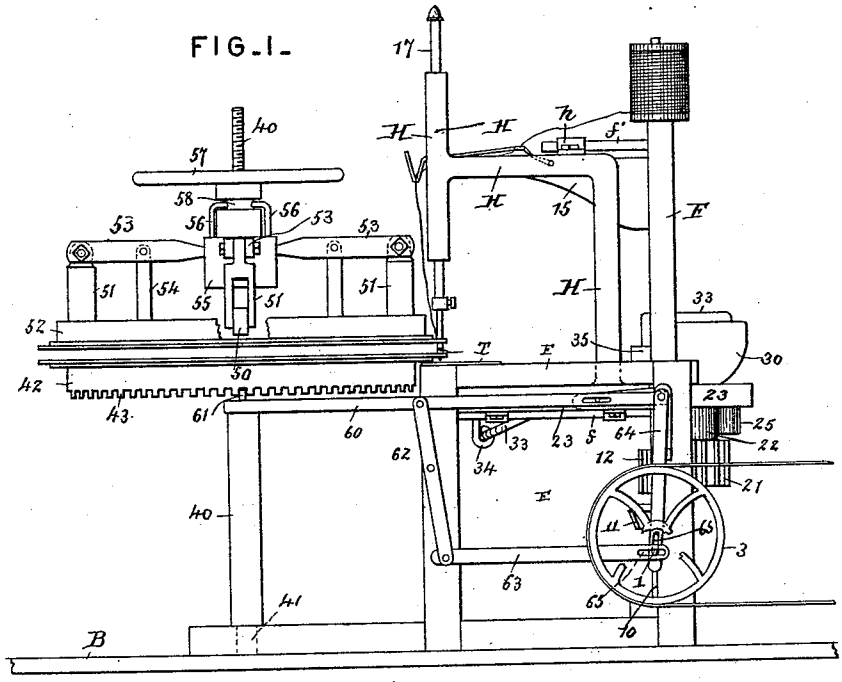
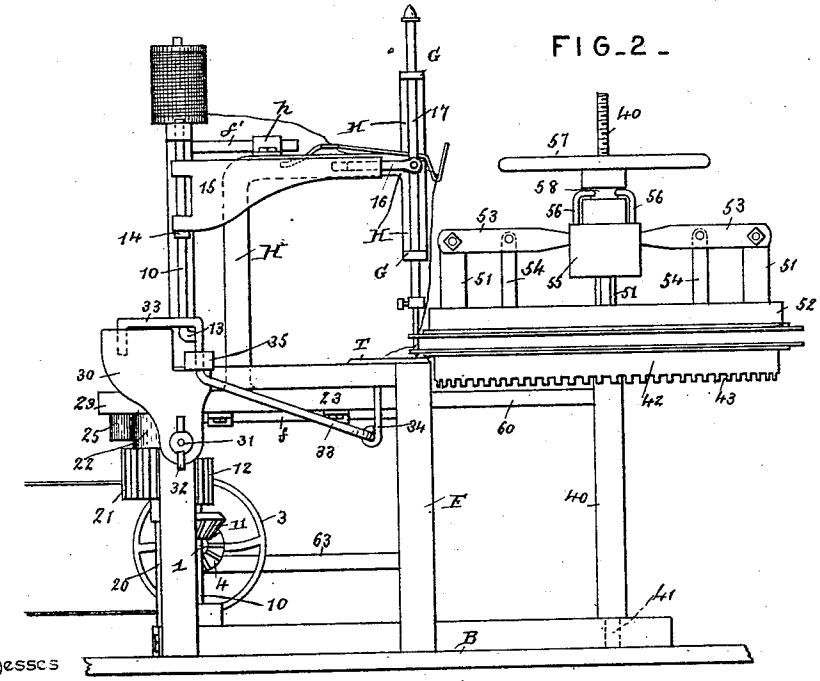


FIG. 2.



Witnesses

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FIG. 3.

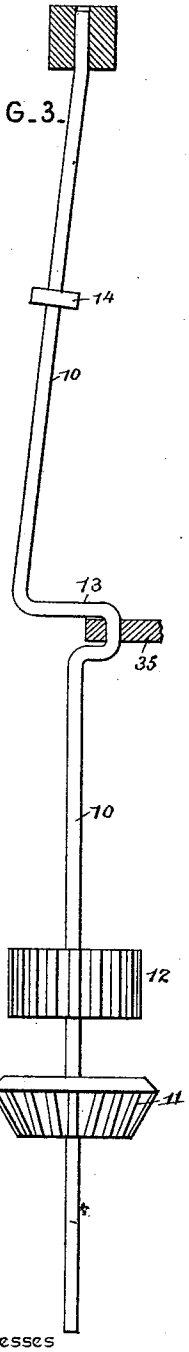


FIG. 7.

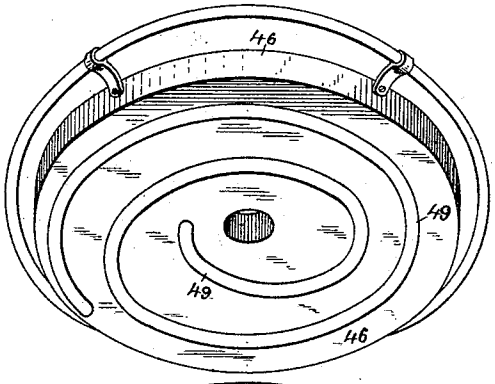
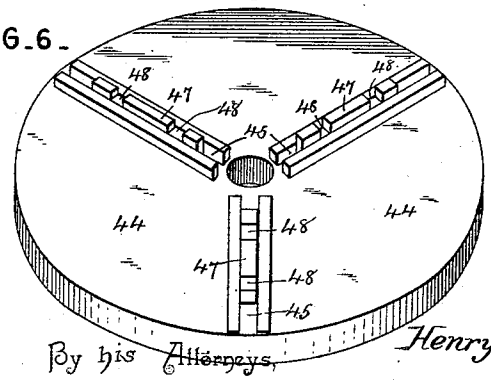


FIG. 6.



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BROOM SEWING MACHINE.

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FIG. 8.

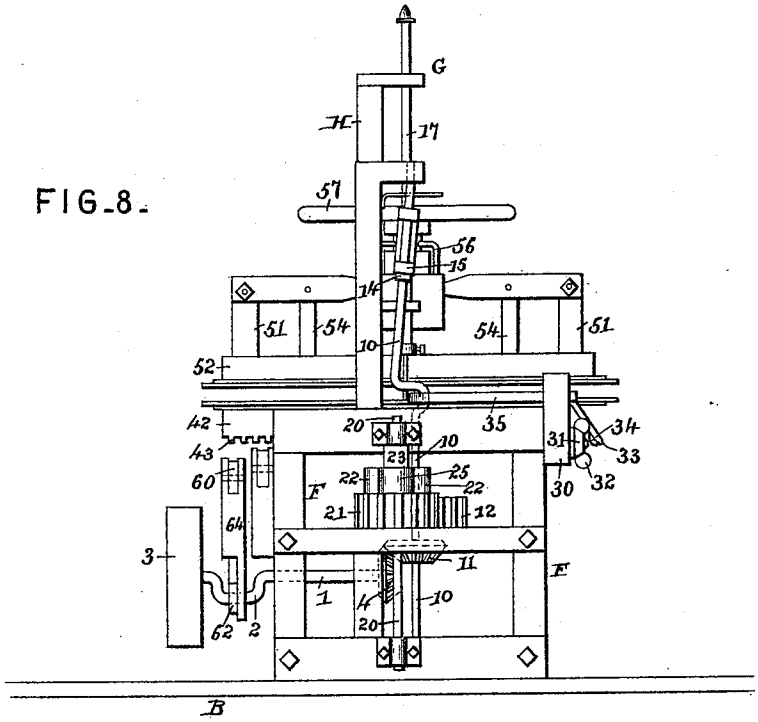
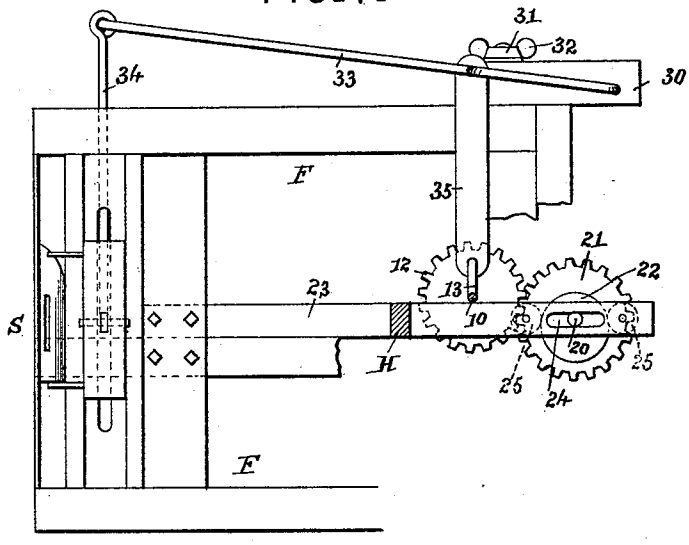


FIG. 4.



Witnesses

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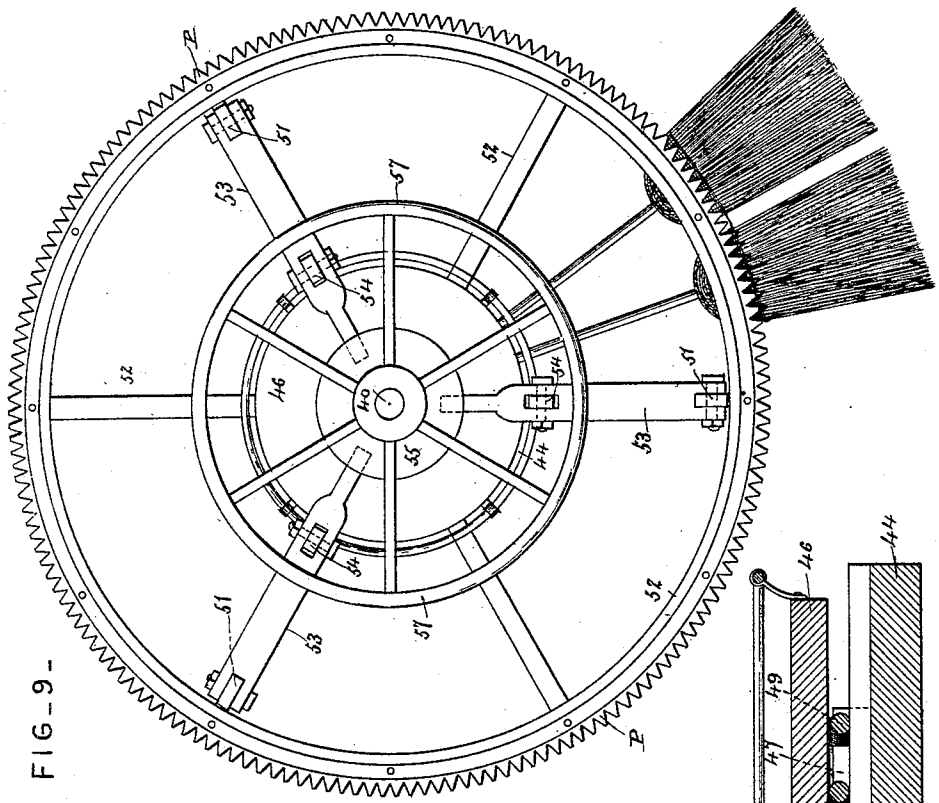
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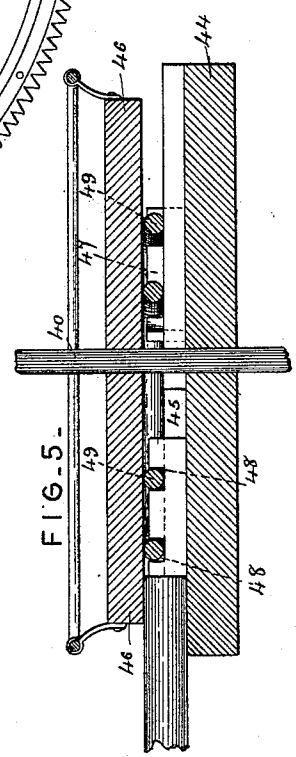
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BROOM SEWING MACHINE.

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UNITED STATES PATENT OFFICE.

HENRY K. CRISSEY, OF HUBBARD, IOWA.

BROOM-SEWING MACHINE.

SPECIFICATION forming part of Letters Patent No. 457,850, dated August 18, 1891.

Application filed May 15, 1890. Serial No. 351,965. (No model.)

To all whom it may concern:

Be it known that I, HENRY K. CRISSEY, a citizen of the United States, residing at Hubbard, in the county of Hardin and State of Iowa, have invented a new and useful Sewing-Machine, of which the following is a specification.

This invention relates to sewing-machines adapted to sew a zigzag line; and the object of the invention is to provide a machine of the character mentioned which is adapted to form such line of stitches, especially through brooms.

To this end the invention consists of the general arrangement and specific construction of parts hereinafter more fully set forth, and illustrated in the drawings, in which—

Figure 1 is a general front elevation of the machine complete. Fig. 2 is a rear elevation of the same. Fig. 3 is an elevation in detail of the main operating-shaft and connections as viewed from the rear side of the machine. Fig. 4 is a plan view of the shuttle-operating mechanism. Fig. 5 is a central transverse section of the broom-handle-holding frame. Fig. 6 is a perspective detail of the lower disk, and Fig. 7 of the upper disk, for holding the inner ends of the broom-handles. Fig. 8 is an end view of the machine. Fig. 9 is a plan view of the broom-holding devices, showing the manner in which the brooms are wrapped and the style of stitches that are taken therethrough by this machine.

Referring to the said drawings, B is the base of this machine, carried upon which is a frame-work F, in which is journaled and supported the several shafts and other mechanism forming parts of the whole, and which frame-work also carries the machine-table T, upon which the sewing is done.

The driving-shaft 1 is journaled transversely through the frame-work F, is cranked, as at 2, has a driving-pulley 3 on its front end, and has a bevel gear-wheel 4 upon its rear end, all as seen.

The main operating-shaft 10 stands in an upright position in the frame-work and is rotated through the instrumentality of a bevel-gear 11, meshing with the bevel-gear 4, just mentioned. This shaft carries a gear-wheel 12, and has a crank 13, for a purpose to be set forth hereinafter, and the upper end of its body is bent out of a straight line between its extremes and provided with a shoulder 14.

15 is an arm mounted loosely at its rear end upon the oblique portion of the main operating-shaft 10 and having a socket in its front end. In this socket loosely slides a pin 16, which is pivoted to the needle-bar 17, the latter reciprocating vertically through guides G in the supporting-head H of the sewing-machine. This head is of L shape, and rises from the bar 23, described below, and at its outer upper end it is provided with upwardly and downwardly extending arms carrying the guides G, all as best seen in Fig. 1. A guiding-bar f', extending forwardly from the upper part of the frame-work F, engages an eye h on the head H and steadies its movement. The said gear-wheel 12 meshes with a gear-wheel 21, mounted upon a vertical axis 20, and to this gear-wheel is connected a cam 22. A bar 23 slides loosely longitudinally of the frame-work F on a guiding-bar f below the table T, and has a slot 24 engaging the axis 20 of the gear 21 and cam 22, and pivoted to this bar 23, in front and in rear of the cam 22, are friction wheels or rollers 25. It will thus be seen that when the gear-wheel 21 rotates the bar 23 will be moved, and as the needle-guide-supporting head H of the sewing-machine is connected to this bar it will also move therewith from and toward the pivot 20. This movement of the head carries the needle-bar 17 out and in, sliding the pin 16 out of and into the socket in the end of the arm 15, as will be clearly understood. The front end of the bar 23 carries a shuttle-plate S, having a slot in which the shuttle works below the table T of the machine, and when the needle-bar and its supporting-head are moved out and in the shuttle-plate S, and with it the shuttle, are also moved, so that the latter will always stand in the proper plane below the needle.

30 is a plate mounted on the threaded stud 31 at the rear side of the frame-work F, and 32 is a thumb-nut on the free end of said stud, by means of which the plate 30 can be adjusted at any desired angle. Pivoted in the upper end of this plate is a crank-arm 33, and to the free end of this arm is connected a pitman 34, by means of which the shuttle is

reciprocated simultaneously with the movements of the free end of said crank-arm. Said movements are imparted by a connecting-bar 35, connecting the crank of the crank-arm 33 with the crank 13 of the main operating-shaft, and through the instrumentality of this connecting-bar reciprocatory motion is thus imparted to the shuttle by the rotary motion of the main operating-shaft 10. As the plate 30 is adjusted in its angle to the frame-work, the free end of the crank-arm 33 is raised or lowered, and while this adjustment will have no effect upon the length of the movement of the shuttle, still it will effect the points from which said movements commence and at which they finish.

I have not considered it necessary to describe and illustrate in detail the devices for carrying the threads and feeding them to the needle and to the shuttle, as such devices may be any of those ordinarily employed for this purpose.

40 is a rotating shaft mounted in a step 41, and 42 is a wheel carried by said shaft and having notches 43 in the lower edge of its periphery. Mounted upon the hub of this wheel is a disk 44, having a number of cleats or guides secured to its upper face, between which are radial slots 45. The upper end of the shaft 40 is screw-threaded, and mounted loosely on this vertical portion above the disk 44 is a plate 46, upon the lower face of which is formed a spiral rib or projection 49.

47 are blocks sliding in the radial slots 45, which blocks are provided with notches 48 in their upper edges, where they project above the guides or cleats, and the spiral rib 49 engages these notches. It will thus be seen that when the plate 46 is turned upon the shaft 40 the several blocks 47 will be caused to move inwardly or outwardly in the slots 45.

52 is a ring corresponding in size with the periphery of the wheel 42, and to lugs 50 on the interior of this ring are pivotally connected the bifurcated lower ends of links 51. The upper ends of these links are in turn pivotally connected to the outer ends of the bifurcated levers 53, the latter being pivotally supported at their centers upon uprights 54, mounted upon the spokes of the wheel 42. The inner ends of the levers are reduced and enter holes formed in a sleeve 55, which slides loosely upon the shaft 40 and has L-shaped arms 56 at its upper end.

57 is a hand-wheel whose hub engages the threads on the shaft 40, and whose hub also has an annular groove 58, in which the feet of the L-shaped arms are loosely engaged. It will thus be seen that when the hand-wheel 57 is turned the sleeve 55 is raised and lowered, and this motion oppositely lowers and raises the ring 52. The ring 52 and the periphery of the wheel 42 carry notched plates P, whose notches register with each other, as seen in the drawings and as will be clearly understood.

60 is an arm having a pin 61 in its outer end adapted to engage the notches 43 in the periphery of the wheel 42. This arm is pivoted between its ends to the upper end of a rock-lever 62, which rock-lever is in turn pivoted between its ends to the frame-work F. The lower end of this rock-lever is pivotally connected by a pitman 63 with the crank 2 of the driving-shaft 1, whereby when said shaft is rotated the arm 60 will be given a longitudinal reciprocation, as will be clearly understood. The inner end of the arm 60 is connected by a connecting-rod 64 with the said crank 2 in the driving-shaft 1, whereby when said shaft rotates the said inner end of the arm 60 will be given a vertical reciprocation, and this arm, receiving in this manner a simultaneous longitudinal motion and rocking motion over its central pivot, moves its pin 61 in an approximately rectangular course. This movement of the pin causes it to engage one of the notches 43 as it moves upwardly, turns the wheel 42 the distance between two of the notches as it moves outwardly, disengages the notch as it moves downwardly, and returns to its normal position as it moves inwardly. In order to cause the pin 61 to remain elevated while the pitman 63 is moving it outwardly and in order to give the arm 60 its proper motions, the pitman 63 and the connecting-rod 64 are slotted, as at 65, where they are mounted on the crank 2, as will be clearly understood.

With the above construction of parts the operation of this machine will be as follows: When the driving-shaft is rotated, the main operating-shaft is also rotated, as above described, and by the rotation of this latter shaft the needle is caused, with the assistance of the shuttle, to make stitches, as will be readily understood. The movements of the cam 22 are so timed that the head H of the machine, and with it the needle and shuttle, will be moved outwardly and inwardly just at the proper moments relatively to the movements of the needle and shuttle to cause one stitch to be made at the inner and the next at the outer extreme of the movements of the head. The brooms are inserted between the plates P, with their handles in the grooves 45 against the blocks 47, after which the plate 46 is turned so as to adjust the brooms to a proper position. The hand-wheel 57 is then turned upwardly on the screw-shaft 40, whereby the ring 52, carrying the upper plate P, is brought down upon the heads of the several brooms, firmly clamping them against the lower plate P. The rotation of the driving-shaft 1 also imparts the above-described movement of the pin 61, which movement turns the wheel 42, carrying the brooms, and the parts of the machine are so timed that this turning of the brooms occurs between each two stitches and while the head of the machine is moving inwardly or outwardly. In the operation of sewing brooms the heads of the latter, after they are put in place between the notched

plates P, are first wrapped with cord, the latter making several complete turns around the broom-head and being led from one broom to the next without breaking or cutting it. The machine is then started and operates as above described, the stitch which is made at the outmost position of the head H passing through the notches in the plates P and above the cords which are wrapped around the broom-handle and the next successive stitch (when the head H is retracted) standing opposite the points between the notches in the plate P and passing through the broom-head below the cord, whereby the sewing which is done through the broom-head is done in zigzag lines and each stitch passes over the cords which are wrapped around the broom-head. The brooms can be adjusted out or in the wheel by the plate 46, as above described, and the several adjustments of which the machine is capable are useful for the purposes above described in connection therewith, all as will be clearly understood by a person familiar with this class of machines.

Having thus described my invention, I claim—

1. In a sewing-machine, the combination, with an upright rotating shaft having an oblique bend in its body and a shoulder on said bend, of an arm loosely mounted on said oblique bend above said shoulder and having a socket in its outer end, a needle-bar reciprocating vertically through guides in the machine-head, and a pin pivoted to said needle-bar and sliding within said socket, substantially as described.

2. In a sewing-machine, the combination, with an upright rotating shaft having an oblique bend in its body and a shoulder on said bend, of an arm loosely mounted on said bend above the shoulder, a needle-bar carried by the outer end of said arm, and guides in which said needle-bar moves, substantially as described.

3. In a sewing-machine, the combination, with the main operating-shaft having a crank in its body and the needle-bar driven by said shaft, of a crank-arm pivoted at one end to the machine frame-work, a connecting-bar between its crank, and the crank in the main shaft, and a pitman connecting the other end of said crank-arm with the shuttle-driver, substantially as described.

4. In a sewing-machine, the combination, with the main operating-shaft having a crank in its body and the needle-bar driven by said shaft, of a plate adjustably connected to the frame-work of the machine, a crank-arm pivoted at one end in said plate, a connecting-bar connecting the crank of this arm with that in the main shaft, and a pitman connecting the free end of said crank-arm with the shuttle-driver, the whole operating substantially as described, and for the purpose set forth.

5. In a sewing-machine, the combination, with the rocking arm having a socket in its outer end, the head having guides, the needle-bar reciprocating in said guides, and a pin pivoted to said needle-bar and loosely seated in said socket, of a longitudinal bar carrying the head, means for reciprocating said bar between the strokes of the needle, a slotted shuttle-plate connected to the outer end of said longitudinal bar and moving therewith, and means for moving the shuttle in said slot, substantially as described.

6. In a sewing-machine, the combination, with the rocking arm having a socket in its outer end, the head having guides, the needle-bar reciprocating in said guides, and a pin pivoted to the needle-bar and loosely seated in said socket, of a cam driven by the operating-shaft of the machine and a longitudinal bar carrying the head and provided with a slot spanning the axis of said cam and having friction-rollers on each side of the latter, the head of the machine being moved outwardly and inwardly by said longitudinal bar between the strokes of the needle, substantially as described.

7. The combination, with a sewing-machine, substantially as described, and a driving-shaft therefor having a crank in its body, of broom-holding rings, one of which has notches in its edge, and a feeding-arm driven by connections from said crank in the driving-shaft and having a pin engaging said notches to rotate the rings between the strokes of the needle, the whole operating as set forth.

8. In a broom-sewing machine, the combination, with the sewing mechanism and a driving-shaft therefor having a crank at its body, of broom-holding rings, the lower one of which has notches in its lower edge, a feeding-arm having a pin in its outer end engaging said notches to rotate the rings between the strokes of the needle, a rock-lever centrally pivoted to a support and pivotally connected at one end to the center of said arm, a pitman pivotally connected to the other end of said rock-lever, and a connecting-rod pivotally connected to the inner end of said arm, both the pitman and the connecting-rod having slots in their other ends engaging the crank in the driving-shaft, the whole operating as and for the purpose set forth.

9. In a broom-sewing machine, the combination, with broom-holding rings having notched plates registering with each other above and below the broom-heads, of the sewing mechanism comprising a machine-head moving toward and from the center of said rings between the stitches, and means for turning the rings a distance equal to half that between the notches within the plates simultaneously with the moving of the head, the whole operating as set forth.

10. In a broom-sewing machine, the combination, with a wheel mounted on an upright shaft, a ring above the periphery of said wheel, levers centrally pivoted to the upper ends of uprights carried by the spokes of said wheel, links connecting the outer ends of said levers

with said ring, and an adjusting-sleeve connected to the inner end of said levers, of the sewing mechanism located adjacent the periphery of said wheel, and means for turning the latter intermittently between the strokes of the needle, substantially as described.

11. In a broom-sewing machine, the combination, with a wheel whose hub is mounted loosely on an upright screw-threaded shaft, a ring above the periphery of said wheel, levers centrally pivoted to the upper ends of uprights carried by the spokes of said wheel, links connecting the outer ends of said levers with said ring, a sleeve sliding loosely on said shaft and having sockets engaging the inner ends of said levers, L-shaped arms on said sleeve, and a hand-wheel having a threaded hub engaging the threads on said shaft and also provided with an annular groove loosely engaging the feet of said arms, of the sewing mechanism located adjacent the periphery of said wheel, and means for turning the wheel intermittently between the strokes of the needle, substantially as described.

12. In a broom-sewing machine, the combination, with a wheel mounted on an upright shaft, a vertically-adjustable ring above the periphery of said wheel, a disk mounted on the hub of said wheel and provided with radial grooves for the broom-handles, and a plate above said disk and grooves, of the sewing mechanism located adjacent the periphery of said wheel, and means for turning the wheel intermittently between the strokes of the needle, substantially as described.

13. In a broom-sewing machine, the combination, with the wheel mounted upon an upright shaft, a vertically-adjustable clamping-ring above the periphery of said wheel, a disk mounted on the hub of said wheel and provided with radial grooves for the broom-handles, blocks in said grooves having notches in their upper faces, and a plate above said disk having a spiral web on its lower face engaging said notches, of the sewing mechanism located adjacent the periphery of said wheel, and means for turning the latter intermittently between the strokes of the needle, substantially as described.

14. In a broom-sewing machine, the herein-described broom-holder comprising a wheel whose hub is mounted loosely on a threaded shaft, a ring upon the periphery of said wheel, levers centrally pivoted to uprights carried by the spokes of said wheel, links connecting the outer ends of said levers with the ring, a sleeve sliding loosely on said shaft and having sockets engaging the inner ends of said levers, and a hand-wheel having a threaded hub engaging the threads of said shaft, said hub being connected with said sleeve, and also comprising a disk mounted on the hub of the wheel and provided with radial grooves, blocks seated in said grooves, and means, substantially as described, for moving said blocks simultaneously outward, as set forth.

15. The herein-described broom-holder, the same comprising a wheel whose hub is mounted loosely on an upright screw-threaded shaft, a ring above the periphery of said wheel, levers centrally pivoted to uprights carried by the wheel, links connecting the outer ends of said levers with said rings, a sleeve sliding loosely on said shaft and having sockets engaging the inner ends of said levers, L-shaped arms on said sleeve, and a hand-wheel having a threaded hub engaging the hubs on said shaft and also provided with an annular groove loosely engaging the feet of said arms, as set forth.

16. The herein-described broom-holder, the same comprising a wheel whose hub is mounted on an upright shaft, a ring above the periphery of said wheel, levers centrally pivoted to uprights carried by the wheel and connected at their outer ends with said ring, a sleeve sliding loosely on said shaft, and means, substantially as described, for adjusting it vertically thereon, as set forth.

17. The herein described broom-holder, the same comprising a wheel mounted on an upright shaft, a vertically-adjustable clamping-ring above the periphery of said wheel, a disk mounted on the hub of said wheel and provided with radial grooves for the broom-handles, blocks in said grooves, and means, substantially as described, for moving said blocks simultaneously outward, as set forth.

18. The herein-described broom-holder, the same comprising a wheel mounted on the upright shaft, a vertically-adjustable clamping-ring above the periphery of said wheel, a disk mounted on the hub of said wheel and provided with radial grooves for the broom-handles, blocks in said grooves having notches in their upper edges, and a plate above said disk having a spiral web on its lower face engaging said notches, as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

HENRY K. CRISSEY.

Witnesses:
C. A. CLANCY,
CALVIN BOYLAN.