

W. WALKER.
SEWING MACHINE.

No. 320,099.

Patented June 16, 1885.

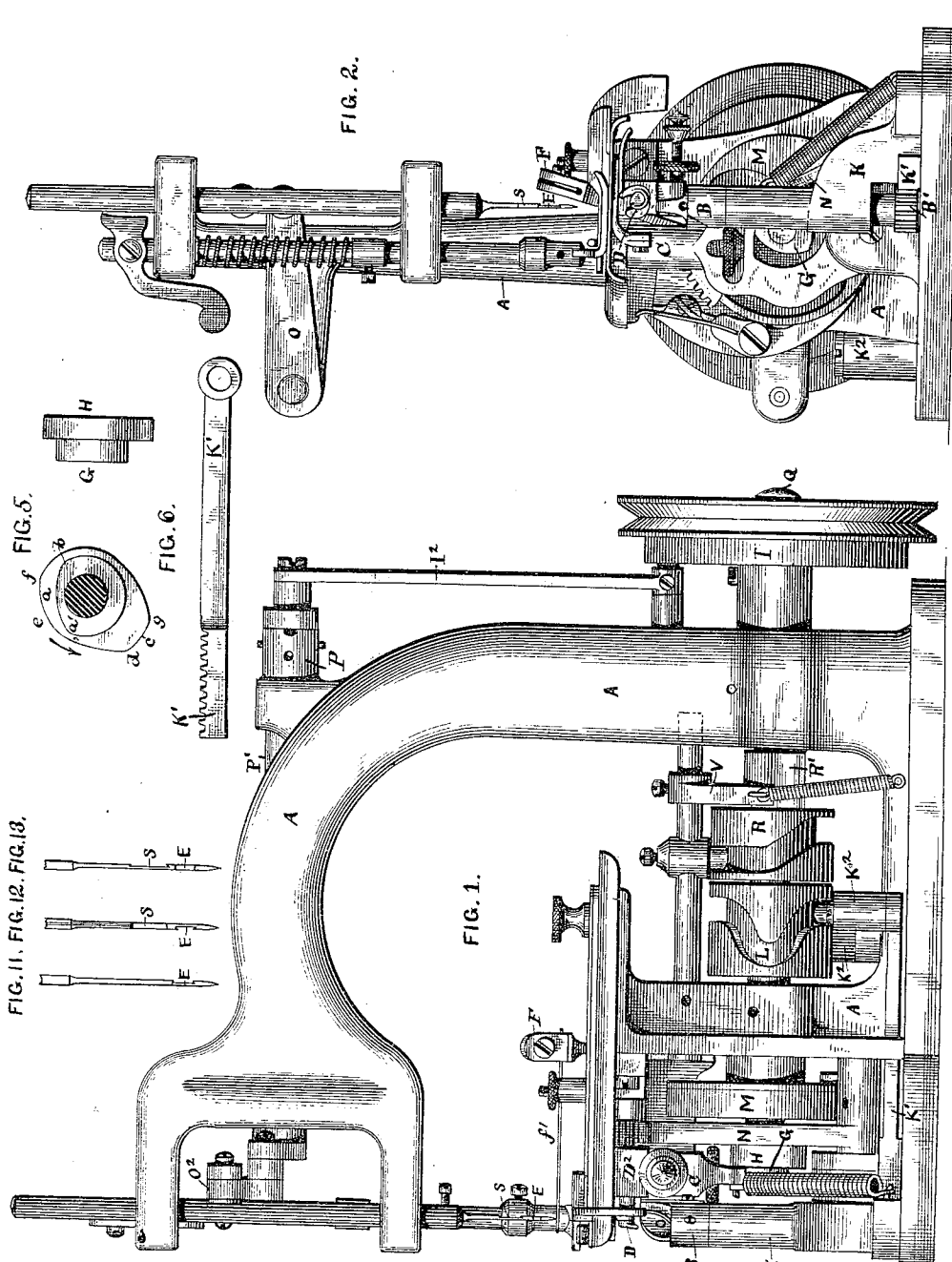


FIG. 11. FIG. 12. FIG. 13.

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W. B. Masson

Inventor:
William Walker
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FIG. 14.

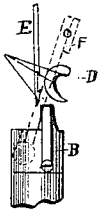


FIG. 15.

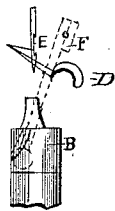


FIG. 16.

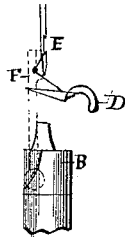


FIG. 17.

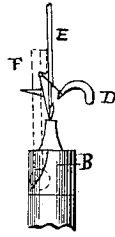


FIG. 18.

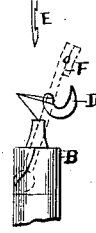


FIG. 3.

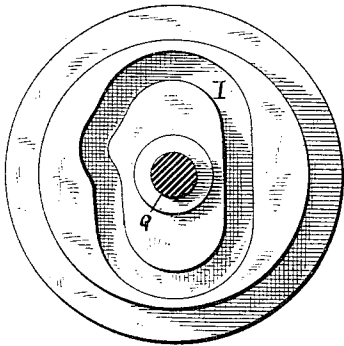


FIG. 4.

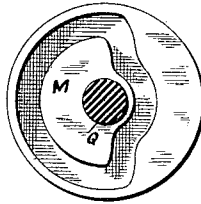


FIG. 4^a.

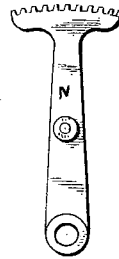


FIG. 8.

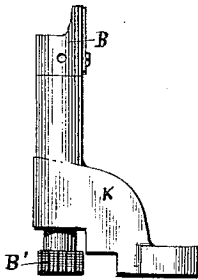


FIG. 9.

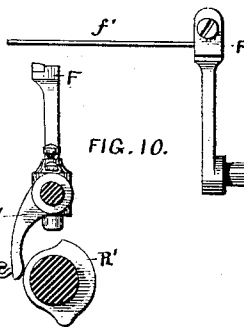


FIG. 10.

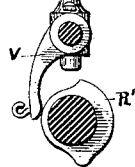


FIG. 4^b.

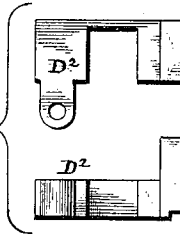


FIG. 4^c.

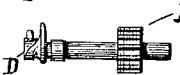
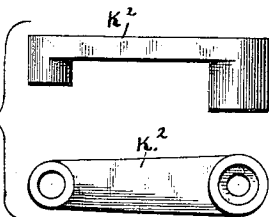


FIG. 7.



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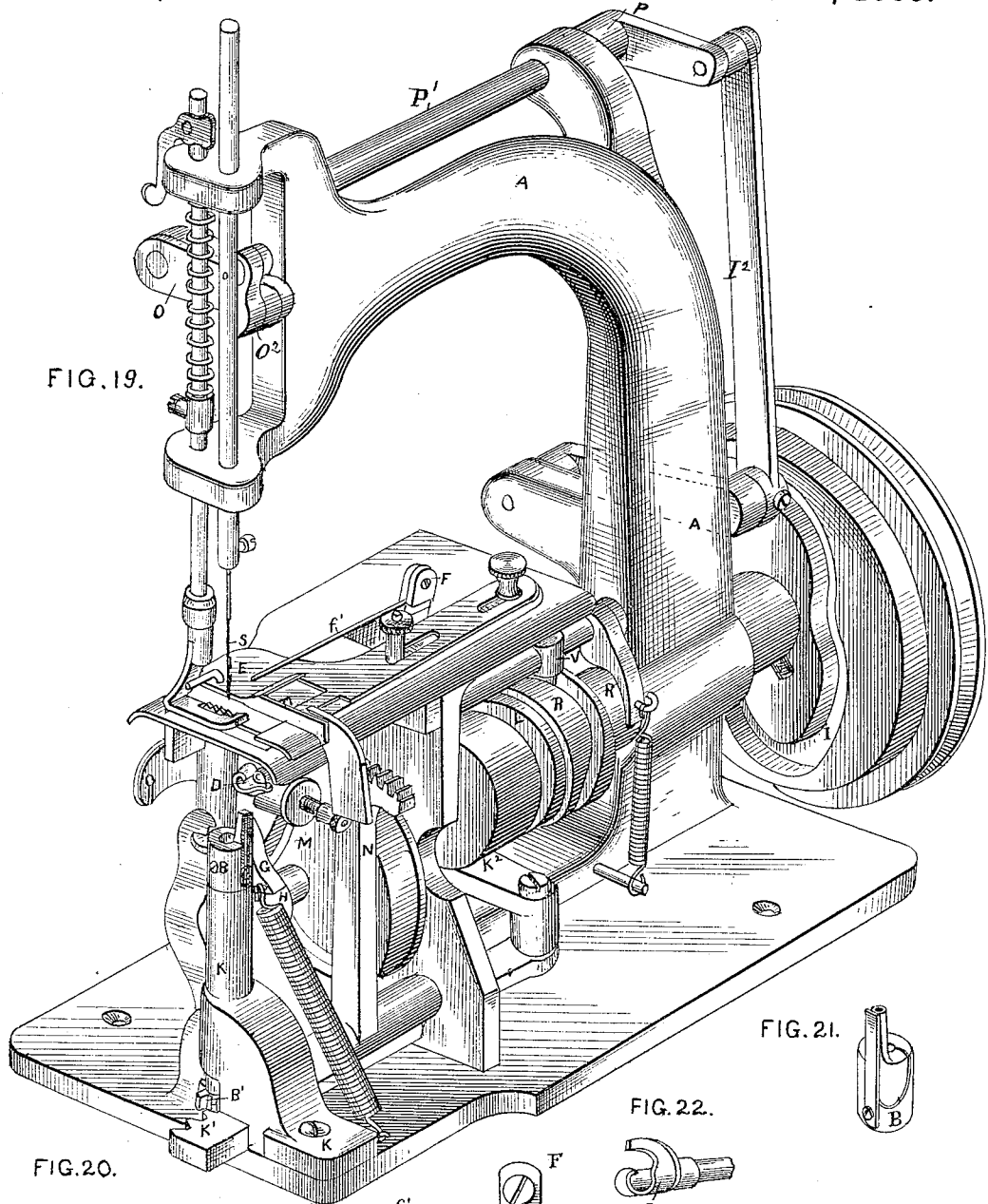


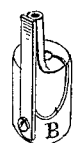
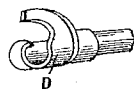
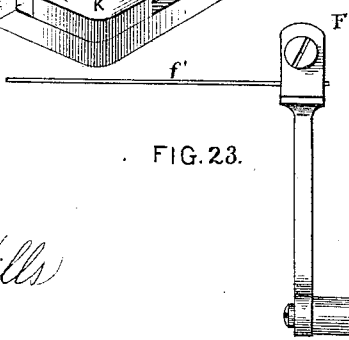
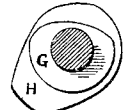
FIG. 19.

FIG. 21.

FIG. 22.

FIG. 20.

FIG. 23.



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UNITED STATES PATENT OFFICE.

WILLIAM WALKER, OF DUNSTABLE, COUNTY OF BEDFORD, ENGLAND.

SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 320,099, dated June 16, 1895.

Application filed November 23, 1883. (Model.) Patented in England January 10, 1883, No. 142; in France August 8, 1883, No. 156,948; in Germany August 18, 1883, No. 26,805, and in Belgium August 22, 1883, No. 62,372.

To all whom it may concern:

Be it known that I, WILLIAM WALKER, of Dunstable, in the county of Bedford, England, have invented new and useful Improvements in Sewing-Machines, (for which I have obtained a patent in Great Britain, No. 142, bearing date January 10, 1883; in France, No. 156,948, dated August 8, 1883; in Germany, No. 26,805, dated August 18, 1883, and in Belgium, No. 62,372, dated August 22, 1883,) of which invention the following is a specification.

My invention relates to a single-thread chain stitch sewing-machine producing a long and a short stitch alternately and applicable to the manufacture of straw, braid, chip, and other hats and bonnets, and to other purposes.

My improvements consist particularly in the mechanical arrangements for producing the feed-motion, the threading and unthreading of the double-hook needle, and for retaining and releasing the loop of thread.

In the drawings, Figure 1 is a side elevation of the machine constructed according to my invention. Fig. 2 is an end elevation showing the arrangement of mechanism beneath the work-plate. Fig. 3 shows the double cam for operating the needle-shaft. Fig. 4 shows the cam for operating the looper or unthreader by means of the lever shown in Fig. 4^a and the pinion shown in Fig. 4^b. Fig. 4^c shows the frame in which the said pinion works. Fig. 5 is a front and side view of the double cam for operating the feed-bar. Fig. 6 is the rack-bar for operating the threader, the said bar being actuated by the lever shown in Fig. 7. Fig. 8 is a front elevation of the threader. Figs. 9 and 10 are front and end views of the thread-retainer and cam for operating the same. Figs. 11, 12, and 13 show the needle. Figs. 14, 15, 16, 17, and 18 show the formation of the stitch. Fig. 19 is a perspective view of the whole machine. Fig. 20 is a front view of the double cam operating the serrated foot that feeds the material operated upon. Fig. 21 is a perspective view of the threader. Fig. 22 is a perspective view of the unthreader. Fig. 23 is a front view of the thread-retainer.

Like letters indicate like parts in all the figures.

A is the frame of the machine.

B is the threader retained in a vertical frame or support, K, secured upon the base-plate of the machine. This threader is oscillated a quarter of a revolution every second stitch of the needle by means of its pinion B' engaging with the rack K', and the latter is operated by the cam L upon the main shaft.

C is the feeder that advances the material.

D is the oscillating looper or unthreader. It is mounted upon a horizontal shaft carrying a pinion, D', (see Fig. 4^b,) to which an intermittent rotary motion is imparted by the rack-lever N. (See Figs. 4^a and 1.)

The needle is provided upon its side with a double hook, E, to elevate and depress at the proper time the thread of the machine through the material, and a recess, S, to allow the unthreader to pass and take out the thread and hold the same.

F is the thread looper or retainer above the cloth-plate. It is moved lengthwise by means of the cam R, and laterally, as shown in Fig. 10, by means of the cam R' pressing against the lower end of the lever V.

Upon one end of the main shaft are mounted the cams G and H, to operate the feeder C, and upon the opposite end of the main shaft is also mounted the double cam I, to impart motion to the needle-bar by means of the connections I' and P, the shaft P', crank O, and link O'.

M is a cam-disk for operating the rack-lever N, and the latter gives an intermittent motion to the unthreader D.

The first part of my invention consists in a feed action which will raise the feeder C above the level of the work-plate and maintain the said feeder in this position until two stitches—one long and one short, or vice versa—have been made by the needle. A double cam G H is fixed on the end of the driving-shaft Q, Figs. 1 and 2. The portion *c* of the cam (see Fig. 5) is nearest the center, and when the feeder C presses against this portion *c* the said feeder is in its most forward position. As the shaft Q turns in the direction of the arrow (Fig. 5) the movement of the cam from *c* to *d* propels the feeder C. The portion *d* to *e* of the cam being circular, the said portion imparts no movement to the feeder, but the

needle and looper are performing their part. The revolution of the shaft Q brings the portion *e* to *f* of the cam against the feeder C, thereby giving the said feeder a further feeding movement. Thus two distinct motions or feeds are imparted to the feeder C while it is raised by the cam or eccentric G. The object of this cam G is to raise the feeder C from its lowest point *a*. The revolution of the cam G from *a* to *a'* raises the feeder C, and the said feeder continues raised during the movement of the said cam from *a'* to *b*, and while the said feeder is making a long and a short feeding movement, or vice versa. The feeder C then falls and returns while cams G and H revolve from *b* to *a* and from *g* to *c*.

The second part of my invention relates to the mechanism for forming the stitches. The needle is of peculiar construction, as shown in Figs. 11, 12, and 13. The eye is cut away on one side, so as to form an upper and lower hook, and the said needle is provided with a recess, S, on one side to admit of the passage of the looper or unthreader D. The needle moves up and down twice to each revolution of the driving-shaft, so that two stitches—a long one and a short one, or vice versa—are formed by each revolution. Figs. 14 to 18 illustrate the action of the threader B, the thread being drawn up through tensions to the hole and slot in the said threader and through the needle-hole in the work-plate. The needle descends, and just before it reaches its lowest point the threader B, by means of pinion B' and rack-bar K', actuated by cam L, makes about two-thirds of a revolution and strains the thread around the needle. As the needle rises the thread falls into the eye or recess E in the needle, and is held by the lower hook of the said recess. (Figs. 14 and 15.) After the thread is secure in the hook of the needle, the said needle rises to its highest point. To prevent the thread slackening and coming out of the hook in its descent, a fine wire, *f'*, is fixed in the thread-retainer F. The cam R moves the said thread-retainer so as to bring the wire *f'* in front of the needle, and as soon as the wire *f'* is fully in front of the needle a rocking motion is imparted to the thread-retainer F by the cam R'. This motion holds back the thread and retains the same in the needle, as in Fig. 16. As the needle descends, the wire gives to the strain, as in Fig. 17, until the needle is at its lowest point, when the wire is withdrawn by the action of

the cams R and R', and as soon as the needle begins to rise, the thread, which in its descent has been held in the top hook of the needle by means of the wire *f'*, slightly bows out, and the looper or unthreader D in its movement enters this loop through the recess S in the needle and takes the thread quite out of the needle-hooks, as shown in Figs. 17 and 18. The looper or unthreader D holds the thread expanded until the feed is moved forward for the long stitch, and the needle, unthreaded, rises to its highest point and again descends through the loop formed by the looper or unthreader D, when the threader B returns and again strains the thread around the needle, as before described. The needle rises and draws up the thread through the loop, when the looper or unthreader D releases the loop, and it is pulled up, as in Figs. 15 and 16, when the feed is moved forward as required.

Having thus fully described my said invention, and shown how the same may be carried into practice, I claim and desire to secure by Letters Patent—

1. The combination of a needle-operating double cam, I, a needle having a notch in its side, a needle-bar and its connections with said cam, with the oscillating looper D, feeder C, and double cam G H, whereby two distinct feeding movements are imparted to said feeder, and an alternately long and short stitch are produced from a needle, substantially as described.

2. The needle E, having a notch in the side thereof, the threader B, and mechanism for operating the same, in combination with the double-feed cams G and H and feeder C, substantially as shown and described.

3. The reciprocating notched needle, the looper or unthreader D, and the mechanism for operating the same in combination with the threader B, its operating mechanism, the double cam G and H, and feeder C, substantially as described.

4. The thread-retainer F, having the wire *f'*, and mechanism for operating the same, in combination with the double-feed cams G and H, the feeder C, threader B, unthreader or looper D, and notched needle reciprocating substantially as described.

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Witnesses:

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