(No Model.) 2 Sheets—Sheet 1.

D. H. COLES.

SEWING MACHINE.

No. 423,856. Patented Mar. 18, 1890.

Fig. 1.

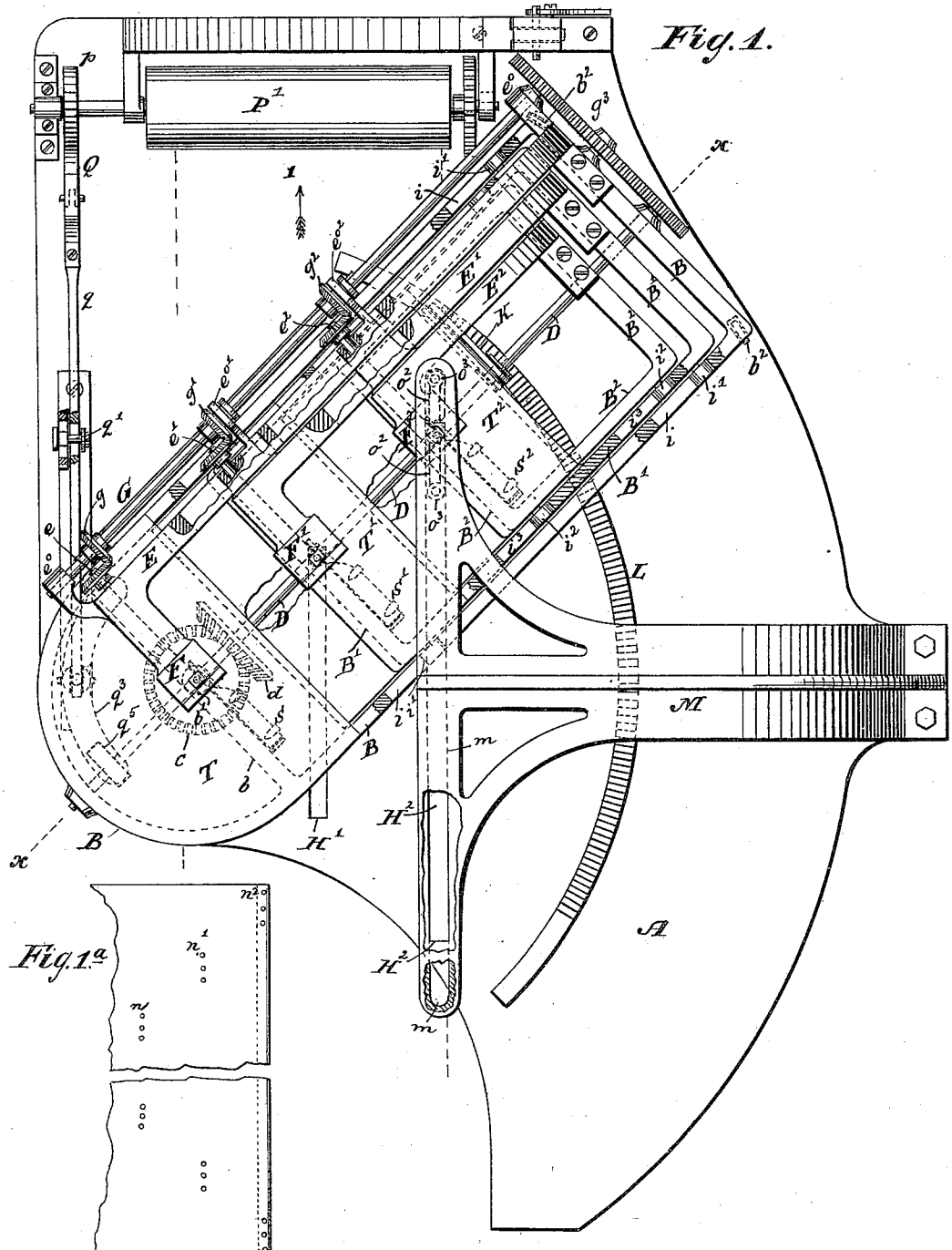


Fig. 1a.

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 2.

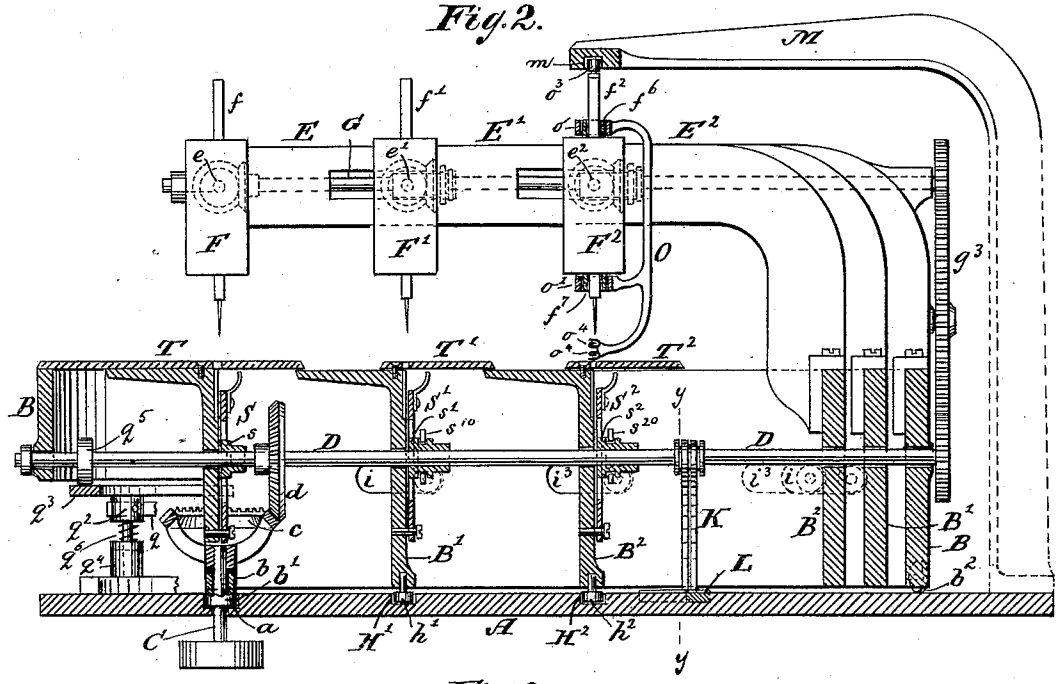


Fig. 3.

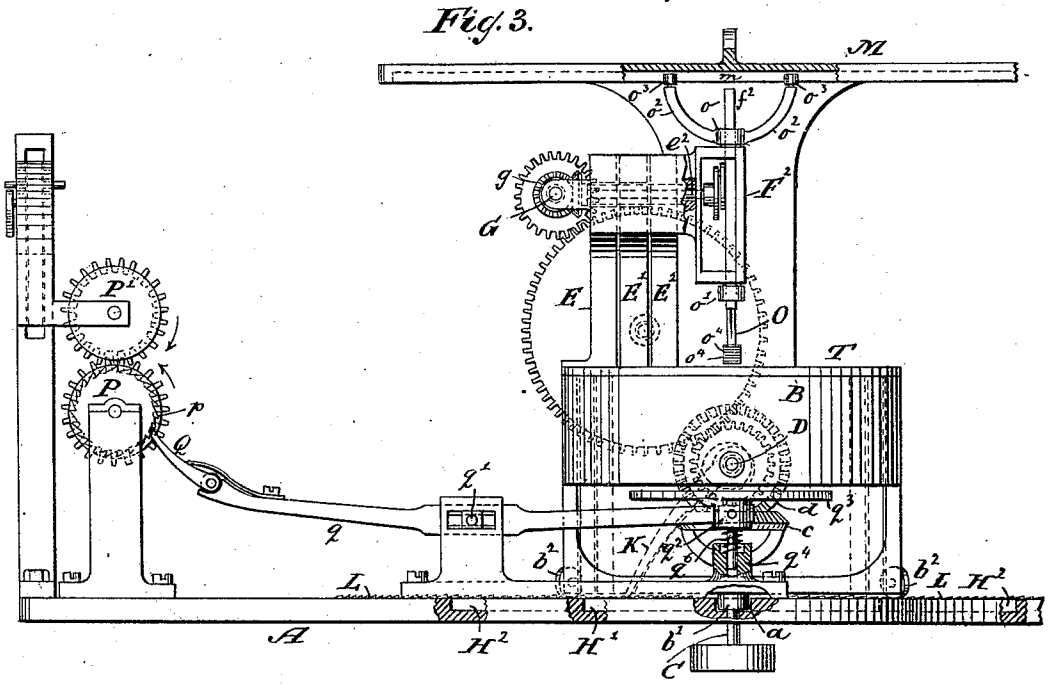
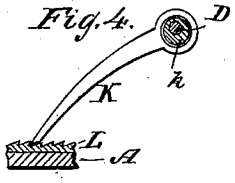


Fig. 4.



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UNITED STATES PATENT OFFICE.

DAVID H. COLES, OF BROOKLYN, ASSIGNOR TO THE MANHATTAN QUILTING AND MANUFACTURING COMPANY, OF NEW YORK, N. Y.

SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 423,856, dated March 18, 1890.

Application filed January 9, 1890. Serial No. 336,375. (No model.)

To all whom it may concern:

Be it known that I, DAVID H. COLES, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented new and useful Improvements in Sewing-Machines, of which the following is a specification.

This invention relates to a sewing-machine which is capable of producing miter-shaped borders and simultaneously hemming the edges of the work.

The peculiar and novel construction of my sewing-machine is pointed out in the following specification and claims, and illustrated in the accompanying drawings, in which—

Figure 1 represents a plan or top view. Fig. 1^a is a plan view of a portion of the work when finished. Fig. 2 is a vertical section in the plane $x\ x$, Fig. 1. Fig. 3 is a front view, partly in section, showing the working parts in a different position from the previous figures. Fig. 4 is a partial vertical section in the plane $y\ y$, Fig. 2.

In the drawings, the letter A designates the base-plate, which is provided with a circular cavity a, and on which rest the frames B B′ B^2, the frames B′ B^2 being fitted into the frame B, as shown in Fig. 1. The frame B is provided with a cross-bar b, from which projects a cylindrical boss b' to engage the cavity a in the base-plate A. Through the boss b' extends the vertical driving-shaft C, on the upper end of which is mounted a bevel-wheel c, engaging a bevel-wheel d, mounted on the horizontal shaft D, which has its bearings in the frame B and extends through the frames B′ B^2. The frame B is provided at its rear ends with two wheels b^2 b^3, which rest upon the base-plate A and are placed in such a position that said frame can be turned easily round on its boss b', and when it is turned round the shaft D remains in gear with the driving-shaft C.

From the rear ends of the frames B B′ B^2 extend the goose-necks E E′ E^2, which carry the needle-heads F F′ F^2 and the shafts e e' e^2, which serve to impart motion to the needle-slides f f' f^2, and to which motion is imparted from a shaft G, which has its bearings in arms e^0, extending from the goose-neck E, and is geared together with the shafts e e' e^2 by bevel-wheels g g' g^2 and with the shaft D by gears g^3, as shown in Figs. 1 and 2. From the goose-necks E′ E^2 extend arms $e^{0'}$ e^{02}, which engage circular grooves in the hubs of the bevel-wheels g' g^2, and these bevel-wheels are feathered on the shaft G, so that they can follow the movements of the frames B′ B^2 without being thrown out of gear with the shafts e' e^2.

Each of the frames B B′ B^2 is provided with a throat-plate T T′ T^2 and with a shuttle-carrier S S′ S^2, and motion is imparted to these shuttle-carriers by cams s s' s^2, which are mounted on the shaft D, the cams s' s^2 being feathered on this shaft and carried by forked arms s^{10} s^{20}, which extend from the frames B′ B^2, respectively, and engage circular grooves in hubs of the cams s' s^2. (See Fig. 2.)

From the bottom of the frame B′ projects a stud h', (preferably a roller-stud,) which engages a groove or recess H′ in the base-plate A, and from the sides of said frame B′ project roller-studs i', which engage grooves or slots i in the sides of the frame B. From the bottom of the frame B^2 projects a roller-stud h^2, which engages a groove H^2 in the base-plate A, and from the sides of said frame B^2 project roller-studs i^2, which engage slots or grooves i^3 in the sides of the frame B′. On the shaft D is loosely hung a pawl K, which engages a segmental rack L, secured to or on the base-plate A, and a cam or eccentric k, Fig. 4, imparts to the pawl the required movement, so that by its engagement with the rack L a step-by-step movement is imparted to the frames B B′ B^2, causing the frame B to turn on its boss b' as a center, while the frames B′ B^2 are compelled to move with the frame B, and at the same time the needle-heads F′ F^2 are carried in the direction of the grooves H′ H^2, respectively, by the action of the roller-studs h' h^2, which are situated in the same vertical planes with the needle-slides f' f^2, respectively.

From the base-plate A rises a standard M, which is provided in its under surface with a groove m. This groove is directly over and in line with the groove H^2 in the base-plate A, which engages the stud h^2 of the frame B^2.

From the needle-head E^2 extend two cylindrical projections f^6 f^7, one above and the other below, which engage the eyes o o', formed on the hemmer O. From the eye o extend two arms o^2, Fig. 3, carrying roller-studs o^3, which engage the groove m in the standard M. In the example shown in the drawings the hemmer is provided with two folding-guides o^4, so that if the work to be sewed consists of two layers of muslin or other material the edges of both layers are turned in and hemmed simultaneously. By means of the slot m in the standard M the hemmer O is retained in the proper relation to the needle in the head F^2, while it is free to move with this head as the sewing progresses.

P P′ are the feed-rollers, which are geared together and on the shaft of one of which is mounted the ratchet-wheel p, Figs. 1 and 3.

Q is the feed-pawl, which engages the ratchet-wheel p and is attached to the feed-lever q, so that it can yield in one direction. The fulcrum q' of the feed-lever is adjustable, so that the feed motion can be increased or decreased in the well-known manner. The inner end of the feed-lever engages the hub q^2 of a segment q^3, the shank of which is guided in a socket q^4, Fig. 3, and which is held in contact with the feed-cam q^5 by the action of a spring q^6. The feed-cam is firmly mounted on the shaft D.

The throat-plates T T′ T^2 form the work-plate, and by the action of the feed-rollers the work receives a step-by-step movement in the direction of arrow 1, Fig. 1, and at the beginning of the operation the frames B B′ B^2 occupy the positions shown in Fig. 1, so that the first stitches will be in the position indicated by the letters n n' n^2 in Fig. 1^a. As the sewing progresses the needle in the needle-head F remains in the same vertical plane, and the length of the stitches produced by this needle is equal to the cloth-feeding motion; but the needles carried by the needle-heads F′ F^2 are moved after each stitch in the direction opposite to the cloth-feeding motion and a miter-shaped border is produced, as indicated in Fig. 1^a, and at the same time the edge of the work is hemmed.

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

1. In a sewing-machine, the combination, with the work-plate and the feed mechanism, of a needle-head F, mounted above the work-plate and capable of turning upon an axis which coincides with the longitudinal axis of the needle carried by said head, a shuttle-carrier S beneath the work-plate and connected to the head F, mechanism for imparting to the shuttle-carrier S a concerted movement with the needle in the head F, a needle-head F′ above the work-plate, a shuttle-carrier S′ beneath the work-plate, and mechanism for imparting to the head F′ and the carrier S′ a concerted step-by-step movement, substantially as described.

2. In a sewing-machine, the combination, with the work-plate and the feed mechanism, of the needle-head F above the work-plate, the shuttle-carrier S beneath the work-plate, mechanism for imparting a concerted movement to the shuttle-carrier S and to the needle carried by the head F, the needle-head F^2 above the work-plate, the shuttle-carrier S^2 beneath the work-plate, mechanism for imparting to the head F^2 and the carrier S^2 a concerted step-by-step movement in a direction opposite to the feed motion of the cloth, a hemmer O, movably connected to the head F^2, and a guide for retaining said hemmer in the sewing-line, substantially as described.

3. In a sewing-machine, the combination, with a frame B and the needle-head F, and the shuttle-carrier S, mounted on said frame, of a secondary frame B′ within the frame B, a needle-head F′ and shuttle-carrier S′, mounted on the frame B′, mechanism for imparting a concerted movement to the needle carried by the head F and the shuttle-carrier S, and also to the needle carried by the head F′ and the shuttle-carrier S′, and a cloth-feeding mechanism common to both frames B and B′, substantially as described.

4. In a sewing-machine, the combination of the frame B, having a boss b', on which it can swing round, the driving-shaft C, extending through this boss, the needle-head F, mounted on the frame and carrying a needle in line with the center line of the boss b', the shuttle-carrier S, mounted in the frame B, the secondary frame B′ within the frame B, the needle-head F′ and shuttle-carrier S′, mounted in the frame B′, mechanism for imparting a concerted movement to the needle carried by the head F and the shuttle-carrier S, and also to the needle carried by the head F′ and the shuttle-carrier S′, and a cloth-feeding mechanism common to both frames B and B′, substantially as described.

5. In a sewing-machine, the combination of the frame B, having a boss b', on which it can swing round, the driving-shaft C, extending through this boss, the needle-head F, mounted on the frame and carrying a needle in line with the center line of the boss b', the shuttle-carrier S, mounted in the frame B, the secondary frame B′ within the frame B, the stud h', extending from the frame B′ into a groove H′, the needle-head F′, mounted on the frame B′ and carrying a needle in line with the center line of the stud h', the shuttle-carrier S′, mounted on the frame B′, mechanism for imparting a concerted movement to the needle carried by the head F and the shuttle-carrier S, and also to the needle carried by the head F′ and the shuttle-carrier S′, mechanism for imparting to the frames B B′ a step-by-step movement round the boss b', and a cloth-feeding mechanism common to both frames, substantially as described.

6. In a sewing-machine, the combination of the frame B, having a boss b', on which it can swing round, the driving-shaft C, extending through this boss, the needle-head F, mounted

on the frame and carrying a needle in line with the center line of the boss b', the shuttle-carrier S, mounted in the frame B, the secondary frame B^2 within the frame B, the stud h^2, extending from the frame B^2 into a groove H^2, the needle-head F^2, mounted on the frame B^2 and carrying a needle in line with the center line of the stud h^2, the shuttle-carrier S^2, mounted on the frame B^2, mechanism for imparting a concerted movement to the needle carried by the head F and the shuttle-carrier S, and also to the needle carried by the head F^2 and the shuttle-carrier S^2, a hemmer O, movably mounted on the head F^2 and provided with arms to engage the groove m, which is parallel with the groove H^2, mechanism for imparting to the frames B B^2 a step-by-step movement round the boss b', and a cloth-feeding mechanism common to both frames, substantially as described.

7. In a sewing-machine, the combination of the frame B, having a boss b', on which it can swing round, the driving-shaft C, extending through this boss, the needle-head F, mounted on the frame and carrying a needle in line with the center line of the boss b', the shuttle-carrier S, mounted in the frame B, the secondary frame B′ within the frame B, the needle-head F′ and shuttle-carrier S′, mounted in the frame B′, mechanism for imparting a concerted movement to the needle carried by the head F and the shuttle-carrier S, and also to the needle carried by the head F′ and the shuttle-carrier S′, the cam q^5, the elastically-supported segment q^3, the fulcrum q, engaging this segment, and the feed-rollers P P′, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

DAVID H. COLES.

Witnesses:
W. C. HAUFF,
E. F. KASTENHUBER.