

(No Model.)

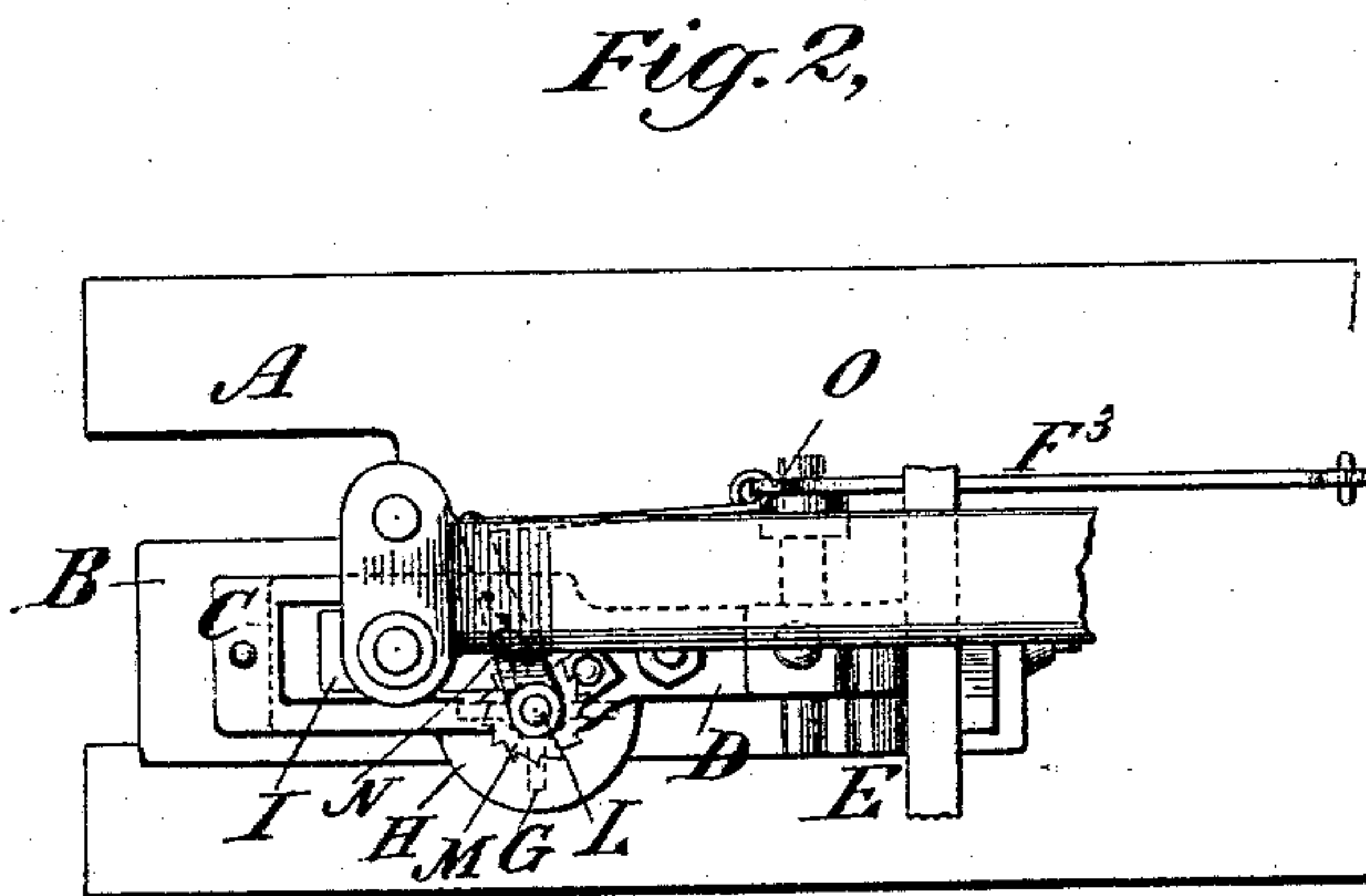
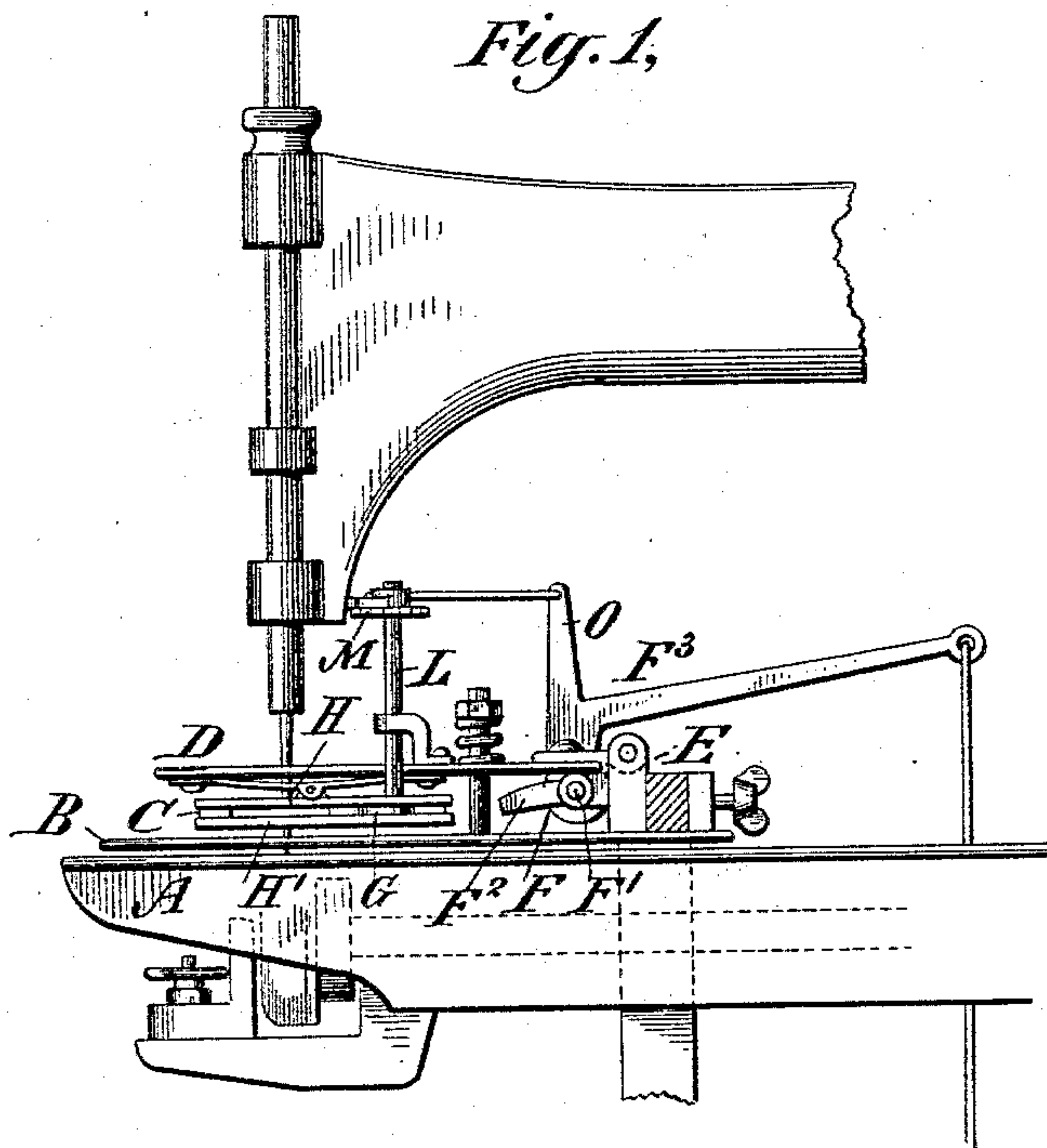
2 Sheets—Sheet 1.

C. H. & T. E. COLBY.

THREAD CUTTING DEVICE FOR SEWING MACHINES.

No. 561,766.

Patented June 9, 1896.



WITNESSES:

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Adolph F. Bosch

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(No Model.)

2 Sheets—Sheet 2.

C. H. & T. E. COLBY.

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Fig. 3,

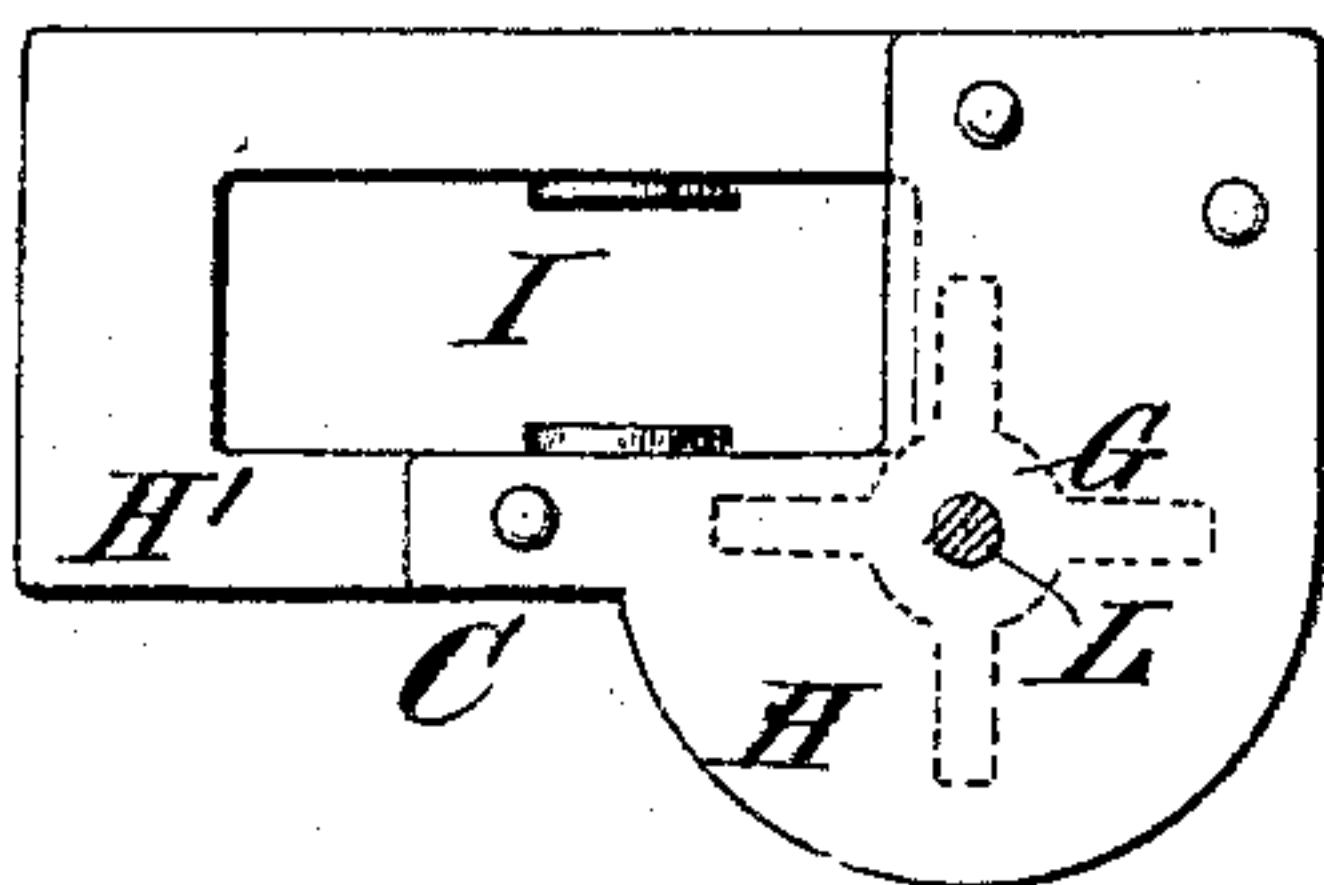


Fig. 5,

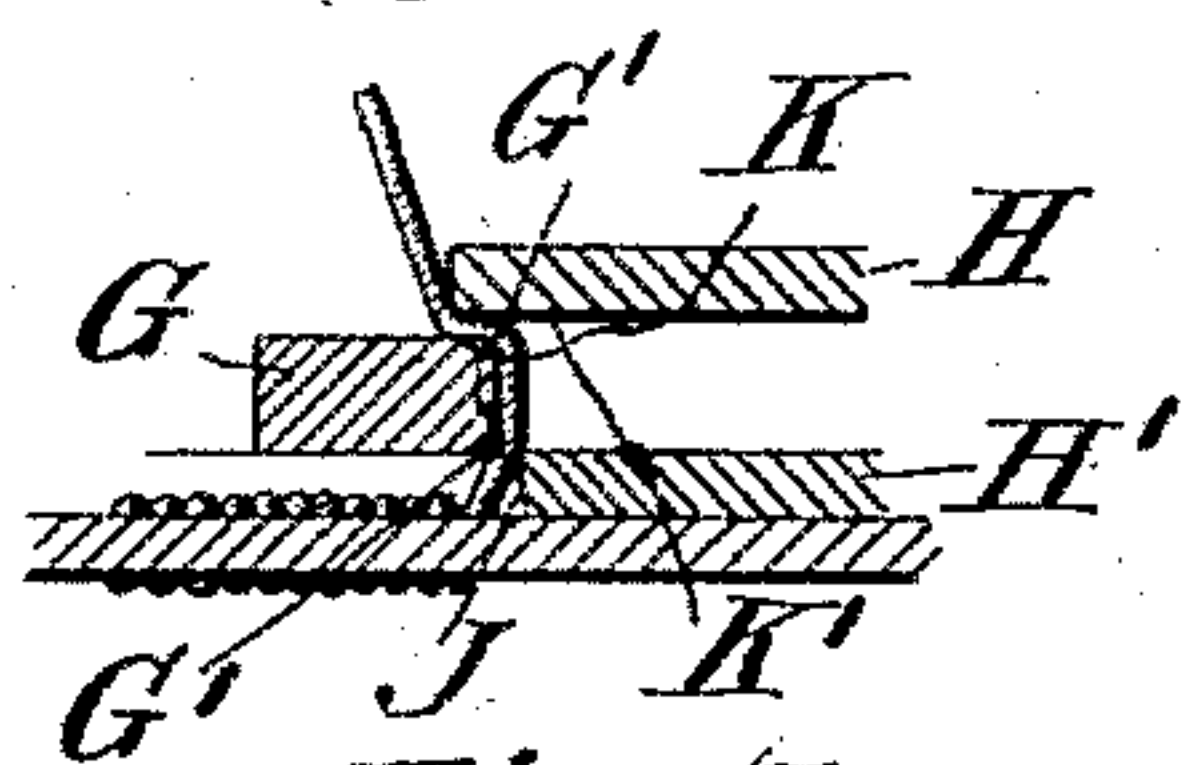


Fig. 4,

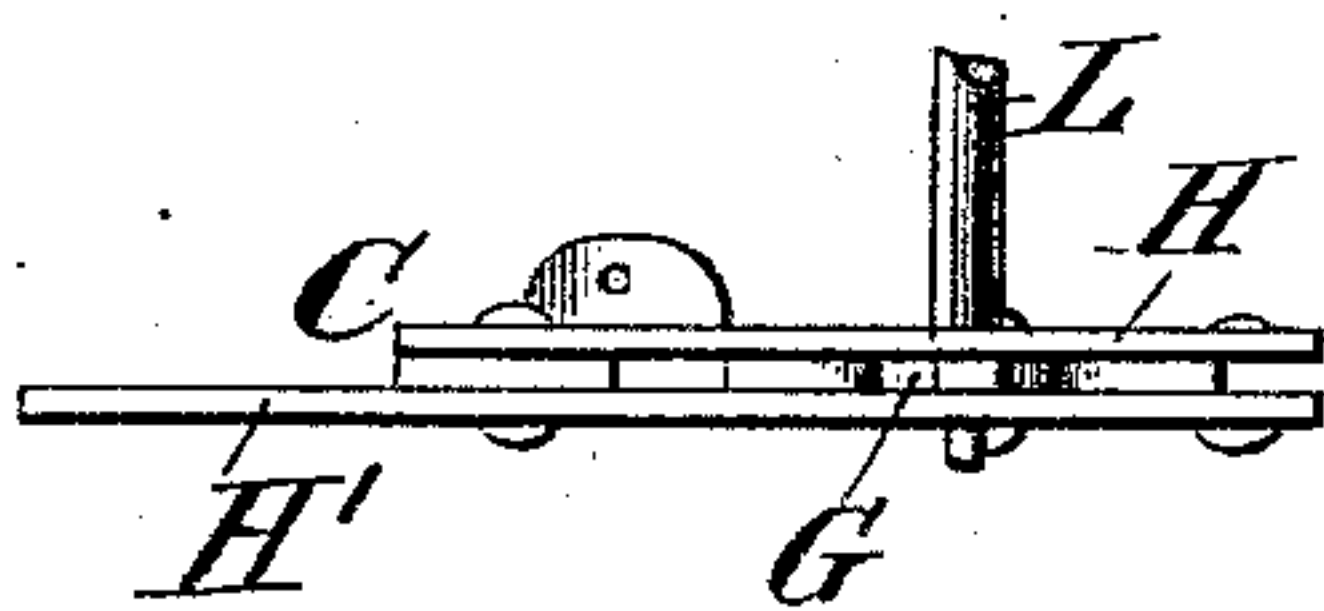


Fig. 6,

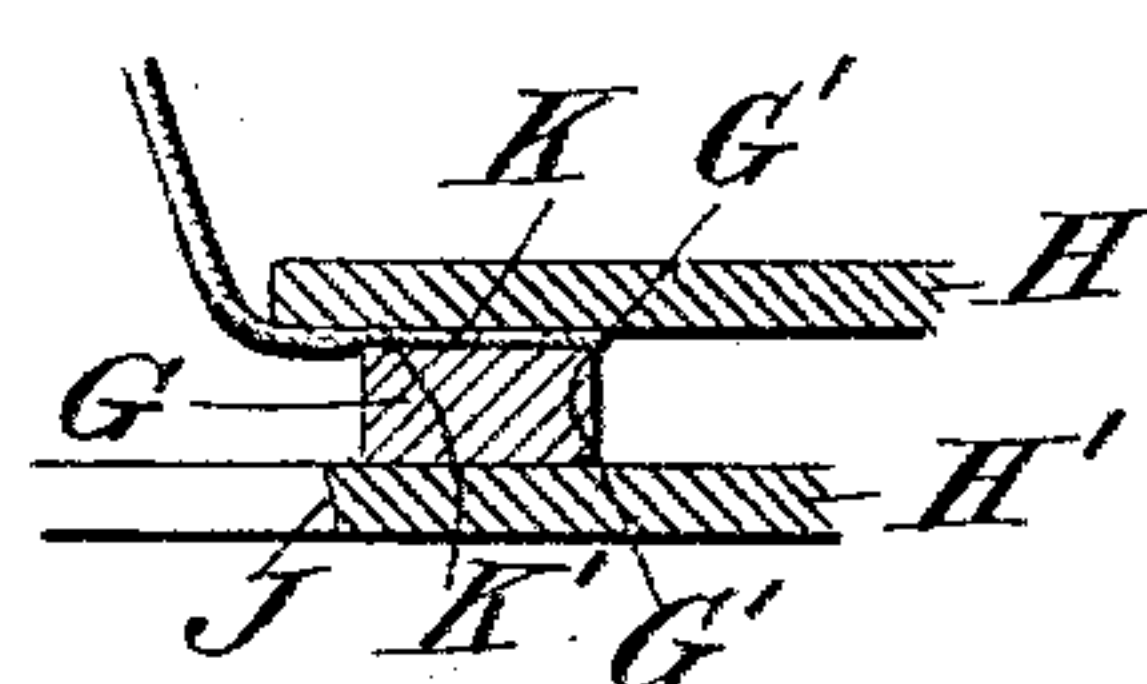


Fig. 7,

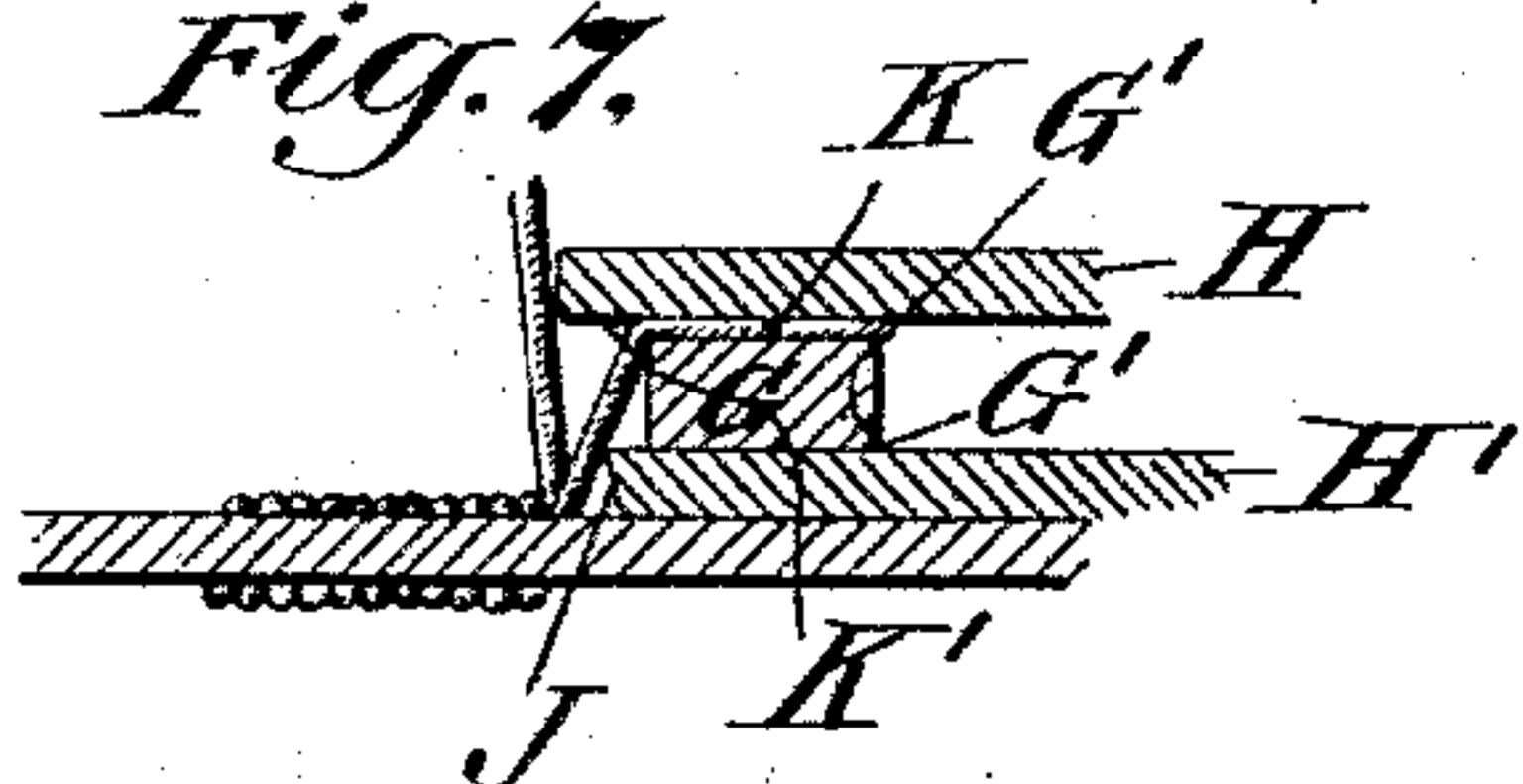
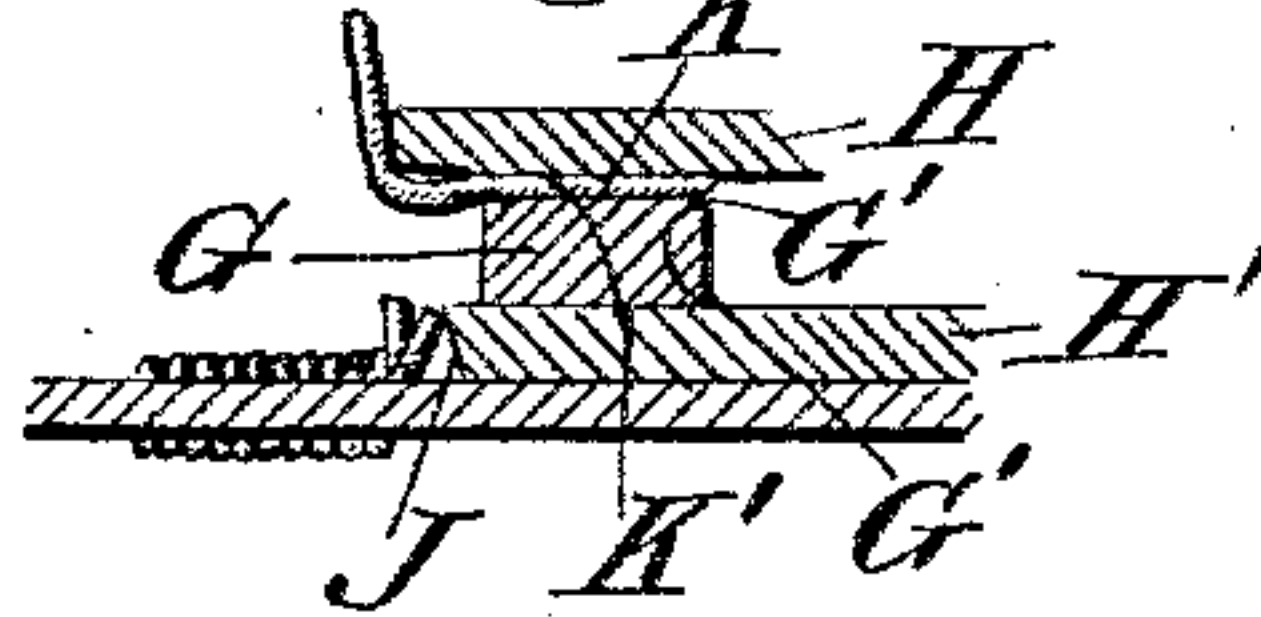


Fig. 8,



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UNITED STATES PATENT OFFICE.

CHARLES H. COLBY AND THOMAS E. COLBY, OF BROOKLYN, NEW YORK.

THREAD-CUTTING DEVICE FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 561,766, dated June 9, 1896.

Application filed January 22, 1896. Serial No. 576,407. (No model.)

To all whom it may concern:

Be it known that we, CHARLES H. COLBY and THOMAS E. COLBY, citizens of the United States, and residents of the city of Brooklyn, county of Kings, and State of New York, have invented a new and useful Improvement in Thread-Cutting Devices for Sewing-Machines; and we do hereby declare that the following is a full, clear, and exact description of the same.

This invention relates to thread-cutting devices for sewing-machines of the general class exemplified in an application for patent made by Herbert E. Hawes, and filed August 25, 1894, Serial No. 521,306, said application having been assigned to us as members of the firm of Colby & Co., of Brooklyn, New York. In the thread-cutting device described in said application Serial No. 521,306 a thread cutting and clamping piece is swung across the needle-opening in the work-clamp on the completion of the stitching operation, so as to sever the thread from the work and at the same time clamp the free end of the thread until after the commencement of the next stitching operation, when the thread cutting and clamping piece is swung backward into position to sever the thread from the work on the completion of the stitching.

The general object of our invention is to provide an improved thread-cutting device which, after each cutting operation, is in position for the next cutting operation without the necessity of returning it, so that it is adaptable to all kinds of sewing-machines and particularly to buttonhole-sewing machines.

Another important object is to provide for clamping and holding the severed end of the thread in the needle until the completion of the next stitching operation, so that the ensuing operation of the cutting device will sever both the final thread of the buttonhole between the needle and the work and the initial thread of the buttonhole between the thread-clamp and the work, and thus completely trim the work.

A further object is to conveniently provide for simultaneously cutting the threads of a plurality of buttonholes when stitched simultaneously by a multiple buttonhole-sewing

machine of the kind exemplified in Letters Patent No. 441,058, granted to Thomas E. Colby, November 18, 1890.

We attain these and other important ends by the construction hereinafter described, and illustrated in the accompanying drawings, in which like letters of reference designate the same parts in all the figures.

Figure 1 is a sectional side view representing the essential parts of a multiple buttonhole-sewing machine provided with a thread-cutting device according to our invention. Fig. 2 is a plan view of the same. Figs. 3, 4, 5, 6, 7, and 8 are detail views illustrating the successive steps in the operation of the said thread-cutting device.

A designates the work-table of a multiple buttonhole-sewing machine of the character described in Letters Patent No. 441,058 aforesaid; B, one of the work-feeding clamps thereof; C, the presser-foot of the work-clamp B; D, the spring-depressed presser-foot arm; E, the carrier for the several work-clamps having the well-known vibratory and longitudinally-reciprocatory motion for making a buttonhole, and F the multiple presser-foot-lifting device or lifter consisting of a rock-shaft F', mounted on the carrier E beneath the arms of the presser-foot and having projections F² to lift the arms D, and an operating-arm F³, which in practice is connected with a treadle, so that the several presser-feet may be elevated and lowered simultaneously by the foot of a single operator.

All the parts we have recited are substantially shown and described in said Letters Patent No. 441,058, and therefore need no detailed description here.

In applying our improved thread-cutting device to this machine we mount a cutting-piece G, having, by preference, a plurality of, in this instance, four equidistant radiating bottom cutting edges G' to revolve horizontally between the upper and lower plates H H', respectively, of each presser-foot C in such manner that when rotated the cutting edges G' will successively swing from the side of the needle-opening I in the presser-foot to the end of said opening, where the needle rests before and after the stitching of the buttonhole, and thus between the uplifted

needle and the work. We likewise form a cutting edge J on the lower plate H' of the presser-foot at the end of the needle-opening I, so as to cooperate with the rotary cutting edges G' and sever the thread between the needle and the work, as illustrated in Fig. 5.

On the top of the cutting-piece G, above each lower cutting edge G', we form a preferably beveled clamping-jaw K to cooperate with a clamping-jaw K', formed on the upper plate H of the presser-foot at the end of the needle-opening I, as best shown in Figs. 5, 6, and 7, so that when the thread is severed by the cutting-piece, as shown in Fig. 5, the upper severed end of the thread will at the same time be caught and clamped by the jaws K K', as shown in Figs. 6 and 7.

We operate the thread cutting and clamping piece G so that in this application of our invention on the completion of the stitching of a buttonhole a cutting edge G' will be rotated from the side to the end of the needle-opening, so as to sever the thread and clamp the upper or free end thereof, and at the same time the succeeding cutting edge G' (if there are several cutting edges, as shown) will be brought into position for the next cutting operation. Then when the next buttonhole is stitched the thread end is held in the clamp until the completion of the stitching, when there will be two adjoining threads to cut, as shown in Fig. 7—the initial thread held in the clamp and the final thread held in the needle. The succeeding cutting edge G' is then rotated across the needle-opening, so as to sever both thread ends cleanly, throw aside the initial end, and again clamp the needle-held end for working the next buttonhole in like manner. We accomplish this operation of each cutting device in practice from the presser-foot lifter F by fixing the rotatable cutting-piece G on a central vertical shaft L, which we mount in bearings on the presser-foot and provide with a ratchet-wheel M, connected by a pawl N with an arm O on the rock-shaft F', the construction and arrangement in this instance being such that when the rock-shaft is initially moved by the foot of the operator its projections F² do not affect the presser-feet of the several work-clamps, but through the ratchet connection described the rock-shaft first operates the several thread cutting and clamping devices simultaneously, so as to sever and clamp the threads, and then raises the several presser-feet.

On lowering the presser-feet for the succeeding buttonholes the cutting devices are of course not moved, the pawl N slipping over the teeth of the ratchet-wheel M.

It is evident that this rotary thread cutting and clamping device may be applied to any kind of sewing-machine, and it may be actuated automatically by a simple adaptation of the cam mechanism shown in the aforesaid application of Hawes, Serial No. 521,306.

We claim as our invention—

1. A sewing-machine provided with a thread-cutting piece mounted to rotate between the needle and the work and with means for rotating the thread-cutting piece unidirectionally and intermittently so as to cut the thread at the end of each stitching operation.

2. A sewing-machine provided with a thread-cutting piece mounted to rotate between the needle and the work, a thread-clamp, and means for rotating the thread-cutting piece unidirectionally and intermittently so as to cut the thread at the end of a stitching operation, and for clamping the free end of the thread until the next operation of the cutting-piece severs both the needle and clamp held ends from the work.

3. The combination, with the work-feeding clamp of a sewing-machine, of a thread-cutting piece mounted to revolve unidirectionally across the needle-opening in the clamp.

4. The combination, with the work-feeding clamp of a sewing-machine, of a thread-cutting piece mounted to revolve unidirectionally across the needle-opening in the work-clamp so as to cut the thread, and a thread-clamping device to hold the free end of the thread until the next operation of the rotary cutting-piece severs both the needle and clamp held ends of the thread.

5. The combination, with the work-feeding clamp of a sewing-machine, said clamp having a cutting edge and a clamping-jaw, of a thread cutting and clamping piece and means for revolving said piece intermittently but unidirectionally across the needle-opening into engagement with the said cutting edge and clamping-jaw.

6. The combination, with the work-feeding clamp of a sewing-machine, of a thread-cutting piece mounted to revolve unidirectionally, and having a plurality of radiating cutting edges, which edges are successively moved across the needle-opening in the work-clamp.

7. The combination, with the work-feeding clamp of a sewing-machine, said clamp having a cutting edge and a clamping-jaw, of a thread cutting and clamping piece having a plurality of cutting edges and clamping-jaws mounted to rotate successively into engagement with the cutting edge and clamping-jaw on the work-clamp.

8. The combination, with the work-clamp of a sewing-machine comprising a presser-foot, and a thread-cutting piece revolvably mounted to move across the needle-opening in the work-clamp, of a presser-foot lifter, and operating connections whereby the presser-foot lifter first operates the thread-cutting piece, then lifts the presser-foot, but on depression of the presser-foot does not move the thread-cutting piece.

9. The combination, with the work-clamp of a sewing-machine, comprising a presser-foot, and a thread-cutting piece revolvably

mounted to move across the needle-opening
in the clamp, of a presser-foot lifter, and op-
erating connections, including a ratchet-and-
pawl gear, between the thread-cutting piece
5 and the presser-foot lifter, whereby the thread-
cutting piece is rotated intermittently in one
direction by the operation of the presser-foot
lifter.

In testimony whereof we have hereunto set
our hands this 4th day of June, 1895.

CHARLES H. COLBY.
THOMAS E. COLBY.

In presence of—

JENNIE HOFFMANN,
MINNIE SCHOLL.