

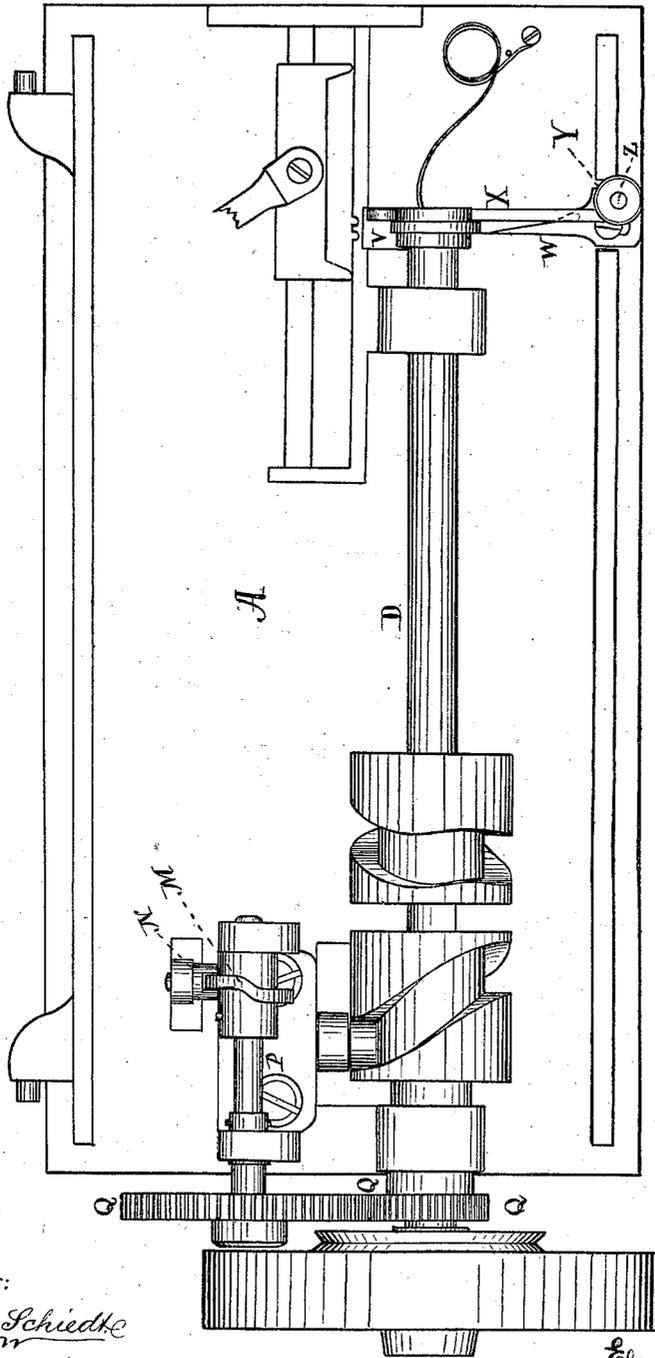


E. A. GOODES.  
Sewing-Machines.

No. 147,387.

Patented Feb. 10, 1874.

Fig. 2.



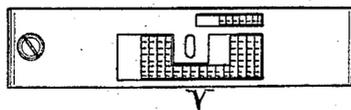
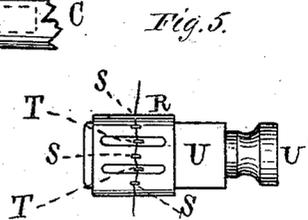
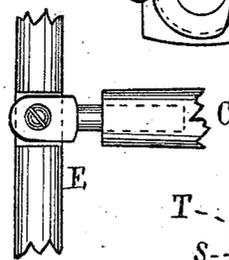
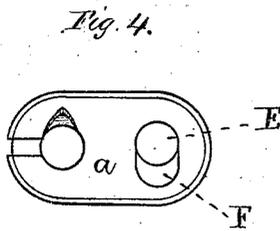
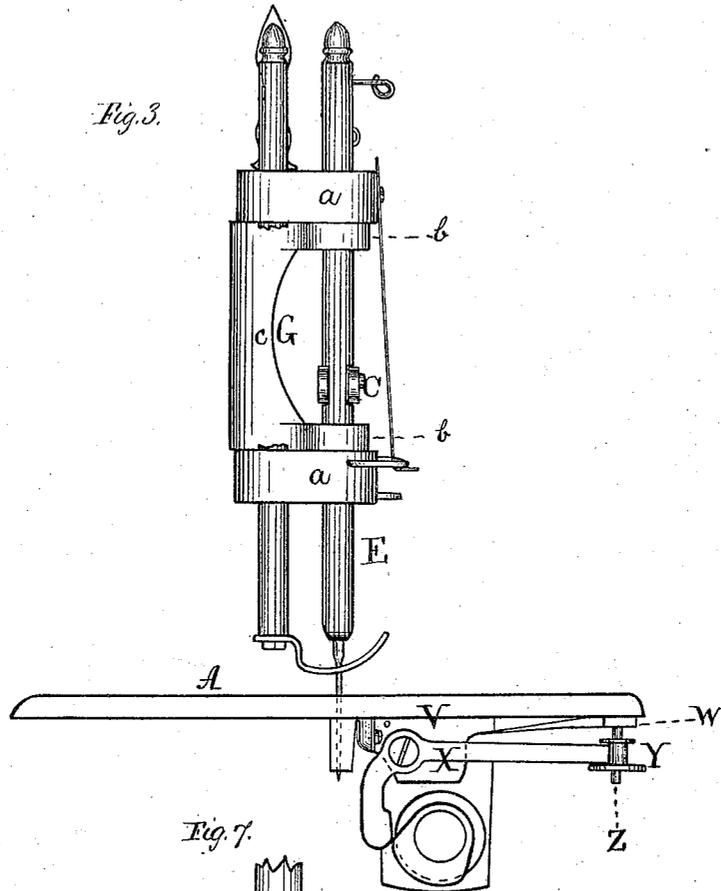
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# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. **147,387**, dated February 10, 1874; application filed May 26, 1873.

*To all whom it may concern:*

Be it known that I, EBENEZER A. GOODES, of the city and county of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in Sewing-Machines; and I do hereby declare the following to be a clear and exact description of the nature thereof, sufficient to enable others skilled in the art to which my invention appertains to fully understand, make, and use the same, reference being had to the accompanying drawings making part of this specification, in which—

Figure 1 is a side elevation of the device embodying my invention. Fig. 2 is a bottom view thereof. Fig. 3 is an end view thereof. Figs. 4, 5, 6, and 7 are views of detached parts.

Similar letters of reference indicate corresponding parts in the several figures.

This invention consists in the combination of an angular lever and worm-gearing with a vibrating arm and sliding head, in the manner and for the purpose hereinafter particularly described and set forth.

Referring to the drawings, A represents the table, B, the stationary arm rising therefrom; C, the oscillating arm for operating the needle-bar; and D the driving-shaft, having cams for operating the needle-arm, the shuttle, and the feed, all of which parts may be of general form and construction. E represents the needle-bar, which passes through openings F in the bosses *a* of the arm B, as usual; but said openings are enlarged or extended in the longitudinal direction of the machine, (see Fig. 4,) so as to permit play of the needle-bar in such direction. Said bar also passes through openings or close bearings in a longitudinally and horizontally sliding head, G, which consists of two horizontal arms, *b*, and a vertical connecting-piece, *c*, the arms *b* bearing against the inner sides of the bosses *a*; or, in other words, the head is fitted between said bosses. H represents an arm or extension of the head G, which is arranged to slide on the stationary arm B, and held in place by screws or other fixtures, *d*. To the rear of this extension is jointed a vibrating arm, J, having a curved slot, J', through which passes the axial pin or screw *e*, secured to one end of an angular lever, K, whose pivot is on the stationary arm B, near the table, and the other end of said

lever K is engaged by a worm or screw, L, which is also mounted on the arm B and provided with a handle, *f*, for convenient rotation of the screw, and a set-screw, *g*, for holding it in position when adjusted. The curved slot in arm J is described from the axis of the lever K, so that by moving said lever by means of the worm L the fulcrum of the arm J may be changed so as to impart more or less sliding movements or play to the head G, and thereby vary the stitch for different kinds of work, as will be hereinafter explained. The arm J passes through an opening in the table A, and is engaged by a cam-shaped flange or projection, M, which rotates in the groove of a piece, N, jointed to the arm J, and conforming to the convolutions of the cam M, so as to prevent binding of the parts. This cam M is secured to a shaft, P, which receives rotary motion by means of gearing Q on said shaft P and the driving-shaft D. The presser-foot is of usual construction, except that it has a longitudinal slot to permit the sliding movements of the needle, and the bar of said foot passes through the bosses *a* of the arm B, as is well known, the head G in nowise interfering with the movements and operation of said foot. The vibrating arm C is jointed to the needle-bar by a sliding or slotted connection, which properly reciprocates the needle-bar without preventing the longitudinal sliding movements thereof due to the operation of the head. The shafts D P, in connection with the gearing Q, are so arranged that the shaft P makes but one half revolution to each revolution of the driving-shaft D, and the cam M is so formed that during one-half of its revolution the rocking arm J and head G move the needle-bar a short distance toward the front of the machine, and the needle then passes through the fabric. During the other half revolution of the cam the needle-bar is drawn back again, the fabric fed along, and the needle descends through the fabric back of the former stitch, thereby carrying the thread over the edge of the fabric at an angle, according to the length of the feed, (which operates as is well known,) the cloth being so placed that one of its edges moves directly between the points perforated alternately by the needle, and the thread each time being in-

terlocked by the shuttle-thread, in the usual manner. The cloth-plate has an enlarged slot to permit the sliding movements of the needle, (see Fig. 6,) but in other respects is similar to those in use. This angular or zigzag stitching is of service where two pieces or thicknesses of fabric are lapped or folded, as is customary in the manufacture of sails, awnings, &c. The tension consists of a shell or plate, R, from which rise fingers S, and is slotted transversely for the passage of similar fingers, T, which are secured to a sliding plate, U, arranged under and inclosed by the shell R. The sliding piece U is moved by a screw, U', which is swiveled to said piece U, and fitted in an arm, which supports the shell R. The thread is laid between the two sets of fingers, which should be curved to prevent vertical escape of the thread, and the piece U is moved by the screw, so that the thread is drawn angularly from one finger to the other, the tension being regulated or determined by the acuteness of the angle thus formed. The feed-bar V is operated by the cam on the driving-shaft, and is secured to a transverse slid-

ing arm, W, one end of which is held in position by a screw which passes through a slot in the arm, as is well known; but the other end of said arm carries a piece, X, which is jointed thereto, and has one of its ends curved and bearing on the operating-cam, and the other end resting and running in a groove in a regulating-nut, Y, which is fitted on a screw-pin, Z, secured to the arm W, so that by running the nut up or down the curved end is brought nearer to or farther from the driving-cam, thus regulating the length of the stitch.

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

The angular lever K and gearing L, in combination with the cam M, arms J and H, and sliding needle-carrying head G, substantially as and for the purpose set forth.

The above signed by me this 24th day of January, 1873.

EBENEZER A. GOODES.

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