2 Sheets—Sheet 1.

DE WITT C. SMITH.

Sewing Machine.

No. 45,528. Patented Dec. 20, 1864.

Fig: 1.

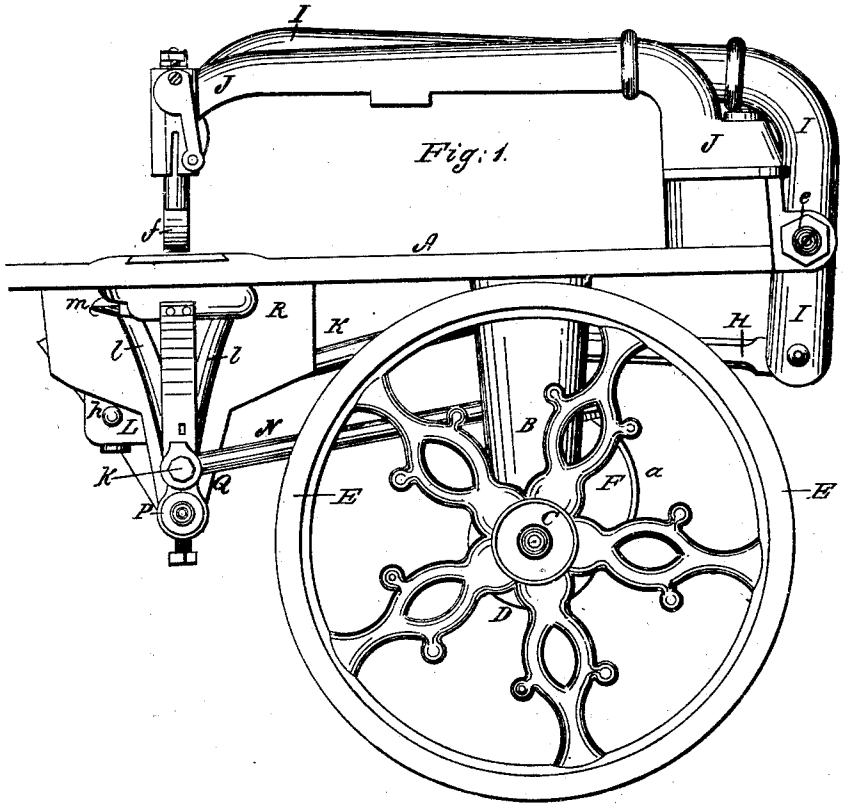
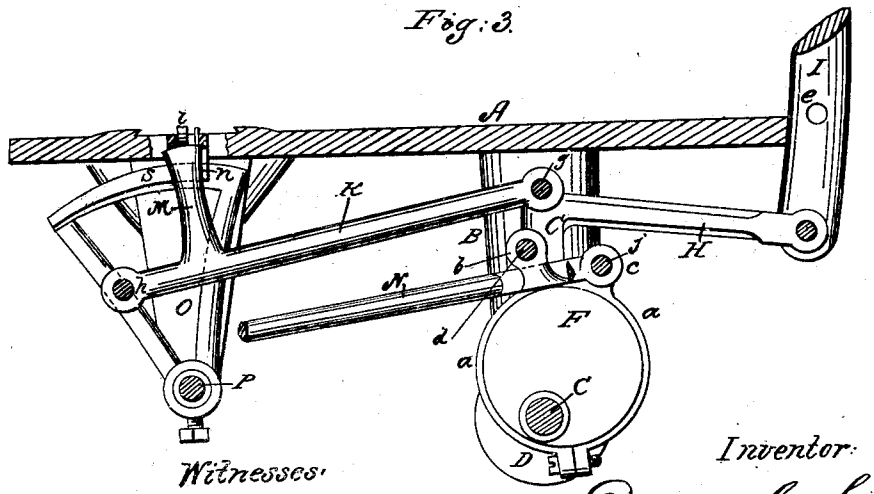


Fig: 3.



Witnesses:

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2 Sheets—Sheet 2.

DE WITT C. SMITH.

Sewing Machine.

No. 45,528. Patented Dec. 20, 1864.

Fig: 2.

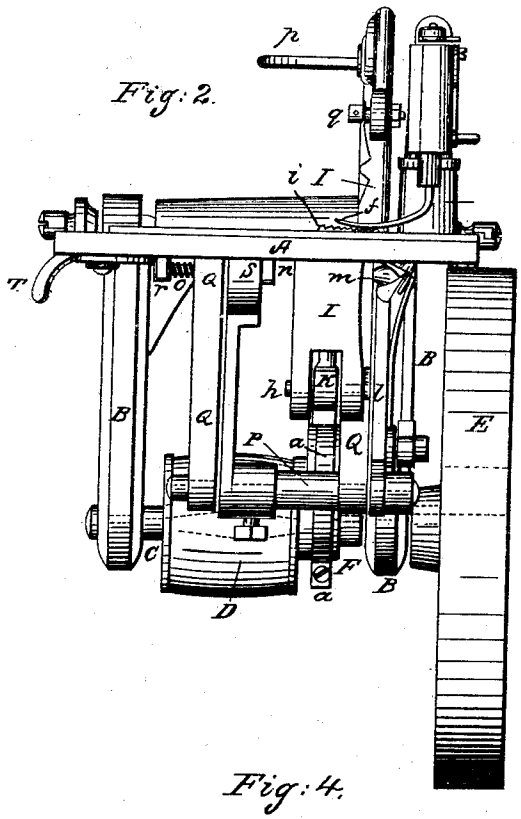
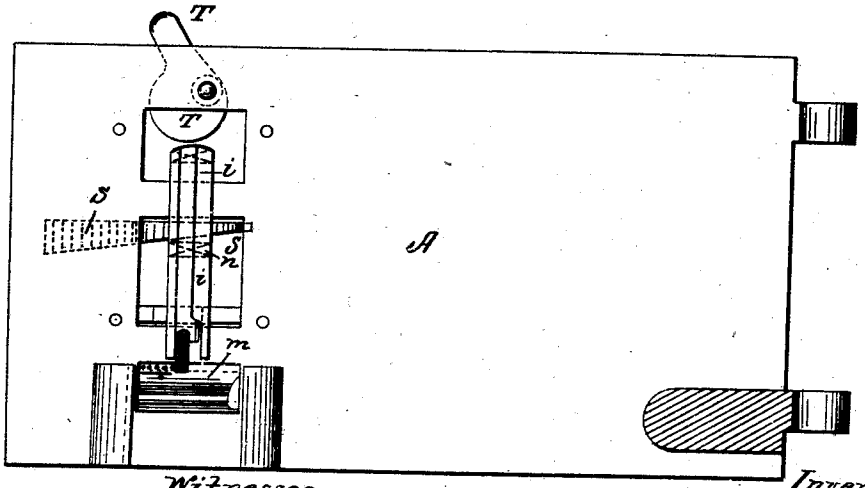


Fig: 4.



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UNITED STATES PATENT OFFICE.

DE WITT C. SMITH, OF CINCINNATI, OHIO.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. **45,528**, dated December 20, 1864.

To all whom it may concern:

Be it known that I, DE WITT C. SMITH, of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Sewing-Machines; and I do hereby declare the following to be a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 represents a side elevation of the machine. Fig. 2 represents a front end view. Fig. 3 represents a longitudinal vertical section; and Fig. 4 represents a top plan of the table, with the arm and slide removed to better show the mechanism otherwise covered or concealed by them.

Similar letters of reference, where they occur in the separate figures, denote like parts in all the drawings.

My invention consists in the mechanism for operating the needle and shuttle from one and the same eccentric or crank, by which means I very much simplify and cheapen the machine.

To enable others skilled in the art to make and use my invention, I will proceed to describe the same with reference to the drawings.

A is the table or platform, to the under side of which are attached hangers or supports B B, for the main driving-shaft C to rest and turn in. On this shaft C there is a drum or pulley, D, for a band or belt, which sets the machine in motion. A fly or balance wheel, E, is arranged upon one end of the shaft C, to steady the motion of the running parts.

On the shaft C there is an eccentric, F, around which a collar, *a*, works, and on this collar there are two lugs or ears, *b c*, to the former of which is pivoted, as at *d*, the bent arm G, which is a part of the connecting-rod H, that operates the needle-arm I, said needle-arm being pivoted to the bed or table at *e*.

J is a rigid arm, secured to the table at its rear, and extending forward and downward so as to form a support for the presser-foot *f* and the usual mechanism by which said presser-foot is raised or lowered and held as occasion may require.

To the bent arm G, as at *g*, there is also pivoted another connecting-rod, K, the forward end of which is pivoted at *h* to a hanger, L, or other permanent part of the frame or machine, and these two connecting-rods, H K, with their attachments, form a kind of toggle-lever, or what is sometimes termed a "broken lever," the pivoted point *h* being in a fixed permanent position, while the other pivoted connections oscillate around certain points, which points themselves also move around other centers, as will be perceived by the drawings.

The connecting-rod K has an upright arm, M, upon it, which, when at its greatest elevation, comes in contact with the roughened cloth-feeder *i*, and causes it to take hold of the cloth with sufficient power to move the cloth along under the needle the length of a stitch when the feeding mechanism operates, as will be hereinafter explained. The timing of the feed so as to take place when the needle is out of the cloth is of course properly provided for. To the other ear or lug, *c*, on the collar *a* is connected another rod, N, as at *j*, the opposite end of said rod being pivoted at *k* to a vibrating shuttle carrier, *l*, that is fixed upon a rock-shaft, P, supported in the hangers Q, and this shuttle-carrier supports and carries the shuttle *m*, which moves against the race-plate R to catch the loop of the needle-thread and perform its part of the sewing in the usual way.

On the shaft P there is a wedge or cam shaped arc, S, that vibrates against a projection, *n*, on the under side of the feed-plate *i*, causing said plate to move the cloth along the length of the stitches to be made, and after the wedge or cam S passes by the projection *n* the feed-plate is returned to its normal position by the recoil of the spring *o*, placed between a second projection, *r*, on the feed-bar *i*, and the hanger Q. A cam-lever, T, is arranged to operate against the end of the feed-bar *i*, so as to regulate the extent of the feed, which defines the length of the stitch. The farther that the projection *n* is moved from the wedge or cam S the less will be the length of feed, and vice versa. The arm M raises the roughened part of the feeder against the cloth and the wedge or cam S moves the cloth along the defined distance. The needle-thread is supplied from a bobbin on the arm *p*, and the necessary tension given it by a turning friction-button at *q*.

By this arrangement and construction all the necessary movements are made and timed from the cam F and collar *a*, very much simplifying and cheapening the cost of the machine.

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

The combination of the eccentric F and its collar *a* and lugs *b c* with the mechanism, substantially as described, for connecting them with the several moving parts of a sewing-machine, for the purpose of operating and timing the motions of the needle, shuttle, and feed, as herein described and represented.

DE WITT C. SMITH.

Witnesses:

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