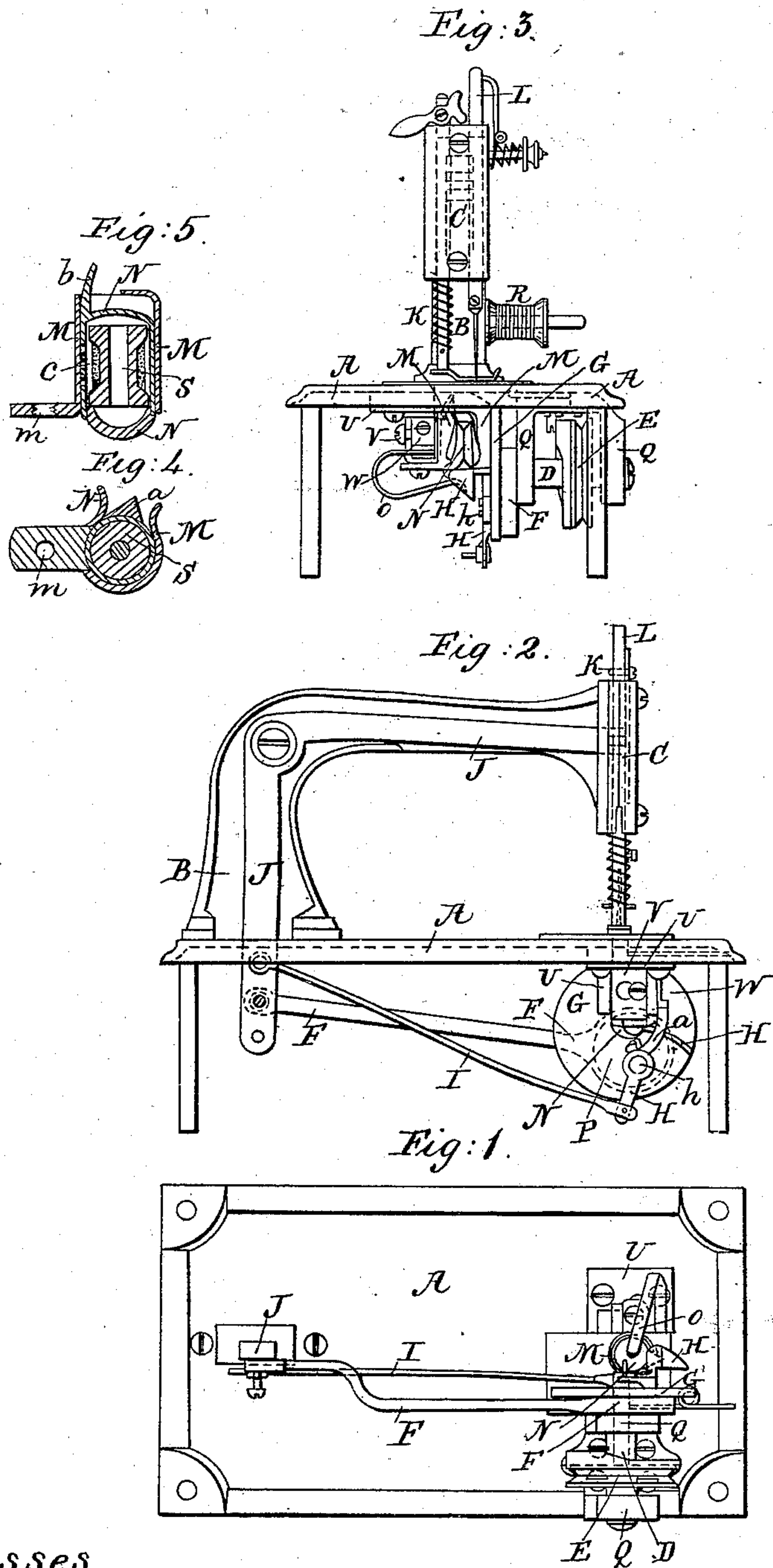


L. HALL.
Sewing Machine.

No. 43,404.

Patented July 5, 1864.



Witnesses.
M. Ames.
M. M. Parker

Inventor
Luther Hall
By W. A. Kelly atty

UNITED STATES PATENT OFFICE.

LUTHER HALL, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO ALFRED B. ELY, OF SAME PLACE.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. 43,404, dated July 5, 1864.

To all whom it may concern:

Be it known that I, LUTHER HALL, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Sewing-Machines; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation thereof, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a plan of the bottom of the machine; Fig. 2, a side elevation; Fig. 3, a front elevation; Fig. 4, an enlarged horizontal section, and Fig. 5 a vertical central section, of the lower spool, spool-case, and holder or bracket.

Like parts are indicated by the same letters in all the drawings.

The nature of my invention consists, first, in seizing the needle-thread and carrying it around the under spool and spool-case by means of a hook constructed and arranged as herein-after described, whereby the shuttle-stitch is made without a shuttle, and I am enabled to use for the under thread an ordinary commercial spool; and, second, in the employment of a spool-case holder or bracket, M, with an opening in its side, so constructed and arranged that while it retains the spool in place it will receive the distended loop of the needle-thread presented by the hook to be passed under and around the spool.

To enable others skilled in the art to make and use my invention, I will now proceed to describe its construction and operation.

A is the table, constructed like those in general use for a similar purpose.

B is the bent arm or "goose-neck," in the vertical front C of which plays the needle-bar L.

J is a bent lever or pitman vibrating on the fulcrum *j*, one end of said lever being attached to the needle-bar and the other passing through a slot in the rear of the table, as shown in Figs. 1 and 2.

K is a vertical shaft, to the bottom of which is attached the usual pressure-foot, said shaft being depressed by a spring and raised by a lever, as represented in Fig. 3.

R is the upper spool.

T is the tension apparatus, like that on many other machines.

G is an iron wheel, fast to the inner end of the axle D, which turns in bearings in the studs Q Q, the latter being confined to the bottom of the table A by means of screws, as shown in Figs. 1 and 3.

E is the driving-pulley, fast to the shaft D, the inside of said pulley, as shown in Figs. 1 and 3, being furnished with a cam, by means of which the feed-bar (represented by dotted lines in Fig. 3) is driven forward, the same being thrown back by a spring in the usual manner.

Fast to the side of the wheel G is an eccentric wheel, P. (Shown by dotted lines in Fig. 2.)

F is a pitman, one end of which encircles the eccentric P, the other end being attached to the bottom of the lever J, by means of which the latter is made to vibrate.

H is the eccentric-hook, (the shape of which is shown in Figs. 1, 2, and 3,) attached to the side of the wheel G by means of the pin *h*, on which it turns.

I is a rod, one end of which is pivoted to the lever J and the other to the shank of the hook H, as shown in Fig. 2, the object of said rod I being to guide the hook H and keep the same in a vertical or approximately vertical position.

The toe of the hook, as shown in Figs. 1, 2, and 3, is nearly a triangle, the two sides of which are slightly curved. The top of this toe is slightly convex, the under side being nearly flat, and provided (see Fig. 1) with a cleat about one-eighth of an inch thick, having its side toward the point of the toe beveled under, so as to form a hook-shoulder to catch the loop formed by the needle-thread and hold the same till it has carried it past the center of the bottom of the spool-case N.

U is a start or hanger, confined to the bottom of the table by means of screws, as shown in Figs. 1, 2, and 3.

N is the spool-case, of brass or other suitable material, the bottom part of which is hemispherical, and so constructed as to fit into the lower end of the cylindrical case, like a box-cover, as represented in the vertical section, Fig. 5. To the side of the case N, and extending nearly its whole length, is soldered or otherwise fastened a triangular piece, *a*, (see Fig. 4,) the object of which is to assist in dividing the needle-loop while expanded and

carried round by the hook H. The top of the spool-case is also provided with a horn or projection, *b*, (see Fig. 5,) through the upper end of which is a hole, whereby the thread from the spool S is guided clear of the hook, there being a hole or holes, *c*, in the case for the thread to pass from said spool to the hole *b* in the horn. This horn also tends to keep the spool-case from turning in its holder by the draft of the hook H.

M is the spool-case holder or bracket, the general shape of which is clearly shown in Figs. 1, 3, 4, and 5. This holder or bracket is made of brass or other suitable material, bent or cast into the form of a cylinder, with an opening in the side sufficiently wide to receive the triangular strip *a*, Fig. 4, and the distended loop of the needle-thread, presented by the hook H, to be passed under and around the spool-case N. The contiguous side edges of the holder should flare outward a little, as represented in Fig. 4. The top of the holder, as shown in Fig. 3, is partially covered to prevent the spool-case N from rising up too high and turning round. The lower edge of the holder is provided with a horizontal arm or continuation, through which is a hole, *m*, to receive a screw which enters the cleat, V, the latter, as shown in Fig. 2, being also confined by a screw to the start U. The inside diameter of the holder M, as shown in Figs. 4 and 5, is a little larger than the spool-case, so that there may be sufficient space between the two for the needle-loop to pass without obstruction. The outside of the spool-case and the inside of the holder should be smooth and polished.

O is an elastic strip of metal, bent as represented in Figs. 1, 2, and 3, one end of which is fast to the cleat W, which latter is confined to the start U by means of a screw.

The center of the bottom of the spool-case N rests upon the free end of the strip O, and is thereby supported, excepting when raised by the hook passing under it, with the expanded loop from the needle. Thus constructed,

it is obvious that the point of the hook will enter the loop formed by the needle, gradually expand the same, and carry it down under the spool-case, leaving it (the loop) to be drawn up by the needle, thus forming the shuttle-stitch by means of two substantially stationary spools of the ordinary size.

My machine is very simple in construction, rapid and comparatively noiseless in operation, and saves the trouble of winding thread from spools to shuttle.

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

1. Seizing the needle-thread and carrying it around the under spool, S, and spool-case N by means of the hook H, constructed and arranged substantially as described.

2. The spool-case holder or bracket M, with a lateral opening, so constructed and arranged that while it retains the spool in place it will receive the distended loop of the needle-thread when seized and presented by the hook H, to be passed under and around the spool, substantially as described.

3. The spool-case, with its horn *b*, constructed substantially as set forth, for the purpose specified.

4. The combination and arrangement of the wheel G, hook H, rod I, and lever J, substantially as set forth, and for the purpose of carrying a loop of the needle-thread around a spool of commerce.

5. The combination of the almost stationary spool-case for containing the common spool of commerce with the hook or looper H, substantially as and for the purpose set forth.

6. The combination of the bracket or spool-case holder M, the spool-case N, with its horn *b* and spool S, substantially as set forth and for the purpose described.

LUTHER HALL.

Witnesses:

W. M. PARKER,
JOSEPH FREESE.