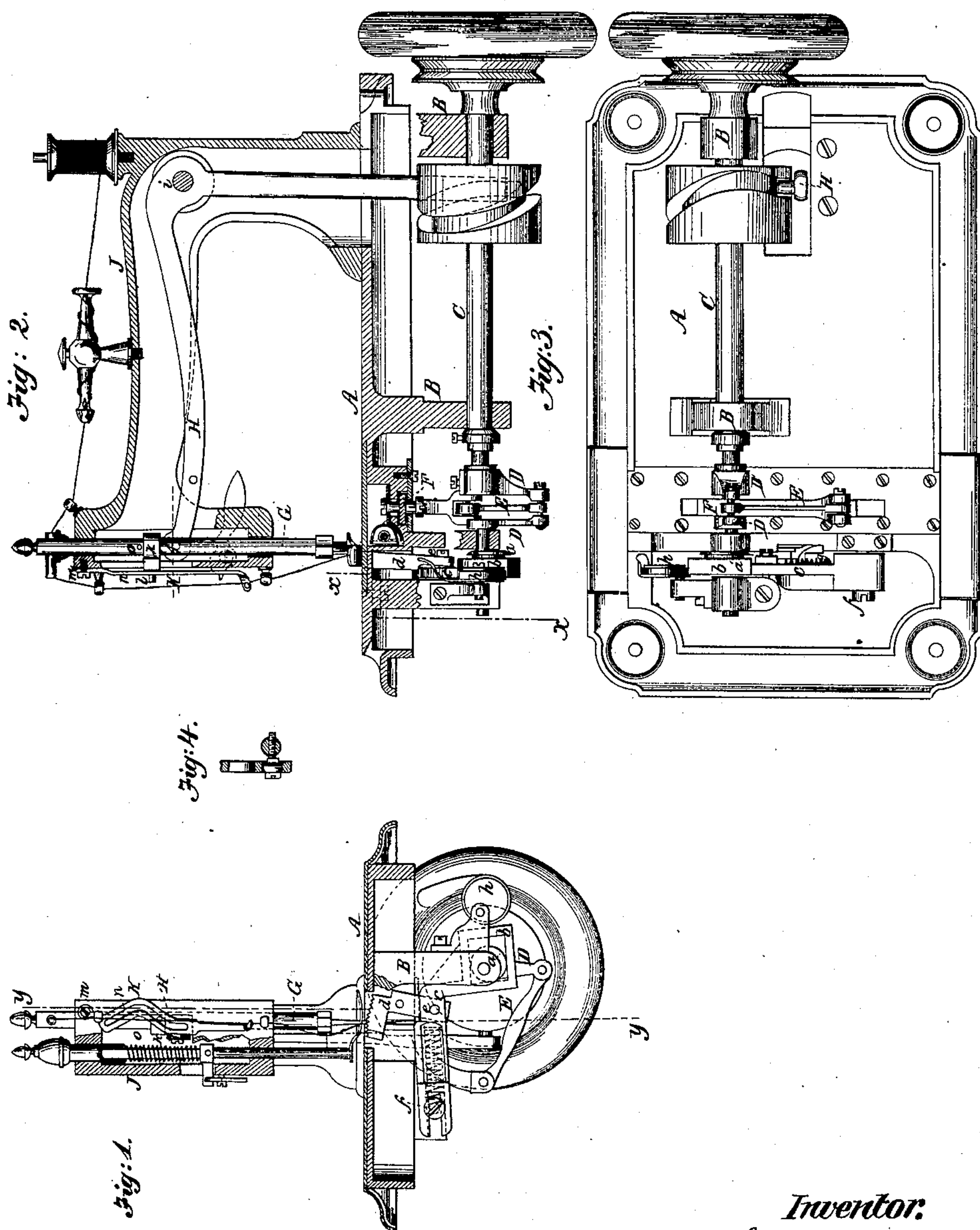


L. LYON.  
Sewing Machine.

No. 89,489.

Patented April 27, 1869.



Witnesses.  
At Test.  
Chas. Wahler.

Inventor:  
L. Lyon  
By Van Santvoord & Hauff.  
his attys.



# United States Patent Office.

LUCIUS LYON, OF NEW YORK, N. Y.

Letters Patent No. 89,489, dated April 27, 1869.

## IMPROVEMENT IN SEWING-MACHINE.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, LUCIUS LYON, of the city, county, and State of New York, have invented a new and useful Improvement in Sewing-Machines; and I do hereby declare the following to be a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification, in which drawing—

Figure 1 represents a transverse section of this invention, the line *x x*, fig. 2, indicating the plan of section.

Figure 2 is a longitudinal section thereof, taken in the plane indicated by the line *y y* in fig. 1.

Figure 3 is an inverted plan of the same.

Figure 4 is a transverse section of the needle-bar.

Similar letters indicate corresponding parts.

This invention consists in the arrangement of a revolving sleeve carrying the stud which actuates the thread-controller in combination with a rolling hinge-joint and with the needle-bar and needle-lever in such a manner that said sleeve will form no obstruction to the rolling motion of the needle-bar in its sockets, which is necessary to permit the pin, which forms the connection between the needle-bar and lever, to adapt its position to the oscillating motion of the needle-lever.

A represents the cloth-plate which is cast or otherwise made in the usual form or manner.

From the bottom surface of this cloth-plate, project the standards B, which form the bearings for the cam-shaft C.

This shaft is made in two parts, which are connected by the crank D, as shown in figs. 2 and 3, and from the crank extends a rod E to the shuttle-driver F.

On the end of the main shaft is secured an eccentric *a*, which works in a cage, *b*, that is secured to one end of a rod, *c*, to which the feed-dog *d* is attached by a pivot, *e*.

The opposite end of the rod *c* is bifurcated and straddles a stud *f*, which is secured in a lug projecting from the under surface of the cloth-plate, and a spring *g* serves to keep the cage *b* up against the surface of the eccentric *a*.

As the eccentric revolves, it imparts to the feed-dog the required motion, causing the same to rise, move forward, drop down, and move backward, and the feed-motion is regulated by a cam-lever *h*, (see fig. 1,) which serves to adjust the position of the cage in relation to the eccentric.

By placing the crank D between the two parts of the main shaft C, said crank is strengthened, and at the same time room is obtained to place the eccentric of the feed-motion beyond the crank, which imparts motion to the shuttle-driver, and both the feed-dog and the shuttle receive their motion by a simple, cheap, and durable mechanism.

The needle is secured in the needle-bar G, which receives a reciprocating motion from the lever H. This lever has its fulcrum on a pivot *i*, in the arm or goose-neck I, and the desired motion is imparted to it from the cam J, on the main shaft in the usual manner.

The connection between the lever H and the needle-bar is effected by a stud *j*, which is secured in the side of said needle-bar, and passes through a hole in the end of the lever H, that part of the stud, which works in the hole of the lever being made globe-shaped, as shown in fig. 4, so that it allows the needle-bar to roll in its sockets, and that said stud is permitted to adapt itself to the oscillating motion of the lever H, without allowing the needle-bar any dead motion.

By allowing the needle-bar to assume a rolling motion in its sockets, its point of connection with the lever H, is free to adapt itself to the circular path of the lever without the necessity of making the connection by means of a slot or other device, which would serve to compensate for said circular motion, but which also would necessarily produce a dead motion of the needle-bar.

On the needle-bar is secured a sleeve *k*, from which projects the stud *l*, which imparts motion to the thread-controller K. This thread-controller is suspended from a pivot *m*, and it is provided with a cam-slot *n*, into which the stud *l* works, and as the needle-bar rises and falls, said stud imparts to the thread-controller the required motion.

The sleeve *k* is placed loosely on the needle-bar, being prevented from sliding thereon beyond certain limits in a longitudinal direction by pins *o*, secured in the needle-bar, but left free to turn on the same, so that it does not interfere with the rolling motion of the needle-bar in its socket.

By the arrangement of this sleeve *k*, a simple and effective connection between the rolling needle-bar and the take-up or thread-controller is effected.

By these means I have adapted the rolling hinge-joint which forms the connection between the needle-bar and needle-lever, and which heretofore has been used in single-thread sewing-machines, to a shuttle-machine, and I am enabled to work my shuttle-machine at a rapid speed without noise.

I disclaim the various devices above described, when separately considered; but having thus described my invention,

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

The sleeve *k*, stud *l*, and thread-controller K, in combination with the globe-shaped stud *j*, needle-bar G, and lever H, all as set forth.

LUCIUS LYON.

Witnesses:

W. HAUFF,

ERNEST F. KASTENHUBER.