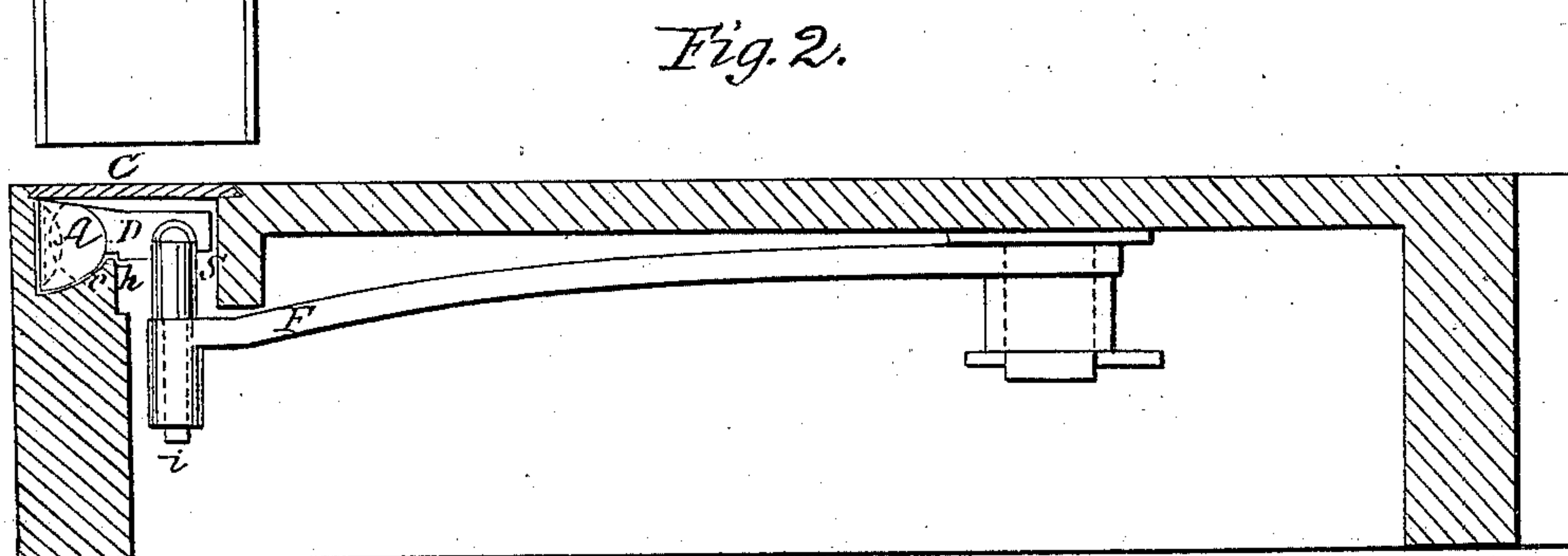
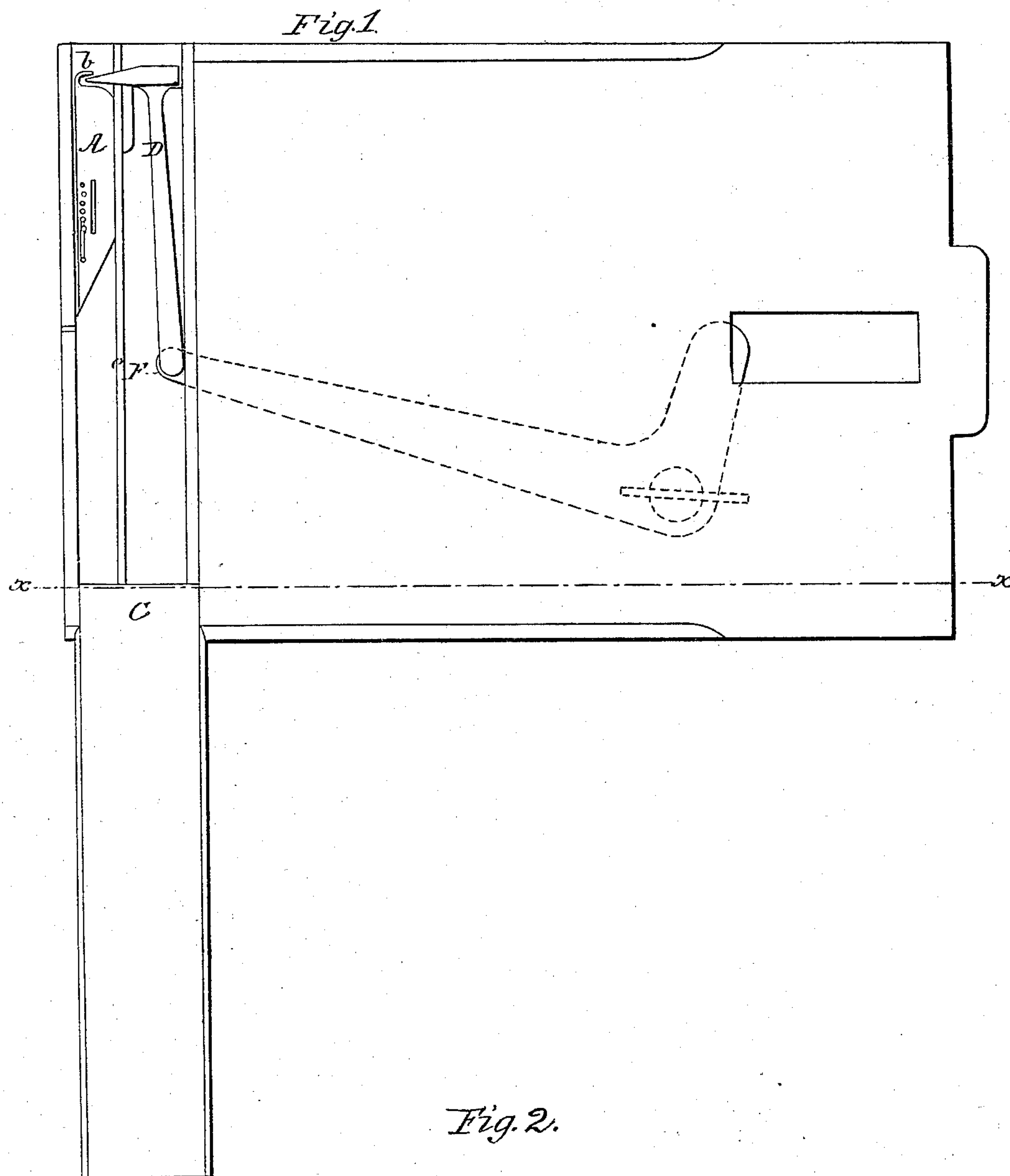


E. HOWE, Jr.
Sewing Machine.

No. 21,258.

Patented Aug. 24, 1858.



UNITED STATES PATENT OFFICE.

E. HOWE, JR., OF BROOKLYN, NEW YORK.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. **21,258**, dated August 24, 1858.

To all whom it may concern:

Be it known that I, ELIAS HOWE, Jr., of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Sewing-Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, in which—

Figure 1 represents a plan of a portion of a sewing-machine embodying my improvement, and Fig. 2 is a vertical longitudinal section thereof at the line *x x* of Fig. 1.

My improvement has reference to that class of sewing-machines in which a shuttle is used to carry the lower thread. In such machines it has been customary to propel the shuttle to and fro by applying force to it alternately at its opposite ends by means of a suitable driving apparatus. This method is objectionable on account of the friction of the parts and consequent wear of the shuttle, which can be lessened only by oiling the machine freely at parts where the presence of oil is liable to soil the thread. It is also objectionable on account of its cost, and of the amount of play between the shuttle and the drivers.

The object of my invention is to obviate these defects; and it consists in a method of operating the shuttle so as to cause it to move to and fro by means of a driver applied to one part only of its length.

My invention also consists in constructing the shuttle and the mechanism that drives it in such manner that they are well adapted to this mode of operation.

The shuttle *A* of the machine represented in the accompanying drawings is formed of thin metal, pointed at one end and terminating at the other extremity in a rounded butt, to which a projecting lip, *b*, is secured in such manner as to form a socket between the lip and the butt of the shuttle, into which the end of a reciprocating driver, *D*, is received. The shuttle lies in a shuttle-race, which is covered by a sliding cap, *C*. The shuttle-driver has a hammer-shaped head, which is notched at its lower side to fit loosely upon the edge *e* of the shuttle-race, but not to touch it. Its stock terminates in a pivot, *i*, which drops into a tubular socket in the front extremity of an arm, *F*, to which a suitable vibratory motion is imparted by the rotating shaft of the machine for the purpose of impelling the driver to and fro. The pivot

is perpendicular to the table of the machine, and the depth of the socket and the length of the pivot are such that any tendency in the driver to sink out of its proper position is effectually prevented, and that the shuttle-driver is at the same time sustained, so that there is no pressure upon the shuttle-race. The shuttle-driver is guided in moving to and fro by the opposite sides, *g h*, of a race, in which the hammer-shaped head is loosely fitted.

With this mode of construction, it is evident that the shuttle is impelled to and fro by the action of the driver alternately against the opposite sides of the socket formed by the butt of the shuttle and the lip, so that the necessity of employing a second driver to act at the point of the shuttle is dispensed with. By this method of imparting a reciprocating movement to the shuttle by the application of a driver to one point only of its length, the driver may be applied continuously to the shuttle, and the point of the shuttle which enters the loop of thread in the needle of the sewing-machine is left free at all times. The construction of the driving mechanism is also exceedingly simple, and the method of guiding the driver by a race parallel with the shuttle-race, and at the same time of preventing it from sinking out of its proper position by pivoting its stock in a deep socket in the vibrating arm is cheap and efficient, and enables me to dispense almost wholly, if not entirely, with the use of oil at that part of the head of the driver which is adjacent to the shuttle-race.

Having thus described my invention and the manner which I have deemed best for embodying it in mechanism, I wish it to be understood that it is not limited to the precise construction herein described, but that it may be modified, as circumstances may render expedient, to adapt it to different sewing-machines or to meet the views of different constructors. Thus, for example, if a curved shuttle-race is employed, as is the case in some machines, the arm *F* may be pivoted at the center of the circle of which the race is an arc, and its extremity may terminate in the recess at the butt of the shuttle, thus driving the latter directly without the interposition of the connecting bar or driver *D*.

I am aware that the shuttle of a sewing-machine has been operated by seizing it by one of its ends in a forceps, but the construction

and operation of the mechanism in this case is such as to render it necessary to apply the driving apparatus to the shuttle and to disconnect it therefrom at each movement of the shuttle. I do not therefore claim imparting motion to a reciprocating shuttle by seizing one of its ends intermittently by a forceps; but

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

1. Imparting a reciprocating movement to the shuttle of a sewing-machine by the application of a driver to one point only of its length, substantially as herein set forth, in such manner that the driver need not be disconnected from the shuttle.

2. Constructing the shuttle-driver in such manner that it is guided by a race parallel with the shuttle-race or its equivalent, and is at the same time supported and prevented from sinking out of its proper position by pivoting its stock perpendicularly to the table of the machine in a socket in the arm which imparts motion to it, substantially as herein set forth.

ELIAS HOWE, JR.

Witnesses:

JOHN G. SCHUMAKER,
PETER CLEMITSON.