(No Model.) 2 Sheets—Sheet 1.

J. TRIPP.

SHUTTLE ACTUATING MECHANISM FOR SEWING MACHINES.

No. 527,565. Patented Oct. 16, 1894.

Fig. 1

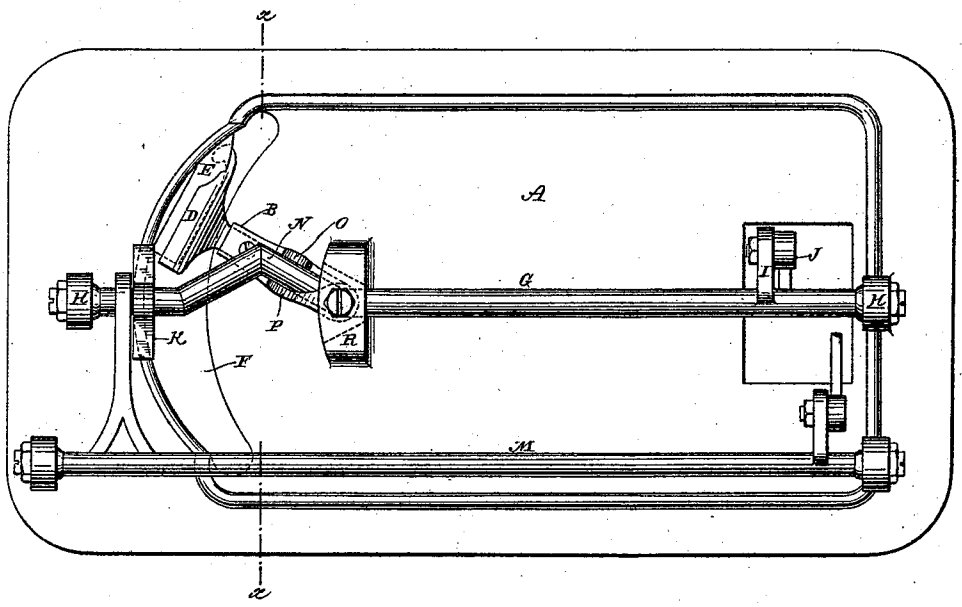


Fig. 2

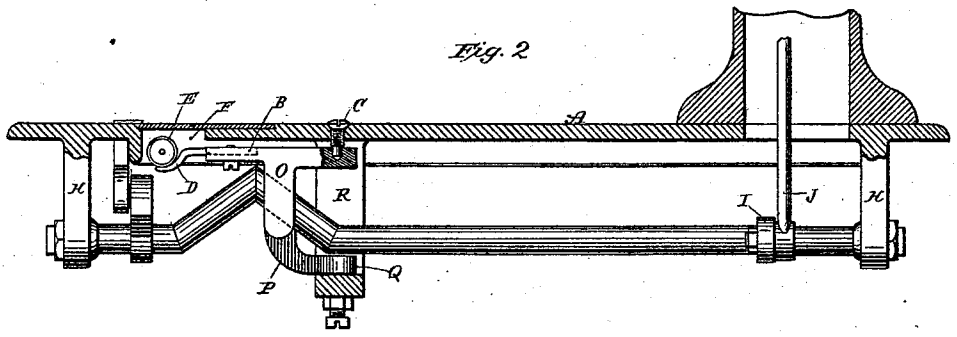
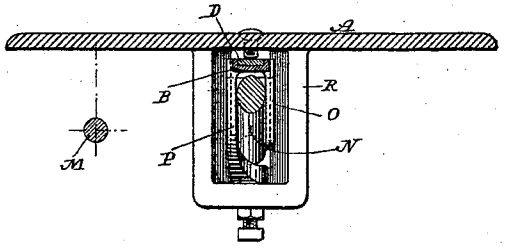


Fig. 3



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(No Model.) 2 Sheets—Sheet 2.

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No. 527,565. Patented Oct. 16, 1894.

Fig. 4

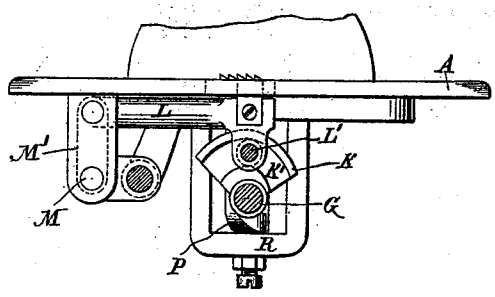
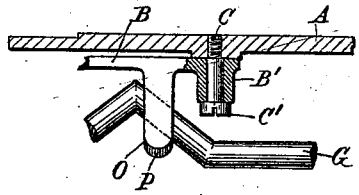


Fig. 5



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UNITED STATES PATENT OFFICE.

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SHUTTLE-ACTUATING MECHANISM FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 527,565, dated October 16, 1894.

Application filed September 30, 1889. Serial No. 325,485. (No model.)

To all whom it may concern:

Be it known that I, JAMES TRIPP, of the city, county, and State of New York, have invented certain new and useful Improvements in Shuttle-Operating Mechanism for Sewing-Machines, of which the following is a description, reference being had to the accompanying drawings.

This invention relates first to an improved vibrating shuttle mechanism, that is, to mechanism for driving a shuttle reciprocating in a horizontal plane.

The object of the invention is to produce a simple and cheap, yet practicable and durable, mechanism; and also to secure greater speed of the shuttle than is usually possible with this class of shuttle operating devices, with less vibration and wear of the parts.

I will first describe the mechanism embodying my invention and in the claims to follow the description I will point out the elements and combinations of elements that I regard as new.

In the drawings, Figure 1 is a plan view of the under side of the base of the machine, the same carrying shuttle operating devices embodying my improvements. Fig. 2 is a central longitudinal section on a vertical plane of the base plate. Fig. 3 is a cross-section of the same on the plane *x*—*x* of Fig. 1. Fig. 4 is an end elevation from the left-hand end of Fig. 1. Fig. 5 is a detail view of a modified form of shuttle lever.

Referring to the views in detail, A represents the base of the machine.

B is the shuttle carrying lever pivoted to the base at C, D being the shuttle carrier and E the shuttle, and F the shuttle race.

G is what I will herein call the shuttle shaft. It is journaled in studs H projecting downward from the base, and is oscillated from the main shaft by the crank I and eccentric pitman J. This shaft carries a cam K or similar device by which the feed bar L is lifted and lowered, its horizontal motion being derived through the feed bar rock-shaft M and crank arm M′ thereon. The cam K has a cam groove K′ in its face, in which groove runs a friction wheel L′ pivotally mounted on the inner end of the feed bar L. The shape of the cam groove is such that the rocking of the cam effects the proper vertical motion of the feed plate and holds it elevated and depressed during its respective horizontal motions. It is to be especially noticed that the cam K is on the shaft G, and that thus the vertical feed motion is derived from the same shaft as the shuttle motion, and the parts are not only simple in construction and combination, but the nicest relative adjustment can be easily effected and a high speed be acquired.

In the shuttle shaft is an inclined bend or elbow N, the angle of which corresponds to the desired angle of motion of the shuttle-carrying lever B, and the vertical pivotal axis of this lever is at right angles to the oscillating shaft, such axis passing through the angle formed by the junction of the incline with said shaft.

O and P are arms projecting downwardly from the shuttle lever and forming a fork that engages the inclined portion N of the shaft. Preferably one of these arms P of the fork is extended backward to form a second pivotal bearing for the shuttle lever at Q in the bracket R cast to the base. By the use of this second bearing the shuttle lever is more firmly and rigidly held than if it had but one bearing. A single pivot may, however, be employed, and one is shown in Fig. 5 where the shuttle lever is provided with an extended hub bearing B′, and a long screw C having a broad head C′ is employed to pivotally secure the lever to the base A.

The operation will now be readily understood. As the shuttle shaft is oscillated, its inclined portion acts after the manner of a crank arm to press against the fork on the shuttle lever and thereby vibrate the lever and its shuttle back and forth; but this motion is different from a right-angle crank motion, in that, while the shaft has a uniform motion, the shuttle lever increases its speed to a greater extent from the ends of its excursion to the middle point thereof and correspondingly decreases its motion from the middle point to either end, which is the desired motion for a vibrating shuttle and which obviates the necessity of loose or relatively movable bearing parts between the lever and the shaft.

It is to be particularly noted that the fork, which forms the connection between the shaft and shuttle lever, is attached to the latter be-

tween its reciprocating end and its pivotal support. The shuttle lever and the shaft are thus directly connected, that is, are connected by bearing parts rigid with them. The elbow of the shaft acts directly upon the shuttle-carrying lever between its pivot and its shuttle end, and thus the power to oscillate the lever is not transmitted through its pivotal support. By this construction, the circular motion of the shaft is converted into the reciprocating motion of the shuttle lever with the least of friction and tendency to binding or looseness of the parts relatively, and therefore a high speed of the shuttle is practicable. The shuttle lever may be made light and short, which also contributes to its speed and to its ease and smoothness of motion.

The parts are simple in construction and cheaply made, and but little fitting is necessary to assemble them.

I am aware that it is old to drive a vibrating shuttle lever by various forms of crank and link connections with an oscillating or revolving shaft.

What is claimed as new is—

1. The combination, in a shuttle-operating mechanism, of the shaft G supported from the under side of the base plate and having the inclined elbow N, the vibrating shuttle carrying lever B arranged with its axis at a right angle to and intersecting the axis of said shaft at the junction of said elbow with the shaft, and a fork attached to said lever between its pivot and the shuttle carrier and engaging the elbow of the shaft, substantially as and for the purpose set forth.

2. The combination in a shuttle-operating mechanism, of the shaft G supported from the under side of the base plate and having the elbow N, the shuttle-carrying lever B arranged with its axis at a right-angle to and intersecting the axis of said shaft at the junction of said elbow with the shaft, and a fork O P attached to said lever between its axis and the shuttle carrier, which fork engages said elbow and has its arm P pivoted to the bracket R, substantially as and for the purpose set forth.

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