

(No Model.)

W. F. DIAL.

SHUTTLE OSCILLATING MECHANISM FOR SEWING MACHINES.

No. 304,710.

Patented Sept. 9, 1884.

Fig. 1.

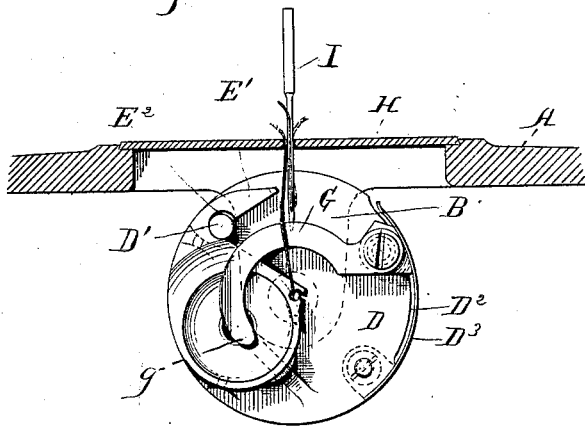


Fig 2.

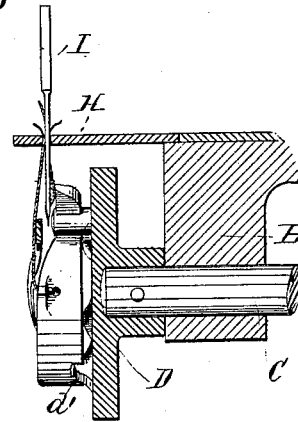


Fig. 3.

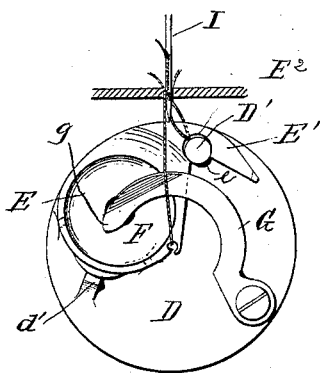


Fig. 4.

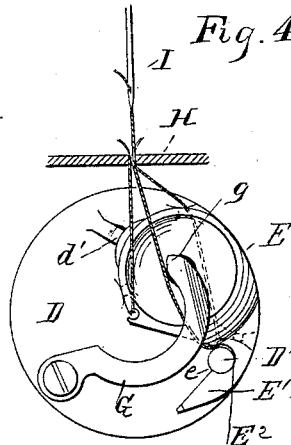


Fig. 5.

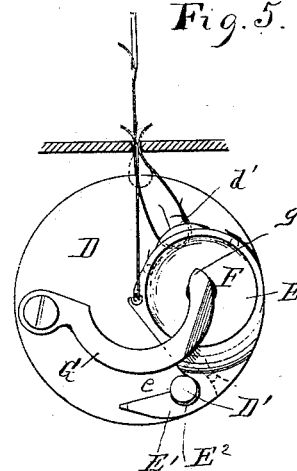


Fig. 6.

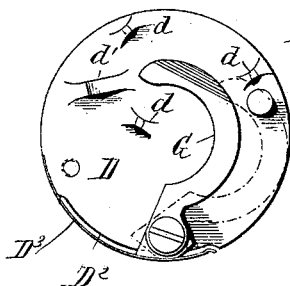


Fig. 7.

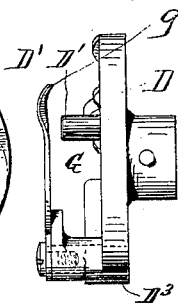


Fig. 8.

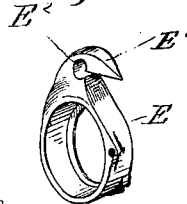


Fig. 10.

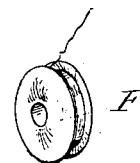


Fig 9



Witnesses

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# UNITED STATES PATENT OFFICE.

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## SHUTTLE-OSCILLATING MECHANISM FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 304,710, dated September 9, 1884.

Application filed January 23, 1884. (No model.)

### *To all whom it may concern:*

Be it known that I, WILBUR F. DIAL, a citizen of the United States, residing at Bridgeport, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Shuttle-Oscillating Mechanism for Sewing-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention has for its object to simplify the construction of that class of sewing-machines known as "oscillators." With this end in view I have devised a novel construction in which an oscillating shuttle carried by a pin passes entirely through the loop in the needle-thread in the formation of each stitch.

My invention consists in the construction and combination of parts, as hereinafter fully described, and then pointed out in the claims.

In order that those skilled in the art to which my invention relates may understand its construction, I will proceed to describe the same, referring by letters to the accompanying drawings, in which—

Figure 1 is an end elevation of the shuttle and carrying-plate, with the shuttle in position to take the loop; Fig. 2, a side elevation showing the shuttle in the same position, and the carrying-plate in section. Fig. 3 shows a position of the shuttle after the taking of the loop. Fig. 4 shows the forward movement of the shuttle as nearly completed and the loop about to be cast off; Fig. 5, the shuttle at the extreme of its forward movement, the loop having been cast off and partially drawn up by the take-up. Figs. 6 and 7 are front and side elevations, respectively, of the carrying-plate with the shuttle removed. Fig. 8 is a perspective, and Fig. 9 a section of the shuttle; Fig. 10, a perspective of the bobbin.

Similar letters indicate like parts in all the figures.

A is the bed of the machine, and B a bracket depending therefrom.

C is the oscillating shaft, the outer end of which is journaled in the bracket.

D is the shuttle-carrying plate, which is secured to the end of the shaft.

D' is a pin near the outer edge of the carry-

ing-plate, upon which the hook E' of the shuttle E rests. The hook portion of the shuttle is provided with a recess, E<sup>2</sup>, which is contracted at its opening, as at e, so that the shuttle, when placed on the pin, cannot escape therefrom, although ample space is provided for the thread to pass between the shuttle and the pin.

d d' represent bosses or lugs upon the face of the carrying-plate, upon which the shuttle rests, one or more of which are provided with shoulders, against which the edge of the shuttle rests. (See Fig. 2.)

G is a spring-guard latch pivoted to the face of the carrying-plate, which acts to hold the bobbin in the shuttle and the shuttle upon the pin and against the lugs, and also acts as a guard to hold the shuttle-thread out of contact with the needle and the hook upon the shuttle. This latch I preferably so construct that its point g only presses against the bobbin, thus offering very slight resistance to the passage of the loop between it and the bobbin. (See Figs. 3 and 4.)

In Figs. 1, 6, and 7 I have shown a portion of the circumference of the carrying-plate as having a slightly-lessened radius, as at D<sup>2</sup>, and the heel of the latch projecting slightly beyond the plate, in order that it may be acted on by a spring, D<sup>3</sup>, which, in this construction, serves to hold the latch either in operative position or out. (See Fig. 6.)

H is the cloth-plate, and I is the needle. I have shown no take-up for the needle-thread, as it forms no part of my present invention. It will of course be understood, however, that a take-up of ordinary construction is used.

The operation of my invention is as follows: The bobbin is laid in the shuttle. After threading, the shuttle is placed upon the carrying-plate, with recess E<sup>2</sup> in engagement with the pin, and the body of shuttle resting on the lugs, as already described. Latch G is then turned into place, and holds the shuttle in position. When the needle, after reaching its lowest position, (see Figs. 1 and 2,) begins to rise, the loop in the needle-thread is caught by the hook of the shuttle, which proceeds to enlarge the loop and to pass with the bobbin entirely through it, thus interlocking the needle and

the shuttle threads. During the passage of the shuttle through the loop the needle-thread passes into and out of recess E<sup>2</sup>, during which time it lies between the shuttle and the pin. 5 The normal position of the shuttle with reference to the pin is shown in Fig. 1, in which ample space is shown between the hook and the pin for the loop to slip into the recess in the shuttle. In Fig. 3 the shuttle has moved 10 forward far enough so that the loop is half through the recess. At this stage of its passage through the loop the shuttle is resting upon the bosses, (see Fig. 3,) the shape of the recess being such that there is ample space for 15 the loop to pass between the shuttle and the pin without binding. In Fig. 4 the shuttle has passed nearly through the loop, which is passing out of the recess. At this instant the pull of the thread is exerted upon the body 20 of the shuttle, which it lifts slightly from the pin, thus leaving for the loop a clear passage out of the recess. The next instant the take-up begins to act, and the loop is quickly drawn up, as shown in full and in dotted lines in 25 Fig. 5. In this figure the shuttle is shown at the extreme forward point of its throw. The take-up (not shown) is acting to draw up the loop, which has now encircled the shuttle-thread. At the next instant the shuttle is 30 carried back by the oscillation of the carrying-plate to the position shown in Fig. 1, when it is ready to take another loop and proceed with the formation of the next stitch. It will of course be apparent that the details of construction may be varied within reasonable limits 35 without departing from the spirit of my invention. I make no claim in this application, however, to the subject-matter claimed in my

applications Serial Nos. 118,401, 118,402, 118,404, filed January 23, 1884, or my application Serial No. 128,395, filed April 18, 1884.

Having described my invention, I claim—

1. The combination of a needle, and an oscillating plate having a pin near its edge, with a shuttle having a recess which loosely engages 45 said pin, permitting the loop to pass between the shuttle and pin, and a spring secured to the plate, which holds the shuttle in place.
  2. The needle, and oscillating plate having a pin near its edge, bosses upon its face, and 50 a spring-latch pivoted thereto, in combination with a shuttle having a recess with a contracted opening, and adapted to be held by the latch in place upon the pin and bosses, while at the same time the loop is permitted to pass 55 between the shuttle and said latch, pin, and bosses, substantially as described.
  3. The shuttle having a hook for engaging the loop, and a recess with a contracted opening, in combination with a needle, an oscillat- 60 ing plate having a pin loosely held in said recess, and a spring-latch which holds both bobbin and shuttle in position, and acts as a guard to hold the shuttle-thread out of contact with the hook and the needle. 65
  4. In a sewing-machine plate, D, having pin D', bosses d d', latch G, and spring D<sup>2</sup>, in combination with shuttle E, having hook E', recess E<sup>2</sup>, and bobbin F, combined and arranged substantially as described. 70
- In testimony whereof I affix my signature in presence of two witnesses.

WILBUR F. DIAL.

Witnesses:

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A. B. FAIRCHILD.