(No Model.)

G. D. ELDREDGE.

SEWING MACHINE SHUTTLE.

No. 261,839. Patented Aug. 1, 1882.

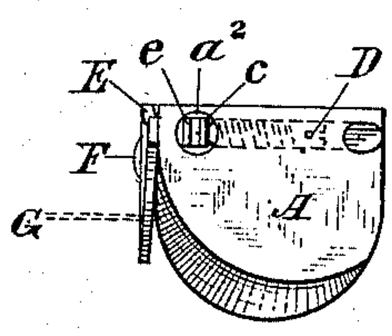

Fig 2

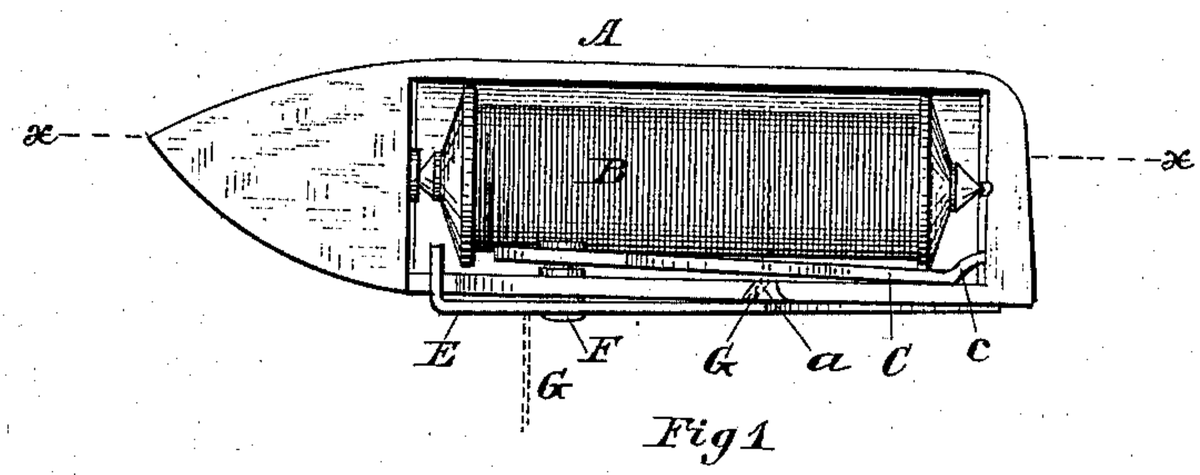

Fig 1

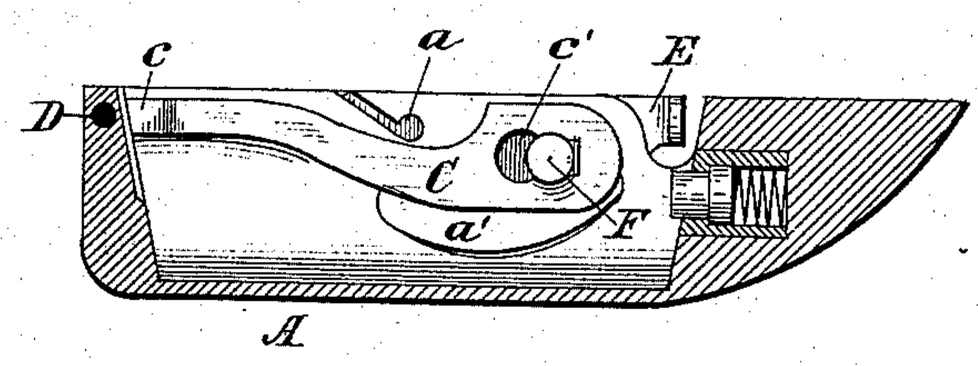

Fig 3

Fig 4

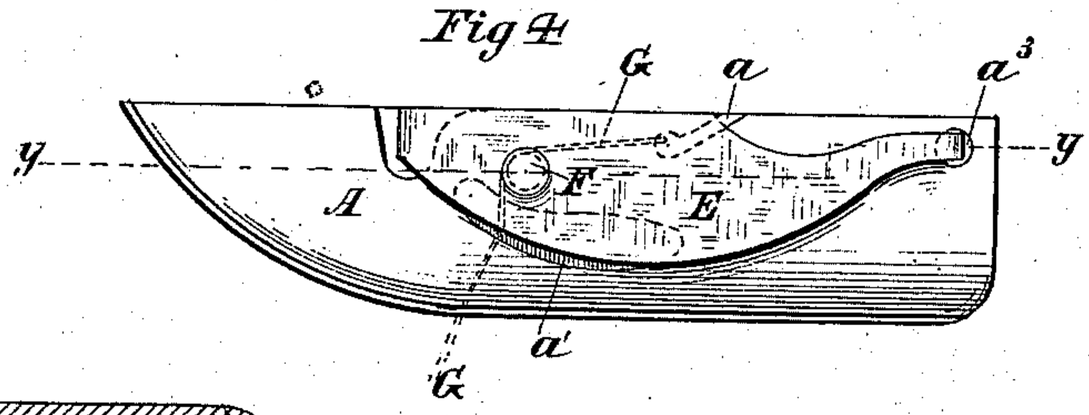

Fig 5

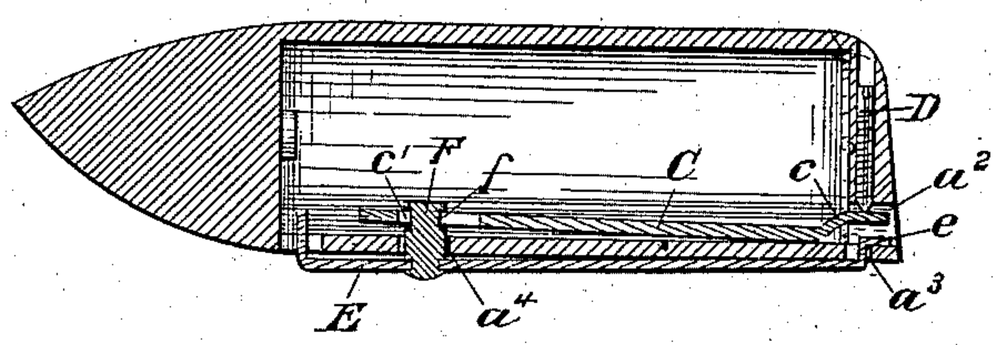

Fig 6

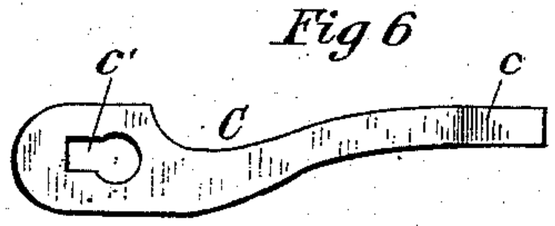

Fig 7

Witnesses
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UNITED STATES PATENT OFFICE.

GEORGE D. ELDREDGE, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE ELDREDGE SEWING MACHINE COMPANY, OF SAME PLACE.

SEWING-MACHINE SHUTTLE.

SPECIFICATION forming part of Letters Patent No. 261,839, dated August 1, 1882.

Application filed March 19, 1881. (No model.)

To all whom it may concern:

Be it known that I, GEORGE D. ELDREDGE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Sewing-Machine Shuttles, set forth in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 represents a plan view of a shuttle embodying my improvements; Fig. 2, a rear end elevation of the same; Fig. 3, a vertical section of the same, taken on the line *x x* of Fig. 1; Fig. 4, a side elevation of the same; Fig. 5, a plan section of the same, taken on the line *y y* in Fig. 4. Fig. 6 is a detailed view of the tension-spring; Fig. 7, a similar view of the thread guide and controller.

My invention relates to certain thread tension and controlling devices in shuttles for sewing-machines, and is an improvement upon the shuttle described and shown in Letters Patent No. 232,248, dated September 14, 1880.

The invention consists in certain special devices and combinations of devices, the construction and operation of which will be hereinafter fully described, and the particular improvements which I believe to be new and desire to secure by Letters Patent will be more definitely pointed out in the claims.

In the drawings, A represents the shell or case of the shuttle, which, in its main features, is of ordinary construction, and is adapted to receive the usual bobbin, B. In one of the side walls of this case are a slit, *a*, and an elongated slot, *a'*, as in the shuttle shown in the patent mentioned.

The tension-spring C is a long thin plate, made of the form shown in Fig. 6 of the drawings, and having a sharp bend, *c*, near its rear end, and an elongated slot, *c'*, at the other end, this slot being enlarged at the rear. A hole, a^2, is made in the rear end wall of the shell, in which the rear end of the tension-spring is inserted, this spring being arranged within the shell, and so that the bend in it will be inward, as shown in Fig. 5 of the drawings.

An adjusting-screw, D, is set transversely in the rear end wall of the shell, the point of which enters the opening a^2 and rests against the end of the tension-spring.

The thread guide or controller E is in general form like that shown in the Patent No. 232,248; but this plate is made of a thin plate, so as to be very elastic and yielding, and it is provided with a pin, F, attached to it near its front end, projecting on the inside, and provided with an annular groove, *f*, at its outer end. The rear end of this plate E is bent twice at right angles, or nearly so, thereby providing a finger, *e*, bent inward, by means of which the plate is secured to the shell by inserting this finger in an aperture, a^3, in the wall of the shell opening into the aperture a^2, as shown in Fig. 5 of the drawings. An aperture, a^4, is also made in the side wall of the shell, through which the pin F is passed, and the slot in the tension-spring receives the inner end of this pin, as shown in said Fig. 5.

To put the parts in working position the plate E is first connected to the shell by inserting the bent finger at its rear end in the aperture provided for it and then turning the plate down against the side of the shell, entering the pin F in its proper seat. The tension-spring C is then connected to the pin F by passing the latter through the large end of its slot, and the plate is then pushed backward, thereby entering its rear end in the opening provided for it in the end wall of the shell, the grooved portion of the pin F at the same time passing into the narrow end of the slot, and thereby fastening the two plates C and E together. The screw D is turned up against the end of the tension-spring, thereby throwing the front end of the latter inward, the first bend in the plate obviously serving as a fulcrum on which the spring vibrates. The bobbin being put in place as usual, the thread G is passed out over the tension-spring through the slit *a*, then forward between the side of the shell and the plate E, above the pin F, out around the end of the plate E, and then out underneath the lower edge of the latter, opposite the slot *a'*, as shown in Fig. 4 of the drawings.

Now, obviously, the tension-spring C has a comparatively long range, nearly the entire

length of the spring being utilized from the front end to the fulcrum-bend. The outside plate, E, has also a long range, being practically from the point of its attachment to the shell to its front end, the pin F playing freely back and forth in the side of the shell. This construction enables me to make these plates very thin, so that they yield readily, thereby providing a very soft, uniform, and even tension by reason of the great elasticity given to the tension-spring, and a very nice adjustment is obtained by means of the screw D acting on the short arm of the spring C.

It will be noticed, also, that by arranging my tension-spring inside of the shell there is no danger of catching the thread as the shuttle moves back and forth, and the adjusting devices are all out of the way of the thread. The construction and attachment of the guide-plate E is also designed to avoid this difficulty, for it will be noticed that in my construction there are no projecting points on which the thread might be caught as the shuttle moves back and forth, a substantially-smooth surface being provided at the side of the shuttle. It will be understood, of course, that the plate E is arranged with reference to the side wall of the shell so as to admit of the largest thread being passed between it and the wall without pinching.

In the devices shown in Letters Patent 232,248 the spring-plate must be made of material sufficiently thick to allow the rear end to be counterbored for the head of the fastening-screw, in order that the head may be sunk flush with the spring, and then the plate is reduced or graduated toward its front end to make it elastic or yielding, so as to act as a tension-plate. This is done by milling and grinding, and much difficulty is experienced in keeping the springs uniform, so that it is almost impossible to obtain an even tension. Another objection has been found in using this patented shuttle, on account of the great liability of the thread to slip over the post, which passes through the spring-plate near its front end as the shuttle is reciprocated, thereby breaking the thread, and also the liability of the thread being drawn under the pivoted end of the spring-plate. The rigidity of the spring has also proved another defect, which produces a too heavy tension on large thread when changing from fine to coarse, and vice versa, each change requiring a special adjustment. In my improvements I have overcome all of these defects, and my improved shuttle has been found by actual use to be entirely satisfactory. It will be noticed that the spring-plates in my construction are of uniform thickness, and the plate E may be stamped out of steel of the proper thickness and quality without the necessity of hardening or tempering.

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

1. The shell A, in combination with the tension spring, bent near its rear end to form a fulcrum, with both ends free to vibrate about said fulcrum within certain limits, and arranged inside of the shell, substantially as described.

2. The shell A, in combination with the tension-spring, bent as described, and having each end free to vibrate within certain limits, and the adjusting-screw, substantially as described.

3. The shell A, provided with the apertures a^2 a^3, in combination with the thread-guide E, provided with the bent finger *e*, by which it is attached to the shell, substantially as described.

4. The shell A, in combination with the tension-spring C, provided with a bend, *c*, at one end, and at the other connected loosely to the shell to permit free vibration, and thread-guide E, constructed as specified, substantially as described.

GEORGE D. ELDREDGE.

Witnesses:
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