

(No Model.)

L. A. MILLER.
SEWING MACHINE SHUTTLE.

No. 503,269.

Patented Aug. 15, 1893.

Fig. 1.

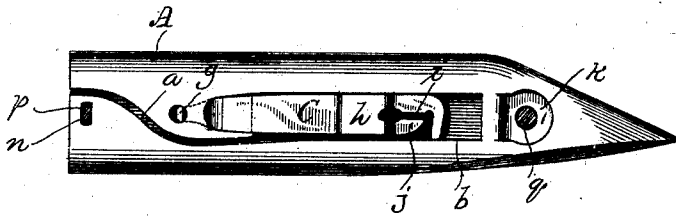


Fig. 6.

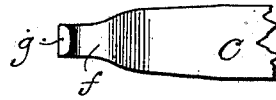


Fig. 2.

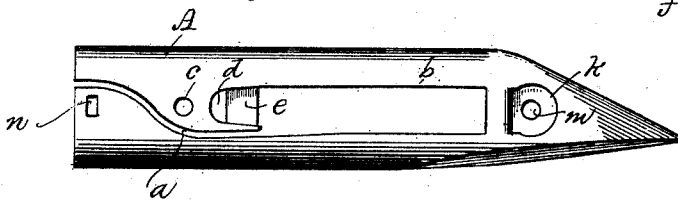


Fig. 3.

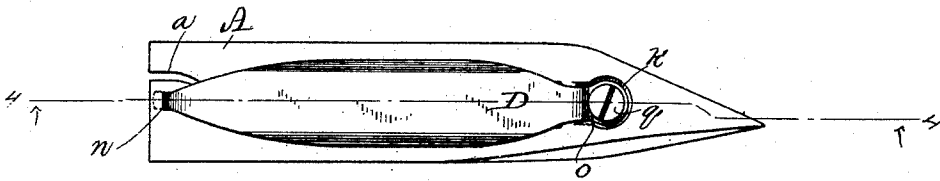
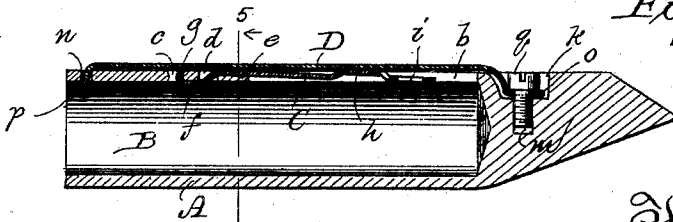


Fig. 4.



Inventor

Witnesses
Geo. W. Loring.
N. E. Oliphant

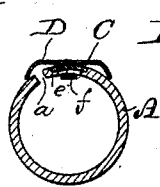


Fig. 5.

Lee A. Miller,

By H. G. Underwood,
Attorney

UNITED STATES PATENT OFFICE.

LEE A. MILLER, OF MILWAUKEE, ASSIGNOR TO SAMUEL B. FULLER, OF
WATERTOWN, WISCONSIN.

SEWING-MACHINE SHUTTLE.

SPECIFICATION forming part of Letters Patent No. 503,269, dated August 15, 1893.

Application filed November 28, 1892. Serial No. 453,309. (No model.)

To all whom it may concern:

Be it known that I, LEE A. MILLER, a citizen of the United States, and a resident of Milwaukee, in the county of Milwaukee, and in the State of Wisconsin, have invented certain new and useful Improvements in Sewing-Machine Shuttles; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention relates to sewing machine shuttles, and it consists in certain peculiarities of construction, as will be fully set forth hereinafter and subsequently claimed.

In the drawings: Figure 1 is a plan view of my improved shuttle, with the shuttle-spring removed. Fig. 2 is a plan view, with the tension-spring also removed. Fig. 3 is a plan view of the complete device. Fig. 4 is a vertical longitudinal central section, through my said device, on the line 4—4 of Fig. 3. Fig. 5 is a vertical transverse section through the same, on the line 5—5 of Fig. 4. Fig. 6 is a detail view, on an enlarged scale, showing one end of the tension-spring.

My present invention is, in part, an improvement on the device shown and claimed in my prior patent, No. 436,837, granted September 23, 1890, and, as in that device, my present improvements are equally applicable to either an open-ended or close-ended shuttle, although I have only shown the former style in the present drawings.

A represents the shell of the shuttle, which has one pointed end, and one blunt end, as is common, said shell having the usual bore or opening, B, for the reception of a bobbin (not shown). In the present shuttle, the sides thereof are solid, as before, and provided with a slot or opening, *b*, on top for the reception of the tension-spring C in its downward movement, but in the present device, this slot *b*, instead of occupying only about a third of the length of the cylindrical part of the shuttle-shell, (and that adjacent to the forward or pointed end) is now made, in the present device, to extend back farther, toward the blunt end, and hence to extend about two-thirds of the length of the said cylindrical part of the shell, and the threading slit, *a*, instead of ex-

tending to about the longitudinal center of the slot *b*, as before, is now a very short slit, extending from the blunt rear end to the rear limit of the slot *b*, and thereby doing away with the narrow tongue of metal shown at one side of the slot *b* in the former patent. This is a stronger and cheaper construction, avoiding the possible danger, in the former shuttle, of said tongue being broken or bent in use, and now furnishing two solid side walls to the slot *b*.

In the present shuttle, the tension-spring C extends in a direction exactly opposite to that shown in said prior patent, and the shell is provided on top, adjacent to the rear blunt end, with openings *c*, *d*, and also, just forward of the last named opening, with a slightly depressed or countersunk portion, *e*, whose front edge forms the rear wall of the described slot *b*. The rear end of the tension-spring C (shown in enlarged detail in Fig. 6) is formed with a depressed portion, *f*, and an upward extending hooked extreme end *g*, the part *f* being slipped down, through the opening *d* and the hook *g* extending up through the opening *c*, and bearing against the solid portion of the shell between the openings *c* and *d*, to secure the said tension-spring C in place, as clearly shown in the drawings. The present tension-spring has a raised or offset portion, *h*, but instead of being at the rear end, and at the extreme free end, as in the former patent, this offset is now adjacent to the front of the spring, and the practically right-angled slot *i*, in the present spring, is on the opposite or farther side of the raised or offset portion of the tension-spring, (with relation to the attaching or secured end of said spring) from its location as shown in the said prior patent, thereby insuring a greater length of the operative part of said tension-spring, and a more ready yield, than in the former device. The said right-angled slot is further improved in construction by rounding off the metal of the tension-spring at the point *j*, thereby widening the said slot at its outer limit, and forming a guide for the thread entering said slot.

As now constructed, the tension-spring is more readily detachable than in the former

device, and is wholly independent, in its attachment or removal, of the outer or shuttle-spring D (next described) and while its added length gives it greater flexibility, and yielding capacity, it is still of considerable less length than that of the slot *b*, and hence any accumulation of dust or fluff inside the shell, drawn from the thread, or otherwise, can be more easily removed than before, and this can be done very simply, without necessitating the removal of the tension-spring itself, in an obvious manner.

In the front part of the shell A, just forward of the bore B, there is formed a depression *k*, having, at its base, a screw-threaded opening *m*, and near the rear end of the shell A (in the open-ended style of shuttle, illustrated in the present drawings) is an opening *n*. This depression *k* and opening *n* are designed to receive, respectively, the depressed forward end, *o*, and depressed rear end, *p*, of the shuttle-spring, D, the forward end *o* being held in place by means of a screw *q* entering the opening *m*, and the rear end *p*, in this form, hooking through the opening *n*, as shown. It will be understood, that when a close-ended shuttle is employed, the rear end of the shuttle-spring D may be attached, in the ordinary manner, to the ordinary door closing the end of the shuttle, in the well known manner illustrated for example, in the said prior patent.

The operation of the present device (save as to the advantages hereinbefore set forth) is substantially the same as set forth in said prior patent, and need not be here set forth in detail. The shuttle is threaded instantly and easily, from the rear end, through the described slit *a*, and slots *b*, *i*, and the thread goes back, in a straight line, after leaving the inner end of the right-angled slot *i*, and hence has the same freedom from liability to breakage, as in the said former patent, and the same clearing and non-clogging action, while, as already stated, the present tension-spring yields more readily than before, by reason of its greater length and flexibility, and its forward projection, and if a knot or kink comes in the thread, as it passes through the slot *i*, the yield will be at the free end, in front of and free from the raised or offset portion *h* of the tension-spring, instead of back of the same, between the offset and attached end of the said spring, as before, which is a very great advantage. Again, on account of the space now left between said free end of the tension-spring and the front wall of the slot *b*, and by the further reason of the coincidence of the forward limit of said slot with that of the bore B of the shell, there is no possibility of clogging or catching the free end of the tension-spring, and the shuttle is more readily emptied of any accumulations of foreign matter, as already stated. The pressure of the shuttle-spring against the tension-

spring may be regulated by a slight turn of the screw *e*, and on account of the present added length and construction of the latter spring there is no need of permitting it to drop downward, away from the former spring, as in the said prior patent.

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

1. A sewing-machine shuttle shell having solid sides, and a slot in its upper surface intermediate between the ends thereof, a tension-spring secured to said shell, and having a free end yielding vertically within said slot, a superimposed shuttle-spring, and a threading slit extending from the rear of the shell to, and terminating at, the rear wall of the said slot, substantially as set forth.

2. A sewing-machine shuttle having a threading-slit, and a slot, in its upper surface in communication with each other, a tension-spring provided with a raised portion intermediate of its ends, and secured at its rear end only to the shuttle, and adapted to yield within said slot, the free end of said spring beyond said raised portion having a slot in communication with the shuttle slot, and a superimposed shuttle-spring normally resting on said raised portion of the tension-spring and secured to the shuttle at each end, substantially as set forth.

3. In a sewing-machine shuttle, the combination with the shell, having a slot in its upper surface and a threading slit extending from the rear of said shell to, and terminating at, the rear wall of said slot, of a vertically-yielding tension-spring secured at its rear end to said shell back of said slot, and projecting forward toward the front end of said shuttle and a superimposed shuttle-spring, normally in contact with said tension-spring, and secured at both ends to said shell, substantially as set forth.

4. In a sewing machine shuttle, the combination with the shell, having a slot in its upper surface and a threading slit extending from the rear of said shell to, and terminating at, the rear wall of said slot, of a vertically-yielding forward-projecting tension-spring of less length than said slot, and secured at its rear end back of the rear wall of the slot, whereby clogging at the free end of said tension-spring is prevented and all accumulations of foreign matter rendered capable of ready removal, without prior removal of said tension-spring, and a superimposed shuttle-spring, normally in contact with said tension-spring, and secured at both ends to said shell, substantially as set forth.

5. In a sewing-machine shuttle, the combination with the shell, having a slot in its upper surface and a threading slit extending from the rear of said shell to, and terminating at, the rear wall of said slot, of a vertically-yielding forwardly-projecting tension-

spring removably secured at its rear end to said shell back of said slot, and a superimposed shuttle-spring, normally in contact with said tension-spring, and secured at both ends
5 to said shell, independently of the attachment of the said tension-spring thereto, substantially as set forth.

In testimony that I claim the foregoing I

have hereunto set my hand, at Milwaukee, in the county of Milwaukee and State of Wisconsin, in the presence of two witnesses.

LEE A. MILLER.

Witnesses:

JOHN E. WILES,
N. E. OLIPHANT.