

**E. G. SPALDING.**  
**Loom-Shuttles.**

No. 147,076.

Patented Feb. 3, 1874.

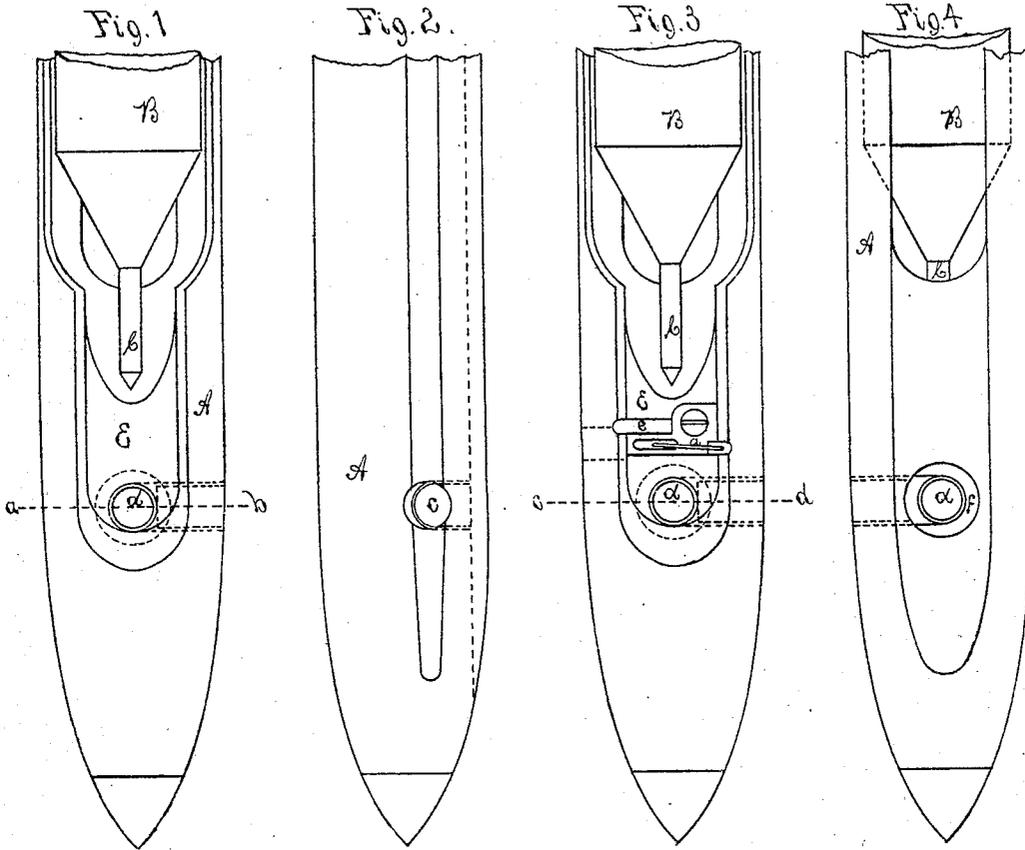


Fig. 6

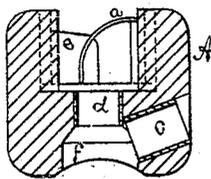
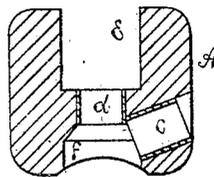


Fig. 5



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# UNITED STATES PATENT OFFICE.

EDWIN G. SPALDING, OF LOWELL, MASSACHUSETTS, ASSIGNOR TO FRANK T. JACQUES, CHARLES E. SMITH, AND JOHN L. JACQUES, OF SAME PLACE.

## IMPROVEMENT IN LOOM-SHUTTLES.

Specification forming part of Letters Patent No. **147,076**, dated February 3, 1874; application filed November 28, 1873.

*To all whom it may concern:*

Be it known that I, EDWIN G. SPALDING, of Lowell, in the county of Middlesex and State of Massachusetts, have invented a new and useful Improvement in Weavers' Shuttles, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings making part of this specification, in which—

Figure 1 represents a plan or top view; Fig. 2, a side elevation; Fig. 3, a plan with a friction device connected. Fig. 4 is a bottom side view. Figs. 5 and 6 are each a cross-section of Figs. 1 and 3, respectively, through the two eyes of the shuttle.

This invention consists of an eye in the bottom of the shuttle, in combination with an eye in the side of the shuttle, the side eye communicating with the bottom eye, below the upper cavity E, or in an under recess, below the bottom eye, near the end of the shuttle. This invention also consists in the combination, with a shuttle having a bottom eye and a side eye, as described, of a common friction device, such as herein described. The object of this invention is to regulate and control the tension of the filling running from the cop or bobbin in a shuttle, and at the same time to provide easy and convenient means for threading the shuttle, and means for producing and preserving a more direct line of draft of the filling from the cop or bobbin to the leading or guiding eye *d*.

In the said drawings, A represents the body of the shuttle, and B the cop or bobbin of filling on the spindle C. The bottom eye *d* is formed as a tube, applied in and through the substance of the shuttle, near the end of the cavity E, and this eye *d* opens into a recess, F, in the under side of the shuttle. The side eye *c* may be formed at an angle, both inward and downward, or downward and at a right angle with the side of the shuttle, so as to open into the bottom eye, or partly or wholly into the recess F, below the eye *d*, without communicating with the cavity E in the upper part of the shuttle.

In a shuttle thus made, with the bottom eye and side eye, and with the filling running through both of the eyes, there will be suffi-

cient friction on the filling for some kinds of weaving, such as slack-twisted cotton, on which the friction is limited, in a shuttle having only the ordinary side eye; but for weaving hard-twisted filling, such as worsted, or the strong flax or cotton filling used in the manufacture of duck or sail cloth, the friction on the filling must of necessity be greatly increased, and it should be always at the same degree of tension. All this is accomplished by the application of a common friction device, applied in the cavity E between the free end of the spindle and the eye *d*.

By this combination of new and old elements, sufficient friction and tension will be generated and maintained for most kinds of weaving, and, besides this, the line of draft of the filling will be more direct, and the action or effect of the friction device more certain, by constantly drawing the filling downward between the two parts of the friction device; whereas, if used in connection with an eye in the side of the shuttle leading from the upper cavity E, when the filling unwinds from the cop, that portion over the upper side of the bobbin or cop will rise above the fixed bar or wire *e*, while that portion from the under side of the cop will be drawn downward between the two parts of the friction device, and thus the friction and tension on the filling will vary and be liable to cause the filling to break, or otherwise to make less perfect fabric than where the friction and tension on the filling are constantly uniform and the line of draft of the filling is direct and downward.

In order to thread the shuttle having a bottom eye and a side eye, as described, it is only necessary to place the end of the filling over or into the bottom eye, and cover the under cavity F with a finger; then place the mouth over the side eye, when the filling is sucked through both eyes to the side of the shuttle as easily as through the side eye of an ordinary shuttle.

If preferred, the end of the filling may be passed through the bottom eye and then through the side eye, and thus thread the shuttle without sucking the filling through the eyes—a process injurious to the operative.

This friction device is clearly shown in Pat-

ent No. 70,171, dated October 29, 1867, to George L. Crandall, and need not be described. In this case it may be sufficient to say the bottom eye *d* aids the friction device, or increases its efficiency, by constantly guiding the filling downward, as before described.

I claim as my invention—

1. A shuttle having its eyes arranged and constructed, relatively with each other, as described, and with the side eye *c* opening into the bottom eye *d* or thread-passage through the shuttle, all in the manner and for the purpose specified.

2. In a shuttle having its eyes constructed relatively with each other, and with side eye opening into the bottom eye or thread-passage, as described, a friction device consisting of a fixed bar, *e*, and an adjustable spring-bar, all combined, arranged, and operating in the manner and for the purpose as specified.

EDWIN G. SPALDING.

Witnesses:

JOHN E. CRANE,  
JOHN L. HUNT.