

(No Model.)

J. T. AHRENS.
LOOM SHUTTLE.

No. 496,766.

Patented May 2, 1893.

Fig. 1.

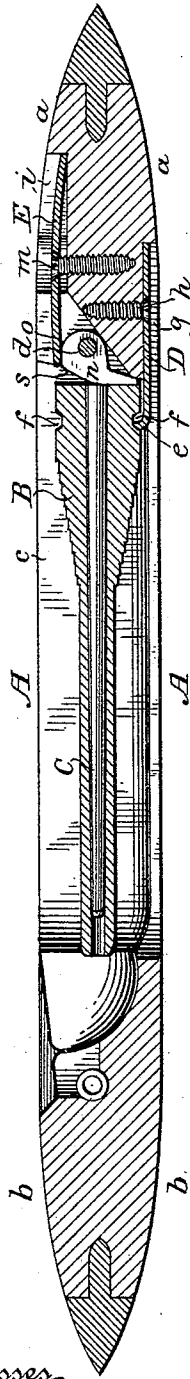


Fig. 2.

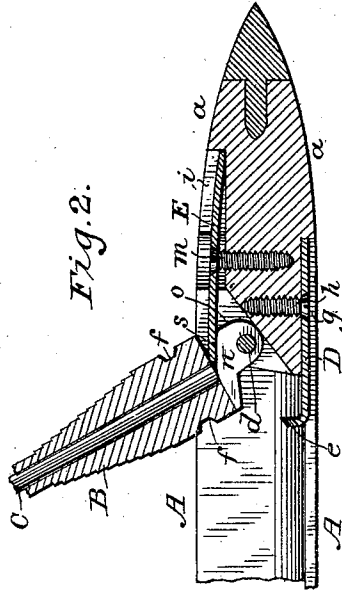


Fig. 3.

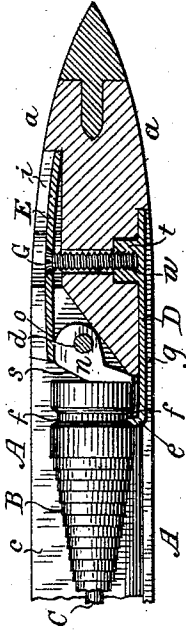


Fig. 4.

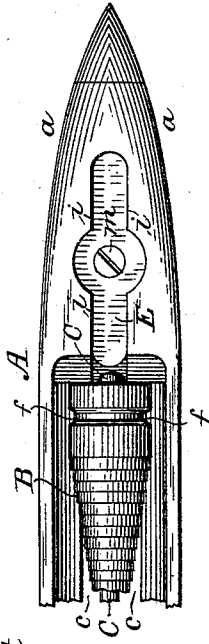


Fig. 5.

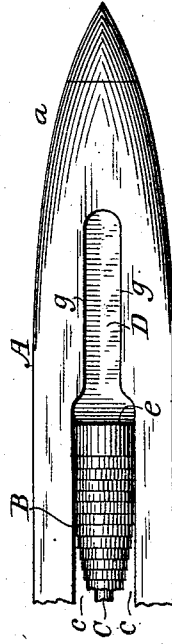


Fig. 6.



Witnesses
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UNITED STATES PATENT OFFICE.

JOHN T. AHRENS, OF WILMINGTON, DELAWARE, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, OF ELEVEN-SIXTEENTHS TO WILLIAM S. KNIGHT, GEORGE HILLSLEY, AND FRANCIS E. GALLAGHER, OF SAME PLACE.

LOOM-SHUTTLE.

SPECIFICATION forming part of Letters Patent No. 496,766, dated May 2, 1893.

Application filed June 8, 1892. Serial No. 435,960. (No model.)

To all whom it may concern:

Be it known that I, JOHN T. AHRENS, of Wilmington, in the county of New Castle and State of Delaware, have invented certain new and useful Improvements in Loom-Shuttles, of which the following is a specification.

The present invention is an improvement upon the construction of that class of loom shuttles which are probably most widely used, and its object is to overcome the defects of this old style of shuttles.

In order that the present invention may be clearly understood, I will first describe the old style of loom shuttles to the improvement of which the present invention relates, in connection with the accompanying drawings, wherein—

Figure 1, is a central vertical longitudinal section of the old style of loom shuttle, showing the parts in position for use. Fig. 2, is a similar section of one end of the shuttle, showing the spindle elevated for the removal and insertion of the bobbin or cop. Fig. 3, is a section similar to Fig. 1, of one end of the shuttle, showing the improvements. Fig. 4, is a top view, and Fig. 5, a bottom view, of the same end of the shuttle, showing the improvements. Fig. 6, is a detail view of the improved bobbin catch plate.

Referring first to the old style shuttle shown in Figs. 1 and 2, A is the wooden body of the shuttle, having ends *a* *b*, and the usual central slot *c*, in which is located the bobbin B. The bobbin is slipped onto a spindle C, which is pivoted at one end by a pin or shaft *d*, extending crosswise of the shuttle at one end, as *a*. When the shuttle is in its operative position, the spindle C, and bobbin B, occupy the position shown in Fig. 1, parallel with the longitudinal axis of the shuttle. The bobbin is then retained in place on the spindle, and is prevented from slipping thereon, by means of a bobbin catch *e*, on a bobbin catch plate D. The catch *e*, engages a peripheral groove *f*, on the end of the bobbin. The plate D, is located in a recess *g* at the bottom of the end *a*, of the shuttle, and is held in place by a screw *h*, which passes through the plate D, and into the wood of the end *a*, of the shuttle. The spindle C, is retained in its proper oper-

ative position shown in Fig. 1, by means of a bobbin spring or tongue E. This bobbin spring or tongue is located in a recess *i* in the upper face of the end *a*, of the shuttle, and is held therein by a screw *m* which extends through the bobbin spring and screws into the wood of the end *a*, of the shuttle. This screw also gives tension to the bobbin spring E, which is slightly arched. The inner end of this bobbin spring or tongue E co-operates with the head *n*, of the spindle C. This head has a face *o*, parallel with the axis of the spindle, and when the spindle is in the operative position shown in Fig. 1, the free end of the bobbin spring E, bears against the face *o*, and thereby holds the spindle in the proper position. When, however, it is desired to effect a substitution of bobbins, as to remove an empty one and replace it with a full one, the spindle C is turned on its pivot *d* to the inclined position shown in Fig. 2. When the spindle is in this position, the groove *f*, of the bobbin B, is out of engagement with the catch *e* of the bobbin catch plate D, so that the bobbin may be freely moved longitudinally of the spindle C. The spindle C is maintained in its upwardly inclined position, shown in Fig. 2, during the substitution of bobbins by the bobbin spring E, resting upon a face *s*, of the head *n* of the spindle C, which face *s* is inclined to the axis of the spindle and is brought into operative relation with the bobbin spring by the turning of the spindle on its pivot.

Now several defects arise in the use of these old and widely used shuttles. In the constant moving of the spindle on its pivot to substitute bobbins, the bobbin spring E, is subject to constant flexure, and the resistance to this flexure is afforded by the screw *m*. There is consequently great strain brought upon the screw *m*, which is thereby frequently broken off, but more frequently is worked loose by the tearing away of the wood of the shuttle between the screw threads. When the screw *m* is thus loosened, the tension of the bobbin spring E, is destroyed, so that the spindle swings on its pivot during the throw of the shuttle. The free end of the bobbin is thus frequently thrown up beyond the body

of the shuttle, and if this occurs, as it frequently does, while the shuttle is passing through the shed, the warp threads are broken, and the loom must be stopped until the damage is repaired. If the screw, however, is broken, not only does the spindle swing freely on its pivot, but the bobbin spring falls off and becomes an instrument of damage. If a shuttle becomes thus damaged, either by the loosening or the breaking of the spring plate screw, it is almost impossible to repair it. If the screw has worked loose, the shuttle can only be repaired by using a larger screw or by plugging the screw hole. If a larger screw is used, the wood of the shuttle is usually split, thus entirely destroying the shuttle, and the plugging of the hole is a temporary remedy only. Similar defects exist also in reference to the bobbin-catch plate. If in placing a bobbin on the spindle it is not pushed clear down, but is only partially pushed into place, as often happens with careless operatives, the end of the bobbin is brought into contact with the bobbin catch *e*, when the spindle is returned to its operative position, shown in Fig. 1. As the result of such carelessness, the bobbin catch plate *D* is subjected to strain which is borne by its screw *h*. The strain upon this screw causes it to be broken and to come loose with the same evil consequences as result from the breaking or loosening of the spring screw *m*.

In order to avoid the defects just enumerated, many constructions have been devised. But as far as I am aware, all such attempts have been practically unsuccessful. Many such prior constructions overcome the defects referred to, but by an entire change in the construction of the connections between the spindle and shuttle, and such constructions are either too expensive to come into extensive use, or introduce new defects more serious than those which they avoid. Consequently, at the present time, in spite of the numerous attempts at improvement, the old style of bobbin shuttle shown in Figs. 1, and 2, is almost exclusively employed.

The improvements which constitute the present invention are illustrated in Figs. 3, 4, 5, and 6. In accordance with the present invention, the spindle, bobbin, and bobbin spring are unchanged. The bobbin catch plate is, however, of novel construction, as shown in Fig. 6. The metallic bobbin catch plate *D* does not have a screw hole passing through it, as in the old style shuttle, but is formed with a projecting boss *t*, on its inner face, which is formed with a threaded provision such as a female-threaded socket *w*. The end *a*, of the shuttle is suitably recessed for the reception of this boss *t*, as shown in Fig. 3.

When the bobbin catch plate is in place on the shuttle, its socket *w*, is in line with the screw aperture in the bobbin spring *E*. Instead of two screws *h* and *m* being used, a single screw bolt *G*, is employed. This screw bolt does not screw into the wood of the shuttle, but a hole is bored through the shuttle, as shown in Fig. 3, through which the bolt freely passes. The bolt *G*, is passed through the aperture in the bobbin spring, thence through the hole in the shuttle, and screws into the socket *w*, of the bobbin catch plate. Thus a single bolt serves to attach and lock both the bobbin catch plate and the bobbin spring to the shuttle. This simple improvement effectually overcomes the defects in loom shuttles having a bobbin spring and a bobbin catch plate. The screw bolt *G*, never becomes loose, since it screws into metal, and not into the wood of the shuttle. The screw bolt, also, is not likely to break because it has some freedom of movement in the hole of the shuttle through which it extends. Should it ever break, the shuttle can be readily repaired by the substitution of a new bolt. With these improved shuttles the only limit to the life of the shuttle is the eventual wearing away of the wood of the shuttle.

A main advantage of the improved shuttle is its simplicity and economy. The meritorious features of the existing shuttles are retained without change, and the advantages of the new shuttle are attained without any additional cost.

Another and important advantage of the improvements is that they can be applied to existing damaged shuttles, by simply boring in such a shuttle a hole for the bolt to pass through and a recess for the boss *t*, of the bobbin catch plate.

I claim as my invention—

1. A loom shuttle having a bobbin spring, a bobbin catch plate, and a single bolt connecting said spring and catch plate together and attaching both to the shuttle, substantially as set forth.

2. A loom shuttle having on one side a bobbin catch plate with a female threaded socket, on its opposite side a bobbin spring, and a bolt passing through the bobbin spring and shuttle, and screwing into said socket, whereby said bobbin catch plate and said bobbin spring are locked together and attached to the shuttle, substantially as set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

JOHN T. AHRENS.

Witnesses:

THOS. J. BROWN, Jr.,
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