C. I. KANE.

Loom-Shuttle.

No. 213,207 Patented Mar. 11, 1879.

Fig. 1.

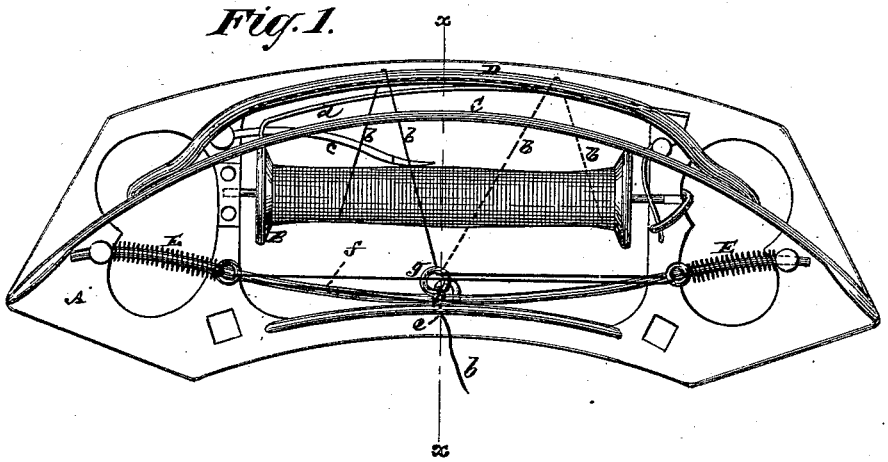
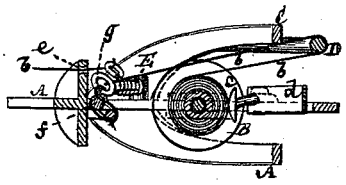


Fig. 2.



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UNITED STATES PATENT OFFICE.

CHARLES I. KANE, OF NEW YORK, N. Y., ASSIGNOR TO THE NEW YORK SILK MANUFACTURING COMPANY, OF SAME PLACE.

IMPROVEMENT IN LOOM-SHUTTLES.

Specification forming part of Letters Patent No. **213,207**, dated March 11, 1879; application filed April 18, 1878.

To all whom it may concern:

Be it known that I, CHARLES I. KANE, of the city and State of New York, have invented certain new and useful Improvements in Shuttles for Looms, of which the following is a description, reference being had to the accompanying drawings, forming part of this specification.

The object of this invention is to furnish a light, strong, and effective shuttle; and to this end it consists in a shuttle having a skeleton-frame braced by the warp-bridge, which is attached at each end thereto. The warp-bridge supports and is braced by the thread-equalizing bar, and the front portion of the frame is braced by a rod extending from end to end thereof, and serving at its opposite ends to guide the take-up springs, as will be hereinafter fully described.

Figure 1 represents a plan of a shuttle having my invention applied, and Fig. 2 a transverse section of the same on the line *x x* of Fig. 1.

A is the frame of the shuttle, which is here represented of curvilinear form for travel within an arched or circular race, but which might be of a straight construction for operation within a straight race or way. B is the bobbin carried by the shuttle; *b*, its thread, and *c d* an ordinary or any other suitable spring-pressure device applied to the bobbin to control its run. C is a warp-bridge, extending lengthwise of the shuttle and attached to its frame. This bridge, which occupies a raised position in relation with the bobbin and other parts of the shuttle, is preferably arranged on the outer side of the bobbin, and serves to guard the filling by supporting the warp from being caught by the weft in the passage of the shuttle through the shed.

Back of the bobbin, also on its outer side, but below the level of the warp-bridge, is an equalizing-bar, D. This bar, which likewise extends lengthwise of the shuttle, is attached to the back of the warp-bridge C, thus bracing the latter. The warp-bridge and equalizing-bar serve to mutually support each other and to brace the shuttle-frame by a single connection of the two—that is, of the warp-bridge to the shuttle-frame—thereby giving lightness and strength to the shuttle. Said bar and said bridge are here represented as of curvilinear form, corresponding with the curved form of the shuttle; but when a straight shuttle is used they may also be straight.

The shuttle thread or silk *b* passes from the bobbin B around or over this bar D, and from thence to a take-up, and through an eye, *e*, in the inner side of the shuttle, and as said thread is taken from the bobbin it is caused to travel alternately backward and forward along the bar D as the thread is unwound or drawn off first from one end of the bobbin and afterward from the opposite end thereof.

The bar D serves to so materially reduce variation in angular draft of the thread from the bobbin as virtually to equalize tension on the thread as the latter is drawn from opposite ends of the bobbin alternately. This is clearly shown by full and dotted lines in Fig. 1 of the drawings, and by the use of said equalizing-bar I am enabled to use a much longer bobbin than would be otherwise practicable without seriously impairing the tension.

By using a long bobbin in the shuttle it of course will carry more thread than a short one, thus diminishing the frequency of refilling the shuttle, and yet it will not present the objection which a short bobbin having the same amount of thread on it does—viz., of requiring the shed to be opened inconveniently wide for the passage of the bobbin with the shuttle through it. This action of the equalizing-bar, as also the hereinbefore-described action of the warp-bridge, do not essentially differ from the actions of equalizing-bars and warp-bridges generally as applied to shuttles.

The take-up, which provides for taking up surplus thread drawn from the bobbin by the throw of the shuttle, consists, in part, of two opposite end coiled springs, E E, provided with eyes on their inner ends for passage of the thread through them, and arranged loosely around a supporting and guiding rod, *f*, which extends lengthwise of the shuttle through both of said springs, and, furthermore, serves to stiffen or brace the shuttle-frame.

The thread *b*, as it is taken from the bobbin, or as it is drawn from off the equalizing-bar, passes first through a smooth eye or ring-

guide, *g*, midway of the rod *f*, and which may be flexibly attached to said rod. From thence said thread passes to and through the eye of one of the springs E, and from said eye to and through the eye of the other spring E, and from thence through the eye *e* of the shuttle.

A take-up constructed as described is both simple and efficient, and has a graduated or divided action on the thread on opposite sides of the eye *e*, through which the thread ultimately passes.

I claim—

The shuttle-frame A, provided with the warp-bridge C, secured at its ends to the shuttle-frame, the equalizing-bar D for the shuttle-thread, secured at its ends to the warp-bridge, whereby the warp-bridge and equalizing-bar are made to support and strengthen each other and stiffen the shuttle-frame, the bar *f*, and opposite end take-up springs E, and the guide-eyes *g* and *e*, substantially as specified.

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Witnesses:

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