J. KUTTNER.

Improvement in Shuttles for Looms.

No. 114,155. Patented April 25, 1871.

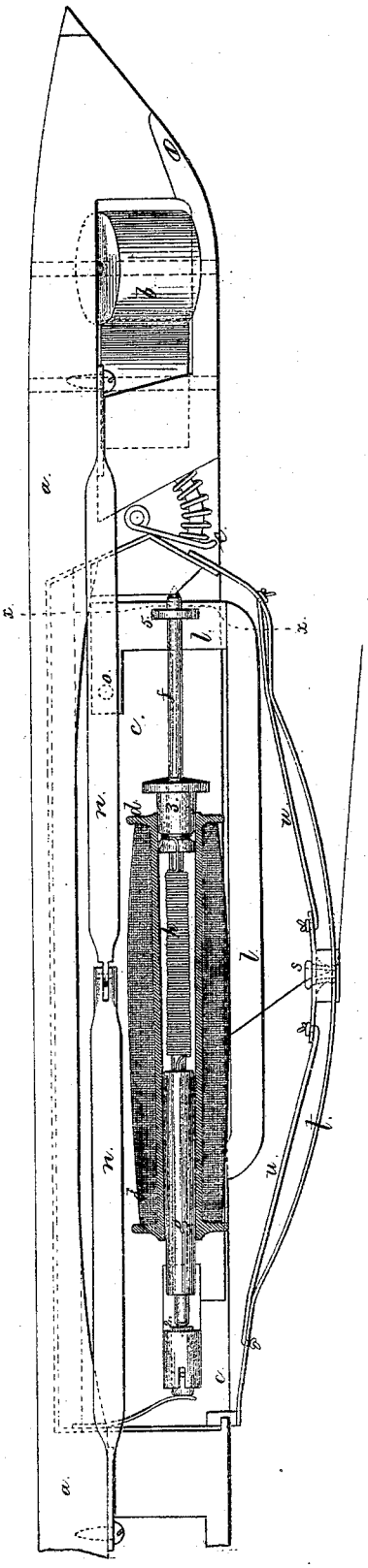

Fig. 1.

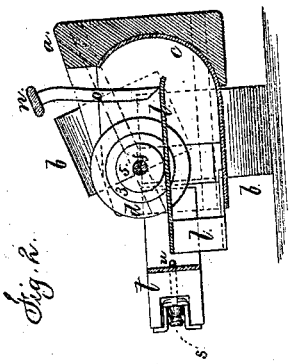

Fig. 2.

Witnesses:

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UNITED STATES PATENT OFFICE.

JULIUS KUTTNER, OF NEW YORK, N. Y.

IMPROVEMENT IN SHUTTLES FOR LOOMS.

Specification forming part of Letters Patent No. **114,155**, dated April 25, 1871.

To all whom it may concern:

Be it known that I, JULIUS KUTTNER, of the city and State of New York, have invented an Improvement in Shuttles for Looms; and the following is declared to be a correct description thereof.

This shuttle is adapted especially to use in looms for weaving corsets, but may be used in other characters of looms.

Difficulty has heretofore arisen in weaving corsets in consequence of the weft-thread forming into loops upon the surface of the fabric at the edges of woven gores, from the slack weft-thread not being drawn up. Various devices, such as a reversible shuttle and a spring-tension, have been devised to endeavor to overcome this difficulty; and in some instances, where the slack loops of weft-thread have been prevented, another difficulty has arisen from the tension being too great upon the weft-thread; hence the warp-threads at the inner ends of the wefts of the gores have been drawn out of line; hence uniformity in the fabric has been prevented.

My invention consists in a let-off motion applied to the weft-threads, said let-off operating when the shuttle is between the warps to allow the weft-thread to draw off freely, and ceasing to operate when the shuttle passes clear of the upper shed of warp. The weft-thread that is drawn off during the other portions of the movements of the shuttle revolves the spool or bobbin against the action of a delicate spring, which spring again winds up such weft-thread as the shuttle moves in the opposite direction.

By this construction the amount of weft-thread allowed to pass entirely from the bobbin is regulated by the width of the shed, whether that shed is the entire width of the goods or only a portion thereof, as in weaving a gusset.

In the drawing, Figure 1 is a plan of a shuttle fitted with my improvement, a portion being in section; and Fig. 2 is a cross-section at the line *x x*.

The shuttle *a*, with its rollers *e*, is of the character adapted to use in the positive-motion loom patented by James Lyall, and the removable case *c*, carrying the spool or bobbin *d*, and retained by the latch *e*, is also similar to that employed by him, except in the particulars hereafter set forth.

The spool or bobbin *d* is mounted upon a spindle, *f*, that is held in by a spring-center, 2, and can be taken out for receiving upon it said spool *d*. The spool *d* has a hole large enough to pass over the fixed sleeve *g* and spring *h* and set upon the loose conical collar 3, so that, when the spindle *f* is prevented from revolving, the spring *h* will be wound up by drawing off the weft-thread, because one end of the spring *h*, that is attached to the sleeve *g*, will be held stationary, while the other end of said spring will be revolved by and with the conical collar 3 and spool *d*. The spring *h* is only sufficiently strong to revolve the bobbin or spool *d* and wind up the weft-thread when the pull thereon is relieved.

It will now be seen that, if the spindle *f* is allowed to revolve while the shuttle is passing through the shed, the weft-thread will draw off with little or no resistance; but so soon as the spindle is held from revolving the pull of the weft-thread winds up the spring *h*, and that, in turn, rewinds the weft, taking up the slack upon the return movement of the shuttle.

The holding and liberating of the spindle *f* are effected by the friction-spring *l*, acting against the disk 5 on the spindle *f*, and the warp-arms *n* and friction-reliever *o*. These arms *n* are hinged together in the middle, and at the ends to the shuttle, and the reliever *o* extends from one arm, *n*, to the spring *l*. The power of this spring *l* is sufficient to hold up these arms *n* slightly above the shuttle and arrest the revolution of the spindle *f* while the shuttle is out of the shed of warps; but, so soon as the shuttle enters the shed, the warps, pressing upon these arms *n*, depress them, and move the spring *l* from contact with the disk 5, and allow the spool and spindle to revolve freely as the weft-thread is drawn off; but, on leaving the shed, the spring *l* again operates to hold the spindle from revolving, so that the spring *h* may be made operative to revolve the spool and rewind the weft-thread and take up the slack.

The weft-thread passes through the eye *s*, that is fitted to slide in the slotted bow *t;* and very slight india-rubber cords or other

springs *u* retain this eye in a central position, except when the tension of the weft-thread draws this eye to either one side or the other; hence the weft-thread will not be allowed to remain in loops upon the surface of the fabric; neither will there be strain upon the weft-thread sufficient to draw the warp-threads out of line at either the selvage or at the intersections of the gores with the body of the fabric.

If it were desired to relieve the warp-threads of any strain the arms *n* might be operated upon by stops controlled by the jacquard, so as to apply friction to the spindle of the spool when the shuttle is not in the shed.

I claim as my invention—

1. The arms *n* and reliever *o*, in combination with the friction-spring *l*, spindle *f*, and bobbin or spool *d*, substantially as and for the purposes specified.

2. A friction mechanism applied to the spindle of the bobbin or spool of a shuttle, in combination with a spring intervening between the spindle and the bobbin or spool, and mechanism, substantially as set forth, for relieving the spindle of friction during the passage of the shuttle beneath the upper shed of warp-threads, substantially as set forth.

Signed by me this 1st day of March, A. D. 1871.

JULIUS KUTTNER.

Witnesses:

HAROLD SERRELL,

GEO. T. PINCKNEY.