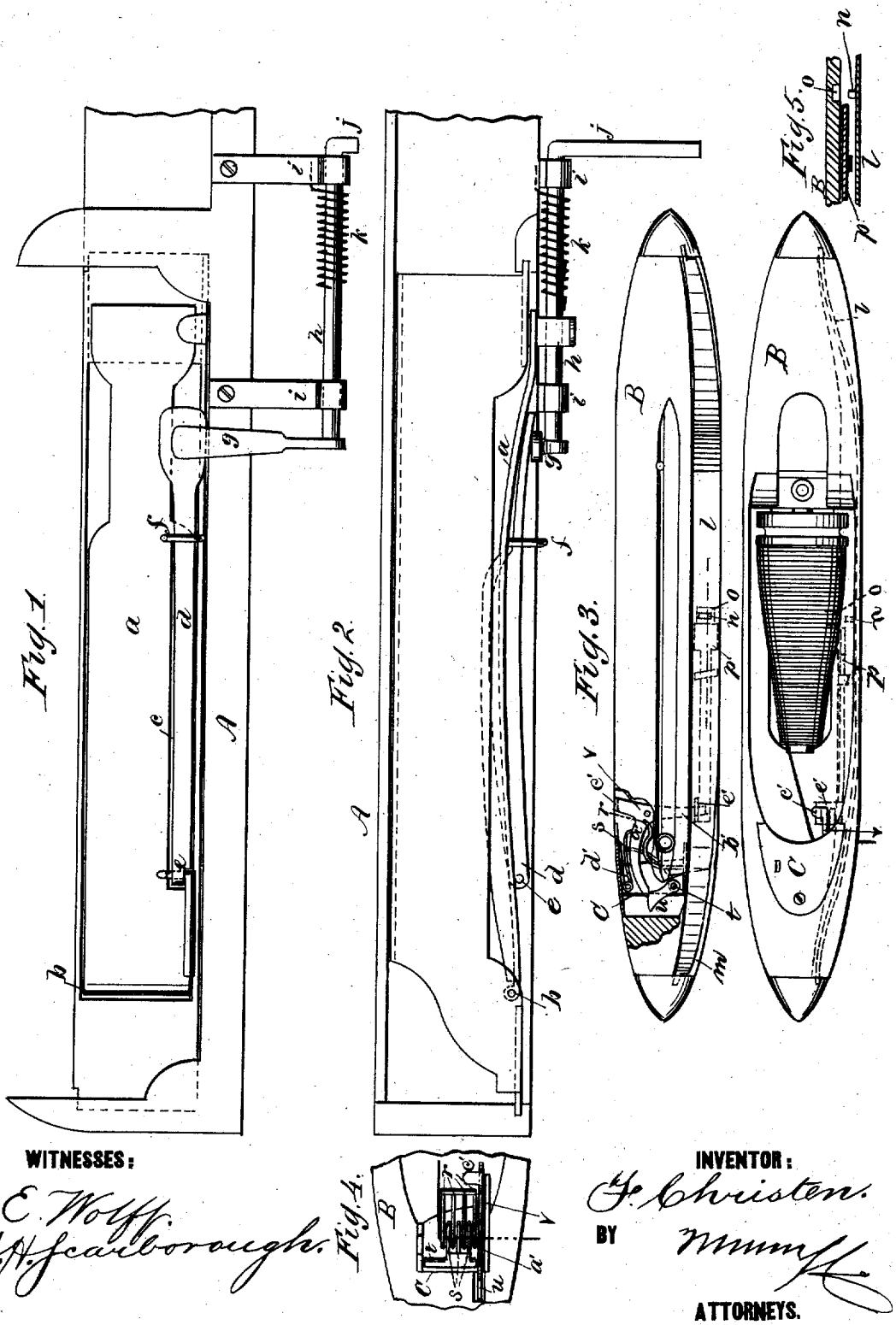
2 Sheets—Sheet 1.

F. CHRISTEN.

STOP-MOTION FOR LOOMS.

No. 190,741. Patented May 15, 1877.



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2 Sheets—Sheet 2.

F. CHRISTEN.

STOP-MOTION FOR LOOMS.

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Fig. 6.

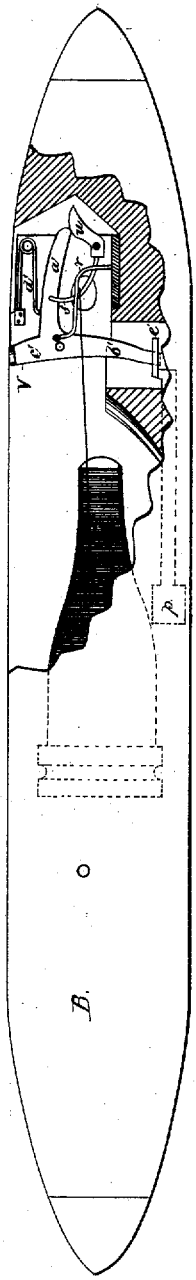
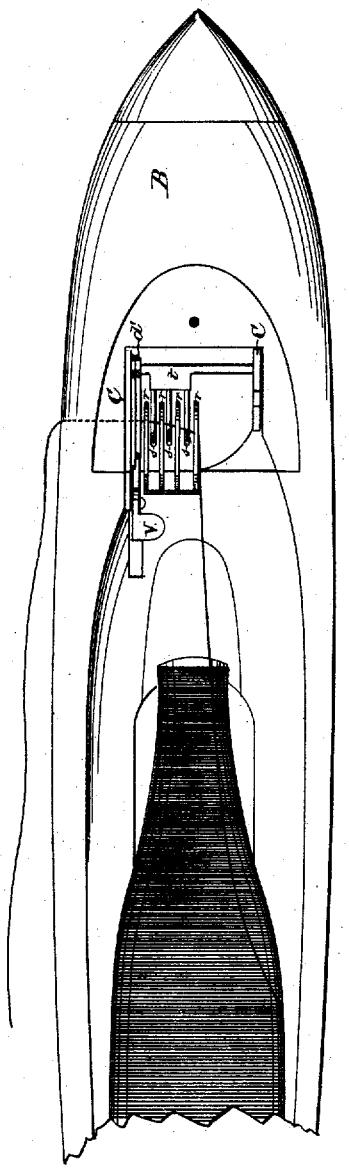


Fig. 7.



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UNITED STATES PATENT OFFICE.

FRED. CHRISTEN, OF HOMESTEAD, IOWA.

IMPROVEMENT IN STOP-MOTIONS FOR LOOMS.

Specification forming part of Letters Patent No. **190,741**, dated May 15, 1877; application filed February 26, 1877.

To all whom it may concern:

Be it known that I, FRED. CHRISTEN, of Homestead, in the county of Iowa and State of Iowa, have invented a new and Improved Stop-Motion for Looms, of which the following is a specification:

Figure 1 is a side view of a shuttle-box of a loom, showing the auxiliary shuttle-binder. Fig. 2 is a top view of the same. Fig. 3 contains two views of a shuttle having my improvements attached. Figs. 4 and 5 are detail views of portions of the invention. Fig. 6 is a side elevation, partly in section, of the loom-shuttle; and Fig. 7 is an enlarged top view of the shuttle.

Similar letters of reference indicate corresponding parts.

The object of my invention is to provide a simple and effective weft-stopping device for fancy looms using two or more colors of thread; and it consists in a novel arrangement of fingers, between which the filling passes as it runs out of the shuttle, one series of which, on the breaking of the filling-threads, moves so as to actuate a stopping device, as hereinafter more fully described.

The improvement is designed for that class of looms that weaves fabrics from threads of several colors, which are introduced into the warp in succession; and it is intended for stopping the loom or the pattern-forming mechanism of the same.

Referring to the drawing, A is the shuttle-box, having the shuttle-box swells *a*, hinged at *b*, and cut away at *c* to receive the auxiliary box-swell *d*, which is hinged at *e* to the said main box-swell *a*. A loop, *f*, is attached to the swell *a*, to limit the motion of the auxiliary swell *d*.

g is a lever, secured to a shaft, *h*, that is journaled in supports *i*, projecting from the side of the shuttle-box. To the shaft *h* an arm, *j*, is attached, which, by its motion, governs the stopping mechanism of the loom. The lever *g* is caused, by the spring *k* on the shaft *h*, to press against the shuttle-box at a point opposite the end of the auxiliary box-swell.

The shuttle B is provided with an ordinary bobbin and with the plate-spring *l*, which is placed in a rabbet, *m*, formed in the side of the shuttle. The ends of the said spring are received by recesses formed in the metallic caps secured to the ends of the shuttle.

A lug, *n*, projects from the inner surface of the spring *l*, and a recess, *o*, is formed in the shuttle to receive it. *p* is a slide placed in the bottom of the rabbet *m*, and capable of being moved over the recess *o*.

C is a casing, placed in the eye end of the shuttle, to which is attached a series of four **S**-shaped wires, *r*, which extend over the shuttle-eye and backward toward the bobbin, as shown in Fig. 3. The distance between these wires is a little more than their diameter.

s s s are arc-shaped wires, attached to a rocking shaft, *t*, journaled in the casing C. The said wires are capable of moving between the wires *r*. A cam, *u*, is secured to the shaft *t*, near the side of the shuttle in which the eye is placed; and *v* is a lever, pivoted to the side of the casing C, and having three arms, *a′ b′ c′*. The arm *a′* extends forward and rests upon the cam *u*, and is pressed down by a spring, *d′*, attached to the casing C. The arm *b′* extends downward and passes through an eye, *e′*, that projects inward through the shuttle-casing from the end of the slide *p*. The arm *c′* extends upward to the side of the shuttle, where it may be moved by the finger.

The operation is as follows: The thread from the bobbin is placed between the wires *s* and *r* by throwing the arm *a′* of the lever *v* up, so as to relieve the cam *u*, when the arc-shaped wires *s* drop below the wires *r*, and also below the eye of the shuttle. The thread is now drawn through the loop formed between the wires and through the shuttle-eye by means of a hook, and the lever *v* is released, when the arm *a′*, acting on the cam *u*, throws the wires or fingers *s* upward, clamping the thread lightly. The thread prevents the fingers *s*, and consequently the cam *u*, from turning further toward the point of the shuttle; and the lever *v*, being thus sustained, holds the slide *p* in its normal position, so that the lug *n* of the spring *l* is free to enter the recess *o* as the said spring is pressed by the auxiliary box-swell *d* in the shuttle-box; but when the thread breaks or becomes exhausted from the bobbin, and is drawn from between the wires *r* and *s*, the pressure of the arm *a′* of the lever *v* throws the cam *u* over, permitting the

said lever to turn on its pivot, being actuated by spring d' and by means of its arm b' to move the slide p over the recess o, so that the spring l, being now rigid and unyielding, throws the auxiliary box-swell d out, so that it strikes the lever g, when the shuttle enters the shuttle-box. The movement of the lever g, by moving the arm j, effects the stopping of the harness and drop-box motion of the loom, and also the unshipping of the belt.

When the yarn offers extraordinary resistance to unwinding or becomes entangled, so that it breaks, the movable wires s are first drawn downward, when the yarn slips from between the wires. The wires s, being liberated, allow the cam u to move, so as to permit the lever v to turn on its pivot and move the slide p over the recess o, as before described.

The arrangement of the wires r s, besides controlling the action of the loom in the manner shown, offers a continual slight tension on the yarn, which insures a smooth fabric and a uniform selvage by preventing an undue amount of yarn from passing out of the eye of the shuttle.

By bending the wires s this tension may be varied to suit different kinds of yarn.

My invention is designed to be used in connection with, or in addition to, the ordinary swell-stop mechanism.

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

1. The combination of the fixed wires r, the wires s, shaft t, cam u, lever v, spring d', and slide p with the shuttle-body B, substantially as herein shown and described.

2. The combination of the spring l, having the lug n, the slide p, and mechanism for operating the same, with the shuttle-body B, having the rabbet m and recess o, substantially as herein shown and described.

3. The combination of the fixed wires r, movable wires s, cam u, lever v, spring d', slide p, and shuttle-body B, having the rabbet m and recess o, with the spring l, substantially as shown and described.

4. The combination of the auxiliary box-swell d and main box-swell a with the shuttle A, stop-rod h, swell-finger g, and dagger j, as and for the purpose set forth.

5. The combination of the shuttle B, having the spring l, provided with lug n, recess o, and slide p, and mechanism for operating the same, with the auxiliary binder d, substantially as herein shown and described.

FRED. CHRISTEN.

Witnesses:
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P. P. KUNZ.