3 Sheets—Sheet 1.

S. COLVIN & H. A. REMINGTON.

Loom.

No. 210,670. Patented Dec. 10, 1878.

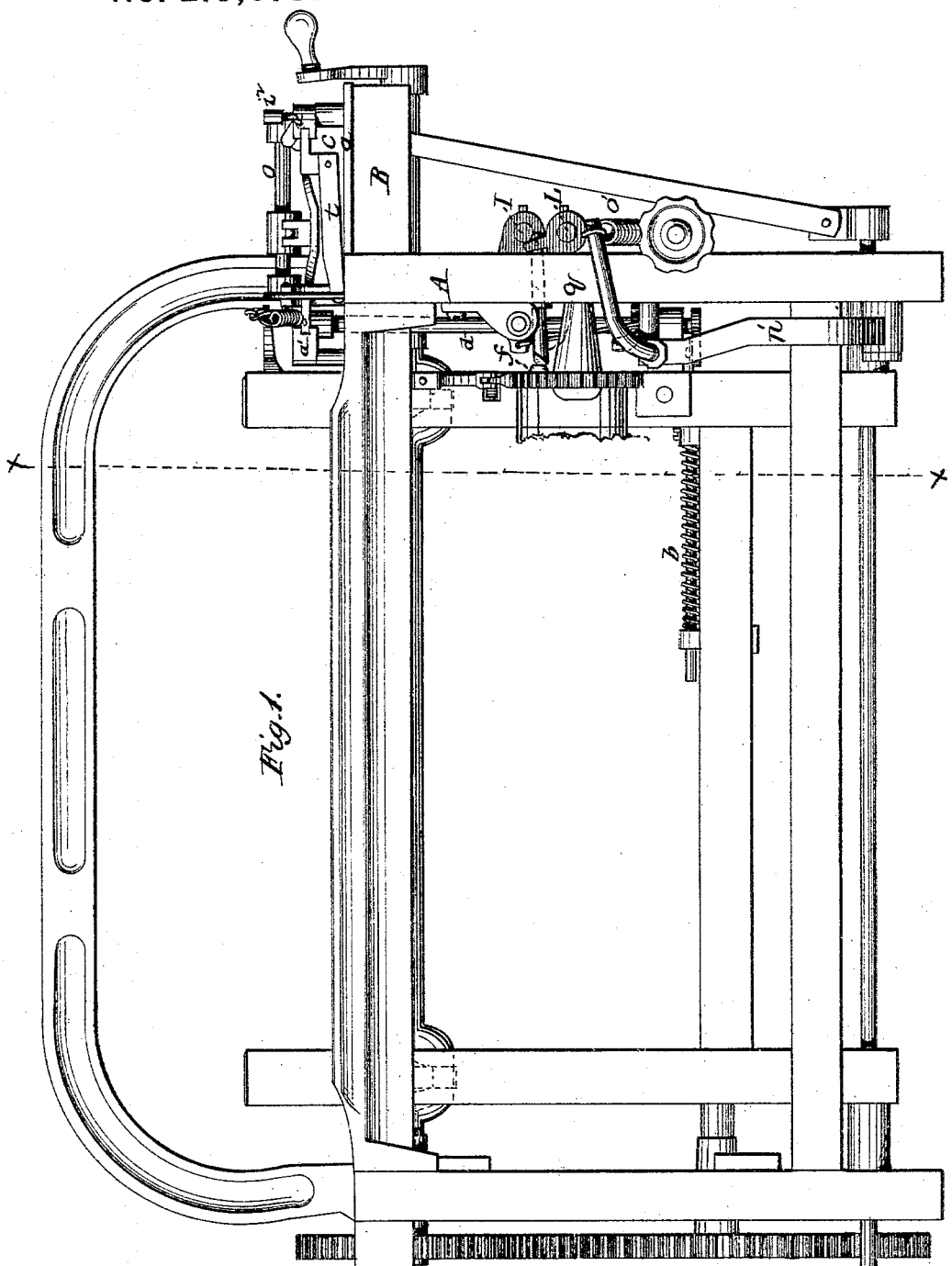

Fig. 1.

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3 Sheets—Sheet 2.

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Fig. 2.

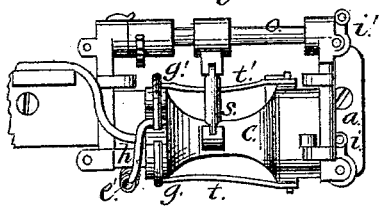

Fig. 3.

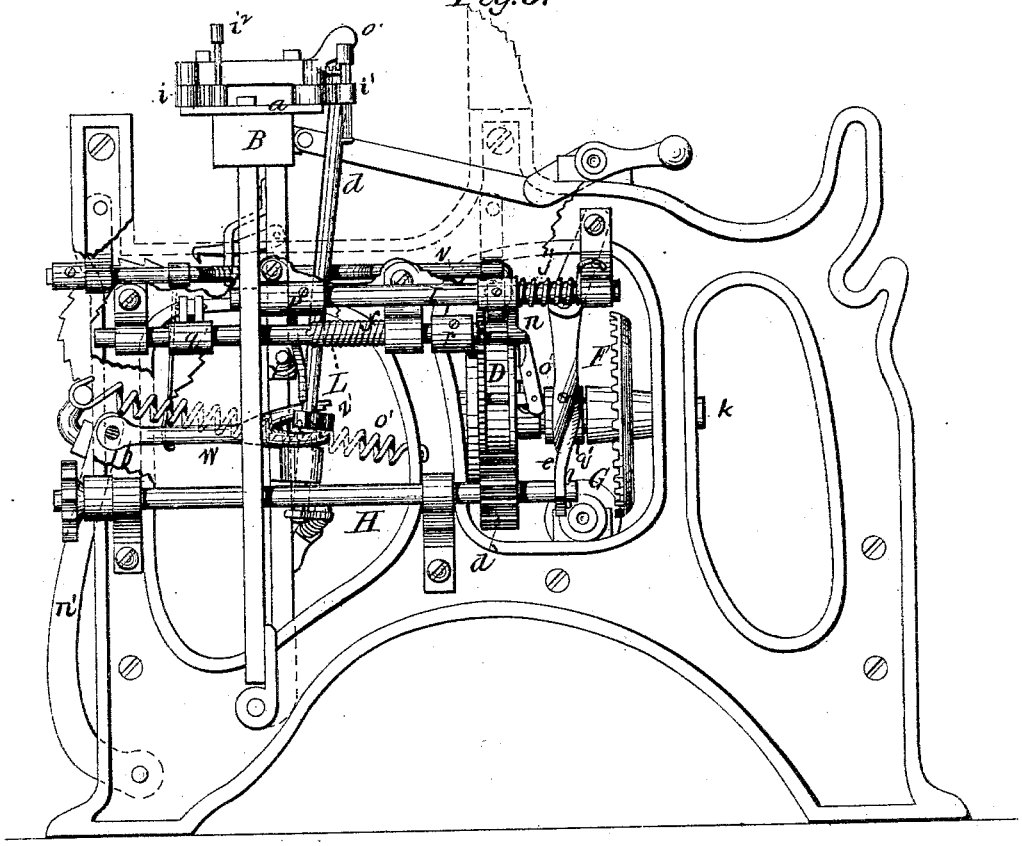

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Fig. 4.

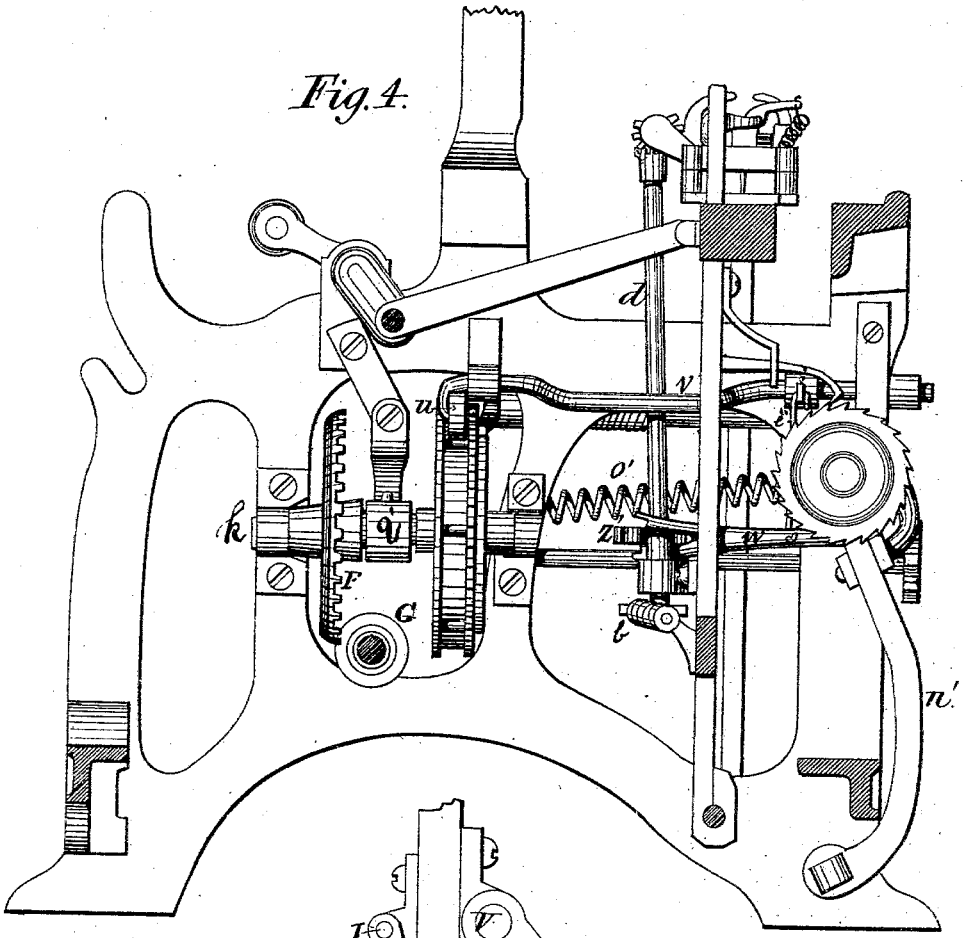
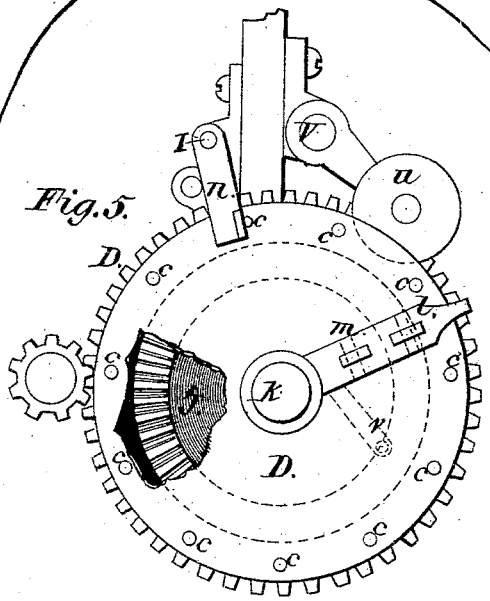


Fig. 5.



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UNITED STATES PATENT OFFICE.

STEPHEN COLVIN AND HORATIO A. REMINGTON, OF RIVER POINT, R. I.

IMPROVEMENT IN LOOMS.

Specification forming part of Letters Patent No. **210,670**, dated December 10, 1878; application filed December 14, 1877.

To all whom it may concern:

Be it known that we, STEPHEN COLVIN and HORATIO A. REMINGTON, of River Point, in the county of Kent and State of Rhode Island, have invented certain Improvements in Looms for Weaving, of which the following is a specification:

This invention consists in combinations of devices for moving a sliding shuttle-box across the lay and for controlling the shuttle-binders; also, in the construction of the pattern-wheel, the devices for operating, locking, and unlocking the wheel, and for preventing damages when the shuttle-box gets clogged in any way, and in making openings, with gates to close them, in the outer ends of the shuttle-box, to allow the shuttles to be taken out and put in while the loom is in motion.

Figure 1 is a front elevation of the loom. Fig. 2 shows a top view of the shuttle-box. Fig. 3 is an elevation of the right-hand end of the loom. Fig. 4 is a sectional view of the same end, taken through the line *x x*, Fig. 1. Fig. 5 is a view of the pattern-wheel and locking devices detached.

A is the frame of the loom. B is the lay, to the top of which is secured the plate *a*, on which are two ways or guides, *a'*, in which the double shuttle-box C slides across the lay.

A rocker-shaft, *o*, in bearings on the back edge of the plate *a* has an arm secured to it, which moves the shuttle-box by means of the connection *s*, motion being given to the rocker-shaft *o* by an upright shaft, *d*, secured to the sword of the lay through a pair of segment bevel-gear wheels or levers connecting them together.

Two curved levers, *g g'*, are pivoted on top of the shuttle-box at its inner end, the lower ends of which hang down over the free ends of the shuttle-binders *t t'*, and an arm attached to the sword of the lay carries on its end a lever, *h*, one end of which is bent down under the upper ends of the levers *g g'*, and the other end is attached by a spring, *e'*, to the top plate of the shuttle-boxes, so that when the latter are slid toward the front of the loom the end of the lever *h* will be under the end of the lever *g'*, that rests on and controls the shuttle-binder *t'* on the back side of the box, that being the division of the box then in operation. When the shuttle-box slides back the other lever, *g*, is brought over the end of the lever *h*, and its control is transferred to the binder *t* in the front of the box.

There is but one slot in the lay, through which the picker-staff operates the shuttles in both divisions of the box as they are brought over it.

The outer end of the shuttle-box is closed by two gates, *i* i^1, one for each division, for the purpose of allowing the shuttles to be taken out when the loom is in operation, and without regard to the position of the box. These gates swing on pivots, and are secured when shut by sliding pins i^2, or other suitable fastenings.

All the parts connected with the shuttle-box are secured to the plate *a*, so that the whole can be screwed onto the top of the lay of an ordinary plain loom without in any way cutting or altering the beam of the lay, and can easily be removed, and the loom put back in order for plain weaving again.

The pattern-wheel D, that controls the motions or changes of the shuttle-box, is made to turn loosely on the shaft *k*, to the back end of which is fastened a worm-gear wheel, F, which is driven by the worm-wheel G continuously when the loom is in operation.

Inside of the pattern-wheel D is a ratchet-wheel, J, (see Fig. 5,) fastened to the shaft *k*. This ratchet-wheel drives the pattern-wheel by means of the pawl-bolt *l*, which is hung on a lever, *m*, pivoted to a stud on the wheel D. This pawl-bolt *l* passes through the wheel D, and projects so that it can be operated from the other side of the wheel. The spring *v* presses the pawl down into the spaces between the teeth on the ratchet-wheel J, which connects the two, and causes the pattern-wheel to revolve with the shaft *k* until the outer end of the lever *m* strikes against the knob on the arm *n*, and in its further revolution turns the shaft I, and throws up the arm *p* on the same shaft into position to be struck by the projection *x* on the sword of the lay. The blow from the projection *x* pushes the shaft I endwise and moves the lever *m*, so that the bolt *l*, that projects from the lever *m* through the wheel D, will become disengaged from the ratchet J, and then the arm *r* on the end of the shaft L will pass in front of and hold the bolt off the ratchet-wheel J, leaving that wheel free to turn without carrying the pattern-wheel with it, and consequently with-

out changing the shuttle-box until the boss *f* on the end of the cloth-roll strikes the arm *q* on shaft L, and turns that shaft so as to throw the arm *r* away from in front of the end of the bolt *l*, leaving it free to be pressed into the ratchet-wheel again by the spring and carry the pattern-wheel around one revolution, when the same operation of stopping, &c., is repeated. The object of this detention of the pattern-wheel is to allow of a space of plain weaving, as in handkerchiefs, between the borders, which are woven while the pattern-wheel is in motion.

The pattern-wheel is made with two flanges on its periphery, through which holes are made to receive pins *c*, that extend across the face of the wheel and raise the wheel *u* when they pass under it. The wheel *u* is pivoted to an arm on the rocker-shaft V, and another arm, *v'*, fast on the same shaft, is connected by a rod, e^2, to the forked rod *w*, so that when the shaft V is turned by a pin in the pattern-wheel passing under the wheel *u*, the forked end of the rod *w* will be raised into position to strike against one of the projections *z'* on the upright shaft *d*, which turns that shaft and the shaft *o* and changes the shuttle-box. The forked rod *w* is pivoted to the top of the arm *n'*, which swings on a pin attached to the lower part of the frame, the arm being held up to its proper position by the spring *o'*, which is strong enough to resist the blow of the projections *z'*, and effect the changing of the shuttle-box, if there is nothing in the way; but if the picker-staff gets caught in the slot, or the box becomes clogged in any way, the spring and arm *n'* will yield, and thus prevent a breakage of the machinery, that might otherwise occur.

A shaft, H, placed in bearings on the end frame, has fast on its end a gear-wheel, *d'*, that engages with gear-teeth formed on one of the flanges of the pattern-wheel D. The end of this shaft is attached to the lever *e*, that moves a collar on the shaft *k*, so that when the shaft H is drawn toward the front of the loom the collar *q'* will press on the inner end of the lever *m*, so as to raise the pawl out of the ratchet-wheel and leave the pattern-wheel free to be turned back by turning the shaft H. This is to allow the pattern-wheel to be set back the proper distance in case the lay should make a few beats after the filling runs out or becomes broken. The upright shaft *d* has an arm attached to its lower end, to which a spring, *b*, is fastened, which, by its pressure on the arm, tends to hold the shaft when turned either way and prevent the shuttle-box from being changed by the mere motion of the lay. The shafts L and I have, respectively, the springs *f* and *j* placed on them, and so arranged as to bring them back to their first position after being moved, as above described.

The position of the pattern-wheel and its devices may be changed to the upper part of the loom, if necessary, for convenience, as we have already done in case a larger pattern-wheel is required than there is room for below.

We do not confine ourselves to the exact shape or arrangement of the devices set forth, but use others substantially the same and accomplishing the same result in substantially the same manner.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. The combination of the horizontally-sliding shuttle-box C with rocker-shaft *o*, rod *s*, upright shaft *d*, connecting segment gears and lay B, and operating mechanism, arranged substantially as set forth, and for the purpose described.

2. The shuttle-binders *t t'*, levers *g g'*, lever *h*, and spring *e'*, in combination with a double shuttle-box, substantially as and for the purpose specified.

3. In combination with the pattern-wheel D, ratchet J, and mechanism for operating said ratchet, connecting and disconnecting mechanism, substantially as described, whereby the said pattern-wheel is connected to the ratchet and caused to revolve therewith a definite period, then disconnected therefrom and allowed to remain stationary for another definite period, substantially and for the purpose specified.

4. The combination of ratchet-wheel J, lever *m*, pawl-bolt *l*, and pattern-wheel D with shaft V, wheel *u*, connecting-rod *e''*, and forked rod *w*, substantially as and for the purpose set forth.

5. The forked rod *w*, swinging arm *n'*, and spring *o'*, in combination with upright shaft *d*, rocker-shaft *o*, rod *s*, and shuttle-box C, substantially as and for the purpose specified.

6. The combination, with a double shuttle-box, of the hinged gates *i* i^1 and pins i^2 for securing the same, whereby the said gates can be operated independently of each other to admit of the removal of either of the shuttles while the box is in motion or at rest, substantially as set forth.

7. The combination of the shaft I, provided with the arms *n* and *p*, the shaft L, provided with the arms *q* and *r*, the lay provided with the projection *x*, and the cloth-roll carrying the boss *f*, in combination with the pattern-wheel, substantially as and for the purpose set forth.

8. The shaft H, with its gear-wheel *d'*, lever *e*, and sliding collar *q'*, in combination with the pattern-wheel and its locking devices, substantially as and for the purpose set forth.

9. The shaft V, provided with the arm carrying the roller *u* and with the arm *v'*, the rod *e''*, and forked rod *w*, in combination with the pattern-wheel D, substantially as described, and for the purpose specified.

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HORATIO A. REMINGTON.

Witnesses:
THOS. M. HOLDEN,
WM. E. BRAYTON.