2 Sheets--Sheet 1.

W. CHADWICK & S. LOWNDS.

Cop Winding Machines.

No. 143,497. Patented Oct. 7, 1873.

Fig: 1

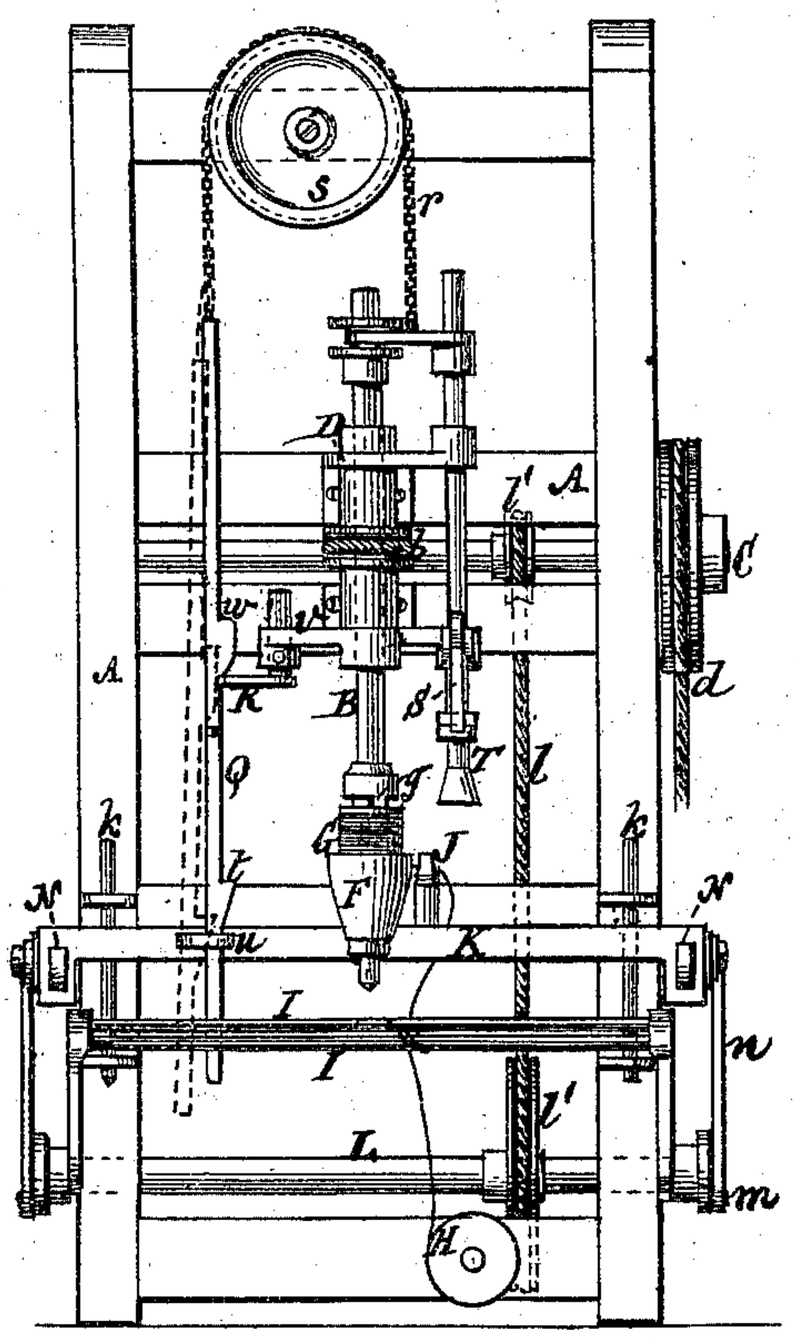
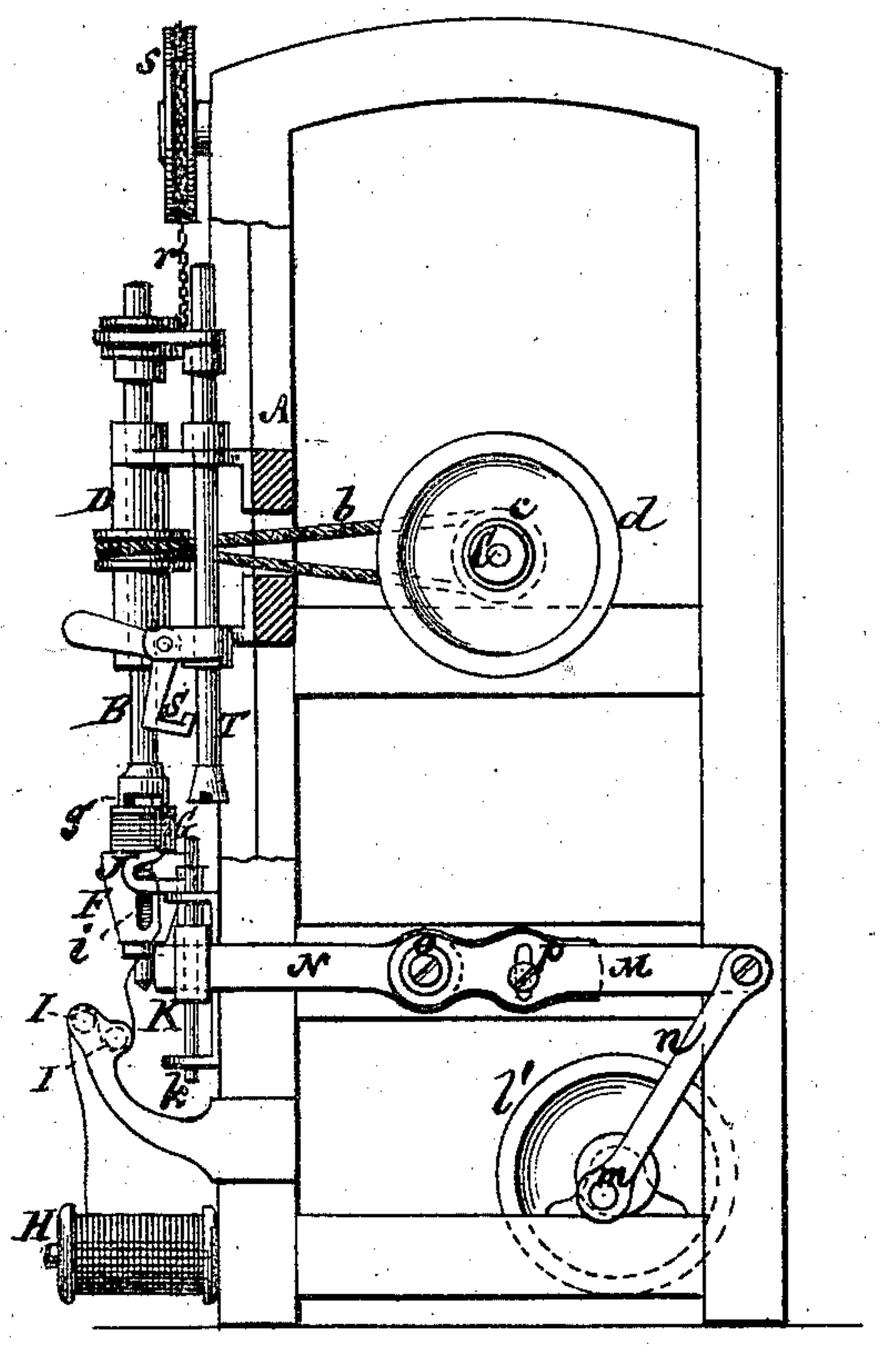


Fig: 2



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by their Attorneys
Brown & Allen

2 Sheets--Sheet 2.

W. CHADWICK & S. LOWNDS.

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No. 143,497. Patented Oct. 7, 1873.

Fig: 3

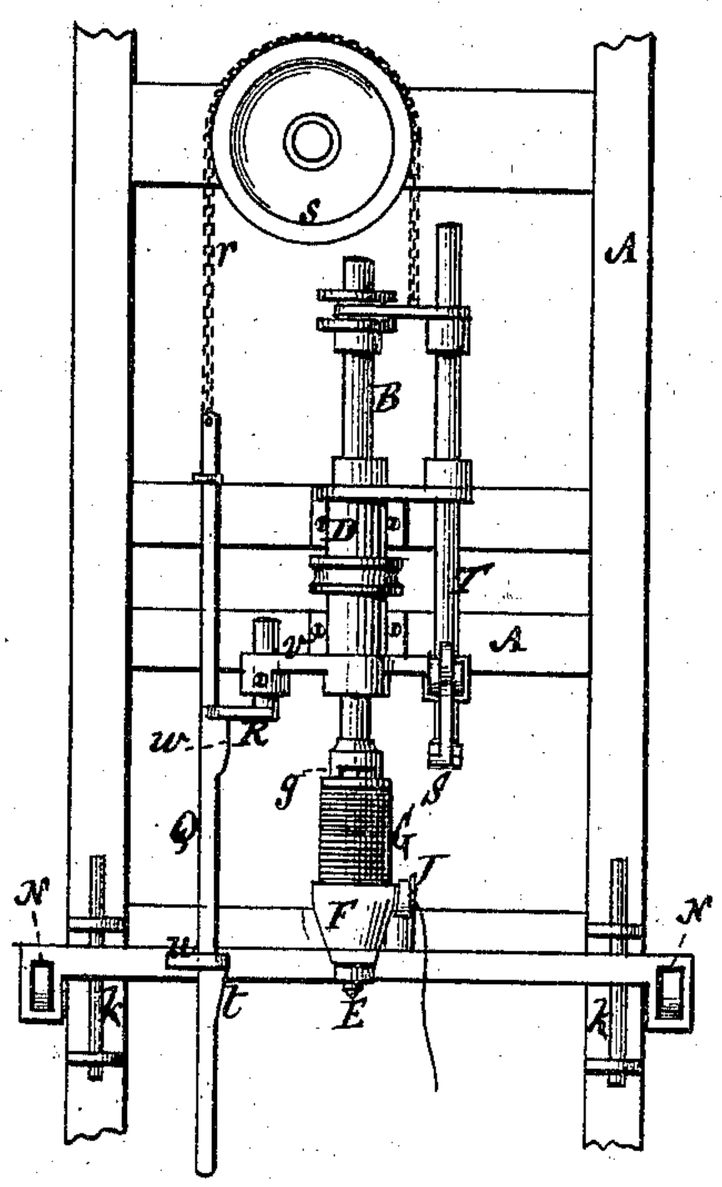


Fig: 4

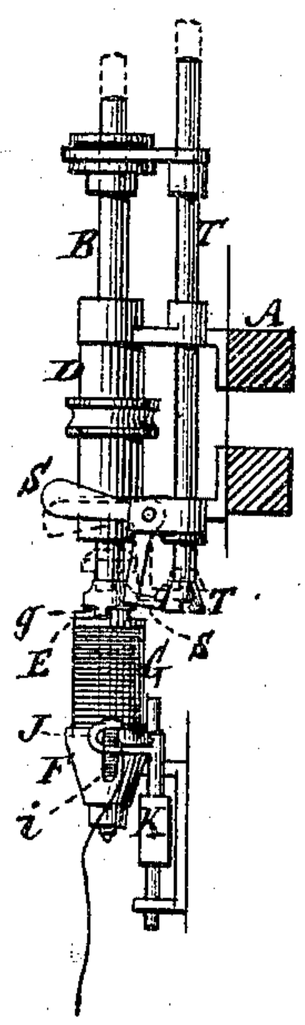


Fig: 5

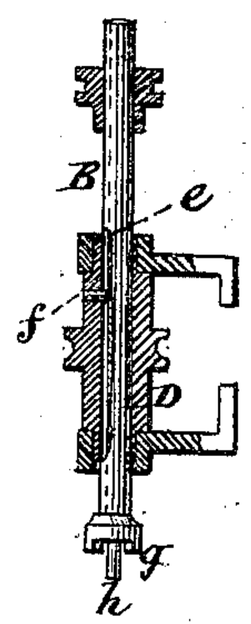
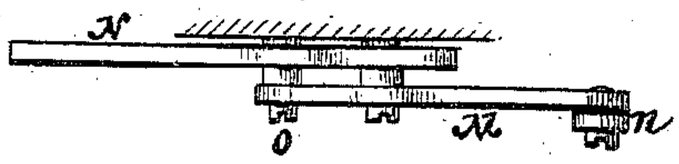


Fig: 6



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UNITED STATES PATENT OFFICE.

WILLIAM CHADWICK AND SAMUEL LOWNDS, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN COP-WINDING MACHINES.

Specification forming part of Letters Patent No. **143,497**, dated October 7, 1873; application filed March 24, 1873.

To all whom it may concern:

Be it known that we, WILLIAM CHADWICK and SAMUEL LOWNDS, both of Williamsburg, Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Cop-Winding Machines for Power-Looms, of which the following is a specification:

In the cop winding or filling machine shown in the drawing, the invention consists in an automatic stop-rod, or device for disconnecting the winding-spindle, thereby insuring a uniform cop being built, and doing away with the loss of time and labor consequent on removing the cop before it is fully built, or neglecting to remove it when fully built. The invention likewise includes or consists in an automatic catch contrivance for holding the winding-spindle out of gear after it has been disconnected from the skewer or building-spindle; furthermore, the invention includes an adjustable finger for lengthening or shortening the cop.

In the accompanying drawing, which forms part of this specification, Figure 1 represents a front view of a cop winding or filling frame, in part, having our improvements applied; Fig. 2, a side view of the same; Fig. 3, a front view, in part, showing the winding-spindle and its immediate devices in a different working position from that illustrated in Fig. 1; and Fig. 4, a side view of the same. Fig. 5 is a vertical section, in part, in illustration of the winding-spindle; and Fig. 6, a plan of a compound-lever arrangement for operating the building-rail.

Similar letters of reference indicate corresponding parts.

The cop winding or filling frame shown in the accompanying drawing may be extended indefinitely, to accommodate any number of winding-spindles side by side, at a suitable distance apart; but it will suffice here to show a single winding-spindle with accompanying devices.

A is the upright frame, and B the vertical or nearly vertical winding-spindle, deriving its motion by a belt, *b*, from a pulley, *c*, upon a horizontal shaft, C, which may be driven by belt and pulley *d*, or in any other suitable manner. The winding-spindle B is rotated by means of a sleeve, D, with which said spindle is in gear by a longitudinal slot, *e*, and pin or feather *f*, to allow of the spindle rising or falling while being rotated. At the foot of the winding-spindle B are driving and centering projections *g h*, to gear with the skewer or tapering building-spindle E, on which the cop G is wound, said building-spindle having its bearing below in the building-cup F. H is the spool of yarn of which the cop is to be built. Said yarn passes through or over and under tension-bars I I, and from thence through a guard, J, on the building-rail K, and through a slot, *i*, in the building-cup. The building-rail K has an up-and-down motion along guides *k k*, said motion being derived from a shaft, L, driven by belt and pulleys *l* and *l' l'*, and being communicated to the building-rail by a wrist-pin, *m*, connected with the shaft L, a rod, *n*, and a system or combination of levers, M N, arranged to rock upon a common fulcrum, *o*, and connected with each other by a slot and screw, *p*, to provide for required change in the diameter of the cop. As the cop G is formed on the building-spindle E it rises in the cup F, and with it the winding-spindle B, until the cop has been built its required length, when a stop-rod, Q, connected with the winding-spindle B by a cord or chain, *r*, passing over a pulley, *s*, comes by its descent into lock or gear with the building-rail K by a hook or catch, *t*, on said rod engaging with or under a strap or projection, *u*, on the building-rail K during the upward movement of the latter, and so that as said rail descends it pulls the winding-spindle B up and out of gear with the building-spindle E, and thus automatically disconnects the winding-spindle. The period of thus disconnecting the winding-spindle B from the cop-spindle E is made adjustable, according to the length of cop required, by means of a finger, R, adjustable up or down in a holder, *v*, and arranged so that in the descent of the stop-rod Q, as the spindle B rises, it comes sooner or later in contact with a step, *w*, on the rod Q, and bears said rod to one side, so that it fails to engage by its hook *t* with the building-rail K until the step *w* is clear of the finger R, the position of which latter, therefore, determines the time of the building-rail's disconnecting action on the stop-rod. Upon

such disconnection of the winding-spindle B from the cop-building spindle E—that is, as the former is drawn upward by the action of the strap or projection *u* of the building-rail K on the hook *t*—a crank drop-catch, S, falls under and into lock with a rod, T, in rigid or permanent connection with the winding-spindle B, so as to be virtually a part of it. This automatically keeps or holds the winding-spindle in its raised position, and out of gear with the building-spindle.

What is here claimed, and desired to be secured by Letters Patent, is—

1. The combination of the stop-rod Q, chain *r*, and pulley *s* with the winding-spindle B, the building-rail K, and the building-spindle E, as shown and described, for the purpose specified.

2. The bell-crank catch S, in combination with the rod T, connected with the winding-spindle B, as shown and described, for the purpose specified.

3. The finger R, capable of adjustment in the holder *v* on the sleeve D, in combination with the step *w* on the stop-rod Q, as shown and described, for the purpose specified.

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