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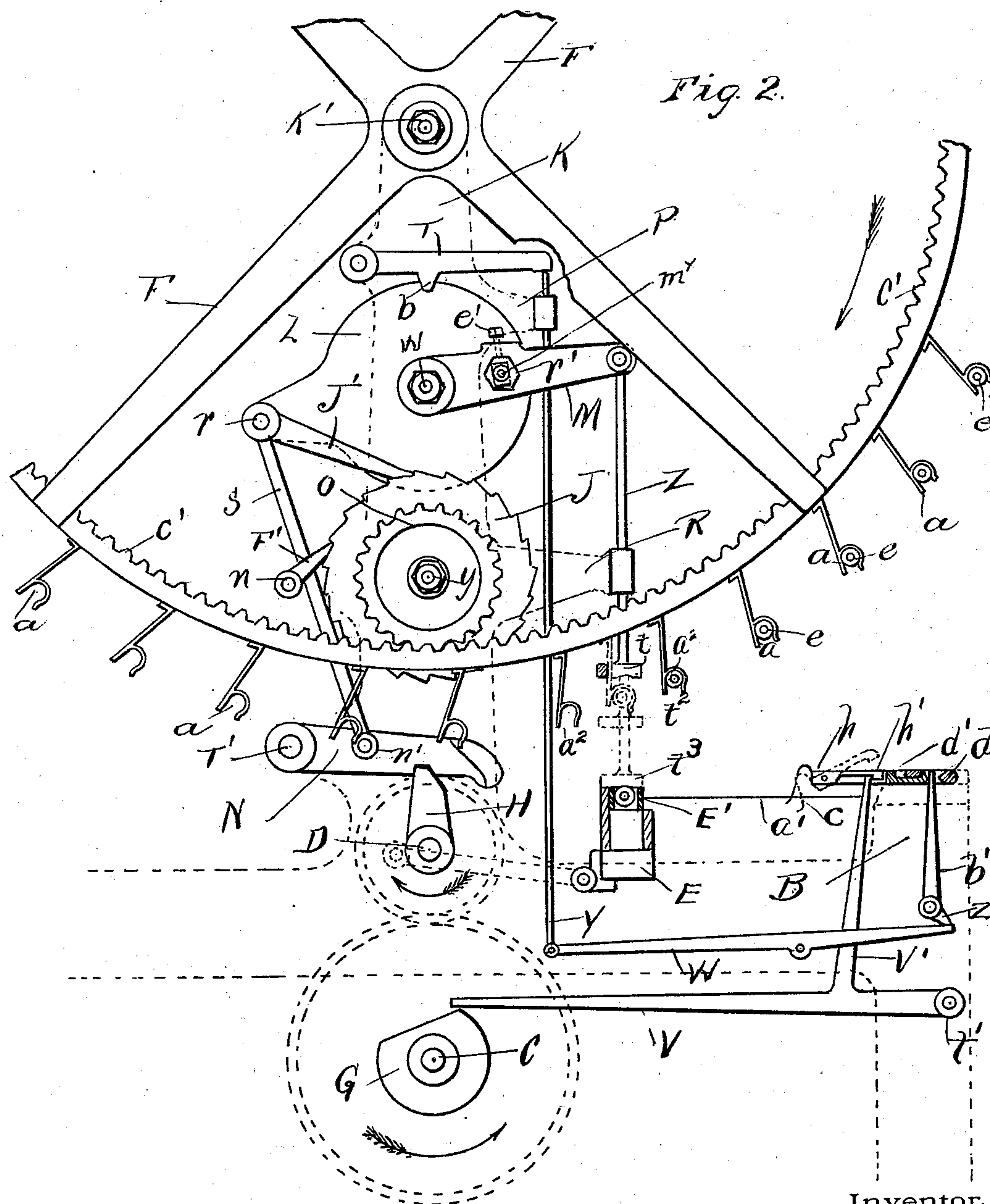
F. O'DONNELL.

WEFT REPLENISHING MECHANISM FOR LOOMS.

(Application filed Apr. 29, 1901.)

(No Model.)

2 Sheets—Sheet 2.



Witnesses.

C. L. Barlow.
 Annie L. Makepeace.

Inventor.

Felix O'Donnell.

By *Arnold & Carlow*
Attorneys

UNITED STATES PATENT OFFICE.

FELIX O'DONNELL, OF PAWTUCKET, RHODE ISLAND.

WEFT-REPLENISHING MECHANISM FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 695,696, dated March 18, 1902.

Application filed April 29, 1901. Serial No. 57,892. (No model.)

To all whom it may concern:

Be it known that I, FELIX O'DONNELL, a resident of the city of Pawtucket, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Weft-Replenishing Mechanism for Looms; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to the class of looms for weaving that are provided with mechanism for supplying the shuttle with filling, either in cops or on bobbins, without stopping the operation of the loom.

The object of the invention is to provide mechanism simple in construction that will accomplish this object by the action of the loom automatically with certainty and with little attention.

It is fully described and illustrated in this specification and the annexed drawings.

Figure 1 represents a front elevation of the loom, showing only those parts necessary to make clear the application of my invention. Fig. 2 is an enlarged view of the left end in elevation, showing most of the mechanism of the invention. Fig. 3 is a perspective view of the cop-changer.

The construction and operation are as follows:

A A are the end frames of the loom, and B is the breast-beam. In Fig. 2, in which almost all of the mechanism is shown, a part only of one of the end frames A is seen in dotted lines.

C is the cam-shaft, and D is the crank-shaft, connected together by gear-wheels in the usual manner.

F is a wheel held to turn on a stud K', fast in the arch K of the loom-frame. This wheel F has a series of spring cop-holders *a a* attached to its periphery and a set of gear-teeth *c'* made on the inner side of the rim, in which the teeth of a spur-gear O, held on a stud *y*, fast in the arch K, engage to turn the wheel F. The spur-gear O is moved intermittently by a ratchet-wheel J, fast on it. A rocking plate L, held on a stud *w*, fast in the arch K above the ratchet-wheel J, has a stud

r, fast in a projecting part of the plate, that holds a pawl J' in position to engage in the teeth of the ratchet-wheel J and move it when the plate moves. The plate L has a short rocking motion given to it in one direction by means of a rod S, that connects the stud *r* with the pin *n'* in the cam-lever N. The cam-lever N is held on a stud T', fast in a projection on the back of the arch K, in position to have its free end raised by the cam H when the lever N is allowed to drop low enough. An arm M is rigidly held on the face of the plate L by a stud M', fast in the plate, that projects through a slot in the arm, and has a nut *r'* on its outer end, so that when the arm M is properly adjusted by means of the set-screw *e'* in the upper side of the arm the nut can be screwed down on the arm and hold it fast.

A rod Z, attached to the outer end of the arm M by a stud, is fitted to slide a short distance vertically in an arm R, made on the front of the arch K. The lower end of the rod Z has a notched block *t* on its lower end (see Fig. 3) that straddles the cop-holders *a a* and pushes the cops *e e* out of the holders down into the shuttle E' when the plate L is moved by the cam H and lever N, as described.

The mechanism that starts the operation of changing the cop in the shuttle consists of a plate *d*, secured on the top of the breast-beam between the cloth and the end frame, and a plate *d'*, fitted to slide in a recess made in plate *d*, or a recess may be made on the top of the breast-beam for the plate *d'* to slide in. A weft-fork *h* is held on a pin in the inner end of the sliding plate *d*, so that the weft-thread *a'* from the shuttle to the cloth will come in contact with the lower part *c* of the fork and tip the back end up when the lay beats up.

A lever V is held on a stud *t'*, fast in the end frame at one end, and its free end rests on the cam G. This lever V has an arm extending up with its upper end in the recess of the sliding plate *d'* in position to strike against a projection *h'* on the end of the weft-fork lever *h* when that lever is down level and throw the plate *d'* against the upper end of a small upright lever *b'*, held on a shaft M', held in bearings in the end frames under the breast-beam, (see Fig. 1,) and a short arm *z'*, also fast on this shaft, rests on the outer

end of the lever W, which is connected at its inner end by a rod Y to the lever T, that holds the plate L from turning.

The operation of the mechanism is as follows: The cops *e e* are placed in the holders *a a*, with one in the shuttle *E'*, and the loom is started. So long as there is a cop in the shuttle and a weft-thread *a'* to strike against the fork *h* and tip the tail end up, so the arm *V'* of the lever *V* will not hit the projection *h'* when the lever is moved by the cam *G*, and the cop-changing mechanism will remain inactive, but when the cop in the shuttle *E'* runs out there will be no weft-thread to operate the fork when the lay beats up, and the tail will remain down, so that the upper end of the arm *V'* will hit the projection *h'* when the cam *G* raises the lever *V*, and push the fork-slide *d'* back against the upper end of the lever *b'*, which will operate the lever *W* by the arm *z* and cause it to push up the lever *T* by the rod *Y* and raise the detent *b* out of the notch in the plate *L*, thereby allowing the back side of the plate with the rod *S* to drop, either by its weight or by means of a spring, (not shown,) and turn the wheel *F* by means of the pawl *J'*, ratchet-wheel *J*, and gear *O*, so as to bring the next full holder *a*, with its cop *e*, into the position of the holder in dotted lines and resting against the foot *t* over the shuttle and at the same time let the lever *N* down, so as to be struck by the cam *H* and thrown up again, which will turn the plate *L* and carry down the arm *M* with the rod *Z* and push the cop *e* into the shuttle *E'* and push the cop-tube (or empty bobbin, as the case may be) down through an opening in the bottom of the shuttle-box without stopping the loom, for the lay will be practically still, as the crank that moves it will be passing the dead-center. When the back side of the plate *L* turns upward, as just described, the pawl *J'* is drawn back so as to catch in another tooth of the ratchet-wheel *J*, and as the weight of the lever *N* and the rod *S* begin to turn back the plate *L* and the arm *M* to raise the foot *t* the pawl *J'* will begin to move the ratchet-wheel *J*, and the gear *O*, fast on it, will begin to turn the wheel *F* to bring the cop-holders and cops into the position represented in full lines and the foot *t* up midway between an empty and a full holder, as before the delivery. Then the detent *b* will drop into the notch in the plate *L*, and all these parts remain in this position until the cop just delivered runs out and another is required to take its place, when the above operations will be repeated.

The weft-fork may be placed on either side or on both sides of the web; but by putting it on the other side from the cop-carrier, as shown in Fig. 1, more time is allowed for the operation of the cop-moving mechanism, and greater speed may be obtained for the loom.

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

1. In a weft-replenishing motion for looms the combination of a carrier-wheel, a series of cop-holders arranged on its periphery, gear-teeth made on the inside of said wheel, a pinion-gear engaging with said gear-teeth, a ratchet-wheel fast on said pinion-gear, a cam fast on the crank-shaft, the crank-shaft, a lever arranged to be operated by said cam, a connecting-rod between said lever and a pawl engaging in said ratchet-wheel, and said pawl, substantially as described.

2. In a weft-replenishing motion for looms the combination of a cam fast on the crank-shaft, the crank-shaft, a lever operated by said cam, a rocking plate connected with said lever, a cop-carrier wheel, a rod to push the cops from said wheel into the shuttle, an arm on said plate to operate the rod, means for turning said cop-carrier wheel, substantially as described.

3. In a weft-replenishing motion for looms the combination of a cam fast on the crank-shaft, a lever operated by said cam, a rocking plate connected with said lever, a cop-carrier wheel, a rod to push the cops from said wheel into the shuttle, an arm on said plate to operate the rod, means for turning said cop-carrier wheel, a lever having a detent to enter a notch in said plate, a weft-fork, mechanism for raising said detent-lever by means of said weft-fork when the weft is lacking, substantially as described.

4. In a weft-replenishing motion for looms a cop-carrier wheel in combination with mechanism to actuate said wheel and to release the cops from it, a sliding weft-fork plate, a vertical lever operated by said plate, a horizontal lever operated by said vertical lever, a rod connected with said horizontal lever to release said actuating mechanism, a cam fast on the cam-shaft, a cam-shaft, a lever operated by said cam with an arm to move said weft-fork plate, substantially as described.

In testimony whereof I have hereunto set my hand this 25th day of April, A. D. 1901.

FELIX O'DONNELL.

In presence of—

BENJ. ARNOLD,
ALBERT C. READ.