

(No Model.)

2 Sheets—Sheet 2.

A. W. FAIRWEATHER.
LOOM.

No. 499,456.

Patented June 13, 1893.

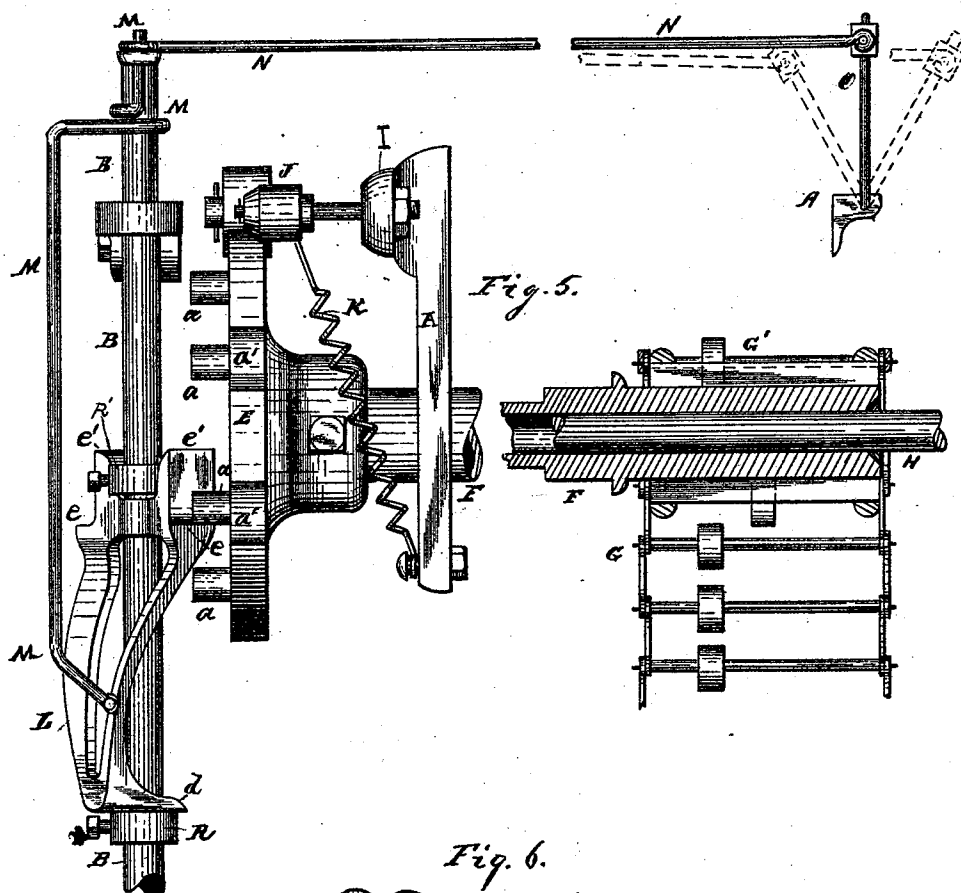


Fig. 5.

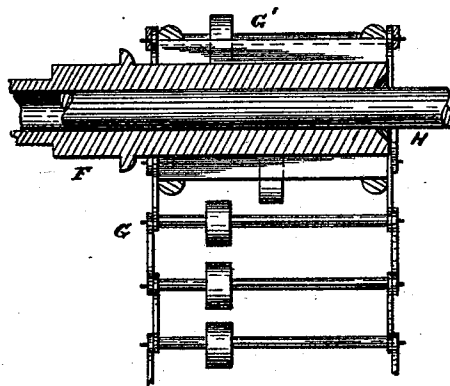


Fig. 6.

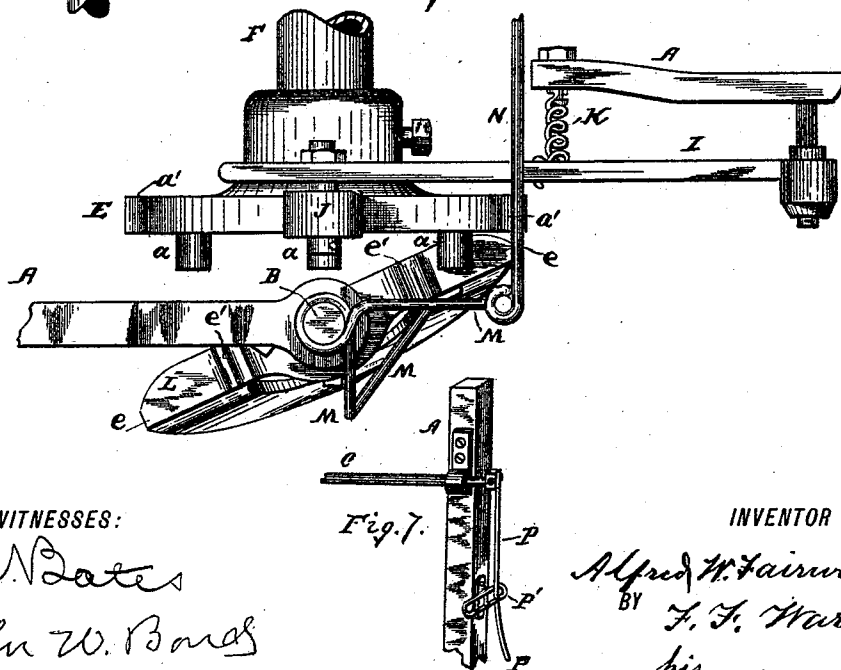


Fig. 7.

WITNESSES:

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UNITED STATES PATENT OFFICE.

ALFRED W. FAIRWEATHER, OF WATERLOO, NEW YORK.

LOOM.

SPECIFICATION forming part of Letters Patent No. 499,456, dated June 13, 1893.

Application filed September 14, 1892. Serial No. 445,872. (No model.)

To all whom it may concern:

Be it known that I, ALFRED W. FAIRWEATHER, a citizen of the United States, and a resident of Waterloo, in the county of Seneca and State of New York, have invented certain new and useful Improvements in Looms, of which the following is a specification.

My invention relates to the means employed for controlling the filling-chain in looms of the class commonly known as "fancy" looms. These means, embracing my improvements, I have shown in the accompanying drawings, in which—

Figure 1, is a rear view of so much of one end of such a loom as need be shown in order to illustrate the principal features of my invention. Fig. 2, is a top or plan view of the mechanism acting more or less directly on the lifting-rod constituting a part of the means for operating the said chain. Fig. 3, is a side view of the lifting-cam. Fig. 4, is a like representation of the other side of the said cam. Fig. 5, is a side representation of so much of the same end of the loom as need be shown in order to more clearly explain the parts shown more or less fully in Fig. 1. Fig. 6, is a top or plan view of the principal parts shown in Fig. 5, and Fig. 7 is a detail, in perspective, showing the initial means for controlling the lifting-dog by the hand of the operator.

Like letters of reference indicate like parts.

A A are portions of the frame.

B is the lifting-rod, C is the lifting cam, and D is the shaft on which it is mounted.

E is the check-wheel carrying studs or pins *a a* and indentures *a' a'*, as usual.

F is the check-wheel cylinder, G the filling-chain, and H the harness-chain shaft. The filling chain is supported by a sprocket, G', on the cylinder F.

I is the check-lever, J the roller thereon, and K the check-lever spring. The lever I is pivoted to a part of the frame A. The check-lever and its spring are old and well known parts, and may be applied to the frame or to a fixed part in any way which will permit them to perform their usual functions.

L is the lifting-dog, a more particular description of which I will give hereinafter. M is an angular, and yielding or spring-finger

attached, at its lower end, to said dog and turning, near its upper end, on the rod B.

N is a connecting rod or "telegraph" connected, at one end, to an arm of the said finger, and at the other, to a bent shifting-rod, O, which rocks in its bearings and is controlled by a yielding handle-arm, P, passing through a notched loop or holder P', (Fig. 7.) I will also hereinafter refer more fully to the cam C.

Q is the lifting-rod lever, or lifting-cam-lever, on one end of which is, by preference, an anti-friction roller, Q', (Fig. 2) arranged for contact with the cam C; the other end of the said lever is pivotally connected to the rod B, and the said lever also has lateral extensions, *b b*, turning or rocking in bearings *c c*, applied to a frame-piece.

The parts thus referred to, considered generically or broadly, are old and well known, and perform no new functions, so far as I am aware, excepting as I will hereinafter explain. I believe, however, that the novel features of construction which constitute my invention produce new, useful and improved results in the operation of machines of this class, and these I will now describe particularly.

The lifter or dog L is by preference directly pivoted on the rod B; as a detail of construction to accomplish this pivotal movement, I make a laterally-extending foot or base-piece, *d*, (Fig. 5,) which is bored or open to receive the said rod freely, and R is a vertically-adjustable collar on said rod to serve as a seat or rest for the said dog or lifter, while another or like collar R', prevents the accidental upward movement of the said dog; this part R', however, is not absolutely essential, as the finger M may, under ordinary conditions, retain the said dog in its proper position, as to height or elevation, on said rod. This dog or lifter L has horizontal shoulders, *e e*, and vertical shoulders or stops, *e' e'*, the angle between which is made or arranged to catch or receive the pins or studs *a a*. It will be perceived, especially on reference to Figs. 1 and 5, that the upward extension of the shoulders *e' e'* is sufficient to serve as an effectual or positive stop to the rotary movement of wheel E, as one or another of the pins or studs *a a* will always be in one or the other of the said angles when the said dog is ar-

ranged to operate on any of the said pins or studs, as will hereinafter more fully appear. This positive stopping of the rotation of the wheel E by means of these high shoulders *e'* 5 *e'*, notwithstanding inaccuracy of mechanism and the severe pounding or jarring of the loom, is one feature of my invention. For example, if the stud or pin *a*, shown in the angle of the said shoulders in Fig. 1, be moved 10 up to the position indicated by the dotted or broken lines there shown at *a''*, it will be perceived that the vertical shoulder will constitute a positive stop to the further rotation of the wheel E, or of that movement of that 15 pin or stud in that direction. This accidental movement which I thus avoid, of the wheel E, has heretofore been the occasion of bad results in the work being done, as well as of much annoyance to the operator.

20 I do not mean to be understood that the shoulder *e'* at all times prevents the further rotation of the wheel E,—for, when the lifter L begins to descend, such rotation is prevented, though not positively, by the check-wheel roller, which is then in its proper notch 25 in the check-wheel; but, the stoppage of the rotation referred to is positive when caused by the said shoulder, which latter acts to that end when the said roller is not in engagement 30 with its wheel, or limits the rotation to the time when it ought to cease, acting as it does in conjunction with the said roller, which latter, however, yields to the positive upward movement of the lifter. The lifter L should 35 be bent or curved outwardly or rearwardly, or so formed as to permit the pins or studs *a* not engaged by it to pass freely across it, or without contact therewith; this I accomplish, preferably, by bowing the said lifter 40 outwardly from its upper portion downward, as is clearly indicated in Fig. 5.

I have already explained that the dog or lifter L is mounted pivotally on the rod B. The purpose of so mounting it is that the direction of the rotation of the wheel E may be 45 reversed in order to reverse the movement of the chain G when such reverse movement may be necessary. This reverse movement is accomplished by the operator, who moves 50 the handle P in such a direction as to rock the rod O which, in turn, by moving the connector N back or forth, as may be desired, imparts to the finger M such a motion that 55 L engages a pin or stud upon one or the other side of the center of the wheel E, thus controlling its direction of rotation. The handle P, when thus shifted from one notch to the other in the loop P', remains as placed until 60 shifted again, and when placed in the central notch, the dog L is neutral or out of engagement with the wheel E. This method of controlling the lifting dog is not entirely new with me, and I have not, therefore, more fully 65 shown or described the means employed for that purpose; but, I desire to state that, as a

part of these means, I regard the yielding pivotal finger M as new; it aids more than the means heretofore used, to return the lifting dog at precisely the proper time under the 70 proper pin or stud *a*. The upward movement of the lifting rod is caused by the rotation of the cam C which, as it rotates, pushes down that end of the lever Q to which the roller Q' is applied, thus imparting a tilting or rock- 75 ing movement to said lever which, being pivotally connected, at its other end, to the rod B, lifts the latter intermittingly, the said rod descending, by gravity, and so keeping the said roller in contact with the said cam. The 80 connection of said lever to said rod should be such as to permit this movement without tending to draw the said rod laterally. The yielding axial movement of the dog L results from its contact, during its downward move- 85 ment, with the pins *a a*, in succession, together with the spring action of the arm M, which latter also returns the said dog underneath the said pins, in rotation, so as to rotate the check-wheel intermittingly at the proper 90 times.

My preference in regard to the construction of the lifting cam C and the lever operated by it is to make the said cam in two parts, one of which, C', is detachable, so that 95 the said cam may be converted either into a single or double cam, or one having either one or two lifting movements during one revolution of the cam-shaft, as may be desirable or necessary, substantially as shown in my 100 drawings. In form I would make this cam so that the lifting dog will engage the proper pin at precisely the proper time.

Fig. 3 represents the double heart-cam when its parts are arranged together to act 105 as such.

The dog L, when formed substantially as shown, and by being pivoted directly on the shaft B, is so well balanced that it is less liable than heretofore to be subject to acciden- 110 tal vibrations.

By means of the improvements now described, the action is positive or certain, and the operator or weaver can move the "lay" 115 back and forth with facility, and without interference with the lifting-chain, and can readily provide a double heart-cam for use in "pick and pick" work, and afterward restore it to a single heart-cam for other work.

The antifriction roller prevents much of the 120 jar of the machine, and so greatly diminishes the danger of the lifting-dog being accidentally misplaced.

The cam C, (C C') is of such form as to prevent the check-wheel (E) from being turned 125 when the "lay" is pushed backward by hand, an advantage which those familiar with the art will readily understand.

While I have referred to the form of some of the parts described, I desire to state that I 130 do not here intend to restrict myself to any mere details of form or configuration.

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

1. The combination, in a loom, of the lifting-rod B; a check-wheel-dog or rotator in pivotal connection with said rod; the “telegraph”-rod; a flexible crank-like finger in operative connection with the said rotator and the said “telegraph”-rod, and the check-wheel, substantially as and for the purposes specified.

2. The combination, in a loom, of the lifting rod B; the check-wheel E, with its pins or studs *a a* thereon; the outwardly-bored or curved check-wheel-dog or rotator L, in pivotal connection with said rod, and having thereon the shoulders *e* and *e'*; the pivotal or vibratory crank-like flexible finger M, in connection with said dog, and a telegraph rod in

operative connection with said finger and under the control of the operator, substantially as and for the purposes specified.

3. The combination, in a loom, of the flexible or spring-like handle arm P; the notched loop or holder P'; the bent or crank-like shifting rod or rocker O; the “telegraph” rod; the check-wheel; the check-wheel dog or rotator; the rod B, and a finger connecting the said “telegraph” rod and dog, all made and arranged for operation together, substantially as and for the purposes set forth.

Signed at Waterloo, in the county of Seneca and State of New York, this 6th day of September, A. D. 1892.

ALFRED W. FAIRWEATHER.

Witnesses:

JOHN W. BOND,
W. D. BURRALL.