Sheet 1-2 Sheets.

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Let-Off Motion.

No. 6,159. Patented Mar. 6, 1849.

Fig. 1

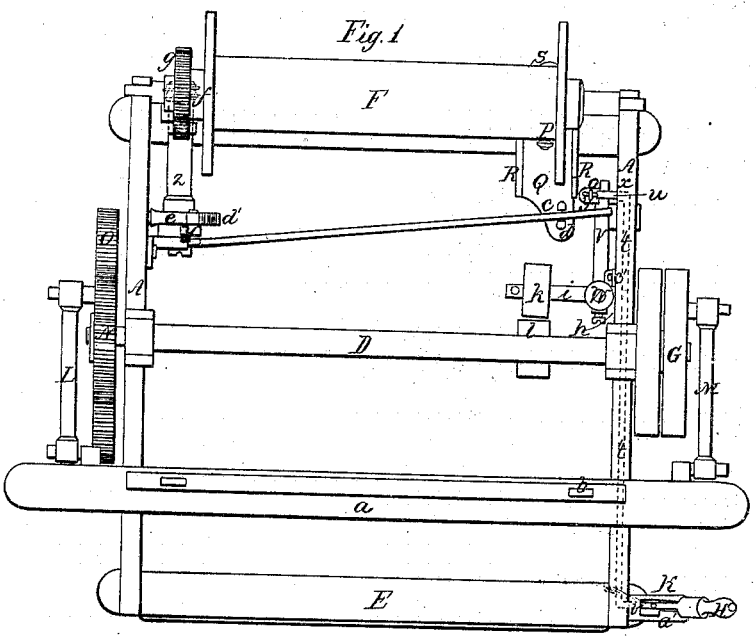

Fig. 8

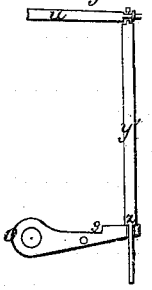

Fig. 6

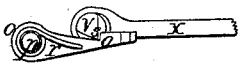

Fig. 7

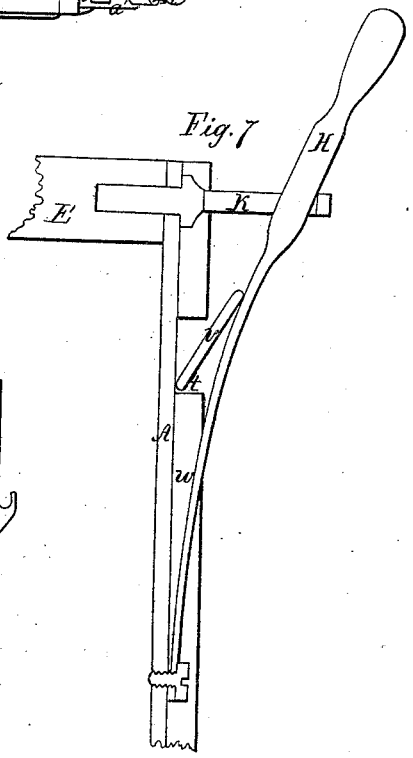

Fig. 2

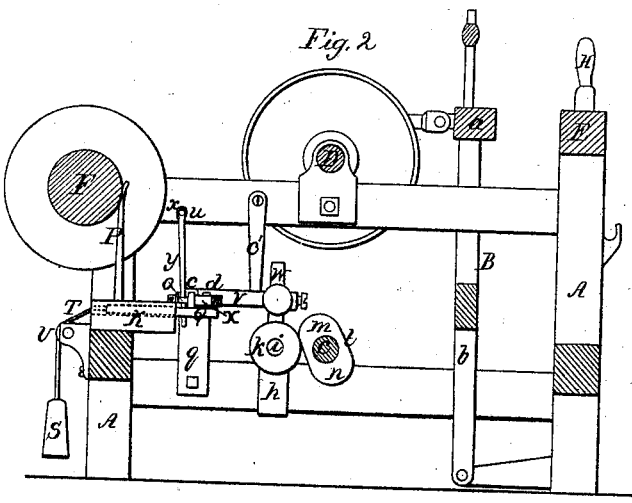

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Fig. 3

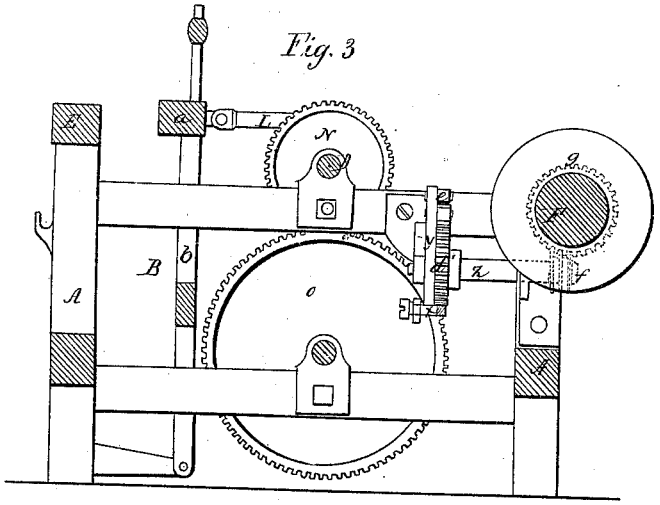


Fig. 4

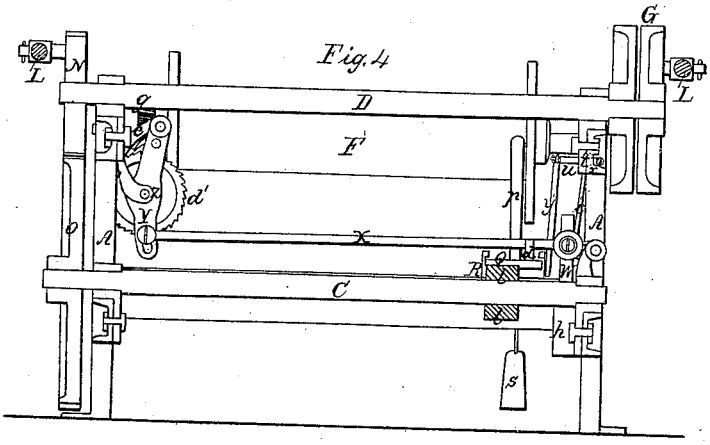
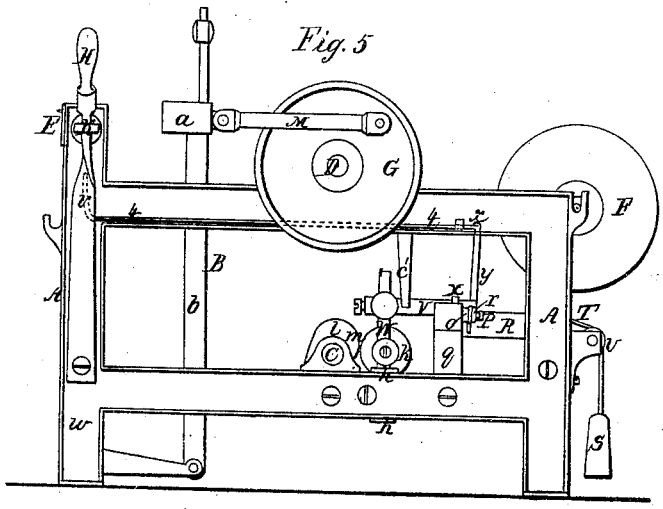


Fig. 5



UNITED STATES PATENT OFFICE.

JEREMIAH MYERS, OF BIDDEFORD, MAINE.

LET-OFF MOTION OF LOOMS.

Specification of Letters Patent No. 6,159, dated March 10, 1849.

To all whom it may concern:

Be it known that I, JEREMIAH MYERS, of Biddeford, in the county of York and State of Maine, and lately of West Brookfield, in the State of Massachusetts, have invented a new and useful Improvement in Looms for Weaving; and I do hereby declare that the same is fully described and represented in the following specification and accompanying drawings, letters, figures, and references thereof.

Of the said drawings, Figure 1 denotes a top view of a loom frame, having my invention applied to it, and the warp roller or beam. Fig. 2, is a vertical central and transverse section taken as though the spectator's eye was directed toward the right hand end of the loom. Fig. 3 is a similar section but taken as though the spectator was looking in an opposite direction. Fig. 4 is a longitudinal and vertical section taken through the cam or treadle shaft, and as if the spectator was looking toward the warp roller. Fig. 5 is an elevation of the right hand end of the loom.

My invention is what may be termed a "positive" let off mechanism or combination of mechanism, its object being to regulate the rotary movement of the warp beam, in such manner that the warps may be delivered from it, in a regular and uniform manner. Also that when the motions of the lay are arrested, by what is termed the stop motion, or stoppage of the loom, the said rotary movement of the warp roller may be simultaneously stopped.

A in the above mentioned drawings exhibits the loom frame, constructed in the ordinary way.

B is the lay; *a*, the race beam thereof; *b*, *b*, the swords of the lay; C, the treadle or cam shaft; D, the crank or driving shaft; E, the breast beam; F, the warp roller; G, the fast or driving pulley of the crank shaft; H, the spring hand or stop lever; K, the slotted notched plate of the lever H; L, M, the connecting or crank rods of the lay; N, O, gears for communicating motion from the driving shaft to the cam shaft, all the said parts being essentially similar to others in common use, in general in looms for weaving.

P is an arm made to project vertically from a horizontal slide plate Q, which is suitably supported so as to be capable of freely sliding back and forth and in such manner as to permit the arm P, to move either toward or from the warp beam, and in directions at right angles thereto, the said plate Q being sustained upon a supporting plate R, which is fastened to the loom frame, and in the position as seen in the drawings. The said arm P, extends upward above its plate Q a distance equal to or greater than the height of the axis of the warp roller, above the said plate, and during the operation of the loom, said arm P rests against the outer curved surface or cylinder of warp thread, wound upon the warp roller. It is always kept drawn against the same, by means of a sufficient weight S, suspended to a cord T, attached to the plate Q, and made to pass over a pulley U. Instead of this weight, a spring might be used as an equivalent.

The inner part or end of the plate Q, has two studs or projections *c*, *d*, extended upward from it as seen in Figs. 1 and 2. Between these projections a long bar X, is interposed or placed. The right hand end of this bar has a hole made through it horizontally, through which (hole) an arm V, projecting from a vertical shaft W passes, the hole of said bar being of a size to permit the bar to slide or play freely on the arm or to move from one end of it to the other as occasion may require.

The opposite or left hand end of the bar X, is jointed to the lower end of an upright lever Y, whose fulcrum is on a horizontal shaft Z, arranged as seen in Figs. 1 and 3. An impelling pawl *e* is jointed at its upper end to the top of the lever Y, and rests at its lower end on the periphery of a ratchet wheel *d'*, affixed to the shaft Z, there being on the outer end of the said shaft, an endless screw *f*, (represented by dotted lines) which plays into a gear wheel *g*, fixed upon the shaft of the warp roller as seen in Fig. 1. There may be more of said impelling pawls if one is not found sufficient.

From the vertical shaft W, which is supported by and so as to revolve in a socket or bearing *h*, fixed to the loom frame, an arm

i, is made to extend about at right angles to the arm V, hereinbefore mentioned. On the arm *i*, is a roller *k*, which should be so applied to the arm as to be capable of freely rotating thereon, and of being placed in any desirable position on the arm. The periphery of the roller rests against a cam *l*, fixed on the cam shaft C, and having two projecting parts *m*, *n* of like extension and shape, and arranged as seen in Fig. 2.

Directly under the front end of the arm V, and at right angles to it is a short lever *o*, which rests and turns on a short horizontal shaft *p*, made to project from the upper part of a standard *q*, fastened to the loom frame, in the position as seen in the drawings. A spring *r*, is fastened at one end to the shaft *p*, and bears at its other end upward and against the lever *o*. The lever *o* is made with a small notch or shoulder *s*, as seen in Fig. 6, which denotes a side view of the said lever.

A long shaft *t*, extended along the end of the loom frame, as seen in Fig. 5, and by dotted lines in Fig. 1, has an arm *u*, projected horizontally from it, at one end of it. It also has another arm *v*, projected upward from its opposite end, and directly in rear of the spring lever H, the same being shown in Fig. 7, which denotes a section of the arm *v*, the hand lever H, and the adjacent post *w*, of the loom frame.

The arm *u* extends through a slot or hole *x*, made through the loom frame, and of sufficient size to permit the arm to be raised and lowered as occasion may require. From the inner end of the arm *u*, a rod *y*, depends, it being fastened or jointed to the arm. This rod near its lower end is turned down or made smaller and so as to have a shoulder *z*, as seen in Fig. 8, which is a sectional view of the rod, and the lever *o*. The lower or smaller part of the rod passes through a hole made through the lever *o* and of a diameter less than the diameter of that part of the rod above the shoulder *z*.

The notch of the plate K, is seen at *a'*. When the spring lever H, is moved up toward the loom, and into the notch, it throws the driving belt upon the fast pulley in the usual manner it being supposed that said spring lever operates on said belt by means of a forked lever, arranged and applied as it is in most levers, also that the lever H, is connected with and operated by a stop motion or mechanism in the usual way. Furthermore while the lever H, is being moved toward and into the notch *a'*, it will so act against the adjacent arm *v*, as to move it with it and thereby cause the shaft *t*, to so turn as to depress the arm *u*, and thereby by means of the rods *y*, depress the lever O, to such extent as to cause the shoulders *s* of it to be carried entirely below the arm V, and not disturb its movements. When however the spring lever H, is thrown out of the notch *a'*, and springs outward it leaves the adjacent arm *v*, so as to permit the spring *r*, to elevate the lever *o*, or shoulder *s*, which latter on rising above the plane of the lower side of the arm V, will arrest the motions of the arm, and prevent a spring *c'*, from pressing the roller *k* toward and against the cam of the cam shaft. One end of the spring *c'*, is fastened to the loom frame, while the other is made to bear against the arm V. The spring not only operates against the said arm in the manner above described, but it causes the arm to press forward the bar X, so as to move the lever Y in such manner as to retract the pawl *e*, on the ratchet wheel *d*, or cause it to fall back over the teeth thereof. When either of the projecting cams *m*, *n*, is moved against the roller *k*, and so as to press the arm on which said roller is placed, in a direction away from the cam shaft, the other arm (V) will be simultaneously moved so as to retract the bar X, and thereby so move the lever Y, and pawl *e* as to cause the latter to press against a contiguous tooth of the ratchet wheel and produce a partial revolution of the said ratchet wheel, such a movement as will cause the shaft Z, and endless screw *f*, to turn, and thereby turn the warp roller. This movement of the warp roller will be gradually increased in proportion as the warp is unwound therefrom, the same being effected by the bar X, being gradually drawn toward the outer end of the arm V. In proportion as this takes place it will be seen that the longitudinal movements of the bar X, are increased, the same causing a gradual increase of the rotary motion of the warp roller, to the extent which will enable it to produce a regular delivery of the warp as fast as may be necessary during the weaving process.

It is not necessary that two cams *m*, *n* be employed, to operate the roller *k*, and its arm, as one cam may be applied to the crank shaft, and the parts of the mechanism be so arranged as to be operated by it. The reason why two cams are used on the treadle shaft is because it is made by the connecting gears N, O, to rotate but one half as fast as does the crank shaft.

What I claim as of my invention is—

1. The combination composed of the gear *g*, screw *f*, shaft Z, ratchet wheel *d'*, pawl *e*, lever Y, bar X, a bent lever composed of the arm V, shaft W, and arm *i*, or otherwise properly made, roller *k*, one or more cams *m*, *n*, the spring *c'*, the slide plate Q, and arm P, and weight S, as applied to the warp beam or roller, and made to operate together substantially as above specified.

2. And I also claim in combination with the above described mechanism for operating the warp roller, the stop motion or

mechanism applied to the same, and the spring stop lever H of the loom, the said stop motion consisting of the shaft *t*, and its arms *u*, *v*, rod *y*, notched lever O, and its spring *r*, the whole being constructed and made to operate substantially as above explained.

In testimony whereof I have hereto set my signature this fourth day of December A. D. 1848.

JERH. MYERS.

Witnesses:

J. D. HOWES,

T. G. THORNTON, Jr.