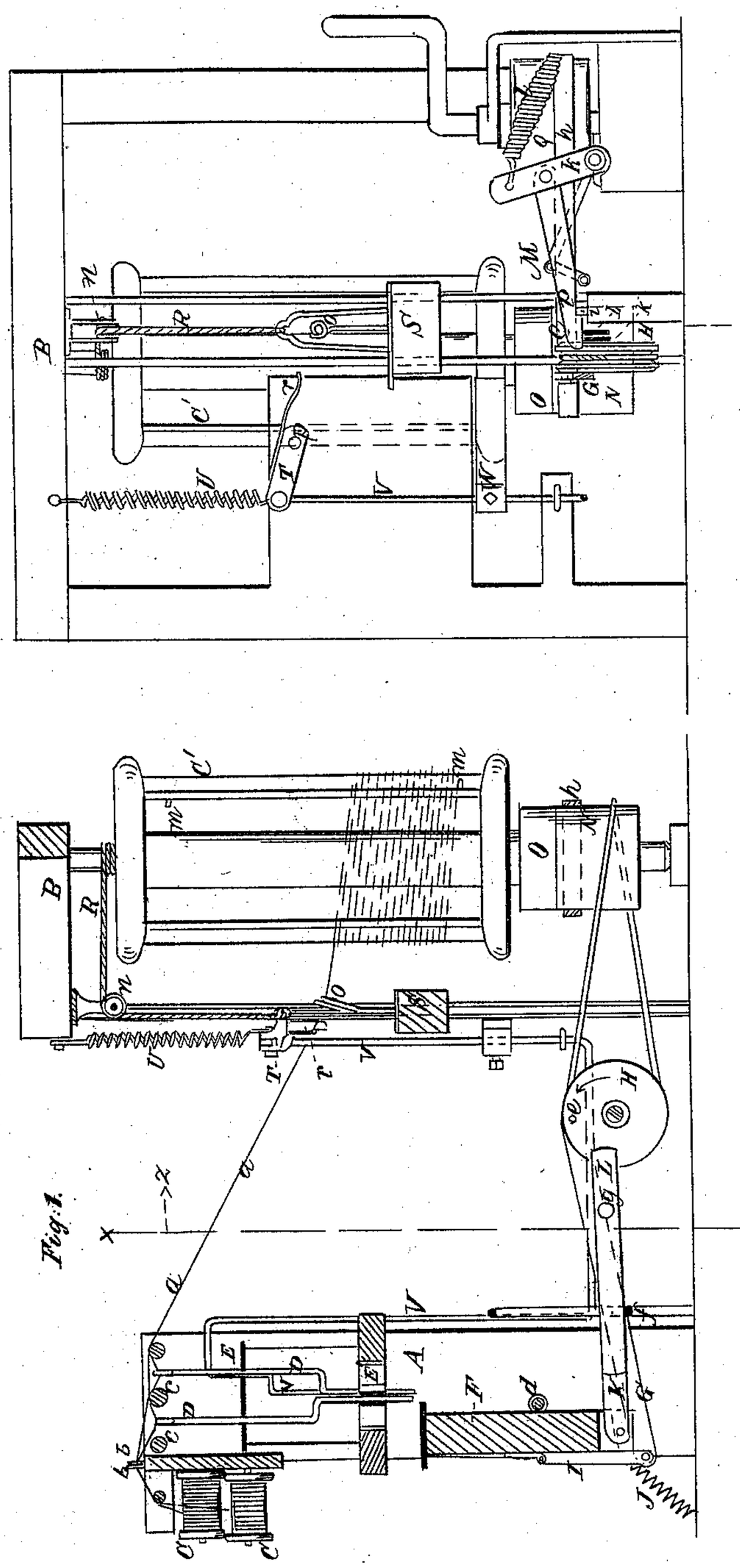
H. Weber,

Warping Machine.

No. 87,528. Patented Mar. 2. 1869.



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Letters Patent No. 87,528, *dated March* 2, 1869.

IMPROVEMENT IN STOP-MOTION MECHANISM FOR WARPING-MACHINE.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, HENRY WEBER, of the city, county, and State of New York, have invented a new and useful Improvement in Stop-Motions for Warping-Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, forming part of this specification, and in which—

Figure 1 represents a vertical section of a warping-machine, or machine in part, having my improved stop-motion applied to it; and

Figure 2, a vertical section, at right angles to fig. 1, taken as indicated by the line *x x*, and looking in direction of the arrow *z*.

Similar letters of reference indicate corresponding parts.

My improvement relates to warping-machines, either for broad or narrow weaving, and includes a feature which is common to other warping-machines, also as applied to looms and braiding-machines, in which weights have been hung on the warp-yarns, so that, in case of a yarn breaking or running out, the weight, in dropping, would operate a stop-motion to the machine.

My invention consists—

First, in a combination, with the yarn-weights, of a rocking-beam, driven in the one direction by a spring or springs, and in the other, by a pitman, connected with a latch hinged to the beam, for operating, through suitable connections, the belt-shifter.

Secondly, the invention consists in a combination, with a rocking-beam, operated as described, of bars, eccentric rotating pin and catch-lever, for operating the belt-shifter in both directions of the machine's travel, in case of the breaking or running out of the yarns.

Thirdly, the invention consists in a combination of devices for arresting the motion of the machine in both directions of its travel, when necessary to reverse the wrap of the warp-yarns on the reel.

This machine is mainly designed to be operated by hand, but may be worked by "power."

In the accompanying drawing—

A B represent vertical frames for carrying certain of the working-parts.

C C are the warp-yarn spools, running freely on pins arranged to project from, or connected with the frame A. There may be any suitable number of these spools, according to the number of warp-yarns it is designed to reel, and the same may be differently disposed or arranged in relation to the frame.

From these spools, the warp-yarns *a a* are taken or passed through eyes *b b*, and on or over bars *c c*, and from thence to the reel C'.

Hanging or supported on the yarns *a a*, between the bars *c c*, are the rod-weights D D, that, in case of the yarns they are hung upon breaking or running out, drop, to operate the stop-motion.

E E' are guides to the rod-weights D D, the lower one, E', of which also acts as a rest for said weights when they drop.

F is a beam or board, hung to rock or vibrate on a shaft-rod, *d*.

Said board is located below the weights D D, a little to one side of them, so that on any one of said weights dropping, it acts as a bolt or stop, to limit the movement of the beam F, which is rocked in the one direction by a pitman, G, from a crank or eccentric-pin, *e*, arranged to project from a pulley, H.

The pitman G is not connected directly to the beam, but to a latch or hinged plate, I, which bears on the one side or face of the beam, so that the pitman only works, when pulling, to rock the lower end of the beam toward the pulley, a spring or springs, J, acting to rock it in the opposite direction.

Pivoted to the lower end of the beam is a bar, K, that, resting loosely on a stop, *f*, projects toward the pulley H.

This bar K has pivoted to it, as at *g*, another bar, L, the one end of which projects, so as to overlap the one side of the pulley H, while the other end loosely rests on the stop *f*. When the weights D D are suspended on the yarns, the beam F has full swing, and the bars K L are then reciprocated in such timely relationship to the travel of the eccentric-pin *e*, as that said pin, which projects through the pulley, rotates without coming in contact with the bar L; but when any one or more of the weights D D have dropped, through the breaking or running out of the yarn, then the swing of the beam F is restricted in the direction in which it is moved by the spring or springs J, by such weight or weights causing the bars K and L to move a less distance from the pulley H, so that the pin *e*, in rotating, strikes the inner end or arm of the bar L, and lifts or depresses it, according to the direction in which the pin *e* travels.

To fully comprehend such action, it should be borne in mind that the pitman G, during the action of the springs J on the beam, is not operating on the latter, but only on the latch I.

This pause to the beam, by the interference of the weight or weights D D with it, operates a belt-shifter, M, which shifts a driving-belt, *h*, from a fast pulley, N, secured to the shaft of the reel C, on to a loose pulley, O, and so stops the motion of the machine.

This is done by the bar L, on its inner end, being raised or depressed, acting, by its longer, or outer arm, under a catch-lever, P, so as to release the latter from a fixed lip, *i*, over or on which it bites, said catch-lever being pivoted to an arm, *k*, with which the belt-shifter M is connected, and which, when the catch-lever is released, is thrown or drawn back by a spring, *l*.

By the use of the two bars, K and L, connected as described, and resting on the stop *f*, it will readily be seen that it is immaterial whether the inner end of the bar L be raised or lowered, as, on the pin *e* rotating, to depress said inner end of the bar L, it lifts the outer arm of said bar, to release the catch-lever P, by the swing of it on the pivot *g*, and, on the inner end of the bar L being lifted, by the rotation of the pin *e* in the

opposite direction, it lifts the inner end of the bar K, the stop or rest *f* acting as a fulcrum, and similarly releases the catch-lever to throw the belt-shifter.

Thus, the stop-motion operates in both, or opposite directions of the machine's travel, which is an important provision, as the warp-yarns are wrapped round the wheel C, first in one and then in a reverse direction, and so on alternately.

This is done by rotating the reel, through its belt *h* and driving-pulley Q, in opposite directions, and giving the warp-yarns bite or twist alternately, in reverse directions, on or around side-pins, *m m*, at top and bottom of the reel, as said warp-yarns, in being wound on the reel, reach the upper and lower ends of the latter.

To give the necessary bite of the warp-yarns on the pins *m m*, it is requisite that the machine should pause, which is effected in an automatic manner, as the warp-yarns reach the limit of their wrap in length on the reel, substantially as follows:

R is a cord or chain, made fast, at its one end, to the reel-shaft, at or near its top, and, passing over a pulley, *n*, secured, at its other end, to a weight, S, which carries an eye, *o*, through which the warp-yarns pass to the reel. The descent of this weight, with its eye *o*, directs the warp yarns in their wrap down the reel, and the ascent of it causes them to be wound in an upward direction thereon.

T is a lever, pivoted, as at *p*, to an upright or portion of the frame, and having attached to it a spring, *r*, that forms an extension of one of its arms.

Connected with the back arm or other end of said lever, is a spring, U, which operates to lift said back arm of the lever T, and with it a bent rod, V, attached, at its one end, to said lever, and so extended and shaped as to pass through the guides E E′, to have the same action, when lowered on the beam F, as the rod-weights D D, in arresting the motion of the machine.

W is a lower arm, adjustable, by set-screw, on the rod V, that is, on such portion of it as lies in proximity to the weight S.

As the reel C rotates in the one direction, it lifts, by the winding of the rope R on its shaft, the weight S, which, by the eye *o*, directs the warp-yarns up the reel, but, when said weight reaches the spring *r* of the lever T, it operates said lever to depress the rod V which stops the machine, by arresting the movement of the beam F, that causes the catch-lever P to be tripped, and belt-shifter M to be moved, as hereinbefore described.

This establishes the necessary pause for giving the warp-yarns reverse bite on the upper-side pin *m* of the reel, which is afterward rotated in a reverse direction, causing the rope R to unwind, weight S to descend, and rod V to rise out of lock on the beam F.

The weight S, in descending, by carrying the eye *o* along with it, directs the warp-yarns in a downward course on the reel, and, when said weight reaches the lower arm W, it depresses it, and with it the rod V, to again stop the machine, in order that the wrap on the reel may again be reversed, that, is, by giving the warp-yarns bite on the lower reel-pin *m*, and rotating the reel in an opposite direction, causing the warp-yarns to be wound in a reverse direction up the reel.

Thus, an automatic stop is established in both directions of the reel's travel, and, by adjustment of the arm W on the rod V, the length of wrap on the reel may be varied as required.

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

1. The combination, with the yarn-weights D D, of the rocking-board or beam F, latch I operated by a pitman, G, and spring or springs J, substantially as specified.

2. The combination, with the rocking-beam F and hinged latch I, operated as described, of the bars K L, eccentric rotating pin *e*, and catch-lever P, for operating the belt-shifter in both directions of the machine's travel, essentially as herein set forth.

3. The combination of the rising and falling weight S, set in motion by the reel, with the lever T and its spring *r*, rod V, spring U, and arm W, substantially as and for the purposes herein set forth.

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Witnesses:

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