W. BANCROFT.

Drop-Wire for Warping-Machines.

No. 213,608. Patented Mar. 25, 1879.

Fig: 1.

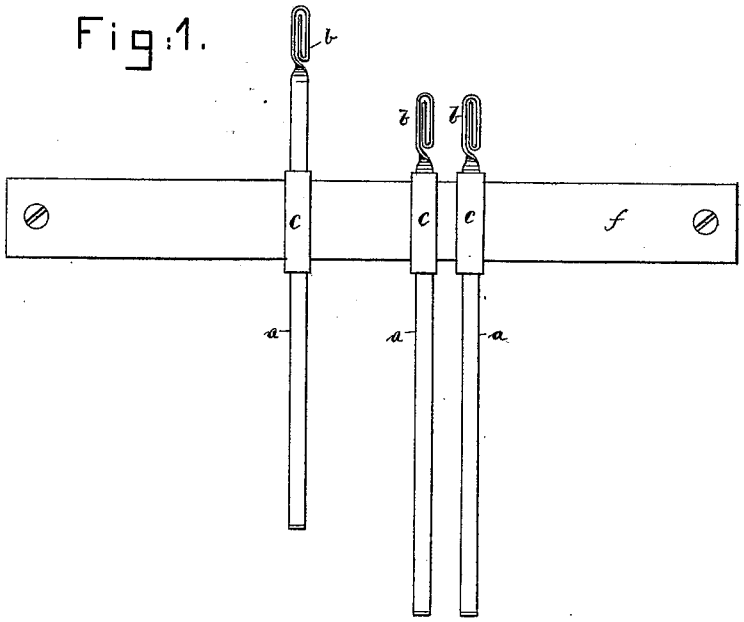
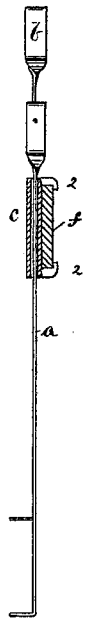


Fig: 2.



Witnesses.

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UNITED STATES PATENT OFFICE.

WILLIAM BANCROFT, OF HOPEDALE, MASSACHUSETTS, ASSIGNOR TO HOPEDALE MACHINE COMPANY, OF SAME PLACE.

IMPROVEMENT IN DROP-WIRES FOR WARPING-MACHINES.

Specification forming part of Letters Patent No. **213,608**, dated March 25, 1879; application filed October 25, 1878.

To all whom it may concern:

Be it known that I, WILLIAM BANCROFT, of Hopedale, county of Worcester, State of Massachusetts, have invented an Improvement in Drop-Wires for Warping-Machines, of which the following description, in connection with the accompanying drawings, is a specification.

This invention relates to warping-machines, and has special reference to the drop-wires and their supports.

Heretofore it has been common to place the drop-wires in a row in a slot in a plate extended across the warping-machine, the wires being held up solely by the threads in their eyes; and upon the breaking of a thread the drop-wire has been permitted to fall from the slot down between rollers, connected with and so as to operate the belt-shipper of the machine, or other stopping mechanism, and after passing between the rollers the drop-wire then falls into a box.

Frequently the operators start the machine again without placing the drop-wire in position and restoring the thread, and less than the proper number of threads are put upon the beam.

In other machines the drop-wires, held in slots, as above described, have been limited as to their descent, but could be and frequently are lifted up out from the said slot, thereby permitting a careless operator to place a wrong number of threads upon the beam:

In other machines each drop-wire has been held in a separate hole in a plate, and has been restricted as to its vertical movements both up and down; but at the same time they have been restricted as to lateral movement, making it possible to put but a certain number of threads through the machine without a change of plate containing the holes and wires, which is expensive.

In the first and second plans it frequently happens that the eyes of adjacent wires, coming in contact in the slot, become caught or have their threads tangled together and broken, thereby producing imperfect warping, and sometimes preventing the descent of a wire though its thread is broken.

This present invention consists chiefly in the combination, with independent drop-wires, of independently-adjustable guiding-boxes, the said boxes being sustained upon suitable supports of the frame.

Figure 1 represents, in front view, a series of drop-wires and their boxes mounted upon a supporting-bar; Fig. 2, a cross-section thereof.

In the drawings, it has been considered unnecessary to show the mechanism of a warping-machine, or the stopping mechanism thereof, as the devices herein claimed are applicable to well-known warping-machines instead of the usual drop-wires.

The drop-wires *a* have at their tops eyes *b*, of usual construction, and are passed through the box *c*. The lower ends of the wires are preferably bent or turned to form shoulders, as at *d*, to prevent the said wires from being lifted from the boxes, so as to avoid the liability of the operator, without detection, removing any number of the drop-wires from the machine.

Each box *c* receiving a drop-wire has prongs or ears 2 2, to enable it to be placed in position upon the support *f*, which may be a bar or rod extended properly across the machine, the boxes being so connected with the said support as to permit them to be adjusted laterally thereon, to adapt the warping-machine to guide and direct to the beam any desired number of threads.

The boxes, being wider than the eyes, prevent the eyes of the wires from coming in contact, or one wire overriding another, as when guided in slots.

It is obvious that one or more drop-wires may be held in each box.

I claim—

1. In a warping-machine, drop-wires *a* and boxes *c*, provided with prongs or ears 2, combined with and made longitudinally adjustable upon the support *f*, substantially as and for the purpose described.

2. The guide-wires, having projections or shoulders at their lower ends, combined with the adjustable boxes, provided with prongs or ears 2, and the support *f*, upon which the boxes are fitted, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM BANCROFT.

Witnesses:

F. J. DUTCHER,

W. S. BANCROFT.