

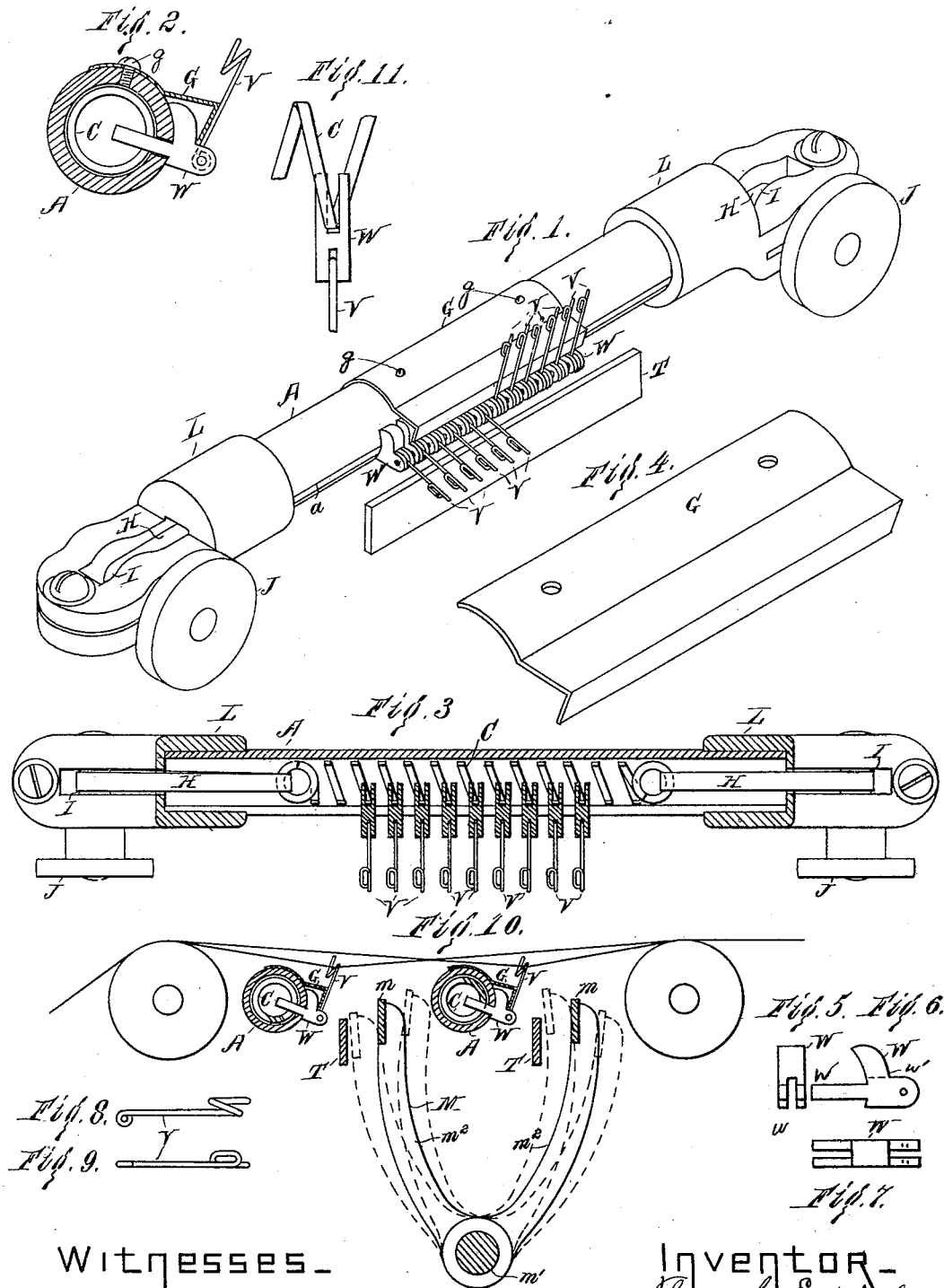
(No Model.)

T. C. ENTWISTLE.

DROP WIRE BOX FOR WARPING, BEAMING, AND OTHER MACHINES.

No. 344,365.

Patented June 29, 1886.



Witnesses.

Kirkley Hyde,
Antoine M. Day.

Inventor.

Thomas C. Entwistle,
By Albert M. Moore,
His Attorney.

UNITED STATES PATENT OFFICE.

THOMAS C. ENTWISTLE, OF LOWELL, MASSACHUSETTS.

DROP-WIRE BOX FOR WARPING, BEAMING, AND OTHER MACHINES.

SPECIFICATION forming part of Letters Patent No. 344,365, dated June 29, 1886.

Application filed February 1, 1886. Serial No. 190,466. (No model.)

To all whom it may concern:

Be it known that I, THOMAS C. ENTWISTLE, a citizen of the United States, residing at Lowell, in the county of Middlesex and Commonwealth of Massachusetts, have invented a certain new and useful Improvement in Drop-Wire Boxes for Warping, Beaming, and other Machines, of which the following is a specification.

My invention relates to drop-wire boxes for warping, beaming, and other machines; and it consists in the improvement hereinafter described, the object of which is to dispense with the dents, guide-rods, and stop-rod commonly used in connection with expansion drop-wires, and to enable drop-wires to be expanded or contracted by the expansion or contraction of a single spring, with which the brackets of said drop-wires are arranged to be engaged.

In the accompanying drawings, Figure 1 is an isometric view of a drop-wire box with brackets, drop-wires, stop bar, and means of expanding the drop-wires, and a guard-plate which retains the drop-wire brackets in engagement with the expansion-springs; Fig. 2, a vertical section of the drop-wire box at right angles to its axis between any two adjacent drop-wire brackets; Fig. 3, a horizontal central longitudinal section of the drop-wire box between its heads; Fig. 4, an isometric view of the guard-plate detached; Fig. 5, a rear end elevation of a drop-wire bracket; Fig. 6, a side elevation of a drop-wire bracket detached; Fig. 7, a plan of the bottom of the same; Fig. 8, a side elevation, and Fig. 9 a plan, of the drop-wire detached; Fig. 10, a vertical cross-section of two drop-wire boxes and their springs, the vibrator-shaft and vibrator-bars, stop-bars, the vibrator-arms, drop-wires, and drop-wire brackets in side elevation and two carrier-rolls in end elevation; and Fig. 11 is a detail view.

The invention hereinafter described is an improvement on that shown in United States Letters Patent No. 333,118, dated December 29, 1885, and the drop-wire box A, provided with longitudinal slot *a*, the heads L, the stop-bar T, on which the drop-wires fall when the yarns break, the vibrator M, vibrator-shaft *m'*, vibrating bars *m*, arms *m*², connecting said shaft and bar, and the drop-wires V, are all as shown in said patent.

In the patent referred to an expansion-comb is used, consisting of two springs, the coils of which overlap each other and short dents inserted in said springs and reaching across the interior of the box and projecting into the slot *a*, guide-rods being used to prevent said dents from getting out of line with each other, and a stop-rod, which passes from end to end of the box through holes formed in said dents, to prevent said dents from being drawn out of said box and from between the coils of said springs. In said patent, also, a drop-wire bracket is provided with a shank as wide as the body of the bracket and too wide to turn in the slot *a*, which shank is provided with a slot to receive the outer end of the dent shown in said patent. The outer end of the drop-wire bracket is also slotted, to receive a drop-wire which turns within said slot upon a pivot.

In the present invention I use a single spring, C, which loosely fills the box A, and I dispense with the dents, guide-rods, and stop-rods used in said patent. I make the dents unnecessary by slightly lengthening the shank *w* of the drop-wire bracket W until it reaches within the comb-box far enough to receive within its slot a single coil of the spring, as shown in Fig. 11.

The single spring used in the present invention is expanded, just as the two springs are expanded in said patent, by means of straps H H, wound upon drums or cylinders I I, by turning hand-wheels J J, secured to said drums, which drums are prevented from being turned accidentally by the friction of the bearings in which they turn, as shown in said patent and in United States Patent No. 333,399. The straps H H in the present invention are, however, secured to the end coils of the spring C, which are bent parallel with the axis of said spring, as shown in Fig. 3. The body of the drop-wire bracket, W, herein described is precisely like that of the drop-wire bracket shown in said first-named patent, and is retained in place by the guard-plate G, which reaches down over the head *w* of said bracket, as shown in said first named patent. By removing the guard-plate from the box, to which it is secured by screws *g*, any drop-wire and its bracket when bent or broken, or when not required for use, may be immediately removed, and the brackets nearest the ends of the guard-

plate may be lifted out of engagement with the spring by expanding the spring sufficiently to bring such brackets outside of the end of said guard-plate.

- 5 The construction above described is economical, because so many parts are dispensed with, and for the same reason the box and the drop-wires are less liable to get out of order.

I claim as my invention—

- 10 1. The combination of the box provided with a longitudinal slot, a single spring placed within said box and loosely filling the same, means, substantially as described, for expanding
15 said spring, drop-wire brackets provided with shanks having slots, said shanks being adapted to enter the slot in said box and to receive the coils of said spring in the slots of said shanks, and drop-wires pivoted to said brackets, as and for the purpose specified.

2. The combination of the box provided 2c with a longitudinal slot, a single spring placed within said box and loosely filling the same, means, substantially as described, for expanding said spring, drop-wire brackets provided 25 with shanks having slots, said shanks being adapted to enter the slot in said box and to receive the coils of said spring in the slots of said shanks, and drop-wires pivoted to said brackets, said brackets being provided with heads, and a guard-plate secured to said box 30 and reaching over said heads of said brackets, as and for the purpose specified.

THOMAS C. ENTWISTLE.

Witnesses:

ALBERT M. MOORE,
GERTRUDE M. DAY.