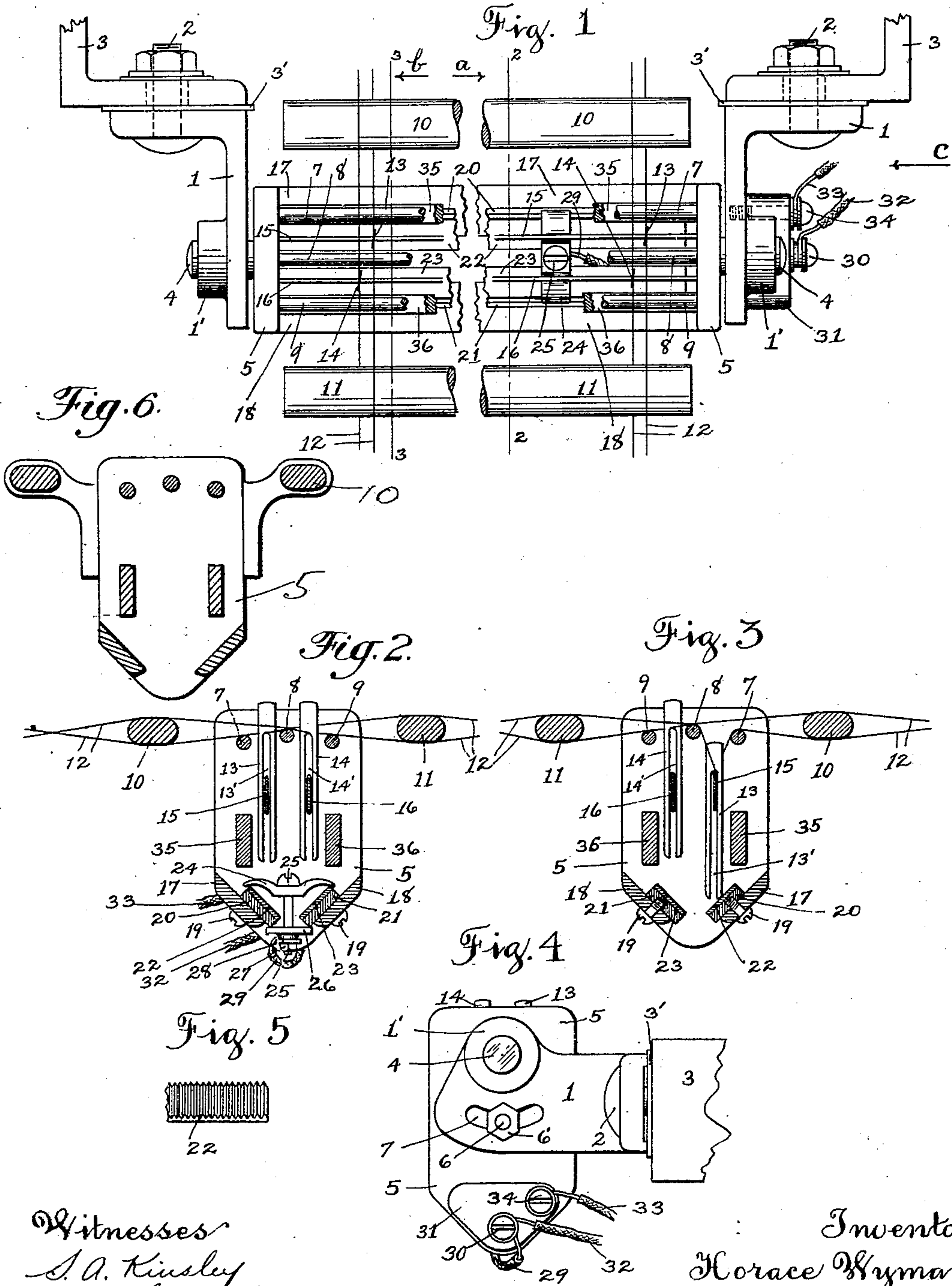


H. WYMAN.
WARP STOP MOTION FOR LOOMS.

(Application filed Dec. 19, 1901.)

(No Model.)



Witnesses
S. A. Kinsley
M. Haas.

Inventor
Horace Wyman
By John C. Dewey Atty

UNITED STATES PATENT OFFICE.

HORACE WYMAN, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO CROMPTON & KNOWLES LOOM WORKS, OF WORCESTER, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

WARP STOP-MOTION FOR LOOMS.

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Application filed December 19, 1901. Serial No. 86,474. (No model.)

To all whom it may concern:

Be it known that I, HORACE WYMAN, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Warp Stop-Motions for Looms, of which the following is a specification.

My invention relates to warp stop-motions for looms, and more particularly to an electrical warp stop-motion in which one or more sets of drop bars or wires, hung on the warp-threads intermediate the back roll and the harnesses, are used. The dropping of one of the drop bars or wires by reason of the breaking of the warp-thread on which it is hung will establish or complete an electric circuit and through coacting mechanism will stop the loom.

The object of my invention is to make an improved warp stop-motion, and more particularly an improved construction of the frame carrying the warp-supporting bars or rests and the guide-bars for the drop-wires and an improved construction of the terminals or circuit-bars and their arrangement. The mechanism which is brought into action to stop the loom on the establishing or the completing of the electric circuit by the dropping of a drop-wire may be of any ordinary and well-known construction, and as the same forms no part of my present invention I have not shown such mechanism in the drawings.

My invention consists in certain novel features of construction of my improvements, as will be hereinafter fully described.

I have only shown in the drawings a detached part of a warp stop-motion embodying my improvements sufficient to enable those skilled in the art to which my invention belongs to make and use the same.

I have shown in the drawings two sets of drop bars or wires and two sets of terminals or circuit-bars, one set for each set of drop-wires, but only one set of drop-wires and one set of terminals may be used or more than two sets, if preferred.

Referring to the drawings, Figure 1 is a plan view of the supporting-frame, the two lease-rods, the warp-supporting rods or rests,

the guide-rods, the drop-wires, and the other parts embodying my improvements. Fig. 2 is a section on line 2 2, Fig. 1, looking in the direction of arrow *a*, same figure. Fig. 3 is a section on line 3 3, Fig. 1, looking in the direction of arrow *b*, same figure. Fig. 4 is an end view of the supporting frame and bracket shown at the right in Fig. 1 looking in the direction of arrow *c*, same figure; and Fig. 5 is a detached portion of one of the lower terminals or circuit-bars, showing a grooved construction which may be used on the engaging face. Fig. 6 is a detail view showing a modification in which the lease-rods are carried by the end plates.

In the accompanying drawings, 1 are supporting-brackets, made in this instance of angle shape and having one arm rigidly secured by a bolt 2 to the side or other stationary part 3 of the loom, from which it may be insulated by a non-conducting surface 3'. The other arm of the brackets 1 has a hub 1' thereon as a bearing for a stud 4, which is loosely mounted in said bearing and is fast at its inner end to the plates 5, forming the ends of the frame. Each end plate 5 has a bolt 6 fast therein and extending out therefrom through a curved slot 7 in one arm of the angle-iron 1. (See Fig. 4.) On the threaded end of the bolt 6 is a nut 6'. The vertical position of the plates 5 relative to the supporting-brackets 1 may be adjusted through the rotation of the studs 4 in their bearing 1' and be held in their adjusted position by screwing up the nuts 6'.

In connection with the two end plates 5, which are preferably pivotally supported, as above described, to have a swinging motion and be adjusted in position, I use in this instance three parallel warp-supporting rods or rests 7, 8, and 9, secured at their ends to the end plates 5 and extending between the two lease-rods 10 and 11 and in substantially the same horizontal plane.

The two lease-rods 10 and 11 in this instance extend loosely through the warp-threads 12 to divide them into two sets in the ordinary way. One set of drop bars or wires 13, which in this instance have a long open end slot 13' therein, are strung on one half of

the warp-threads, between the rods or rests 7 and 8, which act to support the warp-threads on each side of and close to the drop-wires 13, and the other set of drop-wires 14, with open end slots 14', are strung on the other half of the warp-threads between the rods or rests 8 and 9, which act to support said warp-threads on each side of and close to the drop-wires 14.

Two parallel guide-bars 15 and 16 extend through the slotted portion of the drop bars or wires 13 and 14 and are secured at their ends to the end plates 5 and act in this instance as upper terminals or circuit-bars.

Two parallel transverse bars 35 and 36 in this instance extend between the two end plates 5 and are secured thereto and form in this instance a part of the frame.

Two parallel transverse inclined bars 17 and 18 extend between the end plates 5 at their lower ends and are secured thereto, and upon the inner surface of the bars 17 and 18 are secured in this instance by screws 19 the insulating-bars 20 and 21, upon which are secured the copper plates or bars 22 and 23, forming the lower terminals or circuit-bars.

The inner face or engaging surface of the circuit-bars 22 and 23 may be corrugated or grooved, as shown in Fig. 5, to guide or hold the lower end of the drop bar or wire in its lowered position. In this instance the two circuit-bars 22 and 23 are connected to be in the same circuit by a bar 24, held in contact with the upper edges of the circuit-bars 22 and 23 by a bolt 25, which passes at its lower end through a plate 26, which bears against the lower edges of the inclined insulating-bars 20 and 21. A nut 27 is screwed onto the lower end of the bolt 25 below a washer 28.

A wire 29 extends from the bolt 25 to a binding-post 30 in an insulating-plate 31 on the outside of one end plate 5. (See Fig. 4.) From the binding-post 30 a wire 32 leads to the magnet. (Not shown.) The other wire 33 of the circuit is attached in this instance to a binding-post 34, which extends through the insulating-plate 31 and is screwed into the bracket 1, (see Fig. 1,) thus connecting the guide-bars 15 and 16, forming the upper terminals or circuit-bars, through the end plate 5, binding-post 34, and wire 33 with the magnet. (Not shown.)

In connection with my improvements shown in the drawings and above described any well-known form of mechanism may be employed for operating the shipper-lever to stop the loom, which mechanism will be automatically operated upon the establishing or completing of the electric circuit by the dropping of any one of the drop-wires and the engaging of the lower end of the drop-wire with either one of the lower terminals or circuit-bars 22 or 23, as shown in Fig. 3.

By means of the pivotal support of the end plates 5 the warp-supporting rods or rests 7, 8, and 9 and the other parts above described may be adjusted so that the drop-wires on

the warp-threads can be made to occupy the most advantageous position relative to the line of movement of the warps, which is determined by the position of the back rail, the hang of the harnesses, and also in some instances by the condition of the threads comprising the warps. There is a clear open space between the two lower terminals or circuit-bars 22 and 23, as shown in Fig. 3, so that any dirt or lint which comes off of the warp-threads in passing through the drop-wires will have a free passage between said circuit-bars. The lower circuit-bars 22 and 23 are preferably inclined toward each other, though one may be made inwardly inclined and the other outwardly inclined or both may be made outwardly inclined, if preferred, provided an open space is maintained between them.

It will be understood that the details of construction of my improvements may be varied, if desired. The lease-rods 10 and 11 may be connected with the end plates 5 to move with them, if preferred, as shown by broken lines in Fig. 2.

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

1. In a warp stop-motion for looms, brackets secured to the loom-framing, a frame carrying warp-thread rests and drop-wire guides, said frame being pivotally supported by said brackets to be swung in the arc of a circle, one of said parts being provided with a slot, and a bolt passing through said slot for holding the frame in adjusted position.

2. In a warp stop-motion for looms, brackets secured in stationary position on the loom-framing, a frame pivotally supported on said stationary brackets and comprising end plates, transverse bars or rods connecting said end plates, and pin-and-slot connection between the frame and one of the brackets and independent of the pivotal support of said frame to hold the same in adjusted position.

3. In a warp stop-motion for looms, the combination with drop bars or wires, two parallel terminals or circuit-bars, having a clear open space between them, adapted to guide the drop bars or wires, of two parallel terminals or circuit-bars, extending below the first-mentioned terminals, and having a clear open space between them, and inclined surfaces to be engaged by the drop bars or wires, substantially as shown and described.

4. In a warp stop-motion for looms, a pair of parallel terminals or circuit-bars, having an open space between them, and a second pair of parallel terminals or circuit-bars extending below the first-mentioned pair, and having an open space between them, and provided with downwardly-converging surfaces, and drop bars or wires to establish or complete the electric circuit when in contact with one of each pair of terminals, substantially as shown and described.

5. In a warp stop-motion for looms, the combination with drop bars or wires two parallel terminals or circuit-bars, having a clear open space between them, adapted to guide the drop bars or wires, of two parallel terminals or circuit-bars, extending below the first-mentioned terminals, and having a clear open space between them, and inclined surfaces to be engaged by the drop bars or wires, said inclined surfaces being grooved or corrugated.
HORACE WYMAN.

Witnesses:

J. C. DEWEY,
M. HAAS.