

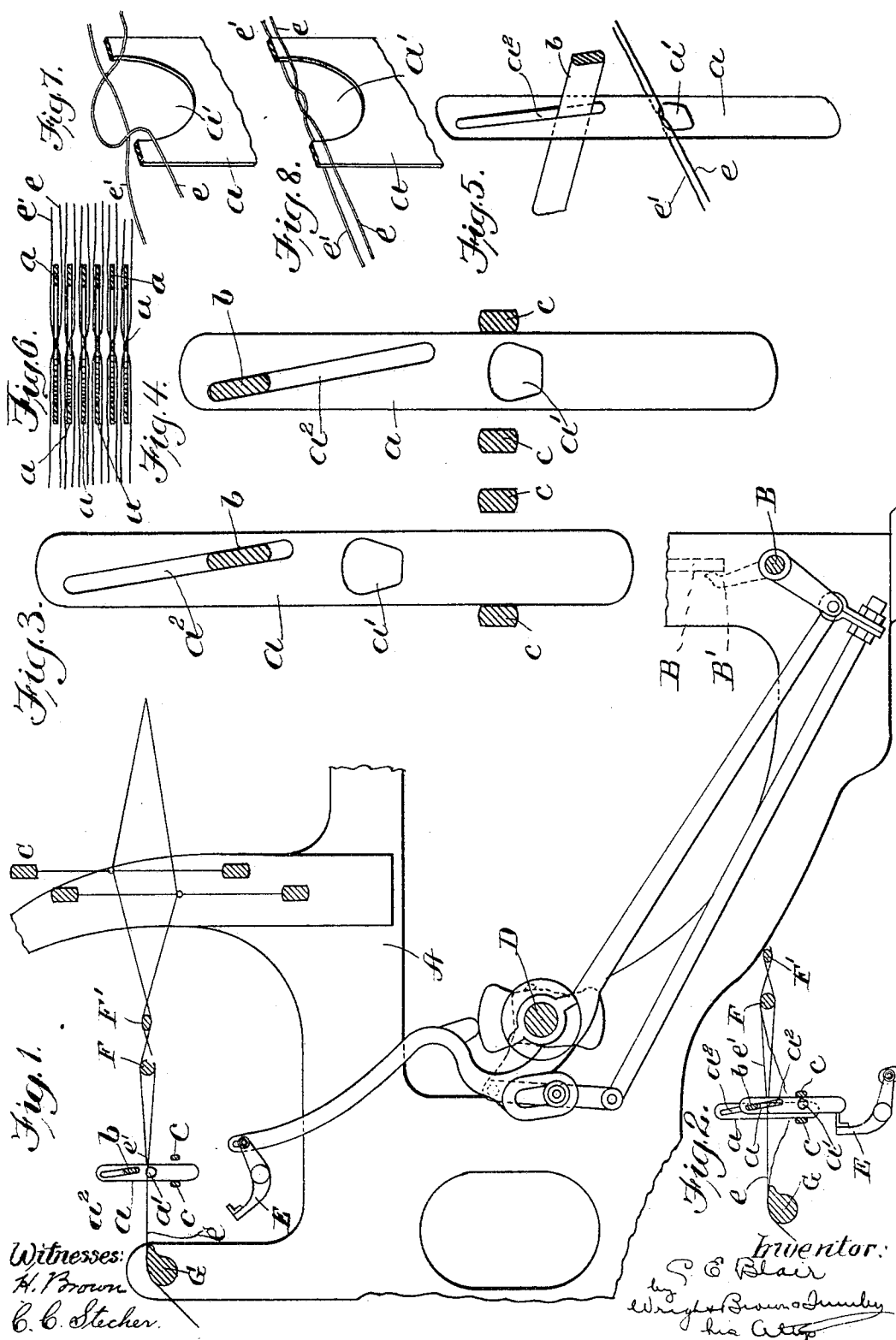
No. 798,653.

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C. E. BLAIR.

WARP STOP MOTION.

APPLICATION FILED APR. 13, 1905.



# UNITED STATES PATENT OFFICE.

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## WARP STOP-MOTION.

No. 798,653.

Specification of Letters Patent.

Patented Sept. 5, 1905.

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*To all whom it may concern:*

Be it known that I, CHARLES E. BLAIR, of  
Somerville, in the county of Middlesex and  
State of Massachusetts, have invented certain  
5 new and useful Improvements in Warp Stop-  
Motions, of which the following is a specifi-  
cation.

This invention has relation to warp-stop-  
motion apparatus which is rendered effective  
10 to stop the operation of the machine in which  
the stop mechanism is included by the move-  
ment of a detector into operative position.

According to the present invention means  
are provided whereby the detectors may be  
15 greatly reduced in number, so as to simplify  
the apparatus and reduce the cost thereof  
without in any way endangering its effective-  
ness. A detector is provided, which is en-  
gaged with two warp-threads, and thereby  
20 held in an inoperative position out of the path  
of a feeler. This detector may consist of a  
thin flat wire, substantially similar to those  
which are now in use. It hangs freely upon  
the two threads and upon the breakage of  
25 either thread is permitted to drop into an op-  
erative position, whereby upon the engage-  
ment therewith of a feeler the stop-motion  
mechanism is set in operation to stop the  
loom. According to this invention, however,  
30 the detectors engage the warp-threads in a  
peculiar and novel manner and are supported  
thereby, being strung, if desired, upon a  
guiding member, so that when any one of the  
threads breaks or becomes abnormally loose  
35 a detector may drop into active or operative  
position.

One embodiment of the invention as applied  
to a loom is herein illustrated; but it will be  
40 understood that the invention is not restricted  
to such application.

Referring to the accompanying drawings,  
Figure 1 represents a longitudinal section of  
a portion of a loom with one embodiment of  
the invention applied thereto. In this figure  
45 the detectors are shown as all being in inop-  
erative or inactive positions. Fig. 2 repre-  
sents a similar view of a smaller portion of  
the loom and illustrates one of the detectors  
in its active or operative position. Fig. 3  
50 represents an enlarged view of one of the de-  
tectors in its inactive position. Fig. 4 repre-  
sents a similar view with a detector in its ac-  
tive or operative position. Fig. 5 represents  
a perspective view of one of the detectors held

in its normal or inactive position, and it rep- 55  
resents the two warp-threads which support it.  
Fig. 6 represents a horizontal section through  
the detectors in a plane above the warp. Figs.  
7 and 8 illustrate how a pair of warp-threads  
are engaged with a detector. 60

I have illustrated the invention as applied  
to a loom of the Draper type, such as is illus-  
trated in the patent to Draper, No. 643,951,  
which patent illustrates a convenient form of  
stop-motion mechanism which may be utilized 65  
in connection with this invention. The loom-  
frame A, the shipper-lever B, the harness C,  
the knock-off arm B' on the rock-shaft B<sup>2</sup>,  
the cam-shaft D with the cams thereon, the  
feeler E and the connections between the 70  
feeler, the rock-shaft B, and the cam-operat-  
ing devices do not differ from the similar ele-  
ments shown and described in the said patent  
to Draper.

F F' indicate the usual lease-rods, which 75  
are indicated as ordinarily at some distance  
from the whip-roll or bar G. Between the  
whip-roll and the lease-rod F are placed a se-  
ries of detectors, each of which is indicated  
at *a*. These detectors are preferably formed 80  
of relatively thin metallic strips, which, so  
far as their general features of construction  
are concerned, may not differ materially from  
the usual drop-bar or detector. Each is pro-  
vided with an eye *a'*, which may be round, 85  
but which I prefer to make relatively wide  
for rendering more easy the operation of  
drawing the warp. The eye is illustrated as  
being substantially ovoid. The detectors are  
all illustrated as strung in alinement upon a 90  
support *b*, which extends from side to side of  
the loom, each detector being provided with  
a slot *a''*, through which the support extends.  
This slot may be arranged longitudinally of  
the detector, with its walls parallel to the side 95  
edges of the detector; but I prefer to form it  
it at an angle to the side edges, for a purpose  
which I shall subsequently describe. The sup-  
port *b* is illustrated as being arranged above  
the warp, although this is not material, and it 100  
consists of an elongated bar, the ends of which  
may be supported in any suitable way, and  
it is so placed that its flat faces are at an in-  
clination to both the vertical and the horizon-  
tal and are at the same angle to the side edges 105  
of the detector as the slot *a''* therein.

The detectors are all arranged vertically,  
and when they are all in inactive or inopera-

tive position they all lie in the same transverse vertical planes. When, however, one of the detectors is permitted to drop by the failure of one of its supporting warp-threads, it drops by gravity and is guided laterally by the support *b* to a position shown in Fig. 4, there occupying a conspicuous position partially out of alinement with the remainder of the drop-bars or detectors, so that it may be easily seen by the operator.

The support *b* and the detectors are arranged above the feeler *E* and are normally held in inactive relation to said feeler. When one of the detectors drops, however, into the position shown in Fig. 4, it is engaged by the feeler, with the result that the stop-motion mechanism is set in operation to stop the loom.

Below the warp and on either side of the row of detectors are placed two guides *c c*, which may consist of bars, serrated, if desired, and extending from side to side of the loom. These bars are separated far enough apart to permit the lateral movement of the detectors, as previously described. One of these guides *c c* serves as an abutment to resist the thrust of the feeler when one of the detectors drops, it being so arranged that the forward edge of the detector will rest against it when the detector drops into the position shown in Fig. 4.

In order that one detector may serve for a pair of warp-threads, the warp-threads are entwined, as shown in Figs. 7 and 8. In these figures the two warp-threads are indicated at *e e'*. Each thread is coiled half a convolution around the other, so that it engages the same face of the detector in front and in the rear of the eye *d'*. The engaged bights of the threads cross in the eye of the detector, so that if one of them breaks the detector is allowed by the other to drop substantially vertically. The warp-threads are in substantially the same horizontal plane, and consequently the detectors may be located at any convenient vertical transverse plane of the loom independently of the position of the lease-rods.

In drawing the threads one of them is passed across the face of the detector and the other thread is drawn through the eye and after being looped around the first-mentioned thread is drawn back through the eye. In this way while the detector is supported partially by the joint coöperation of both threads it is disengaged from each by the breakage of one of them.

While I have illustrated a simple and convenient form of detector, it will be quite apparent that the invention is not limited thereto, since I may have other forms of detectors, such as those in which an open slot commu-

nicates with the eye for making easier the operation of drawing the warp therethrough. Moreover, while the stop-motion device is illustrated as mechanically operated I contemplate the employment of an electromechanical device in which the dropping of a detector closes the operating-circuit. I have not illustrated such an electromechanical device, as any one of those heretofore employed may be used.

Having thus explained the nature of the invention and described a way of constructing and using the same, although without attempting to set forth all of the forms in which it may be made or all of the modes of its use, I declare that what I claim is—

1. In a warp stop-motion, a series of detectors therefor, each having an eye and each maintained inoperative by the joint coöperation therewith of a pair of warp-threads which are intertwined through the eye thereof.

2. In a warp stop-motion, a detector therefor having an eye, said detector being maintained inoperative by the joint coöperation of a pair of warp-threads lying on opposite sides of said detector but having bights intercoiled through the said eye.

3. In a warp stop-motion, a detector therefor having an eye, said detector being maintained inoperative by the joint coöperation of a pair of warp-threads lying on opposite sides of said detector, one of said warp-threads having a loop extending into the said eye and crossed around the other of said warp-threads.

4. In a warp stop-motion, a series of detectors therefor, each having an eye, and means for guiding said detectors substantially vertically, said detectors being each maintained inoperative by the joint coöperation of a pair of warp-threads intertwined at the eye thereof, and both adapted to release said detector and allow it to drop vertically upon the failure of either of them.

5. In a warp stop-motion, a series of elongated detectors normally in alinement and maintained inoperative by the warp-threads and each having a slot inclined to the longitudinal median line thereof, and a guide passed through said slots in said detectors, all combined whereby when one of the detectors drops from a failure of a warp-thread, it is guided laterally out of alinement with the remaining detectors.

In testimony whereof I have affixed my signature in presence of two witnesses.

CHARLES E. BLAIR.

Witnesses:

M. B. MAY,  
C. C. STECHER.