

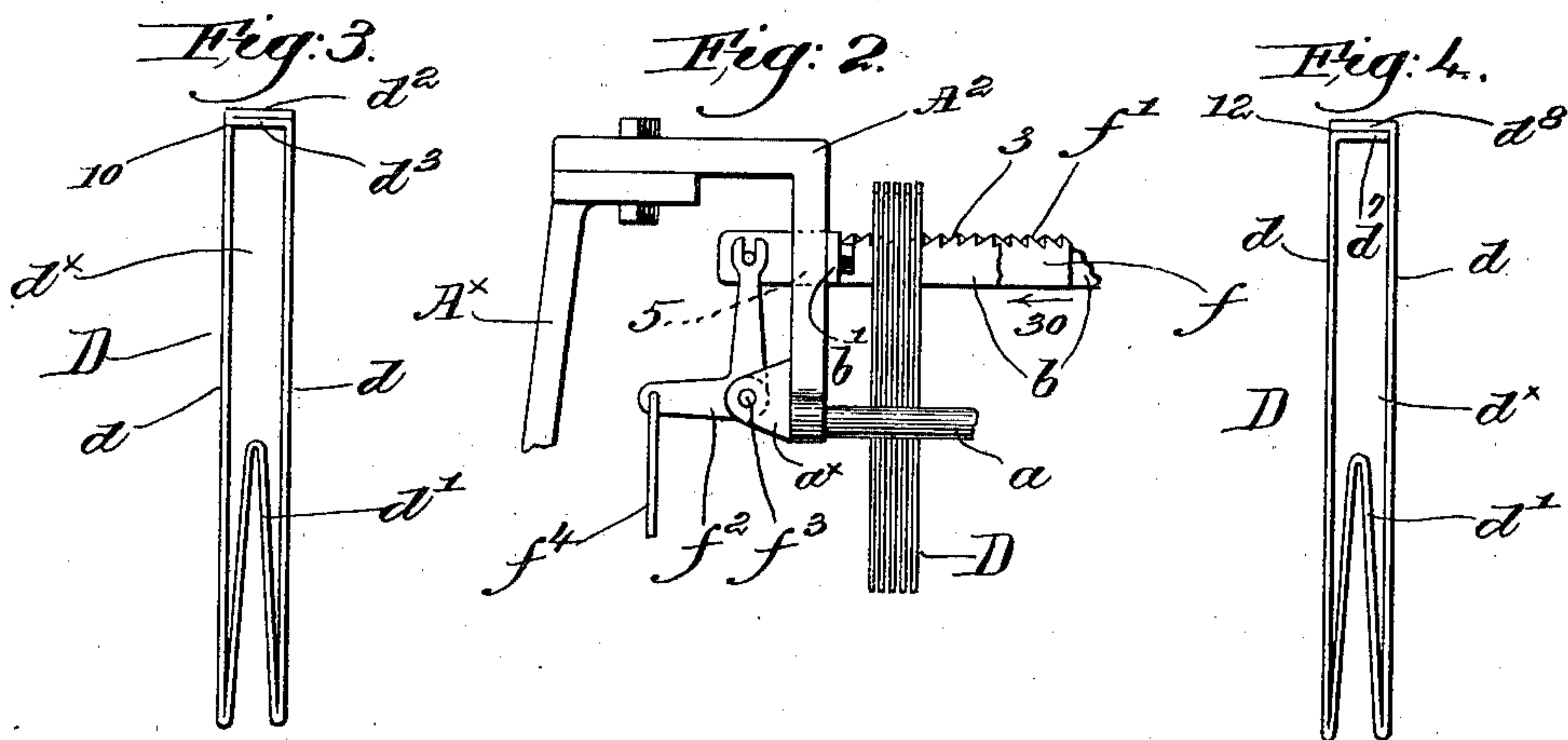
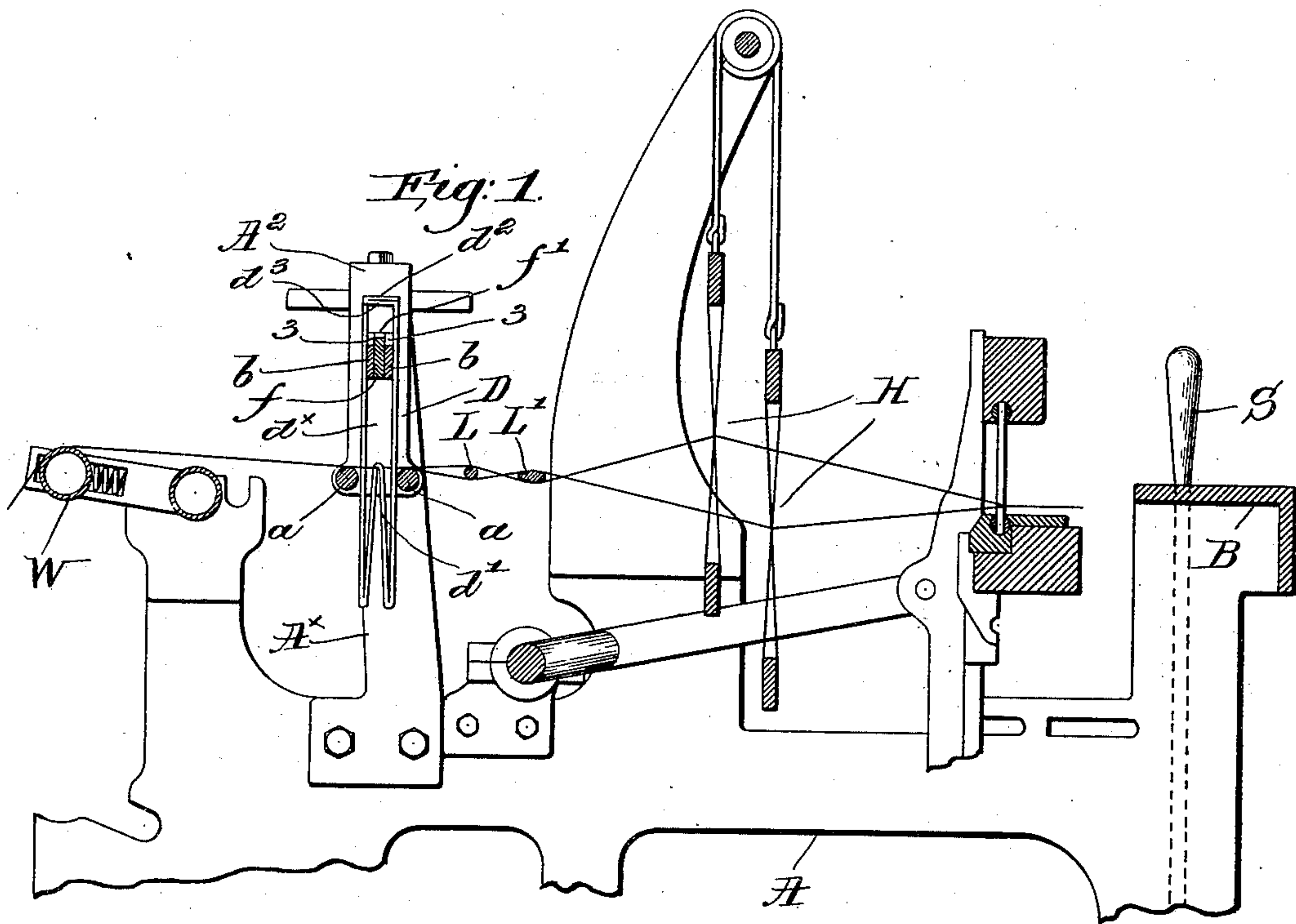
No. 671,540.

Patented Apr. 9, 1901.

W. F. DRAPER.
WARP STOP MOTION FOR LOOMS.

(Application filed Dec. 21, 1900.)

(No Model.)



Witnesses,
Edward H. Allen.
Thomas J. Drummond.

In Witness Whereof,
William F. Draper,
by Leroy S. Gregory
attys.

UNITED STATES PATENT OFFICE.

WILLIAM F. DRAPER, OF HOPEDALE, MASSACHUSETTS, ASSIGNOR TO
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WARP STOP-MOTION FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 671,540, dated April 9, 1901.

Application filed December 21, 1900. Serial No. 40,635. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM F. DRAPER, a citizen of the United States, residing at Hope-
dale, county of Worcester, State of Massachu-
5 setts, have invented an Improvement in Warp
Stop-Motions for Looms, of which the follow-
ing description, in connection with the ac-
companying drawings, is a specification, like
characters on the drawings representing like
10 parts.

My invention relates to mechanism for au-
tomatically stopping a loom upon breakage
or failure of a warp-thread; and it applies
more particularly to that type of apparatus
15 wherein the stopping means is controlled as
to the time of its operation by the movement
into abnormal position of one or more of a
series of detectors normally maintained in-
operative by the warp-threads.

20 One of the objects of my invention is to
provide a cheap and readily constructed de-
tector which can be easily applied to the
warp-thread and which is reinforced at the
portion which coöperates with the feeler when
25 a thread breaks.

Figure 1 is a cross-sectional view of a suf-
ficient portion of a loom to be understood,
with my invention illustrated in connection
therewith. Fig. 2 is a detail in rear eleva-
30 tion of a portion of the feeler, the stop, and
some of the detectors. Fig. 3 is an enlarged
side view of one of the detectors made in ac-
cordance with my invention; and Fig. 4 is a
like view of a detector, showing another way
35 of forming the integral reinforce.

Referring to Fig. 1, the loom-frame A, har-
nasses H, and lease-rods L L' may be and are
of any usual or well-known construction in
looms, and I have herein shown the detectors
40 of the warp-stop-motion mechanism as lo-
cated between the lease-rods and the whip-
roll W. Upon the loom sides I have erected
upright stands A^x, to which are secured sub-
stantially T-shaped brackets A², to the de-
45 pending ends of which are secured two warp-
rests, (shown as bars a,) which extend across
the loom from side to side. A pair of plates
b are arranged in parallelism and slightly
separated between the brackets a², the ends

of the bars being shown as outturned, as at 50
b', (see Fig. 2,) and bolted to the brackets,
the upper edges of each of these plates being
notched (see Fig. 2) to form a series of teeth
3, one face of each tooth being substantially
vertical. Between the plates, which form 55
stops, is mounted a longitudinally-movable
feeler f, shown as a flat plate set on edge
and extended through a slot, as 5, Fig. 2, in
each of the brackets A², the upper edge of
the feeler being provided with a series of 60
teeth f', having each a substantially vertical
face; but the straight faces of the feeler-teeth
are opposed to the straight faces of the teeth
of the stops b, as clearly shown in Fig. 2. The
feeler is connected at one of its projecting 65
ends with a bell-crank lever f², (see Fig. 2,)
fulcrumed at f³ in an ear a^x on one of the
brackets, and the bell-crank lever is rocked
by means of a link f⁴ to normally reciprocate
the feeler in the direction of its length. 70

I have not shown herein any means for
rocking the bell-crank lever, as any suitable
mechanism may be employed.

A series of stop-motion-controlling detec-
tors are arranged to coöperate with the warp- 75
threads and be held thereby normally in in-
operative position, and I have herein shown
the detectors as formed of wire and generally
loop-like in character.

Referring to Fig. 3, the detector D is shown 80
as made of a single piece of wire bent to form
substantially parallel elongated sides d and
having a reëntrant V-shaped shorter portion
b' at its lower end, one of the sides d being
bent upon itself at its extremity, as at d², 85
and then bent over, as at d³, substantially at
right angles to the side d and secured to the
extremity of the other side at 10, as by sol-
derring, brazing, or in any other suitable man-
ner. The upper end or head of the detector 90
thus presents an integral reinforced portion
of increased strength, for a purpose to be de-
scribed, the detector as a whole being sub-
stantially W-shaped, with the outer limbs ex-
tended and secured together at their upper 95
ends, forming a closed elongated loop d^x.
The reinforce of the detector may be made
in various ways, and in Fig. 4 I have shown

the extremities of the straight sides d as oppositely bent substantially at right angles, as at $d^7 d^8$, and overlapped and secured together at 12 by soldering or in any other suitable manner.

A series of detectors of the general structure hereinbefore described are mounted between the brackets A^2 , the feeler and stop-plates b being extended through the loop-like portion or opening b^x of the detectors, as clearly shown in Fig. 1, and in said figure the lower portions of the detectors are shown as extended downward between the warp-rests a , the reëntrant portion d' of each detector straddling a warp-thread. The detectors are held in the position shown in Fig. 1 by intact warp-threads, with their reinforced heads elevated above the feeler and coöperating stops, so that no obstacle is presented to the reciprocation of the feeler. Upon breakage of a warp-thread, however, its detector will drop and its head will drop between two of the teeth of the tooth-plates b , so that on the movement of the feeler in the direction of the arrow 30, Fig. 2, the upright face of one of its teeth will engage one side of the head of the dropped detector, while the other side thereof will be held stationary by the oppositely-located upright faces of the stops and continued movement of the feeler in the direction of the arrow 30 will be stopped. Through suitable intervening connections, such as shown in the patent referred to, the shipper-handle S , Fig. 1, is released from its usual holding-notch in the breast-beam B and the loom stopped in usual manner.

It will be obvious that the detectors made in accordance with my invention can be readily and cheaply made. They are light, and yet, by virtue of the reinforced portion, are sufficiently strong to resist and stop the movement of the feeler when the head of a drop-detector is engaged, as has been described, simultaneously by a tooth of the feeler and the toothed portion of the stop-plates.

When a broken warp-thread has been pieced up, it is only necessary for the attendant to lift the detector, so that it can straddle the repaired warp-thread, threading of the thread

through an eye in the detector being avoided by my invention.

The warp-rests a support the warp-threads in front of and at the back of the detectors and also serve to prevent swaying of the lower ends of the detectors.

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

1. As an article of manufacture, a wire detector having straight sides and a reëntrant portion between them at one end, the opposite ends of the sides being bent and overlapped and secured together to form a reinforce.

2. As an article of manufacture, a wire detector one end of which is substantially **W**-shaped, the outer limbs being extended in substantial parallelism and bent at their opposite extremities and overlapped to form an integral reinforced head.

3. In a warp stop-motion for looms, the combination with a plurality of parallel warp-rests, of a series of loop-like wire detectors located therebetween, each detector having an integral reinforced head and a reëntrant lower end to straddle a warp-thread, a feeler extended through the detectors in position to coöperate with the reinforced head of a dropped detector, means to normally reciprocate the feeler, and stopping means controlled by the feeler.

4. In a warp stop-motion for looms, the combination with a series of loop-like wire detectors, each having a **W**-shaped lower end to straddle a warp-thread and an integral reinforced head at the upper end of a notched stop and an adjacent reciprocable notched feeler, extended through the detectors and adapted to coöperate with the head of a released detector, means to normally reciprocate the feeler, and stopping means controlled by the feeler.

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

WILLIAM F. DRAPER.

Witnesses:

GEORGE OTIS DRAPER,
ERNEST W. WOOD.