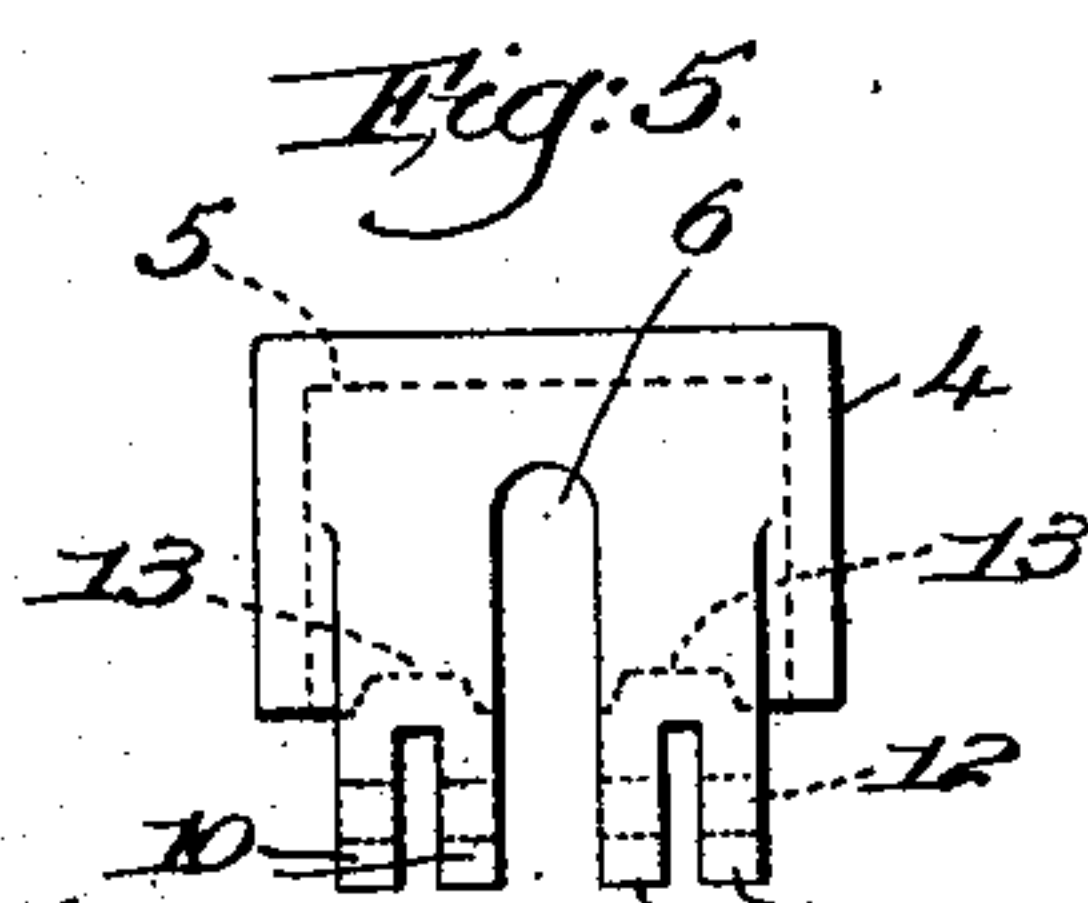
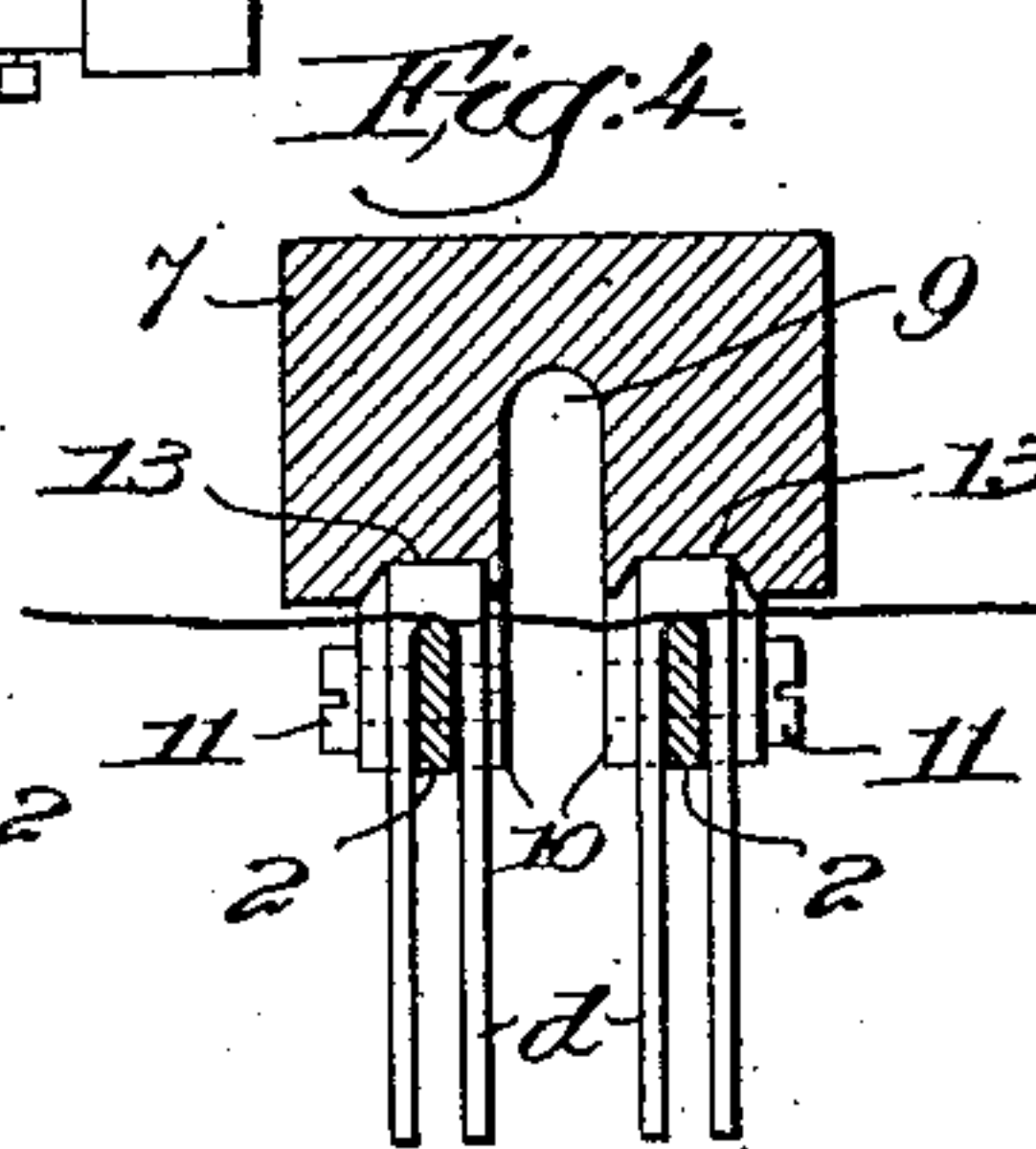
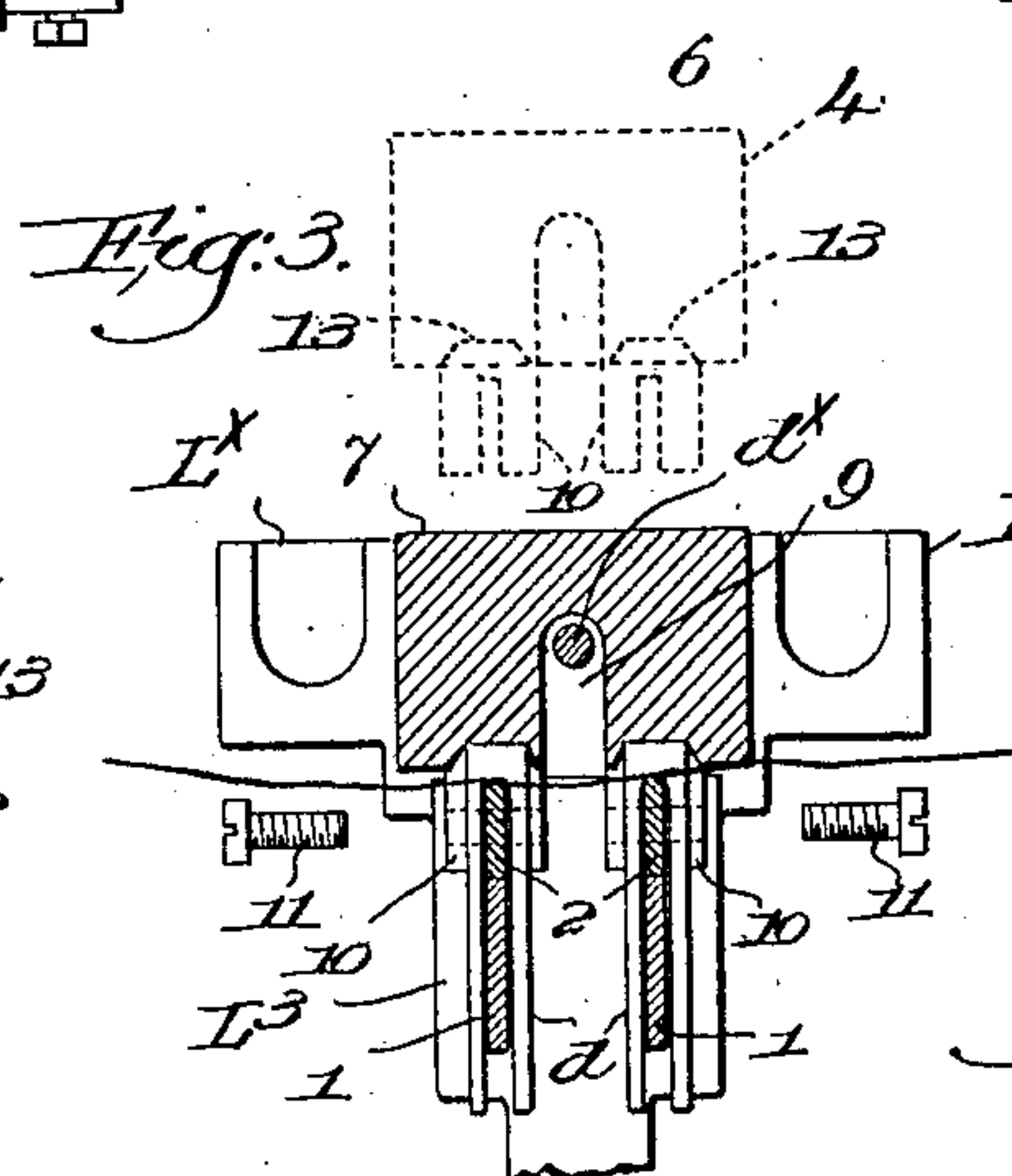
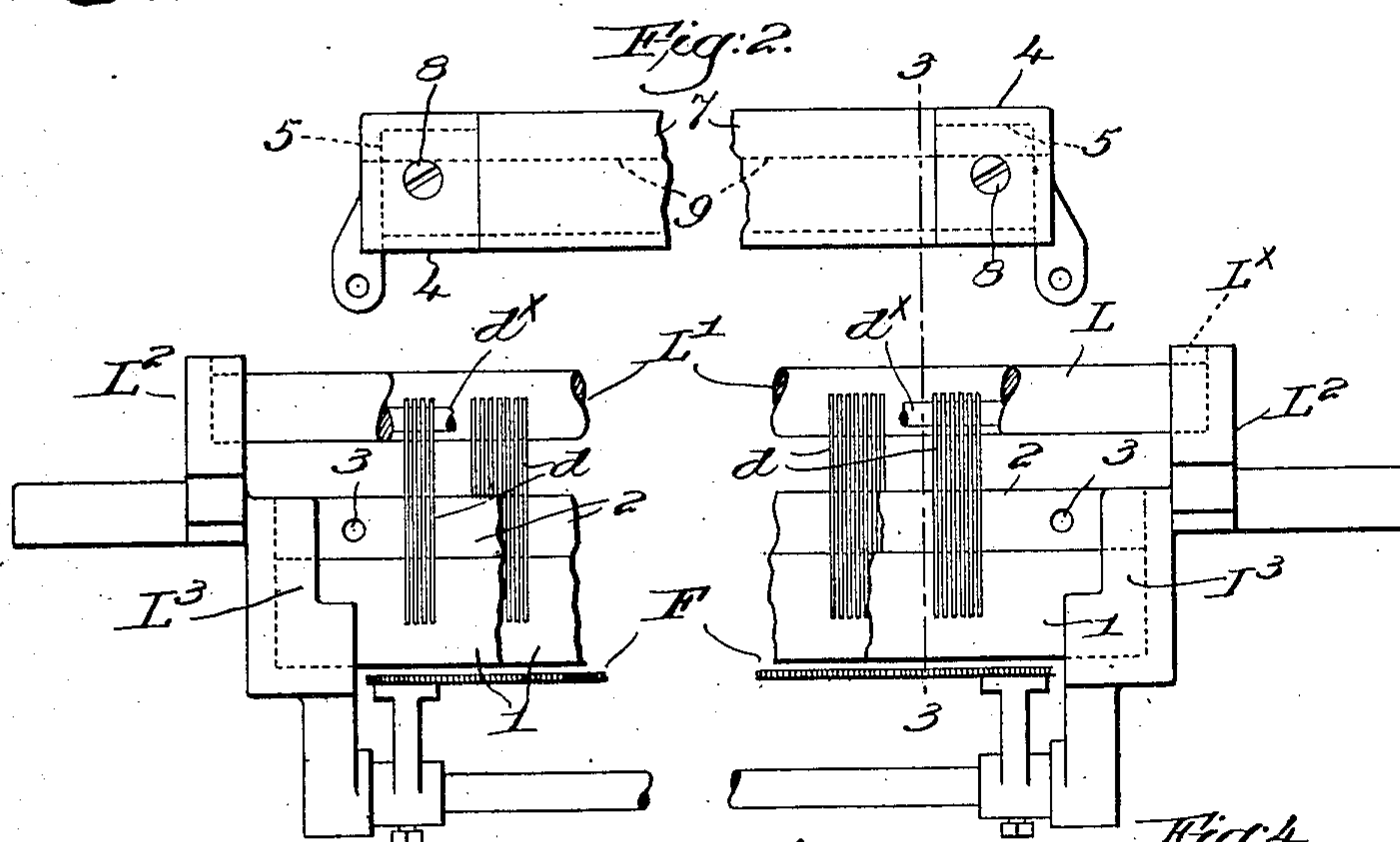
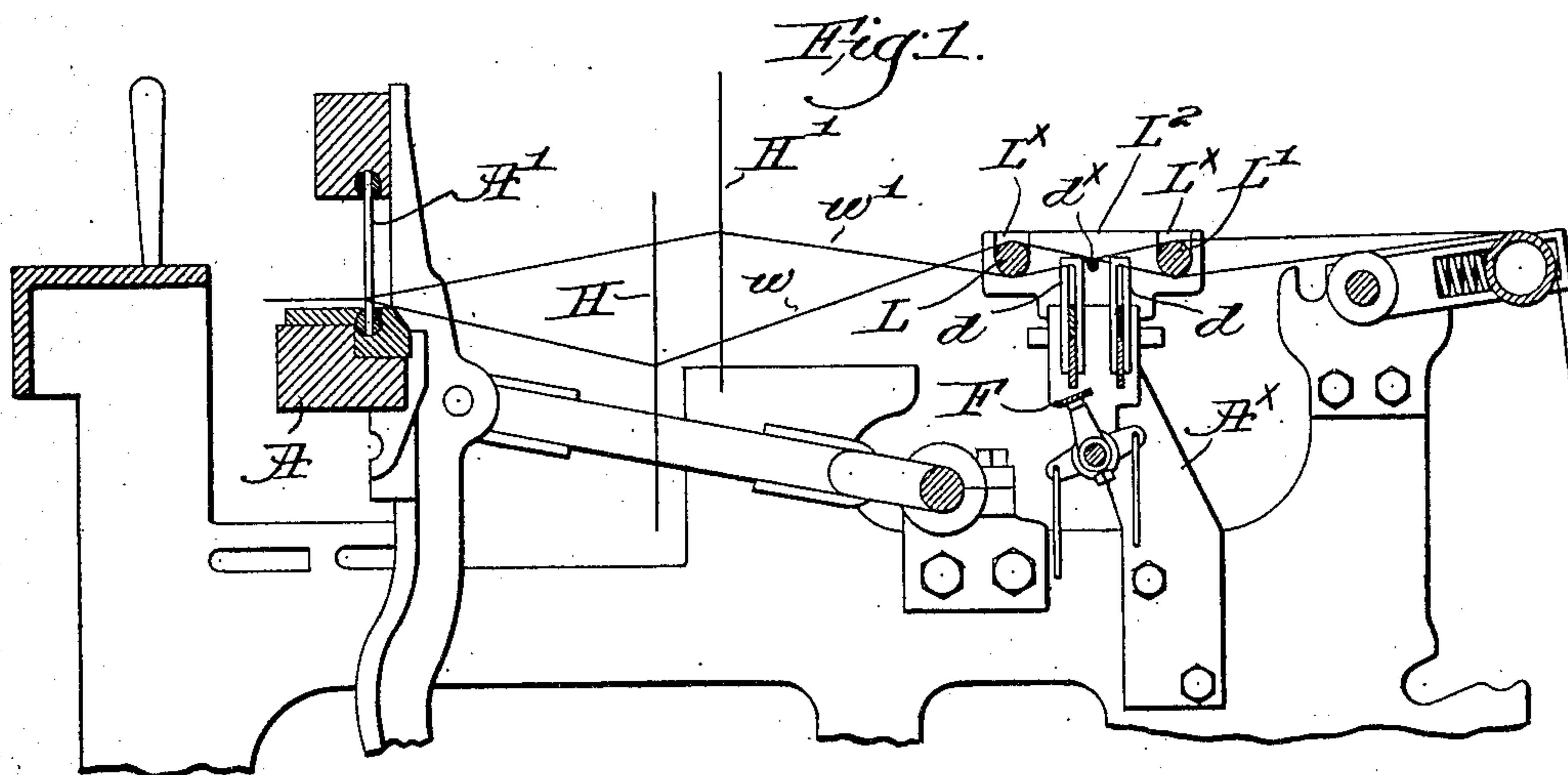


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 MEANS FOR FACILITATING WARP CHANGE IN LOOMS.  
 APPLICATION FILED AUG. 24, 1908.

916,596.

Patented Mar. 30, 1909.



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# UNITED STATES PATENT OFFICE.

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## MEANS FOR FACILITATING WARP CHANGE IN LOOMS.

No. 916,596.

Specification of Letters Patent.

Patented March 30, 1909.

Application filed August 24, 1908. Serial No. 449,921.

*To all whom it may concern:*

Be it known that I, ALONZO E. RHOADES, a citizen of the United States, and resident of Hopedale, county of Worcester, State of Massachusetts, have invented an Improvement in Means for Facilitating Warp Changes in Looms, of which the following description, in connection with the accompanying drawing, is a specification, like characters on the drawing representing like parts.

This invention has for its object the production of means for facilitating a change of the warp in a loom, either when a warp has been substantially run off and a new one is to be substituted, or when a certain amount has been run off and for any reason it is desired to change the warp.

My invention is particularly adapted for use in connection with warp-stop-motion mechanism wherein so-called "hair-pin" detectors are used, which are adapted to be dropped upon the warp threads and hang suspended therefrom.

When a warp is run off it is the common practice to substitute a new warp the threads of which have been drawn in through the harnesses and reed, and the detectors must then be applied, involving time and expense in both operations.

By means of my present invention I am enabled to obviate a great deal of the expense and to materially reduce the time required to effect a change of warp. So, too, if a warp is to be laid aside temporarily before it has been completely run off my invention is of value, as it enables such warp to be removed with its detectors intact and in readiness for operation whenever such warp is again placed in a loom.

The various novel features of my invention will be fully described in the subjoined specification and particularly pointed out in the following claims.

Figure 1 is a transverse section of a portion of a loom with a common form of warp-stop-motion applied thereto, to illustrate the general mode of operation of my invention; Fig. 2 is an enlarged front elevation of the stop-motion mechanism, centrally broken out, with the removable means for retaining the detectors on the threads when the warp is removed; Fig. 3 is a cross-section on the line 3—3, Fig. 2, looking toward the right, with the detector retaining means in place ready to be secured; Fig. 4 is a similar view

showing the said means secured to the separable portions of the detector supports, and holding the detectors in cooperation with their warp threads; Fig. 5 is an end elevation of the removable retaining device or cap shown at the upper part of Fig. 2.

In Fig. 1 A is the lay having a reed A', H and H' are the harnesses, L and L' the lease-rods loosely mounted in sockets L<sup>x</sup> in the brackets L<sup>2</sup> sustained on stands A<sup>x</sup> on the loom-sides; d, d are drop devices or detectors of the well known hair-pin type, slotted longitudinally from their lower ends and dropped upon the warp threads, being shown as arranged in two parallel banks or series between the lease-rods, a released detector cooperating with the feeler F to effect loom stoppage in a manner well known to those skilled in the art. A warp rest d<sup>x</sup> extends across the loom substantially at the crossing point of the two divisions w, w' of the warp, and a transverse guiding support is extended loosely through the slots of each series of detectors. Heretofore this support has been made as a single flat bar or plate set in upright position and fixed at its ends in the brackets L<sup>2</sup>, but herein each support is preferably made in separable upper and lower sections 1, 2, the lower section 1 being fixedly secured while the top section 2 normally rests upon it and enters easily the recessed portion L<sup>3</sup> of each bracket L<sup>2</sup>, see Fig. 2, each section 2 having a hole 3 near each end.

A removable retaining member or cap is shown in Fig. 2, and preferably comprises end castings 4 internally recessed at 5, see dotted lines Figs. 2 and 5, each casting having a central slot 6 in its end, and a body portion 7 preferably made of wood and fitted into the recesses 5 and permanently secured by screws 8, the body having a central longitudinal slot or channel 9 which registers with the slots 6. A pair of ears 10 depends from each casting 4 at each side of the slot 6, the ears being laterally positioned to slip onto the top sections 2 of the two supports, and to be detachably connected therewith by suitable means, as for instance the screws 11, Figs. 3 and 4, which are passed through holes 12 in the ears and through the holes 3 in the sections 2, and said holes 3 may be threaded to retain the connecting screws, or the holes 12 may be threaded as is most convenient. On its under side the body 7 is provided with a plurality of relatively shallow



low, longitudinal seats 13, corresponding in number and lateral spacing to the banks or series of detectors, and as I have herein shown two of such banks the body has two  
 5 seats. Let it be supposed that the warp has been practically run off and it is desired to substitute a new warp. The lease-rods L, L' are removed, and the retaining member or cap 4, 7 is applied to the detectors so that  
 10 their heads enter the seats 13, as in full lines Fig. 3, the ears 10 embracing the top sections 2, so that the holes 12 therein register with the holes 3, and the detachable connections 11 are applied. Now the top sections and  
 15 the cap are fixedly connected, and can be removed bodily as a unit from the loom, as the sections 2 can be lifted from the recessed parts L<sup>3</sup> of the end brackets, and by reference to Figs. 3 and 4 it will be seen that the  
 20 detectors are practically locked between the cap and said sections and in coöperation with their warp threads. Before removing the parts shown in Fig. 4 the warp is cut in front of the reed and back of the detectors, and  
 25 the ends brought together and loosely knotted together, the reed and harnesses being detached from their normal supports. The reed, harnesses, cap and top sections, and the two banks of detectors can now be re-  
 30 moved together, and set up in a suitable frame or support and the ends of the new warp can be tied onto the ends of the old piece of warp, after which the new beam is set in the loom and the other parts positioned. The retaining cap is now removed,  
 35 and the lease-rods inserted, and by turning the loom ahead the tied ends of the new warp will be drawn through the detectors, harnesses and reed as the old ends are pulled  
 40 forward.

It will be seen that the operation of drawing-in as commonly practiced is entirely obviated, and further, that the detectors assume their proper relations to the new  
 45 warp without requiring individual application, so that much time and considerable expense is saved. Should it be desired to take a warp off a loom the first part of the described procedure is followed, except that  
 50 the warp is not cut behind the detectors, and the removed warp, harnesses, reed and detectors can be laid aside indefinitely or applied to another loom, the retaining cap and top sections of the supports remaining  
 55 locked together while the warp is out of use. The slots 6 and 9 in the retaining member receive the warp rest  $d^x$  when said member is applied, as is shown in Fig. 3, and it will be manifest that the ears 10 at the opposite  
 60 ends of a series of detectors prevent the latter from sliding endwise off the section 2.

I have shown the device arranged for co-operation with a warp-stop-motion having the detectors arranged in two banks, but  
 65 obviously a different number of banks can

be accommodated by making the corresponding number of seats in the bottom of the retaining member or cap. When the latter is clamped in operative position to the  
 top sections 2 the warp threads are held be- 70  
 tween the upper edges of such sections and the upper ends of the slots in the detectors, firmly enough to prevent pulling out of the threads but not tightly enough to pinch or  
 cut them. 75

I prefer to make the transverse supports for the detectors in separable parts, as the handling is thereby facilitated and the lower part, which forms a back-stop for a released  
 detector when engaged by the feeler, can be 80  
 permanently secured in place in the loom.

My invention is not restricted to the precise construction and arrangement shown and described herein, as the same may be  
 modified or rearranged in different particu- 85  
 lars by those skilled in the art without departing from the spirit and scope of my invention as set forth in the claims appended hereto.

Having fully described my invention, what 90  
 I claim as new and desire to secure by Letters Patent is:—

1. In a loom, a series of warp-stop-motion detectors of the hair-pin type adapted to be  
 hung on the warp threads, a transverse guid- 95  
 ing support for the detectors, having a separable top section, a removable cap adapted to be applied to said top section to hold the detectors thereon, and temporary connections between said section and the cap, where- 100  
 by said parts and the detectors may be removed bodily from the loom without unthreading the detectors.

2. In a warp-stop-motion for looms, a series of detectors slotted longitudinally from 105  
 their lower ends and adapted to be hung on the warp threads, a two-part supporting member extended through the slots, one part being permanently mounted in the loom and the other part being removable, and means 110  
 temporarily attachable to the removable part to fit over the heads of and hold the detectors upon the removable part of said supporting member and permit removal of the same from the loom while maintaining the 115  
 detectors strung upon the warp threads.

3. In a warp-stop-motion for looms, a series of hair-pin detectors hung upon the warp threads, a support upon which the detectors are vertically movable, said support 120  
 having a separable section, and a retaining member or cap temporarily attachable to said section and removable from the loom therewith, said cap having a seat to receive the heads of the detectors and retain them 125  
 on the removable section and in coöperation with their warp threads, whereby the warp and the detectors may be removed bodily from the loom.

4. In a warp-stop-motion for looms, a plu- 130



5 rality of series of detectors of the hair-pin  
type hung upon the warp threads, a trans-  
verse supporting device for each series, re-  
movably mounted in the loom, means to ex-  
10 tend above and simultaneously engage the  
upper ends of the detectors in said series and  
hold them on their supporting devices, and  
detachable connections between said means  
and the supporting devices, whereby the de-  
15 tectors, with said means and the supporting  
device, may be removed bodily from the  
loom and retained in coöperation with the  
warp threads.

5 5. In a warp stop-motion for looms, a plu-  
rality of banks or series of hair-pin detectors  
adapted to be dropped upon the warp  
threads and hang suspended therefrom, a  
two-part separable support for the detectors  
of each series, a cap having seats for the  
20 heads of the detectors of the several series,  
and means to detachably and temporarily  
connect the cap and one member of each sup-  
port, to hold the detectors in place on their

warp threads while permitting bodily re-  
moval from the loom.

25 6. In a loom, a plurality of banks of hair-  
pin detectors adapted to be dropped upon  
the warp threads, a support for each bank,  
extended through the detectors and having a  
separable top section, means to fit over the 30  
heads of the detectors of the several banks  
and confine them on the separable top sec-  
tions, and detachable connections between  
the latter and said means, whereby the lat-  
ter, said sections and the banks of detectors 35  
may be removed bodily from the loom while  
the detectors are maintained in engagement  
with their warp threads.

In testimony whereof, I have signed my  
name to this specification, in the presence of 40  
two subscribing witnesses.

ALONZO E. RHOADES.

Witnesses:

ERIC AUDETTE,  
EDWARD DANA OSGOOD.