

No. 626,412.

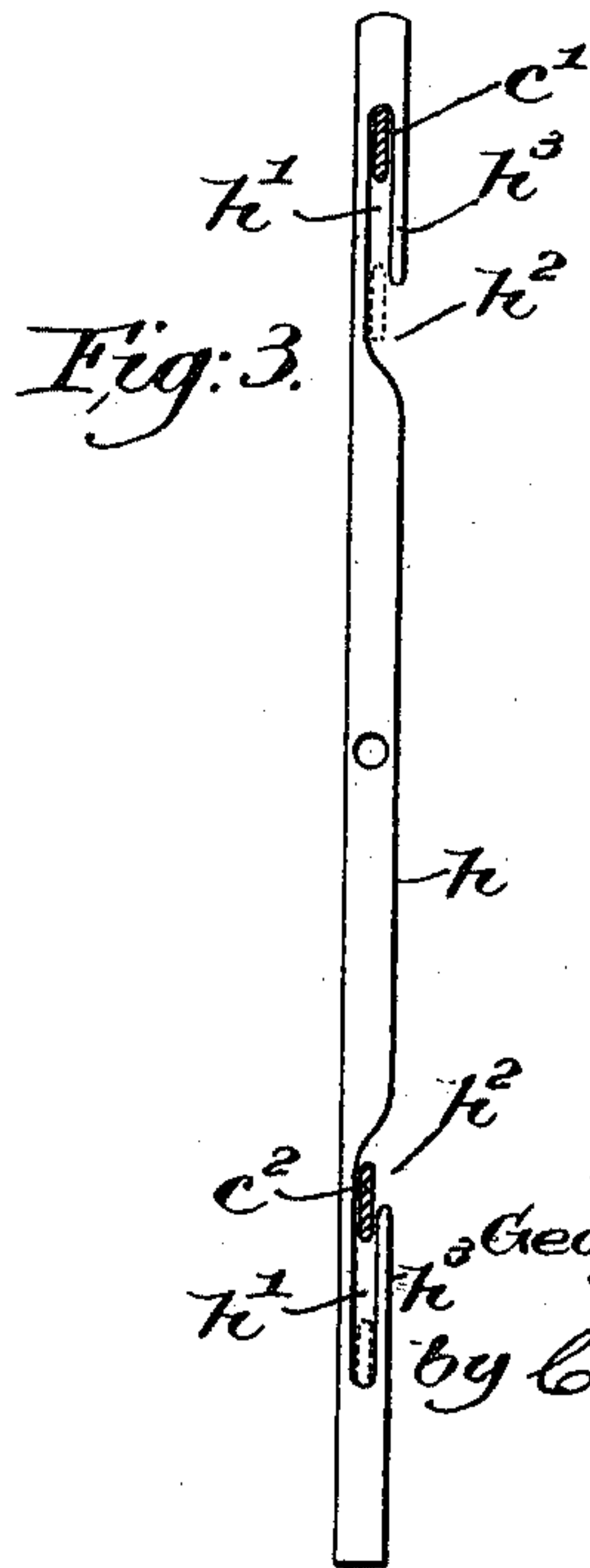
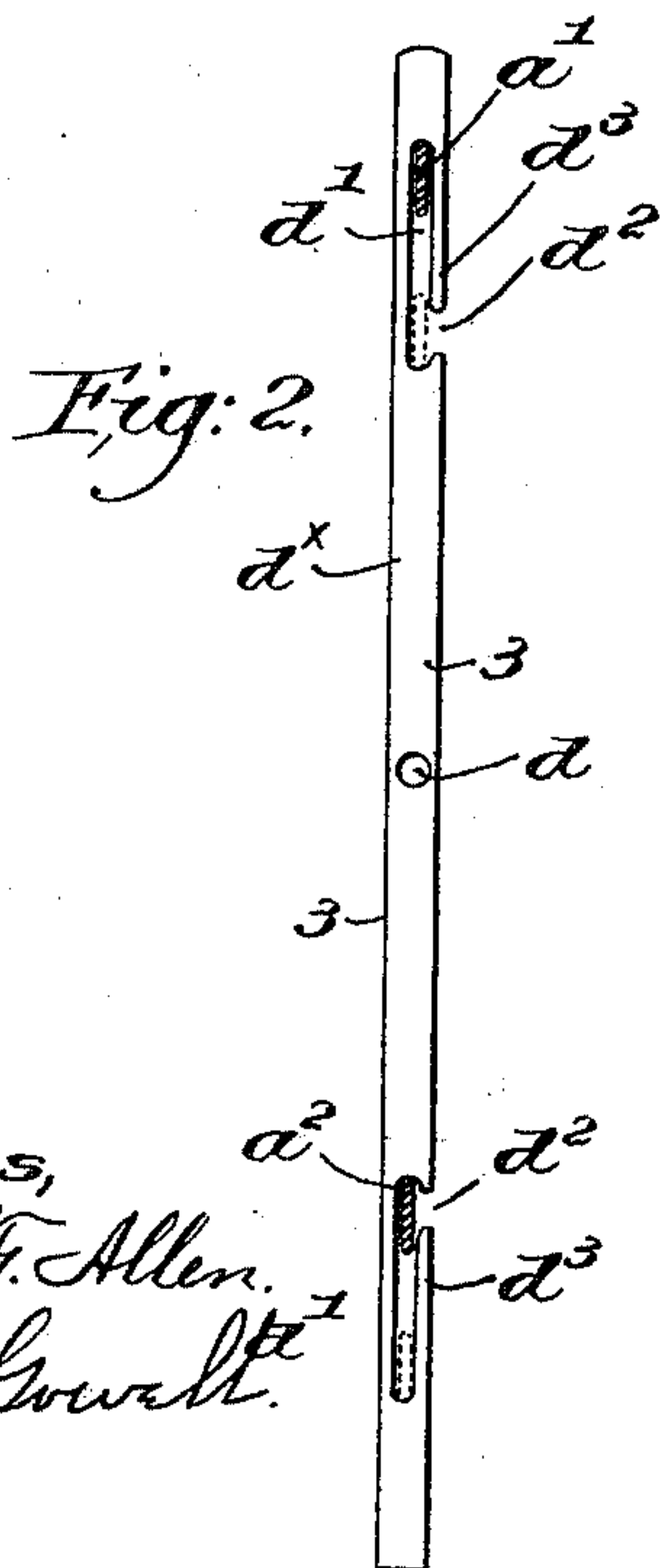
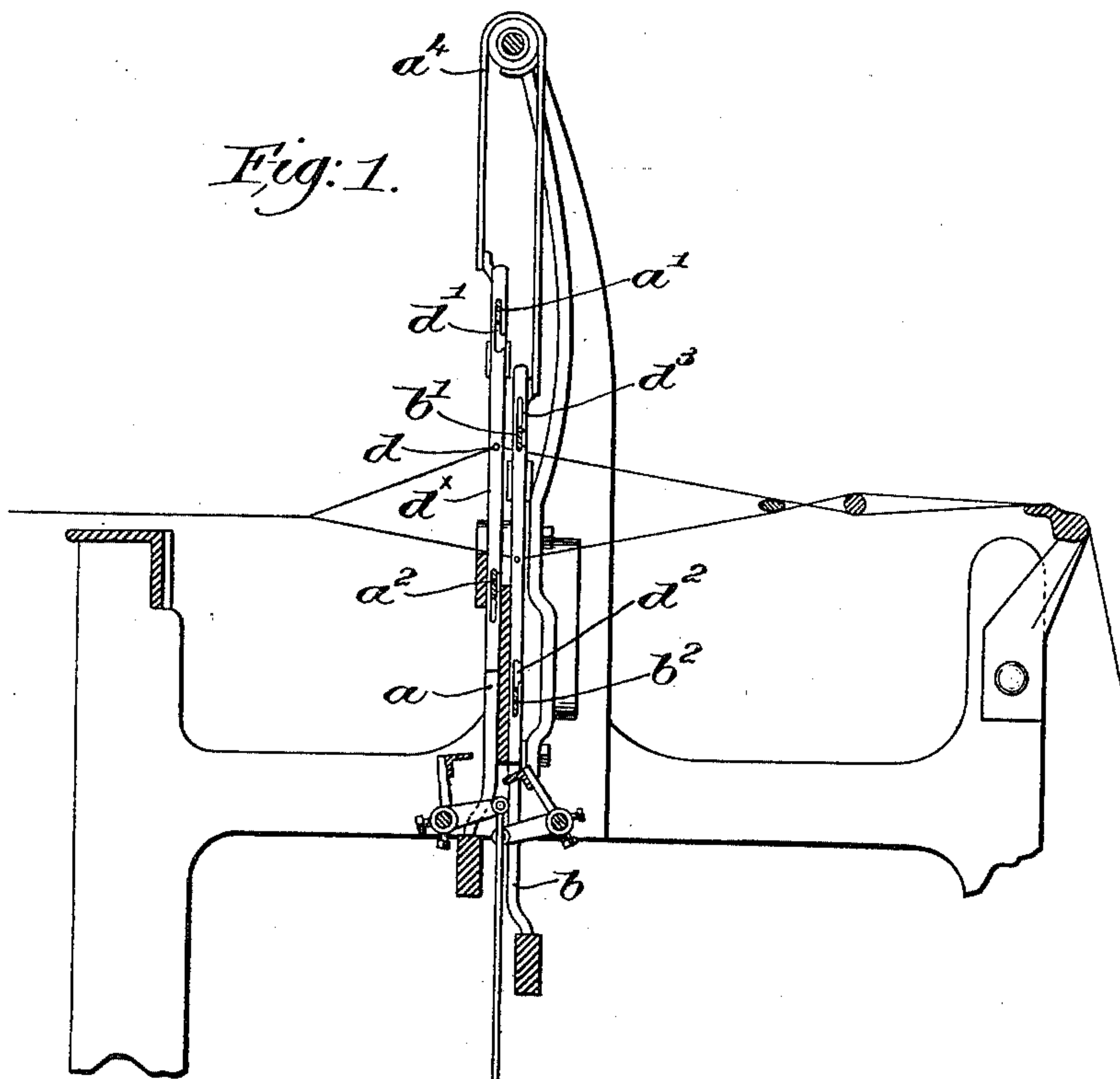
Patented June 6, 1899.

G. O. DRAPER.

WARP STOP MOTION DETECTOR FOR LOOMS

(Application filed Sept. 22, 1898.)

(No Model.)



Witnesses,
Edward F. Allen.
Louis N. Goulet.

In witness whereof,
George O. Draper,
by *George O. Draper*
attys.

UNITED STATES PATENT OFFICE.

GEORGE O. DRAPER, OF HOPEDALE, MASSACHUSETTS, ASSIGNOR TO THE
DRAPER COMPANY, OF SAME PLACE AND PORTLAND, MAINE.

WARP-STOP-MOTION DETECTOR FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 626,412, dated June 6, 1899.

Application filed September 22, 1898. Serial No. 891,573. (No model.)

To all whom it may concern:

Be it known that I, GEORGE O. DRAPER, of Hopedale, county of Worcester, State of Massachusetts, have invented an Improvement in

5 Warp-Stop-Motion Detectors for Looms, &c., of which the following description, in connection with the accompanying drawings, is a specification, like letters and figures on the drawings representing like parts.

10 Warp-stop-motion mechanisms for looms and some other textile apparatus are frequently made to operate upon the abnormal positioning of a detector—a device or member which is controlled as to its position by one or

15 more warp-threads—a series of such detectors being employed in accordance with the number of warp-threads.

While the warp-threads are intact or maintained under proper tension, the detectors are

20 held in inoperative position, a detector moving into abnormal or operative position upon failure or slackening of its controlling warp thread or threads, and the stop-motion mechanism then acts to automatically stop the ap-

25 paratus.

In looms for weaving the detectors may be arranged and located entirely independent of the shedding devices, or the detectors may be also utilized as heddles in the harness-frames,

30 as in United States Patent No. 536,969, dated April 2, 1895, the result of their coöperation with the stop-motion mechanism effecting the the same result in either case—viz., automatic stoppage of the loom.

35 The detectors are conveniently and preferably made of thin flat sheet metal stamped out or struck up into the desired shape and provided with a closed slot through which is extended a supporting-bar which sustains a

40 detector when in abnormal position and freed from the control of its warp-thread, the slot being longer than the depth of the bar in order to permit a relative vertical movement of detector and bar. Whether this bar be a fixed

45 support or forms a part of a harness-frame it is very desirable that a detector may be applied to or removed from the bar without disarrangement of the other detectors or removal of the bar, for it often happens that

50 after a warp is drawn in an extra thread is

found on the beam, and this thread must be either crossed over to the end of the supporting-bar, where a new detector can be most readily applied, or a detector must be inserted in the proper place in some other manner. 55

My present invention has for its object the production of a novel detector which may be applied to or removed from the supporting-bar at any point with the greatest ease without any disarrangement of either the bar or 60 the other detectors of the series.

Figure 1 represents in longitudinal section a sufficient portion of a loom to be understood with one embodiment of my present invention applied thereto, the detectors also 65 serving as heddles in the apparatus chosen for illustration. Fig. 2 is an enlarged side elevation of a detector embodying my invention, and Fig. 3 is a similar view of a modified form of detector. 70

Referring to Fig. 1, the side bars $a b$ of the harness-frames are rigidly connected by transverse bars $a' a^2 b' b^2$, the frames being reciprocated in usual manner—as, for instance, by the mechanism shown in the patent referred 75 to—and provided with a flexible overhead connection a^4 . Vibrating feelers $f f'$ coöperate with the detectors d^x , (shown in Fig. 1 as mounted on the cross-bars of the harness-frames, as will be described,) the devices be- 80 tween the feelers and the stop-motion mechanism and such latter mechanism not being shown herein, as they form no part of my invention.

The detector d^x is preferably stamped from 85 thin sheet-steel in tape-like form. It may be of the width desired for the detectors, the completed detector having parallel longitudinal edges 3 3, Fig. 2, and usually a warp-receiving eye d . 90

My detector shown in Figs. 1 and 2 is adapted to be applied to either one or a pair of supporting-bars, and in order to secure such adaptation the detector is provided at or near each end with an open slot d' , extending in 95 the direction of the length of the detector and having its entrance d^2 at one of the longitudinal edges thereof. The entrance d^2 to the slot is shown as located between the ends of the slot, and adjacent the inner ends, form- 100

ing an open supporting-hook, the tongue d^3 of which lies within the boundaries of the detector.

In order that the detector may be used with a single supporting-bar, the slots are made, as in Figs. 1 and 2, to extend beyond each end of the entrance thereof, so that the bar will have a bearing when depressing the detector, as when the harness-frame is in the lower part of the shed, and to prevent accidental disengagement of the detector and its bar.

The entrance d^2 is made narrower than the depth of the supporting-bar, as shown by dotted lines, Fig. 2, to prevent accidental displacement of the detector when in position on the bar.

To apply a detector to a single bar, the former is tipped to slide the hook over the bar, and when the bar is in the slot the detector is moved back into vertical position, as shown in Fig. 1, removal of the detector being effected by a reversal of the movements above set forth. It will thus be obvious that a detector may be applied to a bar at any point without in any way disarranging or changing the position of the bar or detaching it from its supports.

When a detector is to be applied to two bars, as to a harness-frame such as shown in Fig. 1, the detector is applied to one bar, as described, and then the tongue of the hook at the other end of the detector is deflected sufficiently to permit entrance of the other bar into the slot forming the hook, the flexibility and resiliency of the material of the detector permitting such deflection without injury.

So far as the position of the entrance to the hook forming slot d' is concerned, it is not restricted to the position shown, provided that said entrance extends from the longitudinal edge of the detector to the slot.

The detector h shown in Fig. 3 is intended for use with two supporting-bars c' c^2 , the oppositely and inwardly turned hooks h^3 being formed by elongated slots h' , having their entrances h^2 at the inner ends of the slots, which diverge from the hooks h^3 , so that the entrances in the longitudinal edge of the detector converge to the width of the slots, while in the form of detector shown in Figs. 1 and 2 the entrances d^2 diverge from their mouths to the

slots. Two bars are thus necessary with the detector shown in Fig. 3, the upper bar elevating and the lower bar depressing the detector, said bars when operating engaging the outer ends of the slots.

The detector h is applied to or removed from the bars in a manner similar to that described for the detector d^x .

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

1. As a new article of manufacture, a warp-stop-motion detector made from flat, metal tape having a warp-eye and provided with an open hook the entrance to which is at the side and narrower than the length of the slot forming the hook, said slot extending beyond the entrance thereof at both ends.

2. A loom harness-frame having a transverse bar, and a series of flat detector-heddles mounted thereon, each heddle having a slot or opening therein through which the bar is extended and longer than the depth of the bar, said slot or opening having an unobstructed entrance from the edge of the heddle, and extending beyond each end of said entrance.

3. A loom harness-frame having two transverse, parallel bars, and a series of flat detector-heddles mounted thereon, each heddle having at or near each end a longitudinal slot provided with a side entrance leading from the edge of the heddle, the distance between the upper edge of one and the lower edge of the other bar being less than the distance between the outer ends of the two slots in each heddle.

4. As a new article of manufacture, a detector for warp stop-motions, made of thin, flat metal having a warp-receiving opening and provided at or near each end with an elongated slot each having a side entrance narrower than the length of the slot, each slot extending beyond its entrance at both ends thereof.

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

GEORGE O. DRAPER.

Witnesses:

E. D. BANCROFT,

ALBERT H. COUSINS.