

No. 669,472.

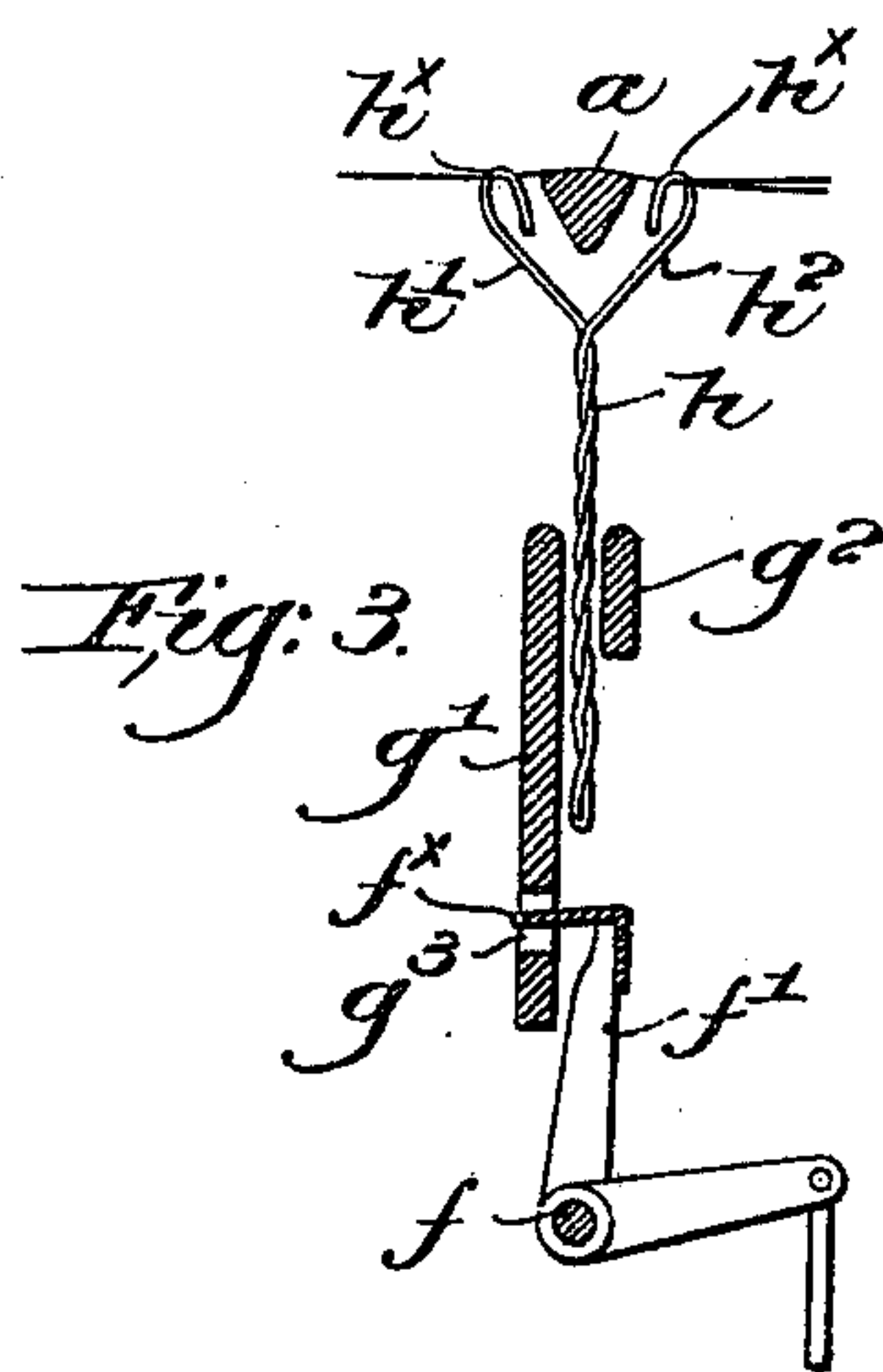
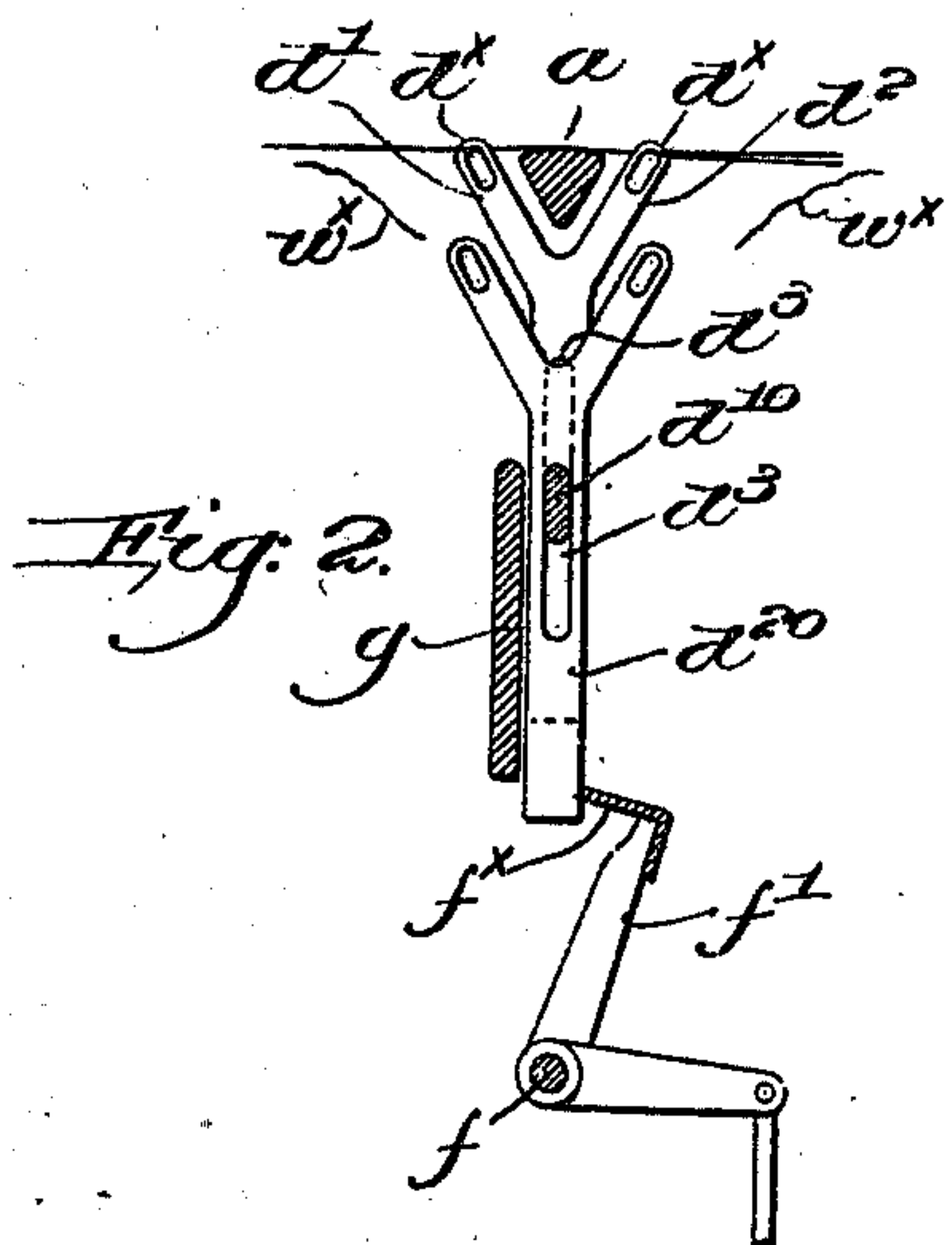
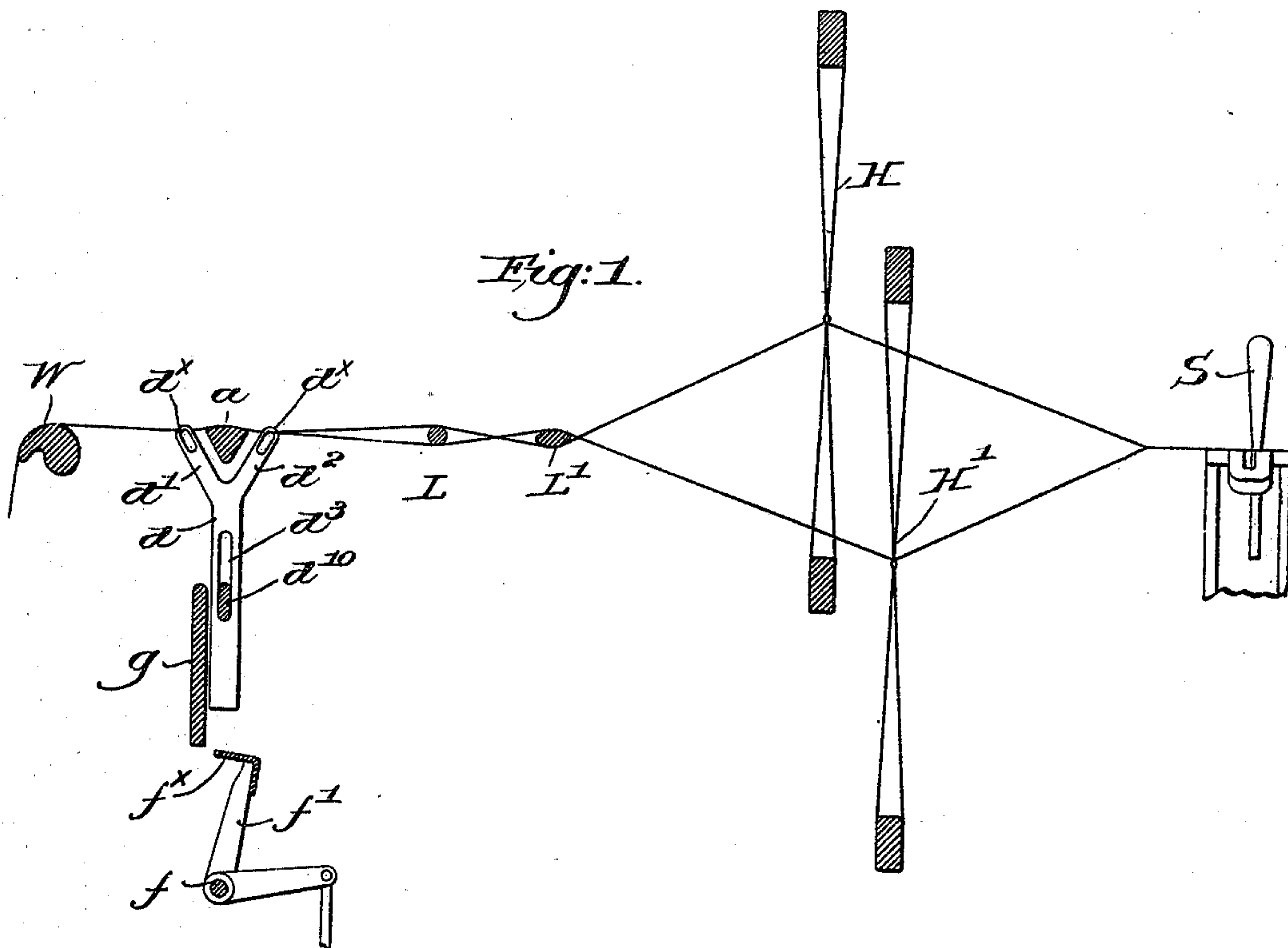
Patented Mar. 5, 1901.

W. E. ALLEN.

WARP STOP MOTION MECHANISM FOR LOOMS.

(Application filed Aug. 25, 1900.)

(No Model.)



Witnesses,
Edward F. Allen

Thomas Drummond.

Inventor;
William E. Allen,
by Crosby Gregory,
attys.

UNITED STATES PATENT OFFICE.

WILLIAM E. ALLEN, OF SALEM, MASSACHUSETTS, ASSIGNOR TO DRAPER COMPANY, OF PORTLAND, MAINE, AND HOPEDALE, MASSACHUSETTS.

WARP-STOP-MOTION MECHANISM FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 669,472, dated March 5, 1901.

Application filed August 25, 1900. Serial No. 27,987. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM E. ALLEN, a citizen of the United States, residing at Salem, in the county of Essex and State of Massachusetts, have invented an Improvement in Warp-Stop-Motion Mechanism for Looms, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention relates to warp-stop-motion mechanism of the type wherein suitable stopping means is controlled as to its operation by or through detectors which are normally held in inoperative position by the warp-threads, breakage of a warp-thread releasing its detector and permitting it to move into operative position.

In practice it has been found that sometimes the stopping means will be operated unnecessarily by a slack warp-thread, the slackness while not interfering with the proper action of the apparatus, such as a loom, being sufficient to permit movement of the detector into operative position. Manifestly it is undesirable to stop the apparatus unless a warp-thread breaks or a very abnormal slackness of thread occurs; and my present invention has for its object the production of means for preventing movement of a detector into operative position unless its warp-thread breaks, so that slack thread will not under ordinary circumstances affect the operation of the apparatus.

Figure 1 is a sufficient view of a portion of a loom to be understood with one embodiment of my invention applied thereto. Fig. 2 is a detail showing the position assumed by a detector when its warp-thread breaks, and Fig. 3 shows another form of detector to be described.

I have herein shown my invention as illustrated in connection with a loom as affording a wide field for its application; but my invention is not restricted to such use or application.

In Fig. 1 the harnesses H H', lease-rods L L', and whip-roll W are and may be of usual or well-known construction in looms, and, as herein illustrated, I have applied the detectors of the warp-stop-motion mechanism to

the warp-threads between the whip-roll and the lease-rods. A warp-rest (shown as a bar a) is extended across the loom beneath the warp-threads, and a series of stop-motion detectors d are provided, each engaging a warp-thread in a plurality of places, the detector being shown as substantially Y-shaped, divergent arms d' d^2 branching from the upper end of the depending shank or body d . Each arm is provided with a warp-engaging portion, as the eye d^x , and the arms of each detector straddle the warp-rest a , the thread passing through the eye of the arm d' , over the warp-rest, and then through the eye of the arm d^2 . So long as the warp-threads are intact the detectors will be maintained thereby in inoperative position, with their lower ends out of the path of movement of a normally vibrating feeler f^x , mounted on arms f' , secured to a rock-shaft f , mounted in suitable bearings (not shown) on the loom-frame. Should a thread break, its detector will descend into operative position, (see Fig. 2,) the detector d^{20} being thus shown, and the feeler will be engaged and arrested thereby, a guide g at such time serving as a back-stop for the shank of the detector.

The feeler may be vibrated in any suitable manner—as, for instance, by the mechanism shown in United States Patent No. 622,182, dated March 29, 1899—arrest of the feeler acting by suitable intermediate devices (not herein shown) to effect the operation of the stopping means, the shipper-lever S, Fig. 1, being the only member of the stopping means herein illustrated.

In Figs. 1 and 2 the shank of the detector is longitudinally slotted at d^3 to receive a fixed support d^{10} , which guides the detectors and prevents them from improper displacement when released by a broken warp-thread.

Should a thread become slack, it will permit some descent of the detector, but by the double engagement of the latter with the thread and the coöperating warp-rest a the downward movement of the detector will not be sufficient to place it in the feeler-path. Hence for ordinary and allowable slackness of a warp-thread the stopping means will not be operated. On the other hand, if a thread breaks, as at w^x , Fig. 2, the warp-rest does

not in any way hinder the movement of the detector directly into operative position to engage the feeler and effect the operation of the stopping means.

5 The detectors may be made of thin flat sheet metal, as shown in Figs. 1 and 2, stamped or cut out, or they may be made of wire, as shown in Fig. 3, the wire being twisted upon itself, as at h , to form a rigid
10 body or shank and having its ends diverge, as at h' h^2 , each end having an open downturned hook h^x to hook over the warp-thread.

Back and front guides g' g^2 are provided, between which the shanks of the detectors
15 are extended, the back guide g' having an opening g^3 therein opposite the feeler f^x and into which the latter extends on its feeling stroke.

When a thread breaks, its detector drops
20 the shank crossing the opening g^3 and engages the feeler on its next feeling stroke, so that the stopping means will be operated, the guide supporting the shank above and below the feeler opening and taking up any strain
25 due to arresting the feeler.

My invention is not restricted to the precise construction and arrangement herein shown and described, as the same may be modified without departing from the spirit
30 and scope of my invention.

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

1. In apparatus of the class described, a
35 transverse warp-rest, a series of Y-shaped detectors provided with a warp-engaging portion in each branch, the bifurcated upper end of the detector straddling the rest, whereby each detector engages its thread above and
40 at opposite sides of the rest, a normally vibrat-

ing feeler to engage the straight, depending shank of a detector released by breakage of its warp-thread, and stopping means operated by or through engagement of the feeler with the shank of a released detector.

2. In apparatus of the class described, a series of vertically-movable thin, flat detectors each having a depending, straight shank bifurcated at its upper end and adapted to engage a warp-thread at two points, a warp-rest extended beneath the warps and between the bifurcations of the detectors, the latter being maintained in inoperative position by intact threads, a normally vibrating feeler to coöperate with the shank of a released detector, and stopping means operated by or through engagement of the feeler with the depending portion of a released detector.

3. In apparatus of the class described, a series of Y-shaped detectors having a warp-eye in each divergent branch, and a straight, elongated shank depending from the apex of the branches, a warp-rest extended beneath the warps between the branches of each detector, a fixed guide adjacent the depending shank of each detector, a feeler normally vibrating toward and from the guide, and stopping means controlled by the feeler, the shank of a released detector, due to breakage of its warp-thread, being engaged by and arresting the feeler and supported by the guide, such arrest of the feeler effecting the actuation of the stopping means.

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

WILLIAM E. ALLEN.

Witnesses:

JOHN C. EDWARDS,
MARGARET A. DUNN.