

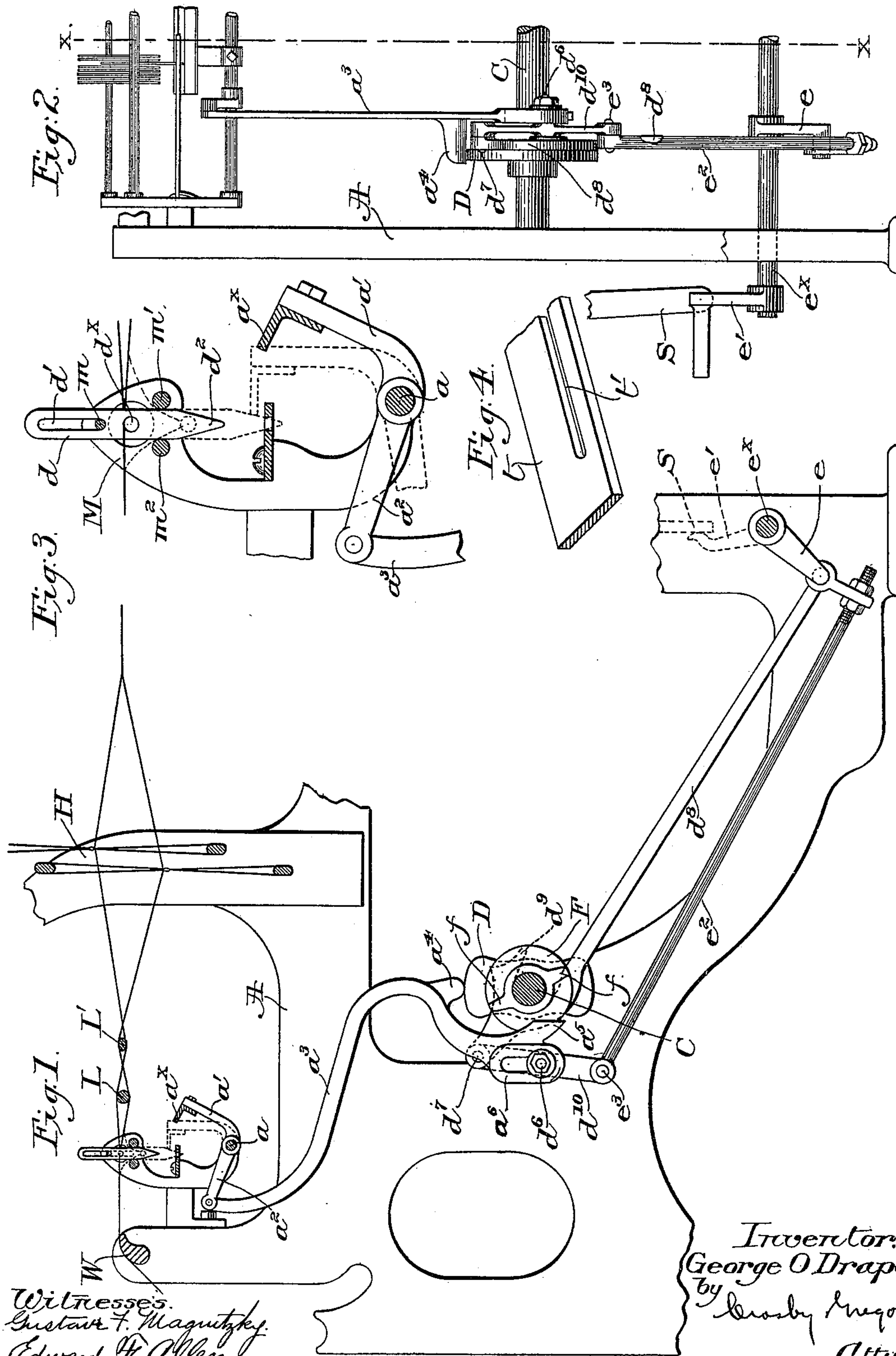
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Patented Mar. 28, 1899.

G. O. DRAPER.
WARP STOP MOTION APPARATUS.

(Application filed Oct. 14, 1898.)

(No Model.)



Witnesses:
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UNITED STATES PATENT OFFICE.

GEORGE O. DRAPER, OF HOPEDALE, MASSACHUSETTS, ASSIGNOR TO THE
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WARP-STOP-MOTION APPARATUS.

SPECIFICATION forming part of Letters Patent No. 622,184, dated March 28, 1899.

Application filed October 14, 1898. Serial No. 693,479. (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 Warp-Stop-Motion Apparatus, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

10 This invention has for its particular object the production of novel means for supporting a released detector against the thrust of the feeler in that type of warp-stop-motion mechanism wherein the engagement and arrest of
15 a normally-vibrating feeler is effected by or through the release of one or more of a series of detectors controlled as to their position by normal warp-threads. The arrest of the feeler is made to operate suitable stopping
20 means, and thereby automatically stop the particular apparatus with which the stop-motion mechanism coöperates. Upon release of a detector by slackness or failure of its warp-thread said detector moves by gravity into
25 position to engage and arrest the feeler, and while subjected to the thrust of the latter the detector must be suitably supported and held in order to avoid distortion or bending.

30 Figure 1 is a longitudinal sectional view of a sufficient portion of a loom to be understood, taken on the line $x x$, Fig. 2, with one embodiment of my invention applied thereto. Fig. 2 is a partial rear elevation of the apparatus shown in Fig. 1. Fig. 3 is an enlarged
35 detail view of the stop-motion mechanism as illustrated in Fig. 1, and Fig. 4 is an enlarged perspective detail of a portion of the device for supporting a detector when engaged by the feeler.

40 The harnesses H, whip bar or roll W, lease-rods L L', and the shipper-lever S may be and are of usual or well-known construction, and herein a series of detectors d are shown as located between the whip-bar and lease-rods.

45 The detectors are preferably thin flat metal strips provided each with a longitudinal slot d' near its upper end and having a warp-eye d^x below the slot, the lower end of the detectors being made wedge-shaped, as at d^2 .

50 Brackets or stands M, attached to the loom sides A, support a transverse rod m , extended

through the detector-slots d' , while below said rod two other rods $m' m^2$ are sustained by the brackets at the front and back of the series of detectors, the three rods serving to guide
55 the detectors in their vertical movement.

A normally-vibrating feeler a^x , attached to arms a' of a rock-shaft a , having its bearings in the brackets M, moves back and forth below the lower ends of the detectors when the
60 latter are controlled and maintained elevated (see full lines, Figs. 1 and 3) by normal warp-threads—i. e., by properly taut and intact threads.

When a detector is released by slackness or
65 failure of its warp-thread, it descends vertically until its lower end is in the path of movement of the feeler (see dotted lines, Fig. 3) to engage and arrest the latter. It will be obvious that the detector so engaged must
70 be supported adjacent to the feeler in such manner as will take up the thrust, while preventing distortion of the detector. To this purpose I mount in suitable manner, as on the brackets M, a thrust-plate or holder t beneath
75 the detectors and below the feeler-path, but above the point of maximum descent of a released detector, and a longitudinal slot t' is made in the plate directly beneath the pointed
80 lower ends of the detectors. When a detector descends, its wedge-shaped end d^2 will enter the slot t' , the width of the detector being transverse thereto, and the downwardly-converging edges of said detector will tend
85 to wedge in the slot to thereby hold the end d^2 firmly against the feeler thrust at a point immediately adjacent the feeler. This not only serves to take up thrust, but the plate t acts to prevent twisting or bending of the
90 detector as the narrowed portion of the detector is engaged, preventing less leverage to bending or twisting strain. The thrust plate or bar also serves as a stop to limit the descent of a released detector.

The mechanism for normally vibrating the
95 feeler is so constructed that the movement thereof toward the detectors is effected by gravity, so that when the feeler is arrested by engagement with a detector there will be
100 no tendency to strain or break any of the mechanism, while the opposite swing of the feeler is effected positively.

A convenient form of mechanism for vibrating the feeler is herein shown, although it forms no part of this present invention, and other vibrating mechanism may be employed in its stead.

An arm a^2 , fast on the rock-shaft a and extended oppositely to the feeler, has pivotally connected to it a bent arm a^3 , provided with a bunter a^5 and a toe a^4 , the latter coöperating with the cam D on the shaft C , herein shown as the cam-shaft of the loom, the bunter being normally moved into and out of the path of one or more tappets f of the cam F , also fast on the shaft C . When the feeler is arrested, the bunter a^5 will be held up in the path of a tappet to be engaged, and thereby swung to move the arm a^3 to the rear, said arm being slotted at a^6 to receive a stud d^6 on a short lever d^{10} , the latter being pivoted at its upper end to a link d^8 , hooked around the cam-shaft at d^9 , the other end of the link being jointed to the arm e of a rock-shaft e^x , provided with a knock-off arm e' for the shipper-lever. The lower end of the lever d^{10} and the arm e are connected by a rod e^2 , the joint e^3 acting as a fulcrum for the lever d^{10} when the bunter a^5 is acted upon by the tappet-cam f , the swing of the upper end of said lever at such time moving the link d^8 longitudinally to operate the knock-off arm and release the shipper-handle S .

Various changes in the construction and arrangement of the embodiment of my invention herein shown and described may be made without departing from the spirit and scope of my invention.

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

1. In an apparatus of the class described, a normally-vibrating feeler, stopping mechanism operated by or through arrest of the feeler, a series of vertically-movable detectors maintained in inoperative position by normal warp-threads, each detector having a warp-receiving opening and provided with a wedge-shaped portion at its lower end, a released detector descending into the path of and arresting the feeler, and means to engage the wedge-shaped portions of such released detector, and hold it adjacent to and against the thrust of the feeler.

2. In an apparatus of the class described, a normally-vibrating feeler, stopping mechanism operated by or through arrest of the feeler, a series of vertically-movable detectors maintained in inoperative position by normal warp-threads, each detector having a warp-receiving opening and provided with a wedge-shaped portion at its lower end, a released detector descending into the path of and arresting the feeler, and means located below, but adjacent the path of the feeler, to engage the wedge-shaped portions of a released detector and hold it against the thrust of the feeler.

3. In an apparatus of the class described, a normally-vibrating feeler, stopping mechanism operated by or through arrest of the feeler, a series of vertically-movable detectors maintained in inoperative position by normal warp-threads, each detector having a warp-receiving opening and provided with a wedge-shaped portion at its lower end, a released detector descending into the path of and arresting the feeler, and a thrust-plate below and in the path of movement of a released detector to engage the wedge-shaped portion thereof and limit the downward movement of the detector while holding the same against the thrust of the feeler.

4. In an apparatus of the class described, a normally-vibrating feeler, stopping means operated by or through arrest of the feeler, a series of vertically-movable detectors maintained in inoperative position by normal warp-threads, each detector having a warp-receiving opening and provided with a wedge-shaped portion at its lower end, a released detector descending into the path of and arresting the feeler, and a thrust-plate located below the path of the feeler and adapted to engage the edges of the wedge-shaped portion of a released detector, to limit the downward movement of the latter and prevent its twisting or bending when engaged by the feeler.

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,
THEO. B. HASELDEN.