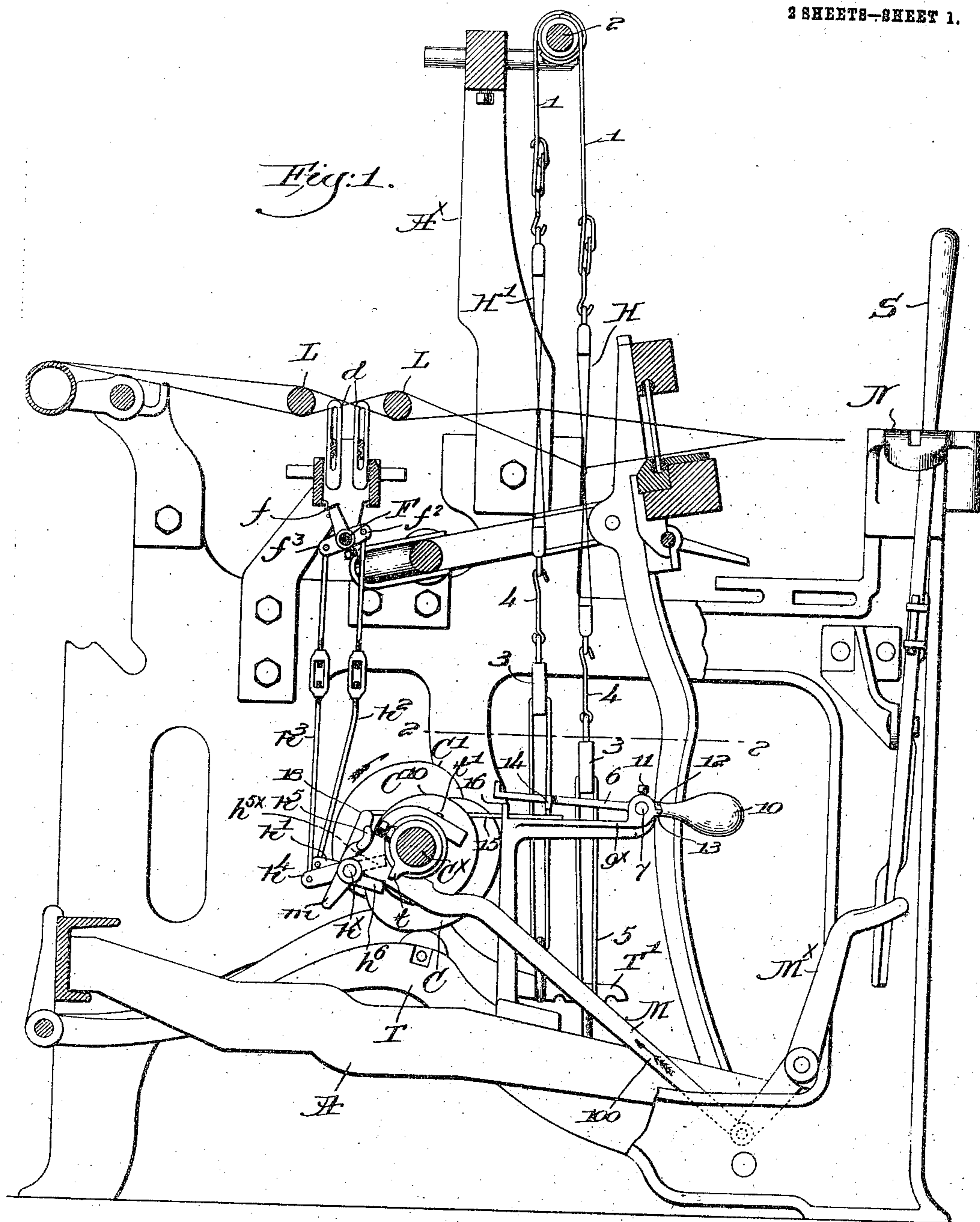


G. E. WHITEHEAD.
HARNESS STOP MOTION FOR LOOMS.
APPLICATION FILED MAY 15, 1909.

966,725.

Patented Aug. 9, 1910.

2 SHEETS—SHEET 1.



Witnesses,
Edward S. Allen,
Joseph M. Ward.

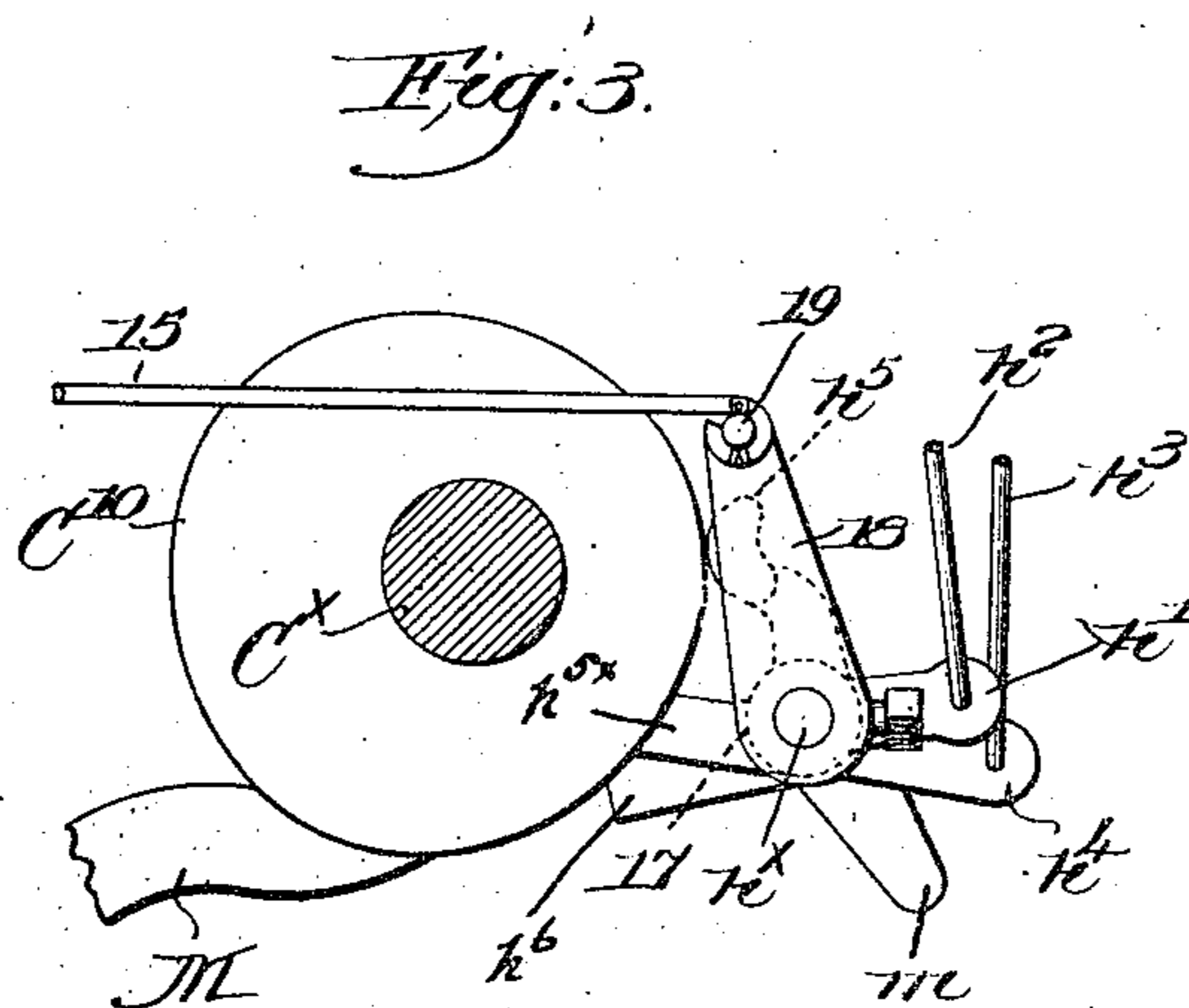
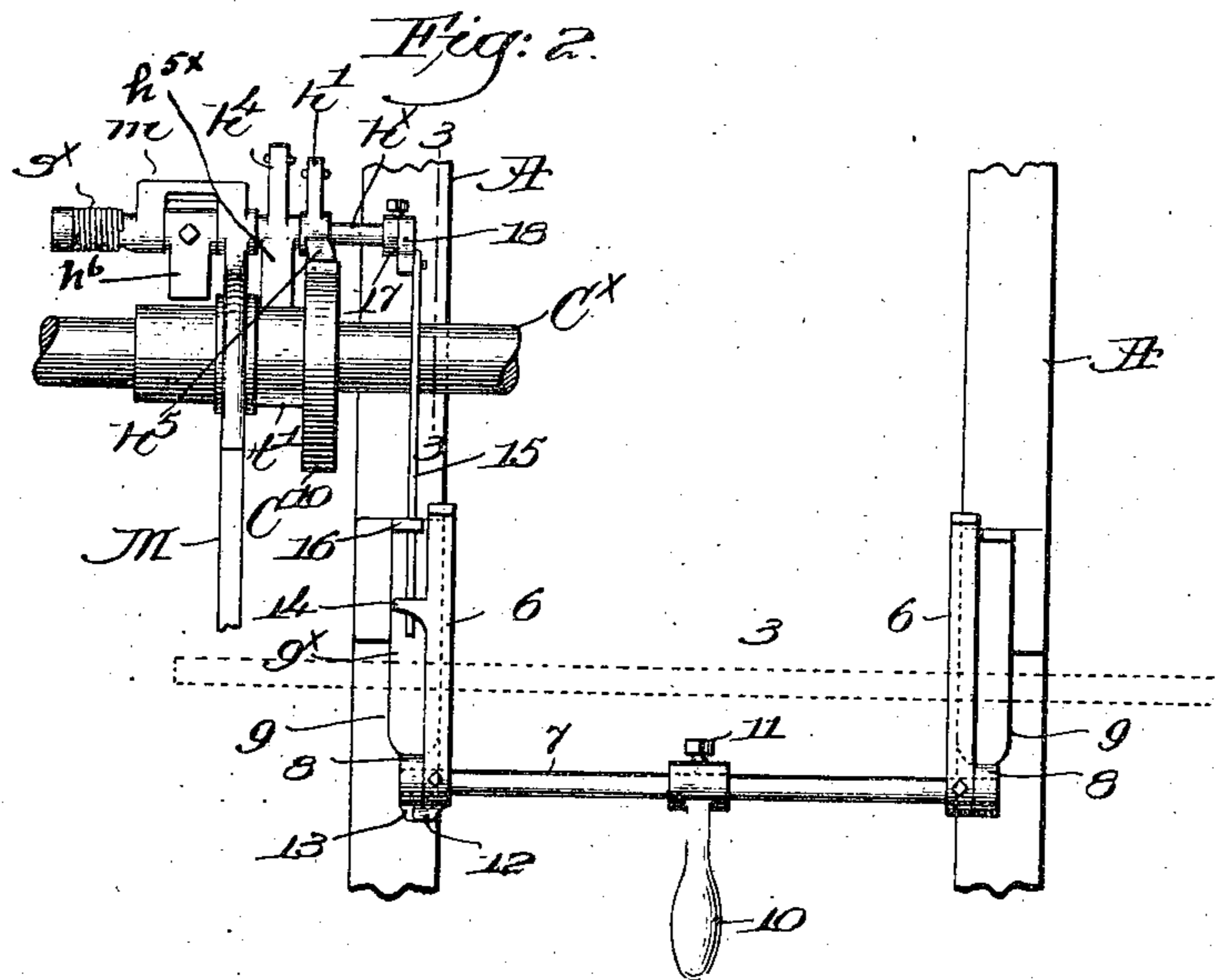
Inventor:
George E. Whitehead,
by Stanley Gregory,
attorney.

G. E. WHITEHEAD.
HARNES STOP MOTION FOR LOOMS.
APPLICATION FILED MAY 15, 1909.

966,725.

Patented Aug. 9, 1910.

2 SHEETS—SHEET 2.



Witnesses,
Edward J. Allen.
Joseph M. Ward.

Inventor:
George E. Whitehead,
by Henry B. Buey.

UNITED STATES PATENT OFFICE.

GEORGE E. WHITEHEAD, OF MILLBURY, MASSACHUSETTS, ASSIGNOR TO DRAPER COMPANY, OF HOPEDALE, MASSACHUSETTS, A CORPORATION OF MAINE.

HARNESS STOP-MOTION FOR LOOMS.

966,725.

Specification of Letters Patent. Patented Aug. 9, 1910.

Application filed May 15, 1909. Serial No. 496,232.

To all whom it may concern:

Be it known that I, GEORGE E. WHITEHEAD, a citizen of the United States, and resident of Millbury, county of Worcester, State of Massachusetts, have invented an Improvement in Harness Stop-Motions for 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 whereby the operation of a loom may be stopped automatically upon breakage of an overhead suspending connection of any one of a series of reciprocating harness members.

In loom structures the harness members are ordinarily suspended by an overhead connection, which also performs the function of lifting the harness member, the downward movement of the latter being effected by the coöperation of a connected treadle and a harness-cam. Should the suspending or overhead connection break the corresponding harness member will drop, and if this is not discovered promptly and the loom stopped very serious warp and other breakage will follow. By my present invention such descent of any harness member is arranged to position abnormally a device common to all the harness members of the set, and such positioning is made effective to set in operation automatically a stopping instrumentality for the loom.

In the present embodiment of my invention I have shown the loom stopping instrumentality as controlled ordinarily by warp stop-motion detectors, but so arranged that it will also operate if the overhead connection of a harness member breaks.

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 sectional view and part side elevation of a sufficient portion of a loom to be understood, the section being taken on a plane substantially through the center of the harness members or frames; Fig. 2 is a top plan view of a portion of the apparatus below the line 2—2, Fig. 1; Fig. 3 is an enlarged sectional detail on the line 3—3, Fig. 2, looking toward the left.

In Fig. 1 I have shown two harness members or frames as H, H', the top of each

frame in practice being connected at or near each end by a strap or other flexible member 1 with a rock shaft 2 mounted on the loom arch A^x so that in practice a harness member will be sustained by two of the straps or connections. The lower portion of each harness member has attached thereto in usual manner a bottom bar 3 by means of short links 4, each bottom bar being connected by a suitable strap 5 with one of the treadles T, T' operated by usual harness cams C, C' fast on the cam shaft C^x all as usual in loom structures and operating in a manner familiar to those skilled in the art.

When the harness members are connected in pairs, as shown in Fig. 1, one harness member rises when the other is depressed, and vice versa, to thereby effect the proper reciprocation of the harness and secure the desired opening of the sheds of the warp.

Beneath the bottom bars 3 I mount a controlling member or stop carrier shown in Fig. 2 as comprising parallel arms 6 rearwardly extended from and fixedly attached to a rock shaft 7, mounted in bearings 8 on brackets 9, the said brackets being sustained on cross girths A forming a part of the loom frame. A weighted handle 10 has its hub fixedly attached by means of a set screw 11 to the rock shaft 7, the weight of the handle being sufficient to rock the shaft 7 and thereby elevate the arms 6 into the position shown in Fig. 1, under normal conditions, one of said arms having at its end a shoulder 12 arranged to overhang a stop 13 formed on the adjacent bearing 8 to thereby limit the upward swing of said arms. The arms 6 are separated a sufficient distance to conveniently receive between them the straps 5 of the harness treadles, it being understood that while only two harness members are herein shown, my invention is equally applicable to looms having a greater number of harness members. The controlling device or carrier is provided with a stop 14, herein shown as a lateral ear extended from the left hand one of the arms 6, said stop normally being held above the path of movement of a feeler, shown as a rod 15, arranged to reciprocate longitudinally in the direction of warp travel, the forward end of the feeler resting on the shelf-like top 9^x of the supporting bracket 9 and it is also guided by a slotted ear 16 on the bracket. If the carrier is caused to rock

from normal position so that the free ends of its arms rest on the tops of the brackets 9, then the stop 14 will be moved into the path of the feeler 15 to arrest its forward movement and through such arrest the stoppage of the loom is effected automatically by any suitable mechanism, one convenient form of which is herein shown and will be briefly referred to hereinafter. If the overhead suspending connection of a harness member should break at either corner thereof, then that particular corner will drop down and the bottom bar 3 connected with such harness member will descend upon one or the other of the arms 6 of the stop carrier, depressing the latter, placing the stop 14 in abnormal or operation position. The stop carrier or controlling device is thus common to all of the harness members irrespective of their number, and is actuated upon the breakage of any of the overhead connections.

The harness members herein shown are of the plain or so-called "cotton harness" type, and I have shown my invention in connection with a warp stop-motion which is substantially the same as disclosed in patent to Stimpson No. 673,824, granted May 7, 1901.

The slotted detectors d are hung on the warp threads between the lease rods L, a dropped detector engaging and arresting a normally vibrated feeler f mounted on the feeler rock shaft F. This rock shaft F has a spring-controlled arm f^2 loose thereon and an arm f^3 fast thereon, and said arms are respectively connected by links h^2 , h^3 with arms h' , h^4 , respectively, as in the Stimpson patent referred to, a follower h^5 coöperating with the cam C^{10} on the cam-shaft of the loom, such shaft also having tappets t , t' as in the patent above referred to, said arms h' , h^4 being mounted on a hooked link M movable longitudinally in the direction of the arrow 100, Fig. 1, when the feeler is arrested. Such movement of the link M operates to rock the shipper releasing arm M^x to thereby release the shipper S from its notch in the usual holding plate N, Fig. 1, to stop the loom in usual manner. Herein I have utilized the warp stop-motion to effect normal reciprocation of the feeler 15 and to stop the loom when such reciprocation is arrested. The follower h^5 is fast on a rock shaft h^x mounted in the yoke m , and the follower is normally pressed against the periphery of the cam C^{10} by the spring s^x , Fig. 2, as in the Stimpson patent, the arm h' being rigidly connected with or forming a part of the follower. Herein I have extended the inner end of the rock shaft h^x and have fixedly mounted upon it the hub 17 of a rocker arm 18 pivotally connected at 19 with the rear end of the feeler 15, see Figs. 2 and 3. The cam C^{10} acting through the follower

h^5 rocks the shaft h^x in one direction, its return movement being effected by the action of the spring s^x , and this rocking or oscillation of the said shaft acts through the rocker arm 18 to effect, under normal conditions, the fore and aft reciprocation of the feeler 15. When the warp stop-motion operates by reason of the arrest of the feeler f by a dropped detector d , Fig. 1, the link M is moved in the direction of the arrow 100 by the coöperation of one of the tappets, t , t' with a bunter, as in the Stimpson patent, and thereby the shipper S is released. The bunters are shown best in Fig. 2, the bunter h^6 being fast on the rock shaft h^x and the bunter h^{5x} is fixedly connected with the arm h^4 . In the position of the part shown in the drawings, the reciprocating feeler 15 is at the extreme forward end of its path of movement, and it is retracted or moved toward the rear of the loom by the action of the cam C^{10} upon the follower h^5 , such movement causing the free end of the feeler 15 to pass back beyond the stop 14, so that if the latter descends into operative position it will engage and arrest the said feeler on its next forward stroke. That will have precisely the same effect upon the warp stop-motion mechanism as if one of the detectors d in the rear bank had dropped and had prevented the swing of the feeler f rearward to the position shown in Fig. 1, and consequently the shipper will be released and the loom stopped.

Having reference to Fig. 1, and remembering that each bottom bar 3 is connected by two links or jacks 4 (as they are sometimes called) it will be manifest that if one of these jacks breaks or pulls out, the bottom bar at that side will drop down upon the stop-carrier and the stop 14 will thereby be operatively positioned, and stoppage of the loom will be effected as previously described. Thus my invention effects loom stoppage upon breakage of an overhead connection of a harness member, or upon breakage or detachment of an underneath connection, as will be apparent, and if the strap 5 of one harness member should break the other harness member will descend far enough to permit its bottom bar 3 to operatively position the stop 14.

My invention is not restricted to the particular form of warp stop-motion herein shown, for any other convenient or suitable mechanism adapted to effect the operation of the stopping instrumentality can be employed in lieu of the mechanism illustrated, provided the arrest of the normally reciprocating feeler 15 will set in operation the loom stopping instrumentality.

Various changes or modifications may be made by those skilled in the art without departing from the spirit and scope of my invention as set forth in the annexed claims.

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

1. The combination, in a loom, with a plurality of reciprocating harness-frames, and overhead supports for the same, of means adapted to effect the operation of a loom-stopping instrumentality upon breakage of an overhead support, said means including a carrier provided with a stop fixedly mounted thereon and positioned abnormally through the falling of any of the harness-frames upon the carrier when an overhead support breaks, and a normally moving feeler engaged and arrested by the stop when the latter is positioned abnormally.

2. The combination, in a loom having a series of reciprocating harness members each having overhead lifting and suspending means and a bottom bar, of mechanism adapted to effect the stoppage of the loom automatically upon breakage of a lifting and suspending means, said mechanism including a pivoted carrier having arms extended beneath the bottom bars, one of said arms having a stop thereon, and a reciprocating feeler adapted to be engaged and arrested by the stop when the carrier is abnormally positioned by engagement with a bottom bar.

3. In a loom, a plurality of reciprocating harness members, means to effect their reciprocation, connections between said means and the bottoms of the harness members, and means to effect the operation of a loom-stopping instrumentality by or through breakage of such under connections, said means including a stop moved into abnormal position by or through any of the har-

ness-members when such breakage occurs, and a normally moving feeler to engage and be arrested by said stop when positioned abnormally.

4. In a loom, a plurality of reciprocating harness members, means, including overhead and underneath connections, to effect the reciprocation of the harness members, said means to effect the operation of a loom-stopping instrumentality by or through rupture of any of said connections, and means including a stop moved into abnormal position by or through any of the harness-members when such rupture of a connection occurs, and a normally moving feeler to engage and be arrested by said stop when positioned abnormally.

5. In a loom having a warp stop-motion including a vibrating feeler, the combination, with a plurality of reciprocating harnesses, and means to reciprocate them, of means adapted to effect the operation of a loom-stopping instrumentality upon the falling of a harness, said means including a carrier having a stop moved into abnormal position by any harness of the series through the falling of a harness upon the carrier, and a normally reciprocating feeler to engage and be arrested by said stop when positioned abnormally, said feeler being independent of the first-mentioned vibrating feeler of the warp stop-motion.

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

GEO. E. WHITEHEAD.

Witnesses:

CHARLES A. ROOTE,
ERWIN R. LIBBY.