No. 844,818. PATENTED FEB. 19, 1907.

H. LINDSAY.

STOPPING MECHANISM FOR WIRE LOOMS.

APPLICATION FILED AUG. 30, 1905.

3 SHEETS—SHEET 1.

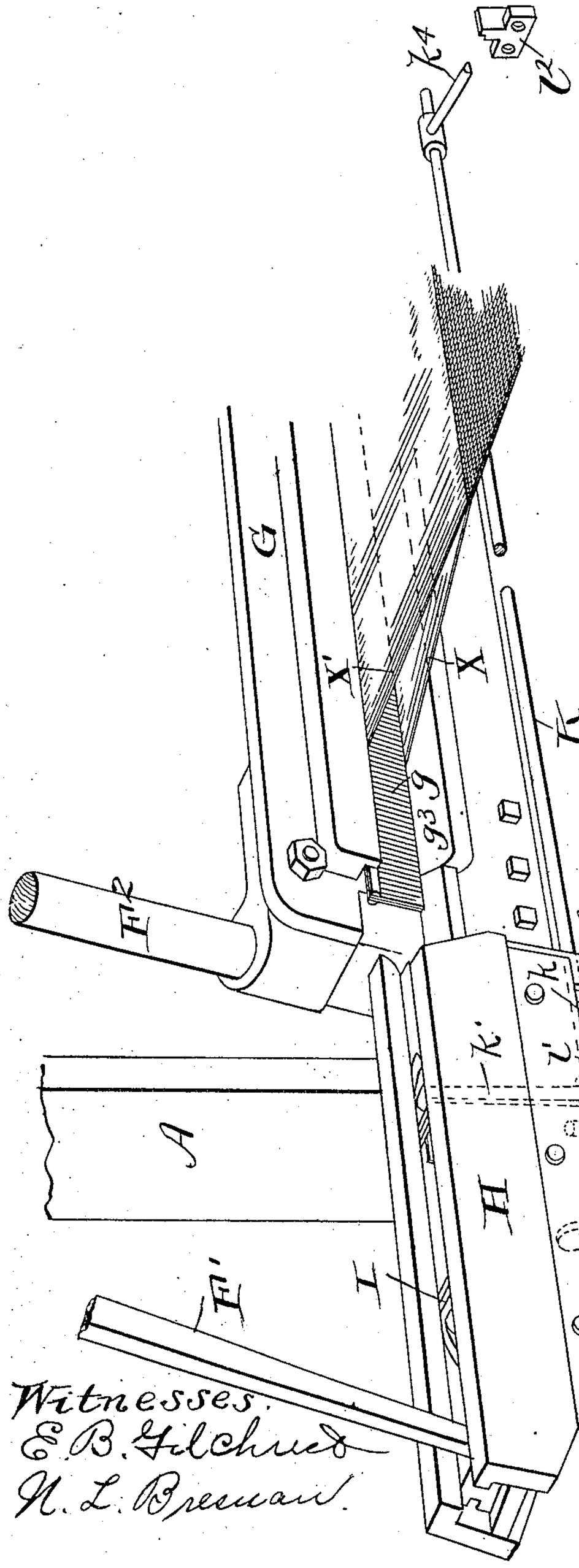

Fig. 1.

Witnesses.
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3 SHEETS—SHEET 2.

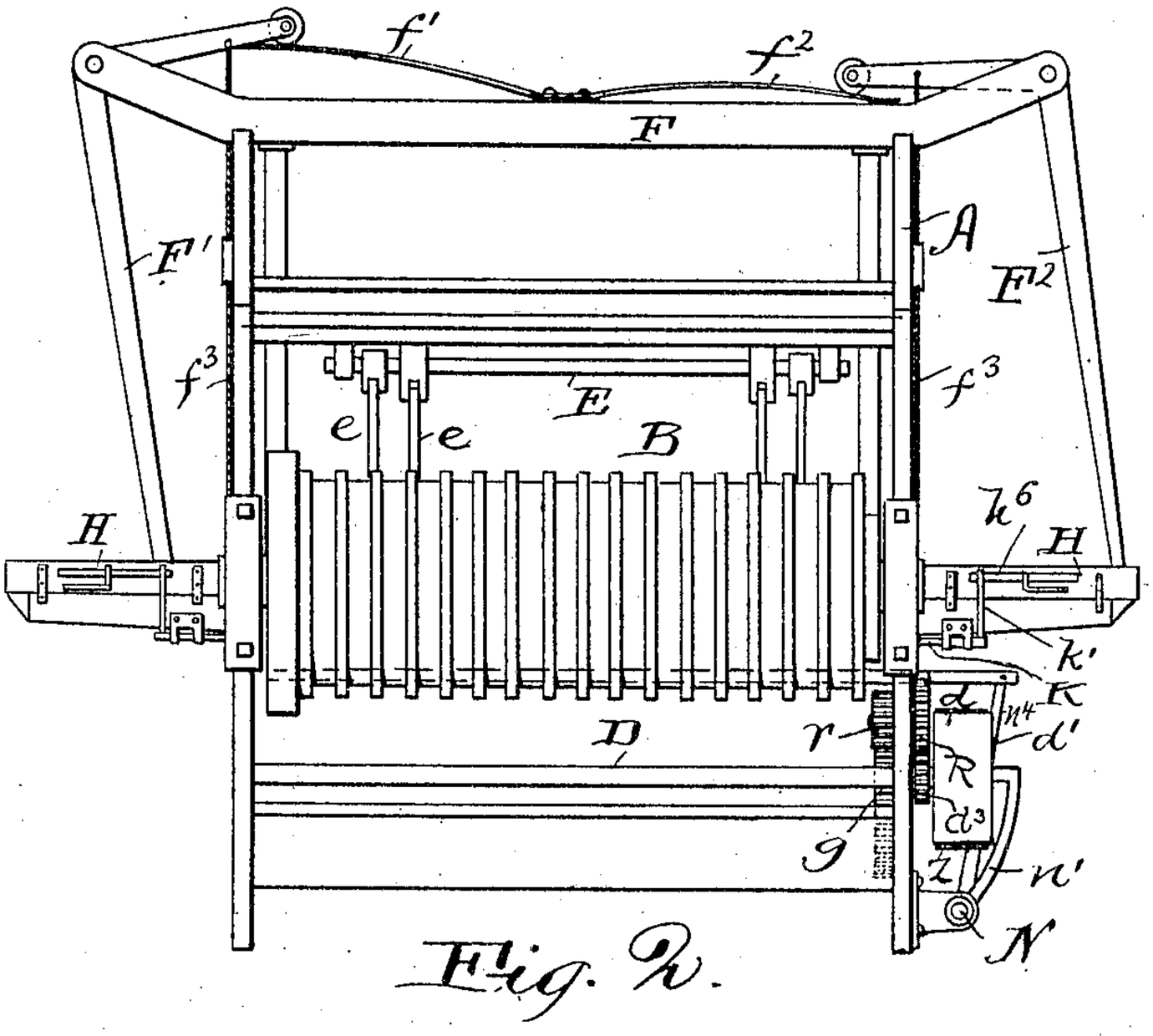

Fig. 2.

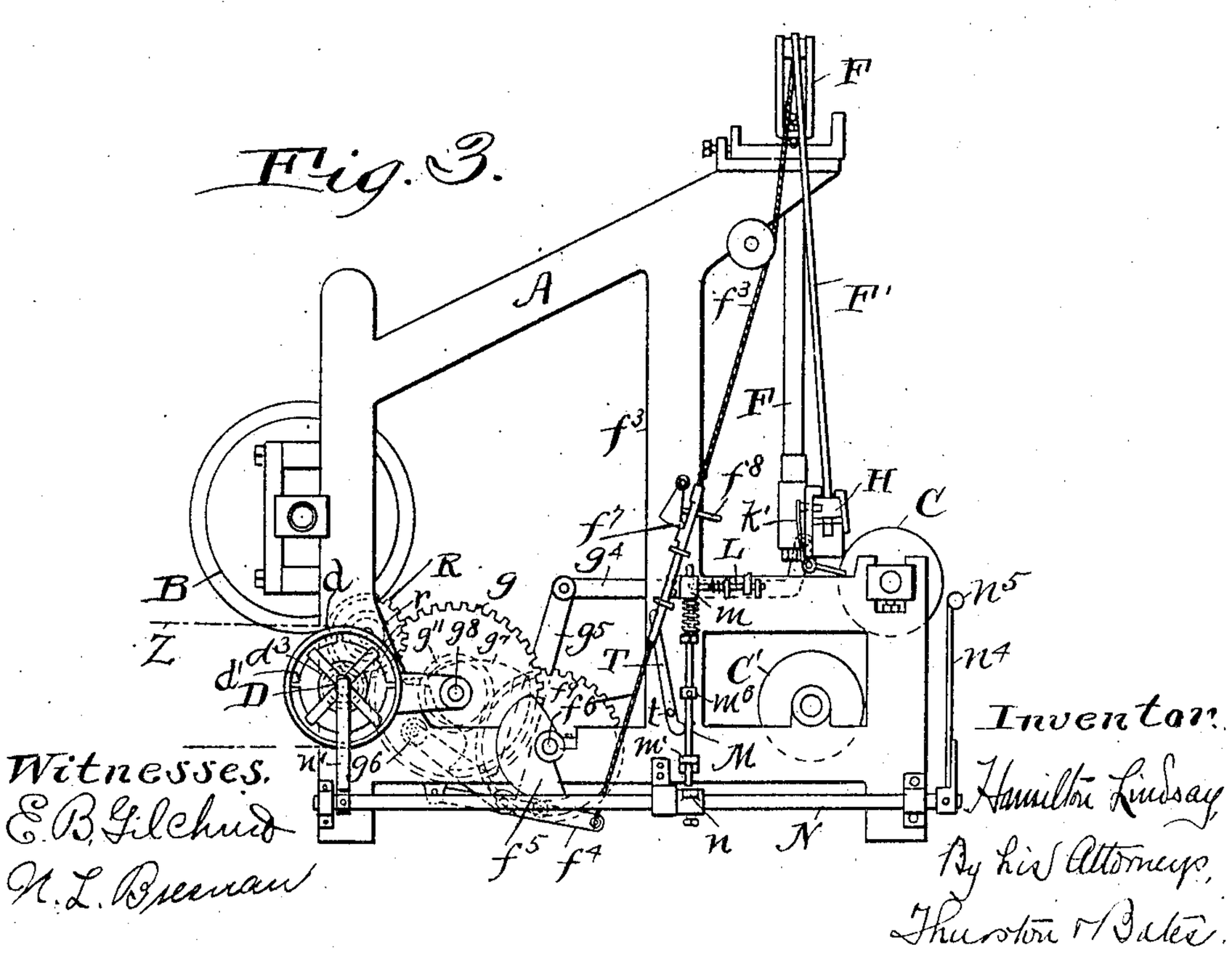

Fig. 3.

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3 SHEETS—SHEET 3.

Fig. 4.

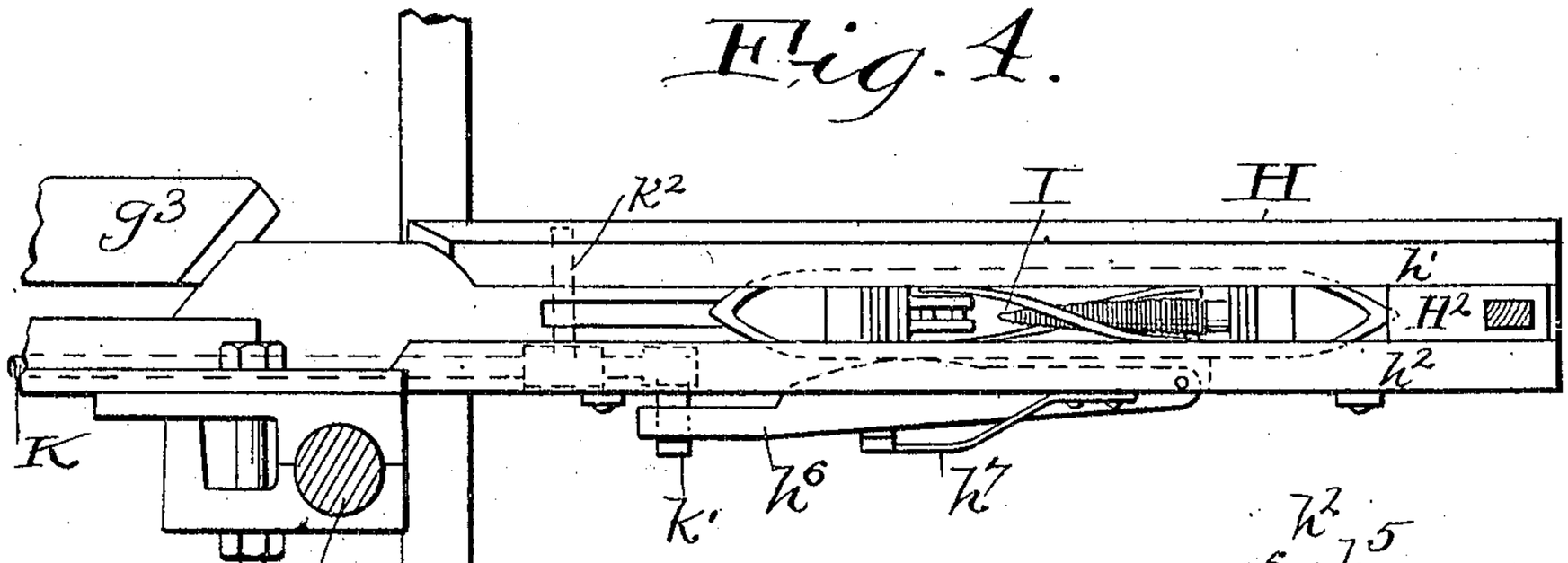


Fig. 5.

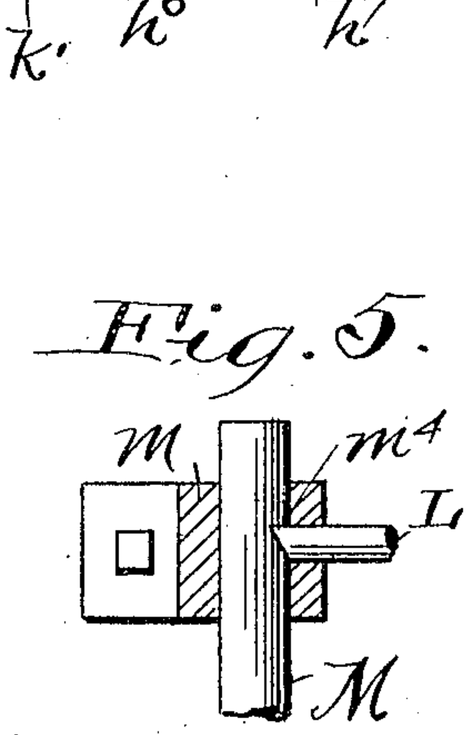


Fig. 6

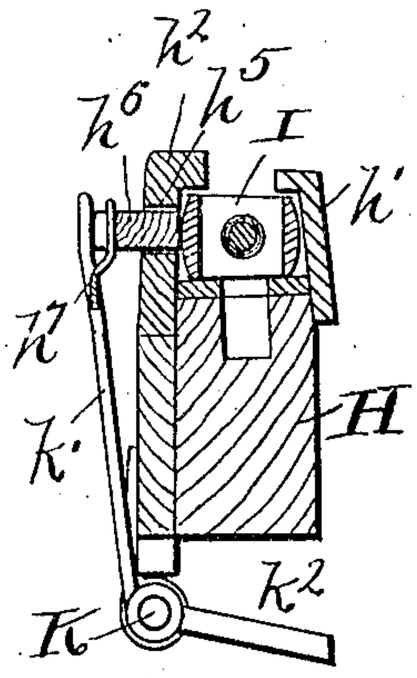
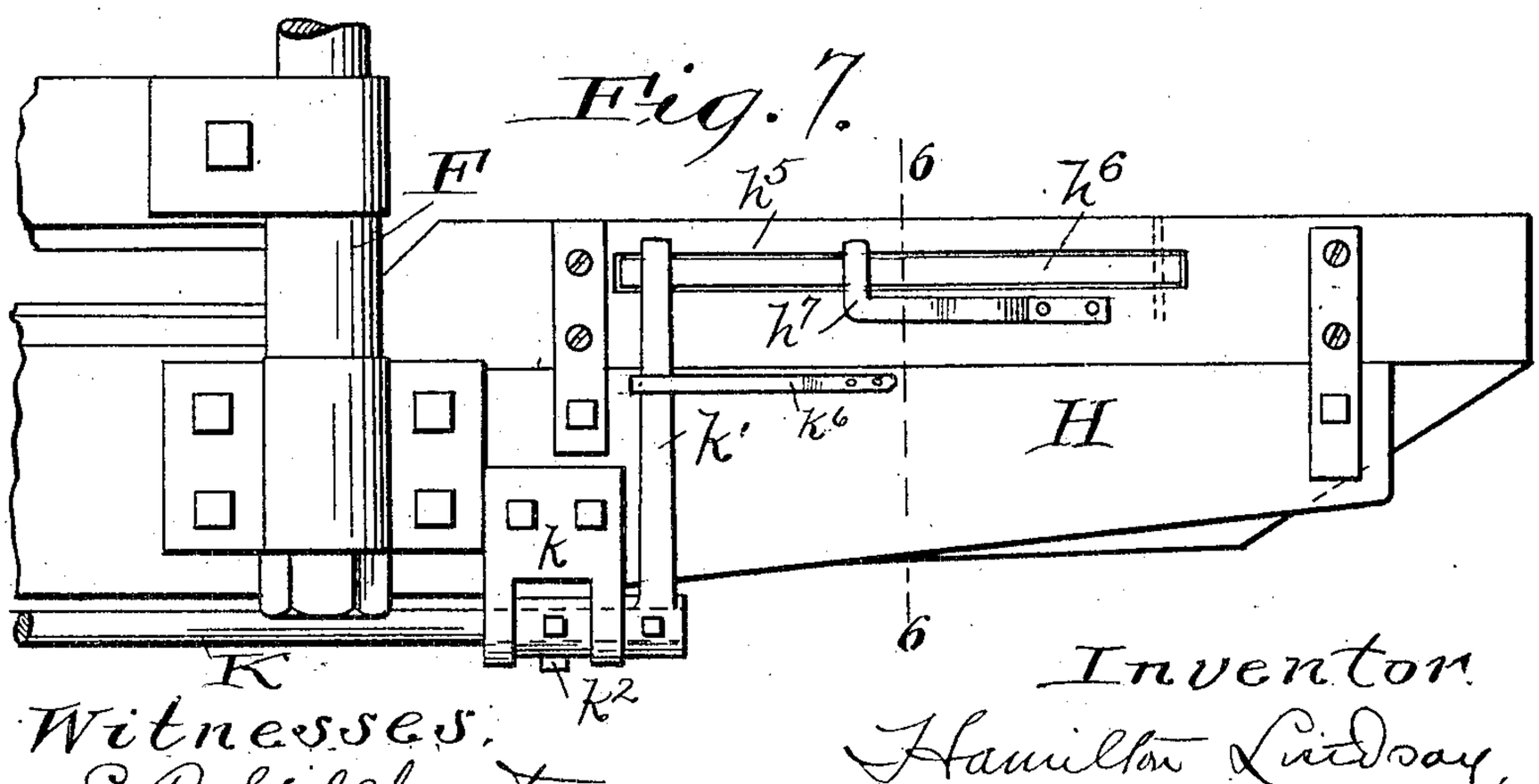


Fig. 7.



Witnesses.

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N. L. Brennan

Inventor

Hamilton Lindsay,

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Thurston & Bates.

UNITED STATES PATENT OFFICE.

HAMILTON LINDSAY, OF CLEVELAND, OHIO, ASSIGNOR TO THE LINDSAY WIRE WEAVING COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

STOPPING MECHANISM FOR WIRE-LOOMS.

No. 844,818. Specification of Letters Patent. Patented Feb. 19, 1907.

Application filed August 30, 1905. Serial No. 276,378.

To all whom it may concern:

Be it known that I, HAMILTON LINDSAY, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Stopping Mechanism for Wire-Looms, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

This invention relates to looms, more particularly of the class shown in my Patent No. 731,112, granted June 16, 1903, for a loom adapted to weave wire-cloth.

The present invention is concerned with mechanism operating in conjunction with the shuttle-box whereby upon the failure of the shuttle to enter the box the power of the machine may be thrown off and the weaving operation cease.

The invention consists of the means to this end and is hereinafter more fully described, and definitely set out in the claims.

In the drawings, Figure 1 is a perspective view of the shuttle-box and adjacent parts. Fig. 2 is a rear view of the loom. Fig. 3 is an end elevation thereof. Fig. 4 is a plan of the shuttle-box and coöperating parts. Fig. 5 is a detail of the latch for the power-shifting mechanism. Fig. 6 is a cross-section through the shuttle-box on the line 6 6 of Fig. 7. Fig. 7 is a rear elevation of the shuttle-box.

Referring briefly to the machine in which the present invention is embodied, A represents the frame provided with bearings for the warp-beam B, which has suitable grooves for receiving the warp-wires. On the forward part of the frame is journaled a guide-roller C, around which the cloth passes onto a cloth-beam C′.

Suitable gears and mechanism (not shown) are provided for rotating the warp-beam and the cloth-beam at proper speed for giving off the warp-wires from the former and winding the finished cloth upon the latter. This mechanism, which forms no part of the present invention, may be of the construction shown in my prior patent referred to, where a shaft (corresponding to the shaft f^6 in Fig. 3) operates ratchet mechanism connected with the beams and governed by a tension device.

The heddle-frames (not shown) are carried by suitable links *e*, Fig. 2, depending from a rock-shaft E, which is rocked by suitable mechanism such as is shown in my prior patent referred to.

Pivoted on the upper part of the frame A is the batten-frame F, which carries the picker-staffs F′ and F^2, with suitable springs f' and f^2 for giving them the proper throw. Cables f^3, connected to each picker-staff at their upper ends and at their lower ends to levers f^4, operated by cams f^5 on the shaft f^6, provide means for drawing the picker-staffs against their springs, placing them in position for action. A gravity-latch f^7, engaging a shoulder carried by the cable, is adapted to hold the same with the corresponding spring f' or f^2 under tension. An arm f^8 on the latch extends into the path of the batten, whereby on the backward movement thereof the cable is released, and the corresponding picker-staff will be operated by its spring, and the shuttle will be shot across the race. This construction of cable, cam, and catch appears at one end of the machine in Fig. 3 and is duplicated at the other end.

The batten carries the cross member G, which supports the reed *g*, through which the ranks X and X′ of the warp-threads pass. In front of the reed and below it is the shuttle-race g^3. Secured to the batten at the ends of the race are the shuttle-boxes H, in which the picker-staffs operate to shoot the shuttle across the race, as described. Connected to the rear side of the lay is a link g^4, the rear end of which is connected to a bell-crank g^5, which carries a roller g^6, adapted to be engaged by a cam g^7 on a shaft g^8. These parts are shown in Fig. 3. They are of usual construction.

The shuttle-boxes H, which are secured to the lower portion of the batten, are of substantially the construction shown in Figs. 1, 4, and 7. They each have a front plate h' and a rear plate h^2, provided with inwardly-projecting flanges, which guide the picker-block H^2 in the shuttle-box.

In the plate h^2 is a long slot h^5, extending throughout a portion of the length of the shuttle-box and having pivoted within the same a shuttle-binder h^6, arranged to project into the shuttle-box and engage the shuttle I as it enters the box. A spring h^7 bears against the brake-shoe and causes it to retard the motion of the shuttle, so that it will not injure itself or the picker-block H^2.

The parts of the machine above described

enter into the present invention only incidentally, and their particular construction is immaterial to the invention claimed herein, which will now be described.

In bearings k upon the lower part of the batten is the rock-shaft K, having secured at either end thereof a rock-arm k', extending up into a position where it may be engaged by the brake-shoe h^6. This rock-shaft is provided at the left-hand end with a dagger k^2, arranged to travel in a path which lies immediately above a lug or bumper l, rigid with a latch L, slidably mounted in a bracket L', secured to the frame. A spring l' tends to normally force this latch L to the rear.

Mounted in bearings m and m' is a rod M, which is given a forcible downward tendency by a spring m^2, surrounding the rod and compressed between the bearing m and the collar m^3, rigid upon the rod. The bearing m is provided with an opening upon one side for receiving the end of the latch L, whereby the latter may engage in a notch m^4 in the rod M and hold the same in its uppermost position with the spring m^2 compressed. The lower end of the rod M is located immediately above a rock-arm n, secured to a rock-shaft N, on the rear end of which is a lever n' for opening the clutch which controls the power, the clutch being disengaged when the arm n is moved downward.

From the above description it is evident that if the latch L be shifted so as to break the engagement between it and the rod M this latter member will be freed to the action of its spring m^2 and will move down upon the rock-arm n, rocking the shaft N, and thereby opening the clutch d' to throw off the power. This shifting of the latch L is brought about by the dagger k^2, which is held out of the path of the lug l whenever the shuttle is in either box, but is arranged to swing into position to engage the lug l whenever the shuttle fails to properly occupy or enter either shuttle-box, or, in other words, when one or the other of the brake-shoes h^6 is not operated. It will be seen, therefore, that the operation of the brake mechanism by the shuttle prevents the throwing off of the power which operates the machine.

If the shuttle does not reach the box, the brake mechanism is not operated, and the dagger remains in effective position. A leaf-spring k^6 is shown in Fig. 7 as acting on the arm k' to insure this position of the dagger. When not raised, the dagger engages the lug l as the lug is completing its forward movement and moving that lay forward shifts the latch to release the throw-off mechanism. Whenever the dagger k^2 does engage the lug l at the same time that this lug is brought to a stop against the end of the bracket L', which forms an abutment for the lug, an arm k^4 on the other end of the shaft K engages a stationary lug or abutment l^2, carried by the frame at that end. This prevents the batten being unevenly held or twisted.

The power is brought to the machine by means of a belt Z, running on a loose pulley d. Fig. 3 illustrates the clutch as disengaged, the machine being idle. When the clutch, which is fast on the shaft D, is in engagement, the belt drives that shaft. A pinion d^3 on the shaft D meshes with an idle gear R, which has a pinion r meshing with a gear g on the shaft g^8, which, as heretofore stated, swings the batten. A pinion g'' on this shaft g^8 meshes with a gear f^9 on the shaft f^6, which operates the picker-staffs. This shaft, as heretofore explained, operates to drive also the warp-beam and the cloth-beam. It will thus be apparent that the one pulley d drives the whole machine through the clutch, and when the clutch is opened the machine stops.

A lever n^4 may be provided on the shaft N at the front of the machine and connected with the bar n^5, running along the front, to allow the power to be thrown off by hand whenever desired.

A device is provided upon the machine for resetting the power operating mechanism, and this device consists of a lever T, pivoted to the frame at t and having a pair of lugs t' adapted to take upon opposite sides of the shaft M and engage a collar m^6 thereon. The lever may thus lift the shaft M until the latch L engages in the notch m^4.

I claim—

1. In a loom, in combination with the batten, a power operating-lever, mechanism for rocking said lever including a strong spring, a latch for holding said mechanism inactive, means carried by the batten for engaging said latch to set free said mechanism to rock said lever, and a hand-lever for returning said rocking mechanism to its normal position against the action of said spring.

2. In a loom, in combination, a power-shifting rock-shaft, a rod adapted to engage an arm on said rock-shaft to operate it, a spring surrounding said rod and tending to give it such movement, a latch-pin engaging the rod, a spring on the latch-pin for causing such engagement, a bumper on the latch-pin, and a dagger carried by the batten and adapted to engage such bumper when the shuttle is out of the shuttle-box.

3. The combination with a loom-frame and movable batten, of driving mechanism, a power-shifting device therefor, a longitudinally-movable rod for controlling the same, a spring on such rod to give it such movement, a bracket-arm on the loom-frame, a latch-rod slidably mounted in said bracket-arm and adapted to engage a shoulder on the rod first mentioned and hold the same inactive, a bumper carried by said rod on the inner side of the bracket-arm, a dagger carried by the batten adapted to engage such bumper and

move it against the bracket-arm, whereby the power-shifting mechanism is released, said bracket-arm forming a stop for said bumper and batten.

4. In a loom, the combination with a batten, a power-shifting mechanism, a latch for restraining such mechanism, a bracket mounted on the loom-frame and carrying such latch and forming a stop therefor, a dagger carried by the batten and adapted to engage such latch, an arm carried by the batten near its other end, and a stationary abutment which said arm is adapted to engage when the dagger has engaged and moved the latch against said bracket.

5. In a loom, the combination, of power-shifting mechanism including a slidable rod, a spring surrounding said rod, normally compressed and tending to move it in a direction to shift the power, a tubular bearing for said rod, said bearing having an opening in it and said rod having a notch adapted to register with said opening when the rod is in idle position, a latch-rod occupying said opening and adapted to engage the power-shifting rod, a batten, and mechanism carried thereby adapted to engage the latch-rod and move it to release the power-shifting rod.

6. In a loom, the combination with a batten, of power-shifting mechanism, a latch for restraining such mechanism, an abutment for such latch, a dagger carried by the batten and adapted to engage such latch, a member carried by the batten near its other end, and a stationary abutment which said member is adapted to engage when the dagger has moved the latch against its abutment.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

HAMILTON LINDSAY.

Witnesses:
ALBERT H. BATES,
GERTRUDE A. MYERS.