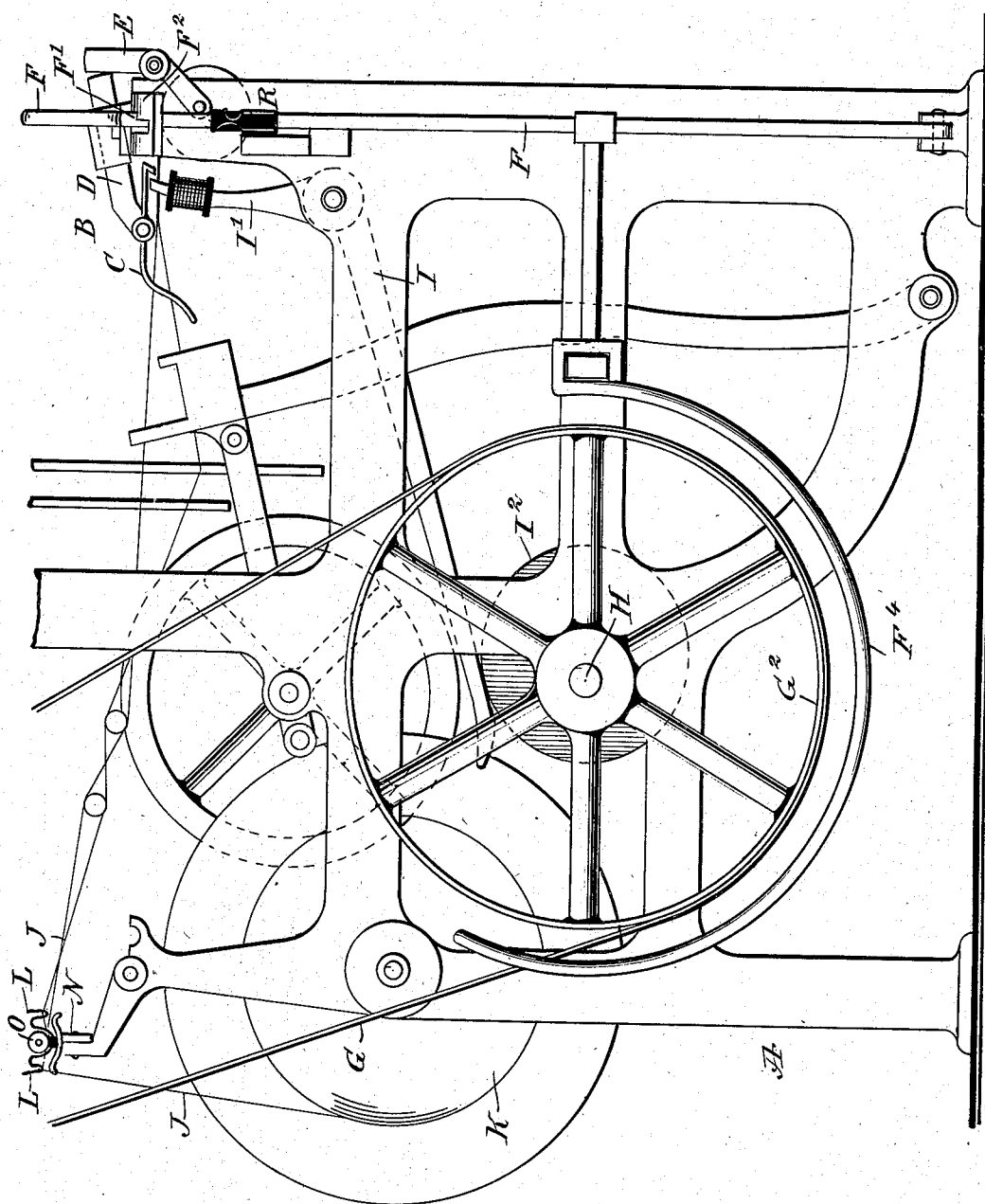


No. 867,758.

PATENTED OCT. 8, 1907.

F. A. SANDFORD.
ELECTRIC STOP MOTION.
APPLICATION FILED JUNE 27, 1906.

2 SHEETS—SHEET 1.



WITNESSES

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Fig. 1

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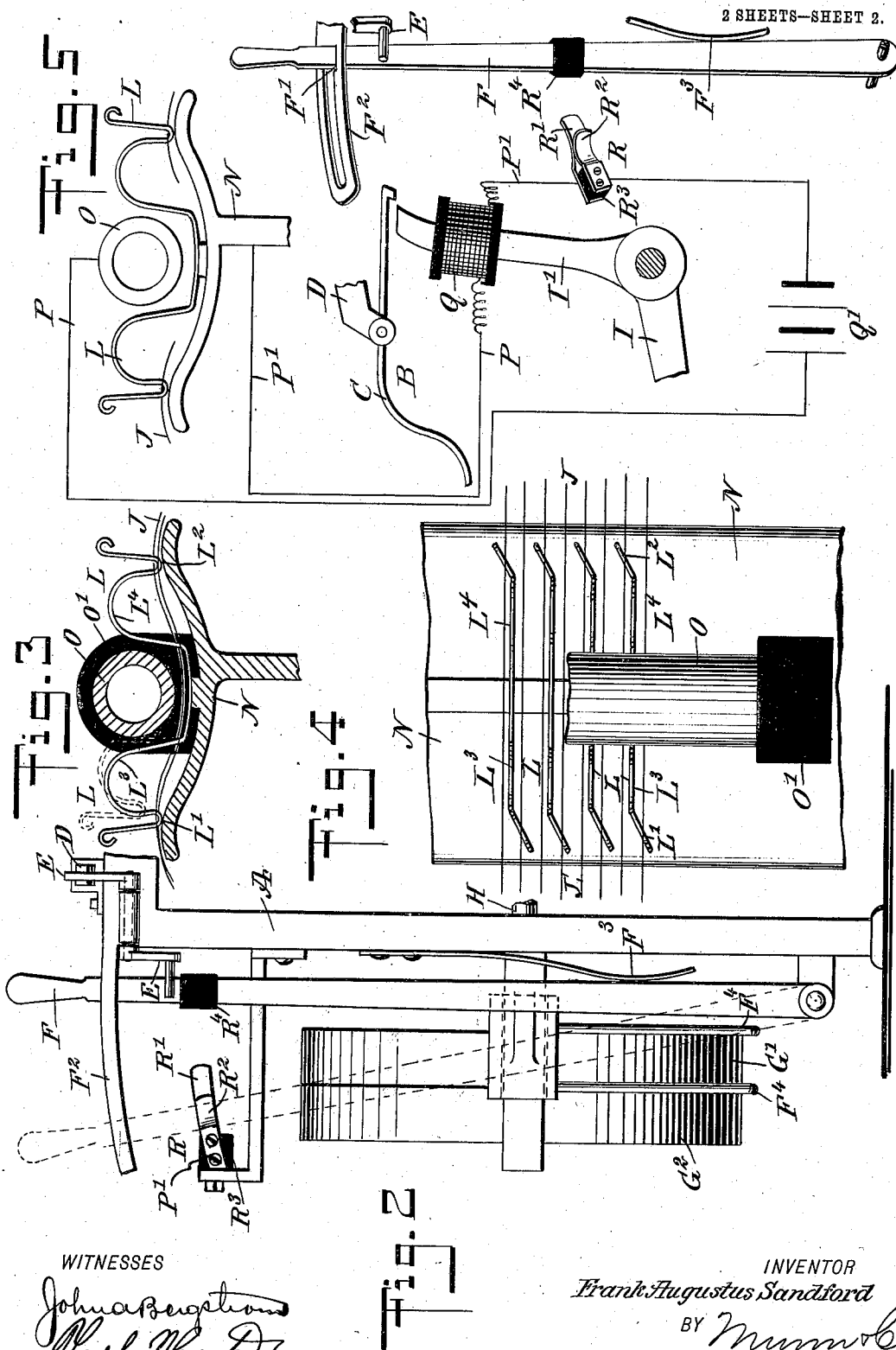
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

FRANK AUGUSTUS SANDFORD, OF ADAMS, MASSACHUSETTS.

ELECTRIC STOP-MOTION.

No. 867,758.

Specification of Letters Patent.

Patented Oct. 8, 1907.

Application filed June 27, 1906. Serial No. 323,733.

To all whom it may concern:

Be it known that I, FRANK AUGUSTUS SANDFORD, a citizen of the United States, and a resident of Adams, in the county of Berkshire and State of Massachusetts, have invented a new and Improved Electric Stop-Motion, of which the following is a full, clear, and exact description.

The invention relates to looms, and its object is to provide a new and improved electric stop motion, arranged to automatically stop the loom in case a warp thread breaks, the action taking place by connection with the ordinary stop motion actuated when the weft filling runs out or breaks.

The invention consists of novel features and parts and combinations of the same, which will be more fully described hereinafter and then pointed out in the claims.

A practical embodiment of the invention is represented in the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of the improvement as applied; Fig. 2 is an end elevation of the same; Fig. 3 is an enlarged sectional side elevation of the improvement; Fig. 4 is a plan view of the same, and Fig. 5 is a diagrammatic perspective view of the improvement.

The loom A on which the improvement is shown applied is of the usual construction, and is provided with a stop motion B having a filling fork C controlled by the filling, and fulcrumed on a slide D, for actuating the releasing latch E engaging the shifting lever F, for throwing the latter out of the notch F' in a slotted keeper F², whenever the filling runs out or breaks, it being understood that the said shifting lever F is pressed on by a spring F³, and carries the shifting fork F⁴ for shifting the driving belt G from the fast pulley G' to the loose pulley G², both pulleys being mounted on the driving shaft H of the loom.

When the filling runs out or breaks, the filling fork C is engaged and bodily shifted by the arm I' of the weft hammer I, continually oscillated by a cam I² secured on the shaft H.

The mechanism so far described is of the usual construction and operation and hence further description of the same is not deemed necessary, it being understood, however, that when the filling runs out or breaks, the filling fork C is actuated to cause the latch E to release the lever F from the notch F', so that the spring F³ imparts a swinging motion to the lever F, which by the fork F⁴ shifts the belt G from the fast pulley G' to the loose pulley G², thus stopping the loom.

The stop motion B is also adapted to be actuated in case of a break in the warp J, unwinding in the usual manner from the warp beam K, said warp threads passing through spring guides L, secured to a bracket N attached to the frame of the loom A, preferably directly

above the warp beam K, as plainly indicated in Fig. 1. Each thread guide L is preferably made of spring wire, secured at its middle to the bracket N and provided at both ends with eyes L', L², for the entrance and exit of the warp thread. Each thread guide L is also provided with contacting arms L³, L⁴, adapted to make contact with opposite sides of a rod O, held in bearings O' of rubber or other suitable insulating material attached to the bracket N. The rod O and the bracket N are connected by wires P and P' with an electro-magnet Q, secured or formed on the arm I' of the weft hammer I, so that when the electro-magnet Q is energized, as hereinafter more fully described, it then attracts the filling fork C to hold the same in engagement with the arm I' of the weft hammer I, to shift the filling fork C bodily, the same as when the filling runs out or breaks, as above described.

The wire P is connected with a suitable source of electrical energy Q', such as a battery or the like, and the wire also connects with a circuit breaker R, having spring arms R', R² attached to opposite sides of an insulating block R³ carried on the loom frame. The spring arms R', R² are connected with the ends of the wire P' and are normally closed and in contact with each other, but the said spring arms are adapted to be opened by a block R⁴ of insulating material and held on the shifting lever F; thus when the latter is released and shifts the belt G from the fast pulley G' to the loose pulley G², then the block R⁴ passes between the arms R' and R², so as to break the circuit for the electro magnet Q after the belt G has been shifted from the fast pulley G' to the loose pulley G².

The operation is as follows: When the loom is running, the warp threads J passing through the eyes L', L² hold the arms L³ and L⁴ of the thread guides L out of engagement with the rod O, and consequently the circuit for the electro-magnet Q is broken and the electro-magnet is in a deenergized condition. Now, in case the warp thread J breaks, the thread guide L is released and by its resiliency causes the arms L³, L⁴ to move in contact with the rod O, so that the electric circuit for the electro-magnet is closed and consequently the electro-magnet Q is energized. Now as the electro-magnet Q is in close proximity to the filling fork C, it is evident that the filling fork is attracted and thrown in engagement with the arm I' of the weft hammer I, so that the filling fork C and with it the slide D is bodily shifted, for the releasing latch E to release the lever F. When this takes place, the shifting lever F shifts the belt G from the fast pulley G' to the loose pulley G² to stop the loom, and at the same time the block R⁴ again breaks the circuit by separating the spring arms R', R², so that the electrical energy of the source of supply Q' is not wasted to any extent.

The device is very simple and durable in construction and can be readily attached to looms having stop

motions as described, and it will also be noticed that the circuit closer, consisting of the thread guides L and rod O, is completely out of the way of the leash rods, heddles and other devices of the loom.

5 Having thus described my invention, I claim as new and desire to secure by Letters Patent:—

1. A stop motion for looms, comprising a stop motion controlled by the filling and having a filling fork and a weft hammer, an electro-magnet on the said weft hammer
10 for attracting the said filling fork, and means controlled by the warp and electrically connected with the said electro-magnet.

2. A stop motion for looms, comprising a thread guide for the passage of a warp thread, a contact adapted to be engaged by the said guide, the latter being normally held out of engagement with the said contact by the warp thread, an electro-magnet electrically connected with the said thread guide and the said contact, a weft hammer carrying the electric magnet a belt shifting device and
20 a shifting member for the belt shifting device adapted to be attracted by the said electro-magnet when the latter is energized on the breaking of a warp thread.

3. A stop motion for looms, comprising a thread guide for the passage of a warp thread, a contact adapted to be engaged by the said guide, the latter being normally held
25 out of engagement with the said contact by the warp thread, an electro-magnet electrically connected with the said thread guide and the said contact, and a belt shifting

device, comprising a belt shifter, a locking device for the same, a releasing device for the belt shifter, a filling fork
30 for actuating the said releasing device, and a weft hammer for actuating the said filling fork and carrying the said electro-magnet for attracting the filling fork.

4. A stop motion for looms, comprising a thread guide for the passage of a warp thread, a contact adapted to be engaged by the said guide, the latter being normally held out of engagement with the said contact by the warp thread, and electro-magnet electrically connected with the said thread guide and the said contact, a weft hammer carrying the electric magnet a belt shifting device, and a
40 shifting member for the belt shifting device adapted to be attracted by the said electro-magnet when the latter is energized on the breaking of a warp thread, and a circuit breaker controlled by the said oscillating member to break the circuit for the said electro-magnet.

5. An electric stop motion for looms, comprising a stop motion having a filling fork controlled by the weft and a weft hammer for shifting the filling fork, an electro-magnet on the said weft hammer for attracting the said filling fork, and a circuit closer for the said electro-magnet and controlled by the warp to energize the said electro-magnet on a break in the warp.

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

FRANK AUGUSTUS SANDFORD.

Witnesses:

PATRICK J. BARRETT,
WALTER LACEY.