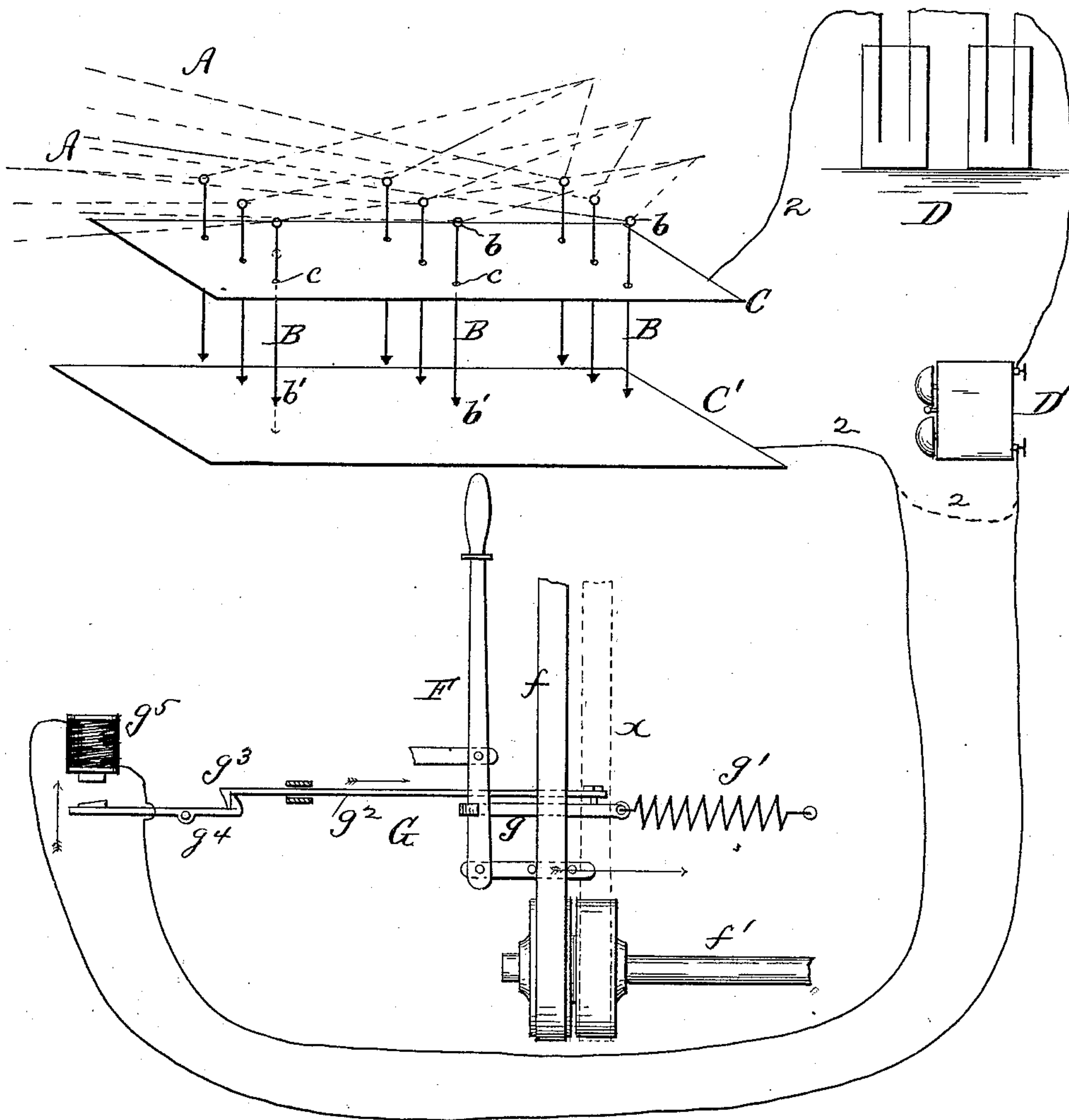


(No Model.)

D. E. COUGHLIN.  
ELECTRIC STOP MOTION FOR LOOMS.

No. 432,512.

Patented July 22, 1890.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

DAVID E. COUGHLIN, OF MILFORD, NEW JERSEY.

## ELECTRIC STOP-MOTION FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 432,512, dated July 22, 1890.

Application filed July 5, 1888. Serial No. 278,997. (No model.)

*To all whom it may concern:*

Be it known that I, DAVID E. COUGHLIN, a citizen of the United States, residing at Milford, in the county of Hunterdon and State of New Jersey, have invented certain new and useful Improvements in Electric Warp Stop-Motions for Looms; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to stopping mechanism for looms and other machines, and has for its object the provision of simple and effective electrical appliances for indicating the breakage of a warp or other thread, and in conjunction therewith of appliances for actuating the shifting or stopping mechanism of the loom or machine, so that the same is automatically stopped whenever warp-threads break, thereby avoiding breakage of other warp-threads by the continued operation of the machine or loom after one of the same breaks.

My invention is not only applicable to a loom, but to all kinds of machinery in which thread, yarn, or wire is used as a material.

My invention accordingly consists of the combinations, constructions, and arrangements of parts, as hereinafter described in the specification, and pointed out in the claim.

The accompanying drawing is a diagram representing the warp-threads in a loom or other machine and the mechanism connected with said threads and embodying my invention.

A A represent the warp or other threads, from which are suspended, in any suitable manner, metal rods B, which, if desired, may have eyes *b* at their upper ends for the passage of the threads A, and enlarged lower ends *b'*, to weight them sufficiently so that when free to do so they will drop quickly. These rods or bars B pass through holes *c* in a metal plate C in such manner that they will always be in contact with said plate. Below plate C is another metal plate C', which is plain or without slots or openings, and is preferably larger than the plate C, so that when the bars B drop their ends will always fall on said plate. Plate C is connected by way of

wire 2 with one pole of a battery or electric-current generator or supply D, and the plate C' is connected by way of wire 2' with the other pole of said source of electricity. In said circuit may, if desired, be included an electric bell, telegraph-sounder, or other indicator D', to denote when said circuit is closed. Normally it is open, for the reason that so long as none of the threads are broken the rods are not in contact with the plate C'; but as soon as any of the threads break the suspended wires fall or drop upon plate C' and complete the circuit, whereupon the alarm or indicator is actuated to signal the fact that a thread is broken and needs repairing. The machine or loom also stops automatically. To accomplish this, I provide the usual belt-shifting or clutch lever F, for shifting the belt *f* on the fast and loose pulleys of the driven shaft *f'* to stop and start the machine, with an automatically-acting independent shifting device G, for moving said belt or clutch shifting lever F to stop the machine. For belt-shifting I make use of a bar or hook *g*, which is normally so located that it is in line with or engages with the shifting-lever F when it is moved in position to place the belt on the fast pulley. Said bar or hook is connected in any suitable way to a spring or weight *g'*, the tendency of which is to move said bar or hook *g*, and consequently the shifting or clutch lever F, to a position to shift the belt to the loose pulley or in other form of driving mechanism to release the clutch and stop the machine, the position of the belt when on the loose pulley being indicated by dotted lines *x*. The described tendency of the spring *g'* is opposed or prevented by a latch bar or rod *g<sup>2</sup>*, pivoted or otherwise secured to hook or bar *g* at one end and having at the other end a latch *g<sup>3</sup>*, for engagement with the pivoted armature *g<sup>4</sup>* of the electro-magnet *g<sup>5</sup>*, which is included in the circuit, as indicated. As soon as a thread A breaks and the circuit is closed, as above described, the magnet *g<sup>5</sup>* attracts its armature *g<sup>4</sup>* and releases the latch-bar *g<sup>2</sup>* therefrom, whereupon the spring *g'* is free to act to effect the shifting of the belt and the stoppage of the machine, as above set forth.

If desired, the plate C' may be magnetized



or a series of magnets substituted therefor to attract the bars B thereto when a yarn or thread breaks, when said bars are not in a vertical position. In such case the said plate  
5 or magnets will be either permanent magnets or they may be made electro-magnets by including them in a separate circuit or in a shunt from the main circuit. If desired, any suitable stops may be provided for the hook  
10 or bar *g* to limit the extent of its movement when actuated by the spring *g'* to shift the lever F.

It will be noticed that as the spring-actuated shifting device G is independent of the  
15 lever F, the latter can be operated in the usual manner for starting and stopping the machine or the driven shaft without affecting the position of the bar or hook *g* and without disengaging its latch engagement with the  
20 armature *g'*. Consequently said hook and its latch-bar are always in position for operation when the machine is started.

What I claim is—

The combination of a driven shaft and a belt-shifting or clutch lever, a separate  
25 spring-actuated shifting-bar, which is normally in engagement with said belt-shifting or clutch lever when moved to admit of said shaft being driven, a trip or latch bar for engagement with said spring-actuated bar, an  
30 electro-magnet and armature for controlling the movement of said trip or latch bar, a source of electric supply, circuit-connections having terminal plates C C' for said magnet, and bars or rods suspended from yarns or  
35 wires and passing through openings in one of said plates, substantially as set forth.

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

DAVID E. COUGHLIN.

Witnesses:

GEORGE W. SELTZER,

AUGUSTUS H. BECKMANN.