(No Model.)

R. J. MOMMERS.

ELECTRIC WARP STOP MOTION FOR LOOMS.

No. 583,213. Patented May 25, 1897.

Fig: 1.

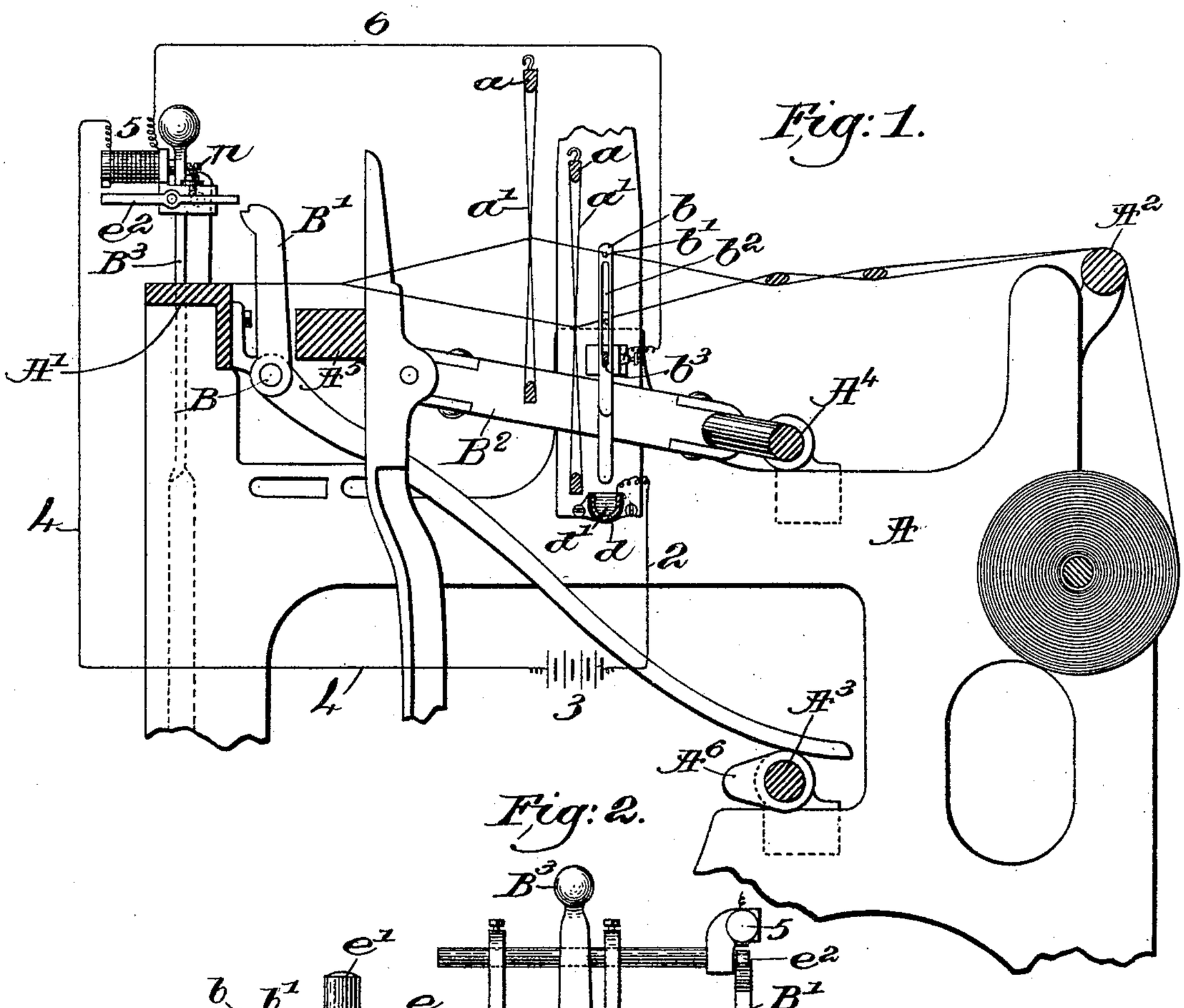

Fig: 2.

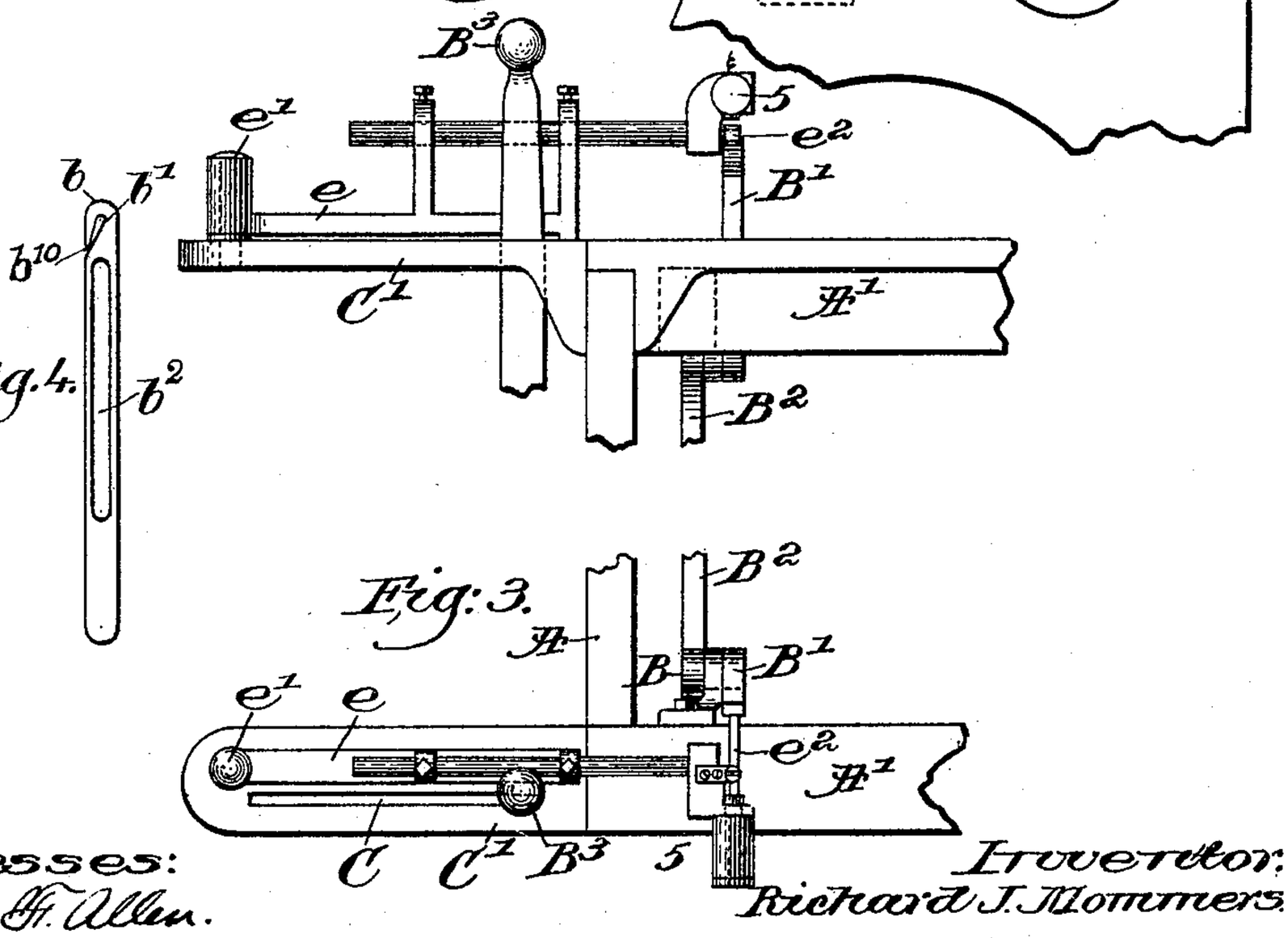

Fig. 4.

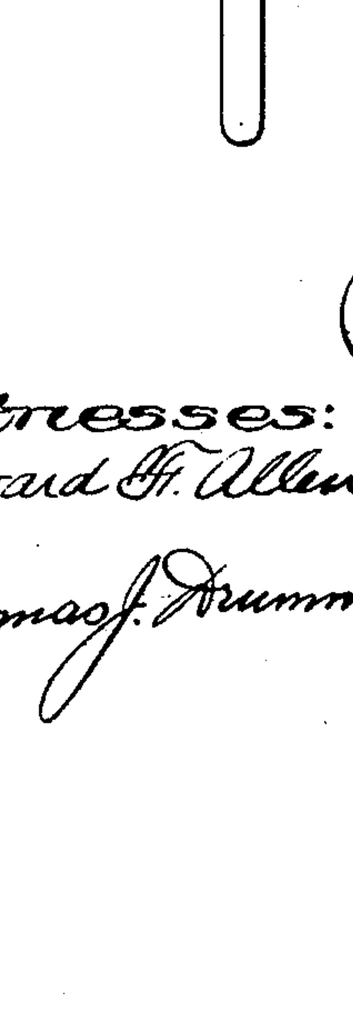

Fig: 3.

Witnesses:
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UNITED STATES PATENT OFFICE.

RICHARD J. MOMMERS, OF MANCHESTER, CONNECTICUT, ASSIGNOR TO GEO. DRAPER & SONS, OF HOPEDALE, MASSACHUSETTS.

ELECTRIC WARP STOP-MOTION FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 583,213, dated May 25, 1897.

Application filed August 31, 1896. Serial No. 604,378. (No model.)

To all whom it may concern:

Be it known that I, RICHARD J. MOMMERS, of Manchester, county of Hartford, State of Connecticut, have invented an Improvement in Electric Warp Stop-Motions for Looms, of which the following description, in connection with the accompanying drawings, is a specification, like letters and figures on the drawings representing like parts.

This invention, relating to looms, has for its object to provide a warp stop-motion which when a warp-thread breaks will permit a metallic drop device, having a warp-eye and a slot, to fall and effect the closing of an electric circuit, the closing of the circuit causing an electromagnet carried, preferably, by a knock-off lever to put a lever or finger, preferably pivoted and forming the armature of the said magnet, in position to be struck by a hammer actuated continuously by a suitable cam or device on a cross-shaft of the loom, the blow of the hammer causing the knock-off device or lever to be moved and push the usual shipper-handle out of its usual holding-notch.

The particular features in which my invention consists will be hereinafter described, and pointed out in the claims.

Figure 1 shows a sufficient portion of a loom with my improvement added to enable my invention to be understood. Fig. 2 is a partial front elevation of the left-hand end of the loom, showing part of the usual shipper-handle and the knock-off device or lever; Fig. 3, a top view of the parts shown in Fig. 2; and Fig. 4 shows a drop device with a modified form of eye.

The loom-frame A, breast-beam A′, whip-roll A^2, under shaft A^3, crank-shaft A^4, lay A^5, cam A^6 on under shaft, rock-shaft B, and a hammer B′ and lay-connecting rods B^2, harness-frames *a*, having harnesses *a*′, and the shipper-handle B^3, adapted to be moved in a slot C in plate C′, one side of said slot having a notch to receive the said shipper-handle and hold it in place, to keep the usual driving-belt on the usual driving-pulley, (not shown,) are and may be all as common in looms now in general use, so need not herein be further described, and it will be understood that the harness-frames in practice will be operated in usual manner.

I desire to stop the loom on the breaking of a warp-thread, and to do this I have provided a series of flat ribbon-like drop devices *b*, each having a warp-eye *b*′ to receive a warp-thread, and at one side of said eye a slot b^2, through which is extended a metallic bar b^3, said bar acting to keep the said drop devices substantially parallel and to also act as a guide for a series of said devices. Below the lower ends of these drop devices I have arranged a closure device, shown as a trough *d*, properly insulated from the frame of the machine and shown as filled with mercury *d*′, the breaking of a warp-thread letting a drop device fall so that its lower end enters the mercury and closes an electric circuit, to be described.

The electric circuit shown contains a wire 2, which starts from the mercury-cup and extends to a battery 3 and from the battery by wire 4 to an electromagnet 5, mounted at or near the end of a knock-off lever or device *e*, pivoted at *e*′ and carrying a finger or lever e^2, which constitutes the armature of said magnet, the outer or heavier end of said armature keeping the same in what I call its "normal" position, a wire 6 connecting the opposite end of said magnet to the said guide-bar b^3.

When the circuit is open, the inner or right-hand end of said armature (see Fig. 1) is normally kept elevated out of the range of motion of the hammer B′ or other moving device, operated at each rotation of the shaft A^3, and said hammer device passes under the said armature, but in case a drop device falls into the mercury, it constituting a closure device for the circuit, the magnet is excited and turns the armature, putting its inner end in its abnormal position, when it will be struck by the hammer or equivalent device as it comes forward, thus moving the armature and with it the knock-off device or lever *e*, causing it to meet the said shipper-handle and push it from its holding-notch and effect in usual manner the shipping of the belt to stop the loom.

This invention is not limited to the exact shape shown for the hammer or to the exact

shape shown for the knock-off device or lever, and instead I may use any well-known equivalent for either of them.

The screw *n* is employed as an up-stop for the magnet.

Instead of the mercury I may use any other usual or suitable device, which, as the lower end of the drop device meets it, will close an electric circuit, as described.

By the term "shipper-handle" I mean to include any usual device which keeps the driving-power of the loom effective to rotate the main shaft.

This invention is not limited to the exact shape of the warp-eye in the drop device, and by the term "eye" I mean any opening of any suitable shape to receive the warp, and the shape of this eye may be varied, and it may be open at one side for the insertion of the thread, as represented at b^{10} in Fig. 4.

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

1. In a warp stop-motion for looms, the following instrumentalities, viz: a series of drop devices, having warp-eyes to hang on the warp-threads, a shipper-handle, a knock-off lever, an armature mounted directly thereon, an electric circuit containing an electromagnet and a closure device which is made to energize the magnet and put the armature in its abnormal position by the dropping of a drop device, and means to strike said armature when put into its abnormal position and cause the knock-off lever to release the shipper-handle, substantially as described.

2. In a loom, a shipper-handle, means to hold it in position to maintain the loom in operation, a knock-off lever provided with an armature pivoted thereon, and an electromagnet also mounted on said knock-off lever and arranged in an electric circuit, which when excited moves the armature into its abnormal position, combined with means to meet said armature and move it and said knock-off lever to release the shipper-handle and means to effect the closure of said circuit, substantially as described.

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

RICHARD J. MOMMERS.

Witnesses:
WILLIAM H. COATES,
ANNETTA MCCAW.