

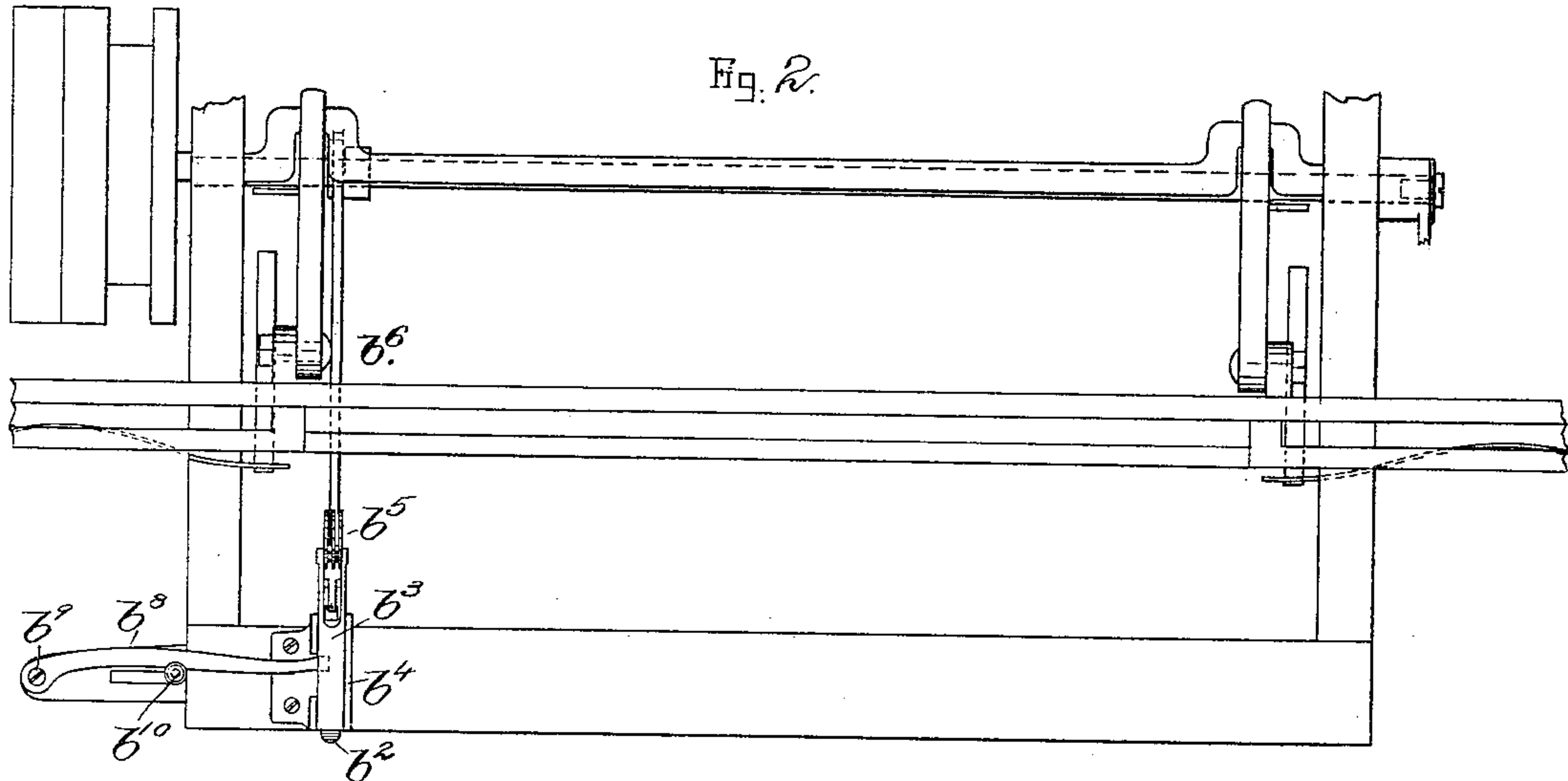
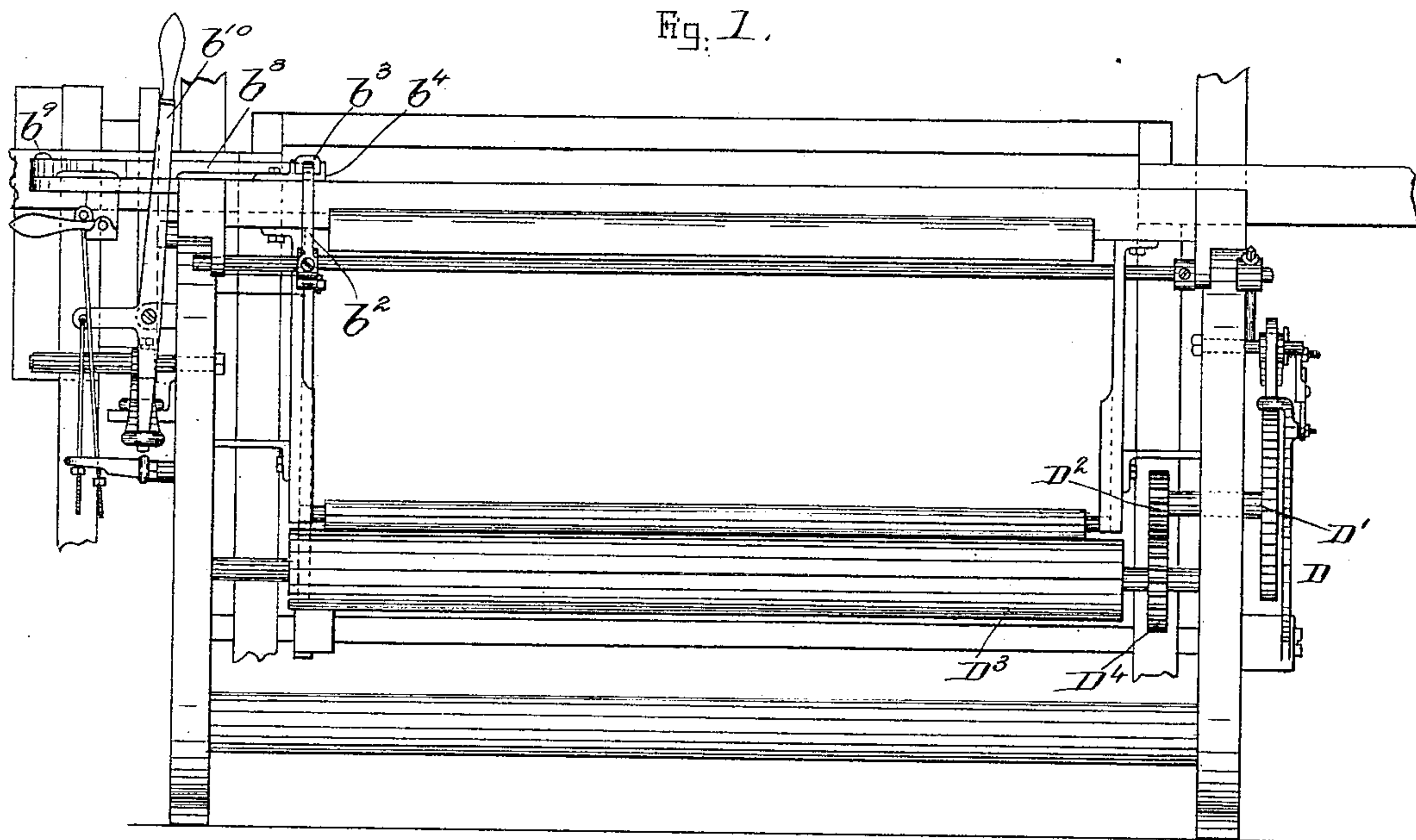
(No Model.)

2 Sheets—Sheet 1.

D. CUNNINGHAM.  
TAKE UP MECHANISM FOR LOOMS.

No. 405,829.

Patented June 25, 1889.



Witnesses.

Howard F. Eaton.  
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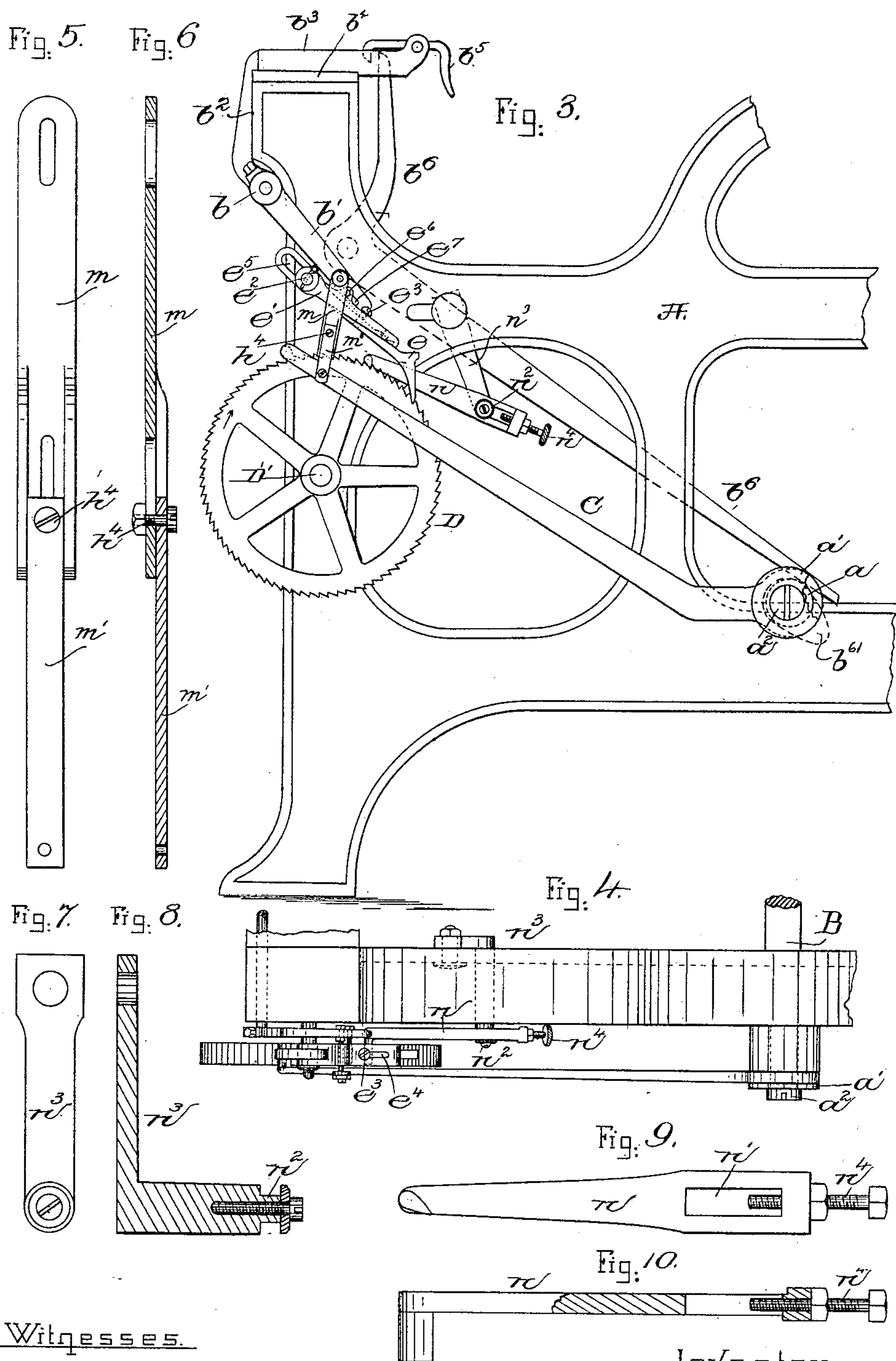
Inventor.

Daniel Cunningham.  
by Leroy & Gregory  
attys.

2 Sheets—Sheet 2.

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Howard F. Eaton  
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# UNITED STATES PATENT OFFICE.

DANIEL CUNNINGHAM, OF FALL RIVER, MASSACHUSETTS.

## TAKE-UP MECHANISM FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 405,829, dated June 25, 1889.

Application filed July 8, 1887. Serial No. 243,726. (No model.)

*To all whom it may concern:*

Be it known that I, DANIEL CUNNINGHAM, of Fall River, county of Bristol, and State of Massachusetts, have invented an Improvement in Take-Up Mechanism for Looms, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention has for its object to automatically control the extent of reverse movement in the take-up mechanism whenever the loom is stopped by reason of any fault in the weft. When the weft breaks and the loom is stopped, it is necessary, in order to avoid a thin place in the cloth, when the loom is again started to turn the ratchet-wheel back far enough to bring the fell of the cloth in the position it occupied when the weft was broken, and this the loom attendant tries to do; but if the ratchet-wheel is permitted to turn back too far a thick place is made in the cloth, which is also very objectionable.

By the invention to be herein described I seek to obviate the formation of both these objectionable thin and thick places.

In this my invention the pawl and detent commonly used to co-operate with the ratchet-wheel of the take-up mechanism are connected together in an adjustable manner, and the loom has been provided with an adjustable measuring-detent, the function and purpose of which are to let the ratchet-wheel referred to turn back a predetermined or measured distance whenever the pawl and detent are both lifted from engagement with the ratchet-wheel.

My invention consists, essentially, in the combination, in a loom, of the following instrumentalities, viz: a ratchet-wheel, a pawl to move it, means to move the pawl, a two-part detent, the parts being adjustable with relation to each other by a slot and screw, whereby ratchet-wheels of various diameters and teeth may be used, and means to move both the pawl and detent simultaneously from engagement with the said ratchet-wheel, combined with a measuring-pawl, the said measuring-pawl being provided with an adjusting device to determine the extent of retrograde or backward movement of the ratchet-wheel

when released from the control of its pawl and holding-detent, substantially as will be described.

Figure 1 is a front elevation of part of a loom with my improvements added; Fig. 2, a top or plan view of Fig. 1; Fig. 3, a side elevation of a portion of a loom; Fig. 4, a top or plan view of Fig. 3; Figs. 5 and 6, respectively, a front elevation and longitudinal section of the adjustable connecting-link between the pawl and detent; Figs. 7 and 8, like views of the stand for holding the measuring-detent; Fig. 9, a side elevation of the measuring-detent; and Fig. 10, a plan view thereof, partially broken out.

The loom-frame A, the cam-shaft B, the eccentric *a* thereon, the pawl C, actuated by the said eccentric, the ratchet-wheel D, its shaft D', the pinion D<sup>2</sup> thereon, the sand or equivalent roll D<sup>3</sup>, having the attached toothed gear D<sup>4</sup> engaged by the said pinion, and the rock-shaft *b*, having an arm *b*<sup>2</sup> extended above the breast-beam, are all substantially as in United States Patent No. 137,188, to which reference may be had. This arm *b*<sup>2</sup>, also common to United States Patent No. 78,941, dated January 16, 1868, is acted upon by a slide *b*<sup>3</sup>, moving in a stand *b*<sup>4</sup>, the slide carrying a weft-feeder *b*<sup>5</sup> pivoted thereon, and so constructed that when the rear end of the weft-fork is not lifted by the presence of the filling it is struck by the upper end of a lever *b*<sup>6</sup>, actuated by a cam *b*<sup>6'</sup> on the cam-shaft, the lever *b*<sup>6</sup>, by its engagement with the heel of the weft-fork, carrying the slide back with it, so as to meet the arm *b*<sup>2</sup>, turn the rock-shaft *b*, and lift the arm *b*<sup>2</sup> and its connected parts, as will be described. The slide *b*<sup>3</sup>, as it is moved backward, as described, is made to turn a lever *b*<sup>8</sup>, pivoted at *b*<sup>9</sup>, and move it to effect the release of the usual shipper-lever *b*<sup>10</sup> to stop the loom in usual manner.

The lever *b*<sup>6</sup> referred to and the parts actuated by it, as so far described, are common to United States Patent No. 78,941, referred to.

In the loom described in United States Patent No. 137,188, whenever the weft fails and the rock-shaft *b* is turned, as described, the usual detent, as well as the actuating-pawl, is lifted from the ratchet-wheel, and thereafter the ratchet-wheel is permitted to



turn back a desired distance, to thus avoid a thin place in the cloth. In the patent referred to the detent to control the extent of backward rotation of the ratchet-wheel is slotted to determine the extent of backward movement of the detent; but this plan has not been found to be fully practical, especially when the filling varies in size or is coarser or finer, for if the ratchet-wheel is permitted to turn back too far thick places will be formed in the cloth when the loom is again started. Sometimes the operator, the pawl having been lifted to let the ratchet turn backward, again turns the ratchet forward by hand to secure, if possible, correct position for the fell when the loom is to be started; but even then the ratchet is sometimes turned too far, and the result is a thin place.

In my invention the rock-shaft *b* is provided with an arm *b'*, which is joined to the pawl *C* by a link, (herein shown as composed of two parts *m m'*), connected together adjustably by a screw *h<sup>4</sup>*, the said pawl and detent being both raised from the ratchet-wheel whenever the rock-shaft *b* is turned, because of fault in the filling. When the pawl *C* and detent *e* are both raised simultaneously from the ratchet, the full strain of the cloth is effective to turn the sand or equivalent roll, and through it the ratchet-wheel, backward, but should the backward rotation be not checked the cloth would have too much slack. So, to obviate this and enable the ratchet to be turned back only a certain measured or predetermined distance, so as to give up only just the proper amount of cloth and thus avoid not only thin but also thick places, I have provided a measuring-detent *n*, which, as herein shown, is slotted at *n'* and fitted to slide on a stud, as *n<sup>2</sup>*, connected to a stand or bracket *n<sup>3</sup>*, secured to the loom side, the said measuring-pawl being provided with an adjusting device *n<sup>4</sup>*, (shown as a screw,) the rotation of which in one or the other direction shortens or lengthens the effective length of the slot *n'*. The longer the slot the greater the longitudinal movement of the measuring-pawl and the greater the extent of backward movement of the ratchet-wheel to slacken the warp, and vice versa.

In my invention the finer the weft being

used the less backward movement of the ratchet-wheel is required, and vice versa.

As herein shown, the detent *e* is made in two parts, the second part being an arm *e'*, having its fulcrum upon a pin or stud *e<sup>2</sup>*, fixed to the loom side, the two parts being connected by a screw *e<sup>3</sup>*, extended through a slot, as *e<sup>4</sup>*, of the arm *e'*, the screw being screwed into the part *e*. The faces in contact of the parts *e* and *e'* are toothed or corrugated to prevent slipping. The part *e* of the detent is slotted, as at *e<sup>5</sup>*, and is extended loosely about the stud *e<sup>2</sup>*, so that by loosening the screw *e<sup>3</sup>* the part *e* may be adjusted with relation to the part *e'* to accommodate teeth of different sizes in the ratchet-wheel to be used and also to enable the pawl to be adapted to the diameter of the ratchet-wheel *D*. The arm *e'* has a pin *e<sup>6</sup>*, which enters a slot *e<sup>7</sup>* in the arm *b'*. The two-part link is adjustably connected by a screw *h<sup>4</sup>*, thus permitting the arm *b'*, which has a definite throw or movement, to always lift the actuating-pawl *C* from the ratchet-wheel *D*, no matter what may be the diameter of the ratchet-wheel or the fineness of its teeth, the link being lengthened or shortened as the size of teeth or the diameter of the ratchet-wheel requires.

I claim—

The ratchet-wheel, a pawl to move it, means to move the pawl, a detent consisting of the parts *e e'*, the part *e* being slotted and pivoted to the loom side, the two parts being adjustably connected by the screw *e<sup>3</sup>*, a disengaging device for the pawl and detent, the two-part link *m m'*, adjustable by the screw *h<sup>4</sup>*, to connect the pawl with the said disengaging device, the pawl and detent being moved simultaneously and automatically from engagement with the said ratchet-wheel, combined with a measuring-pawl, the said measuring-pawl being provided with an adjusting device *n<sup>4</sup>* to determine the extent of retrograde or backward movement of the ratchet-wheel, substantially as described.

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

DANIEL CUNNINGHAM.

Witnesses:

G. W. GREGORY,  
C. M. CONE.