

E. M. Daniels,

Let-Off for Looms.

Nº 98,082.

Patented Dec. 21. 1869.

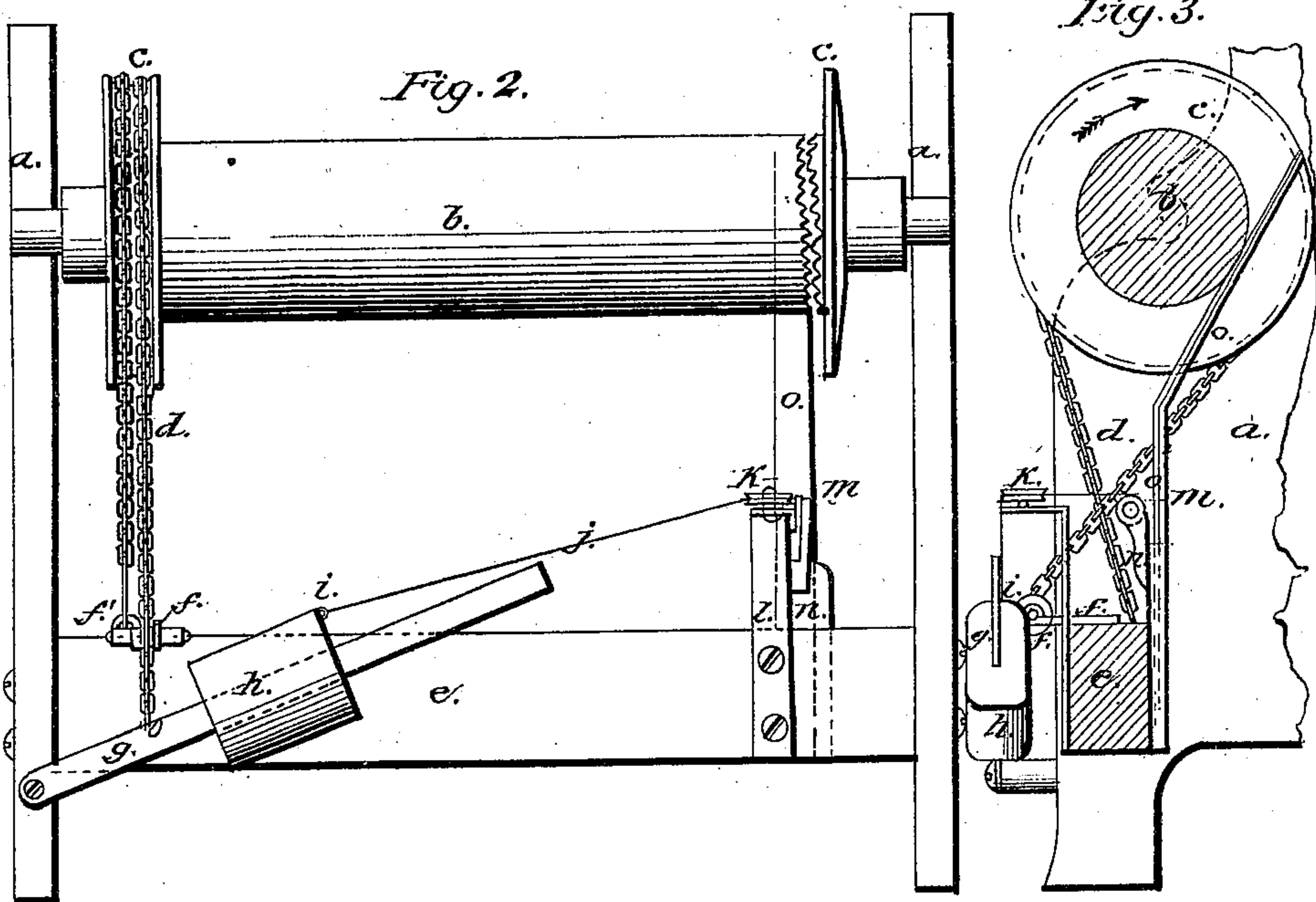
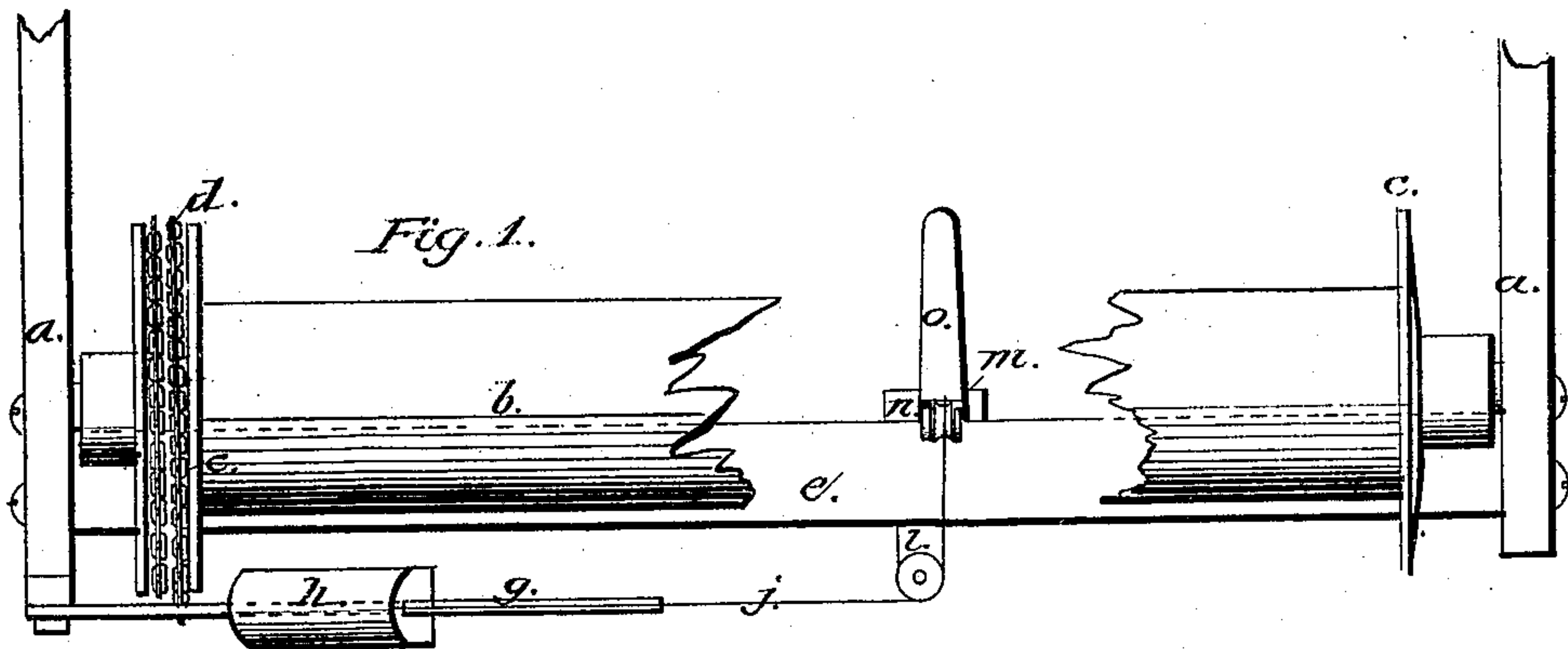
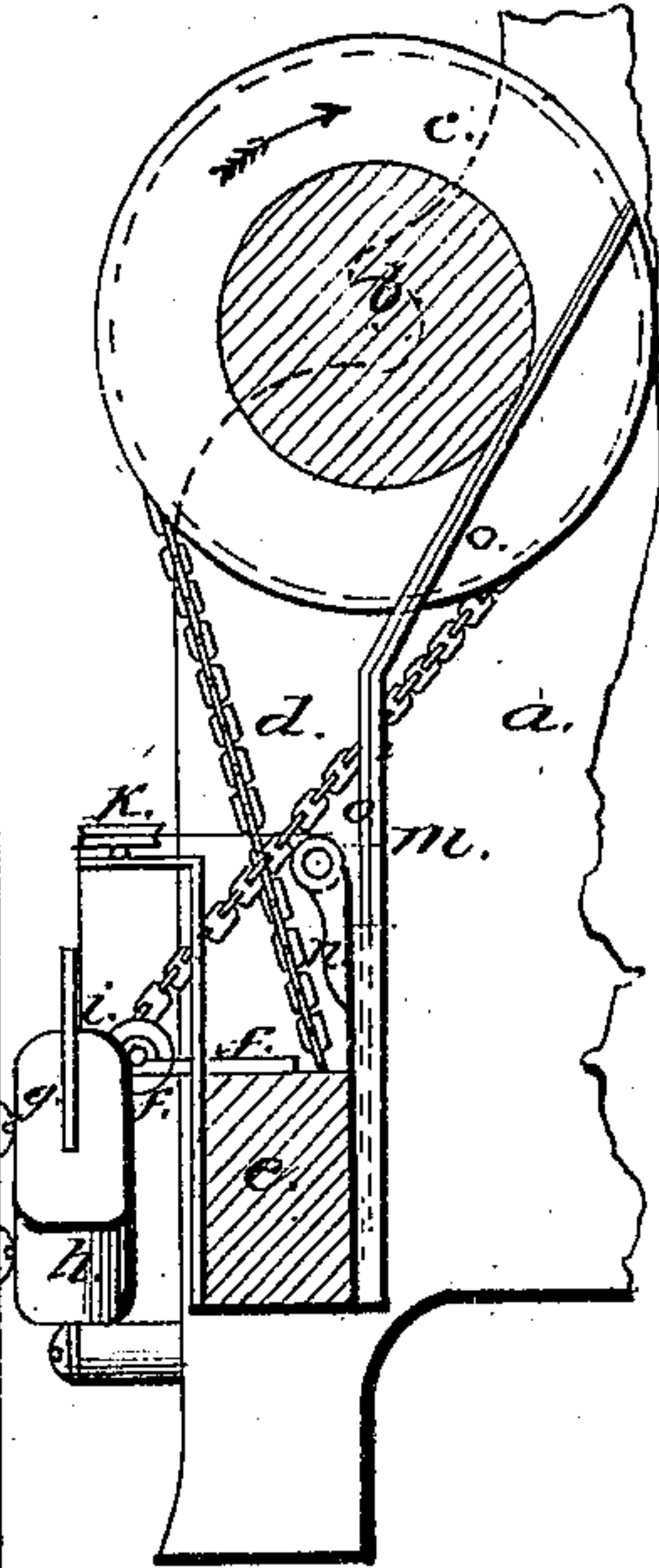


Fig. 3.



Witnesses:
William W. Gladwin,
Geo. E. Povey,

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United States Patent Office.

EPHRAIM McDANIEL, OF LOWELL, MASSACHUSETTS.

Letters Patent No. 98,082, dated December 21, 1869.

IMPROVEMENT IN LET-OFF MECHANISM FOR LOOMS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, EPHRAIM McDANIEL, of Lowell, in the county of Middlesex, and State of Massachusetts, have invented new and useful Improvements in Self-Operating Friction Let-Off for Looms; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

Figure 1 represents a plan of a loom, with my improved device attached.

Figure 2 represents a side elevation of the same.

Figure 3 represents a vertical section of the same.

Similar letters in the different figures indicate corresponding parts.

a a represents the loom-sides, which receive the yarn-beam *b* on suitable bearings or boxes at each end.

This yarn-beam *b* is provided at each end with beam-heads *c c*, over and around one of which passes the friction-strap, cord, or chain *d*, one end of which is permanently secured and fastened to the girt *e*; the chain *d* is then passed twice around the head *c*, in the direction in which the yarn-beam unwinds, as shown by the arrow in fig. 3, so that the binding traction of the chain or strap on the head, will be from the fixed end thereof, thereby producing greater uniformity of friction, and requiring a much lighter weight to produce the same amount of friction, and obviating the unsteady vibration of the weight lever, as produced by the usual arrangement of the friction-strap running in the opposite direction, thence over the friction-pulley *f*, which is provided with a stand, *f'*, and secured to the girt *e*, and fastened to the inclined lever *g*.

This lever *g*, at one end, is hinged by a pivot to the loom-side *a*, and in an inclined position.

Sliding on this lever *g*, loosely above the point of fastening the chain *d*, is the weight *h*, which is provided with an eye, *i*, at its upper edge, to which is attached the cord or chain *j*.

This cord passes partially around the guide-pulley *k*, which is provided with suitable bearings in stand *l*, which stand is fastened to the outside of the girt *e*.

From this pulley *k*, the cord *j* passes at a right angle over the guide-pulley *m*, which is also furnished with bearings in stand *n*, like the former, and is secured to the inside of the girt *e*.

The end of the cord *j* is then fastened to the lower

end of the arm or fork *o*, which fork slides loosely and freely in dovetail grooves provided in the stand *n*.

The upper end of this arm or fork *o* comes directly in contact with the yarn on the beam *b*, when the loom is in operation.

That portion of the arm *o*, which bears against the yarn, is inclined from the direction of its movement, substantially as shown in fig. 3.

This arrangement produces a movement of the arm, and consequently of the weight, greater than the actual diminution of the radius of the roll of yarn; hence the leverage of the weight can be more rapidly changed, and by varying the inclination of the arm, it can be nicely adjusted to produce the requisite uniformity of tension on the yarn-beam.

Operation.

The yarn-beam *b*, being filled with yarn, even with the heads *c c*, the strap, cord, or chain *d*, is adjusted and secured to the inclined lever *g*.

The weight *h* is slid up on the lever *g*, so that the arm or fork *o* can be depressed sufficiently to come in contact with the yarn on the beam *b*.

The weight *h* is so graduated in its number of pounds, and its distance from the fulcrum, as to give the desired tension to the warp for the proper and desired thickness of the cloth.

The loom is then set in motion, and as the warp unwinds from the yarn-beam *b*, the diameter of the yarn on the same is reduced, which allows the arm *o* to move gradually toward the centre of the beam *b*.

This action of the arm or fork *o* allows the weight *h*, by aid of the cord or chain *j*, which passes over and around the guide-pulleys *m* and *k*, to descend on the inclined lever *g* toward its fulcrum, which reduces the friction on the yarn-beam *b*, corresponding with the increased power or force to unwind the same, which results in a perfect and uniform distribution of the filling during the entire working or using up of the yarn on the beam *b*.

What I claim as my invention, and desire to secure by Letters Patent, is—

The arrangement of the strap or chain *d*, drawing from the fixed end thereof, and in the direction in which the yarn-beam turns, and the arm *o* having an inclined bearing on the yarn-roll, in combination with the lever *g*, weight *h*, and cord *j*, as and for the purpose herein specified.

EPHRAIM McDANIEL.

Witnesses:

WILLIAM W. GLADWIN,
GEO. E. PEVEY.