S. O. Colvin.

Let-Off Motion.

No. 19,073. Patented Jan. 12, 1858.

Fig. 1.

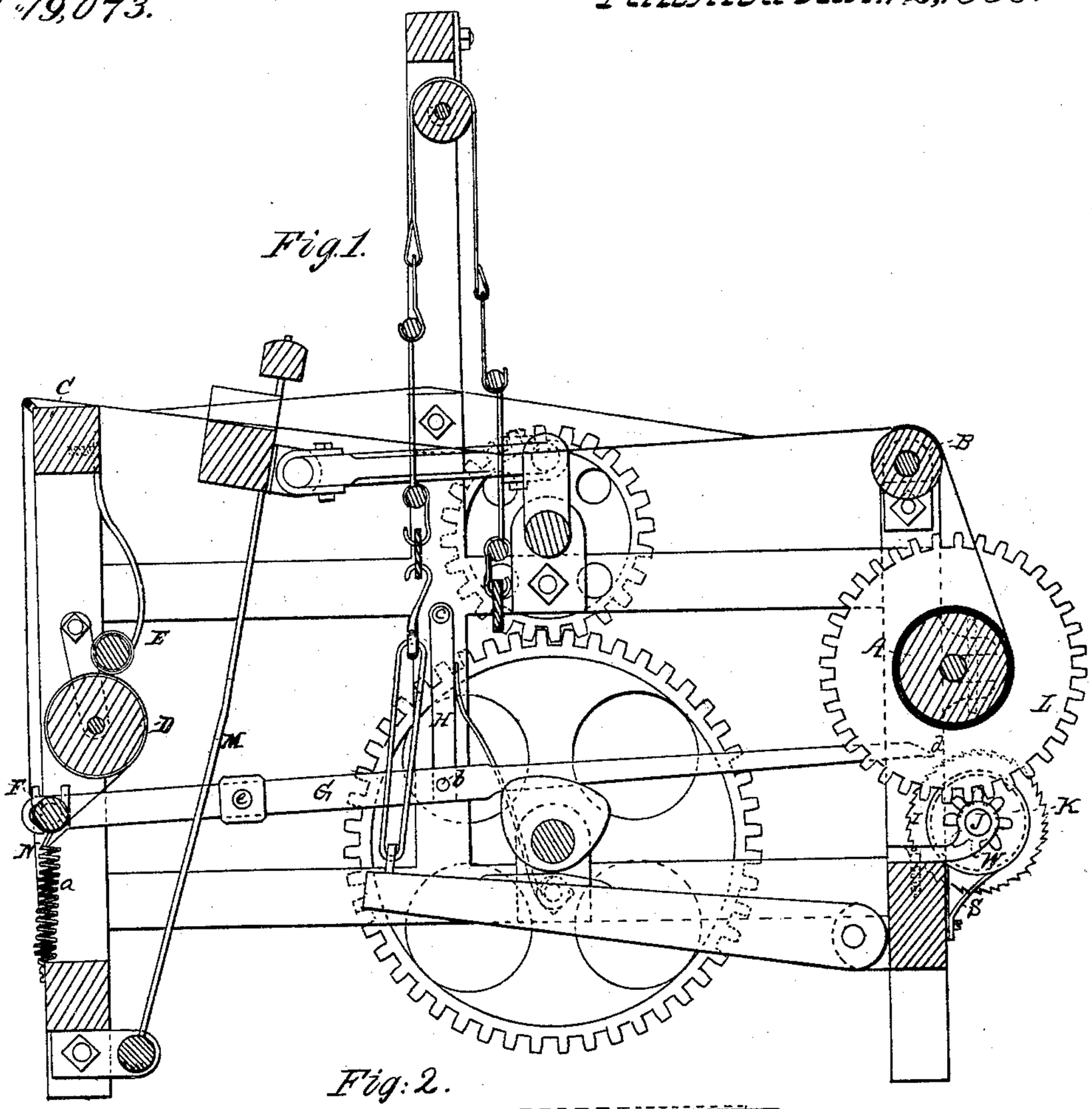
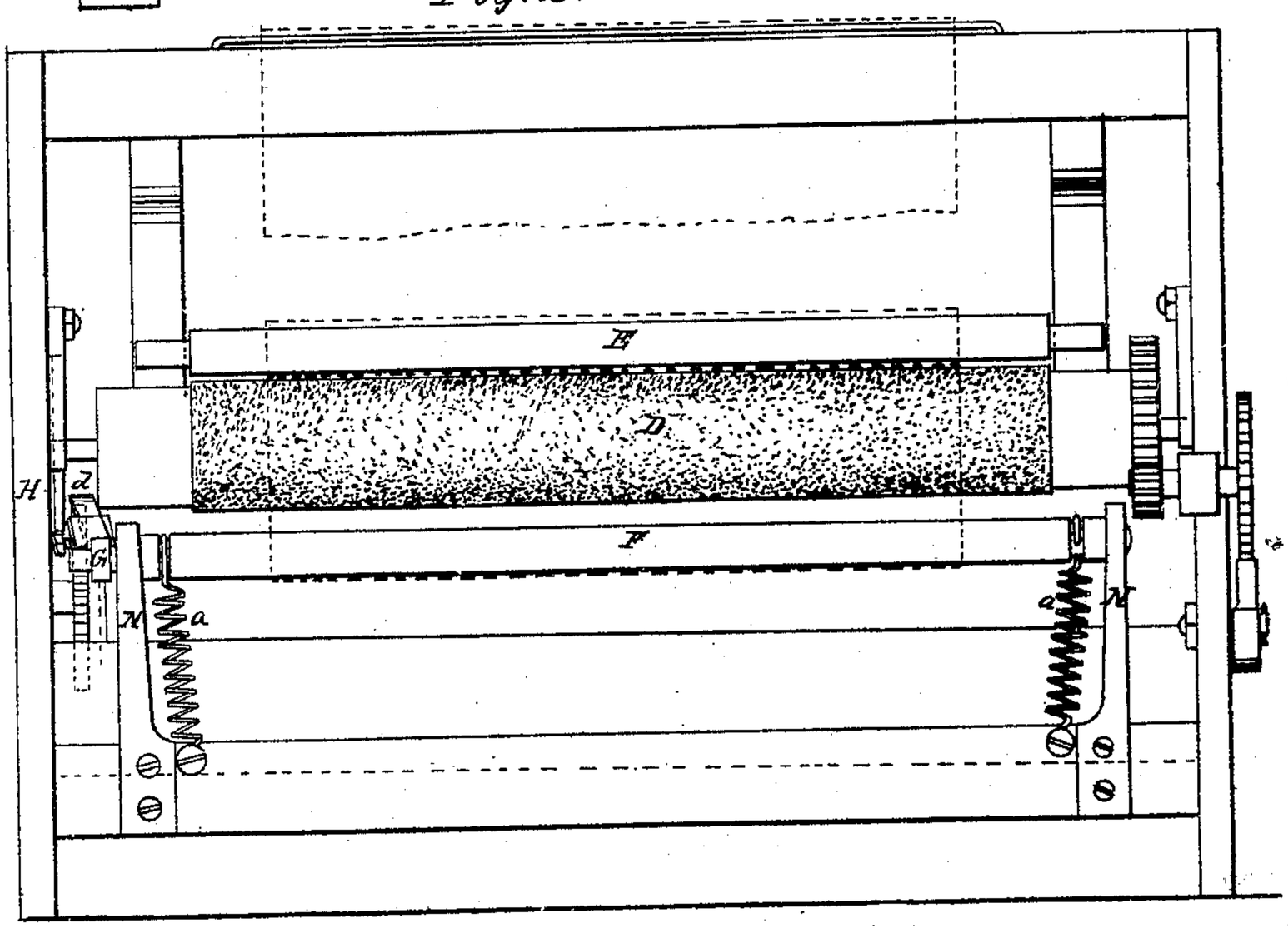


Fig: 2.



UNITED STATES PATENT OFFICE.

STEPHEN O. COLVIN, OF COVENTRY, RHODE ISLAND.

LET-OFF MOTION OF POWER-LOOMS.

Specification of Letters Patent No. 19,073, dated January 12, 1858.

To all whom it may concern:

Be it known that I, STEPHEN O. COLVIN, of Coventry, in the county of Kent and State of Rhode Island, have invented a new and useful Improvement in Let-Off Motions of Power-Looms; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a vertical section of a power loom taken parallel with the warp, illustrating the application of my invention. Fig. 2 is a front elevation of a sufficient portion of the loom to illustrate the invention.

Similar letters of reference indicate corresponding parts in both figures.

This invention consists in certain means of operating on the yarn beam to effect the letting off the yarn only as required to prevent too great a tension of the warp, thus keeping the warp always at a proper and almost perfectly uniform tension and letting off when and only when required.

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

A is the yarn beam.

B is the whip roll above the yarn beam.

C is the breast beam.

D is the "take up" roll.

E, is the cloth roll on which the cloth is taken up, resting upon the take-up roll D, and being turned to roll up the cloth upon it by the friction produced upon the cloth between it and the take-up roll by the rotation of the latter. The take-up roll receives a positive motion in the usual manner which it is unnecessary to describe.

F is a roll arranged below the take-up roll and having its journals fitted to guides in two small standards N, N, attached to the loom framing in which they are capable of moving to a slight extent upward and downward, or toward and from the take-up roll. This roll F, has two springs (*a*) (*a*) applied to it in such a way as to pull it downward or away from the take-up roll. The cloth which is represented in red outline passes under this roll on its way from the breast beam C, to the take-up roll D.

G is a lever working on a fulcrum pin (*b*), in a link H, which hangs on a pin (*c*), secured in one side of the loom framing so as to be capable of a swinging motion back and forth. The lever G has at its front end a slot to receive the journals of the adjacent end of the roll F, and at its rear end it is made in the form of a dog (*d*) to engage with the teeth of a ratchet wheel I on a short shaft J, which is placed in fixed bearings below the yarn beam A, and carries a pinion K, gearing with a spur wheel L on the yarn beam. The pinion shaft J also carries a brake wheel W which is encircled or nearly so by a strap S, attached to the loom framing, said strap producing friction enough on the brake wheel to prevent the yarn beam being turned by the tension of the cloth.

The lever G carries a stud (*e*) which occupies such a position as to be struck by the sword M on that side of the lay every time the latter swings back, and by the action of the sword on this stud it is caused to receive a longitudinal movement which is permitted by the link H. By the above longitudinal movement of the lever the dog (*d*) is caused, so long as the tension of the cloth requires it, (as will be presently explained) to act upon the ratchet wheel I, for the purpose of turning the yarn beam to let off the yarn.

The springs (*a*) (*a*) are always more or less extended by the tension of the cloth acting upon the roll F, but if the tension of the cloth and warp yarn is less or not greater than is required they hold down the roll F so low or so far from the take-up roll that the front end of the lever G, which, as before stated, is connected with the roll F, that the dog (*d*) is raised too high to engage with the ratchet wheel I, but as the tension is increased by the taking up the springs are more extended by the pull on the roll F, and the front end of the lever raised high enough to depress the dog (*d*) low enough to engage with the ratchet wheel, when the lever moves longitudinally backward, and thus to cause the dog to turn the ratchet one or more teeth to unwind the yarn from the yarn-beam. As soon however as the tension of the cloth and warp yarn becomes less or no greater than is desired, the springs pull down the roll F again, and by the action of the said roll on the lever raise the dog so that it will work clear of the ratchet teeth, and cause no more yarn to be let off till it is required by the increased tension of the warp. The tension of the warp may be regulated by

taking in or letting out the springs (*a*) (*a*) to make them stronger or weaker, according as the tension requires to be increased or diminished.

A bar may be substituted as the equivalent of the roll F, as it is only the motion toward and from the take up roll that is absolutely required by the said roll F, the rotary motion not being indispensable. I prefer however to use the roll and to have it turn as the cloth passes it.

I disclaim the let off motion of power looms of Jonathan Knowles patented April 30, 1850.

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

The roll F, or its equivalent the springs (*a*) (*a*) and the lever G combined and operating substantially as described to turn the ratchet wheel I, or its equivalent that moves the yarn beam, to let off the yarn only as required by the tension of the cloth and the warp yarn.

STEPHEN O. COLVIN.

Witnesses:
WILLIAM A. STONE,
CHARLES PHILLIPS.