

T. S. Smith.
Let-Off Motion.

N^o 84,515.

Patented Dec. 1, 1868.

Fig. 1.

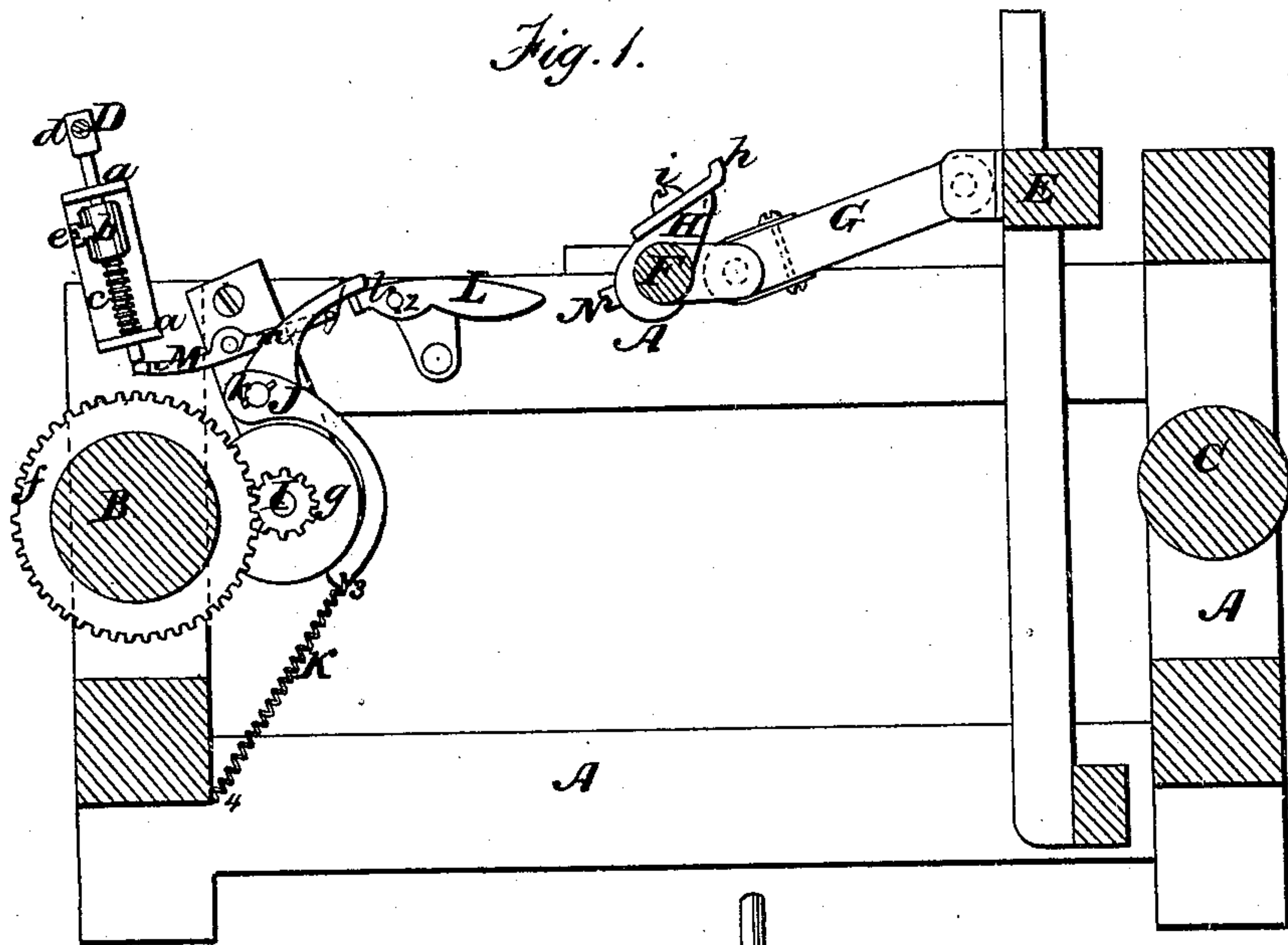
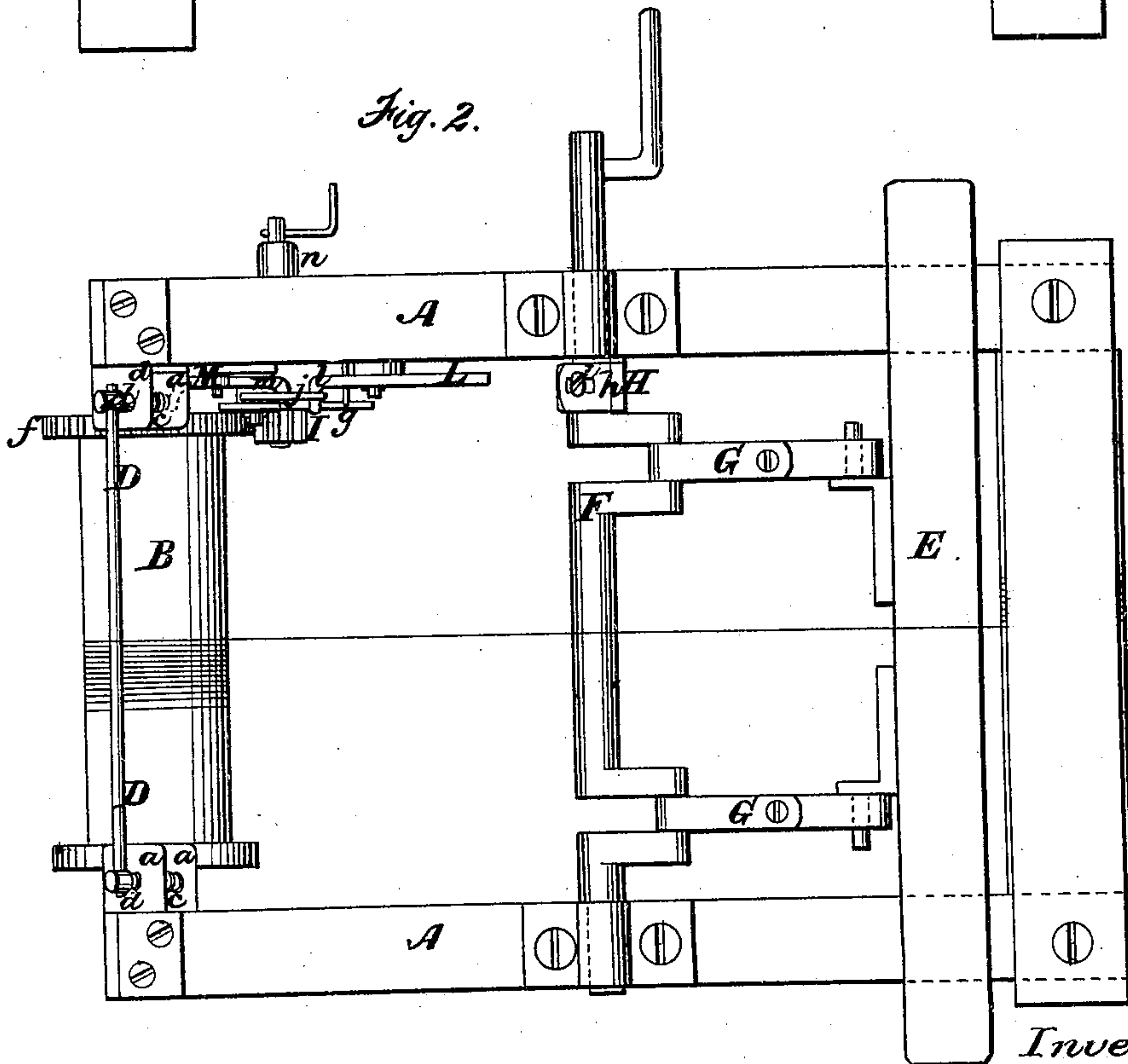


Fig. 2.



Witnesses.
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T. S. SMITH, OF CHARLESTOWN, ASSIGNOR TO ALFRED B. ELY, OF
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Letters Patent No. 84,515, dated December 1, 1868.

IMPROVEMENT IN LET-OFF MECHANISM FOR LOOMS.

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

Be it known that I, T. S. SMITH, of Charlestown, in the State of Massachusetts, have invented certain new and useful Improvements in Let-Offs for Looms; and the following, with the accompanying drawings, is a full and exact description of the same.

Figure 2 is a top view.

Figure 1 is a sectional view from front to rear, with a view of a let-off mechanism on the inside of the side frame.

A represents the frame of a loom.

B, the yarn-beam, and

C, the cloth-beam.

D is the whip-roll, and

E, the lay.

F is the crank-shaft, and

G, straps connecting it with the lay.

f is a gear-wheel upon the yarn-beam, meshing into a gear-pinion, I, upon a smooth surface-wheel or escapement, *g*, revolving upon a bearing attached to the frame, and having its axis projecting outside at *n*, with a small crank, for the purpose of easily winding up any slack of the yarn upon the beam.

The whip-roll rod D is supported, at its ends, in studs or rods *d d*, which pass down through double brackets *a a*, attached to the frame at each end.

Between the shelves of the brackets *a a*, and around the rods *d*, are placed spiral springs *c*, and a collar, *b*, with a set-screw, *e*. The lower end of the spring *c* rests upon the lower shelf, *a*, and the upper end presses against the collar *b*, which is movable upon *d*, and can be adjusted to any height, and so adjust the pressure of the spring by the set-screw *e*.

J *j* is a double-armed lever, pivoted to the frame at *k*, the lower arm, J, being curved, and made to act as a brake upon the periphery of the wheel *g*.

L *l* is another lever, pivoted to the frame at 2, the short arm, *l*, acting upon the under side of the arm *j* of the lever J *j*.

H is a projecting lug or finger upon the crank-shaft F, having a set-screw, N, to adjust its position upon the shaft circumferentially, and also having an adjustable plate, *h*, with set-screw *i*, to regulate the length of its stroke or reach; this finger H, in its revolution, striking upon the arm L of the lever L *l*.

K is a spiral spring, which may be made adjustable as to its tension and power, having one end fastened to the brake-lever J at 3, and the other to the frame at 4.

In the revolution of the crank-shaft, the finger H strikes upon the lever-arm L, and raises the lever-arm *j*, and thus raises the brake J from the wheel or escapement *g*, and allows the delivery of so much yarn as may be needed from the yarn-beam. As soon as the finger H has passed by the lever-arm L, the spring K brings back the brake J upon the escapement-wheel *g*, and stops the delivery of the yarn.

H being made adjustable upon F by set-screw N, can be made to operate upon the brake at any position of the lay that may be desired; and *h* being made

adjustable, so as to lengthen the reach of H, the brake may be lifted for a longer or shorter period, as desired.

Instead of J acting merely as a friction-brake, the periphery of *g* may be supplied with lugs, against which J may strike, and from which it may be relieved; and instead of using an intermediate lever, the finger H may be made to strike directly upon one of the lever-arms of J, and relieve the brake from the escapement.

The advantage of this method is the furnishing of a positive let-off, and one not affected by any casual pressure upon the whip-roll. It can also be made perfectly adjustable and controllable.

The whip-roll being suspended upon springs, is elastic under the pressure of the yarn. It can be varied in position as to the yarn-beam, and the amount of elasticity or tension can be readily varied and adjusted as desired.

Where the positive let-off is not desired, and the letting off is to be done by the pull or tension of the yarn, M *m* is a lever, pivoted to the frame at 1, one end being acted upon by the rod *d*, and the other end acting upon the lever-arm *j*, and thus raising the brake from the escapement, and letting off the yarn by the pressure of the yarn upon the whip-roll. This may also be done by the action of the rod *d* upon the lever-brake without any intermediate lever.

Where the positive let-off is alone to be used, the lever M *m* is to be dispensed with.

Where the let-off is to be accomplished by the tension of the yarn, the lever L *l* is to be dispensed with.

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

1. The combination of the brake or pawl J with the shaft and finger H, when the parts are constructed and arranged to operate together, substantially as described.

2. The adjustable lug or finger H *h*, when arranged and operating in connection with the brake or pawl J, as a positive let-off to the yarn, substantially in the manner described.

3. The whip-roll D, supported by sliding arms *d*, in combination with the spring *c* and adjustable collar *b*, constructed and arranged substantially as and for the purposes described.

4. The whip-roll supported in spring-bearings, in combination, and arranged and operating in connection, with the brake or pawl J, so as to relieve the same, and let off the yarn by means of the tension thereof, substantially as described.

5. The whip-roll, supported in spring-bearings, in combination or connection with the shaft and finger H, when the latter are arranged to operate with the pawl or brake J, substantially as described.

In testimony whereof, I have hereunto subscribed my name.

T. S. SMITH.

Witnesses:

FRANCIS L. HAYES,

WM. H. KIMBALL.