

T. S. Smith Let off
 assigned to W. N. Ely.

PATENTED

JAN 21 1868

73470 *Fig 1.*

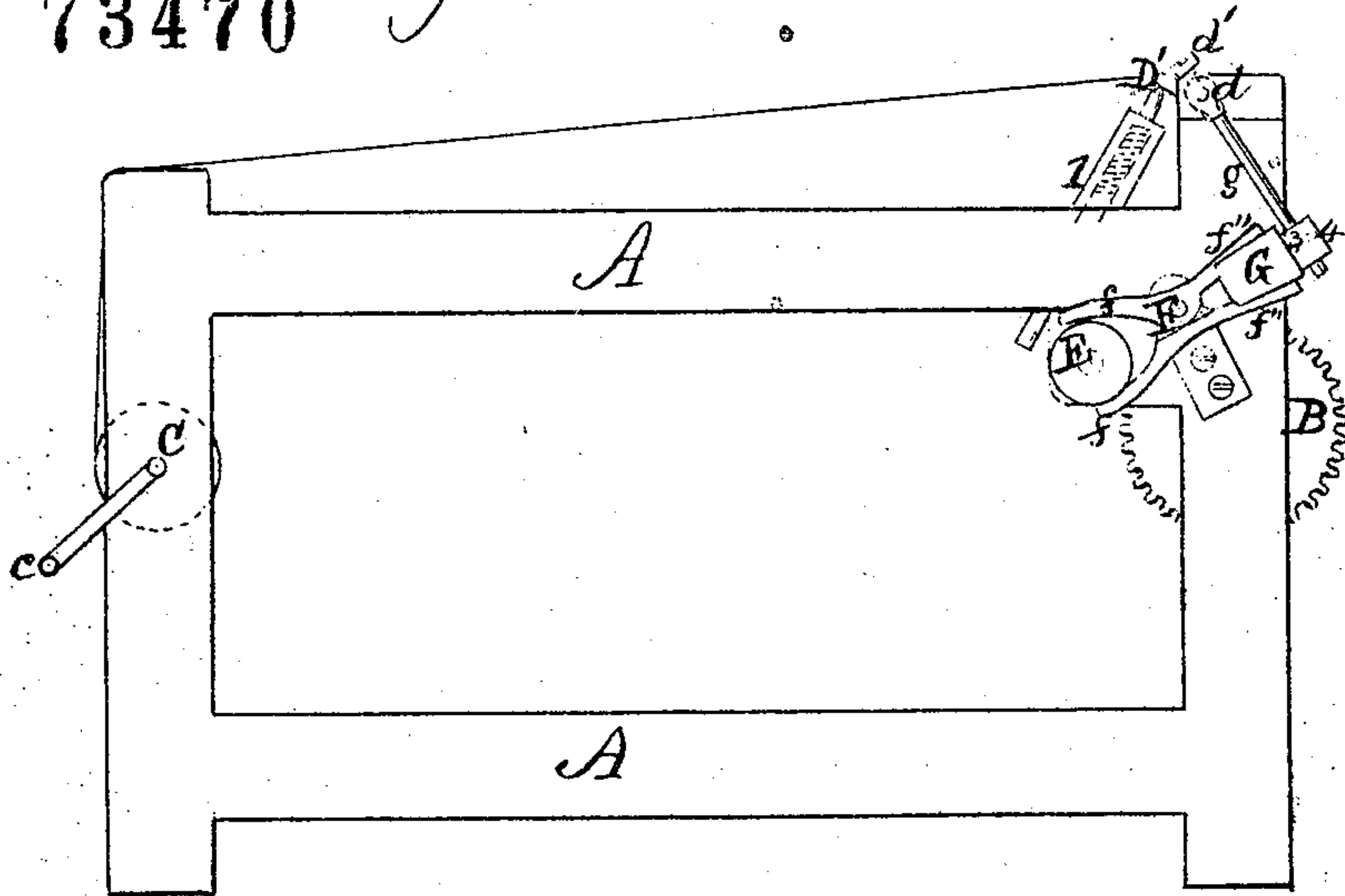
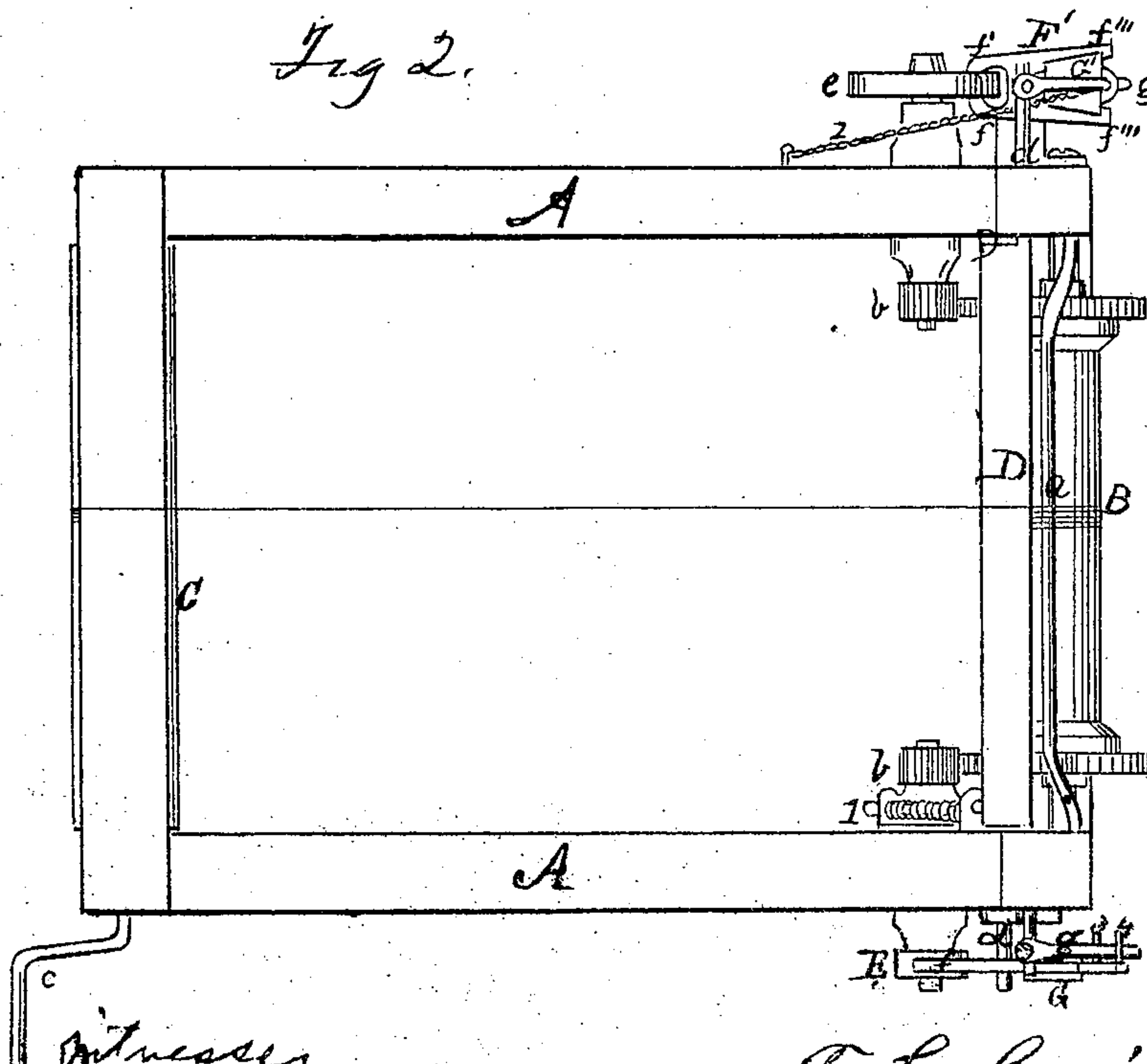


Fig 2.



Witnesses
 W. M. Parker
 A. B. Ely

T. S. Smith

United States Patent Office.

T. S. SMITH, OF BOSTON, MASSACHUSETTS.

Letters Patent No. 73,470, dated January 21, 1868.

IMPROVEMENT IN LET-OFF 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 Boston, in the State of Massachusetts, have invented a new and useful Improvement in Let-Offs for Looms, of which the following, with the drawings, is a full description.

Figure 1 is a side elevation.

Figure 2, a top view.

A A is the frame; B, the yarn-beam with gear-wheel; C, the cloth-beam; D, a rocking whip-roll or flat lever, rocking or bearing in the frame *d d*. E and *e* are a kind of escapement-wheels, having geared pinions *b b* connected with the gears of the yarn-beam. F is a double friction-clutch brake, operating on the periphery of the escapement-wheel E. F' is a similar clutch, operating on the outer edges of the escapement-wheel *e*, the one being a modification of the other. These clutches have two forcep-arms *f f* and *f' f'*, embracing the escapements E and *e*, and two other extended arms *f'' f''* *f''' f'''*, so pivoted that when the extended arms are pressed apart, the forcep-arms will grasp or clutch the wheel and stop its motion. Between these extended arms is a wedge-shaped block, G, and in the modification G', to the outer end of which is attached a rod, *g*, and in the modification *g'*, which is also attached to the shaft *d* of the flat rocking whip-roll D. No. 1 is a spring, pressing upward the front edge D' of D, and in the modification, No. 2 is a spring drawing upon rod *g'*, and so pressing upward the front edge D' of D. *a* is a stationary rod or whip-roll, over which the yarn passes from the yarn-beam.

The operation is this: The yarn passing over the flat rocking-bar D, when pulled sufficiently hard will overcome the tension of springs 1 or 2, as one or the other modification is used, and depress the front edge D', which will elevate or throw outward the extreme end of rod *g* or *g'*, and elevate or throw outward the wedge-block G or G', and thus relieve the wheels E or *e* from the pinch of the clutch F or F'. This will permit the wheel to revolve, and the yarn to be given off so far as wanted. As soon as sufficient yarn is given off, the action of spring 1 or 2 will overcome the tension of the yarn, and the front edge D' of D will rise, and rod *g* or *g'* will press wedge-block G or G' down between the extended arms *f'' f''* or *f''' f'''*, and cause the forcep-arms *f f* or *f' f'* to clutch the wheels E or *e*, and stop the delivery of the yarn; D *g*, D' *g'*, forming a lever of which *d* is the fulcrum. The relative position of the arms may be altered and adjusted by a set-screw, *d'*.

By crossing the arms of the clutch, the pressure of the yarn may be made to operate from the whip-roll directly upon the wedge-block, and by forcing it down between the extended arms, cause the forceps to clutch the wheel.

What I claim in let-off for looms and yarns, is—

1. The double-arm clutch, constructed, arranged, and operating substantially as described, when the grasp of the clutch is loosened by the pull or tension of the yarn, substantially as set forth.
2. The lever D *g*, in combination with the clutch, when arranged and operating substantially as described.
3. The combination of lever, clutch, and spring, substantially as and for the purposes described.
4. The combination of lever, wedge-block, clutch, and spring, substantially as and for the purposes described.
5. The combination of whip-roll, wedge-block, and cross-arm clutch, substantially as and for the purposes described.

In testimony whereof, I have hereunto subscribed my name.

T. S. SMITH.

Witnesses:

W. M. PARKER,
A. B. ELY.