

B. TWEEDLE.

Improvement in Let-Off Mechanisms for Looms.

No. 129,628.

FIG. 1.

Patented July 16, 1872.

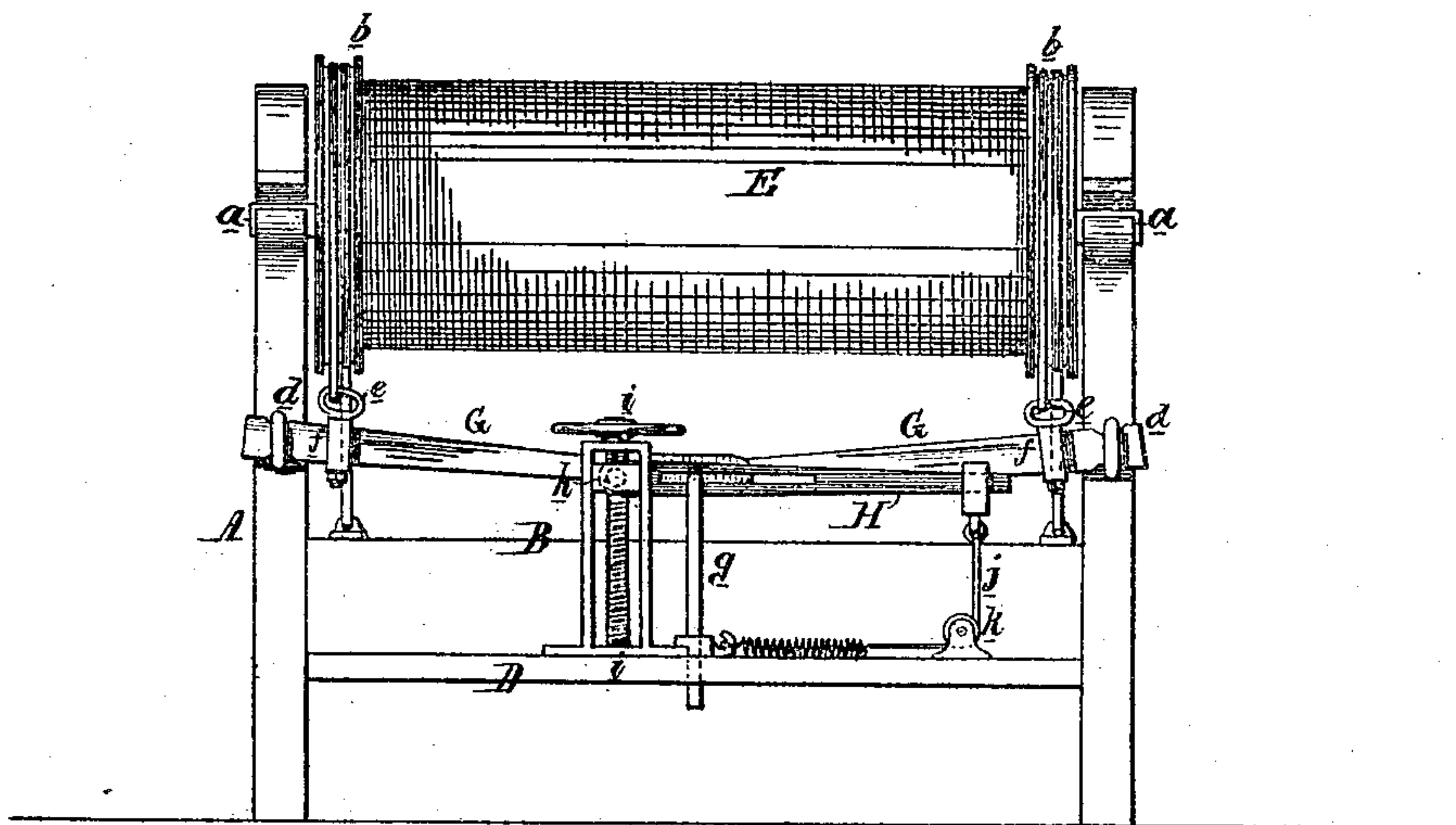


FIG. 2.

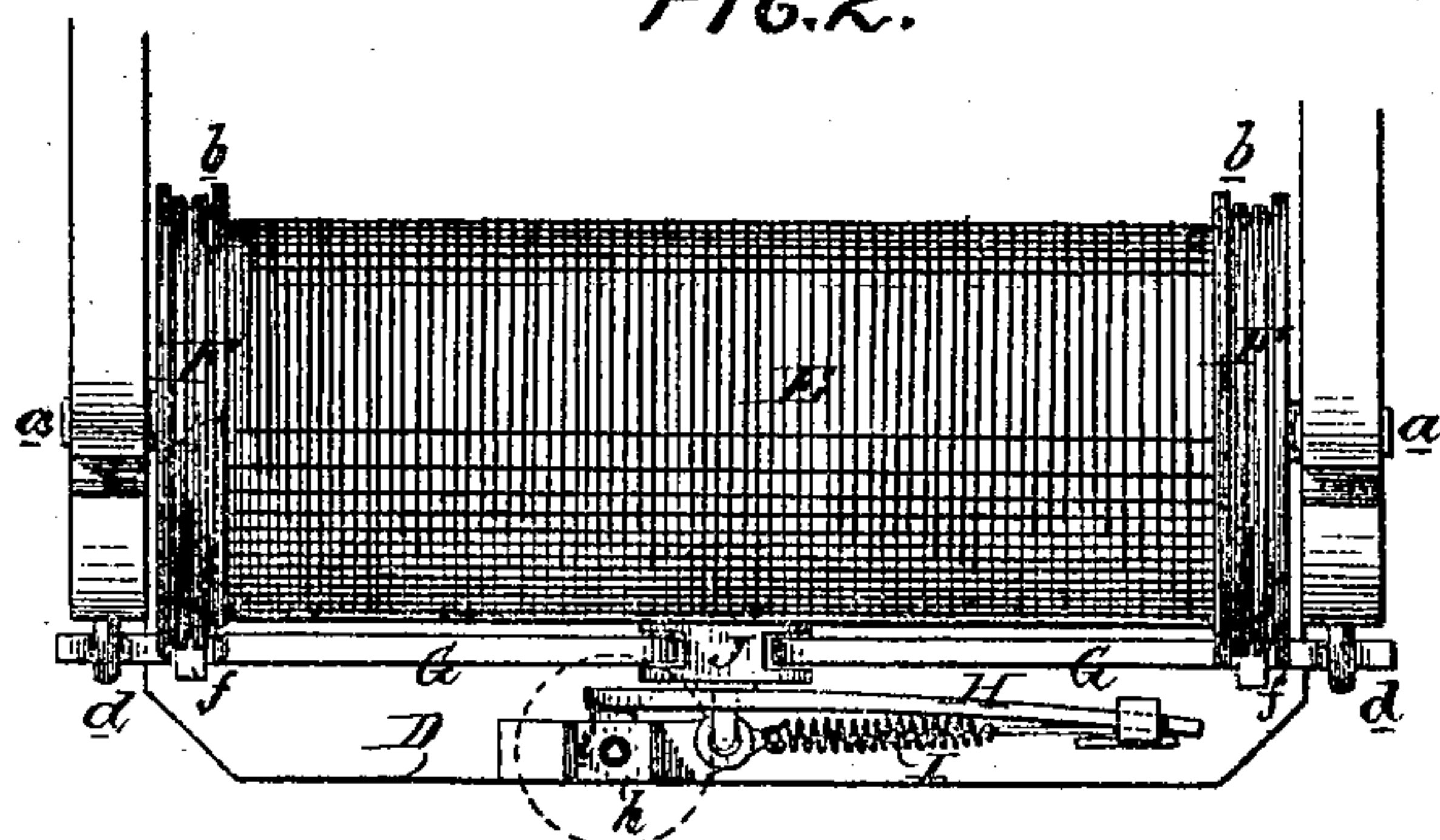


FIG. 3.

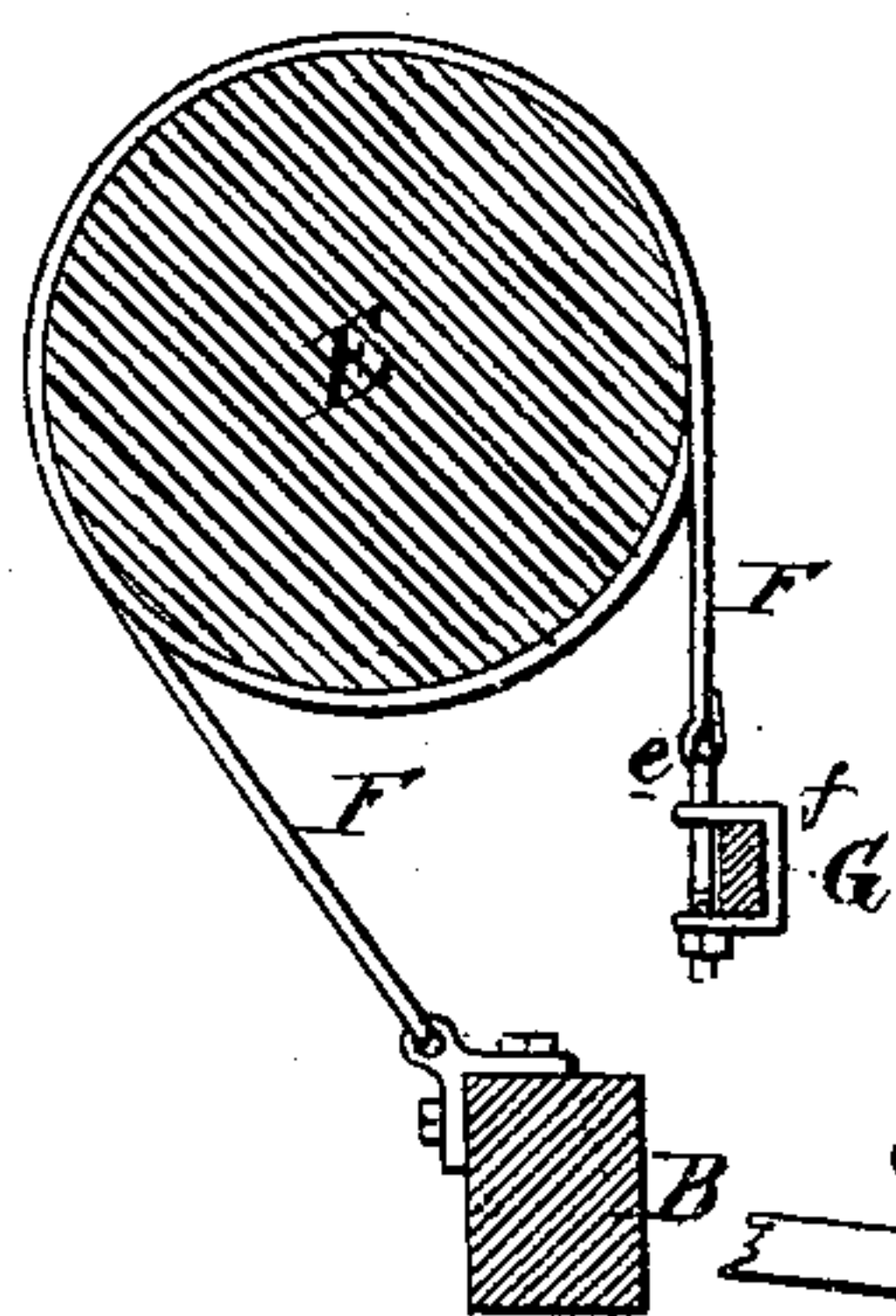


FIG. 4.

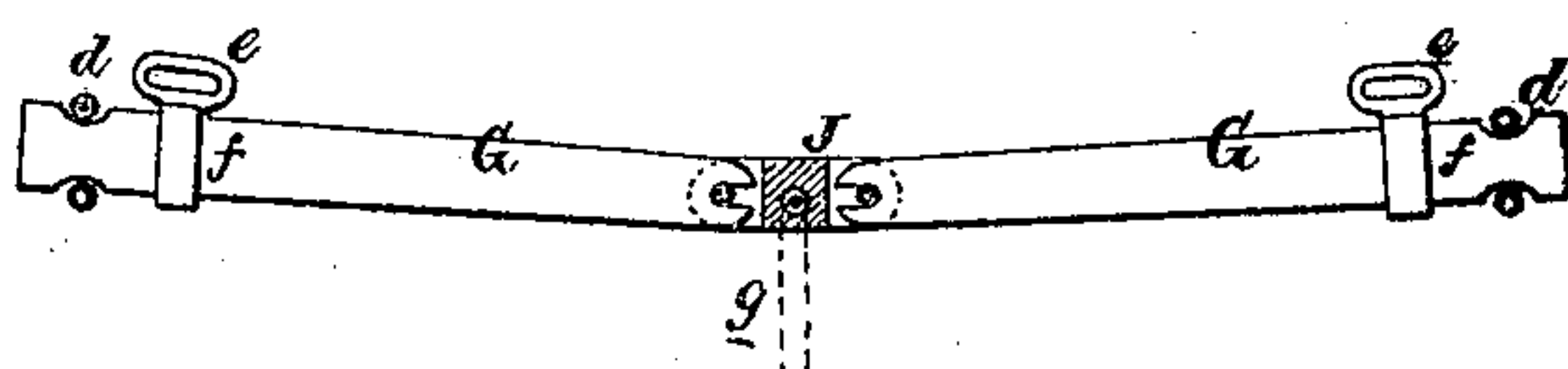


FIG. 6.

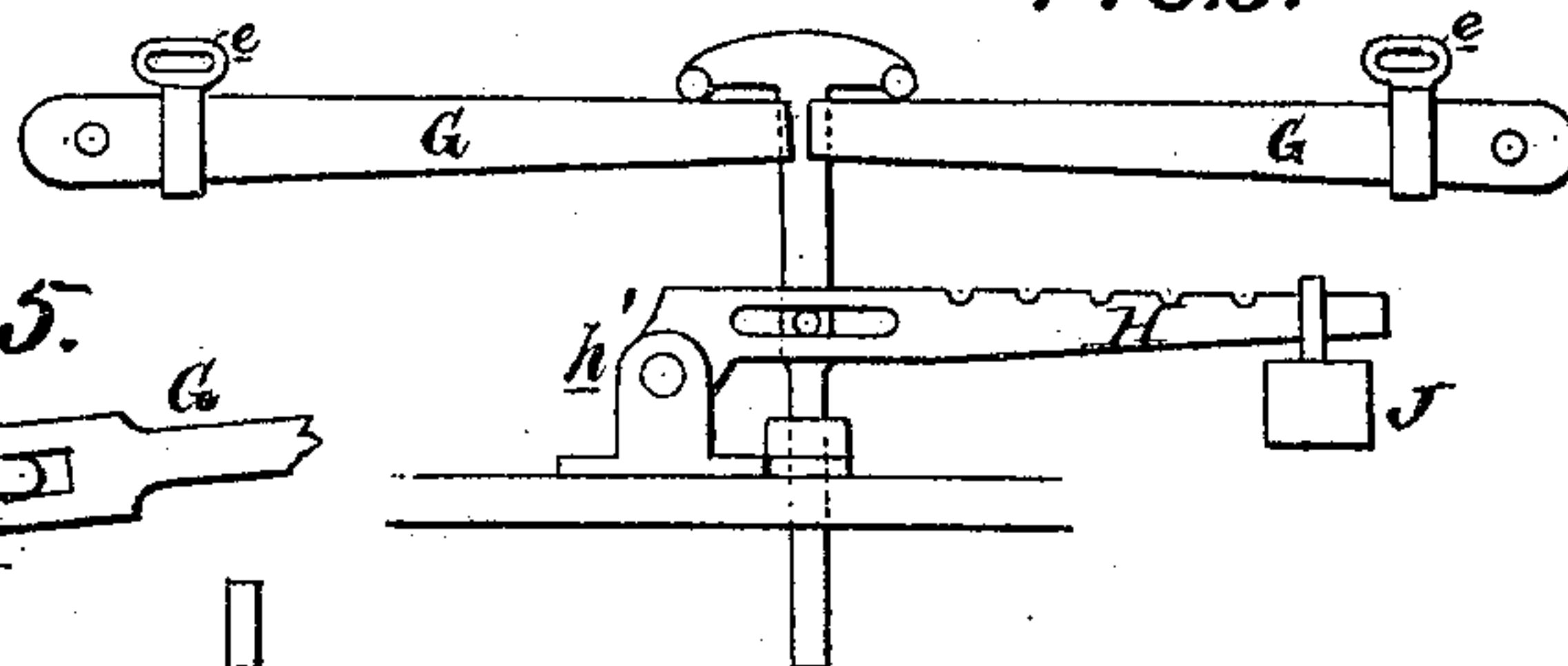
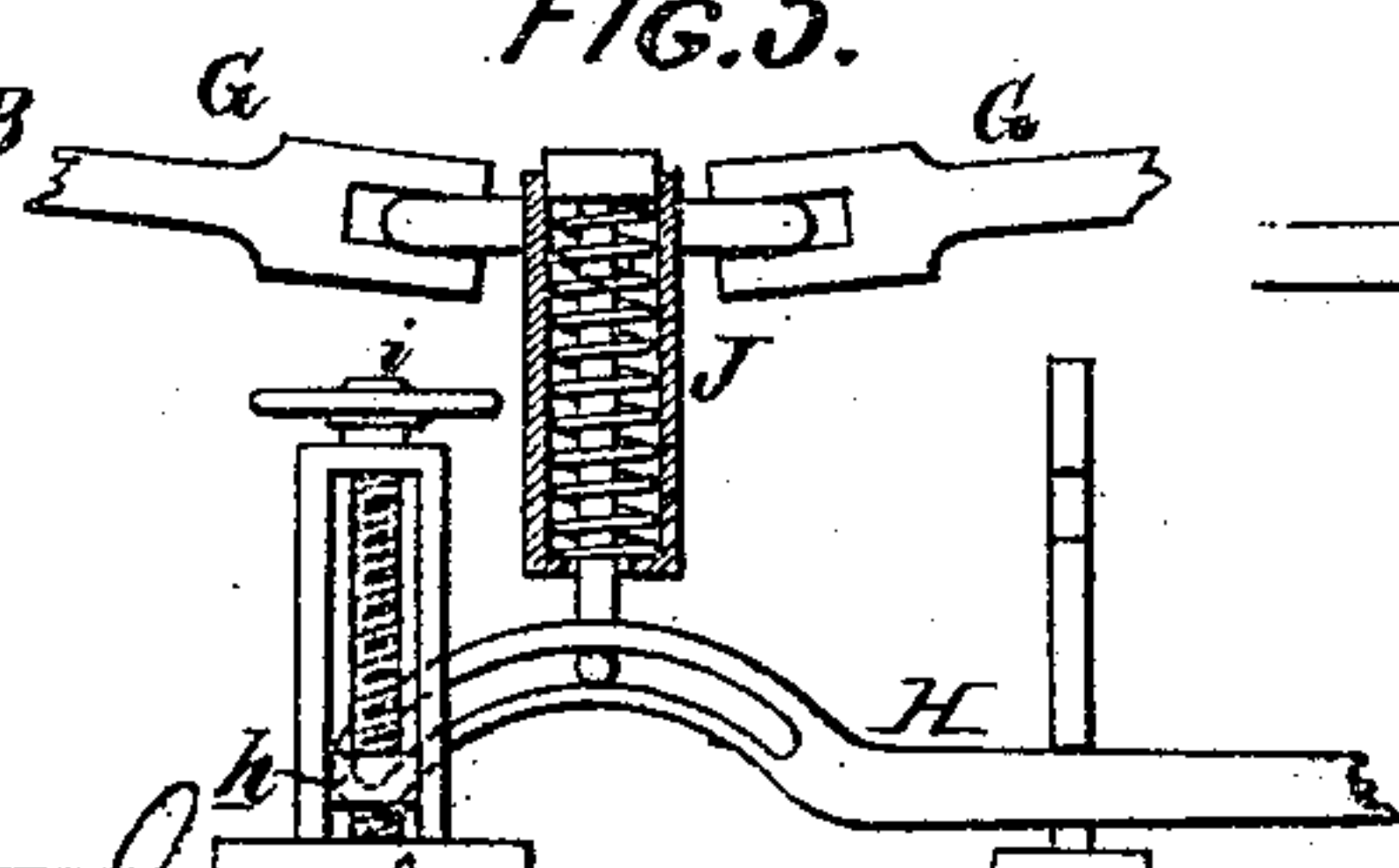


FIG. 5.



WITNESSES,

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UNITED STATES PATENT OFFICE.

BENJAMIN TWEEDLE, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN LET-OFF MECHANISMS FOR LOOMS.

Specification forming part of Letters Patent No. 129,628, dated July 16, 1872.

Specification describing an Improved Warp-Beam Regulator, invented by BENJAMIN TWEEDLE, of Philadelphia, Pennsylvania.

Improved Warp-Beam Regulator.

My invention consists of certain devices, fully explained hereafter, for regulating the tension of warp-threads in looms, and for entirely removing the tension on the said thread when necessary, the main feature of the said invention being a supplementary lever connected to the friction-levers of a warp-beam and acted on by a spring or its equivalent; other devices and modifications, explained hereafter, forming part of my invention.

In the accompanying drawing, Figure 1 is a rear view of a loom with my improved warp-beam regulator; Fig. 2, a plan view of the same; Fig. 3, a section of the beam on the line 1 2, Fig. 1; Fig. 4, a detached view; and Figs. 5 and 6, views of modifications.

A and A' represent the opposite side frames of the loom; B and D, the rear cross-pieces; and E, the warp-beam, the journals of which turn in suitable bearings *a a* in the said frames. The warp-beam has at each end a grooved pulley, *b*, for the reception of the friction bands or ropes F F, by which more or less retarding-friction is imparted to the warp-beam, and consequently more or less tension is imparted to the warp-threads. The bands F F are secured at one end to the cross-piece B of the loom, and at their opposite ends to levers G G, which have their fulcrums in staples *d* on the side frames. (See Figs. 1 and 3.) The bands are connected to the levers G in the present instance by means of eyebolts *e* adapted to slides *f* on the said levers, the nuts at the lower ends of the bolts permitting the latter to be drawn downward for the purpose of taking up the slack of the friction-bands, while the slides can be moved upon the levers to accord with the position of the bands, which will depend upon the length of the warp-beam. Ordinarily, a number of heavy weights are hung to the ends of the levers G for the purpose of insuring a proper degree of friction of the bands or ropes F upon the warp-beam and of regulating such friction. These heavy weights, however, are difficult to adjust, or to detach when it becomes necessary to instantly slacken the warp; and they are also objectionable inasmuch as they only per-

mit the levers to yield with a jerking motion to the movements of the warp-beam, which causes an irregular tension upon the warp and produces inequalities in the fabrics. These objections I have overcome by dispensing with the heavy weights altogether, and by using in the place of the same an additional lever, H, coupled to both levers G, and acted on by a spring or light weight, as I will now proceed to describe. The forked outer ends of the levers G are connected together by a coupling-block, J, Figs. 2 and 4, which is guided and sustained in a proper horizontal position by a sliding rod, *g*, adapted to an opening in the cross-piece D of the loom or in the floor beneath. The upper bent portion of the rod also passes through a slot in the lever H above mentioned, which is thus connected to the levers G, and the said lever H has its fulcrum on a guided nut, *h*, which can be raised or lowered to any required extent by means of a screw, *i*, Figs. 1 and 2. The outer end of the lever H is connected by a cord, *j*, passing around a pulley, *k*, to a spiral spring, I, which constantly acts upon and tends to depress the said lever, the said spring consequently acting, through the latter, upon the levers G, which are depressed equally, and their friction-bands F tightened upon the opposite ends of the warp-beam. The friction of the bands F upon the warp-beams, and consequently the tension on the warp-thread, can be increased to any desired extent by lowering the adjustable fulcrum *h* of the lever H, and thus correspondingly depressing the levers G; and in like manner the friction can be diminished by merely raising the said fulcrum.

When it is necessary to instantly release the warp-beam, and thus slacken the warp, the coupling-block J and levers may be simultaneously raised and held up by means of the rod *g*, which will have the effect of loosening the friction-bands F; and the parts can be as instantly restored to their original positions, so as to retard the warp-beam to the same extent as before by merely releasing the said rod. The same effect could be produced, however, without the aid of the rod *g* by disconnecting the cord and spring from the outer end of the lever H, which would permit the latter to instantly yield until the warp was sufficiently slackened.

In the modification of my invention shown in Fig. 5 a lever, H, with its adjustable fulcrum, is employed; but the spring is arranged in the connection between the said lever and the levers G, so that the latter only are capable of yielding to the movements of the warp-beam, while the tension of the spring is regulated by adjustments of the lever H and its fulcrum.

In Fig. 6 the lever H has a fixed fulcrum, *h'*—and a comparatively light weight, J, is employed instead of the spring I—and is rendered adjustable toward and from the fulcrum of the lever for the purpose of regulating the tension, so that there is no necessity in this case of making the fulcrum adjustable.

By the employment of the compound leverage above described I am enabled not only to dispense with the usual heavy weights and to effect the most delicate adjustments of the parts, so as to regulate the tension as desired, but the friction upon both ends of the warp-beam is equalized, and the levers yield with-

out jerking to the movements of the warp-beam and permit the warp to be regularly unwound in accordance with the movement of the cloth-beam.

I claim as my invention—

1. The single supplementary lever H, connected to both of the friction-levers G of a warp-beam, substantially as set forth, and acted on by a spring or its equivalent, substantially as and for the purpose described.

2. In combination with the above, I claim the adjustable fulcrum *h* for the lever H.

3. The combination, with the levers G and H, of a coupling-block, J, guided by a rod, *g*, substantially as described.

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

BENJ. TWEEDLE.

Witnesses:

WM. A. STEEL,
HARRY SMITH.