

(No Model.)

M. C. WILLIAMS.

TAKE UP AND LET OFF MECHANISM FOR LOOMS.

No. 351,726.

Patented Oct. 26, 1886.

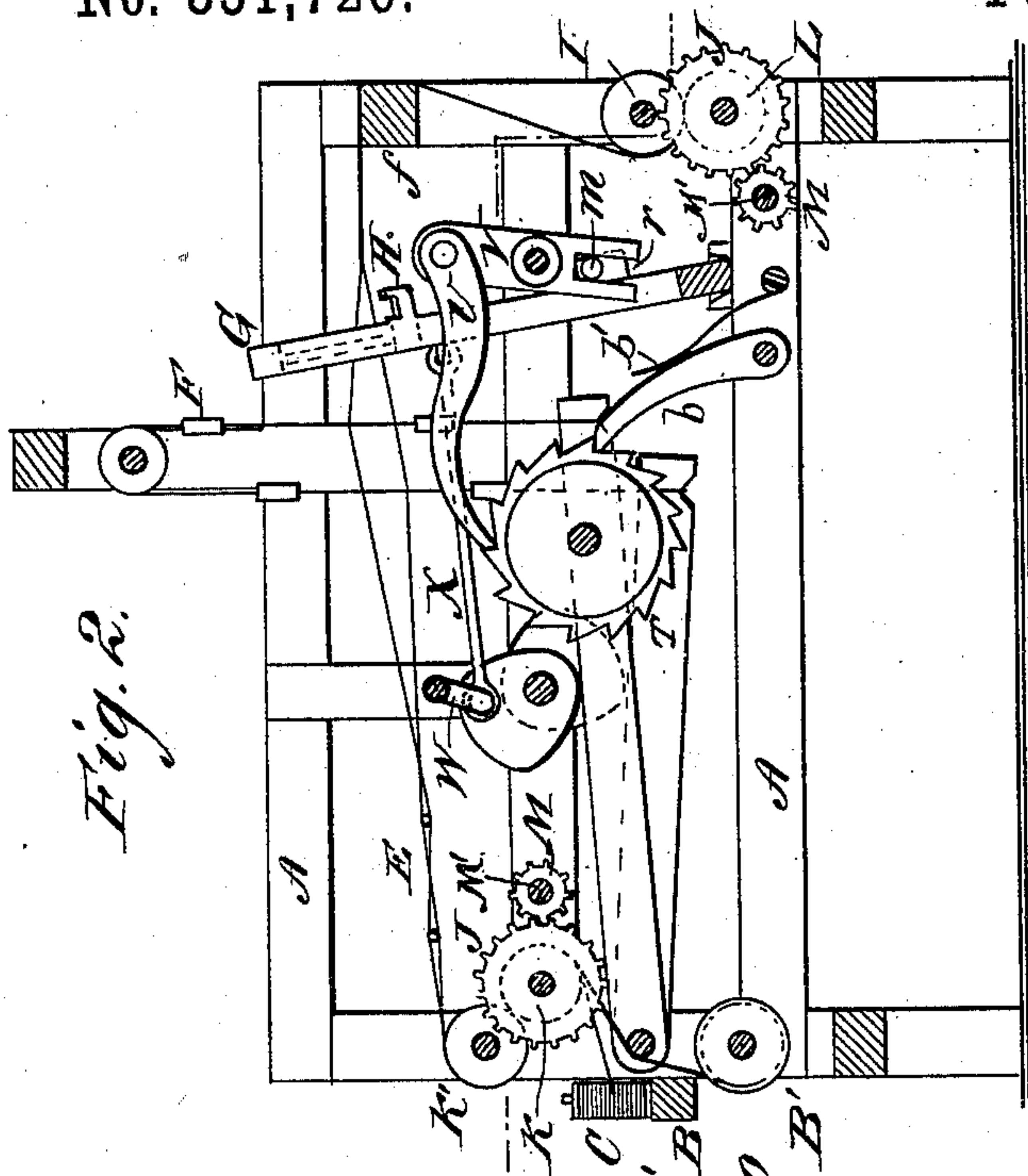


Fig. 2.

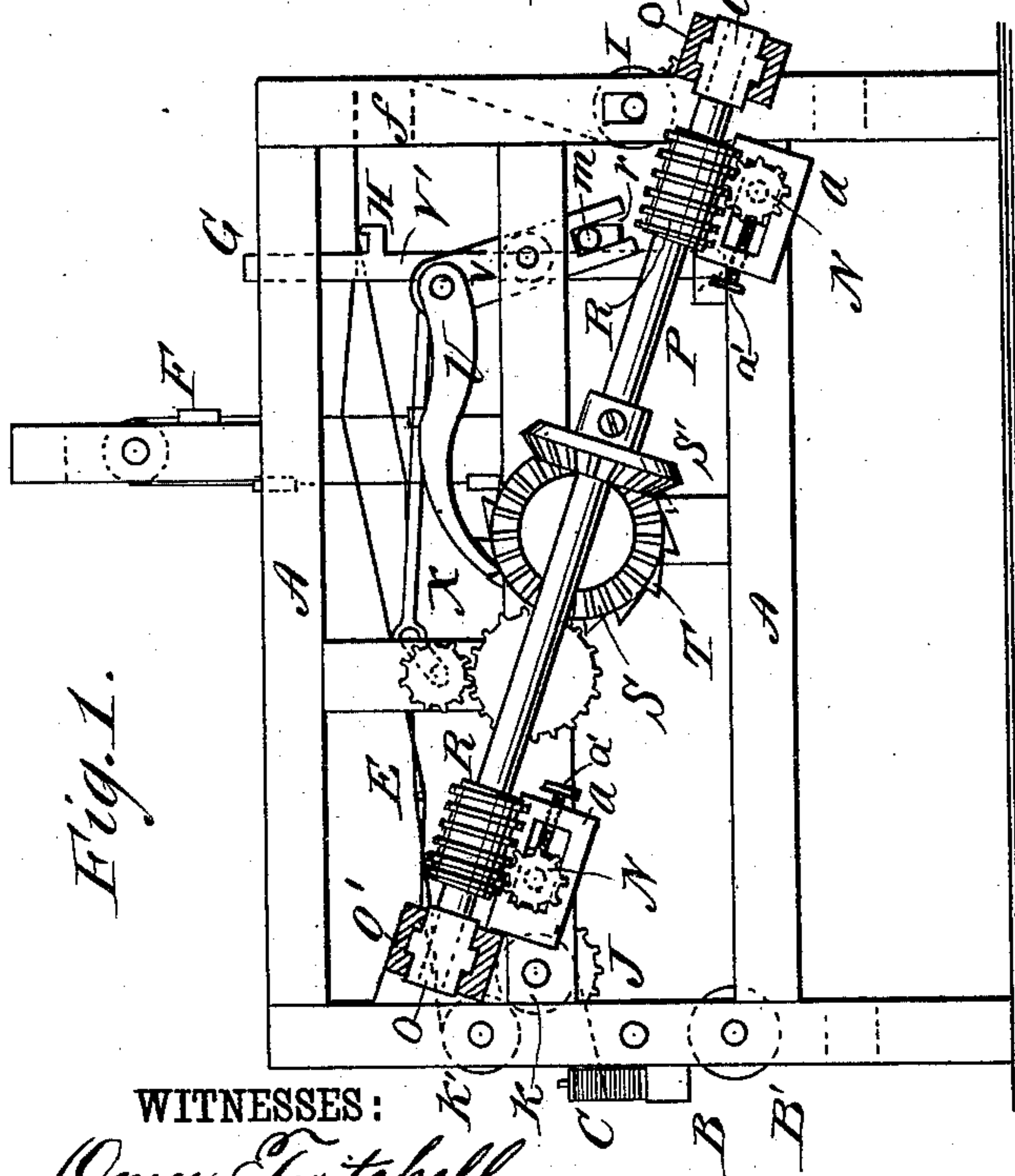


Fig. 1.

WITNESSES:

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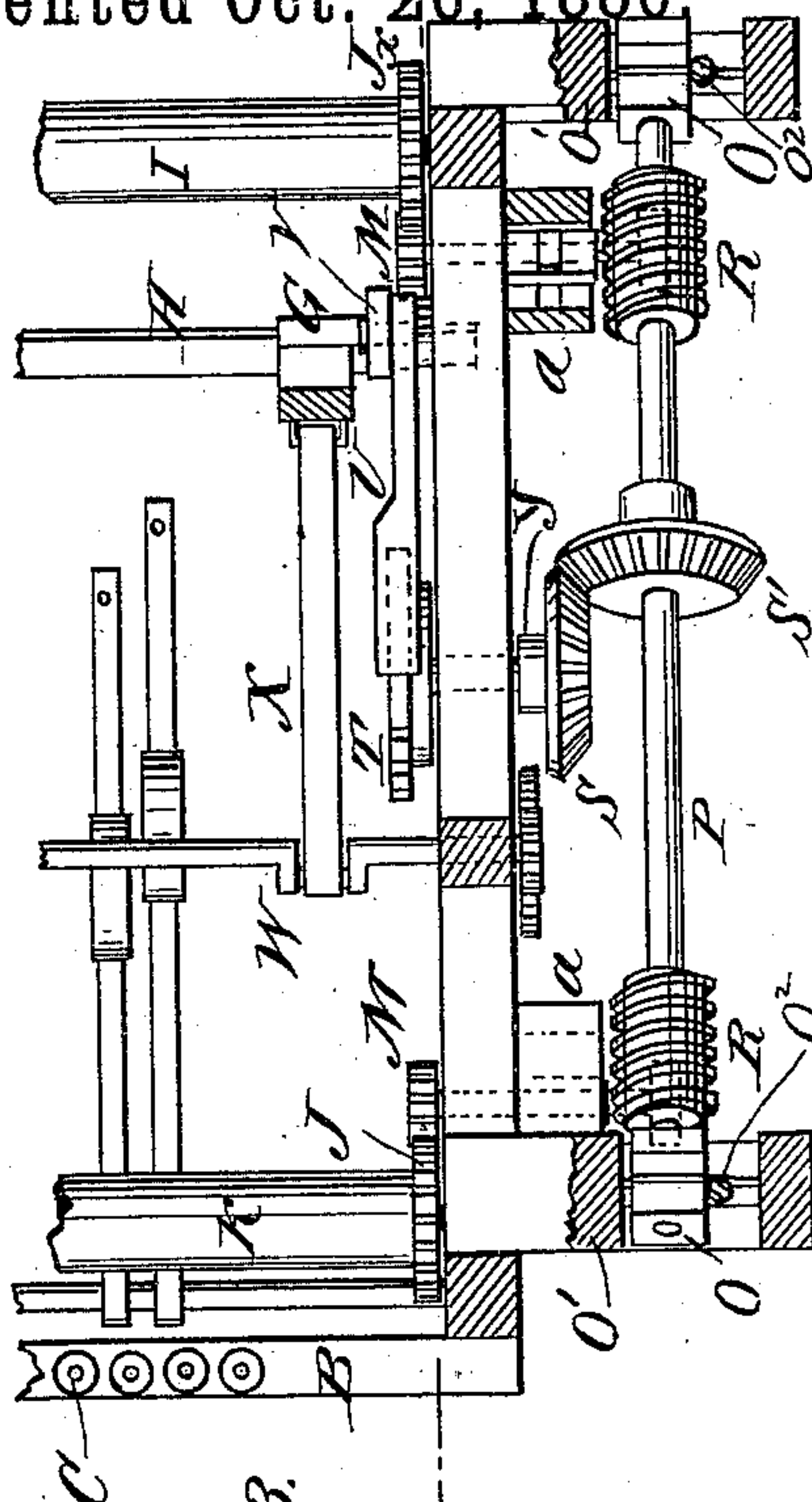


Fig. 3.

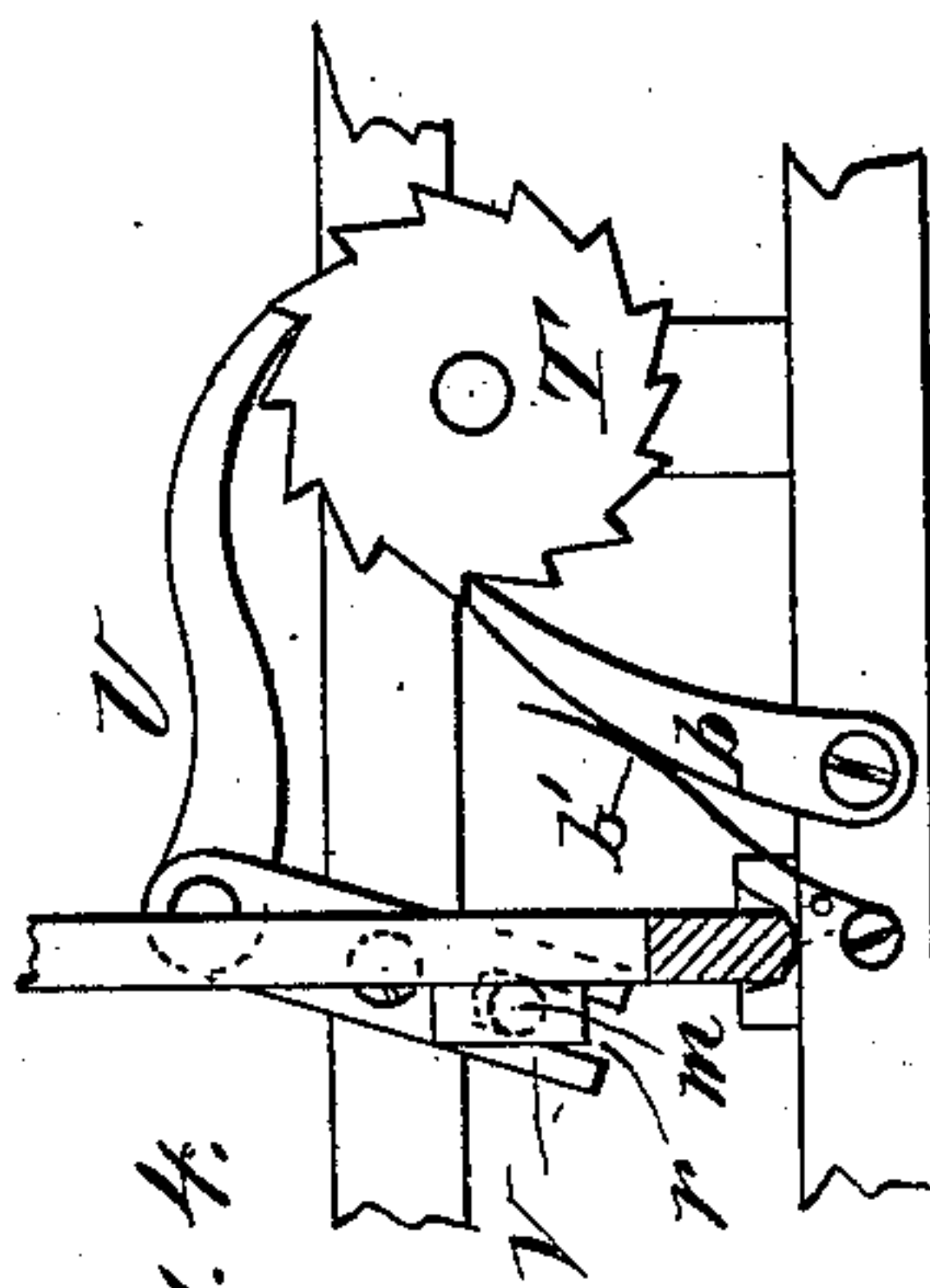


Fig. 4.

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MATTHEW C. WILLIAMS, OF ADAMS, MASSACHUSETTS.

TAKE-UP AND LET-OFF MECHANISM FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 351,726, dated October 26, 1886.

Application filed July 6, 1885. Serial No. 170,772. (No model.)

To all whom it may concern:

Be it known that I, MATTHEW C. WILLIAMS, of Adams, in the county of Berkshire and State of Massachusetts, have invented new and Improved Take-Up and Let-Off Mechanism for Looms, of which the following is a full, clear, and exact description.

This invention consists of the construction and arrangement of the within-described mechanical devices, whereby a given length of warp is let off intermittently from the warpspools or from the warp-beam, as the case may be, in weaving and the cloth taken up as woven.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 represents a side elevation of a loom for weaving cloth with my improvements applied thereto, the frames to support the bearings of an adjustable shaft on the outside of the loom-frame being shown in section. Fig. 2 shows a vertical-longitudinal section through the line *xx* of Fig. 3. Fig. 3 represents a top view of a part of a loom, showing the take-up and let-off mechanism, the frame of the loom being in section to better delineate the several devices mounted and operating thereon. Fig. 4 is a detail view.

A in the accompanying drawings represents the frame of a loom, of the usual form and construction, upon which are mounted the several operating parts employed in weaving, consisting of the creel B, spools C thereon, warp E, let-off roller K, heddles and harness F, lay G, having race-board H, cloth-roller I, and take-up roller L.

The mechanism to produce the intermittent movements to let off a given length of warp at every beat of the lay and to operate a take-up roller intermittently to take up the cloth is composed of cog-wheels J, of an equal number of teeth each, one wheel being secured to the end of a let-off roller, K, and the other wheel secured to the take-up roller L to revolve a cloth-roller, I.

The two cog-wheels J J are geared into pinions M M, mounted upon shafts M', supported in bearings in the frame A. To the opposite ends of these shafts are secured pinions N N,

which have the same number of cogs each as the pinions M M.

On the outside of the frame A, in suitable bearings, O, is placed a shaft, P, to the ends of which are fitted corresponding worms, R, into which the pinions N N take, as shown in Fig. 1. Near the center of this shaft P are two bevel-wheels, S S', with an equal number of teeth each, one of which, S', is mounted upon the shaft P, and the other, S, upon a shaft, Y, supported in bearings on the frame A. To the opposite end of the shaft Y on which the bevel-wheel S is mounted is secured a ratchet-wheel, T.

To operate the ratchet-wheel T at the proper time to let off, through the mechanism connected therewith, the required length of warp at each beat of the lay G, a pawl, U, is pivoted to the upper end of a vibrating lever, V, the lower end of which lever is slotted at *r* to receive a pin, *m*, extending from the lay, so that at each beat of the lay the pawl U will revolve the ratchet-wheel T a given distance, by which the let-off roller K is revolved to supply the length of warp required and the take-up roller L revolved to take up the woven cloth on the roller I, which is revolved by friction from the roller L. The roller I, upon which the cloth is wound as it is delivered from the loom, is placed directly above the roller L, secured to the shaft of the cog-wheel J, and is driven by the friction of the roller L to wind the cloth thereon, so as to take up the same length of cloth as the roll increases in diameter.

The lay G is operated back and forth in the usual manner by cranks W and connecting-rods X, and the harness, treadles, and cams to operate them are all of the usual construction, and, being no part of my invention, do not require to be described in detail in this application.

Above the let-off roller K is placed an independent friction-roller, K', the warp E from the spools C passing between the let-off roller K and the friction-roller K', as shown in Fig. 1. To vary the length of the warp to be let off and cloth taken up at each beat of the lay, the pinions M M are changed to larger or smaller ones, as the case may require. The warp E may be supplied from spools C, mounted upon the creel B; or a beam, B', may be substituted

for the spools; or the spools and beams may both be employed at the same time, if required or preferred.

To compensate for the different sizes of pinions M used in weaving various fabrics driven by the outer pinions, N, and worms R, the boxes *a* are slotted, so that the shafts of these pinions may slide therein, as shown in Figs. 1 and 3, to enable them to be properly adjusted and secured by set-screws *a'*, or in any convenient and suitable manner.

To permit the worms R to be disengaged from the pinions for shifting the latter, and also to enable the attendant to draw up the cloth to have access to the interior of the loom for repairs or for other purposes, the bearings O of the shaft P slide outward on brackets O', attached to the frame, and are held in position by pins O², as clearly shown in Fig. 3.

To prevent a backward movement of the ratchet-wheel T from any cause, a stop-pawl, *b*, and spring *b'* are provided, as represented in Figs. 2 and 4.

The operation of the foregoing mechanism, to be used in looms for weaving to let off a given length of warp intermittently and at the proper time and to take up the cloth upon a cloth-roller, may be described as follows: The warp E from the spools C passes partly around and between the let-off roller K and friction-roller K', thence through the heddles to the lay G,

and the cloth thence passes over the breast-beam *f* and between the positive take-up roller L and around the cloth-roller I, driven by the friction of the positive-motion roller L. The loom being set in motion, at every beat of the lay G, the vibrating lever V operates the pawl U to revolve the ratchet-wheel T one notch. The bevel-wheels S S' turn the shaft P, revolving the worms R thereon, by which, through the pinions M N and cog-wheels J, the let-off roller K is revolved with a positive movement a fixed distance, and a given length of warp thereby let off, and at the opposite end of the loom, by corresponding mechanism, the take-up roller with a positive movement will revolve the cloth-roller to take up the slack of the cloth continuously.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

The combination, with the take-up and let-off rollers K L, pinions J on the ends of the said rollers, and the lay G, of the shafts M', the pinions M N, the shaft P, the worms R, the shaft Y, the bevel-wheels S S', the ratchet-wheel T, the lever V, and the pawl U, substantially as herein shown and described.

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Witnesses:

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