No. 808,658. PATENTED JAN. 2, 1906.

E. HERZIG.

TENSION DEVICE FOR LOOMS.

APPLICATION FILED DEC. 16, 1904.

2 SHEETS—SHEET 1.

Fig. 1.

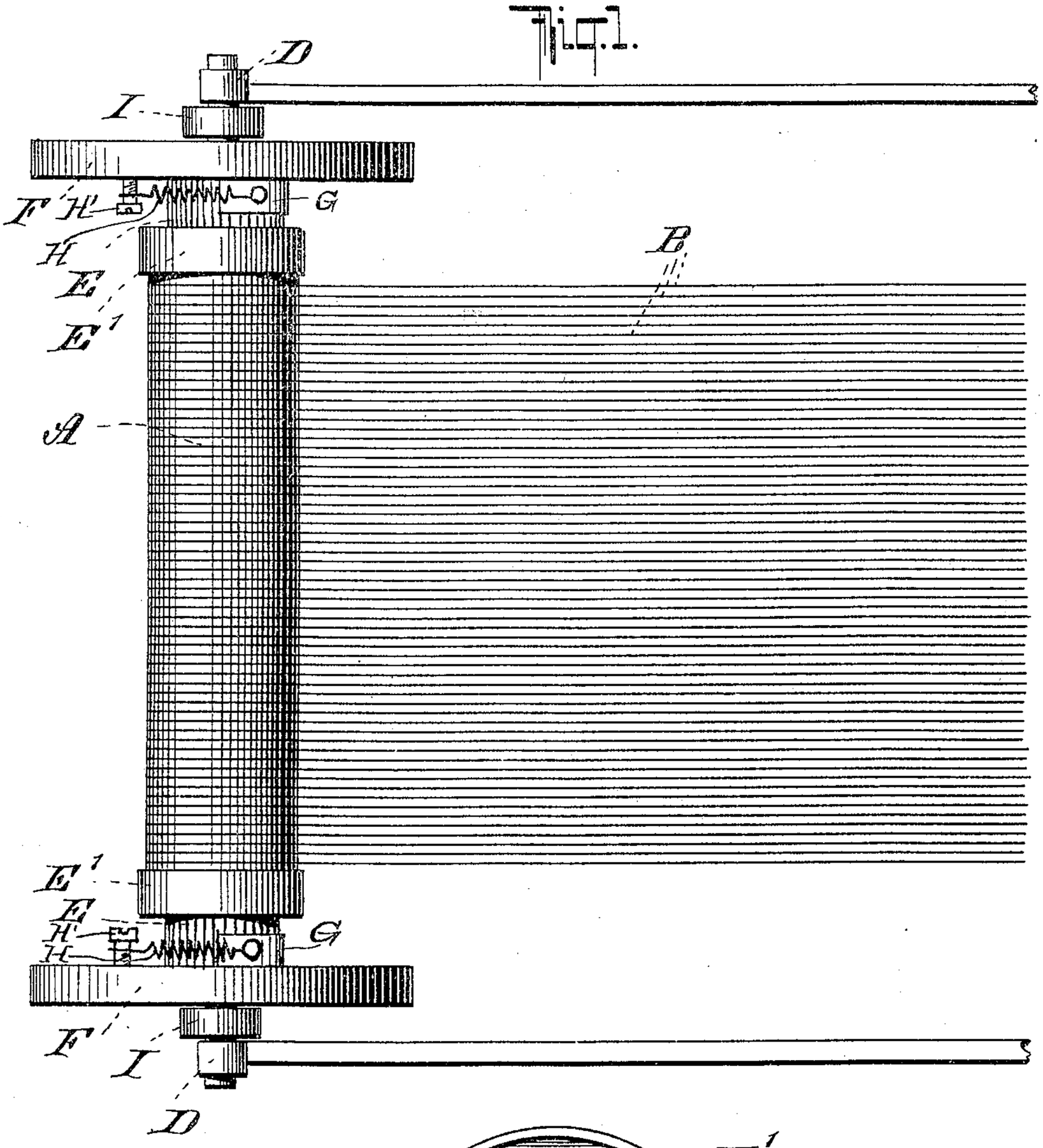
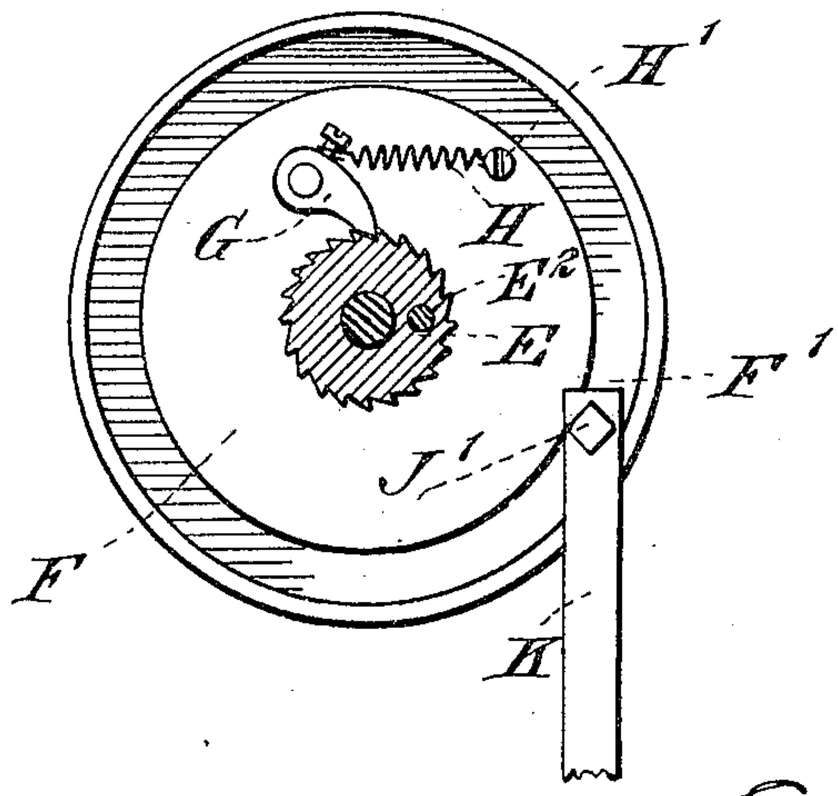


Fig. 3.



Witnesses
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2 SHEETS—SHEET 2.

Fig. 2.

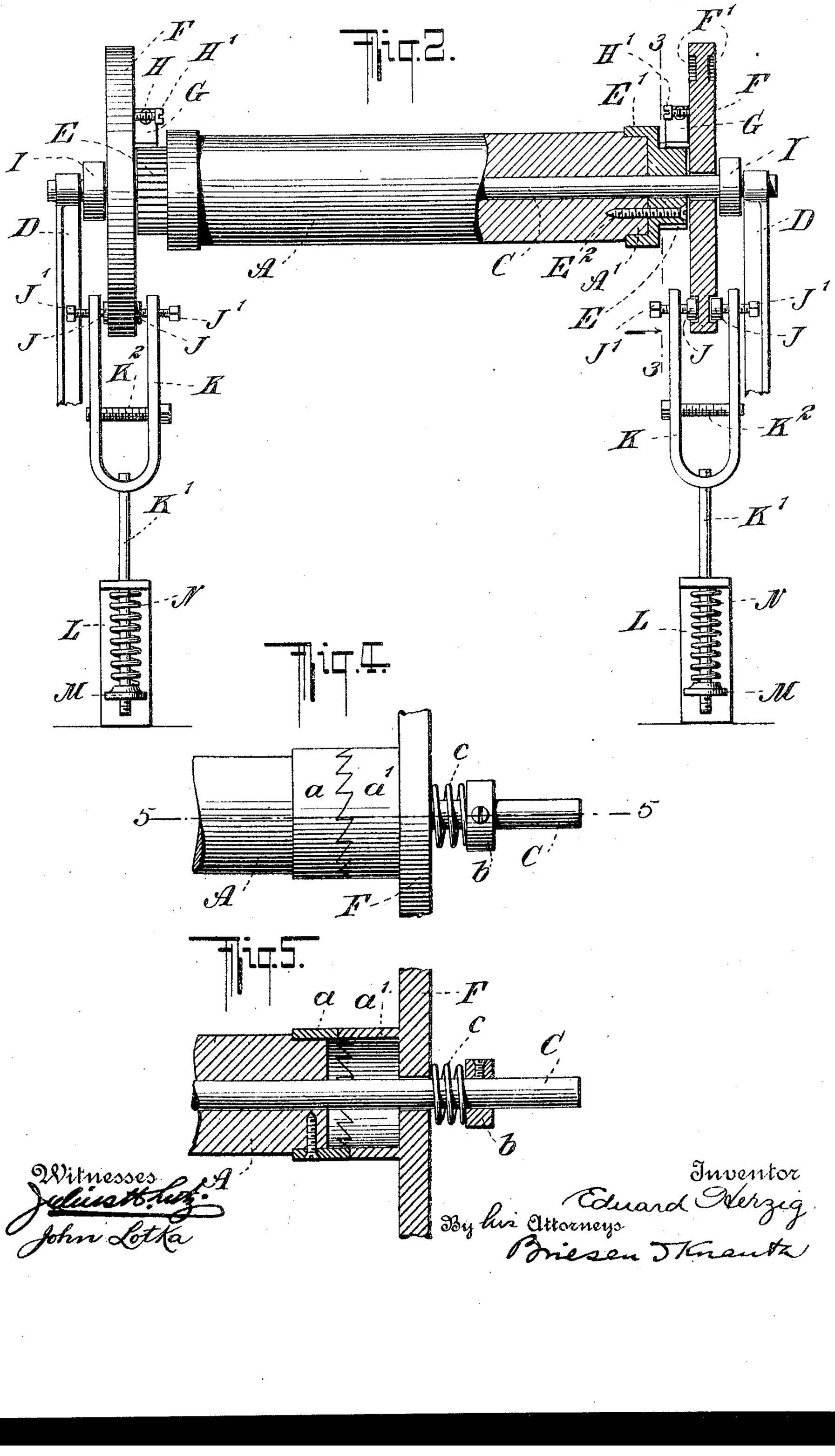

Fig. 4.

Fig. 5.

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UNITED STATES PATENT OFFICE.

EDUARD HERZIG, OF WEST HOBOKEN, NEW JERSEY.

TENSION DEVICE FOR LOOMS.

No. 808,658. Specification of Letters Patent. Patented Jan. 2, 1906.

Application filed December 16, 1904. Serial No. 237,060.

To all whom it may concern:

Be it known that I, EDUARD HERZIG, a citizen of the United States, and a resident of West Hoboken, county of Hudson, State of New Jersey, have invented certain new and useful Improvements in Tension Devices for Looms, of which the following is a specification.

My invention relates to looms, and has for its object to provide a simple and efficient mechanism to be applied to the warp-beam for giving a uniform tension to the warp-threads under all conditions and to make it possible to slacken the warp for any purpose whatsoever without the necessity of cumbersome adjustments.

To this end my invention consists in certain features of construction, which will be hereinafter described in detail and then specifically pointed out in the appended claim.

Reference is to be had to the accompanying drawings, which illustrate a specific embodiment of my invention, and in which—

Figure 1 is a plan view of a part of an ordinary loom with my invention applied thereto. Fig. 2 is an end view of the loom, partly in section. Fig. 3 is a sectional view on line 3 3 of Fig. 2. Fig. 4 is a detail view of another form of my invention, and Fig. 5 is a section thereof on line 5 5 of Fig. 4.

A represents the usual warp-beam from which the warp-threads B unwind, said warp-beam being secured to a shaft C, which is journaled in suitable bearings on the frame D of the loom.

Referring now more particularly to Figs. 1, 2, and 3, the warp-beam is provided with a reduced portion A′, which fits into a portion E′ of the ratchet E. The said ratchet E is secured to the warp-beam in any convenient manner—as, for instance, by screws E^2. Thus the ratchet E and the warp-beam A rotate together. Mounted loosely on the shaft C adjacent to the ratchet E is a disk F, provided on each face with an annular groove F′. Upon the inner face of the disk F is movably secured a pawl G, which may be held in engagement with the teeth of the ratchet E in any suitable manner—as, for instrnce, by a spring H, one end of which is secured to the pawl and the other end fastened to a pin H′ on the disk F. A collar I is secured to the shaft C for the purpose of retaining the disk F in position. In each of the annular grooves F′ is located a collar J, which is movable in said grooves and into which collars pass the bolts J′. The said collars J are adapted to bear against the inner surface of the grooves F′ of the disk F. The said bolts J′ also screw through a fork K, having a stem K′, which passes through a bracket L, secured to the floor in any convenient manner. The said stem K′ is screw-threaded a part of the distance from its free end to accommodate a hand-nut M. A coil-spring N surrounds the stem K′ and abuts with one end against the bracket L, the other end of said spring resting against the nut M. Thus by turning the bolts J′ the position of the collars J in the grooves F′ may be changed and the position of the fork K may be changed to compress the spring N more or less to change the tension of said spring. The tension of the spring N may further be changed by screwing the nut M up or down on the stem K′. A supplemental bolt K^2 is applied to the fork K to prevent the same from spreading when the bolts J′ are screwed up so that the collars J engage the inner face of the grooves F′ and secure the collars J and the fork K in position. I wish it distinctly understood that the ratchet E, the disk F, and the other mechanism described with relation thereto may be duplicated on the other side of the loom, although this is not absolutely necessary.

Referring now to Figs. 4 and 5, the warp-beam A is provided, preferably at each end, with a member *a* of a clutch which may be of any suitable construction. In the particular instance illustrated the clutch member *a* is provided with teeth which engage the teeth of the mating clutch member *a′*, which forms part of or is secured to the disk F. A collar *b* is secured to the shaft C, between which collar *b* and the disk F is located a coil-spring *c*, surrounding said shaft C and serving to keep the two clutch members normally in engagement with each other. The two clutch members *a* and *a′* in this form of my invention take the place of the ratchet and pawl shown in Figs. 1, 2, and 3. The remainder of the mechanism may be the same as that described with regard to the structure shown in Figs. 1, 2, and 3. In the operation of weaving, the warp-beam A rotates as the warp-threads are drawn off, which rotary motion is communicated to the disk F through the medium of the ratchet E and pawl G. The disk F will carry the collars J and fork K with it a certain distance, thus compressing the spring N. After the tension of the spring N, due to the compression thereof, exceeds the pulling power of the warp-thread the fork K will re-

main stationary with the spring under tension, the collars J thus slipping along in the grooves F′ as the disk F rotates. Thus the warp-threads are kept under a uniform tension during the weaving operation. If the warp-threads from any cause whatever become slack, the ratchet and pawl in Figs. 1, 2, and 3 and the clutch in Figs. 4 and 5, working in conjunction with the disk F and the spring N, serve to take up all such slack and to maintain the warp-threads always at a uniform tension. Further, if from any cause some part of the woven fabric is defective and it is desired to cut out such part of the work this may be done without any trouble and the work brought back to the heddles by simply turning the warp-beam, the pawl or the one clutch member simply slipping over the teeth of the ratchet or of the other clutch member, the disks in this instance remaining stationary.

I wish it distinctly understood that the ratchet and pawl shown in Figs. 1, 2, and 3 of the drawings is to be considered the equivalent of the clutch shown in Figs. 4 and 5 of said drawings—that is, a clutch having two members, one of which is on the disk F and the other of which is secured to the warp-beam A.

Various modifications may be made without departing from the spirit of my invention.

I claim and desire to secure by Letters Patent—

The combination of the warp-beam A carrying the ratchet-teeth, with the grooved disk F concentric to the warp-beam and carrying spring-pressed pawl into engagement with the ratchet-teeth of the warp-beam and with the tension-adjusting arm K, having collars J, entering the annular grooves of disk F, and spring N as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

EDUARD HERZIG.

Witnesses:
WILLIAM REINDEL,
E. WHILLDIN.