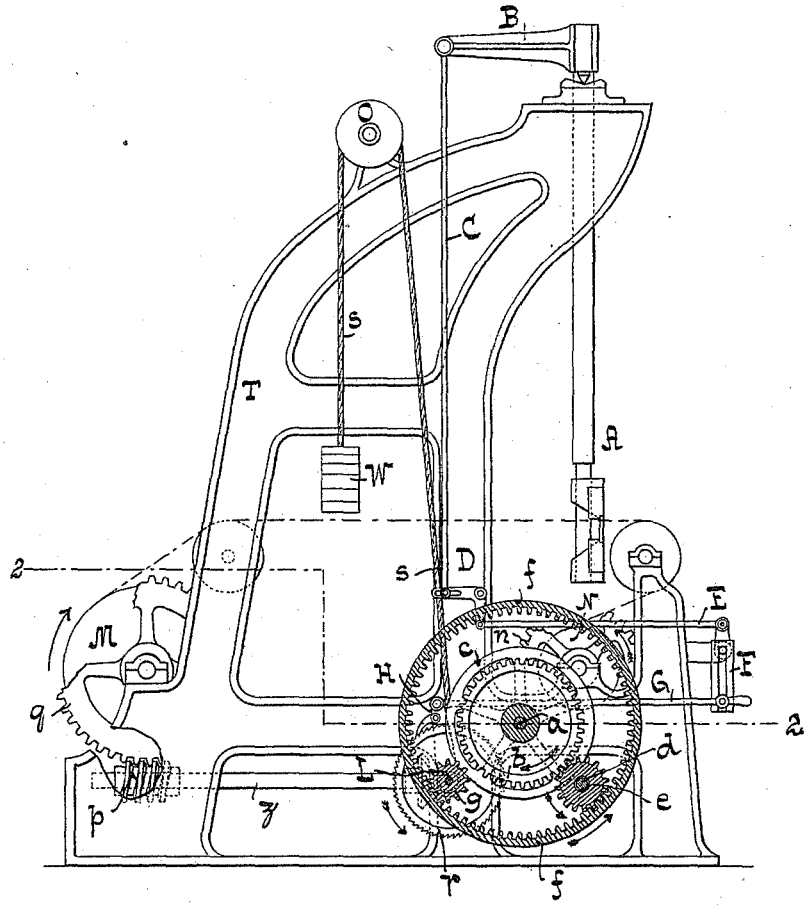
(No Model.) 2 Sheets—Sheet 1.

C. SEYBOLD.

LOOM.

No. 570,234. Patented Oct. 27, 1896.

Fig. 1.



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(No Model.) 2 Sheets—Sheet 2.

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Fig. 2.

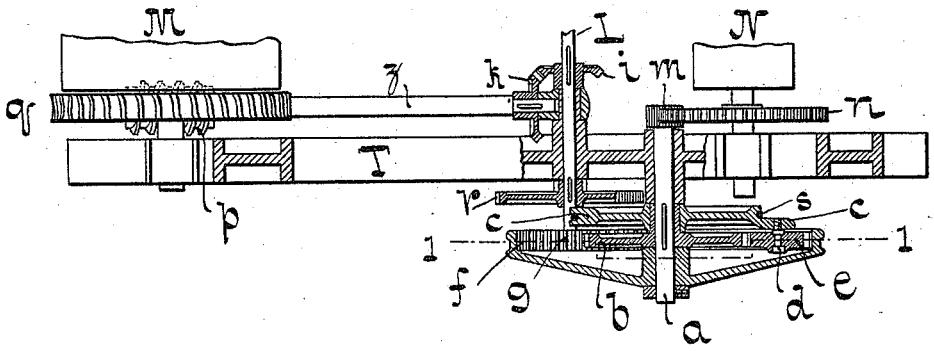
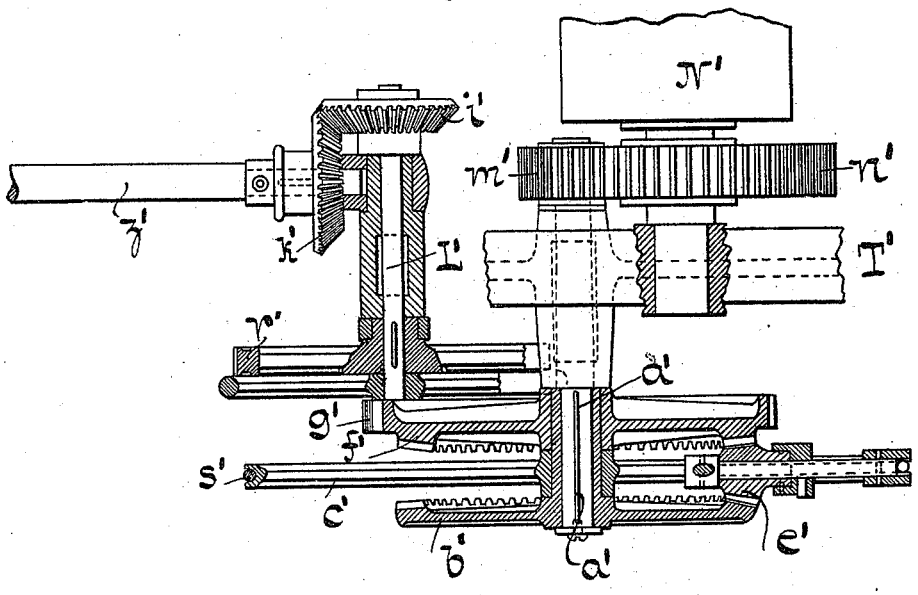


Fig. 3.



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UNITED STATES PATENT OFFICE.

CHRISTIAN SEYBOLD, OF ZWEIBRÜCKEN, GERMANY.

LOOM.

SPECIFICATION forming part of Letters Patent No. 570,234, dated October 27, 1896.

Application filed May 8, 1895. Serial No. 548,565. (No model.) Patented in Germany February 6, 1894, No. 78,217, and in Austria-Hungary June 26, 1894, No. 1,329 and No. 22,736.

To all whom it may concern:

Be it known that I, CHRISTIAN SEYBOLD, a subject of the Emperor of Germany, and a resident at Zweibrücken, in the Kingdom of Bavaria, Germany, have invented new and useful Improvements in Looms, (for which I have obtained Letters Patent in Germany, No. 78,217, dated February 6, 1894, and in Austria-Hungary, No. 1,329 and No. 22,736, dated June 26, 1894,) of which the following is a specification.

My invention refers to improvements in let-off and take-up movements for looms, the nature of which will be fully explained in the following specification, in connection with the annexed drawings, in which—

Figure 1 represents a side elevation, partly in section, on the line 1 1, Fig. 2, of part of a loom provided with my improvements. Fig. 2 is a sectional plan of the let-off and take-up movements, the section being taken on the line 2 2, Fig. 1. Fig. 3 is a similar sectional plan of a modification.

Similar letters of reference designate corresponding parts throughout the several views of the drawings.

Referring now to Figs. 1 and 2 of the drawings, the letter T designates one of the side frames of a loom; M, the warp-beam; N, the cloth-beam, and A the lay or lathe.

L is a shaft mounted in the frame T and carrying at its inner end a bevel-gear *i*, engaging a bevel-gear *k* on a shaft *z*, Fig. 2, the opposite end of which carries a worm *p*, engaging a worm-wheel *q*, placed on the shaft of the warp-beam M between the frame and the end of the warp-beam M. Upon the outer end of the shaft L is mounted a pinion *g*, and between the latter and the frame is placed a ratchet-wheel *r*.

a is another shaft mounted in the frame and carrying at its inner end a pinion *m*, engaging a gear-wheel *n*, mounted between the frame and the cloth-beam and upon the shaft of the latter. Upon the outer end of the shaft *a* is loosely mounted an internally-toothed wheel *f*, into which the pinion *g* on shaft L meshes. Fixed upon the shaft *a* is a gear-wheel *b*, and loosely mounted upon the same shaft is a rope-wheel *c*, carrying the shaft *d* of a pinion or planet wheel *e*, which engages the inner teeth of the wheel *f* and the teeth of the fixed wheel *b*.

W is a weight suspended on a rope or chain *s*, passing over a pulley *o* and attached to the wheel *c*.

B is an arm projecting from the lay and connected to a pawl-carrying arm H by means of a rod C, bell-crank lever D, rod E, lever F, and rod G, whereby motion is imparted to the ratchet-wheel *r* from the lay.

The operation of the above-described apparatus is as follows: During the forward motion of the lay the arm B is depressed, the rod E pushed toward the right, and the rod G, with the pawl-arm H, to the left, the pawl sliding over the teeth. During the return motion the ratchet-wheel *r* is turned a certain distance, and with it the pinion *g*, as well as the bevel-wheel *i*, which latter, through bevel-wheel *k*, worm *p*, and worm-wheel *q*, turns the warp-beam a certain amount, letting off the warp correspondingly. The pinion *g*, under the action of the ratchet-wheel, is turned to the right, and under the action of the weight W to the left, and is then free to adjust its position; but under the action of the weight W it will transmit a uniform moment of force to the cloth-beam; that is to say, the force will be constant for a given radius. By properly proportioning the parts, and in particular the wheels *i* and *k* of the let-off, the weight W need not be wound up in weaving ordinary lengths of goods. Assuming the rope-wheel with the axis *d* of the planet-wheel *e* to remain stationary during a forward movement of the ratchet-wheel, the cloth-beam would be moved forward a fixed amount, but if this should cause too much strain the weight W will yield and reduce the motion of the cloth-beam.

Fig. 3 shows, on a larger scale, a modification of the apparatus shown in Figs. 1 and 2. In this figure *r'* is the ratchet-wheel, the shaft of which carries a pinion *g'*, meshing into the outer teeth of a gear-wheel *f'*, loosely mounted upon a shaft *a'*. This gear-wheel *f'* has a bevel toothed rim, and a similar bevel-wheel *b'* is mounted on the same shaft *a'*. Between the two bevel-wheels is placed to mesh with the same a bevel-pinion *e'*, mounted on the rope-wheel *c'*.

The operation of this apparatus is substantially the same as that of the apparatus shown in Figs. 1 and 2.

What I claim as new is—

1. In a combined let-off and take-up for looms, the combination with the warp-beam, the cloth-beam and the lay, of a ratchet-wheel, an operative connection between the lay and said ratchet-wheel, means for transmitting motion from the ratchet-wheel to the warp-beam, a pulley, means for subjecting the same to a constant turning stress, a planet-wheel carried by said pulley, and two toothed wheels meshing with the planet-wheel; a shaft; one of said wheels being fixed upon said shaft and geared to the cloth-beam, and the other wheel being loose on the same shaft and geared to the ratchet-wheel, substantially as and for the purpose set forth.

2. In a combined let-off and take-up for looms, the combination with the warp-beam M, the lay, and the cloth-beam N, of a rope-pulley *c*, a rope *s*, a weight W connected by said rope with said pulley, a ratchet-wheel *r*, an operative connection between the lay and said ratchet-wheel, means for transmitting motion from the ratchet-wheel to the warp-beam, a shaft *a* geared to the cloth-beam, a toothed wheel *f* geared to the ratchet-wheel shaft and loosely mounted on said shaft *a*, a toothed wheel *b* fixed to the shaft *a*, and a planet-wheel *e* carried by the rope-pulley *c* and meshing into the wheels *b* and *f*, substantially as and for the purpose specified.

3. In a combined let-off and take-up for looms, the combination with the warp-beam, the cloth-beam and the lay, of a ratchet-wheel, an operative connection between the lay and said ratchet-wheel, a wheel *q* on the warp-beam shaft between the end of the warp-beam and the frame, an operative connection between said wheel and the ratchet-wheel, a rope-pulley, a rope, a weight connected by said rope with said pulley and tending to turn the same, a planet-wheel carried by said pulley, a shaft *a*, two toothed wheels meshing with said planet-wheel, one of the said wheels being loose upon the shaft *a* and geared to the ratchet-wheel, and the other being fixed upon the same shaft *a*; a toothed wheel *n* fixed upon the cloth-beam shaft between the cloth-beam and frame, and a pinion *m* fixed on the shaft *a* and meshing with the wheel *n*, substantially as and for the purpose specified.

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

CHRISTIAN SEYBOLD.

Witnesses:

FRIEDRICH CORRELL,

HEINRICH DEBUS.