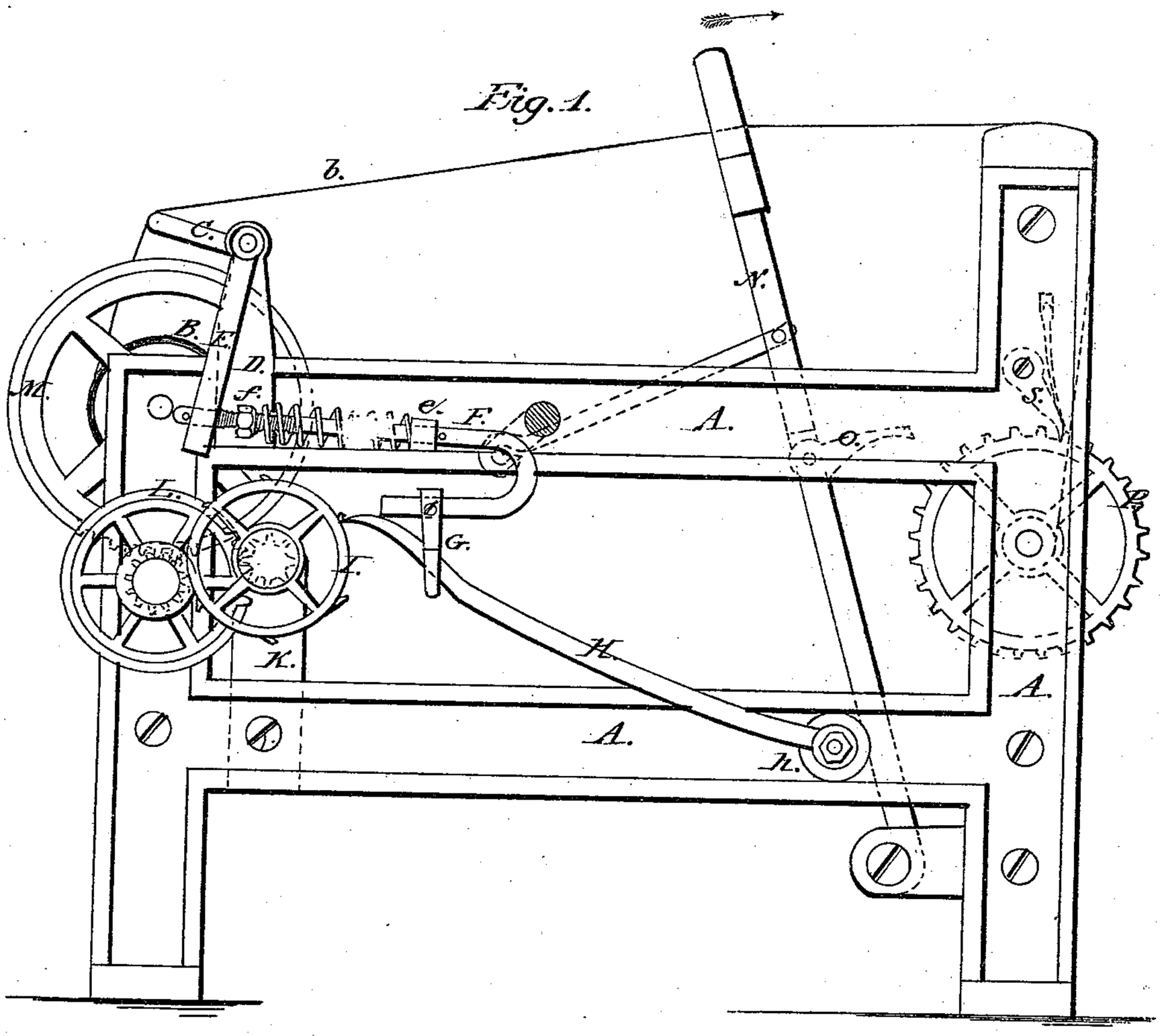
# J. A. Marden's

## Take up & Let off for Looms.

No. 64,235. Patented Apr. 30. 1867.

Fig. 1.




Witnesses:

David. Kelley.
L.B. Swinford

Inventor:

Jer.h A. Marden.
by J.H. Adams.
Atty.

# United States Patent Office

JEREMIAH A. MARDEN, OF NEWBURYPORT, ASSIGNOR BY MESNE ASSIGNMENTS TO A. B. ELY, OF NEWBURYPORT, MASSACHUSETTS.

*Letters Patent No.* 64,235, *dated April* 30, 1867.

## IMPROVEMENT IN LET-OFF AND TAKE-UP MECHANISM FOR LOOMS.

The Schedule referred to in these Letters Patent and making part of the same.

Be it known that I, JEREMIAH A. MARDEN, of Newburyport, in the county of Essex, and State of Massachusetts, have invented a new and useful Improvement in Let-Off and Take-Up Motion for Looms, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 represents a side elevation of a machine showing my invention.

The object of my invention is to maintain an equal tension on the warp under all circumstances, and also to enable the operator to readily adjust the tension, so as to adapt it to the manufacture of finer or coarser goods, according to the quality of yarn used. It also has for its object the adjustment of the take-up motion in relation to the let-off motion, so as to insure a perfect uniformity in the formation of the web.

The invention consists in the employment of an adjustable pawl and escapement-wheel, together with a spring-rod, provided with an adjustable collar, in combination with a rocker-shaft, provided with an arm, in such a manner as to enable the operator to readily adjust the tension on the warp at pleasure; and, in connection with the above, the invention also consists of a take-up motion, effected by means of a pawl, attached to the lay, and operating a toothed wheel on the cloth-beam, in combination with one or more pawls, attached to the frame of the machine, by means of which the cloth-beam is made to take up the web in perfect uniformity with the let-off of the yarn from the yarn-beam.

Referring to the drawings, A represents the frame of a loom, and B the yarn-beam, as ordinarily arranged. *b b* represent the yarn passing from the yarn-beam towards the lay. C represents a rocker-shaft, arranged over the yarn-beam, and having its bearings in uprights D, secured to the sides of the frame A. To the outer end of the rock-shaft, at one side of the frame, is attached an arm, E, extending downwards, as shown in the drawing. In the lower end of the arm E is a slot, in which is fitted loosely one end of a rod, F, and so secured as to admit of a free longitudinal play of the rod as the arm is vibrated. A portion of the rod F is formed with a screw-thread, on which is fitted a nut, *f*. The rod F passes through an eye or perforated lug, *e*, attached to the frame; and between this lug and the nut *f*, upon the rod, is placed a coiled spring, which serves to keep the rod F pressed towards the rear of the machine, together with lower or free end of the arm E on the rocker-shaft. By moving the nut *f* forward or backward on the threaded portion of the rod F the tension of the spring will be greater or less, according to the tension required on the yarn. The rod F is curved, and terminates in a short arm, nearly parallel with the longer portion, below the same. Upon the short arm or portion of the rod F is placed a dog, G, which is capable of being moved upon the said arm, and is confined on the same by means of a set-screw, so as to admit of its being adjusted thereupon. The lower end of the dog G is made to support one end of a pawl, H, which is pivoted at its other end to the frame, as shown at *h*. The free end of the pawl H is made to engage with the teeth of an escapement-wheel, I, whose axis is supported in an upright or standard, K, attached to the frame. On the shaft which carries the escapement-wheel I is a pinion, which engages with a gear-wheel, L; and this latter is connected, by means of a pinion, to a gear-wheel, M, attached to the yarn-beam. The connection between the gear-wheel M, on the yarn-beam, and the escapement-wheel I is such that, as the warp yarns pass from the yarn-beam upon and over the rocker-shaft C, the tension of the yarn will press down the rocker-shaft, and thus, through the arm E, press forward the rod F, and cause the arm or pawl H to rise, so as to permit the escapement-wheel to rotate to the extent of the space between two or more of its teeth, as circumstances may require. The degree of tension of the warp yarns upon the rocker-shaft may be regulated for the manufacture of finer or coarser goods by adjusting the length of throw of the spring-rod F, and also the degree of motion of the pawl H, which is effected, firstly, by turning the nut *f* on the rod F, by which the spring is caused to act more or less powerfully, and adapt itself to the required tension of the warp yarns; and secondly, by adjusting the dog G on the lower arm of the spring-rod F, by which the pawl is made to act upon the teeth of the escapement-wheel more or less, as may be required, to let off the yarn from the yarn-beam. N represents the lay, to one side of which is attached a pawl, O, shown in dotted lines, so arranged that, at every forward movement of the lay, it will strike against a tooth of the wheel P, which is attached to the cloth-beam, as shown, and thus cause the web to be taken up on the said cloth-beam. Attached to the frame is a pawl, S, shown in dotted lines, which serves to hold the wheel P in position when moved

forward by the pawl O on the lay. Two or more pawls may be arranged upon the frame to act upon the toothed wheel P when it is desired to impart a small amount of motion to the cloth-beam in taking up the web; and the said pawls may also be so adjusted as to enable the cloth-beam to take up more or less of the web, as may be desirable. The pawl O may be so connected to the lay as to enable it to be set further forward or back on the lay, in order to impart more or less motion to the toothed wheel P, as circumstances may require.

It will be seen from the above description that the let-off motion may readily be adapted to the use of finer or coarser yarns, and also to any variation in the quality of the same during the process of feeding to the web; and also that the proper relation may always be maintained between the let-off and take-up motions, so that a perfect uniformity and evenness in the woven material will be insured. The let-off motion in this machine, it will be seen, has no immediate connection with the lay.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination of the rock-shaft C with its arm E and the spring-rod F, provided with the adjustable nut *f*, when constructed and arranged as and for the purpose described.

2. I claim the combination of the adjustable spring-rod F and the dog G with the pawl H and escapement-wheel I, substantially as and for the purpose specified.

3. I claim a let-off motion in looms, effected by the tension of the yarn upon a rocker-shaft, C, provided with an arm, E, in combination with a spring-rod, F, a pawl, H, escapement-wheel I, and the yarn-beam B, with its intermediate connections, as set forth.

4. In combination with the above-described devices for effecting the let-off motion, I claim a take-up motion, effected by means of a pawl, O, attached to the lay, in combination with the toothed wheel P, attached to the cloth-beam, and one or more pawls, attached to the frame, substantially as and for the purpose specified.

5. The relieving pawl H, operated by the tension of the yarn upon the rock-shaft, through the medium of the adjustable spring-rod F, substantially as described.

6. I claim the spring-rod F, when made with a screw-thread, in combination with the nut *f*, rock-shaft C E, and relieving pawl H, substantially as set forth.

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

JEREMIAH A. MARDEN.

Witnesses:

ORSMENT WOODBERRY,

NATH. PIERCE.