2 Sheets—Sheet 1.

E. OLDFIELD.

Looms.

No. 196,694. **Patented Oct. 30, 1877.**

Fig. 1.

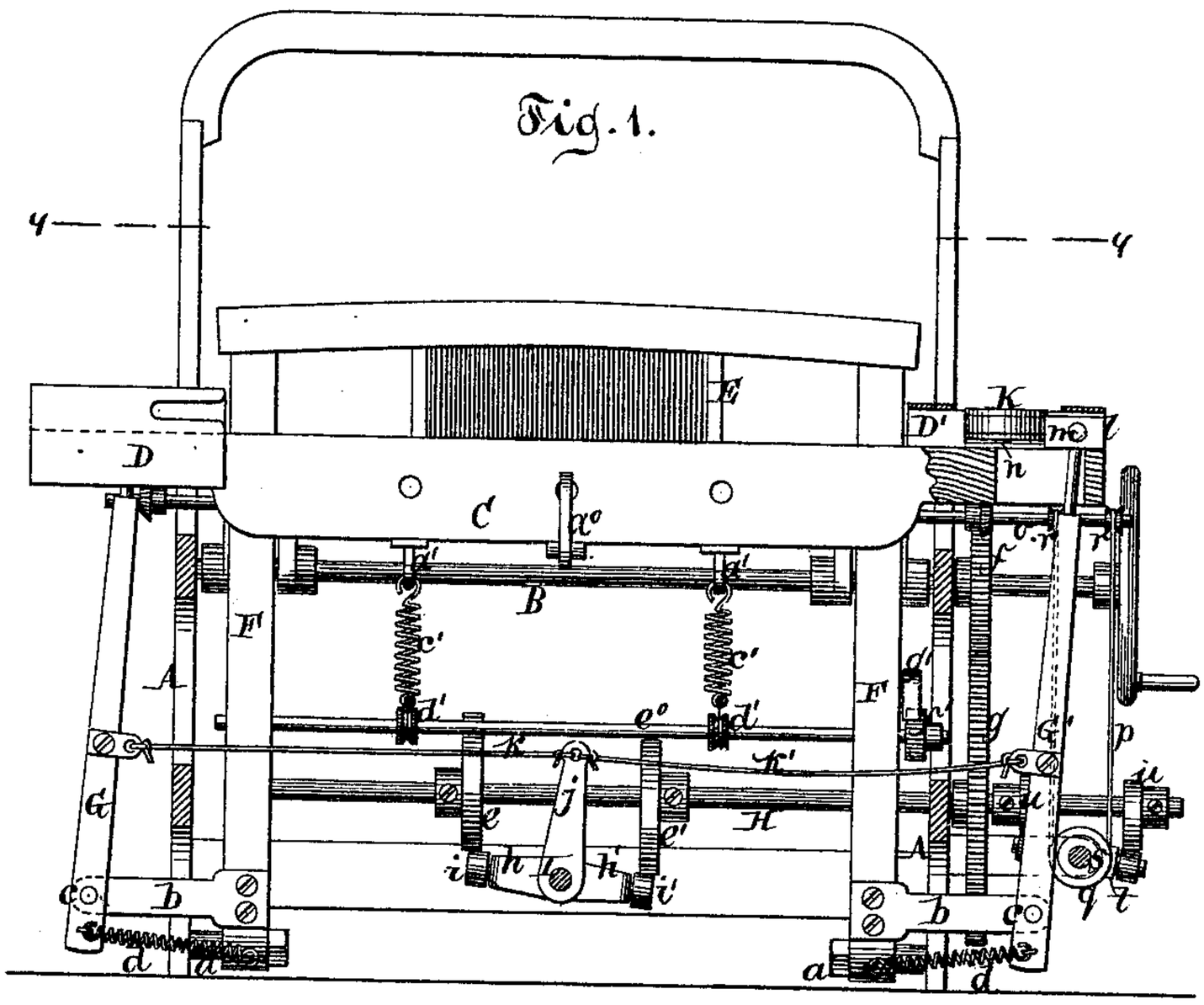


Fig. 2.

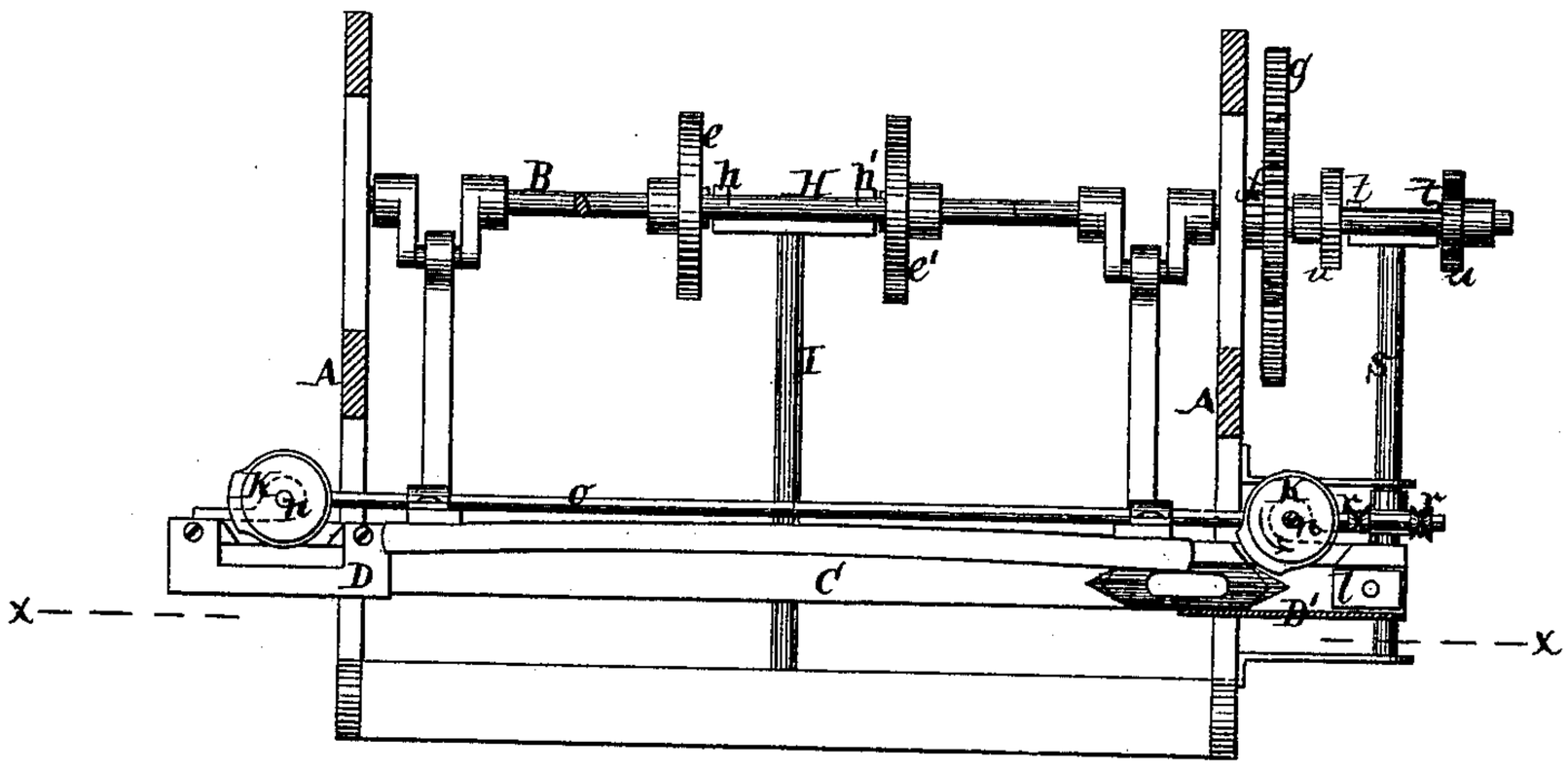
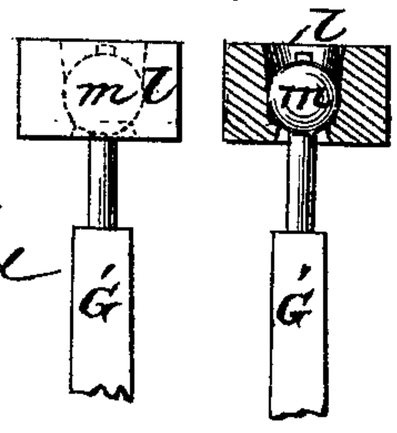


Fig. 7.



Witnesses.

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2 Sheets—Sheet 2.

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Looms.

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Fig. 4.

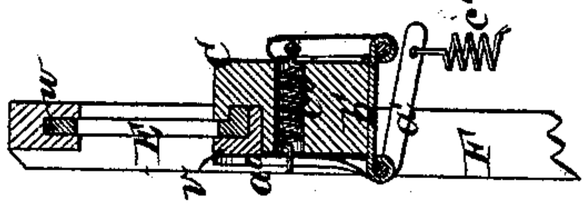


Fig. 6.

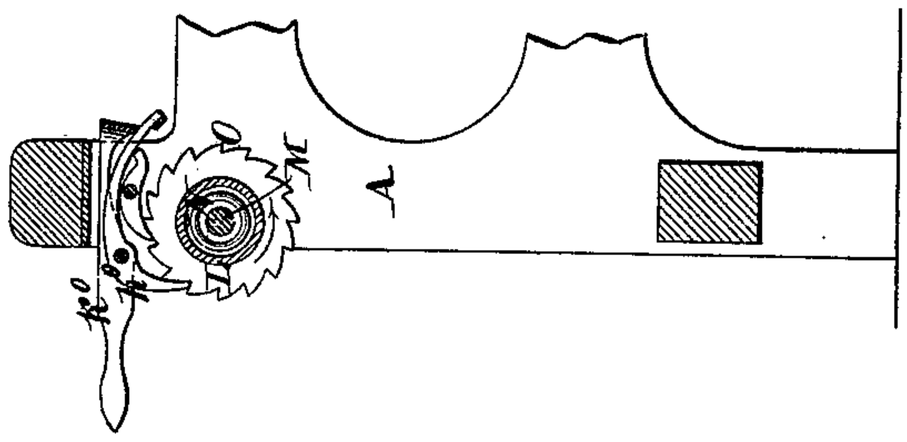


Fig. 3.

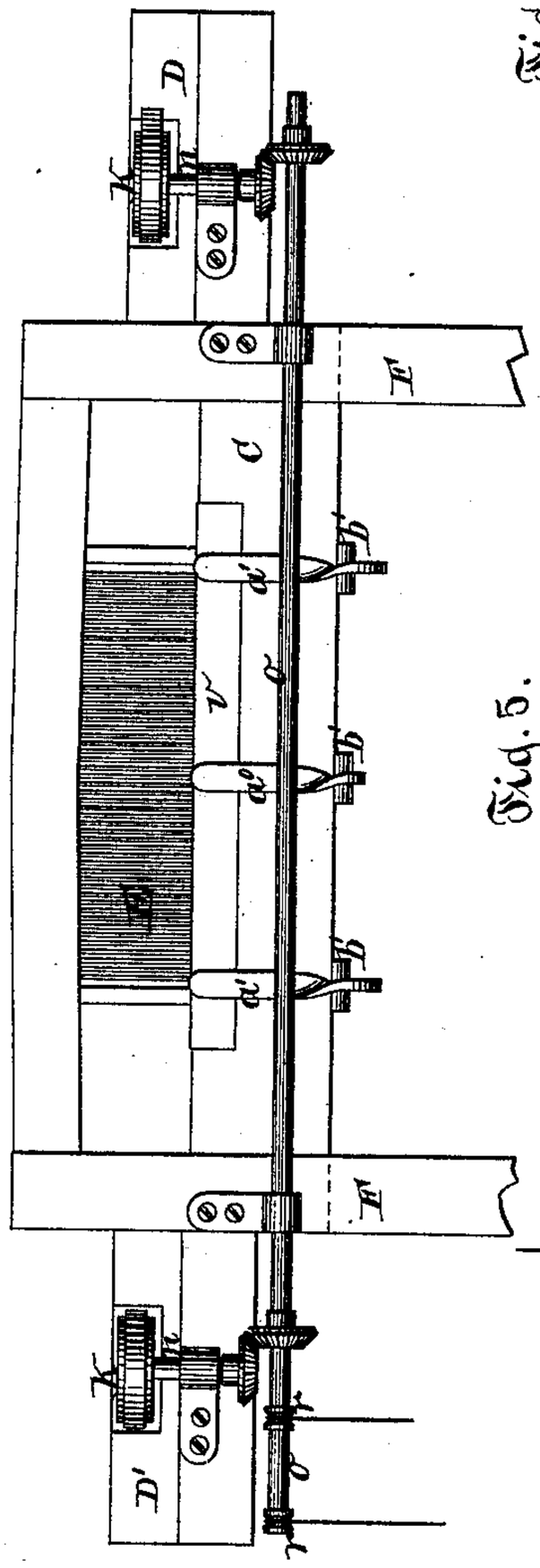
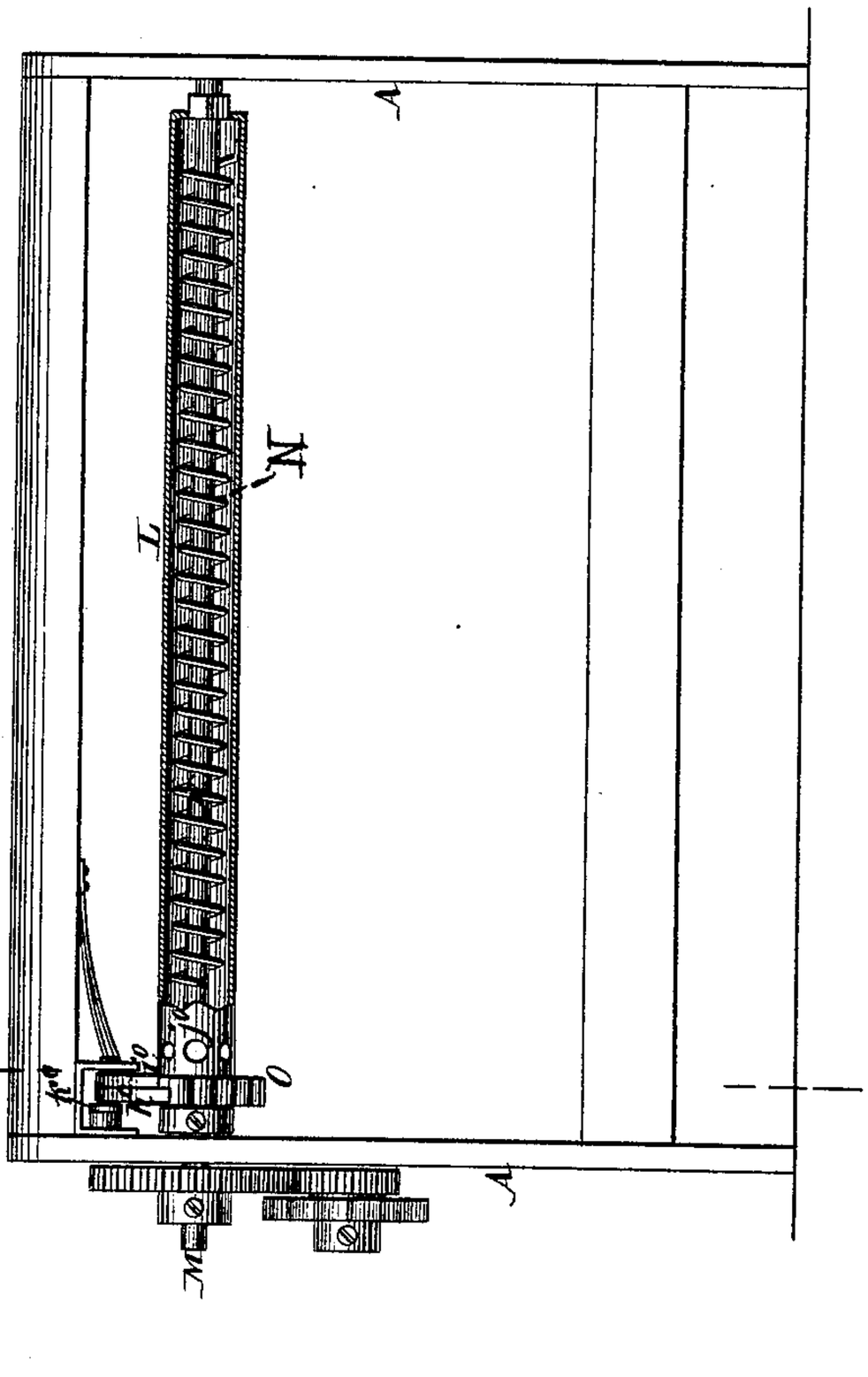


Fig. 5.



Witnesses.

Robt. E. Miller.

Otto Arfeland

Inventor.

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per

Van Santvoord & Hauff

Attys

UNITED STATES PATENT OFFICE.

EDWIN OLDFIELD, OF NORWICH, CONNECTICUT.

IMPROVEMENT IN LOOMS.

Specification forming part of Letters Patent No. **196,694,** dated October 30, 1877; application filed February 7, 1877.

To all whom it may concern:

Be it known that I, EDWIN OLDFIELD, of Norwich, in the county of New London and State of Connecticut, have invented a new and useful Improvement in Looms, which improvement is fully set forth in the following specification, reference being had to the accompanying drawing, in which—

Figure 1 represents a vertical section in the plane *x x*, Fig. 2. Fig. 2 is a horizontal section in the plane *y y*, Fig. 1.

The remaining figures are details, which will be referred to as the description progresses.

Similar letters indicate corresponding parts.

This invention relates to certain improvements in looms; and consists in combining with the picker-staff of a loom, and with its picker-head, a roller, said roller being arranged on the upper end of the picker-staff, and seated within the picker-head, in such a manner that the picker-head can swivel in a vertical plane and lie flat on the shuttle-race throughout the entire stroke of the picker-staff, thereby producing a rectilinear movement of the picker-head, preventing the tendency of the shuttle to fly out of the box.

The invention also consists in the combination, with the shuttle, the shuttle-race, and the shuttle-boxes, of elastic cam-shaped cushions, which have a revolving motion, or of any equivalent mechanism whereby a secondary motion is imparted to the shuttle after the same has entered a shuttle-box, so as to draw the filling-thread out straight, and retain it in this position until it is locked by the crossing of the warp, and in consequence thereof to produce perfect selvages.

The invention further consists in the combination, with the take-up-actuating mechanism, and with the take-up roll, of a suitable spring, retaining-pawls, a ratchet-wheel, and a releasing-lever, arranged and operating in such a manner as to compensate for the varying thickness of the filling-threads.

The invention further consists in combining with the reed a rail, which is held up against the bottom part of said reed through the medium of pivoted bell-crank levers, one end of said levers adapted to rest upon the side of the rail, while the other ends are connected with springs, which are attached upon pulleys of a shaft carrying a ratchet-wheel, in such manner as to regulate the tension of said springs and their action upon the said bell-crank levers, as will more fully hereinafter appear.

In the drawing, the letter A designates the frame of my loom, which forms the bearlngs for the crank-shaft B, from which motion is transmitted to the lay. This lay consists of the beam C, which supports the shuttle-boxes D D′ and the reed E, and which is secured to two uprights, F, that swing on pivots *a*, secured in the frame A. On these uprights are secured brackets *b*, which form the bearings for pivots *c*, on which swing the picker-staffs G G′. The lower ends of these picker-staffs are connected to the lower ends of the uprights F by means of springs *d*, which have a tendency to throw the upper ends of said picker-staffs outward.

The motion of the picker-staffs is produced by two cams, *e e′*, which are mounted on a shaft, H, that runs parallel to the crank-shaft B, and is geared with the same by cog-wheels *f g*, of such proportion that the shaft B makes two revolutions for each revolution of the shaft H. The cams *e e′* act on tappet-arms *h h′*, which extend from a rock-shaft, I, that is situated beneath the shaft H, and runs at right angles to the same. On the ends of said tappet-arms are secured anti-friction rollers *i i*, which bear against the cams *e e′*. On the rock-shaft I is secured a lever, *j*, which connects, by straps *k k′*, with the picker-staffs G G′ and the cams *e e′*, and tappet-arms *h h′* are so arranged that by their action a positive rocking motion is imparted to the rock-shaft, and by the straps *k k′* this motion is transmitted to the picker-staffs, said straps being kept tight by the action of the springs *d*.

The picker-heads *l* are provided with a roller, *m*, (see Figs. 1 and 7,) having a transverse opening, through which passes the end of the picker-staff, the arrangement and construction being such that the picker-heads can swivel in a vertical plane, and are enabled to rest

upon the shuttle-race, and to move parallel, thereby preventing the shuttle from being thrown out of the shuttle-boxes.

On the inside of each of the shuttle-boxes is situated a segmental cushion, K, made of india-rubber or other elastic material. These segmental cushions are mounted on vertical arbors *n*, which are geared with a shaft, *o*, that has its bearings in boxes secured to the beam C of the lay, and receives a rocking motion by a belt, *p*, which is fastened at its ends to pulleys *r r*, mounted on the rock-shaft *o*, and at its middle to a pulley, *q*, which is mounted on a rock-shaft, *s*, that has its bearings in brackets secured to the main frame, and runs parallel to the rock-shaft I. On the rock-shaft *s* are secured two tappet-arms, *t t*, which bear against cams *u u*, mounted on the shaft H. At the moment the shuttle enters one of the shuttle-boxes, the segmental cushion K in said box is in such a position (see Fig. 2) that the shuttle strikes against it, and then said segmental cushion is turned in the direction of the arrow shown on it in Fig. 2, and the shuttle is slowly carried forward. By this secondary forward motion of the shuttle the filling-thread is drawn out straight, and retained thus until it is locked by the crossing of the warp, and perfect selvages are produced. The segmental cushion continues to move in the same direction until it releases the shuttle, leaving the same entirely free to receive the blow of the picker, instead of having to be driven out when held by a spring, as in the looms of the ordinary construction.

The reed E, instead of being firmly secured to the lay, is placed with its bottom edge against a rail, *v*, Figs. 3 and 4, while its top edge rests in a groove, *w*, so that the bottom edge can move backward. The rail *v* is retained in position by bell-crank levers *a'*, which have their fulcra on pivots secured in brackets *b'*, which are fastened to the beam C of the lay.

From the horizontal arms of the bell-crank levers extend springs *c'*, the lower ends of which connect by cords or straps with pulleys *d'*, mounted on a shaft, c^o, that has its bearings in the uprights of the lay, and is retained in position by a ratchet-wheel, *f'*, and pawl *g'*. (See Fig. 1.) By turning this shaft in the proper direction the springs *c'* are strained, the power with which the rail *v* is retained being thereby increased, and vice versa. Instead of using bell-crank levers, however, a simple lever, a^o, (see Fig. 4,) may be used, which is drawn up against the rail *v* by a spring, c^o.

The object of this arrangement is to compensate for filling-threads of different thicknesses, particularly if the filling-thread begins to run fine.

It will be seen from the foregoing description that the reed, every time it reaches the cloth-making point, springs back a short distance, and it is obvious that when the filling-threads begin to run finer the reed will not spring back so far at each pick as it does when the filling-threads run with the standard size, and the number of picks to the inch in the fabric will increase correspondingly, so that the fabric is made even and one thickness throughout, instead of having some places that are thick and others thin.

The take-up roll L is made tubular, and it is mounted on the shaft M, Fig. 5, being connected to said shaft by spiral spring N, so that when the take-up roll is held fast, and the shaft is turned in the proper direction, the spring is wound up, imparting to the take-up roll a tendency to revolve in the direction of the arrow marked near it in Fig. 6, or in the proper direction for taking up the fabric. The shaft M has its bearings in the frame A, and it receives an intermittent revolving motion by a ratchet-wheel and pawl, or by any other suitable mechanism generally employed for imparting motion to take-up rolls in looms.

With the roll L is firmly connected a ratchet-wheel, O, with which engage two or more pawls, h^o i^o, of different length, so that they drop in gear with said ratchet-wheel at intermediate points. In the end of the take-up roll are a series of holes, *j'*, for the insertion of a hand-lever, whereby the weaver is enabled to let the fabric back to the reed, or to draw it down.

In order to allow the take-up roll to turn back, the pawls h^o i^o have to be thrown out of gear with the ratchet-wheel O. For this purpose a hand-lever, k^o, is used, which has a toe that bears against the tails of the pawls, so that when the hand-lever is depressed all the pawls are thrown out of gear with the ratchet-wheel.

If the reed beats up the filling, the spring of the take-up roll immediately takes up all the slack, and consequently, if the filling-thread runs coarse, the fabric is taken up by the roll L, to correspond to the thickness of the filling-thread, and an even fabric is produced.

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

1. The combination, with the picker-staff of a loom and with its picker-head, of a roller arranged upon the end of the picker-staff and seated within the picker-head, substantially as described, whereby said picker-head is caused to lie flat on the shuttle-race, and to move in a rectilinear direction, for the purpose of preventing the tendency of the shuttle to fly out of the box by the blow of the picker-head, as herein set forth.

2. The combination, with the shuttle, the shuttle-race, and the shuttle-boxes, of elastic cam-shaped cushions and mechanism, substantially as described, for imparting thereto a revolving motion, whereby a secondary motion is imparted to the shuttle after the same has entered a shuttle-box, substantially as and for the purposes shown and described.

3. The combination, with the take-up-actu-

ating mechanism and with the take-up roll, of a spring, N, retaining-pawls *h i*, ratchet-wheel O, and releasing-lever *k*, substantially as and for the purpose described.

4. In combination with the reed and the rail, the pivoted bell-crank levers *a'*, springs *c'*, shaft *e*, to which said springs are attached, and ratchet and pawl, arranged to operate substantially as described, whereby the tension of the springs can be regulated, and the rail, which is held up againstthe bottom part of the reed, allowed to spring back a short distance whenever it reaches the cloth-marking point, as set forth.

In testimony that I claim the foregoing I have hereunto set my hand and seal.

EDWIN OLDFIELD. [L. S.]

Witnesses:

E. H. LEARNE,

CHAS. M. TRACY.