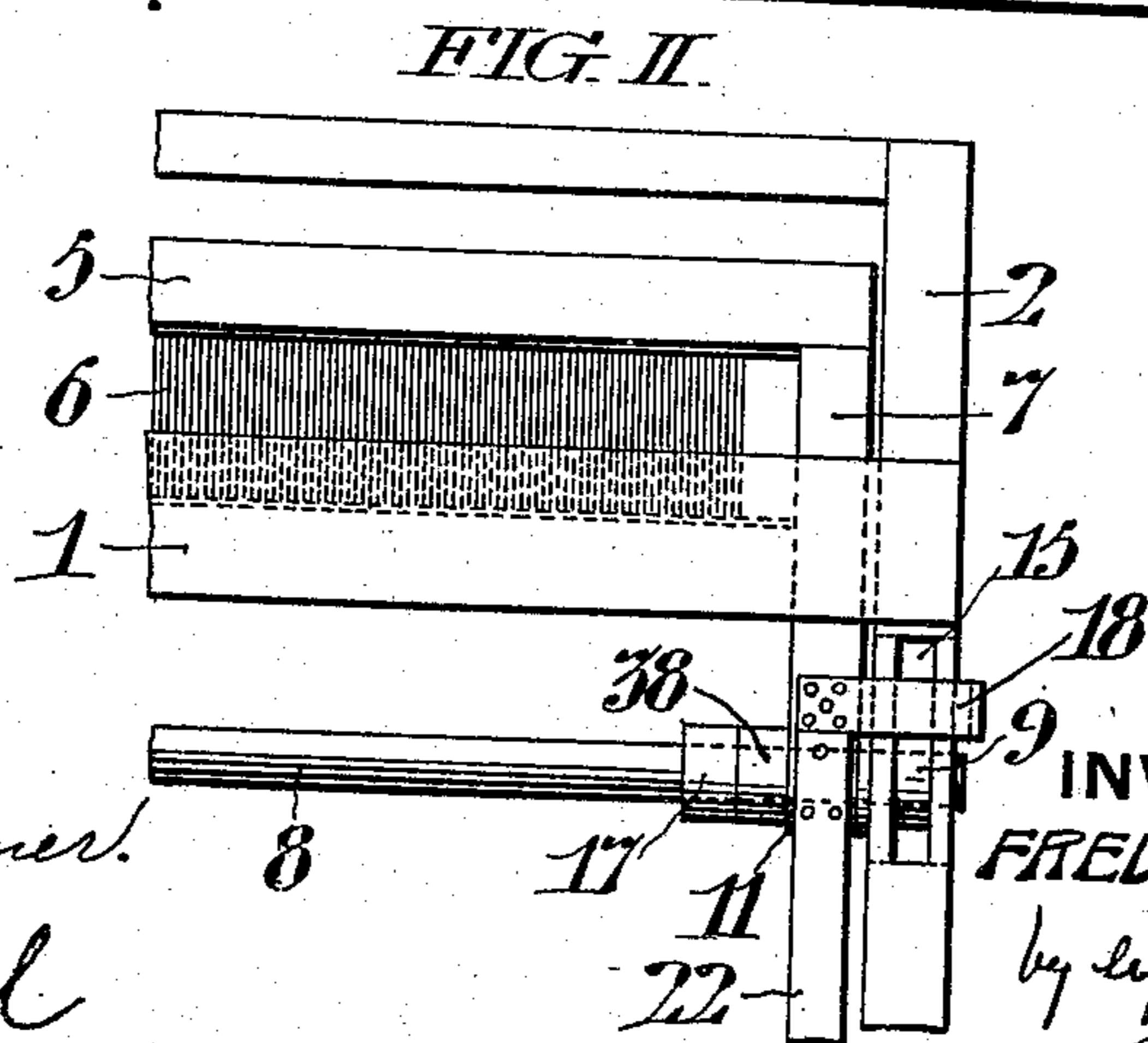
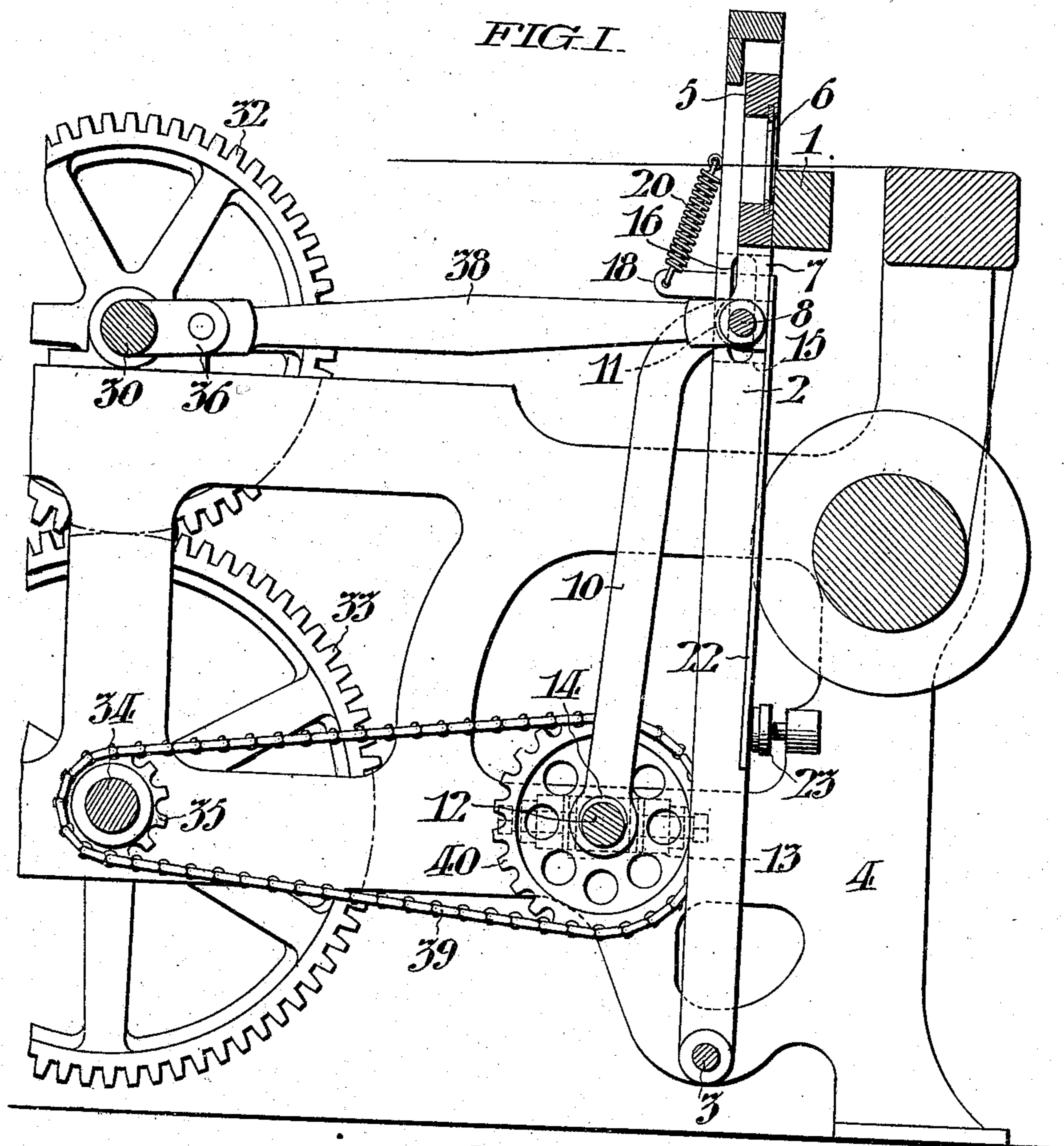


911,675.

F. OTT.
 REED MOTION.
 APPLICATION FILED OCT. 29, 1907.

Patented Feb. 9, 1909.



WITNESSES:

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UNITED STATES PATENT OFFICE.

FREDERICK OTT, OF SOUTH BETHLEHEM, PENNSYLVANIA.

REED-MOTION.

No. 911,675.

Specification of Letters Patent.

Patented Feb. 9, 1909.

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To all whom it may concern:

Be it known that I, FREDERICK OTT, of South Bethlehem, in the county of Northampton and State of Pennsylvania, have invented certain new and useful Improvements in Reed-Motions, whereof the following is a specification, reference being had to the accompanying drawings.

My invention relates to means for rendering more easy the passage of the warp threads between the reeds of a loom, and also for simultaneously distributing the wear occasioned by the contact of the threads and the shuttle with the reeds. It is applicable to looms for weaving various fabrics and for weaving either narrow or wide webs.

To effect these purposes my invention consists of a reed frame to which is imparted a vertical reciprocatory motion in addition to its normal horizontal reciprocatory motion. It will be understood that I do not here use the term "vertical" and "horizontal" in a mathematical sense, for the vertical motion is not strictly such, owing to the varying inclination of the lay, and the horizontal motion is not strictly such, because, owing to the pivoting of the lay, the reeds move in an arc of a circle; but with this explanation, I will use the phrases "vertical reciprocation," and "horizontal reciprocation," to indicate these two differing motions of the reed frame always at right angles to each other.

According to my invention, for the purpose of rendering more easy the passage of the warps between the reeds, I impart to the reed frame a continuous vertical reciprocation throughout each beat coincident or synchronous with the horizontal reciprocation, that is to say, the reed is at one extremity of its vertical play, as it beats up, and at the other extremity of its vertical play as it falls back, the movement being continuous throughout the stroke. In this way the reeds are given a sliding motion as they beat back and forth along the warps, whereby the passage between two adjacent reeds of any lump or enlargement of the threads, is rendered more easy, and the threads smoothed out so as to allow passage without breakage; and apart from abnormal enlargement of the threads it is to be noted that a warp passes more easily over a reed or dent with which it is in contact if the rela-

tive motions of the two have a diagonal resultant.

For the purpose of accomplishing the other end of my invention, I make provision whereby there is a constant variation in the limits of the vertical position of the reed frame from beat to beat, having reference both to the position in which the lay falls back, and the position in which it beats up. This brings a slightly different portion of each reed in contact with the warps on either side of it at each beat of the reed, thus effectually distributing the wear and preventing the formation of those well defined variations in the thickness of the reed, due to wear, such as ordinarily occur at that point of the reed which marks the limit of its contact with the warps. In this way I lengthen the life of the reeds. Likewise the same variation in the vertical position of the reeds as they fall back causes a similar variation in the line along which the shuttle rubs against the reeds as it traverses the raceway and in this way I distribute this wear and prevent the formation of a corresponding groove along the face of the reeds.

In the accompanying drawings, Figure I, is a sectional view showing the application of my invention to a loom. Fig. II, is a partial front elevation of the lay and reed frame.

In said drawings, the lay 1 is mounted upon the swords 2, which are pivoted at 3 to each side frame 4 of the loom. The reed frame 5 holding the reeds 6 is secured on each end to a strap 7 having a boss 11 on its lower end through which the shaft 8 passes. This shaft thus forms a support upon which the reed frame is pivotally mounted. Said shaft 8 is mounted in the upper end of links 10 upon each side of the machine and is kept in place by collars 17. A shaft 12 suitably journaled in adjustable bearings 13, on the side frames 4, is provided with two eccentrics 14, about each of which one of the links 10 is mounted to move freely. The bearings 13 are slidably mounted on the side frames 4 and may be adjusted to vary the position of the reed frame. The upper ends 9 of links 10 are free to move in slots 15, in the swords 2. The swords 2 are also provided with slots 16 into which the ends of the shaft 8 project. Thus when the lay 1, is moved forward and backward in the act of beating up the filling thread, the reed frame 5, is

given a vertical reciprocatory motion at right angles to the beat of the lay, and coincident therewith, that is to say, as the lay moves forward the reed frame is continuously lowered, and as the lay moves backward the reed frame is continuously raised. This relative motion of the reed frame and lay takes place at each beat of said lay. This vertical motion of the reeds with respect to the warp threads tends to smooth out any lumps or inequalities in said threads thus insuring their free action to form the shed, and generally renders the passage of the warps between the reeds more easy. Owing to this fact a cheaper grade of material may be employed in the warp.

Extending downwardly from the front of each strap 7 is a rod 22, having its lower end adapted to bear against a buffer 23, mounted in a convenient position upon the frame of the machine, when the lay is in its forward position as shown in Fig. I. Secured to the upper front face of each of said rods 22 is a metal strap 18, to which the lower end of a spring 20 is attached. The upper end of each spring 20 is attached to a sword 2. These springs are comparatively light and tend to keep the reed frame in its proper position with relation to the swords, yet allowing it to move up and down with only a slight amount of friction.

Power is applied to the crank shaft 30 having fast thereon the gear wheel 32. Said gear wheel 32 meshes with a gear wheel 33 secured to the shaft 34 journaled in the lower part of the side frames 4. The crank shaft 30 is provided with two cranks 36, one at each side of the machine, and said cranks are connected by means of links 38 with the shaft 8, by which the oscillatory motion is imparted to the lay 1.

Mounted upon the shaft 34 is a sprocket wheel 35 connected by a chain 39 with a sprocket wheel 40 on shaft 12.

The operation of the device is as follows: The lay 1 is oscillated in a well known manner through the connection of its swords 2 with the crank shaft 30 by means of the rod 8 and links 38. The rotation of the crank shaft 30 and gear 32 is transmitted by gear 33 to shaft 34 and sprocket 35. Said sprocket 35 by means of chain 39 drives sprocket 40, and shaft 12 connected therewith. It will be noted that the motion imparted to the eccentric 14 on shaft 12 is slow owing to the manner in which the gearing is employed to reduce the speed from the shaft 30 to shaft 12. Accordingly as the eccentric 14 rotates, a slow but constant variation is occasioned in the limits of the vertical motion of the reed frame 5, as imparted to it by the link 10, connecting said frame with the eccentric, thus constantly presenting a new region of the reeds 6 for contact with the threads and with the shuttle, corresponding

to the extent of said eccentricity. Furthermore, by varying the position of shaft 12 by adjusting its bearings the extent of movement of said reed frame may be further varied.

It will also be noted that when the lay is moving forward to beat the filling into its final position, the reed frame will be tilted backwardly if it were not for the engagement of the rods 22, with the buffers 23 which tend to keep the reed frame in an upright position, and are aided by the springs 20.

It will be understood that I do not limit myself to the specific means herein shown, as it will be evident that other means may readily be employed for accomplishing the same purposes. Furthermore it will readily be seen that I may employ means for reciprocating the reed frame vertically at each beat without the employment of the additional means for slowly varying the limits of its vertical position. I may also employ means for slowly varying the vertical position of the reeds for the purpose of distributing the wear thereon without employing means for reciprocating said reeds at each beat of the lay.

Having thus described my invention I claim:

1. A loom having a reed frame mounted in its lay with capacity for vertical motion therein; in combination with means whereby during every beat of the lay, said reed frame is given continuous vertical reciprocation coincident with the beat of the lay.

2. A loom having a reed frame mounted in its lay with capacity for vertical motion therein; means whereby continuous vertical reciprocation is imparted to the reed frame coincident with the beat of the lay; and means for slowly but continuously varying the position of the lay when at that extremity of its vertical reciprocation which corresponds with the falling back of the lay.

3. A loom having a reed frame mounted in its lay with capacity for vertical motion therein; means whereby continuous vertical reciprocation is imparted to the reed frame coincident with the beat of the lay; and means for varying the vertical relation of the reed frame to the lay throughout the entire extent of successive beats of the lay.

4. In a loom, the combination of a lay; a reed frame mounted to move vertically therein; and a link connecting said reed frame to a pivotal point on the loom frame, whereby said reed frame is given continuous vertical reciprocation coincident with each beat of the lay.

5. In a loom, the combination of a lay; swords provided with slots; a reed frame having members cooperating with said slots; and connections between each of said members and a pivotal point on the loom frame.

6. In a loom, the combination of a lay mounted upon swords which are pivotally

connected to the loom frame; a reed frame mounted to slide vertically in said lay; and means positively connecting the reed frame with a point on the loom frame removed from the pivotal point of said swords.

7. In a loom, the combination of a lay; a reed frame mounted to move vertically therein; an eccentric; and a link connecting said eccentric and reed frame, whereby said reed frame is given continuous vertical reciprocation coincident with each beat of the lay and the extent of movement of said reed frame gradually varied.

8. A loom having a reed frame mounted in its lay with capacity for vertical motion 15 therein; an eccentric mounted to rotate continuously during the operation of the loom; and a link positively connecting the eccentric and reed frame.

In testimony whereof, I have hereunto 20 signed my name, at South Bethlehem this 26th day of October 1907.

FREDERICK OTT.

Witnesses:

MERRITT B. HARTZ,

I. B. HARTZOG.