

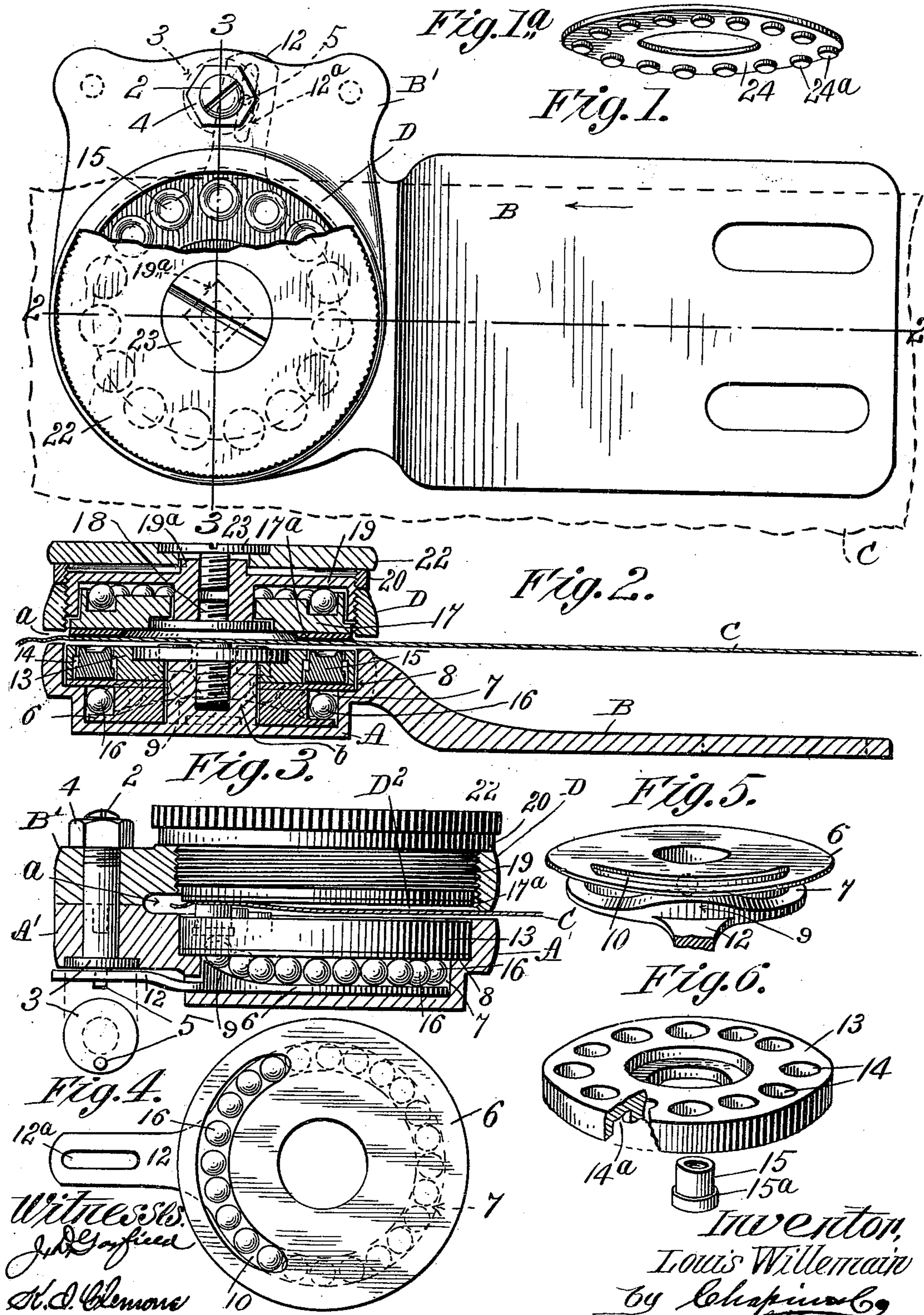
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L. WILLEMAIN.  
LOOM TEMPLE.

(Application filed Mar. 8, 1898.)

(No Model.)



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# UNITED STATES PATENT OFFICE.

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## LOOM-TEMPLE.

SPECIFICATION forming part of Letters Patent No. 620,005, dated February 21, 1899.

Application filed March 8, 1898. Serial No. 673,076. (No model.)

*To all whom it may concern:*

Be it known that I, LOUIS WILLEMAIN, a citizen of the Republic of France, residing at Westfield, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Loom-Temples, of which the following is a specification.

This invention relates to looms, and particularly to a new and improved construction of loom-templates, the object of the invention being to provide a temple which can be used on the most delicate fabric without injuring it or picking up the threads thereof and which can readily be adjusted to give more or less transverse draft to said fabric and which can be adjusted to grip said fabric with sufficient force to prevent it from yielding to any strain transverse to the line of its movement in passing through the loom, but in which the grip of the device on said fabric to hold it against said transverse strains does not in the slightest degree impede the movement of said fabric through the machine.

The invention consists in the construction, as fully hereinafter set forth, and particularly pointed out in the claims.

In the drawings forming part of this specification, Figure 1 represents a temple, in top plan view, constructed according to this invention, a part thereof being broken away. Fig. 1<sup>a</sup> is a perspective view of a thin flexible disk. Fig. 2 is a sectional view of the temple taken on line 2 2, Fig. 1. Fig. 3 is a sectional view of the temple taken on line 3 3, Fig. 1. Fig. 4 is a plan view of a cam-plate. Fig. 5 is a perspective view of the same in a different position. Fig. 6 is a perspective view of the circular plunger-plate and one plunger which is separated from said plate.

Referring to the drawings, A represents an annular case having an arm B of any suitable form to permit of securing it to the loom in a proper position, said arm lying in a plane below the top of said case A to give free passage to the fabric C across the top of said case. A suitable lug A' extends outward from the side of the case A at right angles to said arm B, said case, lug, and arm being preferably made integral, and these and all other parts of the device are made of any suitable metal. A ring D for receiving the parts of the temple coacting with those parts con-

tained in the case A is bolted to said lug A' by a bolt 2, said ring being provided with a lug B', similar to the lug A', for that purpose. Said bolt passes through both lugs and is provided with a head 3, countersunk in the under side of the lug A' and with a nut 4, bearing on the upper surface of the lug B'. The upper end of said bolt 2 is slotted transversely, whereby it may be turned with a screw-driver when the nut 4 is loosened, and the head 3 of the bolt is provided with a pin 5, located near the edge of said head, as shown in Figs. 1 and 5. Said lugs A' and B' are so constructed that when they are bolted together the contiguous edges of the ring D and the case A will be separated by the space *a*, through which the fabric C passes, as shown.

Lying within the lowest part of the case A is the circular cam-plate 6, (see Fig. 5,) provided with an annular groove 7 in its periphery. The diameter of the top of said cam-plate exceeds somewhat the diameter of the lower part thereof, and said case A is made with two internal diameters corresponding substantially with those of said cam-plate 6, thus forming within said case a shoulder 8, on which the projecting edge of the cam-plate rests, as shown in Figs. 2 and 3. At a point in said annular groove 7 which would lie substantially under the edge of the fabric when the latter is in proper position in the space *a* the base of said groove is inclined upward, as indicated by 9, an easy curve from the level of said base leading up to the summit of said incline and from thence down to the level of the base again, the angles of the said ascent and descent being substantially the same, and in the part of said cam-plate 6 forming the top of said annular groove 7, lying over said incline 9, a slot 10 is cut concentric with the cam-plate 6 and of substantially the same width as the depth of the groove 7 and extending only over that part of said groove occupied by said upwardly-inclined part thereof. On the edge of said cam-plate coinciding with the highest part of the incline 9 is a tongue 12, extending through a suitable slot in the side of the case A and provided with a slot 12<sup>a</sup>, radially located in said tongue relative to the center of said cam-plate. The slot in the case A through which the tongue 12 passes is made wide enough to

permit said tongue to be swung laterally to either side of the center of the bolt 2, whose center coincides with the center of the slot 12<sup>a</sup>. The said slot 12<sup>a</sup> in said tongue 12 receives the pin 5 in the head 3 of the bolt 2, whereby by turning said bolt the highest point of said incline 9 may be swung to one side or the other of a line drawn at right angles to the line of movement of the fabric through the temple through the axis of said cam-plate 6. The case A is provided with a central boss *b* therein, and said cam-plate 6 has its center turned out to fit said boss and may be rotated more or less therein, with its edges free from the sides of said case A.

The plunger-plate 13 (shown in perspective in Fig. 6) is a circular plate adapted to fit in the case A on the top of the cam-plate 6, and the central perforation therein fits the boss *b* in said case closely enough to prevent contact between the edges of said plunger-plate and the case. Said plate 13 is provided with a row of holes 14, concentrically arranged thereon and extending therethrough at right angles to the plane of rotation of said plate. The centers of said row of holes coincide with the center of the slot 10 in the top of said cam-plate. The holes 14 receive the plungers 15, which are of a length substantially equal to the thickness of the plate 13. Said plungers are provided with the heads 15<sup>a</sup> on the ends thereof which bear on the cam-plate 6, the holes 14 in said plate 13 being counterbored far enough to receive said heads and permit them to move endwise therein for a certain distance. After said holes 14 have been bored and counterbored in that end thereof lying next to the cam-plate 6 an annular groove 14<sup>a</sup> is turned in that side of the plunger-plate in the position shown in Fig. 6, whereby the thin metal wall between the counterbored ends of said holes will be cut away for a certain depth. When the cam-plate 6 has been put in place in the case A, a sufficient number of hard-steel balls 16, of slightly less diameter than said groove 7, are put into the said groove through the slot 10 to fill said groove, and the plunger-plate 13, having the plungers 15 thereon, is then laid in said case on the top of said cam-plate 6. When the balls 16 are placed in the groove 7, those that rest on the upwardly-inclined part 9 of said groove will project through the slot 12<sup>a</sup> and above the surface of the said cam-plate 6, and therefore when the plunger-plate is placed in position on said cam-plate the plungers 15, lying over said slot 12<sup>a</sup>, will be forced upward, so that their upper ends will project above the upper surface of the plunger-plate 13 to practically the same extent that the balls 16 project above the surface of the plate 6.

As the walls between the holes 14 in the plunger-plate have been cut away, as stated, by the groove 14<sup>a</sup>, which has a depth somewhat in excess of the distance which the balls 16 project above the cam-plate 6, it follows

that said plunger-plate may be rotated without hindrance and that when said plate is so rotated the bases of the plungers 15 are successively caused to ride up on the balls lying on the incline 9, thus forcing the upper ends of said plungers outward above the surface of said plunger-plate. The upper ends of these plungers 15 as they are forced upward impinge when near the summit of the incline 9 against the surface of a circular plate 17, supported to rotate freely in the ring D, and said plate is concentric with and parallel with the contiguous face of the plunger-plate 13. A ring 17<sup>a</sup>, of some yielding material, such as rubber, is applied to said plate 17 and covers that part of it extending from the edge thereof inward for a distance a little greater than the diameter of the plungers 15. Said circular plate 17 is held in proper position by screws 18, entering the hub of a shell 19, which is screw-threaded to enter the threaded interior of the ring D, and said shell is made to project far enough out of said ring to permit of locating a check-nut 20 thereon, the position of which will determine the distance between the faces of said circular plate 17 and said plunger-plate 13.

To obviate the possibility of disturbing the adjustment of the check-nut 20, a part 19<sup>a</sup> of the hub of the shell 19 on the outside of said shell is made square, as shown in dotted lines in Fig. 1, and a plate 22, having a slightly larger diameter than said check-nut, has a square perforation through it which fits over the square end 19<sup>a</sup> of the hub of the shell 19, and after said check-nut 20 has been set the said plate 22 is placed in position and fixed there, as shown in Fig. 2, by a screw 23, and the shell 19 can then be screwed into or out of said ring D by grasping the said plate 22, whose edge is knurled and rounded for the purpose, without being liable to disturb the adjustment of the check-nut 20. The edge of the ring D is made to extend somewhat below the surface of the plate 17, as at D', to prevent contact between the face of plate 17 and the fabric.

The adjustment of the face of the plate 17 relative to the ends of the plungers in their outermost position is a very delicate one, as it determines the force with which the fabric shall be gripped between said plungers and the ring 17<sup>a</sup> of the plate 17. It is obvious that as the point of contact of said plungers 15 with said plate 17 is to one side of the center of the plunger-plate 13 and said plate 17 the fabric gripped between the said two plates may be freely drawn through the temple in the direction indicated by the arrows in Fig. 1, but that any attempt to draw said fabric transversely to said direction would be impossible as long as the fabric is gripped between said two plates. It is understood, of course, that these temples are placed on each side of the loom to grip each edge of the fabric and are placed opposite each other, and

it has been stated that the fabric is gripped before the plunger arrives at the highest point of said incline 9, and said grip is maintained on the fabric for an equal distance each side of a line drawn through the center of the temple and through the bolt 2 if the center of the slot in the tongue 12 coincides with the above-mentioned center line—that is to say, said fabric is gripped at a point on one side of said line equidistant from said line with the point on the other side at which said grip is released. Thus by moving said tongue 12 right or left the point of gripping engagement of said fabric may be varied relative to the point of release, and thus more or less transverse draft may be given to the temple, as may be desired.

Fig. 1<sup>a</sup> shows a thin rubber ring 24, similar to the ring 17<sup>a</sup> of the plate 17, except that this ring is provided with short projections 24<sup>a</sup>, which are adapted to enter depressions in the tops of the plungers 15 when said ring 24 is placed on the plunger-plate in a position opposite the ring 17<sup>a</sup> on plate 17. The purpose of this ring 24 is to protect a very thin material from being injured by the ends of the plungers being forced against it.

The great advantage of a loom-temple which in no wise disfigures the fabric, however light it may be, and one in which the adjustment for lateral draft on said fabric is so simple and easy to operate as is the construction embodied in this invention, is very apparent.

It is obvious that, if desired, more than one row of plungers 15 may be employed and that such construction would be clearly within the scope of this invention. Such a construction might be desirable in temples designed to be used on looms weaving exceptionally heavy fabrics.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. A loom-temple consisting of two revoluble plates supported face to face in proximity to each other, a movable part in one of said plates, means for causing said movable part to be moved across the space between said plates and into contact with the face of the opposite plate through the rotation of the

plate in which said part is supported, substantially as described.

2. A loom-temple comprising two revoluble circular plates having substantially coinciding axes, means of support for said plates, a movable part in one of said plates, an undulatory surface on which said movable part is supported, whereby, by the rotary movement of the circular plate bearing said movable part, the latter is caused to move in a direction substantially at right angles to the plane of rotation of said plate, and into contact with the other of said circular plates, and means for varying the point of said contact, substantially as described.

3. A loom-temple comprising two revoluble circular plates, supports for said plates for permitting their rotation in proximity to one another in substantially parallel planes, a plurality of parts supported in one of said plates for movement therein in lines parallel with the axis of said plate, an undulatory surface on which the parts in said plate bear, whereby when said parts are moved by the rotation of said plate, they are successively moved toward the other of said circular plates, at a predetermined point, and means for moving said undulatory surface whereby said predetermined point may be shifted, substantially as described.

4. A loom-temple comprising two circular plates revoluble in parallel planes, one above the other, supports for said plates, a series of concentrically-arranged plungers in one of said plates, a cam-plate located below said plungers and on which the latter bear, whereby some of said plungers are supported in a plane lying above that of the rest of said plungers, and in contact with the other of said circular plates, whereby a piece of fabric may be gripped between said raised plungers and said plate with which they are in contact, and means for moving said cam-plate whereby the point of contact between said plungers and said circular plate may be varied, substantially as described.

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