

R. M. JONES.
 LOOM FOR WEAVING RETICULATE REINFORCEMENTS.
 APPLICATION FILED DEC. 16, 1911.

1,058,982.

Patented Apr. 15, 1913.

3 SHEETS—SHEET 1.

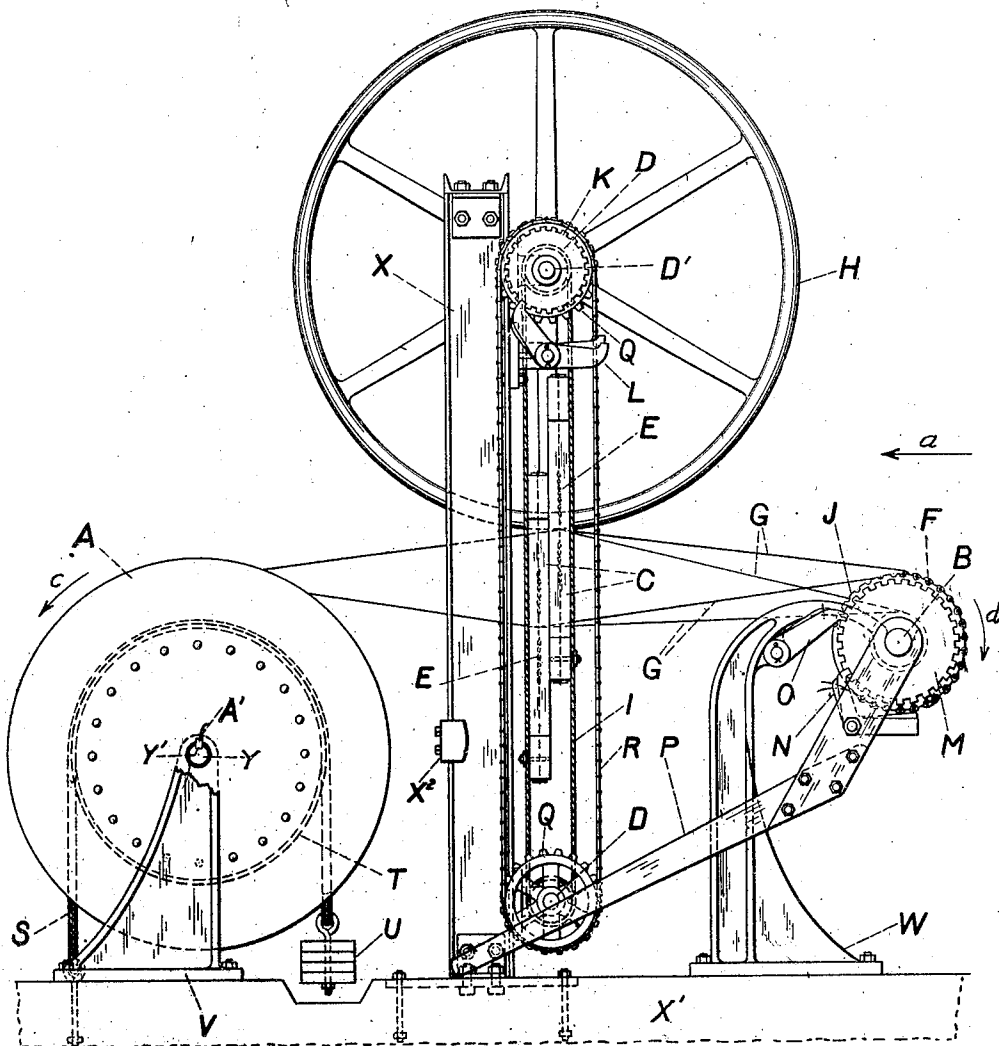


FIG. 1.

WITNESSES:

Gale C. Drumm
 Barton M. Jones

INVENTOR.

Robert M. Jones

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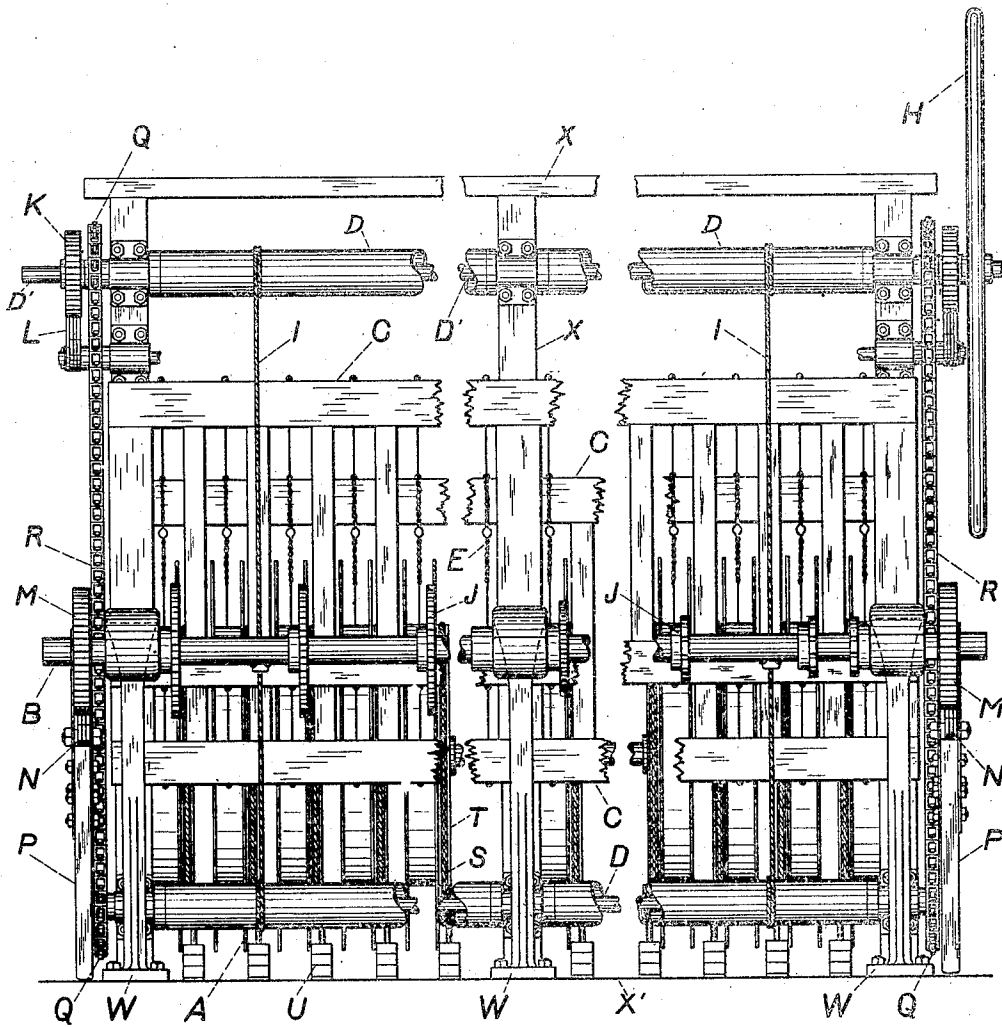


FIG. 2.

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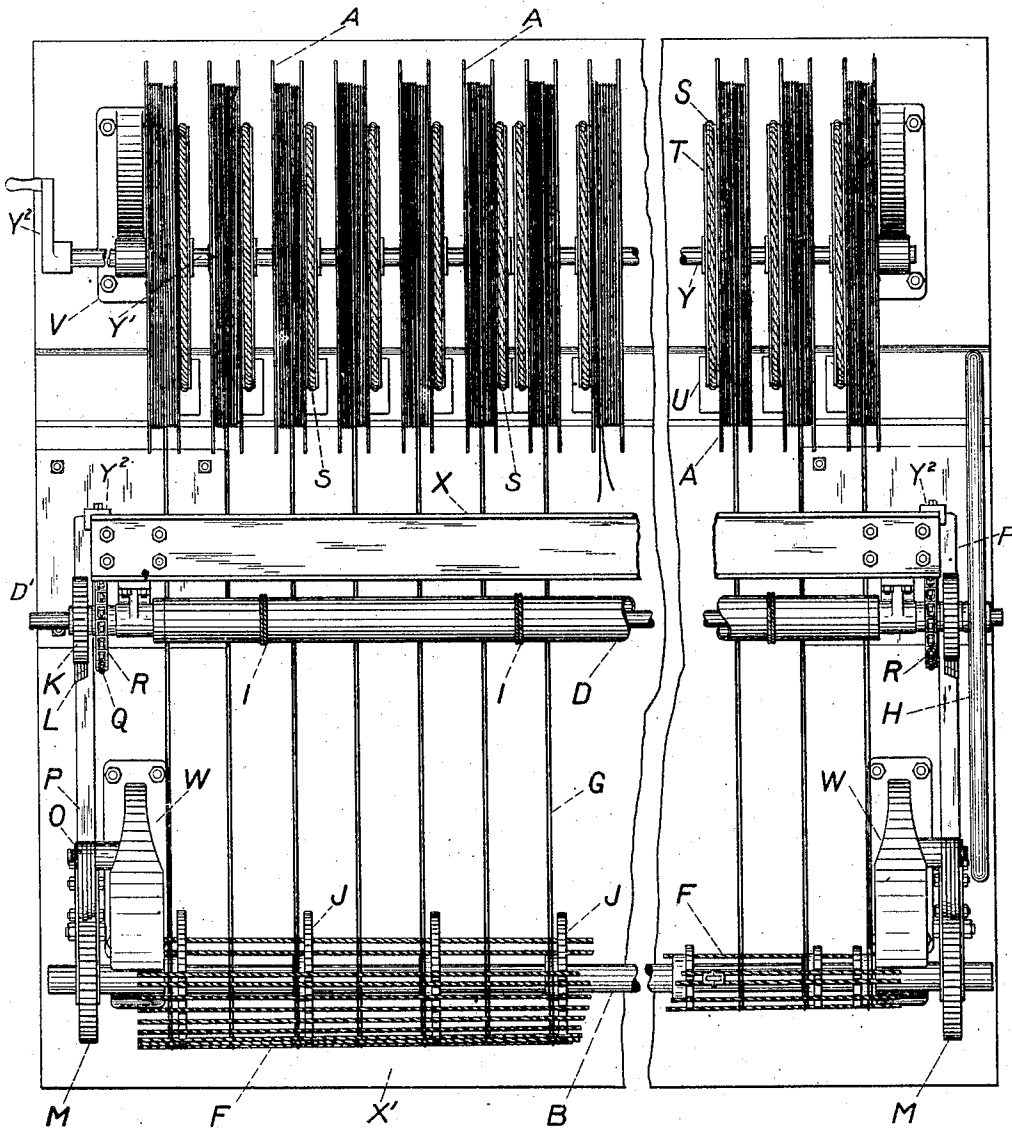


FIG. 3.

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UNITED STATES PATENT OFFICE.

ROBERT M. JONES, OF DENVER, COLORADO.

LOOM FOR WEAVING RETICULATE REINFORCEMENTS.

1,058,982.

Specification of Letters Patent.

Patented Apr. 15, 1913.

Application filed December 16, 1911. Serial No. 666,234.

To all whom it may concern:

Be it known that I, ROBERT M. JONES, a citizen of the United States, residing at Denver, in the county of Denver and State of Colorado, have invented certain new and useful Improvements in Looms for Weaving Reticulate Reinforcements, of which the following is a specification.

My invention relates to looms for weaving reticulate reinforcements for use in concrete structures and its object resides in the provision of a mechanism of simple construction by which metallic bars and wires may be woven into a reticulate article of either flat, cylindrical, or conoidal form. I attain this object by the mechanism shown in the accompanying drawings in the various views of which like parts are similarly designated and in which,

Figure 1 represents an elevation of the loom with the warps and filling of which the woven product is produced, in the operative position, Fig. 2 a fragmentary front-elevation of the same looking in the direction of the arrow A, Fig. 1, and Fig. 3 a fragmentary plan view of the machine.

Referring to the drawings by letters, the weaving-machine consists of a suitable base X' upon which are erected an upright frame X for the support of the loom-harness and the mechanism by which the same is operated, standards V for the support of a horizontal shaft Y upon which the warp-reels A are mounted, and standards W which support the element of the mechanism by which the relative position of the parts constituting the filling or weft of the woven product is determined and by which said product is shaped to the desired form.

The reels A are loosely mounted upon the shaft Y to move independently about the axis thereof while the machine is in operation, they are spaced from each other to permit of a limited lateral displacement and they are each provided with an integral sheave-member T of reduced diameter, to receive a rope or cable S one end of which is securely fastened upon the base X' while weights U are suspended from their opposite ends after they have been placed over the respective sheaves, for the purpose of holding the warp taut and keeping the proper strain thereof while it is being paid off the reels.

The shaft Y has a longitudinal key way

Y' extending from one of its ends to the other and the reels are each provided with a corresponding key-seat A', so that by insertion of a key into the way Y' and the seat A' of one of the reels, the latter may be fixed on the shaft when it is desired to wind the warp upon the reel at the initial point of the operation, which may be readily accomplished by rotating the shaft in its bearings by any suitable means such as the crank Y² shown in Fig. 3 of the drawings.

The loom harness consists of the two heddle frames C each provided with a plurality of heddles E and respectively attached at opposite sides of a pair of endless ropes or cables I looped around two drums D which are mounted to rotate about horizontal axes in suitable bearings secured near the upper and lower ends of the upright frame X. The drums D are connected to rotate in unison, by means of endless chains R which are placed around sprocket wheels Q secured upon the opposite ends of the shafts D' of the respective drums and the upper one of these shafts carries in addition, a hand wheel H by means of which the two drums are rotated to alternate the position of the heddle frames in the operation of the machine.

To prevent retrograde movement of the two drums, toothed wheels K are mounted upon the shaft of the upper one adjacent the sprocket wheels and a series of double gravity pawls L of different lengths are pivotally connected upon blocks secured to the frame X to engage the toothed peripheries of the wheels K at either side of the perpendicular passing through their center.

The element by which the rods comprised in the weft or filling of the woven product, are spaced and by which the said product may be formed into either a cylinder or a conoid, consists of a shaft B which is rotatably supported in bearings on the before mentioned standards W and upon which a series of disks J are fixedly mounted. The disks which, collectively, provide a drum or reel upon which the woven product is wound, as will hereinafter be explained, are provided with equidistant peripheral notches which are placed in alinement for the reception of the rods F which constitute the web of the reticulate reinforcement. When the machine is employed to weave reinforcements of cylindrical form the sev-

eral disks comprised in the series, are of equal diameters, while when the loom is operated to produce a conoidal reinforcement, the disks are progressively reduced in diameter from the outer one at one end of the shaft B, to the opposite one at the other extremity of the same. The last described arrangement of disks has been shown in the drawings.

In the operation of the loom, the shaft B is intermittently rotated by means of levers P which are fulcrumed upon the ends thereof and which carry series of overbalanced pawls N of different lengths which respectively engage the toothed peripheries of two ratchet-wheels M, fixedly mounted upon the shaft. Gravity dogs O pivoted on the standards W are placed in engagement with the teeth of the respective wheels M to prevent retrograde movement of the rotatory element and stops X² adjustably secured upon the upright frame X are provided to determine the extent of the movement of the levers P and, in consequence, that of the arc through which the shaft B is intermittently rotated. The warp of the reticulate reinforcement produced by the operation of the machine, consists of double wires which in the drawings are indicated by single lines G, and which are wound upon the reels A, and the web or filling of the reinforcement is provided by rods F which in the operation are placed in the alined peripheral notches of the disks J.

To wind the double wires which constitute the warp, upon the reels A, the latter are one after the other, fixed on the shaft Y by means of a key inserted in the corresponding key-seats Y' and A', and the shaft is rotated in the direction of the arrow C, Fig. 1 by means of the crank Y². When as many reels have been supplied with wire, as are required to produce a reinforcement of a determinate mesh, the friction cables S which had been removed from the sheaves T during the operation of winding the warp on the reels, are replaced in the position shown in the drawings, and the two wires wound on each reel are singly drawn through the eyes of opposite heddles on the two frames C and their ends are secured by twisting, to a rod F which has been placed in alined notches of the disks on the shaft B. The disks are now rotated by means of the lever P in the direction of the arrow d through an arc substantially equal to the distance between two successive notches in their peripheries after which a second rod is placed in the web produced by decussation of the wires G and drawn into the next series of alined notches in the disks. The heddle frames C in which the two strands of the warp are held, are, subsequently, respectively raised and lowered past each other, for the purpose of securing the rod F in place, by a partial rota-

tion through an arc of approximately 180 degrees, imparted to the drums D by means of the hand wheel H. A second partial rotation imparted to the shaft B by means of the lever P, brings a third series of notches within reach of the operator, who again draws a rod F through the web and places it in the said notches, after which he reverses the position of the pawls L and turns the hand-wheel H in the opposite direction to return the heddle frames to their original position. This operation is repeated until the first rod placed in the notches of the disks, which is held in place either by friction or by tying the ends of the warp to the shaft B, approaches the point at which it was initially disposed, when the warp is severed back of the last rod placed in the notches of the disks, and the ends of the strands are twisted together with the ends of the wires projecting beyond the first rod to complete the continuity of the reticulate reinforcement, which in accordance with the relative sizes of the disks is either cylindrical or conoidal in form.

To produce a flat reinforcement, it is only necessary to withdraw the rods comprised in the filling, from the notches in the disks after the latter have been partially rotated and it will be understood that by varying the perimetrical form of the disks the machine may be effectively employed to produce reinforcements of quadrangular form.

As the reels A rotate independently on the shaft Y, and are constantly restrained by the frictional engagement of the weighted cables S with the sheaves I, the said reels will, in the operation of the machine, rotate intermittently at velocities differing in ratio from the diameters of the oppositely disposed disks J and the spaced relation of the reels, as shown in Fig. 3, makes it possible to laterally displace the same, when it is desired to insert the keys in the corresponding key-ways Y' and A', for the purpose of winding the warp.

It will be understood that while the machine as shown and described is particularly adapted for the production of reticulate reinforcements for concrete structures, it may, if so desired, be effectively employed in the manufacture of fencing and the like.

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

1. In a loom of the class described, the combination with means for the decussation of the strands comprised in the warp, of a plurality of disks mounted to rotate in unison about a common axis and having series of peripheral notches in alinement with each other for the support of rods which constitute the weft of the product of the loom, the said disks being spaced from each other for the passage of the warp strands between

them at right angles to their axis of rotation, and means for imparting an intermittent rotary movement to said disks.

2. In a loom of the class described, the combination with means for the decussation of the strands comprised in the warp, of a plurality of disks of progressively increasing diameters mounted to rotate in unison about a common axis and having series of peripheral notches in alinement with each other for the support of rods which constitute the weft of the product of the loom, the said disks being spaced from each other for the passage of the warp strands between them at right angles to their axis of rotation, and means for imparting an intermittent rotary movement to said disks.

3. In a loom of the class described, the combination with means for the decussation of the strands comprised in the warp, of a plurality of disks mounted to rotate in unison about a common axis and having series of peripheral notches in alinement with each other for the support of rods which constitute the weft of the product of the loom, the said disks being spaced from each other for the passage of the warp strands between

them at right angles to their axis of rotation, a rod supported in one of the series of alined notches to which the ends of the warp strands are secured, and means for imparting an intermittent rotary movement to the said disks.

4. In a loom of the class described, the combination with means for the decussation of the strands comprised in the warp, of a plurality of disks mounted to rotate in unison about a common axis and having series of peripheral notches in alinement with each other for the support of rods which constitute the weft of the product of the loom, the said disks being spaced from each other for the passage of the warp strands between them at right angles to their axis of rotation, means for imparting an intermittent rotary movement to said disks, and adjustable means to determine and vary the extent of said movement.

In testimony whereof I have affixed my signature in presence of two witnesses.

ROBERT M. JONES.

Witnesses:

A. B. JONES,

KIRBY V. JONES.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."