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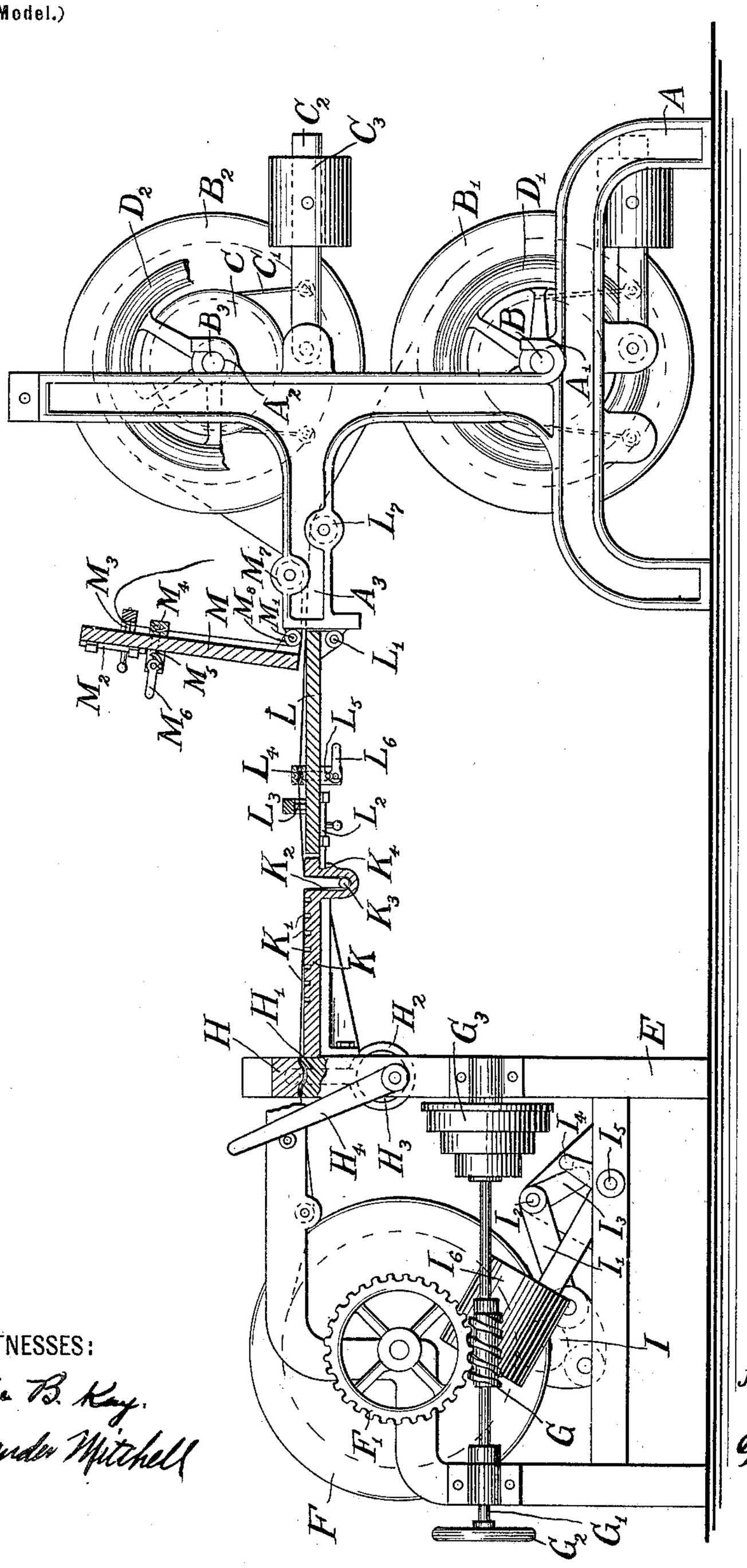
J. W. DIMICK, JR. & J. JAGGER.

WARPING MACHINE.

(Application filed Jan. 27, 1902.)

(No Model.)



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WARPING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 699,615, dated May 6, 1902.

Application filed January 27, 1902. Serial No. 91,309. (No model.)

To all whom it may concern:

Be it known that we, JEREMIAH W. DIMICK, Jr., and JOSEPH JAGGER, citizens of the United States, residing at Rifton, in the county of Ulster and State of New York, have invented a new and useful Improvement in Warping-Machines, of which the following is a specification, taken in connection with the accompanying drawing, forming part of the same.

This invention relates to warping-machines more especially adapted for rewinding warps and for uniting several warps to form a compound warp.

One embodiment of this invention is illustrated in the accompanying drawing, which represents a side elevation, parts being shown in section.

The beam-frame A is formed of any desired material, such as cast-iron, and is provided with the two bearings A′ A², in which are mounted the shafts B and B³, respectively. These shafts carry the two warp-beams B′ and B², these warp-beams being rigidly secured to the shafts. The large hand-wheels D′ and D² are also rigidly secured to these shafts, so that the warp-beams may be turned by hand, if desired. The friction-drum C is rigidly secured to the shaft B³, and the strap C′ engages the periphery of this drum to cause the desired tension in the warps as they are withdrawn from the warp-beam B². The free end of the friction-strap C′ is connected with the lever C², upon the outer end of which is adjustably mounted the weight C³. A similar tension device is used in connection with the warp-beam B′.

Upon the rigid winding-frame E is revolubly mounted the winding-drum F. The shaft of this beam has rigidly connected with it the worm-wheel F′, by which the winding-beam is revolved as desired. The worm G engages the worm-wheel F′ and is secured to the worm-shaft G′. This shaft, which is mounted in suitable bearings in the frame E, has rigidly secured to one end of the same the hand-wheel G² and at the other end the cone-pulley G³. It will of course be understood that a suitable belt is used engaging the cone-pulley G³ and a corresponding cone-pulley on a suitable counter-shaft. The presser I is mounted in the lever I′ in suitable bearings and engages the under surface of the warps as they are wound upon the winding-beam F. This lever I′ is pivoted about I², and the free end I³ of this lever is engaged by a stud I⁴ on a bell-crank lever pivoted about I⁵. The counterweight I⁶ at the other end of this bell-crank lever acts through these connections to hold the presser tightly against the warps upon the beam, so as to smooth the same as they are being wound.

The winding-clamp H is mounted on the frame E and is actuated by the eccentric H³. The strap H² of this eccentric is connected with the upper member H of the clamp and serves to bring the same into proper engagement with the lower member H′. This clamp is operated by the handle H⁴, connected with the eccentric H³. The cutting-table K is secured to the winding-frame E at about the level of the winding-clamp. This table is provided with a series of parallel cutting-grooves K′, extending transversely across it, and with the transverse loop-slot K² at the outer end of the table. This loop-slot is provided so that loops may readily be formed in all the warp-threads extending across the table by pushing down the loop-rod K³ into the slot.

The beam-frame A is formed with the lateral extensions A³ on either side of the same, and to the outer end of these extensions or arms are pivoted the clamping-tables L and M, so that these clamping-tables are each adapted to coöperate with the cutting-table to form a continuous table. The table L is pivoted about the point L′, and its upper surface is substantially level with the top of the cutting-table, as shown. The outer end of this clamping-table is provided with a latch L², which when extended into the position indicated in the drawing engages the slot K⁴ in the cutting-table and holds the clamping-table firmly in the position indicated. The reed L³ is mounted on the upper surface of the table L, and just behind the reed there is provided the table-clamp L⁴, this clamp being actuated by a crank-handle L⁶, which is linked to the upper member of the clamp, the link connection being indicated as L⁵. It will be evident that if the clamping-table L is moved about its pivot L′, so as to assume a position vertically below this pivot, the upper clamping-table M can then be swung down

into substantially horizontal position. The latch M^2 on this table will hold it rigidly in proper coaction with the cutting-table K. This clamping-table M is formed with the reed M^3 and the clamp M^4, actuated by the members M^5 and M^6, similar to the corresponding parts of the other clamping-table. Suitable guiding-rolls M^7, M^8, and L^7 are provided to guide the warps through the machine.

This machine is used to rewind and tie warps to form a compound warp and is of especial utility in producing a compound printed warp for weaving velvet carpets. For this purpose pattern-warps are printed, wound, set, and beamed in the usual way to produce the direct warp-beam B^2, and it may be stated that in printing these warps the pattern upon them is only a half of the warp-pattern, repeating at intervals in the usual way, and also between these half-patterns suitable knotting-sections are provided. Upon the reverse beam B′ are wound similar half-pattern warps; but these are wound upon the beam in the opposite direction. The warps upon the direct beam would consist of a knotting-section, then a pattern-section, such as would extend from the center to the border of a velvet carpet, and then another knotting-section, repeated indefinitely. The warps upon the reverse beam B′ would comprise a knotting-section, then a pattern-section, giving the pattern from the border to the center of a velvet rug or carpet, then another knotting-section and pattern-section, repeated indefinitely. After the warp-threads from the direct and reverse beams have been led through the reeds M^3 and L^3 and after one set of these warps has been started upon the winding-beam F—for instance, the warp-threads from the reverse beams, as indicated in the drawing—one length of these warps is wound upon the winding-beam F. This length is sufficient to supply pattern-warps extending from the border to the center of a velvet carpet. Then when the knotting-sections adjacent the ends of these pattern-warp sections are brought over one of the cutting-grooves K′ in the cutting-table the winding-beam is stopped and the winding-clamp H is set. The loop-rod K^3 is then pushed down over the warps into the loop-slot, so as to draw forward a sufficient length of these warps for tying. The table-clamp L^4 is then operated to firmly hold this set of warps to the clamping-table. The warps are then severed at the ends of the sections by a knife or other implement, which is guided by the proper cutting-groove K′. The latch L^2 is then disengaged and the clamping-table L swung down into a vertical position. The clamping-table M is thereupon brought down and is clamped to the cutting-table. The direct warps are then knotted to the ends of the corresponding reverse warps which lie upon the cutting-table, each of the direct warps being tied to the proper reverse warp by the knotting-sections on the ends of these warps. When this has been done, the winding-clamp H and the table-clamp M^4 are released and a half-section of the direct warps is wound upon the winding-beam sufficient to supply pattern-warps for the other half of the carpet-pattern from the center to the border. When the ends of these direct warps are brought over one of the cutting-grooves in the table K by means of the hand-wheel G^2, if necessary the winding is stopped, the clamps are operated, and the direct warps are cut. The clamping-table M is thereupon raised into position indicated in the drawing, the clamping-table L raised into engagement with the cutting-table, as indicated, and the ends of the reverse warps carried by this clamping-table are joined correctly to the ends of the direct warps upon the cutting-table. In this way a compound warp is produced and wound upon a winding-beam F, this warp being formed of the direct and reverse warps which are knotted together at the center and at the borders of the pattern by the knotting-sections. It is of course apparent that instead of making this compound warp from two sectional warps it might be formed from any desired number of sectional warps, and for this purpose more sectional warp-beams and clamping-tables would be provided.

Many modifications may be made in this invention by those skilled in the art, and it is not necessary in all cases to employ the exact embodiment of the same which is disclosed in the drawing. Parts of the machine may be omitted and parts of the same may be used in connection with other devices. We do not, therefore, wish to be limited to the disclosure which we have made in this case; but what we claim as new, and what we wish to secure by Letters Patent, is set forth in the appended claims.

What is claimed as new is—

1. In a warping-machine, a beam-frame, warp-beams mounted upon said beam-frame, hand-wheels secured to said warp-beams, friction-drums secured to said warp-beams, friction-straps engaging said drums, strap-levers connected to said straps and carrying adjustable weights to form tension devices for said warp-beams, a winding-frame mounted adjacent said beam-frame, a winding-beam mounted in said winding-frame, a worm-wheel secured to said winding-beam, driving-gear including a hand-wheel, engaging said worm-wheel, a presser to coöperate with said winding-drum, a cutting-table mounted on said winding-frame and provided with cutting-grooves and a loop-slot, a winding-clamp mounted adjacent said cutting-table, swinging clamping-tables mounted on said beam-frame to coöperate with said cutting-table, and latches to secure either of said clamping-tables to said cutting-table, each of said clamping-tables being provided with a reed and a table-clamp.

2. In a warping-machine, a beam-frame to support a plurality of warp-beams, a winding-

frame carrying a winding-beam and means to rotate said winding-beam, a cutting-table secured to said winding-frame, said cutting-table being formed with a series of parallel transverse cutting-grooves and with a transverse loop-slot adjacent said cutting-grooves to form a series of equal loops in warp-threads and a winding-clamp on said winding-frame adjacent said cutting-table.

3. In a warping-machine, a beam-frame carrying warp-beams, a winding-frame carrying a winding-beam, means to rotate said winding-beam, a cutting-table secured to said winding-frame, movable clamping-tables mounted on said beam-frame to coöperate with said cutting-table and means to clamp a series of warp-threads upon said cutting-table and said clamping-tables.

4. In a warping-machine, a beam-frame, a plurality of warp-beams revolubly mounted in said beam-frame, a winding-frame, a winding-beam mounted in said winding-frame, a cutting-table secured to said winding-frame, a plurality of clamping-tables secured to said beam-frame, each of said clamping-tables being adapted to coöperate with said cutting-table and means to clamp a series of warp-threads upon said cutting-table and upon said clamping-tables.

5. In a warping-machine, a beam-frame, a plurality of warp-beams mounted in said beam-frame, a winding-frame mounted adjacent said beam-frame, a winding-beam in said winding-frame, driving mechanism for said winding-beam, a presser to coöperate with said winding-beam and a clamp secured to said winding-frame to clamp a series of warp-threads.

6. In a warping-machine a beam-frame having bearings for a plurality of warp-beams, a winding-frame to support a winding-beam, a clamp upon said winding-frame to engage a series of warp-threads and means to rotate said winding-beam to alternately wind threads from each of said warp-beams.

7. In a warping-machine, a beam-frame, a plurality of warp-beams revolubly mounted in said beam-frame, movable clamping-tables mounted on said beam-frame, means to clamp a series of warp-threads upon said clamping-tables, a winding-frame mounted adjacent said beam-frame, a winding-beam in said winding-frame and driving mechanism for said winding-beam.

8. In a warping-machine, a beam-frame, a plurality of warp-beams mounted in said beam-frame, movable clamping-tables mounted on said beam-frame, means to clamp a series of warp-threads from said beams upon said clamping-tables and a winding-frame having a winding-beam mounted therein adjacent said beam-frame.

9. In a warping-machine, a beam-frame, a plurality of warp-beams mounted in said beam-frame, movable clamping-tables mounted on said beam-frame, each of said clamping-tables being provided with a reed and a table-clamp to engage warp-threads from said warp-beams.

10. In a warping-machine, a beam-frame to carry a plurality of warp-beams and clamping-tables mounted on said beam-frame to clamp warp-threads from said beams.

11. In a warping-machine, a beam-frame to carry warp-beams, a winding-frame mounted adjacent said beam-frame, means to rotate said winding-beam, a cutting-table provided with cutting-notches and with a loop-slot secured to said winding-frame and a winding-clamp mounted adjacent said table.

12. In a warping-machine, a winding-frame to carry a winding-beam, means to rotate said winding-beam, a cutting-table provided with cutting-grooves and with means to form loops in warp-threads mounted on said winding-frame and a winding-clamp adjacent said table.

13. In a warping-machine, a winding-frame to carry a winding-beam and a cutting-table provided with a loop-slot mounted on said winding-frame.

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Witnesses:
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