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WARP LOOM

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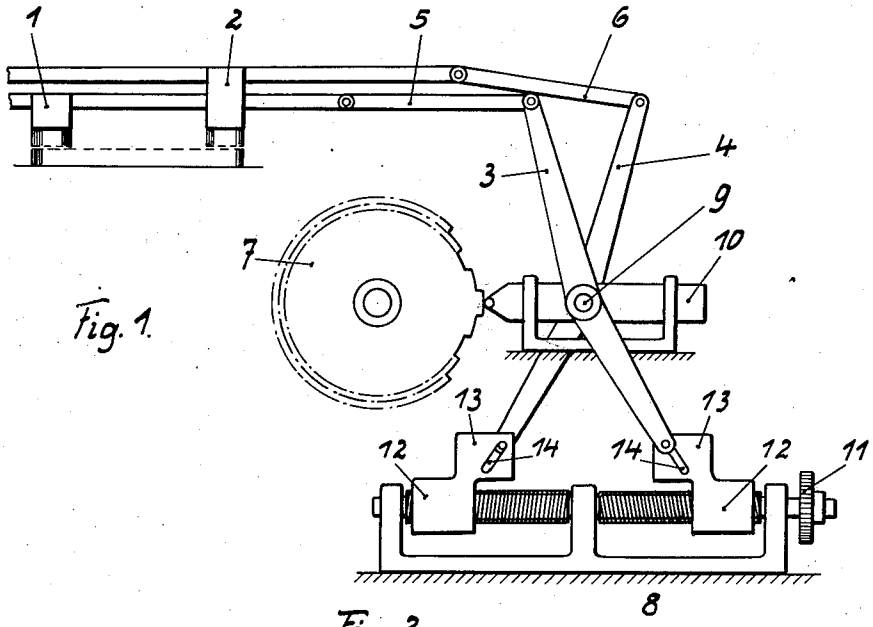
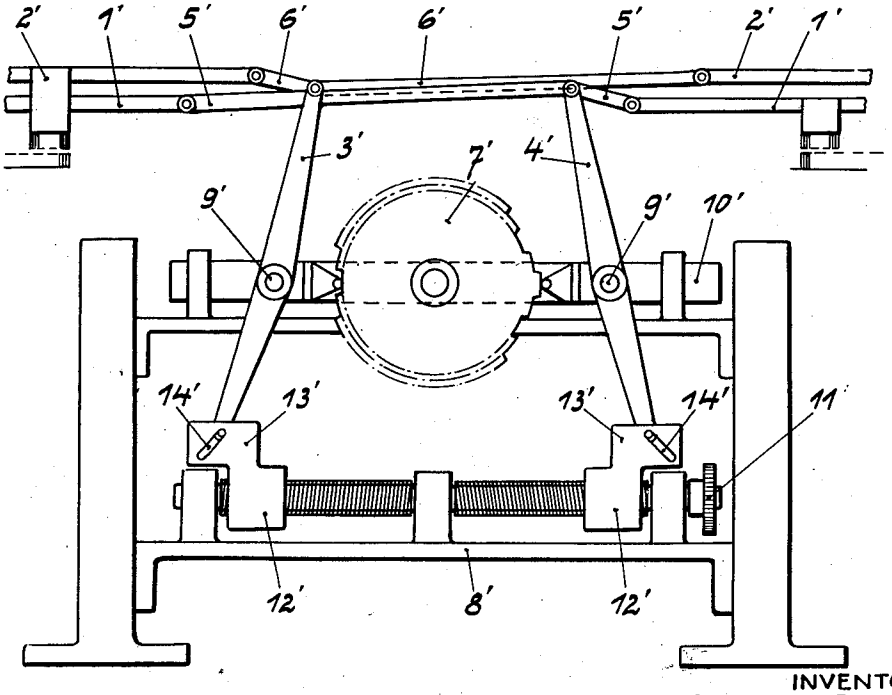


Fig. 1.

Fig. 2.



INVENTOR
RICHARD RICHTER
Richards & Geier
ATTORNEYS

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WARP LOOM

Richard Richter, Oberlungwitz, Germany

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7 Claims. (Cl. 66—86)

This invention relates to a warp loom whose warp is composed of a plurality of thread groups guided on different planes, the outer groups being moved in or out to vary the width of the fabric.

On a warp loom of this type fashioned goods can be produced, and the lapping machines which guide the thread groups to be moved in or out are laterally adjusted by means of double levers which in addition to the usual means for adjusting lapping also require another adjusting device.

In the known warp looms the bearing for the double levers is provided on a regulatable screw spindle which effects the inward or outward motion of the lapping machines to vary the width of the goods. An adjusting device, as a pattern wheel, acts on the ends of the double levers remote from the lapping machines. As each double lever requires a screw spindle and also a second device for adjusting lapping, an extensive mechanism is needed for controlling the lateral motions of the lapping machines, particularly if a loom has a large number of lapping machines.

Machines of this type are described in the German Patent No. 634,045.

It is the object of the invention to eliminate this drawback, and this object is attained by controlling the double levers of every two lapping machines carrying out the same inward or outward motion, though in different directions, for the purpose of reducing or enlarging the width of the fabric by a single correspondingly operating adjusting device for narrowing or widening motions and by a single device for adjusting lapping.

There are certain difficulties involved in controlling the double levers of every two lapping machines performing similar yet oppositely directed inward and outward motions by the two devices mentioned above. According to the invention, these troubles are overcome by controlling the bearings of the double levers through the medium of the lap adjusting device and subjecting the ends of the levers remote from the lapping machines to the action of a second adjusting means.

By way of example, the invention is illustrated in the accompanying drawing, in which Figure 1 is a view of the longitudinal driving means of two oppositely movable lapping machines disposed on one side of the machine and Fig. 2 shows similar driving means arranged within the loom.

For the sake of greater clearness the warp machine shown has only three thread groups the outer two of which are oppositely moved in or out to vary the width of the goods. These outer groups are guided by the lapping machines 1, 2, and racking motions for lapping as well as for varying the width of the fabric are imparted to the machines 1, 2 by double levers 3, 4 which are articulated to their respective machines 1, 2 by the arms 5, 6. The double levers 3, 4 are subjected to the action of two adjusting devices, viz. the lap adjusting means 7 and the adjusting device 8 for varying the width of the goods, the arrangement being such that the device 7 racks the bearing 9 of the double levers 3, 4 and the second adjusting device 8 acts on the ends of the levers remote from the lapping machines 1, 2. For this purpose the levers 3, 4 are mounted on a horizontally displaceable slide 10 which cooperates with the adjusting device 7.

Fig. 1 shows a construction in which control of the lapping machines 1, 2 is effected on one machine side by only one lap adjusting device 7 and one adjusting device 8, the two machines 1, 2 being symmetrically adjusted relative to one another both as to lapping and inward or outward motion to vary the width of the fabric. The double levers 3, 4 of the machines 1, 2 are jointly disposed on the slide 10 on a common shaft 9, and the adjusting device 8 is necessarily of a type permitting opposite adjustment of the levers 3, 4. In the construction shown the adjusting device 8 comprises a screw spindle which is provided with left-handed thread for one double lever and with right-handed thread for the other. The spindle is turned by means of the wheel 11. Adjusting nuts 12 are provided with compensating members 13 having curved slots 14 for guiding the levers 3 and 4.

In long warp looms of this class differences in the adjustment of the lapping machines 1, 2 due to influences of temperature may occur. To meet this trouble a construction as shown in Fig. 2 is provided in which the lapping machines 1', 2' are interrupted in the center of the machine and if necessary at other points and the adjusting means for narrowing or widening motions as well as the lap adjusting device are arranged at the place of interruption. The slide 10' is preferably positively guided through the device 7', in this instance a pattern wheel, and intersects the axis thereof so as to contact with the wheel at two opposite points. The two double levers 3', 4' are still arranged on the same slide 10' but at different sides of the device 7'.

During variation of the width of the fabric the two double levers 3', 4' are swung out of

their central position to a considerable extent with the result that their operating path is increasingly shortened while their turning angle remains constant, as the lapping machines are rectilinearly displaced. The racking variations involved could be eliminated by a corresponding adjustment of the screw spindle 8', which, however, is impracticable. In the constructions shown the arrangement is therefore such that the adjusting nuts 12' located on the screw spindle 8' possess compensating members 13' for varying the uniform racking of the nuts 12' during uniform turning of the spindle in accordance with the shortening or lengthening of the travel of the double levers 3', 4' when they are swung out of their central position. For example, at one revolution of the spindle 8' a certain uniform amount of racking of the lapping machines 1', 2' will always be insured in this manner, regardless of the angle at which the double levers 3', 4' are positioned. For this purpose, the compensating members 13' of the nuts 12' are provided with curved slots 14' in which the ends of the levers 3', 4' are guided. The radius of the slots 14' whose position is preferably fixed during assembling of the machine is as large as the arm of the double levers 3', 4' which acts on the lapping machines 1', 2'.

When the width of the fabric is diminished, the outer thread groups move toward each other, so that a thickening of the fabric takes place. However, in the course of the widening, no holes are formed in the fabric, since the thickened portions resulting from the intersection of the thread groups are merely made narrower. Furthermore, the goods may be widened only when the outer thread groups which are moved away from each other at least partly intersect the inner thread groups.

I claim:

1. A warp loom for producing fashioned goods by means of a warp composed of a plurality of thread groups guided on different planes, the outer groups being adjustable to vary the width of the fabric, in which the lapping machines guiding these groups are laterally adjusted by double levers which are carried by a bearing and which in addition to the control of the usual lap adjusting means are subjected to that of a second adjusting device, characterized in that the double levers of every two lapping machines carrying out the same inward or outward motion, though in different directions, for the purpose of reducing or enlarging the width of the fabric are controlled by a single correspondingly operating adjusting device for narrowing or widening motions and by a single lap adjusting device.

2. A warp loom according to claim 1, in which the lap adjusting device racks the bearing of the double levers and the second adjusting device acts on the end of the levers remote from the lapping machines and in which a displaceable member is provided which cooperates with and is controlled by the lap adjusting device and on which both double levers are mounted.

3. A warp loom according to claim 1, in which the adjusting device for the narrowing or widening motions of the lapping machines comprises a screw spindle provided with left-handed thread for one double lever and with right-handed thread for the other lever.

4. A warp loom according to claim 1, in which the lapping machines are interrupted in the center of the machine and the adjusting means for the narrowing or widening motions as well as the lap adjusting device are arranged at the point of interruption.

5. A warp loom according to claim 1, in which the lapping machines are interrupted in the center of the machine and the adjusting means for the narrowing or widening motions as well as the lap adjusting device are arranged at the point of interruption, in which, further, the two double levers actuating the lapping machine carrying out the same inward or outward motions, though in different directions, are arranged on a displaceable member cooperating with and controlled by the lap adjusting device in such manner that the lap adjusting is positioned between the two double levers and the bearings of the double levers are positively adjusted by the lap adjusting device.

6. A warp loom according to claim 1, in which the adjusting device for the narrowing or widening motions of the lapping machines comprises a screw spindle provided with left-handed thread for one double lever and with right-handed thread for the other lever and nuts disposed on the screw spindle for adjusting the double levers and possessing compensating members for varying the uniform racking of the nuts during uniform operation of the screw spindle in accordance with the shortening or lengthening of the travel of the double levers on the lapping machines when said levers are swung out of their central position.

7. A warp loom according to claim 1, in which the adjusting device for the narrowing or widening motions of the lapping machines comprises a screw spindle provided with left-handed thread for one double lever and with right-handed thread for the other lever and nuts disposed on the screw spindle for adjusting the double levers and possessing compensating members for varying the uniform racking of the nuts during uniform operation of the screw spindle in accordance with the shortening or lengthening of the travel of the double levers on the lapping machines when said levers are swung out of their central position, said compensating members being slotted in curved fashion to guide the respective end of the double levers in said slots the radius of which equals the length of the arm of the double levers that acts on the lapping machines.

RICHARD RICHTER.