Nov. 24, 1925. 1,562,659

W. W. ROBERTSON

CHECK FOR LOOM NEEDLE MOTION

Filed May 9, 1925

Fig. 1

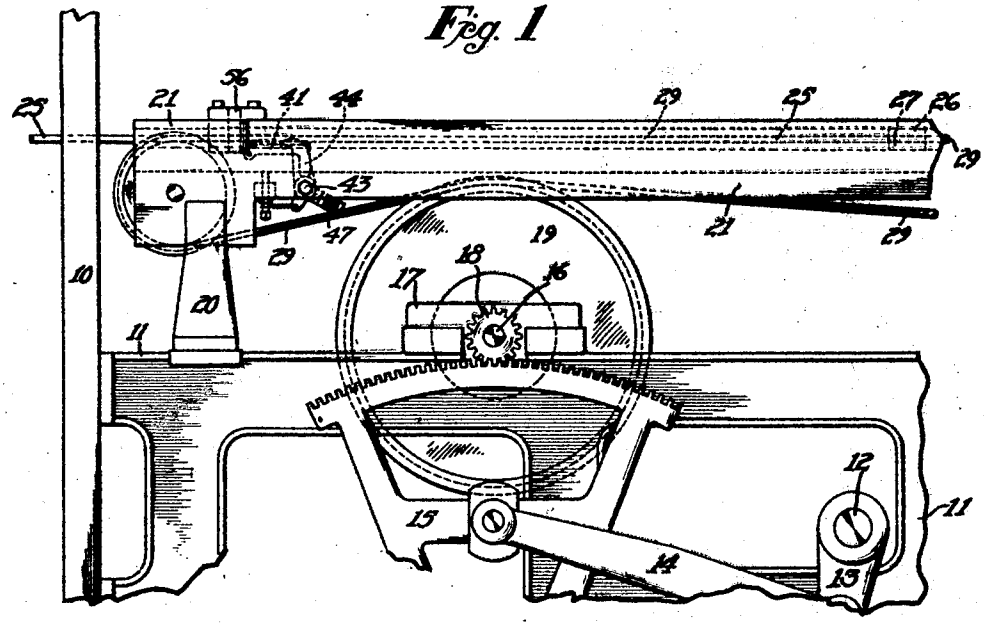


Fig. 2

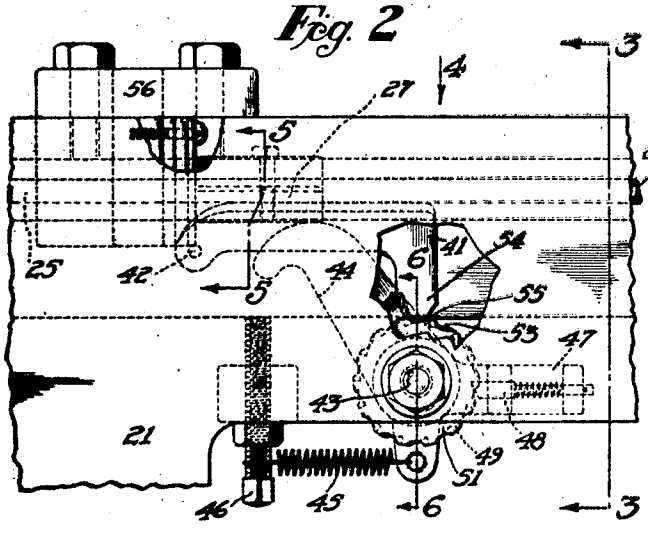
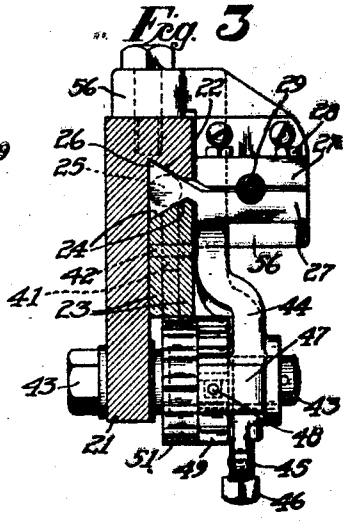


Fig. 3



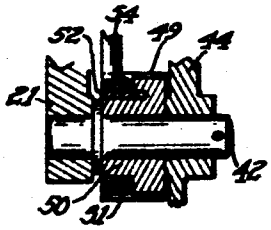


Fig. 6

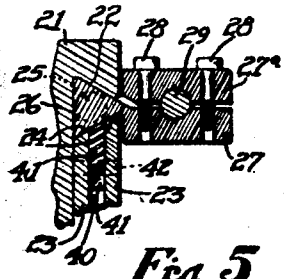


Fig. 5

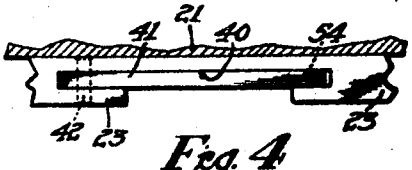


Fig. 4

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UNITED STATES PATENT OFFICE.

WILLIAM W. ROBERTSON, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO CROMPTON & KNOWLES LOOM WORKS, OF WORCESTER, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

CHECK FOR LOOM NEEDLE MOTION.

Application filed May 9, 1925. Serial No. 29,204.

To all whom it may concern:

Be it known that I, WILLIAM W. ROBERTSON, subject of the King of Great Britain, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Check for Loom Needle Motion, of which the following is a specification.

This invention relates to improvements in needle motions for Axminster looms and an object of the invention is to provide a periodically actuated device for checking the motion of the needle.

It is a further object of the invention to provide a check which will supply maximum pressure near the end of the needle motion but which will reduce the pressure at the end of the motion so that the needle may be withdrawn easily.

With these and other objects in views which will appear as the description proceeds, my invention resides in the combination and arrangement of parts hereinafter described and set forth in the claims.

In the accompanying drawings wherein I have shown one embodiment of my invention,

Fig. 1 is a front elevation of the end portion of an Axminster loom having my invention applied thereto,

Fig. 2 is an enlarged front elevation of the check, parts being broken away for the sake of clearness,

Fig. 3 is a vertical section on line 3—3 of Fig. 2,

Fig. 4 is a fragmentary top plan of the guide plate looking in the direction of arrow 4, Fig. 2 and showing the check lever supported thereon,

Fig. 5 is a detail vertical section on line 5—5 of Fig. 2, and

Fig. 6 is a vertical section on line 6—6 of Fig. 2.

Referring more particularly to the drawings it will be seen that I have provided a loom side 10 to which is secured an end frame 11 extending as shown herein from the right hand side of the loom. A driving shaft 12 is suitably mounted on the end frame and has secured thereto a crank 13 connected by means of link 14 to a segment 15 pivotally mounted with respect to the end frame by means not shown. A shaft 16 is mounted in bearing 17 carried by the end frame 11 and has secured thereto a pinion 18 which meshes with the segment 15. A drum 19 is secured to the shaft and rotates with the pinion as the latter is moved by the segment. Stand 20 mounted on the frame 11 supports needle rail 21 which as shown in Fig. 3 is provided with an undercut ledge 22. A guide plate 23 is secured to the bar 21 and has a bevel surface 24 which cooperates with the undercut ledge 22 to form a triangular guide. Needle 25 is secured to a triangular slide 26 mounted for movement in the guide previously described and having formed integral therewith a block 27. A clamp 27^a is secured to the block by bolts 28 and serves to bind the rope or other flexible band 29 to the slide 26 and needle 25. A rope 29 is wrapped around and is secured to the drum 19 and receives motion as the latter rotates. The matter thus far described is of common construction and forms no part of my invention, the regular vibration of shaft 12 resulting in a back and forth movement of the block 27 to move the needle into and out of the shed.

My improvements relate to means for arresting the motion of the block 27 and needle 25 and in carrying out my invention I provide the plate 23 with a slot 40 in which is mounted for free movement a check lever 41 pivoted as at 42 to the plate. As shown in Fig. 5 the lever 41 has the upper surface thereof beveled so that when raised it will contact with the lower face of slide 26.

In order to give the lever 41 its checking movement I mount on the needle rail a stud 43 on which is mounted for free movement a lever 44 the upper end of which is rounded as shown in Fig. 2 and normally held upright as shown in Fig. 1 by a spring 45 interposed between the lower end of the lever and a screw 46. An arm 47 extends laterally from the lever 44 and has slidably mounted therein a spring pressed pawl 48 positioned for engagement with the teeth of a ratchet 49. As shown in Fig. 6 said ratchet has a reduced hub 50 to which is secured a check wheel 51 by means of a pin 52, this construction requiring that the check wheel and ratchet move together when the latter is actuated by the detent. As shown in Fig. 2 said check wheel is provided with a plurality of dents 53 which are formed to receive the lower end 54 of check lever 41,

said dents being separated by raised cam portions 55.

In normal operation, with the needle approaching the end of its stroke, the parts are in the position shown in Fig. 1 with end 54 in a notch 53, and as the block 27 approaches the inner end of its travel it will engage the lever 44 and move the same to the position shown in Fig. 2. As this movement takes place the detent 48 is given a counterclockwise movement to move the ratchet 49 and check wheel 51 to the left and one of the cams 55 will pass under the end 54 of the lever 41, raising the latter against the lower face of slide 26 to cause additional friction thereon for the purpose of stopping the block 27 and needle 25. As the block reaches the end of its stroke one of the dents 53 will come under the lever 41, permitting the latter to fall away from the slide 26 to relieve pressure thereon. In order to position the needle at the inner end of its stroke I provide a block 56 secured to the needle rail 21 in position to be engaged by the block 27 as the latter moves inwardly. On the return movement of the block spring 45 will restore the lever 44 to the position shown in Fig. 1 and retrograde movement of the ratchet and check wheel will be prevented by engagement of the block with the lever 41 after said block has moved out of contact with lever 44. It will be noted in Figs. 1 and 2 that the upper end of the check lever 41 extends to the right of the lever 44 and is therefore engaged and held against upward movement during the whole time that the lever 44, ratchet 51 and pawl 48 are returning to normal position. Any tendency of the check wheel and pawl to turn will therefore be resisted and the pawl 48 will be moved into engagement with a fresh tooth on the ratchet.

From the foregoing it will be seen that I have provided the needle motion of Axminster looms with a check which is actuated by some part moving with the needle and that the pressure is relieved at the extreme end of the stroke to permit easy return movement of the needle. It will also be seen that the parts are so constructed that the return movement of the needle does not effect retrograde movement of the ratchet and check wheel.

Having thus described my invention it will be apparent that changes and modifications may be made therein by those skilled in the art without departing from the spirit and scope of the invention, and I do not wish to be limited to the details herein disclosed but what I claim is:

1. In a needle motion for Axminster looms comprising a needle and a block movable therewith, a check lever movable into checking relation with respect to the block, and means actuated by the block as the latter nears the end of its stroke to move said lever into checking position.

2. In a needle motion for Axminster looms having a needle and a block movable therewith, a check lever, a block engaging lever to be engaged by the block as the latter nears the end of its stroke, and intermediate connections between said levers to give the check lever a checking movement when the block lever is moved by the block.

3. In a needle motion for Axminster looms having a needle and a block movable therewith, a check lever a block engaging lever normally in the path of the block, means including a cam face normally in contact with the check lever and movable with the block lever as the latter nears the end of its stroke to actuate said check lever and move the same to checking position.

4. In a needle motion for Axminster looms comprising a needle and a block movable therewith, a needle rail, a needle plate secured thereto, a check lever guided in the plate and pivotally mounted thereon to engage a portion of the block, and means operative by the block as the latter nears the end of its stroke to move the check lever into frictional engagement with the block.

5. In a needle motion for Axminster looms comprising a needle and a block movable therewith, a needle rail, a plate secured thereto and having a beveled face to engage a correspondingly formed part of the block, a check lever guided in and pivotally mounted on said plate and having the upper end thereof beveled, and means to move said lever into frictional contact with the block as the latter nears the end of its stroke.

6. In a needle motion for Axminster looms comprising a needle and a block movable therewith, a check lever movable into frictional contact with the block, a block engaging lever normally positioned in the path of the block and movable thereby as said block nears the end of its stroke, a check wheel having dents and cam faces to engage a portion of the check lever, a ratchet secured to the check wheel, a pawl slidably mounted with respect to the block lever to move said ratchet and check wheel with said block lever, and means to return said block lever to normal position in the path of the block, said check lever holding the check wheel and ratchet against retrograde movement.

7. In a needle motion for Axminster looms comprising a needle and a block movable therewith, a check lever movable into frictional engagement with the block, a block lever normally in the path of the block, means intermediate the levers to move said check lever into frictional contact with the block as the latter engages and moves the block lever, said check lever extending beyond the normal position of the block lever

so that the latter will be released before the block moves to prevent retrograde movement of the means intermediate the levers.

8. In a needle motion for Axminster looms having a needle and a block secured thereto and movable therewith, a check device actuated by the block to apply pressure thereto to check the needle as the latter approaches the end of its stroke, and means to relieve the pressure of the check as the needle reaches the extreme end of its stroke.

In testimony whereof I have hereunto affixed my signature.

WILLIAM W. ROBERTSON.