Aug. 14, 1945. S. P. PARKER 2,382,741

LOOM

Filed May 7, 1942 2 Sheets-Sheet 1

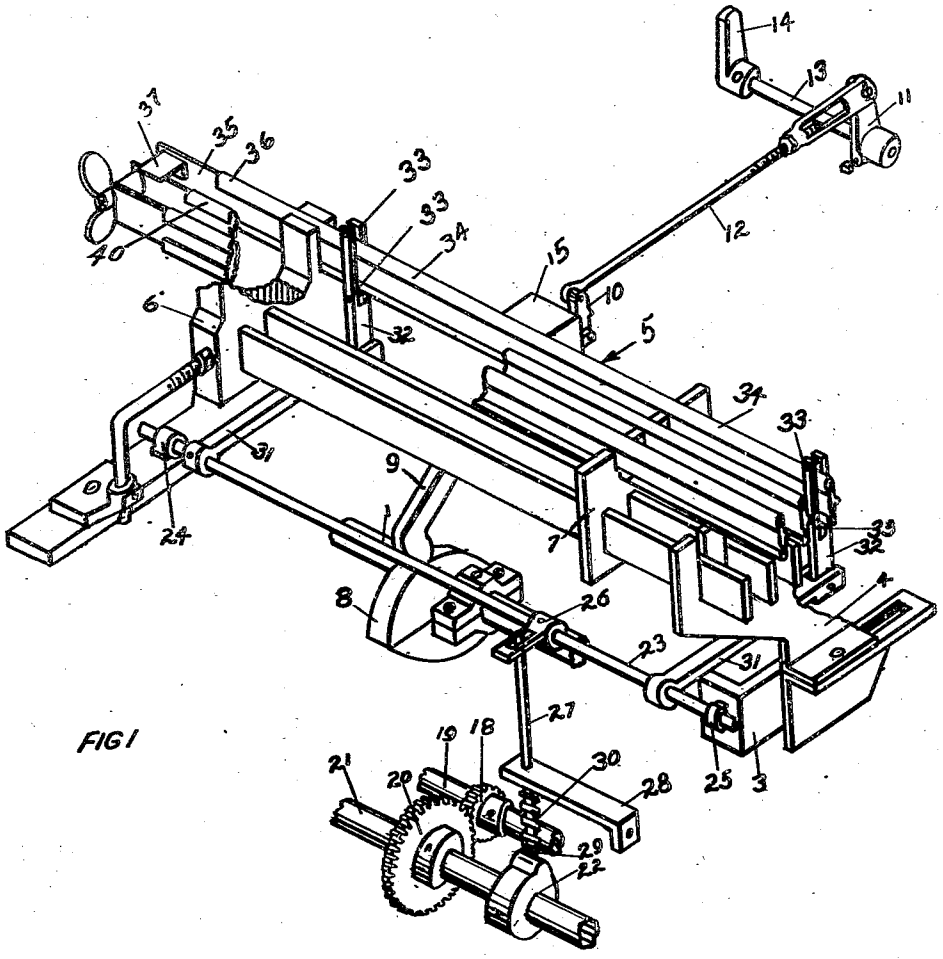

FIG 1

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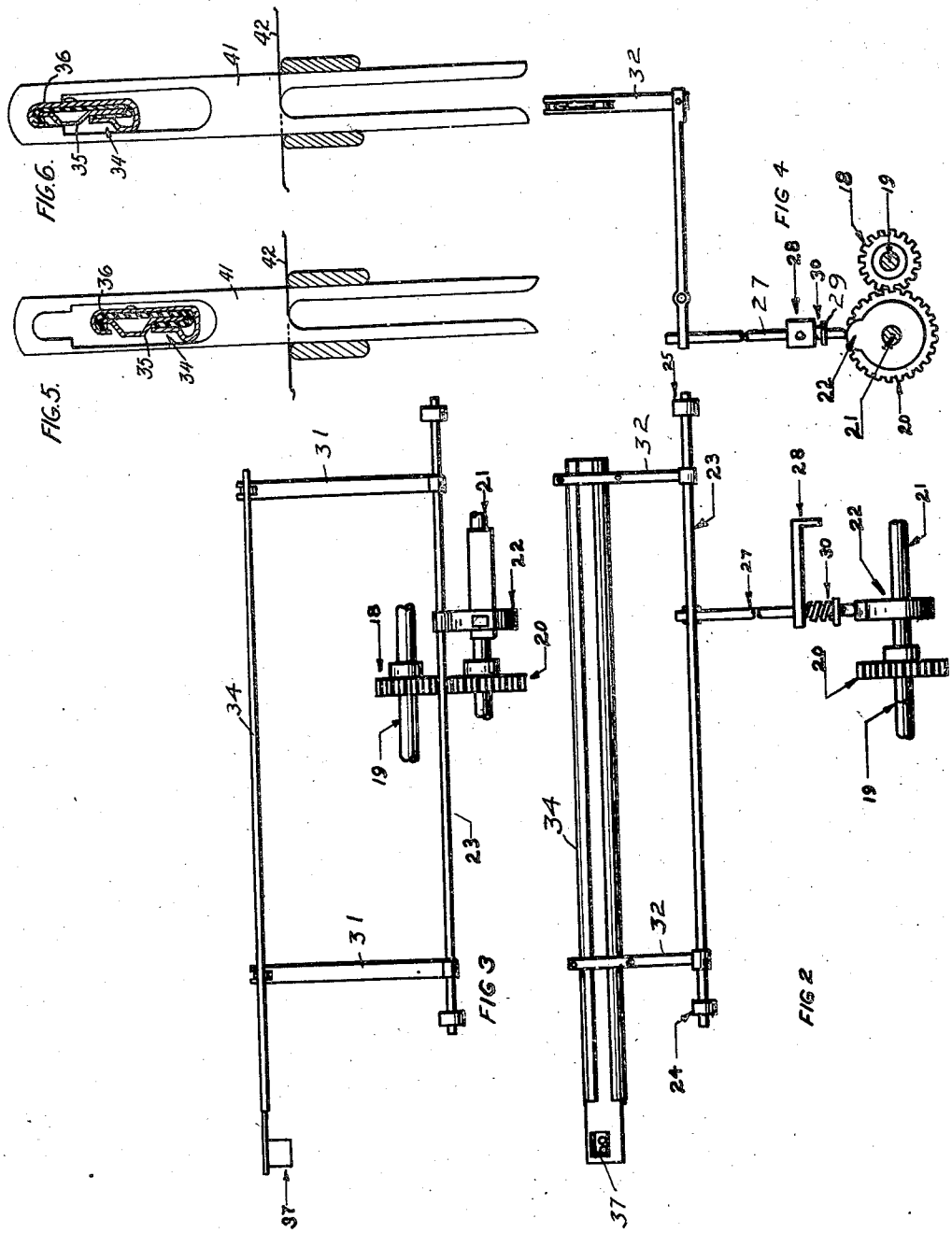

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2,382,741

LOOM

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5 Claims. (Cl. 139—353)

This invention relates to looms, and, more particularly to warp stop motions for pile looms.

The invention will be described as used on a loom adapted to weave a terry fabric.

Heretofore, warp stop motions using drop wires have been unsatisfactory when used on terry warp because of the very slight tension under which this warp operates. The usual drop wires, when used with a terry warp, are held upward by their warp threads for a small number of picks, but, after a short period of operation, the terry warp yarns sag sufficiently to allow the drop wires to move down to the position in which they are effective to stop the loom.

It is accordingly an object of this invention to provide a mechanism to relieve the tension, applied by the drop wires, on the terry warp at regular intervals, so that stoppage of the loom as a result of sagging of the terry warp yarns rather than breakage thereof is prevented.

Other objects, advantages, and novel features of the invention will become more apparent from the following description of the illustrative embodiment shown in the accompanying drawing, in which:

Figure 1 is a perspective view of a stop motion embodying the invention as applied to a loom.

Figures 2, 3, and 4 are, respectively, front elevational, top plan, and side elevational views of the new stop motion, and Figures 5 and 6 are fragmentary sectional views showing parts of the stop motion in different positions.

In Figure 1, a portion of the well-known loom mechanism is shown and it includes the cam shaft 1, center brace supports 3, a center brace 4 for a group of contact bars generally designated 5, a bar separator 7, a stop motion cam 8 on camshaft 1, cam lever 9, levers 10 and 11 and rods 12 and 13 for actuating knock-off lever 14, and knock-off case 15. As all this mechanism is old in the art, it will not be necessary to describe it further than to state that the usual drop wires (not shown) are to be provided for making contact between the two members of each contact bar 5. When the drop wires are permitted to fall, as upon breakage of a strand of warp yarn, an electric circuit is closed energizing an electromagnet in case 15, which permits knock-off lever 14 to engage and operate the shipper handle (not shown) to stop the loom.

The new stop motion as shown in the drawings comprises a spur gear 18, rigidly secured to one of the rotating shafts of the loom. This shaft is indicated at 19 and may be coincident with cam shaft 1. Spur gear 18 drives another spur gear 20, rigidly attached to shaft 21. Shaft 21 is rotatably mounted in any desired manner. Rigidly fastened to shaft 21 is cam 22, whose function will be described later.

A shaft 23 is provided, and is journalled at 24 and 25. A lever 26 is secured to the shaft 23, and has pivotally attached to it a downwardly extending rod 27. Rod 27 passes through a hole in bracket 28 which is secured to the loom side, not shown. A collar 29 is secured to rod 27 at some distance below bracket 28. Positioned around the rod, and between the bracket 28 and collar 29, is a helical spring 30 which forces rod 27 downward into engagement with cam 22. Rigidly secured to shaft 23 are lever arms 31 which are bifurcated at their ends. Vertical rods 32 are pivotally secured at their lower ends to the bifurcated ends of lever arms 31. Resting horizontally in the upper bifurcated ends of rods 32 and held into position by means of pins 33 is a contact bar 34, which cooperates with the drop wires carried by the terry warp yarns.

The contact bars 5 are constructed in the usual manner with an inner metallic member 35 insulated from an outer metallic member 36. The inner members of all the bars, except bar 34, are normally charged and the outer members of all the bars are grounded through the loom frame. Secured at one end to an extension of the inner member of contact bar 34 is a metallic bracket 37, adapted to engage a similar extension of the inner member of contact bar 40, when the bar 34 is in its down position, and cause the inner member of bar 34 to be charged. When contact is made by one of the drop wires between the inner and outer members of bar 34, when that bar is in its down position, the loom is automatically stopped in the usual manner.

The difficulty in connection with the use of drop wires on the pile warp of a terry loom is well known to operators of such looms. The pile warp is under such slight tension that if drop wires and contact bars were used in the usual manner, the drop wires would gradually fall, thus stopping the loom when no break in the pile warp had occurred. It has been found that the terry warp yarns will keep the drop wires out of engagement with the contact bars during the insertion of several picks in the fabric, after which the sagging of the yarns will allow the drop wires to engage the contact bars and stop the loom. Accordingly, if the pull of the drop wires on the terry warp yarns is relieved for most of the time, as, for example, during the insertion of ten out of every twelve picks, those drop wires will fall and

stop the loom only when their respective warp yarns break.

The operation of the new stop motion is as follows:

The shaft 19 rotates during the operation of the looms causing spur gear 18 to drive spur gear 20. The gears 18 and 20 are preferably so designed as to rotate shaft 21 one revolution every twelve picks. Thus cam 22 makes one complete revolution every twelve picks of the loom. The cam 22 engages rod 27 and is so designed as to force rod 27 upward and hold the rod 27 in the upward position for about one sixth of a revolution of the cam 22. When rod 27 is moved upward by cam 22, it rocks shaft 23 through lever arm 26, and this causes the bifurcated end of lever arm 31 to move downward, thus carrying the contact bar 34 downward by means of rod 32. When bar 34 is in its down position, its inner member 35 becomes energized by engagement of bracket 37 with the inner member of contact bar 40 and the drop wires associated with bar 34 are supported wholly by the terry warp yarns.

During operation, the rod 27 is in the upward position for approximately two picks of the loom, after which time, the rod is forced downward by spring 30, rotating shaft 23 in the direction opposite to that mentioned above, thus raising contact bar 34 and disengaging it electrically from contact bar 40. When the contact bar 34 is in its upper position, the bar engages its drop wires 41 and supports them so that the terry warp yarns 42 are relieved of the weight of the drop wires. When the parts are in this relation, the drop wires bridge the inner and outer members of the contact bar, but since the inner member is not charged, the loom is not stopped. When bar 34 is in its down position and its inner member is charged by reason of the engagement of projection 37 with the inner member of the adjacent stationary bar, the breakage of a warp yarn will permit its drop wire 41 to fall and bridge the inner and outer members of bar 34. This will cause a flow of current which will bring about the stopping of the loom.

While only one embodiment of the invention has been shown and described, it is not intended the scope of the invention be limited thereby, nor otherwise than by the terms of the appended claims.

What is claimed is:

1. A warp stop motion for a loom comprising a vertically reciprocatable contact bar, a rotatably driven cam and means operated by said cam and so constructed and arranged as to reciprocate said contact bar into and out of operating position at regularly recurring intervals.

2. A warp stop motion for a loom comprising a vertically reciprocatable contact bar, a rotatably driven cam, a cam follower and means operated by said follower to vertically reciprocate said contact bar into and out of operating position at regularly recurring intervals.

3. A warp stop motion for a loom, which comprises a vertically movable contact bar having an inner and an outer member insulated from one another, the outer member being grounded, means for moving the bar between upper and lower positions at regularly recurring intervals, drop wires engaging individual warp yarns and being supported wholly thereby when the yarns are unbroken and the bar is in its lower position, the bar in its upper position supporting the wires and relieving the warp yarns of the weight of the wires, and means operable when the bar is in its lower position only for charging the inner member of the bar.

4. A warp stop motion for a loom, which comprises a vertically movable contact bar having an inner and an outer member insulated from one another, the outer member being grounded, means for moving the bar between upper and lower positions at regularly recurring intervals, the bar being held in its upper position by said means for a longer period than it is held in its lower position, drop wires engaging individual warp yarns and being supported wholly thereby when the yarns are unbroken and the bar is in its lower position, the bar in its upper position supporting the wires and relieving the warp yarns of the weight of the wires, and means operable when the bar is in its lower position only for charging the inner member of the bar.

5. A warp stop motion for a loom, which comprises a stationary contact bar having an inner and an outer member insulated from each other with the outer member grounded and the inner member charged, a vertically movable contact bar adjacent the stationary bar and having an inner member and an outer member insulated from one another, the outer member being grounded, means for moving the movable bar between upper and lower positions, means for electrically connecting the inner members of said bars when the movable bar is in its lower position, and drop wires engaging individual warp yarns and being supported wholly thereby when the yarns are unbroken and the movable bar is in its lower position, the movable bar in its upper position supporting the wires and relieving the warp yarns of the weight of the wires.

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