Nov. 29, 1960 A. ALTENWEGER 2,961,737

FRAME FOR MOUNTING WARPS

Filed March 18, 1959

Fig. 1

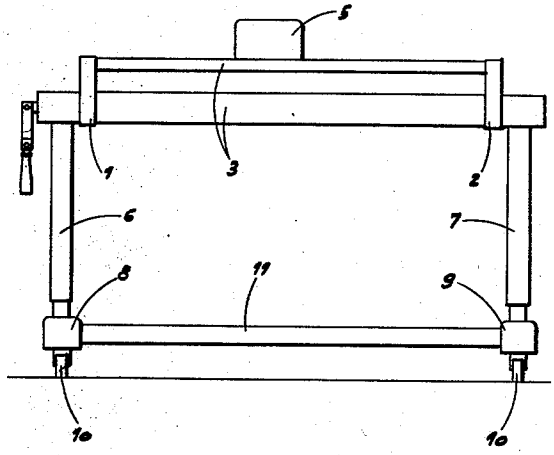


Fig. 2

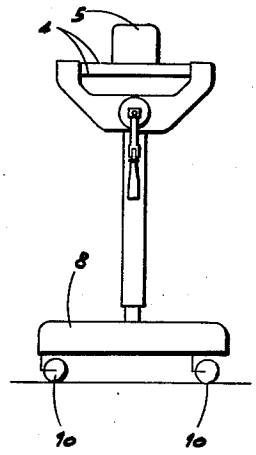


Fig. 3

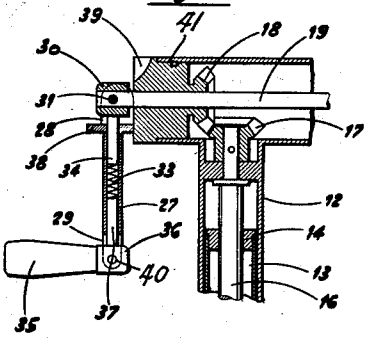


Fig. 4

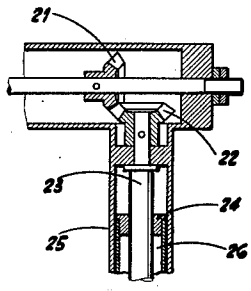


Fig. 5

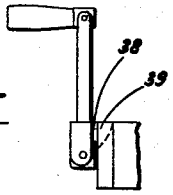
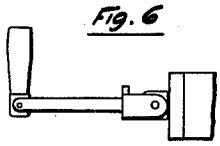


Fig. 6



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FRAME FOR MOUNTING WARPS

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5 Claims. (Cl. 28—49)

The present invention relates to a frame for mounting warps and supporting a warp tying apparatus for tying the threads of a used warp to the threads of a fresh warp.

Warp tying machines and the like operate on top of a frame which is placed adjacent to the loom and on which the warp threads are mounted. In order to place the frame in a suitable position relatively to the loom the elevation of the top of the frame is adjustable. Mechanisms for this purpose are known by means of which the ends of the frame tops can be simultaneously lifted and lowered by an operator standing at one end of the frame. In other conventional mechanisms the ends of the top of the frame can be individually adjusted as to height, making it necessary for the operator to walk from one end to the other end of the frame. Individual adjustment of the ends of the frame is desirable in plants where the floor is not level.

It is an object of the invention to provide a mechanism whereby the elevations of the ends of a warp mounting frame above the floor are either simultaneously or individually adjustable by one operator standing at one end of the frame and who need not walk to the other end of the frame for this operation. The mechanism according to the invention includes a crank having an arm connected to one end of a horizontal shaft extending over substantially the whole length of the frame and adapted to actuate gears affording changing of the elevation of the ends of the frame. The crank arm is so connected to the shaft that it can be selectively placed in a position in line with the shaft or in either one of two diametrically opposed positions normal to the shaft. One of the elevating gears is permanently operatively connected to the shaft to be actuated upon rotation of the shaft whereas the other of the elevating gears is loose on the shaft and can be connected to the crank arm when the latter is in one of its two positions normal to the shaft whereby both gears are actuated upon rotation of the crank. This connection between the crank arm and the loose one of the gears is disengaged when the crank arm is in line with the shaft. When the crank arm is in the second of its positions normal to the shaft it is pressed to the loose gear and presses the latter to the frame so that movement of the whole mechanism is prevented by frictional forces. In order to be able to turn the crank when its arm is in position for actuating only the one of said gears which is permanently connected to the shaft or in positions for actuating or preventing action of both gears, the crank handle is so connected to the crank arm that it can be placed and held in two diametrically opposed positions which are normal to the crank arm.

The novel features which are considered characteristic of the invention are set forth with particularity in the appended claims. The invention itself, however, and additional objects and advantages thereof will best be understood from the following description of an embodiment thereof when read in connection with the accompanying drawing, in which:

Fig. 1 is a diagrammatic side elevation of a frame according to the invention;

Fig. 2 is a diagrammatic end elevational view of the frame shown in Fig. 1;

Fig. 3 is a part sectional view of the crank side of the mechanism for lifting and lowering the top of the frame with the crank in position for arresting the mechanism;

Fig. 4 is a part sectional view of the part of the mechanism for lifting and lowering the top of the frame on the end of the latter which is distant from the crank end;

Fig. 5 shows the crank in position for simultaneously lifting or lowering both ends of the top of the frame;

Fig. 6 shows the crank in position for lifting and lowering only one end of the top of the frame.

The frame illustrated in Figs. 1 and 2 comprises a center portion carrying a tying machine 5 and two end portions supporting the center portion. The latter comprises two vertical carriers 1 and 2 which are connected by two oblong elements 3 on which the warps 4 are mounted and which also longitudinally movably support the tying machine 5. The center portion is held rotatably, if desired, between two uprights 6 and 7 which are mounted on feet 8 and 9 respectively, and are adjustable as to height. The feet are preferably provided with swivel rollers 10 and may be interconnected by a rod 11 for increasing rigidity. The upright 6 has a tubular portion 12 (Fig. 3) telescoping on a tube 13 which is rigidly connected to the foot 8 and whose upper end is closed by a nut 14 having a threaded bore. A threaded rod 16 is rotatable in the nut 14. The upper end of the rod 16 carries a bevel gear 17 engaging a bevel gear 18 connectable to a crank so that the end of the frame supported by the upright 6 can be lifted and lowered by rotation of the crank. The gear 18 is rotatably supported by a shaft 19 extending over the whole length of the frame inside of the hollow lower member 3. The far end of the rod 19 carries a bevel gear 21 engaging a bevel gear 22 mounted at the upper end of a threaded rod 23. The latter extends through a threaded bore of a nut 24 closing the upper end of a tube 26 rigidly connected to the foot 9 and telescoping in a tube 25. Rotation of the shaft 19 therefore causes lowering or lifting of the right top portion of the frame. The bevel gear 21 is made fast on the shaft 19 whereas the bevel gear 18 is either loose or fast on the shaft, depending on the position of the crank. In this way either both ends of the top portion of the frame or only the right end thereof can be adjusted as to height. A hollow crank arm 27 comprises a center portion and forked ends 28 and 29. To the left end of the shaft 19 a prismatic head 30 whose outer edges are rounded is connected by a pin 31 which extends also through the prongs of the end portion 28 of the crank arm 27 so that the latter is swingable on the head 30. A spring 33 within the arm 27 presses a pin 34 against the head 30 for holding the crank arm either coaxial of the rod 19 or at a right angle thereto.

The handle 35 is similarly connected to the arm 27 and has a prismatic head 36 which is pivotally connected to the fork 29 by means of a pivot pin 40. The handle is held either coaxially of the arm 27 or at a right angle thereto by means of a pin 37 pressed against a surface of the head 36 by the spring 33.

Fig. 3 shows the crank in a position in which friction arrests all members of the lifting and lowering mechanism for the top of the frame. The pin 31 is eccentric in the prongs of the fork 28 so that the fork is pressed against an enlarged hub portion of the gear

18. This hub portion has an annular shoulder 41 resting against the tube forming the lower one of the oblong members 3. In the position of the mechanism shown in Fig. 3 the shoulder is pressed against the tube to create a friction-braking action. The crank is simultaneously arrested and rotation of the shaft 19 is prevented so that also the gears at the right side of the frame cannot be turned.

Fig. 5 shows the crank in a position in which a tooth 38 projecting from a flange at the upper end of the arm 27 is inserted in a groove 39 in the hub portion of the gear 18. In this position the fork 28 does not press against the gear 18. Rotation of the crank causes rotation of the gears 18 and 21 so that both ends of the frame are lifted or lowered.

Fig. 6 shows the crank in a position in which the crank cannot turn the gear 18 and in which there is no appreciable frictional engagement between the gear 18 and the tube 3. When the handle of the crank is turned, the shaft 19 is revolved and thereby also the gear 21. The gear 18 meets too much resistance caused particularly between the nut 14 and the rod 16 so that it is not turned. In this way only the right end of the frame is lowered or lifted.

I claim:

1. A frame for supporting a tying apparatus for tying the used up warp of one loom to the new warp, comprising support means of changeable length at the ends of the frame, a mechanism operatively connected to said support means for changing the lengths of said support means and thereby the height of the frame, said mechanism including manipulating means placed at one end of the frame, and means forming part of said manipulating means for operatively disconnecting said mechanism from one of said support means, whereby either the lengths of both support means can be changed simultaneously or the length of only one support means can be changed.

2. A frame as defined in claim 1 wherein said mechanism includes a horizontal shaft extending substantially over the length of the frame and having one end operatively connected to said manipulating means, and gears individually operatively connected to said support means for changing the length thereof, one of said gears being loose on said shaft and operatively disconnectably connected to said manipulating means, the second of said gears being fast on said shaft.

3. A frame according to claim 2 wherein said manipulating means include a crank arm having an end swingably connected to one end of said shaft, a handle operatively connected to the second end of said arm, means connected to said shaft, and means operatively connected to said arm and engaging said means connected to said shaft for selectively holdling said arm substantially normal to said shaft in either one of two diametrically opposed positions, said arm including means operatively connecting said arm to said disconnectable gear when said arm is in one of said normal positions with respect to said shaft and pressing said arm against said disconnectable gear and the latter against a stationary part of said frame when said arm is in the second of said normal positions for stopping rotation of said shaft and of said disconnectable gear.

4. A frame according to claim 3 wherein said means connected to said shaft and said means operatively connected to said arm include means holding said arm in line with said shaft, said arm including means operatively disconnecting said arm from said disconnectable gear when said arm is in line with said shaft.

5. A frame for supporting a typing apparatus for tying the used up warp of one loom to the new warp, comprising support means of changeable length at the ends of the frame, a mechanism operatively connected to said support means for changing the lengths of said support means and thereby the height of the frame, said mechanism including a horizontal shaft extending substantially over the length of the frame, gears individually operatively connected to said shaft and to said support means, one of said gears including a gear loose on said shaft, the second of said gears including a gear fast on said shaft, a crank arm having one end swingably connected to one end of said shaft, a handle swingably connected to the second end of said arm, means connected to said shaft and means operatively connected to said arm and engaging said means connected to said shaft for selectively holding said arm either in line with said shaft or substantially normal to said shaft in either one of two diametrically opposed positions, said arm including means operatively connecting said arm to said disconnectable gear when said arm is in one of said normal positions with respect to said shaft and operatively disconnecting said arm from said disconnectable gear when said arm is in line with said shaft and pressing said arm against said disconnectable gear and the latter against a stationary part of said frame when said arm is in the second of said normal positions for stopping rotation of said shaft and of said disconnectable gear, and means connected to said handle and engaging said means operatively connected to said arm for selectively holding said handle substantially normal to said arm in either one of two diametrically opposed positions.

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