This invention relates to looms for weaving and, in particular, to a jack stick assembly for use in effecting positive pulldown of the harness frames to cause shedding of the warp threads.

It is a general object of the invention to provide a jack stick assembly which may readily be adapted for use on any one of the harness frames of a multiple harness loom, thereby eliminating the need of manufacturing and stocking a different assembly for each harness frame of that particular loom.

It is a further object to provide a jack stick assembly wherein the pulldown parts are easily separated from the jack stick itself so that any part of the assembly may be replaced individually without the need for replacing the complete assembly.

It is a further object to provide a jack stick assembly which includes spaced inserts protruding from the upper edge of the jack stick and offset from the center thereof, a rigid strap member slidable along said stick and having an opening therein for engagement with said insert, and pulldown means pivotable on said strap member including locking means effective to prevent displacement of said strap from said insert during operation of said loom. Further objects will appear from the description to follow.

It is conventional practice in looms of the type to which this invention relates to move the harness frames positively in one direction, usually downwardly, and to move them in the other direction by means of a spring motion, the flat spiral clock spring being one in common usage. The positive pulldown mechanism usually comprises a jack stick immediately below each harness frame connected to the latter by means of hook and link units at each end of the jack stick. Downward motion is imparted to the jack stick by means of pulldown means affixed to the jack stick at one end and connected to treads at their other end, each tread being separately controlled by individual cams spaced along the cam or auxiliary shaft. The spacing of these cams requires a jack stick for each harness frame wherein the pulldown means is located in a position different from that of every other jack stick. Heretofore, the pulldown means have usually been fixed on the jack stick thereby necessitating a differently constructed jack stick for each harness frame on the loom.

According to the present invention a jack stick assembly has been devised which assembly may readily and easily be adapted for use on any one of the harness frames of a multiple harness loom. At the same time the pulldown members are removable from the jack stick itself. This means a savings in the cost of construction of the loom as well as savings on replacement parts since in jack stick assemblies of the prior art, the complete assembly had to be replaced in the event of damage or wear of either the jack stick or the pulldown parts. The construction under the present invention permits substitution of any part of the whole assembly. The number of parts required to be stocked by a mill are also lessened when the present invention is employed.

The above and additional objects and advantages which will become evident are realized by the invention, a more complete understanding of which may be had by reference to the accompanying specification and drawings, wherein:

Fig. 1 is a plan view of a portion of the jack stick assembly;

Fig. 2 is a front elevational view thereof;

Fig. 3 is an enlargement of a portion of Fig. 2 showing the pulldown means being transferred to a different position along the jack stick; and

Fig. 4 is an end view of the jack stick assembly.

In the drawings 11 represents a jack stick which is usually constructed of wood, although not necessarily so. Hooked members 12 and 13 are affixed to either end of the stick and are adapted to engage mating members at the lower end of a harness frame (not shown). One or more pins or inserts 14 are fixed in the upper edge of the jack stick to one side of the center line thereof and are spaced apart a distance equal to the normal spacing of the treads or harness cams on the cam or auxiliary shaft. The pulldown mechanism comprises a generally U-shaped rigid strap member 15 having a slidable fit with the jack stick and having an opening in its upper surface which is slightly larger than the inserts 14 so that the strap may be freely slid on and off the pin. A linking member 16 is pivoted on pin 17 at the lower end of the strap 15. An extension 18 at the upper end of the linking member acts as a locking member to prevent displacement of the strap from a pin inserted into the strap opening when the member 16 is in a vertical position, as would be the case in normal operation of the loom. A turnbuckle 19 is threaded to the lower end of the linking member and has threaded at its opposite end a treadle engaging hooked member 19.

For a loom having six harness frames the same jack stick assembly as shown in the figures having three inserts in its upper edge may be used to operate each of the harness frames. The strap 15 may be moved so as to be placed over any one of the inserts shown merely by raising the turnbuckle about the pivot pin 17 to a horizontal position as shown in the dot-and-dash lines in Figs. 2 and 3. The locking member 18 is thus removed from its effective position and the strap 15 is free to be moved into position over another of the inserts and locked in place by returning the turnbuckle and its linking members to a vertical position. In this way three positions of the strap assembly are possible when the jack stick is in the position shown in Fig. 2 with the inserts appearing on the right hand side of the center line, and three additional positions are possible when the jack stick is revolved 180° about the center line so that the inserts appear to the left thereof.

Of course, for a loom employing only two harness frames, only one insert is necessary and for one having eight harness frames, four pins would be required. The strap may easily be removed from the jack stick merely by sliding it over either end thereof, making possible the substitution of individual parts when necessary.

While one embodiment of the invention has been disclosed, it is to be understood that the inventive concept may be carried out in a number of ways. This invention is, therefore, not to be limited to the precise details described, but is intended to embrace all variations and modifications thereof falling within the spirit of the invention and the scope of the claims.
each end thereof adapted to engage said harness frame, at least one insert protruding from the upper edge of said jack stick, a rigid strap member displaceable along said jack stick and having an opening therein for engagement with said insert, and pulldown means attached to said strap member selectively operable to prevent displacement of said strap from said insert.

2. A jack stick assembly for the harness frame of a loom which comprises a jack stick having means near each end thereof adapted to engage said harness frame, at least one spaced insert protruding from the upper edge of said jack stick and offset from the center thereof, a rigid strap member displaceable along said stick and having an opening therein for engagement with said insert, and pulldown means pivotable on said strap member including locking means effective to prevent displacement of said strap from said insert during operation of said loom.

3. A jack stick assembly for the harness frame of a loom which comprises a jack stick having means near each end thereof adapted to engage said harness frame, spaced inserts protruding from the upper edge of said jack stick and offset from the center thereof, a rigid strap member displaceable along said stick and having an opening therein for engagement with one of said inserts, and pulldown means pivotable on said strap member and effective in operating position to prevent displacement of said strap from said insert and in a second position to permit such displacement.

4. The mechanism of claim 3 wherein said locking means comprises an extension on said pulldown means.

5. The mechanism of claim 3 wherein the jack stick includes at least three of said spaced inserts all of which are offset to one side of the center of said jack stick and wherein said pulldown means includes an extension which in a position normal to said stick prevents displacement of said strap from said insert and in a position parallel to said stick permits lateral displacement of said strap along said stick.

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