March 4, 1930. A. E. BENSON 1,749,123

SHED DIVERTING MEANS FOR LOOMS

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Fig. 1.

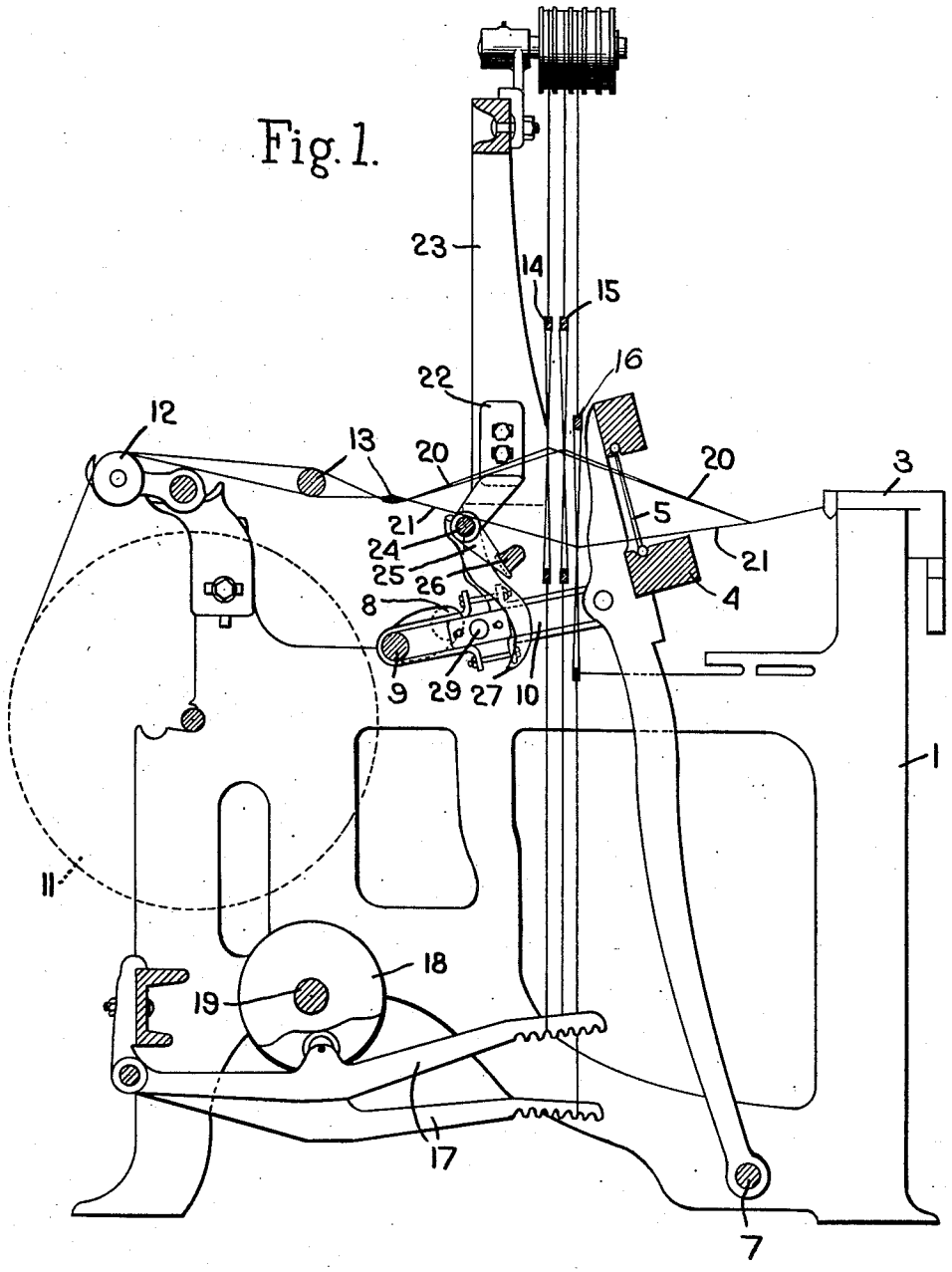

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Fig. 2.

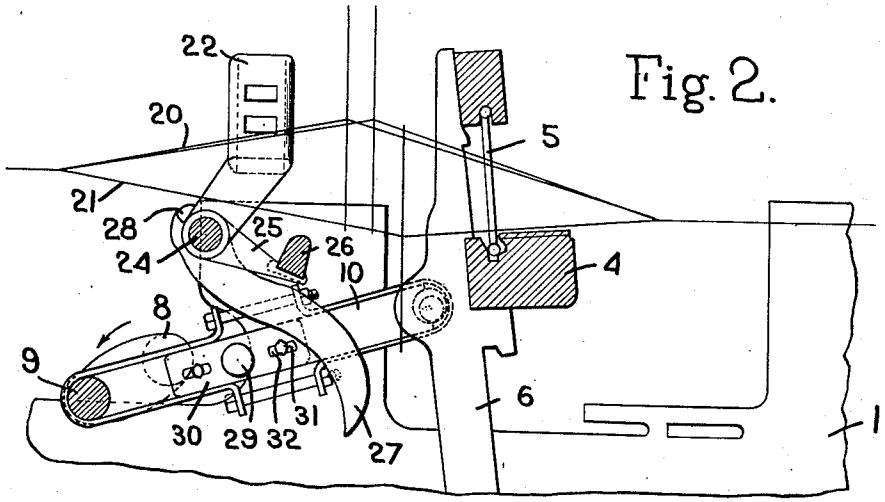


Fig. 3.

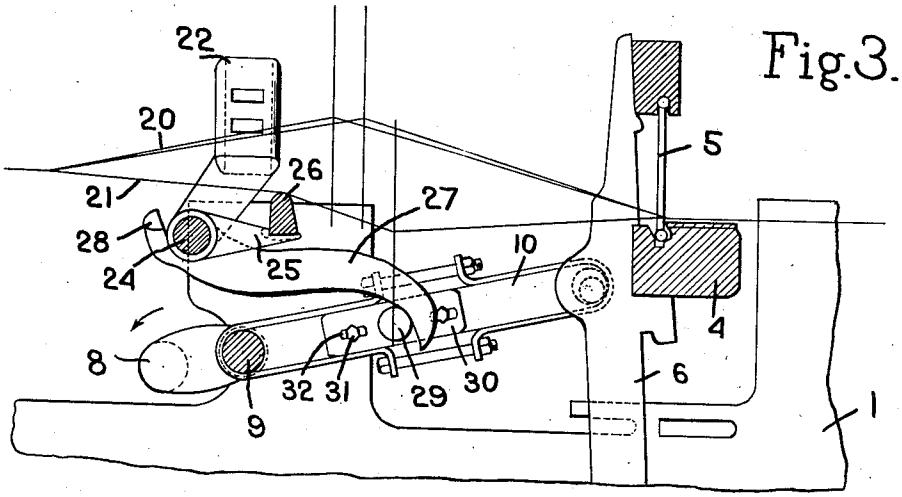
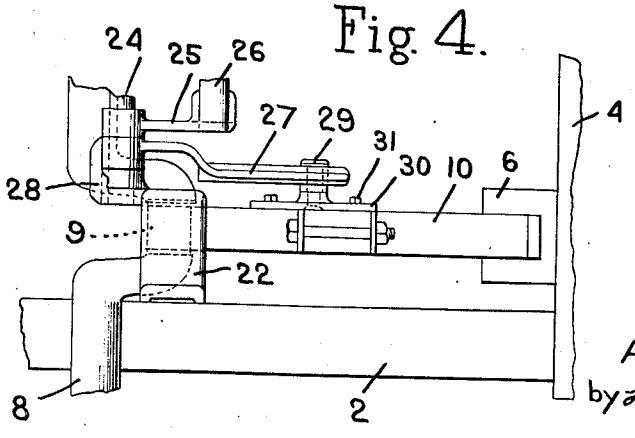


Fig. 4.



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UNITED STATES PATENT OFFICE

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SHED-DIVERTING MEANS FOR LOOMS

Application filed August 28, 1928. Serial No. 302,486.

In the weaving of cloth, it is frequently desirable to control the tension on the warps so as to cover the filling to a greater extent on one face of the cloth than on the other, thus producing what is commonly known as "cover" on the cloth. If the warps forming one of the shed layers, as, for example, the lower shed layer, are given a greater tension than the remainder of the warps as the lay beats up, the desired result will be secured. Such a tension is frequently secured to a certain extent by raising the whip roll and the sand roll, but this is not always satisfactory and not always practical.

The object of the present invention is to provide a definite means for thus placing "cover" on the cloth by diverting one of the shed layers from its normal path each time the beat-up occurs so as to place a greater tension on the said shed layer than the remainder of the warps.

The object of the invention is further to provide such a mechanism in which a bar extends transversely of and adjacent to one of the shed layers, preferably the lower shed layer, at the central portion of the shed, which bar is forced against the said shed layer to divert it from its normal path as the beat-up occurs.

The object of the invention is further to provide for the actuation of the shed diverting means from the actuating pitman of the usual lay operating means.

These and other objects and features of the invention will appear more fully from the accompanying description and drawings and will be particularly pointed out in the claims.

In the drawings:

Fig. 1 is a view chiefly in vertical cross section looking toward the inside of the right-hand side frame of an ordinary type of loom equipped with a preferred form of the invention.

Fig. 2 is a similar view of a portion of the loom shown in Fig. 1 with the parts in position as the lay starts from its rear position.

Fig. 3 is a view similar to Fig. 2 with the parts in the position assumed at the conclusion of the beat-up.

Fig. 4 is a top plan view showing the construction of the parts particularly concerned with the invention at the left-hand side of the loom.

The invention may be applied to any type of loom and is herein shown as embodied in an ordinary form of loom having three cam operated harness frames. The loom is shown as comprising the usual side frames 1 and 2, the breast beam 3, the lay 4 carrying the reed 5 supported on the swords 6 pivoted on the rock shaft 7, the crank shaft 8 with the cranks 9 for operating the lay through the medium of the pitmen 10, each pitman being pivoted at one end to one of the cranks 9 and at the other end to the corresponding lay sword, the warp beam 11 from which the warps lead over the whip roll 12 through lease rods 13, thence through the harness frames 14, 15 and 16, through the reed 5 to the breast beam 3. The harness frames are shown as actuated by the usual levers 17 operated by cams 18 on the shaft 19.

All of these features of loom construction are well known and familiar, operate in the usual manner and afford a general representation of an ordinary type of loom conveniently selected for an embodiment of the preferred form of the invention. It will be seen that the operation of the harness frames in forming the shed divide the shed into what I have termed an upper shed layer 20 and a lower shed layer 21. If, now, one of these shed layers, no matter of what individual warps it may consist as determined by the harness frames, continually be given a greater tension than the other as the beat-up occurs, the desired "cover" effect will be produced in the woven fabric.

In the present invention, the result is secured by providing means for diverting from its normal path one of these shed layers as the beat-up occurs. Preferably and conveniently the lower shed layer is thus diverted.

In the preferred embodiment, brackets 22 are bolted to the loom arch 23 at each side. The lower portions of these brackets project inwardly and downwardly and present bearings for a rock shaft 24 which thus extends transversely of the loom beneath the shed. This rock shaft is provided with a pair of

forwardly projecting, parallel, radial arms 25. A bar 26, preferably of wood, having a smooth, upper, rounded surface is supported in the ends of the arms 25 and the parts are so located and proportioned that this bar extends transversely of the loom adjacent to and just below the lower shed layer 21 at its central portion.

Operating arms 27 are also secured to the ends of the rock shaft 24 and project radially and forwardly therefrom down alongside the respective loom pitmen 10. These arms are provided with stop lugs 28 adapted to engage with the brackets 22 and limit the downward swinging movement of the rock shaft 24 with the bar 26 supported thereby. It will be seen that by raising the arms 27, the rock shaft 24 will be rocked to force the bar 26 against the lower shed layer 21 and divert it from its normal path. This is done in the construction illustrated by studs adjustably mounted on the loom pitmen cooperating with the arms 27 as the beat-up occurs thus to move the rock shaft. These actuating studs 29 are shown as formed on plates 30 adjustably secured by means of the bolts 31 and slots 32 to the respective pitmen and arranged to project beneath the arms 27. The arms 27 are so shaped and the studs 29 so located that as the lay beats up after the shuttle has been picked, the bar 26 will be forced against the lower shed layer 21 thus diverting it from its normal path, as shown in Fig. 3, and placing a heavy tension on the lower shed layer. As the lay swings back, the arms 27 drop and the rock shaft 24 rotates in the reverse direction, withdrawing the bar 26 from engagement with the shed or into the position shown in Fig. 2.

It will thus be seen that means are provided which extend transversely of and adjacent one only of the shed layers and which act as the beat-up occurs to divert this shed layer from its normal path thus to produce the required tension and secure the desired "cover" in the finished woven fabric. Such a mechanism may readily be applied to existing looms and, in the preferred construction illustrated, contains no features that are likely to get out of order or to interfere with the operation of the loom.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is:

1. A loom comprising a lay, lay operating means comprising an actuating pitman, shed forming mechanism, a rock shaft extending transversely of the loom and having parallel radial supporting arms, a bar carried by said arms extending transversely of the central portion of the shed, an operating arm extending radially from the rock shaft and engaging and actuated by the pitman to rock the rock shaft and move the bar to engage and divert the adjacent shed layer thereby to place greater tension on the warps forming said shed layer than upon the remainder thus to produce "cover" in the woven fabric.

2. A loom comprising the construction defined in claim 1, in which the pitman has adjustably mounted thereon a projecting stud for engaging and actuating the operating arm.

3. A loom comprising a lay, lay operating means, shed forming mechanism, a rock shaft extending transversely of the loom and having arms extending therefrom, a bar carried by said arms extending transversely of and adjacent to the shed layer occupying the same position at each successive beat-up, an operating arm extending from said rock shaft engaged by said lay operating means as the beat-up occurs to rock the shaft and move the bar to engage and divert said shed layer thereby to place greater tension on the warps forming said shed layer than upon the remainder thus to produce "cover" in the woven fabric.

In testimony whereof, I have signed my name to this specification.

ARTHUR E. BENSON.