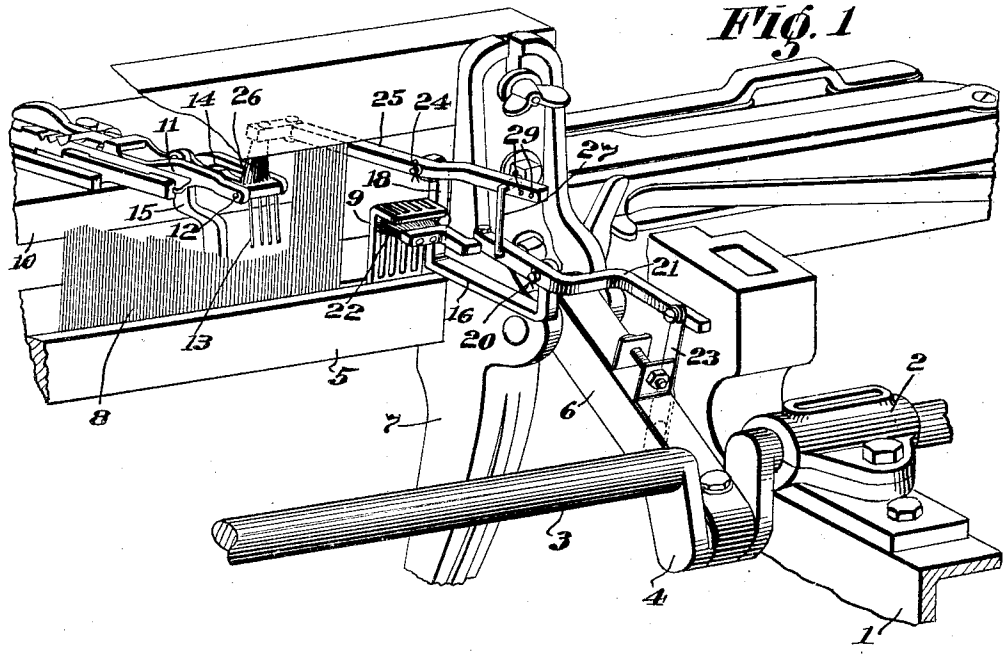
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W. H. NIX ET AL

COMBINED WEFT FORK AND GRID CLEANER

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FIG. 1



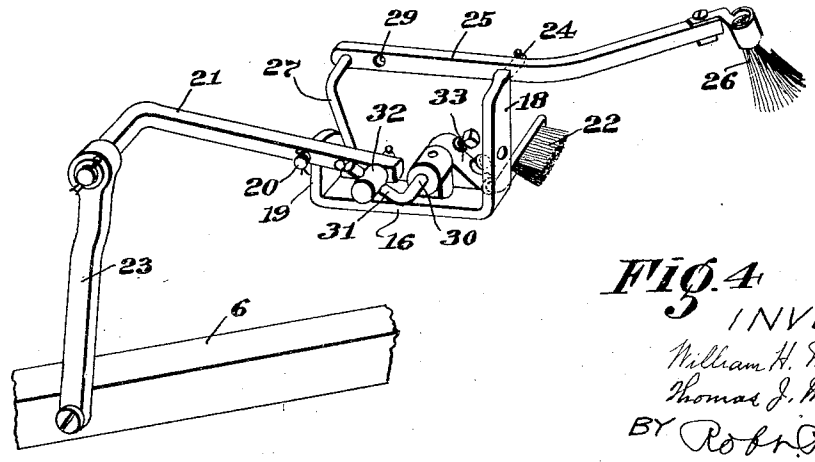


FIG. 4

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Fig. 3

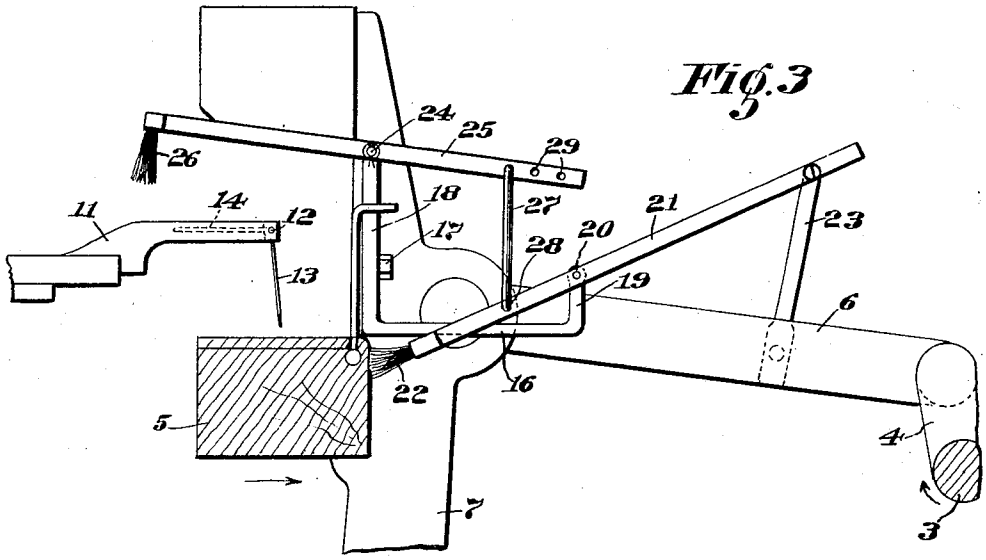
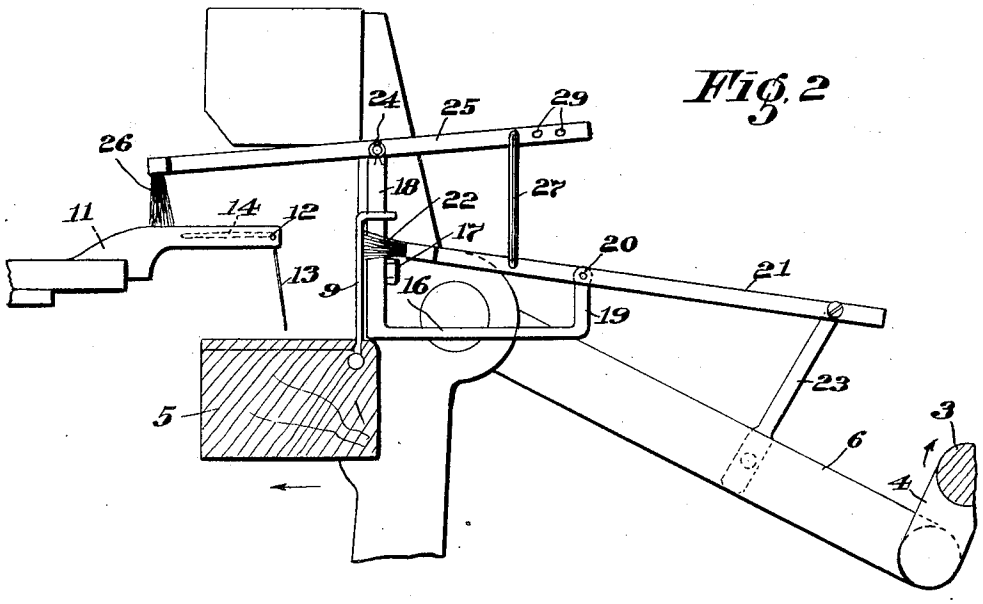


Fig. 2



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Patented Nov. 29, 1927. 1,651,148

UNITED STATES PATENT OFFICE.

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COMBINED WEFT FORK AND GRID CLEANER.

Application filed April 21, 1927. Serial No. 185,452.

This invention relates to weft fork and grid cleaners for looms, whereby the functional operation of the weft fork is insured during weaving.

It is now the ordinary practice to provide looms with weft or filling detecting mechanism, usually comprising a grid mounted upon the lay, and a weft fork mounted on the breast beam to cooperate with the grid to determine whether or not filling has been laid in the shed, and on failure thereof to effect a change in the loom operation, such, for instance, as stopping the loom. During weaving, especially with certain kinds or characters of filling or weft threads, lint, dirt or other foreign matter is liable to accumulate on the grid, and also on the weft fork, with the result that in such case the detecting mechanism may fail in its functional operation and call for loom stoppage when, as a matter of fact, weft has been laid in the shed. To guard against this improper operation of the weft detecting mechanism, both the grid and the weft fork should be maintained free from lint and other like substances during the entire weaving operation.

Attempts have been made heretofore to meet this condition by providing a cleaner for the grid, and in some of these cases the cleaning means has been effective for its intended purpose, but even though the grid may be free from lint, the weft fork itself, especially the tail end thereof which extends frontwardly from the pivot of the weft fork, may become clogged with lint and fail to be properly tilted on the beat-up though weft be laid in the shed. It is one of the purposes of the present invention to provide a combined weft fork and grid cleaner which shall not only maintain the grid itself free from lint but also keep the weft fork clear of such substances.

In accordance with the present invention, brush elements are mounted for movement with the lay, one to clean the grid and the other projecting frontwardly of the grid to clean the weft fork on beat-up movement of the lay and thereafter move from its cleaning position to permit the weft fork to properly function.

The invention and new combination of parts will best be made clear from the following description and the accompanying drawings of one good form of the present invention.

In the drawings:

Fig. 1 is a perspective detail of sufficient portions of a loom provided with the present invention to show the connection and operation thereof;

Fig. 2 is a side elevation on an enlarged scale showing the relation of the weft fork and grid cleaner during the beat-up movement of the lay and just prior to the full beat-up movement;

Fig. 3 is a view similar to that of Fig. 2, showing the lay as having completed the beat-up movement and returning to rearward position; and

Fig. 4 is a detached detail of a slightly modified form of the invention.

The loom frame 1 may be of usual construction and is provided with bearings 2, one at each side of the loom, for the crank shaft 3, the crank 4 of which is connected to the lay 5 by means of a pitman 6, as usual in looms. The lay 5 is carried by the usual lay swords 7 which oscillate upon the usual rock shaft at the lower part of the loom, the construction being such that as the crank shaft 3 is rotated, the lay will be given its frontward and rearward movements to effect the beat up.

The lay 5 also carries the usual reed 8 and at one end of the reed and mounted on the lay is the grid 9 which may be conveniently secured to the lay in any appropriate manner, as, for instance, by connection with the back box-plate of the shuttle box.

Mounted upon the breast beam 10 is the weft fork slide 11 carrying the weft fork which is pivotally mounted at 12 on the weft fork slide and has the downwardly extending tines 13 for cooperation with the grid on the lay. Secured to the weft fork and extending frontwardly from its pivotal mounting 12 is the tail 14 of the weft fork which is adapted to be engaged by the weft hammer or cam follower 15 in case the weft fork fails to be tilted by the presence of a weft thread in front of the grid as the lay beats up, to thereby effect loom stoppage. These parts may be of usual construction, and since the details thereof form no special part of the present invention they need no further description.

In accordance with the present invention,

the weft fork and grid cleaner are mounted for movement with the lay and are caused to perform their cleaning function during the beat-up movement of the lay by an actuator connected with the pitman, the construction being such that as the lay beats up, the grid cleaner will clean the grid, and the weft fork cleaner which extends frontwardly of the grid will move into position to clean the weft fork by frontward movement of the lay and then be disengaged from the weft fork to permit the latter to function.

Mounted upon the lay is the bracket 16 which may be appropriately secured to the lay by any suitable securing means, and is herein shown as secured to the laterally extending portion of the grid by a bolt 17 passing through the upwardly extending arm 18 of the bracket.

The rearwardly extending portion of the bracket 16 is upturned, as at 19, and has pivotally connected thereto at 20 the arm 21, the front end portion of which is provided with a grid cleaner or brush 22. The rearwardly extending end portion of the arm 21 is connected by a link 23 to the pitman 6, the construction being such that as the crank shaft is rotated, as indicated by the arrows in Figs. 2 and 3, the rising and lowering movement of the pitman will be rendered effective in causing the grid cleaner 22 to move over the back portion of the grid and free it from lint.

Pivotally mounted to the upstanding arm 18 of the bracket 16 at 24 is the weft fork cleaner, comprising an arm 25, the front end portion of which is provided with a cleaner or brush 26 extending downwardly therefrom, while the rear end portion of the arm 25 is connected by a link 27 with the arm 21, as at 28, the result being that both the grid cleaner and the weft fork cleaner will be given appropriate movements as will later appear, for not only cleaning the grid during the beat-up movement of the lay, but also to wipe over the top of the weft fork and free it from lint and foreign substances and then move out of cleaning position to permit the weft fork to function as the lay completes its frontward beat-up movement. In order that the movements of the grid and weft fork cleaner may be properly synchronized, the arm 25 of the weft fork cleaner is provided with a series of openings 29 for varying the leverage connection with the link 27.

Assuming the lay to be moving frontwardly to beat-up the filling, as indicated in Fig. 2 and the arrows thereon, the pitman 6 will be lifted from the position indicated in Fig. 2, as the lay approaches front position, and such lifting movement of the pitman is utilized in operating the grid cleaner and weft fork cleaner. During such upward movement of the pitman as the lay moves towards front center, the grid cleaner 22 will be moved downwardly from the position indicated in Fig. 2, and effectively remove lint and foreign matter from the grid. When the grid cleaner 22 is in its upward position which is assumed when the crank arm 4 extends downwardly from the crank shaft 3, as indicated in Fig. 2, for instance, and the lay is moving frontwardly to beat-up, the weft fork cleaner will assume the position indicated in Fig. 2, with the cleaning element 26 in position to wipe over the top portion of the tail of the weft fork as the lay moves frontwardly. As the lay approaches front position, however, and the pitman 6 rises from the position indicated in Fig. 2, the grid cleaner 22 will be lowered to a position below the grid, while the weft fork cleaner 26 will be lifted free of the weft fork to permit the latter to function as the lay completes its frontward beat-up movement, the parts then assuming approximately the position indicated in Fig. 3, wherein the lay has completed its frontward beat-up movement and is now moving backwardly. In Fig. 3 it will be noted that the weft fork cleaner having wiped over the top of the weft fork, is raised from interference with the proper operation of the weft fork in detecting the presence or absence of filling in the shed.

Thus, during the frontward movement of the lay, the grid cleaner will be wiped over the back of the grid in a downward direction, as indicated in Figs. 2 and 3, and the weft fork cleaner having been lowered to the position substantially indicated in Fig. 2, will wipe over the top of the weft fork as the lay advances to beat-up, and when the pitman 6 approaches dead center in its rising movement, the grid cleaner will be lowered and the weft fork cleaner will be raised after having wiped over the top of the weft fork, thereby permitting the weft fork to function and determine the presence or absence of filling in the shed.

The present invention, as will be noted from the foregoing description, provides a combined weft fork and grid cleaner, the former of which is lowered into contact with the weft fork as the lay moves frontwardly towards beat-up, and just prior to the completion of the beat-up the weft fork cleaner is raised from interfering with the proper functioning operation of the weft fork as the grid and weft fork cooperate to determine the presence or absence of filling in the shed.

The grid cleaner is preferably located back of the grid, while the weft fork cleaner extends frontwardly of the grid in position to wipe over the top of the weft fork by virtue of frontward movement of the lay during beat-up, and the connection between the two cleaners is such that under the actuation of

the pitman both cleaners will be freed from their cleaning position to permit detection of filling presence or absence in the shed as the lay completes the beat-up.

In Fig. 4 is shown a slightly modified form of the invention, wherein the leverage connection between the grid cleaner and the weft fork cleaner is slightly changed to cause both cleaners to move upwardly together and downwardly together in effecting their cleaning functions. In the modification the pitman 6 is connected by the link 23, as before, to the arm 21, pivoted at 20 to the bracket 16, as in the preferred construction, but instead of mounting the grid cleaner directly upon the arm 21, the grid cleaner is mounted upon the rocker 30 carried by the bracket 16 and provided with a crank arm 31 engaged with the swivel block 32 carried by the arm 21. The grid cleaner 22 in the modification is mounted upon an arm 33 extending from the rocker 30, so that upon upward movement of the pitman 6 during the beat-up, the grid cleaner will be moved upwardly instead of downwardly, as in the preferred construction. In the modification, also, as shown by Fig. 4, the arm 25 carrying the weft fork cleaner 26 is connected by the link 27, as before, to the arm 21, with the result that the weft fork cleaner will be rocked about its pivotal mounting 24 to move the weft fork cleaner upwardly as the grid cleaner moves upwardly, to thereby remove both the grid cleaner and weft fork cleaner from their operative relation with the grid and weft fork as the lay completes the beat-up.

What is claimed is:

1. In a loom, a combined grid and weft fork cleaner, comprising two brush elements, one acting upon the grid and the other upon the weft fork in front of the grid, and an actuator for operating both brush elements to clean both the grid and weft fork prior to the full beat-up movement of the lay.

2. In a loom, the combination of a grid and weft fork cleaner, each comprising a brush element movable with the lay, one acting on the grid and the other supported to act upon the weft fork in front of the grid, and an actuator for moving both of the brushes relative to the lay to clean the grid and weft fork.

3. In a loom, a combined grid and weft fork cleaner, comprising two brush elements, one supported on the lay to clean the grid and the other supported on the lay and extending frontward of the grid to clean the weft fork, and an actuator for operating both cleaners to clean the grid and weft fork during frontward movement of the lay.

4. In a loom, the combination of a brush, an arm carrying the brush mounted on the lay and extending frontwardly of the lay above the weft fork in position to sweep over the top of the weft fork, and an actuator for moving the brush relative to the lay into position to clean lint from the top of the weft fork as the brush is moved by the lay.

5. In a loom, the combination of the lay having a grid, a weft fork in front of the grid, a weft fork cleaner comprising an arm pivotally connected to the lay and extending over the top of the weft fork, a brush carried by the arm above the top of the weft fork, and means for swinging the arm as the lay beats up to cause the brush to clear the top of the weft fork and then free it for its weft detecting function in cooperation with the grid.

6. In a loom, the combination of the lay having a grid, a weft fork in front of the grid, a weft fork cleaner carried by the lay in front of the grid and extending frontwardly above the top of the weft fork, and means for causing the cleaner to act upon the top of the weft fork as the lay moves frontwardly and to disengage the weft fork prior to the full beat-up of the lay that the fork may be tilted by the weft in front of the grid.

7. In a loom, the combination of the lay having a grid, a weft fork in front of the grid, a weft fork cleaner carried by the lay in front of the grid, means for causing the cleaner to act upon the weft fork as the cleaner is moved frontwardly by the lay and to disengage the weft fork prior to the full beat-up of the lay that the fork may be tilted by the weft in front of the grid, and a grid cleaner back of the grid.

8. In a loom, the combination of the lay having a grid, a weft fork in front of the grid, an arm carried by the lay and having a brush in front of the lay, and means for actuating the arm as the lay carries it frontwardly that it may sweep over the weft fork to clean it and then be disengaged therefrom prior to the full beat-up movement of the lay that the fork may be tilted by weft in front of the grid.

9. In a loom, the combination of the lay, an arm on the lay carrying a brush back of the grid to clean the latter, a second arm on the lay extending in front of the grid and carrying a brush to clean the weft fork, and means for moving both of said arms to cause the brushes to clean the grid and weft fork during part of the beat-up and then be moved from interference with the cooperation of the grid and weft fork that the latter may be tilted by weft in front of the grid.

10. In a loom, the combination of the lay, an arm on the lay carrying a brush back of the grid to clean the latter, a second arm on the lay extending in front of the grid and carrying a brush to clean the weft fork, and a pitman for operating the lay and moving both of said arms to cause the brushes to

clean the grid and weft fork as the lay moves frontwardly and then free them to detect the presence or absence of weft in front of the grid.

11. A weft fork cleaner comprising an arm on the lay having a brush element in front of the reed and above the plane of the weft fork, and means for moving the brush element downwardly towards the weft fork to clean it as the lay moves the cleaner frontwardly and then away from the weft fork prior to full beat-up movement of the lay that the weft fork may be free to detect the presence or absence of weft laid in the shed.

In testimony whereof, we have signed our names to this specification.

WILLIAM H. NIX.
THOMAS J. McDANIEL.