July 30, 1929. W. M. WATTIE 1,722,831

PICKING MOTION FOR LOOMS

Filed Dec. 1, 1927

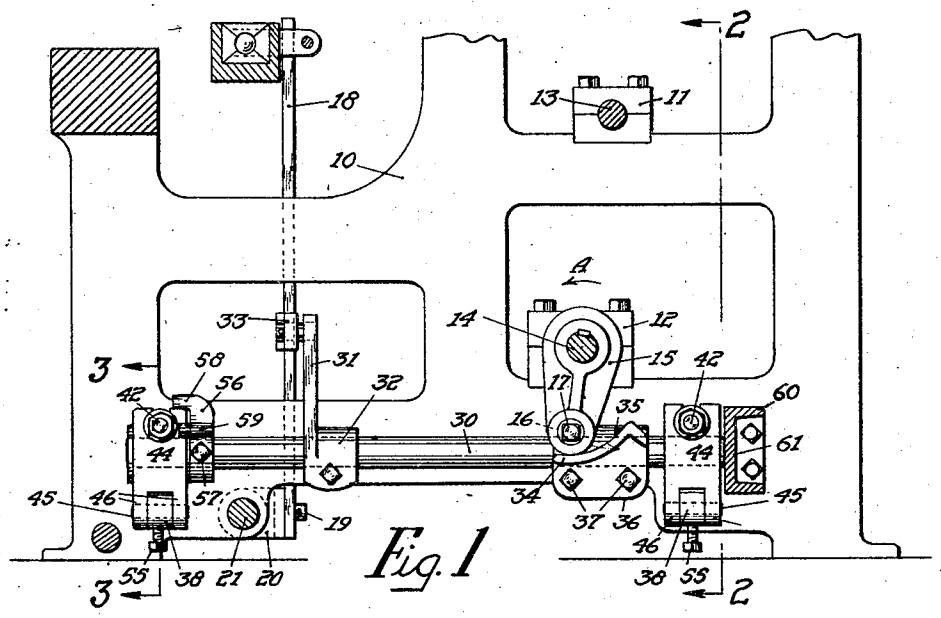


Fig. 1

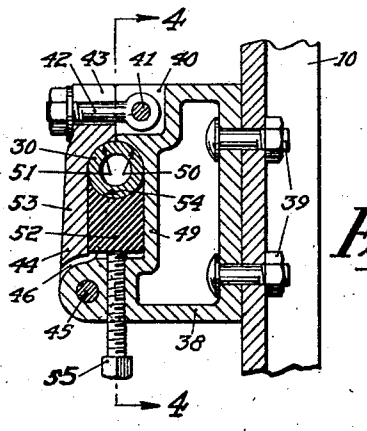


Fig. 3

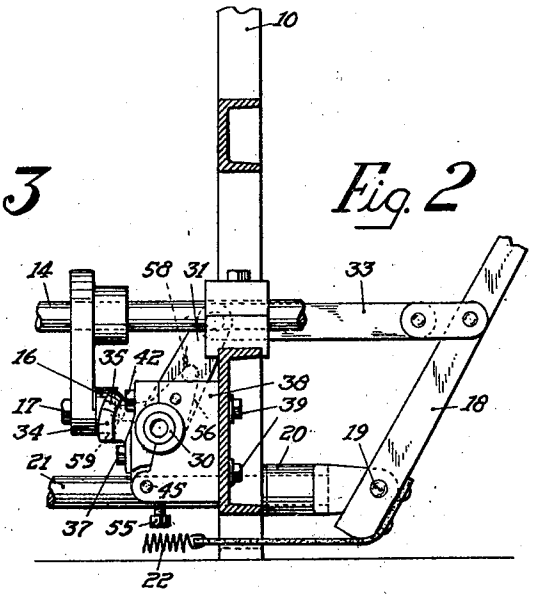


Fig. 2

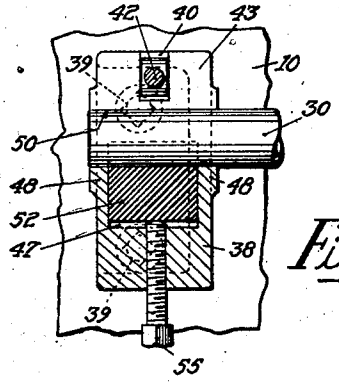


Fig. 4

Inventor

William M. Wattie

Coulthard Fay & Hawley

Attorneys

Patented July 30, 1929. 1,722,831

UNITED STATES PATENT OFFICE.

WILLIAM M. WATTIE, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO CROMPTON & KNOWLES LOOM WORKS, OF WORCESTER, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

PICKING MOTION FOR LOOMS.

Application filed December 1, 1927. Serial No. 237,086.

This invention relates to improvements in picking motions for looms and it is the general object of the invention to improve the construction of picking motions to the end that the picking shaft may be readily removed from the loom and replaced so as to have its original setting.

It is a further object of my invention to provide a picking shaft with an adjusting collar which not only limits endwise movement of the shaft in one direction and limits angular movement in another direction, but also affords means for adjusting the angular position of the shaft so that the picking cam may be varied with respect to the picking arm which moves with the bottom shaft of the loom.

It is a still further object of the invention to provide an improved form of bearing for picking shafts constructed with blocks that the blocks may be readily replaced or adjusted without disturbing the setting of the bearing brackets which support said blocks.

With these and other objects in view which will appear as the description proceeds, my invention resides in the combination and arrangement of parts hereinafter described and set forth in the claims.

In the accompanying drawings wherein one form of my invention is shown,

Fig. 1 is a vertical section through a loom showing my improved picking shaft in the position it assumes at the beginning of a picking stroke,

Fig. 2 is a vertical section on line 2—2 of Fig. 1 showing the picker stick and its connections,

Fig. 3 is an enlarged vertical section on line 3—3 of Fig. 1, and

Fig. 4 is a vertical section on line 4—4 of Fig. 3.

Referring to the drawings, the loom frame 10 is provided with upper and lower bearings 11 and 12, respectively, for the top and bottom shafts 13 and 14, respectively. The bottom shaft has keyed thereto a picking arm 15 provided with a picking ball 16 which rotates freely about a stud 17 fastened to the picking arm 15. Under normal conditions the shaft 14 rotates in the direction indicated by arrow A and completes its revolution in two picks of the loom. The picker stick 18 is pivoted as at 19 to the rocker arm 20 supported in the usual manner by the rocker pin 21. A tension spring 22 having the left end as viewed in Fig. 2 secured to the rocker shaft in a manner not shown but usual has the righthand end secured to the bottom of the picker stick to the right as shown in Fig. 2. The matter thus far described is of common construction and it has gone into very general use heretofore and forms no part of my present invention.

In carrying my present improvements into effect I provide a hollow round picking shaft 30 which may be made of heavy piping stock, if desired. A power arm 31 with a hub 32 is secured to said shaft 30 to move angularly therewith, said power arm being attached by means of the lug strap 33 to the picker stick 18 so that as the shaft 30 rocks in a counter-clockwise direction as shown in Fig. 2 said picker stick wil be moved inwardly to propel the shuttle across to the left hand side of the loom.

A picking shoe 34 secured to the shaft 30 has a cam face 35 positioned to engage the roll 16 and cause oscillation of the picking shaft. Said picker shoe may have one side of the hub 36 thereof split so that the same may be clamped to the shaft by means of bolts 37.

Each end of the picker shaft 30 is supported by means of a bearing and as these bearings are substantially the same a description of one will suffice for both. A bearing bracket 38 is held by means of bolts 39 to the loom frame 10 and has formed in the upper end thereof a pocket 40 through which extends a pivot pin 41 on which is mounted a bolt 42. Said bolt extends through the forked upper end 43 of a hinged cap 44 swinging about a pin 45. The pin 45 is mounted in the bracket 38 and extends through the ears 46 which depend from the body of the cap 44. As shown in Fig. 4 the bracket 38 is provided with a pocket 47 defined by walls 48 which are on the sides of the bracket and also wall 49 formed as part of the bracket 38. The upper end of wall 49 is curved as at 50 to form one half of the upper portion of the bearing for the shaft 30, while the cap 44 is also provided with a curved portion 51 which forms the other half of the upper part of the bearing for said shaft. The shaft rests on a wooden block 52 located in the pocket 47 and held therein by the front wall 53 of the hinged cap 44. The front wall 53 together with the walls 48 and 49 provide a substantially closed compartment in which said block 52 is located. The upper end of the

block is concave as at 54 and supports the adjacent end of the shaft 30. By means of adjusting screw 55 the position of the block relatively to the bearing bracket may be changed to compensate for wear.

It is necessary to limit end movement of the shaft and also restrict angular movement thereof in both directions and these results are accomplished by means of a collar 56 which as shown in Figs. 1 and 2 is secured to the shaft 30 adjacent the left hand end as viewed in Fig. 1. Said collar is adjustably mounted for angular movement around the shaft 30 by means of a set screw 57 and the collar is provided with an upper finger or lug 58 which engages the bracket bearing 38. The collar also carries a second lower finger 59 which engages the wall 53 of the hinged bearing cap 44. Longitudinal movement of the shaft to the right is restricted by means of the cross girt 60 which is secured to the loom frame 10 and has a vertical wall 61 positioned to engage the right end of the shaft 30 as shown in Fig. 1.

When the picking motion is at rest the spring 23 acting through the picker stick, lug strap and picker arm 31 will hold the shaft 30 in the position shown in Fig. 2 with the lug or finger 58 limiting movement of said shaft. The lug therefore determines the position of the cam face 35 and when it is desired to raise or lower said face relatively to the path in which the ball 16 rotates the set screw 57 may be loosened and the collar 56 moved angularly relatively to the shaft, the direction of movement depending upon whether the cam face 35 is to be raised or lowered. During the operation of the loom the picking ball will engage the surface 35 to rock the shaft 30 in its bearings in counter-clockwise direction as viewed in Fig. 3 and excess movement of the shaft will be arrested by engagement of the finger 59 with the cap 44. I find it desirable to employ means to limit movement of the shaft 30 in a counter-clockwise direction in case the connections with the picker stick should become broken or unduly loose. Under these conditions it has been found heretofore in some constructions of looms that certain parts carried by the picking shaft will fall into the path of regularly moving parts of the loom, such as the lay, and be damaged.

When it is desired to remove the shaft 30 it is necessary merely to release the bolts 42 and throw them upwardly around pins 41 as a center, after which the hinged bearings 44 can be swung away from the bracket bearings and the shaft removed. In this way the picker shaft can be quickly replaced without disturbing the settings of the bearings therefor and by means of the adjusting screws 55 the blocks 52 may be moved upwardly to be kept in proper position and prevent vibration of the shaft.

From the foregoing it will be seen that I have provided a picking motion wherein the picking shaft may be very conveniently and easily removed, a portion of the bearings adjacent each end of the picker shaft remaining always in fixed position relatively to the loom. It will further be seen that the blocks 52 are confined in a compartment defined by the bearing bracket 38 and the hinged cap 44 and that by means of the adjusting screws said blocks may be raised or lowered to give proper fit for the shaft. It will also be seen that the collar 56 serves the function not only of preventing endwise movement of the picker shaft in one direction but also affords means for adjusting the position of the cam face 35 relatively to the picking ball 16 and furthermore limits angular movement of the shaft and the members carried thereby should the connections for the picker stick become broken or slack. Also, the end thrust of the shaft 30 under action of the picking ball is absorbed by the cross-girt, a relatively strong and immovable part of the loom frame.

Having thus described my invention it will be seen that changes and modifications may be made therein by those skilled in the art without departing from the spirit and scope of the invention and I do not wish to be limited to the details herein disclosed, but what I claim is:

1. In a picking motion for a loom having a frame, a pair of spaced aligned bearings on the frame, a shaft supported by and rotatable with respect to the bearings, a power arm secured to the shaft, picking mechanism connected to the power arm, a collar angularly adjustable on the shaft, and inter-engaging stop connections betwen the collar and one of the bearings to limit angular movement of the shaft in two opposite directions.

2. In a picking motion for a loom having a frame, a pair of spaced aligned bearings on the frame, a shaft supported by and rotatable with respect to the bearings, a power arm secured to the shaft, picking mechanism connected to the power arm, a collar angularly adjustable on the shaft, and inter-engaging stop connections between the collar and one of the bearings to limit angular movement of the shaft in two opposite directions, said collar being in engagement with the last named bearing to limit longitudinal movement of the shaft in one direction.

3. In a picking motion for a loom having a frame and a rotating picking arm, a pair of spaced aligned bearings supported by the frame, a shaft supported by and rotatable in the bearings, a cam secured to the shaft to cooperate with the picking arm, a collar secured to and angularly adjustable with respect to the shaft, and inter-engaging stop connections between the collar and one of the bearings to limit angular movement of the shaft in opposite directions.

4. In a picking motion for a loom having a frame and a rotating picking arm, a pair of spaced aligned bearings supported by the frame, a shaft supported by and rotatable in the bearings, a cam secured to the shaft to cooperate with the picking arm, a collar secured to and angularly adjustable with respect to the shaft, and inter-engaging stop connections between the collar and one of the bearings to limit angular movement of the shaft in opposite directions, said collar engaging the adjacent bearing to limit end movement of the shaft in one direction.

5. In a picking motion for a loom having a frame and a rotating picking arm, a pair of spaced aligned bearings, a shaft supported by and rotatable in the bearings, a cam secured to the shaft and located for cooperation with the picking arm and having an inclined portion extending in the general direction of the length of the shaft, and a girt secured to the frame and forming a part of the latter and positioned for direct engagement with the shaft to limit longitudinal movement of the shaft in one direction.

6. In a picking motion for a loom having a frame and a rotating picking arm, a pair of aligned bearings, a picker shaft supported by and rotatable in the bearings, a cam fixed to the shaft and located for cooperation with the picking arm and having an inclined portion extending in the general direction of the length of the shaft, said picking arm when cooperating with the cam moving toward one end of the shaft, and a girt forming a part of the frame of the loom to have a direct engagement with the picker shaft to restrain longitudinal movement of said end of the shaft when the latter tends to move in an endwise direction under influence of the picker arm when engaging the inclined face of the cam.

In testimony whereof I have hereunto affixed my signature.

WILLIAM M. WATTIE.