

Practical Fixing of Cotton Looms

By John Reynolds

Box-Loom Multiplier Motion.

As the fixer in a gingham mill has to build his own box-chains, the chain building formerly took up much of his time which could have been better employed. The multiplier motion eliminated the building of long chains, resulting in the saving of labor and cost of a large amount of chain stock.

The multiplier motion as used on gingham looms is one of the most efficient devices ever placed on a loom. By the use of different cams, which are easily changed, one bar of

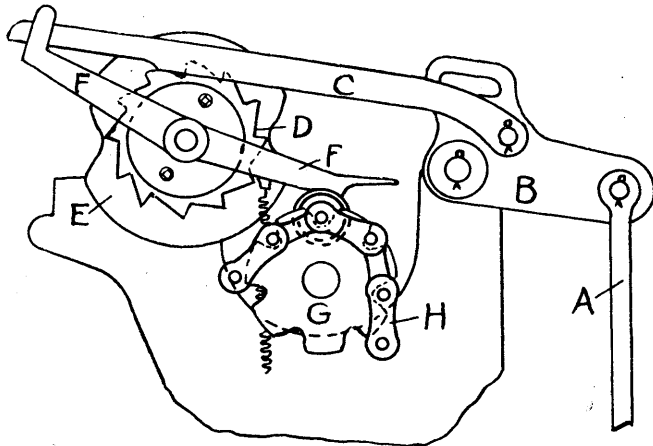


Fig. 104. Multiplier Motion.

the chain can be made to serve for 8, 12 or 24 picks. One revolution of an 8-multiplier cam with three depressions will give 24 picks with 3 bars of chain. A cam with two depressions will give 24 picks with 2 bars. A cam with one depression will give 24 picks with one bar.

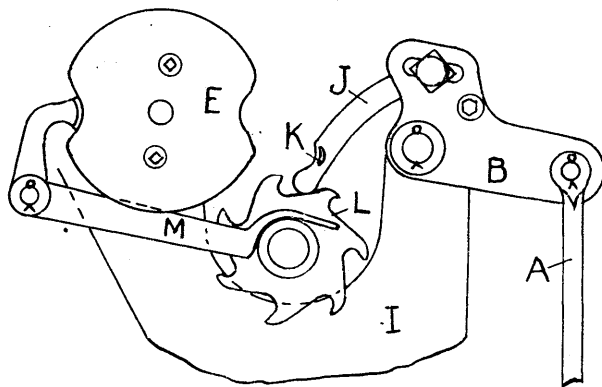


Fig. 105. Multiplier Motion.

Fig. 104 shows a multiplier motion equipped with a 2-depression cam equal to 24 picks for 2 bars of the chain at one revolution. A is the rod driven by a double cam on the bottom shaft; B, oscillating casting to which is attached the pattern cylinder pawl also the multiplier pawl; C, driving pawl for multiplier; D, cam sprocket; E, the cam; F, tipping lever; G, pattern chain cylinder; H, pattern chain.

Fig. 105 is a view of the opposite side of a multiplier motion, showing the pattern-cylinder pawl, stop pin K, pattern cylinder sprocket L and pawl lifter M.

Fig. 106 shows 5 bars of the pattern chain. The first bar is built with one extension ball which operates the multiplier for the shuttle in the first or top box. This kind of a ball can be used in the same position on any bar, no matter

how many box operating balls there are on the same bar. The second bar is built to operate the first box also. The third bar has one ball which engages the sliding tooth that turns the eccentric one-half revolution, which gives the second box. The fourth bar has a ball which engages the sliding tooth operating the box crank in the rear of the motion. This crank turns one-half revolution and raises a distance of two boxes. On the same pick the eccentric is again engaged and, turning back one-half revolution, lowers the box which is raised on the third bar. While the box crank is raising two the eccentric takes away one which brings the third box in line. The fifth bar has two balls, one of which keeps the third box in position. The other one again engages the eccentric which gives one box and brings the fourth box in line.

The boxes can be raised or lowered in any desired order. Fig. 106 merely shows the manner of building a bar of the chain to operate either the multiplier or any of the boxes. If a dobby is used instead of a box-head, two harness levers is all that will be required to operate the box motion for the four boxes.

Take, for example, 60 picks of white using a 2-depression or 12-multiplier cam as shown at Fig. 104. One complete

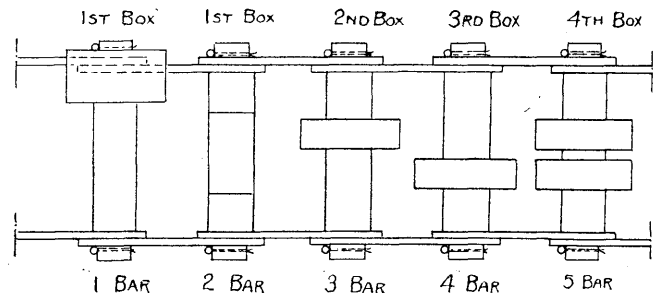


Fig. 106. Pattern Chain.

revolution of this cam corresponds to two bars of the pattern chain or 24 picks, each depression being equivalent to 12 picks. Five bars ($60 \div 12$) of the pattern chain would be required to give 60 picks, whereas 30 bars would be required if no multiplier were used.

Fig. 104 shows a multiplier ball lifting the tipping lever F. This permits the pawl C to engage the sprocket D and turn the cam one pick. As the depression on cam E is turned out of position, the pawl lifter M, Fig. 105, rises and covers the outer surface of the pattern cylinder sprocket, stopping the pawl J from engaging with the sprocket. This continues until another depression appears on cam E, which permits the lifter to fall and lowers the cylinder pawl, which turns the pattern chain one bar. If the next bar contains an extension or multiplier ball, the operation of the multiplier cam is continued.

The sprocket D is bolted to the cam E. If the fixer wishes to change to a more convenient multiple, he can do so in a very few minutes. The resetting of the cam and sprocket is an easy matter.

Setting the Pattern Cylinder.

The multiplier and pattern cylinder pawls are located on the oscillating casting B, which is operated by rod A through the medium of a double-faced cam on the bottom shaft. With the shuttle on the handle side of the loom, move the lay of the loom forward until the oscillating casting B has

(Continued on following page)

THE PRACTICAL FIXING OF COTTON LOOMS

(Continued from previous page)

been given its full movement upwards. Set the pawl J in full engagement with the sprocket L. Now turn the loom until the casting B is in its lowest position and set cam E so that the offset on the lifter M is completely in a depression and the pawl C, Fig. 104, is fully engaged with sprocket D. This is the correct setting for position. The timing will be given under the next heading.