Practical Fixing of Cotton Looms

By John Reynolds

LINING UP THE 4 AND 1 MOTION.

Half of a revolution of the eccentric I corresponds to the distance of one box either up or down. Half of a revolution of the box crank corresponds to the distance of two boxes. The eccentric I is not adjustable. It is built to move the distance of one box, but after running for some time it wears a very little. The distance lost through wear is made up by moving the stud in the slot G nearer to the end of the box lever, giving a slightly greater movement of the boxes up and down. Under no circumstances move the stud in the slot J on the opposite end of box lever away from a center with the box crank adjuster K.

After leveling the boxes as explained for the 2 and 1 box motion, turn the eccentric crank I half way around, bringing up box 2. If this box is too high or too low, make adjustments in slot G. Then come back to box 1, with this box exactly level. Turn the loose crank half way around. This will give box 3. If box 3 is too high, make all the adjustments by the box crank adjuster K, as explained for the 2 and 1 box. The movement from box 3 to box 4 is made by the eccentric I, which has already been adjusted for a movement of one box. The motion moves the boxes as follows:

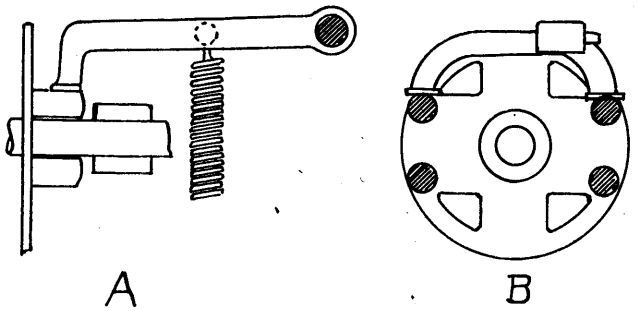

FIG. 103.—BOX CRANK, SIDE AND END.

From 1 to 2, one-half turn of eccentric I.

From 2 to 3, one-half turn of box crank L, which raises 2 boxes; and one-half turn of eccentric I which lowers 1 box at the same time.

The eccentric I is again in neutral position.

From 3 to 4 turn the eccentric one-half turn again, starting from the first or top box. The box crank attached to the eccentric I can be turned by hand. Turn this half way around and make the adjustments as described above. This completes all the adjustments for the movement from 1 to 2 and 3 to 4.

The movements from 1 to 3 or from 3 to 1 are made by the box crank L and all adjustments must be made by the adjuster K.

Keep the shuttle on the 4-box or dobby side of the loom when making these adjustments or when fixing any part of the motion.

Fig. 103 shows the circular plates or studded disks which are called the box-cranks. A is a side view; B, an end view. The two fingers which can be seen lying on the studs at B are kept in position by the spring shown at A. One-half turn of the crank sets the fingers on the two lower studs. The spring at A must be strong enough to allow the fingers to assume the different positions without rebounding.

The springs are adjustable for tension. The box cranks, segment gears and eccentrics are fastened to the respective shafts by pins driven through the gears and shaft. These pins often work loose, causing the cranks to be late in turning. This causes the picker or boxes to appear out of line. The shuttles frequently become chipped and fly out. The only way to locate the cause of the difficulty is to take the springs and fingers, Fig. 103, away from the box cranks. Everything now being free, it is easy to determine whether the box crank, segment or eccentric is loose on the shaft.

If either is found loose, the machinist should put in a new pin. Most all these parts are made from malleable iron which often wear inside, necessitating a new hole, as well as a new pin. The life of a new pin is not very long if the hole in the gears or eccentric is worn.

The initial move is given to the boxes by the first tooth of the star wheel striking the sliding tooth. The other teeth have comparatively little work to do, merely assisting in the further movement of the boxes. The first tooth becomes worn, causing a tendency for it to slip over the sliding tooth. New teeth made from steel wire can be put in but they do not last very long. The wise fixer will change the star wheels from a right to a left-hand loom, or from left to right, bringing the good tooth of the star wheel facing the sliding tooth. Time and money are saved by this method. A new star wheel is expensive and needs a lot of fitting to the older and worn parts of a motion. One of the most difficult parts to replace is a box-lever, as the slightest bind on the eccentric causes trouble. There must be no lost motion between the eccentric and the box-lever. If the casting has been made by some indifferent moulder and finished by an equally indifferent machinist, there will be trouble for the fixer. These parts should be bought from the loom builders, who have special machinery for making the castings. The extra cost is more than offset by the saving of the fixer's time and by increased production.

BOXING THE COLORS.

The method used in most gingham mills is to give the fixer a blank form showing the filling pattern, the boxing of the colors being left to the fixer. There is much difference of opinion as to whether it is advisable to lift the boxes or lower them when weaving a skip-box pattern. Suppose, for example, that the pattern is laid out so that a movement from box 1 to box 4 or from box 4 to box 1 cannot be avoided. Some fixers claim it is better to lower the boxes because gravity helps the motion, others claim it is better to raise the boxes because in this way they become settled quicker. There is force in both claims and that is the reason why looms will be found with boxes changing in different ways, but making the same pattern.

A form for the filling pattern and chain draft, which is used in many gingham mills, is arranged as follows with a space left for a sample of the cloth to be duplicated:

Picks	Color		Wrong	Wrong	Right
48	White		1	2	2
24	Blue	2	2	3	1
48	White		1	2	2
10	Red	6	3	1	3
10	Yellow	4	4	4	4
10	Red	6	3	1	3
10	White		1	2	2
10	Blue	2	2	3	1
6	White		1	2	2
6	Blue	2	2	3	1
6	White		1	2	2
6	Blue	2	2	3	1
6	White		1	2	2
10	Blue	2	2	3	1
10	White		1	2	2
10	Red	6	3	1	3
10	Yellow	4	4	4	4
10	Red	6	3	1	3
250					

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PRACTICAL FIXING OF COTTON LOOMS.

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A space is left in the form for the fixer to insert the order for boxing the colors. A good method is to start with box 1 and work up. If this does not avoid skips, then start with box 2 and work up. If skipping boxes still occur then start with box 2 and work down. The form given above shows how this method works out. The third order of boxing colors is right.

The order of boxing colors for a 3-box pattern is shown in the following table:

Picks	Color		Wrong	Right
60	White		1	2
6	Pink	5	2	1
60	White		1	2
6	Tan	8	3	3
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