

R. B. Goodyear. Shuttle Box.

N^o 87,337.

Patented Mar. 2, 1869.

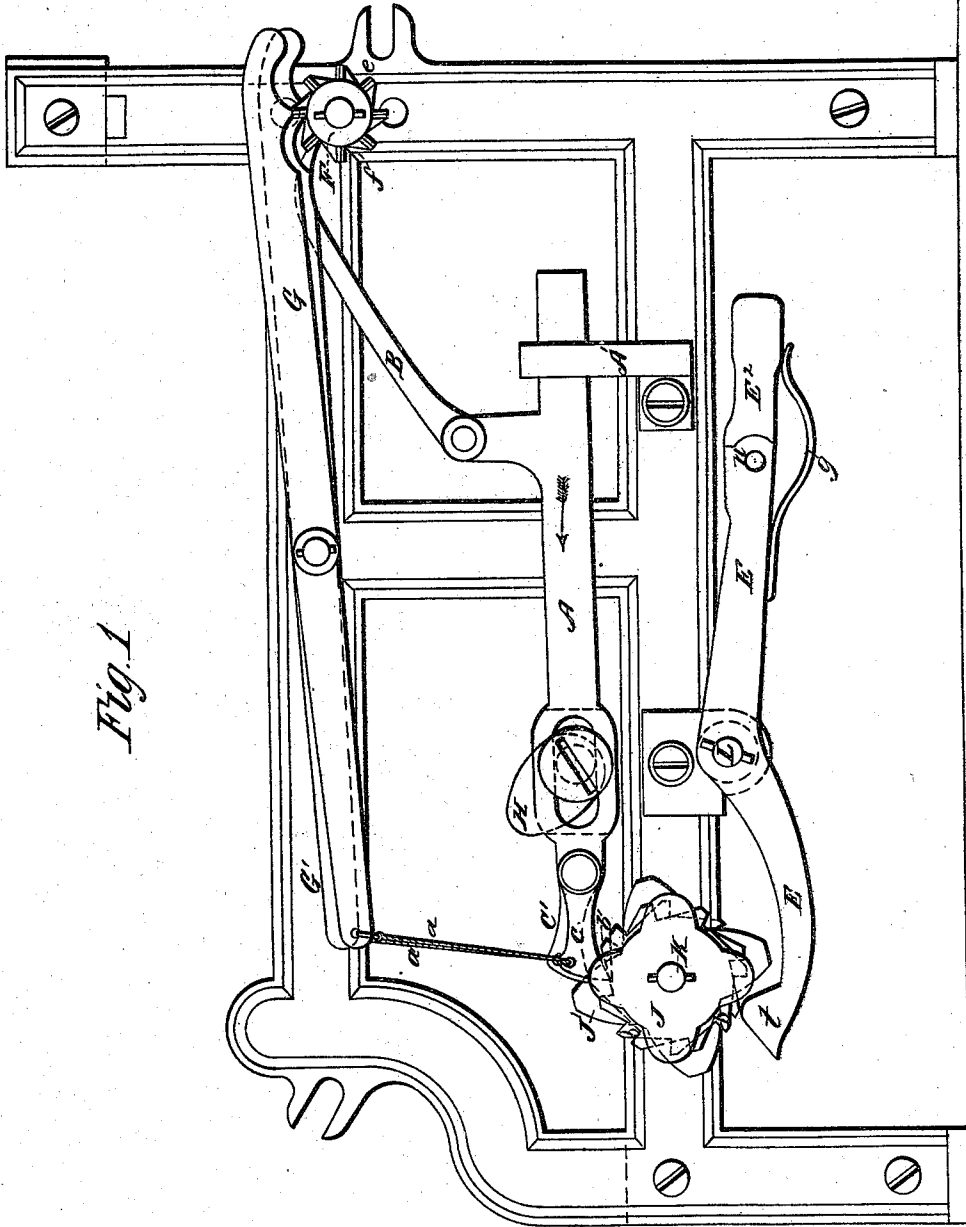


Fig. 1

Witnesses:
R. T. Campbell
W. H. Rowe.

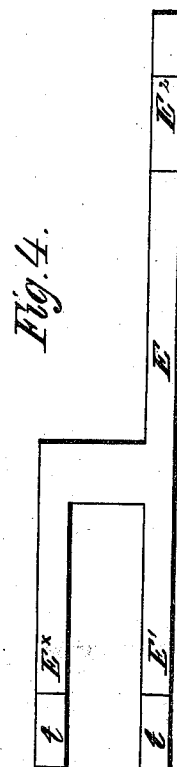
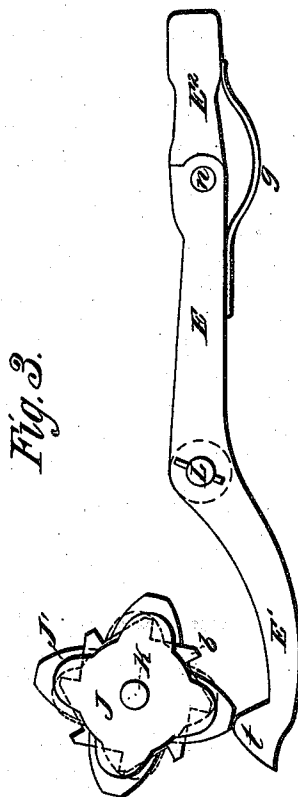
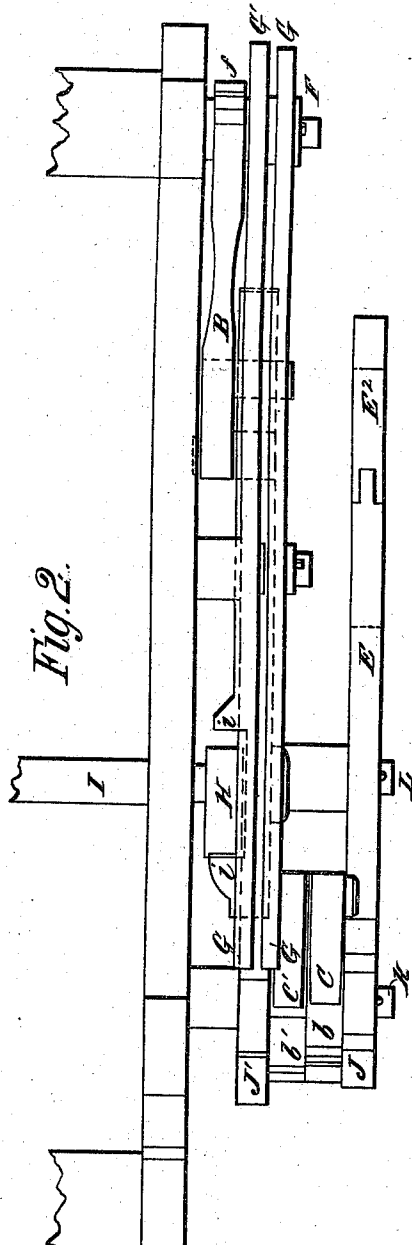
Inventor:
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R. B. Goodyear Shuttle Box.

Sheet 2-2 Sheets.

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ROBERT BURNS GOODYEAR, OF ELKTON, MARYLAND, ASSIGNOR
TO BARTON H. JENKS, OF BRIDESBURG, PENNSYLVANIA.

Letters Patent No. 87,337, dated March 2, 1869.

IMPROVEMENT IN MECHANISM FOR OPERATING THE SHUTTLE-BOXES IN LOOMS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern :

Be it known that I, ROBERT BURNS GOODYEAR, of the city and county of Philadelphia, in the State of Pennsylvania, have invented a new and useful Improvement in Looms; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is an elevation of one side of a loom-frame, having my improvement applied to it.

Figure 2 is a top view of the improved devices.

Figures 3 and 4 are details of the star-ratchets and their levers.

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates to an improvement on that class of looms which are designed for weaving with wefts of different colors.

The object is to so construct the mechanism for actuating the shuttle-boxes, that all regular changes can be made for moving a greater or less number of the boxes in the same given time, as will be hereinafter explained.

To enable others skilled in the art to understand my invention, I will describe its construction and operation.

In the accompanying drawings, I represent the cam-shaft, having a single-throw cam H permanently fixed to it, and adapted for acting upon the jaws, *i i*, of a sliding bar, A, and giving a longitudinal reciprocating motion thereto.

At one end of the slide A is a pivoted pawl, B, which acts upon a ratchet, *f*, on one end of a studded index or pattern-cylinder, F, and gives an intermittent rotary motion to this cylinder. At the opposite end of this sliding bar A, two pawls, *c c'*, are pivoted, which, at proper times, are caused to act upon their respective ratchets *b b'*, to each of which ratchets a star-cam of one or more depressions is permanently attached. The star-cam J is fast to the ratchet *b*, and the star-cam J', which is the largest, is fast to the ratchet *b'*, and all are applied upon a stud, K, so as to turn freely thereon.

The lever E is pivoted to a stud, L, on the loom-frame, and has two or more curved arms, E¹ E², on one end, which bear upward against the star-cams, and are acted upon by these cams as they are moved about their axes.

There will be as many arms on lever E as there are cam-wheels. In the drawing only two are represented, but in practice any required number may be employed.

The front arm of lever E is, in practice, attached to the rod of the shuttle-boxes in the usual well-known manner.

The pattern-wheel F has two or more rows of studs projecting from its circumference, and properly disposed thereon, which studs may all be of a given length or of different lengths. These studs act upon their respective levers, G G', there being a lever for each row or each length of stud, and for each pawl and ratchet; but

this cylinder F may be constructed with one lever having a bifurcated end acted upon by the studs, so that one length or row of studs will move the lever through a given arc, and the other row or length of studs will move the lever through a greater arc. These studs should be adjusted or disposed upon their drum or cylinder F, according to the pattern which it is desired to weave.

In the drawings I have represented two levers, G G', and two rows of studs upon the cylinder F. The levers G G' are both pivoted to the loom-frame, and are connected, by chains or rods *a a'*, to their respective pawls, *c c'*. Thus it will be seen that for each shuttle-box there is a star-cam, a ratchet, and a row or different length of studs.

The operation is as follows:

The cam H on shaft I moves the slide A to and fro with each revolution of this shaft.

In the forward movement, the studded cylinder is moved by the pawl B, so that when a stud comes under one end of a lever, G G', such end is lifted and the opposite end depressed.

In the backward movement of the slide A, indicated by the arrow in fig. 1, the pawl *c* is moved over the notches of the ratchet *b* of star-cam J, and when depressed by the lever G, this ratchet engages with the notches of *b*, and turns cam J the distance of one cam or leaf, which depresses the end E¹ of lever E, and moves up the end E², thus lifting one box, and as long as the stud last mentioned keeps up the lever G, the star-cam J will be revolved.

At the next revolution of the cam-shaft, the end E² of lever E, is released and allowed to descend by the gravity of the shuttle-boxes which it carries. When there is no stud under either lever G G', the pawls *c c'* are prevented from moving the star-cams, and the shuttle-boxes remain stationary. When the studs on the cylinder F move the lever G', the pawl *c'* moves the star-cam J', which, having a greater lift than cam J, depresses the end E² of the box-lever E a greater distance than it is depressed by cam J, and moves up the end E¹, and lifts two boxes, or skips a box.

The lever E has a rule-joint at *n*, so constructed that the section E² is held stationary in position by a spring, *g*, sufficiently so that when a shuttle fails to fully enter a shuttle-box, in its passage across the race of the loom, and becomes entrapped, or when the picker fails to leave a box by any derangement of the picking-mechanism, the positive upward movement of the lever E, by the action of one or the other of the star-cams, is modified by the section E² yielding, which will prevent injury to the shuttle-box or other parts of the loom.

It is obvious that this device may be applied to the connection between the end of the lever and the lifting-rod of the shuttle-boxes in almost any of the well-known looms.

Instead of a studded cylinder, F, an endless chain

may be used, provided with different rows of elevations and depressions.

Having described my invention,

What I claim as new, and desire to secure by Letters Patent, is—

1. Two or more star-cams J J', each provided with a ratchet-wheel, and placed upon a stud, so as to turn independently of each other, in combination with the bifurcated lever E, pawl-slide A, pawls c c'-and B, lifting-levers G G', and a studded pattern-cylinder F, or its equivalent, substantially as described.

2. The combination of two or more independently-acting cams, having their axes in line, and each provided

with a ratchet and actuating-pawl, with the shuttle-box lever and a pivoted lever or levers acted on at one end by the pattern-device, and attached at the other end to the actuating-pawl or pawls, all constructed substantially as described and for the purpose set forth.

3. The slide A, provided with pawl B and pawls c c', and arranged so as to operate the pattern-cylinder F, or its equivalent, and also the star-cams J J', substantially as described.

ROBT. B. GOODYEAR.

Witnesses:

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