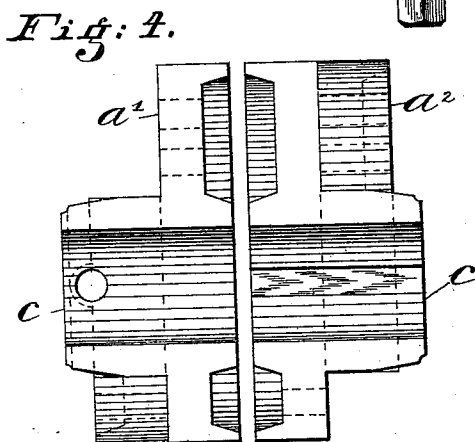
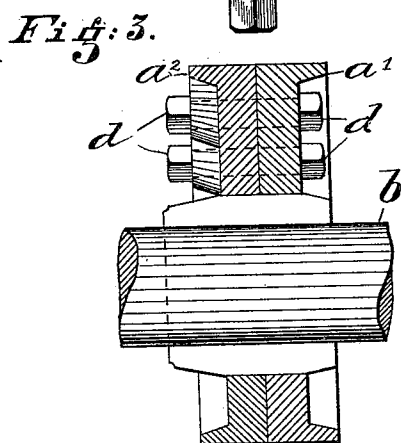
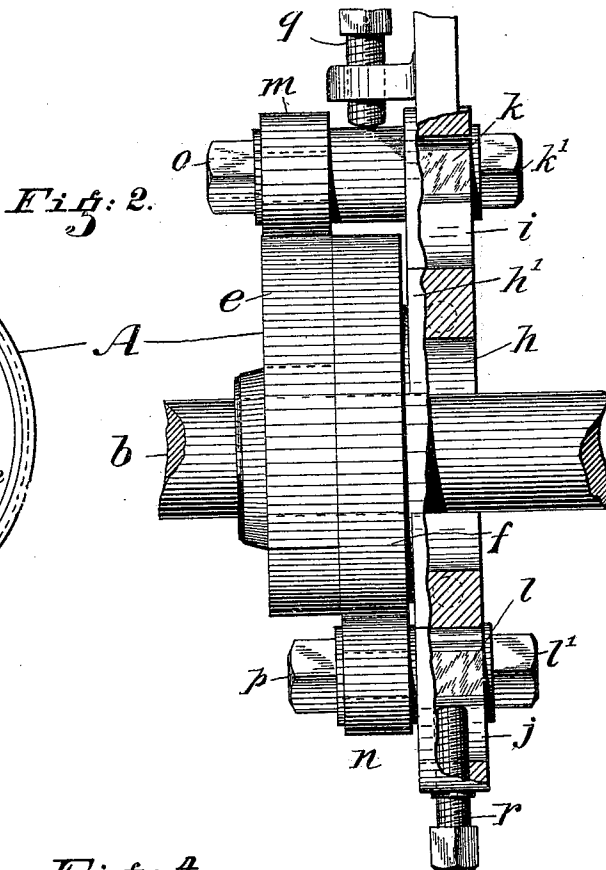
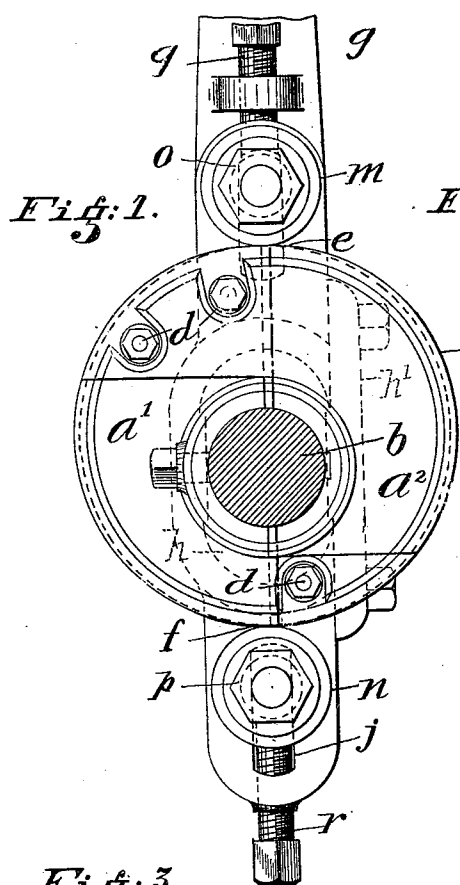


(No Model.)

W. ROBERTS.  
CAM MECHANISM.

No. 544,380.

Patented Aug. 13, 1895.



Witnesses:

*W. C. Whitney*

*Arthur B. Jenkins,*

Inventor.

*Walter Roberts,*

*by Chas. L. Burdett,*

*Attorney.*

# UNITED STATES PATENT OFFICE.

WALTER ROBERTS, OF BEACON FALLS, ASSIGNOR TO THE BEACH MANUFACTURING COMPANY, OF HARTFORD, CONNECTICUT.

## CAM MECHANISM.

SPECIFICATION forming part of Letters Patent No. 544,382, dated August 13, 1895.

Application filed April 28, 1893. Serial No. 472,258. (No model.)

*To all whom it may concern:*

Be it known that I, WALTER ROBERTS, of Beacon Falls, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Cam Mechanisms, of which the following is a full, clear, and exact description, whereby any one skilled in the art can make and use the same.

This invention relates to improvements in cam mechanisms, the object of the invention being to provide a cam mechanism that will impart positive alternating movements, as outward or upward and return movements, to connected mechanisms, and to so construct the parts of said cam mechanism that the same may be quickly applied to or removed from a shaft without removal of the shaft, and to provide means for taking up or compensating for any wear of the actuating-face of the cam.

With these objects in view my invention consists in the special construction and in the combination and arrangement of the several parts of the cam mechanism, substantially as hereinafter described, and set forth in the claim.

Referring to the drawings, Figure 1 represents in front elevation a cam mechanism secured to a shaft and embodying my invention; Fig. 2, a side elevation, partially in section; Fig. 3, a vertical cross-section of the cam, and Fig. 4 a detail showing the two parts of the cam separated.

In the drawings, A represents the cam-wheel, which is eccentrically mounted upon the shaft *b*, said cam being preferably made in two parts *a'* *a''*, and of the form shown in Fig. 4, with a semicircular or half journal-bearing *c* in each that register one with the other and form the bearing for the shaft *b* when the parts are secured together by bolts *d*, as shown in Figs. 1, 2, and 3.

The cam-wheel, which may be of cast-steel, chilled or case-hardened at its periphery, will preferably have two paths *e f*, divided centrally and corresponding in general contour, as shown in full and dotted lines, Figs. 1 and 2, a roller in contact with one of said paths imparting an outward movement to attached mechanism in one direction, and a roller traveling on the other path imparting a movement

in an opposite or a return direction, this forming practically a duplex cam in which the transverse forces are equalized.

The cam-lever *g*, a portion only of which is shown, will be secured at one end to the mechanism to be actuated by the cam, and is herein shown as vertically aligned with the axis of the shaft *b*, and as having an elongated slot *h*, through which the shaft *b* extends, said slot being open at one side to permit the attachment of the lever to the shaft, a cap *h'* being bolted to the side to prevent displacement.

Formed in the cam-lever *g*, one above the other, below the central slot *h*, are elongated slots *i j*, respectively, and through these slots are extended studs *k l*, said studs being adjustably secured in the slots by means of nuts *k'* *l'*, screwed upon the ends of the studs and bearing against the face of the lever *g*, as clearly shown in Fig. 2.

Journaled upon the outer ends of the studs are friction-rollers *m n*, the one *m* bearing upon the path *e* and the one *n* bearing upon the path *f* of the duplex cam at a point directly opposite to the roller *m*, said rollers being secured in position upon the studs by nuts *o p*, screwed upon the outer reduced end of the studs, as shown. The shanks of the studs *k l* will preferably be flat-sided at the points where they enter the slots *i j*, to prevent the accidental turning of said studs. By this construction it will be readily seen that any wear of the cam-faces may be taken up or compensated for by the simple adjustment of the studs. To prevent accidental outward movement of the studs in their slots set-screws *q r* are provided, which bear at their inner ends against said studs, said set-screws having a screw-bearing in the lever, as shown in the drawings. If desired, one of said studs might have a fixed bearing in the lever, and the other stud only be made adjustable with relation to the lever and cam.

I do not desire to limit myself to the exact form of lever or cam shown in the drawings, as various forms might be made to accomplish the same end—as, for instance, the lever might be (and would if an oscillating movement was desired) forked or bifurcated at its cam-engaging end, the rollers being mounted upon studs at the ends of the prongs forming

the fork. Therefore a claim will be drawn of sufficient scope to cover any mere mechanical equivalents or colorable variations of the present invention.

5 My improved cam mechanism is especially adapted to use with looms for giving vertically and horizontally reciprocating movements to the various moving parts—such as the needle-bars, bat-feed carriage, sinker-bar, thread-guide, and cloth-winding mechanisms—as was shown and described in an application for looms filed concurrently with this.

10 It will be seen by reference to the drawings that the friction-rollers *m n* travel upon the cam-face in different paths and always retain the same relative position one with the other, the cam-face being of such construction that when one roller is traveling away from the axis of rotation of the cam the other roller  
20 travels inward in a corresponding degree.

In the manufacture of cams as heretofore practiced, when it was desired to impart a positive intermittent reciprocating or oscillating motion to mechanism without the use  
25 of springs, it has been customary to form a cam-groove in the cam-wheel and provide rollers upon the cam-lever to ride in said groove, and the difficulty and expense in making and turning such cam-wheels with accuracy is well known, and the inability to take  
30 up any lost motion caused by wear has been a source of great inconvenience.

By the construction of cam mechanism herein described the cost of manufacture is materially reduced, accuracy of movement  
35 insured, and provision made for take up of lost motion caused by wear. Another and material advantage gained by securing the cams together by bolts passing through the parts in a direction edgewise of the cam is  
40 that when the bolts become slightly loosened no increase is necessarily made in the size of the shaft-opening through the cam. In the old construction of a separable cam, where the parts were united by bolts passing through  
45 the parts in the direction of the diameter of the cam, in case the bolts became slightly loosened an increase in the size of the shaft-opening through the cam was at once made, and this difficulty is avoided in a cam made  
50 in accordance with my within invention.

I claim as my invention—

In combination the cam-wheel *A* having two paths of like contour, rollers *m, n*, mounted upon studs, the cam-lever *g* having  
55 elongated slots in which said studs are adjustably secured, and set screws *q, r*, adjustable upon said lever adapted to bear against said studs to prevent accidental displacement, substantially as described.

WALTER ROBERTS.

Witnesses:

DANNIEL FLEMING,  
A. B. JENKINS.