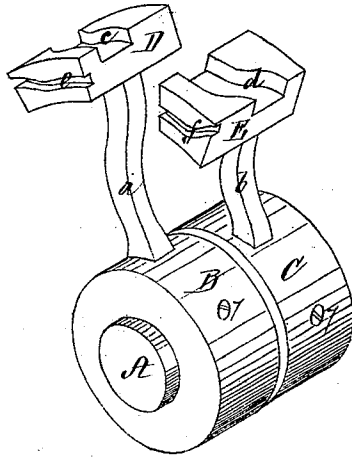


C. F. Annan,
Adjustable Cam.

No. 110,537.

Patented Dec. 27, 1870.

Fig. 1.



Witnesses,
N. W. Stearns
W. J. Cambridge

Inventor,
C. F. Annan

Fig. 2.

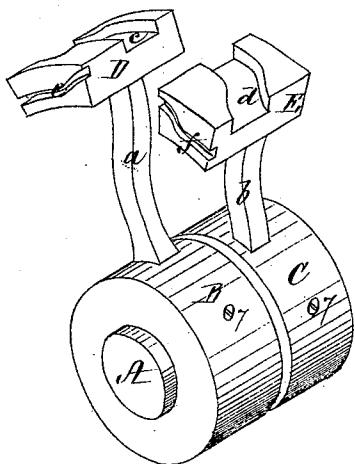
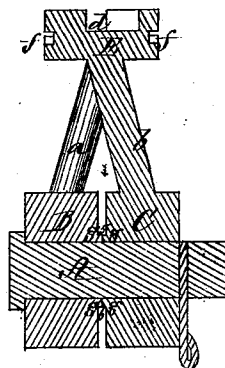


Fig. 3.



United States Patent Office.

CHARLES F. ANNAN, OF BOSTON, ASSIGNOR TO HIMSELF AND HERBERT S. MERRILL, OF CAMBRIDGE, MASSACHUSETTS.

Letters Patent No. 110,537, dated December 27, 1870.

IMPROVEMENT IN ADJUSTABLE CAMS.

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, CHARLES F. ANNAN, of Boston, in the county of Suffolk and State of Massachusetts, have invented an Adjustable Cam for producing variable motion at different intervals of time, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing making part of this specification, in which—

Figure 1 is a perspective view of my adjustable cam.

Figure 2 is a perspective view of the same reversed.

Figure 3 is a vertical section through the center of one portion of my adjustable cam.

My invention has for its object to provide an adjustable cam for imparting to various mechanical devices any variable motion desired; and

My invention consists in two hubs revolving upon a shaft, and provided with one or more arms, the outer ends of which are provided with enlargements, the outer sides and surfaces of which contain grooves of the desired form for imparting to the object or device the particular motion required.

To enable others skilled in the art to understand and use my invention, I will proceed to describe the manner in which I have carried it out.

In the said drawing—

A is a shaft, upon which are fitted two hubs, B C, from which project arms *a b*, the outer ends of which are provided with blocks or enlargements, D E, in the outer faces and ends of which are formed grooves, *c d e f*, of the desired shape, and into which project the rolls or ends of the levers or other devices to be actuated thereby.

The inner face of each hub is provided with a short boss or projection, *g*, of less diameter than its hub, the boss being planed off truly, so that when one hub is revolved around the shaft, the surfaces 5 6 of each hub will snugly coincide and remain in contact with each other, each surface 5 6 being truly finished off in a plane at right angles to the axis of revolution, in order that when one hub has been revolved and secured in place by a screw, 7, to alter the distance between the enlargements D E, any two corresponding points of similar grooves will still continue to remain in the common plane originally given them, and the end of the device to be actuated after having

been acted on by or passed out of the groove in one enlargement, D, will be left in the proper position to be taken up and actuated by the corresponding groove in the other enlargement E, thereby insuring the motion desired.

The whole of the inner face of each hub may, however, be planed off truly for the same purpose, and the bosses be dispensed with; but I prefer the construction first described, as it economizes labor.

The object of varying the distance between the two enlargements D E, is to change the times of rest or motion of the mechanism actuated thereby, in order to produce any given result, such as feeding, holding or releasing, striking or cutting, or other operation or office required in machines of different descriptions.

By providing one or more grooves, *c* or *d*, of the same or different forms in the outer face of each enlargement D E, and one or more grooves, *e* or *f*, in each of its ends, or in their under sides where their arms join them, I am enabled to provide a ready means of securing any number of similar or variable motions at different intervals of time.

When it is desired to change the direction of any particular motion, that is to say, to throw the device operated by the cam from right to left, or from one side to another, it is simply necessary to unclamp the screw 7 and revolve the hub C until its enlargement E is revolved around so as to come in contact with the opposite side of the enlargement D, when the position of the several portions of the various grooves, *c d e f*, will be changed with respect to each other, (see figs. 1 and 2.)

Claim.

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

The within described adjustable cam, consisting essentially of the grooved blocks or enlargements D E, the distance between which may be varied, substantially as and for the purpose set forth.

Witness my hand this 26th day of November, A. D. 1870.

CHS. F. ANNAN.

Witnesses:

N. W. STEARNS,
W. J. CAMBRIDGE.