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C. A. SPOTZ

CAM

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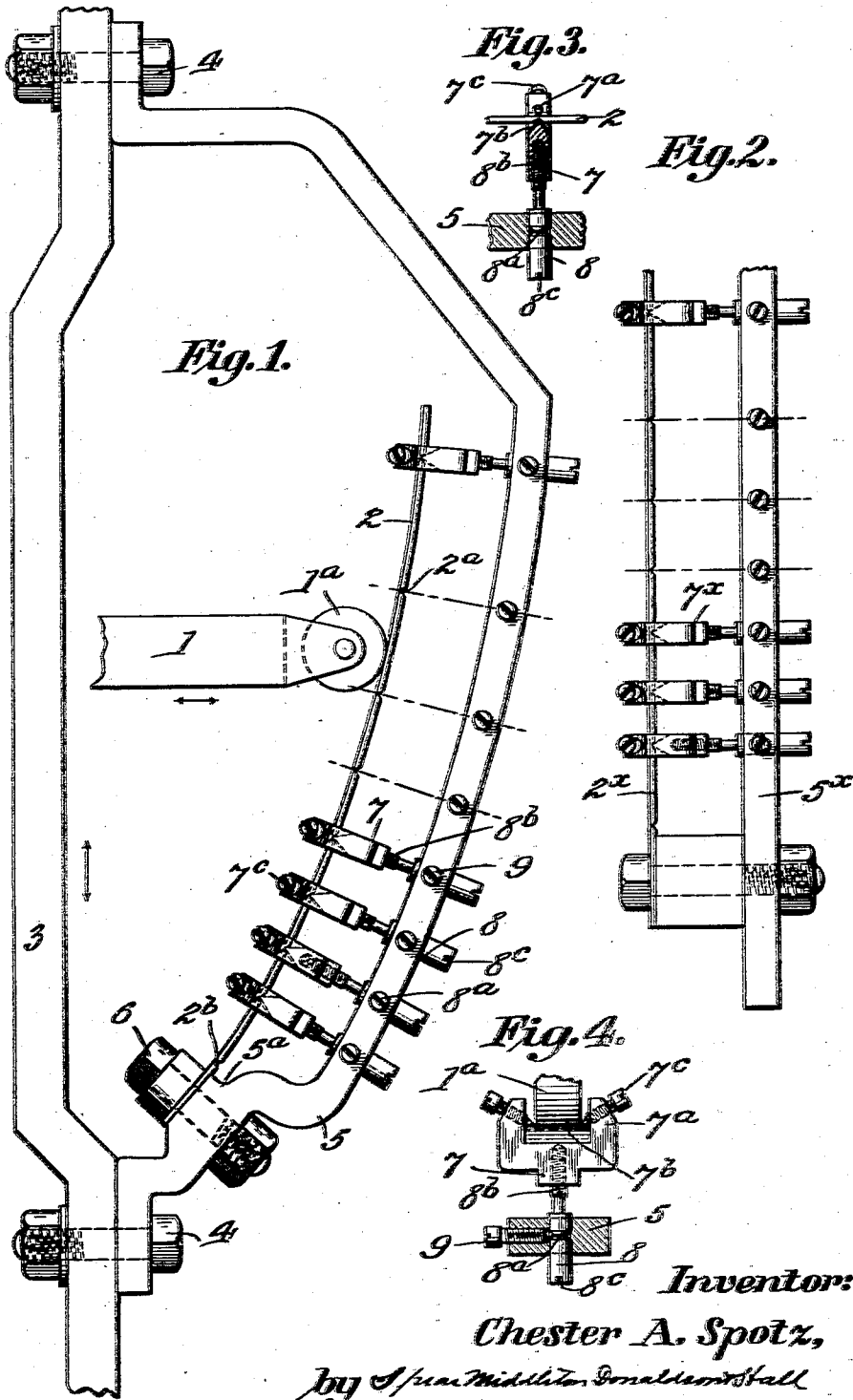


Fig. 1.

Fig. 3.

Fig. 2.

Fig. 4.

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CAM.

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To all whom it may concern:

Be it known that I, CHESTER A. SPOTZ, a citizen of the United States, and resident of Greenwich, county of Fairfield, and State of Connecticut, have invented certain new and useful Improvements in Cams, of which the following is a specification.

My present invention relates to improvements in cams or contact devices designed to cooperate with a movable element either to directly actuate the same or to act as a variable abutment to limit the movement of said movable element according to the manner of use.

The invention aims to provide a cam or abutment member having an acting surface, different portions of which may be independently and accurately adjusted, and the invention comprises the novel construction and arrangement and combination of parts hereinafter described, the nature and scope of my invention being particularly defined by the appended claims.

An embodiment of my invention is illustrated in the accompanying drawing in which:

Figure 1 is a plan view of the cam and cooperating element, the latter being conventionally shown.

Fig. 2 is a similar view of a member having a substantially straight surface.

Figs. 3 and 4 are respectively longitudinal and transverse sectional detail views.

Referring by reference characters to these drawings the numeral 1 designates a movable element which is intended to be representative either of a member to be operated by my improved cam, or an independently operated variable throw member, the movement of which would be limited or determined by the cam which in such case would serve as a variable stop or abutment.

Such movable element 1 is shown as having a part 1^a designed to contact with the cam surface 2, such part 1^a being shown as an anti-friction roller.

The said part 1^a may be carried by a swinging arm or by a reciprocating member, being shown conventionally in Fig. 1 as the latter, the direction of movement being substantially perpendicular to the direction of movement of the cam element, such respective lines of movement being indicated by the double headed arrows.

The variable movement determining element or cam comprises an elongated strip

2 preferably of metal having weakened portions preferably in the shape of transverse grooves 2^a on the back face thereof which impart the desired degree of flexibility to such element at said points, and such grooves or weakened portions may be located at any desired distances apart and vary in number according to the length of the element and the uses for which it is intended. Such element may of course take any desired shape, that is, it may be curved to any desired degree from a substantially straight line up to a complete circle and it may have its surface of curvature varying as to degree and direction or in other words be of substantially sinuous form, the forms shown in the drawing being illustrative examples only.

A convenient manner of supporting such element 2 is to provide a bar 3 which is designed to be connected to any desired operating device or part (not shown) such bar having secured thereto by means of bolts 4 a frame member or cam carrying element 5 which has a portion shaped to conform approximately to the desired shape of contact surface of element 2.

Preferably frame number 5 has a shoulder 5^a to which one end of the flexible element 2 is rigidly connected in a suitable manner as by bolt 6, and said element 2 has preferably a weakened portion 2^b adjacent such point of attachment.

A plurality of adjustable struts 7 are provided connecting the element 2 at or adjacent such weakened portions with the carrying member or frame. Such attaching or holding struts preferably take the form of forked members 7^a adapted to embrace the sides of the element 2 and having knife edges 7^b designed to rest in the grooves 2^a, the element 2 being held in such position by suitable means such for example as diagonal screws 7^c threaded through the arms of the forked members and impinging against the edges of the element 2.

Such forked members are adjustably connected with the carrying member 5 by suitable means such as rods 8, rotatably mounted in openings in the carrying member 5 and held therein by transverse screws 9 engaging annular grooves 8^a in the rods 8, said rods having threaded ends 8^b engaging correspondingly threaded openings in the forked members 7^a. By turning the screw rods 8 in the proper direction by suitable

means, such for example as a screw driver applied to the kerfs 8^c of the screw rods, they may be screwed in or out to give the desired adjustment to the corresponding portions of element 2, and may be locked in such position by tightening the screws 9.

In the form illustrated in Fig. 2, I have shown how the position determining element or cam may take the form of a substantially straight member as indicated at 2^x, being in this event carried by a substantially straight carrying member or bar 5^x.

By adjusting the struts 7^x in or out any desired deviation from the straight form can be secured.

Having thus described my invention what I claim is:

1. The combination with a movable member of a movement determining device arranged to have sliding contact therewith, comprising a supporting member, an elongated flexible element carried thereby, and means for independently actuating different parts of said flexible member to thereby adjust the same relative to said supporting member, said means including an adjustable device connecting an intermediate portion of said flexible element with said support, which device has a bearing of no appreciable area lengthwise of said flexible element.

2. The combination with a movable member of a coacting movement determining device comprising a supporting member, and a surface element carried thereby, having a plurality of weakened portions to impart flexibility, and means adjustably connecting such weakened portions to said supporting member.

3. The combination with a movable member of a coacting movement determining device comprising a supporting member, and a surface element carried thereby having a plurality of weakened portions to impart flexibility, and adjustable struts connecting such weakened portions to said supporting member.

4. The combination with a movable element of a coacting movement determining device, comprising a carrying element, an elongated flexible element having transverse grooves in its rear face, forked members embracing the sides of said elongated flexible

element and having edges engaging said grooves, and means adjustably connecting said forked members to said carrying element.

5. The combination with a movable element of a coacting movement determining device, comprising a carrying element, an elongated flexible element having transverse grooves in its rear face, forked members embracing the sides of said elongated flexible element and having edges engaging said grooves, means for holding said elongated element in the forked members, and means for adjustably connecting said forked members to said carrying members.

6. The combination with a movable element of a coacting movement determining device comprising a carrying element, an elongated flexible element having transverse grooves in its rear face, forked members embracing the sides of said elongated flexible element and having edges engaging said grooves, set screws threaded through the arms of said forked members and engaging the edges of said elongated flexible element, and means for adjustably supporting said forked members from said carrying element.

7. The combination with a movable element of coacting device comprising a carrying element, an elongated flexible element, and a plurality of struts having knife edges to engage the rear face of said elongated flexible element, and connecting different portions of said elongated flexible member to said carrying element, said struts having rotatable screw members with means for locking them against rotation.

8. In combination a carrying element and an elongated flexible element having one end rigidly connected thereto, the opposite end being free, and means adjustably connecting intervening portions of said elongated flexible element with said carrying element, said means including knife edges bearing against the rear face of said elongated flexible element and pointed means impinging against the front edges of said elongated flexible element in line with and opposed to said knife edges.

In testimony whereof, I affix my signature.

CHESTER A. SPOTZ.