Oct. 3, 1967 H. CROUZET 3,344,685

CAM FOLLOWER

Filed Oct. 7, 1965

FIG. 1

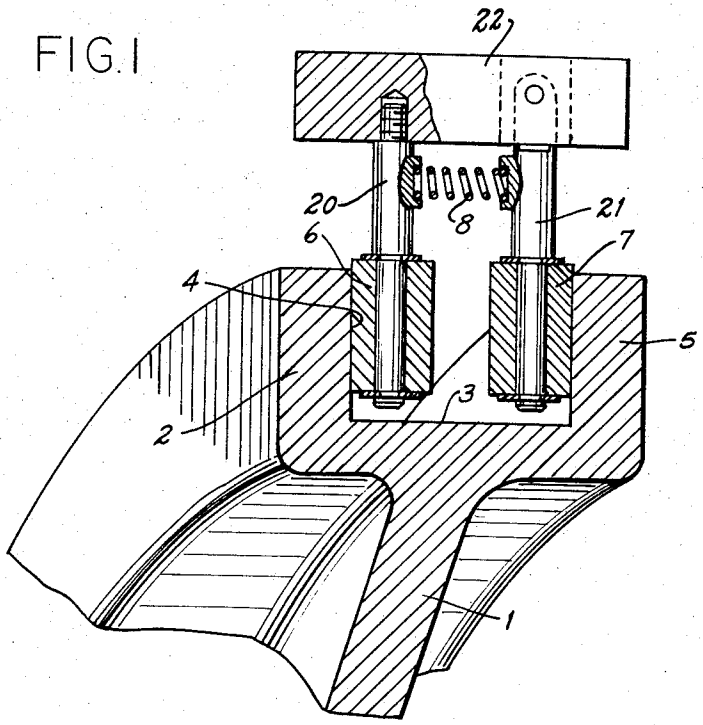
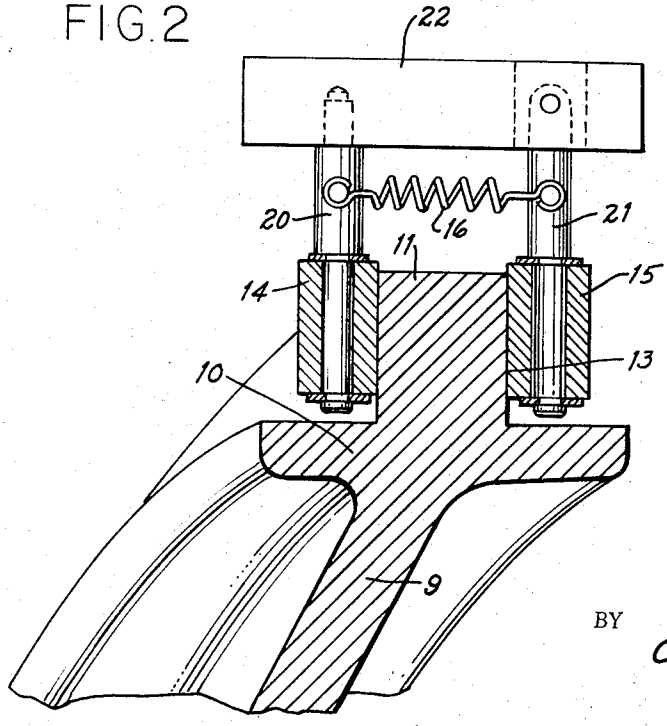



FIG. 2




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3,344,685
Patented Oct. 3, 1967



3,344,685

# CAM FOLLOWER

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Filed Oct. 7, 1965, Ser. No. 493,795
Claims priority, application France, Nov. 13, 1964, 994,829
4 Claims. (Cl. 74—569)

## ABSTRACT OF THE DISCLOSURE

A cam follower mechanism comprising a rotating cam roll having a peripheral surface and a closed helical cam track formed on said surface and having opposed parallel radial surfaces with a pair of cam rollers disposed to engage the respective radial surfaces for following the cam track. The track can comprise a groove in the peripheral surface or can comprise a rib on said peripheral surface both the groove and rib having opposed parallel radial walls.

This invention relates to cam mechanism for producing reciprocatory motion and has for an object to provide a cam mechanism which is capable of operating at high rates of reciprocation.

Cam mechanism of the type used for imparting rapid reciprocating motion to textile machinery commonly includes a rotating cam drum having a close helical cam track engaged by a cam follower roller. In order to achieve practically instantaneous reversal of direction, the roller should have as small a diameter as possible. On the other hand, this reversal is facilitated by providing a helix having a small pitch. Thus, for high rates of reciprocation it is preferable to utilise, for a given oscillation amplitude, cams which have the largest possible diameter and a cam roller of small diameter which engages the cam track.

For example, for an amplitude of 150 mm. and an oscillation rate of 120 strokes per minute, use may be made of cams having a diameter of 400 mm. and of a roller having a diameter of 12 mm., so that the velocity of rotation of the roller will be $120 \times 400/12 = 4000$ r.p.m.

When moving in one direction, the roller engages one face of the track and when moving in the other direction it engages the other face of the track so that in the above example at a rate of 240 times per minute it will pass from 4,000 revolutions in one direction to 4,000 revolutions in the other. The roller is braked, by contact with the cam, from 4,000 revolutions down to 0 and then re-started by friction on the other flank of the track from 0 to 4,000 revolutions, and this necessarily subjects the cam and the roller to abnormal wear and produces a high level of noise.

The present invention provides a device which, without modification of the diameter of the cam or that of the roller, allows the said roller to rotate always in the same direction, thus avoiding abnormal wear and, under these conditions, increasing the possible oscillation rate.

This is accomplished by utilising paired rollers each of which is used for one direction and does not participate in the production of movement in the other direction. Due to this fact, each roller is always maintained in the same direction of rotation.



The nature of the invention will be better understood by referring to the following description taken in connection with the accompanying drawings in which certain preferred embodiments have been set forth for purposes of illustration.

In the drawings:

FIGS. 1 and 2 are elevational views illustrating respectively two embodiments of the invention.

Referring to FIG. 1, the rotary cam drum **1** has a rim **2** in which a groove **3** is formed. The said rim has two sides **4** and **5**. One roller **6** bears against the side **4** and the twin roller **7** bears against the side **5**. The two rollers **6** and **7** are connected by a compression spring **8**.

Referring to FIG. 2, the rotary cam drum **9** has a helical rib **10** provided with two parallel, external sides **12** and **13** constituting guideways for two rollers **14** and **15** connected by a tension spring **16**. The roller **14** travels on the side **12** and the roller **15** on the side **13**.

Thus the two rollers **6** and **7** and **14** and **15** respectively may be connected by a fixed arm **20** and a pivoted arm **21** to actuate a reciprocatory member **22**.

The rollers **6** and **7** and **14** and **15**, respectively, may be angularly offset by several degrees, so as not to affect the inertial reserve of the cam.

The use of the springs has the advantage that it ensures permanent contact between the rollers and the guide faces and thus obviates impact on change of direction.

What is claimed is:

**1.** Cam follower mechanism for producing rapid reciprocatory motion comprising a rotating cam roll having a peripheral surface, a closed helical cam track formed on said surface and having opposed parallel radial surfaces, a pair of cam rollers disposed to engage the respective radial surfaces for following said cam track, said rollers being held in contact with the respective radial surfaces by a spring means, and a member carrying said rollers and adapted to be reciprocated thereby as said cam roll rotates.

**2.** Cam follower mechanism as set forth in claim **1** in which said cam track comprises a groove in said peripheral surface having opposed parallel radial walls and said rollers are disposed in said groove in contact with said walls.

**3.** Cam follower mechanism as set forth in claim **1** in which said track comprises a rib on said peripheral surface having opposed parallel radial walls and said rollers are disposed to engage said opposed walls of said rib.

**4.** Cam follower mechanism as set forth in claim **1** in which said cam rollers are mounted to rotate about non-parallel axes.

**References Cited**

UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 1,613,136 | 1/1927 | Schieffelin | 74—57 |
| 1,896,449 | 2/1933 | Kreidler | 74—56 |
| 2,340,010 | 1/1944 | Miller | 74—569 X |

FOREIGN PATENTS

| | | |
|---|---|---|
| 111,415 | 11/1917 | Great Britain. |

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