

Dec. 23, 1930.

J. P. HESS

1,785,736

CAM

Original Filed Nov. 28, 1927 3 Sheets-Sheet 1

Fig. 1.

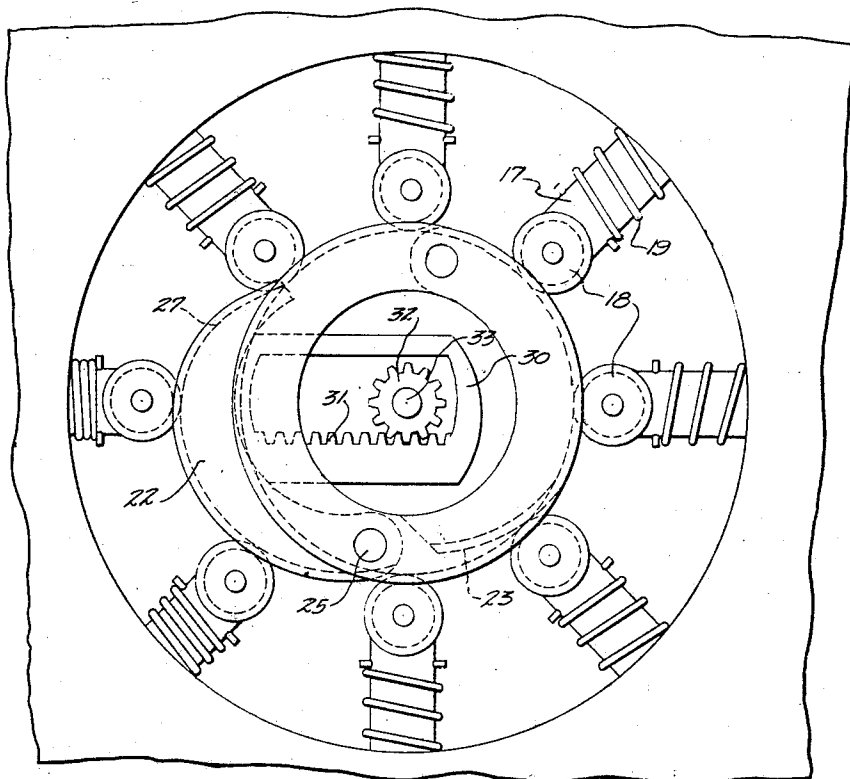
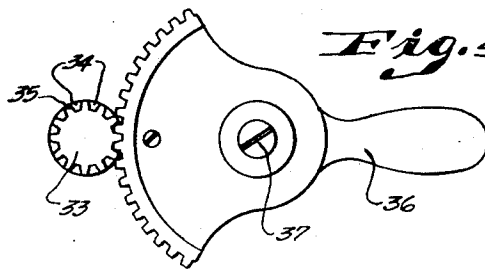


Fig. 4.



INVENTOR.

John P. Hess

BY

Erwin, Wheeler & Woolard
ATTORNEYS.

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J. P. HESS

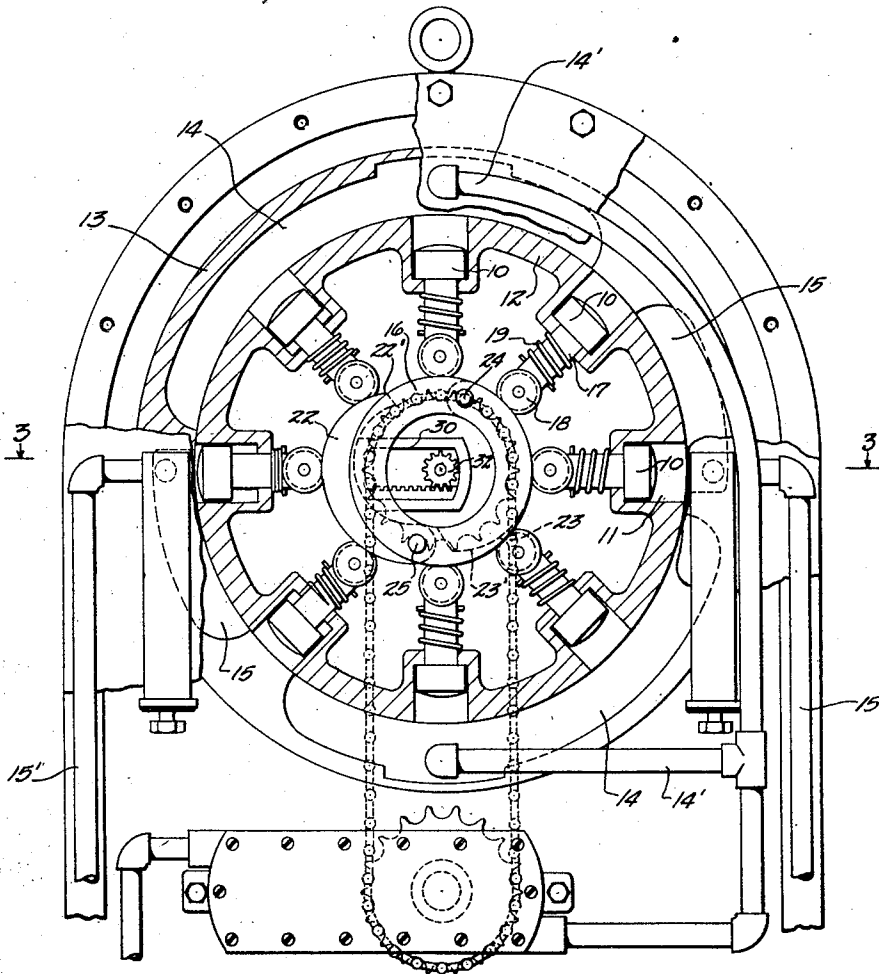
1,785,736

CAM

Original Filed Nov. 28, 1927

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Fig. 2.



John P. Hess INVENTOR.
BY Erwin Wheeler & Woodland
ATTORNEYS

Dec. 23, 1930.

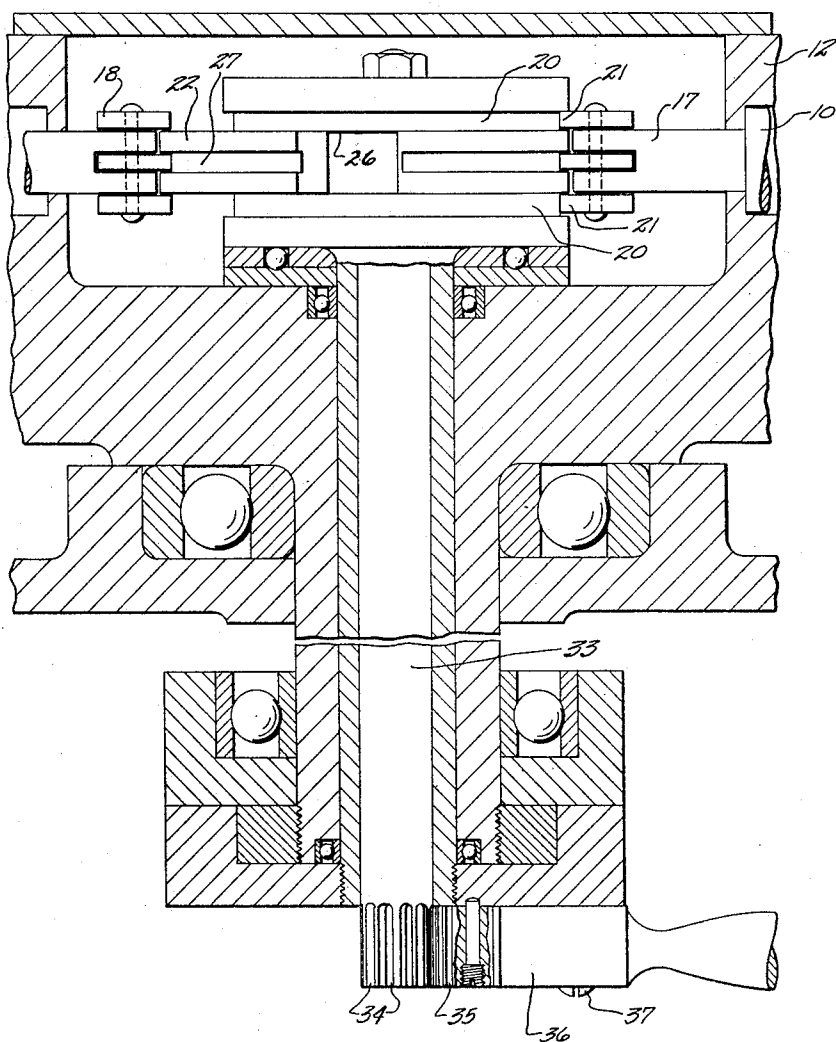
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Fig. 3.



INVENTOR.
John P. Hess
BY
Erwin Wheeler & Woolard
ATTORNEYS.

UNITED STATES PATENT OFFICE

JOHN P. HESS, OF MILWAUKEE, WISCONSIN

CAM

Original application filed November 28, 1927, Serial No. 236,101. Divided and this application filed July 30, 1928. Serial No. 296,242.

My invention relates to an improvement in cams.

The object of my invention is to provide a cam wherein portions of the face thereof may be expanded or changed in their configuration.

Another object of my invention is to provide a cam having a face of variable pitch and contour together with a control for the purpose of making such changes, said control being operatively connected so that an operator at a distance from the cam may control the contour thereof.

Another object of my invention is to provide a cam with portions thereof diametrically opposed and a single control for alternately changing or regulating the contour of said opposed parts.

In the drawings:

Figure 1 is a side elevation of a portion of a rotary pump wherein my cam is installed.

Figure 2 is a side elevation of the entire pump mechanism showing portions of the side wall thereof broken away to exhibit my cam.

Figure 3 is a section on line 3—3 of Figure 2.

Figure 4 is a detail of the control handle for operating my cam.

Like parts are identified by the same reference characters throughout the several views.

This is a division of my application Serial Number 236,101, filed November 28, 1927.

In the drawings I have shown my cam installed in a rotary pump although it will be obvious from the description hereinafter set forth that my cam may be used in any one of a number of devices where a cam follower is used to impart motion which must at times be varied in extent and varied in length of time and speed at which the motion is to be accomplished.

In the particular pump in which I have shown my cam as best illustrated in Figure 2 a number of pistons 10 are mounted for reciprocation in cylinders 11 extending downwardly from the outer circumference of a rotor 12. This rotor in turn is mounted for rotation within an annular frame 13 which is provided with channels 14 and 15. Pipes

14' provide fluid to the channels 14 and pipes 15' receive fluid from the channels 15 when the rotary pump is in operation under the control of my cam 16 which is centrally mounted to control the action of the pistons as hereinafter described.

Each of the pistons 10 is provided with a connecting rod 17 equipped with a cam following roller 18 which bears upon the face of my cam under the influence of a spring 19.

My cam provides essentially an annular ring body 16, about the outer face of which are grooves 20 within which various projecting flanges 21 of the cam following roller are designed to travel, said channels 20 therefore providing a guide for the roller to keep the connecting rods 17 constantly aligned in a given direction.

Certain portions of the outer circumference of my cam are pivotally mounted upon other portions of the cam body whereby to provide wings 22 and 23 one end of each of which is pivotally connected to the main body 16 of the cam as shown at 24 and 25 and since each of these wings comprise only a portion of the width of the face of my cam and comprise a central portion only thereof it is possible for me to make an extension of each of said wings as shown at 22' and 23'. Curved inwardly from the face of my cam and extended into a channel 26 so that when the wing is pivotally swung upon its mounting to provide a protruding cam surface beyond the main body 16 of my cam the curved extension 22' or 23' may be brought outward into registry with the surface of the main body of the cam and thereby provide a comparatively smooth contour surface for the cam roller 18 after it has ridden high above the cam surface upon the protruding wing surface.

Throughout the travel of the cam following roller upon the protruding wing a central channel 27 guides the roller until its return to the surface of the main body of the cam.

It is necessary to the control of the wings above described that means be provided for pressing the wings outwardly against the pressure of the various springs 19 upon the

connecting rods 17 and I, therefore, provide a block 30 provided with a rack 31 and pinions 32 to mesh therewith, said pinion being mounted upon a shaft 33 which may be extended to any desired distance to a point of safety and accessibility where depressions 34 providing intervening teeth make possible the meshing of a gear segment 35 upon a controlling handle 36 pivotally mounted upon a screw 37 as indicated in Figure 3.

From an examination of Figures 1 and 3 it will be apparent that a partial pivotal movement of the control handle 36 will rotate the pinion 32 and force the block 30 against one of the wings thereby crowding same outwardly to vary the contour of the surface of the main body of the cam 16.

Likewise the contrary movement of the handle 36 will cause the block 36 to move in the opposite direction and permit the return of the one wing and force the other wing outwardly upon the other side of the cam.

In any mechanism where cam followers must at times be thrust greater or lesser distances out of a circular or accustomed path of other contour my cam will be invaluable since it is subject to easy control from remote distances and mechanism such as the pump described and disclosed herein may be controlled to actually reverse flow of fluid or to displace little or much fluid as desired by an operator.

I claim:

1. A cam comprising a cam body, wings comprising hinged portions of the surface of the cam having ribbed surfaces, ribbed portions of the cam body to mate with the free ends of the wings, whereby to provide a continuous path for a cam follower.

2. A cam comprising a cam body provided with a working face divided into a plurality of movable sections pivotally secured to the cam body, and a control comprising a shaft, rack and pinion for distending the movable sections to change the contour of the working face.

3. The combination with a cam including a ribbed cam face and a portion of the cam face of different contour than the remainder of the cam face hingedly secured in place and provided with ribs complementary to the ribs of the remainder of the cam face, a cam follower including a ribbed roller to co-act with the ribbed face and hinged portion whereby the roller may be guided over the hinged portion in any position of adjustment thereof.

4. The combination with a cam provided with a working face having a plurality of ribs, portions of the working face including portions of the ribs hingedly adjustably secured with reference to the remainder of the working face and contoured differently from said remainder of the working face.