G. E. WILLERS.

CAM DEVICE FOR PUMPS.

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1,191,256. Patented July 18, 1916.

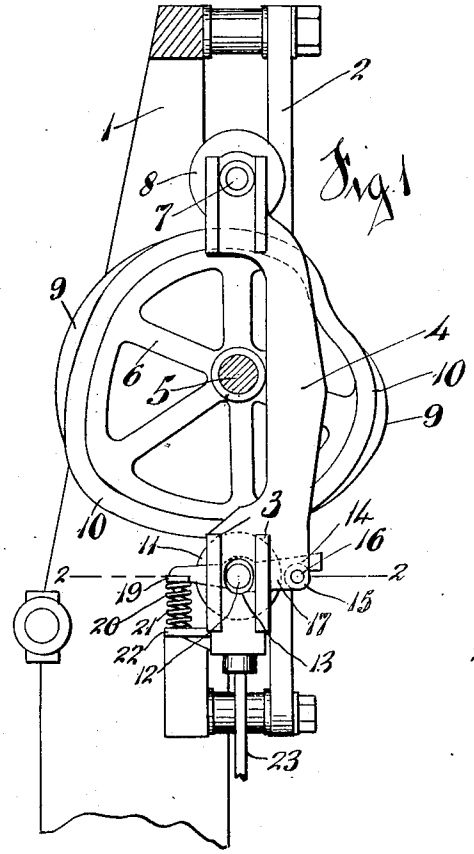


Fig. 1

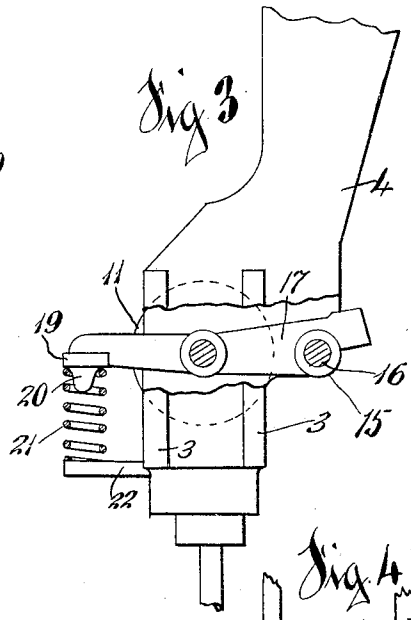


Fig. 3

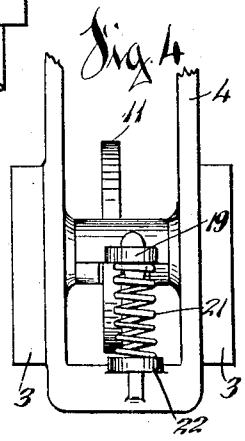


Fig. 4

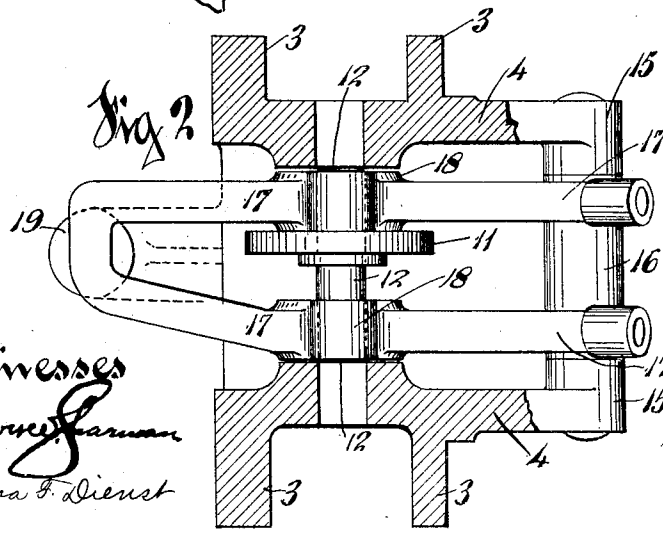


Fig. 2

Witnesses

Olivier Garman

Anna F. Dienst

Inventor

George E. Willers

by Allen & Allen

Attorneys

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

GEORGE E. WILLERS, OF LAWRENCEBURG, INDIANA, ASSIGNOR TO AUGUST D. COOK, OF LAWRENCEBURG, INDIANA.

CAM DEVICE FOR PUMPS.

1,191,256. Specification of Letters Patent. Patented July 18, 1916.

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To all whom it may concern:

Be it known that I, GEORGE E. WILLERS, a citizen of the United States, and a resident of the city of Lawrenceburg, in the county of Dearborn and State of Indiana, have invented certain new and useful Improvements in Cam Devices for Pumps, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

In the use of cams to raise and lower reciprocating frames connected with the pump rods, which frames carry antifriction rollers actuated by the cam, there is very likely to be a jump of the rollers, when the frame reaches each end of its movement. This is because in a pump, for example, there is a certain amount of inertia to overcome, even though the cam is so arranged as to start downward movement just as the top is reached, and thus, as ordinarily constructed, the upper antifriction roller will not ride smoothly over the point of the cam. A certain amount of play must be allowed for, and this play will cause a decided pound or knock each time a roller passes the point of the cam. It is understood that in these instances, the cam, which may or may not have a double nature, revolves inside and at right angles to the frame, and the antifriction rollers are mounted in each end of the frame, so as to rotate parallel with the cam, and in constant contact therewith at both ends.

It is the object of my invention to overcome this pounding, and I accomplish it by that certain construction and arrangement of parts to be hereinafter specifically pointed out and claimed, whereby a constant spring pressure holds the antifriction rollers against the cams, and while allowing sufficient play, overcomes all tendency of the rollers to leave the cam.

In the drawings, Figure 1 is a side elevation of my device mounted as for use in a pump. Fig. 2 is an enlarged horizontal section, looking downwardly, on the line 2, 2, of Fig. 1. Fig. 3 is a side elevation of the spring structure with the frame broken away to show the parts more plainly. Fig. 4 is a front elevation of the parts shown in Fig. 3.

Mounted to slide between a framework 1 and a plate 2, on the flanges 3, 3, at each side of the top and bottom thereof, in a cam frame 4. The main part of the frame is out of the way of the shaft 5 of the cam 6, but the ends having the flanges are directly in line with the shaft.

I prefer to locate my spring structure at only one end of the cam frame, and accordingly provide a shaft 7 in the upper end of the frame and upon it mount the upper antifriction roller 8. This roller bears on one of the faces 9 of the cam 6, and is not wide enough to contact with the second face 10 thereof, which is designed for the lower roller. The mounting for the lower roller 11 comprises a shaft 12 upon which the roller turns, and said roller as hereinafter described, is spring-pressed against the cam and free to oscillate to take up all jars and pounding. Rather than having a spring-pressed peripheral band on the roller, I prefer to mount the shaft 12 in a rocker member and apply spring pressure to the rocker member, as this is strong and easily repaired, and it is necessary to use powerful springs. The side arms of the frame form heels 14 at one side of the point where the shaft 12 is journaled, and bosses 15, 15, thereon carry a rocker pin 16. On this rocker pin are mounted the two arms 17, 17, of the roller yoke for the roller 11. Journals 18, 18, are formed in these two arms, and in these journals the shaft 12 for the roller is mounted. The arms then come together and are provided with an end plate 19. A stud 20 is formed on the under side of this plate and over this stud fits a heavy spring 21, which finds its other seat on the extension 22 from the bottom of the cam frame. It can now be appreciated that the pressure of the spring will regulate the position at any one time of the cam frame with relation to the cam. The up and down position of the shaft 12 will be regulated by the up and down movement of the yoke as determined by the spring. The cam frame is thus, through its two antifriction rollers, in constant contact with the cam, and play is allowed for the cam movement which is instantaneously taken up by the spring.

Connected to the cam frame 4 at its lower end is the pump rod 23. In the use with a pump, there are usually a plurality of cam frames to operate a double plunger pump.

This is because the continuous motion imparted by a cam is especially valuable in the double plunger construction. Only one frame and cam have been shown, however, this being deemed enough for purposes of illustration and description.

The cam pumps of today make a very disturbing noise, which by the use of my spring antifriction roller is done away with entirely. The pounding and jumping are also liable to interfere with the smooth and continuous flow of liquid from the pump, which, as has been said, is the reason why cams are used instead of cranks in these machines.

My new spring feature might well be applied to other devices, but is extremely valuable in a pump, where smooth flow is desired as well as quietness of operation, which is always a desideratum.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:—

In a pump, in combination with a cam, a cam frame therefor adapted to be reciprocated thereby to actuate the pump, connection between the pump and the frame at the lower end of said frame, a rocker member pivotally mounted at the rear of the frame, an antifriction roller carried by said rocker member, a shaft for the roller, slotted bearings in the cam frame members for said roller shaft, and a compression spring mounted between said frames and positioned to apply pressure at the forward end of the rocker, whereby a powerful spring leverage is applied to said roller to prevent knocking upon reciprocation of the pump.

GEORGE E. WILLERS.

Witnesses:
CORNELIUS O'BRIEN,
CARL F. KOCH.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."