No. 877,687. PATENTED JAN. 28, 1908.

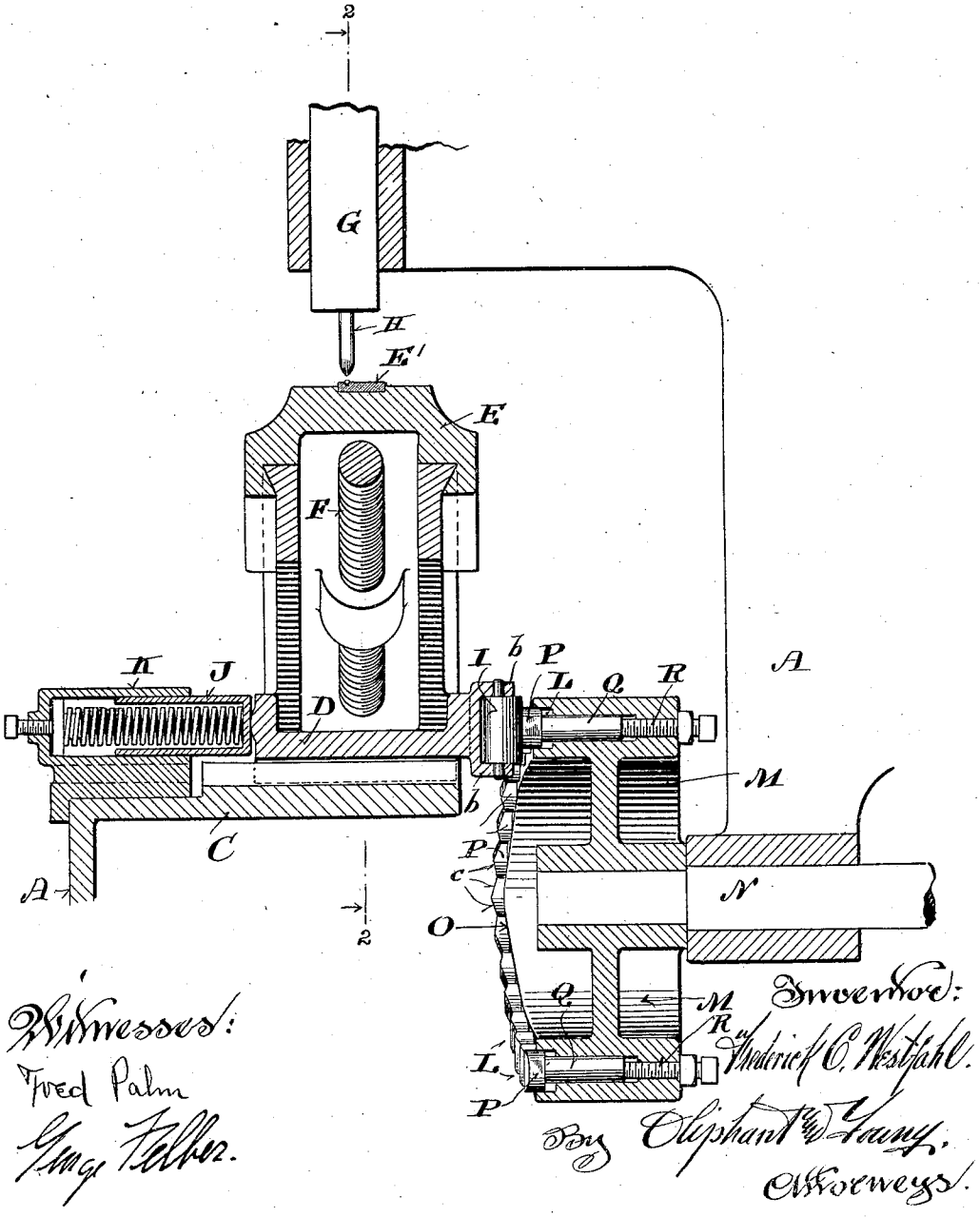
F. C. WESTFAHL.

CAM.

APPLICATION FILED MAY 18, 1906.

2 SHEETS—SHEET 1.

Fig. 1.



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2 SHEETS—SHEET 2.

Fig. 4.

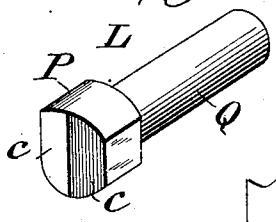


Fig. 2.

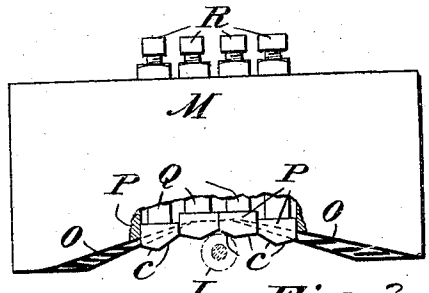
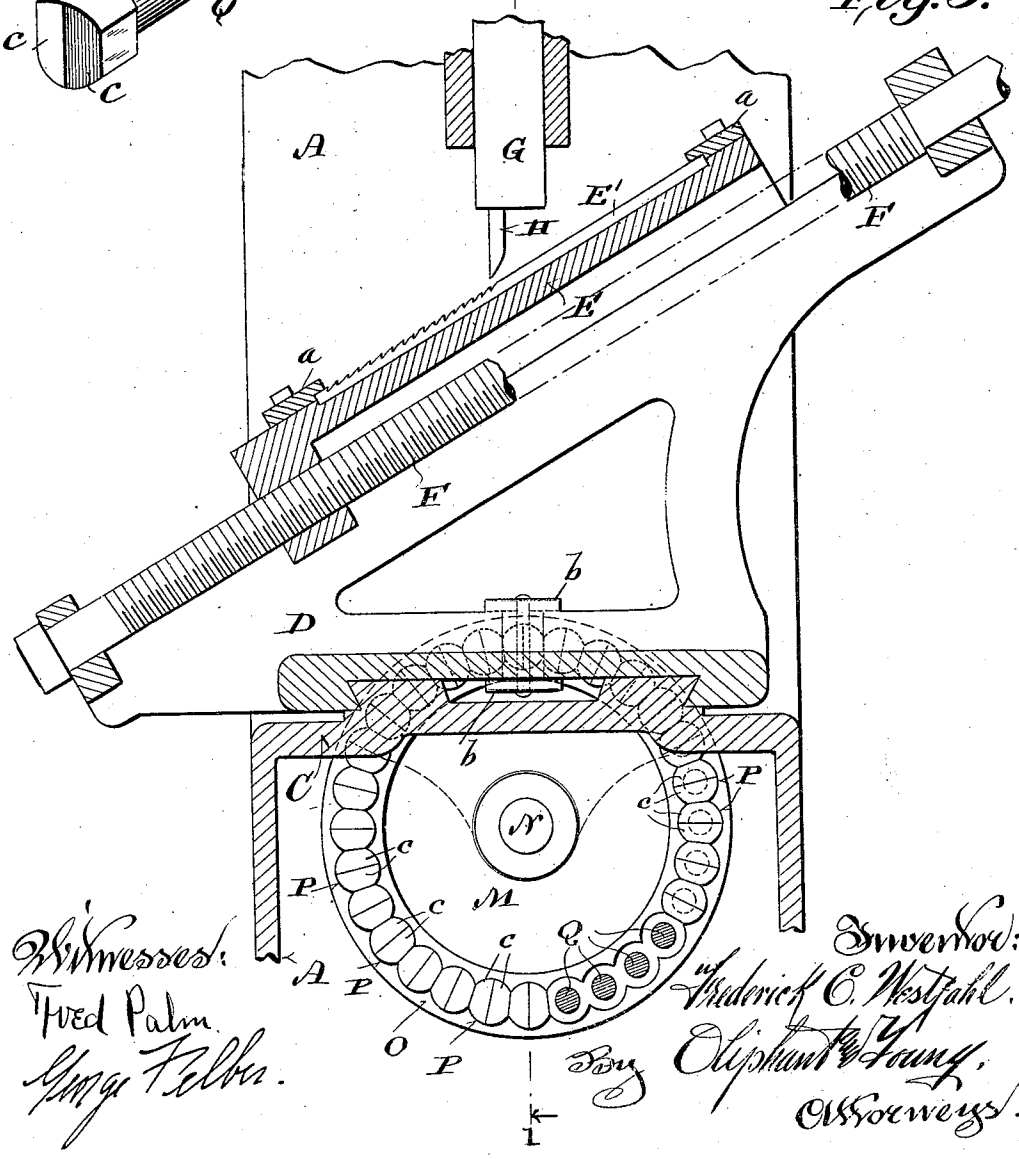


Fig. 3.



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UNITED STATES PATENT OFFICE.

FREDRICK C. WESTFAHL, OF MILWAUKEE, WISCONSIN.

CAM.

No. 877,687. Specification of Letters Patent. Patented Jan. 28, 1908.

Application filed May 18, 1906. Serial No. 317,555.

To all whom it may concern:

Be it known that I, FREDRICK C. WESTFAHL, a citizen of the United States, and resident of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Cams; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention consists in what is herein shown, described and claimed; its object being to provide simple, economical and durable cams especially designed for use in connection with the feed-mechanism of rasp-cutting machines or the like, said cam being readily assembled and adjusted to the required contour, and said cam is shown in connection with a portion of a rasp-cutting machine.

In the drawings: Figure 1 represents a front elevation of a portion of a rasp machine having a cam attached thereto embodying the features of my invention, said view being partly broken away and in section, as indicated by line 1—1 of Fig. 2, Fig. 2, a longitudinal section of the same on line 2—2 of Fig. 1; Fig. 3, a detail view of the cam-wheel, with parts broken away and in section showing a small group of the feed pins in position, and Fig. 4, a perspective view of one of said pins detached.

Referring by letter to the drawings, A indicates a rasp-machine bed provided with a top C in dovetail connection with a horizontally reciprocative frame D, which frame carries an inclined block E, that is adapted to be fed backward and forward thereon, by a screw-threaded rod F mounted in bearings at either end of said frame, the frame and block E together constituting a work-holder. The block E is recessed to receive the rasp or file blank E′, which blank is held in position thereon by the usual clamps *a*, the blank being directly under a plunger G that carriers a burring tool H of any desired form.

The means for rotating the screw threaded rod F, whereby the rasp blank and block are fed longitudinally, as well as the drive of the transverse feed mechanism of the frame, and the burring tool forms no part of my invention and therefore is not shown in the drawings, it being understood that any mechanism known to those skilled in the art, may be employed to transmit motion to the several parts herein mentioned, which parts are common in all machines of the class to which my invention pertains.

The frame D of the work-holder is provided with ears *b* projecting from its inner face between which is mounted a roller I, the opposite side of said frame being opposed by a spring-plunger J guided in a barrel K that is fast to the top C of the machine-bed. The spring-plunger J serves to keep the work-holder roller I against the ends of a series of adjustable plugs L, which plugs are set in the edge of a cam-wheel M, that is intermittently rotated the space of one plug, after each downward action of the burring tool. This cam-wheel is mounted upon a suitably driven shaft N, the peripheral edge adjacent the work-holder being waved to form a double incline cam surface O, that is counterbored parallel with its axis to receive the series of plugs L, as best shown in Figs. 1 and 3 of the drawings. The heads P of the plugs have their faces *c* oppositely beveled, the sides thereof being flattened and fitted together so as to form a continuous circumferential corrugated surface that is set approximately parallel with the waved cam surface O of the cam-wheel, the flattened sides of said pulgs serving to lock the same in position with their beveled faces radially disposed.

The shank Q of each plunger is fitted into a counterbored opening of the wheel to abut an adjusting set-screw R in threaded connection with the cam-wheel, and when it is desired to adjust the plugs to regulate the cam inclination of the series, the set-screws serve to force said plugs outward to their proper plane, it being understood that the plugs may also be adjusted in the opposite direction by driving them in and thereafter turn the set-screws so that their ends abut those of said plugs, these adjustments being necessary when it is desirable to regulate the width between the cuts of a line of burs, caused through wear or otherwise.

When the parts are in the position as shown in Fig. 1 of the drawings, with each intermittent rotary motion of the wheel, the work-holder will be forced forward against the spring-plunger one space, the burring tool will then operate, and the wheel again move the work-holder, and so on until the plug which is on the high point of the cam is reached and a row of burs completed, the block E which carries the rasp blank is then moved to bring said blank to a new point un-

der the burring tool, preparatory to the cutting of another row of burs, the cam-wheel has now made a quarter of a revolution, and as it continues its motion it will permit the spring-plunger to intermittently move the work-holder in a reverse direction, to cut another row of transverse burs on the blank due to the gradual decline of the cam formed by the plugs until such time as said wheel has completed another quarter of a revolution, when the operation will be repeated.

While I have shown a cam-wheel having its cam surface formed to provide for the cut of four rows of burs in one revolution, it is obvious that said wheel may be formed with only two inclined faces in place of four, in which case two rows of burs would be completed with each revolution, the essential feature being the plugs set to form a gradually increasing and decreasing cam surface of the heart type, the said plugs preferably having oppositely inclined beveled working faces to permit freedom of movement of the roller against which they operate, the faces at the same time forming pockets between each pair of plugs to insure a positive seat of said roller at each intermittent movement of the feed-roller.

By the described arrangement of plugs, it will be seen that accurate adjustment of the cam-surface formed thereby can be maintained, said adjustment being essential in order to compensate for wear, which would otherwise soon cause the burs of a row to lose their uniformity through variations in the cam-wheel contour. Another advantage of the adjustable plugs being cheapness of construction, which construction permits replacing of the plug-members, and also dispenses with accuracy that would be necessary in cutting the face of a solid cam-surfaced wheel, thereby rendering it possible to manufacture the wheel of cheaper material.

I claim:

1. A cam comprising a waved-edge wheel having a series of circumferentially disposed detachable plugs fitted in the waved edge to form a continuous surface approximately parallel with said waved edge of the wheel.

2. A cam comprising a wheel having a peripheral waved edge provided with a series of openings therein parallel with the wheel-axis, plugs fitted in the openings and projecting beyond said waved edge to form a continuous corrugated surface approximately parallel with the aforesaid waved edge, and adjusting screws for the plugs carried by the wheel.

3. A cam comprising a wheel having a peripheral waved-edge provided with a series of counterbored openings therein, a series of shouldered plugs fitted in the openings, and provided with heads having flattened sides contacting with each other to form continuous gradually increasing and decreasing cam-faces approximately parallel with the waved edge of the wheel, and adjusting screws for the plugs.

4. A cam comprising a waved edge wheel provided with a series of counterbored transverse openings through the waved edge of the wheel, adjusting screws in threaded-connection with the bored openings, a series of shouldered plugs fitted in the openings provided with circular heads, the inner ends of the plugs being abutted against the adjusting-screws, the heads being flattened at their sides to form a continuous gradually increasing and decreasing cam-face approximately parallel with the waved edge of the wheel, and a spring-controlled member in opposition to the faces of the plugs.

In testimony that I claim the foregoing I have hereunto set my hand at Milwaukee in the county of Milwaukee and State of Wisconsin in the presence of two witnesses.

FREDRICK C. WESTFAHL.

Witnesses:

GEORGE FELBER,

FRED PALM.