W. M. EVENSEN.

CAM.

APPLICATION FILED JULY 26, 1917.

1,306,419.

Patented June 10, 1919.

2 SHEETS—SHEET 1.

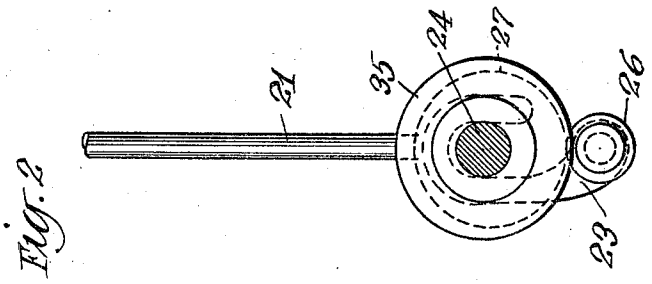


Fig. 2.

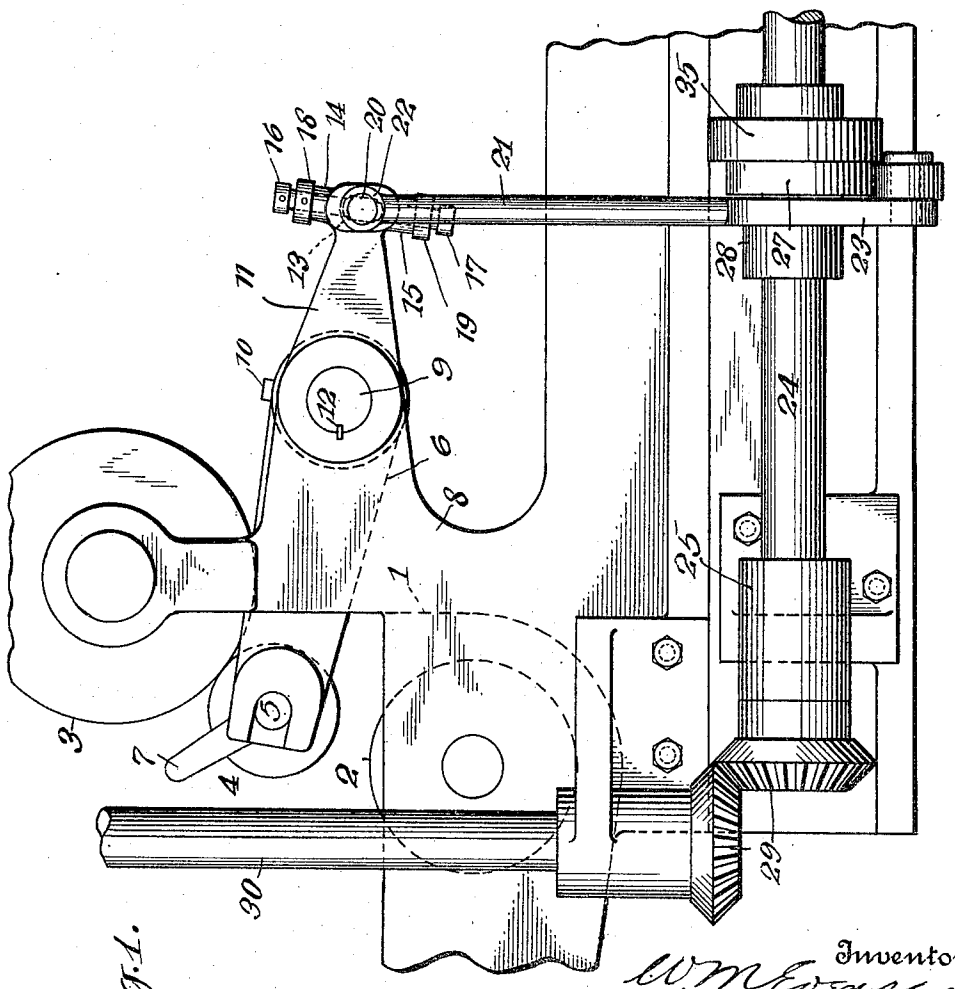


Fig. 1.

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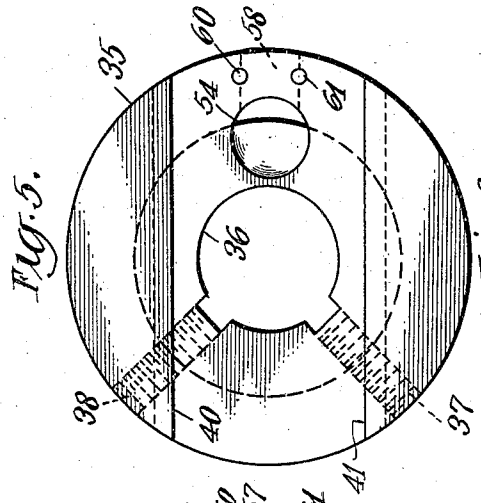


Fig. 5.

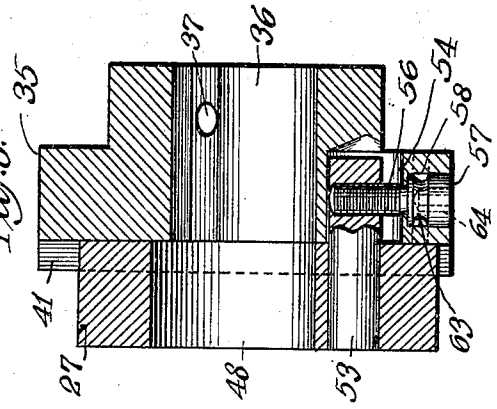


Fig. 8.

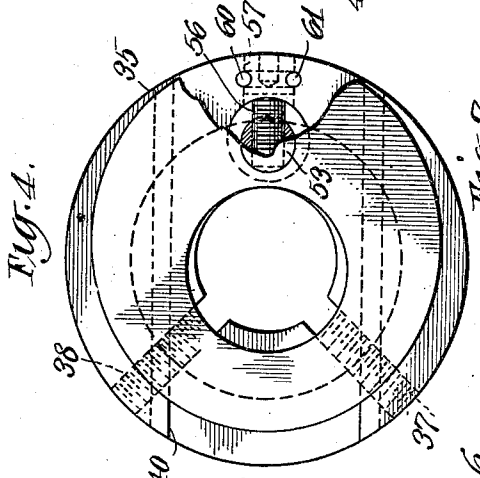


Fig. 4.

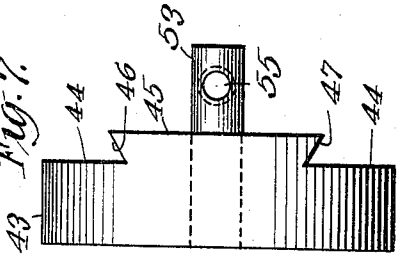


Fig. 7.

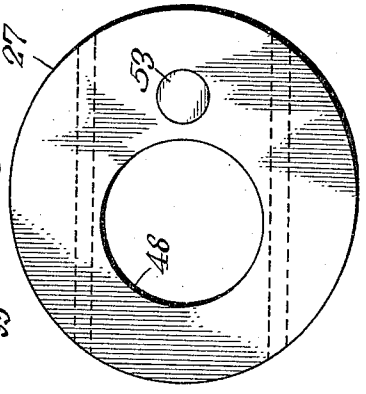


Fig. 6.

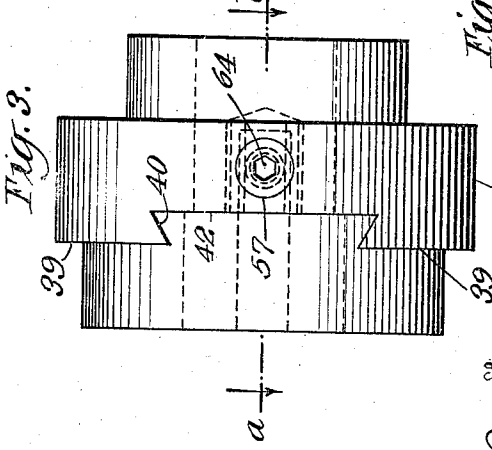


Fig. 3.

William M. Evensen Inventor

By his Attorney

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UNITED STATES PATENT OFFICE.

WILLIAM M. EVENSEN, OF CHICAGO, ILLINOIS, ASSIGNOR TO GOSS PRINTING PRESS COMPANY, A CORPORATION OF ILLINOIS.

CAM.

1,306,419. Specification of Letters Patent. Patented June 10, 1919.

Original application filed May 16, 1916, Serial No. 97,793. Divided and this application filed July 26, 1917. Serial No. 182,829.

To all whom it may concern:

Be it known that I, WILLIAM M. EVENSEN, a citizen of the United States, residing at Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Cams, of which the following is a specification.

The invention relates to a cam for giving a variable throw or travel to the actuated or driven part or mechanism, and to such a cam having means or capabilities for very nice and reliable adjustment of the kind described.

Objects of the invention will be set forth hereinafter in part, and in part will be obvious herefrom, said objects being attained through the means and combinations pointed out in the accompanying claims.

This application is a division of application Ser. No. 97,793, filed May 16, 1916.

The invention consists in the novel parts, constructions, arrangements, combinations and improvements herein shown and described.

The accompanying drawings, referred to herein and forming a part hereof, illustrate one embodiment of the invention, the same serving in connection with the description herein to explain the principles of the invention.

Of the drawings:—

Figure 1 is a fragmentary elevation of a portion of a printing press, with parts omitted, said figure showing a mechanism constructed in accordance with the principles of the invention;

Fig. 2 is a fragmentary view of the cam and connections looking at Fig. 1 from the right;

Fig. 3 is a detail edge view, on an enlarged scale, of the cam for operating the vibrating feed roller;

Fig. 4 is a face view, also on an enlarged scale of the cam, looking at Fig. 3 from the left;

Fig. 5 is a face view of the cam hub, likewise on an enlarged scale;

Fig. 6 is a face view of the cam;

Fig. 7 is an edge view of the cam looking at Fig. 6 from the right; and

Fig. 8 is a horizontal central section on the line A—B of Fig. 4.

In the parent application Ser. No. 97,793, hereinbefore referred to, the preferred embodiment of the cam was illustrated and described as a part of the inking mechanism of a printing press, and in the present exemplification the same application of the cam is preserved, although it will be understood that the cam is useful in other connections and for other purposes.

Referring by way of example to the accompanying drawing, as an exemplification of one application or use of the cam, an ink fountain is represented by numeral 1, and the fountain roller therewithin by 2. The ink drum 3 coöperates with the usual distributing or vibrating rollers (not shown), and these distributing rollers in turn cooperate with and ink the form rollers, which latter ink the forms upon the cylinders in a well-known manner.

The ink feeding roller 4 swings to and fro between the fountain roller 2 and the ink drum 3, conveying periodically a small quantity of ink from the fountain roll to the ink drum, the ink being carried forward from the latter to the form rollers in the manner and by the mechanism briefly indicated above. The fountain roll 2 is intermittently rotated for a short distance from time to time in the usual manner. The roller 4 is supported by its pintles 5 in notches or recesses in the upper end of arms 6, the roller 4 being held in position by latches 7, which latches are mounted on the arms 6, and engage the pintles 5 of the roller 4. The roller-carrying arms 6 are located within the press frame 8, and are fixed to a rock shaft 9, which shaft is journaled transversely in the press frame (only one of the arms 6 and one end of the roller 4 being shown in the drawings).

The actuating means for the ink feeding roller 3 comprises means included in the connections between the roller and its cam for varying the angular relation in either direction of the roller with respect to the cam, thereby regulating and changing as desired the length of travel of the ink-feeding roller in either direction. In the embodied form of such means, the arms 6 are fixed to the shaft 9 in a suitable manner preferably adjustably by means of set or clamping screws 10. The end of the rock shaft 9 extends outside of the press frame 8,

and from such outside end of the shaft 9 extends a lever arm 11, which is fixed to the shaft in a suitable manner, as by a key or feather 12. The outer end of lever 11 has formed therein an elongated slot 13, and at either side of the slot, the lever is provided with internally threaded bosses or extensions 14 and 15. Into these bosses, respectively, are threaded screws 16 and 17, which screws are provided respectively, with locking nuts 18, and 19, the interior ends of the screws 16 and 17 projecting into the slot 13. Projecting into the aperture 13 is a cylindrical pin 20, the inner end of the screws 16 and 17 engaging with the pin 20 on opposite sides thereof. By turning the screws 16 and 17 the travel of the ink-feeding roll may be lengthened or shortened toward either the fountain roll or the ink drum, the effective length of the rod being changed by the setting of the screws to effect this result.

The pin 20 is attached to the upper end of a rod 21, said rod at its upper end having an enlarged circular head 22 with a face bearing against a corresponding face upon the head or end of the lever arm 11. The rod 21, at its lower end, is formed as a yoke 23, straddling a shaft 24, which shaft is carried in suitable bearings 25 upon the machine frame. The yoke 23 carries a cam roll 26, said cam roll engaging the rim or periphery of a cam 27, which cam is fixed to and rotates with the shaft 24. Upon the opposite side of the yoke 23 is a collar 28, encircling the shaft 24, and holding the yoke in position with the cam roll 26 engaging the cam 27. The shaft 25 is driven in a suitable manner, as by beveled gears 29, from the shaft 30. It will be seen that by turning the screws 16 and 17, the angular relation in either direction of the arm 11 to the rod 21 and to the cam 27 may be determined and regulated as desired.

In accordance with certain features of the invention, means are provided for varying the diametral relation of the cam 27 and its shaft 24, and also for positioning the cam angularly upon its shaft. By these various means, the extent and location of the path of travel of the oscillating ink-feeding roller may be varied and determined, the amount or degree of contact and pressure between the ink feeding roller and the ink fountain roller and between the ink feeding roller and the ink drum may be nicely and accurately maintained and regulated despite variations in the size of the ink feeding roller, and at the same time the ink feeding roller is under control throughout its entire extent of travel, thereby preventing slamming of the supplying roller against the fountain roller or the ink drum.

In the embodied form of the cam, there is provided a hub fixed to and rotating with the shaft and a cam proper, preferably encircling the shaft and providing a bearing or contacting surface all the way around its periphery, thereby keeping the oscillating ink feeding roller under control at all times, the cam being diametrally variable or positionable relatively to the hub and to its shaft. In such embodied form, the hub 35 has a central opening 36 through which passes the shaft 24. The hub is held in fixed position to rotate with its shaft, and is angularly adjustable about its shaft by suitable means, such as clamping or binding screws threading into the radially arranged apertures 37 and 38. Upon the face or side of the hub 35 there is provided a dovetail or undercut part, arranged centrally across the face of the hub. As embodied, the face 39 is undercut as shown at 40 and 41 providing therebetween a flat bearing face 42 for the inner face of the cam.

The cam proper has its rim or periphery 43 as the contacting or operating surface for the cam roll. Upon its inner face 44 is a projecting portion 45 extending across the face of the cam symmetrically with respect to the center thereof, said projecting part 45 having its side edges 46 and 47 undercut or beveled so as to fit snugly and to be held by and to slide within the undercut edges 40 and 41 of the hub, as shown best in Fig. 3. The cam has its internal aperture 48 considerably larger than the internal aperture 36 of the hub and likewise considerably larger than the diameter of the shaft 24. Thus the cam may slide along the face of the hub, changing the diametral relation thereof, and the relation of the centers of the cam and its shaft with respect to each other.

Means are provided by the invention for accurately and nicely varying and determining the relation of the cam to its shaft, and in the embodied form thereof, a pin 53 is fixed in the cam 27 and projects from the inner face thereof into an opening 54, of larger size, formed in or passing through the hub 35. The pin 53 in its projecting portion, has formed therethrough an internally threaded opening 55. In this internally threaded opening 55 engages a screw 56, which screw has a head 57 within a radially disposed cylindrical opening 58 in the hub 35. The screw 56 is held in stationary position longitudinally with respect to the hub 35, while being free to rotate, and as shown pins 60 and 61 are driven respectively through holes passing through the hub at either side of the cylindrical opening 58, said pins projecting for substantially half their diameters into a rounded annular groove 63 formed in the head 57 of the screw 56. The screw is turned in a suitable manner, and preferably by an angularly shaped recess 64 formed in the top of the head.

When the screw 56 is turned, it is free to rotate with respect to the hub 35, but is longitudinally fixed relatively to the hub. As the screw 56 is rotated, by reason of its threaded engagement with the pin 53, the cam proper is moved in the guideway on the face of the hub either to the right or the left in Fig. 8. The central opening of the cam being larger than the shaft 24, and the opening 54 in the hub being larger than the pin 53, the cam can slide upon the hub and be accurately positioned by the screw, while the cam is held to the hub by the dovetail connection.

It will thus be seen that the cam has a very wide range of regulation or adjustability with the utmost degree of exactness and nicety, and at the same time the parts are held accurately and fixedly in position, and that the throw of the cam may be varied as desired, the cam roll on the rod at all times being permitted to follow the periphery of the cam and thus keep the movement of the oscillating ink feeding roll under absolute control, and nicely regulating and determining its travel toward and its contact with both the fountain roll and the ink drum.

There is thus provided by the invention a cam actuated and governed mechanism for continuously controlling the movement of the fountain feed roller lever on this type of press, and at the same time giving a variable throw or length of travel to the feed roller, so that the throw can be increased or decreased as the composition roller varies in diameter, thereby maintaining at all times the desired impingement against the fountain roller, and also the desired impingement against the ink drum.

By the screw regulation at the end of rod 21 the location of the ends of the path of travel of the ink feeding roller 3 may be changed and determined, and thereby the degree of contact of the roller 3 with both the ink drum and the fountain roll is controlled despite variations in the size of the ink feeding roller. By the positioning or adjustment of the cam upon its shaft the total extent of the path of travel of the ink feeding roller may be varied, regulated and determined, thereby compensating for variations in the size of the ink feeding roller. The cam roller is designed to follow the cam at all times to continuously control the ink feeding roller and to prevent slamming and loose motion thereof, and by changing the diametral relation of the cam and its shaft the low and high parts of the cam are varied together to maintain this relation while at the same time securing proper regulation of the location and extent of the path of travel or oscillation of the ink feeding roller.

From all the foregoing it will be understood that a mechanism has been supplied realizing the objects and advantages herein set forth, together with other objects and advantages. It will be further understood that changes may be made from the precise construction shown and described, without departing from the principles of the invention and without sacrificing its chief advantages.

What I claim as my invention and desire to secure by Letters Patent is:—

1. A cam mechanism including in combination a shaft, a hub, mounted upon and rotating with the shaft and having a guideway formed in its flat side, a cam member embracing the shaft and movable along said guideway to vary its diametral relation to the shaft, said cam member having a screw-threaded hole therein, and a rotatable screw mounted against longitudinal movement on the hub and threaded into said screw-threaded hole.

2. A cam including in combination a shaft, a hub, mounted upon and rotating with the shaft and having a guideway formed in its flat side, a cam member embracing the shaft and movable along said guideway to vary its diametral relation to the shaft, there being a recess in the hub and a part projecting from the cam member into the recess and having a screw-threaded hole therein, and a screw mounted in the hub against longitudinal movement and threaded into the hole in said part projecting from the cam member.

In testimony whereof, I have signed my name to this specification.

WILLIAM M. EVENSEN.

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