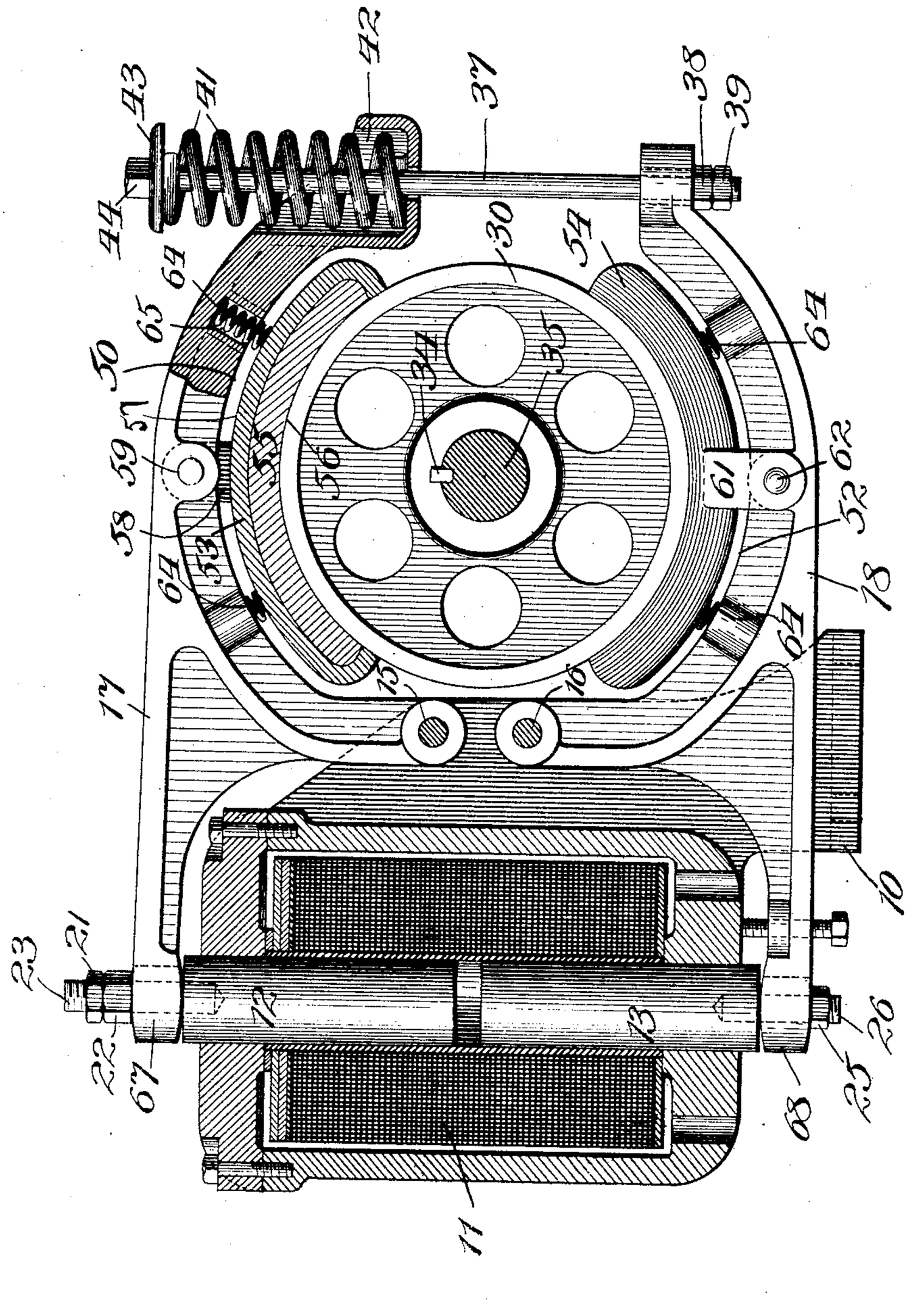
No. 766,117. PATENTED JULY 26, 1904.

F. A. RUNDLE.

BRAKE.

APPLICATION FILED MAR. 3, 1904.

NO MODEL.



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UNITED STATES PATENT OFFICE.

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BRAKE.

SPECIFICATION forming part of Letters Patent No. 766,117, dated July 26, 1904.

Application filed March 3, 1904. Serial No. 196,383. (No model.)

To all whom it may concern:

Be it known that I, FRED A. RUNDLE, a citizen of the United States, residing at Harvey, in the county of Cook and State of Illinois, have invented a new and useful Brake, of which the following is a specification in its best form now known to me, reference being had to the accompanying drawing, in which similar numerals indicate the same parts.

My invention relates to brakes, particularly to brakes for use in power machinery, such as cranes.

The object of my invention is to provide an automatic brake for such use which shall be very positive in operation, which can be easily controlled and easily and cheaply made, and which shall be efficient in operation without danger of getting out of order.

My invention consists in a brake capable of accomplishing the above objects, and particularly in a novel form of mounting for the brake-shoe whereby it is easily held in even contact with the brake-wheel.

My invention also consists in a novel pivoting of the brake-levers and the mechanism for compressing the same upon the brake-wheel.

It also consists in many details of construction which shall be hereinafter more fully described and claimed as the specification proceeds.

The single figure of the drawing represents the central sectional side view of the mechanism, illustrating my invention in its preferred form.

Rigidly secured to the frame 10 of the brake is an electromagnet 11, made up of coils of wire connected with a suitable source of electrical energy and switch. (Not shown.) This coil 11 is arranged, as shown, with iron cores 12 and 13, adapted to move up and down inside the coil. Pivoted on studs, pins, or bolts 15 and 16 are two brake-levers 17 and 18. The lever 17 is connected at one end 67 by the nuts 20 and 21 to the upper end 23 of the core 12, heretofore described. Similarly the corresponding end 68 of the lever 18 is connected by a stud 25 to the end 26 of the core 13, heretofore described. The connection between these brake-beams and the cores should be a loose one, preferably by means of slots in the brake-beam, so that as the brake-beams swing about their pivotal points the magnet-cores are still free to move in a vertical line up and down through the magnet-coil 11. On the opposite side of the pivots 15 and 16 from the magnet-coil 11 and between the brake-beams is a wheel 30, rigidly secured by a key 34 or other suitable means upon a shaft 35, to which is attached machinery which is to be controlled by the brake. The ends of the brake-beams 17 and 18, as shown, extend beyond the wheel, and through the ends of these brake-beams I pass a bolt 37, adjustably secured to one brake-beam, as 18, by nuts 38 and 39. Upon the opposite end of this bolt 37 and outside of the other brake-beam, as 17, I mount a compression-spring 41, resting in a pocket 42 in the end of the brake-beam and bearing against the under side of the plate or washer 43, which in turn bears against the under side of the head 44 of the bolt 37. From this description it will be seen that the action of the compression-spring 41 tends to compress the brake-beams upon the wheel 30, and the tension of this spring 41 can be adjusted by moving the nuts 38 and 39 along bolt 37.

In order to give the device of my invention its preferred form, I cut away the brake-beam 17 in the curve 50 and the brake-beam 18 in the curve 52 on a radius drawn from the center of shaft 35. I also provide two special brake-shoes 53 and 54, which may be made solid or which may have their bearing-faces filled in with wooden blocks or with special braking material 55, as shown in the brake-shoe 53. I make this bearing-face 56 of the shoe fit the surface of the brake-wheel 30, and I make the upper face 57 of the shoe, curved in a radius drawn from shaft 35, less than the radius of the curvature of the face 50 of the brake-beam. Extending from the upper brake-shoe 53 is a lug or arm 58, pivoted at 59 to the upper brake-arm 17. Extending from the lower brake-shoe 54 is another lug or arm 61, pivoted at 62 to the lower brake-arm 18.

In order to insure the brake shoe or shoes bearing evenly upon the brake-wheel 30 when in contact with the wheel and to insure the brake shoe or shoes always clearing the wheel

when the brake-beam is moved away from the wheel, I make the brake-shoe extend over a considerable portion of the circumference of the wheel 30, as shown, and I also mount on the opposite sides of the pivotal points 59 and 62 of the brake-shoes one or more springs 64, which rest in recesses 65, cut in the brake-beams, as shown in section at the outer end of the upper brake-beam 17.

In the operation of my invention I assemble the apparatus as shown in the drawing, in which position the compression-spring 41 presses the brake-beams 17 and 18 together, thereby pressing the brake-shoes 53 and 54 upon the wheel and firmly locking the wheel 30 and any mechanism attached to it in a stationary position. In this position the cores 12 and 13 are withdrawn as far as possible from each other and as far as possible out of the magnet-coil 11. The springs 64 adjust the brake-shoes to the brake-wheel so that the brake-shoes bear evenly at all points of their contact with the wheel. When now the operator desires to start his machinery, he by mechanism not shown turns a current of electricity through the magnet-coil 11, which causes said magnet to draw the cores 12 and 13 into the magnet-coil toward each other. This action draws the ends 67 and 68 of the brake-levers toward each other, thereby moving the opposite ends of the levers away from each other against the action of compression-spring 41 and withdrawing the brake-shoes 53 and 54 from the wheel 30, which releases the wheel 30 and the mechanism attached to it, so that it can be operated. When the operation of such machinery is completed, the operator cuts off the current of electricity from magnet 11, thereby releasing the power upon the cores 12 and 13. As soon as this is accomplished the spring 41 immediately compresses the outer ends of the brake-levers upon the wheel 30 and locks the wheel and the mechanism attached to the shaft 35 in the manner heretofore described.

Quite an important feature of my invention is the pivoting of the brake-beams 17 and 18 at the points 15 and 16 very near the center line of the device, which allows the levers to act much more efficiently than where the brake-beams are made substantially straight and the pivotal points are in such straight brake-beams, as they have been frequently heretofore constructed. The levers may both be pivoted on a common pivot in a line through the center of the shaft and the center of the magnet without departing from my invention.

I do not wish to be limited to the exact details of construction, which may be varied within reasonable limits without departing from the principle of my invention.

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

1. In mechanism of the class described, the combination of a brake-wheel, two brake-beams on opposite sides of said wheel, brake-shoes on the brake-beams adapted to bear against the wheel, a magnet between said brake-beams adapted to control one end of each of said beams, a bolt through the opposite ends of said brake-beams and a compression-spring adapted to force the ends of said brake-beams together upon said wheel against the action of said magnet.

2. A brake mechanism comprising a wheel, a brake-beam adjacent to said wheel, a brake-shoe pivotally mounted upon said brake-beam bearing on said wheel and spring mechanism interposed between said brake-beam and said brake-shoe, adapted to hold said brake-shoe in uniform balance with reference to said wheel and means for moving said brake-beam toward said wheel.

3. A brake mechanism comprising a wheel, a brake-beam, a brake-shoe pivotally mounted upon the brake-beam adapted to bear upon the wheel, springs upon opposite sides of the pivotal point of the brake-shoe mounted in recesses within the brake-beam adapted to bear upon the brake-shoe and hold it in balance with reference to said wheel and means for moving said brake-beam toward said wheel.

4. In mechanism of the class described, the combination of a magnet, two movable cores within said magnet, a wheel adjacent to said magnet, two brake-beams pivotally mounted between said wheel and magnet on or near a line drawn through the center of said wheel and the center of said magnet, brake-shoes on the brake-beams adapted to bear upon said wheel, mechanism connecting one end of each of said brake-beams to a core of said magnet and means for forcing the opposite ends of said brake-beams together upon said wheel.

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