

No. 786,661.

PATENTED APR. 4, 1905.

S. A. MOORE.  
FRICTION BRAKE.  
APPLICATION FILED OCT. 13, 1904.

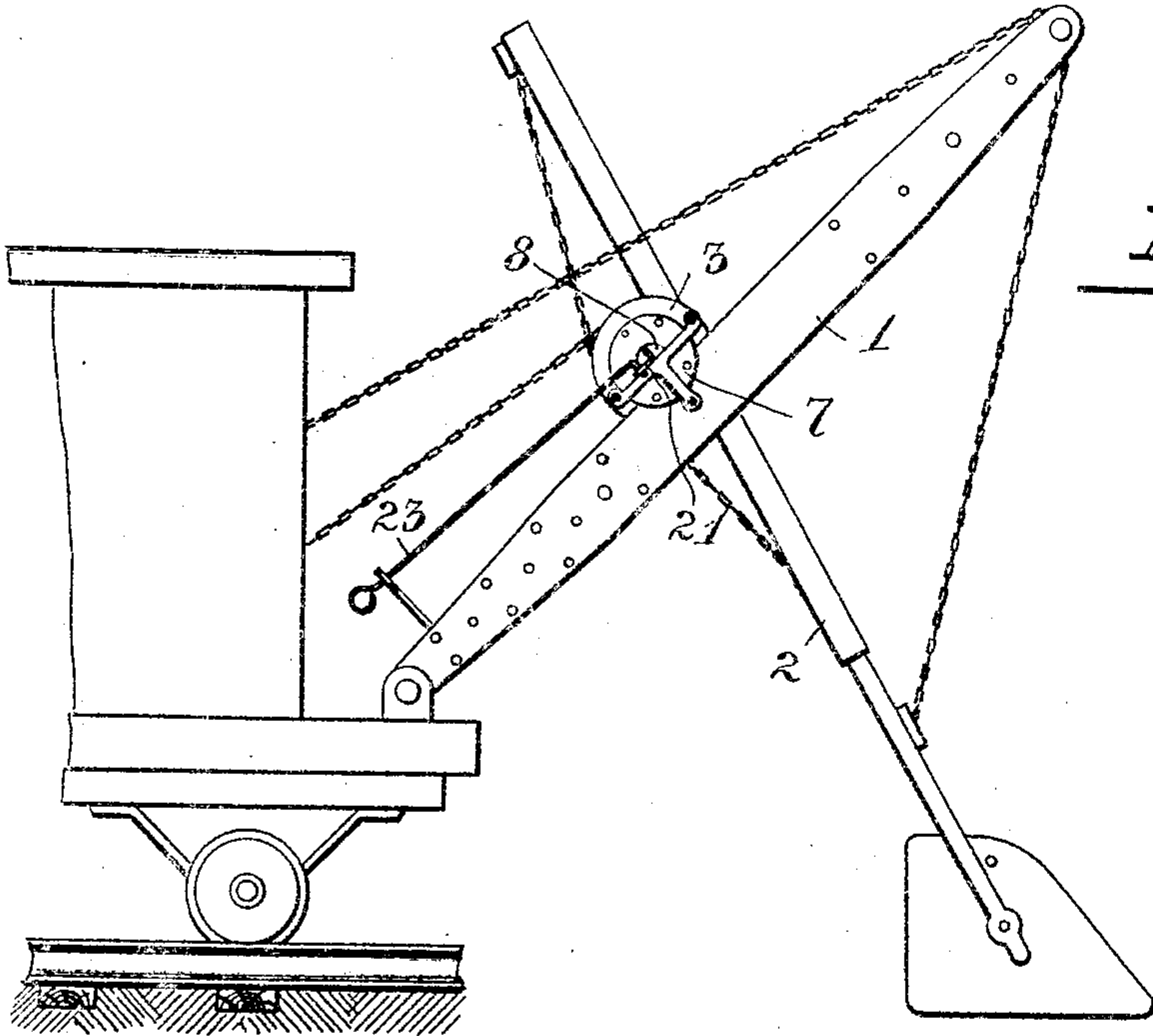


Fig. 1.

Fig. 2.

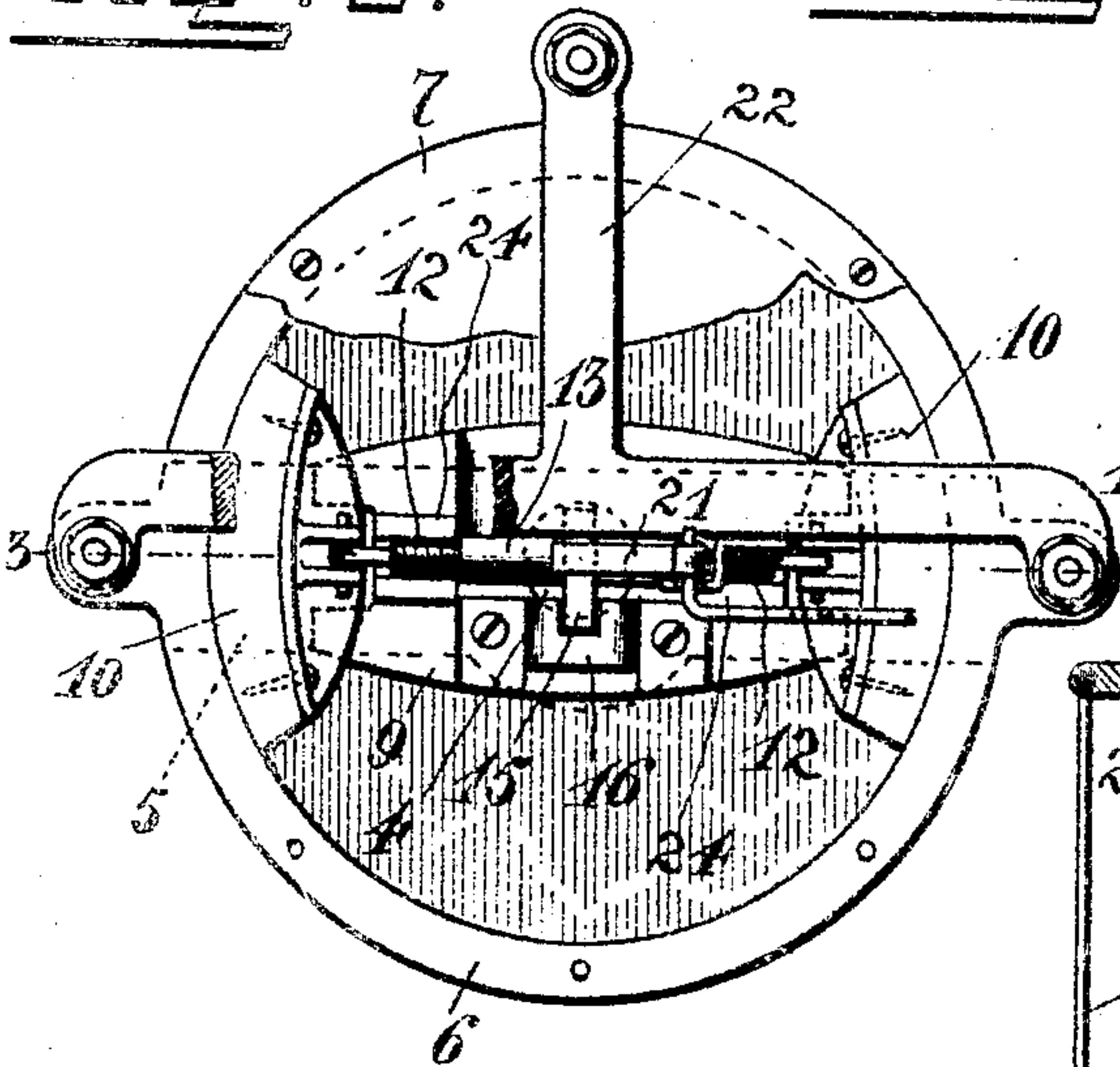
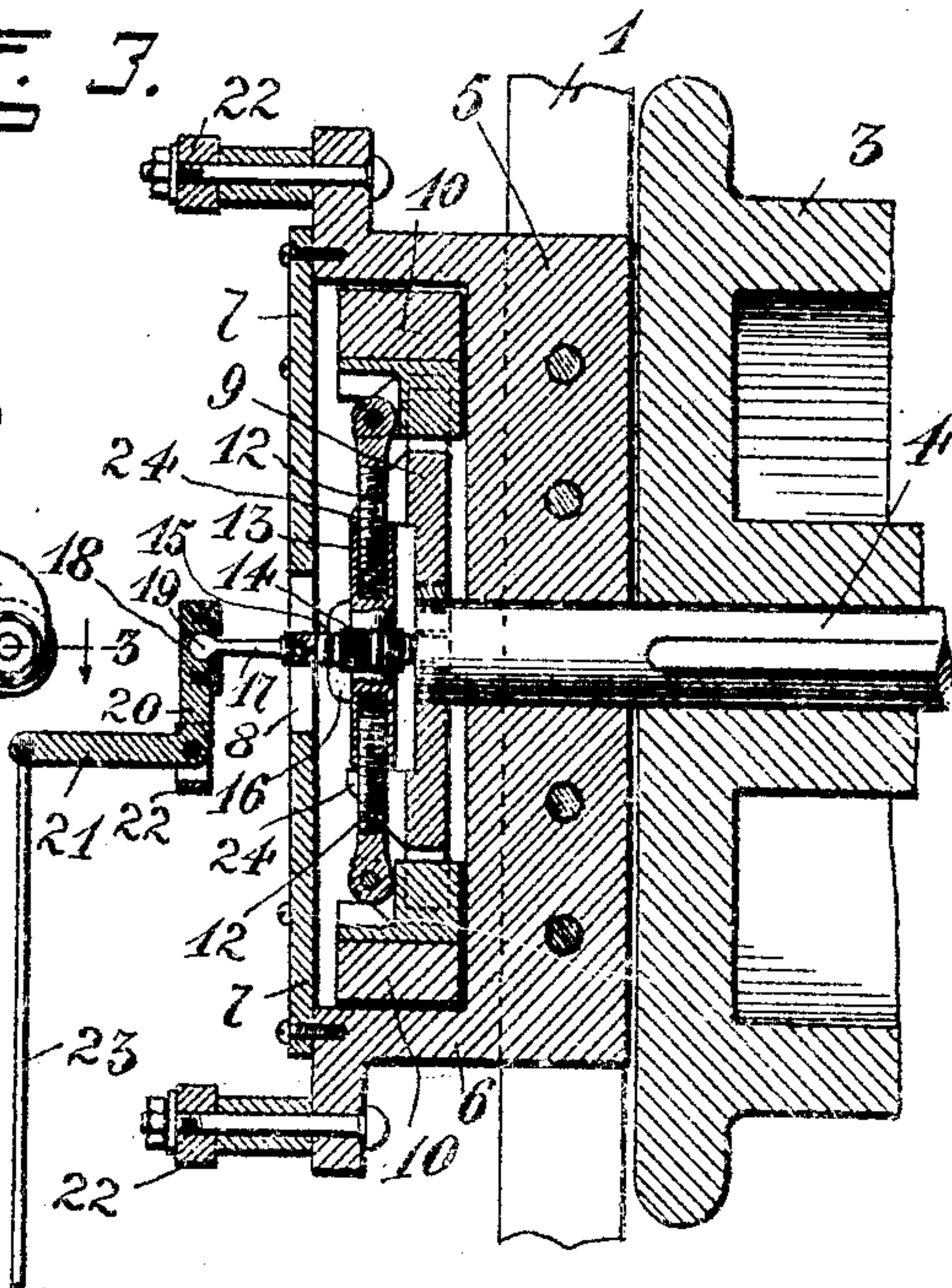


Fig. 3.



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# UNITED STATES PATENT OFFICE.

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## FRICTION-BRAKE.

SPECIFICATION forming part of Letters Patent No. 786,661, dated April 4, 1905.

Application filed October 13, 1904. Serial No. 228,345.

*To all whom it may concern:*

Be it known that I, SAMUEL A. MOORE, a citizen of the United States, residing at Pana, in the county of Christian and State of Illinois, have invented certain new and useful Improvements in Friction-Brakes for Excavating-Machines; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in friction-brakes for excavating-machines.

The object of the invention is to provide a braking device for the dipper arm or beam of excavating-machines whereby the descent of the same may be readily and perfectly controlled.

A further object is to provide a braking mechanism of this character which will be simple, strong, and durable in construction, reliable, efficient, and easily operated in all kinds of weather, the same being inclosed and protected by a suitable casing, which forms a part of the device.

With these and other objects in view the invention consists of certain novel features of construction, combination, and arrangement of parts, as will be hereinafter more fully described, and particularly pointed out in the appended claim.

In the accompanying drawings, Figure 1 is a side elevation of an excavating-machine, showing the application of the device. Fig. 2 is a side view, on an enlarged scale, of the braking mechanism, the side of the casing being removed to disclose the arrangement of the parts; and Fig. 3 is a sectional view of the same on the line 3 3 of Fig. 2.

Referring more particularly to the drawings, 1 denotes the boom of an excavating-machine. 2 denotes the dipper arm or beam of the same. Arranged on the boom 1 is the usual dipper-controlling drum 3, which is fixed on a suitably-mounted shaft 4. One end of the shaft 4 is journaled in a box 5, fixedly mounted on the boom 1. On the box 5 is formed or fixed a cylindrical casing 6, which is provided with a removable cover-plate 7, which is formed in two sections to facilitate

the removal of the same. In the cover 7 is formed a centrally-disposed aperture or hole 8.

On the end of the shaft 4 within the casing 6 is fixedly mounted a cross-head 9, on the end of which is slidably mounted segmental brake-shoes 10. To said brake-shoes 10 are pivotally connected the outer ends of right and left hand threaded bolts 12, the inner ends of which are adapted to engage the right and left hand threaded bores of an operating nut or sleeve 13, whereby when said sleeve or nut is rotated in one direction or the other said bolts will be projected or retracted, thus engaging or disengaging the brake-shoes 10 with the inner cylindrical wall of the casing 6. In order that the nut or sleeve 13 may be rotated in either direction, the same is provided midway between its ends with an annular series of gear-teeth 14, with which is adapted to be engaged a rack-bar 15. The rack-bar 15 is slidably mounted in a guide-bracket 16, secured to the cross-head 9. On the outer end of the rack-bar 15 is formed a right-angularly disposed head, on which is formed an outwardly-projecting cylindrical arm 17, on the outer end of which is formed a spherical head 18. The head 18 is adapted to be engaged by a socket 19, formed in the short arm 20 of a bell-crank lever 21, which is suitably mounted upon a frame 22, secured to the outer side of the casing 6. To the long arm of the bell-crank lever 21 is connected the outer end of an operating-rod 23, the opposite end of which extends to within convenient reach of the operator, whereby said bell-crank lever may be rocked to project or retract the rack-bar 15, which will rotate the sleeve or nut 13 in one direction or the other, which movement will project or retract the bolts 12, and thereby engage or disengage the brake-shoes 10 from the cylindrical wall of the casing 6. The bolts 12 are held in place and guided between pairs of laterally-projecting lugs 24, formed on the outer face of the cross-head 9.

By the use of a frictional brake as herein shown and described the movement of the shaft and dipper-drum may be readily controlled, thereby controlling the descent of the dipper arm or beam. By inclosing the operating mechanism of the brake within the



casing 6 the same will be protected from the weather and will at all times be in condition for use and will be found to be superior to and to possess many advantages over the common form of band-brake used in connection with the drum-shaft of excavating-machines, dredges, and similar devices.

From the foregoing description, taken in connection with the accompanying drawings, the construction and operation of the invention will be readily understood without requiring a more extended explanation.

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

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

In a braking mechanism, the combination with a shaft, of a journal-box, a cylindrical casing arranged on said box, a removable

cover for said casing, a cross-head arranged within said casing and fixed on the end of said shaft, segmental brake-shoes slidably mounted on the ends of said cross-head, right and left hand threaded bolts connected at one end to said brake-shoes, a right and left hand threaded nut or sleeve adapted to receive the free ends of said bolts, an annular series of gear-teeth formed on said nut or sleeve, a rack-bar adapted to be engaged with said teeth, a pivotally-mounted bell-crank lever, means whereby the same is connected with said rack-bar to reciprocate the same and an operating-rod connected to said bell-crank lever, substantially as and for the purpose described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

SAMUEL A. MOORE.

Witnesses:

D. M. KEYES,

GEORGE L. BALDWIN.