No. 815,022. PATENTED MAR. 13, 1906.

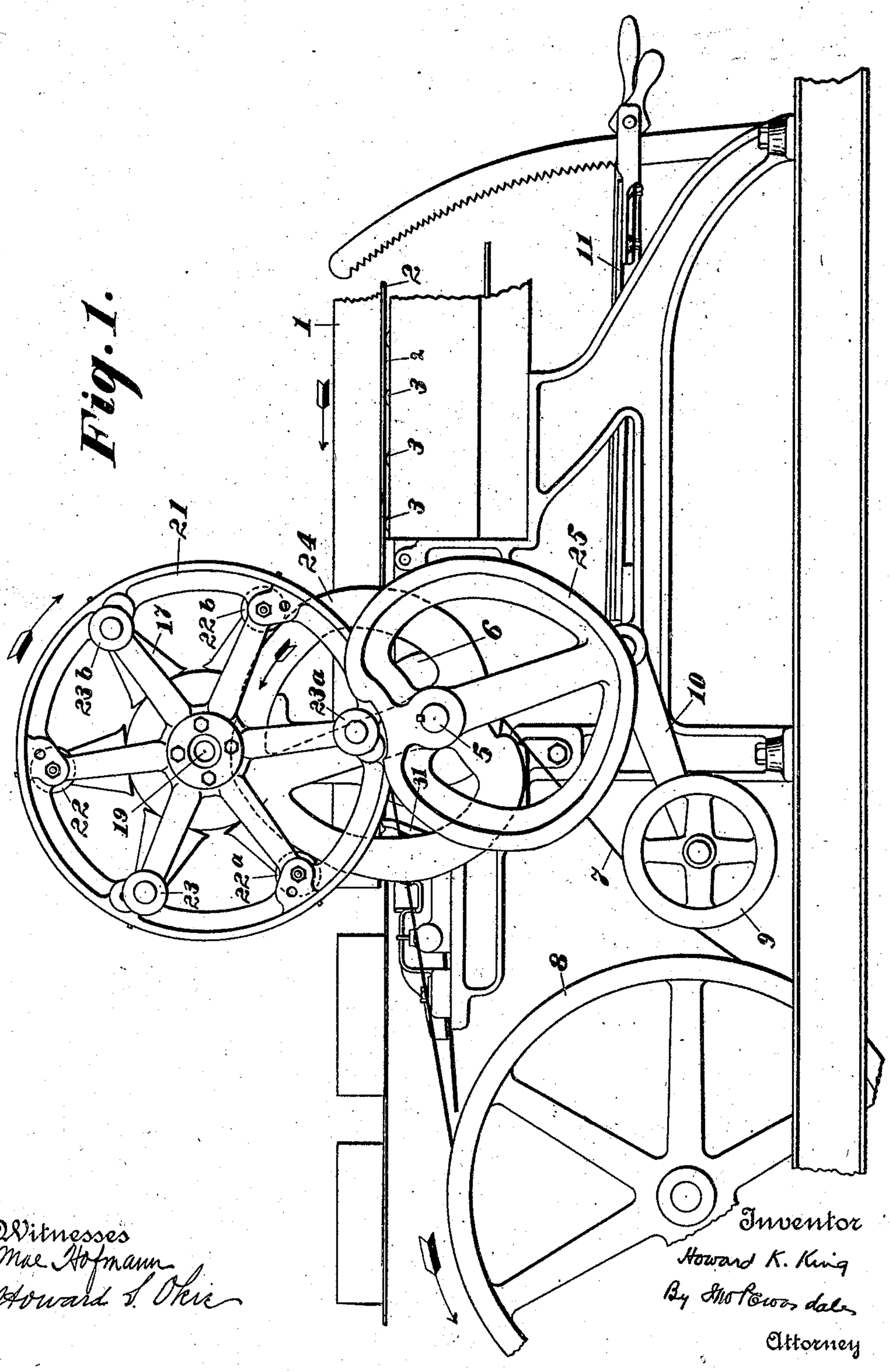
H. K. KING.

CUT-OFF MECHANISM FOR BRICK MACHINES.

APPLICATION FILED JAN. 18, 1905.

3 SHEETS—SHEET 1.

Fig. 1.



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3 SHEETS—SHEET 2.

Fig. 4.

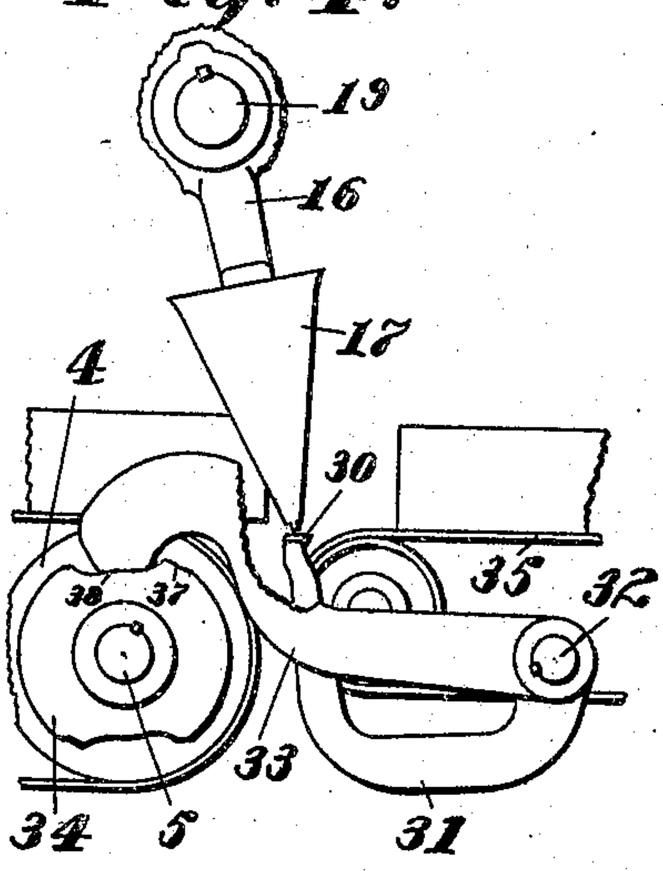
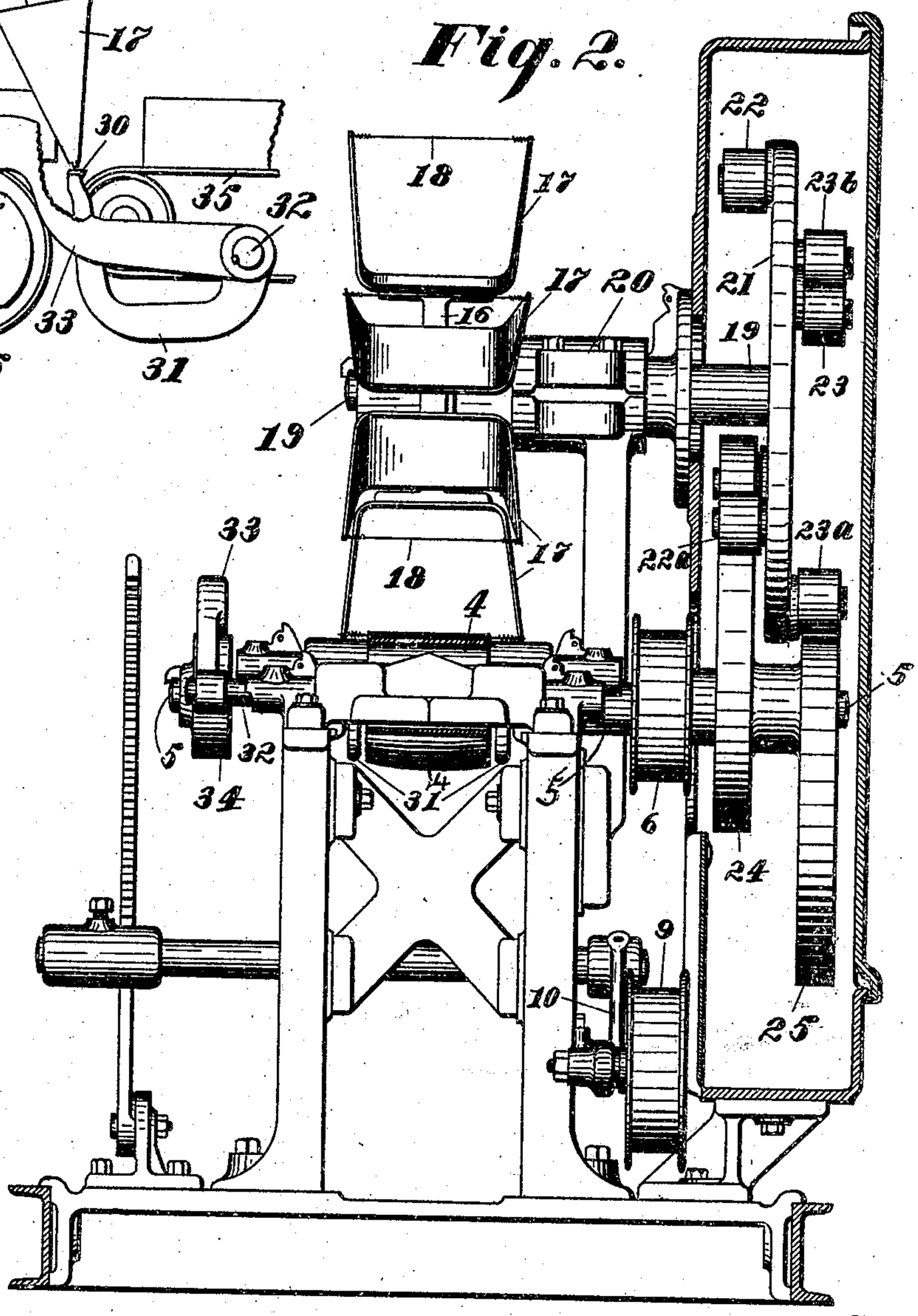


Fig. 2.



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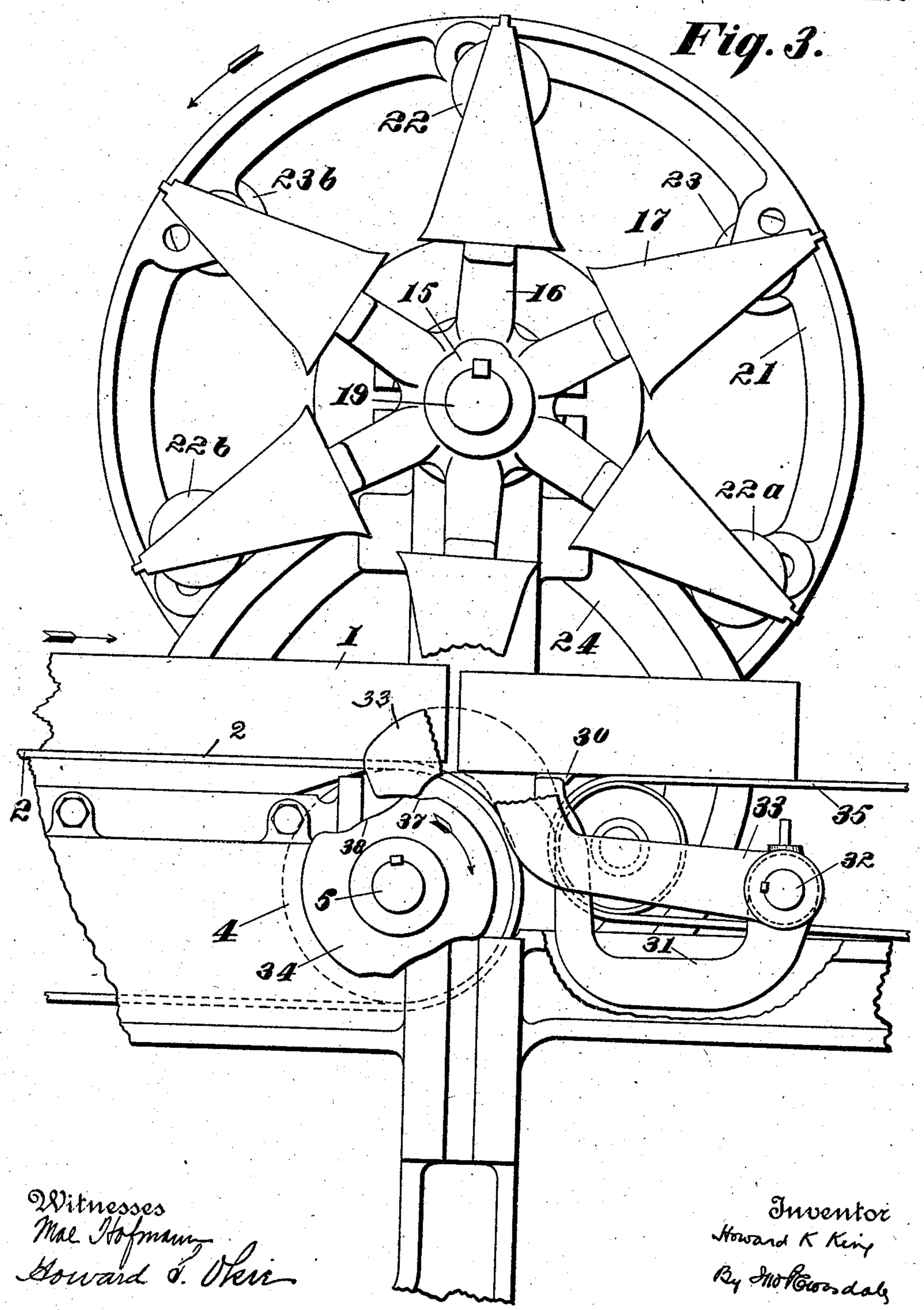
3 SHEETS—SHEET 3.

Fig. 3.



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UNITED STATES PATENT OFFICE.

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CUT-OFF MECHANISM FOR BRICK-MACHINES.

No. 815,022. Specification of Letters Patent. Patented March 13, 1906.

Application filed January 18, 1905. Serial No. 241,589.

To all whom it may concern:

Be it known that I, HOWARD K. KING, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and useful Cut-Off Mechanism for Brick-Machines, of which the following is a specification.

My invention relates to cut-off mechanism for brick-machines, and is an improvement on the mechanism shown and described in Letters Patent to Cyrus Chambers, Jr., No. 362,204, dated May 3, 1887, and is also an improvement on the mechanism shown in patent to me, No. 612,249, dated October 11, 1898.

The object of my invention is to afford improved means for the automatic control of the cut-off wheel, so that the movement of the same shall be positively regulated with respect to the movement of the bar of clay or other plastic material to be cut, said automatic controlling means being itself the actuating means for the cut-off and being regulated by the speed of travel of the bar insures the various required relative speeds of the cut-off.

My invention also comprises improved means for operating the movable support or delivery-plate, which is positioned beneath the continuous bar, close to, but just beyond, the point of severance of the same.

I accomplish my object by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of the cut-off mechanism and associated parts with other parts of the machine broken away. Fig. 2 is a front elevation of same with the housing containing the cams and cam-wheels in section. Fig. 3 is a side elevation, on an enlarged scale, of the cut-off wheel, showing the supporting mechanism of the movable delivery-plate. Fig. 4 is a detail of this same supporting mechanism in a different position.

Similar numerals refer to similar parts throughout the several views.

Referring to Fig. 1, 1 represents the continuous bar of clay traveling from the die as shown in patent to Chambers above referred to. This bar travels upon the regulating-belt 2, which is supported upon a series of rollers 3 and returns about the measuring-pulley 4, mounted on shaft 5. (See Figs. 2 and 3.) Upon the same shaft 5 is mounted the pulley 6, which is connected by the helping-belt 7 with wheel 8, which is driven from any suitable source of power. The tension-pulley 9, carried on lever 10, is adapted to be operated by the hand-lever 11 to regulate the tension of said helping-belt, so that the required amount of power may be derived from wheel 8 necessary to coöperate with the power exerted by the moving bar 1 upon the belt 2 to operate the mechanism hereinafter described.

Above the traveling bar 1 is suitably mounted the wire cut-off similar to the device described in the patents above referred to. This cut-off comprises a wheel or hub 15, having equidistant radial arms or spokes 16, to the free ends of which are secured elastic steel bows 17. To the outer extensions of the bows are secured the cut-off wires 18. The hub 15 is mounted on the shaft 19, which is suitably supported in the journal 20, secured to the stationary parts of the machine. Upon the opposite end of this shaft 19 is mounted the roller-wheel 21, provided on one side thereof with a series of equidistant rollers 22, 22^a, and 22^b and on the other side with a series of equidistant and symmetrically-arranged rollers 23, 23^a, and 23^b. Upon the shaft 5 are also mounted the two cams 24 and 25, adapted to coöperate with the rollers 22, 22^a, and 22^b and 23, 23^a, and 23^b, respectively. These cams 24 and 25 are preferably in one piece or are both keyed to the shaft 5, and therefore have a simultaneous rotation. The form of each cam is such with respect to the position of its coöperative rollers that by the rotation of said cam through approximately one-half of its circumference the roller-wheel 21 is caused to travel in the direction of the arrow in Fig. 1. For example, the cam 24, as shown in Fig. 1, is traveling in the direction of the arrow upon said cam and is operating upon roller 22^a to force the wheel 21 in the direction of its arrow. At the same time wheel 22^b is traveling down the inclined periphery of cam 24 exactly as 22^a is traveling up the opposite incline of said periphery. From this it results that while wheel 21 is positively carried forward by the coöperation of cam 24 and wheel 22^a until the highest point of the incline of

said cam is reached the coöperation of 22^b with cam 24 positively prevents any backlash of said wheel 21, thereby securing a positive relationship between the cams and the coöperating wheels throughout the entire rotation. Before wheel 22^a reaches the highest point of incline of cam 24 the periphery of cam 25, which is exactly symmetrical with cam 24, has come into engagement with wheel 23^a, thereby coöperating with cam 24 and wheel 22^a in causing the forward movement of wheel 21 until said wheel 22^a has reached said highest point of incline of cam 24. The coöperation of cam 25 and wheel 23^a then continues the forward movement of wheel 21 until after the cam 24 has made a sufficient rotation to come into a similar operative relationship with wheel 22^b, and thus is repeated the cycle. The taking up of the propelling-work by the one cam before the other has ceased to propel wheel 21 and the constant coöperation of the rollers with the downward slope of said cams while the upward slope is pushing the wheel 21 around result in a smooth and positive actuation of wheel 21 without jar or backlash. The shape of the cams provides for the desired varying speed of rotation of shaft 19 with respect to the speed of travel of the bar, said speed of rotation being at all times controlled by the movement of the bar 1. The wire cutters being rotated by the shaft 19, it follows that the above-described actuation of said wheel 21 results in such actuation of the cut-off as to secure a straight cut of the bar 1 into bricks, the angle of cut depending upon the shape of the cams 24 and 25. The driving of the cut-off wheel by the cams instead of driving the cams by the cut-off mechanism, as was done in the devices shown in the patents above referred to, obviously results in a great economy of power and a smoothness of operation.

The improvement in the movable delivery-plate 30 for supporting the bar of clay close to the point of severance thereof by the wire is as follows: This delivery-plate 30 is carried by the arm 31, which is keyed to the shaft 32. To this shaft 32 is also keyed the arm 33, which is adapted to coöperate at its free end with and be operated by the cam 34, which is mounted and operated by shaft 5. Heretofore this mechanism has been so constructed that immediately upon the completion of the cut of the bar 1 the form of cam 34 was such as to permit immediately the full drop of arm 33, so as to depress plate 30 to clear its obstruction to the travel of wire 18. The objection to this operation, however, was that such a drop of plate 30 as was necessary to clear the wire was below the plane of the carrying-off belt 35, and as only a portion of the severed brick had been delivered thereto the depression of the delivery-plate below this plane caused the brick to tilt up so that its forward upper corner, especially when the brick is unusually thick, was encountered by one of the neighboring cut-off wires and damaged thereby. My improvement consists in the formation of the cam 34 as shown in Figs. 3 and 4—that is, with a preliminary depression 37, which permits the member 33 to drop sufficiently to bring the under side of the brick into the plane of belt 35. This momentary resting or dwell in the position shown in Fig. 3 permits the brick to get safely started on belt 35, when the further travel of cam 34 brings the end of member 33 into the further depression 38 of said cam to secure plate 30 in the final depressed position—that is to say, that the cam 34 is so shaped as to cause the movement of the plate 30 to and through the three positions, with the necessary dwell in each, as follows: to the position in which the plate shall receive the severed brick, being the position shown in Fig. 1, the plate remaining in this position until the brick has been entirely severed from the bar, then to the position in which the plate delivers the brick to the carrying-belt 35, remaining in said position long enough for said brick to get started on said belt, and then to the position in which the plate will clear the moving cut-off wire, remaining in said position until the wire has safely cleared, then back to the first position.

What I claim is—

1. In combination with a brick-machine comprising means for forming and moving a continuous bar of plastic material, cam-operated wire cut-off mechanism controlled by the travel of the bar.

2. A cam operated and controlled wire cut-off for brick-machines controlled by the travel of the clay bar.

3. In combination with a brick-machine comprising means for forming and moving a continuous bar of plastic material, a cut-off device comprising cut-off wires and means for moving the same across the path of travel of the bar, said moving means comprising a cam controlled by the travel of the bar.

4. In a brick-machine, the combination of a cut-off wire adapted to move across the path of travel of a horizontally-moving bar to sever the same into brick lengths, and a cam for so moving said wire relatively to the moving bar as to cause a straight cut of said bar.

5. In a brick-machine, the combination of a cut-off wire adapted to move across the path of travel of a horizontally-moving bar to sever the same into brick lengths, and cam-operated means controlled by the moving bar for so moving said wire relatively to the moving bar as to cause a straight cut of said bar.

6. In combination with a brick-machine comprising means for forming and moving a continuous bar of plastic material, rotary

wire cut-off mechanism and means controlled by the travel of the bar for causing the rotation of the cut-off at varying speed.

7. In combination with a brick-machine comprising means for forming and moving a continuous bar of plastic material, cut-off mechanism therefor comprising cut-off wires and supporting structure therefor, mounted upon a rotatable shaft, and a cam, having a rotation relative to the travel of the bar, for causing the rotation of said shaft.

8. In combination with a brick-machine comprising means for forming and moving a continuous bar of plastic material cut-off, mechanism therefor, comprising cut-off wires and supporting structure therefor, mounted upon a rotatable shaft, and a cam controlled by the movement of the bar, for causing and controlling the rotation of said shaft.

9. In combination with a machine for forming and moving a continuous bar of plastic material, a measuring-pulley having operative relationship therewith, a rotatable shaft, a cut-off wire and supporting structure therefor mounted upon said shaft, and a cam rotating with the measuring-pulley for causing and controlling the rotation of said shaft.

10. In combination with a machine for forming and moving a continuous bar of plastic material, a regulating-belt moving therewith, a rotatable shaft, a cut-off wire, a supporting structure therefor mounted upon said shaft, a cam for causing and controlling the rotation of said shaft, and means whereby the rotation of the cam is controlled by the travel of the measuring-belt.

11. In combination with a machine for forming and moving a continuous bar of plastic material, a rotatable shaft, a cut-off wire, a supporting structure therefor mounted upon said shaft, a plurality of rollers mounted upon said shaft symmetrically positioned and at a distance from the shaft's axis and a cam, having a rotation relative to the travel of the bar, for coöperating with said rollers for causing the rotation of the shaft.

12. In combination with a machine for forming and moving a continuous bar of plastic material, a rotatable shaft, a cut-off wire, a supporting structure therefor mounted upon said shaft, a roller-supporting structure mounted upon said shaft provided with two series of rollers one on each side thereof and a cam, having a rotation relative to the travel of the bar, for each series of rollers for coöperating therewith for causing the rotation of the shaft.

13. In combination with a machine for forming and moving a continuous bar of plastic material, a rotatable shaft, a cut-off wire, a supporting structure therefor, mounted upon said shaft, a roller-supporting structure mounted upon said shaft provided with two series of rollers one on each side thereof, and a cam, having a rotation relative to the travel of the bar, for each series of rollers for coöperating therewith for causing and controlling the rotation of the shaft.

14. In combination with a machine for forming and moving a continuous bar of plastic material, a rotatable shaft, a cut-off wire, a supporting structure therefor mounted upon said shaft, means for controlling the movement of the cut-off wire relatively to the movement of the continuous bar, a movable delivery-plate and cam-operated means for moving it, with the required dwell in each position, through three different positions.

15. In combination with a machine for forming and moving a continuous bar of plastic material, a rotatable shaft, a cut-off wire, a supporting structure therefor mounted upon said shaft, means for controlling the movement of the cut-off wire relatively to the movement of the continuous bar, a movable delivery-plate adapted to be shifted from one position to another, with the required dwell in each, through three different positions with each cut-off operation and cam means for causing such operation.

16. In combination with a machine for forming and moving a continuous bar of plastic material, a cut-off wire and means for causing the same to cross the path of travel of said bar, a carry-off belt for the severed sections of said bar, a delivery-plate adapted to be moved from one to the other, with the required dwell in each, of the following positions, the position in which first it receives the severed section, then delivers the severed section to the carry-off belt, and then drops out of the path of travel of the cut-off wire, and cam-operated means for causing such actuation.

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