

(No Model.)

2 Sheets—Sheet 1.

H. R. & J. VAN EYCK.
BRICK CUTTING MACHINE.

No. 532,927.

Patented Jan. 22, 1895.

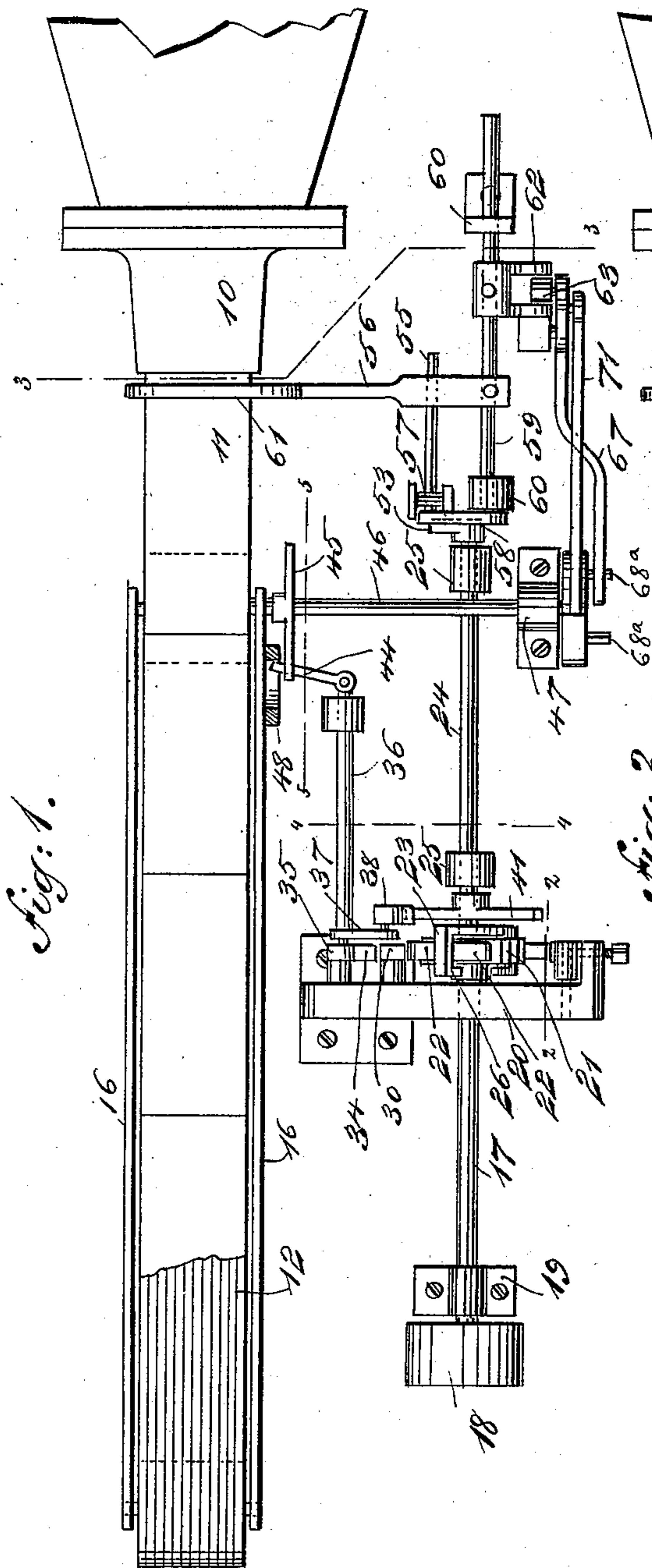


Fig. 1.

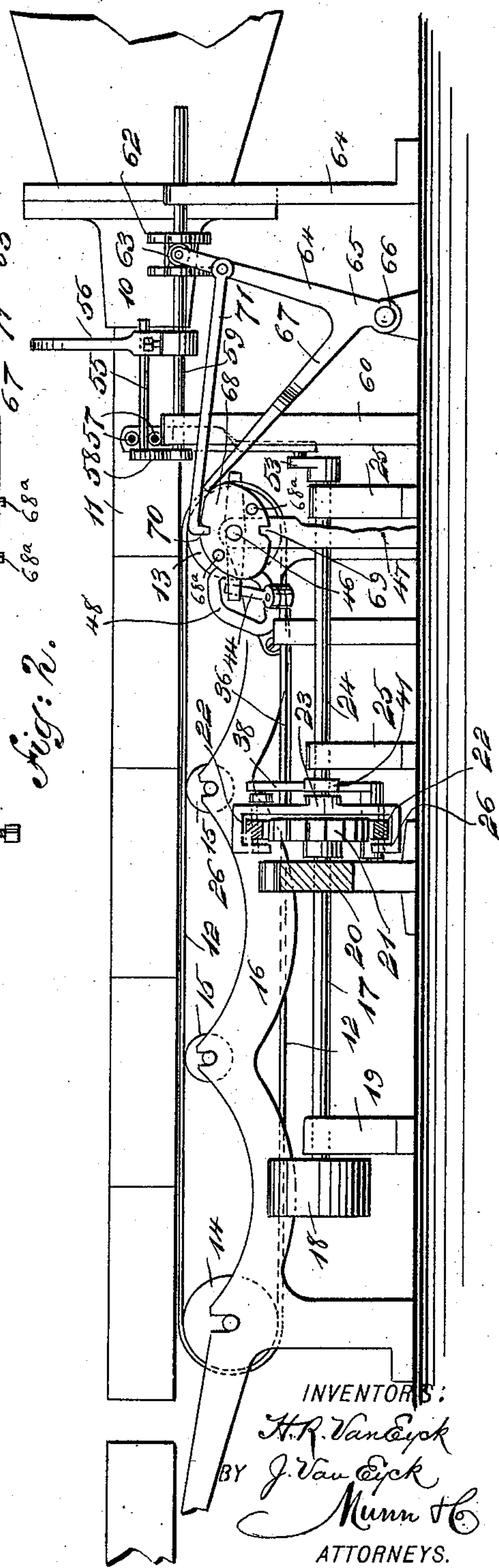


Fig. 2.

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ATTORNEYS.

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Fig. 3.

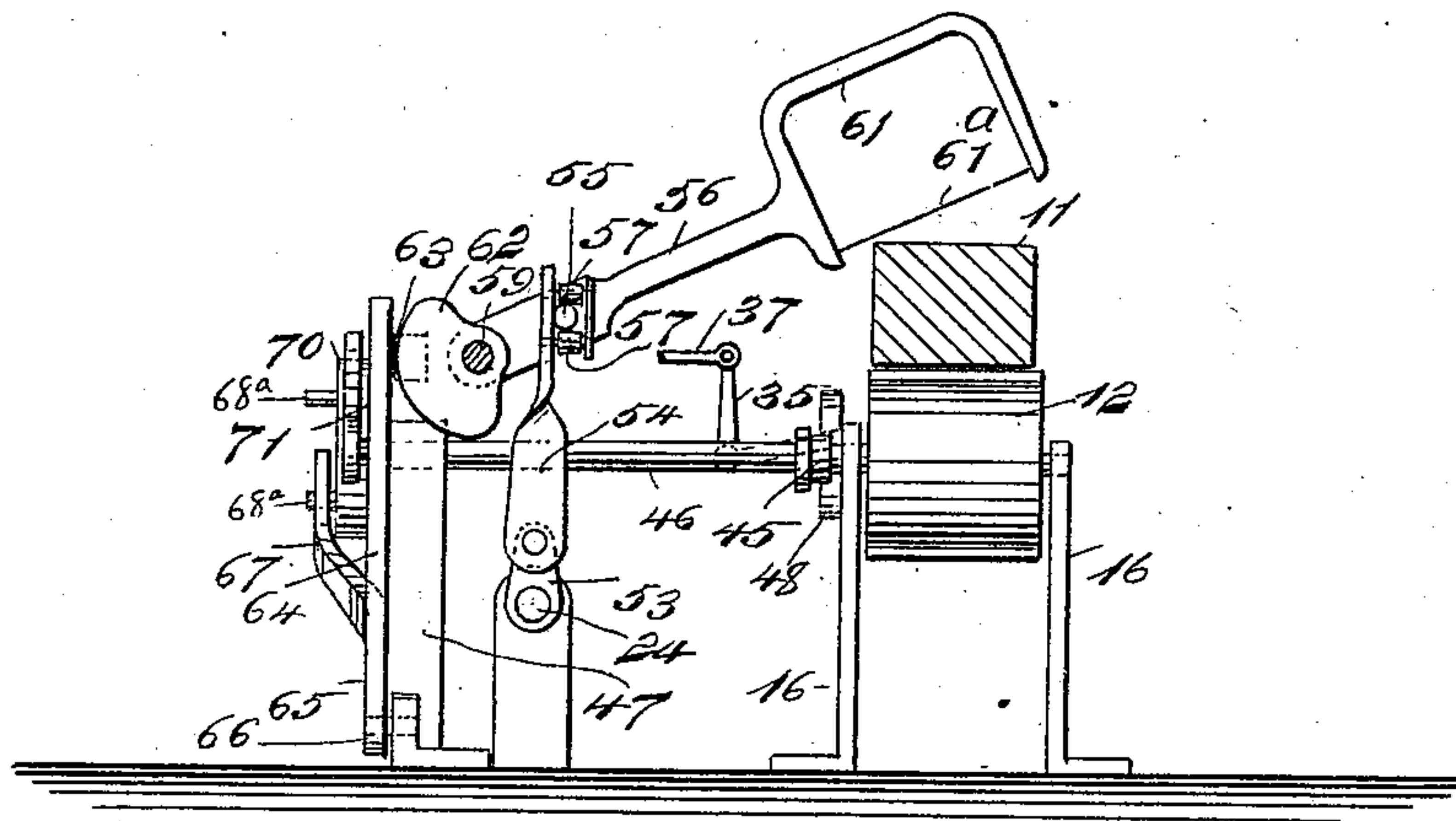


Fig. 4.

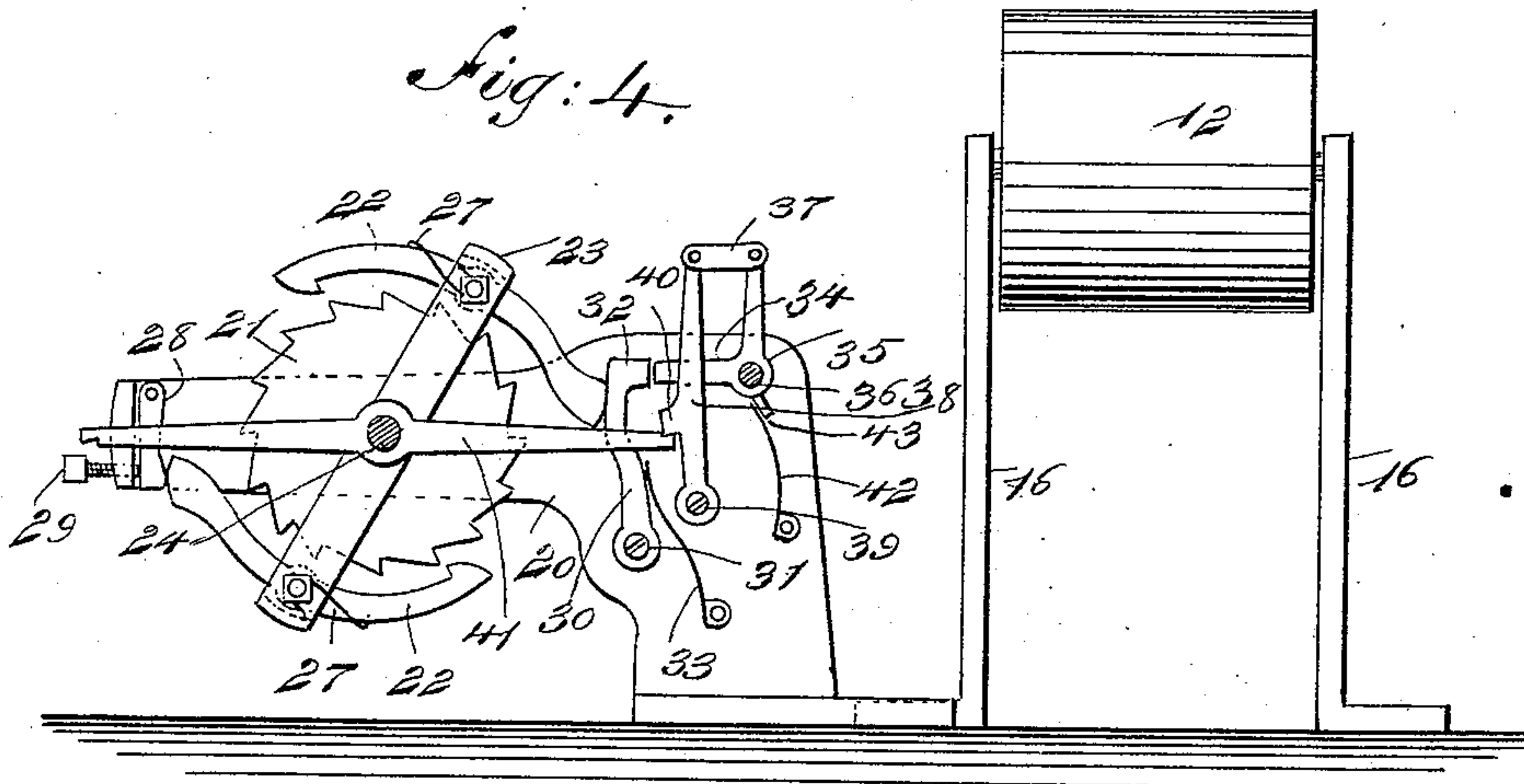
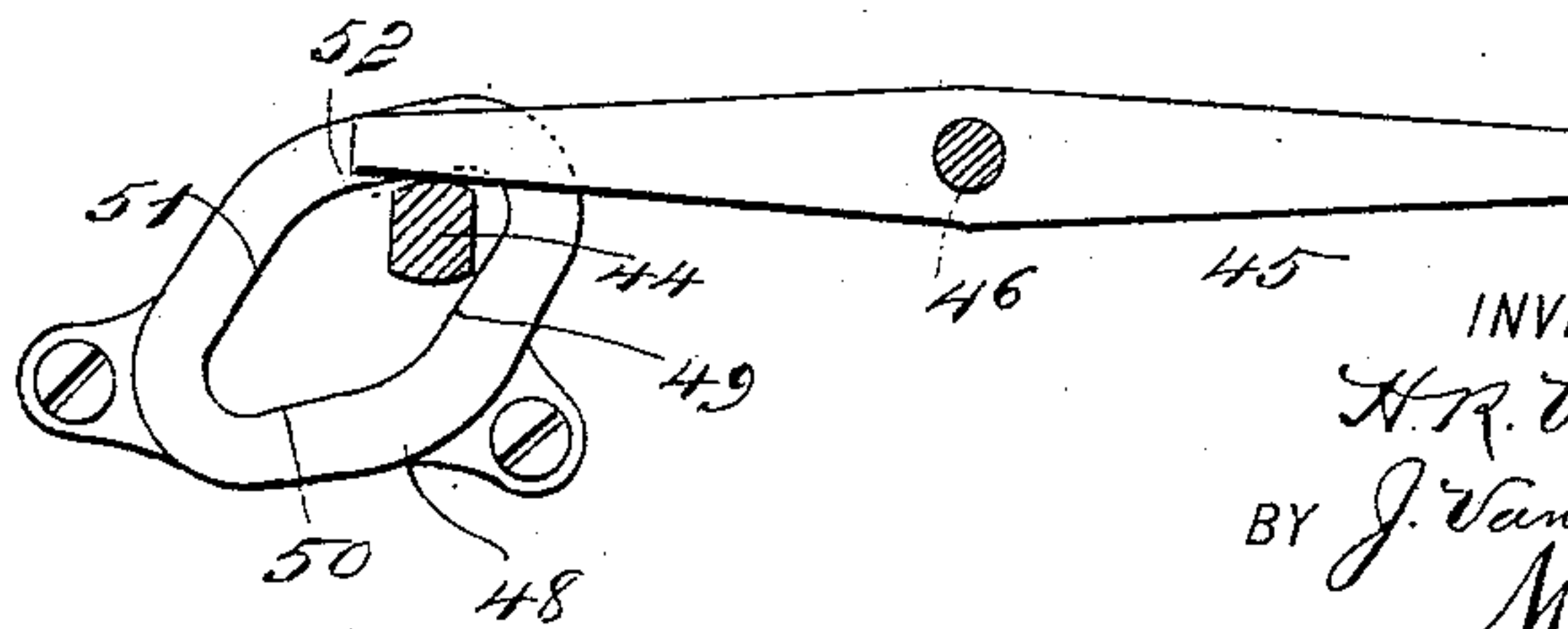


Fig. 5.



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UNITED STATES PATENT OFFICE.

HENRY R. VAN EYCK AND JACOB VAN EYCK, OF ZEELAND, MICHIGAN.

BRICK-CUTTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 532,927, dated January 22, 1895.

Application filed April 6, 1894. Serial No. 506,582. (No model.)

To all whom it may concern:

Be it known that we, HENRY R. VAN EYCK and JACOB VAN EYCK, of Zeeland, in the county of Ottawa and State of Michigan, have
5 invented a new and Improved Brick-Cutting Machine, of which the following is a full, clear, and exact description.

Our invention relates to improvements in that class of machines which are used for cutting a stream of clay into bricks or tiles, although our machine may be used for cutting
10 any plastic material, which moves along in a stream, into blocks of different dimensions.

The object of our invention is to produce a
15 machine of this kind, in which the cutting off mechanism, instead of being actuated at the movement of the stream as is usually the case, is driven by independent power so that the stream of material is not retarded, the
20 blocks are not upset and made of imperfect shape, and a clean nice cut is effected at every movement of the cutter.

A further object of our invention is to produce a tripping mechanism which is actuated
25 by the movement of the stream of plastic material, to trip and set in motion the cutting off device, and also to produce a sliding holder for the cutter which is also controlled by the movement of the stream and is controlled and
30 moved in such a manner that the cutter is always actuated at the right time and makes a smooth straight cut.

To these ends our invention consists of certain features of construction and combinations of parts, which will be hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures of reference indicate
40 corresponding parts in all the views.

Figure 1 is a broken plan view of the apparatus embodying our invention. Fig. 2 is a broken side elevation of the same. Fig. 3 is a cross section on the line 3—3 of Fig. 1. Fig.
45 4 is a cross section on the line 4—4 of Fig. 1; and Fig. 5 is a detail section on the line 5—5 of Fig. 1, illustrating a portion of the tripping mechanism.

The machine is adapted to be used in connection with a pug-mill or mixing machine of any ordinary kind, from the nozzle 10 of which the stream 11 of clay or other plastic material

issues upon the traveling belt 12, which is arranged in substantially the usual way, moving over rollers 13 and 14 at the ends of the
55 belt and supporting rollers 15 which carry the upper strand of the belt and prevent it from sagging. The rollers are all journaled in a suitable supporting frame 16. The above arrangement is substantially like that of an
60 ordinary brick cutting machine and forms no part of our invention.

The cutting apparatus is operated from a driving pulley 18 on a shaft 17 arranged at one side of and parallel with the belt 12, any
65 suitable means being employed for turning the shaft. The shaft is mounted in suitable supports 19 and 20, the latter being wide enough to form a support also for various attachments used in connection with the
70 ratchet wheel 21, as hereinafter described. This ratchet wheel 21 is secured to the shaft 17 and turns constantly therewith, and the cutting-off mechanism is adapted to be driven intermittently by the ratchet wheel so as to
75 effect the cutting, as described below.

The ratchet wheel 21 is adapted to be engaged by the dogs 22, which are held on opposite sides of the ratchet wheel and are pivoted to opposite ends of an arm 23 which is
80 carried by the shaft 24, this shaft aligning longitudinally with the shaft 17 and turning in suitable bearings 25. The shaft 24 is adapted to operate the cutter, as hereinafter described.

The arm 23 is bent at the ends, as shown at 26 in Fig. 2, so as to form a convenient support for the dogs 22, and the dogs are pressed into engagement with the ratchet wheel by springs 27, as shown best in Fig. 4. The dogs
90 are thrown out of engagement with the ratchet wheel by the plate 28 which is hung opposite one edge on the support 20 and is adjustable by means of a screw 29 and by the lever 30 which is arranged opposite the other edge of
95 the ratchet wheel and is fulcrumed, as shown at 31, on the support 20. The lever 30 has at its upper end a lateral bend 32, and it is pressed into the path of the dogs by a spring 33 which is lighter than the springs 27 of the
100 dogs, so that when the abutting arm 34 of the bell crank 35 is removed from behind the bent end 32 of the lever, the spring 27 may overcome the spring 33 and throw aside the lever

30 to enable the dog to drop into engagement with the ratchet wheel.

The arm 34 of the bell crank 35 is adapted to back up the bent end 32 of the lever 30, so as to prevent the displacement of the lever and the engagement of the dogs until the bell crank is tilted. The bell crank is carried by a shaft 36 which turns in suitable supports, and the upper arm of the bell crank connects by a link 37 with a lever 38 which is fulcrumed, as shown at 39 on the support 20 and is provided with a shoulder 40 extending into the path of an arm 41 which is secured to the shaft 24. It will thus be seen that when the bell crank is tilted so as to release the lever 30, the lever 38 will also be moved so as to withdraw the shoulder 40 from the arm 41 and thus the shaft 24 is free to turn, but when the lever 30 is moved back and the bell crank 35 turns to back up the lever, the shoulder 40 is again thrown into the path of the arm 41, which, striking the shoulder, stops the shaft 24 instantly and prevents it from being carried forward by its own inertia.

The arm 34 is normally thrown into position to engage the lever 30 by a spring 42, which presses against a boss or lug 43 on the bell crank 35. The shaft 36 is turned, so as to release the lever 30 and the dogs, by means of a crank arm 44 which is secured to one end of the shaft 36 and is struck by an arm 45 on the shaft 46, which shaft is carried by the roller 13 of the main carrying belt and has one end supported in a post 47 or equivalent support. It will thus be seen that the arm 45 will strike the crank arm 44 and trip the dogs so as to set the shaft 24 in motion at every half revolution of the roller 13, and as the shaft 24 carries the cutter it is obvious that the circumference of the roller 13 should be twice the length of the brick or other article to be cut.

The free end of the crank arm 44 moves in a slotted guide 48, which has a nearly vertical side 49 down which the crank arm runs when first pressed, and this merges in an inclined side 50 so that when the crank strikes this portion of the guide it slips from under the free end of the arm 45 and, impelled by the tension of the spring 42, follows back up the inclined sides 51 and 52 of the guide to its first position ready for another operation.

The shaft 24 has at one end a crank 53 which connects by means of a pitman 54 with the shaft 55 of the holder or rack which carries the shank 56 of the cutter to be hereinafter described. The shaft 55 extends between rollers 57 on the pitman 54, so that the shaft may move freely in a longitudinal direction. The shaft 55 extends through the shank 56 of the cutter and is also connected, by means of a bar 58, with a sliding shaft 59 which moves longitudinally in its supports 60. The shank 56 is secured to the shaft 59 so as to be moved when the shaft turns or is moved longitudinally, and the shank has at its free end an inverted U-shaped cutter head

61 across the open side of which extends a cutting off wire 61^a, which is adapted to be moved up and down through the stream 11 to be severed.

On the shaft 59 is a grooved or flanged head 62, which is fastened to the shaft and which engages a roller 63 on the upper end of an arm 64 of a bell crank 65 which is pivoted at its elbow, as shown at 66, and has an arm 67 which extends into the path of the pins 68^a on the elliptical wheel or cam 68 which is carried by the shaft 46. The arm 64 of the bell crank 65 is provided with a hook 71 which is pivoted to the arm, and the bent end 70 of which engages notches 69 in diametrically opposite edges of the wheel 68. It will thus be seen that the notched wheel will pull the bell crank and cutter head into the correct position for accurate cutting, and as soon as the cutting is finished the point of the wheel strikes and raises the hook 71 and one of the pins 68^a strikes the arm 67 of the bell crank and returns the bell crank and cutter head to normal position.

It will be seen from the above description that the dogs 22 will be tripped at every half revolution of the roller 13 and its shaft 46, that the driving shaft 24 will at such times be actuated, that the cutter will be moved up or down, as the case may be, and also guided into the correct position, and consequently, that the bricks or other things are all of a uniform size.

In operation, motion is given to the shaft 17 and such motion is transmitted to the shaft 24 by means of the pawls 22, but this motion of the shaft 24 is not continuous, like that of the shaft 17, but is interrupted at intervals by the disengagement of pawls 22 from the ratchet wheel 21, which disengagement is effected periodically by the engagement of the bit ends of the said pawls with the parts 28 and 30, the latter being reinforced by means of lever 35, and the lever 38 serving by shoulder 40 to engage arm 41 and prevent any farther movement of the shaft 24 that might result from momentum. This lever 35 is connected with and operates the lever 38 and is supported on the shaft 36 having a crank arm 44 operating in the cam guide 48 and operated by arm 45 on the shaft 46 of the roller 13, which also has a notched and pinned wheel 68, which actuates the bell crank 65, which effects the forward and backward movement of the knife carrier. Thus the movement of the roller 13, which is effected by the travel thereon of the clay sets into motion the devices which gives the knife the cutting stroke, and also those that feed the knife along with the clay, so that although the clay has a progressive longitudinal movement as the knife passes through it, the cut made by the knife will be clean and square at right angles to the length of such clay, such operation resulting from the feeding of the knife corresponding to the feeding of the clay, as set forth.

Having thus described our invention, we

claim as new and desire to secure by Letters Patent—

1. In a brick cutting machine, the combination with the carrying belt, of a pivoted cutter, a driving shaft, a cutter operating shaft connected with the driving shaft by a pawl and ratchet mechanism, and a tripping device operated from one of the rollers of the said belt, substantially as described.
2. In a brick cutting machine, the combination with the carrying belt, of a rock shaft, a cutter carried by said shaft, a driving shaft, a second shaft, a connection between the said shaft and the rock shaft, a pawl and ratchet connection between the second shaft and the driving shaft, and a tripping device operated from one of the rollers of the said belt, substantially as described.
3. In a brick cutting machine, the combination with the carrying belt, of a rock shaft, and a cutter mounted thereon, a driving shaft, a second shaft, connections between the said second shaft and the rock shaft for operating the latter, a pawl and ratchet connection between the driving shaft and the second shaft, a tripping device and means for operating the tripping device from one of the rollers of the belt, substantially as described.
4. The combination, with the carrying belt and one of its rollers, of the revoluble driving shaft having a ratchet wheel thereon, a shaft aligning with the driving shaft, the cutter operated by the said shaft, the cross arm on the cutter operating shaft, the dogs carried by the arm and adapted to engage the ratchet wheel, a lever and plate for holding the dogs out of engagement with the ratchet wheel, and mechanism actuated by the movement of the said roller to release the dog-holding lever, substantially as described.
5. In a machine of the kind described, the combination, with the driving shaft, and the ratchet wheel thereon, of a shaft, cutting mechanism operated by the said operating shaft, the cross arm on the cutter operating shaft, the dogs on the cross arm to engage the ratchet wheel, means as the oppositely arranged plate and lever, to hold the dogs out of engagement with the ratchet wheel, a tilting bell crank having an arm to abut with the dog holding lever, and a device for tilting the bell crank and releasing the dog lever, substantially as described.
6. The combination, with the driving shaft, a shaft and the cutter operated by the said shaft, of the main carrying belt, one of the rollers of the belt, a revoluble arm carried by the roller, a clutch connection between the driving shaft and cutter shaft, an oscillating shaft governing the clutch, a crank arm pivoted on the oscillating shaft and extending into the path of the roller arm, and a slotted guide with inclined sides to receive the free end of the crank arm, substantially as described.

7. The combination, of the main driving shaft, the ratchet wheel thereon, a shaft carrying dogs to engage the ratchet wheel, the cutter operated by the said shaft, the dog lever to hold the dogs out of engagement with the ratchet wheel, the bell crank having an arm adapted to engage the dog lever and hold it in place, a swinging lever carried by the bell crank and provided with a projecting shoulder, and the arm on the dog carrying shaft adapted to engage the said shoulder, substantially as described.

8. In a brick cutting machine, the combination with the carrying belt, of a sliding and rocking shaft, a cutter having its shank mounted upon the shaft and means for sliding and rocking the said shaft, the said means being controlled by one of the rollers of the said belt, substantially as described.

9. In a brick cutting machine, the combination with one of the rollers of the carrying belt, and a driving mechanism independent of the belt, of a sliding and rocking shaft, a cutter having its shank mounted on the said shaft, means for rocking the shaft from the driving mechanism, and intermediate mechanism between the said roller of the belt and the shaft for sliding the latter, substantially as described.

10. In a brick cutting machine, the combination with the carrying belt and one of its rollers, of a cutter held to move up and down near one end of the belt, a holder for the cutter, a notched cam wheel on the shaft of the said roller, and a tilting bell crank engaging the said notched wheel and cutter holder, substantially as described.

11. The combination, with the main carrying belt and one of its rollers, of the cutter held to move up and down near one end of the belt, a holder for the cutter, a grooved or flanged head on the holder, the notched cam wheel carried by the said roller, the oscillating bell crank having one arm held to ride on projections on the cam wheel and the other provided with a roller to engage the flanged head, and a hook pivoted on the bell crank and adapted to engage the notches of the cam wheel, substantially as described.

12. The combination, with the main carrying belt, one of its rollers, the cutter held to move up and down adjacent to one end of the belt, and the cutter shaft, of a longitudinally movable holder for the cutter, the holder comprising parallel shafts and suitable connections, a pitman having a crank connection with the cutter shaft and rollers to engage one of the holder shafts, and mechanism actuated by the carrier roller for moving the cutter holder, substantially as described.

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JACOB VAN EYCK.

Witnesses:

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JACOB KRANS.