

H. C. KUNKLE.
BRICK STROKING-OFF MACHINE.
APPLICATION FILED JULY 8, 1908.

Patented Dec. 28, 1909.

3 SHEETS—SHEET 1.

944,447.

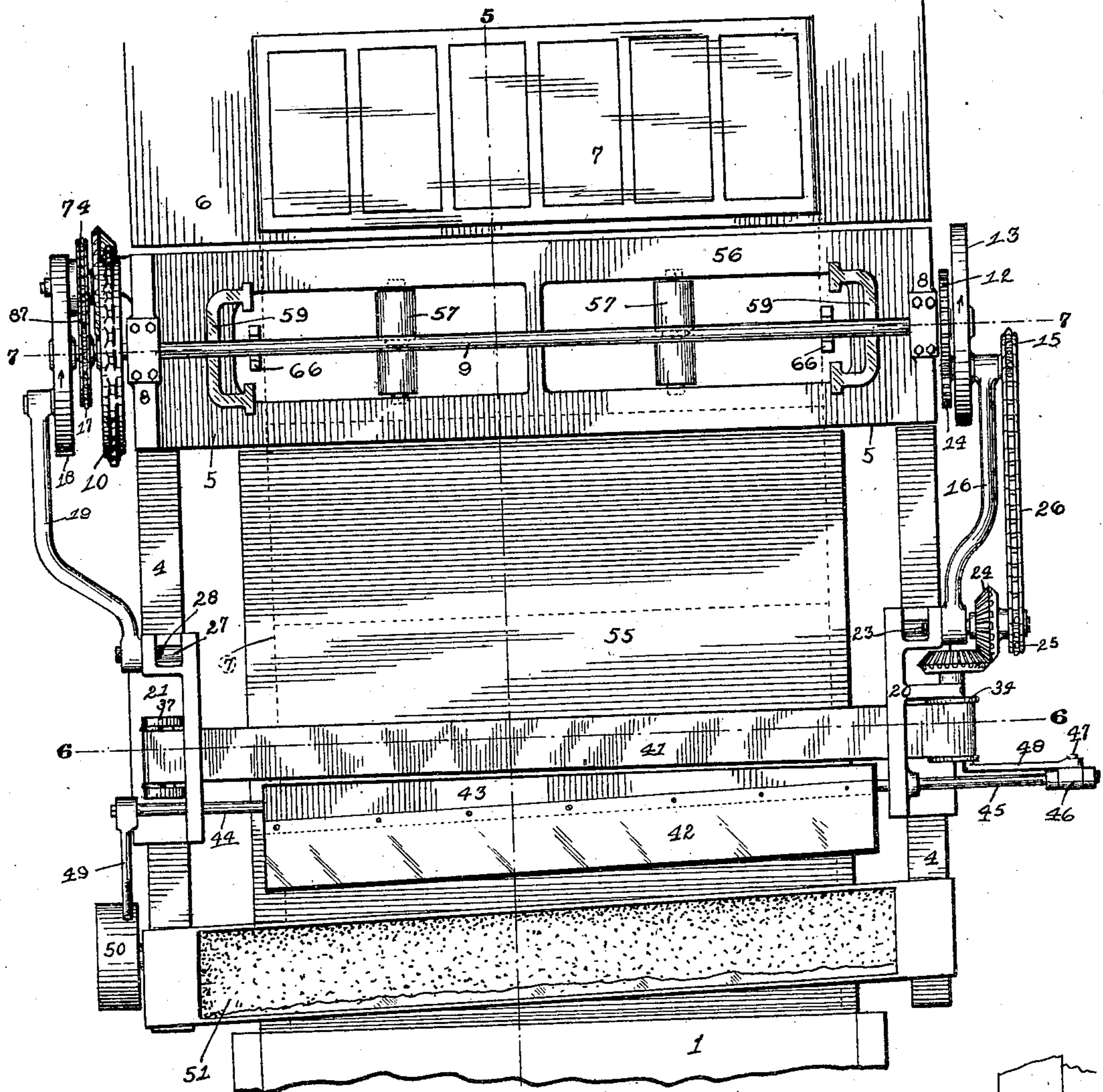


Fig. 1.

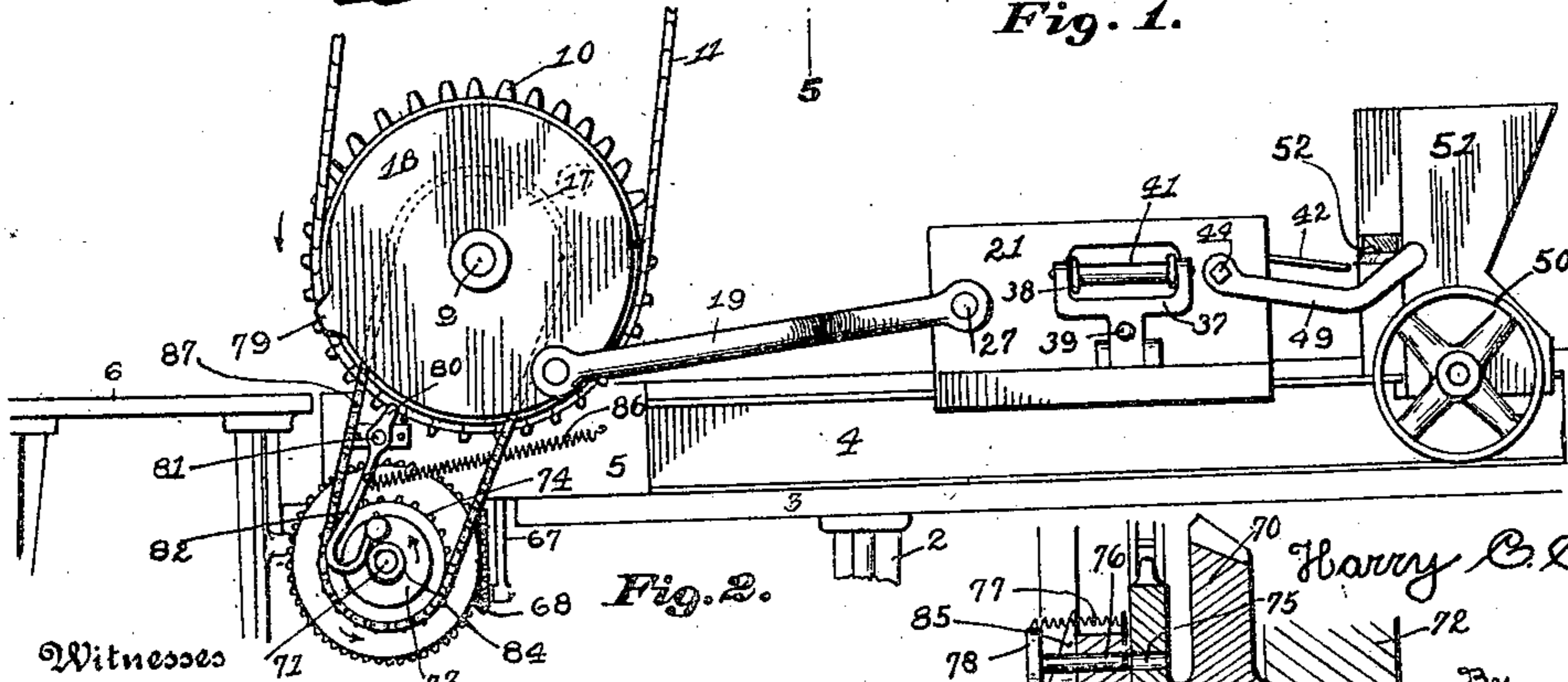
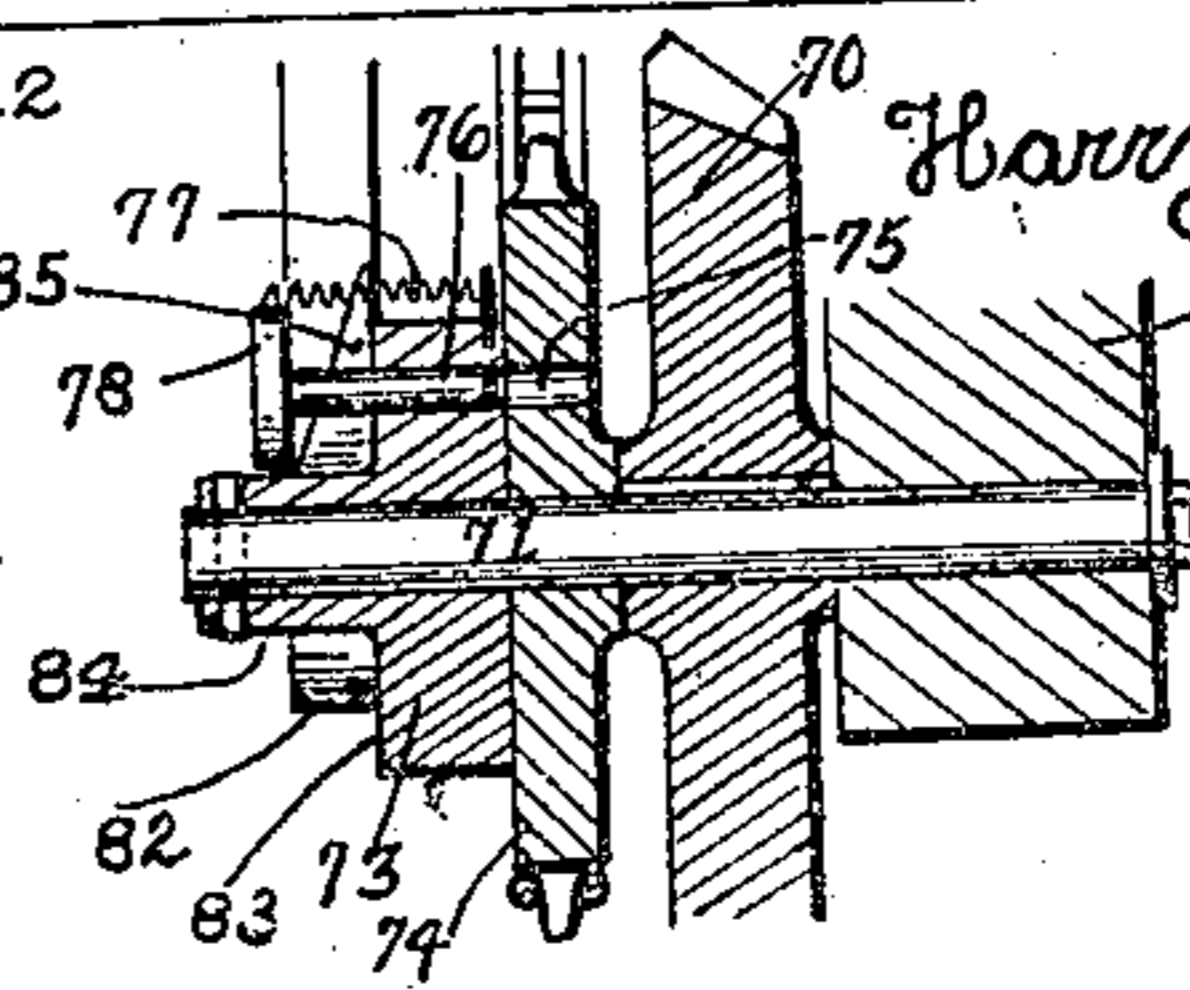


Fig. 2.

Witnesses

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Sylvia Borow

Fig. 3.



Inventor

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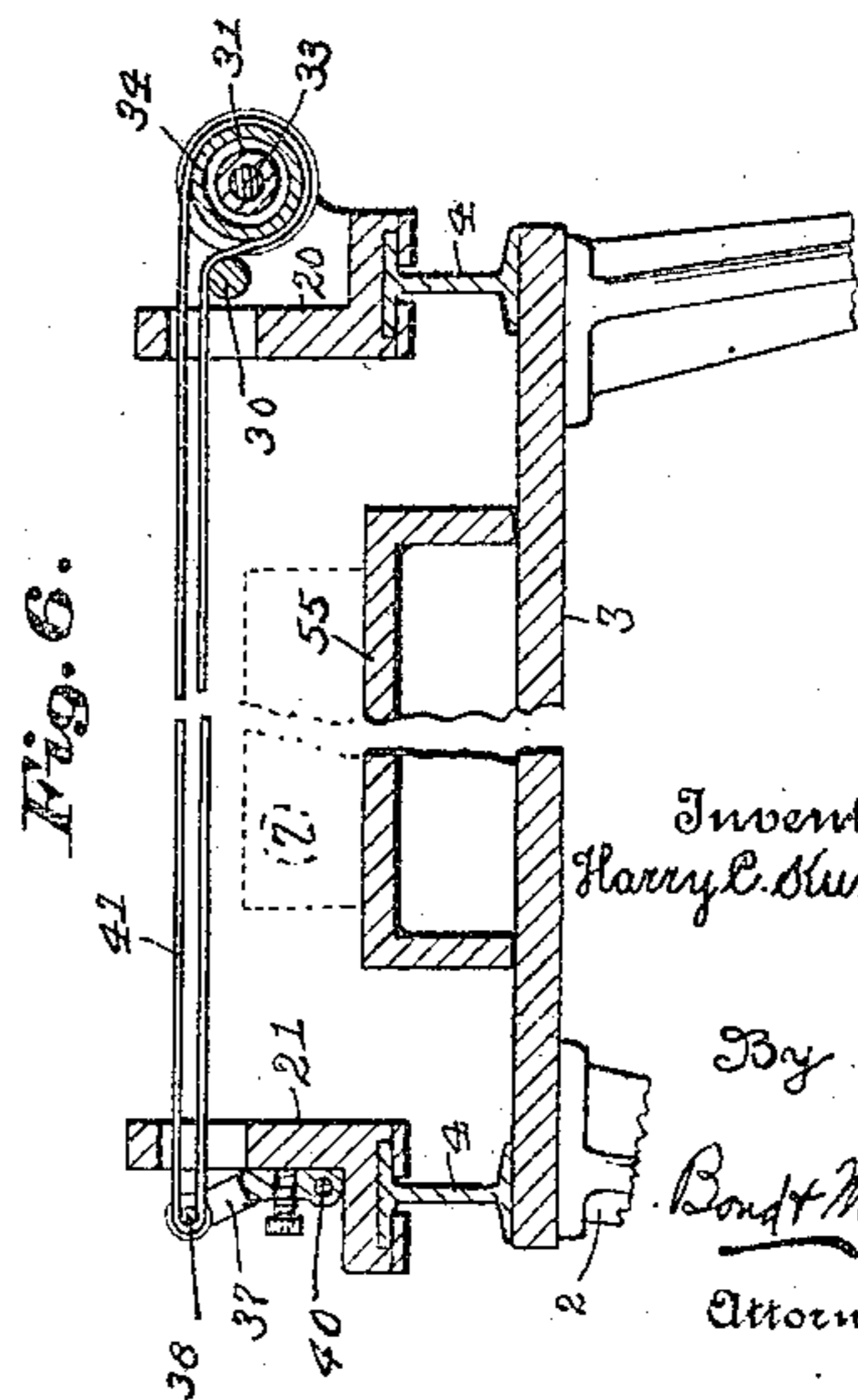
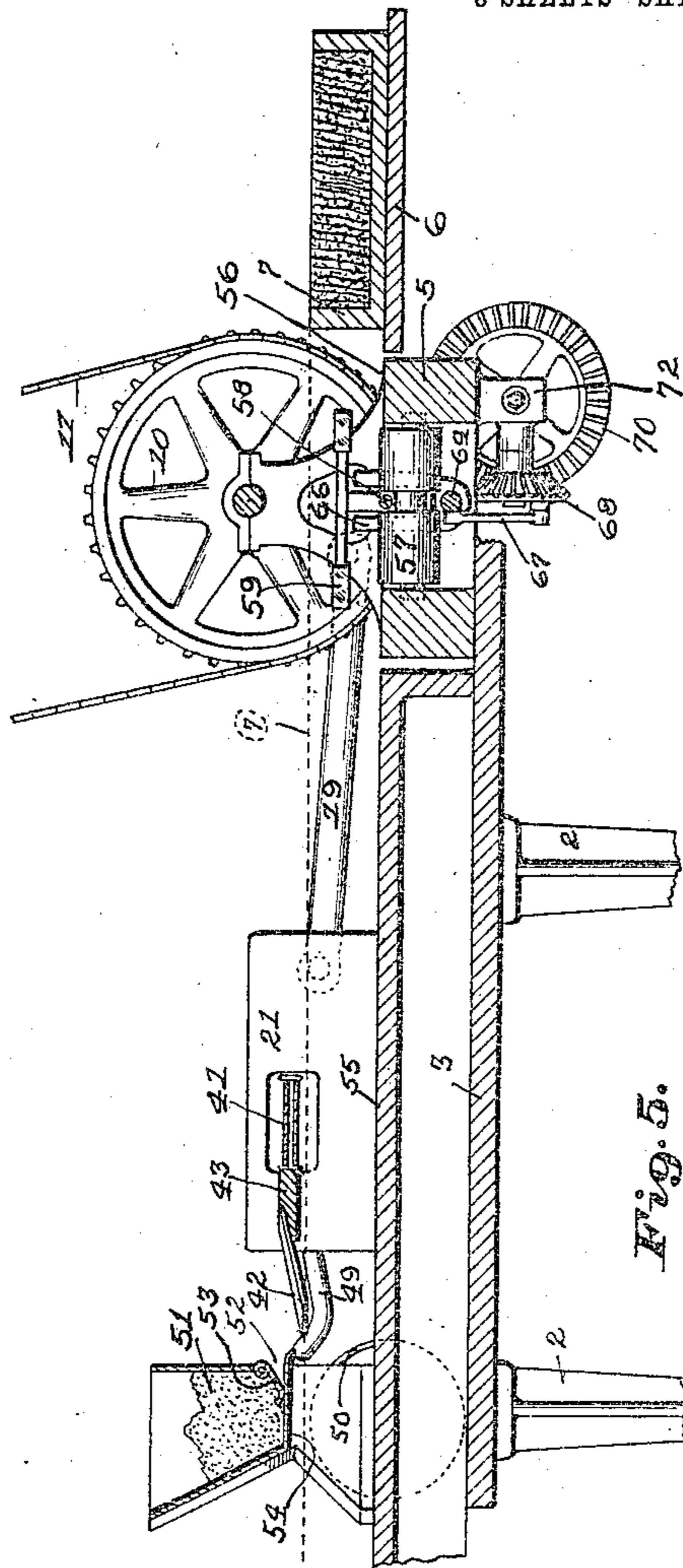
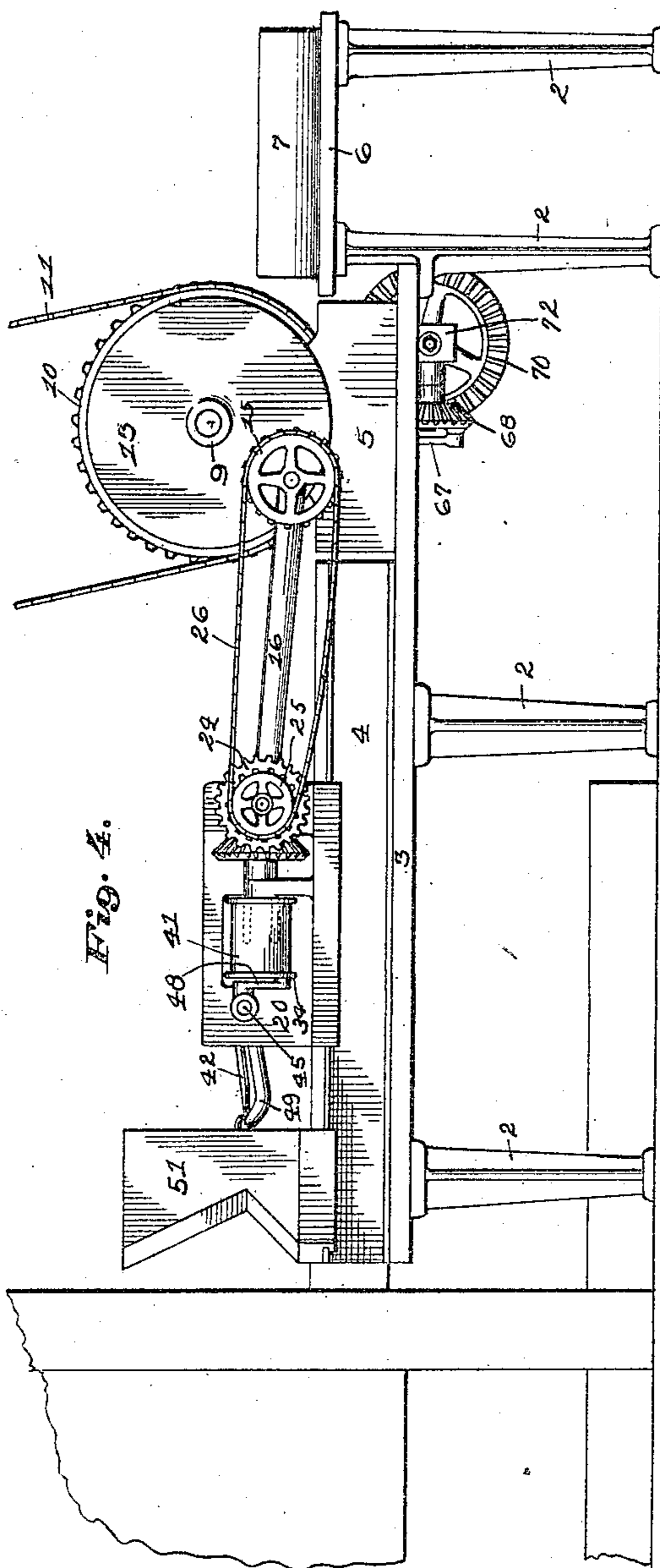
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Witnesses

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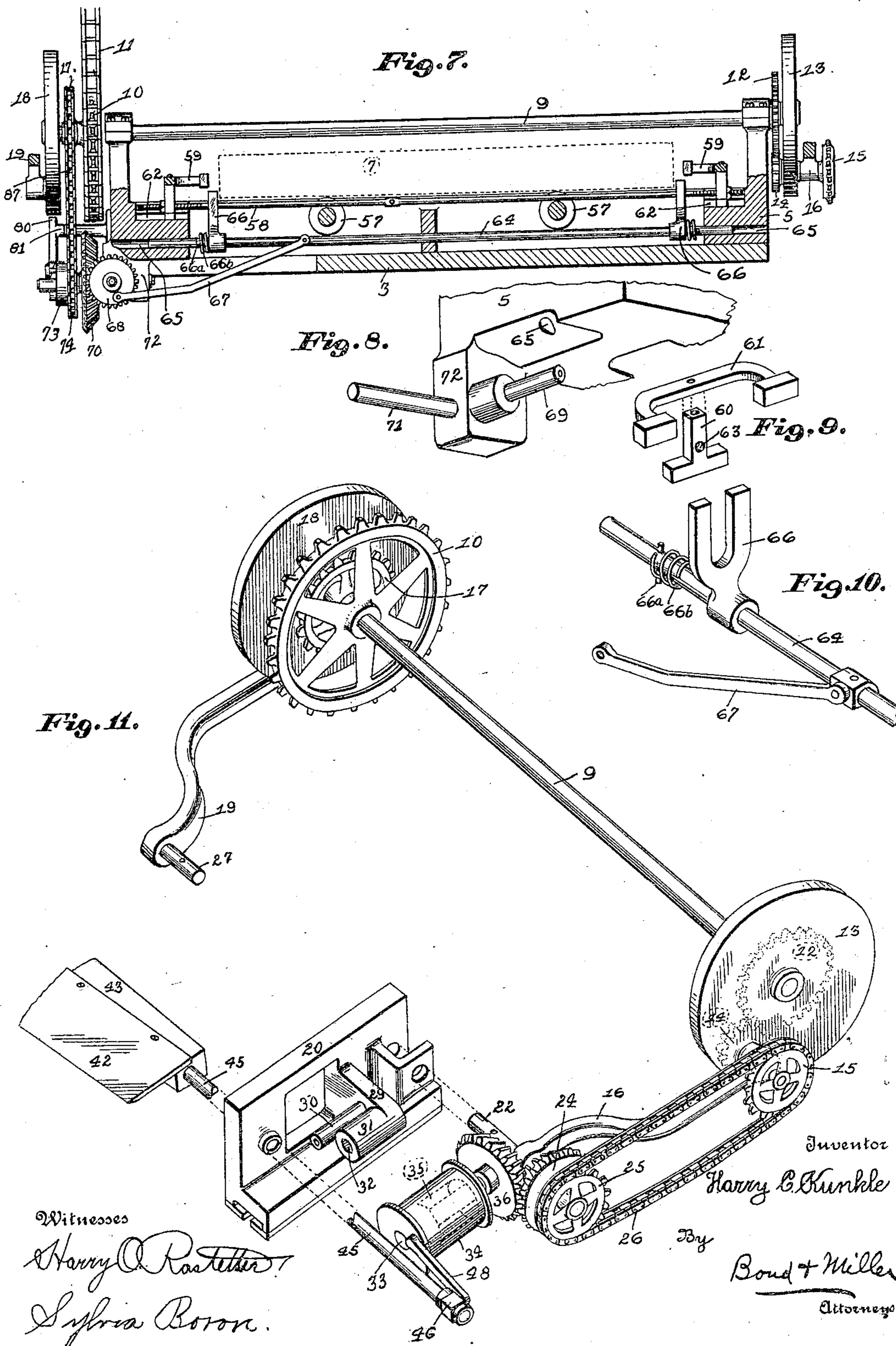
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UNITED STATES PATENT OFFICE.

HARRY C. KUNKLE, OF CANTON, OHIO.

BRICK-STROKING-OFF MACHINE.

944,447.

Specification of Letters Patent.

Patented Dec. 28, 1909.

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To all whom it may concern:

Be it known that I, HARRY C. KUNKLE, a citizen of the United States, residing at Canton, in the county of Stark and State of Ohio, have invented a new and useful Brick-Stroking-Off Machine, of which the following is a specification.

My invention relates to improvements in machines to be used in the manufacture of pressed brick, and consists in a machine designed to stroke-off or shave the edges of the bricks along the top of the mold, after they have gone through the press. Heretofore in the art of pressed brick making the bricks have been made in molds of, say, six bricks each and after the said molds with the bricks therein, have gone through the press it has been necessary to stroke-off the top edges of said bricks. Usually this has been successfully accomplished only by hand, a workman using a large knife with a handle at each end for the purpose of shaving off the tops of the bricks along the top edge of the mold by pushing the said knife across the mold and at the same time imparting a reciprocating motion to the knife in order to accomplish the object more easily and neatly.

In the manufacture of pressed bricks the clay in the molds at the time when it is necessary to perform the operation just mentioned is in a plastic condition, and the surplus clay shaved off by the knife has a tendency to adhere to the said knife. It has been found that the most practical method of removing this from the cutting edge of the knife is by running the edge of said knife into sand, and while such method is satisfactory it necessarily requires time and extra labor. The presses now in use turn out a large number of bricks per hour and it requires much labor and diligence to properly stroke-off the bricks in the manner mentioned but the possibility of imparting motion to the stroking-off knife in several directions while crossing the top of the mold when the operation is done by hand has induced manufacturers to continue this method even though tedious and expensive. After the bricks have been stroked off as above described it is necessary to jar or rap the molds so as to loosen the bricks in order that they may be removed. This is an operation which requires care so that the bricks be not injured or rapped out of shape.

The objects of my improvement are to

accomplish the operations mentioned by machinery in a quick uniform and thoroughly satisfactory manner, and I accomplish these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a top view of the machine as arranged in connection with a brick press, a small portion of said brick press being also shown. Fig. 2 is a side elevation of the machine taken on the clutch side of the same. Fig. 3 is a sectional view of the clutch mechanism. Fig. 4 is a side elevation of the machine on the belt driving side of the same, and showing the relation of the said machine to the brick press, a portion of which is shown. Fig. 5 is a sectional view taken on a plane indicated by the line 5—5, in Fig. 1. Fig. 6 is a sectional view partially broken away taken on the plane indicated by the line 6—6, in Fig. 1. Fig. 7 is a sectional view taken on a plane indicated by the line 7—7, in Fig. 1. Fig. 8 is a view of a detached portion of the frame of the machine designed for the mounting of the clutch and rapping actuating mechanism. Fig. 9 is a detached view of one of the buffers. Fig. 10 is a detached view of a portion of the rapping mechanism. Fig. 11 is a detached view of the main shaft of the machine together with the necessary mechanical connections for actuating the head, knife and belt.

Throughout the several views similar numerals of reference indicate similar parts.

The numeral 1 indicates the table of the pressed brick machine upon which the molds containing the bricks are pushed out by the said machine after the operation of pressing.

2 indicates the supporting legs of the stroking-off machine. Upon these legs is mounted the sub-table 3 whereto are attached to the two I-beams or guides 4 for the purpose of providing a way upon which the head of the machine may travel back and forth.

5 is a casting designed for the support of the main shaft and immediately related mechanism and also the rapping mechanism.

6 is the delivery table of the stroking-off machine.

7 indicates molds containing bricks.

8—8 are main shaft supports provided with boxes of any usual and approved pattern, in which is journaled the main shaft 9. To the main shaft is fixedly attached the main sprocket wheel 10 to which is attached

the chain 11 by which the machine is driven from the same countershaft or source of power which drives the brick press. As the brick press and the stroking-off machine must operate in harmony the brick press should also be driven by a chain belt from the countershaft. The harmony mentioned and the necessity of the same will be hereinafter more fully explained.

On what has been termed the belt driving side of the machine and fixedly attached to the main shaft support 8 is the fixed gear 12. The shaft 9 extends through the center of said gear 12, and has affixed at its outer end the disk 13. In this disk is arranged a bearing wherein is journaled a short spindle to which is fixedly attached the planetary gear 14 meshing with the gear 12, and the sprocket 15 and upon which is rotatably mounted the rear end of the pitman 16. It will be understood that when the shaft 9 is rotated the gear 12 remaining stationary while the disk 13 revolves with the shaft 9 a rotary motion will be imparted to the gear 14 by reason of its meshing with the gear 12, and that this rotary motion will be imparted to the sprocket 15 fixedly attached to the spindle upon which the gear 14 is mounted, and that a reciprocating motion will be imparted to the pitman 16.

On what has been termed the clutch side of the machine the sprocket 17 is fixedly mounted upon the shaft 9 as is also the disk 18 corresponding in some respects with the disk 13. Upon the disk 18 is arranged a wrist pin whereto is attached by suitable bearing the rear end of the pitman 19. It will be understood that as the shaft 9 rotates the sprocket 17 and the disk 18 will rotate with it, and that a reciprocating motion will be imparted to the pitman 19.

The head of the machine consists of two head pieces 20 and 21 which are castings of the design shown in the drawings and are arranged upon the I-beams or guides 4, in such way as to be held in place as against lateral or vertical movement but permitting a longitudinal, horizontal, sliding movement upon the said guides 4. This construction is well illustrated in Fig. 6.

At the forward end of the pitman 16 the pin 22 extends transversely in a horizontal plane, both toward the inside and the outside of the machine, the inner end of the pin being adapted to be pivotally mounted in the head piece 20 and held in place by the cotter 23. The outer end of the said pin 22 forms a spindle or bearing upon which the beveled gear 24 together with the integral sprocket 25 is rotatably mounted. The chain 26 extending from the sprocket 15 to the sprocket 25 is designed to impart rotary motion to the sprocket 25 and the beveled gear 24 integral therewith when the said sprocket 15 is rotated. The pitman 19 is

provided with the pin 27 pivotally arranged in the head 21 and held in place by a cotter or pin 28, this connection between the pitman and the head being similar to the connection upon the pitman 16 and the head 20 before described.

The head 20 is provided with the integral bracket 29 having a belt guide 30 for the purpose hereinafter set forth and the extended collar or bearing 31 having an inner box or bearing 32, in which is journaled the shaft or spindle 33 and an external bearing surface upon which is mounted the drum 34, which is provided with the enlarged box 35 adapted for bearing upon the said surface. The beveled gear 36 is fixedly attached to the spindle 33 and meshes with the beveled gear 24. The said spindle 33 extends through the box 32 and is fixedly attached to the drum 34 journaled upon the collar 31. It will be understood that when a rotary motion is imparted to the beveled gear 24 motion will be imparted to the gear 36 and with the gear 36 will rotate the drum 34. Upon the head 21 is pivotally attached the yoke 37, which carries the spool 38 rotatably mounted upon the said arms and the set screw 39 by means of which the yoke 37 may be adjusted upon the pivot 40 with reference to the head 21 for the purpose of tightening or loosening the belt 41. The said belt 41 extends around the drum 34 through an aperture in the head 20, across the machine on a plane with the top surface of the knife as hereinafter described, through an aperture in the head 21 over the spool 38, back through the aperture in the head 21 under the portion of the belt just mentioned across the machine through the aperture in the head 20 over the belt guide 30 adapted to hold the said belt in an upper plane to clear the tops of the brick molds, and around the drum 34 as described. It will be understood that when the drum 34 is rotated the belt 41 will move continuously across the top of the machine at the rear of the knife and carry away to the side of the machine any surplus clay which may be pushed back by reason of the shaving off of the clay from the edges of the bricks by the said knife.

The knife 42 consists of a blade of steel sharpened at its forward edge and at its rear edge attached to the knife back 43, at a slight angle to a line directly transverse of the machine. This will so dispose the knife that one end of its cutting edge will always precede the other end by a short space in its forward movement. In order to support the knife and for other purposes hereinafter set forth the back 43 is extended in the form of supports 44 and 45, which supports are round in cross-section, and extend through the heads 21 and 20 respectively. The said supports may be formed integral with the said back 43 or may be

fixedly attached thereto. The apertures in the heads 21 and 20 through which the supports 44 and 45 pass are of the nature of boxes in which the supports may not only
 5 slide longitudinally but may also be rotated so as to lift or lower the cutting edge of the knife. At the outer end of the support 45 is arranged a collar 46 rotatably mounted upon the support 45 but held against longitudinal displacement on the support 45 by
 10 the adjacent fixed collars. The collar 46 is provided with the pin 47 to which is pivotally attached the pitman or arm 48, the other end of which is provided with a right
 15 angled portion journaled in a suitable bearing in the head of the drum 34. It will be understood that when the drum 34 is rotated, a reciprocating movement will be imparted to the support 45 through the pitman
 20 48, thus moving the knife back and forth across the machine.

To the outer end of the support 44 is fixedly attached the arm 49 which is curved at its free end as shown most clearly in Figs.
 25 2 and 4. This arm is of sufficient weight to aid in holding the front or cutting edge of the knife down to its place upon the top of the mold, in this function acting as a weighted lever. However, the arm 49 has an additional function, which is the lifting of the
 30 knife 42 at the end of its forward stroke. This is caused by the arm 49 coming in contact with and riding upon the loose pulley 50. The object in lifting the said knife is
 35 to bring the cutting edge of the same above the surface of the molds and into the sand box 51, through the opening 52 provided with the hinged slat or door 53. The sand box 51 is arranged upon the end of the guides
 40 4 near the end of the stroke of the knife. It is supported at each side upon the guides 4 and is fixedly attached thereto, the bottom 54 being sufficiently raised above the table 55, to enable the molds to pass under the same.
 45 As the knife advances toward the end of the forward stroke the arm 49 riding upon the wheel 50 lifts the cutting edge of the knife by rotating the supports 44 and 45 and brings the said cutting edge to the opening 52.
 50 The head continuing to advance pushes the knife against the door 53, which rises, permitting the knife to enter the sand box and come in contact with the sand therein contained. The shaft 9 continuing to re-
 55 volve will start the head and with it the knife on its backward movement withdrawing the knife from the sand box, permitting the door 53 to fall and thus retain the sand in the said box and the arm 49 being freed
 60 from contact with the wheel 50, will drop by gravity the weight of the knife itself also aiding and the edge of the knife will again rest upon the top of the mold as illustrated in dotted lines, in Fig. 5.

65 The brick press feeds the molds containing

the bricks upon the table 1 and by feeding a succession of such molds upon said table moves a continuous line of said molds along the table 55, which table is on a level with the
 table 1. The cutting edge of the knife 42
 70 will rest upon the top edges of the molds and will shave or stroke off the bricks in a true and uniform way as it advances and recedes again and again with the head of the machine sliding back and forth along the
 75 guides 4. During these movements back and forth along the guides 4, a continual reciprocating motion across the machine will be given to the knife 42, and the clay scraped
 80 off by the knife and pushed back across the knife back 43 will be deposited upon the moving belt 41, which being in motion will act as a conveyer to remove the surplus clay to the side of the machine.

After the bricks have been shaved off in
 85 the manner described, the molds continue to advance along the table 55 and onto the rapping table 56. This rapping table has a surface very slightly lower than the surface of the table 55. Portions of the table 56
 90 are cut away and rollers 57 provided, which are journaled at their ends to suitable bearings in the table 56, so as to revolve freely. The uppermost point of the periphery of
 95 said rollers is very slightly above the plane of the table 56 and in a plane with the surface of the table 55. A mold will therefore, when pushed onto the rapping table be supported upon the rollers 57, which will permit it to be freely moved crosswise of the
 100 machine in either direction. The rollers 57 intermediate their ends are provided with a circumferential groove to accommodate the adjusting rod 58, which holds the buffers
 105 59 in spaced adjustment with relation to each other.

The buffers 59 consist of the buffer supports 60 and the U-shaped buffer arms 61. The buffer supports 60 are provided with transversely disposed bases such as shown in
 110 Fig. 9, which bases are adapted to adjustment in suitable grooves in the shaft supports 5, said grooves being numbered 62. The grooves 62 are T-shaped in cross-section and are adapted therefore to hold the buffer
 115 supports in position while permitting adjustment of the same transverse of the machine. The aperture 63 is provided in the buffer supports 60, which aperture is screw threaded and adapted to receive the screw
 120 threaded ends of the adjusting rod 58. These threads are arranged "right and left" so that in turning the rod 58 in one direction the buffers 59 will be brought closer
 125 together while by turning the rod in the opposite direction the said buffers will be separated from each other. Suitable lock nuts or their equivalents are arranged upon the rod 58 to prevent its turning after appropriate adjustment of the buffers 59 has been
 130

obtained. It will be understood that the rod 58 crosses the machine in a plane lower than the top edge of the rollers 57, thus in no wise hindering the movement of the mold across the said rollers. The buffer arms 61 are pivotally attached to the buffer supports 60 so that if the ends of the mold do not strike the arms in a true line, the said arms may readily accommodate themselves to the angle at which the said mold strikes them.

For the purpose of reciprocating the molds and rapping them against the buffers the transversely sliding rod 64 is provided. This rod is arranged transverse of the machine and its ends located in guide ways 65 in the main shaft supports 5. Located upon the rod 64 are two bifurcated, mold engaging brackets 66 adapted to slide longitudinally upon the bar 64. The pins 66^a are located through the bar 64 and a short coiled spring 66^b arranged upon the said bar between the said pin and the bracket 66. The bifurcated bracket extends upward on either side of the adjusting rod 58, said rod thereby holding the brackets 66 in their proper vertical position.

In order to impart a reciprocating movement to the bar 64, the pitman 67 is provided, which is pivoted to the bar 64 at one end, and at the other end is pivoted to a pin upon the back of the beveled gear 68 mounted upon the stud bearing 69, which is fixedly attached to a portion of the frame as shown in Fig. 8. The beveled gear 68 meshes with the beveled gear 70, which is keyed to the rotatable shaft 71. The said shaft 71 is journaled in a portion of the frame as illustrated in Fig. 8 and in Fig. 3, the said portion being numbered 72. The clutch head 73 is also keyed to the rotatable shaft 71 and the said clutch head 73 and beveled gear 70 will therefore rotate together with the said rotatable shaft 71. The sprocket 74 is loosely mounted on the shaft 71 intermediate the gear 70 and the clutch head 73.

The sprocket 74 is provided with the aperture 75 adapted for the reception of the clutch pin 76 when the parts are in appropriate relation. The clutch pin 76 is arranged through an aperture in the clutch head 73 and is drawn toward the sprocket 74 by the coil spring 77 attached at one end to the head 78 of the clutch pin and at the other end to the clutch head 73. It will be understood that when the aperture in the clutch head coincides with the aperture 75 in the sprocket the spring 77 will draw the clutch pin 76 into the aperture 75 thus locking the sprocket 74 and the clutch head 73 together.

The disk 18 is provided at one point upon its circumference with the cam 79 adapted to engage the short end 80 of the clutch lever, which is pivoted at the point 81 to a

bracket arranged upon the main shaft support 8. The long end 82 of the clutch lever is curved as shown in the drawings, and is adapted to bear against the face 83 of the clutch head 73 and to ride upon the surface of the collar 84 of the said clutch head 73. The extreme end of the clutch lever is arranged with a diagonal point 85 which is adapted to enter between the head 78 of the pin 76 and the face 83 of the clutch head 73 and thus raise or draw the pin 76 out of engagement with the aperture 75 in the sprocket 74. The coil spring 86 is attached at one end to the main shaft support 5 and at the other end to the long end 82 of the clutch lever and is adapted to hold the point 85 against the surface of the collar 84. It will be apparent that so long as the end of the clutch lever is permitted to engage the collar 84, the pin 76 will be lifted when it comes in contact with the end of the said lever, and it will also be apparent that when the cam 79 comes in contact with the end 80 of the clutch lever, it will swing the said lever on the pivot 81 in such way as to throw the end 82 away from the clutch head 73 and permit the spring 77 to draw the pin 76 toward the sprocket 74 and to engage the aperture 75 therein when the said aperture registers with the said pin.

As has been stated the sprocket 17 is fixedly mounted upon the main shaft 9 and rotates therewith. The chain 87 extends between the sprocket 17 and the sprocket 74, and is designed to impart rotary motion to the sprocket 74 when the shaft 9 is rotated. During the operation of the machine the shaft 9 is continually in motion and the sprocket 74 will therefore be in continual rotation and will rotate the clutch head and beveled gear 70 whenever the clutch pin 76 is permitted to enter the aperture 75.

It will be understood that the aperture 75 registers with the aperture in the head 73 in which the clutch pin 76 is located once for each rotation of the sprocket 74 but that the pin 76 will be permitted to engage the aperture 75 only at such time as the cam 79 is in engagement with the end 81 of the clutch lever. As the sprocket 17 is of greater diameter than the sprocket 74, the engagement of cam 79 with the clutch lever 81 will coincide with the registering of the pin 76 and aperture 75 only once in several revolutions of the sprocket 74, the number of revolutions depending on the ratio of the sprockets 17 and 74.

The movement of the molds along the table 55 and 56 is not a continuous and uniform movement but is intermittent or periodic. This intermittent movement is occasioned by the time required for the brick press to perform its operation of pressing the clay into the mold. During this operation of pressing the line of molds in the

stroking-off machine comes to a temporary rest and it is at this instant that the rapping mechanism is intended to operate. As has been stated the press and stroking-off machine should be driven by chain belts from the same countershaft or source of power, in order that the brick press may be pressing one mold while the stroking-off machine is rapping one of the molds already pressed. This may be easily accomplished by appropriately arranging the chain belts mentioned. The stroking-off machine and the gears and chains thereof are so arranged that at the instant the brick press is pressing a mold and the line of molds on the table 55 has come to a stop and one mold is located on the rollers 57 of the table 56 the cam 79 will engage the short end 80 of the clutch lever. Instantly the pin 76 will be permitted to enter the aperture 75 and motion will be imparted to the rod 64 through the intermediate mechanism heretofore described. The brackets 66 will engage the ends of the mold as well illustrated in Fig. 7, and with a resilient backing by reason of the operation of the springs 68 will alternately move the mold upon the rollers 57 and rap the same against the arms 61 of the buffers 59 on the two sides of the machine. Practically about two raps on each end of the mold will be found sufficient and the machine illustrated in the drawing is designed to impart that number of raps. By a movement of the rod 58 adjusting the buffers 59, an increased or decreased impact may be given as desired. The gear 70 will make but one revolution when the head 78 of the clutch pin will engage the point 85 of the clutch lever which has returned to its original position after the passage of the cam 79 beyond the portion 80 of the said lever, and the said point 85 will enter between the face 83 of the clutch head 73 and the head 78 of the pin 76, thus drawing the pin 76 out of engagement with the sprocket 74 and discontinue the rapping movement of the bar 64. It should be understood that while the mold is being rapped it is freely movable upon the rollers 57 and the rollers being on a plane with the table 6, as the brick machine pushes out the mold it has just pressed while the rapping operation was taking place, the movement of the line of molds will be resumed and the mold just rapped will be pushed out upon the table 6 from which it may readily be taken away and the bricks removed therefrom.

It will be understood that the stroking-off machine herein described may be used with any brick press which presses clay into molds and pushes the said molds out from the said press when the pressing operation is completed. The press and stroking-off machine can readily be made to operate in harmony and thus successfully accomplish the objects set forth in this specification.

I claim,—

1. The herein described stroking-off machine comprising a table adapted for the travel of molds containing bricks, guides arranged at the sides of the table, a head consisting of head pieces adapted for sliding movement upon said guides, a knife supported between said head-pieces upon rotatable transverse sliding supports, the said knife arranged with one end of its cutting edge in advance of the other end, a sand box having an opening, said box being arranged near the end of the forward stroke of the said knife, an endless conveyer belt arranged at the rear of said knife, means for sliding said head back and forth along said guides, means for imparting to the said knife a reciprocating motion transverse of the machine while said knife is being moved backward and forward with said head, means for actuating said conveyer belt, means for lifting the cutting edge of said knife to a position to enter the opening in the sand box and to return said edge to position for the performance of its work when the head recedes from the sand box.

2. The herein described stroking-off machine comprising a table adapted for the travel of molds containing bricks, guides arranged at the sides of the table, a head consisting of head pieces adapted for sliding movement upon said guides, a knife supported between said heads upon rotatable sliding supports the said knife arranged with one end of its cutting edge in advance of the other end, a sand box having an opening, said box being arranged near the end of the forward stroke of the said knife, an endless conveyer belt arranged at the rear of said knife, means for sliding said head back and forth along said guides, means for imparting to the said knife a reciprocating motion transverse of the machine while said knife is being moved backward and forward with said head, means for actuating said conveyer belt, means for lifting the cutting edge of said knife to a position to enter the opening in the sand box and to return said edge to position for the performance of its work when the head recedes from the sand box, a rapping table provided with mold supporting rollers, buffers arranged at the sides of said table and means for automatically engaging a mold on said rapping table and reciprocating it across said table so as to bring it in contact with said buffers and means for alternately operating said rapping mechanism and discontinuing said operation while the remainder of the machine continues its operation.

3. In a brick stroking-off machine, a table adapted for the travel of molds containing bricks, guides arranged at the sides of the table, a head consisting of head pieces adapted for sliding movement upon said guides, a

knife supported between said heads and adapted for transverse reciprocating movement, means for moving the said head alternately backward and forward along said guides, and means for simultaneously reciprocating said knife in a direction substantially transverse to the line of travel of said head.

4. In a brick stroking-off machine of the character described, an alternately advancing and receding stroking-off knife, a table arranged beneath said knife and adapted for the support of molds containing bricks, the said knife adapted to scrape or stroke off the top edges of said bricks, a sand box arranged near the forward limit of the stroke of said knife, and means for raising the cutting edge of said knife from the said molds and bringing it into engagement with sand in the said sand box.

5. In a brick stroking-off machine of the character described, an advancing and receding stroking-off knife adapted to be reciprocated simultaneously in a direction substantially transverse to said advancing and receding motion, a table arranged beneath said knife and adapted for the support of molds of brick, a rapping table provided with mold supporting rollers adapted to re-

ceive said molds, mold engaging brackets, buffers arranged upon said rapping table and means for reciprocating said mold engaging brackets transverse of the machine whereby said molds are rapped against the buffers, substantially as described.

6. In a brick stroking-off machine, of the character described, an advancing and receding stroking-off knife adapted to be reciprocated simultaneously in a direction substantially transverse to said advancing and receding motion an endless conveyer belt arranged to adjoin the back edge of said knife and adapted for the reception of surplus clay pushed from the back of said knife, means for continuously actuating said knife and belt and a mold supporting table arranged beneath said knife and belt and adapted to support molds of bricks in position to be engaged by the cutting edge of said knife, substantially as described.

In testimony that I claim the above, I have hereunto subscribed my name in the presence of two witnesses.

HARRY C. KUNKLE.

Witnesses:

J. A. JEFFERS,
F. W. BOND.