

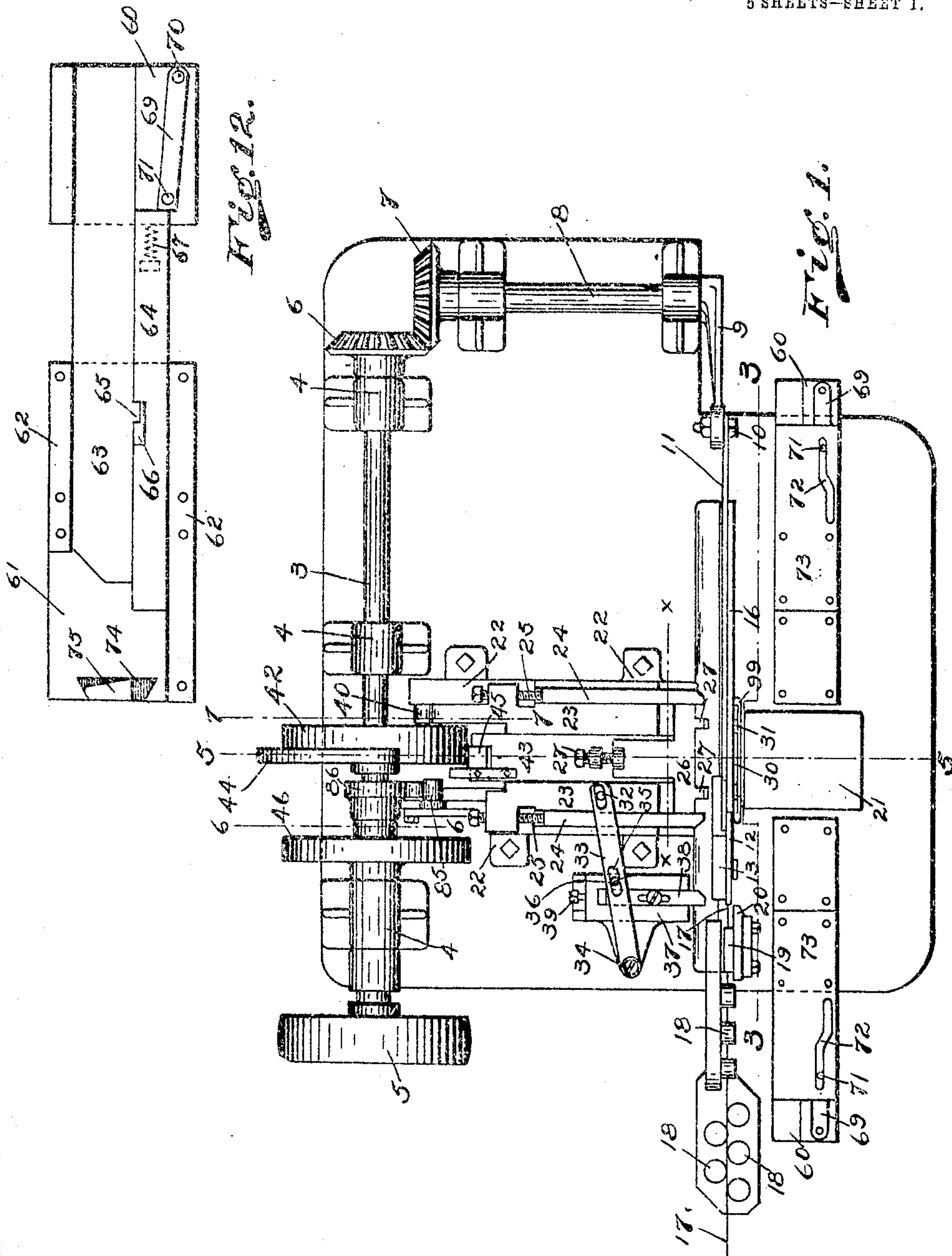
A. R. TIFFANY, DEC'D.
O. I. TIFFANY, ADMINISTRATRIX.
BAILING MACHINE.

APPLICATION FILED JUNE 29, 1908.

Patented Apr. 13, 1909.

5 SHEETS—SHEET 1.

918,395.



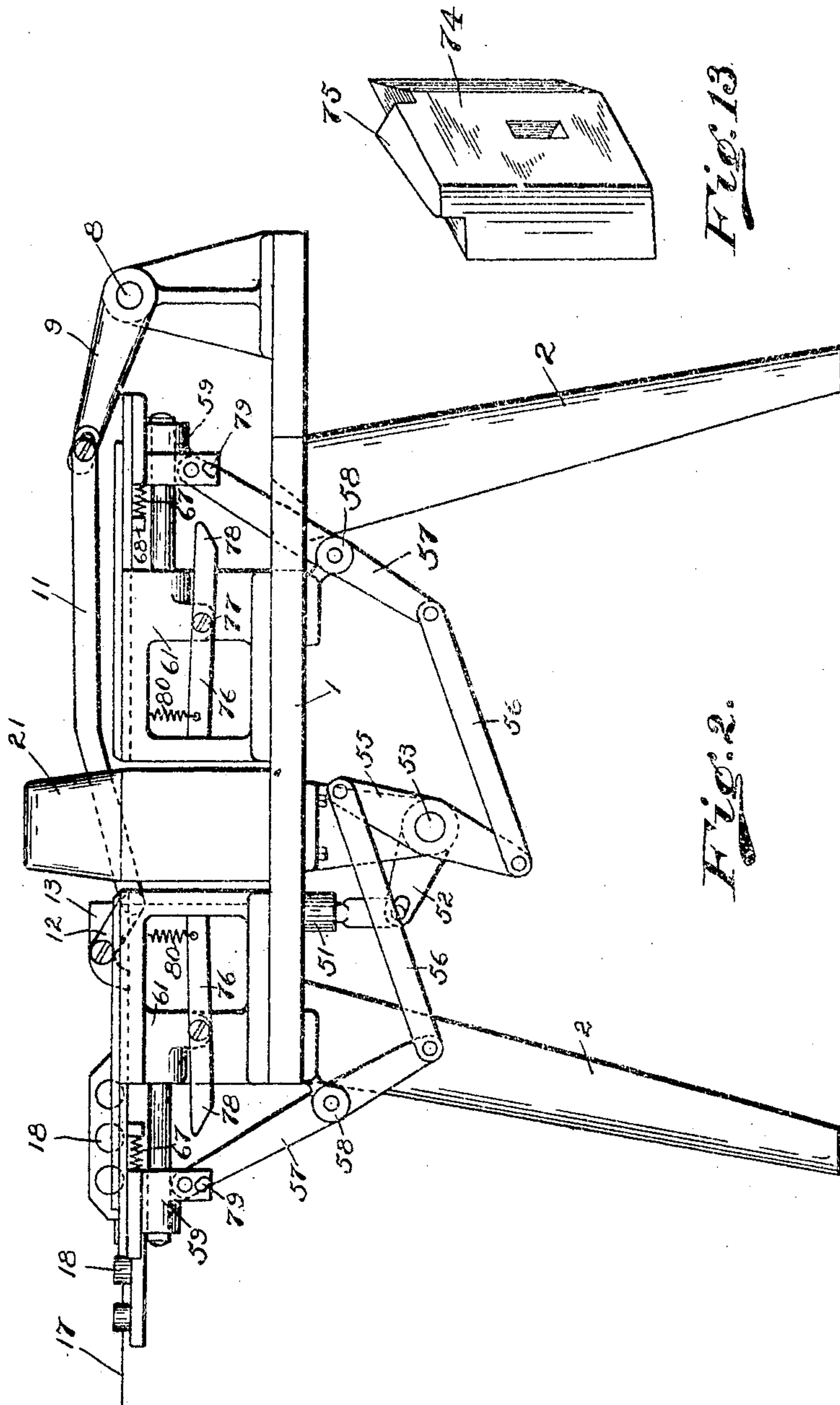
Witnesses
C. M. Palmer
Sam Harris

Inventor
Christina J. Tiffany, administratrix
of the Est. of Albert R. Tiffany, deceased
by Alfred M. Allen
Attorney

A. R. TIFFANY, DEC'D.
 O. I. TIFFANY, ADMINISTRATRIX.
 BAILING MACHINE.
 APPLICATION FILED JUNE 29, 1908.

918,395.

Patented Apr. 13, 1909.
 6 SHEETS—SHEET 2.



Witnesses
 C. M. Palmer
 Sam Harris

Inventor
 Christina S. Tiffany, Administratrix
 of the Est. of Albert R. Tiffany, deceased
 by Alfred M. Allen
 Attorney

A. R. TIFFANY, DEC'D.
O. I. TIFFANY, ADMINISTRATRIX.
BAILING MACHINE.
APPLICATION FILED JUNE 29, 1908.

918,395.

Patented Apr. 13, 1909.

5 SHEETS—SHEET 3.

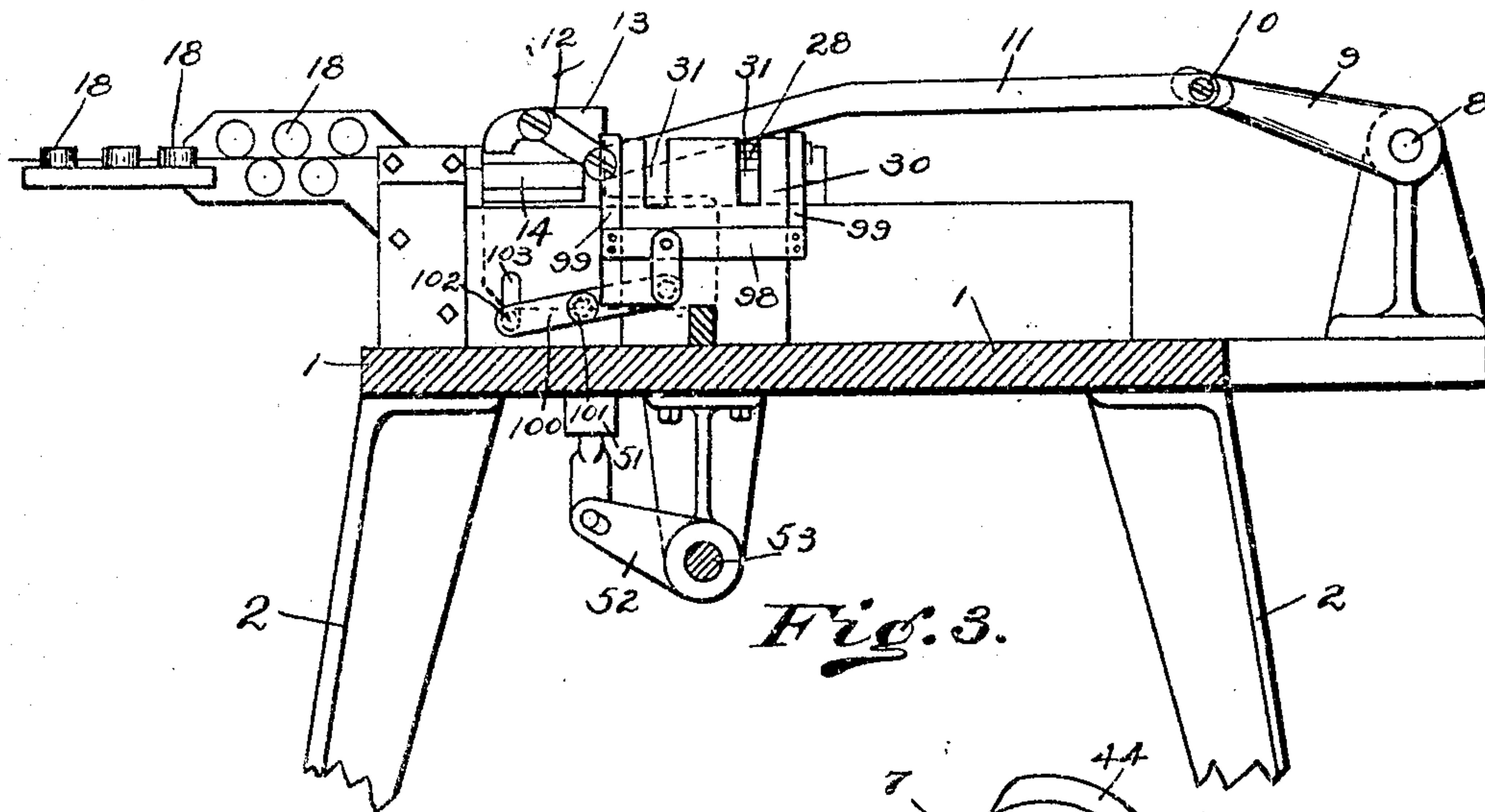


Fig. 3.

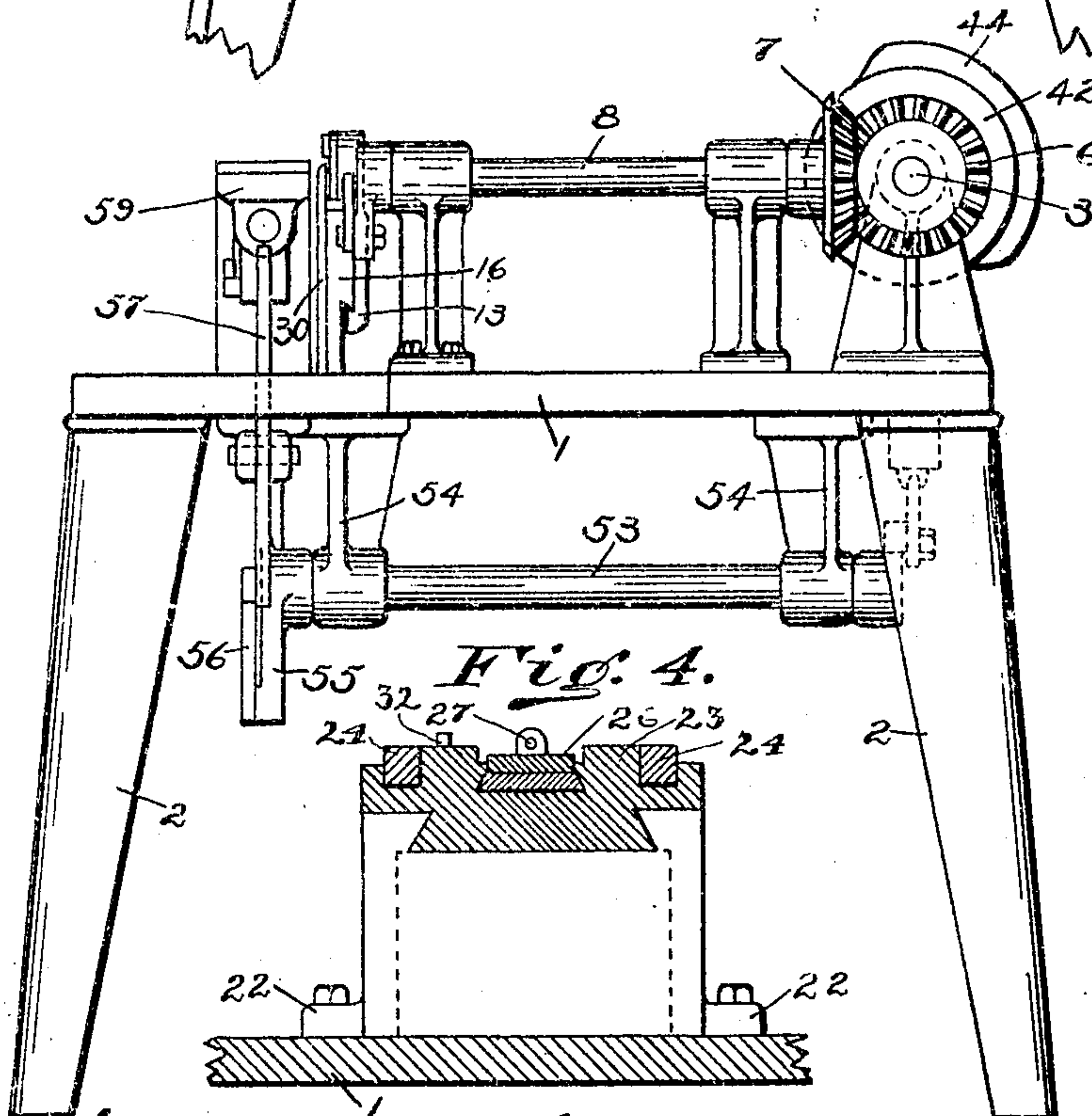


Fig. 4.

Witnesses Fig 14.
C. W. Paluvest
Sam Harris

Inventor.
Christina J. Tiffany, Administratrix
of the Est. of Albert R. Tiffany, deceased
by Alfred M. Allen
Attorney

A. R. TIFFANY, DEC'D.
O. I. TIFFANY, ADMINISTRATRIX.
BAILING MACHINE.

APPLICATION FILED JUNE 29, 1908.

918,395.

Patented Apr. 13, 1909.

5 SHEETS—SHEET 4.

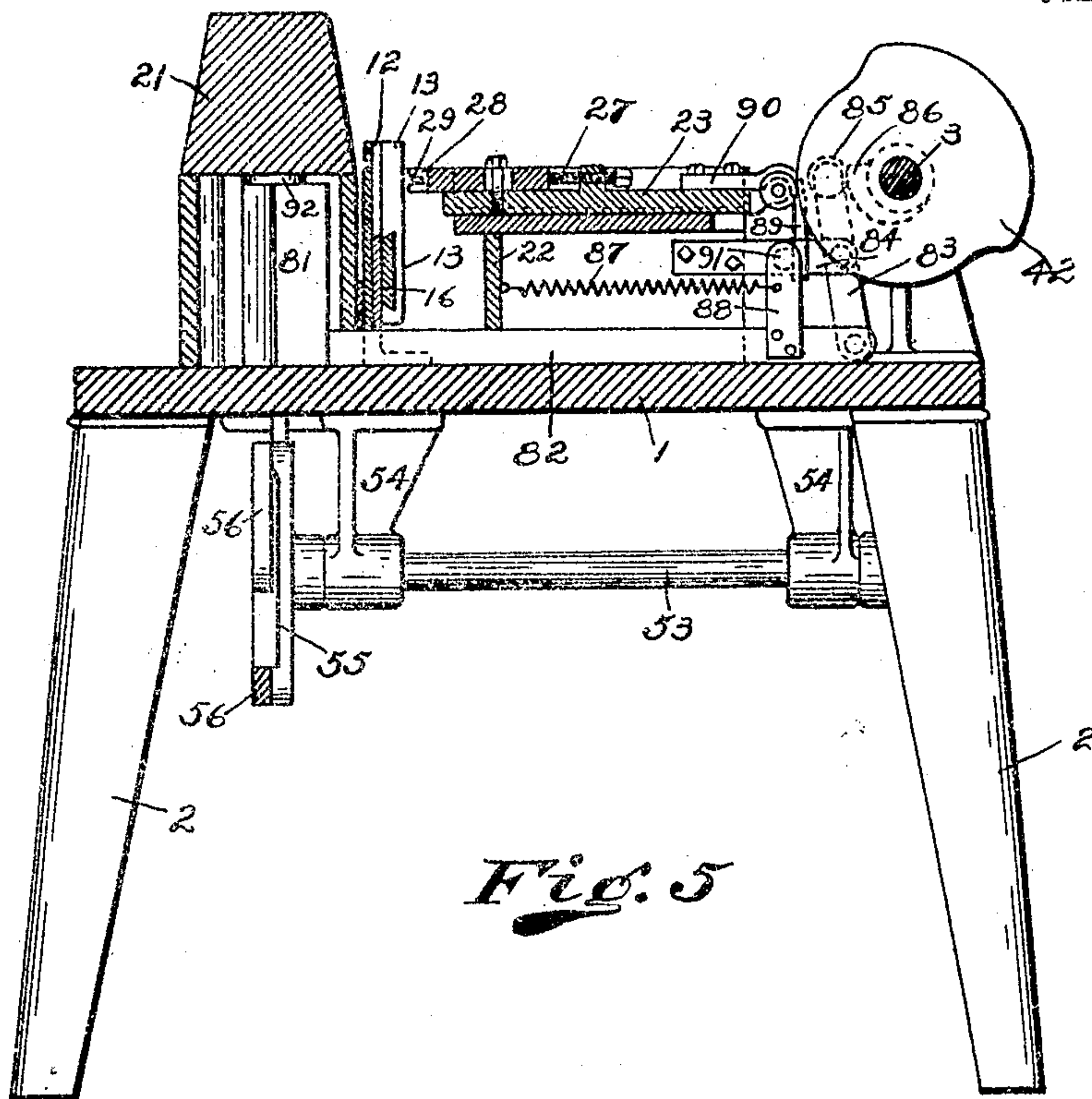


Fig. 5

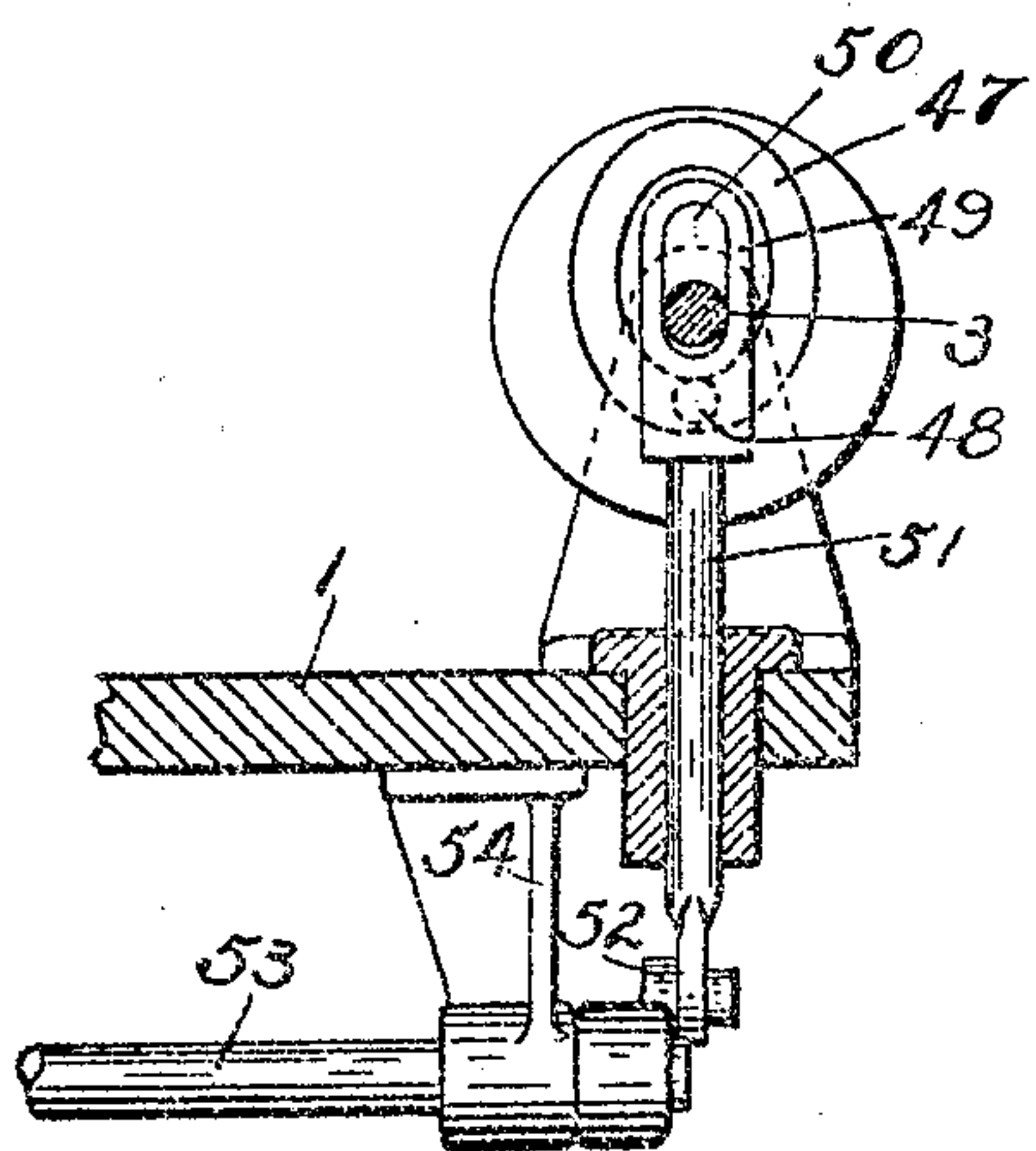


Fig. 6

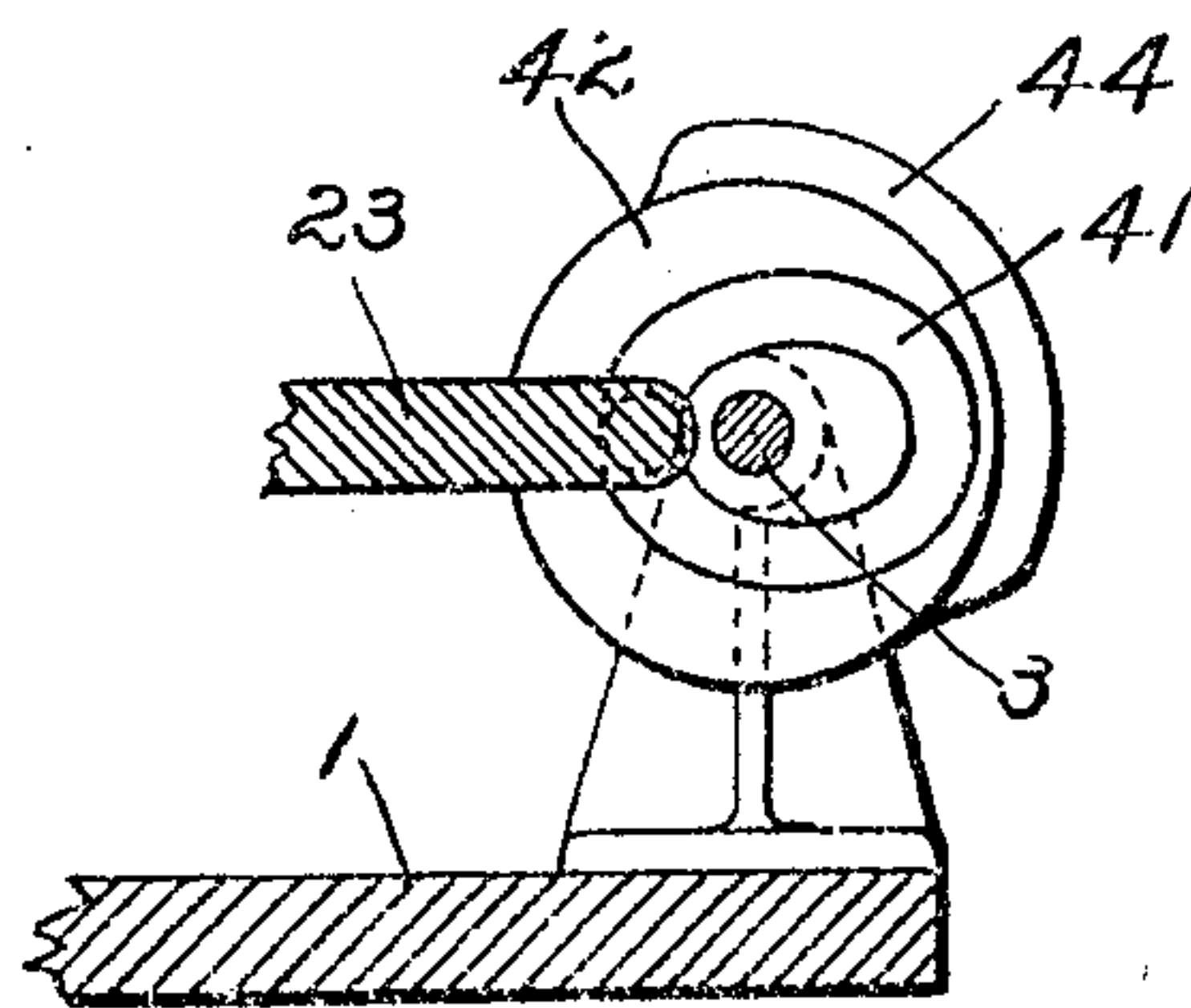


Fig. 7

Witnesses
C. M. Fahnestock
Rau Harris

Inventor
Christina J. Tiffany, Administratrix
of the Est. of Albert R. Tiffany, deceased
by Alfred M. Allen
Attorney

A. R. TIFFANY, DEC'D.
O. I. TIFFANY, ADMINISTRATRIX.
BAILING MACHINE.
APPLICATION FILED JUNE 29, 1908.

918,395.

Patented Apr. 13, 1909.

5 SHEETS—SHEET 5.

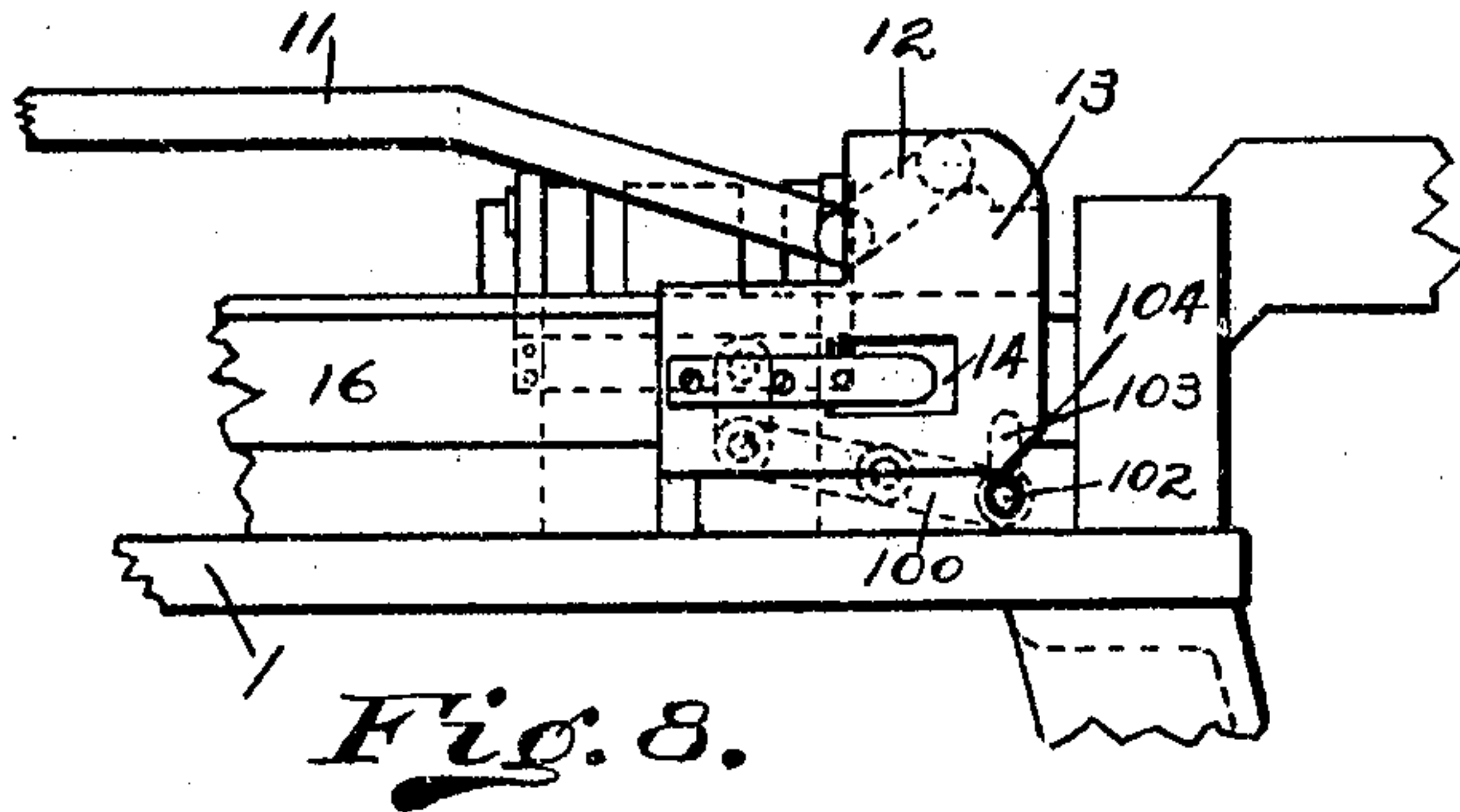


Fig. 8.

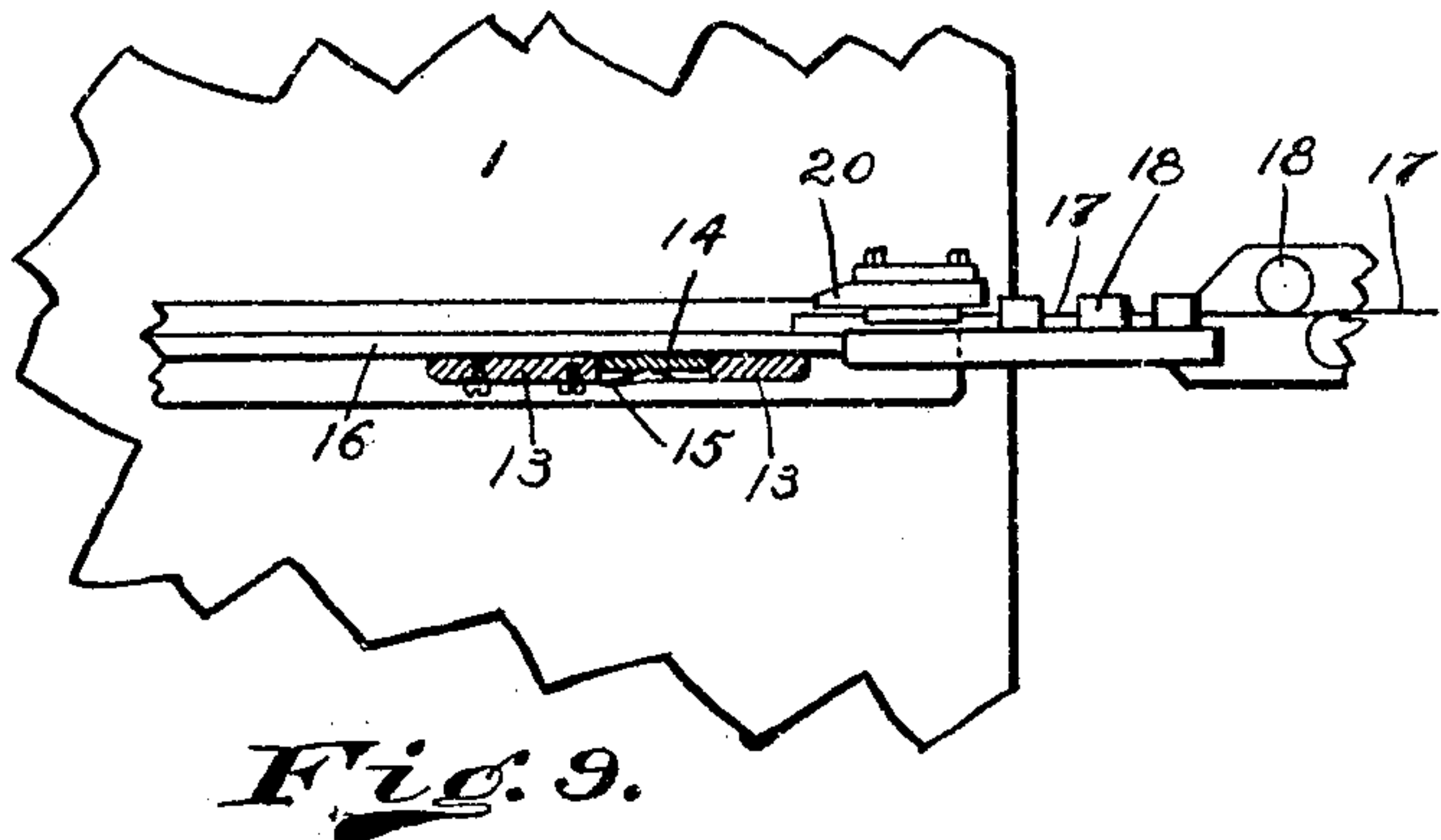


Fig. 9.

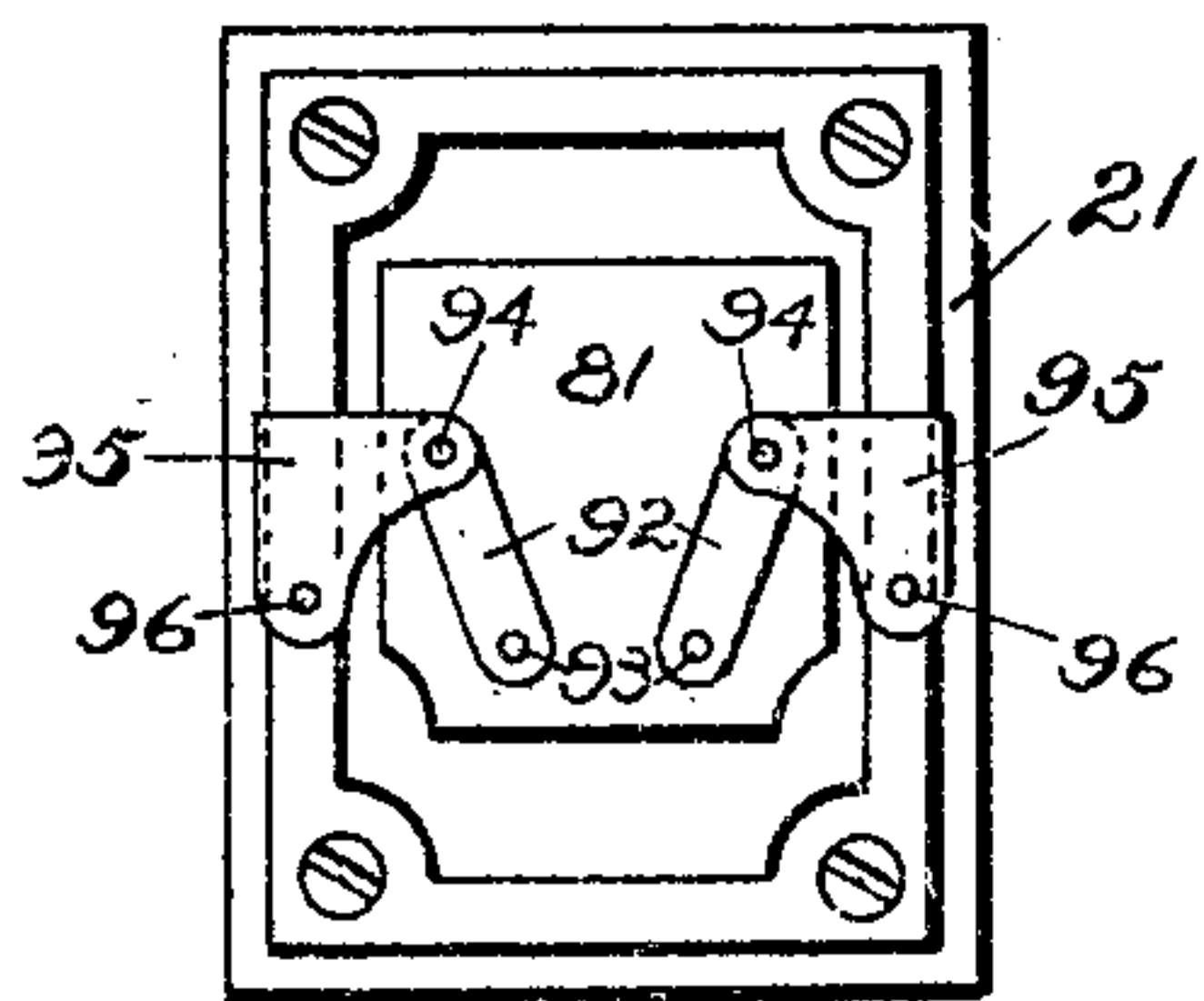


Fig. 10.

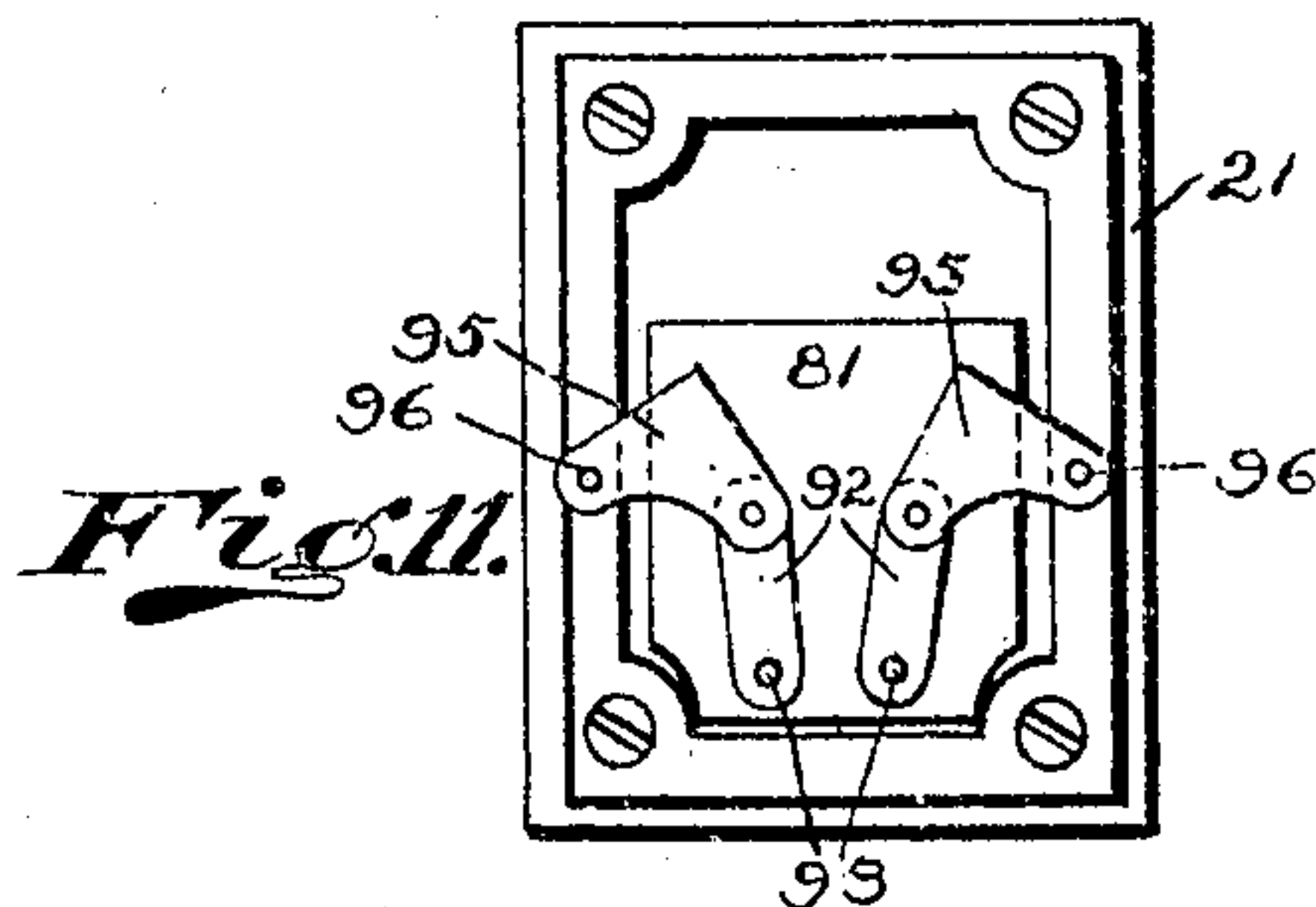


Fig. 11.

Witnesses
C. M. Palmestock
Sam Harris

Inventor
Christina D. Tiffany, Administratrix
of the Est. of Albert R. Tiffany, deceased
by Alfred M. Allen
Attorney

UNITED STATES PATENT OFFICE.

CHRISTENA I. TIFFANY, OF DAYTON, OHIO, ADMINISTRATRIX OF ALBERT R. TIFFANY,
DECEASED, ASSIGNOR TO THE O-K PAPER PAIL COMPANY, OF MIDDLETOWN, OHIO, A
CORPORATION OF OHIO.

BAILING-MACHINE.

No. 918,395.

Specification of Letters Patent.

Patented April 13, 1909.

Application filed June 29, 1908. Serial No. 440,960.

To all whom it may concern:

Be it known that I, CHRISTENA I. TIFFANY, a citizen of the United States, and a resident of Dayton, in the county of Montgomery and State of Ohio, am the duly appointed and qualified administratrix of the estate of ALBERT R. TIFFANY, deceased, who has invented certain new and useful Improvements in Bailing-Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

The invention relates to machines for forming and attaching the wire bail to paper buckets, oyster pails, and the like, and it consists of that certain novel construction and arrangement of parts to be hereinafter particularly pointed out and claimed.

In the drawings Figure 1 is a plan of the machine. Fig. 2 is a front elevation. Fig. 3 is a vertical section taken on the line 3—3 of Fig. 1. Fig. 4 is a side elevation of the right side of the machine. Fig. 5 is a central cross section taken on the line 5—5 of Fig. 1. Fig. 6 is a detail cross section of the main-driving shaft illustrating the cam for operating the staple driving mechanism, taken on the line 6—6 of Fig. 1. Fig. 7 is a similar cross section of the main driving shaft showing the cam for operating the bending flange, taken on line 7—7 of Fig. 1. Fig. 8 is a rear view in detail of the gripper mechanism for feeding the wire. Fig. 9 is a horizontal section of same. Figs. 10 and 11 are detail plan views of the clenching mechanism for the inner ends of the bail in different positions. Fig. 12 is an enlarged plan view of the staple driving mechanism with the top plate removed. Fig. 13 is a perspective view of the die over which the staple is formed. Fig. 14 is a detail cross section taken on the line x—x of Fig. 1.

The operating mechanism is suitably mounted and secured on the horizontal table 1, supported by suitable standards or legs 2—2.

3 is the main driving shaft of the machine mounted horizontally across the rear end of the machine in suitable journals 4—4—4, and driven by the pulley 5 from suitable power. Mounted on the opposite end of the driving shaft 3, is the beveled gear 6, which meshes with the gear 7 on the counter shaft 8, journaled in suitable supports on top of the table.

9 is an arm on the outer end of the shaft 8, which is coupled by a slotted connection 10, with the connecting bar 11 pivoted to the inner end of the gripper 12, which is in turn pivoted on the plate 13, which carries a flange 14, with which the movable gripper 12 co-operates to grip the wire to be fed across the machine. A rear view of this plate 13 is shown in Fig. 8, and a rectangular opening is cut through this plate, and the same is fitted with a washer of leather 14, as shown in Fig. 9, and 15 is a spring bearing on this washer to exert frictional pressure between the plate 13 and the dove tailed portion 16 (as shown in Fig. 5) of the fixed bar upon which the plate 13 is guided and slides. This tension between the plate 13, which as stated forms one member of the grippers in connection with the pivoted gripper 12, is necessary in order that the grippers shall take a firm grasp of the wire as the arm 9 on the shaft 8 is rotated. The wire 17 is fed to the machine from a suitable roll (not shown) through the straightening rollers 18—18, as shown in Figs. 1 and 3, these rolls being arranged at right angles to each other in sets to properly straighten the wire, and the wire extends through and a short distance beyond the plate 19 secured on the table. In front of this plate secured thereto by bolts is a block 20 against the edge of which the wire is severed by the cutting plunger to be hereinafter described. At the full inner throw of the arm 9, the grippers are brought to bear on the inner end of the wire, and as the shaft 8 continues its rotation, the draft of the connecting bar 11 on the inner end of the oscillating gripper 12 firmly clamps the wire between the grippers, the gripper plate 13 being held in position by the tension as above described, so that the grippers grasp the wire tightly before the gripper plate begins its movement to the right as the arm 9 continues its rotation. The wire is thus drawn from the roll across the machine to the rear of the form block 21, upon which the bucket to be bailed is placed in inverted position. As soon as the arm 9 commences its return movement, the push of the arm on the connecting bar 11 causes the gripper 12 to open and release the wire. At the same time, by means of the cams to be now described, the forked holding plate, the bending plungers, and the plunger to sever the wire, are fed forward to hold, cut off, and bend the wire, to bring the ends of the wire into posi-

tion to be acted upon by the driving and clenching devices to insert the bail and clench the same within the walls of the vessel to be bailed.

5 Mounted on the table 1 are the standards 22—22, upon which rides the plate 23 in suitable V guides. This plate 23 carries plunger rods 24—24 in suitable recesses along the side edges of the plate, these rods being se-
10 cured adjustably on the plate by the set screws 25—25. These two plungers 24—24 form the bending plungers for the bail. The plate 23 also carries in a suitable dove-tailed groove the slide 26, adjustably connected to
15 the plate 43 by the set screw 27. This plate 43 and the plate 26 slide independently of the main plate 23. The plate 26 is provided with two short arms 28—28, and these arms are provided with a V-shaped groove 29, as
20 shown in Fig. 5.

Mounted on the table between the form block 21 and the plate 26 is a vertical plate 30, provided with two slots 31—31 in line with the arms 28—28 on the plate 26, as shown
25 in Fig. 3. The function of the plate 26, with the arms 28—28 cooperating with the slots 31—31 in the plate 30 is to hold the wire during the bending operation, under the contact with the bending plungers 24—24.

30 On the main sliding plate 23 is the pin 32, Figs. 1 and 14, and 33 is a lever pivoted at 34 on a suitable standard, and this lever 33 is slotted at 35, and engages the pin 36 on a slide plate 37, which carries the cutting
35 plunger 38 adjustable on the slide by the set screw 39. It will be evident from this construction, that if the main plate 23 is actuated, the plunger plate 37 will be carried forward to bring the cutting plunger 38 against
40 the wire 17, and sever the same against the block 20.

The main slide plate 23 is actuated by the engagement of a roller 40 on the inner end of the plate, which takes within the eccentric
45 groove 41 in the cam wheel 42, mounted on the main driving shaft 3, as shown in Fig. 7. The cam wheel 42 is also provided with a cam surface 44, which engages with a roller 45 on the inner end of the slide plate 43.
50 The action of these cams is timed so that the holding plate, the bending and cutting plungers shall move forward just as the wire is released by the grippers, after it is drawn across the machine. Mounted on the shaft
55 3 is another wheel 46, which is provided with an eccentric groove 47, as shown in Fig. 6, within which groove engages the roller 48 mounted on the head block 49, which is suspended on the shaft 3 by the slot 50. This
60 head block 49 is mounted on the connecting rod 51, coupled to the arm 52 on the rock shaft 53, journaled in suitable hangers 54—54, depending from the table 1. This shaft 53 extends from the rear to the front of
65 the machine, and carries on its forward end,

as shown in Fig. 2, the lever, the ends of which are connected on each side by the connecting bars 56—56, with the levers 57—57 respectively pivoted on lugs 58—58 at each side of the table 1. The outer ends of these
70 levers are coupled to the blocks 59—59, which carry the driving and clenching devices. As the bail is to be inserted on each side of the bucket, these clenching devices are duplicated for each side of the machine,
75 and a plan view is shown with the top plate removed of the staple drivers in Fig. 12. The blocks 59 carry the plates 60, which slide toward the form block 21, with the rocking of the rock shaft 53.
80

61 is a frame mounted on the table, upon which the forward end of the staple drivers slide and are guided between the flanges 62—62.

The staple former and driver is made up of
85 two plates, a plate 63 attached to or part of the plate 60, and a separate driving plate 64. The plate 63 is provided with a lateral lug 65, which engages within a side slot 66 in the plate 64, and a coiled spring 67 is con-
90 nected to a lug 68 depending from the plate 64, and the main block 60. Pivoted at 70 on the upper horizontal surface of the plate 60 is a lever 69, the forward end of which lever engages the end of the plate 64. This
95 lever 69 carries a pin 71, which extends upward through the slot 72 in the top or cover plate 73, which covers the staple driver, as shown in Fig. 1. Mounted to slide vertically
100 at the inner edge of the housing 61 is the die plate 74, shown in perspective in Fig. 13, and top plan view in Fig. 12. This die plate 74 is provided with an extension 75, which forms a block around which the staple is bent, as will be hereinafter described, and
105 after the staple is bent, the die plate 74 is arranged to be shifted downward by the lever 76, pivoted on the housing at 77, and the outer beveled end 78 of which lever is engaged by the pin 79 on the head block 59, to
110 which the lever 57 is pivoted. A coiled spring 80 returns this lever to its normal position. The movement of the lever 57 carries forward the block 60, and with it the plates 63 and 64, and as the plate 64 extends
115 beyond the plate 63, the end of the wire, which is bent by the bending plungers 24—24, is given a short right-angle bend against the block 75, and as soon as this bend is made the pin 71 of the lever 69 riding in
120 the diagonal slot 72 carries the lever 69 from behind the plate 64, and the plate 63 continues to advance, driving the staple thus formed through the pail at the same time that the die plate 74 is withdrawn to per-
125 mit of the action.

In order to clench the staple when driven through the pail, the clenching devices are provided, as shown in Figs. 10 and 11. As
130 shown in Fig. 5 the lower portion of the

form. block 21 is hollow and carries the clenching block 81, mounted on the plate 82, which is coupled at its rear end with the lever 83 pivoted on a support 84. The upper end of this lever 83 carries a roller 85, which is engaged by a cam 86 mounted on the shaft, so that the block 81 may be shifted rearwardly at the proper moment by the action of the cam 86. The block 81 is returned to its normal position by the coiled spring 87 connected between the standard 22, and the lug 88 mounted vertically on the plate 82. As it happens that this spring 87 may fail to work properly to return the block 81 to its normal position, a hook 89 is also provided bolted at 90 on the main slide plate 23, the lower end of which hook engages a pin 91 on the lug, so that the movement of the slide 23 will positively return the block 81 to its normal position. The block 81 carries on its top surface the levers 92, pivoted at 93 to the block, and at their opposite ends pivoted at 94 to the clenching plates 95—95, which are in turn pivoted at 96—96 on a suitable support on the form block. The cam 86 on the main driving shaft 3 is timed to shift the block 81, and with it the clenching plates from the position shown in Fig. 11 to the position shown in Fig. 10, just as the ends of the bail forming the staple have been driven through the pail by the staple driver.

After the bail is formed and secured to the bucket, it is necessary to release the bail, so that the bucket can be readily removed, and in order to do this, as shown in Fig. 3 a frame 98 is provided with two vertical arms 99—99, which extend up alongside of the plate 30. This frame 98 is coupled with the lever 100 pivoted at 101 on the housing, and the outer end of this lever 100 is provided with a pin 102, which extends through a slot 103 in the housing in a position to be contacted with the lower edge 104 of the plate 13, which carries the grippers, as shown in Fig. 8.

The operation of the machine is as follows: The bucket to be bailed is placed in inverted position over the form block 21, and the machine is set in operation. The grippers grasp the end of the wire, and carry it forward across the machine to the rear of the form block. Just as the grippers release the wire, the cams on the driving shaft 3 carry forward the bifurcated holding slide 26 to grasp and hold the wire against the vertical plate 30, the cutting plunger 38 advances and cuts off the wire, and the bending plungers 24—24 bend the wire around the edge of the plate 30, and bring the inner ends of the wire into position on the die plate 74 against the lateral edge of the block 75. The staple drivers then advance, and the plate 64 forms a sharp right-angle bend in the end of the wire, and the driving plate 63 then continues to advance as the plate 64 is released and

drives the staple through the bail, and against the clenching plates 95, while with this movement the block 81 is shifted to actuate the clenching plates to clench the staple in place. The return of the gripper plate to its position to grasp again the end of the wire as a final operation shifts the frame 98 to throw up the bail, so that the bucket can be readily removed, and a new bucket placed in position.

Having thus described the invention, what is claimed is:—

1. In a bailing machine, a feeding mechanism for the wire, comprising a sliding member, a jaw pivoted thereto to engage the wire in cooperation with the sliding member, and a connecting bar pivotally secured to said jaw, with mechanism for reciprocating said bar to grasp and draw the wire across the machine and to release the same.

2. In a bailing machine, a feeding mechanism for the wire, comprising a fixed guide or track, a sliding member mounted to slide thereon, a jaw pivoted to said slide to engage the wire in cooperation with the sliding member, and a connecting bar pivotally secured to said jaw, with mechanism for reciprocating said bar to grasp and draw the wire across the machine and release the same.

3. In a bailing machine, a feeding mechanism for the wire, comprising a fixed guide or track, a sliding member mounted to slide thereon, a jaw pivoted to said slide to engage the wire in cooperation with the sliding member, and a connecting bar pivotally secured to said jaw, with mechanism for reciprocating said bar to grasp and draw the wire across the machine and release the same, with a friction clutch interposed between the sliding member and its guiding track to insure the grasp of the gripping jaw on the wire.

4. In a bailing machine, the combination with a movable die block, of a staple forming slide and a staple driving slide, means for coupling the same together, mechanism for advancing the staple driving slide to actuate the staple bending slide to bend the wire around the die block, and means for simultaneously withdrawing the die block and releasing the staple forming slide to permit the staple to be driven.

5. In a bailing machine, the combination with holding and bending slides for holding and bending the wire, of a vertically movable die block around which the staple is formed, a staple forming slide and a staple driving slide, with means for advancing the same simultaneously, means for coupling said slides together during the initial stroke, mechanism for releasing the staple forming slide when the final bend is made, and means for withdrawing the die block to permit the staple to be driven.

6. In a bailing machine, a staple forming slide and a staple driving slide, and a lever

connecting the staple driving slide with the staple forming slide, and a cam plate acting on said lever to shift the same and release the staple forming slide when the staple is
5 formed, and means for advancing said staple driving slide to drive the staple in place.

7. In a bailing machine, the combination with a form block to hold the vessel to be bailed, and staple forming slides and staple
10 driving slides to form and drive the staples through the vessel arranged in pairs on each side of the form block, of a clenching block mounted within the form block, with clenching plates pivotally mounted between
15 the clenching block and form block, and means for shifting the clenching block to actuate the clenching plates when the ends of the bail are driven through the vessel.

8. In a bailing machine, the combination
20 with a form block for holding the vessel to be bailed, of a bifurcated holding slide for holding the wire to be formed into the bail, a fixed plate with slides therein to receive the holding ends of said slide, and a vertically
25 movable frame with arms cooperating with said slotted plate, and means for actuating said frame to release the bail when the same is secured to the vessel.

9. In a bailing machine, the combination
30 with the main driving shaft, of a sliding plate with a pair of bending plungers mounted thereon, and a cutting plunger coupled thereto, with a single cam on the main driving shaft for operating all of said
35 plungers.

10. In a bailing machine, the combination with the main driving shaft, of a sliding plate with a pair of bending plungers mounted thereon, and a cutting plunger
40 coupled thereto, with a single cam on the main driving shaft for operating all of said

plungers, a second sliding plate intermediate the bending plungers, and a bifurcated wire holding plate secured thereto, with a second
45 cam on said main driving shaft to actuate said plate in advance of the bending and cutting plungers.

11. In a bailing machine, the combination with the main driving shaft, and a form block for holding the vessel to be bailed, of
50 two sets of staple forming and staple driving plates, the staple forming and staple driving plates of each set being coupled together, and each set disposed on opposite sides of said forming block, with a rock shaft and
55 connecting levers for actuating said plates, and a cam on the main driving shaft for rocking said rock shaft.

12. In a bailing machine, the combination with the main driving shaft, and a form
60 block for holding the vessel to be bailed, of two sets of staple forming and staple driving plates, the staple forming and staple driving plates of each set being coupled together, and each set disposed on opposite sides of said
65 forming block, with a rock shaft and connecting levers for actuating said plates, and a cam on the main driving shaft for rocking said rock shaft, a clenching block mounted within the form block, with clenching plates pivotally mounted between the clenching block and form block, and a cam on said main driving shaft to actuate the clenching block as the ends of the bail are driven through the vessel.

CHRISTENA I. TIFFANY,
Administratrix of the estate of Albert R. Tiffany, deceased.

Witnesses: .

ROSCOE T. STAUTER,
CLARA M. SCHROEDER.