

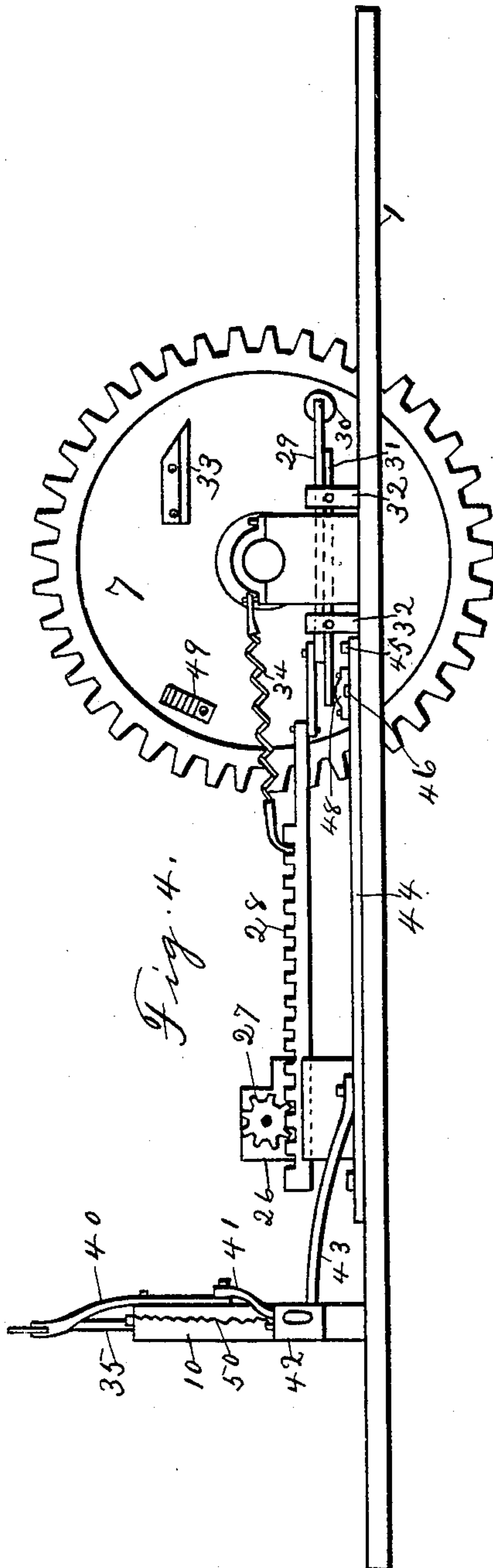
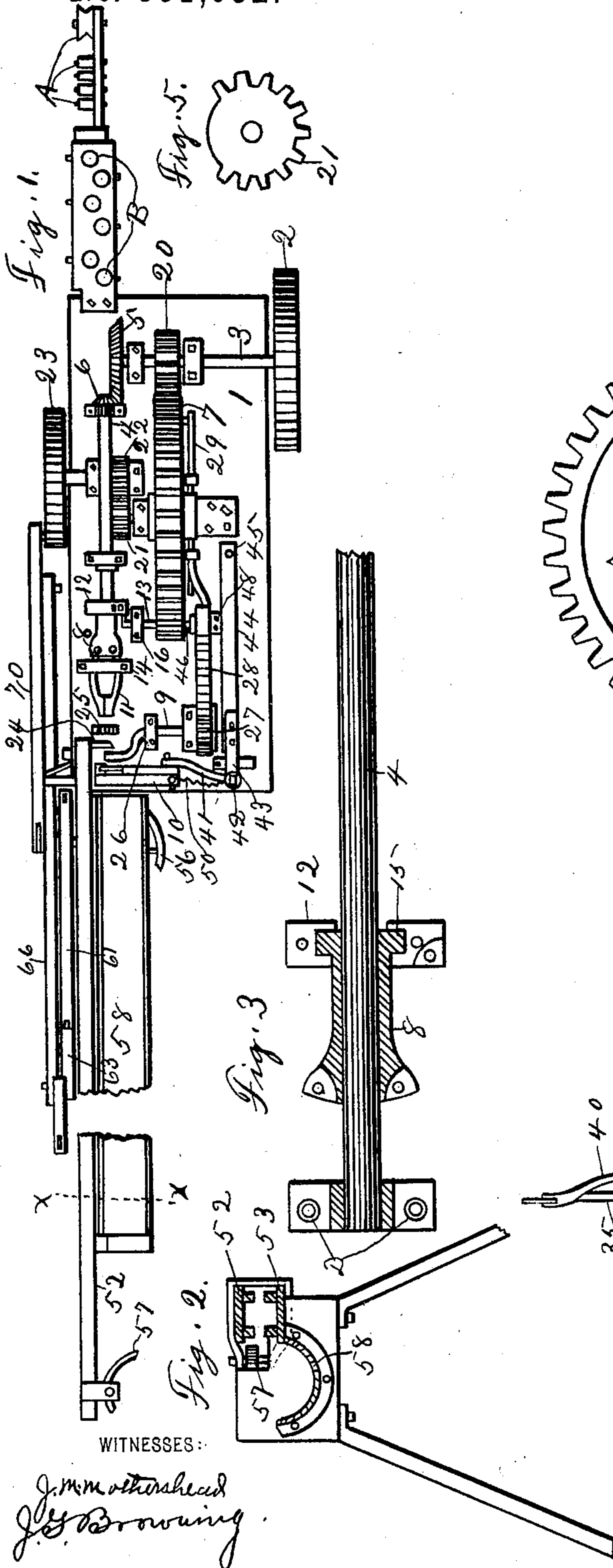
(No Model.)

3 Sheets—Sheet 1.

O. K. HARRY.
BALE TIE MACHINE.

No. 591,532.

Patented Oct. 12, 1897.



WITNESSES:

J. M. Matthewshead
J. E. Browning.

INVENTOR,
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BY
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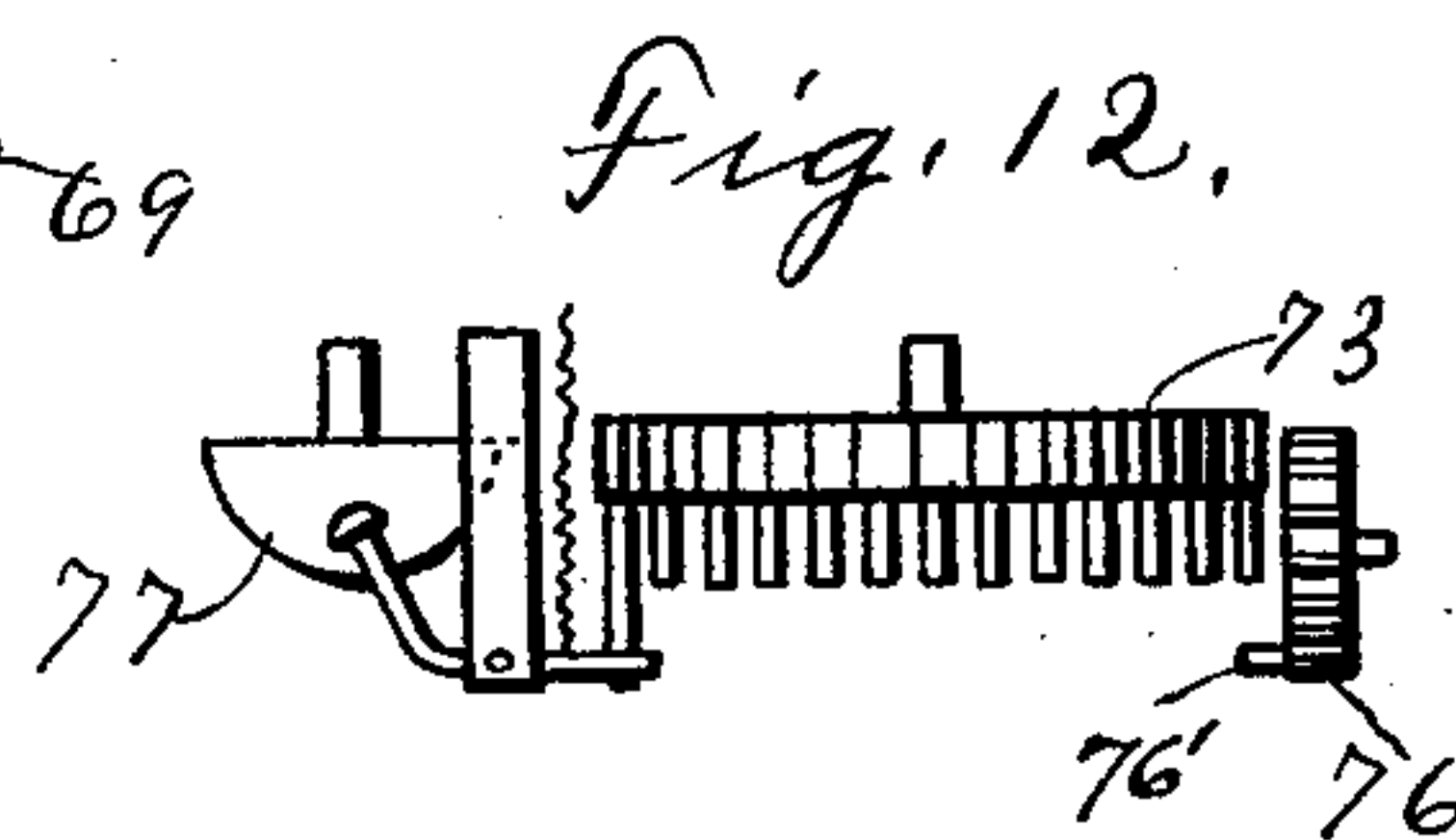
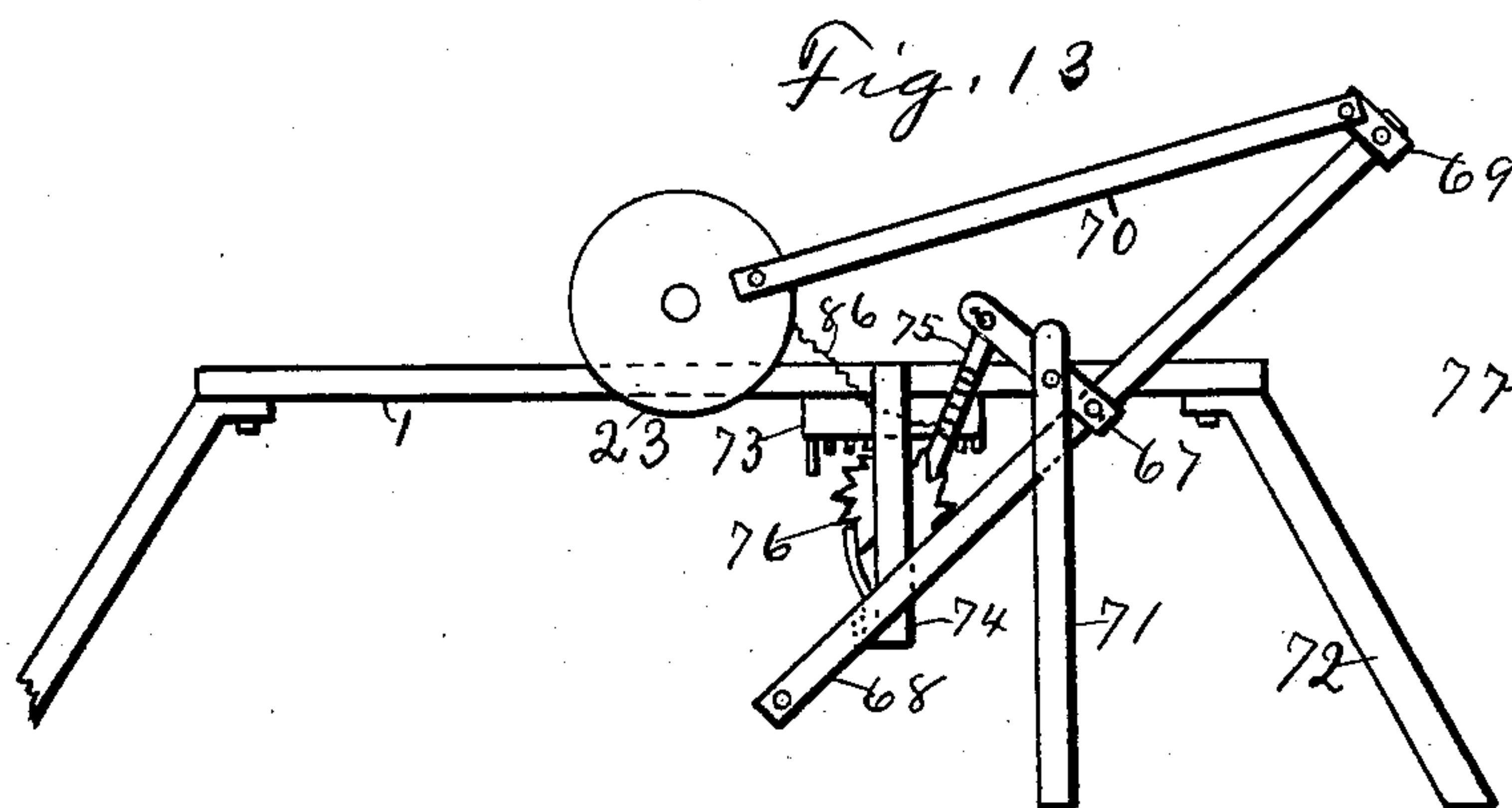
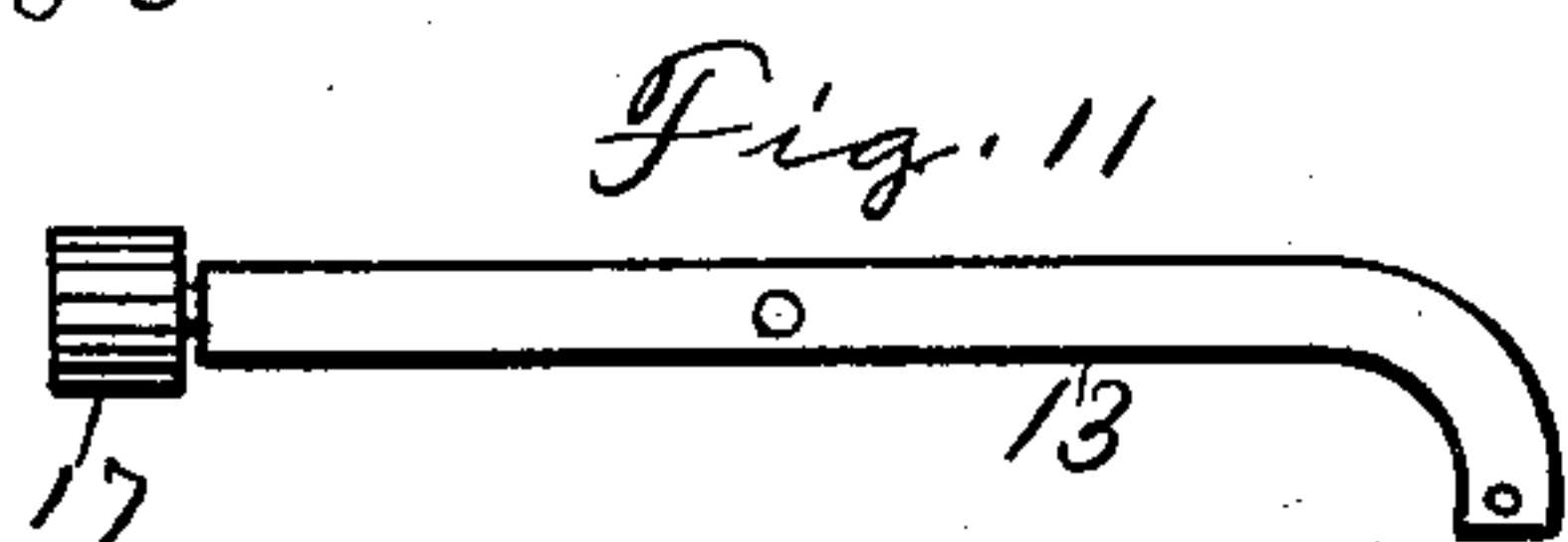
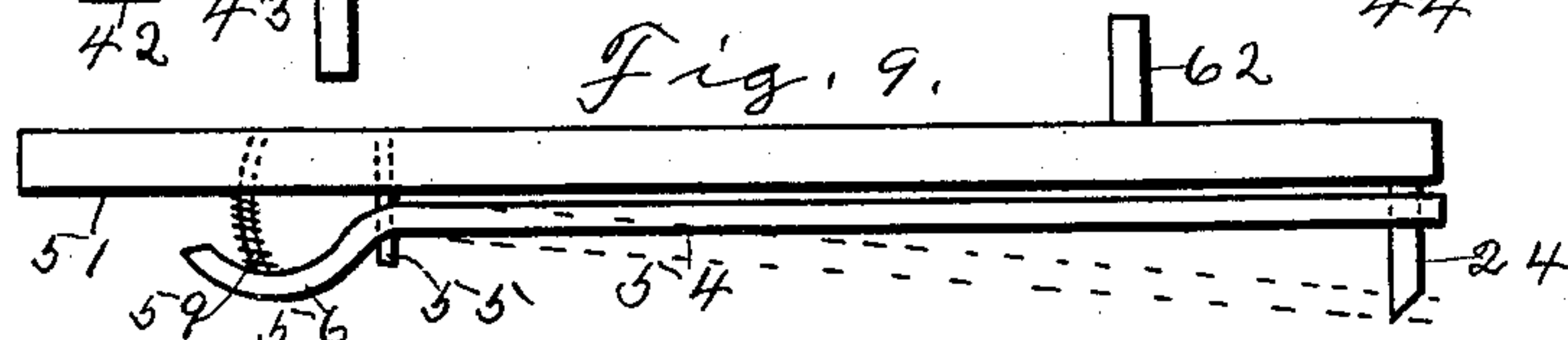
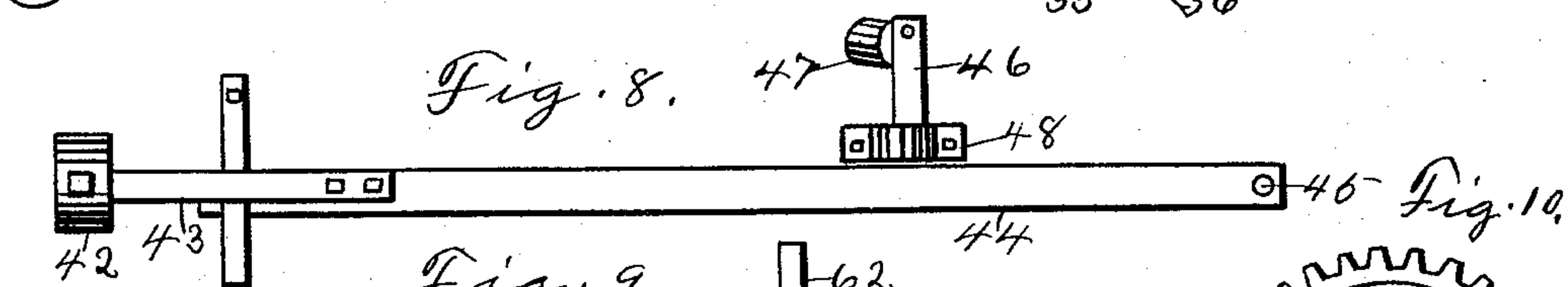
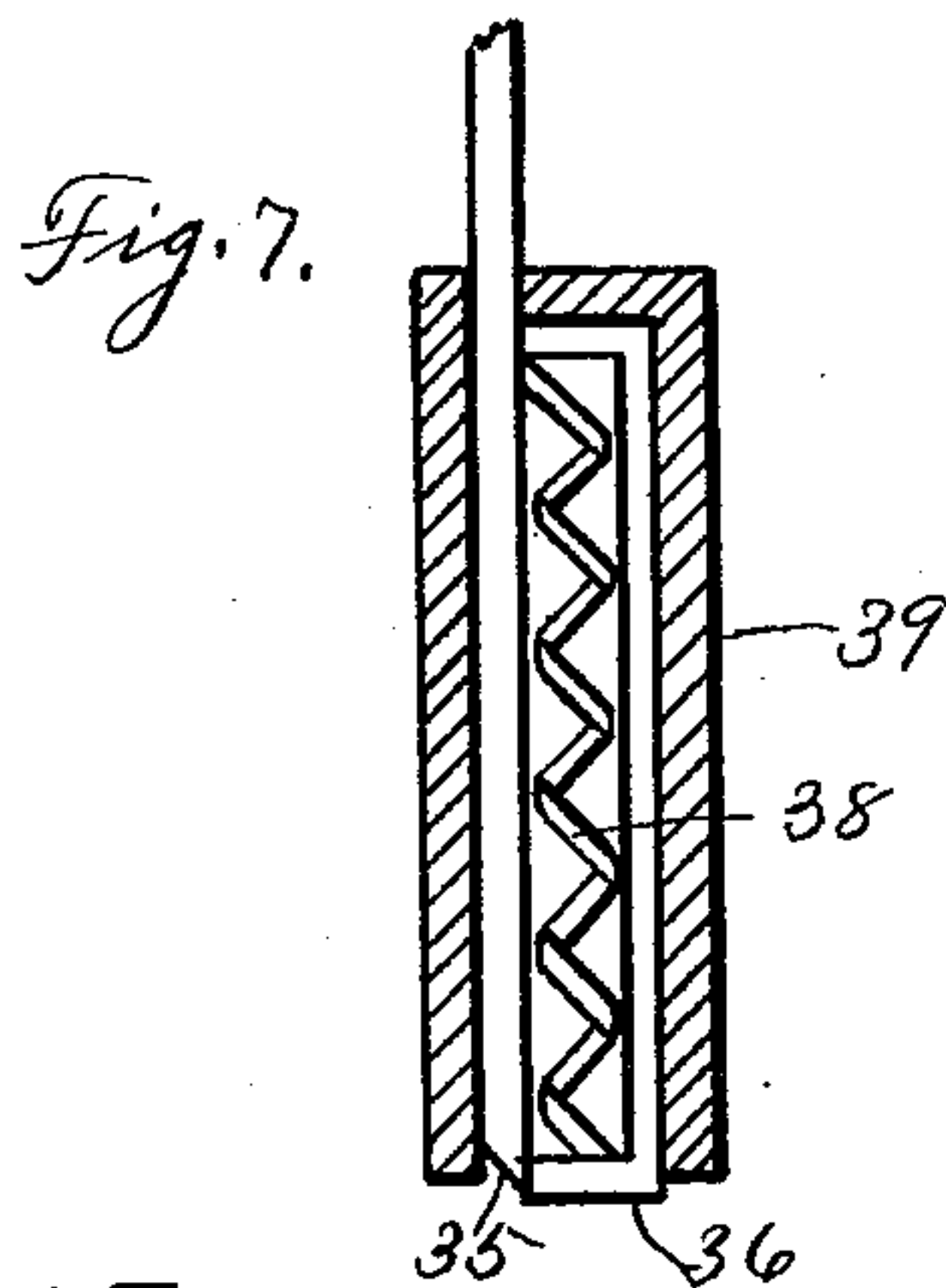
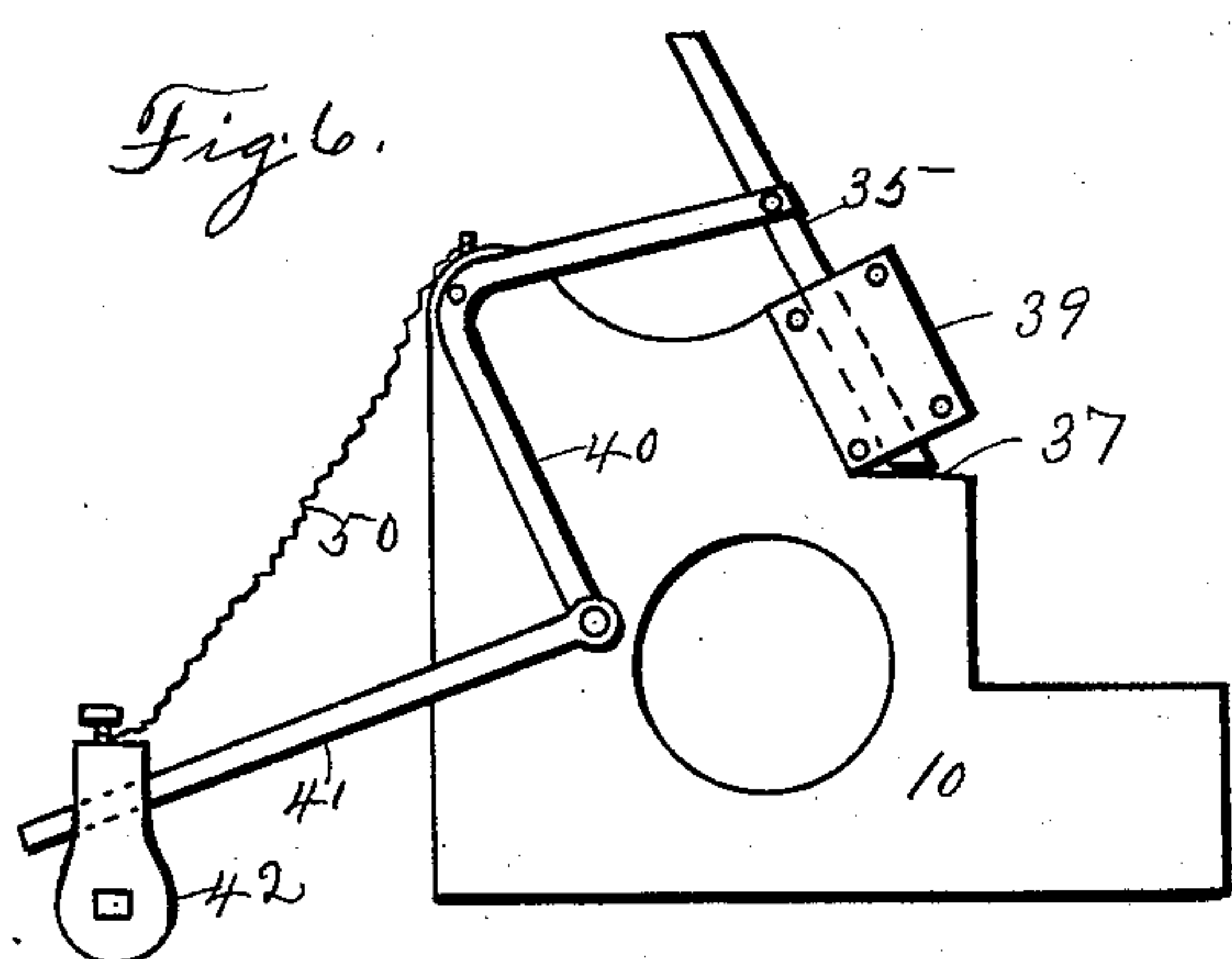
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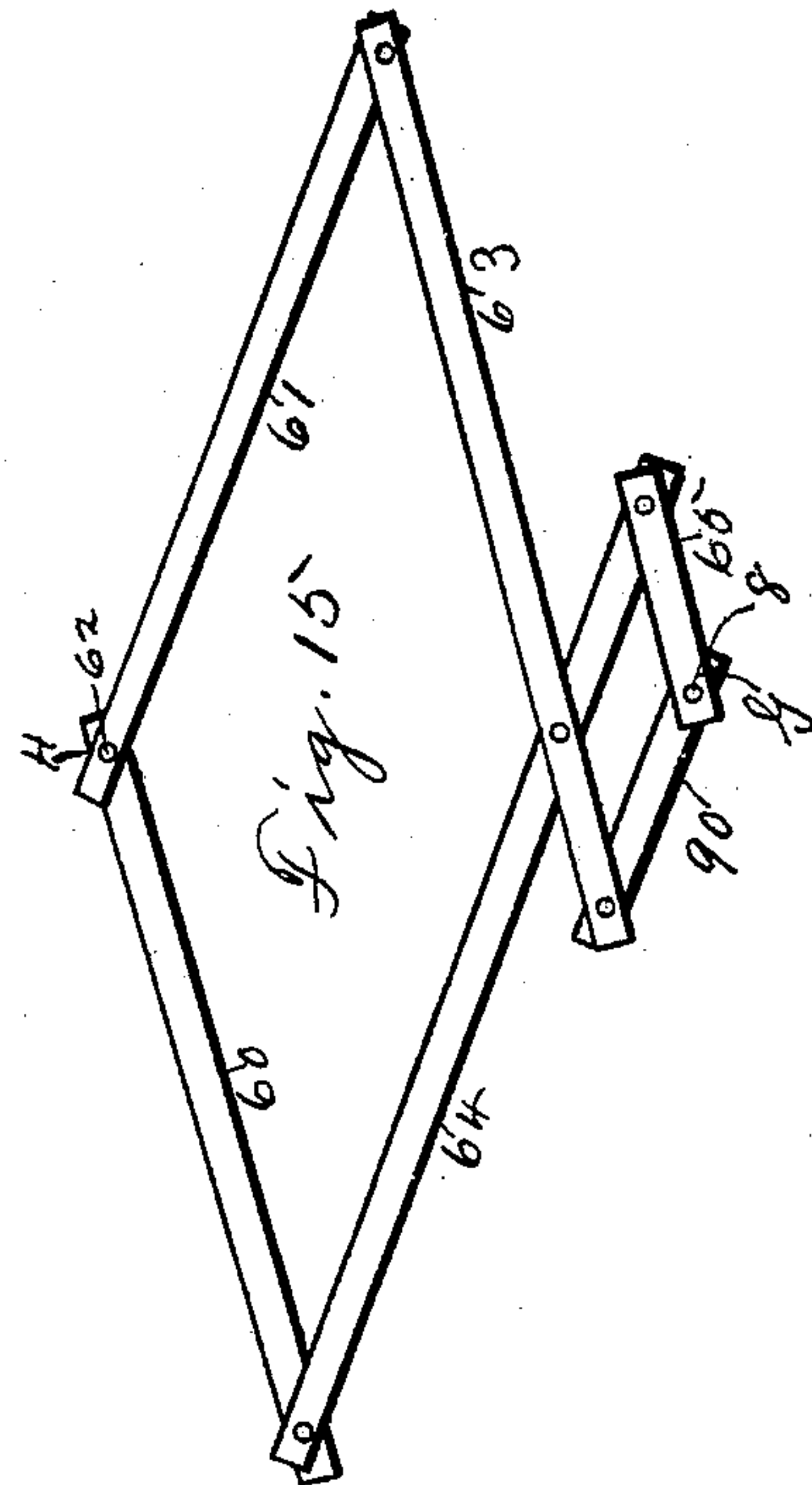
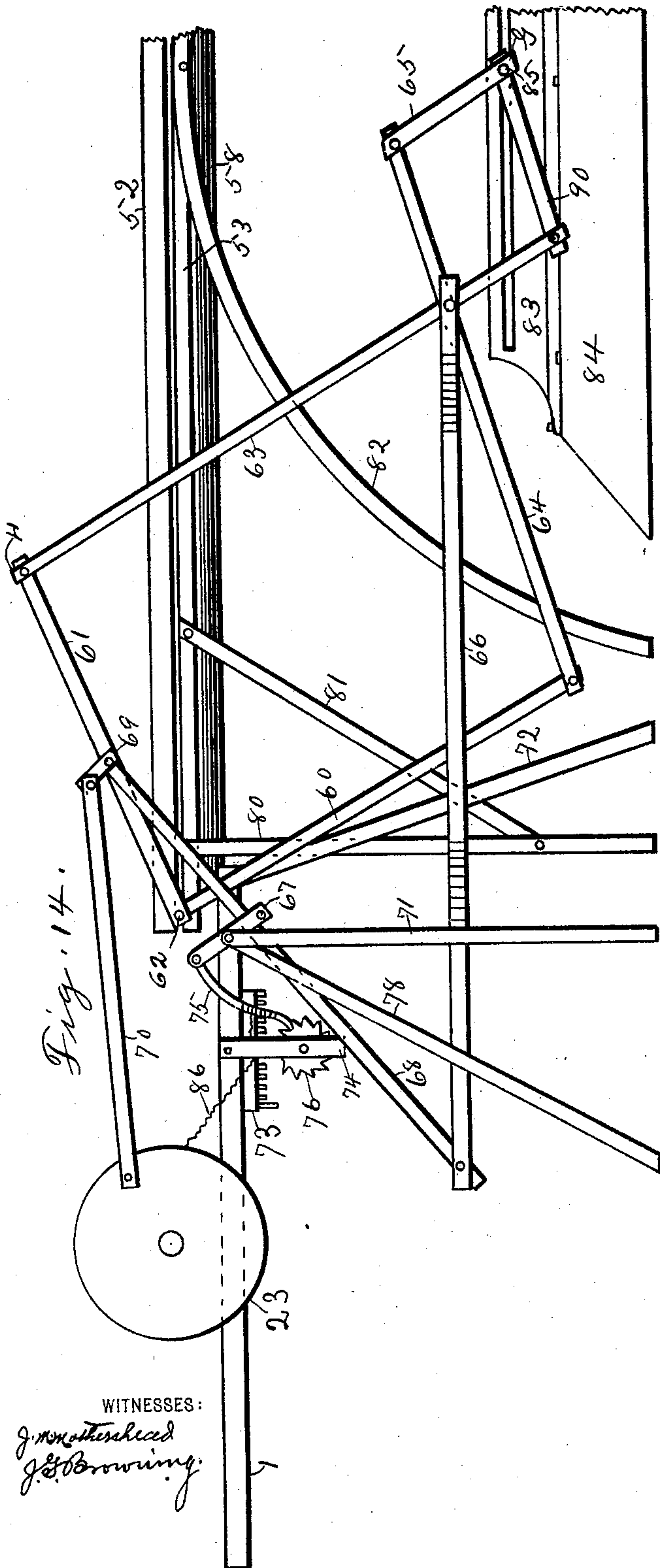
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3 Sheets—Sheet 3.

O. K. HARRY.
BALE TIE MACHINE.

No. 591,532.

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UNITED STATES PATENT OFFICE.

OWEN K. HARRY, OF DALLAS, TEXAS.

BALE-TIE MACHINE.

SPECIFICATION forming part of Letters Patent No. 591,532, dated October 12, 1897.

Application filed August 17, 1896. Serial No. 603,061. (No model.)

To all whom it may concern:

Be it known that I, OWEN K. HARRY, a citizen of the United States, residing at Dallas, in the county of Dallas and State of Texas, have invented a new and Improved Bale-Tie Machine, of which the following is a specification.

My invention relates to machines for making and counting bale-ties; and the object is to manufacture at small cost machines which will be compact, not taking up much space, and which will be simple in construction and durable.

The invention consists in the novel construction and arrangement of parts herein-after fully described, and more particularly pointed out in the claims.

Reference is had to the accompanying drawings, forming a part of this specification.

Figure 1 is a top view of the machine. Fig. 2 is a cross-section through line xx of Fig. 1, looking toward the left. Fig. 3 is a detailed view of the twister, partly in section. Fig. 4 is a side elevation of the shifting-wheel with the wire-cutting and loop-forming mechanism. Fig. 5 is a detailed view of a pinion adapted for intermittent driving. Fig. 6 is a side elevation of the wire-cutter. Fig. 7 is a detailed view of the cutter, the casing being in section. Fig. 8 is a top view of the mechanism for operating the cutter. Fig. 9 is a top view of the device for discharging the ties. Fig. 10 is a side elevation of the shifting-wheel, showing dogs attached for shifting the wire-twister. Fig. 11 is a view of the pivoted arm forming the operative means between the twister and the shifting-wheel. Figs. 12 and 13 illustrate the automatic counting device. Fig. 14 is a side elevation of the mechanism for operating the counting device and the tie-discharger. Fig. 15 illustrates the positions of frames G and H obtained when at the middle of their course. When at the end of their course, their positions are just the reverse of those illustrated in Fig. 14.

Similar characters of reference indicate the same parts throughout the several views.

The machine is mounted on a suitable platform 1 and can be driven by any suitable motive power, and power is applied by means of

a wheel 2, mounted on a shaft 3. Wire is supplied from spools and is first run through rollers A and B for straightening it. A hollow shaft 4 receives the wire. This shaft is driven by beveled cog 5, mounted on shaft 3, and beveled pinion 6, mounted on shaft 4. Wheel 7 constitutes a part of the means for operating the wire-twister 8, the folder 9, and the cutter 10. The twister 8 is mounted on shaft 4 and consists of the body part or tube 8, the fingers 11, pivoted thereon, the clamp 12, and the pivoted arm 13. The fingers 11 are pivoted on the twister 8 and have a suitable bearing 14, which causes the arms to open and close as the twister is moved back and forth. The bearing 14 for fingers 11 is mounted rigidly on the shaft 4 and revolves as the shaft revolves. This bearing may consist of two parts bolted together or it may be cast in one piece. Antifriction-rollers D may be put in the bearing to facilitate the passage of fingers 11. The other end of the twister has an annular flange 15, which revolves in a groove in clamps 12. An arm 13 is pivoted in clamps 12 and in a suitable bearing 16, mounted on platform 1. A roller 17 is mounted on arm 13 and is adapted to engage dogs 18 and 19 on wheel 7. When the roller 17 engages dog 18, the twister is forced forward to engage the wire for twisting same, and when wheel 7 is turned far enough for roller 17 to engage dog 19 the twister is forced back to its normal position.

Wheel 7 is driven by pinion 20. On the shaft with wheel 7 is mounted a pinion 21, which meshes with pinion 22. By the means thus described wheel 23 is driven. A portion of pinion 21 is blank, as shown in Fig. 5. This is for the purpose of allowing the wire to stop long enough to be twisted to hold the loop in the wire. A portion of pinion 21 being blank wheel 23 is allowed to stop for a short interval.

The loop-forming mechanism consists of a lug 24, mounted on the wire-carrying device, a guide 25, a bent rod 9, and the wire-twister already described. Rod 9 is journaled in a suitable bearing 26 and has a pinion 27, mounted on the outer end. This pinion meshes with rack 28, which is connected to a bar 29, bearing a roller 30. Bar 29 is mounted on and slides on a bar 31. Bar 31 is attached to

two uprights 32, which are bent over to hold bar 29 in place. Roller 30 is adapted to engage a dog 33. This forces the rack 28 forward and revolves pinion 27, and consequently rod 9, and so bends the wire into a loop. Guide 25 prevents rod 26 from bending the wire below fingers 11. A spiral spring 34 engages rack 28 and draws the rack back and so replaces the rod 26.

10 The wire-cutting mechanism is shown in Figs. 1, 4, 6, 7, and 8. An upright 10 is mounted on the platform 1. The cutting device is mounted on this upright and consists of a cutter-bar 35 and a bar 36 for holding the wire

15 on shoulder 37 while being cut. These two bars are connected together by a spiral spring 38, and these three pieces are inclosed in a case 39, mounted on upright 10. Springs 38 and 50 show the cutter and its mechanism in place. A

20 bell-crank lever 40 is pivoted to bar 35 and on upright 10. A rod 41 is pivotally joined to lever 40 and the other end is inserted in a connecting-block 42, which may be of any convenient shape. A rod 43 is inserted in this block and

25 attached to a lever 44. Lever 44 is pivoted on the platform at 45. A rod 46, bearing a roller 47, is mounted loosely in a bearing 48 and engages lever 44. A dog 49 is secured to wheel 7 and is adapted to engage roller 47.

30 This dog throws lever 44 out and consequently the cutting-bar 35 down. A spiral spring 50 draws the several parts back in place.

The ties are discharged by means of the mechanism illustrated in Figs. 1, 2, 9, 13, and

35 14. A bar 51, bearing lug 24, is mounted in a track composed of bars 52 and 53, provided with flanges which prevent bar 51 from falling out at the sides. On this bar is pivoted a bar 54 for throwing the wire off of lug 24.

40 This bar has a loop in which lug 24 is held, and the bar is pivoted at 55 and curved at 56. Curve 56 engages a curved arm 57, mounted adjacent to track-bars 52 and 53. This mechanism throws bar 54 to a position as illustrated by dotted lines in Fig. 9, and so throws

45 the wire into trough 58. A spring 59 throws bar 54 back into its normal position. Spring 59 is wound on a curved bar which serves as a guide. Bar 51 is driven back and forth by

50 wheel 23 and the framework illustrated in Fig. 14. The bars 60 and 61 are pivoted on a bolt 62, attached rigidly in bar 51. Two other bars 63 and 64 complete a quadrilateral frame II, with bars 60 and 61 pivotally at-

55 tached at each corner. The bars 63 and 64 extend beyond the corner and form a smaller quadrilateral G, with bars 65 and 90 also pivotally joined together. These frames are driven back and forth by rod 66. Wheel 23

60 serves as a drive-wheel for the mechanism thus described. A cuff 67 is pivoted on platform 1. A bar 68 is attached rigidly to the lower end of cuff 67. Bar 68 is pivotally connected to bar 66 at its lower end and the up-

65 per end is pivoted by means of a cuff 69 to a pitman-rod 70. During a revolution of wheel

23 the frame H carries bar 51 out to its limit and the wire is thrown into the trough 58. The parts marked 78, 71, 80, 81, and 82 are braces. A block 83, provided with a slot, is

70 mounted on a suitable support 84. This block guides the frame G back and forth. The pivot-bolt 85 extends through the slot in block 83 and is held in the slot in any suitable way, as by a nut and washer.

75 An automatic counting device is attached to platform 1 on the under side. A rotating disk 73 is provided with teeth projecting downward and arranged around near the edge of the disk, one of these teeth being longer

80 than the other. A pawl and a ratchet-wheel are mounted on a hanger 74, adjacent to disk 73. The ratchet-wheel 76 has a lug 76', which engages the teeth of disk 73. A finger 75, attached to cuff 69, registers with and drives the

85 ratchet-wheel 76. A spring 86 holds finger 75 securely against ratchet-wheel 76. There are ten teeth on the ratchet-wheel and there are twenty-five teeth on the disk 73. Every

90 revolution of wheel 23 causes one tie to be discharged into the trough and causes finger 75 to move the ratchet one tooth. One revolution of the ratchet-wheel indicates that ten

95 ties have been discharged, and the lug on the ratchet-wheel turns disk 73 one tooth, so that a complete rotation of disk 73 indicates that two hundred and fifty ties have been discharged or delivered. A bell 77 is arranged

100 so that a pivoted spring-pressed lever will be struck by the long tooth on disk 73, thereby ringing the bell whenever a complete rotation is made. (See Fig. 12.)

The operation will be readily understood. The wire is received through rollers A and B into the hollow shaft 4. When the wire

105 reaches the cutter 10, it is cut off to begin a new tie. When cut, the folder 9 turns the wire around lug 24 back over guide 25. Wheel 7 at that instant throws the twister forward, and the fingers 11 grasp the wire

110 thus bent back and also the main wire and twists the bent portion around the main wire. While this is being done pinion 22 has reached the blank place in pinion 21. Consequently

115 the driving mechanism of the carrier has stopped. By the time the wire is twisted enough pinion 22 will again engage pinion 21 and so start the carrier 51. When the carrier has drawn the wire far enough, the

120 wire is cut off. The tie is complete and is immediately thrown into the trough 58 by the tripping-bar 54.

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

125 1. A bale-tie machine provided with mechanism for cutting wire and forming loops in same, consisting of a shifting-wheel having dogs attached to the side thereof, a cutting device suitably mounted, levers 40 and 41 ar-

130 ranged to be actuated by one of said dogs, a rod for bending the wire, said rod having a

bent portion, a shaft for said rod provided with suitable bearings, a pinion mounted on said shaft, a rack meshing with said pinion, means for driving said rack, said loop-forming mechanism being actuated by one of said dogs, a lug over which the wire is bent, and a guide against which the wire is pressed.

2. In a bale-tie machine, means for cutting the wire, consisting of a wheel mounted on a suitable shaft, a dog attached to the side of said wheel, a rod mounted in a sliding bearing, a roller adapted to engage said dog mounted on said rod, a lever mounted adjacent to said rod, a bell-crank lever suitably mounted, means connecting said levers, and a cutter-bar pivotally joined to said bell-crank lever.

3. In a bale-tie machine, a wire-twisting device consisting of a shaft suitably mounted, a body portion mounted loosely on said shaft and having an annular flange or rib at one end, clamps mounted on said body portion, said clamps having a groove engaging said flange, fingers pivoted in the other end of said body portion, a bearing for said fingers mounted on said shaft, and means for moving said body portion back and forth on said shaft, thereby adapting said fingers to grasp and release the wire.

4. In a bale-tie machine, means for folding the wire consisting of a guide mounted on a rigid support, a lug around which wire is bent, a rod suitably journaled and provided with a crank-arm for folding the wire, means for operating said mechanism consisting of a pinion, a rack meshing with said pinion, a bar mounted in a suitable bearing and bearing a roller, and a drive-wheel provided with a dog adapted to engage said roller.

5. In a bale-tie machine, a device for discharging the wire consisting of a bar provided with a lug adapted to engage the loop of the wire, a second bar pivotally attached to said first bar and having a loop adapted to rest around said lug and having a curved portion at the other end, a track for said first bar, a curved arm attached to said track-bars adapted to trip said second bar, and means for driving said first bar.

6. A bale-tie machine provided with mechanism for discharging wire, means for driving said mechanism consisting of two quadrilateral frames, the larger frame being connected to said mechanism, each having pivotally-jointed corners, the lower and smaller frame being formed in part by the extension of two sides of the larger frame, a guide for said smaller frame, a drive-wheel, a pitman-rod, a bar pivotally joined to said rod, said bar being pivoted on a suitable support, and a link-bar pivotally joined to said bar and to the juncture of said frames.

7. In a machine for making bale-ties, a hollow shaft suitably mounted, a beveled pinion on said shaft, a beveled cog-wheel for driving said pinion, a wire-twister mounted on said

shaft, said twister being provided with fingers adapted to grasp the wire, and means for moving said twister, back and forth lengthwise of said shaft, and means for revolving said twister on said shaft intermittently.

8. A bale-tie machine having a device for cutting wire at a predetermined length, a carrier adapted to remove and throw the wire into a convenient trough, means for driving said carrier, a loop-forming mechanism and a wire-twister, a common shifting-wheel provided with means for operating said devices, said carrier being adapted to engage the wire and to remain stationary while said twister completes the loop in the wire, and means to remove the completed tie.

9. A bale-tie machine provided with wire-receiving mechanism and a tie-discharger, said wire-receiving mechanism consisting of straightening-rollers, a hollow shaft and means for driving said shaft, said discharger consisting of a track, a traveling bar provided with a lug to engage the tie, a bar pivotally mounted on said traveling bar, means for tripping said pivoted bar, and driving mechanism for said discharger.

10. A bale-tie machine having a wire-delivering device and a track for same, and means for driving said device consisting of wheel mounted on a suitable shaft, pitman-rod, bar, pivotally joined to said rod, said bar being pivoted on the platform of said machine, frames H and G, link-bar 66, connecting said bar 68 and said frames at their juncture, and a guide 83 for frame G.

11. In a bale-tie machine, an automatic counting device, said device being mounted on the platform of said machine, said device consisting of ratchet 76, and a pawl for same, hanger 74 supporting said ratchet, arm 75 adapted to drive said ratchet during the operation of said machine, a disk 73 provided with teeth extending therefrom, one of said teeth being longer than the other, a bell 77, a pivoted spring-pressed clapper, said ratchet being provided with a lug adapted to engage the teeth of said disk, the long tooth of said disk being adapted to engage said bell-clapper.

12. In a bale-tie machine, the combination of a wire-cutter, a loop-forming mechanism, a twister, a shifting-wheel provided with dogs, one adapted to actuate the driving mechanism of each of said devices, a wire-discharger, driving mechanism for same, means adapted to stop said mechanism intermittently, and a counting device operated by the driving mechanism of said discharger.

13. In a machine for making bale-ties, said machine being provided with a cutter, a folder, a twister, and driving mechanism for said devices, a shifting or drive wheel provided with dogs adapted to actuate the driving mechanism of each of said devices.

14. In a bale-tie machine, the combination of a driving-shaft 3 suitably mounted, a pinion 20 mounted on said shaft, a shifting-wheel

7, dogs 18, 19, 33, and 49 attached to said wheel, rollers suitably mounted and adapted to be engaged by said dogs, a shaft for wheel 7, pinion 21 on said shaft, pinion 22 meshing
5 with said pinion 21, a shaft for pinion 22 and wheel 23, the pinion 21 being adapted to stop the wheel 23 intermittently.

In testimony whereof I have hereunto subscribed my signature in the presence of two witnesses.

O. K. HARRY.

Witnesses:

C. A. HART,
J. A. RUFF.