

No. 750,012.

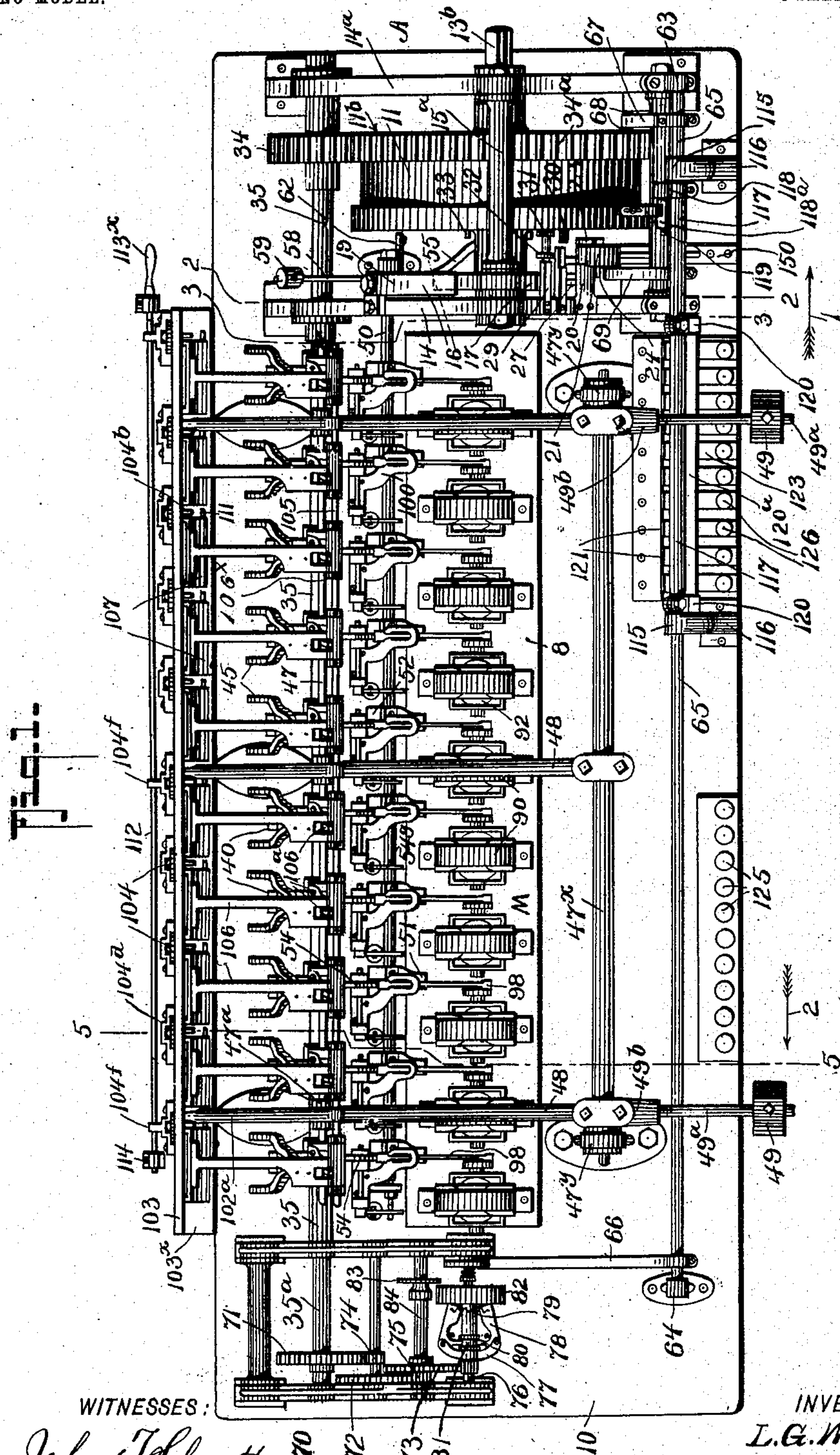
PATENTED JAN. 19, 1904.

L. G. WOOLLEY.
FIRE ALARM MECHANISM.

APPLICATION FILED APR. 27, 1903.

NO MODEL.

6 SHEETS—SHEET 1.



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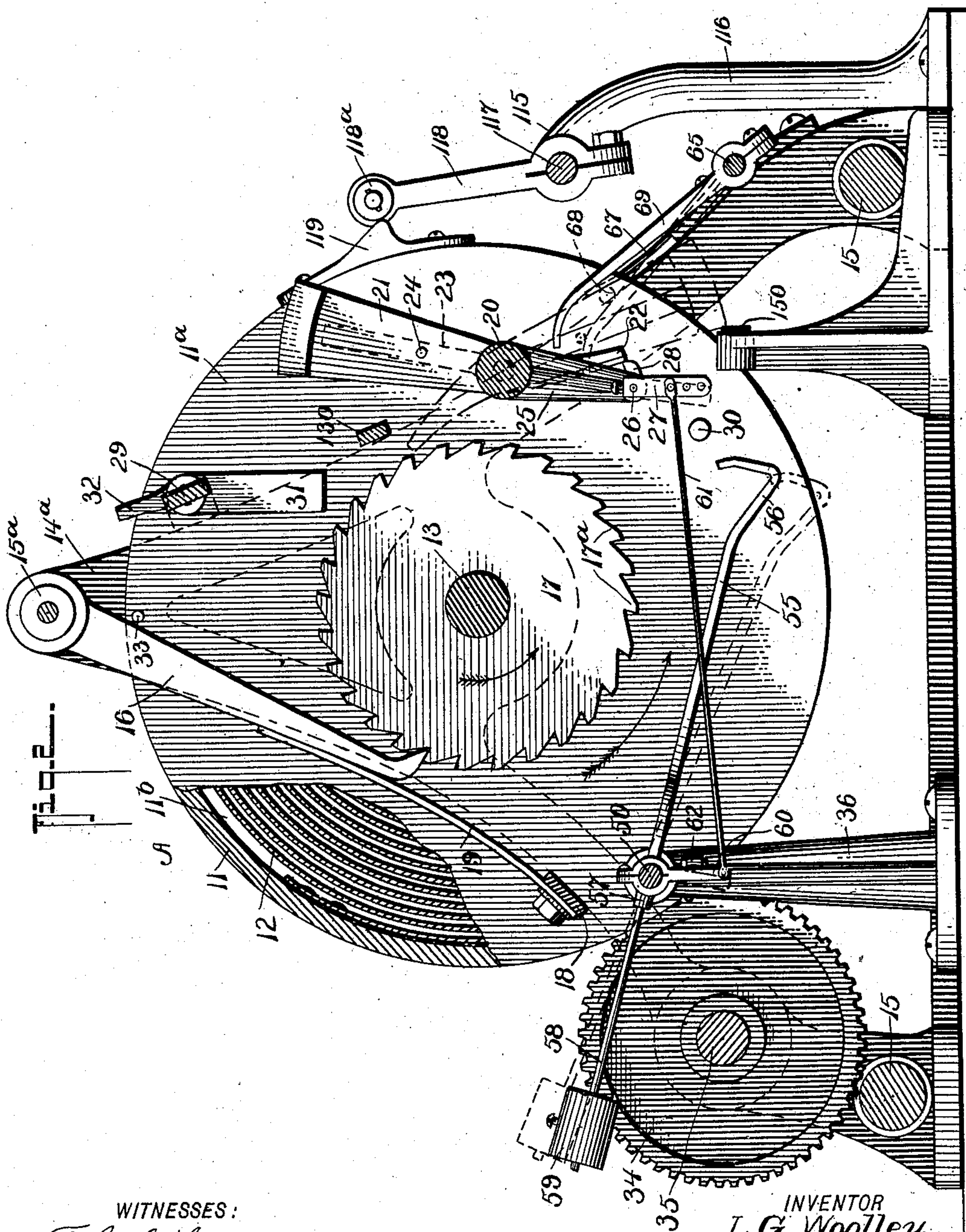
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6 SHEETS—SHEET 2.



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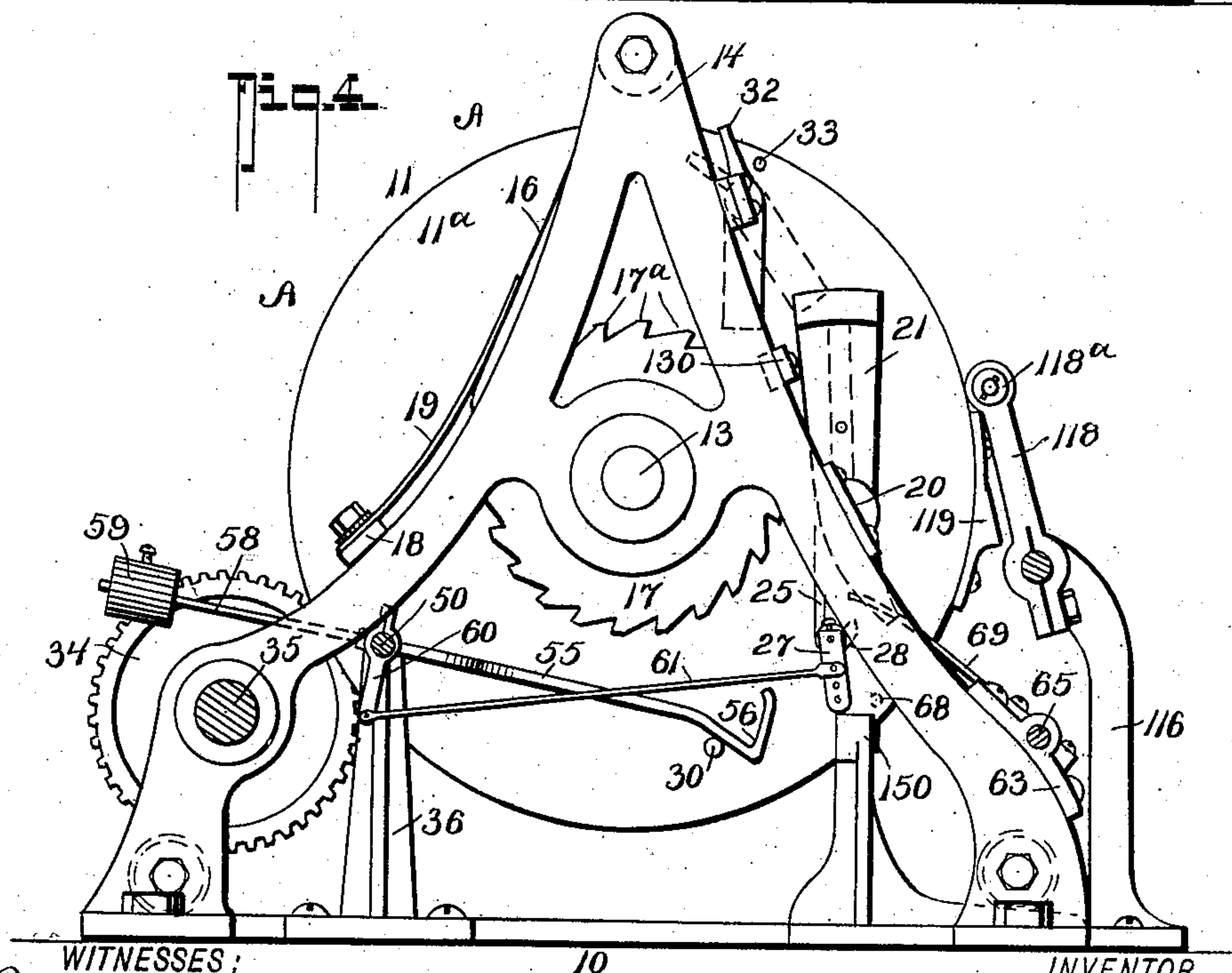
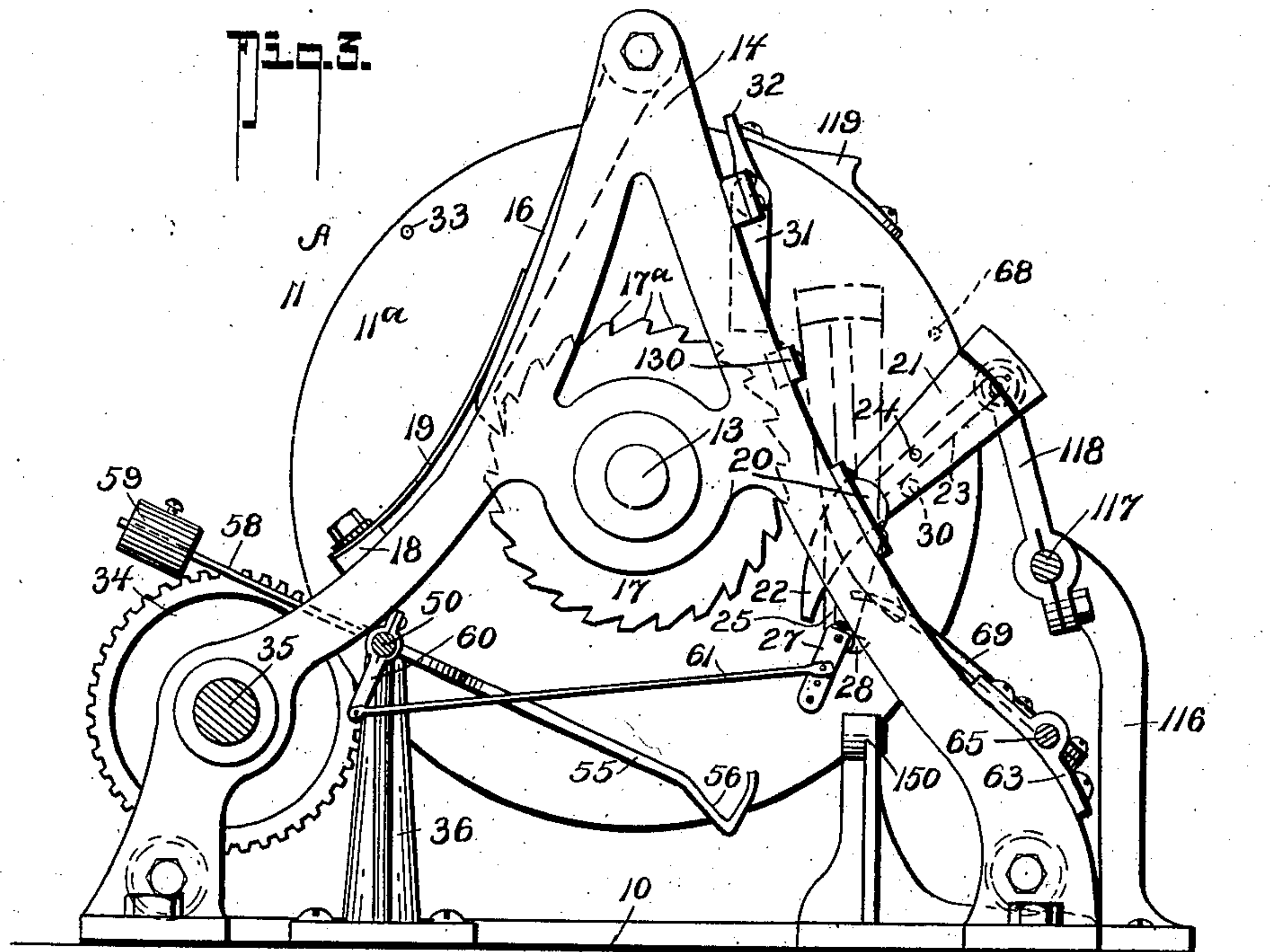
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6 SHEETS—SHEET 3.



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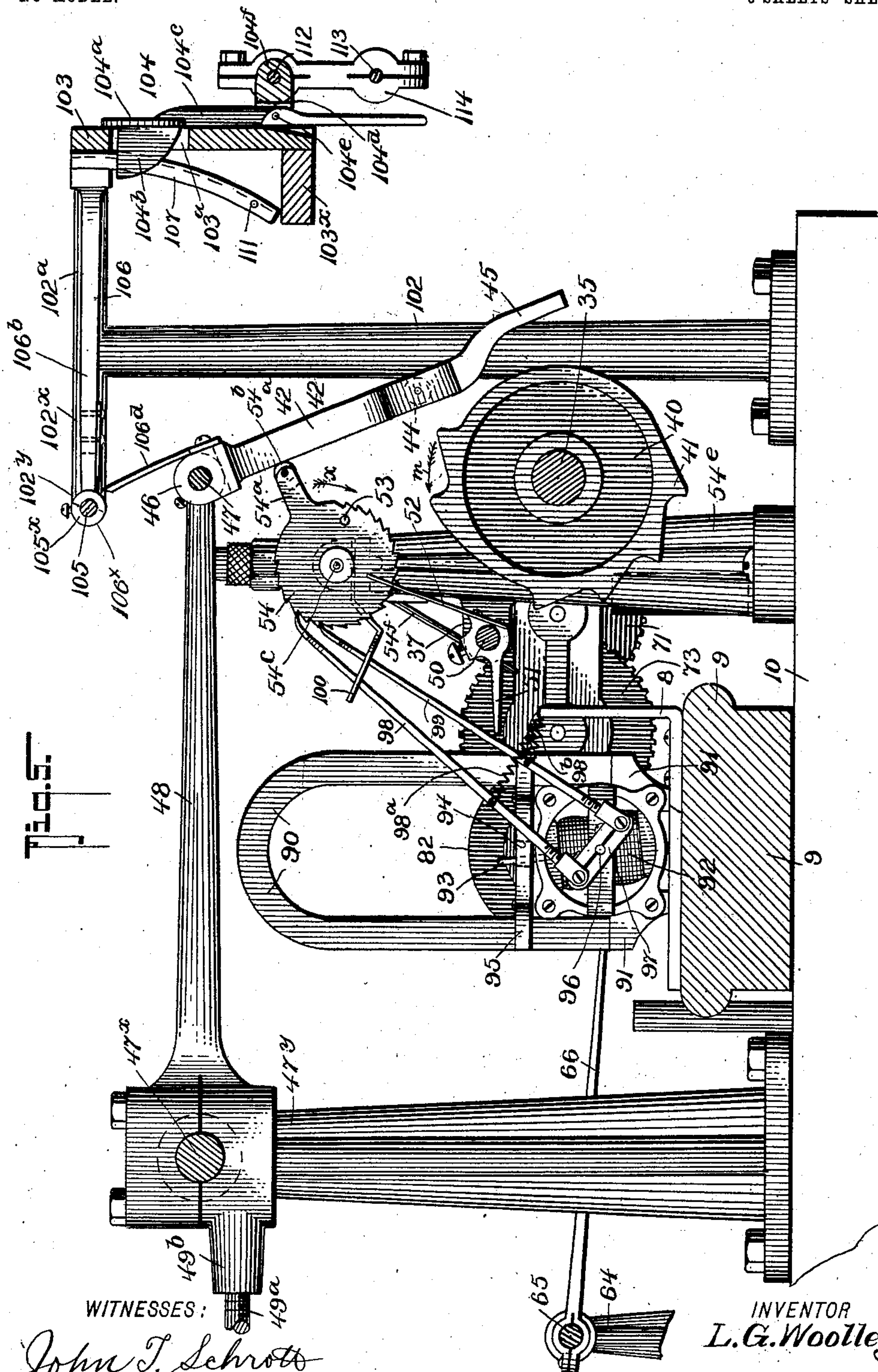
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NO MODEL.

6 SHEETS—SHEET 4.



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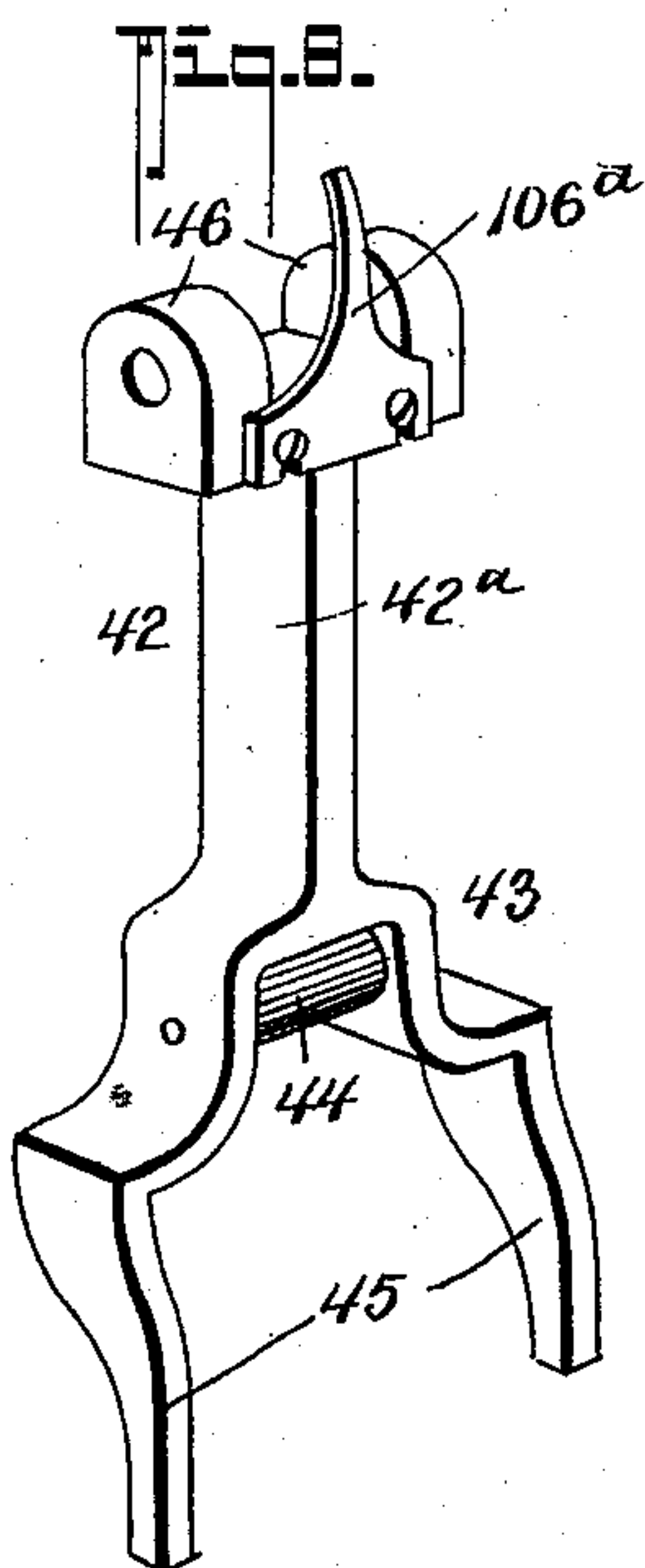
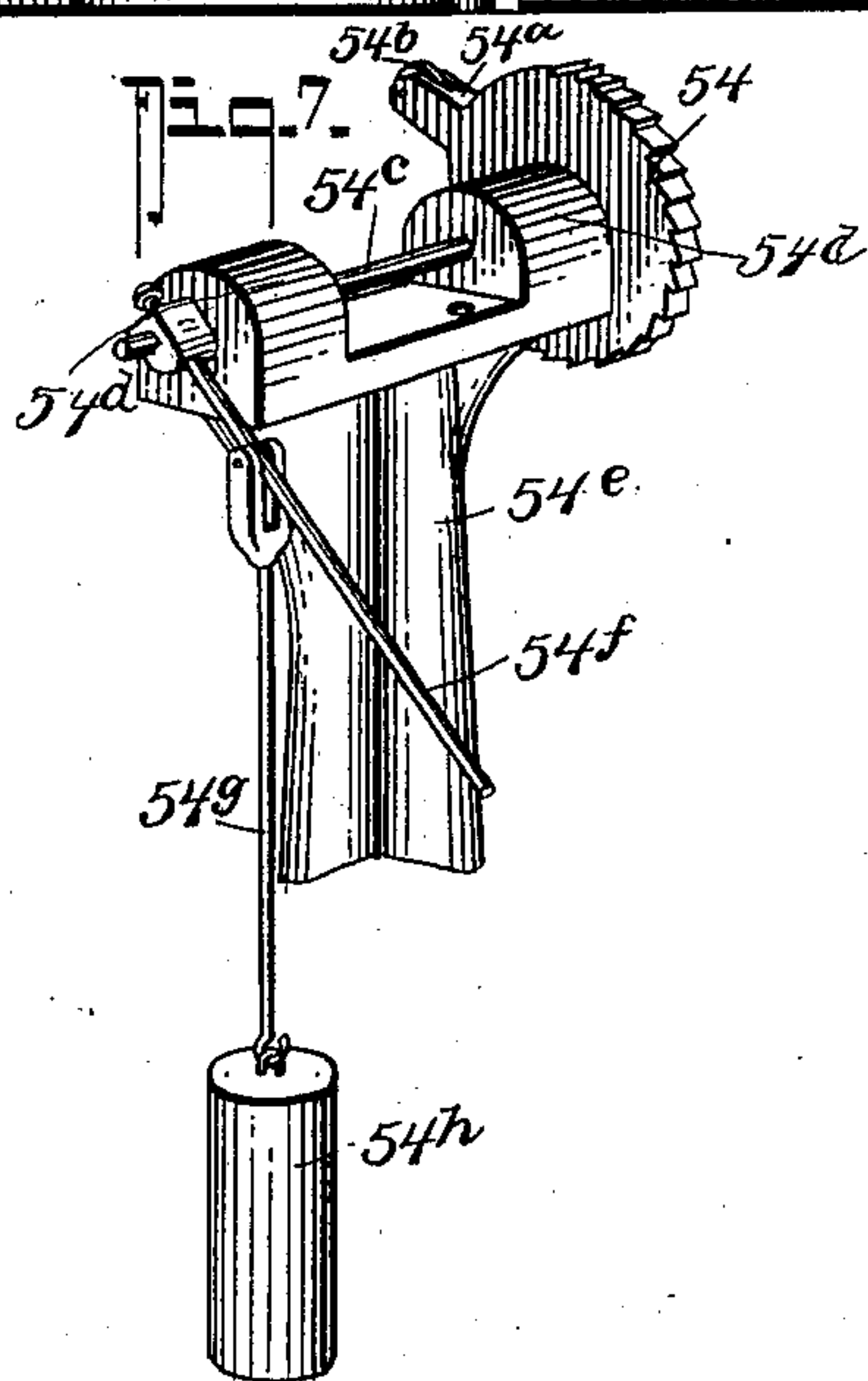
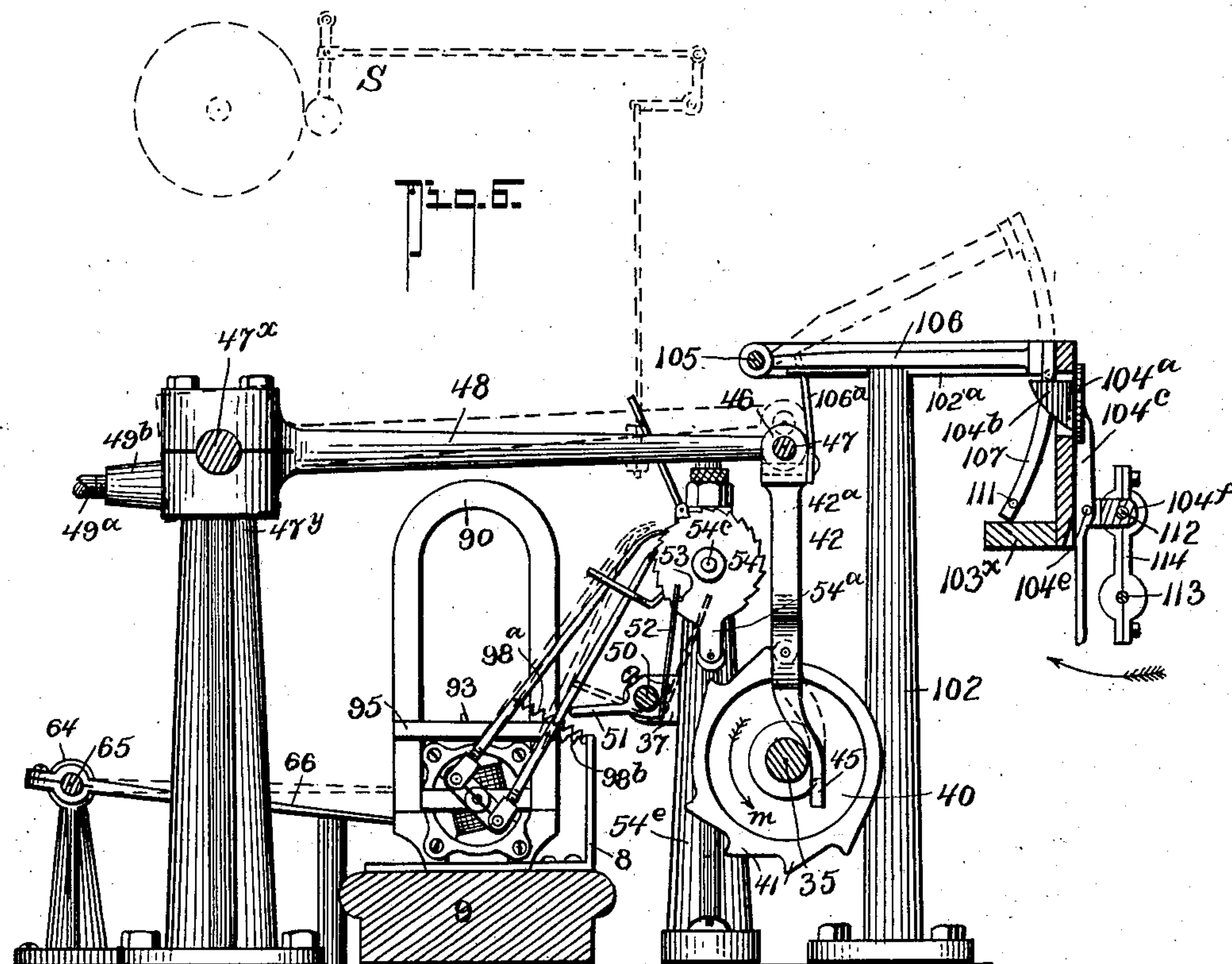
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NO MODEL.

6 SHEETS—SHEET 5.



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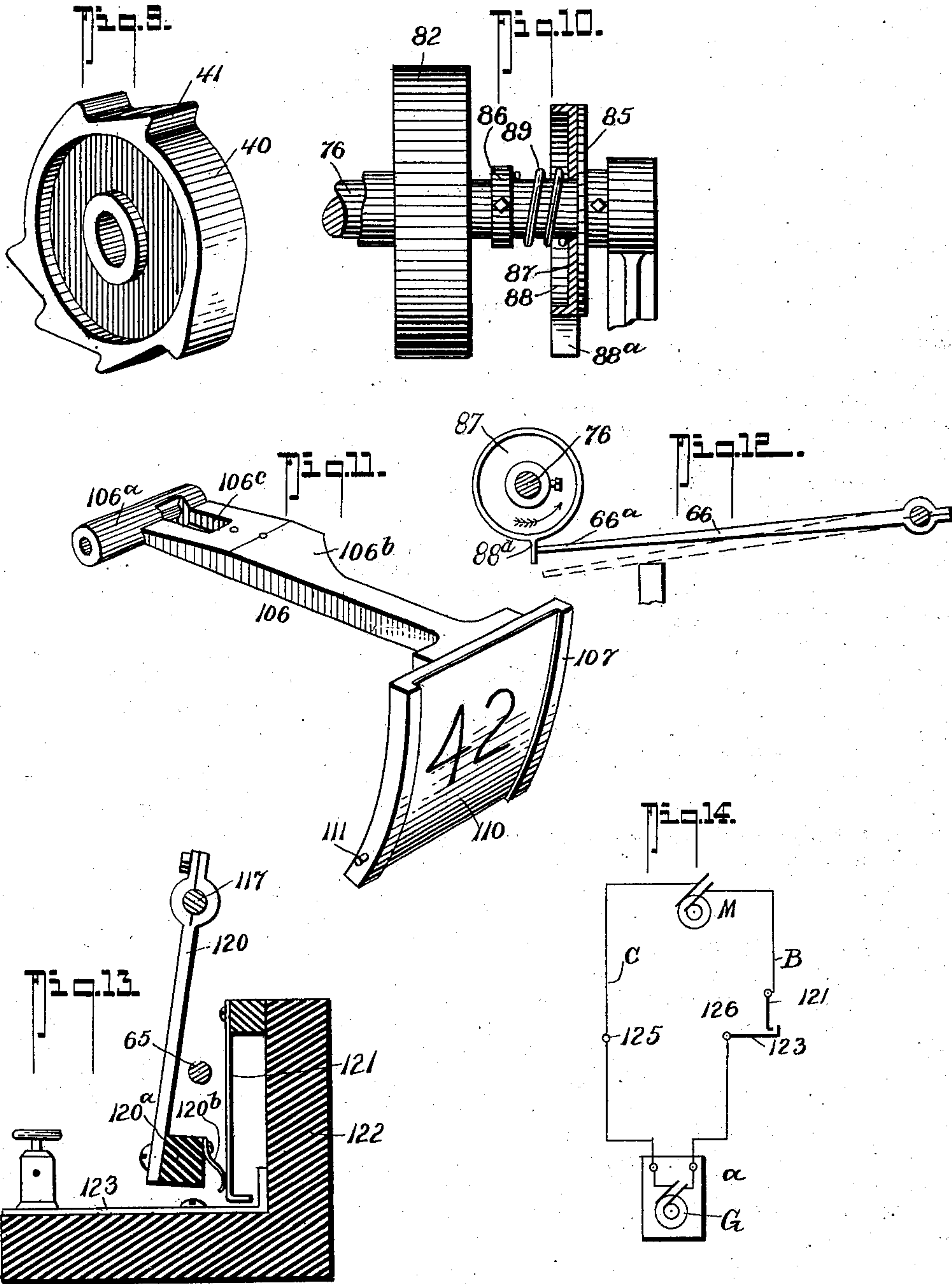
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APPLICATION FILED APR. 27, 1903.

NO MODEL.

6 SHEETS—SHEET 6.



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UNITED STATES PATENT OFFICE.

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FIRE-ALARM MECHANISM.

SPECIFICATION forming part of Letters Patent No. 750,012, dated January 19, 1904.

Application filed April 27, 1903. Serial No. 154,549. (No model.)

To all whom it may concern:

Be it known that I, LEONIDAS G. WOOLLEY, residing at Kenton, in the county of Hardin and State of Ohio, have invented certain new and useful Improvements in Fire-Alarm Mechanisms, of which the following is a specification.

This invention relates to that class of fire-alarm mechanisms in which the signal-setting and striker-operating mechanism is set in motion by alternating magneto-currents, and my invention in its generic nature comprehends a novel construction of recording and striker-operating mechanisms, including a series of number-wheels, one for each fire district or circuit, each of which serves to set a distinct individual signal and strike an alarm.

The invention in its more complete nature includes a suitable drive mechanism for operating the number-wheels, the striker devices, and the signal-setting mechanisms, together with devices for bringing each signal-setting and striker-operating mechanism into operative connection with the number-wheel and means for cutting out the remaining signal-setting mechanisms, whereby but one alarm can be turned in at one time, and thereby prevent any interference of the alarm-signals. In other words, as soon as an alarm from one box is turned in its signal mechanism is set and at the same time every other box in the system is cut out, so that a second alarm cannot be turned at the same or any other box during the striking of the first alarm.

Another essential feature of my present invention lies in the novel correlation of the starting mechanisms with the drive mechanism whereby the alarm will be sounded a plurality of times before the drive mechanism will operate to return the parts to their normal or inoperative positions.

In its more subordinate features my invention consists in a number of structural combinations and detail arrangement of parts, all of which will be hereinafter fully described, and particularly pointed out in the appended claims, reference being had to the accompanying drawings, in which—

Figure 1 is a top plan view of my invention arranged for ten fire-districts, the parts being in their normal or inoperative positions. Fig. 2 is a cross-section thereof, taken on the line 2 2 of Fig. 1 and looking in the direction of the arrow 1, the parts being in their normal positions. Figs. 3 and 4 are similar views taken on the line 3 3 of Fig. 1 and looking in the direction of the arrow 1. Fig. 5 is a cross-section taken practically on the line 5 5 of Fig. 1 looking in the direction of the arrow 2, the parts being in their normal positions. Fig. 6 is a similar view, the parts being in their operative positions. Fig. 7 is a detail perspective view of one of the ratchet-disks, together with its bearing, and showing the means for returning the disk to its normal position after the alarm has been sounded. Fig. 8 is a similar view of one of the number-wheel engaging and straddling pendent portions. Fig. 9 is a detail perspective view of one of the number-wheels. Fig. 10 is a detail view hereinafter specifically referred to. Fig. 11 is a detail perspective view of one of the indicating-drops. Fig. 12 is a diagrammatic detail view hereinafter referred to. Fig. 13 is an enlarged cross-section of the circuit cut out. Fig. 14 is a diagrammatic view of one alarm-circuit.

Referring now to the accompanying drawings, in which like numerals and letters of reference indicate like parts in all of the figures, 10 designates a suitable base, upon which is mounted a drive and controlling mechanism, indicated generally by A, and which consists of a drive-motor, including a casing 11, in which is secured a stout flat coil-spring 12 of the clock-spring type fastened at one end to the motor-casing and at the other end in the ordinary manner to the shaft 13, running through side walls 11^a 11^b of the casing 11 and mounted to turn in suitable bearings in the standards 14 14^a, which standards are secured to the base 10 and are suitably braced by cross-bars 15 15^a. (See Figs. 1 and 2.) Upon the upper cross-bar 15^a is pivotally mounted a pawl 16, which engages the ratchet 17, fixedly secured to the shaft 13 and having teeth 17^a. Secured to a bracket 18, mounted

upon the standard 14 and held in engagement with the pawl 16, is a flat spring 19, which serves to hold the pawl 16 in engagement with the ratchet-teeth 17^a of the ratchet 17. 13^b indicates a square portion of the shaft 13, to which may be fitted any suitable turning-key, whereby the spring 12 of the drive-motor 11 may be wound.

20 indicates a bracket securely fastened to the standard 14, upon which is pivoted a weight 21, having a heel portion 22 for a purpose presently to appear. The weight 21 has upon one face thereof an integrally-formed wing 23, which extends from about the pivot-point of the weight 21 to near its outer end and with which a stud 30, secured to the side wall 11^a of the casing 11, is adapted under predetermined conditions to engage, while upon the opposite face of the weight is a short stud 24, the purpose of which will be hereinafter more fully explained. The bracket 20 includes a pendent portion 25, in the lower end of which is mounted a short shaft 26, carrying a crank-arm 27 at one end and a latch 28 at the other end, the said latch 28 being adapted under predetermined conditions to engage with the heel portion 22 of the weight 21 to hold same in its elevated position, as shown in full lines in Fig. 2.

To the standard 14 is secured another bracket 29, to which is pivoted a trip, having a pendent portion 31 and a stud-engaging portion 32, with which the stud 33 on the side wall 11^a of the casing 11 is adapted to engage in a manner hereinafter described.

Mounted in bearings on the standards 14 14^a and carrying a pinion 34, which meshes with a gear 34^a on the motor-casing 11, is a long shaft 35, which carries a series of suitable spaced number-wheels 40, which will be clearly understood by reference to Figs. 1 and 5 of the drawings.

Mounted in bearings 36 37, one of which, 36, is secured directly to the base 10 and the other formed upon one of the standards 54^e, is a shaft 50, upon which is secured at suitable intervals a series of finger members 51, having a flat spring portion 52, with which the lugs 53 on the ratchet-disks 54 engage at predetermined times. To the end of the shaft 50 nearest the drive mechanism is secured an arm 55, having a cam-shaped portion 56 at its lower end and an enlargement 57 at its bearing end into which is screwed a rod 58, which carries a balancing-weight 59, as shown in Figs. 1 and 2. Adjacent the arm 55 is secured a short crank 60, which is operatively connected to the crank 27 by a rod 61, as shown, and with which a flat spring 62 engages to hold the same from undue vibration.

63 64 indicate bearings, in which is mounted another long shaft or rod 65, carrying at one end an elongated arm 66, while between the standards 14 14^a and on one side of the motor-casing 11 is securely fastened to the shaft 65

a rigid finger 69 and on the other side a spring-finger 67, the rigid finger 69 being adapted to be engaged by the lug 24 on the weight 21, while the lug 68 on the side wall of the motor-casing 11 normally engages the spring-finger 67 to hold the shaft 65 and its arm 66 in their normal positions.

To prevent the excessive speeding of the drive mechanism, and consequently the alarm mechanism, I provide a governor device 70, which includes a gear 71, mounted upon the extension 35^a of the shaft 35 and which imparts motion through gears 72 73 and pinions 74 75 to the short shaft 76, carrying the governor proper and the stopping-disks. The governor proper consists of a bracket 77, secured to the shaft 76 to rotate therewith, to which bracket is fulcrumed a pair of weighted members 78, held to their normal position by a spring 79, and which members 78 include portions 80 for engaging with a collar 81, loosely mounted upon the shaft 76 and carrying a fly-wheel 82. The fly-wheel 82 when the mechanism is in operation will frictionally engage a disk 83 on the shaft 84, and thereby prevent excessive speeding.

Referring now more particularly to Figs. 10 and 12, it will be seen that upon the shaft 76 is secured a metallic disk 85 and a collar 86, between which and the disk 85 is loosely mounted a second disk 87, having a rim 88, with which is integrally formed a radial lug 88^a for engaging the end 66^a of the arm 66 when the machine is at rest to prevent rotation of the shaft 76. To hold the disks 85 and 87 in tight frictional engagement with each other, I provide a coil-spring 89, placed between the collar 86 and the disk 87, as clearly shown in Fig. 10.

Referring now more particularly to Figs. 1, 5, and 6, it will be seen that I provide a series of magneto-motors, each of which consists of the permanent steel magnets 90, between the pole-pieces 91 of which is mounted an armature 92 of any approved construction, which armature is adapted for oscillatory movement and is prevented from making a complete revolution by a pin 93 passing through an aperture 94 in the guard-plate 95. (See Fig. 5.) Upon one end of the armature-shaft 96 is secured an arm 97, to which is pivoted a pair of pawls 98 99, which pass through a guide 100 on each standard 54^e and are normally held in engagement with the ratchet-disks 54 by springs 98^a 98^b, secured each to their respective pawls and to the bracket 8, mounted on the supplemental base 9, which base 9 is in turn mounted upon the main base 10, which will be clearly understood by reference to Figs. 5 and 6 of the drawings. In the outer end of the projecting portion 54^a of the ratchet-wheel 54 is mounted a friction-roller 54^b, which when the disk 54 is in its normal position engages with the flat portion 42^a of the number-wheel-straddling pawls 42, as shown in Fig. 5, and

the ratchet-disk shafts 54^c pass through bearings 54^d on the standards 54^e and the said shafts each carrying at the ends opposite the ratchet-disks an arm 54^f, to which is pivotally secured a rod 54^g, carrying a weight 54^h at its lower end. The weight 54^h serves to turn the ratchet-disk to its normal position when the pawls 98 99 are released therefrom in the manner presently described.

The number-wheel-engaging pawl 42 has a Π -shaped portion at its lower end, in which is mounted a friction-roller 44 for engaging with the projections 41 on the periphery of the number-wheels 40, and the pawl 42 also includes at its lower end a pair of guide-legs 45, which straddle the number-wheel 40 and rest when the machine is in operation against the shaft 35, as is clearly shown in Fig. 6. The upper end of the pawl 42 includes a bearing portion 46, by which each pawl 42 is pendently mounted upon the rod 47, held in bearings 47^a of the arms 48, which arms 48 are in turn mounted upon and secured to a second rod or shaft 47^x, movable in bearings 47^y. (See Figs. 5 and 6.) To prevent lateral movement of the pawls 42, I may, if desired, fix a collar (not shown) to the rod 47 at each side of the bearings 46. To counterbalance the weight of the arms 48 and bearings 42, I provide balance-weights 49 on rods 49^a, screwed or otherwise fastened in projecting portions 49^b on the bearing parts of the arms 48. (See Fig. 1.)

Secured to one end of the horizontal portion 102^a of the standards 102 is a board 103, upon which is pivoted a series of catches 104, each of which includes a flat disk portion 104^a, to the rear face of which and projecting through apertures 103^a in the board 103 is a wing 104^b, as shown in Figs. 5 and 6. Integrally formed with the outer face of the disk 104^a is a downwardly-projecting portion 104^c, which is fulcrumed at 104^e to the bearing 104^d. To the lower end of the board 103 and at right angles thereto is secured a second board 103^x for a purpose presently to appear. The other ends 102^x of the horizontal portion 102^a of the standards 102 are formed with bearings 102^y, upon which is mounted a rod 105, carrying the "indicating-drops" 106, (shown in detail in Fig. 11,) by reference to which it will be seen the drops 106 consist of a bearing portion 106^a and an arm 106^b, to which is secured a number-carrying plate 107. At the bearing end of the drop 106 is a slot 106^c, which co-operates with the finger 106^d, adjustably secured to the bearing portion of the pawls 42. The outer face of the indicating-plate 107 is countersunk to receive a number-bearing card 110, as clearly shown in Fig. 11, and each of the said plates 107 is also provided with a short stud 111, which when the indicator-drop 106 is raised engages the upper edge of the wing 104^b to hold same to its elevated or indicating position. (See dotted lines, Fig. 6.)

To release the indicator-drops 106, I pro-

vide a pair of parallel rods 112 113, which are secured to move in unison by clamps 114, and the upper one, 112, of said rods passes through bearing portions 104^f of the end and middle bearings 104^f, while the lower rod, 113, carries a handle 113^x for moving the rod 113 into engagement with the lower end of the member 104^b to release the drops 106. While the drops 106 are in their non-indicating position, the lower edge of the indicating-plate 107 of the drops rests upon the board 103^x, and to prevent lateral movement of the drops 106 I fasten a collar 106^x at each side of the bearing portions 106 thereof.

Movable in bearings 115 on standards 116 is a rod 117, to one end of which is secured an arm 118, carrying a friction-roller 118^a at its free end, which roller 118^a is adapted to normally engage the cam 119, adjustably secured to the periphery of the motor-casing 11. Secured to the rod 117 is a pair of downwardly-projecting arms 120, connected at their lower ends by an insulating-strip 120^a, upon which is secured at suitable intervals a series of springs 120^b, which engage a series of vertically-disposed spring-contact members 121, mounted upon the base portion 122 of insulating material. Horizontally secured to the base 122 is a series of contact-plates 123, having portions with which the contacts 122 are adapted to coöperate in the manner clearly explained by reference to Fig. 13 of the drawings.

One terminal, B, of each of the magneto-motor circuits is connected to each of the contacts 121, while the other terminal, C, connects with a series of binding-posts 125. The line-terminals from the alarm-boxes *a* connect to the binding-posts 125 and 126, the post 126 being in electrical connection with the contact-plates 123. (See diagram Fig. 14.)

To one of the arms 48 I attach any suitable striker mechanism S, (shown in dotted lines in Fig. 6,) which may be of any approved type, since the same forms no part of my present invention.

Operation: Assuming the parts to be in their normal or inoperative positions, as shown in Figs. 1, 2, and 5, the cam 119 engaging the roller 118^a, whereby all of the contacts 121 are held in engagement with their corresponding contacts 123, now if an operator desires to turn in an alarm he sets in motion the magneto-generator G in its box *a*, which energizes its corresponding magneto-motor MO at the alarm-station, causing its armature to reciprocate, and thereby through the action of the pawls 98 99 causing the ratchet-disk 54 to rotate in the direction of the arrow *x* in Fig. 5 until the straddling-pawl 42 arrives at its vertical position, with its friction-wheel 44 in engagement with the number-wheel 40, as shown in full lines in Fig. 6. As the lug 53 engages the spring 52 it will rotate the shaft or rod 50 sufficiently to allow the latch

28 to become disengaged from the heel portion 22 of the weight 21, and thereby permit the said weight 21 to drop (see dotted lines, Fig. 2) until its stud 24 engages the arm 69 on the shaft 65, and thereby overcome the tension of the spring 67, normally held in engagement with the lug 68, sufficiently to allow the arm 66 to become disengaged from the lug 88^a of the disk 87 on the governor-shaft 76 and set the machine in motion. To prevent the weight 21 dropping too far, I provide a stop or buffer 150, as shown. Immediately after the machine is set in operation by the turning in of an alarm the cam 119 will pass out of engagement with the roller 118^a on the arm 118 and allow the contacts 121 and 123 to separate, thereby cutting out all the alarm-circuits and preventing any interference of other alarms with the striking of the gong and the operating of the machine. As the motor-casing 11 revolves in the direction indicated by the arrow motion will be imparted to the shaft 35, which rotates, carrying with it all the number-wheels 40. As only the pawl 42 of the particular section of the machine set by the alarm is in engagement with its number-wheel, (see Fig. 6,) but one number will be struck upon the gong. As the number-wheel 40 revolves in the direction of the arrow *m*, Fig. 6, the projections 41 on the wheel 40 will alternately raise and lower the pawl 42, and consequently rock the arm 48. At the first raise of the pawl 42 the finger 106^d thereof will engage the under side of the portion 106^b of the drop 106 and raise the same to the position shown in dotted lines in Fig. 6 until the stud 111 engages the upper edge of the wing 104^b, which holds the same with its number-face exposed until released by bringing the rod 113 into engagement with and locking the member 104. The number of times the pawl 40 will be raised and lowered and the time relapsing between each raising and lowering, and consequently the frequency with which the arms 48 will be locked, will depend upon the number and position of the projections 41 on the respective wheels 40 in engagement with the operative pawl 42, it being understood that the number and arrangement of the number-wheel projections are different for each number-wheel 40. Now since the alarm turned in at the box has only served to set to the operative position its respective section of the machine and as all the operating-circuits of the system have been cut out it follows that the remaining sections of the machine will continue in their inoperative position, (shown in Fig. 6;) but since all the pawls 42 are mounted upon the same rod 105 when one of them moves up and down to rock the rods 48 all of the said pawls will likewise move up and down in unison. Since only one pawl 42 is in engagement with its number-wheel 40, the remaining number-wheels 40 will not effect the movement of their re-

spective pawls during the operation of the machine. Furthermore, to prevent the inoperative pawls 48—*i. e.*, those not in engagement with their respective number-wheels—from setting their respective drops I provide the slots 106^c in the portion 106^b of the drops 106, so that the fingers 106^d of the inoperative pawls will pass through the said slots while the pawls are in the position shown in Fig. 6. Any suitable striker mechanism *S* (see dotted lines, Fig. 6) may be connected to one of the lever-arms, which will sound the alarm-gong in the usual manner. In practice the radii of the gears 34 and 34^a are preferably such that the gear 34 will revolve three times to every revolution of the gear 34^a, so that an alarm may be repeated a number of times before the mechanism is stopped.

Referring now more particularly to Figs. 2, 3, and 4, it will be seen that as the motor-casing 11 revolves the lug 30 will engage the wing 23 of the weight 21, (see Fig. 3,) thereby again raising the weight, carrying it to and past its vertical position, as shown in dotted lines in Fig. 3, where it rests against a stop 130. It must, however, be understood that before the lug 30 engages the wing 23 the lug 68 upon the side wall 11^b of the motor-casing 11 will become disengaged from the spring-arm 67 on the shaft 65, so as to leave the arm 66 out of engagement with the lug 88^a on the disk 87. Since the weight 21 is carried past its vertical position, its center of gravity will be located between its fulcrum-point and the stop 130, and hence the weight will remain in such position of its own accord. This is an essential feature of my invention, since the catch 28, lever-arm 55, and shaft 50 remain in the position shown in dotted lines in Fig. 2 and full lines in Fig. 3 during nearly the entire revolution of the motor-casing. Therefore the heel 22 of the weight 21 would not engage the latch 28 were the weight permitted to drop. Now as soon as the lug 30 has moved through an angle of nearly three hundred and sixty degrees from its normal position (shown in Fig. 2) the said lug will engage the under side of the lever-arm 55 and its cam 56, thereby raising said arm 55 to rock the shaft 50, which in turn will cause the arm 60, through the medium of the rod 61 and arm 27, to rock the shaft 26 to again bring the latch 28 to its weight-heel-engaging position, as shown in Fig. 4. This rocking of the shaft 50 through the medium of the lever-arm 55 and lug 30 will cause the fingers 51 to engage the under pawls 99, which in turn engage the upper pawls 98 to release them from engagement with the ratchet-disk 54, which are then returned to their positions by the weights 54ⁿ, and thereby disengage the operating-pawl 42 from its number-wheel 40. (See dotted lines, Fig. 6.) As the motor-casing is completing its rotation the lug 33 will engage the trip 32, causing the pendent portion 31 thereof to en-

gage the weight 21 and move it to its normal or catch-engaging position, as shown in Fig.

4. At the same time the cam 119 will engage the roller 118^a of the arm 118, and thereby again close the contacts 121 against the contacts 123. As soon as the contacts 121 123 are again closed the lug 68 will engage the spring-arms 67, thereby rocking the rods 65 until the arm 66 engages the lug 88^a on the disk 87, which stops the machine. By turning the crank 113^x the drop may be released. As the spring-motor runs down the same may be wound up by attaching any suitable key (not shown) to the square portion 13^b of the shaft 13 in the usual manner.

From the foregoing description, taken in connection with the accompanying drawings, it is thought the complete operation and advantages of my invention will be readily understood.

While I have shown but ten sections capable of setting ten drops and striking ten different alarms, yet I desire it understood that I may vary the number of sections as conveniences and circumstances may require, and I further desire it understood that slight changes and modifications of the construction and detail arrangement of parts of my invention may be made without departing from the scope of the appended claims.

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

1. A machine of the character stated, comprising in combination with a drive mechanism, of a plurality of indicating devices, and means for bringing said indicating devices into operative connection with the drive mechanism said means including magneto-motors, for the purposes specified.

2. In a machine of the class described, a drive-motor, signal-setting and alarm-striker-operating devices, said devices each including a number-wheel, a common shaft for said number-wheels, gearing between said shaft and said drive-motor whereby said shaft and number-wheels will revolve together when the drive-motor is in operation.

3. In a machine of the character described, a drive-motor, signal-setting and alarm-striker-operating devices, said devices each including a number-wheel, a common shaft for said number-wheels, gearing between said shaft and said drive-motor whereby said shaft and number-wheels will revolve together when the drive-motor is in operation, said devices also including a rockable frame, pendently-mounted pawls carried by said frame for cooperating with said number-wheels, for the purposes described.

4. In a machine of the character described, a drive-motor, signal-setting and alarm-striker-operating devices, said devices each including a number-wheel, a common shaft for said number-wheels, gearing between said shaft and

said drive-motor whereby said shaft and number-wheels will revolve together when the drive-motor is in operation, said devices also including a rockable frame, pendently-mounted pawls carried by said frame for cooperating with said number-wheel, and means for normally holding said pawls out of engagement with said number-wheels, for the purposes described.

5. In a machine of the character described, a drive-motor, signal-setting and alarm-striker-operating devices, said devices each including a number-wheel, a common shaft for said number-wheels, gearing between said shaft and said drive-motor whereby said shaft and number-wheels will revolve together when the drive-motor is in operation, said devices also including a rockable frame, pendently-mounted pawls carried by said frame for cooperating with said number-wheels, means for normally holding said pawls out of engagement with said number-wheels, and means for bringing said pawls into engagement with said number-wheels at predetermined times, all for the purposes described.

6. In a machine of the character described, a drive-motor, signal-setting and alarm-striker-operating devices, said devices each including a number-wheel, a common shaft for said number-wheels, gearing between said shaft and said drive-motor whereby said shaft and number-wheels will revolve together when the drive-motor is in operation, said devices also including a rockable frame, pendently-mounted pawls carried by said frame for cooperating with said number-wheels, means for normally holding said pawls out of engagement with said number-wheels, and means for bringing said pawls into engagement with said number-wheels at predetermined times, said last-named means including a magneto-electric motor adapted to be operated by the turning in of an alarm.

7. In a machine of the class described, a drive-motor, signal-setting and striker-operating devices, said devices each including a number-wheel, a common shaft upon which said number-wheels are mounted, gearing between said shaft and said drive-motor whereby said shaft and number-wheels will revolve together when the drive-motor is in operation, said devices also including a rockable frame, pendently-mounted pawls carried by said frame for cooperating with said number-wheels, means for normally holding said pawls out of engagement with said number-wheels, said means including a ratchet-disk having arms adapted to engage said pawls, means for releasing the ratchet-disk arms from engagement with said pawls, for the purposes described.

8. In a machine of the class described, a drive-motor, signal-setting and striker-operating devices, said devices each including a number-wheel, a common shaft upon which

said number-wheels are mounted, gearing between said shaft and said drive-motor whereby said shaft and number-wheels will revolve together when the drive-motor is in operation, 5 said devices also including a rockable frame, pendently-mounted pawls carried by said frame for coöperating with said number-wheels, means for normally holding said pawls out of engagement with said number-wheels, 10 said means including ratchet-disks having arms adapted to engage said pawls, means for releasing the ratchet-disk arms from engagement with said pawls, said means including magneto-motors, each having a shaft, an arm 15 on said shaft, a pair of pawls pivotally secured to said arm and normally held in engagement with said ratchet-disks, substantially as shown and for the purposes described.

9. In a machine of the class described, a 20 drive-motor, signal-setting and striker-operating devices, said devices each including a number-wheel, a common shaft upon which said number-wheels are mounted, gearing between said shaft and said drive-motor whereby 25 said shaft and number-wheels will revolve together when the drive-motor is in operation, said devices also including a rockable frame, pendently-mounted pawls carried by said frame for coöperating with said number- 30 wheels, means for normally holding said pawls out of engagement with said number-wheels, said means including ratchet-disks having arms adapted to engage said pawls, means for releasing the ratchet-disk arms from engage- 35 ment with said pawls, said means including magneto-motors, each having a shaft, an arm on said shaft, a pair of pawls pivotally secured to said arm and normally held in engagement with said ratchet-disks, and means for releas- 40 ing said pawls from said ratchet-disk at predetermined times, for the purposes specified.

10. In a machine of the class described, a drive-motor, signal-setting and striker-operating devices, said devices each including a 45 number-wheel, a common shaft upon which said number-wheels are mounted, gearing between said shaft and said drive-motor whereby said shaft and number-wheels will revolve together when the drive-motor is in operation, 50 said devices also including a rockable frame, pendently-mounted pawls carried by said frame for coöperating with said number-wheels, means for normally holding said pawls out of engagement with said number-wheels, 55 said means including ratchet-disks having arms adapted to engage said pawls, means for releasing the ratchet-disk arms from engagement with said pawls, said means including magneto-motors, each having a shaft, an arm 60 on said shaft, a pair of pawls pivotally secured to said arm and normally held in engagement with said ratchet-disks, and means for releasing said pawls from said ratchet-disk at predetermined times, said means in- 65 cluding a shaft carrying a finger for engag-

ing said pawls at predetermined times, for the purposes described.

11. In a machine of the character described, a drive-motor, signal-setting and striker-operating devices, said devices each including a 70 number-wheel, a common shaft upon which said number-wheels are mounted, gearing between said shaft and said drive-motor whereby said shaft and number-wheels will revolve together when the drive-motor is in operation, 75 said devices also including a rockable frame, pendently-mounted pawls carried by said frame for coöperating with said number-wheels, means for normally holding said pawls out of engagement with said number-wheels, 80 said means including ratchet-disks having arms adapted to engage said pawls, means for releasing the ratchet-disk arms from engagement with said pawls, said means including magneto-motors, each having a shaft, an arm 85 on said shaft, a pair of pawls pivotally secured to said arm and normally held in engagement with said ratchet-disks, and means for releasing said pawls from said ratchet-disk at predetermined times, said means in- 90 cluding a shaft carrying fingers for engaging said pawls at predetermined times, said shaft carrying said fingers being operated directly by the drive-motor.

12. In a machine of the class described, a 95 plurality of signal-setting and striker-operated devices, a drive-motor common to all of said devices, a means for normally holding said drive-motor at rest, a means for bringing said signal-setting devices into operative con- 100 nection with said drive-motor and then releasing said drive-motor whereby an alarm is sounded and a signal set.

13. In a machine of the class described, a 105 plurality of signal-setting and striker-operating devices, a drive-motor common to all of said devices, a means for normally holding said drive-motor at rest, a means for bringing said signal-setting devices into operative con- 110 nection with said drive-motor and then releasing said drive-motor whereby an alarm is sounded and a signal set, means for automatically stopping said drive-motor after an alarm is struck.

14. In a machine of the class described, a 115 plurality of signal-setting and striker-operating devices, a drive-motor common to all of said devices, a means for normally holding said drive-motor at rest, a means for bringing said signal-setting devices into operative connec- 120 tion with said drive-motor and then releasing said drive-motor whereby an alarm is sounded and a signal set, means for automatically stopping said drive-motor after an alarm is struck, and means for restoring said signal-setting de- 125 vices to their inoperative position after the alarm is sounded.

15. In a fire-alarm mechanism, a signaling-machine common to all the alarm-circuits, said machine including a series of signal-setting 130

devices one for each circuit, a drive-motor common to all the said devices, each of said devices including a number-wheel, a common shaft geared with said drive-motor for said number-wheels, a rocker-frame common to all of said signal-setting devices, a series of pendently-held pawls mounted upon said rocker-frame, one for each signal-setting device, each of said signal-setting devices also including a disk having an arm for normally engaging with and holding each of said pawls out of engagement with their respective number-wheels, means for releasing said mechanism, a second shaft common to all the signal-setting devices, fingers mounted upon said second shaft one for each signal-setting device, each of said disks having a stud for engaging with said fingers whereby to rock said second shaft to release said drive-motor, as described.

16. In a machine of the class described, a drive-motor and a governor therefor, a plurality of signal-setting devices coöperatively joined with said drive-motor, a shaft carrying fingers common to all of said signal-setting devices, a catch mounted upon the motor-frame and connected with said shaft, a weight normally engaging said catch, a second shaft carrying an arm normally held in engagement with a portion of the governor, said second shaft having a finger normally in engagement with the drive-motor, a second finger carried by said second shaft for coöperating with said weight, each of said signal-setting devices including a mechanism for engaging with the fingers on the finger-carrying shaft for rocking said shaft at predetermined times whereby said shaft will cause said catch to release said weight to engage the said second finger on the second shaft, and thereby cause said shaft to move its arm out of engagement with the governor.

17. In a machine of the class described, a drive-motor and a governor therefor, a plurality of signal-setting devices coöperatively joined with said drive-motor, a shaft carrying fingers common to all of said signal-setting devices, a catch mounted upon the motor-frame and connected with said shaft, a weight normally engaging said catch, a second shaft carrying an arm normally held in engagement with a portion of the governor, said second shaft having a finger normally in engagement with the drive-motor, a second finger carried by said second shaft for coöperating with said weight, each of said signal-setting devices including a mechanism for engaging with the fingers on the finger-carrying shaft for rocking said shaft at predetermined times whereby said shaft will cause said catch to release said weight to engage the said second finger on the second shaft, and thereby cause said shaft to move its arm out of engagement with the governor, and means for returning said weight to its catch-engaging position.

18. In a machine of the class described, a

drive-motor and a governor therefor, a plurality of signal-setting devices coöperatively joined with said drive-motor, a shaft carrying fingers common to all of said signal-setting devices, a catch mounted upon the motor-frame and connected to said shaft, a weight normally engaging said catch, a second shaft carrying an arm normally held in engagement with a portion of the governor, said second shaft having a finger normally in engagement with the drive-motor, a second finger carried by said second shaft for coöperating with said weight, each of said signal-setting devices including a mechanism for engaging with the fingers on the finger-carrying shaft for rocking said shaft at predetermined times whereby said shaft will cause said catch to release said weight to engage the said second finger on the second shaft, and thereby cause said shaft to move its arm out of engagement with the governor, means for returning said weight to its catch-engaging position, said last-named means including a stud carried by the motor for engaging with said weight at predetermined times.

19. In a machine of the class described, a drive-motor and a governor therefor, a plurality of signal-setting devices coöperatively joined with said drive-motor, a shaft carrying fingers common to all of said signal-setting devices, a catch mounted upon the motor-frame and connected to said shaft, a weight normally engaging said catch, a second shaft carrying an arm normally held in engagement with a portion of the governor, said second shaft having a finger normally in engagement with the drive-motor, a second finger carried by said second shaft for coöperating with said weight, each of said signal-setting devices including a mechanism for engaging with the fingers on the finger-carrying shaft for rocking said shaft at predetermined times whereby said shaft will cause said catch to release said weight to engage the said second finger on the second shaft, and thereby cause said shaft to move its arm out of engagement with the governor, a means for returning said weight to its catch-engaging position, said last-named means including a stud carried by the motor for engaging with said weight at predetermined times, an arm mounted on said finger-carrying shaft for coöperating with said motor-carrying stud whereby said finger-carrying shaft will be returned to its normal position, as described.

20. In a machine of the character described, independently-controlled signal-setting devices each including electric circuits, a drive-motor for said signal-setting devices, means for bringing one of said signal-setting devices into operative connection with the drive-motor and then releasing said drive-motor, means controlled by said drive-motor for opening the electric circuits immediately after the signal-setting devices are brought in operative

connection with the drive-motor, automatically-operated devices for stopping said drive-motor after the alarm is sounded and the signal set, and for returning the signal-setting
5 devices to their normal positions and then again closing the electric circuits.

21. In a machine of the character stated, comprising in combination with the rocker-frame having a pendently-mounted pawl, a
10 number-wheel for coöperating with said pawl, means for normally holding said pawl out of

engagement with said number-wheel, means for bringing said pawl into engagement with said number-wheel at predetermined times, a means for restoring said pawl to its num- 15
ber-wheel-disengaging position, for the purposes described.

LEONIDAS G. WOOLLEY.

Witnesses:

P. C. RIES,

W. M. COONEY.