

(No Model.)

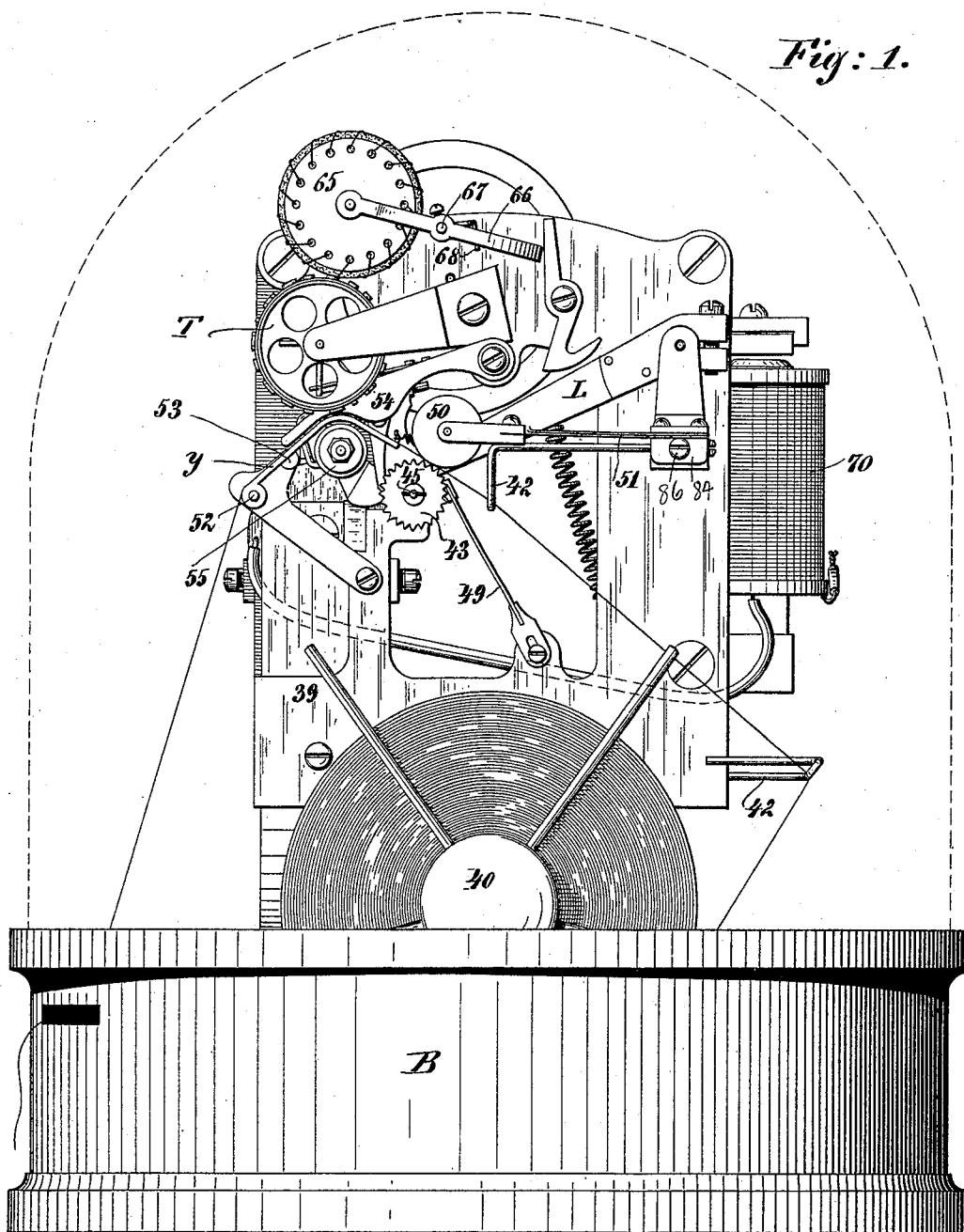
7 Sheets—Sheet 1.

J. BURRY.
PRINTING TELEGRAPH.

No. 581,411.

Patented Apr. 27, 1897.

Fig: 1.



Witnesses
D. Petri-Palmedo.
Frank Ryall

John Burry Inventor
By *his Attorney*
Wilcox, Barker & Rhodes

(No Model.)

7 Sheets—Sheet 2.

J. BURRY.
PRINTING TELEGRAPH.

No. 581,411.

Patented Apr. 27, 1897.

Fig: 2.

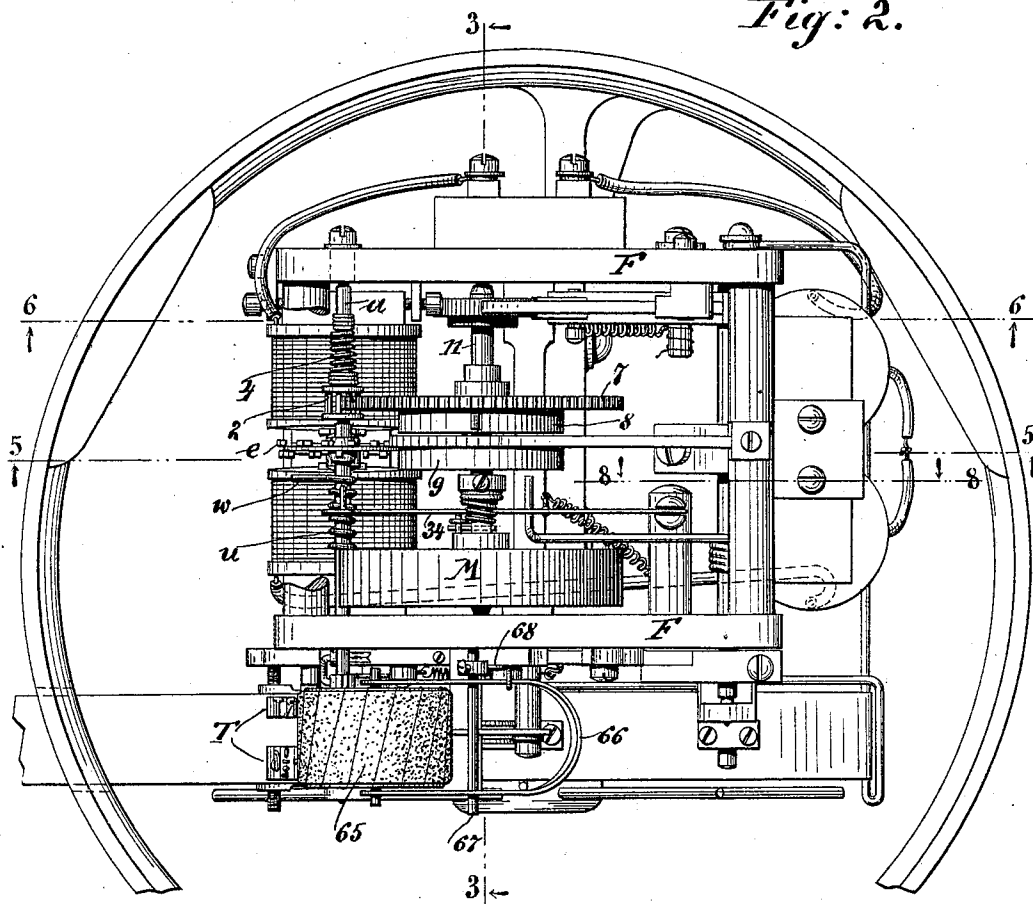
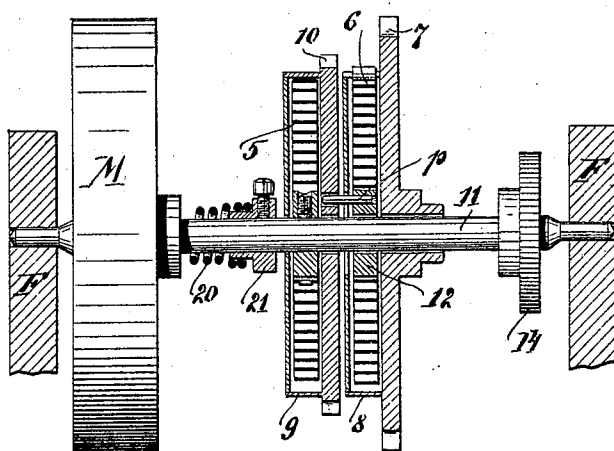


Fig: 3.



Witnesses
S. P. Palumbo
Frank Ryall

Inventor
J. Burry
By his Attorneys
Wilcox, Barker & Proctor

(No Model.)

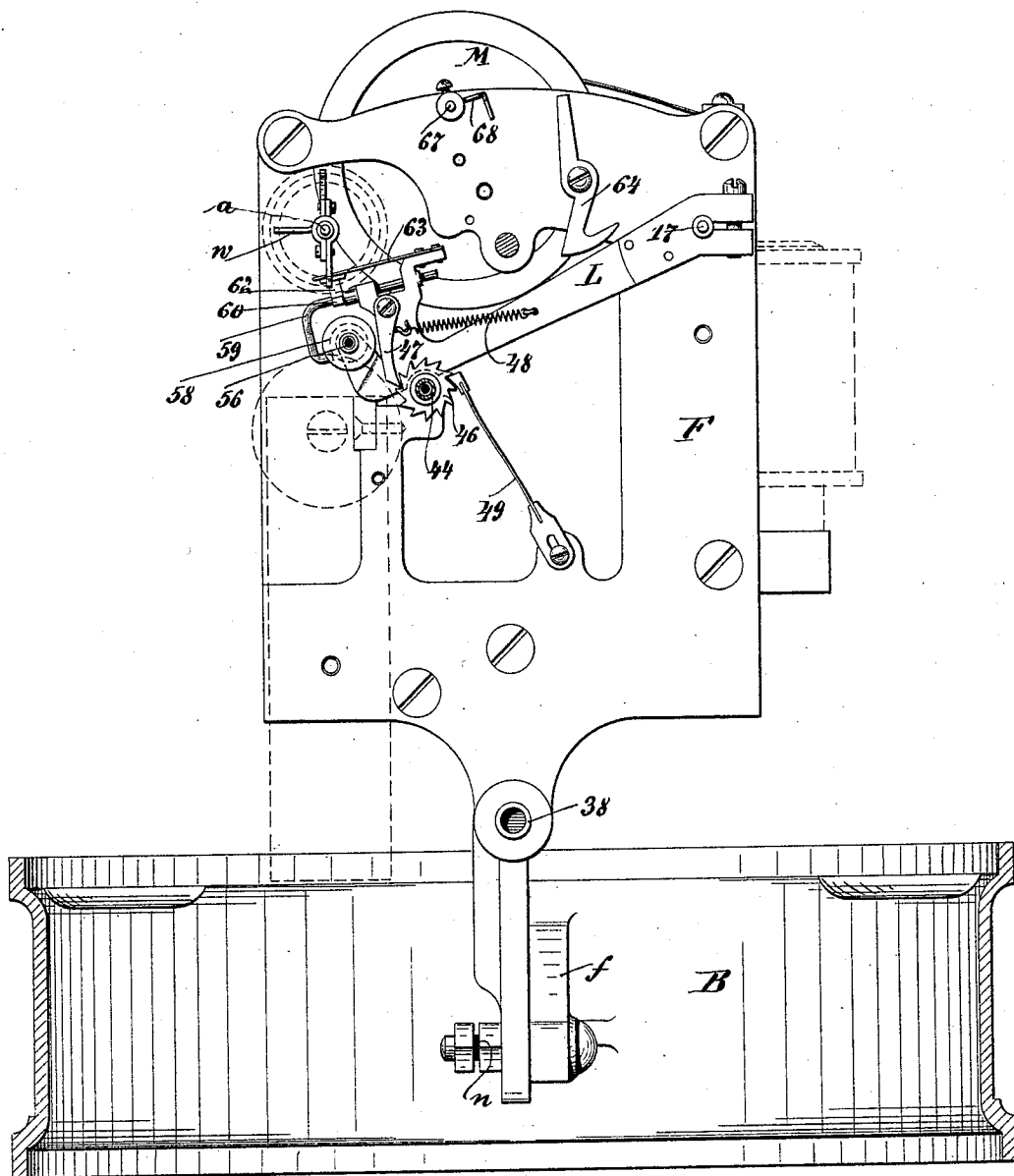
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PRINTING TELEGRAPH.

No. 581,411.

Patented Apr. 27, 1897.

Fig: 4.



Witnesses
L. Petti-Palmieri
Frank Ryall

Inventor
By his Attorneys John Curry
Wilson, Packley & Proctor

(No Model.)

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PRINTING TELEGRAPH.

No. 581,411.

Patented Apr. 27, 1897.

Fig: 5.

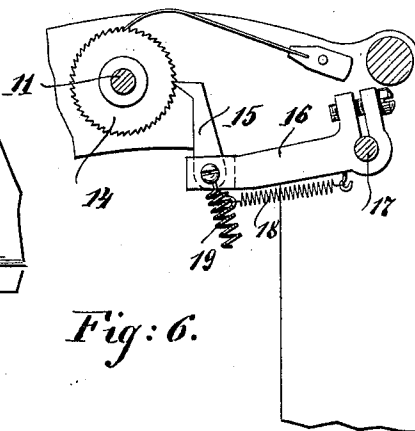
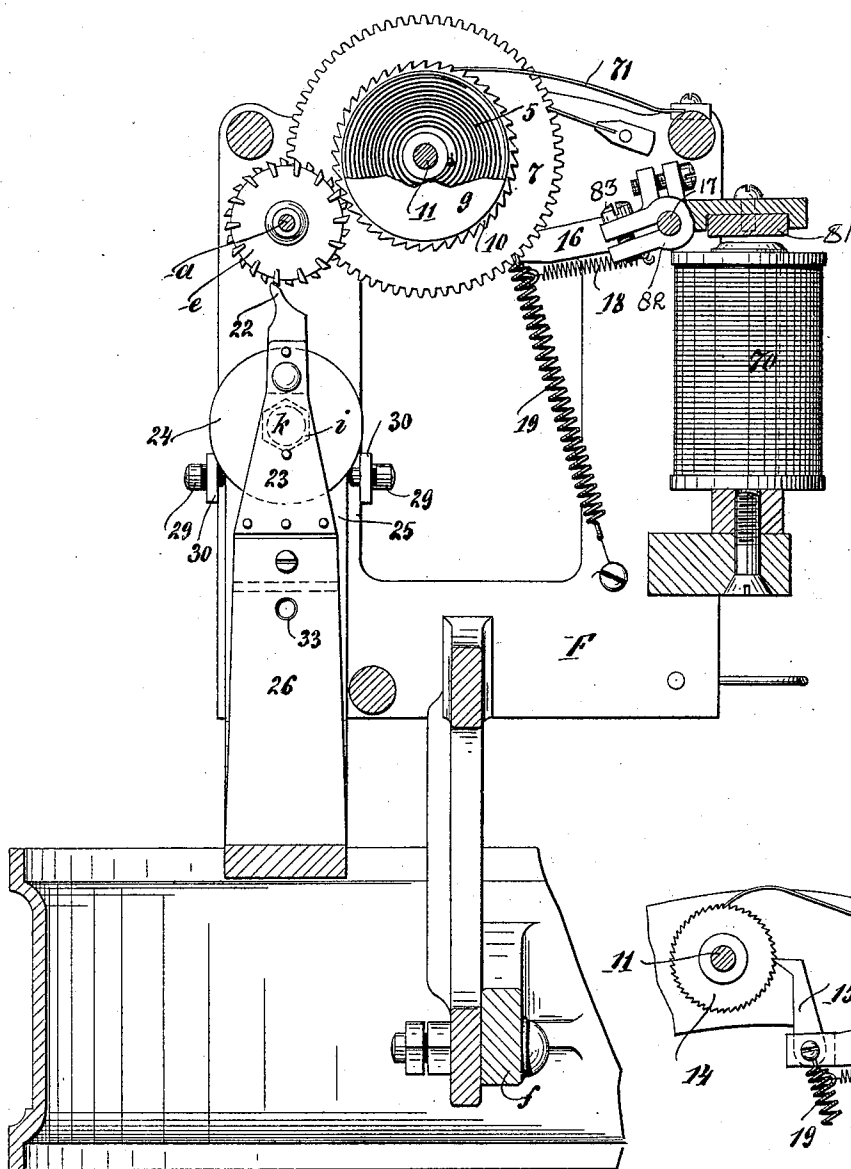


Fig: 6.

Witnesses
S. Pepi-Palmedo.
Frank Ryall

Inventor
John Burry
By his Attorneys
Wilson, Burkey & Roden

(No Model.)

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J. BURRY.
PRINTING TELEGRAPH.

No. 581,411.

Patented Apr. 27, 1897.

Fig: 7.

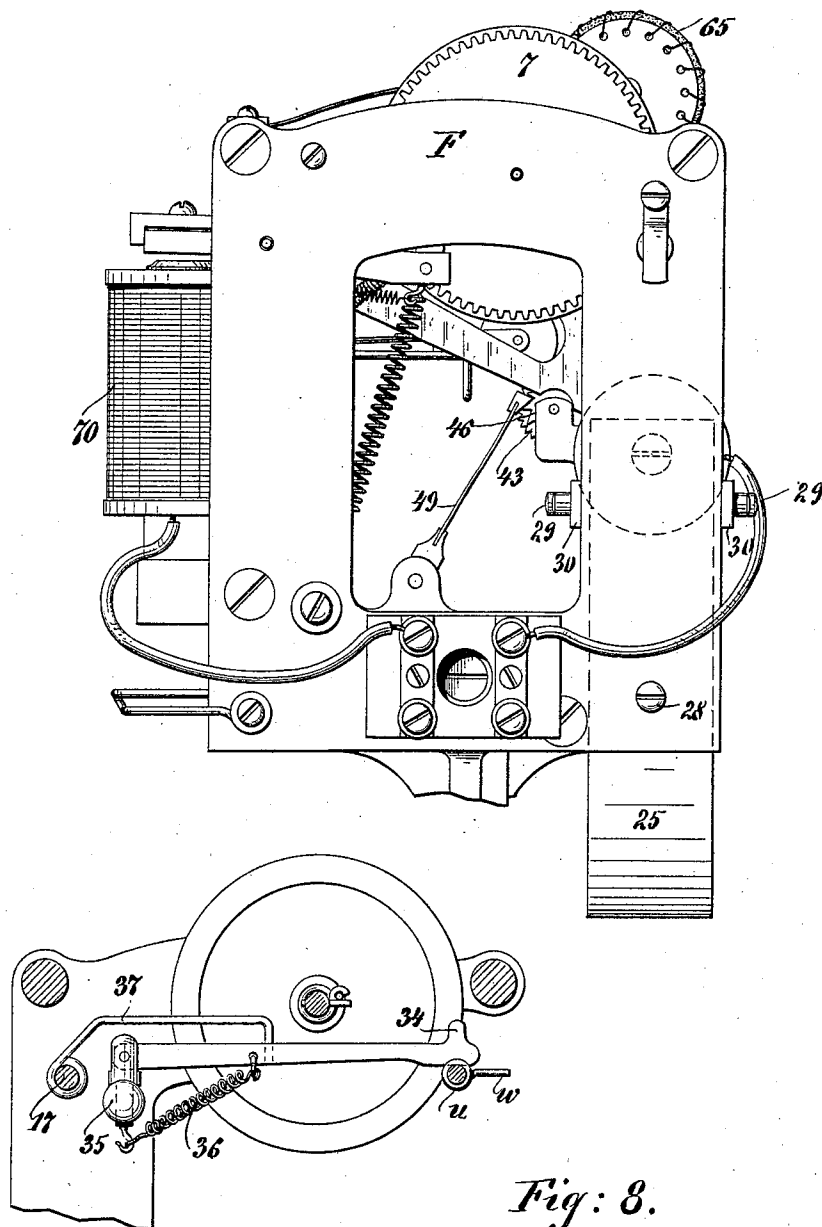


Fig: 8.

Witnesses
D. P. Palmers.
Frank Byall

Inventor
John Burry,
By his Attorneys
Wilson, Backley & Proder

(No Model.)

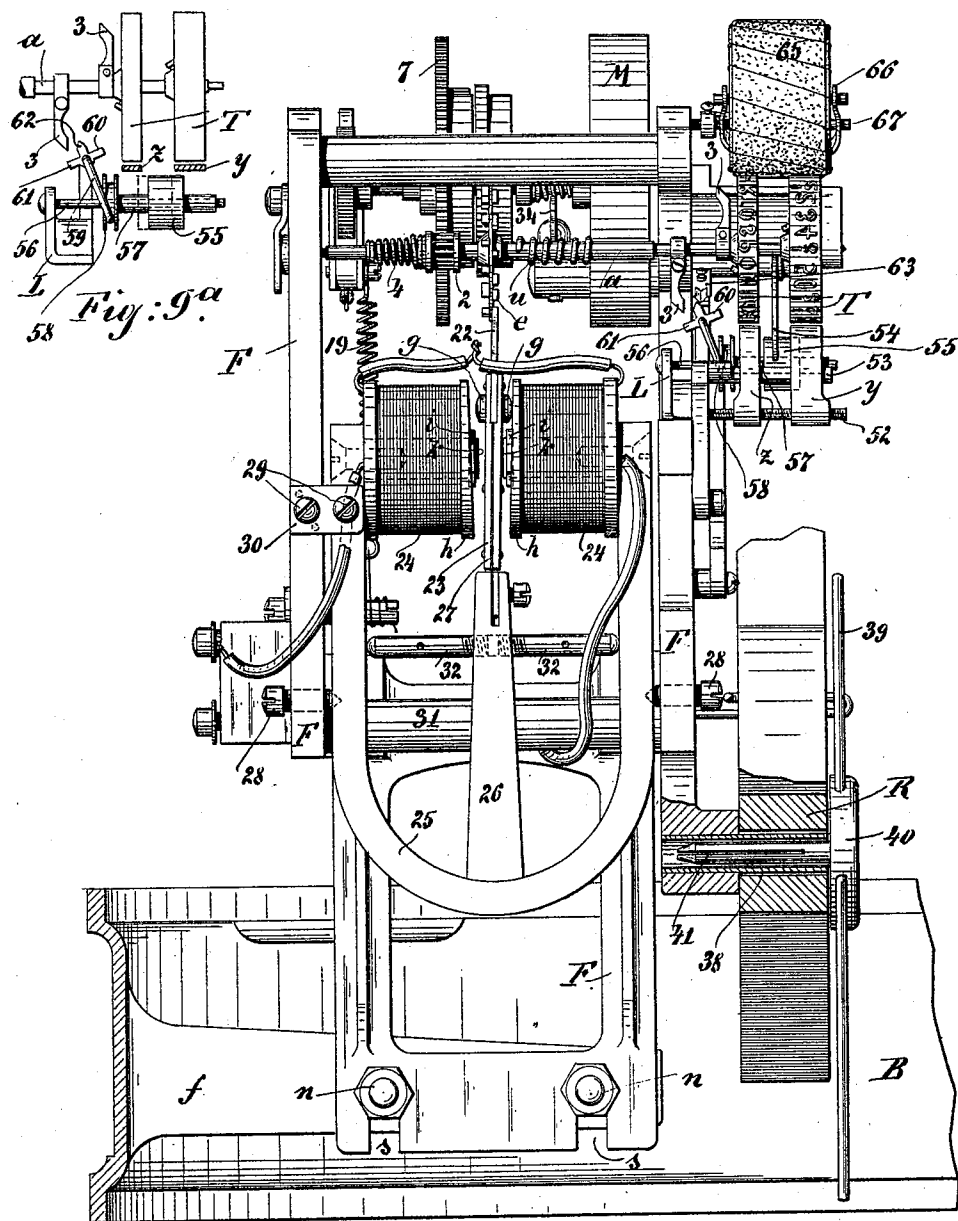
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PRINTING TELEGRAPH.

No. 581,411.

Patented Apr. 27, 1897.

Fig: 9.



Witnesses
S. Pehi- Palmedo.
Frank Ryall

Inventor
By his Attorney,
John Curry,
Wilcox, Barkley & Proctor.

(No Model.)

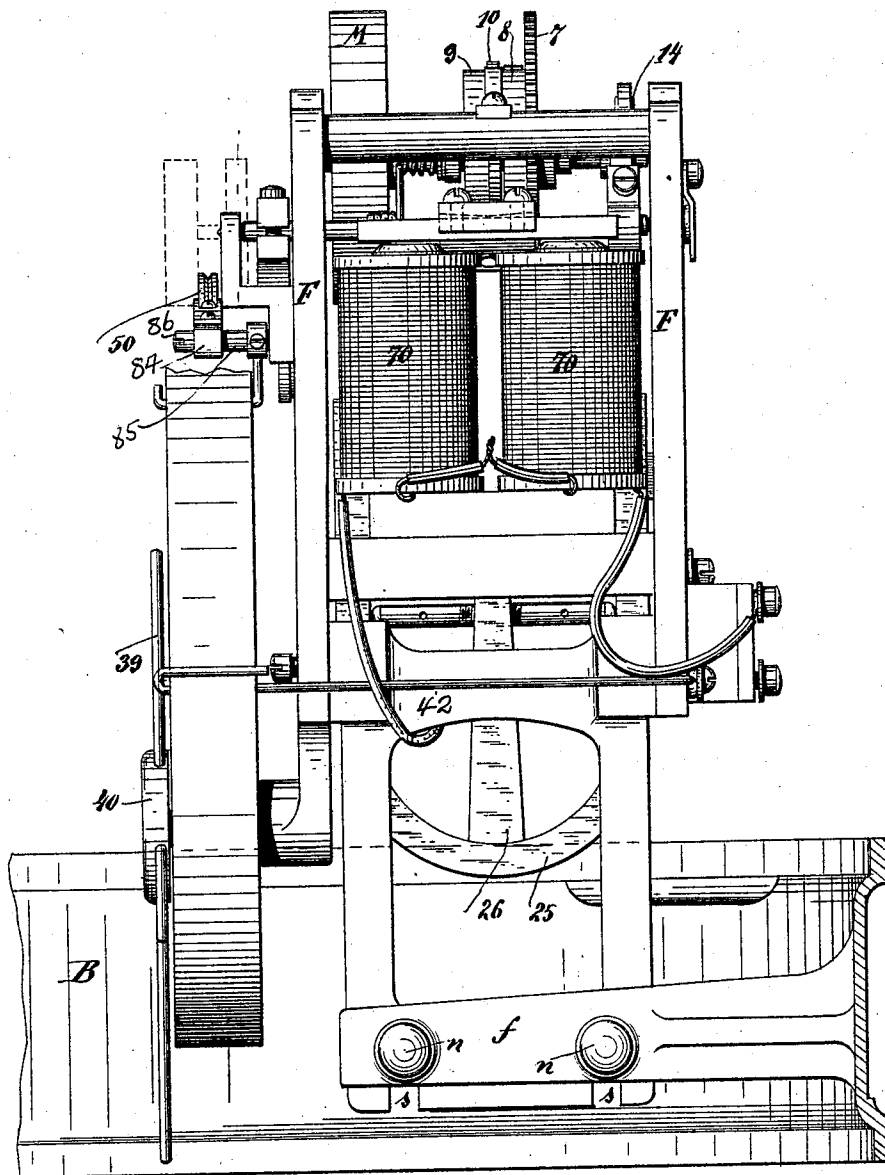
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PRINTING TELEGRAPH.

No. 581,411.

Patented Apr. 27, 1897.

Fig: 10.



Witnesses
S. P. Palmer
Frank Ryall

Inventor
John Burry
By his attorneys
Niles, Barker & Proctor

UNITED STATES PATENT OFFICE.

JOHN BURRY, OF LONG ISLAND CITY, NEW YORK, ASSIGNOR TO THE STOCK QUOTATION TELEGRAPH COMPANY, OF NEW YORK.

PRINTING-TELEGRAPH.

SPECIFICATION forming part of Letters Patent No. 581,411, dated April 27, 1897.

Application filed June 27, 1896. Serial No. 597,183. (No model.)

To all whom it may concern:

Be it known that I, JOHN BURRY, a citizen of the United States, and a resident of Long Island City, in the county of Queens and State of New York, have invented certain new and useful Improvements in Printing-Telegraphs, of which the following is a specification.

This invention relates to that class of machines wherein impressions are made on a strip of paper from type on one or more wheels, the particular character desired being brought to a predetermined point in a step-by-step manner and the impression then taken.

15 An object of the invention is the simplification of such machines.

Another object is to make them as nearly automatic as may be and to improve their operation, and other objects, as will hereinafter more fully appear.

To these ends the invention consists in combinations of devices hereinafter more fully described, and more particularly pointed out in the claims concluding this specification.

25 The preferred form of the invention is illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of the machine, showing the type-wheel, inker, &c. Fig. 2 is a plan view of the machine. Fig. 3 is a vertical sectional view on the plane indicated in Fig. 2 by line 3 3. Fig. 4 is a side elevation of the paper-feed-operating mechanism. Fig. 5 is a view, partly in section, on the vertical plane indicated in Fig. 2 by the line 5 5, showing the driving mechanism and escapement. Fig. 6 is a detail on plane 6 6 of Fig. 2 of parts only partly shown in Fig. 5. Fig. 7 is a view from the side of the machine opposite to that shown in Fig. 1. Fig. 8 is a detail view of the unison device. Fig. 9 is a front view of the machine, showing the escapement, type-wheel, driving mechanism, &c., certain parts in the rear being omitted. Fig. 9^a is an enlarged detail view of the hammer-shifting mechanism; and Fig. 10 is a rear view of the machine, showing the printing-magnets.

The movable and other parts of the machine are suitably connected with a framework F, which is shown as supported by an

annular base B, from one side of which an arm *f* extends inwardly, to which the framework F is attached, as by slots *s* and bolts and nuts *n*.

The type-wheel T is shown as composed of two disks, each of which is attached to the shaft *a*, as by set-screws, so as to move only therewith. The shaft *a*, which is suitably journaled in the frame F, has the escapement-wheel *e* fixed thereto, the barrel-pinion 2 loose thereon, the two shift-operating arms 3 fast thereto, and one end of the coiled spring 4 fast thereto, the other or loose end of said spring 4 being fastened to the barrel-pinion 2.

The type-wheel T is driven by the springs 5 6 and intermediate mechanism. In that form of the invention shown in the drawings the shaft *a*, spring 4, and pinions 2 7 connect the driving-springs 5 6 with the type-wheel T. The spring 6 is fast at one end to the drum 8, which is fast on pinion 7, and at the other end is fast to the hub 12. Both pinion 7 and hub 12 are loose on the shaft 11 and are not connected together save by the spring 6. The spring 5 is fast at one end to the hub 13, which is fast on shaft 11, but is loose at the other end—that is, it is not fastened to but bears loosely against the drum 9. The drum 9 is part of or fast to the ratchet-wheel 10, which is loose on the shaft 11. A pin *p* connects hub 12 and ratchet-wheel 10, so as to cause them to move together, the pin *p* passing through a circular opening in the drum 8, surrounding the shaft 11, thus allowing the pin to move around the shaft freely. The detent 71 coacts with ratchet-wheel 10. The shaft 11, which is suitably journaled in the framework F, has fixed to it the ratchet-wheel 14, by which it is moved. The ratchet-wheel 14 is itself driven by the pawl 15, pivoted in lever 16, this lever being fast on the shaft 17 of the printing-lever L. A spring 18 keeps pawl 15 pressed against the ratchet-wheel 14. (See Fig. 6.) The lever 16 is moved downward by the spring 19, fast thereto and to the frame F. (See Fig. 5.)

The momentum-wheel M is loose on shaft 11 and is connected therewith by means of the spring 20 and collar 21 and other parts, as described in Letters Patent of the United

States granted to me on the 19th day of March, 1895, No. 535,810. The action of these parts is fully described in said Letters Patent.

The escapement-wheel *e* coacts with the pallet 22, borne by the armature 23, which vibrates between the polarized magnets 24. The teeth of the escapement-wheel *e* are alternately on opposite sides of the disk or web uniting them, thus lying in two planes. The pallet 22 moves across the periphery of the disk from the plane of one set of teeth to the plane of the other set, releasing and stopping the wheel *e*, which thus moves through the angle between a tooth in one plane and the next tooth in the other plane, which angle equals the angle between adjacent characters on the type-wheel T, both angles being measured at the center of shaft *a*. The teeth of wheel *e* and the pallet 22 are so shaped that the contact between them shall be that of plane surface with plane surface.

The electromagnets 24 are placed opposite each other and are secured to and inside the ends of a U-shaped permanent magnet-bar 25. Rising from and fixed to the center of the bar 25 is the standard 26, of soft iron. The standard 26 is split at its top, and there receives the spring 27, to which the armature 23 is also secured. The armature 23 is shown as in two parts, between which the spring 27 and pallet 22 are fast, the pallet being of German silver, iridium, or other non-magnetic material. The armature 23 is also provided with stops *g*, of hard fiber or the like, for coaction with the ends *h* of the magnets 24 to prevent contact between armature and ends; also, these stops regulate the amplitude of the vibrations of the pallet 22 or the positions of the latter with respect to the planes of the teeth of wheel *e*. The heads *h* of the spools of the magnets 24 are formed with plane faces which are not at right angles to the axis of the magnets. These spools are rotatable on such axis, however, the purpose being the regulation, by the turning of either or both spools, of the extent of the motion of armature 23 in each direction. In effect the heads *h* of spools are beveled off.

The bar 25 constitutes a supporting-frame for the magnets 24 and the armature and is universally adjustable as follows: The frame 25 is supported (see Fig. 9) by two screws 28, which engage threaded holes in the frame F, and whose pointed or coned ends engage coned cavities in the sides of frame 25. This construction allows of moving frame 25 to the right or left in Fig. 9, and also of moving the frame 25 on these screws, as on an axis or shaft. The motion of frame 25 on the set-screws, as on a pivot, is controlled and its remaining in any desired position is secured by means of the screws 29, which engage threaded holes in lugs or ears 30 on the frame F and which bear against opposite sides of the frame 25. The longitudinal axes of screws 28 29 are at right angles to each other or substantially so, as shown in Fig. 9. By this

universal adjustability of frame 25 the pallet 22 can be accurately adjusted relatively to the wheel *e*. The bar 31 forms part of frame F and prevents the spreading of frame F by the pressure of screws 28 against frame 25. The rods 32 bear at one end against the inside faces of frame 25 and by their screw-threaded ends engage a screw-threaded hole 33 in the standard 26, and act to prevent screws 28 from bending in the magnet-carrying ends of frame 25. The adjustable spools of magnets 24 are preferably held firmly in position, as by the screw-threaded nuts *i*, which engage screw-threads on the cores *k* and bear against the ends of the spools.

The improved unison device consists of a wire *u*, wound spirally on the shaft *a* and having its end turned out, as at *w*, to form an arm for coaction with the stop 34, which is or may be of any usual construction and operation. The stop 34 shown is on an arm or rod pivoted so as to have a universal motion, as at 35, and is moved in one direction by a spring 36 and in the opposite direction by the spiral *u*. The arm or rod 34 is lifted at each printing of character by the arm 37, borne and moved by the shaft 17.

The paper to be printed is in the form of a tape wound in a roll on a spool R, which is supported on the hollow shaft 38, projecting from the frame F. The roll is held in place by means of the arms 39, which project from the hub 40. The springs 41, projecting from the hub 40, bear against the inside of the hollow shaft 38 and serve to hold the roll in place. From the roll the paper passes over suitable guides, as 42, to the paper-feeding mechanism. This mechanism comprises the toothed feed-wheel 43, fast on the sleeve or hollow shaft 44, which is loose on the fixed stud 45, projecting from the framework F. The sleeve 44 carries fast thereto the ratchet-wheel 46. A pawl 47, carried by the printing-lever L, coacts with wheel 46 to turn sleeve 44 and feed-wheel 43. A spring 48, fast to pawl 47 and to lever L, keeps pawl 47 in engagement with the wheel 43. Backlash of wheel 43 is prevented by the detent 49. A roller 50, having a peripheral groove to receive wheel 43, coacts with said wheel 43 to feed the paper, roller 50 being borne and pressed against wheel 43 by the spring 51. From the feeder 45 50 the tape passes over the two platens *y z*, which are independent of each other and are pivoted on the stud 52, projecting from the framework F. A stop 53 limits the downward motion of the platens. The platens are of a suitable width to take impressions from the characters in the particular peripheral row on the type-wheel with which they coact.

In order to prevent accidental impressions from characters in one row while taking impressions from characters in the other row of characters on the type-wheel and also to guide the paper, the guide and stop 54 is provided, (see Figs. 1 and 9,) this guide lying over the

paper and between the platens. From the platens the paper passes through a slot in the base B and out. The platens are shown as being mounted on a screw-threaded stud, being themselves provided with threads to engage the stud, thus keeping them in place after the assembling of the machine.

The platens are thrown up singly to take impressions by means of the hammer 55, which is borne by the stud 56 on the lever L, said hammer being fixed to a sleeve 57 (slidable on said stud) at one end thereof, while the other end of said sleeve 57 is provided with peripherally-grooved disk 58. The "throw" or amount of movement of the hammer along the stud 56 is just sufficient to bring the end portions thereof partly under the platens. This is necessary to the speed of the machine. The lever L has journaled in it the shaft 59, whose end is bent around to lie in the groove of disk 58. (See Fig. 4.) The shaft 59 has fast to it the arms 60 61 62, of which arm 62 is pointed, as shown. The lever L is also provided with a spring 63, having a V-shaped end for coaction with the V end of the arm 62 to hold the latter on either side. The shaft *a* has thereon the two shift-operating arms 3 above described oppositely placed as respects each other, though this is not essential. These arms coact with the arms 60 61 in certain positions of the parts to shift the hammer 55 from under one to under the other of platens *y* *z*. The motion of lever L is limited in one direction by the adjustable cam-lever 64, pivoted to the frame.

The type-wheel receives ink from a roller 65, which is carried by a frame 66. This frame 66 is pivoted on a stud 67, projecting from the frame F, the frame 66 being perforated to slip on and off the stud 67. This stud carries a hook 68, pointing downward. The frame 66 is normally caught under this hook. In case it is desired to remove the roller 65 the frame is tilted until it is clear of the hook and is then slipped off.

The roller 65 shown is composed of two end disks, having a row of perforations near their edges, of hard fiber or the like, these disks being separated and held apart by a cylinder (of cork, preferably) or spool of less diameter than the disks. The ink-carrier is a wrapping of a fibrous nature filling the groove formed by the disks and spool, and is secured in place by threads passing through the perforated disks.

The armature 81 for the "printing-magnet" 70 is adjustably attached to the shaft 17, as by the split clamps 82 and screw 83. This permits of adjusting the armature relatively to the core of magnet 70 to secure the best action of these parts. The levers 16 and L may be adjustably secured to the said shaft in like manner.

The pressure of feed-roller 50 may be varied, as by adjusting the position of the block 84, to which springs 51 are secured, relatively

to the stud 85, a screw 86 being used to clamp the two together.

The escapement-magnets 24 and the printing-magnets 70 are connected electrically with the transmitting-station in any usual or suitable manner in series or in multiple.

The operation of the spring-winding mechanism is as follows: The spring 5 is wound up in the manner set forth in my Letters Patent aforesaid. This need not be detailed further here. The spring 6 is kept under tension by the unwinding of spring 5, which acts through the drum 9, wheel or plate 10, pin *p*, and loose collar 12. The spring 6 drives the type-wheel through the described mechanism. The detent 71 compels the spring 6 to unwind only in driving wheel 7. If at any times springs 5 and 6 are so far wound up that the resistance to further winding by spring 6 exceeds the friction between the spring 5 and drum 9, the spring 5 slips on drum 9.

The described framework for supporting the pallet 22 is such that it may be wholly removed from the main frame and another like subframe, magnets, and pallet be substituted and adjusted in position very easily and quickly without disturbing any other part of the machine or its adjustment.

The operation of the impression-taking parts is as follows: The hammer 55, by means of the described parts 58 59 60 61 62 63, is normally partly under either platen *y* or platen *z* and at each "printing impulse" over the line is driven against the platen to cause the latter to take an impression on the paper from a character on wheel T. In a certain position of wheel T the arm 60 is struck by the corresponding arm 3, if hammer 55 is in the position shown in Fig. 9, and the hammer shifted into position to cause it to operate the platen *z*. If hammer 55 is in position under the platen *z*, the arm 61 is raised and in a certain position of wheel T is struck by the corresponding arm 3 to shift hammer 55 from platen *z* to platen *y*. In each case it is understood that no shift of the hammer takes place unless a printing impulse be sent over the line. The quick-acting escapement-magnets 24 respond to every impulse or break in the current, while the printing-magnets 70 respond to prolonged impulses, as common in the art. The paper is fed forward after the printing-stroke of lever L.

What is claimed is—

1. The combination of a shaft; a loose gear, as 7, thereon; a spring, as 6, fast at one end to said loose gear; a spring, as 5, fast at one end to said shaft; friction devices connecting said springs; and intermittently-acting means for turning said shaft to wind up the spring fast thereto; all substantially as described.

2. The combination of a shaft; a loose gear, as 7, thereon; a spring, as 6, fast at one end to said loose gear; a spring, as 5, fast at one end to said shaft; friction devices connecting said springs; intermittently-acting means for turning said shaft to wind up the spring fast

thereto; and a momentum device to add to the winding up of the spring; all substantially as described.

3. In a printing-telegraph or other instrument, the combination of an escapement-wheel, the pallet, the pallet-operating magnets, a subframe to which said magnets and pallets are secured, a main frame, and means for moving said subframe in two planes at right angles to each other to adjust the position of said pallet relatively to the escapement-wheel, substantially as described.

4. In a printing-telegraph or other instrument, the combination of the escapement-magnets, a U-frame to and inside the ends of which said magnets are secured, a standard at the center of said U-frame, a pallet-carrying armature attached to said standard by a spring, a main frame, and means for attaching the U-frame and adjusting its position relatively to said main frame, substantially as described.

5. In a printing-telegraph or other instrument, the combination of the escapement-magnets, a U-frame to and inside the ends of which said magnets are secured, a standard at the center of said U-frame, a pallet-carrying armature attached to said standard by a spring, adjustable braces between said standard and the sides of said U-frame, a main frame, and screws for moving said U-frame in two planes relatively to said main frame, said braces preventing distortion of said U-frame, substantially as described.

6. The combination of opposite magnets, an armature between them, stops carried by said armature, and adjustable magnet-spools provided with beveled heads for coaction with said stops, substantially as described.

7. The combination of a to-and-fro-moving

armature, opposite magnets alternately attracting it, and adjustable magnet-spools provided with beveled heads for limiting the motion of said armature, substantially as described.

8. The combination of an electromagnet, an armature movable toward and from said magnet, and an adjustable magnet-spool provided with a beveled head for limiting the motion of said armature toward said magnet, substantially as described.

9. The combination of a type-wheel having two rows of characters, two platens independently movable to and fro to take impressions therefrom, a printing-lever, a hammer carried by said lever and movable thereon from one to the other of said platens, an annularly-grooved disk rigid with said hammer, a shifting-lever carried by said printing-lever engaging said grooved disk, arms on said shifting-lever, and arms on the type-wheel shaft for coaction therewith, substantially as described.

10. In a unison device for printing-telegraph and other signal transmitters, the combination of a shaft and a wire spirally wound tightly and frictionally held thereon, substantially as described.

11. In a unison device for printing-telegraph and other signal transmitters, the combination of a shaft and a wire spirally wound thereon, and having its end turned out to form a stop or catch, substantially as described.

Signed at New York, in the county of New York and State of New York, this 24th day of June, A. D. 1896.

JOHN BURRY.

Witnesses:

RICHARD W. BARKLEY,
CHAS. A. BRODEK.