

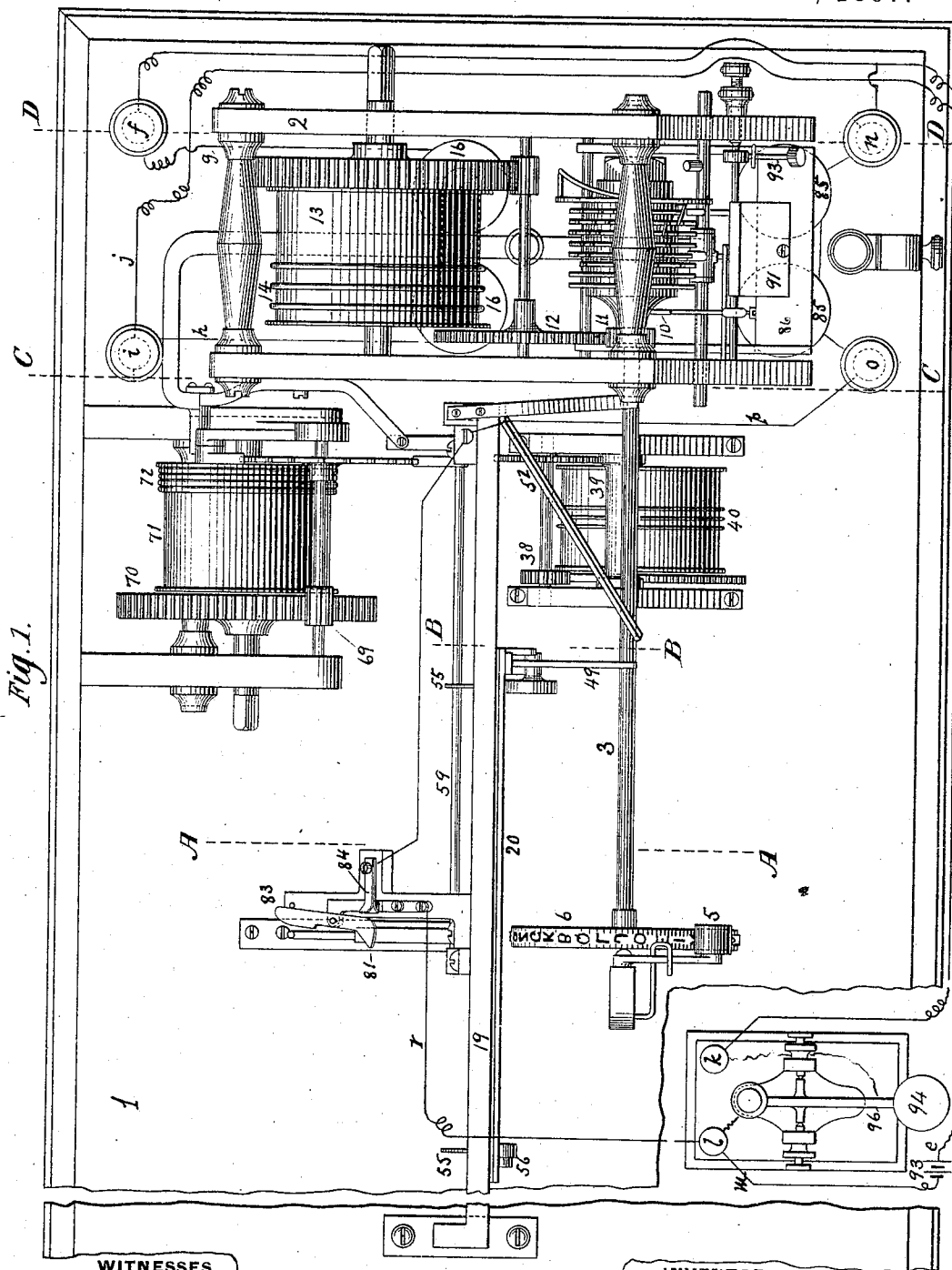
(No Model.)

5 Sheets—Sheet 1.

O. L. KLEBER.
PRINTING TELEGRAPH.

No. 575,830.

Patented Jan. 26, 1897.



WITNESSES

W. Johnston
F. J. Knapp

INVENTOR

Oscar L. Kleber
per Josiah W. Ellis
attorney—

(No Model.)

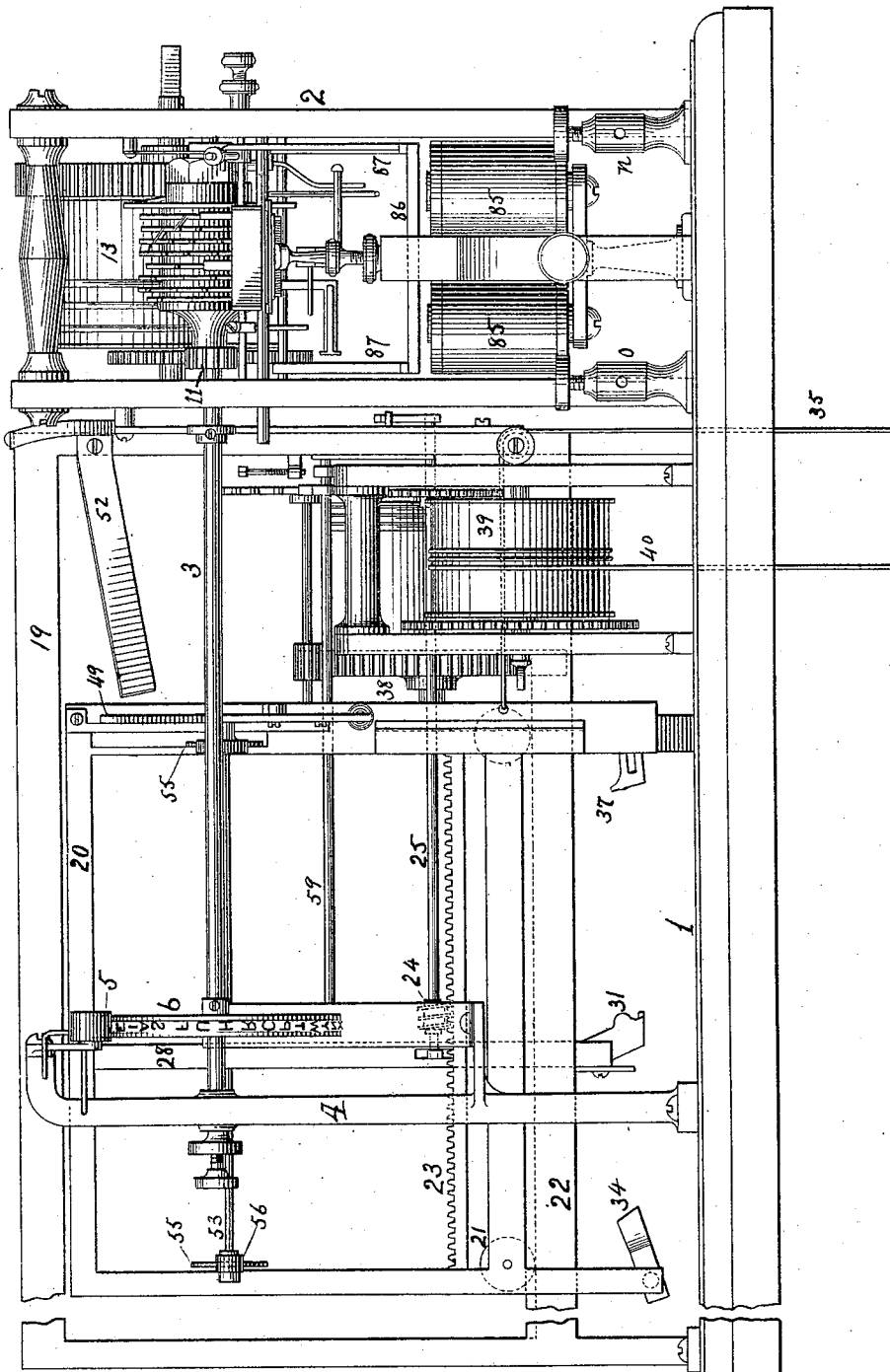
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Fig. 2.



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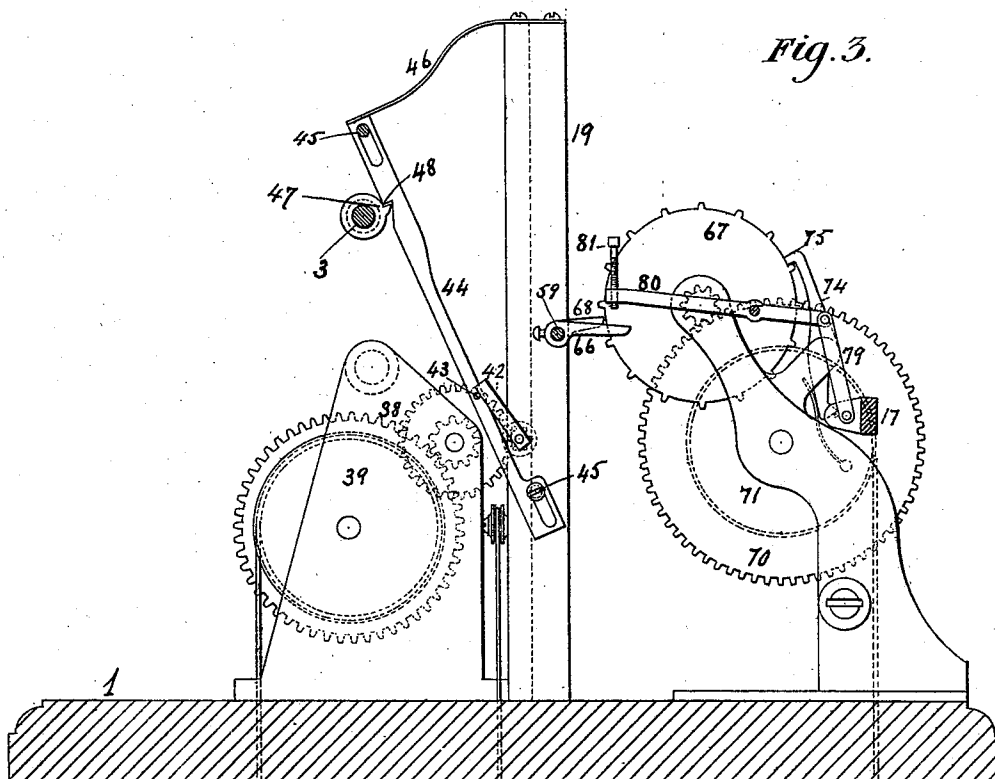


Fig. 3.

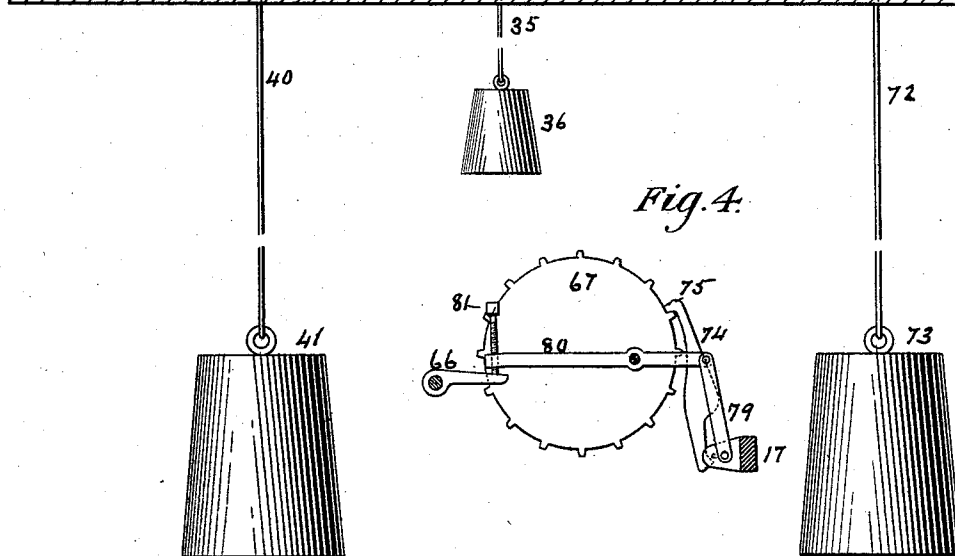


Fig. 4.

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(No Model.)

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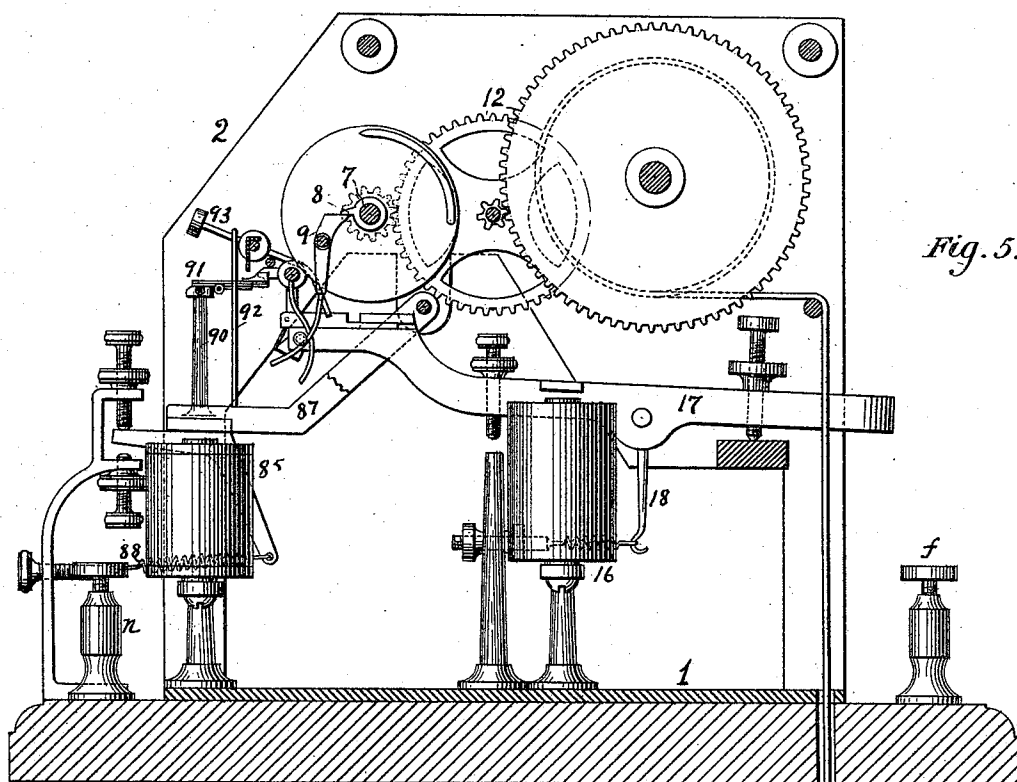


Fig. 5.

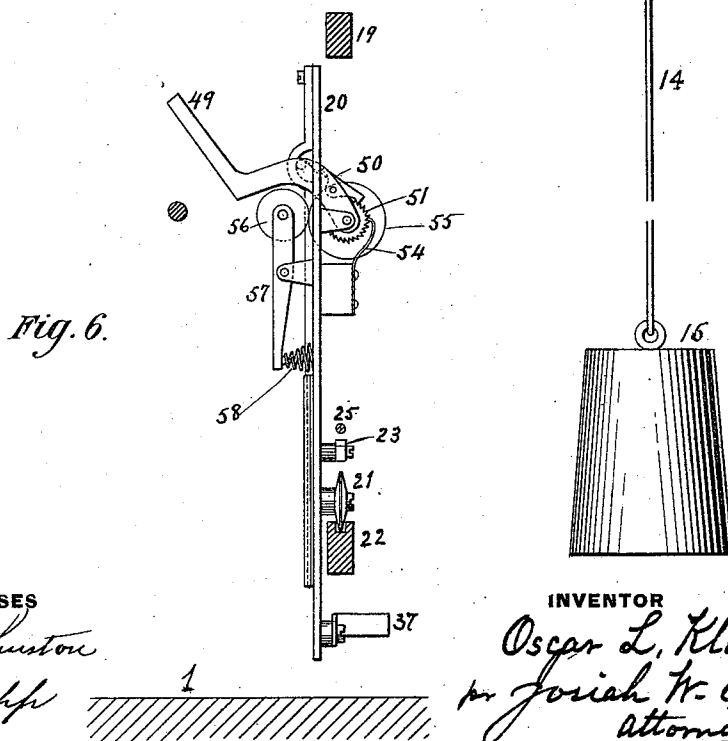


Fig. 6.

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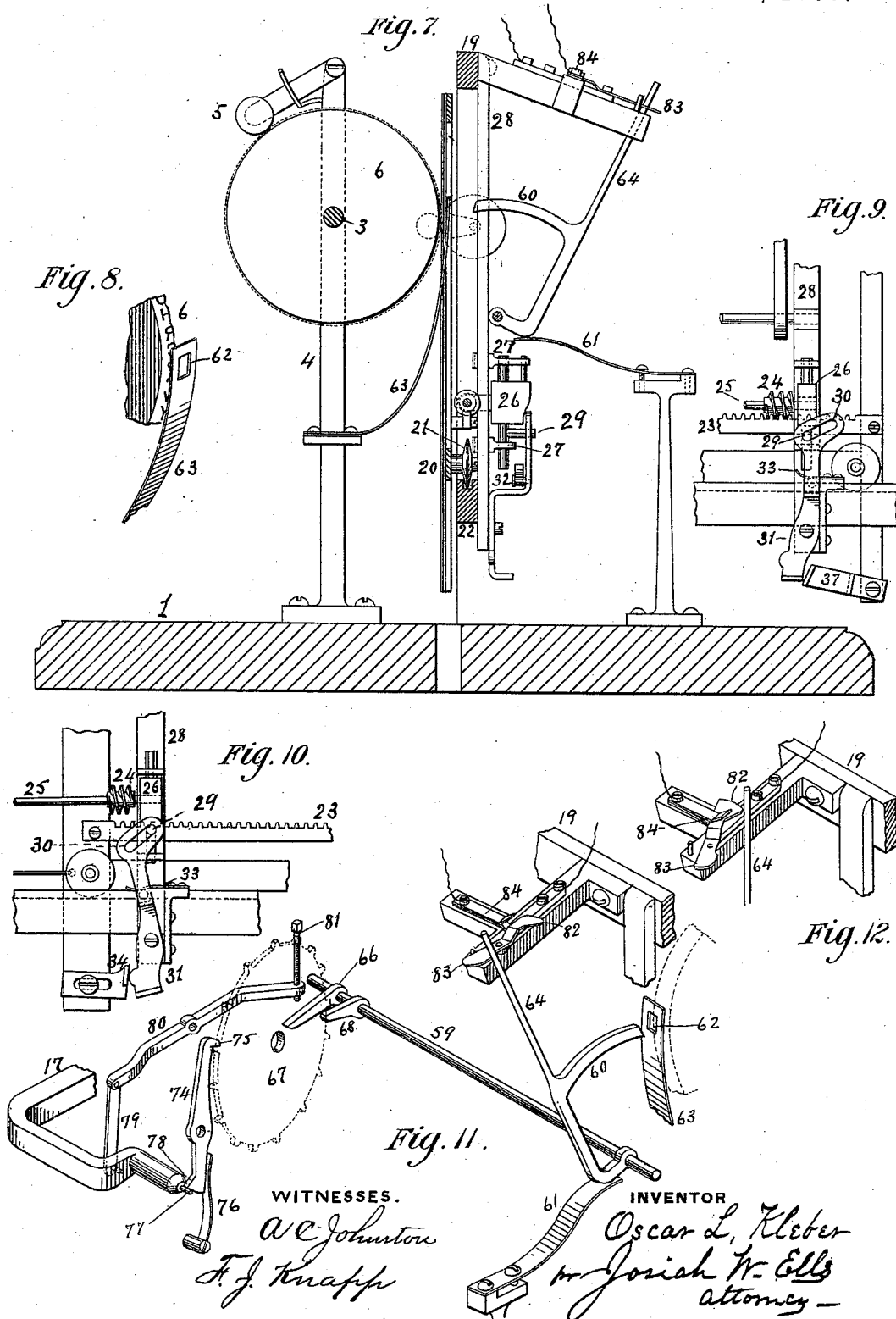
(No Model.)

5 Sheets—Sheet 5.

O. L. KLEBER.
PRINTING TELEGRAPH.

No. 575,830.

Patented Jan. 26, 1897.



UNITED STATES PATENT OFFICE.

OSCAR L. KLEBER, OF PITTSBURG, PENNSYLVANIA.

PRINTING-TELEGRAPH.

SPECIFICATION forming part of Letters Patent No. 575,830, dated January 26, 1897.

Application filed July 18, 1895. Serial No. 556,393. (No model.)

To all whom it may concern:

Be it known that I, OSCAR L. KLEBER, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful improvement in printing-telegraphs which have a revoluble shaft carrying a type-wheel, together with a series of toothed selecting-disks and spacing-wheels severally operated on by electrically-controlled fingers that shift from one disk and wheel to another in such manner as that any letter, numeral, character, punctuation-mark, or other arbitrary sign on the type-wheel agreeing with a transmitted telegraphic signal will be brought and held directly opposite a predetermined point, substantially in the manner shown and described in the patent, No. 521,170, granted me on the 12th day of June, 1894, and the patent, No. 537,464, granted me on the 16th day of April, 1895, of which the following is a specification.

My present invention comprises the above-mentioned elements constructed and adapted to operate in combination with an automatically-acting paper-feeding and printing device, whereby the letters, numerals, &c., on the type-wheel are brought around to the proper point and printed on a sheet of paper in words and sentences arranged as required, all of which will be readily understood from the following description, taken in connection with the accompanying drawings, wherein—

Figure 1 represents a plan or top view of the entire contrivance; Fig. 2, a front elevation of the same; Fig. 3, a transverse vertical section on the line C C; Fig. 4, a detached portion of said section; Fig. 5, a transverse vertical section on the line D D; Fig. 6, a detached portion, in vertical plane B B, of the mechanism designed to shift the paper upward and space the same in parallel lines; Fig. 7, a transverse vertical section of the apparatus on the line A A; Fig. 8, a perspective view of a small portion of the type-wheel and stripper; Fig. 9, an elevated detached portion of the letter and word spacing mechanism in gear and operating position; Fig. 10, a similar view of the same parts when out of gear; Fig. 11, a detached perspective view of

the principal features of so much of the mechanism as is used in combination with the armature-bar of an electromagnet and an automatically-acting electric switch, represented in open position; Fig. 12, a portion of same mechanism, showing the electric switch closed.

This printing-telegraph, as I have constructed it, consists of a substantial table, stage, or base 1, upon which is erected a suitable frame 2, having in fixed bearings a long horizontally-arranged revoluble shaft 3, the outer end of which is supported by and journaled in a vertical post 4, surmounted by an ink-bearing roll 5. This shaft 3 is provided with a wheel 6, which has alphabetical letters, numeral-characters, punctuation-marks, &c., arranged as shown and in relief around its periphery. That portion of the type-wheel shaft between the walls of the main frame 2 is provided with a series of toothed selecting-disks, toothed spacing-wheels, a cam-wheel, and inclined slides for moving the fingers across the faces of their respective wheels, as shown and described in my hereinbefore-mentioned patent, No. 537,464; and at a point near the cam-wheel the shaft has a small collar 7, from which projects a single tooth 8, that operates in conjunction with a pivoted clutch 9 to suddenly stop rotation of said shaft at each complete rotation thereof. On the opposite side of the group of selecting-disks said shaft 3 is also provided with an outwardly-projecting rod or finger 10, that revolves therewith, the object of which will hereinafter be explained, and this portion of said shaft 3 has affixed thereon a small pinion 11, in gear with intermediate toothed wheels 12, connecting the same with a drum 13, around which is wound a cord 14, attached to a weight 15, which when released gives rapid rotation to the type-wheel shaft 3 and its permanent attachments in such direction as that their upper surfaces shall move toward the front of the apparatus.

Properly secured to the base-plate at or near the middle of the main frame 2 is an electromagnet 16, provided with an iron armature affixed to a horizontally-arranged non-magnetic bar 17, pivoted to the frame, and from its pivotal axis this bar 17 is provided with a

downwardly-extended hook 18, connected by means of a spiral spring to an adjusting-screw that passes through a stationary post, whereby the tension of said spring will cause said bar 17 and its armature to quickly move upward when freed from downward magnetic attraction. This armature-bar 17 is also provided with the usual thumb-screws, by which the extent of its movements may be regulated. The forward end of this armature-bar 17 has on each side thereof a laterally-extending pin, that by downward action temporarily withdraws the fingers from their respective selecting-disks and spacing-wheels, precisely in the same manner shown and described in my Patent No. 537,464. The opposite or rear end of this armature-bar 17 in its upward and downward movements governs the action of the printing device, the construction and operation of which are as follows:

A suitable distance behind the type-wheel shaft 3, and in a vertical plane parallel thereto, is an oblong rectangular frame 19, firmly secured to the base-plate of the apparatus. Close beside and directly in front of this oblong frame 19 is arranged a smaller open frame or carriage 20, adapted to slide back and forth on the former, guided by little wheels 21, which run in a grooved track along the rail 22 of said oblong frame. To this carriage is attached a toothed rack 23, which moves intermittently the extent of one tooth on each revolution of a small worm-wheel 24 in engagement therewith. This worm-wheel 24 is secured on a driving-shaft 25, which has that end journaled in the projecting arm of a slide 26, adapted to move up and down in suitable guides 27, fixed to a vertical bar 28, permanently attached to the oblong frame 1. Said slide 26 is provided with a backwardly-projecting pin 29, that extends through an oblique slot 30 in the upper end of a lever 31, pivoted to said vertical bar, and this lever 31 has at a point between its pivotal connection and its oblique slot 30 a short projecting pin 32, pressed upon by a curved spring 33 in such manner as that said pin when moved on either side of a vertical line will cause said lever 31 to complete its action quickly. A movement of this lever in one direction will bring the worm-wheel 24 properly in gear with the toothed rack 23, and keep it there until an adjustable stop 34 on the carriage comes in contact with the lower end of said lever and by striking against the same cause it to suddenly reverse its position and lift the worm-wheel 24 free from the rack, thus liberating the carriage, which is immediately drawn back to the other end of the stationary frame 19 by means of a cord 35 and weight 36. This movement brings the lever 31 in abrupt contact with a fixed stop 37, which effects a reversal of said lever, thereby placing the worm-wheel again in gear with the rack ready for repeated action. The opposite end of the worm-wheel shaft 25 has a small pinion in gear with a suitable train of toothed wheels

38 and a drum 39, around which is wound a cord 40, provided with a weight 41 to give quick rotary movement to said worm-wheel; and this portion of said shaft 25 is also provided with a laterally-extending arm 42, that on each revolution of the same comes in contact with a small pin 43, projecting from the side of an obliquely-arranged bar 44, which has a slot in each end severally astride of a pin 45, that guides said bar 44 in an up-and-down movement sufficiently far to first bring said pin 43 in the pathway of the revolving lateral arm 42 to stop the same and at proper time withdraw it. The downward movement is effected by means of a spring 46, which presses on top of said oblique bar 44, and its upward movement is brought about by means of a small cam or projecting tooth 47 on the type-wheel shaft 3 coming in contact with the square shoulder of an angular notch 48 in the under edge of said oblique bar, whereby it is lifted, raising its side pin 43 out of the way to let the lateral arm 42 of the worm-wheel shaft 25 pass and make a complete revolution, when it will be caught by the aforesaid pin 43, which has returned to its former position. The end of this sliding carriage 20 nearest the selecting-disks is provided with a lever 49, in connection with a pivoted pawl 50 and circular ratchet-wheel 51, so constructed and arranged as that the carriage 20, under the influence of its cord 35 and weight 36, will, in completing its travel in that direction, bring the arm 49 of the pawl 50 directly upon and cause it to rapidly slide along the edge of an upwardly-inclined stationary bar 52, thereby giving the ratchet-wheel 51 and its shaft 53 a partial revolution, and to prevent return movement of said ratchet-wheel a light spring-click 54 engages the tooth thereof. The shaft 53, to which the ratchet-wheel is affixed, extends horizontally along and back of the sliding carriage 20, moving with it, and each end of said shaft 53 is provided with a plain wheel 55, in front of which is arranged a similar but smaller wheel 56, journaled in the upper end of a pivoted lever 57, which has its lower portion forced outwardly by means of a coiled spring 58, whereby the peripheries of said plain wheels are kept closely together, so as to hold with yielding contact an interposed sheet of paper and move it in accord therewith.

Supported in bearings and arranged close behind the stationary open frame 19 and parallel thereto is a horizontal rock-shaft 59, and to it is affixed the handle end of a long-nosed hammer 60, which from its point of connection extends laterally a short distance and then turns upwardly, forming a sort of elbow, under which is placed a spring 61 to throw the hammer forward at the movement of release and cause its nose to pass through a hole 62 in a thin plate 63 and strike a sheet of paper against any letter of the type-wheel opposite thereto. An upward continuation of this hammer-handle forms a rod 64, that when the hammer swings to and fro opens an

electric switch 65, but does not close the same only upon a full and complete stroke of the hammer.

On the other end of the shaft to which the hammer is attached are two radially-projecting arms of unequal length arranged a little distance apart and nearly in the same horizontal plane. The longer arm 66 extends alongside a toothed plate-wheel 67, but out of contact therewith. The teeth of this wheel are widely separated, and the shorter arm 68 is arranged to have its free end between said teeth. This toothed plate-wheel is secured to an axle supported in proper bearings and is fitted with a pinion 69, engaged with the teeth of a larger wheel 70, provided with a drum 71, around which is a cord 72, supplied with a weight 73 to produce rotary movement of the plate-wheel when released. In the same plane and behind the plate-wheel is arranged a pivoted escapement-lever 74, provided with a short hook 75 at its upper end, which catches the teeth of said plate-wheel as they move around, being actuated in that respect by means of a spring 76, which presses the lower end of said escapement-lever outwardly. A reverse movement of this lever and consequent release of an engaged tooth is accomplished by a pin 77, extending from the extreme tail end of the armature-bar 17, which pin slides over and depresses an angular projection or heel 78, formed on the lower end of said escapement-lever. Thus each up-and-down movement of the armature-bar 17 withdraws the hook 75 from the plate-wheel 67 and releases a tooth. A link 79, jointed to this portion of said armature-bar 17, connects the same to one end of a long pivoted lever 80, its opposite end being directly over the longest arm or tappet 66 on the hammer-shaft 59, and said lever 80 is provided with a vertical screw 81 to regulate the distance between said lever and the tappet. The plate-wheel 67, being constantly under influence of a suspended weight, is always ready to respond, and as each up-and-down movement of the armature-bar 17 releases the wheel 67 it escapes tooth by tooth, which successively strikes downward the shorter arm or trip 68 on the hammer-shaft and draws the hammer back, which is immediately and as often thrown forward by the action of its spring 61 keeping up a sort of vibratory movement. During such time as the screw end of the lever 80 is depressed it prevents a full forward throw of the hammer. An elevation of this end of the lever gives freedom to the arm 66 and enables the hammer to accomplish a full and complete stroke. This full stroke causes the rod 64 on the hammer 60 to come against a projecting incline 82 of the pivoted switch 83 and force that portion between the jaws of a spring-grip 84, leaving it in lingering contact therewith until the rod 64 in returning to its former position withdraws the switch by opposite action.

A second electromagnet 85 is arranged ver-

tically near the front of the apparatus, and its armature 86 is secured to the forward ends of a pair of arms 87, pivoted to the main frame 2. When released from magnetic attraction, this armature 86 is forced upward by means of a spring 88, connecting the same to an adjusting-screw. On this armature 86 is a vertical post 90, to the top of which is fastened a broad flat spring 91, that operates to press the selecting and spacing fingers against their respective wheels. A downward pull of said armature 86 draws the broad spring 91 away from said fingers.

This apparatus is designed and constructed to operate by means of an electrical battery 93 or suitable generator of electricity in connection with a main line of communication used to transmit Morse telegraphic or any other arbitrary code of signals, and to this end it is made to operate in conjunction with a telegraphic communicator-key 94 or means for producing such signals. Assuming that the line-wire is properly constructed, on depression of the transmitting-key 94 the circuit will be closed and the electrical current will pass from the positive element of the battery along the wire *e*, leading therefrom to a post *f* of the receiving apparatus, to which the message is addressed, thence by wire *g* into the electromagnet 16, arranged near the middle portion of the receiver, thence by wire *h* to a post *i*, and from the same by a wire *J*, that may be grounded or connected to proper post *k* of the transmitting-key 94, thence to the pin or anvil upon which the button end of the key is pressed, thence through the transmitting-lever 96 to a similar post *l*, and from the same by wire *m* to the negative element of the battery, thus completing the main circuit. When the main circuit is open and the hammer 60 by full stroke closes the switch 83, an electrical circuit is established, starting from the positive element of same battery, thence by the wire *e* to a post *n* in front of the receiver, thence through electromagnet 85, thence to another post *o*, thence by wire *p* to the closed switch 83, thence by wire *r* to a post near the transmitting-key, and from thence, by wire *m* to the negative element of the battery. Closing of the main electrical circuit energizes its electromagnet 16, whereupon its armature will be drawn down, depressing the forward end of the pivoted armature-bar 17, which by means of its lateral pins at that end will withdraw the fingers from their respective selecting-disks and spacing-wheels. At the same time and by the same movement one of said lateral pins will force backward the lower end of the pivoted clutch 9, and its upper end will force the tooth 8 of the permanent collar 7 on the type-wheel shaft 3, permitting it to rotate, carrying with it the selecting-disks, spacing-wheels, type-wheel, and all the appliances rigidly attached thereto, until the liberated finger adapted to operate on the selecting-disks comes in contact with a tooth thereon

to bring a corresponding letter on the type-wheel to a halt at the proper place. On each complete revolution of the type-wheel shaft the tooth 47 of the collar will so act against the square shoulder of the notch 48 in the oblique bar 44 as to lift the same, and thereby draw its trigger-pin 43 free from the arm 42 on the worm-wheel shaft 25, which will then make one complete revolution, causing said worm-wheel 24 to move the rack and its carriage the extent of a single tooth. A roll of paper of suitable width having previously been placed in a cabinet beneath, and its free end brought up through a convenient slot in the base of the apparatus, and the edges of said paper arranged vertically in grooved guide-ways formed in each end of the carriage, and also in the bite of the plain-faced rolls 55 and 56, it will consequently move with the carriage on each rotation of the worm-wheel and properly space the letters along a line from right to left. Upon reaching the terminus of the line the worm-wheel 24 becomes disengaged from its rack in the manner and by the means hereinbefore set forth. Then the carriage will be rapidly drawn in an opposite direction by means of the cord 35 and weight 36 attached thereto, and in completing its rapid transit the arm 49 of the pawl 50 will move along the upwardly-inclined bar 52, thereby producing a partial rotation of the circular ratchet 51 and plain-faced rolls 55 and 56, and by such operation the interposed sheet of paper will be shifted upward sufficiently to make separate lines and dispose them in regular parallel order. At the same time the relation of the worm-wheel and rack will be renewed, as previously set forth, whereby the operation of spacing the letters, words, and sentences and forming other lines may be repeated. As movements of the message-transmitting key 94 are responsively imitated by the pivoted armature-bar 17 at the receiving end of the line, an electrical impulse will cause an elevation of the rear end of said bar and by such action depress the free end of its connected stop-lever. At the same time and by the same action the escapement-hook 75 will release one tooth of the plate-wheel 67, which will then quickly rotate, causing a diametrically opposite tooth to act downwardly on the shorter arm or trip 68 of the rock-shaft 59 in such manner as to draw back the hammer 60 and liberate the same for a forward stroke, made incomplete by the longer arm 66 coming against the depressed end of said stop-lever 80. As the escapement-hook immediately returns to the plate-wheel, it catches the next succeeding tooth, thereby preventing its further rotation until liberated by subsequent action. As these several and joint operations occur on each closing of the electrical circuit, it is obvious that no complete stroke of the hammer can take place at such time, but as opening of said circuit releases the armature 17 from magnetic attraction it immediately resumes its normal position. Its rear end will

therefore become depressed and the free end of its connected stop-lever 80 elevated. This reverse action will bring about such movements of the escapement-lever 74 as will liberate another tooth of the plate-wheel 67 and by quick return engage the next succeeding tooth. Meanwhile a diametrically opposite tooth of said plate-wheel will have pressed down and passed the shorter arm 68 of the rock-shaft 59, drawing back and releasing the hammer 60, and as the free end of the stop-lever at such time is elevated beyond reach of the longer arm 66 there is nothing to prevent a full and complete forward stroke of the hammer. Consequently it will strike against the type-wheel 6 or an interposed sheet of paper, so as to make an imprint of the nearest type thereon. As aforesaid, this full stroke causes the upwardly-extending rod 64 of the hammer to close the electrical switch 83 and leave it closed until a backward movement of the hammer opens it. As the first-mentioned electrical circuit is broken to permit a full stroke of the hammer, it is evident that a closing of this switch will establish an electric current directly through the electromagnet 85 in front of the receiving apparatus and draw down its armature-bar 86 which by connected and intermediate appliances liberates the type-wheel shaft for immediate rotation, causing the tooth 47 on its fixed collar 7 to lift the oblique bar 44 and draw its pin 43 away from the arm 42 of the worm-wheel shaft 25, which will then make a complete revolution, thereby shifting the paper to suitable position for the imprint of another and succeeding letter.

From the foregoing description it would seem that the hammer makes a full forward stroke every time the first-mentioned circuit is opened, and such would be the case if the electrical circuit remained open a time sufficient for the hammer to complete its forward movement; but when such stroke is not required the same may be obviated by closing the electrical circuit before the hammer has completed its stroke. This action will operate the armature-bar 17 and cause the escapement-lever 74 to liberate a tooth of the plate-wheel 67, and as its rotary motion is much quicker than the action of the hammer 60 a diametrically opposite tooth of said wheel will meet the upward movement of the shorter arm 68 of the rock-shaft and by interposition catch the hammer "on the fly" and prevent completion of its stroke. Thus the hammer may be made to strike a distinct single blow or a succession of blows or withheld and prevented from striking at and during any particular time. All movements of the message-receiver are automatic, therefore mechanically precise, and may follow each other with great rapidity. For instance, a rotation of the type-wheel to bring any desired character or letter thereon to some predetermined point, a movement of a sheet of paper to receive the imprint of such letter, and the operations of

a hammer to make said imprint are effected in the apparatus at the receiving end of the line by the electrical transmission of messages in accordance with the Morse code of signals, and any electric-telegraph operator skilled in the art can produce the same.

Having thus described my improved printing-telegraph, I claim—

1. In a printing telegraphic apparatus, the combination, consisting of a type-wheel, suitable selecting-disks, a pivoted finger adapted to move from one disk to the other and thereby control rotation of said type-wheel, an electric circuit, an electromagnet in said circuit, a message-transmitting key, a paper-feeding device adapted to move a sheet of paper across the periphery of said type-wheel, an electric switch, a printing-hammer that by full forward stroke will close said switch, and thereby establish an electric circuit through said electromagnet to withdraw the pivoted finger from the selecting-disks.

2. A printing-telegraph, comprising an electrical circuit, an electromagnet in said circuit, a message-transmitting key, a revoluble type-wheel, a series of concentrically-arranged selecting-disks, a pivoted finger which will move from one disk to the other and thereby control the action of the type-wheel, an automatically-acting paper-feeding device, a printing-hammer, a toothed wheel which by its rotation will operate and govern the strokes of said hammer, and an electrically-controlled escapement-lever to control the movements of said toothed wheel, whereby the hammer will be liberated to make a forward stroke on each opening of said circuit and can be arrested before completing its stroke by closing the circuit.

3. In a printing telegraphic apparatus, the combination, consisting of a type-wheel and suitable selecting-disks affixed on a revoluble shaft, a pivoted finger adapted to shift from one selecting-disk to the other and thereby control the movements of said type-wheel, an electric circuit, an electromagnet in said circuit, a message-transmitting key, an automatically-acting paper-feeding device, a printing-hammer, a wheel with radial projections that in their revolutions operate and govern said hammer, an escapement-lever which controls said wheel, and an electromagnetic armature that in its upward movement will liberate a tooth of said wheel, and in its downward movement liberate the next or succeeding tooth.

4. A printing-telegraph comprising an electrical circuit, a revoluble type-wheel, a series of selecting-disks, a pivoted finger which will move from one disk to the other and thereby control the action of the type-wheel, a message-transmitting key for sending electric impulses through said circuit, a paper-feeding device, a printing-hammer operated by the revolutions of an escapement-wheel, an escapement-lever controlled by said electric impulses to permit and arrest rotation of said

wheel, whereby the hammer may be liberated to make a forward stroke on each opening of said circuit and arrested before completing said stroke by closing of the electric circuit.

5. A printing-telegraph comprising an electrical circuit, a message-transmitting device, a revoluble type-wheel, a number of selecting-disks, a finger that will shift from one disk to the other and control the movement of the type-wheel, a paper-feeding mechanism, a printing-hammer, an escapement-wheel liberated by transmitted electrical impulses, and means for controlling the action of said escapement-wheel and hammer.

6. A printing-telegraph consisting of an organized mechanism comprising an electrical circuit, a message-transmitting key, a revoluble type-wheel, a number of concentrically-arranged selecting-disks, a finger that will shift from one disk to the other and control the movement of the type-wheel, an automatically-acting paper-feeding device, a printing-hammer, a wheel provided with teeth or projections that govern said hammer, an escapement-lever that controls said toothed wheel, and an electromagnetic armature that in its upward movement will liberate one tooth of said wheel and in its downward movement liberate the next succeeding tooth.

7. In a printing-telegraph, the combination of an electrical circuit, a message-transmitting key, a revoluble type-wheel, a number of concentrically-arranged selecting-disks, a finger that will shift from one disk to the other and control the movement of the type-wheel, an automatic paper-feeding device, a printing-hammer, a wheel provided with projecting teeth, an electromagnetic armature, an escapement-lever operating on the teeth of said wheel in such a manner as that one tooth is liberated on each upward movement of said armature and in its downward movement the next succeeding tooth is liberated.

8. In a printing-telegraph, the combination of a type-wheel affixed on a revoluble shaft, a number of selecting-disks, and spacing-wheels on the same shaft, a hammer attached to a rock-shaft, a spring for imparting to said hammer a forward stroke, a laterally-extending arm or trip on said rock-shaft, a wheel provided with teeth that successively act on said trip to draw back the hammer and release the same, an escapement-lever to govern rotation of said wheel, an electromagnetic armature that in each up-and-down movement will act on the escapement-lever and release said wheel tooth by tooth, a pivotal lever which, on each downward movement of the armature, will come in contact with the arm of the rock-shaft thereby preventing the hammer from making a full forward stroke during such time.

9. In a printing-telegraph, the combination, consisting of a stationary frame, a carriage adapted to slide thereon, a toothed rack provided with a worm-wheel to move said carriage in one direction a certain distance and

release the same, a cord and suspended weight attached to said carriage whereby it will rapidly travel in a reverse direction and cause the worm-wheel to reengage its rack, a circular ratchet on a shaft having at each end a plain roll adapted to operate in conjunction with an adjacent roll, between which the paper is inserted, a long lever and suitable pawl pivoted to said circular ratchet, and a stationary inclined bar upon which said long lever is made to slide as the carriage completes its rapid travel, whereby said circular ratchet and connected rolls are given a partial rotation and correspondingly move a sheet of paper in the bite of said rolls.

10. In a printing-telegraph which has a type-wheel and suitable selecting-disks affixed on a revoluble shaft and a finger adapted to move from one selecting-disk to the other and engage them separately, in combination with a carriage adapted to move a sheet of paper across the periphery of the said type-wheel, a pivoted hammer adapted to strike the paper against an adjacent letter on the type-wheel, a toothed wheel an electric circuit and an electromagnetic armature, that on closing of said circuit will release a toothed wheel which will draw the hammer back and release the same, a lever that on closing of said cir-

cuit will interpose and prevent a complete forward stroke of said hammer, and withdraw on opening of said circuit to permit said full forward stroke.

11. In a printing telegraphic apparatus which has a type-wheel and suitable selecting-disks affixed on a revoluble shaft, and a finger adapted to move from one selecting-disk to the other and engage them separately, in combination with a carriage adapted to move a sheet of paper across the periphery of said type-wheel, a pivoted hammer adapted to strike the paper against an adjacent letter on said type-wheel, an electric circuit and an electromagnetic armature, a toothed wheel that will draw the hammer back and release the same, a lever that will interpose and prevent a complete stroke of the hammer during the time said circuit remains closed, and withdraw, on opening of said circuit, to permit a full forward stroke of the hammer, an escape-ment-lever that by closing of said circuit will liberate the toothed wheel and intercept the hammer.

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Witnesses:

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