(No Model.) 5 Sheets—Sheet 1.

S. PRICE.

KEYBOARD TELEGRAPHIC TRANSMITTER.

No. 597,689. Patented Jan. 18, 1898.

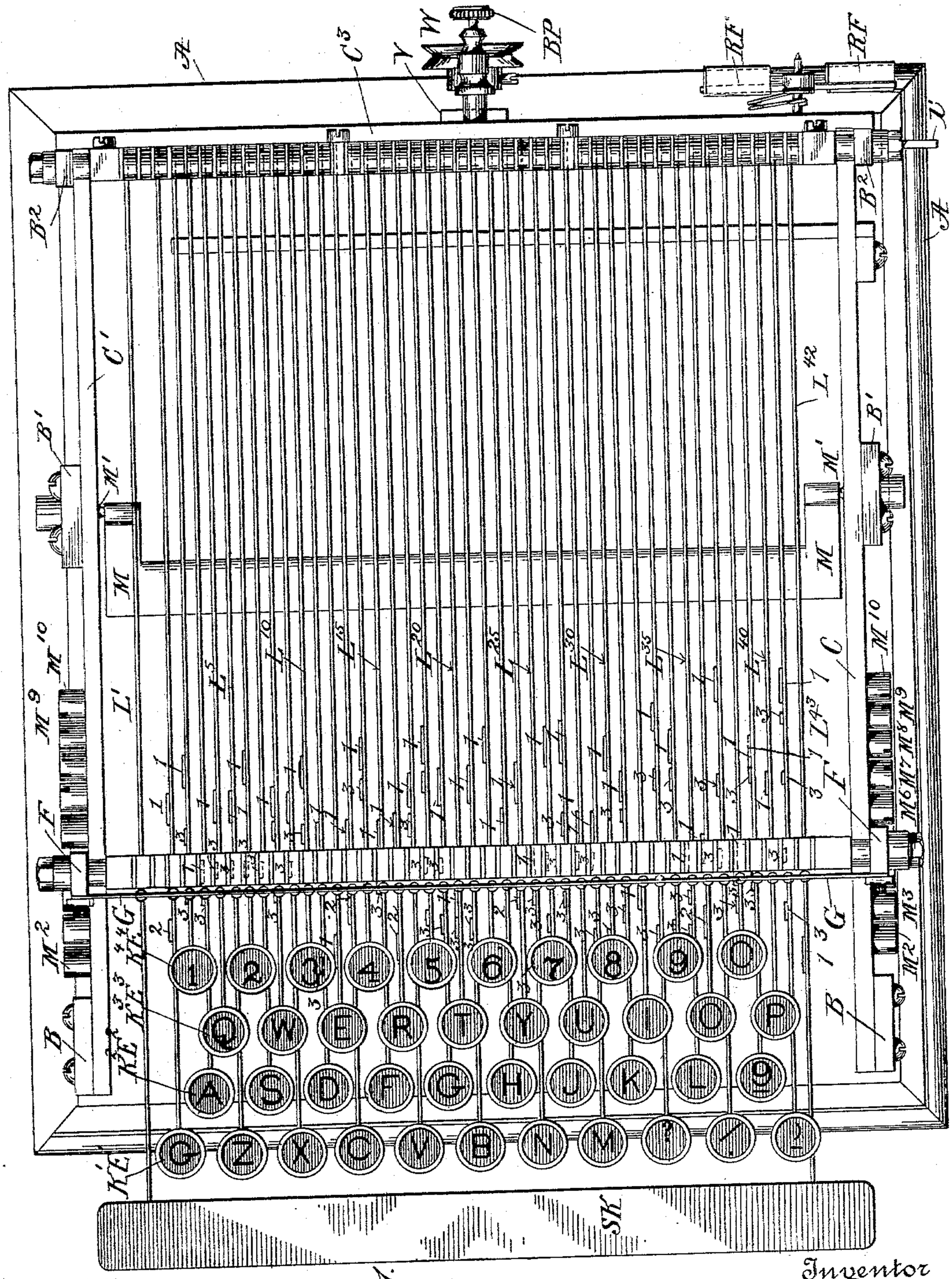

Fig. 1.

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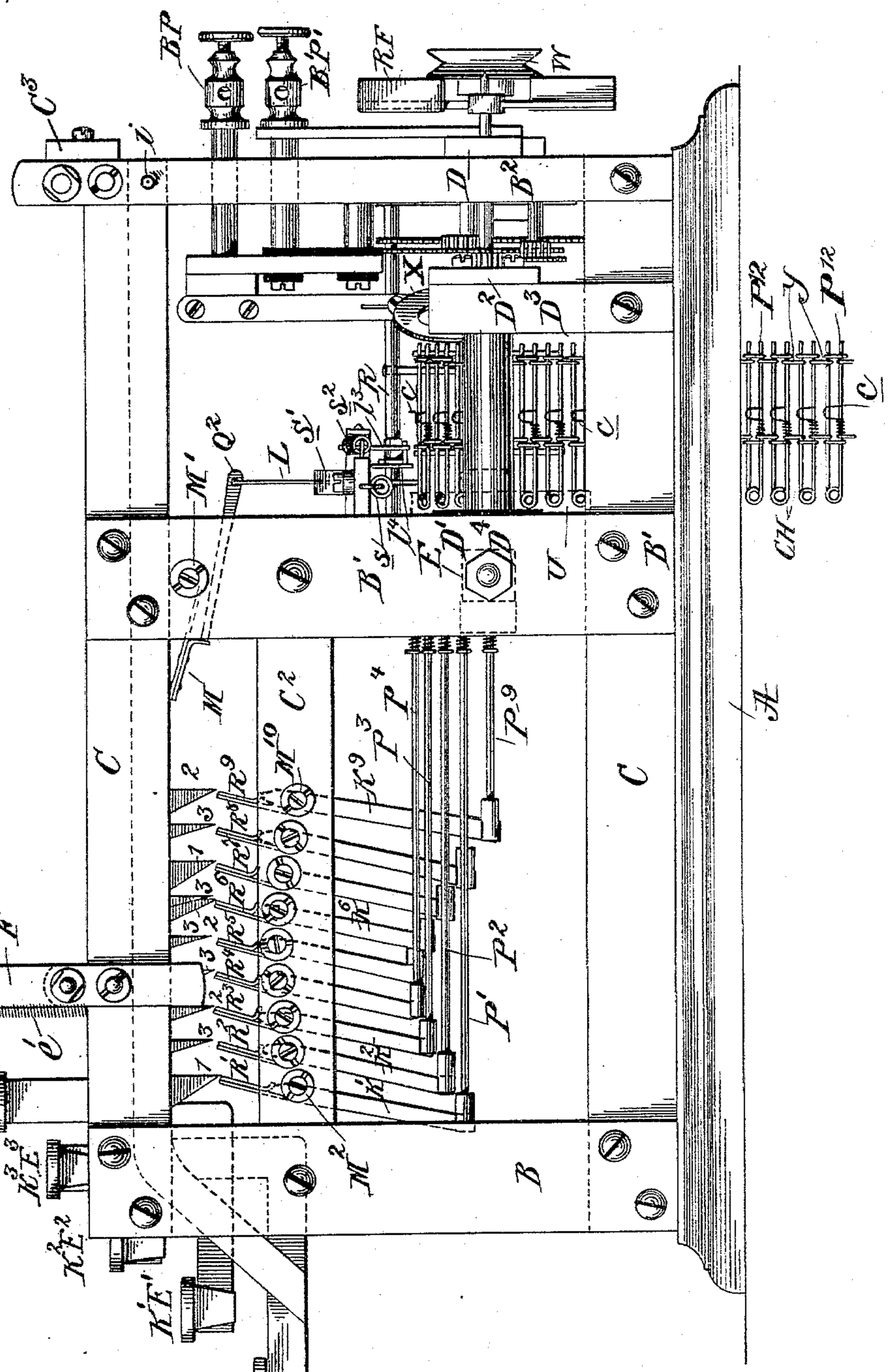
Fig. 2.



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KEYBOARD TELEGRAPHIC TRANSMITTER.

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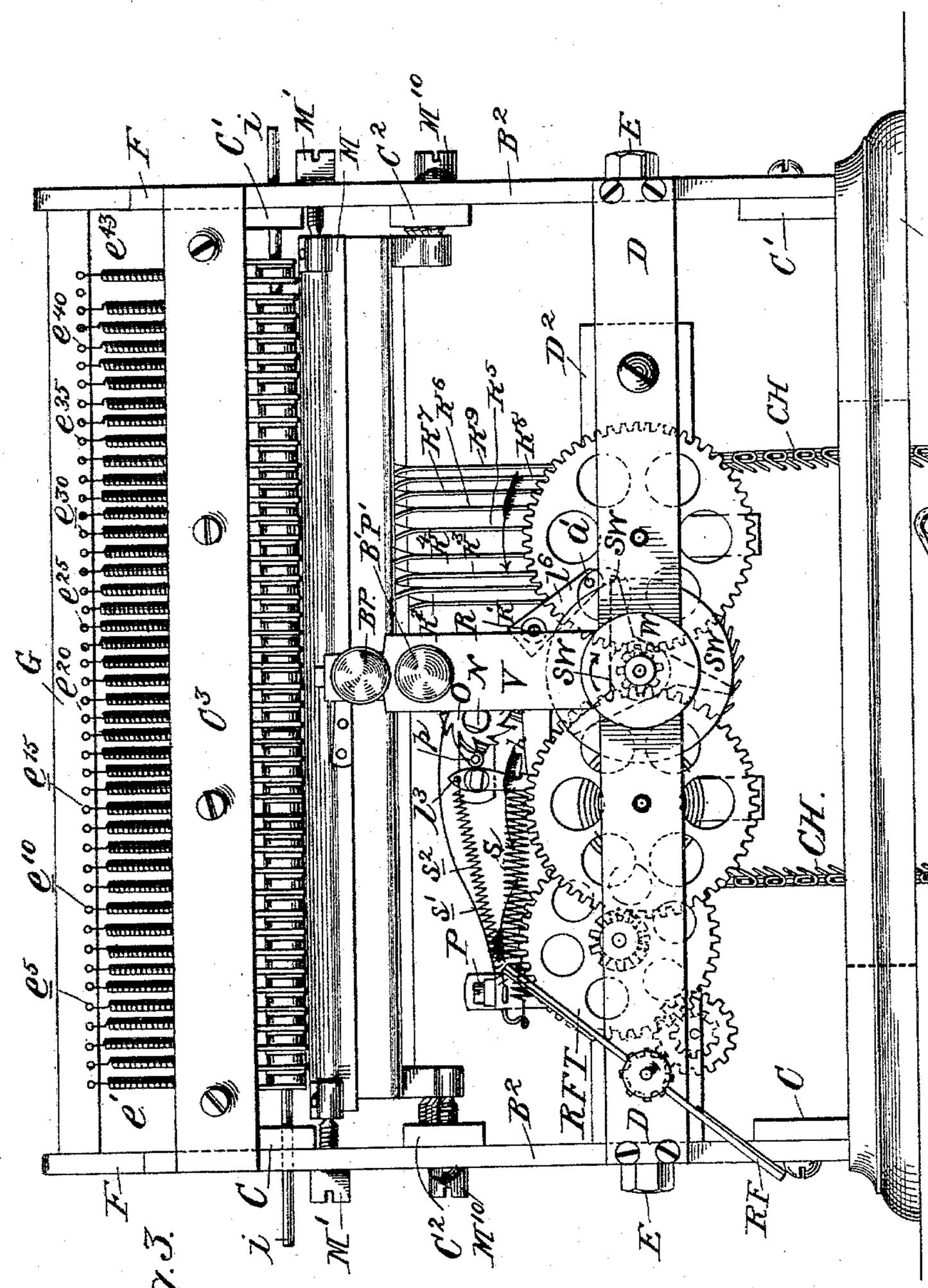

Fig. 3.

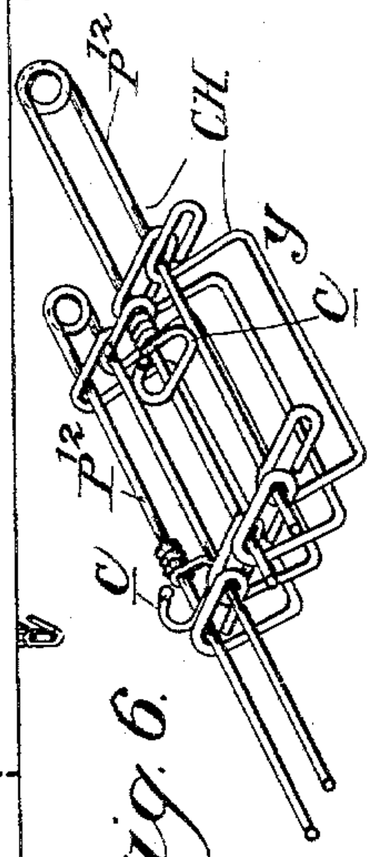

Fig. 6.

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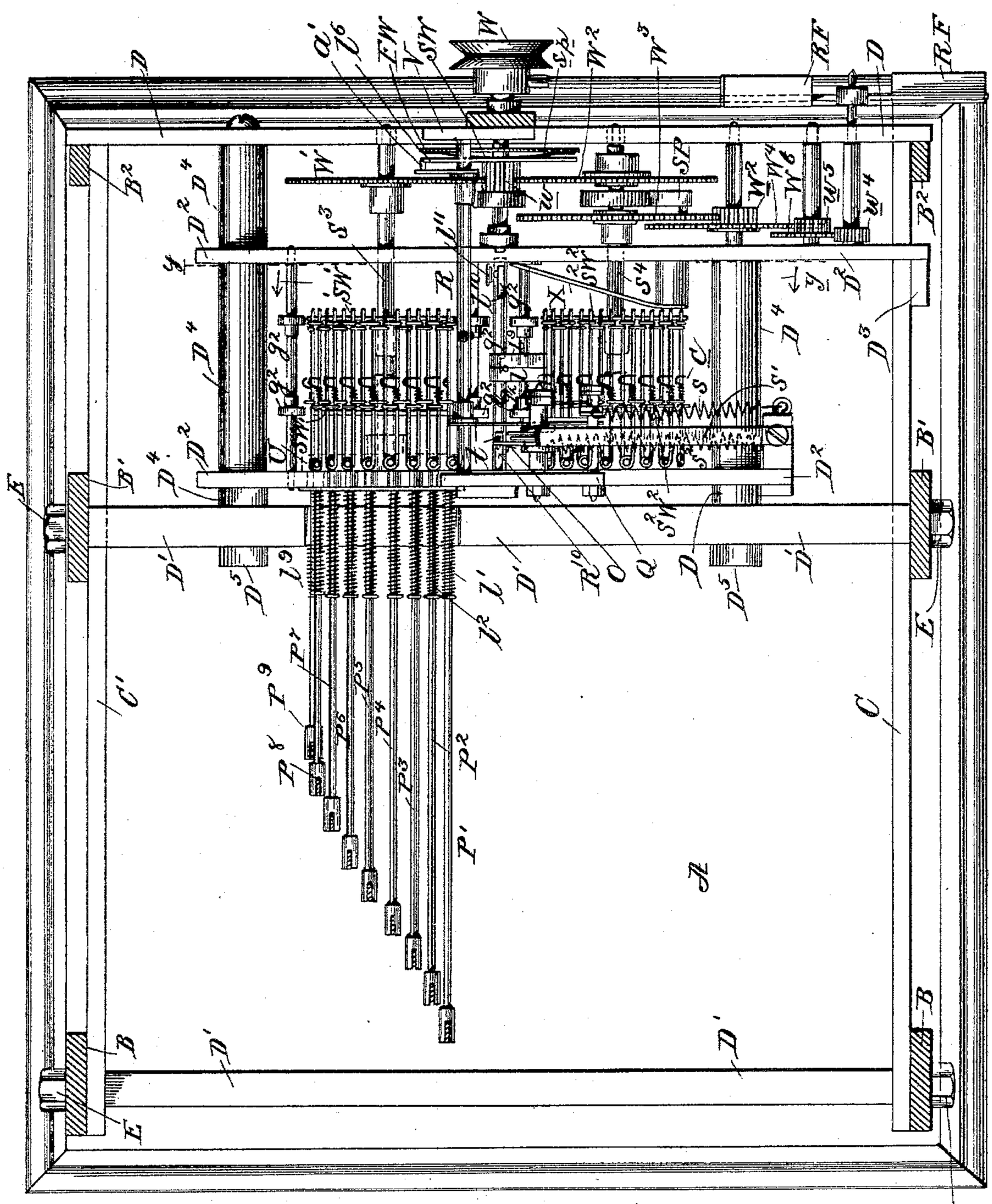

Fig. 4.

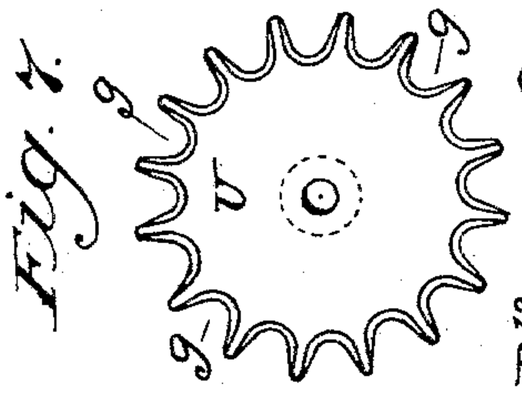

Fig. 7.

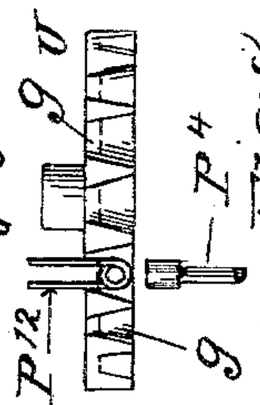

Fig. 8.

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S. PRICE.

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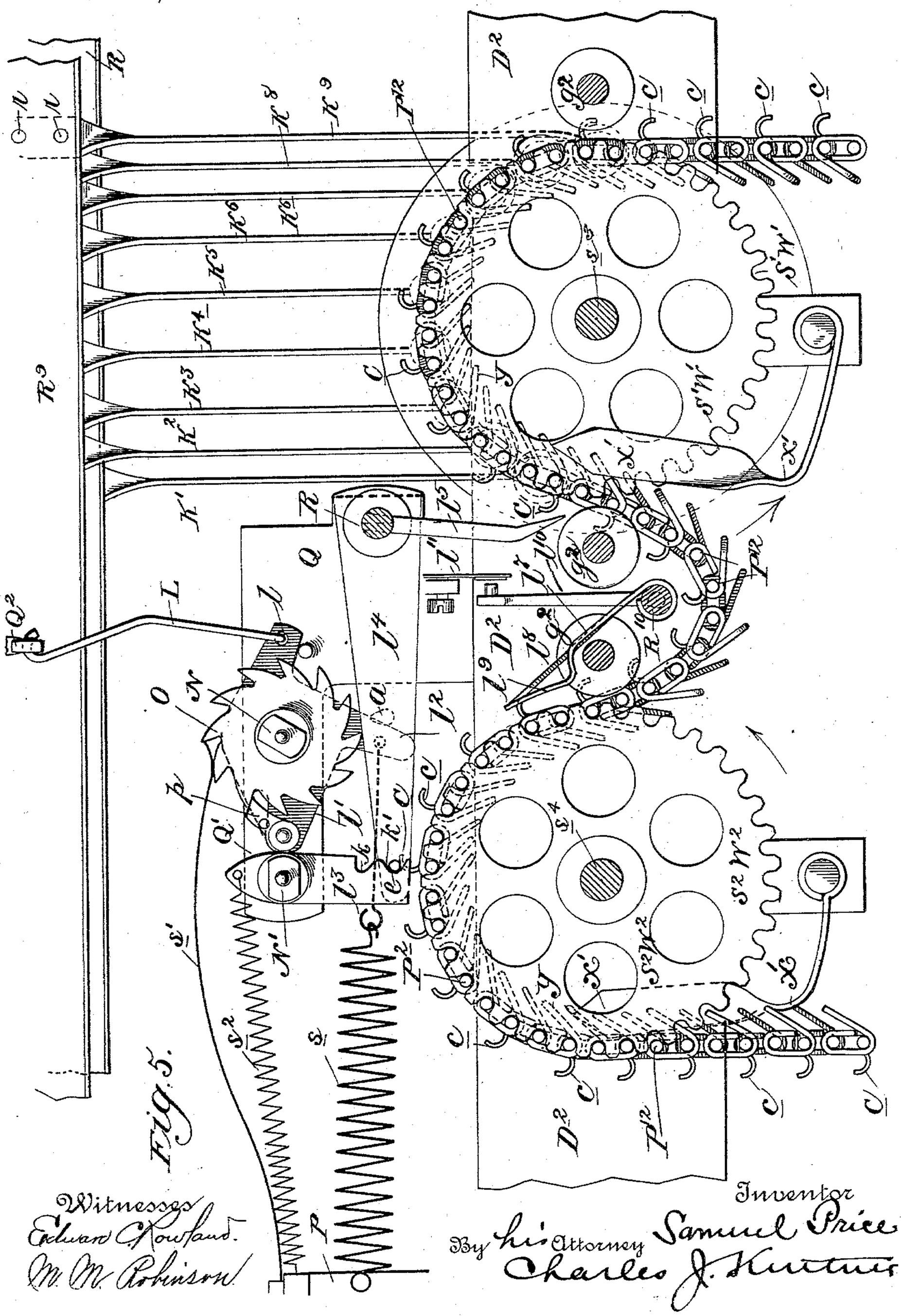

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UNITED STATES PATENT OFFICE.

SAMUEL PRICE, OF PATERSON, NEW JERSEY.

KEYBOARD TELEGRAPHIC TRANSMITTER.

SPECIFICATION forming part of Letters Patent No. 597,689, dated January 18, 1898.

Application filed June 17, 1897. Serial No. 641,192. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL PRICE, a subject of the Queen of Great Britain, residing at Paterson, in the county of Passaic and State of New Jersey, have made a new and useful Invention in Keyboard Telegraphic Transmitters, of which the following is a specification.

My invention is directed particularly to a novel form of keyboard-transmitter adapted to transmit Morse or analogous telegraphic codes; and its objects are, first, to so devise a transmitter of the type indicated that an operator may manipulate the keys thereof at will without in any manner affecting the regular and even automatic sending of the prepared message; second, to devise a keyboard-transmitter which will enable an operator to store up or accumulate a prepared message at any desired speed in advance of its automatic transmission; third, to devise a keyboard-transmitter in which all of the impulses transmitted, whether dots or dashes, are made up by utilizing mechanism which under normal conditions is adapted to transmit dots and under variable changes to transmit dots or dashes, or both, combined with the usual spaces which separate such elements in the well-known Morse characters; fourth, to devise a keyboard-transmitter in which the keys are caused to actuate through the agency of combination controlling mechanism the desired effect upon transmitting mechanism in such manner that a Morse message is set up or arranged at such speed as suits the will of the operator, and the same is automatically transmitted at a comparatively constant speed dependent upon the speed at which he operates; fifth, to devise a keyboard-transmitter in which the transmitting part of the apparatus is driven by a continuously-driven source of power automatically controlled in its operation by the keys as they are actuated, the arrangement being such that the actual speed of transmission is comparatively constant, while the speed of the transmitting medium during the formation of the characters to be transmitted is intermittent and may be varied to suit the will of the operator; sixth, to so simplify the operative parts of a keyboard-transmitter that a minimum number of controlling-levers and parts is utilized in the operation of the apparatus; seventh, to provide a telepraphic transmitter in the nature of an endless chain or flexible transmitting device, the movable parts of which are adapted to be used over and over again in the formation and transmission of electrical impulses such as are usually utilized in connection with the transmission of Morse and analogous codes. These several objects are accomplished by my invention, for a full, clear, and exact understanding of which, such as will enable others skilled in the art to which it appertains to construct and use the same, reference is had to the accompanying drawings, in which—

Figure 1 is a plan view of my improved keyboard-transmitter, and Fig. 2 a side elevational view thereof, Fig. 3 being an end elevational view as seen looking at Figs. 1 and 2 from right to left. Fig. 4 is a horizontal sectional view taken through the body of the apparatus, parts thereof being shown in plan view. Fig. 5 is an enlarged sectional view taken on the line *y y*, Fig. 4, the endless transmitting-chain, its supporting sprocket-wheels, and the adjacent operative parts which control and effect the movement and resultant operation of the same being shown in elevation. Fig. 6 is a detail perspective view of a detached section of the endless transmitting-chain with sliding pins and their lateral circuit-controlling extensions. Fig. 7 is a side elevational view of the guiding sprocket-wheel which directs or guides the movement of the push-rods or plungers as they act upon the sliding pins of the endless chain; and Fig. 8 is a plan view thereof, illustrating also one of the push-rods or plungers and its relation to one of said sliding transmitting-pins.

The transmission of electrical impulses of variable length, which produce the dots and dashes and their separating-spaces in the Morse code, is effected with my invention by a flexible transmitting medium or an endless chain supported by two sets of sprocket-wheels and provided with sliding pins having secured thereto circuit-controlling devices in the nature of lateral extensions which are normally located in alinement with each other and at equal distances apart, so that were this transmitting-chain allowed to move con-

tinuously while the aforesaid pins are in their normal positions these lateral extensions would operate upon a two-part circuit-closing lever in such manner as to transmit continuously over the line a succession of dots separated from each other by equal spaces.

The push-rods or plungers above referred to are so arranged relatively to each other and the endless transmitting-chain that they will cause the movable pins to assume variable positions with relation to each other, such that the lateral extensions upon said pins will, when they come into mechanical contact with the two-part circuit-closing lever, according to their location, effect the transmission of a dot, a dash, or a dot, a space, and one or more succeeding dots or dashes, or, in fact, any arrangement of dots, dashes, and spaces found in any of the characters of the existing Morse code. The apparatus is so arranged also that one of said push-rods always gives to one of the pins a movement to its extreme limit for the purpose of checking the movement of the endless chain as each character is formed, said endless chain being intermittently driven by a constantly-driven source of power, the intermittent action of which results from the operation of the keys upon the chain itself. The transmission of the electrical impulses in turn is effected by a constantly-impelled source of power, which is replenished by the constant source of power in accordance with the action of the operator upon the key-levers, locking and unlocking mechanism being operatively connected with all of said key-levers and with a spacing-lever in such manner that each letter or character set up or formed by the operation of any key-lever or combination of key-levers upon the movable pins of the endless chain is released at the same time that a succeeding letter or character is formed or set up in said chain.

Referring now to the drawings in detail, in all of which like letters and numerals of reference represent like parts wherever used, A represents the base of the machine, and B B B′ B′ B^2 B^2 upright standards or posts secured thereto, to which in turn are secured side supports C C C′ C′ C^2 C^2 and end and central supports D D′ D′ and C^3, all being so connected to the aforesaid standards as to constitute the framework for the entire machine.

K′ E′, K^2 E^2, K^3 E^3, and K^4 E^4 represent banks of keys—such, for instance, as are found in the well-known Remington typewriter—and S K a spacing-key, said spacing-key and banks of keys being connected, respectively, to key-levers L′, L^5, L^{10}, &c., to L^{43}, pivoted and properly spaced from each other upon a rod *i*, beneath the end support C^3, all of said key-levers being normally held in their upper positions by retractile springs *e*′, e^5, e^{10}, to e^{43}, inclusive, secured at their upper ends to a cross-bar G, supported by side standards F F and all provided with spacing-guides supported by a cross-rod, so as to permit of their free and independent movement in the usual manner.

M is a rocking bar extending transversely across the machine beneath all of the key-levers and the two levers L′ L^{43}, which support the spacing-key S K, and pivotally secured by adjustable trunnions M′ M′ in the side supports B′ B′, Q^2 being a lever rigidly secured thereto near its center and connected by a link L with one arm *l* of a three-armed lever pivotally sustained in turn upon a trunnion N, supported by a standard Q Q′ in the rear of a ratchet-wheel O, the second arm *l*′ of said lever being provided with a spring-pressed pawl *p* adapted to take in the teeth of said ratchet-wheel (see Fig. 5) and the third arm l^2 thereof being connected by a retractile spring *s* to a standard P, *s*′ being a spring-actuated check-pawl for regulating the movements of the ratchet-wheel.

R′, R^2, R^3, to R^9, inclusive, (see Fig. 2,) are rocking bars extending entirely across the machine beneath all of the aforesaid key-levers and pivotally sustained by adjustable trunnions M^2 M^2 to M^{10} M^{10}, inclusive, in the side supports C^2 C^2.

K′, K^2, to K^9, inclusive, are levers secured at one end to the rocking bars R′ to R^9 and at the other to push-rods or plungers P′ to P^9, inclusive.

1 2 3 (see Figs. 1 and 2) represent a series of angular lugs secured in a prearranged order to the sides of the key-levers in such manner that when any key-lever is depressed said lugs will actuate certain of the rocking bars and give to them variable thrusts, the lugs 1 having the greatest angle, the lugs 2 a medium angle, and the lugs 3 a minimum angle. These combined parts—to wit, the rocking levers R′, R^2, R^3, &c., to R^9, inclusive, with the groups of inclined lugs 1, 2, and 3—constitute combination controlling mechanism adapted to select a definite number of the push-rods or plungers P′, P^2, P^3, to P^9, inclusive, in any desired order, said push-rods or plungers having a sliding movement through openings in a circular support secured to one of two cross-bars D^2 D^2, which in turn are supported by rods D^5 D^5 and spaced from each other by washers D^4 D^4 D^4, (see Fig. 4,) said cross-bars D^2 D^2 acting also as a supporting means for additional parts of the apparatus.

I′, I^2, to I^9, inclusive, represent spiral springs, the function of which is to restore the push-rods or plungers P′, P^2, P^3, to P^9, inclusive, as the keys are released.

S′ W′ S′ W′ S^2 W^2 S^2 W^2 represent pairs of sprocket-wheels supported by shafts s^3 s^4, journaled, respectively, in the cross-bars D^2 D^2 and the end bar D, the function of said sprocket-wheels being to support a flexible transmitting medium, here shown and described as an endless chain C H, (see Figs. 3, 5, and 6,) said endless chain being of any preferred length and adapted to run over the two

sets of sprocket-wheels as they are impelled, the one set intermittently and the other set with a relatively constant speed dependent upon the action of the operator, as will be described more particularly in connection with the description of the mode of operation.

x' x' are curvilinear arms (see Fig. 5) extending upward to points near the teeth of the sprocket-wheels S′ W′ and S^2 W^2, their function being to prevent the chain C H from sticking to the sprocket-wheels beyond certain points, and X (see Figs. 2 and 4) is a curvilinear restoring device adapted to restore the pins to their normal condition as the chain leaves the sprocket-wheel S^2 W^2. This flexible or transmitting medium or chain C H is illustrated in detail in Fig. 6 and is composed of a series of oblong links y, having a width substantially equal to the width between the supporting sprocket-wheels, the ends of the links being bent upward at right angles, again outward at an angle of about thirty degrees, then downward and backward, as clearly disclosed in Fig. 6, after which they are united together by a series of sliding yielding pins P^{12} P^{12}, constructed each with a loop at one end and resembling in all respects a hair-pin, the arrangement being such that when they are slid into position their outward yielding action will cause them to exert sufficient friction upon the links of the chain to rest at any point to which they may be moved, the extreme limits of movement being clearly shown in Fig. 6, said limits being effected in opposite directions by a series of lateral extensions c c, secured to one leg of each pin at a point substantially near the middle thereof. These extensions, it will be noted, are provided with hooked ends and are so arranged that when the pins are in their normal positions they are all located in alinement with each other, as clearly shown in Figs. 2 and 4.

g^2 g^2 g^2 g^2 g^2 g^2 are guide-rolls secured upon shafts carried by the side supports D^2 D^2, adapted to guide the flexible transmitting-chain in its movement over the sprocket-wheels S′ W′ S′ W′ S^2 W^2 S^2 W^2. (See Figs. 4 and 5.) As this transmitting-chain C H hangs in the position shown in Figs. 3 and 5, the looped ends of the pins P^{12} P^{12} rest in funnel-shaped sprocket-teeth g g of a guiding sprocket-wheel U, (see Figs. 2, 4, 7, and 8,) so that they are in direct alinement with the ends of the nine push-rods or plungers P′, P^2, P^3, P^4, &c., to P^9, inclusive, said funnel-shaped sprocket-teeth being adapted to guide the rods or plungers always into contact with the looped ends of the pins.

W′ is a gear-wheel carried by the shaft S^3, and W^2 a similar gear-wheel running loosely upon the shaft S^4, said gear-wheels meshing on opposite sides with a driving-pinion w, journaled in the side support D^2 and the end support D. The shaft which supports this driving-pinion carries also a star-wheel S W, the three (3) arms of which are adapted to come into mechanical contact with a stop a', carried at the free end of a lever l^6, supported by a rock-shaft R. (See Figs. 3, 5, and 7.)

F W is a friction-disk supported by a shaft, which in turn supports a pulley W, continuously driven by an independent source of power, as an electric motor, S W being a friction-spring rigidly attached to the shaft which supports the driving-pinion between the gear-wheels W′ and W^2, the friction between said disk and spring being sufficient to drive the gear-wheels W′ and W^2 and their attached parts when released, but adapted to allow the pulley to run at all times. Upon the shaft S^4, in alinement with the shaft which supports the gear-wheel W^2, is a second gear-wheel W^3, meshing with a pinion w^2 and adapted to drive through a series of gear wheels and pinions w^2 w^4 w^5 W^6, &c., a regulating-fan R F.

S P is a spiral driving-spring which operatively connects the loose-running gear-wheel W^2 with the shaft S^4 and train of gearing w^4 W^6, &c., the arrangement being such that as the gear-wheel W^2 is driven by the driving-pinion it in turn winds the spring S P, and thereby imparts motion to the gear-wheel W^3, shaft S^4, and transmitting sprocket-wheels S^2 W^2, thus giving to said sprocket-wheels a comparatively constant rate of speed, dependent upon the tension put upon the driving-spring S P.

Referring now to Fig. 5 for a detailed description of the locking and controlling mechanism which regulates the intermittent action of the sprocket-wheels S′ W′ S′ W′ and the relatively constant action of the sprocket-wheels S^2 W^2 S^2 W^2 and the supported transmitting-chain C H, R is a rocking lever, journaled at one end in the standard Q, sustained by a vertical standard V, (see Fig. 3,) and l^6 a locking-lever provided with a stop-pin a' for checking and releasing the arms of the star-wheel S W, l^4 being an operating-lever secured near the other end of said rocking lever and carrying at its free end a stop-pin e, adapted to assume either of two positions in notches k k' at the free end of a pivoted locking-lever l^3, pivotally secured by a trunnion N′ upon a lateral extension Q′ of the standard Q, s^2 being a spring, one end of which is attached to the locking-lever l^3 and the other to standard P. a is a triangular-shaped lug upon the rear face of the operating-lever l^4, adapted to be brought into and out of contact with the teeth of the ratchet-wheel O. l^5 is a second operating-lever secured to the rocking lever R′ at substantially right angles to the operating-lever l^4, with its free or curved end located at such a point in front of the transmitting-chain C H that when the movable lateral extensions c c are moved to their extreme positions they will actuate said second operating-lever, as will be more particularly described later on.

R^{10} is an additional rock-shaft journaled at its opposite ends in the side supports D^2 D^2 and carrying at one end a short arm l^{10}, provided with an electrical contact adapted to

make contact with a second yielding contact l^{11}, said movable contact and yielding contact being in turn connected, respectively, to binding-posts B P and B′ P′, adapted to be connected in circuit with an ordinary telegraph-line. Near the middle of the rock-shaft R^2 is secured a two-part yielding circuit-closing lever l^7, one of the parts l^8 of which is in the nature of a straight arm with its free end adapted to make mechanical contact with the lateral extensions *c c c* of the sprocket-chain C H under normal conditions, while the second arm l^9 is curved, as shown in Fig. 5, so that when said lateral extensions are moved forward a definite distance from under the straight arm l^8 they will make a corresponding mechanical contact with it, the arrangement being such that one of said lateral extensions may act upon the arm l^8, and the next succeeding lateral extension when properly placed will act upon the arm l^9 and prolong the closure of the circuit between the contacts carried by the arm l^{10} and yielding arm l^{11}, as will be more particularly described in connection with the description of the mode of operation, which will now be made.

At the outset it is to be understood that one of the most essential features of novelty of my invention lies in the fact that I utilize the lateral extensions *c c* upon the sliding pins P^{12} P^{12} of the endless transmitting-chain C H to transmit electrical impulses of such a nature as to effect a Morse message of the well-known character by causing said lateral extensions to assume variable positions with relation to the two-part circuit-closing arm l^8 l^9, and this is effected through the agency of the selecting and combination mechanism carried by the key-levers K′ E′, &c., acting upon the rocking bars R′ to R^9 and push-rods or plungers P′ to P^9, inclusive, there being four possible positions for the aforesaid lateral extensions, as follows: first, the normal position, where they are all in alinement and will pass, if continuously released, successively under the straight arm l^8 of the yielding spring-pressed transmitting-arm l^7 and thereby impart to the rocking lever R^{10}, and hence to the movable contact-arm l^{10}, successive movements of equal duration, so as to effect dot impulses over the line; second, the secondary position, where one of the lateral extensions *c* is caused to assume the second position under the curved arm l^9, so that the united effect of two of such lateral extensions *c* upon the levers l^8 l^9 is to produce a dash impulse; third, the still further advancement of any one lateral extension to a point just beyond the path of the lever l^9, so that no current impulse is transmitted, thereby effecting the necessary space between the elements of a Morse character, and, fourth, the still further movement of the necessary lateral extension to its extreme limit, (shown in Figs. 5 and 6,) so that it will pass under the curved end of the locking-lever l^5 and rotate the rock-shaft R with its first operating-lever l^4 and stop *e* into their upper positions, so that the stop *e* will rest in the upper notch *k*, such rotation effecting also a corresponding rotary movement to the arm l^6, so that the stop *a′* near its free end will fall in the path of one of the arms of the star-wheel S W and check the movement of the gear-wheel W′, and hence of the sprocket-wheels S′ W′. These several movements are automatically effected by the operation of the key-levers, as will now be described, it being remembered that the faces of the lugs 1, 2, 3, have each a different angle or inclination.

An examination of Figs. 1 and 2 of the drawings will disclose the fact that these angular lugs 1, 2, and 3 are differently located or grouped relatively to the rocking bars R′ to R^9, inclusive. In other words, it will be seen that each key-lever is provided with one or more of the inclined lugs and that said lugs are so arranged as to affect certain of the rocking bars only, it being apparent that by such an arrangement a combination of results is attained whereby a minimum number of push-rods or plungers P′ to P^9 is utilized.

To illustrate the operation of the apparatus, suppose it is desired to transmit the word "telegram." If the motor which continuously drives the pulley W be set in motion, so as to rotate the same in the direction of the arrow, Fig. 3, it in turn will impart movement through the friction-disk F W and spring S P to the pinion *w*, which drives the gear-wheels W′ and W^2, thereby imparting continuous motion for the time being to the sprocket-wheels S′ W′ S′ W′. The chain is continuously driven, therefore, over the sprocket-wheels until it is stopped, and this is effected by the depression of any one of the key-levers. Suppose, therefore, that the spacing-key S K be depressed to its full limit, in which event the inclined lug 1 on the side of lever 43 will impart to the locking-lever R′, and hence to the lever K′ and push-rod or plunger P′, a stroke of sufficient length to force that one of the sliding pins P^{12} which rests opposite its end in the guiding sprocket-wheel U to its extreme limit. (See Figs. 6 and 8.) This action therefore places the lateral extensions *c* in alinement with the curved end of the second operating-lever l^5, so that when the sprocket-wheels are moved forward to such a point that said lateral extension will pass under this curved end it will impart, through the operating-lever l^5 and rock-shaft R, a sufficient movement to place the locking-stop *a′* at the free end of the lever l^6 directly in the path of one of the arms of the star-wheel S W, thereby checking the star-wheel, and hence the movement of the sprocket-wheels S′ W′. At the same time that the spacing-key was depressed the rocking bar M was moved, causing the lever Q^2 to lift the link L, and hence to move the three-armed lever l l' l^2 to such an extent against the action of the spiral spring *s* as to place the pawl *p* in the next succeeding tooth of the ratchet-

wheel O, so that when the spacing-key is released the spring *s*, acting upon the arm l^2, will impart to the ratchet-wheel one step, causing that one of its teeth which lies above the lug *a* upon the lever l^4 to restore the operating-lever l^4 to its lower or normal position, so that the stop *e* is again placed in the lower notch *k'* of the spring-actuated lever l^3. This action therefore again restores the second operating-lever l^5 to its normal position, ready to be actuated by the next succeeding lateral extension *c* which shall be placed under it at some future operation, which of course takes place upon the formation of each distinct character. The apparatus is now stopped and ready for the formation of the letter "T." Upon depressing the key T (see Figs. 1 and 2) two inclined lugs 1 and 3 are caused to actuate the rocking levers R^2 and R^3 and to therefore advance the push-rods or plungers P^2 and P^3, the first to the second position and the second to the fourth position, so that the lateral extension *c* of the pin P^{12} opposite the push-rod P^2 is caused to assume the second position, or so that it will pass directly under the curved lever l^9 of the two-part lever l^7 while the second plunger P^3 is given its extreme stroke, thereby placing the lateral extension *c* upon the pin P^{12} opposite this plunger in position to actuate the second acting lever l^5 and stop the mechanism at that point. The continued action of levers l^8 and l^9 causes a dash impulse to be transmitted. The next key E is now struck, but its key-lever L^{14} is provided with only one inclined lug—to wit, lug No. 1—which imparts to that pin opposite the end of push-rod or plunger P^2 an extreme stroke, thereby leaving that one of the lateral extensions in front of the one thus moved to make a dot impulse when it passes forward under the transmitter-lever l^8, the advance movement of the pin P^{12} bringing it forward into position in line with the actuating-lever l^5, as before. The depression of the key L in the same manner imparts movement to three push-levers—to wit, P', P^3, and P^4—so that two of the pins K^{12} are placed in their second position, while the third pin is placed with its lateral extension in the stopping position, as before, thus causing a dash of extreme length for the letter "L." The key E is now depressed and forces forward a single pin to its extreme limit, which actuates the lever l^5, as before, so that a dot impulse is transmitted. The key G is now depressed, actuating three plungers—to wit, P^2, P^4, and P^6—the first two of which place the lateral extensions in the second position, while the third places the pin in the stopping position, transmitting two dashes and one dot. The key R is now depressed, causing two push-rods to be actuated—to wit, push-rod P^2 and push-rod P^5—but it will be observed that the lug which controls push-rod P^2 is one of the No. 2 type, of greater inclination than the lug of No. 3 type and less inclination than lug of No. 1 type, so that this push-rod or plunger places the pin P^{12} in such position that its lateral extension is out of the paths of the levers l^8 and l^9 and not sufficiently advanced to fall beneath the lever l^5. Consequently the first or single dot impulse is followed by a space and then two dot impulses. On depressing the key A two push-rods or plungers are actuated—to wit, P^3 and P^4—so that the first pin is caused to assume the first position and the second the third position, thus transmitting a dot followed by a dash. On depressing the key M three push-rods or plungers are actuated—to wit, P^2, P^4, and P^5—two of which cause the proper pins to assume the second position and the third the locking position, transmitting two dashes. As each key-lever is released, therefore, the power is intermittently applied to the sprocket-wheels S' W' and this intermittent action is dependent upon the speed with which the operator actuates his key-levers, so that if he be very rapid in his execution the transmitting-chain will be advanced between the two sets of sprocket-wheels S' W' S^2 W^2 faster than it will be taken up by the constantly-driven sprocket-wheel S^2 W^2, inasmuch as this sprocket-wheel derives its movement from the spring action of the spiral spring S P, driven in turn by the intermittent action of the applied power. Consequently if the operator is rapid in his execution the chain may sag to a considerable distance between the two sets of sprocket-wheels, but the transmission will be relatively constant, it being noted that as this intermittent speed is increased there is consequently an increased storage of power in the spring S P, which will proportionately speed up the transmitting apparatus, so that as the lateral extensions *c c* pass under the two arms l^8 l^9 of the yielding lever l^7 they will transmit to line the successive current impulses of the nature indicated and at a relatively constant speed.

Although I have hereinbefore described the entire apparatus as a keyboard-transmitter adapted to transmit Morse and analogous codes, I desire it understood that a number of the parts thereof may be utilized for transmitting such codes with other apparatus for controlling the same than a keyboard. As an illustration of such use, the flexible transmitting-chain, with its movable pins and lateral circuit-controlling extensions, may be used either as an endless chain or any number of such chains may be used in connection with electrical circuit-controlling devices such as are utilized generally in automatic transmission, the characters to be transmitted having been set up or established upon the chain either by hand or in any preferred manner. In other words, such a flexible chain or device may be used to supplant the ordinary perforated or embossed transmitting-filament used in connection with automatic telegraphs, provided the electrical connections be arranged or adapted to suit such use. Nor do

I limit myself especially to a flexible medium or chain provided with movable circuit-controlling elements, hereinbefore described as lateral extensions, as the same result might be effected with a cylindrical or disk surface provided with sliding pins having such lateral circuit-controlling extensions, and their relative location for the transmission of a Morse code might be effected in a manner which will readily suggest itself to those skilled in the art.

I am aware of United States patent to Merritt Gally, No. 159,664, granted February 9, 1875, in which is shown and described a series of key-levers adapted to select from a number of push-rods or plungers any number of such rods for the purpose of controlling the movable parts of an automatic transmitter, in which transmitter the transmitting-pins are arranged to slide longitudinally, so that their ends shall make electrical contact with a circuit-closer as they are brought successively against the same, and I make no claim hereinafter broad enough to include such a structure.

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

1. A keyboard-transmitter provided with means for transmitting electrical impulses in the nature of a Morse code over a telegraph-line, in combination with propelling mechanism therefor adapted to enable the operator to store up the prepared record in advance of its transmission and at any desired speed, together with additional propelling mechanism for causing the transmitted impulses to be sent at a substantially constant speed, substantially as described.

2. A keyboard-transmitter provided with a transmitting medium in the nature of a flexible chain carrying movable circuit-controlling devices, in combination with a series of key-levers having mechanical connections adapted to effect the desired changes in the order of succession of such circuit-controlling devices, together with a constantly-driven source of power adapted to be intermittently applied to said chain, and a second substantially constant source of power controlled in its movement by the intermittent movement of the apparatus and adapted to cause the transmitting-chain to advance at a regular speed, substantially as described.

3. An automatic transmitter adapted to transmit Morse or analogous codes, consisting of a transmitting medium carrying sliding pins adapted each to be moved to two or more different positions, and having each a lateral circuit-closing extension, in combination with an electrical circuit and means included in said circuit consisting of a flexible circuit-closing device having two arms located in different planes and adapted to be acted upon by the aforesaid circuit-closing extensions in any prearranged order, substantially as described.

4. An automatic transmitter adapted to transmit Morse or analogous codes, consisting of a transmitting medium adapted to be moved continuously in one direction and provided with movable circuit-closing contacts adapted each to be moved laterally with relation to the direction of movement of the aforesaid medium, in combination with circuit-controlling devices located in different planes relatively and adapted each to be acted upon by said contacts in any desired order, substantially as described.

5. An automatic transmitter adapted to transmit Morse or analogous characters, consisting of a transmitting medium adapted to be moved continuously in a given direction and supporting a series of movable circuit-closing devices adapted each to be moved laterally with relation to the direction of movement of the aforesaid medium, in combination with an electric circuit including a two-part circuit-closing lever adapted to be acted upon by the aforesaid circuit-closing devices in any desired order, substantially as described.

6. An automatic transmitter consisting of a flexible medium provided with sliding pins having laterally-extending circuit-closing devices resting normally in alinement with each other in the direction of movement of the aforesaid medium and adapted to be moved in the direction of their length, in combination with a two-part circuit-closing device included in an electric circuit, the independent parts of said two-part circuit-closing device being located in different planes, substantially as described.

7. An automatic transmitter adapted to transmit Morse or analogous characters, consisting of movable pins having lateral extensions, said pins being supported by a flexible medium with the lateral extensions normally in alinement with each other, and a flexible two-arm circuit-closing device included in an electrical circuit, in combination with means for moving said contacts laterally so that they may actuate either arm of said circuit-closing device or avoid both of them, substantially as described.

8. An automatic transmitter adapted to transmit Morse or analogous characters, consisting of a series of sliding pins having lateral circuit-closing extensions, together with two stationary circuit-closing devices one of which is normally in alinement with all of said lateral extensions, in combination with means for moving any one or more of said pins into either of two additional positions whereby dash impulses may be transmitted and separating-spaces effected, substantially as described.

9. A keyboard-transmitter adapted to transmit Morse or analogous codes, consisting of a series of key-levers, a series of push-rods or plungers and combination controlling mechanism between the key-levers and the push-rods or plungers whereby said push-rods or plungers may be operated in any desired com-

bination, together with a transmitting medium having movable pins provided with lateral circuit-closing extensions and adapted to be operatively acted upon by said push-rods or plungers in any desired order, and a circuit-closing device having two arms located in different planes whereby the lateral circuit-closing extensions may come into mechanical contact with either one of said arms, or avoid them both, as desired, substantially as described.

10. A keyboard-transmitter adapted to transmit Morse or analogous codes, consisting of a series of key-levers, a series of push-rods or plungers and combination controlling mechanism uniting said key-levers and push-rods or plungers in such manner that the push-rods or plungers may be actuated in any desired order, in combination with a movable transmitting medium provided with sliding pins having lateral circuit-closing extensions and adapted to be acted upon by said push-rods or plungers, a circuit-closing device having two arms located in independent planes, together with a constantly-driven source of power and interconnections between the key-levers, said source of power and the transmitting medium, whereby the transmitting medium is intermittently moved at any desired speed, substantially as described.

11. A keyboard-transmitter adapted to transmit Morse or analogous codes, consisting of a transmitting medium provided with movable pins having lateral circuit-closing extensions which in their normal position effect the transmission of dot impulses only, a circuit-closing device having two arms located in independent planes and adapted to be acted upon by said lateral circuit-closing extensions, in combination with key-levers, push-rods and interconnecting combination controlling mechanism whereby the movable contacts are caused to assume different positions relatively and in such manner as to transmit dot impulses and dash impulses, or both, separated by properly-timed spaces, substantially as described.

12. An automatic transmitter adapted to transmit Morse or analogous characters, consisting of a flexible endless chain having sliding pins adapted to slide laterally through the links thereof, each pin being provided with a lateral circuit-closing extension adapted to assume any desired position between the ends of the links, in combination with a circuit-closing device having two arms located in different planes and adapted to be acted upon by said lateral circuit-closing extensions, substantially as described.

13. An automatic telegraphic transmitter, consisting of a series of movable circuit-closing contacts carried by a flexible chain and adapted, when located in alinement with each other, to actuate a circuit-closing device having two arms located in different planes and carrying a contact-point adapted to make contact with a stationary contact located in an electrical circuit and in such manner as to transmit a continuous series of dot impulses, and when varied in accordance with a prearranged order to transmit dash impulses or spaces between the elements of the character itself or between all of said characters, substantially as described.

14. A keyboard-transmitter adapted to transmit Morse or analogous codes, consisting of a series of rocking bars connected by levers to a series of push-rods or plungers, a series of key-levers provided with means so grouped as to actuate the rocking bars in any desired order, in combination with a transmitting medium provided with sliding pins having lateral circuit-closing extensions, said pins being adapted to be actuated by the aforesaid push-rods or plungers, a circuit-closing device having two arms located in different planes and adapted to be actuated by said lateral circuit-closing extensions and means for moving said transmitting medium together with locking and releasing mechanism therefor operatively connected with all of the aforesaid key-levers, all of said parts acting substantially as described.

In testimony whereof I have hereunto subscribed my name this 11th day of June, 1897.

SAMUEL PRICE.

Witnesses:
RODERICK HEVEINY,
CHARLES J. KINTNER.