

(No Model.)

2 Sheets—Sheet 1.

J. J. O'NEILL.
TELEGRAPHIC TRANSMITTER.

No. 531,854.

Patented Jan. 1, 1895.

FIG. 1.

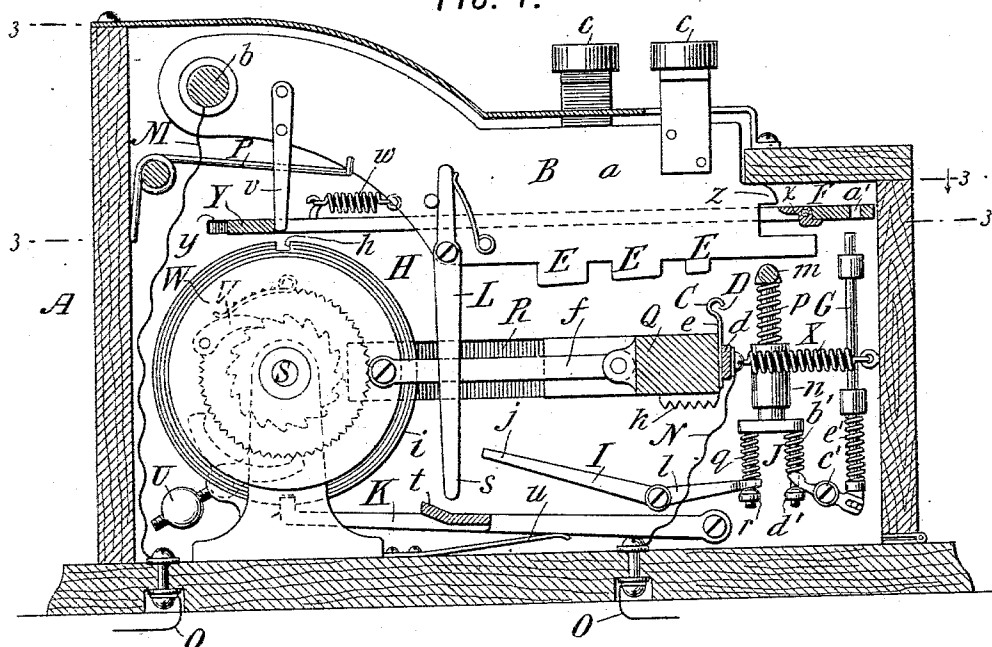
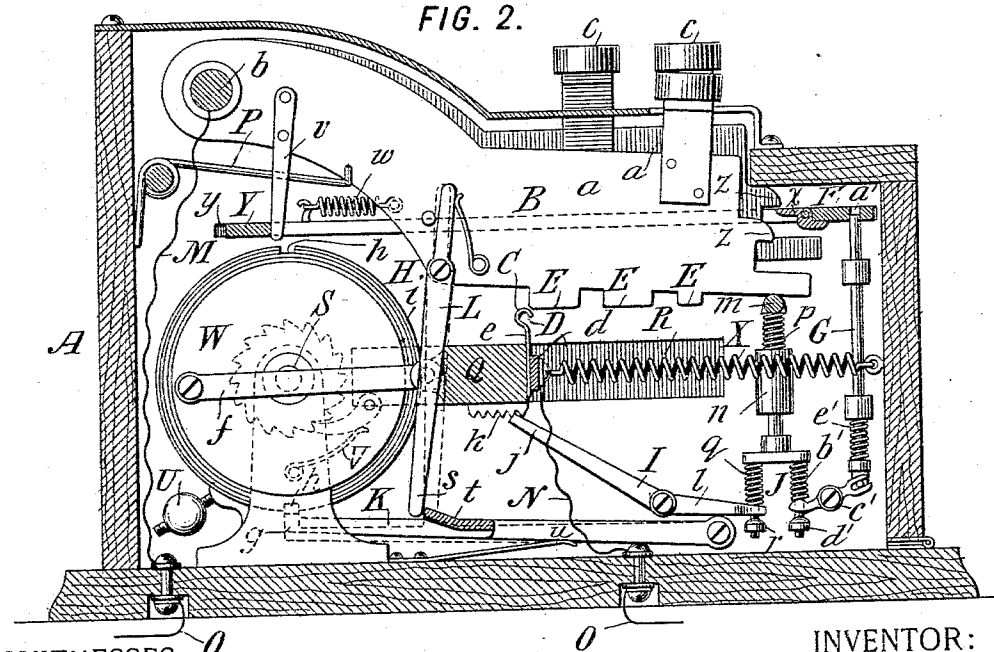


FIG. 2.



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INVENTOR:

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Arthur C. Chase

(No Model.)

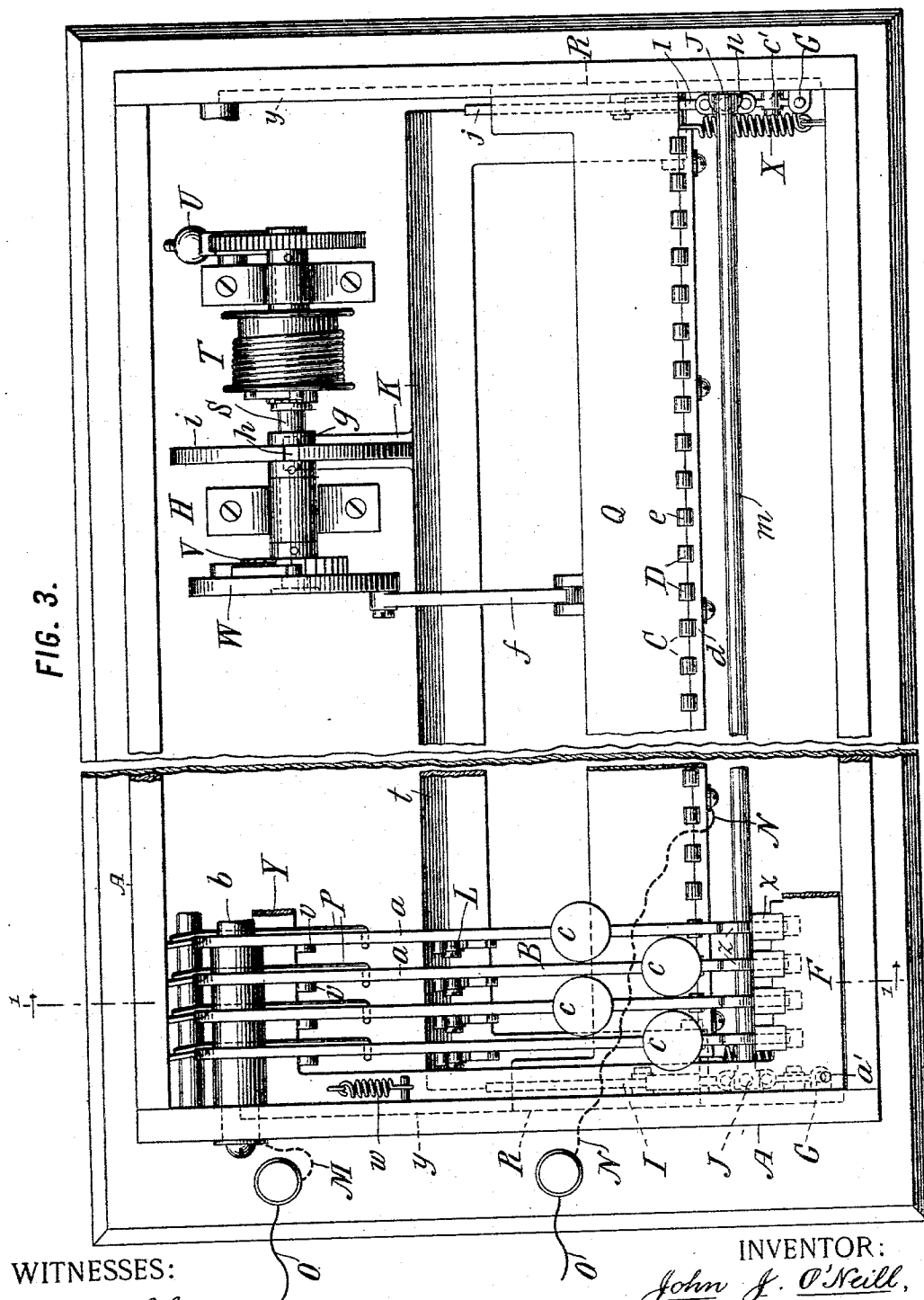
2 Sheets—Sheet 2.

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FIG. 3.



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UNITED STATES PATENT OFFICE.

JOHN J. O'NEILL, OF NEW YORK, N. Y.

TELEGRAPHIC TRANSMITTER.

SPECIFICATION forming part of Letters Patent No. 531,854, dated January 1, 1895.

Application filed February 28, 1894. Serial No. 501,793. (No model.)

To all whom it may concern:

Be it known that I, JOHN J. O'NEILL, a citizen of the United States, residing in the city, county, and State of New York, have invented certain new and useful Improvements in Telegraphic Transmitters, of which the following is a specification.

This invention relates to telegraphic transmitters, of the class having keys for the letters, and movable contacts opposite these keys and operated by the depression thereof and is designed to provide certain improvements in devices of this character whereby they shall be simplified in their construction and operation and rendered regular and accurate in transmitting.

To this end in carrying out the invention I provide certain improvements which will be hereinafter set forth.

In the accompanying drawings, which illustrate the preferred adaptation of my invention, Figure 1 is a vertical cross section of the transmitter, the parts being in the inactive position occupied prior to the sending of a message. Fig. 2 is a similar section showing the parts in the position occupied immediately after the sending of a message and prior to the restoring operation, and Fig. 3 is a plan view partly in horizontal section cut on the lines 3—3 in Fig. 1.

Referring to the drawings, let A indicate a casing inclosing the transmitter; B, one contact device; C, the other contact device; D, the contact point of the latter; E, the contact points of the other device; F, a lock for the latter; G, a catch for said lock; H, a device for moving the movable contact device; I, a lock for controlling the movement of the latter; J, mechanism for operating the lock I and catch G; K, a lock for the moving device H; L, an operating device for the lock K; M, a circuit terminal electrically connected to the contact device B; N, the other circuit terminal electrically connected to the device C, and O the line wires connected to said terminals.

The case A may be of any construction.

The devices B and C may be variously constructed. In the form shown the devices B consist of keys *a*, one for each letter or sign to be transmitted, each electrically connected to the terminal M, in the construction shown, by being fulcrumed on a common shaft *b*, and

each having a plurality of contact points E, disposed to be brought into electrical connection with the contact point of the device C, and variously formed or relatively disposed to give the requisite length or duration of such connection to represent some character or sign to be transmitted. In case the keys are constructed according to the Morse alphabet the contact points E will be long and short to correspond to the length of the dots and dashes required for transmission by that system. The keys *a* have each a finger button *c* bearing the letter or sign to which the key corresponds and exposed for the action of the operator's finger for the movement of the key when its sign is to be transmitted. As shown the keys tilt downwardly when depressed and are restored by springs P when released.

The other contact device in the construction shown is movable relatively to that first described, and has a single contact point D, which in the movement of the device traverses and makes successive electric connection with the several points E of the device B, which is in position for engagement with this contact point, making no connection with the other devices B not in such position. The device C is in electrical connection with the other terminal N of the circuit, whereby when its point D traverses the points E of any device B the circuit is closed during the period that such points are in electrical connection and broken during the intermissions between such period. The device C is preferably a carriage Q of insulating material sliding in a track R opposite the devices B, and is constructed with a conducting member *d* electrically connecting a plurality of springs *e* disposed in the same plane and one for each device B, whereby all these springs are connected to the terminal N and constitute essentially one contact point in relation to the plurality of devices B.

The moving device H may be any suitable device for imparting motion to the movable part. That shown consists of a driven shaft S, carrying a rope drum T, controlled in its speed of rotation by an escapement U, and engaging through a separable connection V, that shown being a ratchet and pawl, a disk crank W connected by a pitman *f* with the

carriage Q and thereby moving the latter. As shown, the device H is locked against rotation by an arrester K consisting of a toothed arm *g* engaging notches *h* in a stop wheel *i* fixed to the shaft. In this construction the shaft rotates the disk crank through a half revolution, thus carrying the carriage Q to its maximum rearward position, which is sufficient for its contact point to traverse those of any device B, whereupon the shaft is stopped by the arrester K and the connection V permits the disk crank to return freely to the initial position. The point of arrest of the shaft is such that the crank of the disk is slightly beyond the dead center, so that a retracting force on the carriage will return the latter, freely rotating the disk through half a revolution. A spring X preferably provides this retracting force. To prevent the return of the carriage before the restoration of the depressed key the lock I is provided, the tail *j* of which engages a ratchet *k* on the carriage, the lock being held in position for engagement by the device J, which elastically depresses the forward end *l* of the lock while the key in use is depressed. This is accomplished by constructing the device J with a cross bar *m* extending beneath all the keys so that the depression of one of the latter will depress the cross bar thereby moving the device J downwardly through its vertical slides *n* against its raising spring *p* and depressing the end *l* of the lock through the yielding spring *q*. When the lock engages the ratchet *k* its tail is held therein until forcibly withdrawn by the return of the device J under the impulse of its spring *p*, which raises it until its nut *r* strikes and lifts the end *l* of the lock and thereby frees the latter from the carriage, whereupon the carriage is instantly retracted by its spring X, which movement restores the disk W to the initial position seen in Fig. 1, snapping the pawl carried by the disk over the ratchet carried by the shaft S.

The arrester K is operated to release the motor and permit movement of the carriage through a throw-off L, one preferably being provided for each key *a* and consisting of a lever pivoted to the key and maintained in position by a stop at its upper end against which end a spring reacts, and projecting at its lower end *s* against a foot *t* carried by the arrester K and extending lengthwise of the machine under all the keys. The arrester K is fulcrumed at its front end, and swings vertically on this fulcrum toward the wheel *i*. When any key *a* is depressed its throw-off L strikes the foot *t* and depresses the arrester K until its nose *g* clears the notch *h* of the wheel *i*, thus permitting the latter and shaft S to rotate, whereby through the connection V the crank W is driven and carries forward the carriage Q. To release the arrester from the throw-off, the latter is automatically disengaged before the completion of a half revolution of the crank. This is best accom-

plished by disposing the throw-offs L in the path of the carriages so that they will be struck and tilted by the latter in its rearward movement, and carried back sufficiently to pass to the rear of the foot *t* whereby the arrester can rise until its claw engages the periphery of the wheel *i*, and may drop into the notch *h* thereof at the completion of the half revolution. The arrester is raised into engagement by a spring *u*. To prevent the depression of another key before the restoration of a depressed one I provide a key lock F. This preferably consists of a rectangular frame Y extending around all the keys *a*, operated by the depression of any one of these, and then engaging the other keys to prevent their depression. This lock is itself retained in the locked position by a lock bolt G which is only restored after the restoration of the depressed key. Preferably each key carries a rigid arm *v* engaging the rear bar of the lock F and moving the latter rearwardly against the forward tension of a spring *w* when the key is depressed. The lock F slides in horizontal tracks *y* and at its front side has a series of tilting dogs *x* passing under noses *z* at the front sides of the respective keys. The dogs are constructed to tilt to permit the rise of any key from beneath and to catch and prevent the depression of any key from above when the lock is in the rearward position. The lock is constructed with a bolt hole or other catch *a'* which when in the rearward position receives the end of the vertical bolt G which prevents the return of the lock F while any key is depressed. This bolt G is preferably operated by the device J which through a spring *b'* tilts a lever *c'* thereby raising the bolt G and maintaining it raised while any key is depressed. When the depressed key raises the device J follows it and its nut *d'* raises the lever *c'* thus permitting the retraction of the bolt G under tension of its spring *e'*. Thus the lock F is freed, whereupon its spring *w* shifts it forward out of engagement with the other keys, so that any of the latter can be depressed. The nuts *r* and *d'* are disposed so that the lock I will free the carriage Q sufficiently in advance of the release of the bolt G to permit the return of the carriage before the lock F permits the depression of another key.

In operation the contact devices B and C are brought into position for engagement, in the construction shown by moving the key *a* into the depressed position so that its contact points *E* will be in the plane of the point D of the member C, and then the one member is moved relatively to the other to make successive electrical connection between the points of the two members. In the construction shown, when a key is depressed its nose *z* passes below the point of the corresponding dog *x* of the lock F before its arm *v* has shifted the lock sufficiently to catch this nose. As soon as this nose is sufficiently below its dog *x* the lock F is moved rearward

sufficiently to pass under the noses of all the other keys. As the key depressed descends it strikes the bar M of the device J and depresses the latter throwing up the bolt G and the lock I. The former rises against the under side of the plate Y and bears there-against until the hole α' coincides with the bolt, whereupon the latter engages the hole and prevents movement of the lock F to the open position. The lock I is raised into the path of the rack k and maintained there while the key is depressed. In its downward movement the key carries its throw off or starting lever L against the shoe of the arrester, depressing the latter and freeing the motor. The motor is freed at the time the contact points E of the key reach the plane of the point B of the carriage Q. As soon as freed the motor draws the carriage past the contact points E so that the point D makes electrical connections successively with each. In moving, the carriage Q draws its rack k over the tail j of the lock I, which lock arrests the carriage immediately its backward movement begins. Before completing its movement the carriage releases the arrester K and stops the motor. Then as the key is restored the lock for the carriage is first released, the spring H restores the latter, the bolt G is drawn from the lock F and the latter moves to the open position. The apparatus is then ready for the depression of another key to send a succeeding signal.

It will be understood that my invention is not limited to the particular arrangement or details of construction of the parts set forth in its preferred form, since these may be variously modified, and in some instances certain of the parts may be omitted, without departing from the essential features of the invention. It will be within the province of those skilled in the art to effect such adaptations of the structural details employed in applying the invention to the different uses for which telegraphic transmitters can be employed.

What I claim is—

1. In a telegraphic transmitter, two conducting devices in connection respectively with the circuit terminals, one of said devices being a sliding carriage having a contact point, and the other of said devices being a key having a plurality of contact points, said key movable toward said carriage and when moved bringing its contact points into the path of the contact points of said carriage, and said carriage movable relatively to said key, and when moved making successive electrical connection between its contact point and those of said key, substantially as and for the purpose set forth.

2. In a telegraphic transmitter, a plurality of keys having respectively a plurality of contact points and all connected with one of the circuit terminals, in combination with a sliding carriage having a single contact point opposite the contact points of said keys and

connected with the other terminal of the circuit, said keys each independently movable and when moved bringing their contact points into the path of the contact point of said carriage, and said carriage sliding relatively to said keys, and when slid making successive electrical contact between its contact points and those of the one of said keys which is moved, substantially as and for the purpose set forth.

3. In a telegraphic transmitter, a plurality of keys α , having contact points E on their inner sides, movably mounted, and all connected to one terminal of the circuit, in combination with a sliding carriage Q, having a single contact point C opposite the contact points of said keys and connected to the other terminal of the circuit, a track R in which said carriage slides, means for reciprocating said carriage in said track, said keys constructed when moved to bring their contact points into the path of the contact point of said carriage, and said carriage constructed when moved to draw its contact point successively across those of any of said keys the contact points of which are in the path of the contact point of the carriage, and means for locking said carriage in position after its contact point has passed those of the keys, and means for releasing said carriage when the keys are all in the normal position, substantially as and for the purpose set forth.

4. In a telegraphic transmitter, a plurality of keys connected to one terminal of the circuit and a movable conducting device connected to the other terminal of the circuit, said parts having reciprocal contact points for making and breaking the circuit when the parts are relatively moved, in combination with a lock F for said keys consisting of a sliding frame opposite the keys operated mechanically by the depression of any one thereof, and when operated engaging all the other keys and preventing their movement until the release of the key depressed, substantially as and for the purpose set forth.

5. In a telegraphic transmitter a plurality of keys α having contact points E and connected to one terminal of the circuit in combination with a sliding carriage Q having a contact point C and connected to the other terminal of the circuit, a track R on which said carriage reciprocates, a motor H for moving said carriage in one direction, and a spring X for moving it in the other direction, means for locking and releasing said motor, and means for controlling the return movement of said carriage, substantially as and for the purpose set forth.

6. In a telegraphic transmitter, a plurality of keys α having contacts E and connected to one terminal of the circuit, in combination with a movable contact point opposite said keys and connected to the other terminal of the circuit, means for moving said movable contact point across the contact points of any depressed key, and means for moving the

movable contact point in the reverse direction, in combination with a rack *k* connected to said movable contact point, a lock lever *I* engaging said rack and locking the movable contact point against movement, a cross bar *m* beneath said keys and depressed thereby, and a connection between said bar and said lever *I* throwing the latter into engagement with said rack when the bar is depressed and freeing it therefrom when the bar is released, substantially as and for the purpose set forth.

7. In a telegraphic transmitter, a plurality of keys *a* having contact points in combination with a movable conducting member opposite said points and making electrical connection with the contact points of any key depressed said keys connected to one terminal and said member to the other terminal of the circuit, in combination with a lock moved by the depression of any of said keys and when moved engaging the other of said keys to prevent their depression, a catch bolt *G* engaging said lock and holding it in the active position, a bar *m* depressed by the depression of any of said keys, and a connection between

said bar and catch bolt moving the latter into engagement with said lock when said bar is depressed and freeing it therefrom when said bar is released, substantially as and for the purpose set forth.

8. In a telegraphic transmitter, a plurality of keys *a* and a sliding carriage *Q*, said parts respectively connected to the respective terminals of a circuit and having contact points engaging when any key is depressed and making electrical connection as the carriage slides, in combination with a motor for moving said carriage, and an arrester *K* locking said motor against operation and a lever *L* carried by each of said keys and operating said arrester to release said motor when any key is depressed, substantially as and for the purpose set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

JOHN J. O'NEILL.

Witnesses:

GEORGE H. FRASER,

THOMAS F. WALLACE.