(No Model.)

A. BIXBY.

TELEGRAPH TRANSMITTER.

No. 374,390. Patented Dec. 6, 1887.

Fig. 1

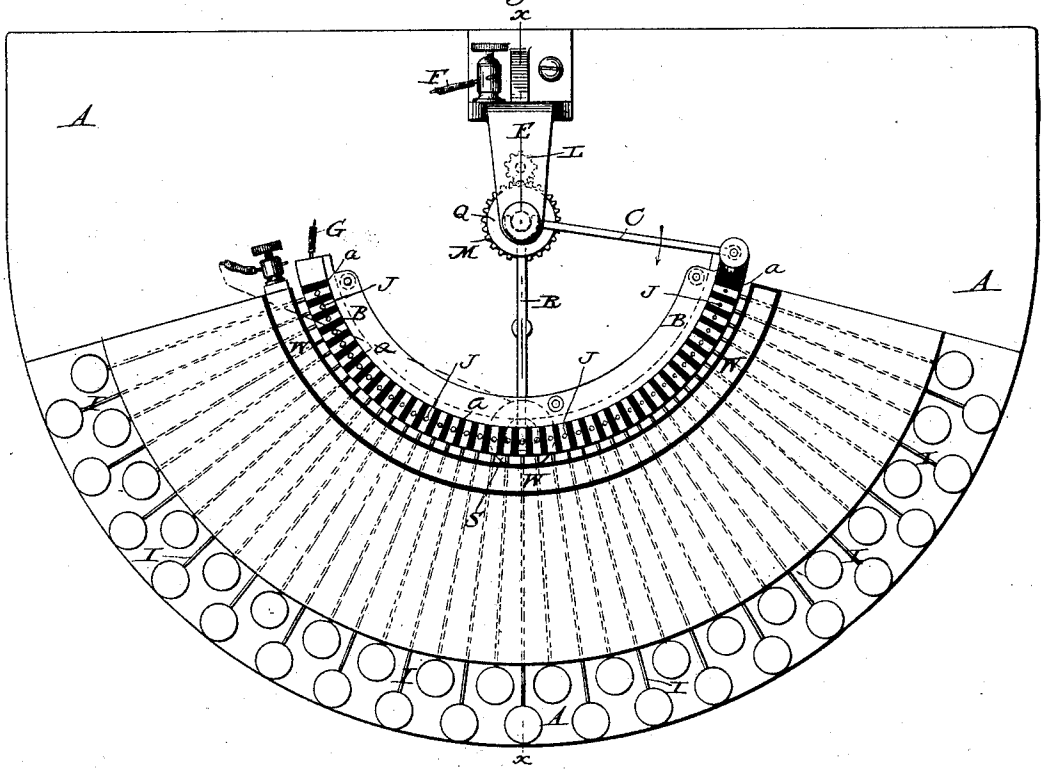
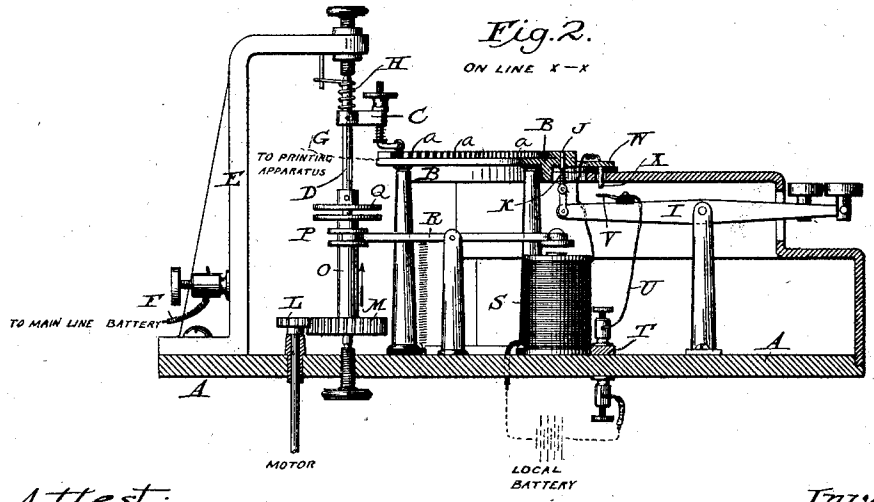


Fig. 2.



Attest:

Sidney P. Hollingsworth

N. R. Kennedy.

Inventor.

Arthur Bixby

By his Atty.

P. J. Dodge

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

ARTHUR BIXBY, OF BALTIMORE, MARYLAND, ASSIGNOR TO GEORGE W. GRAFFLIN, OF SAME PLACE.

TELEGRAPH-TRANSMITTER.

SPECIFICATION forming part of Letters Patent No. 374,390, dated December 6, 1887.

Application filed June 11, 1887. Serial No. 241,059. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR BIXBY, of Baltimore, in the State of Maryland, have invented certain Improvements in Transmitters for Printing-Telegraphs, of which the following is a specification.

There are at present known in the art various printing-instruments which are controlled in their operation by electrical impulses received over the telegraph-line from a transmitting-instrument adapted to send different numbers of impulses to effect the printing of the different characters.

The present invention relates to a transmitting-instrument for this purpose in which a series of finger-keys representing the respective characters are combined with peculiar circuit-breaking devices, so that the depression of the different keys will cause the transmission of different numbers of impulses, each key transmitting a number which will cause the printing of the corresponding character.

My transmitter embraces as its fundamental features a vibratory conducting-finger arranged to traverse an interrupted conducting-plate a greater or less distance, according to the letter to be printed, and to return immediately to its original position, and, in combination with this finger, the means for advancing and retracting the same, and finger-keys by which the actuating devices are brought into play and the advance of the finger positively arrested at the proper point.

In the accompanying drawings, Figure 1 represents a top plan view of an instrument constructed on my plan. Fig. 2 is a central vertical section of the same on the line *x x*.

Referring to the drawings, A represents a stationary frame or bed-plate, which may be of any form and construction adapted to support the various parts hereinafter described.

B represents a stationary semicircular conducting-plate having its upper face divided by non-conducting surfaces *a*, inserted therein into sections in number one or two more than the number of characters to be transmitted.

C represents a conducting-arm mounted on a vertical shaft, D, in such position that its free end may sweep over the semicircular plate and make electric connection therewith. The shaft D is mounted in fixed bearings in the frame, and connected through its supporting-bracket E or otherwise with the conductor F, leading to the main-line battery or to the ground. The plate B is connected to the main-line conductor G, which leads to the printing apparatus. A spring, H, applied as shown or in any other suitable manner, holds the arm C normally at one end of the plate B, as shown in the drawings, where it rests upon an insulating portion of the surface, so that the main line is broken. As the arm advances it comes in electrical contact with the plate, whereupon the circuit is completed through the conductor F, standard E, shaft D, arm C, plate B, and conductor G. As the arm passes over each of the non-conducting portions the current is of course interrupted, and thus it is that during the advance of the arm it has the effect of alternately opening and closing the circuit, and thus causing the transmission of a succession of impulses over the main line. The number of impulses transmitted depends, of course, upon the point to which the arm advances.

For the purpose of thus controlling the advance of the arm, I provide a series of levers, I, disposed radially with reference to the axis of the arm C, and mounted in fixed bearings. At their forward ends these levers are connected to or provided with suitable finger-pieces or keys, by which they may be depressed, and at the rear end they are each connected, in any suitable manner, to a stop-pin, J, arranged to slide upward through the plate B, held normally in a depressed position by a spring, K. Each key serves, when elevated, as a stop or abutment to arrest the movement of the conducting-arm, which is brought in contact therewith.

For the purpose of turning the arm C ahead I employ a clutch mechanism, one part of which is connected with a constantly-operating motor—for example, a clock-train. This clutch, which may be of any suitable construction, is preferably made as shown in the drawings, in which L represents a constantly-revolving pinion connected with the motor, and M a gear-wheel driven thereby and secured on the lower end of a sleeve, O, which sleeve

is mounted loosely on the shaft D. At its upper end the sleeve carries a disk, P, forming one member of the clutch, and designed to engage frictionally with a corresponding disk, Q, fastened to the shaft. Whenever this sleeve is lifted, the disk P, acting against the disk Q, imparts a forward rotation to the shaft and its conducting-arm C; but when the sleeve is lowered the disks are separated and the shaft and arm permitted to turn backward under the influence of the spring H. For the purpose of operating this clutch automatically I provide the sleeve with a circumferential groove, in which I mount the forked end of a lever, R, the opposite end of which, or an armature thereon, is located in the field of an electro-magnet, S, in a local-battery circuit. This magnet has one end of its coil or helix connected with the local battery or the ground, while the opposite end is connected to a stationary conducting-plate, T. From this plate a series of wires or flexible conductors, U, are extended to springs V, mounted one on each of the hand-levers, but insulated therefrom. Over the levers there is a stationary insulated plate, W, forming part of the local circuit and provided with a series of pins or other suitable conductors, X, the parts so arranged that whenever a finger-key is operated it will close the local circuit through the conductors V and X.

The operation of the instrument is as follows: The parts stand normally in the position shown in Fig. 1, with the conducting-finger C standing at one end of the plate B and the clutch being disconnected, although its lower member, P, is in motion. On actuating any one of the finger-keys it will elevate the corresponding stop-pin J, and at the same instant close the local circuit through the conductors V X. The closing of the circuit causes the charging of the magnet S, which, operating the lever R, immediately throws the clutch into action, so that it acts to turn the shaft D and conductor C. The conducting-finger advances over the plate B until it encounters the stop-pin, and in advancing to this point it causes the transmission over the main line of the number of impulses appropriate to the particular character represented by the key which was operated. The instant that the key is released it resumes its original position, and in so doing breaks the local circuit, which is followed by the disconnection of the clutch and the return of the conducting-finger to its original position.

The essence of my invention resides in combining with the conducting-finger stops actuated by the respective keys to arrest the advance of the finger, and in arranging the finger-keys to close the local circuit through which the clutching devices are operated; and it is manifest that the form of the clutch and the construction and arrangement of other details may be modified to any desired extent within the range of mechanical skill, provided the mode of action herein described is retained.

Having thus described my invention, what I claim is—

1. In a telegraphic transmitter, the conducting-finger C and the interrupted conducting-plate B, in combination with the spring to retract the finger and a continuously-driven clutch by which the finger may be advanced or released at will.

2. In combination with the interrupted conducting-plate B and the vibratory finger C, a friction-clutch having one of its members connected with a constantly-driven motor, and a series of stops, substantially as described, for positively arresting said arm in different positions, whereby its movement may be arrested at the required point, notwithstanding the continued engagement of the clutch.

3. In an electric transmitter, the combination of the shaft E and its conducting-arm C, the interrupted conducting-plate B, the friction-clutch having one of its members connected with a constantly-moving motor, the electro-magnet for operating said clutch, the stop-pin to arrest the conducting-arm, and the finger-keys connected individually with the respective stops, and also connected with the clutch-controlling magnet, whereby the operation of a given key is caused to throw into action the clutch for advancing the conducting-arm, and also to place in position the stop for arresting the arm at the proper point.

In testimony whereof I hereunto set my hand, this 25th day of February, 1887, in the presence of two attesting witnesses.

ARTHUR BIXBY.

Witnesses:
JNO. T. MADDOX,
THOS. W. MORSE.