

May 15, 1928.

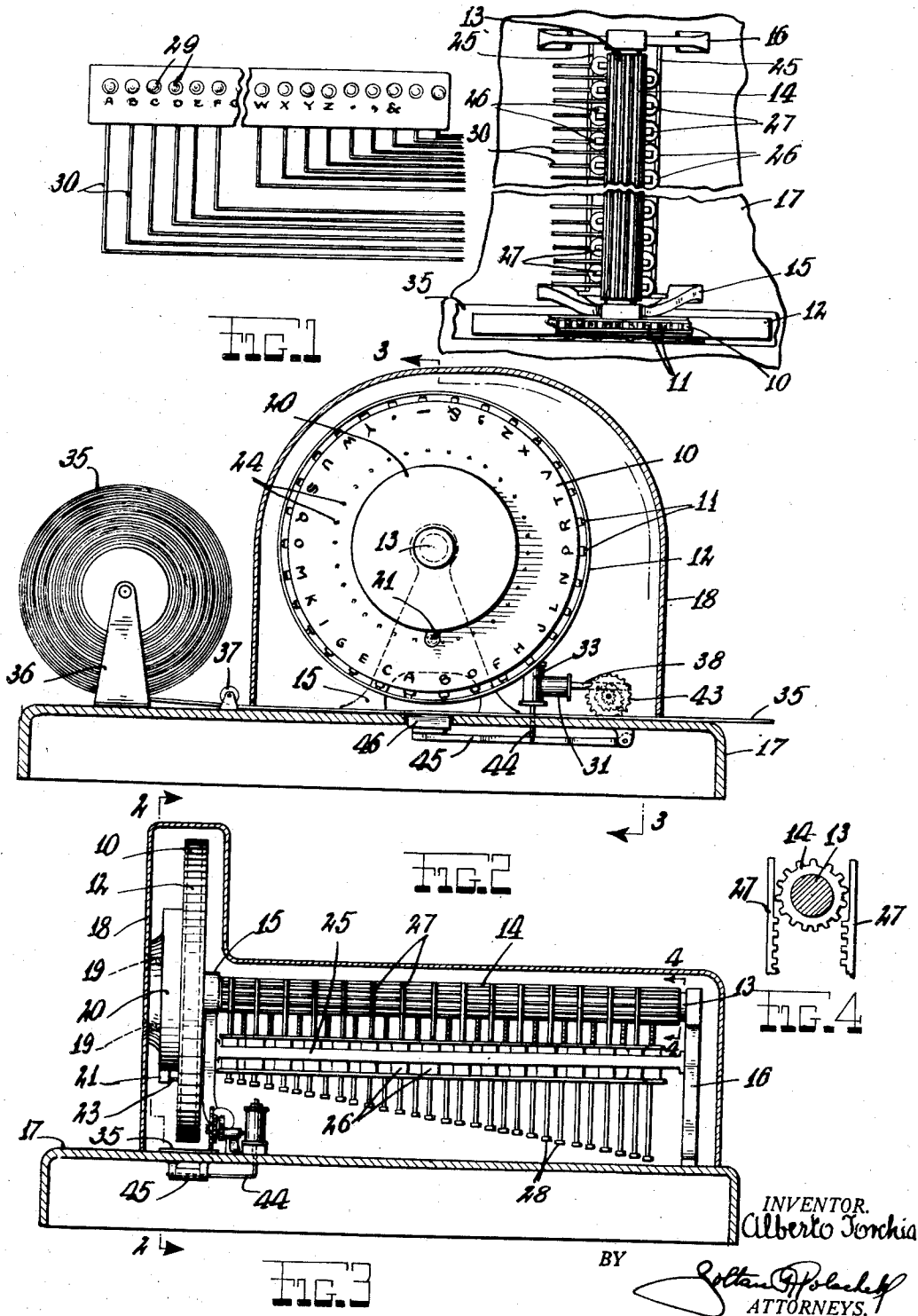
A. TORCHIA

1,669,955

PRINTING DEVICE FOR TELEPHONES

Original Filed Dec. 18, 1925

2 Sheets-Sheet 1



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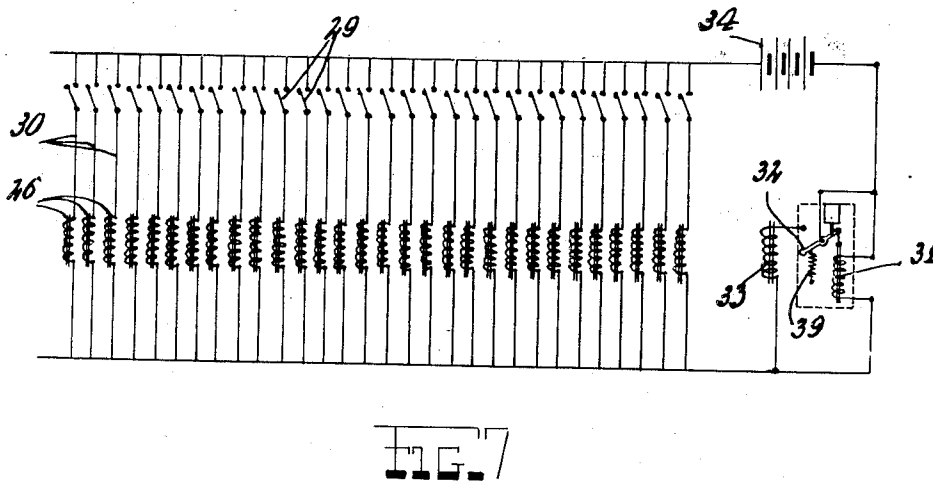
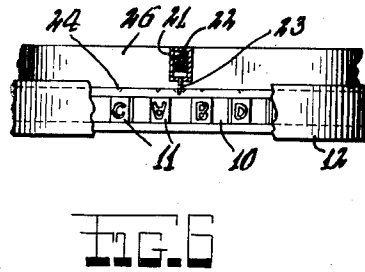
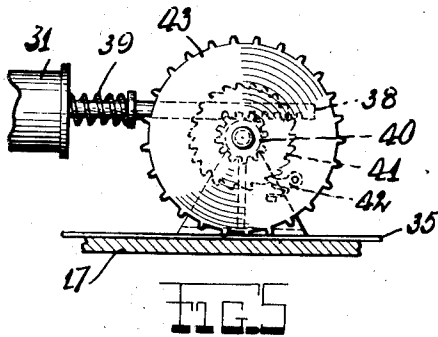
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PRINTING DEVICE FOR TELEPHONES

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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE.

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PRINTING DEVICE FOR TELEPHONES.

Application filed December 18, 1925, Serial No. 76,161. Renewed March 29, 1928.

This invention relates to electrically controlled printing communication machines, particularly adapted for use in conjunction with telephones, notifying absent telephone owners of incoming messages.

An object of the invention is to provide a controlling keyboard having connections with a multiple of solenoids operating racks against a pinion shaft bearing a printing wheel with the necessary characters thereon, a solenoid of slower action than above mentioned multiple of solenoids to advance a tape upon which characters are to be printed, and at the end of the stroke of the latter solenoid a switch is closed actuating another solenoid thrusting said tape against said printing wheel.

Further objects will be disclosed in the appended claims, the specification and the accompanying drawings, in which—

Fig. 1 shows a fragmentary top elevation of the keyboard and the device under the cover.

Fig. 2 shows a transverse vertical sectional view on the line 2—2 of Figure 3.

Fig. 3 shows a transverse vertical sectional view on the line 3—3 of Figure 2.

Fig. 4 shows a vertical sectional view on the line 4—4 of Figure 3.

Fig. 5 shows an enlarged detail view of the paper advancing device.

Fig. 6 shows a fragmentary view of details for positioning printing wheel.

Fig. 7 shows a schematic wiring diagram of the device.

The printing wheel 10 having characters 11 fastened to its periphery and covered by a printing ribbon 12, is supported on a shaft 13 having a pinion 14 on entire length of said shaft, shaft bearing supports 15 and 16 resting on base 17. The upper casing 18 rests on said base 17, and at one end has rigidly attached with screws 19 supporting member 20 having at its lower extremity spring housing 21 with spring 22 and projecting pin 23 engaging the niches 24 in side of printing wheel 10.

The bands 25 between the said bearing supports, have a multiple of attached solenoids 26 one for each character 11. The cores of said solenoids are on the upper ends provided with racks 27 for engagement with pinion shaft 14, and on the lower ends with stops 28 of varying lengths, whereby when keys 29 having leads 30 to said solenoids are closed individually a corresponding solenoid

acts, rack 27 engages pinion shaft 14 rotating printing wheel through a fixed arc depending upon the length of stop 28 so that a similar character as the one pressed on the key is in the printing position of said printing wheel.

Referring to the schematic wiring diagram, the closing of an individual key 29 causes a corresponding solenoid 26 to turn printing wheel so that corresponding character is in printing condition, also causes a slow acting solenoid 31 to advance printing paper, fully explained later on, and upon completing its stroke switch 32 is closed causing another solenoid 33 to thrust the printing paper against printing wheel. The numeral 34 indicates a battery.

The printing paper 35 is revolvably supported by bracket 36, and its end leads out under support 37, passes under printing wheel and is engaged by advancing mechanism consisting of said solenoid 31 having a rack 38 attached to core; with a spring 39 maintaining said rack in outer position, solenoid action is drawing in of rack, and said rack engaging pinion 40 rigidly fastened to ratchet wheel 41, acting against ratchet 42 fastened to cog-wheel 43, whereby when solenoid 31 acts, the cog-wheel advances said printing paper.

Before mentioned solenoid 33 has a core-extension member 44 engaging lever 45 having one end pivoted against said base 17 and the other end provided with a striking material 46 underneath said printing paper, whereby when solenoid 33 acts said striking material thrusts printing paper against said ribbon 12 and a certain character 11 in the printing position.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. A device of the class described, comprising a keyboard having connections with a multiple of solenoids controlling a printing device, embodying a printing wheel with characters thereon revolvably controlled by said solenoids, tape advancing means controlled by a solenoid of slower action than aforementioned solenoid, and means for thrusting said tape against said printing wheel characterized by a solenoid operated by a switch being closed when tape advancing means reaches end of stroke.

2. A device of the class described, provided with a controlling keyboard having con-

nections with a multiple of solenoids, operating racks against a pinion shaft carrying a printing wheel with the necessary characters thereon, a solenoid of slower action than
 5 above mentioned multiple of solenoids to advance a tape upon which characters are to be printed, and at the end of the stroke of the latter solenoid a switch adapted to be closed and actuating another solenoid thrusting said tape against said printing wheel.

3. A device of the class described, provided with a controlling keyboard having connections with a multiple of solenoids, operating racks against a pinion shaft
 15 carrying a printing wheel with the necessary characters thereon, and having niches for engagement with a stationary pin and spring, a solenoid of slower action than above mentioned multiple of solenoids to
 20 advance a tape upon which characters are to be printed, and at the end of the stroke of the latter solenoid a switch adapted to be closed and actuating another solenoid thrusting said tape against said printing
 25 wheel.

4. A device of the class described, provided with a controlling keyboard having connections with a multiple of solenoids, operating racks against a pinion shaft carrying a printing
 30 wheel with the necessary characters thereon, a solenoid of slower action than above mentioned multiple of solenoids to advance a tape upon which characters are to be printed, characterized by a rack, normal position spring, pinion, ratchet wheel, ratchet,
 35 and a cog-wheel, and at the end of the stroke of the latter solenoid a switch adapted to be closed and actuating another solenoid thrusting said tape against said printing wheel.

5. A device of the class described, provided with a controlling keyboard having connections with a multiple of solenoids, operating racks against a pinion shaft carrying a printing wheel with the necessary
 45 characters thereon, a solenoid of slower action than above mentioned multiple of solenoids to advance a tape upon which characters are to be printed, characterized by a rack, normal position spring, pinion, ratchet wheel, ratchet, and a cog-wheel, and
 50 at the end of the stroke of the latter solenoid a switch adapted to be closed and actuating another solenoid, provided with a core extension member and a lever, thrusting said tape against said printing wheel.

6. In a device of the class described, the combination in a printing device having two shaft bearing supports fixed to a base and rotatably supporting a shaft having at one
 60 end a printing wheel and provided with a pinion device its entire length, two bands

fixed between said bearing supports carrying a multiple of solenoids, one for each key and character on said printing wheel, said solenoids having the upper ends of their cores
 65 equipped with racks to engage pinion shaft, and lower ends equipped with stops determining the amount of travel of said printing wheel.

7. In a device of the class described, the combination in a printing device having two shaft bearing supports fixed to a base and rotatably supporting a shaft having at one
 70 end a printing wheel and provided with a pinion device its entire length, said printing wheel provided with niches for engagement with a stationary pin and spring, two bands fixed between said bearing supports carrying
 75 a multiple of solenoids, one for each key and character on said printing wheel, said solenoids having the upper ends of their cores equipped with racks to engage pinion shaft, and lower ends equipped with stops determining the amount of travel of said printing
 80 wheel.

8. In a device of the class described, the combination in a printing device having two shaft bearing supports fixed to a base and rotatably supporting a shaft having at one
 90 end a printing wheel and provided with a pinion device its entire length, said printing wheel provided with characters on its periphery, a printing ribbon, and niches for engagement with a stationary pin and spring, two bands fixed between said bearing
 95 supports carrying a multiple of solenoids, one for each key and character on said printing wheel, said solenoids having the upper ends of their cores equipped with racks to engage pinion shaft, and lower ends equipped with stops determining the amount
 100 of travel of said printing wheel.

9. In a device of the class described, the combination in a printing device having two shaft bearing supports fixed to a base and rotatably supporting a shaft having at one
 105 end a printing wheel and provided with a pinion device its entire length, said printing wheel provided with niches for engagement with a stationary pin and spring, housed by a supporting member fastened to upper casing, two bands fixed between said bearing supports carrying a multiple of solenoids,
 110 one for each key and character on said printing wheel, said solenoids having the upper ends of their cores equipped with racks to engage pinion shaft, and lower ends equipped with stops determining the amount of travel of said printing wheel.

In testimony whereof I have affixed my
 120 signature.

ALBERTO TORCHIA.