

No. 706,251.

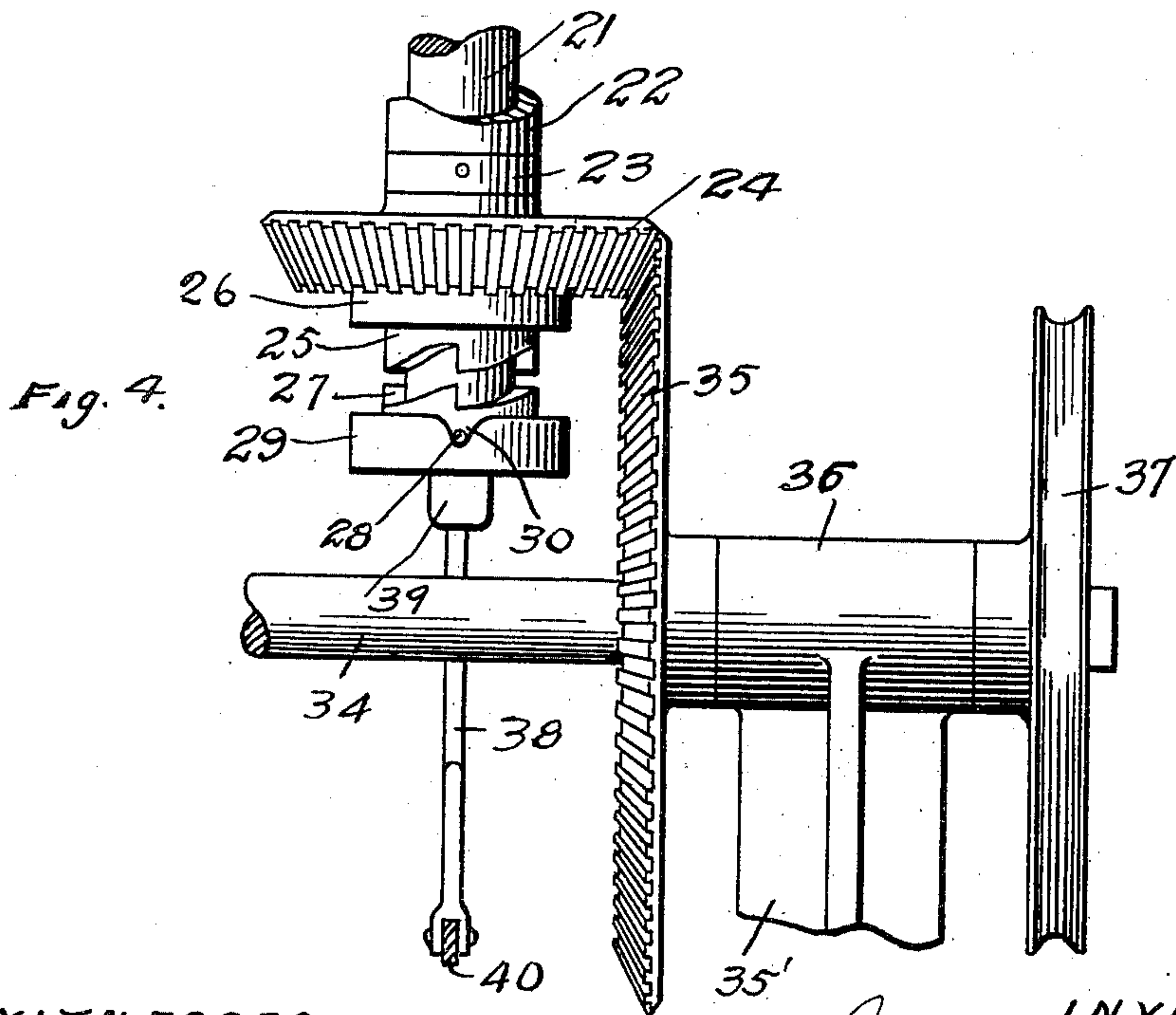
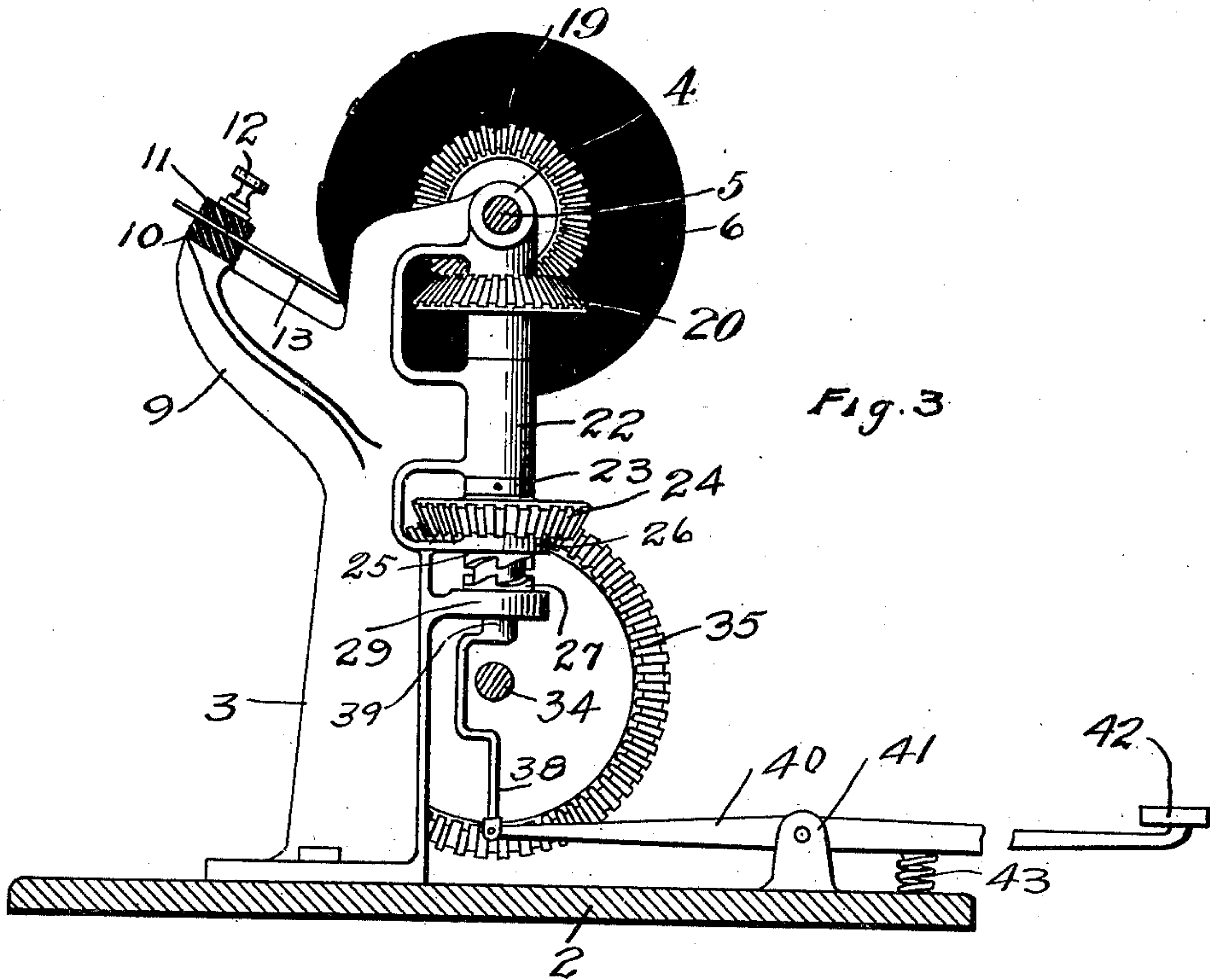
Patented Aug. 5, 1902.

J. W. McDONALD.
MECHANICAL TELEGRAPH TRANSMITTER.

(Application filed Jan. 27, 1902.)

(No Model.)

2 Sheets—Sheet 2.



WITNESSES.

E. E. Staudt
M. C. Noonan

INVENTOR
Joseph Wesley McDonald
BY *Paul & Paul*
ATTORNEYS.

UNITED STATES PATENT OFFICE.

JOSEPH WESLEY McDONALD, OF LARIMORE, NORTH DAKOTA.

MECHANICAL TELEGRAPH-TRANSMITTER.

SPECIFICATION forming part of Letters Patent No. 706,251, dated August 5, 1902.

Application filed January 27, 1902. Serial No. 91,359. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH WESLEY McDONALD, of Larimore, Grand Forks county, North Dakota, formerly of Breckenridge, Wilkin county, Minnesota, have invented certain new and useful Improvements in Mechanical Telegraph-Transmitters, of which the following is a specification.

In telegraph systems in general use where the ordinary key in connection with a Morse sounder is employed and the telegraph code is produced by the manipulation of the key a great many mistakes are liable to creep in during the transmission of a message, owing chiefly to the errors of the operator in sending a letter or word or in sending them so carelessly and indistinctly as to render accurate receiving impossible.

The object, therefore, of my invention is to provide a mechanical transmitter by the use of which the sending of letters or words will be uniform and the speed limited only by the ability of the person at the receiving-station to take the message.

A further object is to provide a transmitter which will cause the sounder at the receiving-station to give a sharp quick signal and enable the person in charge to easily and accurately take a message.

A further object is to provide a transmitter which any one familiar with the typewriter keyboard can use with substantially the same skill and efficiency as an experienced telegraph-operator.

Other objects of the invention will appear from the following detailed description.

The invention consists generally in various constructions and combinations, all as hereinafter described, and particularly pointed out in the claims.

In the accompanying drawings, forming part of this specification, Figure 1 is a plan view of a portion of a mechanical telegraph-transmitter embodying my invention. Fig. 2 is a vertical section showing the gear for operating the revolving disks. Fig. 3 is an end view of Fig. 1. Fig. 4 is a front view of a portion of the machine, showing the position of the key-lever and the clutch connected therewith when in its inoperative position. Fig. 5 is a detail of the brushes that are adapt-

ed to bear upon the periphery of the revolving disks.

In the drawings, 2 represents a suitable base whereon the operating mechanism is arranged. 3 represents standards secured upon said base and having at their upper ends long bearings 4 for a horizontal shaft 5, whereon a series of disks 6 are loosely mounted. There may be any number of these disks; but I prefer to provide at least as many of them as there are keys in the keyboard. Each disk is provided in its periphery with a series of contact or circuit-closing blocks or plates—such as 7 and 8, shown in Fig. 5—the former being narrow and representing the dots of the code, while the latter are wider and represent the dashes. The disks are of such size and the contact blocks or plates are so arranged in the peripheries that each periphery will include only those blocks which are necessary to make up a single character or letter of the code. A complete revolution, therefore, of each disk is necessary in order to transmit the letter or character which that disk represents. The disks may be made of wood, fiber, hard rubber, or any other suitable non-conducting material, the contact blocks or plates being inserted into recesses in the peripheries or secured thereto in any suitable way. The shaft 5 is made of any suitable length to accommodate the desired number of disks, and the standards 3 are provided at intervals along the base between the pairs of disks and support the shaft in a horizontal position and prevent twisting or vibration of the same. The standards 3 are provided with arms 9, supporting bars 10 and 11, of suitable non-conducting material, held together by thumb-screws 12. Between these bars opposite the periphery of each disk I provide brushes 13 and 14, of a flexible conducting material, such as copper, insulated from each other by said bars and adapted to bear at their free ends upon the periphery of the opposite disk and slide over the same as the disk is revolved. The positions of these brushes on their disks are represented in the detail Fig. 5, wherein I have shown a portion of one of the disks with the bearing-blocks on its surface and the ends of the brushes resting upon one of the blocks

when the circuit will be closed, and a corresponding completion of the circuit will take place whenever the brushes pass over a block during the revolution of the disk. One of the
 5 brushes is connected by a short branch wire 15 with a battery-wire 16, and the other brush has a branch wire 17 to the line-wire 18, through which the signal is transmitted to the receiving-station and the sounder 18'. It
 10 is evident that as the disks are revolved the circuit will be closed as the brushes pass over the bearing and contacting blocks in the peripheries of the disks and broken between them. As the brushes pass over the blocks
 15 of various widths, the time that the circuit is closed will depend, of course, upon the width of the block and the speed of the disk. As before stated, the width of each block is graduated to represent the different marks or char-
 20 acters that are appropriated for the different letters of the code, and hence the movement of the sounder at the receiving-station will correspond to the width of the contact-blocks, so that the movement of the brushes over
 25 said blocks and the making and breaking of the circuit by such movement will be instantly and accurately reproduced at the sounder.

Various means may be devised for operating the disks; but I prefer to provide beveled
 30 gears 19 upon one side thereof and arrange corresponding gears 20 upon the upper ends of vertical shafts 21, that are mounted in bearings 22 upon the standards 3. Below the bearing 22 is a collar 23, secured on the shaft
 35 21, and beneath said collar is a gear 24, having a hub 25, loosely mounted on the shaft 21 within a bearing 26, that is carried by the standard 3. The lower end of the hub 25 is notched to form one portion or member of a
 40 clutch, the sliding member 27 of which is vertically movable on the shaft 21 and is provided with a pin 28, that is adapted to slide over the edge of a horizontally-arranged ring 29, that is supported on the standard 3. The
 45 ring 29 is provided with a depression 30, into which the pin 28 drops during the revolution of the shaft 21, and said shaft is provided with a socket 31, wherein a spring 32 is arranged and is adapted to bear upon the pin
 50 28 and normally hold the movable clutch member 27 out of engagement with the fixed portion of said member and allow the gear 24 to turn freely on its shaft. Slots 33 are provided in the end of said shaft 21, wherein
 55 the pin 28 is adapted to slide when the movable clutch member is raised or lowered to lock or release the gear. Beneath the shafts 21 is a horizontal shaft 34, whereon a series of driving-gears 35 are secured in position
 60 to engage the teeth of the gears 24. The shaft 34 is supported on standards 35' on the base 2, said standards having long bearings 36 to receive said shaft. At one end said shaft has a driven pulley 37, operated from
 65 any suitable source of power. Beneath each shaft 21 is a reciprocating rod 38, having a head 39, that is adapted to engage the pin 28,

and the lower end of the rod 38 is pivotally connected with a lever 40, pivoted between lugs 41 and provided at its outer end with a
 70 key 42, bearing a letter or character and normally held in its elevated position by a spring 43. Depression of said key will elevate the inner end of the key and lever, raise the movable portion of the clutch into engagement
 75 with the fixed portion thereof, lock the gear 24 on its shaft, and through the connecting-gearing cause a complete revolution of the disk that is appropriated for the particular key that is struck. When the revolution is
 80 complete, the pin 28 will drop into the depression 30 and allow the spring 32 to disengage the clutch. During the revolution of the disk the electrical circuit will be alternately completed and broken, and during
 85 each closed period an impulse corresponding to a dot or a dash will be transmitted over the wire to the sounder, which will accurately reproduce the letters or characters of the code that are represented by the contact-
 90 blocks on the disks.

The speed of the driving-gears can be easily regulated to suit the "sending" speed of the operator, and as the movement of the oper-
 95 ating parts will be regular and uniform all indistinct jerky transmissions of messages will be avoided, and the use of a type-writer keyboard will enable the operator to rapidly and correctly send a message without having
 100 knowledge of a telegraphic code.

I claim as my invention—

1. The combination, with a frame, of a series of disks loosely mounted therein and normally stationary, a series of contact-blocks of different widths arranged in the periphery
 105 of each disk and representing a single letter or character of the telegraph code, contact-brushes arranged in pairs and adapted to bear upon the peripheries of said disks, the brushes of each pair being insulated from
 110 each other and one being connected to the line-wire and the other to the battery, a series of levers, keys therefor, a driving mechanism, and means in connection therewith for causing a complete revolution of each disk
 115 when its lever is operated by the movement of the corresponding key.

2. The combination, with a frame, of a shaft horizontally arranged therein, a series of disks loosely mounted at intervals on said shaft
 120 and provided in their peripheries with a series of contact-blocks that are insulated from each other, the blocks of each disk representing a single letter or character of the telegraphic code, contact-brushes arranged in pairs and
 125 adapted to bear upon the peripheries of said disks and on said blocks, each brush being insulated from the other brush of the same pair and from the other pairs, and one brush of each pair being connected to the line-wire
 130 and the other to a battery, a series of levers, keys therefor, a driving mechanism, and suitable connections provided between said driving mechanism and each of said disks and

adapted to be actuated by the movement of said levers when the corresponding key is operated.

3. The combination, with a shaft, of a series
5 of loosely-mounted disks arranged at intervals thereon and provided at intervals in their peripheries with a series of contact or circuit-closing blocks of different widths insulated from each other and representing the letters
10 or characters of a telegraphic code, brushes arranged in pairs and insulated from each other and connected with the battery and line wires respectively, the free ends of said brushes being adapted to bear upon the peripheries of said disks and alternately make
15 or break the circuit as the disks are revolved, a keyboard and a series of levers therefor, and means controlled by the movement of said levers for causing a complete revolution of each
20 disk when the key corresponding thereto is operated.

4. The combination, with a loosely-mounted disk of non-conducting material provided in its periphery with a series of circuit-closing
25 or contact blocks of different widths arranged at intervals and representing the letters or characters of a telegraphic code, contact-brushes adapted to bear upon the periphery of said disk and connected respectively with
30 the battery and line wires whereby the circuit will be closed when the brushes pass over a contact-block, a lever and key, and a gear mechanism controlled by the movement of said lever for causing a complete revolution of said disk when said key is operated.
35

5. The combination, with a loosely-mounted disk of non-conducting material provided in its periphery with a series of circuit-closing or contact blocks arranged at intervals and
40 of different widths to represent the dots and dashes of a letter or character of a telegraphic code, brushes adapted to bear upon the periphery of said disk and connected respectively with the line and battery wires, whereby the circuit will be alternately closed and
45 broken during the revolution of said disk, a

gear provided on one face of said disk, an upright shaft provided with a gear engaging the gear on said disk, a loosely-mounted gear provided on said shaft, a driving-gear engaging said loosely-mounted gear, a clutch mechanism provided in connection with said loosely-mounted gear, and a lever and key for operating said clutch device to cause a complete revolution of said disk and the transmission of the letter or character represented thereby when the key is struck. 55

6. The combination, with a series of loosely-mounted disks of non-conducting material provided in their peripheries with a series of
60 circuit-closing or contacting blocks arranged at intervals and of different widths to represent the dots and dashes of a letter or character of a telegraphic code, brushes arranged in pairs and adapted to bear upon the peripheries of said disks those of the same pairs being connected respectively with the line and battery wires, whereby the circuit will be alternately closed and broken during the revolution of said disks, gears provided on the
70 faces of said disks, upright shafts having gears engaging said disk-gears, loosely-mounted gears on said shafts, driving-gears normally engaging said loosely-mounted gears, clutch mechanisms provided in connection
75 with said loosely-mounted gears, springs for normally holding the movable members of said clutch mechanisms out of engagement with the fixed members thereof, key-levers provided with a series of keys and adapted
80 to actuate said movable clutch members when the keys are struck to lock said loosely-mounted gears, and means for permitting the automatic disengagement of said clutch mechanisms when said disks have completed a single
85 revolution.

In witness whereof I have hereunto set my hand this 20th day of January, 1902.

JOSEPH WESLEY McDONALD.

In presence of—

GEORGE M. WINNEY,
J. L. POOL.