

Aug. 30, 1927.

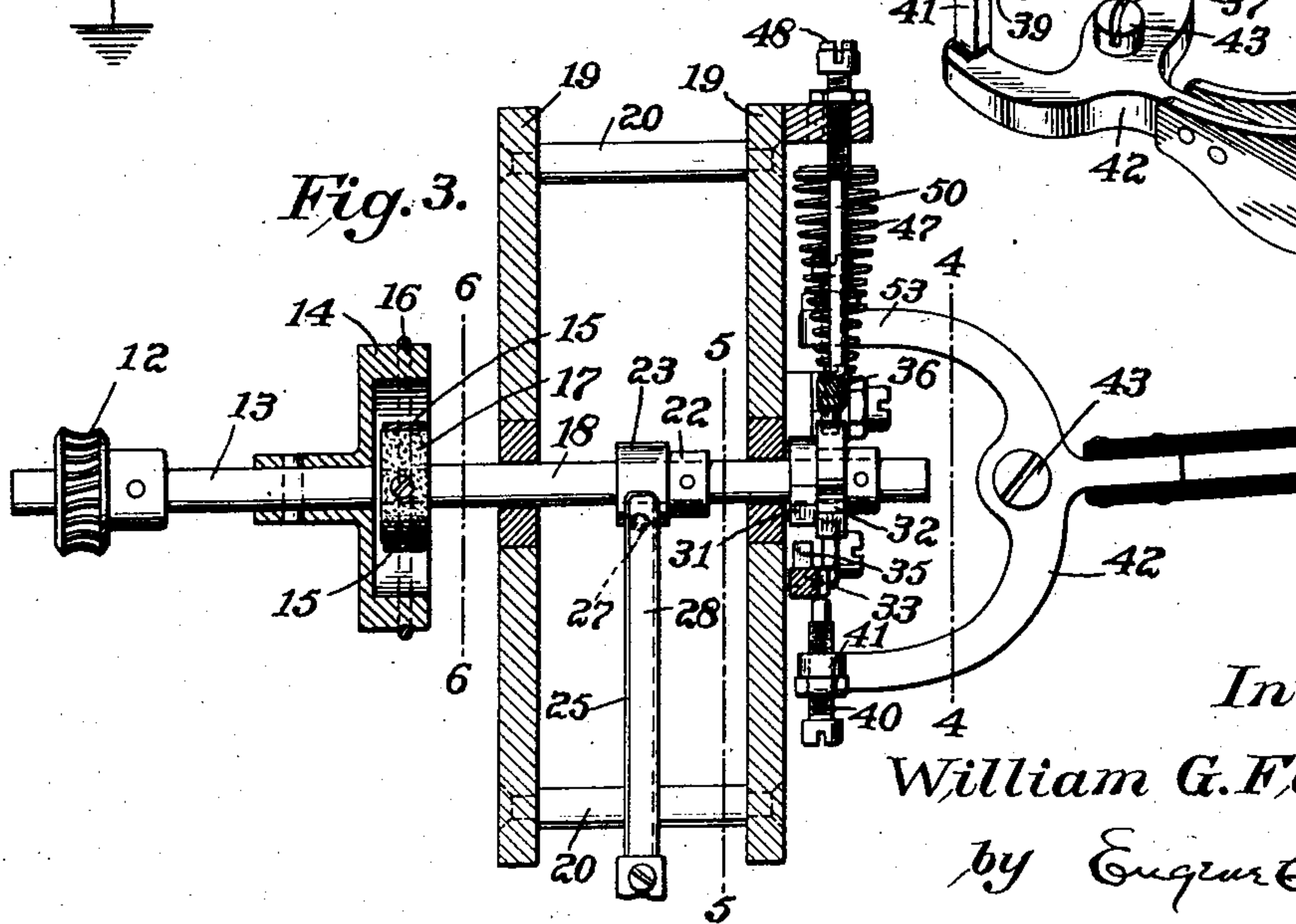
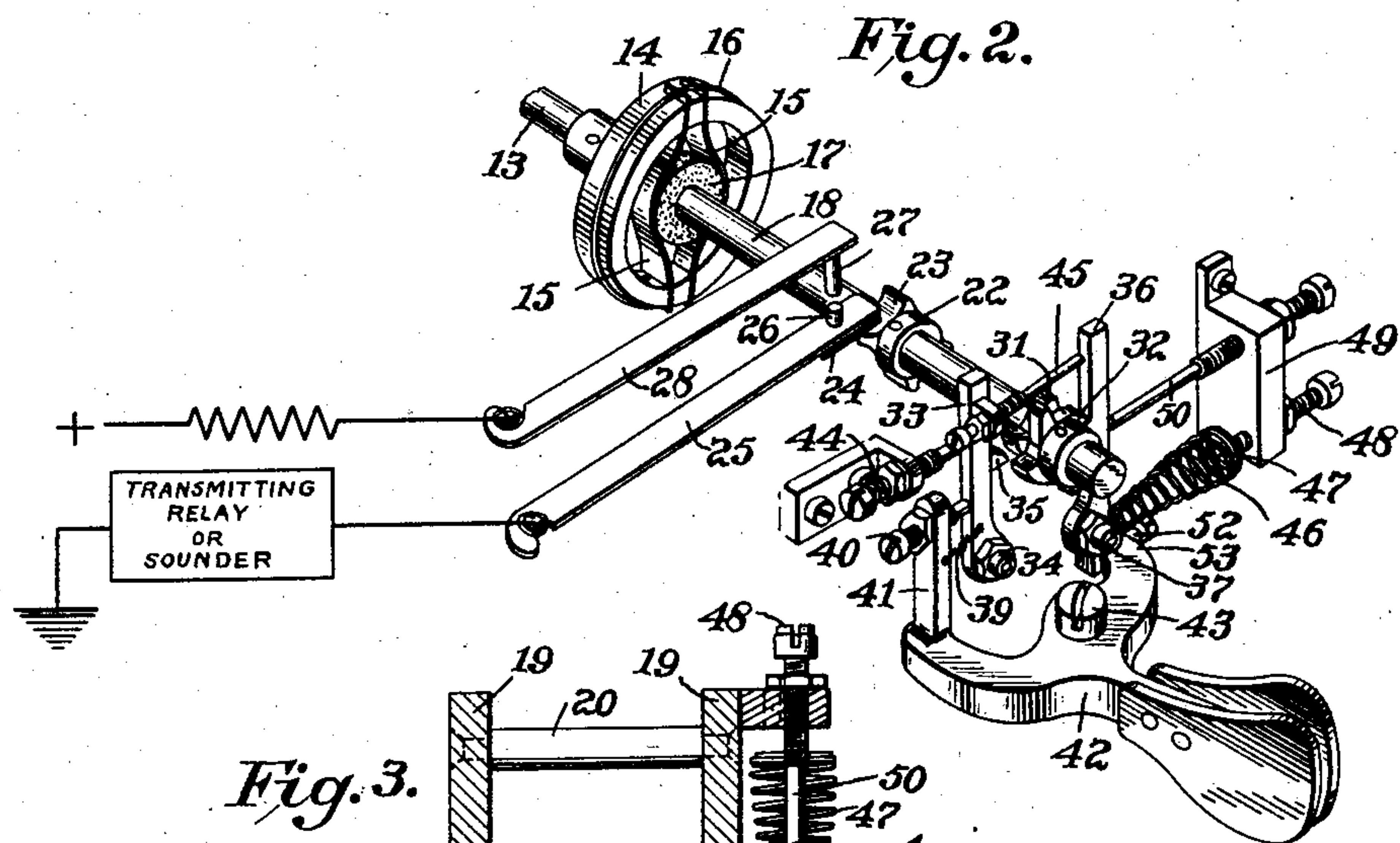
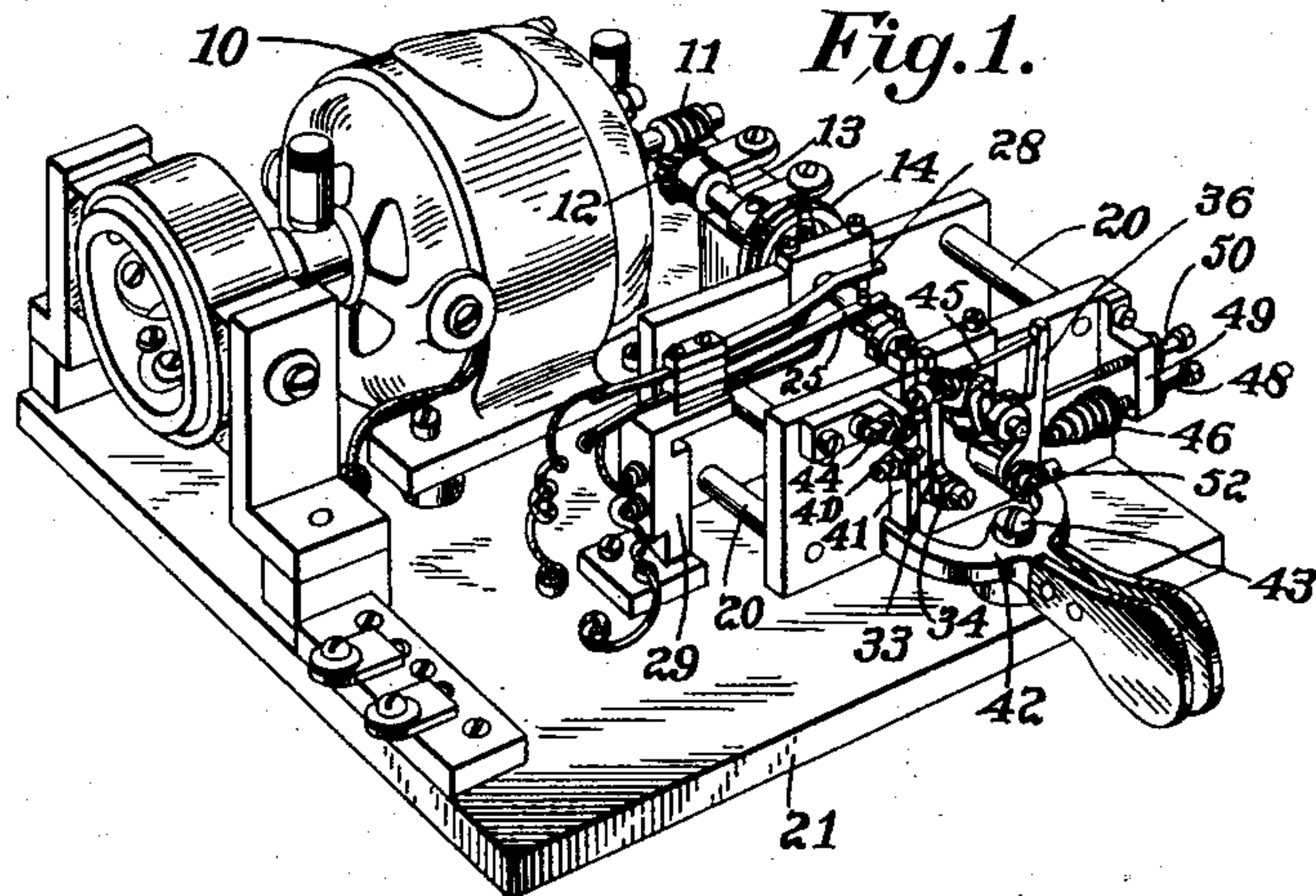
1,640,541

W. G. FLUHARTY

TELEGRAPH TRANSMITTER

Filed Aug. 1, 1924

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

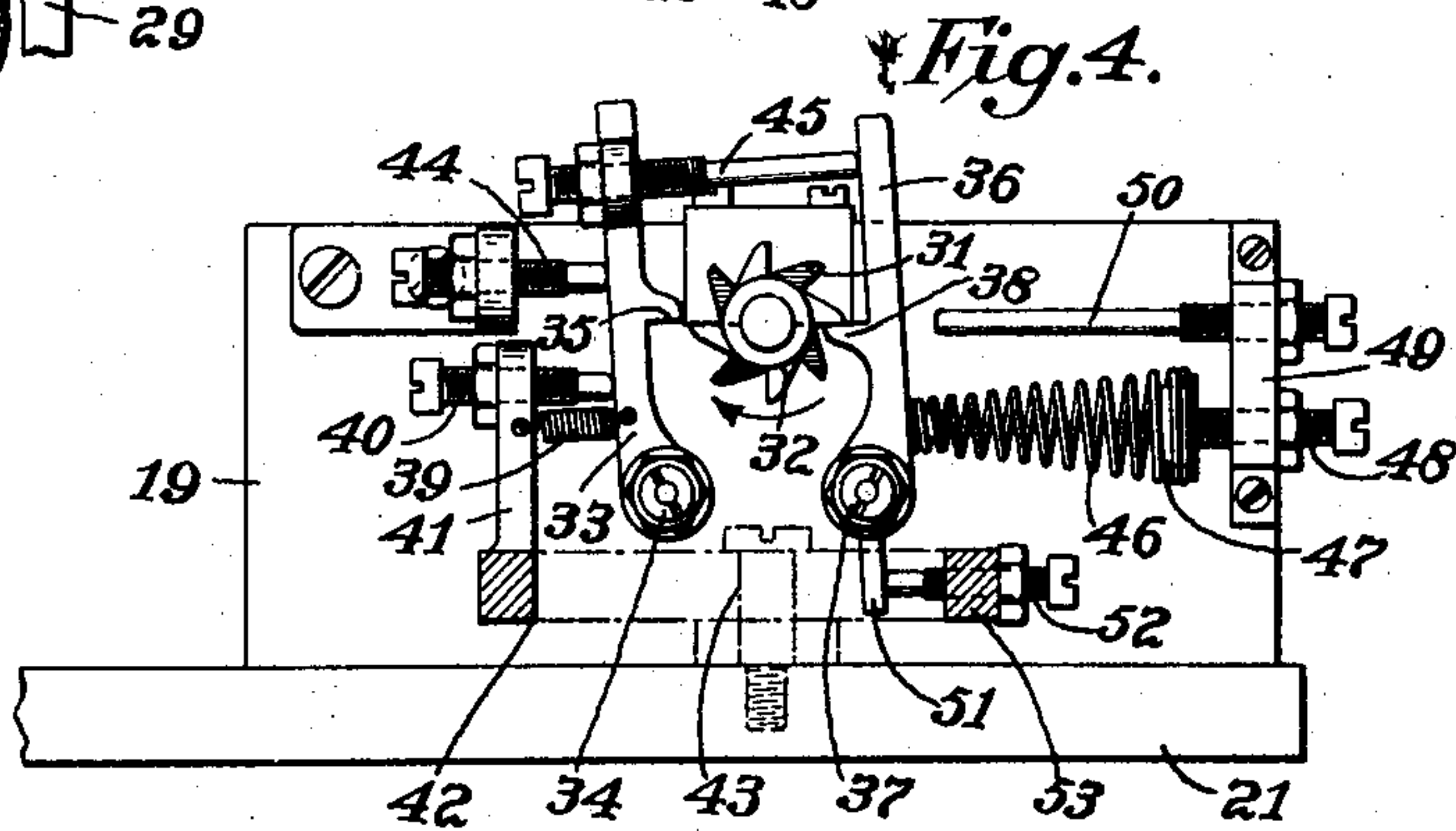
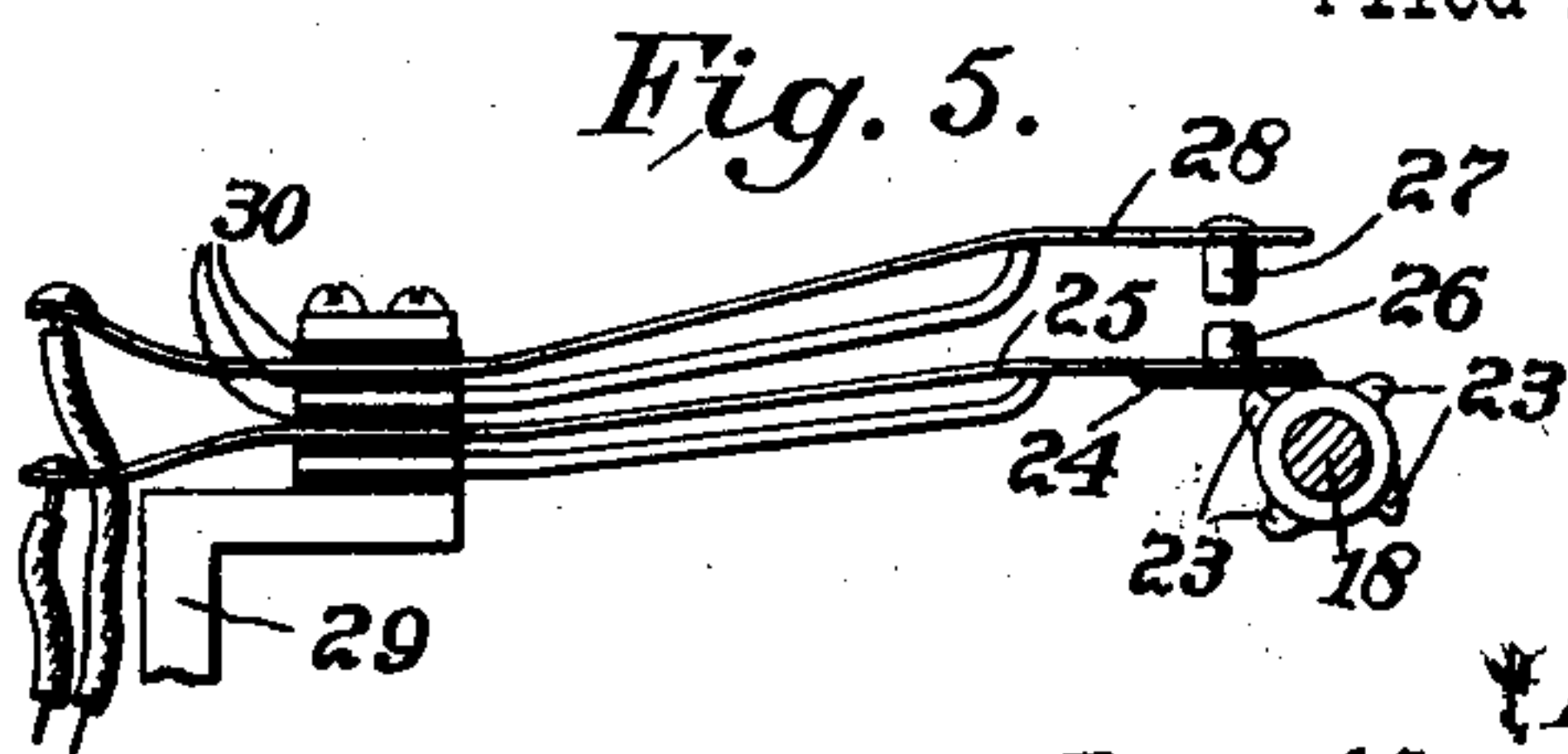


Fig. 6.

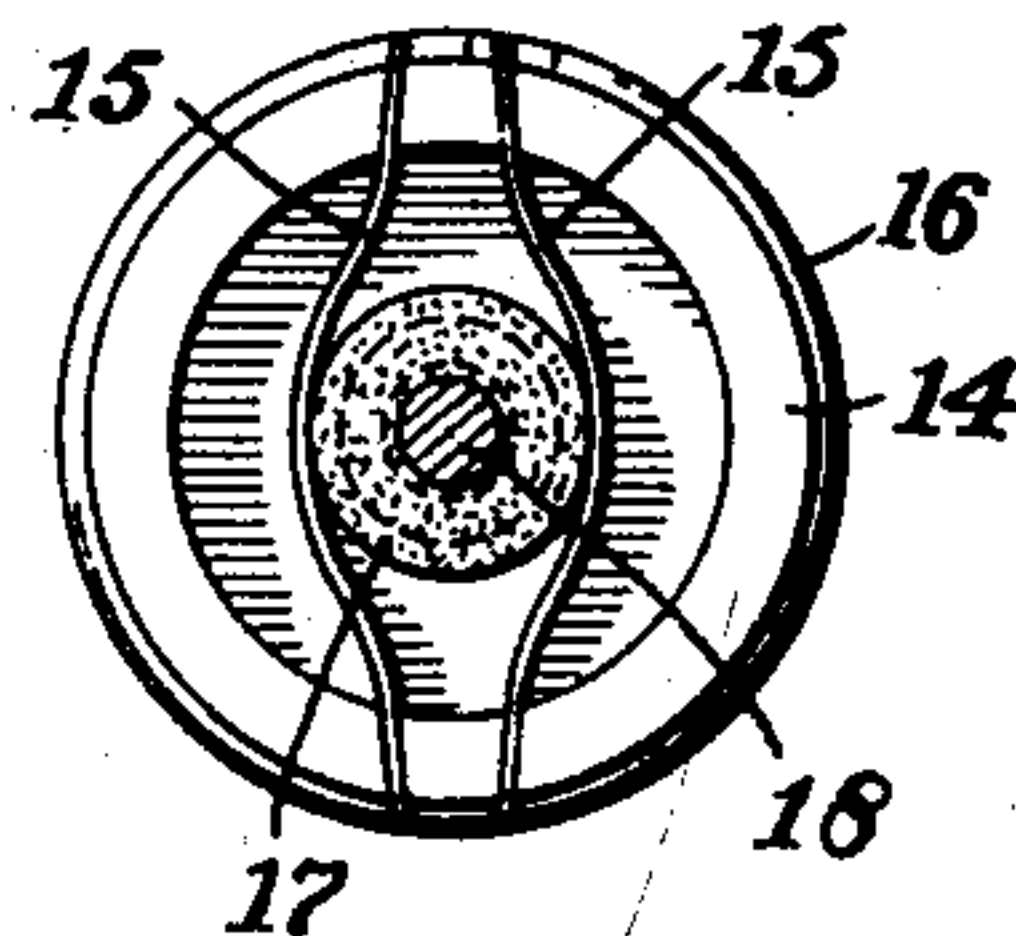
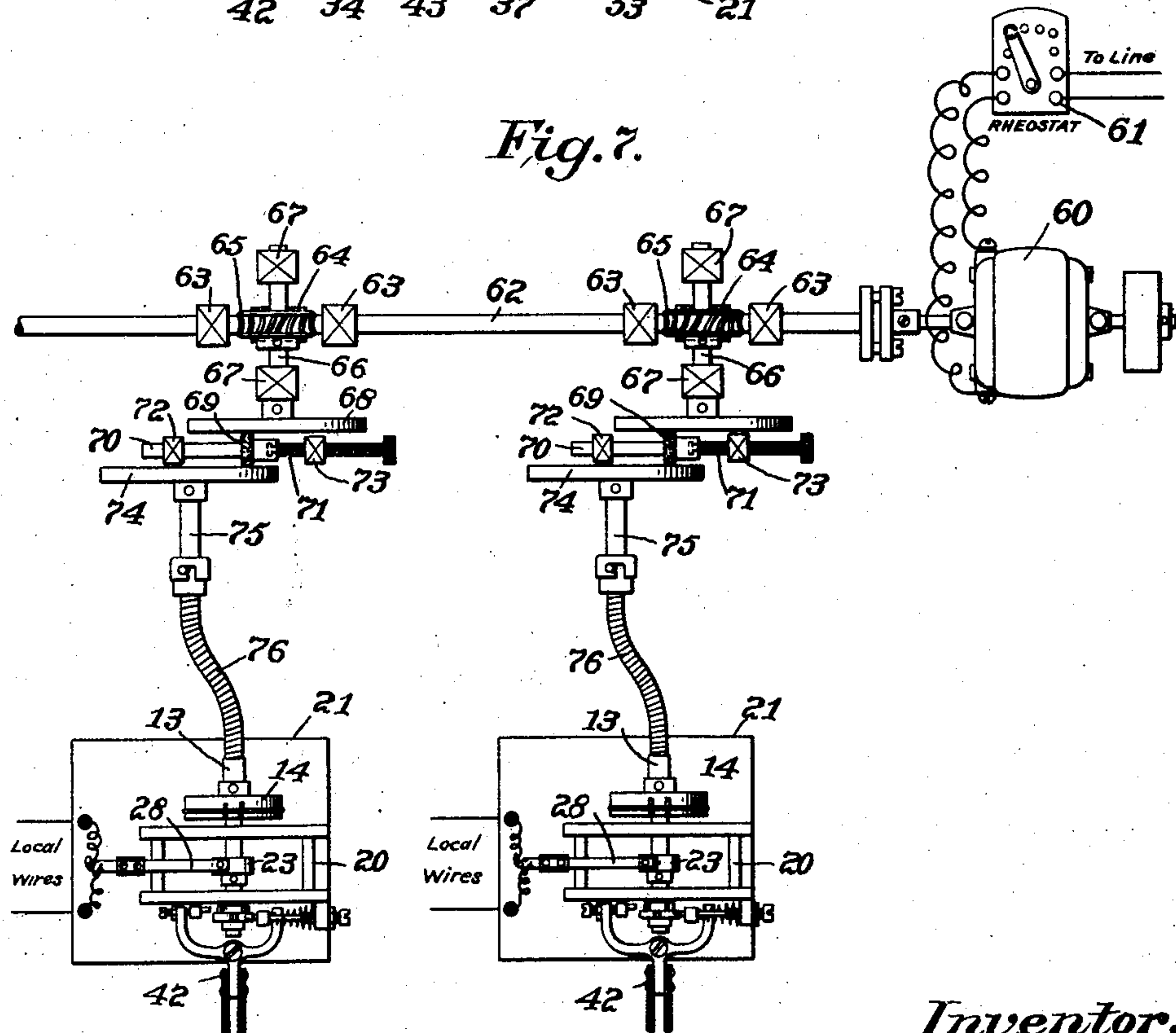


Fig. 7.



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UNITED STATES PATENT OFFICE.

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TELEGRAPH TRANSMITTER.

Application filed August 1, 1924. Serial No. 729,599.

The present invention relates to semi-automatic transmitters.

More particularly the invention relates to semi-automatic transmitters for telegraph codes comprising dot, dash, and space units, such for example as the Morse, continental, and like codes. In prior semi-automatic senders, such as the well known and commonly used vibroplex type, utilizing vibrating reeds to transmit the dots, the length or time interval of dots, dashes, and spaces depend largely upon the operator. The variations in energy applied to the vibratory member may result in shortened or so-called pin dots, which are lost on long lines where appreciable attenuation and distortion occur, while the key may be held over on the dash side for such a short interval that only a dot is transmitted. A further source of error arises due to too rapid changing from dot to dash, or too rapid movement of the key to the dash contact to permit a proper space between successive dashes, which results in crowding of the signals. Due to these variations in the signals produced on the prior transmitters, the receiving operator experiences difficulty in catching signals, which results in error and loss of time.

An object of the invention is to provide a simplified and more efficient semi-automatic transmitter in which the dots are uniform in length, and the dashes and spaces are mechanically limited to minimum time intervals so that crowding and clipping of signals becomes impossible and less skilled operators may be employed.

A further object of the invention is the provision of positive mechanically driven transmitting which will transmit in uniform manner independently of wide variations in the manual operation.

Still another object of the invention is the provision of a novel common drive arrangement for a plurality of transmitters in which each operator can independently control the operating speed of his own machine at will.

Further objects of the invention will appear in the following detailed description of preferred embodiments of the invention of which—

Fig. 1 is a perspective showing a single assembled transmitter.

Fig. 2 is a more or less diagrammatic view

showing the essential parts of the transmitting apparatus and circuit arrangement.

Fig. 3 is a sectional plan view showing the essential parts of the apparatus.

Fig. 4 is a sectional view taken along line 4—4 of Fig. 3.

Fig. 5 is a fragmental sectional view taken along line 5—5 of Fig. 3.

Fig. 6 is a fragmental sectional view taken along line 6—6 of Fig. 3.

Fig. 7 is a more or less diagrammatic view showing an arrangement for driving a plurality of transmitters from a common drive shaft.

Referring to the drawings, a motor 10 of any well known form, through gears 11 and 12, drives a suitably journaled shaft 13. Secured to and rotatable with the end of shaft 13 is a drive member 14 in which are secured flat spring members 15 held in position by a locking spring ring member 16. Springs 15 frictionally grip a driven member 17 of leather, wood, fiber, or any suitable material. Driven member 17 is secured to and rotatable with a shaft 18 supported and journaled in plates 19 which are held in spaced relation by members 20 and secured to a base plate 21. Mounted on shaft 18 is a cam 22, provided with a plurality of actuating projections 23. An insulating block 24 secured to a spring 25 engages the periphery of 22 in such manner that as shaft 18 rotates, projections 23 force contact 26 carried by spring 25 into engagement with a contact 27 carried by a spring 28. Springs 25 and 28 are mounted on a support 29 and are insulated from each other and the base by insulating blocks 30. Secured to the outer end of shaft 18 are stop wheels 31 and 32 each provided with the same number of teeth as there are projections 23 on cam 22. Coacting with the teeth on wheel 31 is a stop member 33 pivotally supported from 19 on a stud 34, and provided with a stop projection 35 adapted to engage the teeth of wheel 31 and arrest rotation of the shaft 18. A stop member 36 pivotally mounted on stud 37 is provided with a stop projection 38 adapted to engage the teeth of wheel 32 to arrest the rotation of shaft 18. Member 33 is normally held by a spring 39 against an adjustable stop screw 40 supported on extension 41 of a key 42 which is pivotally secured to base

21 by a stud 43. An adjustable stop screw 44 suitably supported from member 19 limits the motion of member 33 to the left in Figs. 1, 2 and 4. Member 36 at its upper end is pressed into engagement with adjustable spacing pin 45 secured in an extension of member 33, through the action of a compression spring 46. Spring 46 is seated at one end over a projection of member 36 and at the other end is supported on a seat 47 which is adjustably supported on a screw 48 from a projection 49 of plate 19. The movement of the parts to the right in Figs. 1, 2 and 4 is limited by an adjustable stop pin 50. Formed integrally with member 36 is an extension 51 which is adapted to be engaged by a pin 52 secured in arm 53 of key 42.

The parts are so proportioned and arranged that with key 42 unactuated, the positions as shown in Fig. 4 will be assumed. In this position of parts, projection 38 of member 36 engages a tooth of wheel 32 and shaft 18 is held from rotation, and cam projections 23 are so positioned with respect to block 24 that contacts 26 and 27 will be open. Motor 10 and shaft 13 will be in continuous rotation but the member 17 will simply slip between springs 15. If key 42 is shifted to the right in Figs. 1 and 2, pin 52 will move to the left in Fig. 4, shifting extension 51 of member 36 to the left, and stop projection 38 to the right in Fig. 4 out of engagement with wheel 32. This frees shaft 18 for rotation under the influence of the friction drive. As long as the key is held to the right, stop 38 will be held out of the path of the teeth on wheel 32, member 33 will be held against stop 44 by the tension of spring 39, and cam projections 23 will close and permit opening of contacts 26 and 27 for successive uniform and regularly spaced intervals. The operation of contacts 26 and 27 in well known manner, may control a line circuit and a local sounder. When the operator has heard the desired number of dots on his local sounder, the key may be released, and the parts will restore to the position shown in Fig. 4 under the influence of springs 39 and 46. Stop 38 will now assume a position in the path of rotating wheel 32 and shaft 18 will be brought to rest with contacts 26 and 27 open as shown in Fig. 5.

When a dash is to be transmitted, key 42 is moved to the left, causing pin 40 to force member 33 to the right in Fig. 4. Pin 45 will simultaneously force member 36 to the right withdrawing stop 38 from the engagement with the tooth of wheel 32, and as shaft 18 is released, stop 35 will move into the path of the first tooth on wheel 31. Shaft 18 will now rotate until the first tooth of wheel 31 engages stop 35 when shaft 18 will again be brought to rest. The

relative position of the teeth on wheel 31 with respect to cam projections 23 is such that with shaft 18 arrested by stop 35, contacts 26 and 27 will be held closed. As long as key 42 is held to the left, the contacts will remain closed and an impulse will be transmitted. As soon as the key is released the parts will restore to unactuated position shown in Fig. 4, and shaft 18 will be arrested by stop 38. If two consecutive dashes are to be transmitted the key must be restored to unactuated position before stop 35 will release shaft 18 to permit interruption of the contacts. It will be noted that the arrangement is such as to require practically the full movement of key 42 to the right or left before shaft 18 is freed, and that a very slight restoring movement will position stops 35 and 38 in arresting position so that as soon as rotation is initiated the key may be released, and a full dot will be transmitted, while on the dash side an impulse at least as long as a dot will also be transmitted. It is also clearly impossible to clip spaces as the minimum spaces between each impulse will be determined by the angular spaces between projections 23 and the speed of rotation of shaft 18.

The transmitter shown in Fig. 1 has an individual motor. In offices where a large number of operators are located a common motor may be provided from which all of the transmitters are driven. An improved common drive arrangement is shown in Fig. 7. The motor 60 may be of any well known type, and may have its speed controlled by a rheostat 61 in well known manner. Motor 60 drives a shaft 62 supported in suitable journals 63 and has mounted thereon transmitter drive gears 64. Gears 64 mesh with and drive gears 65 which in turn are mounted upon and drive shafts 66. Shafts 66 are supported in journals 67 and have secured to the ends thereof friction plates 68. Plates 68 contact with and drive members 69 which are provided with extensions 70 at one end, and at the other end are rotatably supported on the end of and longitudinally movable with screw threaded support members 71. Extensions 70 are slidably journaled in bearings 72 and members 71 are supported in screw threaded members 73. The arrangement of parts is such that members 69 may be adjusted to any desired position along the faces of the coacting friction drive plates 69 by adjusting screws 71, and will remain in the set position until members 71 are readjusted. Members 69 engage and drive friction plates 74 which are in turn secured to and drive suitably supported shafts 75 are connected to and drive shafts 13 of the transmitter, as above described, by suitable flexible and readily detachable drive connections 76.

In operation each operator can connect his

own transmitter to the circuit he is operating and to one of the shafts 75. By rotating screw 71 he can position member 69 to drive his transmitter at the speed most suited to his own requirements and transmit without relation to the speeds of other transmitters being driven from the same motor 60.

Having described preferred embodiments of the invention, what is desired to be secured by Letters Patent and claimed as new is:

1. A transmitter comprising a single set of transmitting contacts operative to transmit either dots or dashes, a shaft carrying an actuating cam for said transmitting contacts, a continuously operating motor having a constantly engaged friction clutch operatively connected to said shaft, and means for controlling the operation of said shaft including a pair of stop members adapted to arrest said cam in differing relative positions with respect to said transmitting contacts to thereby cause the transmission of uniformly spaced impulses of uniform length or to arrest said cam in a position to transmit prolonged impulses of variable length and a single manually actuated lever controlling the operation of both stop members.

2. A telegraph transmitting system comprising a plurality of semi-automatic transmitters of the type set forth herein, a common drive shaft for said transmitters and a variable speed control interposed between each of said transmitters and said drive

shaft to thereby permit control of the speed of each transmitter independently of the speeds of the remaining transmitters.

3. A transmitter comprising a single set of transmitting contacts, operative to transmit either dots or dashes, a shaft carrying an actuating cam for said transmitting contacts, a continuously operating motor having a constantly engaged friction clutch operatively connected to said shaft, and means for controlling said shaft including a pair of toothed members carried by said shaft, stop members cooperating respectively with said toothed members, one being normally in engagement and the other normally disengaged therefrom, and a single manually actuated lever controlling both stop members to permit said shaft to rotate for any desired period or to arrest the shaft at will with the cam in differing relative positions with respect to said transmitting contacts, thereby causing either the transmission of uniformly spaced dot impulses of uniform length or the transmission of prolonged dash impulses of the desired lengths.

4. In a transmitter as set forth in claim 3, the actuating cam being provided with a plurality of symmetrically arranged cam elements, and each toothed member having teeth corresponding to said cam elements, the teeth on the two members being in staggered arrangement.

In testimony whereof I affix my signature.
WILLIAM G. FLUHARTY.