

June 8, 1943.

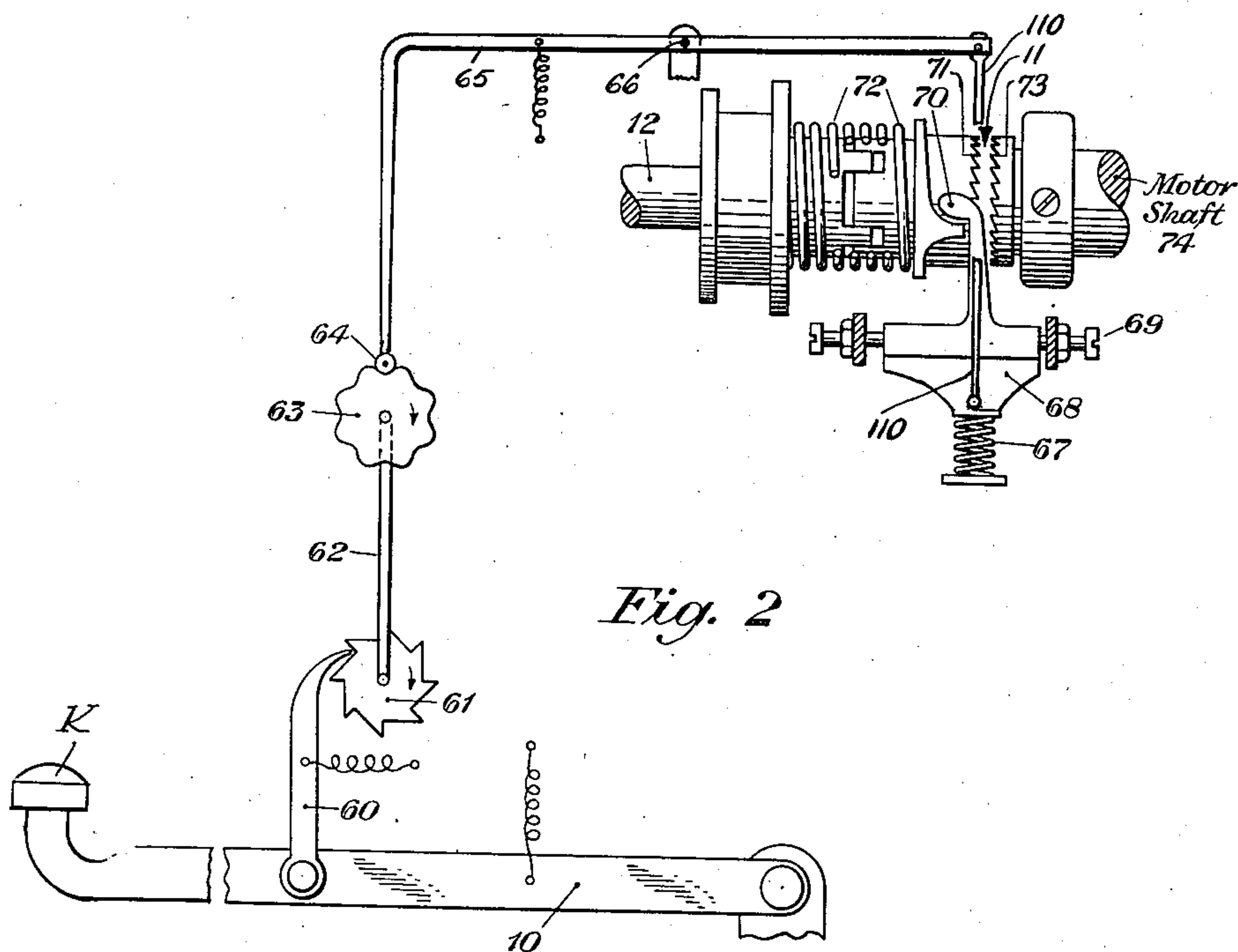
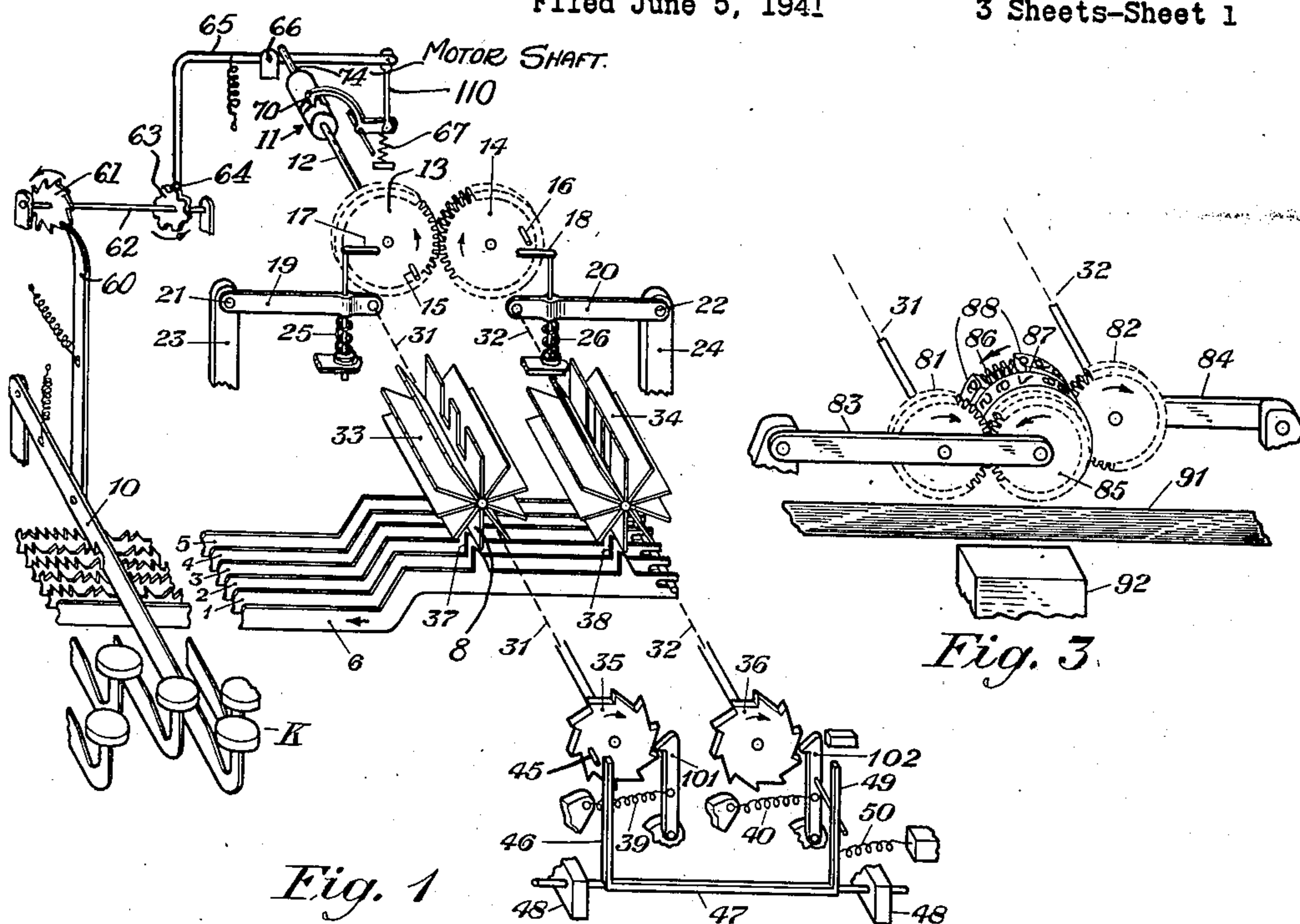
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2,321,418

TELETYPEWRITER NUMBERING SYSTEM

Filed June 5, 1941

3 Sheets-Sheet 1



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3 Sheets-Sheet 2

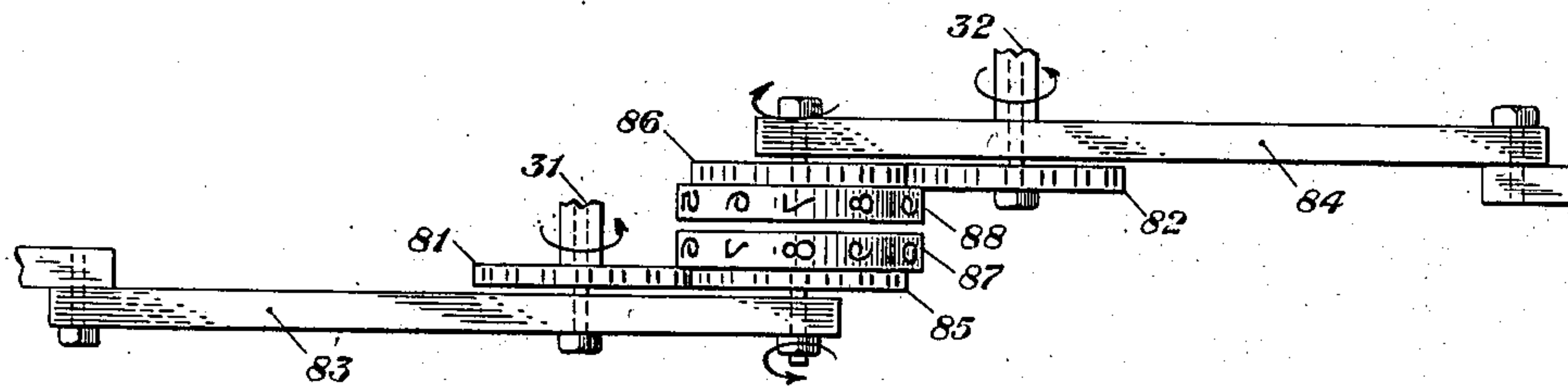


Fig. 4

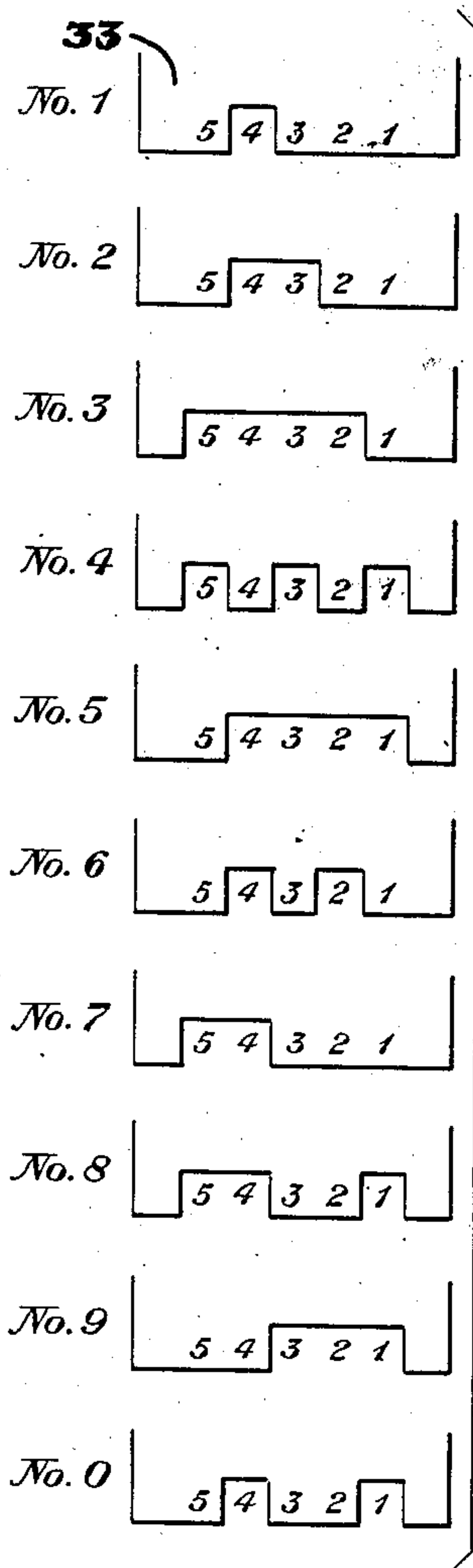


Fig. 5

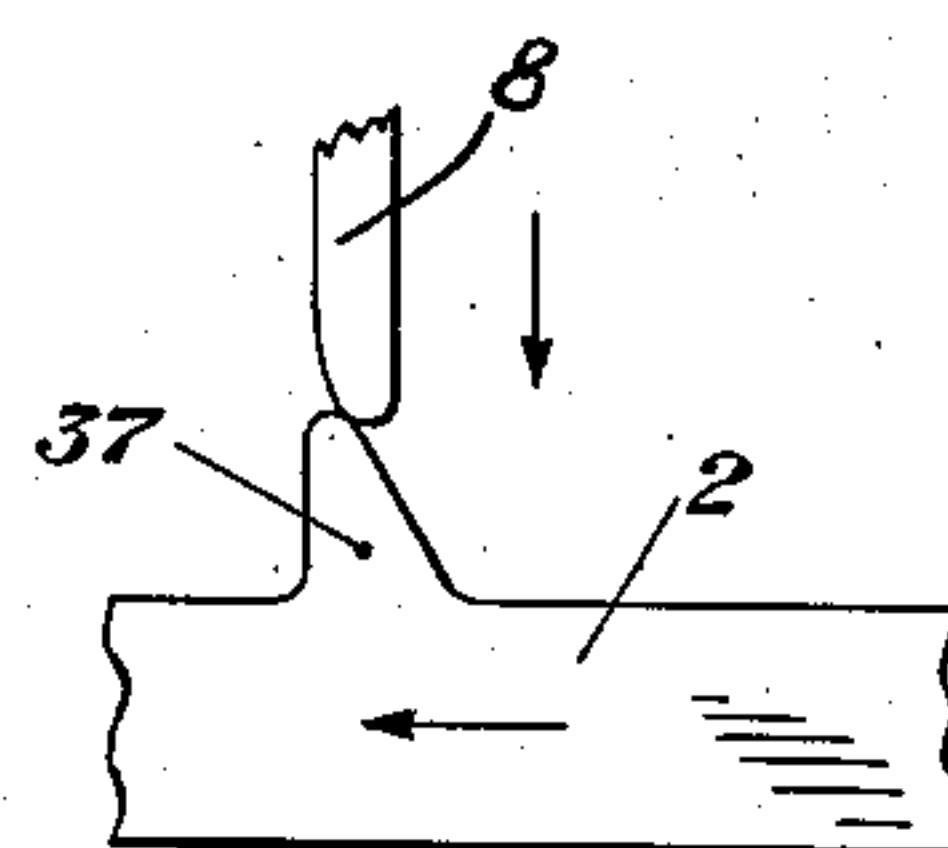


Fig. 6

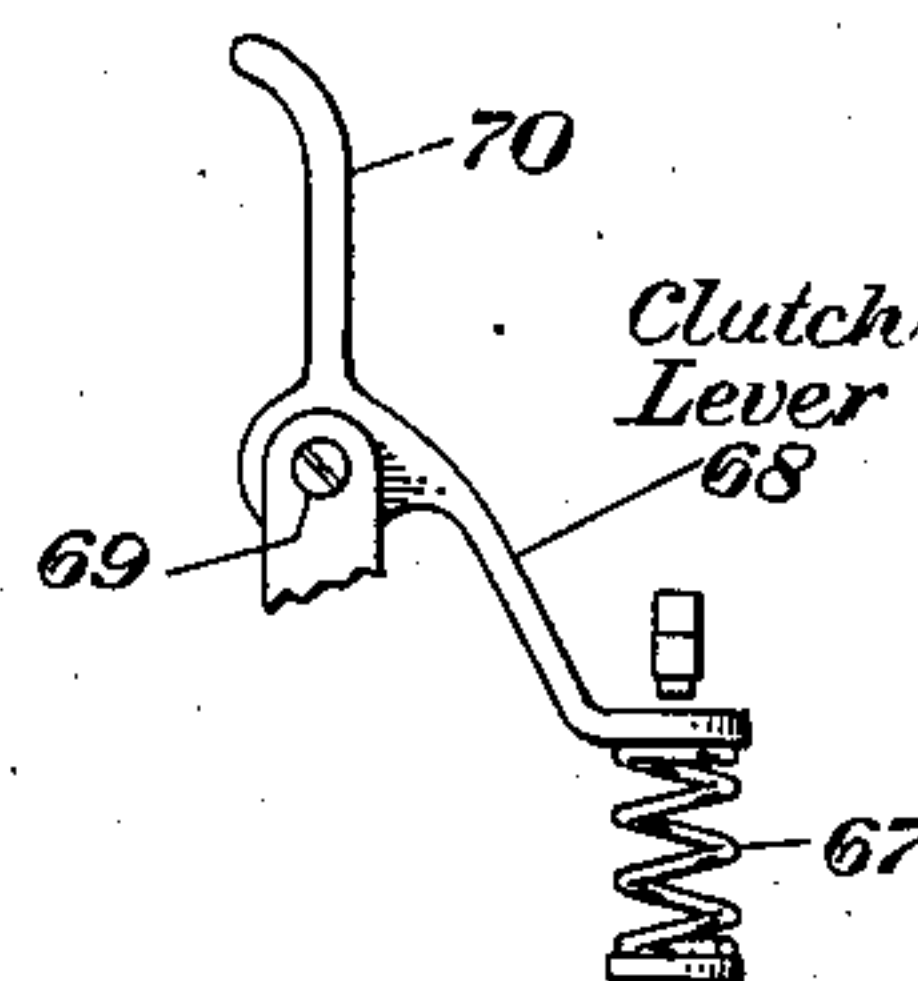


Fig. 7

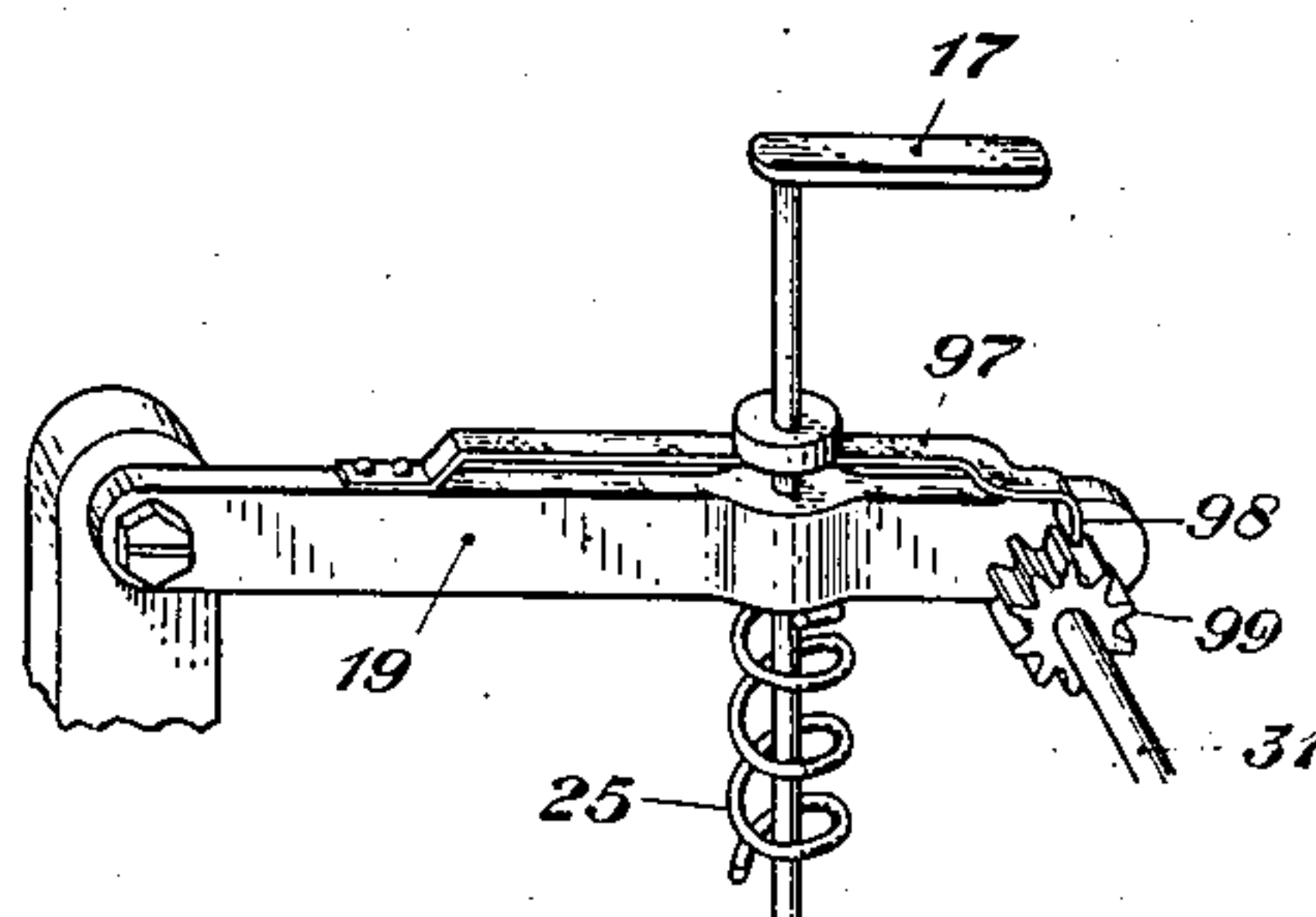


Fig. 8

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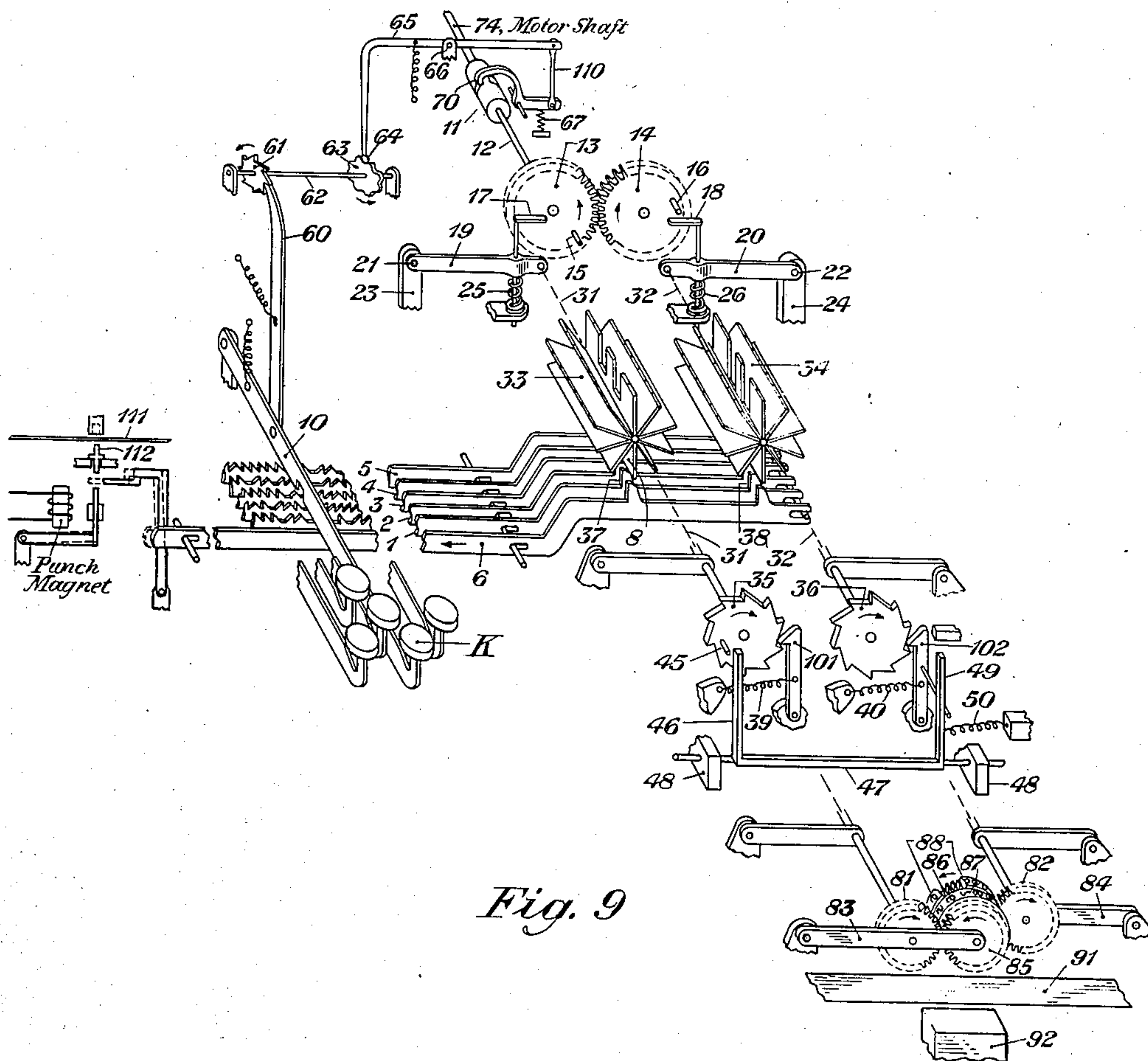
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TELETYPEWRITER NUMBERING SYSTEM

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3 Sheets-Sheet 3



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TELETYPEWRITER NUMBERING SYSTEM

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8 Claims. (Cl. 164—112)

This invention relates to teletypewriter systems and more particularly to apparatus for use in teletypewriter systems for serially numbering messages and/or for transmitting serial numbers consecutively with the various messages.

In present teletypewriter systems, it is customary for the operator to identify each message by a number individual to the message. This is generally done by the operator by writing a suitable number on each message, and checking off the number on a numbering sheet. It is thus necessary for the operator to keep a record of the numbers used, and it oftentimes happens that an incorrect number is assigned to a message or the same number is applied to two different messages.

To overcome this difficulty, it is the object of this invention to provide an arrangement in teletypewriter apparatus for automatically perforating serial numbers on the tape to identify the messages at the start of each of the various messages and/or to print the identifying serial numbers on the separate original messages.

This invention will be better understood from the detailed description hereinafter following when read in connection with the accompanying drawings in which Figure 1 illustrates in perspective one form of serial numbering apparatus for teletypewriter systems. Fig. 2 shows the clutch mechanism for actuating the apparatus in response to the operation of a key of the tape perforator, Figs. 3 and 4 illustrate means for printing serial numbers on the messages, Fig. 5 shows the formations of the teeth of the elements which are used to actuate the selector bars, Fig. 6 shows one of the toothed elements in relation to a selector bar, Fig. 7 shows a part of the clutch mechanism of Fig. 2, Fig. 8 illustrates the devices used for linearly moving the toothed elements of Fig. 1 without simultaneously rotating them, and Fig. 9 illustrates the general assembly of the apparatus of this invention.

Referring to Fig. 1, the reference character K represents one of the numerous keys of the keyboard of a teletypewriter perforator of well-known type, only a few of the other keys being shown merely for the sake of simplicity. The key K may be, for example, a special key used for perforating the symbol "Figs." in the tape 111 shown in Fig. 9. This special key is not the regular "Figs." key but an additional one which is depressed only at the start of each message. The lever 10 controlled by key K is positioned above five transverse selector bars designated 1 to 5 and above a universal bar designated 6.

The lever 10 is notched according to the requirements for the code "Figs.," that is, it will, when actuated by key K, slide the selector bars 1, 2, 4 and 5 to the left, the bar designated 3 remaining in its normal position, as is well known.

Upon the release of key K, the clutch mechanism 11 will be operated so as to rotate the shaft 12 upon which the gear wheel 13 is mounted. The mechanism interconnecting the key lever 10 and the clutch device 11 is shown in Figs. 1, 2, and 9 and will be described hereinafter. The wheel 13 is geared to another wheel 14 so that as wheel 13 rotates through one revolution in a counter-clockwise direction, wheel 14 will rotate one revolution in a clockwise direction. The wheels 13 and 14 carry pins 15 and 16 respectively which are employed to engage and depress members 17 and 18 which are fixedly mounted on levers 19 and 20, these levers being respectively pivoted at 21 and 22 in immovable supports 23 and 24 as shown. In other words, as pins 15 and 16 engage projections 17 and 18 at different times, the levers 19 and 20 will be respectively swung downward about pivots 21 and 22 against the resisting forces of springs 25 and 26, but after the pins 15 and 16 have passed members 17 and 18 and become separated therefrom, the springs 25 and 26 will act to return the levers 19 and 20 respectively to their initial positions.

The levers 19 and 20 carry shafts 31 and 32 upon which are mounted comb devices 33 and 34 and notched wheels 35 and 36, respectively, as well as gear wheels shown in Figs. 3, 4 and 9 which form part of a printer to be subsequently described. The comb devices 33 and 34 each include ten different comb elements or ribs which extend radially from the shafts 31 and 32 and are separated sequentially by equal arcs of 36 degrees. The various radial comb elements or ribs are separately shown in Fig. 5, each element or rib having the configuration corresponding to teletypewriter codes otherwise known as Baudot codes of the numerals zero to nine. These different elements are arranged about both shafts 31 and 32 in the order shown.

When the lever 19 is depressed, for example, the comb device 33 will be moved downwardly. Lever 19 is normally held up by spring 25 and likewise lever 20 is held up by spring 26. One of the elements or ribs of device 33 will engage certain of the projections 37 of the various selector bars 1—5 and cause the engaged selector bars to slide to the left in a well-known manner as indicated by the arrow. If, for example, the comb elements "4," shown in Fig. 5, is adjacent to the projections

37 when shaft 31 is moved downwardly, then the selector bars 2 and 4 will be advanced to the left, the other selector bars 1, 3 and 5 remaining unchanged in their normal positions. Likewise if the comb element "8" shown in Fig. 5, is moved downwardly with shaft 32 it will engage the similar projections 38 of certain of the selector bars 1 to 5, the selector bars 2 and 3 being advanced to the left while the other bars remain in their normal positions. Fig. 6 shows one of the comb elements designated 8 moving downwardly to engage the projection 37 of selector bar 2 so as to advance the bar 2 to the left.

The notched wheels 35 and 36 each have ten teeth or projections as shown. The teeth or projections of these wheels may engage latch levers 101 and 102. The latch 101 is held against the wheel 35 by a spring 39. The wheel 35 carries a pin 45 which may engage a bar 46, this engagement occurring once in each revolution of wheel 35. When bar 46 is so engaged, it causes the bar 47 to slide within fixed supports 48 toward the left, advancing another bar 49 to the left against the tension of a spring 50. In so advancing, latch 102 is permitted to engage the periphery of notched wheel 36 for rotating wheel 36 as will now be explained.

It will be observed that at each return or upward movement of shaft 31 of comb device 33 the latch 101 will cause the notched wheel 35 to rotate in a clockwise direction through 36 degrees. Wheel 35, which is therefore the "units" wheel, will rotate one-tenth of a revolution with each cycle of travel of shaft 31. The pin 45 is positioned adjacent to one of the teeth or projections of wheel 35 corresponding to the "units" digit No. 9. When pin 45 engages bar 46, the slide bar 47 will then be advanced so as to allow latch 102 to engage one of the teeth of wheel 36. Upon the next return or upward movement of shaft 32 of comb device 34, wheel 36 will be rotated in a clockwise direction. The wheel 36 therefore comprises the "tens" digit wheel, being rotated one-tenth as fast as wheel 35. After pin 45 releases bar 46, the slide bar 47 will be returned to its initial position under the influence of spring 50, carrying latch 102 back to its initial position away from wheel 36.

Figs. 1, 2 and 9 show the mechanism which interconnects the key lever 10 with the clutch mechanism 11 so as to provide a positive drive for the clutch mechanism generally designated 11 in Fig. 1. Upon release of the key K (of Fig. 1), the lever 10 will move upwardly, carrying with it a latch element 60. The latch element engages one of the teeth of a cam 61, thereby rotating the cam 61 through a predetermined part of one revolution with each upward movement of lever 10. Cam 61 is mounted on a common shaft 62 with a star wheel 63. The star wheel 63 supports a roller 64 which is affixed to one end of a lever 65 which is pivoted at 66. The roller 64 is used to "center" the star wheel 63 so that the roller is positioned between two adjacent projections of the star wheel when at rest. But as the star wheel 63 is rotated, it depresses the right hand terminal of lever 65 so as to move the arm 110 against a spring 67 affixed to clutch lever 68. Consequently the clutch lever 68 is rotated about its shaft 69 (see Fig. 7). The lever 70 is likewise rotated about shaft 69 as shown in Fig. 7. This releases the gripping member 71 so that spring 72 may apply pressure to advance member 71 to engage the plate 73. The plate 73 is coupled to a continuously rotating motor shaft 74. The en-

gagement of clutch elements 71 and 73 causes the shaft 12 to rotate for a complete revolution as already indicated hereinabove.

After the roller 64 has come to rest between adjacent teeth of wheel 63, the lever 65 will be returned in a counter-clockwise direction to its former position. The lever 70 will then be revolved so as to return the spring actuated plate 71 to its initial position where it is separated from plate 73 and is therefore stationary. The shaft 12 starts in rotation only when roller 64 rides over the crest or protecting surface of a tooth of the star wheel 63.

Figs. 3, 4 and 9 illustrate the shafts 31 and 32 supporting gear wheels 81 and 82 which are mounted in rotatable levers 83 and 84, respectively. These gear wheels mesh with corresponding gear wheels 85 and 86 which carry the "units" and "tens" embossed-type printing wheels 87 and 88, respectively. Wheels 87 and 88 rotate in the same directions as they are stepped around to compose the different serial numbers and the numerals thereon therefore are arranged in same orders. When the shafts 31 and 32 are moved downwardly, the levers 83 and 84 will carry the type wheels 87 and 88 with them to engage the type ribbon 91, a message paper (not shown) being interposed between the ribbon 91 and a platen 92.

Fig. 8 shows the apparatus for depressing the lever 19, for example, of Fig. 1 without rotating the comb device 33 as it engages the selector bars 1 to 5. Although not shown in Figs. 1 and 9 for the sake of simplicity, the Fig. 8 mechanism is part of the Fig. 1 and Fig. 9 arrangements. Here a spring 97 is fastened to lever 19, the spring having a finger 98 which engages the teeth of a gear wheel 99 mounted on shaft 31. The position of the finger 98 relative to the gear teeth is such that no rotation of the gear wheel 99 will occur during the downward translation of shaft 31. A similar arrangement (not shown) will of course be used for preventing the rotation of shaft 32 as it is moved downwardly.

In operating the apparatus of this invention, the original message about to be perforated by the attendant is inserted over the platen 92 of Fig. 3. The key K is then depressed. The selector bars 1, 2, 4 and 5 are advanced to punch characters corresponding to the symbol "Figs.", through the medium of punch bars such as 112 of well known type, in the tape 111 shown in Fig. 9. Key K is then released. The clutch mechanism (of Fig. 2) is then operated so as to rotate the wheels 13 and 14 through one complete revolution. Pins 16 and 15 carried by wheels 14 and 13, respectively, successively engage the lever members 18-20 and 17-19 and hence move the shafts 32 and 31 together with the comb devices 34 and 33 downwardly, but these shaft translations are performed without any accompanying rotation. After the elements of the comb devices 34 and 33 actuate the selector bars to perforate the tape for the "tens" digits and the "units" digits successively, the shafts 32 and 31 are each promptly returned to their initial positions. Although the selector bars 1 to 5 are advanced due to mechanical pressure from the elements of the comb devices 33 and 34, the selector bars are returned by the action of springs (not shown). Thus the selector bars are slid to the left in accordance with the characters conveyed by the comb devices 33 and 34 and consequently the "tens" digit is punched in the tape 111 and at the same time printed on the message blank and this

is then followed by similar action of the "units" digit mechanism.

With each rotation of wheel 35 through 36 degrees, there is a change in the "units" digit. When No. 9 is reached by rotation of wheel 35, the bar 47 is slid to the left and is held there by virtue of the engagement of the pin 45 with bar 46. The latch lever 102, however, will engage one of the teeth of wheel 36 and wheel 36 will revolve through an angle of 36 degrees to interpose the next "tens" digit upon the upward movement of shaft 32.

It will be understood that while two shafts such as 31 and 32 and the accompanying apparatus are shown for perforating the tape and printing numbers up to 99, three or more such devices and accompanying apparatus may be employed, if desired, to perforate the tape and print numbers consecutively up to any desired limit, all of which is within the scope of this invention. It will also be understood that a single such device may alone be employed if desired in place of the two shown and that said device may include any number of different elements, even more than the ten shown in Fig. 5 within the scope of this invention.

While this invention has been shown and described in certain particular embodiments merely for the purpose of illustration, it will be understood that the general principles of this invention may be applied to other and varied organizations without departing from the spirit of the invention and the scope of the appended claims.

What is claimed is:

1. In a teletypewriter apparatus, the combination of means including a keyboard having a plurality of keys to be operated to perforate tape, and means responsive to the release of a predetermined key of said keyboard to perforate the tape in accordance with the Baudot code of a predetermined number, said means including a unitary device having a plurality of similar elements formed according to the codes of different numbers to be perforated in the tape, the elements of said unitary device being arranged so that the Baudot codes of said numbers are in consecutive order and means to displace said unitary device from its normal position and thereafter rotate said unitary device through a predetermined angle to expose a different element of said unitary device so as to perforate the tape in accordance with the code of the exposed element.

2. In a teletypewriter apparatus, the combination of a plurality of interrelated cylindrical devices each of which includes a plurality of separate radial elements, said elements being formed so as to correspond to the teletypewriter codes of different numerals, and key-controlled means for rotating said devices by different predetermined amounts, said key-controlled means including means for depressing both of said devices in a predetermined order.

3. In a teletypewriter apparatus having a keyboard which may be operated to perforate tape, the combination of a cylindrical device which

includes a plurality of radial elements, each radial element being formed so as to correspond to the code of a different numeral, means responsive to the operation of a selected one of the keys of said keyboard to move the cylindrical device bodily through a predetermined distance, and means to return said cylindrical device to its initial position and rotate said cylindrical device through a predetermined angle.

4. In a teletypewriter apparatus having a keyboard which may be operated to perforate tape, the combination of a unitary device having a plurality of similar elements each of which is formed to correspond to the teletypewriter code of a different numeral, and key-controlled means for advancing said device from its initial position to perforate the tape in accordance with the code of one of said numerals, said key-controlled means including means for returning said device to its initial position and for rotating said device through a predetermined angle.

5. In a teletypewriter apparatus, the combination of a keyboard, a plurality of bars operated by the keys of said keyboard to control the perforation of tape in accordance with the bars selected by the keys, a plurality of rotatable cylindrical devices each of which comprises a plurality of similar radial elements formed so as to correspond to the teletypewriter codes of different characters, and means controlled by a selected key of said keyboard to depress both cylindrical devices and thereafter return said cylindrical devices to their initial positions, said means including means to rotate said cylindrical devices through predetermined angles, whereby said keyboard apparatus will operate said bars in accordance with the code formations of the elements of said cylindrical devices.

6. In a teletypewriter tape perforator, the combination of a key, a unitary device having a plurality of similar elements formed so as to correspond to the Baudot codes of different numerals, the Baudot codes formed in said elements representing the different numerals being arranged consecutively, and means controlled by said key to actuate said unitary device so as to progressively expose a different element of said unitary device with each key actuation to perforate the tape in accordance with said numeral combinations in consecutive order.

7. In a teletypewriter tape perforator, the combination of a plurality of interrelated devices each of which includes a plurality of separate elements formed so as to correspond to teletypewriter codes of different characters, and key-controlled means for rotating said devices at different speeds, said key-controlled means including means for depressing both of said devices in a predetermined order to perforate the tape in accordance with the codes of said characters.

8. An arrangement according to claim 1, including also means responsive to each release of said key to separately print the number corresponding to the code.

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