July 14, 1931. R. F. DIRKES 1,814,902

TELEGRAPH SYSTEM FOR DIVIDING RECEIVED INTELLIGENCE INTO GROUPS

Filed Jan. 31, 1930 5 Sheets-Sheet 1

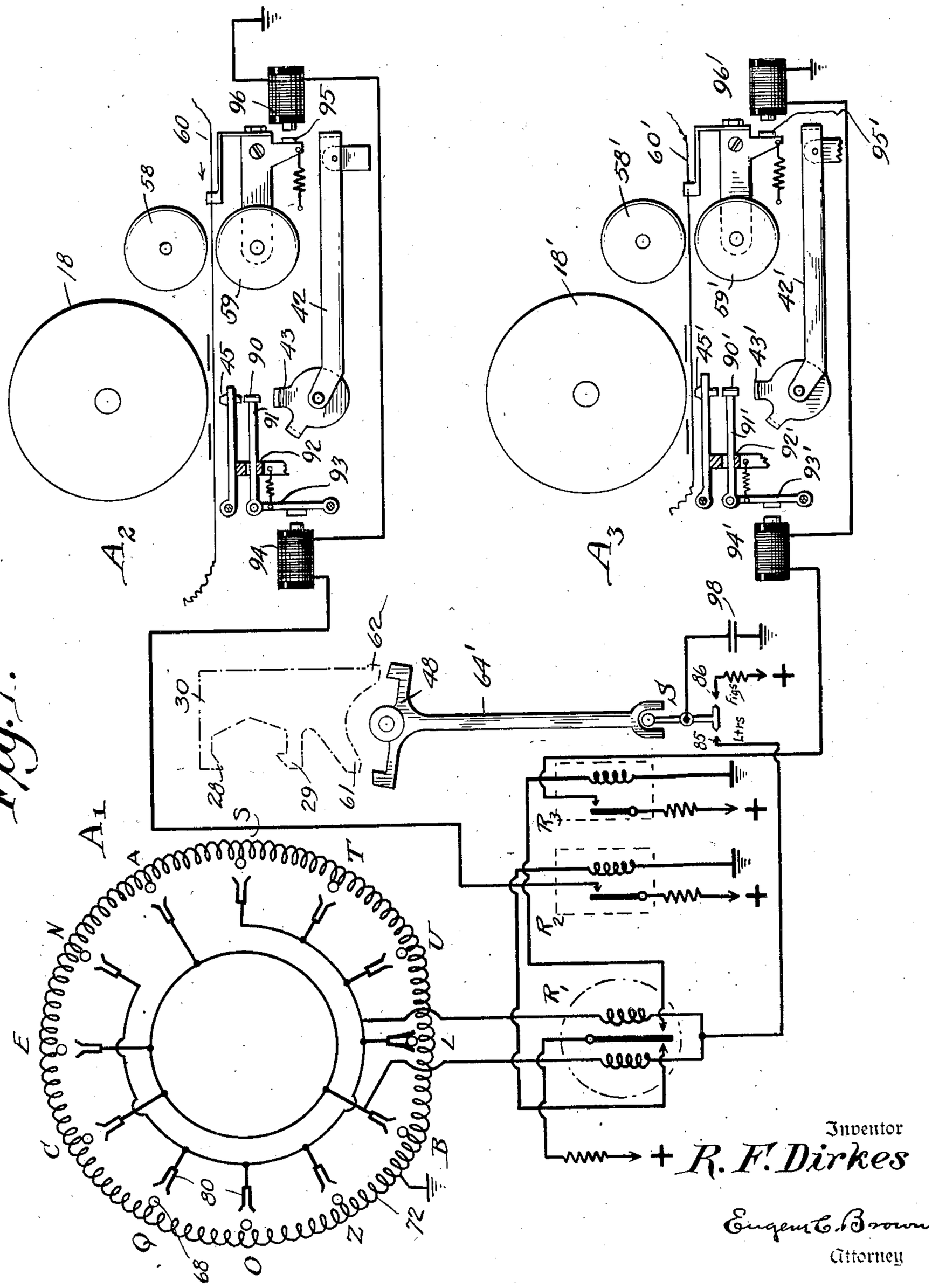

Fig. 1.

Inventor
R. F. Dirkes

Eugene C. Brown
Attorney

July 14, 1931. R. F. DIRKES 1,814,902

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Filed Jan. 31, 1930 5 Sheets-Sheet 2

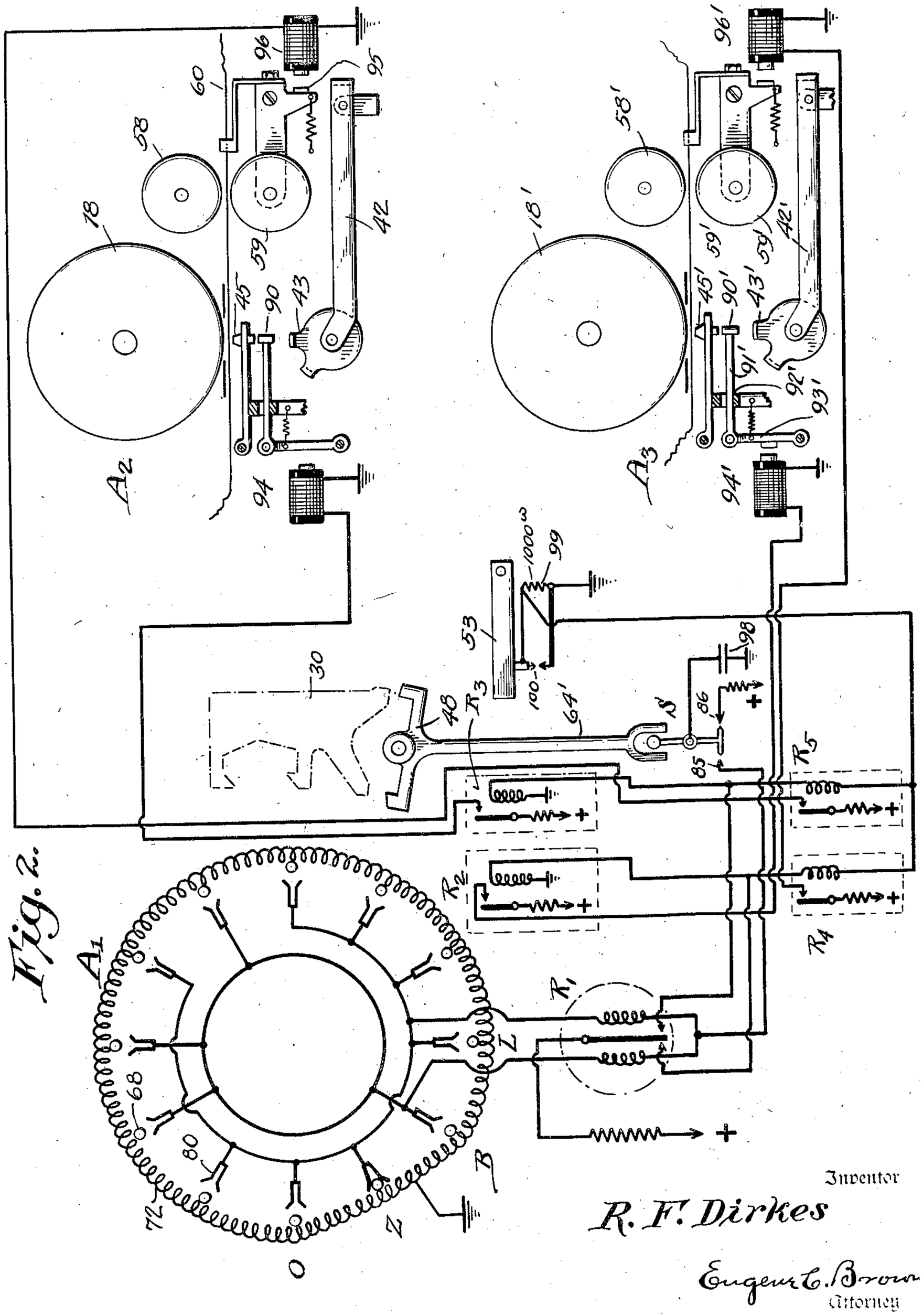


Fig. 2.

Inventor

R. F. Dirkes

Eugene C. Brown

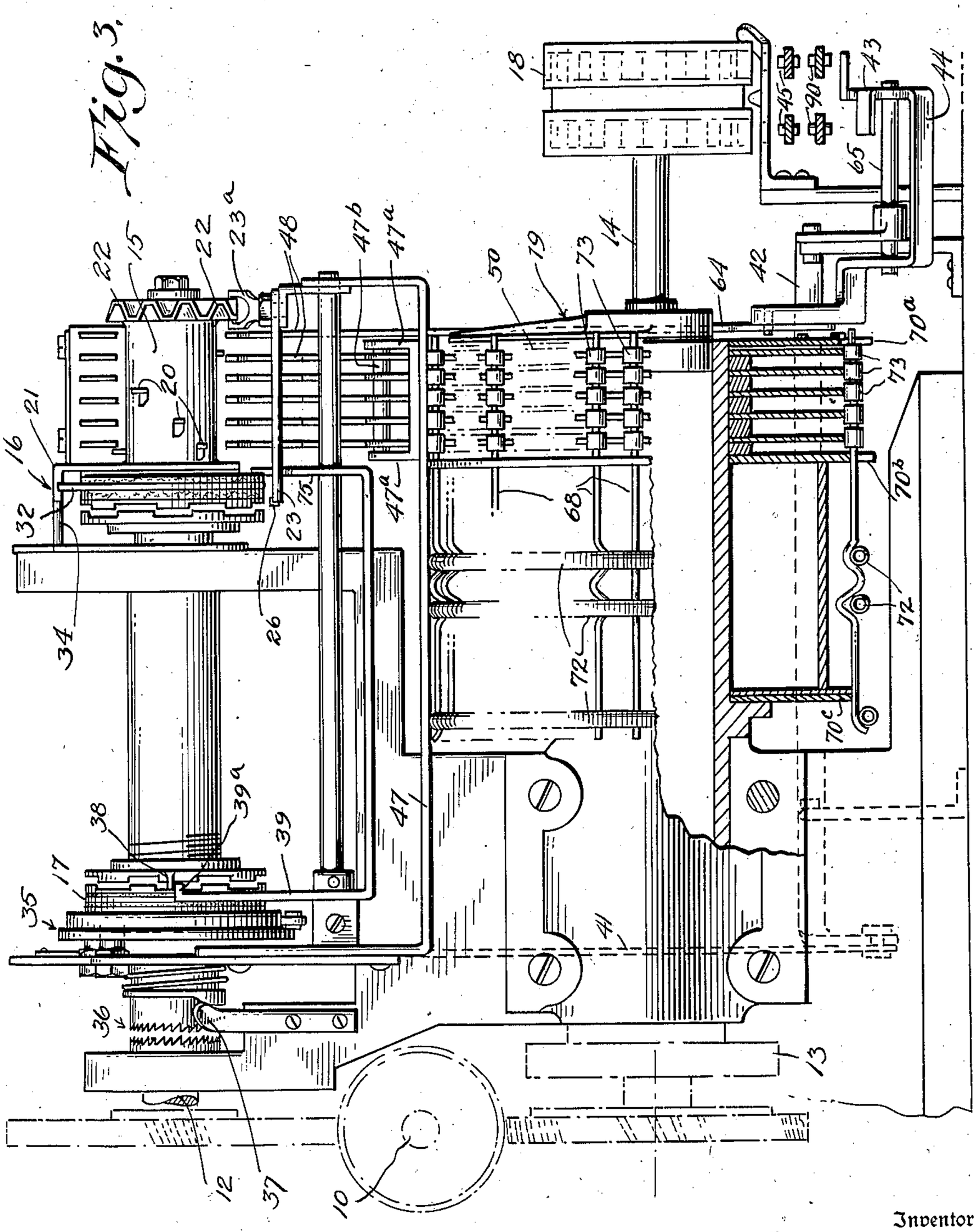
Attorney

July 14, 1931. R. F. DIRKES 1,814,902

TELEGRAPH SYSTEM FOR DIVIDING RECEIVED INTELLIGENCE INTO GROUPS

Filed Jan. 31, 1930 5 Sheets-Sheet 3

Fig. 3.



Inventor
R. F. Dirkes

Eugene C. Brown
Attorney

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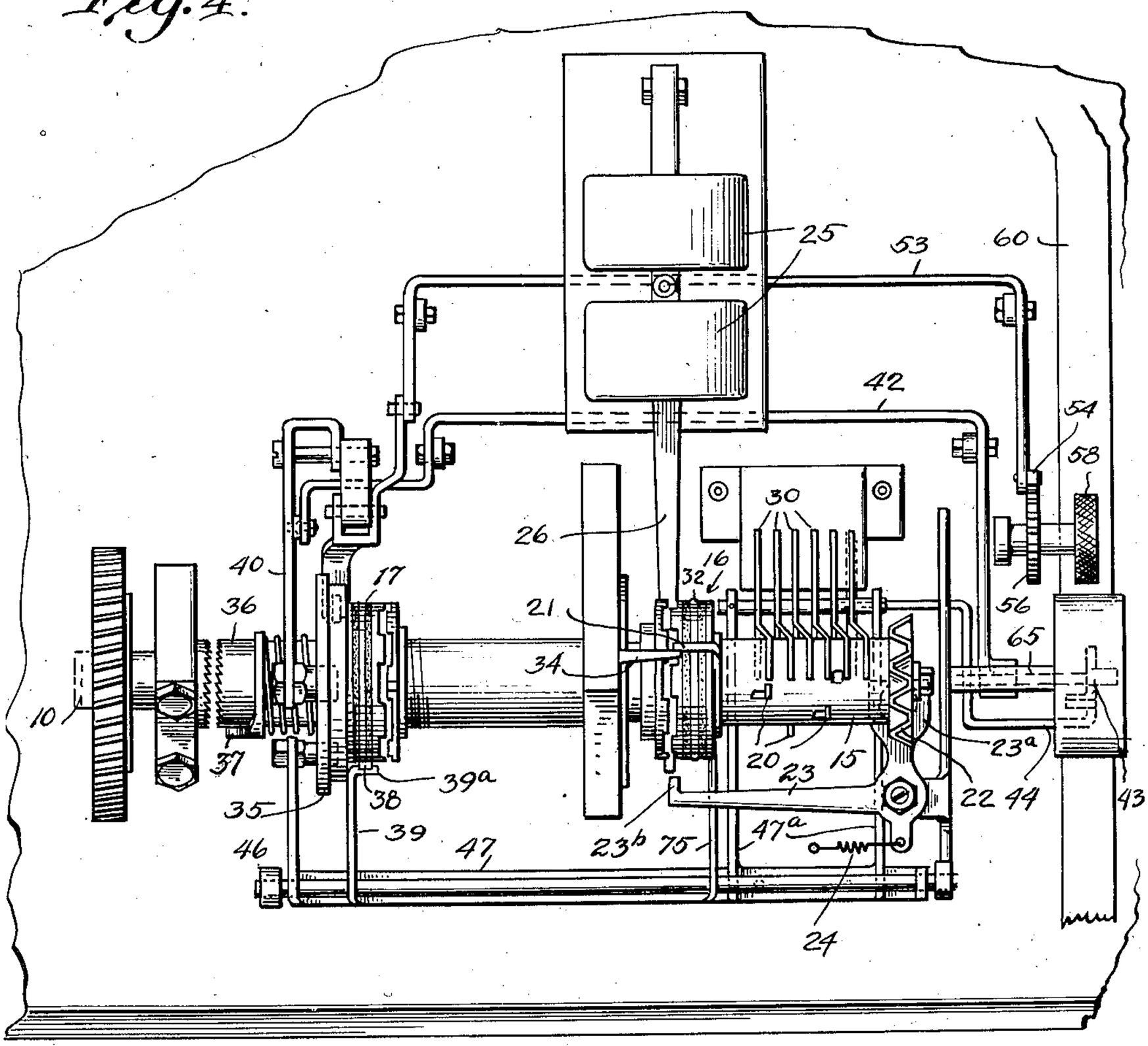
TELEGRAPH SYSTEM FOR DIVIDING RECEIVED INTELLIGENCE INTO GROUPS

Filed Jan. 31, 1930 5 Sheets-Sheet 4

Fig. 4.



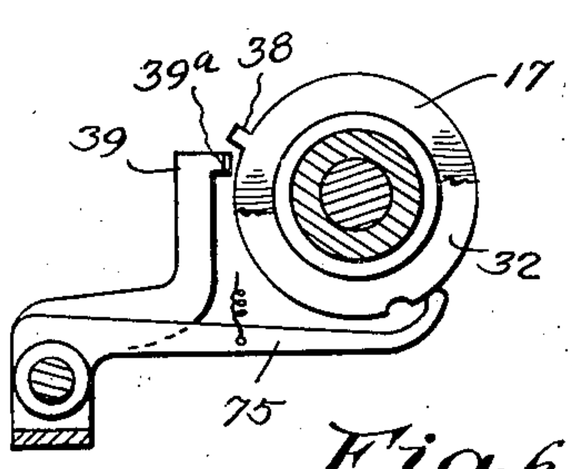


Fig. 6.

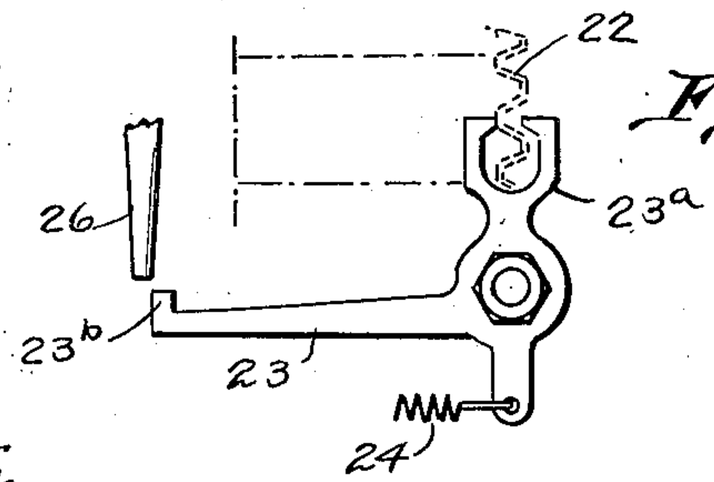


Fig. 7.

Inventor

R. F. Dirkes

Eugene C. Brown

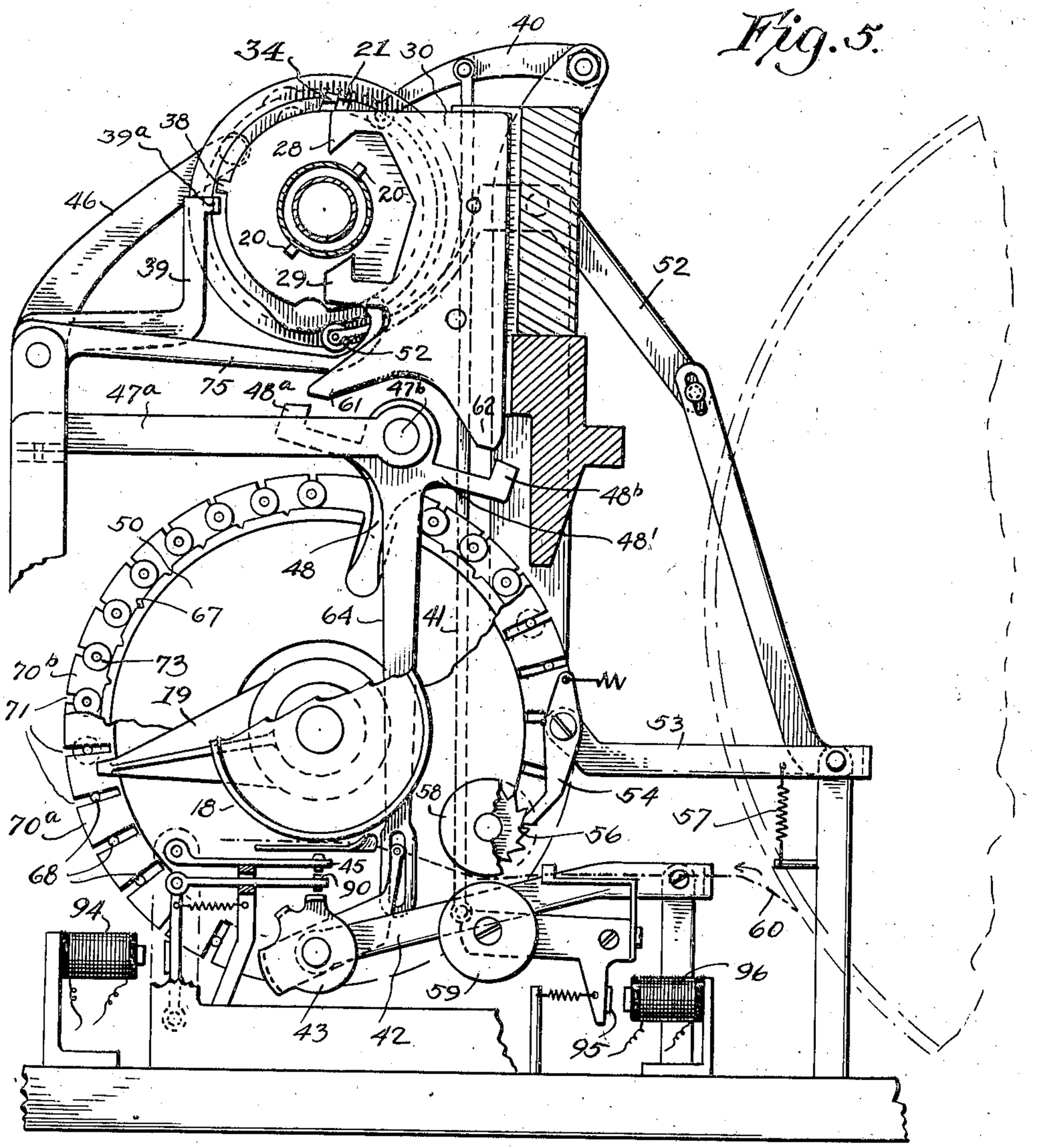
Attorney

July 14, 1931. R. F. DIRKES 1,814,902

TELEGRAPH SYSTEM FOR DIVIDING RECEIVED INTELLIGENCE INTO GROUPS

Filed Jan. 31, 1930 5 Sheets-Sheet 5

Fig. 5.



Inventor
R. F. Dirkes

Eugene C. Bowen
Attorney

Patented July 14, 1931 1,814,902

UNITED STATES PATENT OFFICE

ROBERT F. DIRKES, OF JAMAICA, NEW YORK, ASSIGNOR TO THE WESTERN UNION TELEGRAPH COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK

TELEGRAPH SYSTEM FOR DIVIDING RECEIVED INTELLIGENCE INTO GROUPS

Application filed January 31, 1930. Serial No. 424,966.

This invention relates to a system for dividing received telegraphic intelligence into groups recorded upon separate printers. While it is particularly adapted for use in dividing stock and market quotations between different operators, it is applicable to various other uses.

With the operation of the automatic brokerage quotation boards recently put into service it has become the practice, due to the speed of transmission needed, to divide the transmitting element of the quotation board system into two parts, each one being controlled by a separate operator and each transmitting unit transmitting quotations in which the first letter of the stock designation begins with the part of the alphabet allotted to that particular transmitting unit. In other words should two transmitting elements be used to operate the full brokerage board, it is customary for one operator through his associated mechanism to send all quotations with stock designations beginning with letters from A to J and the other to send all stock designations beginning with letters from K to Z. At the present time, it is the practice to have a secondary operator, called an editor, at each operating position who crosses out the stocks which are not to be sent by his particular operator. This method of operation is not all satisfactory, due to the fact that, first, it requires an extra man to cross out quotations not needed, and second, due to the speed of the received quotations, he is very liable to miss a quotation which should have been crossed out and thereby disconcert the sending operator. Furthermore, the position which he must occupy in order to cross out said stocks naturally obscures the operator's vision for fast retransmission.

The object of my invention is to provide a system which automatically edits the telegraphically received intelligence and records on each telegraph printing apparatus only those quotations or intelligence characters designed for that particular associated operator. I have thus obviated the necessity for the editor heretofore required to cross out the portions of the received intelligence which is not to be sent to any particular operator or receiving printer.

In the following description of my invention I shall refer to the accompanying drawings in which—

Figure 1 is a diagrammatic illustration showing one embodiment of the invention;

Figure 2 illustrates a modification of the arrangement shown in Fig. 1;

Figures 3 and 4 are side elevation and top plan views respectively, of a printing telegraph machine known to telegraph engineers as a teletype ticker;

Figure 5 is an end elevation of the machine illustrated in Figs. 3 and 4, showing an embodiment of my invention applied thereto;

Figures 6 and 7 are detail views of certain parts hereinafter referred to.

The printing telegraph machine which I have selected for the purpose of illustration is of the same general type as that disclosed in the Creed Patent No. 1,639,213. It will be obvious that my invention is not dependent upon any particular printing telegraph machine but may be used in association with various types of machines.

I will first describe the printing telegraph machine illustrated in Figs. 3, 4 and 5. This type of telegraph machine is a motor driven typewheel tape printer. The operation of the printer is controlled by combinations of positive and negative impulses transmitted over the line to which the printer is connected. All of the operations of the printer are determined by movement of the armature of a polarized magnet actuated by the line impulses.

The mechanism of the tape printer is operated from the shaft 10 of a motor, not shown, which is geared to the shaft 12 of the selector cam drum and the typewheel shaft 14. The cam drum 15 is driven through a friction clutch 16 and the printer press lever and tape feed mechanism are actuated through a friction clutch 17. The type wheel 18 is driven through a friction clutch on the shaft 14 as is also the typewheel stop arm 19.

The selector cam drum 15 consists of a hollow cylinder with twelve cam lugs or fingers 20 projecting from its outer surface. Six of

these cams are "marking" cams and six are "spacing" cams. Fastened to the rear of the cylinder is an L-shaped stop arm 21. Fastened to the front end of the cylinder is a crimped disk, called a "flutter cam" 22 having fourteen crimps, seven projecting rearward and seven forward. The flutter cam passes through the forked end 23ª of the flutter lever 23.

The selector cam drum is slidable on a sleeve on the shaft 12, between two stops. A spring 24 attached to the flutter lever tends to move the cam drum to the right against the front stop. The rear end of the flutter lever is provided with a lug 23ᵇ which engages the end of the armature 26 of the selector polarized magnet 25 when the armature is in "marking" position. When the armature rests against the end of the flutter lever and prevents pivotal movement thereof, rotation of the cam drum will cause the drum to be moved backward and forward by the action of the flutter cam as it passes through yoke 23ª. This causes the marking cams 20 to be in alinement with the lower marking arms 29 of the selector levers 30 at the instant that each cam is passing over the end of the corresponding marking arm. When the armature is moved to the left in spacing position, the flutter lever is free to move and the cam drum will be slid to the right against its front stop. The flutter cam will cause the flutter lever to vibrate in and out as the cam drum is rotated. When the selector cam drum is in this position against its front stop, the spacing lugs or cams 20 will be in alinement with the upper spacing arms 28 of the selector levers.

The stop arm 21 attached to the rear end of the cam drum has a horizontal portion which passes through a slot in the selector friction disk 32 so that the drum rotates with the disk.

When the cam drum is nearing the end of its revolution and the stop signal is received, the flutter lever will be against the end of the armature thus causing the cam drum to be shifted to the left against its rear stop. This will cause the stop arm to project far enough through the slot in the friction disk to be engaged by the stationary stop lug 34. When the next start signal is received, the armature 26 will move to the left into spacing position, releasing the flutter lever and permitting the cam drum to move to the right against its front stop. This will disengage the stop arm 21 from the stop lug 34 and permit the drum to revolve.

The operating cam 35 is a combined internal and external cam, the transfer and printing bail levers being controlled by the internal surface and the tape feed bail by the external surface. The operating cam is driven by two clutches. A friction clutch 17 initiates the rotation and after the cam has rotated a few degrees a jaw clutch 36 engages and carries the cam nearly to the end of its revolution where it is disengaged by the lug 37, while the friction clutch 17 continues to drive the cam until it is stopped by a projection 38 on the cam striking against the inner end 39ª of the cam release bail arm 39.

Shortly after the start of the rotation of the operating cam 35, the roller on the end of the printing bail lever 40 rides to the peak of the internal cam, thus lifting the rod 41 and rocking the printing bail 42 carrying the printing hammer 43 and causing the hammer striker 45 to press the tape against the type-wheel 18, thereby printing a character. As the printing bail roller rides down the cam, the roller on the end of the transfer bail lever 46 is riding up on the cam and as it reaches the peak, the transfer bail 47 is rocked to force the transfer levers 48 against the selector levers 30, whereby the character selection previously set up in the selector levers is transferred to the code disks 50. While the transfer bail roller is riding to the peak of the internal cam, the roller on the end of the feed bail lever 52 is riding up on the external cam. The motion transmitted through the lever 52 rocks the feed bail 53 and causes the feed pawl 54 to move upward and engage the next tooth of the feed ratchet 56. Then as the roller on the lever 52 rides down the cam, the feed bail spring 57 moves the feed pawl downwardly, thus stepping the feed ratchet one tooth and through the medium of the feed wheel 58 and the pressure wheel 59 moves the tape 60 forward one letter space.

The selector levers 30 are located at one side of the selector cam drum with their arms 28 and 29 projecting above and below the drum so that they can be moved to either the spacing position or the marking position by the lugs or cams 20 on the selector drum. The levers are engaged by interposed flat springs to hold them in selected position until the selection has been transferred to the transfer levers.

The selector levers have four arms, the upper selecting arms 28 and 29 and lower transfer arms 61 and 62. The ends of the selecting arms are offset with respect to each other, the lower or marking arms 29 being offset toward the back and the upper or spacing arms 28 being offset toward the front of the printer. This is done so that when the marking lugs or cams are alined with the marking arms, the spacing cams will pass to the rear of the spacing arms 28 and vice versa, when the spacing cams are alined with the spacing arms, the marking cams will pass to the front of the marking arms.

The two lower arms of the selector levers 30 are located above and in line with the transfer levers 48, so that when the transfer levers are moved upward by the rocking movement of the bail 47 and the arms 47ª

which carry the pin 47[b] upon which the transfer levers are mounted, either the lug 48[a] or the lug 48[b] of the transfer levers will strike against the corresponding arm 61 or 62 of the selecting levers, depending upon whether the corresponding selecting lever is in marking or spacing position. Thus the selection set up in the selector levers by the lugs or cams 20 on the selector drum, will be transferred by the movement of the transfer levers 48 to the code disks 50. It will be noted that while there are six transfer levers 30, there are only five code disks 50. The sixth transfer lever 48′ is provided with a depending shift arm 64 which determines whether letters or figures shall be printed.

The printing hammer 43 is provided with oppositely directed striking lugs offset from each other which are brought alternately into alinement with either the letters striking hammer or the figures striking hammer as the shift arm 64 is moved in one direction or the other and thereby rocks the yoke 44 on the pivot pin 65 carried on the end of the printing bail 42.

The five code disks 50 are provided with a series of notches 67 around their periphery and above these notches extend stop pins 68 which are held in slots 71 in three guide disks 70[a], 70[b] and 70[c] under the tension of circular coil springs 72 which press the pins against the edges of the disks. The friction of the pins upon the disks is minimized by small rollers 73 placed on the pins. The code disks can be rotated slightly to either of two positions. The counter-clockwise position is the "marking" position while the opposite position is the "spacing" position. With the code disks set in any particular combination, there will be one and only one series of notches which will be alined to permit the corresponding pin 68 to be moved by the springs into said alined notches and into the path of the typewheel stop arm 19, thus determining the code character to be printed.

The typewheel 18 and typewheel stop arm 19 are fixed to the typewheel shaft 14, the latter being driven from the shaft 10 of the driving motor through suitable gears and a friction clutch 13. When the stop arm 19 is engaged by a stop pin 68, the friction clutch permits the stopping of the typewheel to print a character.

The functions of the various parts and mechanism of the printer will be understood from the previous detailed description but it may be well to follow through the complete operation of the printer in selecting and printing a character. Suppose, for instance, that the letter "Y" is being transmitted over the line to the printer. The transmitting distributor at the distant end of the line first sends out a "start" impulse which is always "spacing". This impulse is received by the coils 25 of the polar magnet and causes the armature 26 to move to the left or spacing side and away from engagement with the flutter lever 23. This permits the flutter lever, by the action of its spring 24, to move the selector cam drum 15 toward the right against its front stop, thereby disengaging the stop arm 21 from the stop lug 34 thus initiating the rotation of the selector cam drum 15. The next impulse is a "marking" impulse, which moves the armature 26 to the right or marking side. As the cam drum rotates, the flutter lever will be moved outward by the flutter cam thus permitting the end of the armature to move into the path of the lug 23[b] of the flutter lever and block its further movement. When the flutter lever is thus blocked by the armature, the flutter lever fork 23[a] will move the drum as it rotates, so that the No. 1 marking lug on cam 20 on the drum will be moved into alinement with the marking arm 29 of the selector lever 30 and the cam lug will therefore shift the selector lever to the marking position.

The next impulse of the "Y" selection is spacing. The armature 26 therefore moves to the spacing side, releasing the flutter cam lever and permitting the cam drum to move to its front stop. Hence No. 2 spacing cam lug 20 will be in line with No. 2 selector lever and as the drum revolves, the No. 2 selector lever will be shifted to spacing position.

The third impulse of the "Y" selection is marking, causing the armature 26 of the selector magnet to move again to its marking side and hence as the third marking cam 20 approaches the marking arm 29 of the third selector lever the flutter cam will move the flutter lever outward, thus permitting the armature to slip under the end of the lug 23[b] and block the movement of the lever. As the drum rotates, the flutter lever being blocked, the flutter cam 22 will cause the cam drum to move toward the left bringing the third marking cam into alinement with the marking arm 29 of the third selector lever and moving it to marking position.

The fourth impulse is a spacing impulse and consequently the armature 26 will be moved to the spacing side, releasing the flutter lever and permitting the No. 4 spacing cam 20 on the selector drum to engage the spacing arm 28 on the fourth selector lever and shift it to spacing position.

The fifth impulse is marking and consequently the armature 26 will swing to the marking side and will block the flutter lever thereby causing the fifth marking cam lug 20 to move the fifth selector lever into marking position.

The sixth impulse is a spacing impulse and consequently the sixth selector lever will be moved to the spacing position in the manner previously described.

After the reception of the sixth impulse, the stop impulse is transmitted from the dis-

tant end. This impulse is always "marking" and causes the armature 26 to block the flutter lever 23 so that the cam drum will be moved toward the left and just as one revolution is completed, the stop arm 21 strikes the stop lug 34 thereby stopping the rotation of the cam drum which will remain at rest until the reception of the next start impulse.

During the rotation of the selector cam drum as just described, and after the reception of the fourth impulse, a depression in the edge of the selector friction disk 32 comes opposite the end of the cam release bail 75, thus rocking the bail and removing the lug 39[a] on its opposite arm from engagement with the lug 38 on the friction clutch 17 thereby releasing the operating cam 35 and permitting it to rotate. Shortly after the reception of the fifth selecting impulse, the operating cam 35 has revolved far enough to actuate the lever 40 and cause the printing bail 42 to actuate the printing hammer 43 and print the character on the tape. However, the letter or figure which is printed will not be the one just selected but will be the character selected by the previous rotation of the cam drum.

Following the sixth impulse, the operating cam 35 has reached the position where it actuates the lever 46 and causes the transfer bail 47 to lift transfer levers 48 upwardly so that their lugs 48[a] and 48[b] will strike one or the other of the arms 61 and 62 of the corresponding selector levers, thereby transferring the code combination which has been set up on the selector levers by the cam lugs on the cam drum, to the code disks 50. At this time, the selector cam drum has been stopped by the engagement of the stop arm 21 with the stop lug 34, but the operating cam 35 continues to revolve, thereby actuating the lever 52 connected to the tape stepper bail 53 and causing the spacing of the tape for the previous letter before the cam completes its rotation and is stopped by the engagement of the lug 38 with the lug 39[a] of the cam release bail arm. The printing of the letter "Y", the selection of which has just been described does not take place until the next selection is received and the cam drum has revolved far enough to release the operating cam.

When the code selection was transferred from the selector levers 30 through the transfer levers 48 to the code disks 50, the shifting movement of these code disks, in assuming their new positions, caused the previously selected pin which was at that time holding the typewheel stop arm to move outward thereby permitting the stop arm and type wheel to revolve until the stop arm struck against the stop pin corresponding to the "Y" selection which was permitted to move inward, due to the alinement of the notches in the code disks being in this position. It will be clear, therefore, from the above description that a character which is selected during one revolution of the cam drum is not printed until the next revolution of the cam drum. In other words, while one character is being selected, the preceding character is being printed.

I have shown schematically in Fig. 1, an arrangement of apparatus embodying telegraph machines of the type previously described, for dividing the received stock quotations or other intelligence into separate groups or divisions and recording the same upon two or more telegraph printers or receiving instruments. The division is controlled by the initial character in each group of characters, such as the abbreviations used to designate certain stocks. It is customary for one operator to send all quotations with stock designations beginning with letters from A to J and the other to send all stock designations beginning with letters from K to Z. If desired, a special code combination could precede each group when switching is necessary but in this description the first letter of the actual intelligence characters controls the switching means.

All of the quotations are received by the main distributing receiving instrument, indicated diagrammatically at A_1 by one of the circular tensioning springs 72 and stop pins 68. This machine differs from the machine shown in Figs. 3, 4 and 5, in that the typewheel 18 and typewheel stop arm 19 are omitted. In place of these I provided two or more series or groups of contacts, preferably in the form of spring clips 80, one for each of the stop pins 68, arranged in a circle and positioned so that the stop pin which is permitted to move inwardly by the alined notches in the five selector disks which have been selected by any code combination, will enter the corresponding spring clip and thereby close an electrical circuit for the purpose hereinafter described. The pins are grounded by grounding one or more of the circular spring bands 72. A polar relay R_1 of the Wheatstone type has one end of each coil connected to the respective groups of spring contacts and a common connection from the other terminals of the coils connected to a contact 85 of switch S, the other terminal 86 being connected to positive battery. Relays R_2 and R_3 are the usual non-polar relays. The position of the contact arm of switch S is controlled by switch lever 64′ which is substituted for the shift arm 64, connecting the sixth transfer lever and actuated by the sixth pulse of the code combination.

I have indicated diagrammatically two telegraph printers A_2 and A_3 between which the stock quotations or received intelligence is to be divided, these machines being of the type illustrated in Figures 3, 4 and 5, the

latter showing the relative position and arrangement of said novel features of my invention which are indicated diagrammatically in Figure 1. In telegraph printers as at present used, the press hammer 43 strikes directly against the printing hammer 45 to press the tape against the characters on the typewheel 18. Instead of this arrangement I have interposed an intermediate hammer 90 carried on an arm 91, slidable through a guide 92 and swiveled on the upper free end of an armature 93 of a magnet 94. When the armature is restricted, the intermediate hammer 90 will transmit a blow from the pressure hammer 43 to the printing hammer 45, but when the armature is attracted by the magnet 94 the intermediate hammer 90 is shifted to one side so that the blow of the hammer 43 is not transmitted to the printing hammer.

I have attached an armature 95 to the pivoted arm carrying the tape press wheel 59 which withdraws the press wheel from the tape feed wheel 58 when it is attracted by the magnet 96, thus stopping the forward motion of the tape 60. The machine A_3 is in all respects the same as the printer A_2.

The operation of the organization illustrated in Fig. 1 will now be apparent from the previous description of the several parts. Let us suppose that a stock quotation beginning with the letter L is being received and that the code combination for the letter L has been set up on the code disks 50 so that the stop pin corresponding to the letter L has been forced by the springs 72 into the corresponding spring clip as indicated in Fig. 1. It will be noted that the clips associated with all letters from A to J are connected in parallel and in circuit with the left hand coil of the Wheatstone relay R_1, while all the pins from K to Z are connected in parallel and in circuit with the right hand coil of the polar Wheatstone relay R_1. Hence the right hand coil of the relay R_1 is now connected to ground through the L stop pin and the grounded spring 72. Concurrently with the setting up of the L selection on the selector disks, the sixth pulse of the code combination caused the shift fork 64′ to move the contact arm of the switch S to its left hand or letters contact 85, carrying with it the connection to condenser 98. The condenser was charged by connection with positive battery when the switch arm was against its right hand or figures contact. The discharge of the condenser through contact 85 and the right hand coil of the Wheatstone polar relay R_1 and through the L stop pin and clip to ground through the grounded spring ring 72, causes the relay R_1 to move its tongue against its right hand contact, thereby applying positive battery to the coil of relay R_3. Positive battery is thereupon connected through the armature of relay R_3 to the magnets 94′ and 96′ of the printer A_3. These magnets withdraw the intermediate hammer 90′ and the press roller 59′, thus rendering the printer A_3 ineffective. The letter L will, therefore, be printed on the tape of the printer A_2 but will not be printed on the tape of printer A_3.

The second letter of the stock quotation being received, will prepare a path by grounding one or the other of the coils of the relay R_1 through the selected stop pin and corresponding clip, but inasmuch as the shift lever 64′ remains against the letters contact 85, no current can flow through the relay coil because the condenser 98 was discharged when the first letter was selected. Hence the conditions will remain unchanged and the second letter will be recorded upon the tape of the printer A_2, the printer A_3 remaining ineffective.

When the first figure of the quotation is received and set up on the code disks of the main distributing receiver A_1, the sixth pulse will simultaneously cause the shift lever 64′ to move the contact arm of the switch S against the right hand figures contact 86 thereby causing the condenser 98 to receive a charge from positive battery. Simultaneously one of the stop pins 68 is moved inwardly into engagement with the corresponding spring clip contact 80 and prepares a circuit through one of the coils of the main relay R_1, but this circuit is open at the contact 85 and hence the armature of the polar relay R_1 still remains in engagement with its right hand contact to which it was moved when the initial letter L was received. Accordingly the relay R_3 is still energized and the magnets 94′ and 96′ maintain the printer A_3 inoperative. The succeeding figures of this quotation will be received in the same manner as the status of the relay R_3 and its associated printer A_3 will remain unchanged until the initial letter of the succeeding quotation is received. The code combinations of letters and figures are set up simultaneously in the code disks of the three machines A_1, A_2 and A_3 and consequently each stock quotation or received intelligence is printed either by the printer A_2 or by the printer A_3.

If the next received quotation has an initial letter in the same connected group as the preceding quotation, the operation above described will be repeated and the group of letters and figures will again be printed on the tape of the printer A_2. Let us assume, however, that the initial letter is in the other group, for example beginning with the letter B. The engagement of the stop pin corresponding to the letter B with its spring clip contact 20 connects the left hand coil of the Wheatstone polar relay R_1 to ground and as the shift arm 64′ simultaneously moves the arm of switch S against its letters contact 85, the condenser 98 discharges through

said left hand relay coil thereby closing a circuit from positive battery through coil of relay R_2 and breaking the circuit through the coil of relay R_3. Current then flows from positive battery through the armature of relay R_2 to energize magnets 94 and 96 of the associated printer A_2 thereby rendering ineffectual the printing hammer and the tape stepper of this printer. Upon deenergizing the relay R_3 and the magnets 94′ and 96′ of the printer A_3, the intermediate hammer 90′ and the press roller 59′ were restored to operative position so that this group of letters and figures will be recorded upon the printer A_3. It will be remembered that almost a complete cycle of operations is made between the time the stop pin 68 and the shift lever is actuated by the setting up of a code combination in the selector disks, and the time when the press hammer is actuated and the tape is stepped ahead, so that ample time is allowed for the intermediate hammer 90′ to return to its normal position before the selected character is printed.

It is obvious from the above description that this invention has provided—first, a mechanism which automatically controls the selection of one of two or more circuits dependent upon the mechanical selection of the initial character of a group of selected characters, and second, the use of said selected circuit to automatically control the operation of one of a number of printers or receiving instruments in order to effect the elimination of intelligence which is not to be printed on said receiving instrument.

In the arrangement just described, the quotations printed upon the tape of either printer A_2 or A_3 follow each other with no space interposition so that the operator who observes the quotations on the tape of either machine does not know whether other quotations have been made by the other printers. In Figure 2 I have shown an arrangement for causing a space to be interposed between successive quotations on the tape of either machine whenever a quotation is made on the other printer, thus indicating to the operator the omission of a quotation from his tape. The elements or parts of the apparatus shown in Figure 2 which are the same as the corresponding parts in Figure 1 require no further description. Instead of connecting the magnets 94 and 96 in series, I arrange these magnets in separate circuits, the magnets 94 being controlled by the relays R_2 and R_3, as in Figure 1, but the magnets 96 being controlled by auxiliary relays R_4 and R_5. The instant of operation of the relays R_4 and R_5 is determined by contacts controlled by the operation of the tape stepper lever 53 (see Fig. 5).

Let us follow the operation of this arrangement by citing a particular example. Let us assume that Z is the initial letter of a quotation and that the Z stop pin has been moved inwardly in the notches of the selector disks of the main distributor receiving instrument A_1 in the manner previously described and that it has applied a ground through the spring 72 or the frame of the machine to the right hand coil of the Wheatstone polar relay R_1 and simultaneously the shift fork 64′, by reason of the received selection, moves the arm of switch A from the figures contact 86 to the letters contact 85. The discharge of the condenser 98 through the right hand coil of polar relay R_1 causes its tongue or armature to close a circuit from positive battery through the coil of relay R_3. The armature of this relay closes a circuit from positive battery through magnet 94 of printer A_2, thereby withdrawing the intermediate hammer 90 and rendering the action of the press hammer 43 ineffective. The circuit from positive battery through the tongue or armature of relay R_1 and the coil of auxiliary relay R_5 has not energized the latter as yet, due to the interposed resistance of say a 1000 ohms at 99. It will be remembered that there is quite a time interval between the setting up of a code combination on the selector disks and the operation of the tape stepper lever 53 and hence this time interval occurs between the energization of the relay R_3 and the relay R_5. When the operating cam 35 causes the operation of the tape stepper bail and lever 53, the latter closes the contacts 100, thereby shunting the 1000 ohm resistance, thus causing the actuation of the relay R_5. It will be noted that any further operation of the contacts 100 by the lever 53 will not cause the relay R_5 to release its armature since a sufficient current will flow through the resistance 99 to hold the armature after it has once been actuated. Upon the actuation of the relay R_5 a circuit is closed from positive battery through its armature to energize magnet 96 which thereupon withdraws pressure roller 59 from engagement with the tape feed roller 58, thus rendering the feed of the printer ineffective. Inasmuch as the tape stepper lever 53 is first moved upwardly by the cam 35 and then moved downwardly by its spring 57, the contacts 100 are closed at the end of the stroke of the tape stepper lever and consequently the tape has already been stepped forward one space before the magnet 96 has been actuated. Thus the relay in the actuation of the magnet 96 after the actuation of the magnet 94 causes the spacing of the tape although the printing has been rendered ineffective by the prior actuation of the magnet 94 withdrawing the intermediate hammer 90. The status of the printers A_2 and A_3 will remain unchanged until the reception of the initial letter of the next succeeding quotation.

Let us suppose that the initial character of

the next quotation is a letter in the first part of the alphabet which causes the armature or tongue of the polar relay R_1 to engage its left hand contact, energizing the relay R_2 and providing a path for energizing the relay R_4. Simultaneously the shift lever 64′ moves the contact arm of the switch S from the contact 86 to the contact 85. The deenergizing of relays R_3 and R_5 causes the magnets 94 and 96 to be deenergized, allowing the intermediate striker 90 and the pressure roller 59 of the printer A_2 to return to normal position. The operation of relay R_2 followed immediately upon the shifting of the armature of relay R_1 to its left hand contact, thereby closing a circuit through the magnet 94′ of printer A_3 which withdrew the intermediate striker 90′ from the printer mechanism. As in the previous instance, the operation of relay R_4 is delayed until the tape stepper arm 53 is actuated to close the contacts 100 and shunt the 1000 ohm resistance, so that again in this case the tape feeding mechanism of the printer A_3 is allowed to function for one spacing of the tape following the restriction of the printing mechanism. The selected characters of this quotation are printed on the tape of machine A_2 in the manner previously described.

I claim:

1. The method of classifying received intelligence in a telegraph system which consists in automatically directing the intelligence into one or another predetermined channel determined by the initial character in each group of intelligence characters.

2. In a telegraph system wherein the received intelligence is arranged in groups of characters comprising a letter or letters followed by figures, the method of classifying said intelligence which consists in directing the groups into different channels determined by the initial letter of each group.

3. In a telegraph system wherein the received intelligence is arranged in groups of characters, the method of classifying said groups which consists in receiving all of said intelligence upon a plurality of receiving instruments and causing the initial character of each group to select the instrument upon which the group shall be recorded and preventing other of said instruments from recording the same.

4. In a telegraph system in which the transmitted intelligence is constituted of groups of characters, a plurality of receiving recording instruments and means actuated by the received intelligence to render certain of said receiving instruments ineffective to record certain of said groups and permitting other of said instruments to record the same.

5. In a telegraph system in which the transmitted intelligence is constituted of groups of characters, a plurality of receiving instruments each connected to receive all of the transmitted intelligence, certain of said instruments having means to render the recording function inoperative, and means associated with one of said instruments responsive to the initial character of each group to determine which instruments shall function of record and which instruments shall not record the intelligence group.

6. In a telegraph system in which the transmitted intelligence is composed of groups of characters, a plurality of receiving instruments, each connected to receive all of the transmitted intelligence, certain of said instruments having electromagnetic means adapted when actuated to render the printing and tape stepping functions inoperative, and one of said instruments having means for controlling the operation of said electro-magnetic means of one or the other instrument determined by the initial character of each group of characters.

7. In a telegraph system, a plurality of receiving recording instruments and an editing instrument each connected to receive all of the transmitted intelligence, said recording instruments being provided with nullifying means to render the printing function ineffectual, and said editing instrument having means connected to each of said nullifying means and responsive to the initial character of each received word or group of characters, to cause the operation of any of said nullifying means and permitting the other recording instruments to function

8. In a telegraph system in which the transmitted intelligence is composed of groups of characters, a plurality of receiving instruments, each connected to receive all of the transmitted intelligence, certain of said instruments having electro-magnetic means adapted when actuated to render the printing function inoperative and other electromagnetic means to render the tape stepping function inoperative, and one of said instruments having means responsive to the initial character of each group of characters to control the operation of one or the other receiving instrument by first actuating the electromagnetic means connected with the printing function and subsequently actuating the electro-magnetic means connected to the tape stepping function.

9. In a printing telegraph system for recording intelligence characters, a plurality of receiving instruments each having selecting mechanism responsive to permutation code combinations of selecting impulses, one of said instruments having circuit controlling means actuated by said selecting mechanism, the other instruments having printing mechanism positioned by said selecting mechanism and means actuated by said circuit controlling means to render one or another of said printing mechanisms ineffective deter-

mined by the initial code combination in any word or group of received characters.

10. In a printing telegraph system having a plurality of printing instruments connected to record the received intelligence, the method of assigning different portions of the intelligence to different instruments which consists in controlling the respective instruments by the initial character in each group of intelligence characters.

11. In a printing telegraph receiver for recording groups of characters, selector mechanism responsive to received code combinations of impulses, a typewheel positioned by said selector mechanism, a printing hammer adapted to press a tape against said typewheel, a striking hammer operating to actuate said printing hammer, and means controlled by the initial code combination of predetermined groups of characters to render said striking hammer ineffectual.

12. In a printing telegraph receiver for recording groups of characters, selector mechanism responsive to received code combinations of impulses, a typewheel positioned by said selector mechanism, a printing hammer adapted to press a tape against said typewheel, an auxiliary member normally in alinement with said hammer, a striking hammer operating when actuated to press said member against the printing hammer, and means controlled by the initial code combination of predetermined groups of characters to withdraw said member and thereby render the movement of the striking hammer ineffectual.

13. In a printing telegraph receiver for recording groups of intelligence, selector mechanism responsive to permutation code combinations of impulses, a typewheel positioned by said selector mechanism, printing mechanism to force a tape against said typewheel, tape feed mechanism, and means responsive to certain code combinations for rendering said printing and tape feed mechanisms ineffectual.

14. In a printing telegraph receiver for recording groups of intelligence, selector mechanism responsive to permutation code combinations of impulses, a typewheel positioned by said selector mechanism, printing mechanism to force a tape against said typewheel, tape feed mechanism, and means responsive to certain code combinations for rendering said printing mechanism ineffectual and thereafter rendering said tape feed mechanism ineffectual.

15. In a printing telegraph system, a plurality of receiving printers responsive to received code combinations of impulses, an editing or directing receiving instrument having selectors responsive to code combinations of impulses, circuit controllers operated by said selectors, and means governed by said controllers to render one or another of said receiving printers ineffectual determined by the initial code combination of the groups of received intelligence.

16. In a printing telegraph system, a receiving instrument having selecting mechanism responsive to received code combinations of impulses and a plurality of circumferentially arranged circuit controllers actuated by said selecting mechanism and printers governed by said circuit controllers.

In testimony whereof I affix my signature.

ROBERT F. DIRKES.

DISCLAIMER

1,814,902.—*Robert F. Dirkes*, Jamaica, N. Y. TELEGRAPH SYSTEM FOR DIVIDING RECEIVED INTELLIGENCE INTO GROUPS. Patent dated July 14, 1931. Disclaimer filed June 21, 1935, by the patentee, the assignee, *Western Union Telegraph Company*, assenting.

Hereby disclaims the system defined in claim 4 of said Patent No. 1,814,902, except when the expression "means actuated by the received intelligence to render certain of said receiving instruments ineffective to record certain of said groups" comprises a device mechanically connected to each instrument.

[*Official Gazette July 23, 1935.*]