

June 20, 1944.

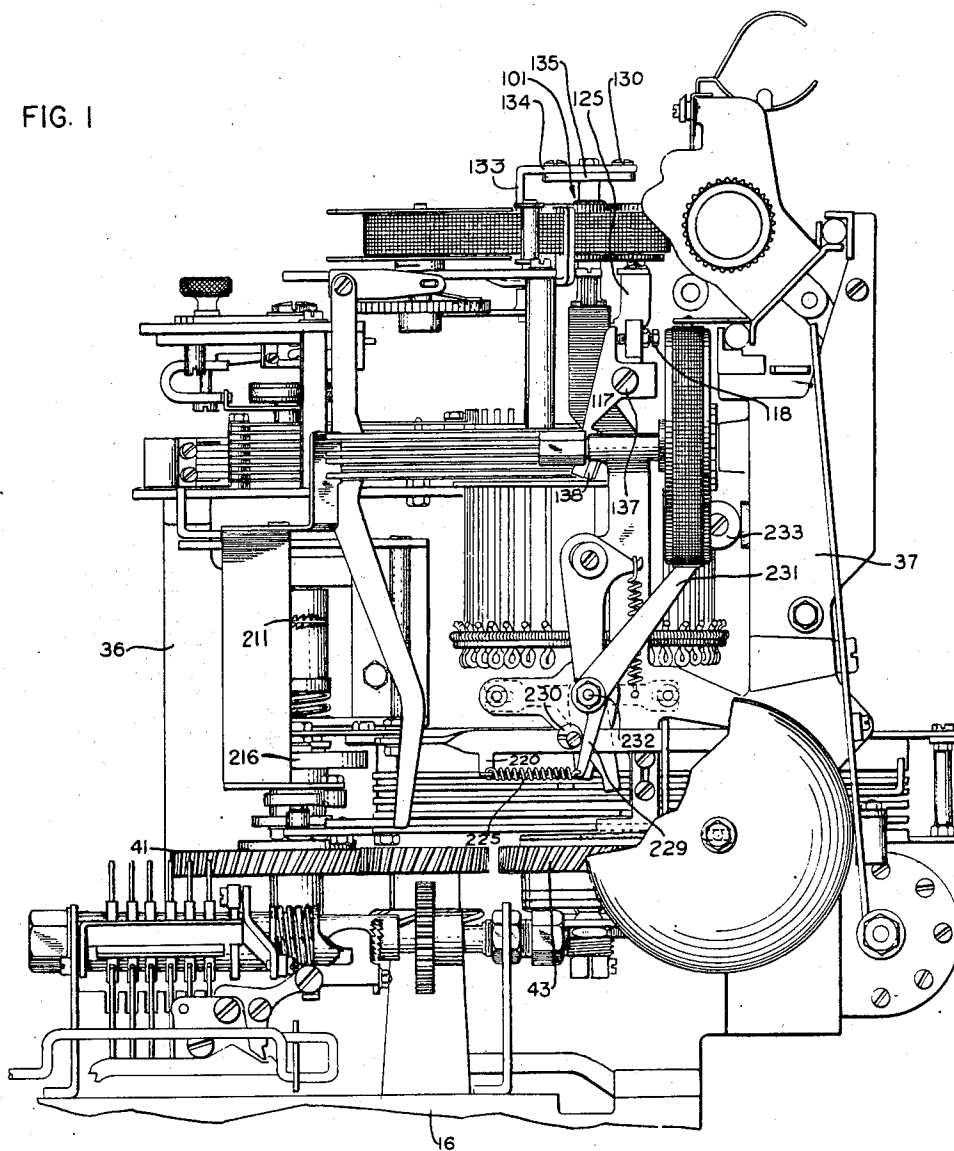
A. H. REIBER

2,352,155

PRINTING TELEGRAPH APPARATUS

Original Filed June 14, 1941 3 Sheets-Sheet 1

FIG. 1



INVENTOR
ALBERT H. REIBER
BY *H. B. Whitfield*
ATTORNEY

June 20, 1944.

A. H. REIBER

2,352,155

PRINTING TELEGRAPH APPARATUS

Original Filed June 14, 1941 3 Sheets-Sheet 2

FIG. 2

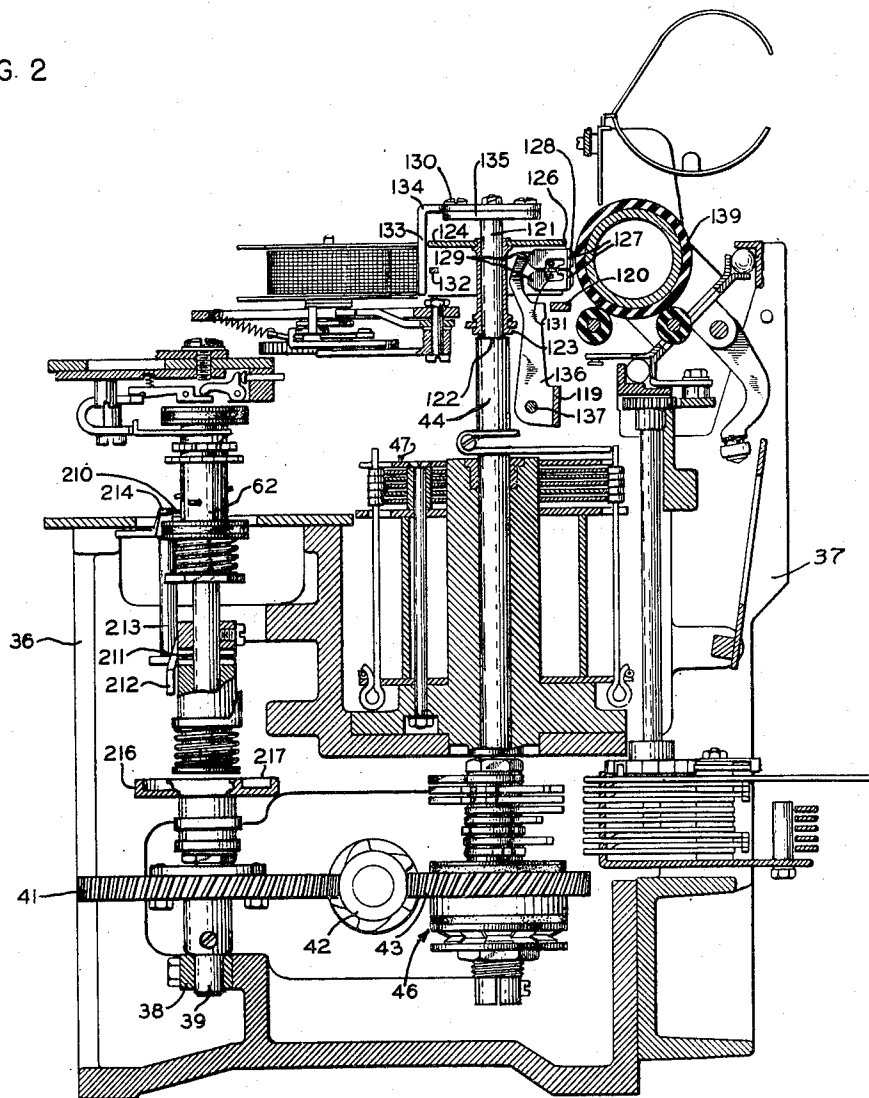
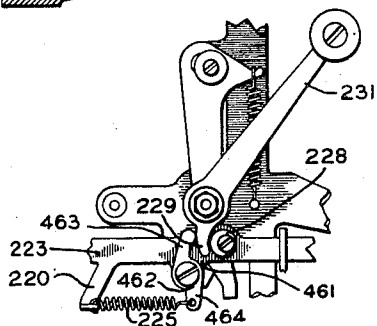


FIG. 3



INVENTOR
ALBERT H. REIBER
BY *H. B. Whitfield*
ATTORNEY

June 20, 1944.

A. H. REIBER

2,352,155

PRINTING TELEGRAPH APPARATUS

Original Filed June 14, 1941

3 Sheets-Sheet 3

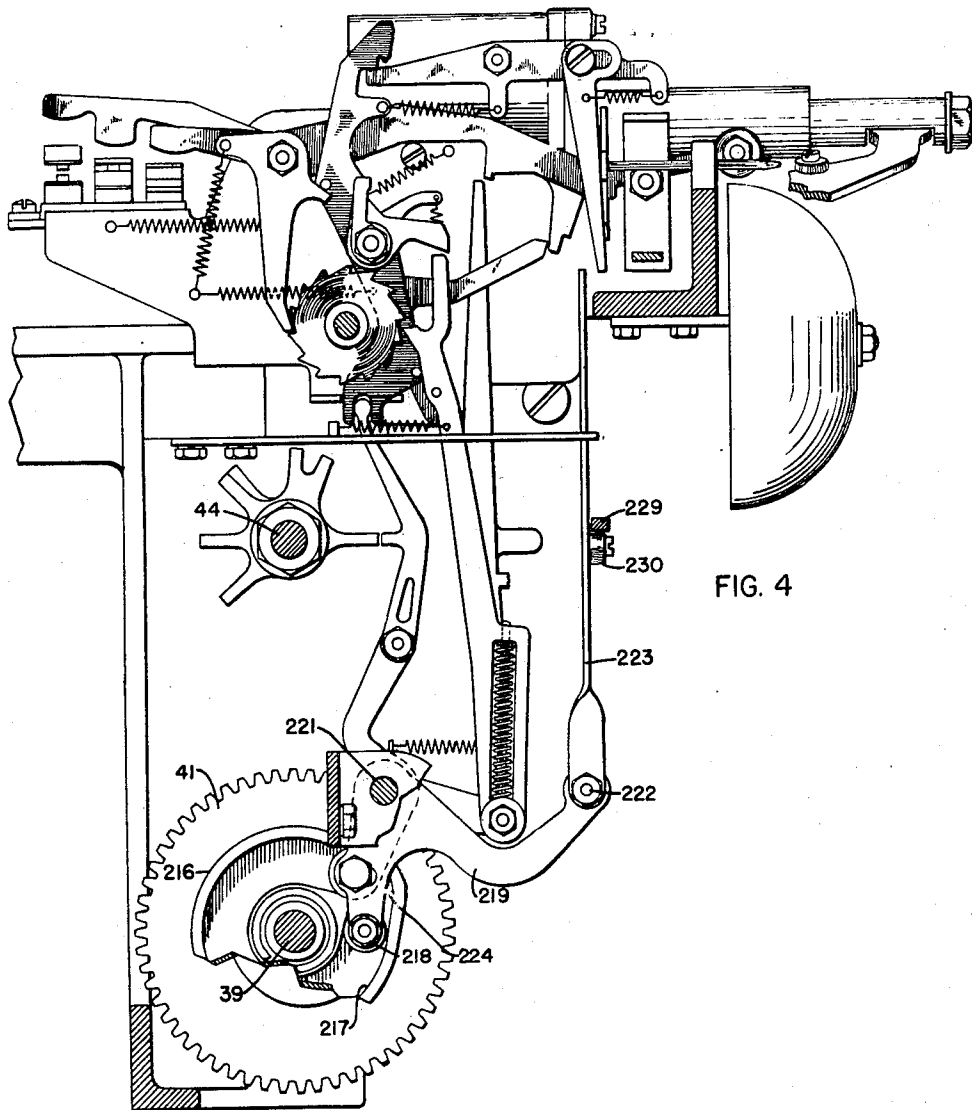


FIG. 4

INVENTOR
ALBERT H. REIBER
BY *H. B. Whitfield*
ATTORNEY

UNITED STATES PATENT OFFICE

2,352,155

PRINTING TELEGRAPH APPARATUS

Albert H. Reiber, Evanston, Ill., assignor to Teletype Corporation, Chicago, Ill., a corporation of Delaware

Original application June 14, 1941, Serial No. 398,074, which is a division of application Serial No. 77,796, May 4, 1936, now Patent No. 2,296,875, dated September 29, 1942. Divided and this application November 9, 1942, Serial No. 465,027

7 Claims. (Cl. 197—53)

This invention pertains to type printing apparatus and particularly to printing mechanism therefor.

This application is a division of copending application Serial No. 398,074 filed June 14, 1941, which in turn is a division of application Serial No. 77,796 filed May 4, 1936. Application Serial No. 77,796 has matured into Patent No. 2,296,875 on September 29, 1942.

The principal object of the invention is to embody in a printing apparatus, features which are conducive to reliable and efficient operation.

The present invention features a printer having a type wheel provided with a plurality of reciprocable type elements, and a printing mechanism comprising a print hammer for effecting printing from said elements operated by an arm from a striker member having a weighted head and a depending arm which is engaged by a lateral abutment on a cam reciprocated bar.

For a more complete understanding of the invention reference may be had to the following detailed description, taken in conjunction with the accompanying drawings in which,

Fig. 1 is a side elevational view of the receiving and printing mechanism according to the present invention;

Fig. 2 is a vertical sectional view through the receiving and printing mechanism;

Fig. 3 is an elevational view of a modified print hammer operating mechanism; and

Fig. 4 is a horizontal sectional view showing the printing function performing mechanism.

Having reference to Fig. 1, the base casting 16 removably supports the foundation for a receiving printer comprising a vertically extending frame casting 36 and a frame casting 37 secured to the casting 36. The frame casting 36 extends from front to rear of the base casting 16 and the casting 37 extends transversely thereof. The frame casting 36 has secured thereto bearing blocks 38 which rotatably support a shaft 39, Fig. 2. Shaft 39 has secured thereto a gear 41 (Figs. 1 and 2) which is driven by a spiral gear 42 (Fig. 2) which is mounted on the rotor shaft of motor (not shown) and constitutes the main driving gear of the receiving printer as well as of the transmitting mechanism. The shaft 39 actuates the selector mechanism of the receiving printer and also the operation performing cams.

The driving gear 42 (Fig. 2) also meshes with a gear 43 which is mounted on a shaft 44 and is operatively connected thereto through a friction clutch 46. Shaft 44 is journaled in a code disc selector mechanism indicated generally by the

reference numeral 47 (Fig. 2) which is removably supported on the frame member 36.

The type wheel shaft 44 has a reduced portion 121 at the upper end thereof which provides a shoulder 122 (Fig. 2). A hub 123 is journaled on the reduced portion 121 of shaft 44 and is slidable thereon. At its upper end the hub 123 carries a disc 124 to which is secured an annular type wheel frame 126. The frame 126 has slots 125 in radial arrangement equally spaced therearound, and in each of the slots upper and lower type pallets 127 are slidably disposed. The type pallets 127 are arranged in upper and lower annular rows, one row of which may carry any desired group of characters such as letters and the other of which may carry other characters such as figures and punctuation marks. The type pallets comprise type faces 128 to which are secured thin shanks 129 which extend inwardly and radially of the type wheel structure within the radial slots thereof. The shanks of each annular row of type pallets are notched to receive a garter spring 131 which biases all of the type pallets of an annular row to their innermost positions with the type faces 128 disposed about the periphery of the slotted frame 126. An annular ring 132 is floatingly disposed in the notches in both annular rows of type pallets and prevents the type pallets from accidental displacement from the type wheel structure due to centrifugal force in the event that one of the garter springs 131 should break. At one portion of its periphery, the type wheel structure has no type pallets and at that point the disc 124 and frame 126 are provided with recesses in which is disposed a perpendicular portion 133 of a type wheel driving arm 134 which is adjustably secured by screws 130 to an arm 135 which is carried by the type wheel shaft 44 at the top thereof in fixed relation to the shaft to be driven thereby. The adjustability between the arms 134 and 135 is angular.

The type wheel structure is slidable longitudinally of the type wheel shaft to bring either of the two rows of type pallets into printing alignment with the printing platen, the shifting of the structure being accomplished by a sliding movement of the hub 123 with respect to the type wheel shaft 44 produced by the shift mechanism described in said application Serial No. 398,074. As the type wheel is shifted, the recesses in which the perpendicular portion 133 of driving arm 134 is disposed slides upon the portion 133 and driving relation between the type wheel shaft and the type wheel is maintained. A printing hammer 136 is pivotally mounted on

screws 137 threaded into the stationary bracket 125 (Fig. 2) and has its head in alignment with the printing position so that it is disposed behind the shank of the type pallet of either of the annular rows of type pallets, depending upon whether the type wheel is in its upper or lower position. The printing hammer 136 has integral therewith a ball portion 119 at the opposite end of which is integrally formed a lever arm 117 (Fig. 1) which carries an impact receiving member 138. A limit screw 118 limits the operative movement of lever arm 117. The lever arm 117 is actuated by a striker member to be described later. The operative movement of the print hammer 136 is a sudden clockwise rotation as viewed in Fig. 2, whereby the type pallet which is aligned with the print hammer at the moment is driven outwardly and radially of the type wheel structure into engagement with the printing platen 139. A stop bar 120 mounted on top of the bracket 125 projects into the path of the hammer 136 and limits the movement thereof.

The operation of the print hammer lever 117 is effected by an operating cam mounted on the shaft 39 above the gear 41 (Fig. 1). The operating cams are assembled in fixed relation with respect to each other on a sleeve which is mounted on shaft 39 and which has associated therewith the driven portion of a spring loaded tooth clutch 211, the driving portion of which is keyed or staked to shaft 39. A clutch throwout lever 212 pivotally mounted on shaft 213 is spring biased into engagement with the driven portion of the clutch 211 and has an arm 214 (Fig. 2) disposed in the path of a cam projection 210 included on the selector cam barrel 62. With this arrangement, at a given point in the cycle of operation of the cam barrel 62, cam projection 210 rocks the arm 214 which withdraws the clutch throwout lever 212 from restraining engagement with the driven portion of the clutch 211 and permits driving engagement to be established between the shaft 39 and the cams mounted thereon.

The uppermost of the cams is a channel or box cam designated by the reference numeral 216, the cam groove 217 (Figs. 2 and 4) of which receives the follower roller 218 rotatably mounted on a bell crank lever 219 rockably mounted on the pivot shaft 221. The bell crank lever 219 is articulated at 222 to a bar 223 to which it is arranged to impart a reciprocatory motion due to the fact that the cam groove 217 has one offset 224 which, when encountered by the follower roll 218, causes the lever 219 to rock counterclockwise upon its mounting shaft 221 and in this way the bar 223 is reciprocated rearwardly of the typing unit.

The bar 223 carries intermediate its ends an eccentrically mounted abutment 230 against which abuts the operating arm 229 of a striker member or hammer 231 pivotally mounted at 232 (Fig. 1). The bar 223 has a depending lug 220, and a tension spring 225 has one end connected to the lug 220 and the other end connected to the operating arm 229 of striker 231. The striker member 231 is provided at its upper end with a massive head 233 which describes an arc as the hammer 231 is rocked and which delivers a sharp blow to an impact receiving abutment 138 of resilient material, such as rubber or leather, carried by the print hammer operating lever arm 117. As indicated in Fig. 4, the offset 224 in the groove 217 of cam 216 is very abrupt and very short, so that the reciprocation of bar 223 to its

rearmost position is very rapid and thus the blow imparted by the striker member 231 to the print hammer operating lever arm 117 is very sharp.

Modified printing mechanism

In Fig. 3 there is shown a modified arrangement for operating the printing striker member 231. In this arrangement, the arm 229 of the striker member 231, instead of being disposed behind the eccentric abutment 228 as in the previously described arrangement, is disposed ahead of it so that upon the operating stroke of the bar 223, the abutment 228 tends to move away from operating engagement with the striker member 231 and upon the return stroke, the abutment 228 operates against arm 229 to restore the striker member 231 to its unoperated position. The bar 223 is provided with lug 461 upon which is pivoted lever 462. The upper arm 463 of lever 462 abuts the foremost surface of striker lever 229 and the lower arm 464 of the lever 462 has connected to it the rearmost end of tension spring 225 which, in the previously described arrangement, was connected to the striker arm 229. The arm 229 of striker 231 is thus between the eccentric abutment 228 and the arm 463 of lever 462. The operation of this arrangement differs from that of the previously described arrangement in that the striker member 231 is operated by the combined action of the operating bar 223 and spring 225 and is restored by action of the abutment 228, whereas in the previously described arrangement, the striker 231 is operated by the bar 223 through abutment 228 and is restored to unoperated position by the tension spring 225. The specific details of the operation of the arrangement shown in Fig. 3 are as follows: When the operating bar 223 is reciprocated to the right, the abutment 228 tends to move away from the arm 229 of striker 231 and the lever 462 tends to be rotated counterclockwise, increasing the tension of spring 225, both of these actions resulting from the inertia of the relatively heavy striker member 231, which tends to remain unmoved. When the inertia of that member is overcome, the striker 231 is operated very sharply, due to the energy stored in the spring 225. The striker 231 is positively brought to its idle or rest position upon the return movement of the bar 223.

What is claimed is:

1. In a printing apparatus, a type wheel having a plurality of reciprocable type elements, a print hammer rockable to strike and reciprocate said type elements, an impact receiving arm for said print hammer, an inertia device having a weighted head for imparting movement to said impact receiving arm, a reciprocable bar for operating said inertia device, and a power driven cam for operating said reciprocable bar.

2. In a printing apparatus, a type wheel having reciprocable type elements, a print hammer for effecting printing from said elements, an operating arm for said print hammer, a striker member for said operating arm having a weighted head and a depending arm, a reciprocable bar having a lateral abutment to engage said depending arm, and an operating cam for said bar.

3. In a printing apparatus, a type wheel having reciprocable type elements, a print hammer for effecting printing from said type elements, an operating arm for said print hammer, a striker member for said operating arm having a weighted head and a depending arm, a reciprocable bar having a fixed abutment and a yieldable abut-

ment for controlling said striker member, and an operating cam for imparting movement to said reciprocable bar.

4. In a printing apparatus, a type wheel having reciprocable type elements, a print hammer, an operating arm therefor, a striker member for imparting movement to said operating arm having a depending arm, and a reciprocable bar having a yieldable abutment for operating the depending arm of said striker member and having a fixed abutment for restoring the depending arm to normal position.

5. In a printing apparatus, a type wheel having reciprocable type elements, a print hammer for effecting printing from said type element, an operating arm for said print hammer, a striker member for said operating arm having a depending arm, a reciprocable bar, a rotatable abutment carried by said bar for engagement with said depending arm, a spring connected between said abutment and said bar for storing energy for operating said depending arm, and a fixed abutment for restoring said depending arm to normal position.

6. In a printing apparatus, a type wheel having a plurality of reciprocable type elements, a print hammer rockable to strike and reciprocate said type elements, means for operating said print hammer, an energy storing and releasing means through which movement is imparted to said means, a reciprocable means for actuating said energy storing and releasing means, and power operated means for operating said reciprocable means.

7. In a printing apparatus, a type wheel having a plurality of reciprocable type elements, a print hammer rockable to strike and reciprocate said type elements, said print hammer comprising an impact receiving arm, an inertia device effective through said arm to operate said print hammer, an energy storing and releasing means through which movement is imparted to said inertia device, a reciprocable means for actuating said energy storing and releasing means, and power operated means for operating said reciprocable means.

ALBERT H. REIBER.

CERTIFICATE OF CORRECTION.

Patent No. 2,352,155.

June 20, 1944.

ALBERT H. REIBER.

It is hereby certified that error appears in the above numbered patent requiring correction as follows: In the heading to the printed specification, line 9, and page 1, first column, line 8, for the patent number "2,296,875" read --2,296,874--; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 12th day of September, A. D. 1944.

Leslie Frazer

(Seal)

Acting Commissioner of Patents.