

Oct. 13, 1936.

L. M. POTTS

2,057,653

CONVERTIBLE SHIFT REPERFORATOR

Original Filed Dec. 20, 1933 3 Sheets-Sheet 1

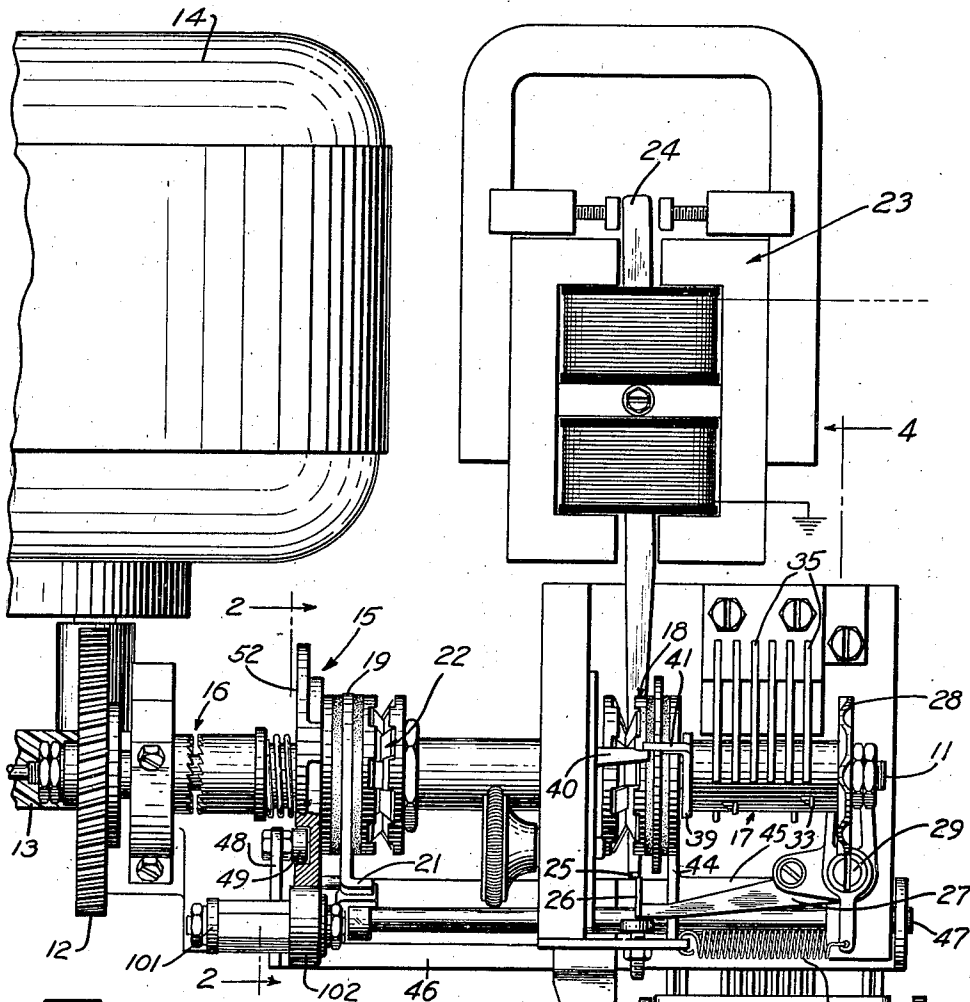


FIG. 1

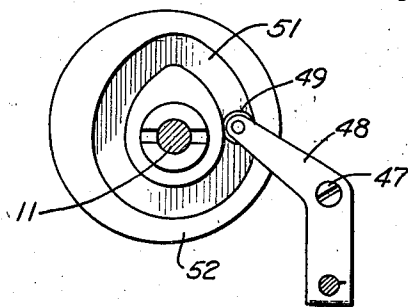
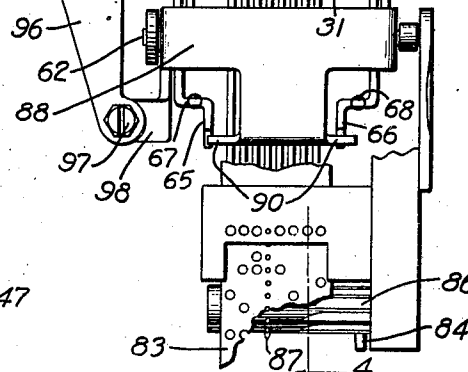


FIG. 2



INVENTOR
LOUIS M. POTTS
BY *H. B. Whipple*
ATTORNEY

Oct. 13, 1936.

L. M. POTTS

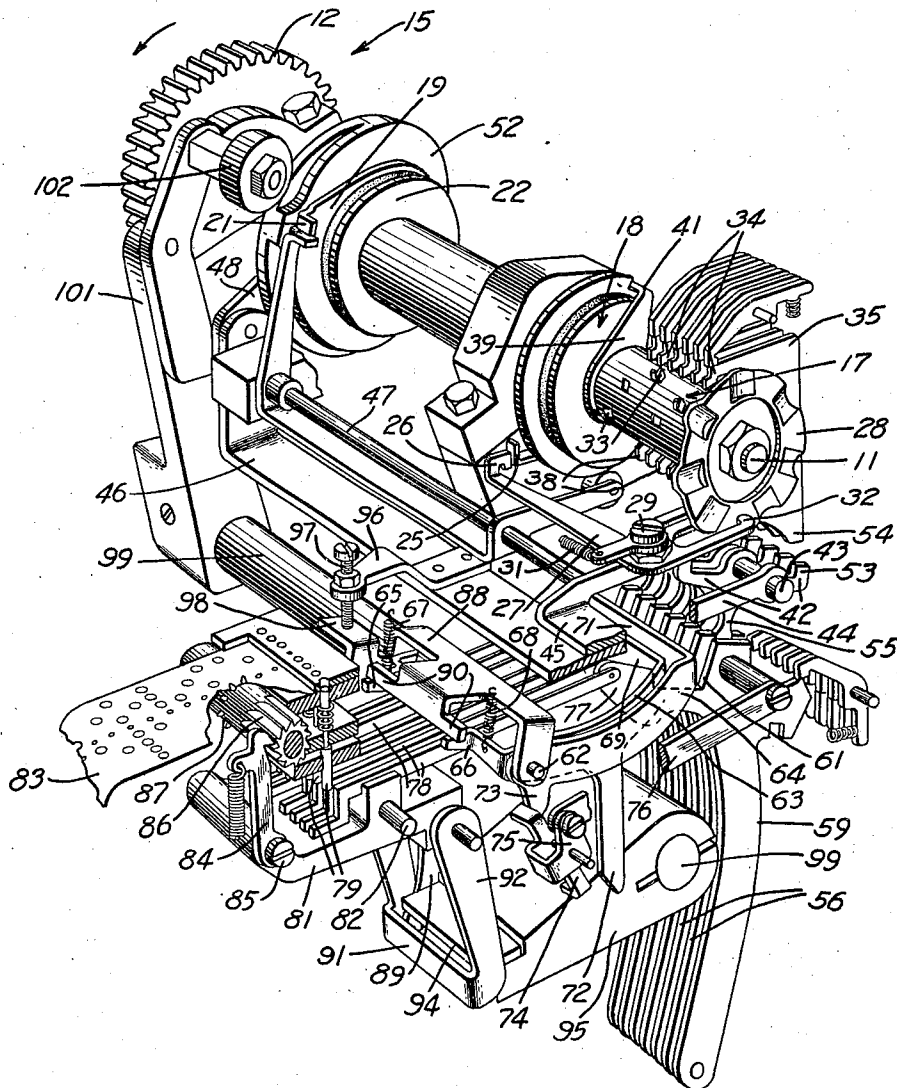
2,057,653

CONVERTIBLE SHIFT REPERFORATOR

Original Filed Dec. 20, 1933

3 Sheets-Sheet 2

FIG. 3



INVENTOR
LOUIS M. POTTS

BY *H. B. Whitfield*
ATTORNEY

Oct. 13, 1936.

L. M. POTTS

2,057,653

CONVERTIBLE SHIFT REPERFORATOR

Original Filed Dec. 20, 1933 3 Sheets-Sheet 3

FIG. 4

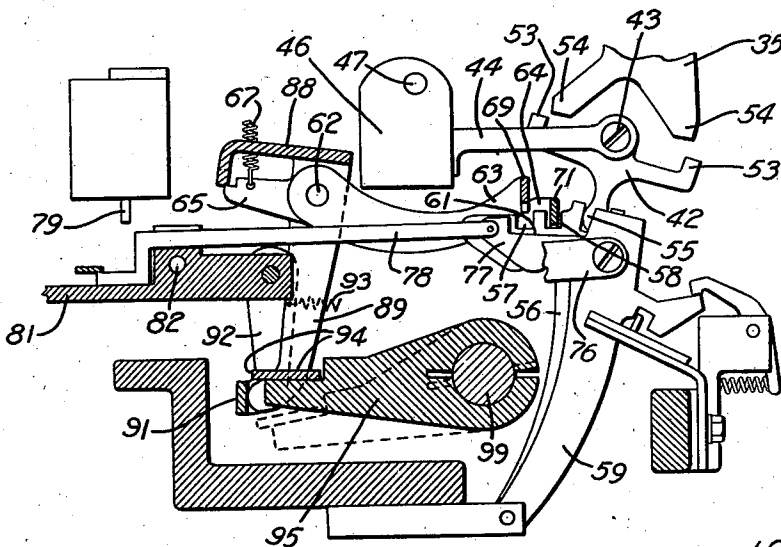
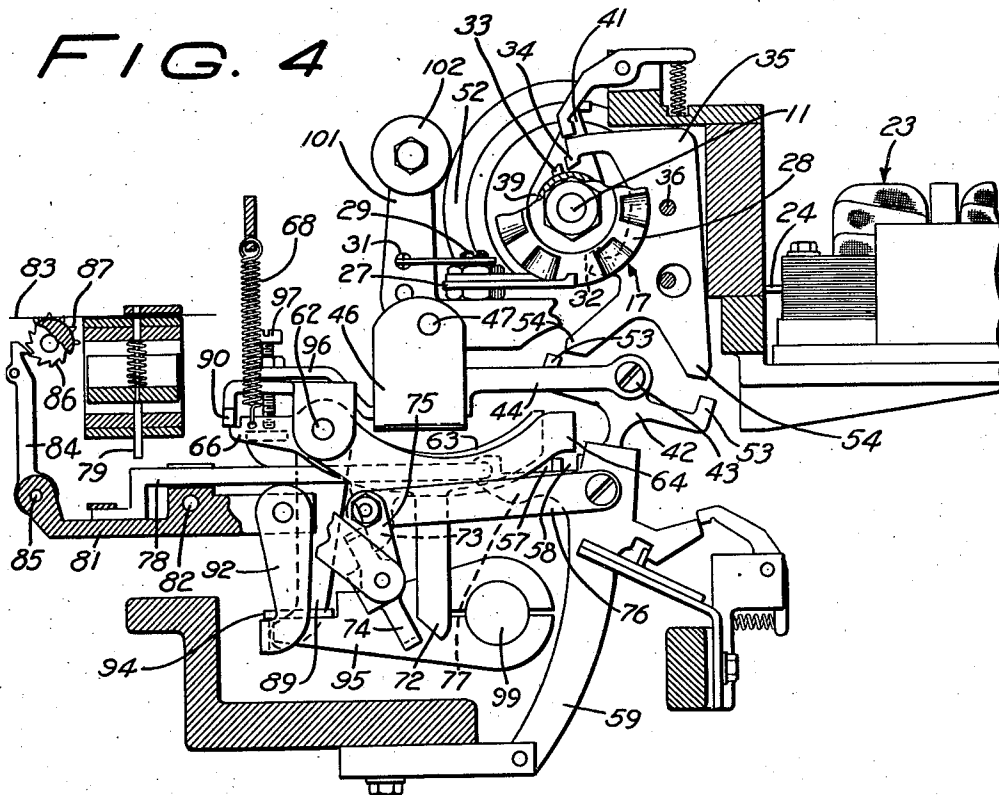


FIG. 5

INVENTOR
LOUIS M. POTTS
BY *H. B. Whitfield*
ATTORNEY

UNITED STATES PATENT OFFICE

2,057,653

CONVERTIBLE SHIFT REPERFORATOR

Louis M. Potts, Evanston, Ill., assignor to Teletype Corporation, Chicago, Ill., a corporation of Delaware

Application December 20, 1933, Serial No. 703,220
Renewed October 21, 1935

40 Claims. (Cl. 178—32)

The present invention relates in general to telegraph systems and apparatus and more particularly to signal controlled tape perforating mechanisms and methods for operating such mechanisms.

The present invention is related to the invention disclosed in copending application Serial No. 703,219, filed December 20, 1933, and concerns particularly reperforating devices which are responsive to predetermined codes of line signals and are operative for preparing, under the control of such codes, a perforated tape bearing code perforations of another character of code.

The object of the present invention is to provide a perforating mechanism for preparing a perforated tape according to a code of a given number of impulse elements, under control of telegraph signals of a code of a lesser number of impulse elements, by embodying the conventional shift and unshift codes into an added impulse added to the character codes which they are intended to modify.

In its preferred embodiment, the present invention employs a mechanical distributor which is responsive to electrical line signals of six-unit code and translates the several shift codes into corresponding conditions for operating a seventh tape perforating punch. In the present disclosure, the six-unit code has been arbitrarily chosen, to conform with the showing in the application referred to above, and herein the six-unit-signal shift code is converted to a seven-unit added-impulse shift code. It should be understood however, that the principles of this invention are equally applicable to any code system, though particular mention is made hereinafter to but five- and six- or seven-unit signals.

In its normal operation, the mechanism of the present device functions in a manner quite similar to the ordinary six-unit reperforator such as the one described in United States Patent No. 1,884,743, but in its capacity as a converting apparatus, the selector mechanism thereof is specially responsive to the two conditioning codes commonly known as shift and unshift codes, and in its response to such signals operates to prepare an auxiliary punch identified hereinafter as the seventh hole punch.

In response to a shift signal, the seventh hole punch is prepared for operation and functions to perforate a hole in the tape to accompany each of the succeeding codes or until an unshift code is received, following which the seventh hole punch is rendered inoperative and does not function for perforating during the reception of the

succeeding codes until a shift signal is again received.

The principles of the present invention will be described as related to the particular function of translating one type of shift system to another; however, other adaptations of the present invention may be made, embodying certain underlying principles disclosed herein.

Referring more specifically to the drawings,

Fig. 1 is a plan view of a perforating unit having applied thereto the embodiments of the present invention;

Fig. 2 is a detail sectional view taken approximately on line 2—2 of Fig. 1;

Fig. 3 is an isometric perspective view of a portion of the mechanism illustrated in Fig. 1 with parts broken away to reveal the transfer mechanism;

Fig. 4 is a transverse sectional view taken approximately on line 4—4 of Fig. 1, and

Fig. 5 is a transverse sectional view of some of the mechanism illustrated in Fig. 4, illustrating another condition in the operation thereof.

Referring now more particularly to the drawings, there is illustrated in Figs. 1 and 3 a principal operating shaft 11 to which is secured a driven gear 12 that receives continuous motion from a driving gear 13, carried by the shaft of a motor 14. The motion of shaft 11 is counter-clockwise, as viewed in Fig. 3, and is similarly imparted to a driven assembly generally indicated by the reference character 15 through the medium of a tooth clutch 16 and a disc friction clutch 22, and to a flutter cam assembly 17 through the medium of a friction clutch 18. The assembly 15 has as a part thereof a disc 19 which is formed with a projection 21.

Incoming signals flow through the windings of a control magnet 23, either directly or through the medium of a line relay, and, in accordance with the electrical condition of each impulse thereof, cause the corresponding movement of an oscillating armature 24, the foremost end of which is upturned as at 25, for providing a blocking surface to an associated portion 26 of one arm of a flutter control lever 27. The opposite arm of lever 27 is bifurcated and receives between the tines thereof a radially fluted cam 28. When cam 28 is rotated with the assembly 17, as explained hereinafter, the radial flutes thereof passing between the tips 32 of the bifurcated portion of lever 27 reciprocate the latter about its pivot 29 in cooperation with a spring 31, but the movement of lever 27 in response to the action of cam 28 is periodically blocked by the

reception of certain electrical impulses which influence the armature 24 counterclockwise into the position illustrated in Fig. 1. During the alternative condition of armature 24, however, when in its clockwise position and when its foremost portion 25 clears the portion 26 of lever 27, the latter is permitted to yield to the urge of cam 28 and to flutter reciprocally in synchronism with the impulses of incoming signals.

The effect of armature 24 upon the freedom of lever 27 produces two results. When shoulder 25 is in the position indicated in full line, rotation of cam 28, failing to dominate lever 27 because it is blocked at 26, reacts instead and produces a longitudinal reciprocation of the assembly 17, against the spring 31.

A series of cam projections 33 formed upon the cam barrel 17 are arranged in a helical progression so that during successive intervals of its cycle, each projection 33 comes into radial alignment with either of the cooperating projections 34 or 38 of a set of code elements 35, pivoted at 36, upon a common shaft. Projections 38 are in diametric opposition to the projections 34, and are offset sidewardly to a slight degree so that as the barrel is reciprocated longitudinally, each lug 33 may be made to engage or pass one or the other of its associated projections 34 and 38, depending upon the relative position of the barrel 17.

When a projection 33 aligns longitudinally with an upper lug 34, it shifts its element 35 into its clockwise or what may be termed its marking position while, if the companion projection 33 aligns longitudinally with the lower lug 38 of the element, it shifts the element into its counterclockwise or spacing position, each position of the projections 33 being determined by the longitudinal placement of the cam assembly 17. Since the longitudinal movement of barrel 17 is conditioned upon the freedom of lever 27, or more generally speaking upon the incoming electrical condition as interpreted by armature 24, the condition of each impulse interval is in this manner translated into a corresponding position of an associated code element 35.

As evidenced by there being six elements 35, the particular apparatus shown is adapted to a telegraph code system employing six impulse intervals to each line code including, additionally, a start impulse interval and a stop interval. The stop interval which follows the aforementioned six signal impulse intervals causes the presentation of armature 24 into its blocking position, during which time the particular flute of cam 28 which comes into registration with the tips 32, shifts cam barrel 17 leftwardly. In so doing, the opposite end of barrel 17, carrying a disc 39 which has a projection 41, presents the latter into the path of a stationary stop lug 40, thereby arresting the further rotary progress of assembly 17 until the initial impulse of the succeeding signal is received which must be of an opposite electrical condition so as to withdraw armature 24 and release the lever 27. The distribution of the line signals in the manner just described and their translation to a set of code elements such as the elements 35 is familiar in the art of telegraph receiving devices, and to this point in the description constitutes no novel part of the present invention.

A signal code, once having been registered upon the several elements 35, its several elements are simultaneously translated into a corresponding condition of a set of transfer levers 42 of

like number which are pivotally carried upon a stub shaft 43 between the arms 44 of a yoke 45. Yoke 45 is secured to a bail 46, pivoted upon the extended portions of a shaft 47, while at the left extremity of bail 46 there is provided an inwardly extending arm 48, Fig. 3 which carries a follower roller 49 that rides within the channel 51 of a box cam 52 Fig. 2. The contour of channel 51 is designed to impart an abrupt reciprocal movement to bail 46 and through yoke 45 to shaft 43 for effecting the aforementioned transfer movement of the several levers 42. As the several levers 42 are forced into engagement with their associated elements 35, the projections 53 thereof come into engagement with the corresponding projections 54 of elements 35, in accordance with the particular position of the latter members. This oscillates the levers 42 which through their disc and socket articulation 55 with notched levers 56 impart a similar motion to them.

Levers 56 are seven in number, six of which are similar in all respects, except as to the arrangement of the notches 57 and 58, Figs. 4 and 5, with which each lever 56 is provided. The seventh lever which is especially indicated 59 is cut away as at 61, Fig. 3, in the region in which the other levers are provided with the aforesaid notches and differs in a further respect from the other levers 56 by having no transfer lever 42 in association therewith. The notches 57 and 58 of the several levers 56 are so arranged that upon the reception of a combination of code impulses which correspond to shift code, notches 58 are placed in a transverse alignment, and upon the reception of a combination of code impulses corresponding to unshift code, notches 57 also come into a transverse alignment. Pivoted on a short rod 62 are a pair of bails 63 and 64, the latter of which is slightly larger than the former, completely surrounding it and having an extending arm 65 to which is secured an expansible spring 67, while a similar but symmetrically opposite arm 66, formed with bail 63, is likewise provided with a spring 68. The bail blade portions 69 and 71 are parallelly disposed above and adjacent to the notches 57 and 58 so that when either of them is presented to its associated alignment of notches, it may be admitted therein as urged by its spring 67 or 68. Ball 63 has integrally formed therewith a long depending projection 72, Figs. 3 and 4, while bail 64 is provided with a relatively shorter depending projection 73, the two projections being associated with a rocking lever 74 so that the clockwise selective movement of bail 64 through its projection 73, rocks lever 74 counterclockwise, while a similar movement of the bail 63 through its projection 72 rocks lever 74 clockwise.

An upstanding arm 75 integrally formed with lever 74 is connected through a link 76 to the seventh lever 59, whereby the latter is moved correspondingly to and fro in accordance with the condition of the rocking lever 74. The seven punch conditioning levers 56 and 59 are connected at their arms 77 with a set of individual punch intervention bars 78. When in their right-hand position, levers 56 and 59 withdraw their bars 78, as indicated in Fig. 5, but when in their left-hand position, they advance said bars to the position indicated in Fig. 4 presenting them beneath their corresponding ones of a row of punches 79. Each cycle of operation finds the several bars variously disposed, some as indicated in Fig. 4 and others as in Fig. 5, and following

each such disposition of the several bars, a cradle 81 pivoted at 82 within which the foremost portions of the several bars 78 are supported, is rocked clockwise by the periodic movement of suitable actuating mechanism to be described later, thrusting its left end upwardly and causing those intervention bars which are in their effective position to engage their associated punches 79 and drive them upwardly to perforate the material 83 with a transverse row of variously distributed perforations. On its return movement, cradle 81, having associated with it a pawl 84 pivoted at 85, engages the ratchet wheel 86, and through the feed sprocket 87, indicated as being integrally formed with ratchet wheel 86, advances the strip of material 83 for presenting a new transverse area over the punches 79.

Under standard operating conditions, the reception of each code results in the perforation of a transverse row of holes in the tape 83 as just explained, but upon the reception of either a shift or unshift code, the operation of the punch mechanism is momentarily suspended or held over until the succeeding signal is received so that the presence of a shift or unshift code is not evidenced by an individual alignment of perforations, but is, instead, evidenced merely by the presence or absence of a seventh perforation in accompaniment with another or succeeding code. The suspension of the punch operation during the reception of a shift or unshift code is brought about in the following manner.

Each of the arms 65 and 66 is shouldered at its extremity where it engages the transversely extending projections 90 of an overslung bail 88, also pivoted at 62. The selective movement of either bail 63 or 64 rotating clockwise causes the engagement of its arm 65 or 66 with bail 88, rocking the latter in a similar direction. A depending arm 89, Figs. 3 and 5, formed integrally with bail 88, extends alongside the bars 78 and engages a transverse portion 91 of an underslung bail 92, as indicated in Fig. 5. Portion 91 of bail 92 is normally urged by spring 93 to underlie and engage the ledge 94 of punch operating arm 95, but when dislodged by the action of the depending arm 89, bail 92 clears ledge 94 so that thereafter during the cycle following the one in which the shift or unshift code is received, when arm 95 is rocked for effecting the punch operation, it is ineffective as to cradle 81 because of the dissociation between transverse portion 91 and ledge or projection 94.

This dissociation is effected only upon the reception of one of the aforementioned special codes and at no other time, since the selective movement of either bail 63 or 64 is brought about only in response to such codes. Hence it will be understood that though the received code employs complete shift and unshift codes of signals, nevertheless the prepared tape 83, as a result of the mechanism just described, converts the special codes into an added perforation, modifying the standard character codes of perforations, and that no specially perforated row of code perforations is punched in response to these signals as would be in the case of reperforator devices heretofore known.

Following the selection of either bail 63 or 64 and after its admission into its respective alignment of notches 57 or 58, arm 89 causes the disengagement of bail 92 as just described, following which the several elements are restored to normal condition and the bails 63 and 64 withdrawn from their notches. This restoration

is performed concurrently with the movement of the transfer levers 42 by an arm 96 which is also carried by bail 46 as is yoke 45, described above. An adjustable screw 97, passing through the foremost portion of arm 96, engages a lip 98, Figs. 1 and 3, integrally formed with the overslung bail 88 so that as bail 46 is rocked counterclockwise by roller 49 within channel 51 of box cam 52, the arm 96 and screw 97 engage lip 98, and restore overslung bail 88 to its original condition. This restoration also withdraws depending arm 89 from engagement with portion 91 of bail 92, allowing spring 93, Fig. 5, to restore the operative relation between bail 92 and punch operating arm 95.

Operating arm 95 is mounted upon a shaft 99 to which is secured an actuating arm 101 that extends upwardly and which is provided with a follower roller 102 which rides the periphery of cam 52, as best indicated in Fig. 3.

Operation

The features embodied in the present invention have been individually pointed out in connection with each mechanical detail, as explained above, but for purposes of a general understanding, a typical cycle of operation will now be described so as to make more comprehensive the inter-relation of the several mechanisms. Reiterating one of the objects of this invention in its specific aspect, it will be noted that signals of a certain class embodying specially delegated shift and unshift codes are received over an incoming line, and that by means of the afore-described mechanism, a perforated tape is prepared corresponding to the incoming signals in all respects except as to the noted shift and unshift codes which, instead of appearing on the perforated tape as independent code rows of perforations, appear instead as added single perforations modifying the standard character codes by their presence or absence therewith.

Incoming signals are impressed upon the windings of a magnet 23, which, through its armature 24, controls the operation of a mechanical distributor comprised of a cam assembly 17 and a set of storage elements 35. The impulses of a six-unit code are translated into a corresponding condition of the six elements 35, after which, by means of a set of transfer levers 42, the same code is relayed to a set of rocking levers 56. In the case of reception of character codes, the position of the several levers 56 will be such as to block the selection of bail blades 69 and 71 so that the effect of such signals is merely to interpose corresponding ones of the bars 78 beneath their associated punches 79. Upon the reception of either the shift or unshift code, however, the positionment of the several levers 56 affords an alignment of notches 57 or 58 so as to permit the selective movement of one of the bail blades 69 or 71.

When this occurs, the reciprocation of arm 95, following thereafter, is rendered ineffective for rocking cradle 81, because depending arm 89, which is responsive to the selective movement of either bail 63 or 64, withdraws the transverse portion 91 of bail 92 from beneath the ledge 94 of punch operating arm 95. Hence, the translation of the shift or unshift code following the same course as that of any other code even to the point of positioning the several bars 78, does not result in a punching operation because of the disengagement between arm 95 and bail 92. Instead, the result of the selection of either bail 75

63 or 64 operative through depending portions 72 or 73 upon lever 74, is a conditioning of the seventh punch conditioning lever 59, presenting the seventh bar 76 under its punch 79 in the case of a shift signal and withdrawing it therefrom in the case of an unshift signal. While the absence of a hole in the seventh position is being referred to herein as an unshift signal and its presence as a shift signal, it should be understood that this delegation or assignment is arbitrary and may as well have been arranged in the reverse order. So also should it be understood that the additional perforation or its absence from the seventh position may determine a conditioning mechanism whose object is other than to effect a case shift operation and still come within the contemplation of the present invention.

Upon the reception of a subsequent code, the seventh punch 79 is effective or not, depending upon the character of the preconditioning code which may be either unshift or shift. In either event, the predetermined condition of punch 79 prevails, following either a shift or unshift code until an opposite code is received so that every perforated character code is modified by shift or unshift characteristics.

For an understanding of the operation of a transmitting mechanism under the control of a tape such as the one prepared by the mechanism just described, reference may be had to the above mentioned copending application.

While the present invention has been illustrated and described with reference to a particular structure, it will be understood that numerous modifications and variations may be made without departing from the spirit or scope thereof. It is therefore intended not to be limited to any of the specific disclosures in the accompanying drawings nor to the language of the foregoing description, but rather to be permitted a latitude of interpretation as defined by the herein-after appended claims.

What is claimed is:

1. In a perforator, a set of punches, a corresponding set of signal responsive elements, means for conditioning each of said punches under the control of one of said elements, an additional punch, and means to condition said additional punch under the control of said signal responsive elements.

2. In a reperforating apparatus, a selector mechanism responsive to electrical signals composed of a definite number of variable impulses, a set of storage elements corresponding in number to the impulses of said signals, means for conditioning said elements in accordance with the impulses of a signal, a set of perforating members, a similar set of devices for conditioning said perforating members, means for translating each condition of said storage elements to a corresponding condition of said devices, a punch actuating mechanism, and means responsive to certain various settings of said devices for disabling said punch actuating mechanism.

3. In a reperforator, a set of punches each responsive to an impulse of a signal, an additional punch responsive to certain signals, a punch actuating mechanism, and means responsive to said certain signals for disabling said punch actuating mechanism and for the selection of said additional punch.

4. In a reperforator, a set of punches responsive to incoming signals for preparing a perforated tape, a preconditioning apparatus placeable into one condition by a certain special signal and

into another condition by a certain other special signal, and means for suspending the operation of said punches subsequent to the reception of one of said special signals.

5. In a reperforator, a set of punches corresponding in number to the number of primary impulses of a signal, means for conditioning each punch in accordance with one or another of the alternative conditions of its delegated impulse, and another punch conditionable by a predetermined signal for modifying the record produced by said punches.

6. In a perforating device, means for installing transverse perforations on a strip of material, elements responsive to signal conditions for controlling said means, an additional installing means, and means actuated under predetermined signal conditions only for controlling said additional installing means to indicate such predetermined signal conditions by the presence or absence of a perforation accompanying subsequent transverse perforations.

7. In a perforator, conditioning elements presentable in varying permutations, a set of perforators conditioned by said elements for installing an alignment of corresponding perforations in a record material, and means controlled by certain settings only of said elements to add to the perforations made by succeeding settings of said elements.

8. In a signal controlled perforator, a set of punches, a perforating hammer for actuating said punches, means to actuate said hammer upon the reception of telegraph signals, and means to prevent the operation of said hammer in response to certain signals only.

9. In a signal controlled perforator device, means to advance a record receiving material under the control of received signals, means responsive to received signals for impressing code perforations upon said material, and means responsive to certain signals only for suspending the operation of said record advancing means.

10. In a reperforator, a set of perforating elements, a corresponding set of signal controlled perforator conditioning elements, tape advancing means, and means responsive to certain settings only of said conditioning means for preventing the succeeding operation of said perforators and for modifying the tape during operation of subsequently received signals.

11. In a reperforator, a set of punches, a set of punch conditioning members, means for operating various combinations of said members so as to correspondingly condition said punches for operation, and a mechanism for modifying the performance of said punches selectively conditioned by certain permutative arrangements of said operating means.

12. In a reperforator, a set of storage elements, a distributor responsive to signal conditions for accordingly setting said elements, a set of conditioning means capable of receiving a setting corresponding to that of said elements and having selecting notches arranged therein, a set of punches controlled by said means, and a mechanism for modifying the record made by said punches and selected for operation by the selective alignment of the said notches of said means.

13. In a tape perforator, a set of punches, means responsive to telegraph signals for conditioning said punches for operation, a cyclically operative hammer, an interponent for transmitting the blow from said hammer to conditioned

ones of said punches, and means under the control of special signals for incapacitating said interponent.

14. In a recorder for telegraphic systems, a tape feeding mechanism comprising a reciprocally moving member, means for actuating said member upon the recording of a telegraph signal, and means to prevent the operation of said member under control of certain telegraph signals only.

15. In an electrically controlled perforator, registering means responsive to received electrical signals for registering said received signals code by code, and perforating means controlled by said registering means for recording one of said received codes jointly with another code.

16. In an electrically controlled perforator, registering means responsive to received electrical signals for registering said received signals code by code, further registering means controlled by said registering means for registering a shift code of one element, and perforating means controlled by said registering means and said further registering means jointly, for recording a code different from any received code.

17. In a signal controlled perforator, means responsive to received electrical signals for registering a received code, further means under control of said first mentioned means for modifying a succession of codes following their reception, and means for recording the modified codes.

18. In a signal controlled perforator, means responsive to received electrical signals for registering a received code, perforating means for recording said registered code with an added hole, and means under control of said means for controlling the presence or absence of said added hole.

19. In a signal controlled perforator, means responsive to received electrical signals for registering a received code, means for perforating a registered code, and auxiliary means for adding a definite modification whereby a succession of perforated codes are modified similarly, said auxiliary means controlled by said means for varying the modification.

20. In a signal controlled perforator, signal controlled punches for perforating tape in response to received code signals, an auxiliary punch for adding to any code when recording the code a hole to indicate shift, a detector ball responsive to a received shift code of signals to condition said auxiliary punch for adding the shift hole to each subsequent code, and a detector ball responsive to a received unshift code of signals to restrain said auxiliary punch.

21. In a reperforating apparatus, a selector mechanism responsive to electrical signals composed of a definite number of signal intervals, a set of perforating elements each conditioned by one of said signal intervals, and an additional perforating element conditioned by certain ones of said electrical signals.

22. In a perforating mechanism, a set of perforators, means responsive to certain telegraph signals for conditioning and operating said perforators to make a transverse row of perforations in a tape, an additional perforator, and means responsive to certain other telegraph signals for conditioning said additional perforator to make a perforation in the tape in transverse alignment with the character which it modifies.

23. In a perforating mechanism, a set of perforators, means responsive to certain telegraph signals for conditioning and operating said per-

forators to make a transverse row of perforations in a tape, an additional perforator, and means responsive to certain other telegraph signals for conditioning said additional perforator to make a perforation in the tape concurrently with the signal perforations which it modifies.

24. In a perforating device, a set of punches, means under the control of telegraph codes to condition said punches in varying permutations for accordingly making perforations in a tape, an auxiliary punch, and means responsive to certain ones of said telegraph codes for conditioning said auxiliary punch and for actuating it concurrently with said set of punches.

25. In a tape perforating device, a cyclically operating mechanism, a set of punches, a hammer for actuating said punches under the influence of said cyclically operating mechanism, means responsive to permutations of telegraph signal impulses for conditioning said punches correspondingly, and means responsive to certain combinations of said impulses to withhold said mechanism from said hammer.

26. In a tape reperforator, a set of punches, a set of telegraphically controlled punch conditioning elements, tape advancing means operative associatively with said punches, and means responsive to certain settings of said conditioning elements for suspending the performance of said tape advancing means and for modifying subsequent performance of said punches.

27. In an electrically controlled recorder, means responsive to incoming electrical signals for impressing a code upon record material corresponding permutably to said signals, and means controlled by an incoming electrical signal for impressing upon said record under the control of said signal a code differing permutably from said signal.

28. In an electrically controlled perforator, means responsive to electrical line signals for registering successively corresponding codes upon a record material, and means controlled by electrical start impulses and prepared for recording action under the control of certain codes of electrical signals for recording codes different from said certain electrical signals.

29. In a signal controlled perforator, means responsive to electrical signals for registering a corresponding code upon record material, further means controlled by said registering means for supplying a definite modified condition of operation to a succession of codes uniformly, and means controlled by certain ones only of said signals for varying said modified condition.

30. In a signal controlled perforator, means to perforate a tape in code manner responsive to corresponding electrical code signals, means to perforate an additional hole to any code concurrently with the perforation of said code which hole is to represent a modified condition to said code, means responsive to certain electrical signals representing shift function for conditioning said perforating means for actuation, and means responsive to unshift signals for disabling said perforating means.

31. In a signal controlled perforator responsive to a six-unit received code, means to perforate seven-unit code conditions including six standard punches corresponding element for element to said received code and an auxiliary punch for perforating an additional hole adjacent the six-unit code perforations, conditioned by a certain six-unit code, and means responsive to a certain other six-unit code for disabling said additional punch.

32. In a signal controlled device, means to advance a control form, and means responsive to certain control signals only for suspending the movement of said form advancing means momentarily. 5
33. In a signal controlled device, means responsive to received electrical signals for registering a received code, means for marking said registered code with an added symbol, and means under control of certain signals only for controlling the presence or absence of said symbol. 10
34. In a permutation selective mechanism, a set of permutation elements variously positionable to effect a principal code selective function, extended portions on said elements notched to duplicate certain permutative selections only, and a selectable function device conditioned by the notches in said extended portions and operative to modify the principal performance of said permutation elements. 15
35. In a perforator, a set of punches, a corresponding set of permutation code elements, means for conditioning each of said punches under the control of an associated one of said elements, an additional punch, and means to condition said additional punch under the control of said set of elements effective permutably. 20
36. In a perforator, a set of permutation signal punches, a case determining punch, means under the control of permutation code character signals for conditioning said signal punches correspondingly, and means under the control of permutation code case signals for conditioning said case determining punch. 30
37. In a perforator, a set of permutation signal punches, a case determining punch, a set of permutation selector elements corresponding in number to said permutation signal punches, means for conditioning each of said permutation signal punches in accordance with the selective condition of an associated one of said selector elements, and means to condition said case determining punch in accordance with a permutation code of the several ones of said set of permutation elements. 5
38. In a tape feeding mechanism for advancing a continuous web of material through a locus of printing or code perforating apparatus, a feed shaft, a ratchet wheel carried by said shaft, a feed pawl operative upon said wheel for rotating said shaft, an actuator comprising an intermittently operative reciprocator, a severable connector between said reciprocator and said feed pawl, and means responsive to predetermined control signals for severing said connector momentarily and thereby disassociating said actuator from said feed pawl. 10
39. In a telegraph apparatus, a tape feed mechanism comprising a feed shaft to be intermittently moved, a pawl and ratchet wheel for actuating said shaft, a reciprocating element for imparting movement to said pawl, and means responsive to certain received signals for disassociating said reciprocating element and said feed pawl for the duration of a signal interval. 15
40. In a perforator mechanism, a set of perforator punches, a set of selectors corresponding in number to said punches, a set of interposition elements corresponding in number to said punches, a set of transfer levers for communicating the setting of said selectors to said interposition elements, a case determining factor, and means associated with said interposition elements for selecting said case determining factor. 20 25 30 35

LOUIS M. POTTS.