

Dec. 6, 1960

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PRINT SUPPRESSING MECHANISM FOR PRINTING
TELEGRAPH PAGE PRINTERS

2,963,547

Filed Sept. 22, 1958

3 Sheets-Sheet 1

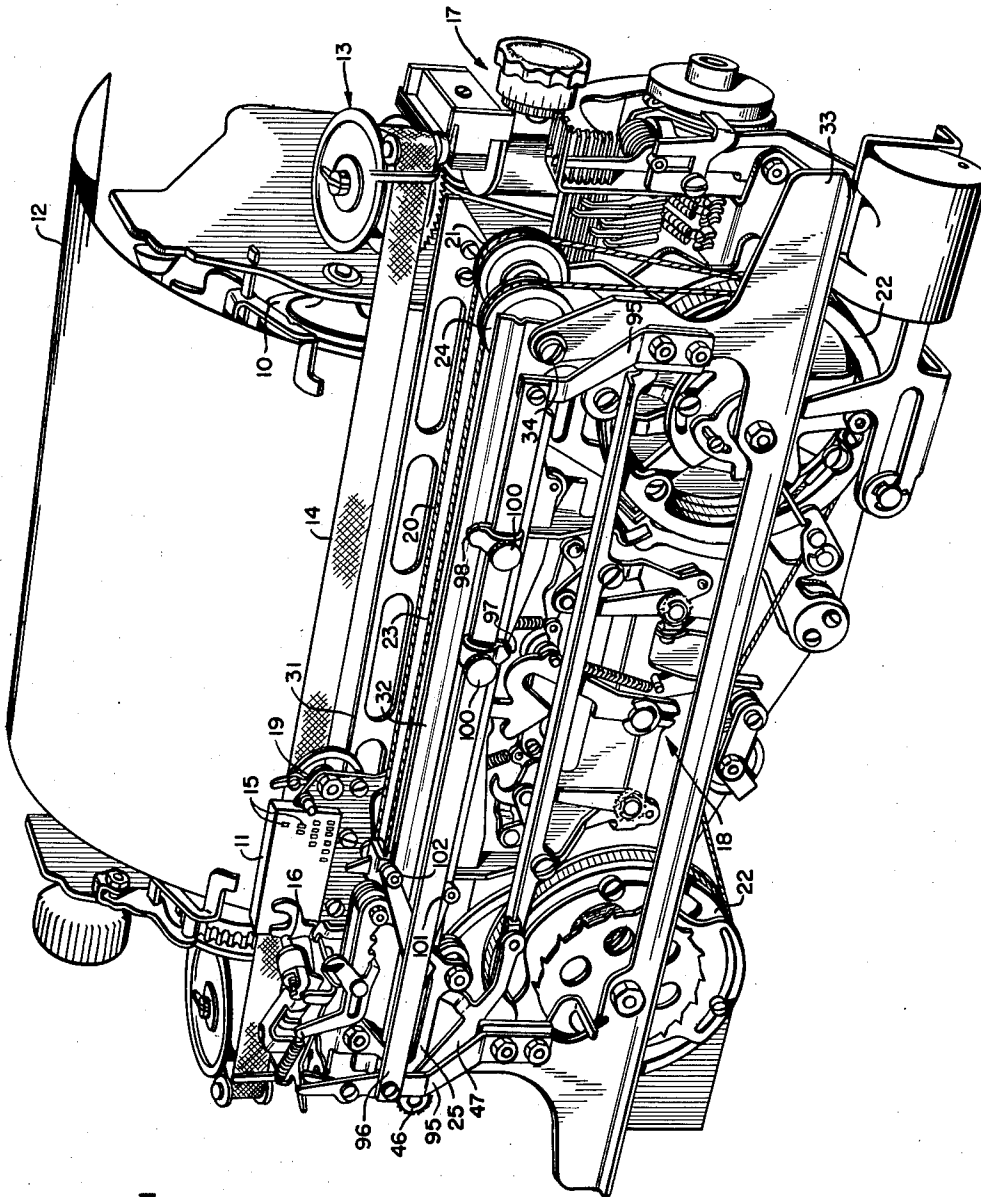


FIG. 1

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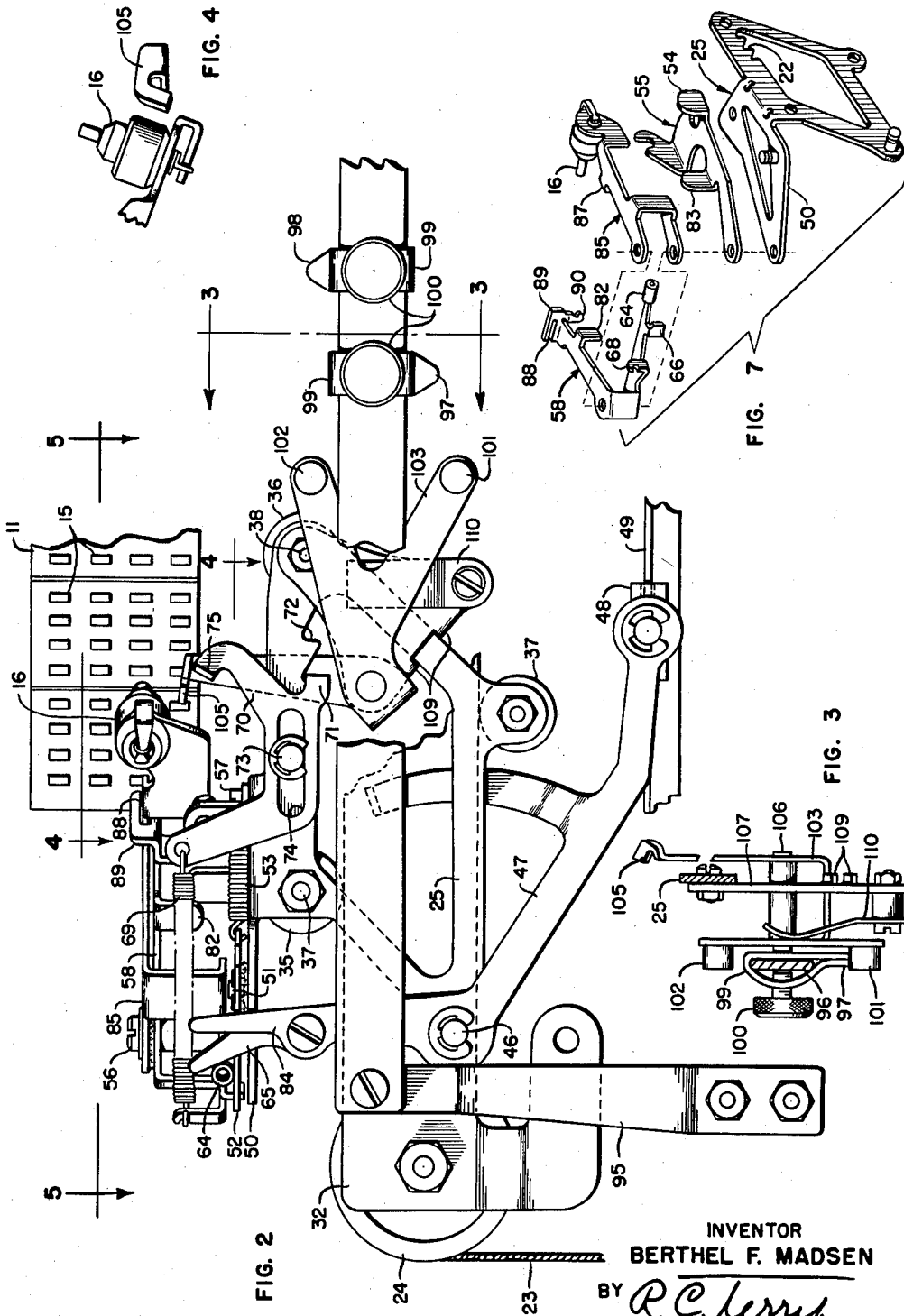
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3 Sheets-Sheet 3

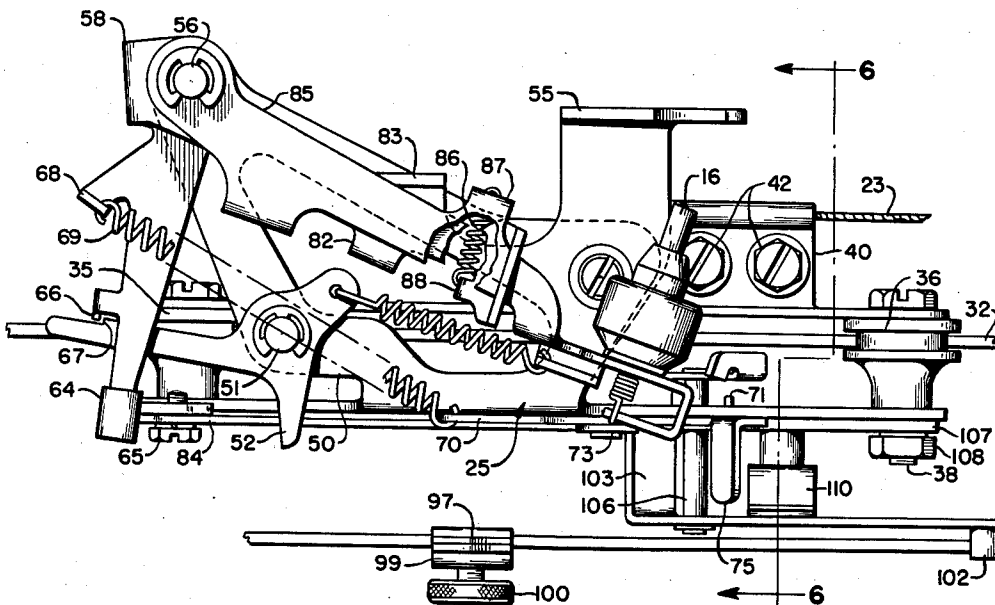


FIG. 5

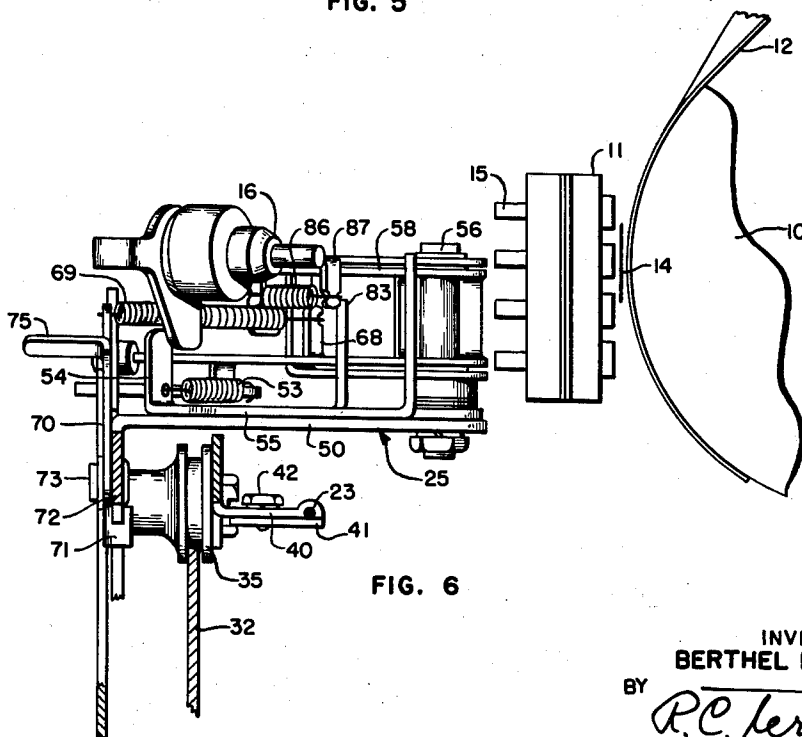


FIG. 6

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PRINT SUPPRESSING MECHANISM FOR PRINTING TELEGRAPH PAGE PRINTERS

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This invention relates to a print suppressing mechanism for printing telegraph apparatus, and more particularly to mechanisms settable to suppress printing on selected areas of the page being printed in a printing telegraph page printer.

When printing telegraph apparatus is used in connection with printed forms, it frequently is desirable to send the same general information to a number of page printers on a telegraph line but it may also be desirable to render the printing apparatus at some of the printers to which the information is sent, ineffective to print portions of a message. For example, when a printing telegraph system is being used to issue orders in a large manufacturing establishment, it may be desirable to have the cost of various items being ordered on a single order suppressed at some of the printers so that those organizations in the concern which do not necessarily have to know the cost of the items will not have the cost printed on the message which is received by them.

It is an object of this invention to provide a novel print suppressing mechanism for a printing telegraph page printer.

Another object of the invention is to provide a novel print suppressing mechanism which will suppress the printing of information in selected columns of a page being printed in a printing telegraph page printer.

In accordance with one embodiment of the invention as applied to a printing telegraph page printer of the type wherein a spring actuated print hammer strikes a type pallet carried in a type box that is moved step by step across the page to be printed, there is provided a mechanism for blocking the print hammer from striking the type pallet, which mechanism is mounted on the carriage that carries the print hammer and may be moved into position to block the print hammer by a leverage mechanism also carried by the print hammer carriage and actuated to operative or inoperative position by cam elements mounted upon a bar which extends across the entire page printer apparatus. Thus, printing may be suppressed on any desired column of the page being printed in the apparatus.

A more complete understanding of the invention may be had by reference to the following detailed description when taken in conjunction with the accompanying drawings wherein:

Fig. 1 is a front view in perspective of a page printing telegraph apparatus of the type in which the present invention may be incorporated;

Fig. 2 is a fragmentary front elevational view of the page printer, showing the print hammer actuating mechanism and the suppressing mechanism, parts being broken away to illustrate more clearly, some of the parts which are behind them;

Fig. 3 is a fragmentary, vertical sectional view taken substantially along the lines 3—3 of Fig. 2, in the direction of the arrows, showing some details of the print suppressing mechanism;

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Fig. 4 is a fragmentary detailed view showing the relative position of the member which blocks the print hammer and the print hammer when the blocking element is not in blocking position, as viewed along the line 4—4 of Fig. 2, looking in the direction of the arrows;

Fig. 5 is a fragmentary plan sectional view looking downwardly in the direction indicated by the arrows 5—5 on Fig. 2;

Fig. 6 is a fragmentary sectional view, taken along the lines 6—6 of Fig. 5, in the direction of the arrows, and

Fig. 7 is an exploded view, in perspective, of some of the details of the printing mechanism.

In the drawings, wherein like reference characters designate the same parts throughout the several views, there is illustrated a printing telegraph page printer of the general type disclosed in United States Patent No. 2,505,729 to W. J. Zenner. In such page printers a stationary platen 10 has associated with it a type box or carrier 11 that is stepped across the face of a page or form 12 (Figs. 1 and 6), on which printing is to be effected. The page or form 12 may be fed step by step to effect line feeding by imparting step by step rotation to the platen 10 in the manner described in the aforementioned United States Patent No. 2,505,729. A ribbon feeding mechanism 13, also of the type described in detail in the aforementioned United States patent, serves to feed a ribbon 14 between the type box 11 and the page or form 12.

The type box 11 has type pallets 15 in it which may be individually associated with a print hammer 16 by reciprocating the type box 11 horizontally and vertically under control of permutation code signals received by a selector mechanism 17 (Fig. 1), that controls the movement of the type box by selectively actuating a type box positioning mechanism designated generally by the numeral 18 which may be constructed in the manner described in detail in the aforementioned United States Patent No. 2,505,729. The type box 11 as pointed out hereinbefore is moved step by step across the face of the paper or form 12 and is carried on a carrier 19. The carrier 19 is suitably fixed to a table 20 that is fed over a pair of guide rollers 21 at the right and left-hand ends of the apparatus, as viewed in Fig. 1, only one of the guide rollers 21 being shown in this figure. The cable is then directed down to a pair of spacing drums 22 which are actuated in the manner described in the aforementioned United States Patent No. 2,505,729. This arrangement serves to move the type box 11 step by step across the paper or form 12 to effect character spacing movements of the type box.

The spacing drums 22 also serve to drive a cable 23 which is guided over a pair of guide rollers 24 and which imparts step by step movement to a print hammer carriage frame 25 in unison with the step by step movement imparted to the type box 11. The type box 11 may be shifted vertically and horizontally to present different type pallets 15 to association with the print hammer 16, and in so being moved, is moved independently of its movements to effect spacings, all as described in the aforementioned United States Patent No. 2,505,729.

The type box carrier 19 travels across the face of the page or form 12 on a track member 31 which is reciprocated vertically as described in the aforementioned United States Patent No. 2,505,729, whereas the print hammer carriage frame travels across the face of the page or form 12 on a track member 32 which is fixed to a front plate 33 of the apparatus by means of machine screws 34, only one of which is shown in Fig. 1 of the drawings.

The printing apparatus which comprises the preferred embodiment of the present invention includes the print hammer 16 and the operating mechanisms therefor. The

print hammer 16, as pointed out hereinbefore, is carried on the print hammer carrying frame 25 on which there are also mounted a pair of grooved rollers 35 and 36 and a grooved roller 37 that are arranged to cooperate with the track member 32. The grooved rollers 35 and 36 are mounted for rotation on a pair of roller stud shafts 38 and 39 suitably fixed to the print hammer carriage frame 25. These two stud shafts 38 and 39 also support a bracket 40 to which a cable clamp 41 is securely fastened by means of a pair of bolts 42, whereby the print hammer carriage frame 25 may be securely fastened to the cable 23 for movement with the cable 23 (Figs. 5 and 6).

The print hammer carriage frame 25 (Fig. 2), has a pivot shaft 46 mounted on it about which there is pivoted an operating lever 47. At its lower right-hand extremity, as indicated in Fig. 2, the operating lever 47 has pivotally attached to it a slotted member 48 which slidably engages the horizontal flange of a vertically reciprocable actuating bar 49 which corresponds to the bar 458 shown in said United States Patent No. 2,505,729 and which is operated in the manner described in said patent.

A horizontally disposed portion 50 of the print hammer carriage frame 25 has a stud shaft 51 mounted on it for oscillatably supporting a striker bail latch 52. The striker bail latch 52 is normally urged to rock in a clockwise direction (Fig. 5), by a contractile spring 53 which is attached to one arm of the striker bail latch 52 and to an upwardly extending projection 54 of a bracket 55. The bracket 55 is mounted on the horizontally disposed portion 50 of the print hammer carriage frame 25 and is pivoted for adjustment on a pivot shaft 56. After the bracket 55 has been properly adjusted on the pivot shaft 56 it may be clamped in place by a clamping screw 57.

The pivot shaft 56 is mounted on the horizontally disposed portion 50 of the print hammer carriage frame 25 and has oscillatably about it a striker bail or hammer actuator 58 which is U-shaped at the portion of it which is mounted on the pivot stud 56 to provide a dual bearing on the shaft 56, as may be seen most clearly by reference to Fig. 5 and Fig. 7. A forwardly extending projection 64 (Fig. 5), of the striker bail actuator 58 is positioned in the path of movement of a vertically extending projection 65 of the operating lever 47 whereby when the operating lever 47 is oscillated in a counterclockwise direction (Fig. 2), about its pivot shaft 46 the upwardly extending projection 65 will engage the forwardly extending projection 64, thus to rock the striker bail actuator 58 clockwise (Fig. 5), about its pivot shaft 56. A latching projection 66 on the forwardly extending projection 64 will thus be brought into latching engagement with a latching shoulder 67 on the striker bail latch 52 when the striker bail or hammer actuator 58 is oscillated to a predetermined position with respect to the striker bail latch 52.

Extending upwardly from the striker bail actuator 58 is a lug 68 to which there is secured one end of a striker bail or printing spring 69. The other end of the spring 69 is secured to an upwardly extending portion of an adjustable bracket 70. A rearwardly extending lug 71 is formed on the adjustable bracket 70 for cooperation with a toothed portion 72 of the print hammer carriage frame 25. This bracket 70 may be locked in a selected position on the print hammer carriage frame 25 by rocking the bracket 70 about a pivot stud 73 which extends into a slot 74 formed in the bracket 70 and which pivot stud 73 is fixedly mounted on the print hammer carriage frame 25. A tab or finger portion 75 formed on the bracket 70 permits easy manipulation of the bracket 70 to nest the rearwardly extending lug 71 on the bracket in any one of the teeth 72 on the print hammer carriage frame 25. By means of this arrangement, the tension of spring 69 may be adjusted to control the force applied to the striker bail actuator 58 and consequently will regulate the force with which the print hammer 16 is driven toward a type

pallet 15 which has been selectively positioned in the path of movement of the print hammer 16.

The striker bail actuator 58 has a downwardly extending stop lug 82 formed on it for cooperation with an upwardly extending lug 83 formed on the bracket 55 to limit the counterclockwise movement (Fig. 5), of the striker bail actuator 58 under the influence of the spring 69. The spring 69 is effective to snap the striker bail actuator 58 to the position where stop lug 82 engages lug 83 on the bracket 55 when the projection 64 of the actuator 58 is released by the striker bail latch 52. The release of the latching shoulder 67 from the latching projection 66 on the striker bail actuator 58 is effected by rocking the striker bail latch 52 in a counterclockwise direction, Fig. 5. The striker bail latch 52, which is normally urged to the position shown in Fig. 5 by its spring 53, is engaged and rocked in a counterclockwise direction, Fig. 5, to release the striker bail actuator 58, by a lever 84 adjustably mounted on the projection 65 of the operating lever 47 when the operating lever 47 is rocked clockwise, Fig. 2, about its pivot shaft 46.

Also pivotally mounted on the pivot shaft 56 is a print hammer arm 85 which is U-shaped at its pivot end to provide a dual bearing on the shaft 56. The print hammer arm 85 carries the print hammer 16 at its right-hand end and is normally urged to move with the striker bail actuator 58 by a spring 86 which is attached to a downwardly extending arm 87 formed on the print hammer 85 and to a downwardly extending arm 90 formed on the striker bail or hammer actuator 58. This spring 86 which is a very light spring holds the forward edge of the print hammer arm 85 against the base of a horizontally disposed notch 88 formed in a bent portion 89 of the striker bail or hammer actuator 58. By this arrangement the print hammer arm 85 will be positively moved in a counterclockwise direction by the striker bail actuator 58 when the striker bail actuator 58 is moved by its spring 69. However, when the lug 82 on the striker bail actuator 58 strikes the lug 83 on the bracket 55 continued clockwise movement of the actuator 58 will be stopped and the weight of the print hammer arm 85 and print hammer 16 carried by it will cause the spring 86 to be stretched and the print hammer arm 85 will consequently overthrow to a sufficient extent to bring the print hammer 16 into engagement with the type pallet 15 which has been aligned with it through the selective operation of the printing apparatus, thus to effect the printing of a character on the page or form 12.

Adjacent to the ends of the front plate 33 there are mounted two brackets 95 which support a cross bar 96. The cross bar 96 has adjustably mounted on it a pair of cam elements 97 and 98 which, as may be seen most clearly by reference to Fig. 3, comprise a bar encircling portion 99 to which the cam proper is fastened and a thumb nut 100 threaded into the bar encircling portion 99 whereby upon loosening the thumb nut 100, the cam 97 or the cam 98 may be shifted to any desired position along the bar 96 and may thereafter be locked in place in the selected position by tightening the thumb nut 100.

When it is desired to suppress printing on a column of the page or form 12 being printed in the apparatus, the cams 97 and 98 may be shifted to the desired positions to interpose them in the path of cam rollers 101 and 102, respectively. The cam rollers 101 and 102 are mounted on the free ends of two arms of a three armed bell crank lever 103 which has a fourth arm designated 104 having a bentover portion 105 at its upper extremity. The bell crank lever 103 is mounted on a pivot shaft 106 fixed in a generally, triangularly shaped plate 107 that may readily be mounted on the print hammer carriage frame 25 by removing a nut 108 from the roller stud shaft 38 and then placing the triangular shaped plate 107 on the shaft and refastening the nut 108. The triangularly shaped plate 107 has a pair of lips 109 on it which will engage the sides of an arm of the print hammer carriage frame 25, thus to

hold the plate 107 fixed with respect to the carriage frame 25. The plate 107 also has a retainer spring 110 mounted on it which will retain the bell crank lever 103 in either of its set positions to which it may be moved by the engagement of its cam rollers 101 and 102 with the cams 97 and 98, respectively. The upper extremity 105 of the arm 104 serves as an abutment against which the print hammer arm 85 will strike if the bell crank lever 103 is rocked to its counterclockwise position, opposite to that shown in Fig. 2.

In the operation of the apparatus the selector mechanism 17, in receiving permutation code signals over a telegraph line, will control the type box positioning mechanism 18 and the type box carrier 19 and print hammer carriage frame 25 will be moved across the face of the page or form 12 step by step in response to spacing operations of the spacing drums 22. Each time the actuating bar 49 is reciprocated it will oscillate the operating lever 47 about the pivot shaft 46 and this operation occurs each time a signal is received in the selector mechanism 17 that calls for a printing operation. As the operating lever 47 rocks counterclockwise (Fig. 2), it will, through its projection 65, rock the striker bail actuator 58 clockwise (Fig. 5) to latch the actuator 58 in the position shown in Fig. 5 where latching projection 66 will be held by latching shoulder 67 on striker bail latch 52.

When the operating lever 47 is rocked clockwise (Fig. 2), about its pivot shaft 46 lever 84 will engage and rock the striker bail latch 52 counterclockwise (Fig. 5), to unlatch the striker bail or hammer actuator 58 and the spring 69 will drive the actuator 58 rapidly in a counterclockwise direction (Fig. 5) until the lug 82 on it strikes the lug 83 on bracket 55. When lug 82 strikes lug 83 the actuator 58 will be stopped. The print hammer arm 85 which is positively driven by the actuator 58 will not be stopped when the actuator 58 is stopped but will be thrown further in a counterclockwise direction (Fig. 5) to carry the print hammer 16 toward the type pallet 15 aligned with it. This overthrow of the print hammer arm 85 will stretch the spring 86 and unless the hammer 16 is blocked it will actuate the type pallet 15.

As the print hammer carriage frame 25 moves across the face of the page or form 12 it will carry with it the print suppressing mechanism mounted on it and will ultimately move to a position where the cam roller 102 will engage the cam element 98. When this occurs the bell crank lever 103 will be rocked counterclockwise about its pivot shaft 106 thus to move the blocking extremity 105 of the bell crank lever 103 into position to block the overthrow of the print hammer arm 85. The bell crank lever 103 will be held in its counterclockwise position, opposite to that shown in Fig. 2, by the retainer spring 110 until the bell crank lever is cammed back to the position shown in Fig. 2 by the roller 101 engaging a cam element 97.

While only one cam element 97 and one cam element 98 are shown in the drawings, it will be obvious that several of them could be arranged on the cross bar 96 to block printing on one or a number of columns of the page or form 12. Other modifications of the structure shown and described could also be made without departing from the scope of the invention.

What is claimed is:

1. A print suppression mechanism for a printing telegraph page printer having a print hammer, a type carrier having type selectively positionable with respect to the print hammer, and means for imparting relative movement between a page to be printed and said type carrier and print hammer, comprising means movable with the print hammer in its travel with respect to the page for blocking the print hammer from effecting printing, and means for rendering said last-mentioned means effective to block printing at predetermined portions of the travel between the print hammer and the page to be printed.

2. A print suppression mechanism for a printing tele-

graph page printer having a print hammer, a type carrier selectively positionable with respect to the print hammer, and means for moving said type carrier and print hammer across a page to be printed, comprising a cam actuable lever movable with the print hammer in its travel across the page, means on said lever for blocking the print hammer from effecting printing, and cam means settable in position for rocking said lever from an inoperative to an operative position for rendering said last-mentioned means effective to block printing at predetermined portions of the travel of the print hammer across the page to be printed.

3. A print suppression mechanism for a printing telegraph page printer having a print hammer, a type carrier selectively positionable with respect to the print hammer, and means for moving said type carrier and print hammer across a page to be printed, comprising a bell crank lever, movable with the print hammer in its travel across the page, a blocking projection on said lever for blocking the print hammer from effecting printing, and means for rocking said bell crank lever to position to block printing at predetermined portions of the travel of the print hammer across the page to be printed.

4. A print suppression mechanism for a printing telegraph page printer having a print hammer, a type carrier selectively positionable with respect to the print hammer and means for moving said type carrier and print hammer across a page to be printed, comprising a supporting plate movable with the print hammer in moving across the page, a multi-armed lever pivotally mounted on said plate, a print hammer blocking means on one arm of said lever, cam rollers on other arms of said lever, a spring on said plate for holding said lever in either of two positions, and cam means disposed in the path of travel of said cam rollers for rocking said lever to said two positions to render the blocking means effective or ineffective to block printing at predetermined portions of the travel of the print hammer across the page to be printed.

5. A print suppression attachment for use on a printing telegraph page printer having a print hammer, a type carrier selectively positionable with respect to the print hammer, and means for moving said type carrier and print hammer across a page to be printed, comprising a plate attachable to the means for moving the print hammer across the page, means on said plate for blocking the print hammer from effecting printing, and means settable for rendering said last-mentioned means effective to block printing at predetermined portions of the travel of the print hammer across the page to be printed.

6. In a printing telegraph page printer having a spring-actuated print hammer, a type carrier selectively positionable with respect to said print hammer, type pallets in said type carrier for actuation by said hammer, carriages movable across a page being printed for carrying said type carrier and said print hammer, and a spacing mechanism for imparting movement to said carriages step by step with respect to said page, the combination of means interposable in the path of said print hammer in its movement toward said type pallets to prevent the hammer from actuating the type pallets, and means settable along the path of movement of the carriage for selectively actuating said interposable means.

7. In a printing telegraph page printer having a spring-actuated print hammer, a type box selectively positionable with respect to said print hammer, type pallets in said type box for actuation by said hammer, carriages movable across a page being printed for carrying said type box and said print hammer, and a spacing mechanism for imparting movement to said carriage step by step with respect to said page, the combination of a lever having a portion interposable in the path of said print hammer in its movement toward said type pallets to prevent the hammer from actuating the type pallets, and means settable along the path of movement of the car-

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riages for selectively actuating said lever to rock said portion of it into the path of the hammer.

8. In a printing telegraph page printer having a spring-actuated print hammer, a type box selectively positionable with respect to said print hammer, type pallets in said type box for actuation by said hammer, carriages movable across a page being printed for carrying said type box and said print hammer, and a spacing mechanism for imparting movement to said carriages step by step with respect to said page, the combination of a 10 plate attachable to the print hammer carriage, a three-armed lever pivotally attached to said plate, a projection on one arm of said lever interposable in the path of said

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print hammer in its movement toward said type pallets to prevent the hammer from actuating the type pallets, a cam roller on each of the other arms of said lever, cam means settable along the path of movement of the carriages for selective engagement of said cam roller to actuate said lever to either operative or inoperative position, and resilient means for holding said lever in either of its positions.

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