

June 25, 1940.

P. A. NOXON ET AL

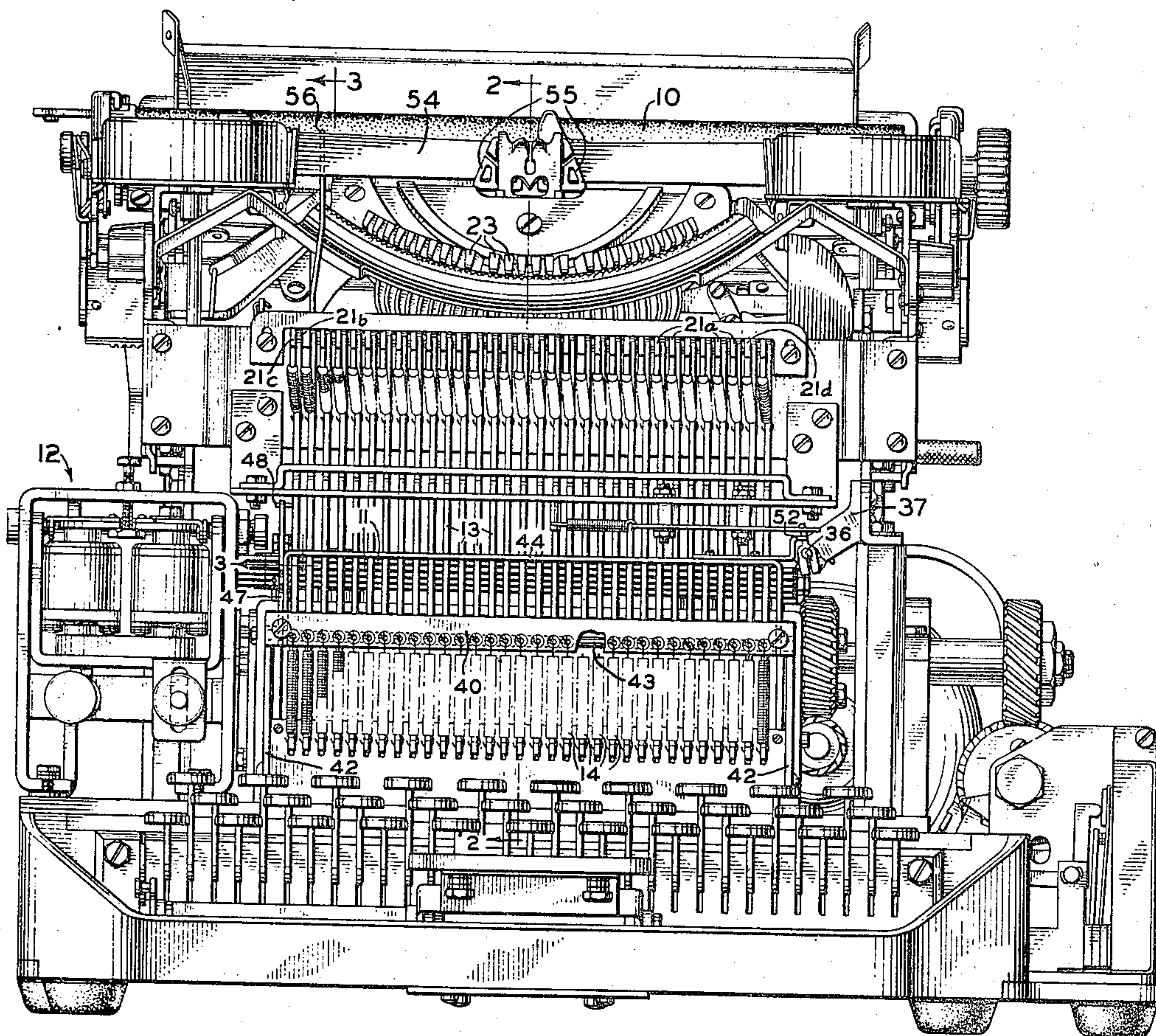
2,205,430

PRINTING TELEGRAPH APPARATUS

Filed Aug. 13, 1937

3 Sheets-Sheet 1

FIG. 1



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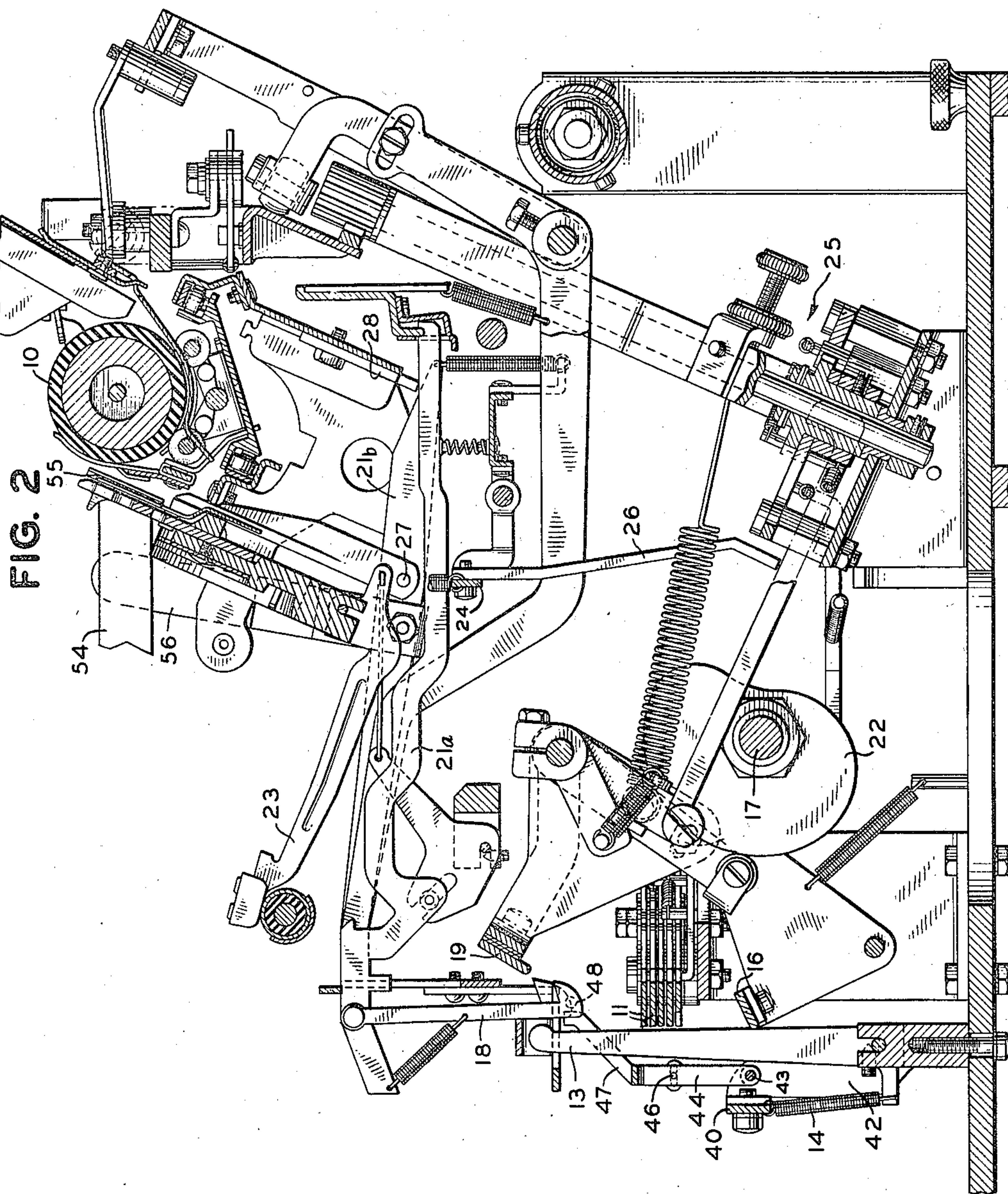
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3 Sheets-Sheet 2



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3 Sheets-Sheet 3

FIG. 3

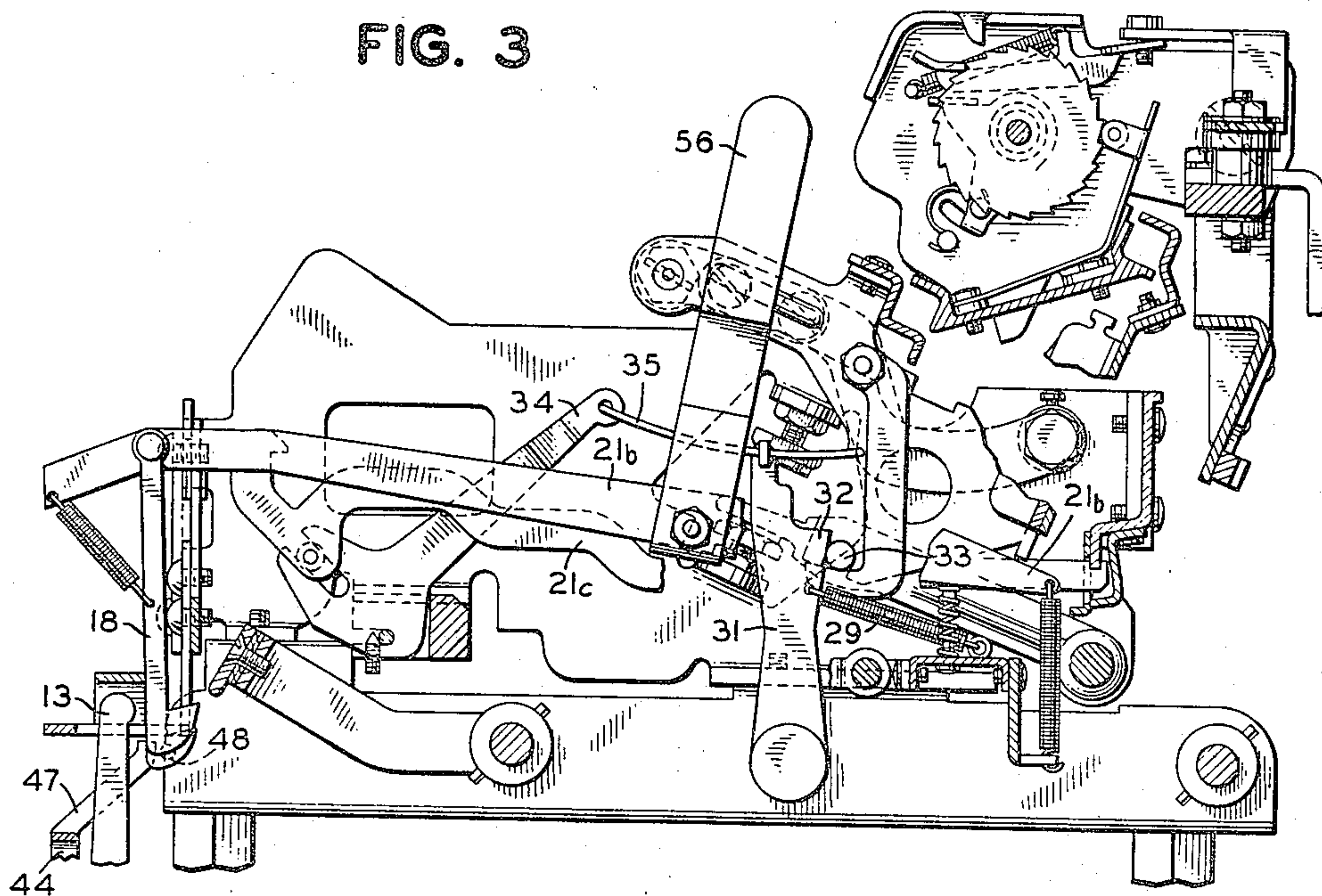
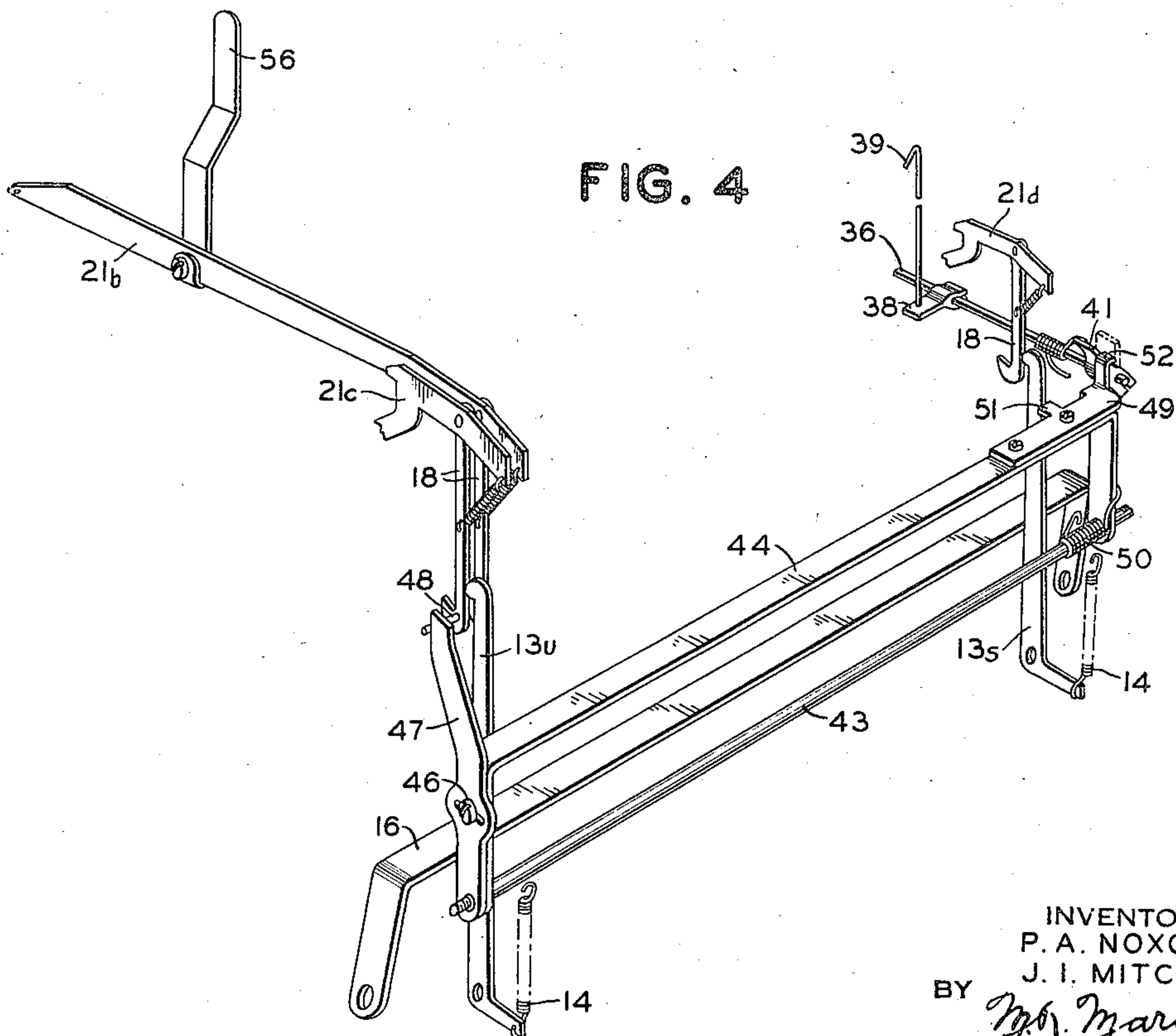


FIG. 4



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2,205,430

PRINTING TELEGRAPH APPARATUS

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Application August 13, 1937, Serial No. 158,848

3 Claims. (Cl. 178—25)

This invention relates primarily to printing telegraph apparatus and more particularly to an attachment for a telegraph page printer of the type disclosed in a copending application of P. A. Noxon, et al., Ser. No. 66,906, filed March 3, 1936. Although the invention is shown and described as operating in conjunction with the above mentioned printer, it should be kept in mind, however, that with minor modifications, the invention may easily be adapted to operate in conjunction with various other printers, such as tape printers.

In telegraph printers there are usually a plurality of printer functions performed in addition to the regular printing operations. These printer functions such as line feed, carriage return, letter space, shift and unshift operation, are usually performed in response to their respective signal code combinations. When ordinary printers are used in brokerage service, wherein the shift and unshift signals occur quite frequently, a considerable portion of the line time is utilized in transmitting these shift and unshift signals. It is, therefore, one of the objects of this invention to provide an attachment for a printer whereby a plurality of printer functions may be performed in response to a single signal, for predetermined conditions of the receiving printer while at the same time allowing these functions to be performed independently under other conditions. More specifically, the above object is to provide an attachment for a printer whereby the receipt of a letter space signal with the platen carriage in its shift position automatically returns the carriage to its unshift position and letter spaces the platen carriage. Obviously, when it is desired to letter space between figures, a condition very rarely occurring with a printer used in this type of service, a shift signal must be transmitted following the letter space signal.

In printers of the type mentioned above wherein the platen carriage is raised and lowered in response to shift and unshift signals, respectively, and employs a typewriter inking ribbon, the supply spools for which are stationary, an abnormal tension is set up in the ribbon on the movement of the carriage to a shift position. This results in the printing operation of the character following the shifting operation being substantially lighter than the other printed characters. The reason for this is that the printing blows of the typebars are substantially uniform and on the first printing operation after a shift, a portion of the typebar blow is absorbed in loosening the inking ribbon. The manner in which the above disadvantage is overcome while

being shown and described in the present application forms the subject matter of a copending application filed May 21, 1940, Serial No. 336,388, and entitled "Printing apparatus."

Another object of the invention resides in the ease with which the apparatus for accomplishing the above objects is attached to the printer and the minimum number of parts necessary to accomplish the above mentioned objects.

These and other objects of the invention will be apparent when taken in conjunction with the following description and the drawings, showing and describing the invention as operating in conjunction with the above mentioned printer, in the latter of which:

Fig. 1 is an elevational view of the printer mentioned above and one embodiment of the invention, showing the manner in which this embodiment of the invention is attached to the printer, to cooperate therewith.

Fig. 2 is a fragmentary sectional view taken on line 2—2 of Fig. 1 substantially through the center of the printer;

Fig. 3 is a fragmentary sectional view taken substantially on line 3—3 of Fig. 1; and

Fig. 4 is a perspective view of the preferred embodiment of the invention and the cooperating elements of the telegraph printer.

Referring first to Figs. 1, 2 and 3, a brief and general description of the operation and arrangement of the elements of the above mentioned printer that cooperate with the elements of the invention will first be given. As fully described in the above mentioned application, the printer is of the page printer type and comprises a platen movable to and fro to effect letter spacing and movable in a plane inclined slightly from the vertical, in response to shift and unshift signals, to effect the printing of the upper and lower case characters on the typebars.

The selecting mechanism of the printer comprises a set of five horizontal permutation bars arranged in superimposed relation adjacent the front of the printer. These bars are set in various combinations in accordance with the signals received on the electric selector mechanism, indicated in general by reference numeral 12, Fig. 1. Each of the permutation bars have differently arranged on the front edge thereof a series of notches and for each combination of settings of the permutation bars a notch in each of the bars is in alignment with a notch in each of the others. Disposed in the front of the permutation bars and adapted to cooperate with the notches therein, are a plurality of substantially

vertical drop-in bars 13. The drop-in bars are pivotally supported at their lower ends and are urged toward the permutation bars by means of individually attached springs 14. However, the drop-in bars are normally held out of engagement with the permutation bars 11 by means of a bail 16. After the permutation bars are selectively positioned in response to a signal combination, a cam (not shown) on this operating shaft 17 adapted to make one revolution in conjunction with each received code combination, allows the bail 16 to pivot away from the drop-in bars 13. This allows the drop-in bars to approach the permutation bars 11 and the one opposite the aligned row of vertical notches in the bars is allowed to pivot a slight amount further than the rest to a selected position. The upper end of the thus selected drop-in bar 13 engages the forward edge of an associated hook 18 and causes the lower hooked end thereof to be pivoted beneath an operating bail 19. Each drop-in bar has an associated hook 18 which in turn is pivotally attached at its upper end to an associated operating lever, indicated in general by reference numerals 21a to 21d, Figs. 1 and 3. The operating bail 19 is controlled by a cam 22 on the operating shaft 17 and engages the operated hook of one of the operating levers 21a to 21d to cause a printing operation or a printer function to be performed, depending on which of the hooks 13 are moved into the path of the operating bail 19.

The typebar operating levers, one for each of the typebars 23, are indicated in general by reference numeral 21a and these bars pivot about their right hand end as seen in Fig. 2 when their associated hook 18 is engaged and operated by the operating bail 19. Extending transversely beneath the typebar operating levers 21a and adjacent the center thereof is a spacing bail 24 which is adapted to be operated on the operation of a typebar operating lever 21a and by means of an arm 26 to trip a spacing mechanism indicated in general by reference numeral 25. The spacing mechanism operates on the return of the operating bail 19 to normal, to space the platen 10 one letter space in conjunction with each printing operation. A single operating lever 21d similar to the typebar operating levers 21a has no typebar associated therewith and therefore its operation only causes the operations of the letter spacing mechanism 25.

The platen 10 is supported in a carriage cradle which is raised and lowered in response to shift and unshift signals respectively. The operation of an operating lever 21b, Figs. 2 and 3, hereinafter referred to as the shift operating lever, causes the carriage cradle to be raised or shifted to a shift position when its associated hook 18 is operated by the operating bail 19. This lever 21b is pivoted adjacent its center on a pin 27 in a stationary part of the printer frame and the right hand end thereof engages a plate 28 on the movable section of the carriage cradle to raise the carriage when this lever is operated. When the carriage cradle is raised, a spring 29, Fig. 3, pivots a latching member 31 and allows a shoulder 32 thereon to be moved under a pin 33 in the movable part of the carriage cradle and thus prevents the carriage from returning to its lower or unshift position on the return of the shift operating lever 21b to its normal position. Another operating lever 21c, hereinafter referred to as the unshift operating lever, is adapted, when operated, to pivot a bell crank 34 which in turn through the link 35 causes the withdrawal of the

latching member 31 from engagement with the pin 33. Thereupon the weight of the carriage causes it to move to its lower position. The lever 21c is selected in response to an unshift signal. For obvious reasons the operating levers 21b and 21c are not adapted to operate the spacing bail 24 and therefore the platen 10 is not letter spaced on shift and unshift operations in response to shift and unshift signal code combinations.

A rod 36, Figs. 1 and 4, is pivotally supported in brackets, such as 37, which are attached to stationary sections of the printer frame. Clamped adjacent the rear end of the rod 36 is a substantially horizontal arm 38 which has connected thereto the lower end of a link 39. The upper end of the link 39 is attached to a movable section of the carriage cradle and as the carriage cradle moves up and down in response to shift and unshift signals, the rod 36 rotates a few degrees from one position to another. Clamped adjacent the front end of the rod 36 for movement therewith is a substantially vertical arm 41. The position of the arm 41, as shown by the full outline thereto, is its position when the carriage cradle is in its lower or unshift position and it is rotated to the position indicated by the dot-dash outline thereof when the carriage cradle is raised to its upper or shift position.

The elements of the invention and the manner in which they cooperate with the above mentioned elements of the printer will now be described. Horizontally supported in the brackets 42, Figs. 1 and 2, which support the anchor plate 40 for the drop-in bar springs 14, is a rod 43, Figs. 1, 2 and 4. Pivotally supported on the rod 43 is an elongated inverted U-shaped member 44. Adjustably attached to the left hand side of the U-shaped member 44 by a screw 46 is an arm 47. The upper end of the arm 47 cooperates with a horizontal pin 48 in the lower end of the hook 18, associated with the unshift operating lever 21c, to place the same underneath the operating bail 19, as will be hereinafter described. Attached to the top right hand end of the member 44 is an angle bracket 49 which has a rearwardly extending projection 51 normally held in engagement with the top front edge of the space drop-in bar 13S, by a spring 50. Another projection 52 of the angle bracket 49 is adapted to cooperate with the arm 41 on the rod 36, as will hereinafter be described. The spring 50 is coiled about the rod 43, and has one end engaged with the U-shaped member 44 and the other engaged with the drop-in bar springs anchor plate 40.

When the carriage is in its lower position and a letter spacing signal combination is received, the space drop-in bar 13S is allowed to pivot to an operated position and place its associated hook 18 beneath the operating bail 19. As the space drop-in bar 13S pivots into the notches in the permutation bars 11, the projection 51 on the angle bracket 49 starts to follow the inward movement of this drop-in bar, but is prevented from moving an appreciable amount because the right hand projection 52 engages the front side of the arm 41 to prevent further movement thereof in this direction. Thus with the carriage in its lower position, the selection of the space drop-in bar allows only a spacing operation to be performed. The selection of the space drop-in bar 13S with the carriage cradle in its upper position, allows both the operation of the space drop-

in bar operating lever 21d and the unshift operating lever 21c on a single operation of the bail 19 as hereinafter described. For this selection of the space drop-in bar 13S the arm 41 is no longer in the path of the projection 52 on the bracket 49, and therefore the projection 51 is allowed to follow the complete movement of the space drop-in bar. The U-shaped member 44 moves with the bracket 49 and therefore the arm 47 is allowed to engage the pin 48 on the hook 18 of the unshift operating lever 21c and thereby pivot this hook beneath the operating bail 19. Thus the hooks of the letters space operating lever 21d and the unshift operating lever 21c are moved into the path of the operating bail 19, and therefore their respective functions will be performed on the following operation of the bail 19. Thus in response to a single letter space signal with the carriage cradle in its upper position, a letter spacing function and an unshift function will be performed simultaneously. It is obvious that the selection of the drop-in bar 13U associated with the unshift operating lever 21c will not cause an unshift operation and a letter spacing operation to be performed simultaneously. With the carriage in its upper position, the selection of the unshift drop-in bar 13U merely pivots the hook 18 into the path of the operating bail 19 to operate the unshift operating lever 21c to perform an unshift operation of the printer as hereinbefore described.

The printer employs a typewriter ribbon 54, Fig. 1, which is wound up on one spool or reel while unwinding from another, as in ordinary typewriter construction. The spools are supported on stationary parts of the printer and do not move with the carriage cradle. The ribbon 54 passes through a ribbon guide 55 which guides the ribbon in front of the typebars and allows them to press it against a paper on the platen 10. The ribbon moves up and down for each printing operation as in an ordinary typewriter so as to provide visible printing. The carriage cradle does not rise in a vertical plane, but in a plane at an appreciable inclination to a vertical plane. The relative movement of the carriage cradle in rising to a shift position is away from the ribbon reels and therefore such a movement tends to increase the tension in the ribbon 54. The printing strokes of the typebars are all of substantially uniform force and therefore with this abnormal tension in the ribbon 54, an appreciable portion of the inertia of a typebar 33 would be absorbed in overcoming this abnormal tension. This would result in the typebar not striking the platen 10 with its normal blow, and consequently this printing operation would be lighter than the others. To prevent the ribbon from having an abnormal tension therein after a shift operation an arm 56 extending substantially vertically from adjacent the center of the shift operating lever 21b is provided. The top of the arm 56 extends in the rear of the ribbon 54 and as the shift operating lever 21c is operated to raise the platen carriage, the arm 56 engages the ribbon and causes a slight amount to be unwound from the supply spool to compensate for the movement of the platen carriage away from the spools. Therefore, there will be no abnormal tension in the ribbon 54

after the platen carriage is moved to its shifting position, and the first printed character thereafter will be as heavy as the others.

It is obvious, of course, that various modifications of the apparatus shown and described herein may be made to accomplish the same results and it is desired, therefore, that only such limitations shall be placed thereon as are imposed by the prior art or are specifically set forth in the appended claims.

What is claimed is:

1. In a telegraph apparatus, a platen having shift and unshift positions, a selector mechanism comprising a set of notched permutation members selectively positioned in accordance with received code combinations, a plurality of pivotable members selectively controlled by said permutation members, an operating bail for performing all printing and auxiliary functions of said printer, a plurality of hooks adapted to be pivoted into the path of said bail by associated of said pivotable members on the operation thereof, said hooks having a one way operating connection with said pivotable members, means operable by the operation of a predetermined one of said pivotable members in pivoting its associated hook into the path of said bail for normally pivoting a hook associated with another predetermined one of said pivotable members into the path of said bail, and means controlled by the position of said platen for preventing the operation of said last mentioned means.

2. In a telegraph apparatus, a platen having shift and unshift positions, a selector mechanism comprising a set of notched permutation members selectively positioned in accordance with received code combinations, a plurality of pivotal members selectively controlled by said permutation members, an operating bail for performing all printing and auxiliary functions of said printer, a plurality of hooks adapted to be pivoted beneath said bail by associated of said pivotal members on the operation thereof, said hooks having a one way operating connection with said pivotable members, a member tending to pivot with a predetermined one of said pivotal members, means controlled by said member for pivoting the hook associated with another predetermined one of said pivotal members beneath said operating bail and means controlled by the position of said platen for allowing the operation of said member.

3. In a telegraph printer, a platen carriage having a shift and an unshift position, a plurality of operating levers, an operating bail for performing all printing and auxiliary functions of said printer, individual hook members associated with each of said levers normally out of the path of said operating bail, selectively controlled members for placing said hooks one at a time beneath said operating bail, means operable on the operation of a predetermined one of said selectively controlled members for placing a second of said hooks beneath said operating bail and means dependent upon the position of said carriage for controlling said last mentioned means.

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