C. E. W. GARDNER.

RECORDING MECHANISM.

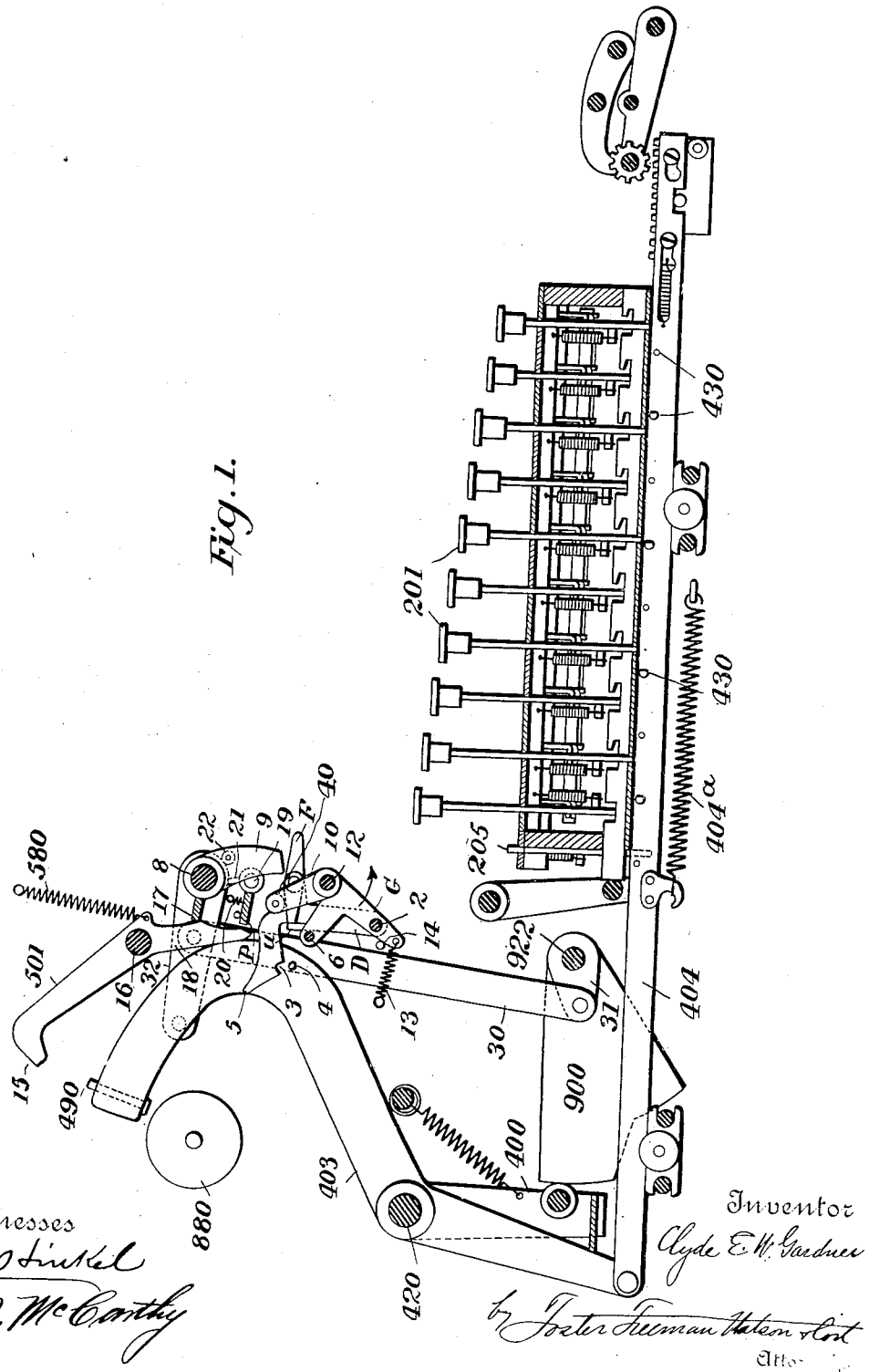
APPLICATION FILED JULY 27, 1908.

918,529.

Patented Apr. 20, 1909.

2 SHEETS—SHEET 1.

Fig. 1.



Witnesses

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J. J. McCarthy

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2 SHEETS—SHEET 2.

Fig. 2.

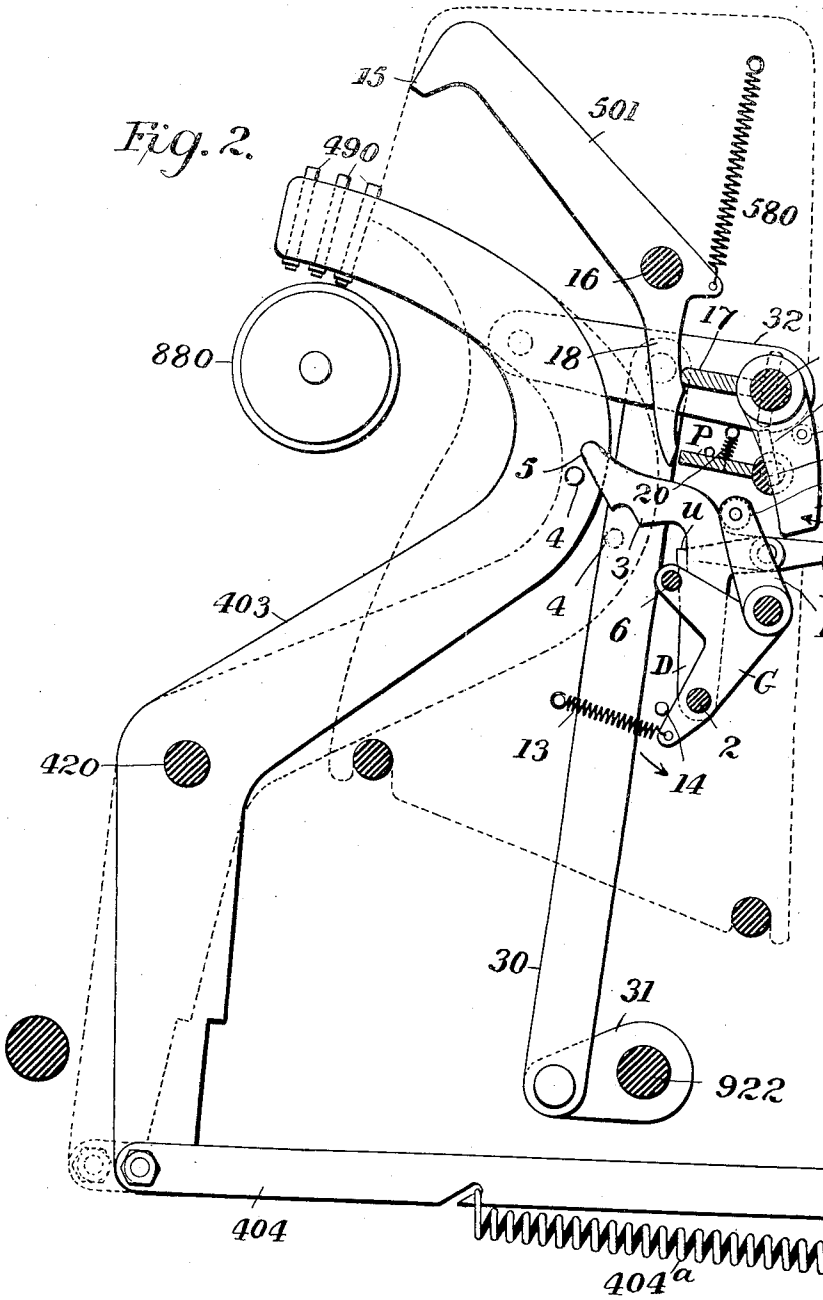


Fig. 3.

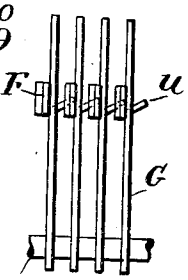
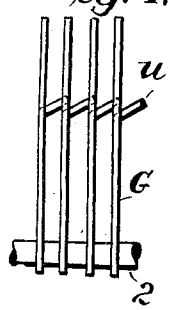


Fig. 4.



Witnesses

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RECORDING MECHANISM.

No. 918,529. Specification of Letters Patent. Patented April 20, 1909.

Application filed July 27, 1908. Serial No. 445,537.

To all whom it may concern:

Be it known that I, CLYDE E. W. GARDNER, a citizen of the United States, and residing at Orange, New Jersey, have invented certain new and useful Improvements in Recording Mechanism, of which the following is a specification.

My invention relates to devices for recording numbers and items, and more especially to that class of recording mechanisms where a series of carriers support each a plurality of numbered type and are brought by suitable means into proper relation to a platen to bring the desired type in printing line opposite said platen, and my invention consists in means whereby the printing of ciphers at the left of those type which are set to print figures is prevented, and whereby the proper automatic printing of ciphers to the right of the carriers set to print figures may be effected. My invention further consists in means whereby to divide the series of carriers at will into two or more independently operable sections, all as fully set forth hereinafter and as illustrated in the accompanying drawing, in which:

Figure 1 is a side elevation of a recording mechanism embodying my improvements and showing parts of an adding machine; Fig. 2 an enlarged view illustrating the parts in different position; Fig. 3 a rear view showing the relation of the catches to each other; Fig. 4 a modification.

The recording means requires essentially a platen, a series of movable type carriers, each supporting a plurality of type, means for bringing the type in a printing line into action upon the paper upon the platen, and means for operating the parts in proper time to effect the desired results. These parts may be differently constructed and arranged, but I have shown the same in connection with a construction of recording means substantially, in may respects, like that of Letters Patent granted to W. H. Pike, Jr., No. 763,692, and wherein there is a cylindrical platen 880, a series of type carrying levers 403, swinging upon a shaft 420, and to each type carrier a series of keys 201, the stems of which may be set in position to be met by stops 430, upon strips 404, sliding horizontally and pivoted at their rear ends to the lower ends of the type carrying levers, these parts being all so arranged that the depressing of any key will so limit the sliding movement of the strip 404 that the associated type carrier will move only to a position to bring into printing position the type that corresponds in value to the key depressed.

The type carriers are carried into printing position each by means of a spring 404^a, and are carried out of printing position by means of a cam 900, upon a working shaft 922, which cam bears upon the antifriction roll of the swinging frame 400, all as set forth in the aforesaid Letters Patent to Pike, and as the above particular construction and mode of operation are not essential to my improvement, and as the construction and mode of operation are fully set forth in the aforesaid Pike patent, it is not necessary here to go into more specific details, except to refer to the fact that at the beginning of each movement of the shaft 922, each carrier will swing to a position limited by a stop 430 contacting with a detent 205 to bring the type which prints a cipher into printing line.

In combination with the movable type carriers and means for adjusting the same to different positions at the will of the operator, and for automatically carrying them to position to print ciphers, I make use of reciprocating catches D, which engage shoulders or projections upon the carriers and serve to draw them back each one step to carry them out of printing position and avoid the printing of ciphers, and I provide means whereby each of said catches is prevented from so engaging and drawing back a carrier whenever the latter has been moved from the action of a key, or otherwise, to a sufficient extent to print a figure instead of a cipher. As shown the catches are all pivoted to a cross-bar 2, carried by a swinging frame G, and are provided with hooks or shoulders 3, for engaging lugs 4, upon the sides of the carriers, each catch having an extended horn 5, with a beveled face, and a cross-bar 6 of the frame G limiting the backward swing of the catches. These parts are so constructed and arranged that after a carrier has been set forward in position to print a cipher, the swinging of the frame G in the direction of its arrow, Fig. 1, will bring the hook 3 of the catch into engagement with the lug 4, and as the frame continues its movement will draw back the carrier out of printing position. If however a carrier has passed beyond the position re-

quired to print a cipher, to any of the positions required to print a figure, the lug 4 of such carrier will be moved so far to the rear that when the frame G swings and carries down the adjacent catch the hook 3 will not engage the lug 4, but the horn 5 of the catch will rest upon this lug and no movement will be imparted to the carrier, while the catch is prevented from swinging backward.

From the above it will be seen that when a carrier is set, as the result of depressing a key, in position to print a figure, no effect will be produced upon the carrier by a movement of the catch, but all of those carriers that occupy positions to print ciphers will be in such relation to the catches as to be engaged by the same and drawn forward out of printing position, and therefore no ciphers will be printed at the left of the figures which may be printed to indicate an item.

If no other provision than that above described was made it would follow of course that all carriers at the right set in position to print ciphers would also be drawn forward and no ciphers would be printed at the right of the said figures, and to avoid this result I provide means whereby when any catch is held up, as the result of the movement of the associated carriers to position to print a figure, all of the catches at the right thereof will also be held up so that none of them can act to draw forward the carriers which are in position to print ciphers and have not been acted upon as the result of setting the keys. This result is secured by providing each catch D with an ear *u*, which is bent to the right to such position as to obstruct the backward swing of the next catch on the right and thereby all of the catches on the right of any one of those held in forward position by a carrier, will be prevented from swinging backward and engaging the lugs of the associated carriers. Each of these ears may be bent to the right to such an extent as to occupy a position back of the rear edge of the next catch as in Fig. 4, but in Fig. 3 I have shown an arrangement whereby instead of bearing upon the said edges one or more of the catches may be provided with a movable bearing in the shape of a pivoted arm F, which may be swung to such a position (and there held by friction) that its rear end will serve as an abutment for the ear of the next catch upon the left, with the same effect as if the said ear bore upon the edge of the catch itself, but with the advantage that by swinging this lever upward the next catch upon the left will have no bearing upon the catch provided with the lever, and as a result the said catch will be allowed to swing to the rear and engage and draw back the associated carrier and carry it out of printing position, and all of the other catches at the right of this catch will be capable of the same operation. By this means I split or divide the series of type carriers into two sections which practically act independently of each other and in each of which any desired item may be printed independently of the other. It will be evident that the catches may all be provided with the adjustable abutments or bearings, or that where the line of division is to be permanent (when the series is to be divided) the movable bearings may be only at one or more definite points.

It will be understood that the arms F, in the construction of the machine corresponding to that of the aforesaid Pike patent, will be accessible so as to be shifted to different positions upon removing the casing of the machine.

While I have described the type carriers as consisting of oscillating levers it will be evident that they may be of any of the usual constructions, and that different means may be employed for imparting to them the desired movements and that the catches may be differently constructed and arranged to effect the results above set forth.

One means of imparting movement to the frame G is shown as embodying a rock-shaft 8, carrying an arm 9, which contacts with a roller 40 upon an arm 10 upon the shaft 12 of the frame G, the latter being swung in the desired direction when the shaft 8 rocks in the direction of its arrow, bringing the arm 9 in contact with the roller of the arm 10, the reverse movement being imparted to the frame G by a spring 13, and a stop 14 limiting this movement.

Any suitable means may be employed for operating upon the type 490, carried by the carriers, so that those in printing line will be caused to embrace the paper upon the platen, but I have shown strikers 501 which operate upon all the type in printing line, the latter being movable upon the carriers, as in the aforesaid Pike patent. As shown the strikers are carried against the type by the action of springs 580. The strikers are raised out of printing position by means of a restoring blade 17 carried by the shaft 8, the edge of which blade, as the shaft rocks in the reverse direction of its arrow, is brought against a tail 18 of each striker. As the reverse rocking of the shaft 8 cannot be so rapid as to properly release the strikers, and as it is desirable to prevent the strikers from operating until after all of the carriers have been set to proper position, I combine with the strikers and restoring means a detent P, consisting as shown of a blade upon a rock-shaft 19, which is moved in one direction by a spring 20 against a stop and which has an arm 21, adapted to contact with a lug 22, projecting from the arm 9. These parts are so proportioned and arranged that the shaft 19 will not be rocked sufficiently to carry the blade or detent P away from the ends of the tails 18,

until the arm 9 has swung the shaft 12 sufficient to carry all of the catches with their associated type carriers forward out of printing position, when the detent will escape from the tail and the strikers will be brought against the type and make the desired impression.

In the illustrated construction and arrangement the parts are operated from the shaft 922, through the medium of a connecting rod 30, pivoted to an arm 31 upon the shaft, and also to an arm 32 upon the shaft 8.

Without limiting myself to the precise construction and arrangement of parts shown, I claim:

1. The combination with a series of type carriers and means for maintaining them normally out of printing position, and with automatic means for setting them to position to print ciphers, of means for automatically moving from printing position all carriers at the left of those set in position to print figures.

2. The combination in a recording mechanism of a series of reciprocating carriers, each supporting a series of numbered type, and means whereby said carriers are maintained normally out of printing position, means for moving the carriers to set the type in position to print ciphers, and means for also moving them to set them in position to print figures, and means for automatically shifting out of printing position the carriers at the left of those set to print figures.

3. The combination in a recording mechanism of a series of carriers each supporting a series of movable number type, means for operating on all the type in printing line to print therefrom, means for maintaining the carriers normally out of printing position, means for moving the carriers to position to print ciphers, and other means for further moving them to position to print figures, and means for automatically shifting out of printing position all carriers at the left of those set to print figures.

4. The combination in a recording mechanism of a series of type carriers, means whereby to set into position such carriers as are required to print desired numbers or items, means for automatically setting all the other carriers in position to print ciphers, and means adjusted to act before the printing action to automatically carry out of printing position the carriers at the left of those set to print an item.

5. The combination in a recording mechanism of a series of type carriers and a series of movable type supported by each carrier, means whereby to set the carriers in position to print ciphers, means whereby to also set the carriers in position to print figures, and a platen and means for moving the type that are in printing position toward the platen, and means for carrying out of printing position the carriers at the left of those set to print figures.

6. The combination with a platen of a recording mechanism, of a series of type carriers normally out of printing position, means for automatically setting the carriers in position to print ciphers, other means for further setting them at will in position to print figures, and means for thereafter automatically carrying out of printing position the carriers at the left of those adjusted to print figures.

7. The combination in a recording mechanism of a series of type carriers normally out of printing position, automatic means for moving to position to print ciphers all the carriers not required to print figures, means for moving the carriers to bring into printing line the type from which figures are to be printed, and means for shifting to non-printing position all the carriers at the left of those adjusted to print figures.

8. The combination of a series of type carriers and type supported movably thereon, strikers adapted to act on all of the type which are in printing line, means for operating said strikers after the type are in printing position, and means for automatically moving from printing position the carriers whose type are not to be operated to print.

9. The combination of a series of type carriers, a series of type supported movably by each carrier, strikers adapted to act on all of the type that are in printing line, means for operating said strikers after the type are in printing position, and means constructed to operate before the operation of the strikers to automatically move from printing position the carriers whose type are not to be operated to print.

10. In a recording mechanism having series of movable type carriers and a series of movable type supported by each carrier, a platen, and means for carrying the type when in printing position toward the platen, the combination of means for automatically shifting the carriers to position to print ciphers, and means for automatically shifting out of printing position all of the carriers at the left of those which are set in place to print figures.

11. The combination in a recording mechanism of type carriers, means for normally carrying them to non-printing position, means for carrying them to a position to print ciphers, oscillating catches for engaging and carrying said carriers out of printing position, and means for preventing the engagement of catches with such carriers as are set to print figures.

12. The combination in a recording mechanism of type carriers, means for carrying them to a position to print ciphers, oscillating catches for engaging and carrying said carriers out of printing position, and means for

preventing the engagement of catches with such carriers as are set to print figures, and means for also preventing the engagement of the catches and those carriers at the right of those set to print figures.

13. The combination in a recording mechanism of a series of movable type carriers, a working shaft and connections whereby each carrier is automatically shifted to a position to print a cipher, keys and connections for setting the carriers in position to print figures, and means for automatically shifting to non-printing position the carriers at the left of those set to print figures.

14. The combination in a recording mechanism of a series of movable type carriers, a working shaft and connections whereby each carrier may be automatically shifted to a position to print a cipher, keys and connections for setting the carriers in position to print figures, and means connected to be actuated from the working shaft for automatically shifting out of cipher-printing position the carriers at the left of those set to print figures.

15. The combination in a recording mechanism of a series of movable type carriers, a working shaft and connections whereby each carrier is automatically shifted to a position to print a cipher, keys and connections for setting the carriers in position to print figures, and carrier retracting means controlled by the movements of the carriers set to print figures.

16. The combination in a recording mechanism, of a series of type carriers, a plurality of type supported by each carrier, means for printing from said type when in printing line, automatic means for moving the carriers into position to print ciphers, keys and connections for setting the different carriers in position to print figures, and means for moving out of printing position the carriers at the left of those set as the result of operating the keys.

17. The combination in a recording mechanism of a series of type carriers, a plurality of type supported by each carrier, means for printing from said type when in printing line, automatic means moving the carriers into position to print ciphers, keys and connections for setting the different carriers in position to print figures, means for moving out of printing position the carriers at the left of those set as the result of operating the keys, and means for simultaneously acting on all the type in printing position to print therefrom.

18. The combination with a series of type carriers and means for holding them normally out of printing position and with automatic means for setting them in position to print ciphers, and with means for operating simultaneously on all the type that are in printing position, of means for automatically moving from printing position all carriers at the left of those set in position to print figures.

19. The combination in a recording mechanism of a series of type carriers each supporting a plurality of movable type, means acting on the type in printing line to print therefrom, means for setting the carriers to bring the desired type into line for printing, and means for automatically shifting from printing position such carriers as are at the left of those required to print the desired item.

20. The combination in a recording mechanism of a series of movable type carriers, means for acting on all the type in printing line to print therefrom, a movable detent for holding all of said means out of operation, means for shifting said detent to release all the said acting means at each recording operation, and a restoring means, and connections for setting the restoring means out of restoring position before the detent releases the acting means.

21. The combination in a recording mechanism of a series of movable type carriers, pivoted strikers for acting simultaneously on all of the type in printing line and provided with tails, a detent having a blade for coacting with said tails to hold the strikers out of action, a restoring means consisting of a movable blade arranged to contact with said tails to swing said strikers away from the type, and means for shifting the restoring blade out of contact with the tails and for thereafter shifting the detent away from the tails to cause all the strikers to drop at each recording operation.

22. The combination in a recording mechanism of a series of movable type carriers, strikers for acting simultaneously on all of the type in printing line, a movable detent having a blade for coacting with the strikers to hold the same out of action means for shifting the detent to permit all of the said hammers to fall at each recording operation, a restoring means consisting of a movable blade arranged to contact with the strikers to swing them away from the type, and means for shifting the blades away from the strikers, the restoring blade moving in advance of the movement of the detent blade.

23. The combination in a recording mechanism, of a series of movable type carriers, strikers for acting simultaneously on all the type in printing line, a detent having a blade coacting with the strikers to hold the same out of action, a restoring means consisting of a blade arranged to contact with the strikers to swing the same away from the type, and shafts carrying the two blades, and contacts carried with the shafts, to swing the detent shaft after the restoring shaft has rocked to carry the restoring blade away from the strikers.

24. The combination with pivoted type

carriers and with a plurality of type carried by each carrier, of means for acting on the type that are in printing line, a series of hooks, shoulders on the carriage adapted to be engaged by the said hooks only when the carriers are in position to print ciphers, and means for moving said hooks to retract the carriers engaged thereby.

25. The combination with the type carriers of a recording mechanism and with means for moving said carriers to positions to print ciphers, of a series of devices for carrying from printing position such carriers as are not to print ciphers, and adjustable means for throwing at will a part of said series out of action.

26. The combination with the type carriers, series of oscillating catches for engaging and shifting the carriers each one step and adjustable devices for throwing at will a part of said catches out of action.

27. The combination with the type carriers, series of oscillating catches for engaging and shifting said carriers each one step and adjustable contacts carried by the catches, and a bearing on adjacent catches adapted to engage the said contacts.

28. The combination with a series of type carriers and means for acting on type in printing position, of keys and associated parts for setting the carriers in position to print numbers, automatic means for setting the remaining carriers in position to print ciphers, a series of devices for carrying out of printing position those carriers in position to print ciphers, and means, adjustable at will, for rendering part of said devices inoperative.

29. The combination with a series of type carriers and means for acting on type in printing position, of keys and associated parts for setting the carriers in position to print numbers, automatic means for setting the remaining carriers in position to print ciphers, a series of catches for engaging the carriers to move them from position to print ciphers, and an adjustable contact on one catch and a bearing on the adjacent catch for the purpose described.

In testimony whereof I affix my signature in presence of two witnesses.

CLYDE E. W. GARDNER.

Witnesses:
JOHN T. LANGHORNE,
EDMUND G. LANGHORNE.