

Nov. 4, 1930.

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1,780,674

COMPOUND TYPE BAR

Filed March 4, 1927

Fig. 1.

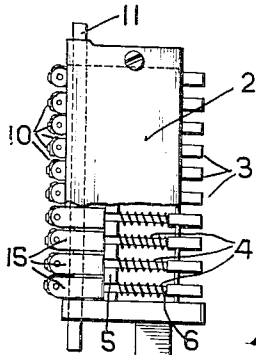


Fig. 3.

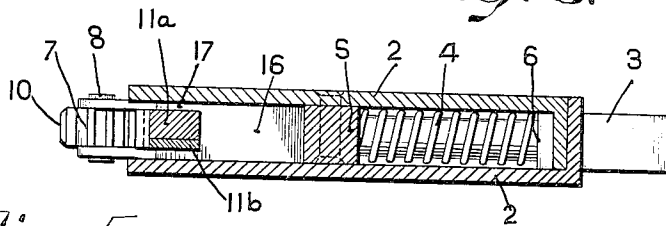


Fig. 5.

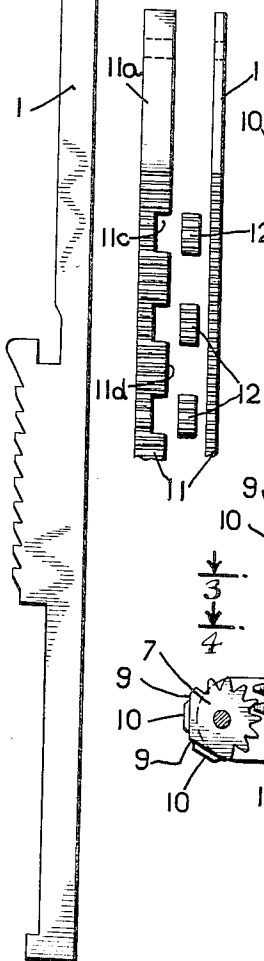


Fig. 4.

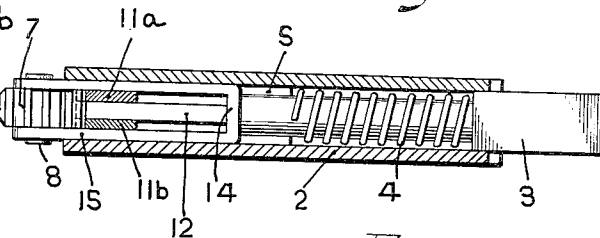
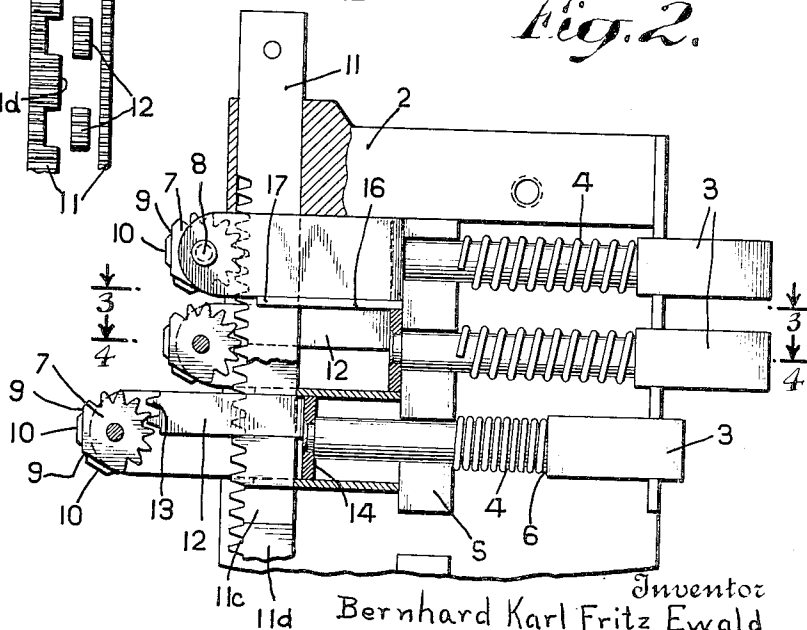


Fig. 2.



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UNITED STATES PATENT OFFICE

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COMPOUND TYPE BAR

Application filed March 4, 1927. Serial No. 172,704.

This invention relates to type carriers and more specifically to a type carrier adapted to carry a maximum number of type characters in a minimum of space.

5 In printing machines such as adding machines, cash registers and tabulating machines it is common to provide a series of type elements on a reciprocating type carrier or bar movable differentially in accordance
10 with the items to be printed. When a large group of characters is provided on each type bar the long reciprocating stroke of the bar is an important factor in the speed of operation of the machine and a saving in time could
15 be effected if the characters could be grouped so that the carrier need not be reciprocated through too great a stroke. Attempts have been made to shorten the stroke of the type carrier by placing the characters on the several
20 faces of a square type bar. This necessitates in addition to the reciprocatory movement of the type bar, the turning of the bar about its longitudinal axis to present any one of the desired faces for printing. It also
25 necessitates a type of printing device wherein the entire type bar is actuated against the platen or in which the platen is actuated against the type bar in order to produce the necessary impressions. This type of printing
30 device has not proved satisfactory and the practice has been to adhere to such printing devices as permit of the individual projection of the type elements against the ribbon or platen.

35 In my invention I employ a type carrier wherein the individual type elements are movable with respect to the carrier and may be individually projected against the platen to effect the printing impression.

40 The principal object of the invention which will be obvious from the foregoing statement is to group the printing characters in a short, lineal space with respect to the type carrier so as to reduce the stroke of operation thereof and correspondingly increase the speed of
45 operation of the machine and also to make it possible to place upon a single type bar a large number of type characters.

50 Another object is to provide a device of this character wherein the selection of a particu-

lar type character for printing will not result in the various type elements being out of phase with each other.

Referring to the drawings wherein I have shown what I now consider to be the preferred form of my invention:

Fig. 1 is a side view of a type carrier with a group of type elements constructed in accordance with my invention, a portion of the casing enclosing the type elements being
60 broken away to show the type elements contained therein.

Fig. 2 is an enlarged detail of the upper portion of the type carrier with the front portion of the casing removed to reveal the detail
65 of construction therein.

Fig. 3 is a section taken on line 3—3 of Fig. 2.

Fig. 4 is a section taken on line 4—4 of Fig. 2.

Fig. 5 is a detail of a gear rack employed to adjust the type characters.

In the drawings the type bar proper is designated as 1 and is provided with ratchet teeth 1^a by means of which the bar may be
75 stopped in differential positions in accordance with the differential items on the controlling keys, tabulating cards or the like, in a manner well-known to the art. The bar has at its upper end a casing 2 within which
30 are carried a plurality of type elements 3. A coil spring 4 wrapped about the type element 3 and pressing at one end against a stop 5 fixed to the type carrier, and at the other end
35 against a shoulder 6 integral with the type element 3 serves to retract the type element from its forward or operative position to its normal position as shown.

The practice heretofore has been to provide each of the type elements 3 with one
80 printing character at its forward end, the element being propelled by any suitable hammer from the rear end to project the type character against the platen to print the
85 character.

In my invention I have provided an adjustable member 7 here shown in the form of a pinion wheel pivotally mounted in the
90 element 3 at 8. This pinion is shown as having two faces 9 each of which carries a
100

type character 10. The characters on similarly disposed faces constitute a predetermined progressive series as A, B, C, etc. while those on the other faces constitute a different series as 1, 2, 3, etc. for example. The teeth of the pinion 7 are meshed with the teeth of a rack 11 movably mounted in the casing 2 so that longitudinal movement of this rack up and down with respect to the casing will rotate the pinion wheel 7 to present either of the type faces 9 and type characters 10 in position for printing. Also associated with each pinion 7 is a slide 12 having at its outer end teeth 13 meshing with the pinion. The slide reaches through holes provided for this purpose in the rack 11 so that the slide may be moved laterally with respect to the rack 11 but is constrained to move up and down therewith when the rack is raised or lowered to alter the positions of the pinions 7. Thus it will be seen from Fig. 2 that while any one of the type elements are in advanced or printing position, movement of the rack 11 up and down will not only change the positions of the pinions 7 in mesh therewith but will through the movement of the slide 12 also change the position of such pinions as have moved forward with their type element 3. Thus, should the rack 11 be moved downwardly in Fig. 2 it will turn the two upper ones of pinions 7 here shown and will also by moving the slide 12 downwardly turn the lower one of the pinions 7. By this arrangement it will be seen that it is not possible to accidentally turn any one of the pinions 7 without turning all of the others associated therewith and carried by the same type bar. The rear end of the slide 12 abuts against the shoulder 14 of the type element between the walls or brackets 15 in which are mounted the pinions 7 so that as viewed in Figs. 2 and 4, when the type element 3 is moved forward or to the left with respect to the casing 2 and the rack 11, the shoulder 14 will move the slide 12 along with the pinion 7 so that the slide will be kept in mesh with the pinion.

The several type elements 3 are spaced from each other by means of spacing plates 16 which may be bifurcated at their other ends as at 17 so as to straddle the rack 11 and be held in position thereby.

For convenience in construction, the rack 11 may be made in two parts 11^a and 11^b; one of the parts as shown at 11^c being recessed to receive the slide 12, the part 11^b then being fastened to part 11^a. The intervening projection 11^d will serve to prevent the slide 12 from moving up and down with respect to the rack.

While I have shown but two type characters 10 on each pinion member 7 it will be noted that in the present disclosure there is sufficient space on each pinion for an additional type character and it will also be un-

derstood that by proper redesigning of the relative sizes of the parts any reasonable number of type characters may be provided on each pinion 7.

What is claimed is:

1. In combination, a rectilinearly movable type carrier, a plurality of elongated type elements carried thereby and a plurality of type characters mounted on one end of each of said elements, only one of said characters on each element being adapted after adjustment for printing.
2. In combination, a movable type carrier, a plurality of elements mounted thereon, a plurality of type characters on each of said elements and a member for simultaneously adjusting the characters on a plurality of said elements.
3. In combination, a type carrier, a movable type element carried thereby, a plurality of type characters mounted on said element and means common to a plurality of said elements for adjusting said characters with respect to said element.
4. In combination, a rectilinearly movable type element, an adjustable member carried by said element and having thereon a plurality of type characters and means for adjusting said member with respect to said element, said element being adapted to be struck for effecting printing by one of said characters.
5. In combination, a type carrier, a plurality of type elements mounted therein, a pinion carried by each of said elements, a rack slidably carried by said carrier adapted to mesh with each of said pinions and adapted when moved with respect to said carrier to actuate said pinions.
6. In combination, a type carrier movable linearly in a predetermined direction, a type element mounted in said carrier and movable linearly relative thereto in a direction transverse to aforesaid direction, a movable member mounted on said element and provided with a plurality of type characters and means associated with said carrier for adjusting said member with respect to said element.
7. In combination, a type carrier, a plurality of type elements movably mounted therein, an adjustable member carried by each of said elements and having a plurality of type characters thereon and means for simultaneously adjusting all of said members.
8. In combination, a type carrier, a plurality of type elements movably mounted therein, an adjustable member carried by each of said elements and means for simultaneously adjusting all of said members irrespective of the relative positions of said elements with respect to said type carrier.
9. In combination, a carrier, a type element slidably mounted thereon, a pinion carried by said element, a rack carried by said car-

rier and adapted to mesh with said pinion, an additional toothed member meshing with said pinion and constrained to move with said rack for actuating said pinion.

10. In combination, a type carrier, a type element slidably mounted thereon, a pinion carried by said element and provided with type characters thereon, a toothed member meshing with said pinion and means carried by said carrier for actuating said toothed member for rotating said pinion, said toothed member being constrained to move with said element when the latter is actuated to print for maintaining operative cooperation with said pinion.

11. In combination, a reciprocable type carrier, a plurality of reciprocable members carried by said carrier, a plurality of type characters on each of said members, and means for adjusting said members with respect to said carrier for selectively presenting said characters for printing.

12. In combination, a movable carrier, a plurality of elements carried thereby, a plurality of members, each mounted on one of said elements, each of said members being provided with a plurality of type, and means cooperating with each of said members for adjusting the type with respect to said elements.

13. In combination, a type carrier, a plurality of movable type elements carried thereby, a member having a set of type characters mounted on each of said elements, and a device having a connection with each of said members for adjusting a member with respect to the element on which it is mounted.

14. In combination, in a printing device, a plurality of groups of type characters, a plurality of adjustable elements, each bearing one type from each of the type groups, and means for simultaneously adjusting said elements to selectively face all the type of any one group in the same direction.

15. In combination, a carrier bar, a plurality of elements mounted parallelly along the length of said bar, said bar and elements having cooperating portions constraining said elements to movement transversely of said bar, a plurality of members, each having a plurality of type characters, and means for adjustably mounting one of said members on each of said elements for movement transversely of said element.

16. In combination, a carrier a plurality of members carried thereby, a progressive series of character elements, and a plurality of devices, each device carrying one element of said series, and each member adjustably carrying one of said devices.

17. In combination, a carrier, a plurality of members carried thereby, a plurality of progressive series of character elements, and a plurality of devices, each device carrying one element from each of said series, and

each member adjustable carrying one of said devices.

18. In combination, a carrier, a plurality of members carried thereby, a plurality of progressive series of character elements, a plurality of devices, each device carrying one element from each of said series, each member carrying one of said devices, and means for adjusting said devices relative to said carrier to present one of said series of elements in operative position.

19. In combination, a differentially movable type carrier, a series of elongated type bars mounted on said carrier, and a type-carrying device pivotally mounted on each bar.

20. In combination, a differentially movable type carrier, a series of elongated type bars mounted on said carrier, and a type-carrying device adjustably mounted on one end of each bar.

21. In combination, a differentially movable carrier, a series of bars carried thereby, and type elements adjustably mounted on each bar, said elements being adapted to move relatively to said carrier to effect printing.

22. In combination, a differentially movable carrier, a series of members carried thereby, said members being movable on said carrier in parallel directions, and a type-carrying element adjustably mounted on each of said members.

23. In combination, a differentially positionable carrier, a plurality of members carried thereby, a plurality of progressive series of character elements, and a plurality of devices, each device carrying one element from each of said series, and each member adjustably carrying one of said devices.

24. In combination, a differentially positionable carrier, a plurality of members carried thereby, a plurality of progressive series of type elements, a plurality of devices, each device carrying one element from each of said series, each member carrying one of said devices, and means for simultaneously adjusting said devices to present one of said series of elements in operative position.

25. In combination, a differentially positionable carrier, a plurality of members carried thereby, a plurality of progressive series of type elements, a plurality of devices, each device carrying one of the elements of each series, each member carrying one of said devices, and means common to each of said devices for adjusting said devices to present all of the elements of one of the series in position adapted for printing.

26. In combination, a carrier, a plurality of members movably carried by said carrier, a series of type elements, devices, each for carrying one element of said series, each member carrying one of said devices, and means for adjusting said devices relatively to said members.

27. In combination, a carrier, a plurality of members carried by said carrier, a plurality of series of type elements, devices, each device carrying one element of each series, and means for rotatably mounting one of said devices on each member.

28. In combination, a carrier, a plurality of members carried thereby, a plurality of series of type elements, devices, each device carrying one element of each series, the elements of each series facing in the same direction, each device being mounted on one of said members, and means for changing the direction in which all of the elements of a series are facing.

29. In combination, a differentially positioned carrier, a plurality of members carried thereby, each member being movable independently of the others, type-carrying devices, each mounted adjustably on one of said members and means for simultaneously adjusting said devices relative to said carrier.

30. In combination, a series of members, each member carrying a type-carrying device, means for adjusting said device relative to its carrying member, and a reciprocatable common carrier for said members, said members being movable relatively to each other to effect printing by the device carried thereby.

31. In combination, a series of elongated members, a common carrier therefor, a type-carrying device comprising a wheel rotatably mounted on one end of each member, and means for rotating said device.

32. In combination, a carrier, a type element slidably carried thereby, a plurality of type characters, means for adjustably mounting said characters on said element so as to be movable with respect thereto for presenting any of said characters for printing, the slidable movement of the type element in the carrier being utilized to effect printing.

33. In combination, a carrier, a plurality of series of recording elements carried by said carrier, the elements of one series at a time being located in differentially spaced predetermined operative positions relative to said carrier, and means for displacing relatively to the carrier the elements of one series from said positions and simultaneously placing the elements of another series in said positions.

34. In combination, a bar, a plurality of series of recording elements carried by the bar, the elements of one series at a time being located in predetermined operative positions relative to the bar, an element from the series in said positions being movable relative to the other elements for effecting a recording operation, and means for displacing one series from said positions and simultaneously placing the other series in said positions.

35. In combination, a bar, a plurality of series of recording elements carried by said bar, and means for simultaneously moving

the elements of one series relative to the bar into operative positions and simultaneously displacing the other series from said positions, any one of the elements of the series in said operative positions being selectively adapted for a recording operation.

36. In combination, an elongated bar, a plurality of series of recording elements carried by the bar, the elements of each series being relatively fixed and differentially spaced longitudinally of the bar, one of said series at a time being in operative position on the bar, and means for displacing the series in said operative position by another of said series.

37. In combination, a bar, a plurality of series of recording elements carried by said bar, each series having the elements thereof differentially located relative to said bar, and means for setting the elements of one of said series at a time in parallel operative positions, only one of the elements in operative positions being selectively effective for performing a recording operation.

38. In combination, a bar, a plurality of series of progressive differentially spaced recording elements carried by said bar, all the elements of one of said series at a time being adapted to face in a printing direction, and means for setting either one of the series at a time to face in the said printing direction, any one of the elements of the series facing in the printing direction being selectively operable to effect a recording operation.

In testimony whereof I hereto affix my signature.

BERNHARD KARL FRITZ EWALD.