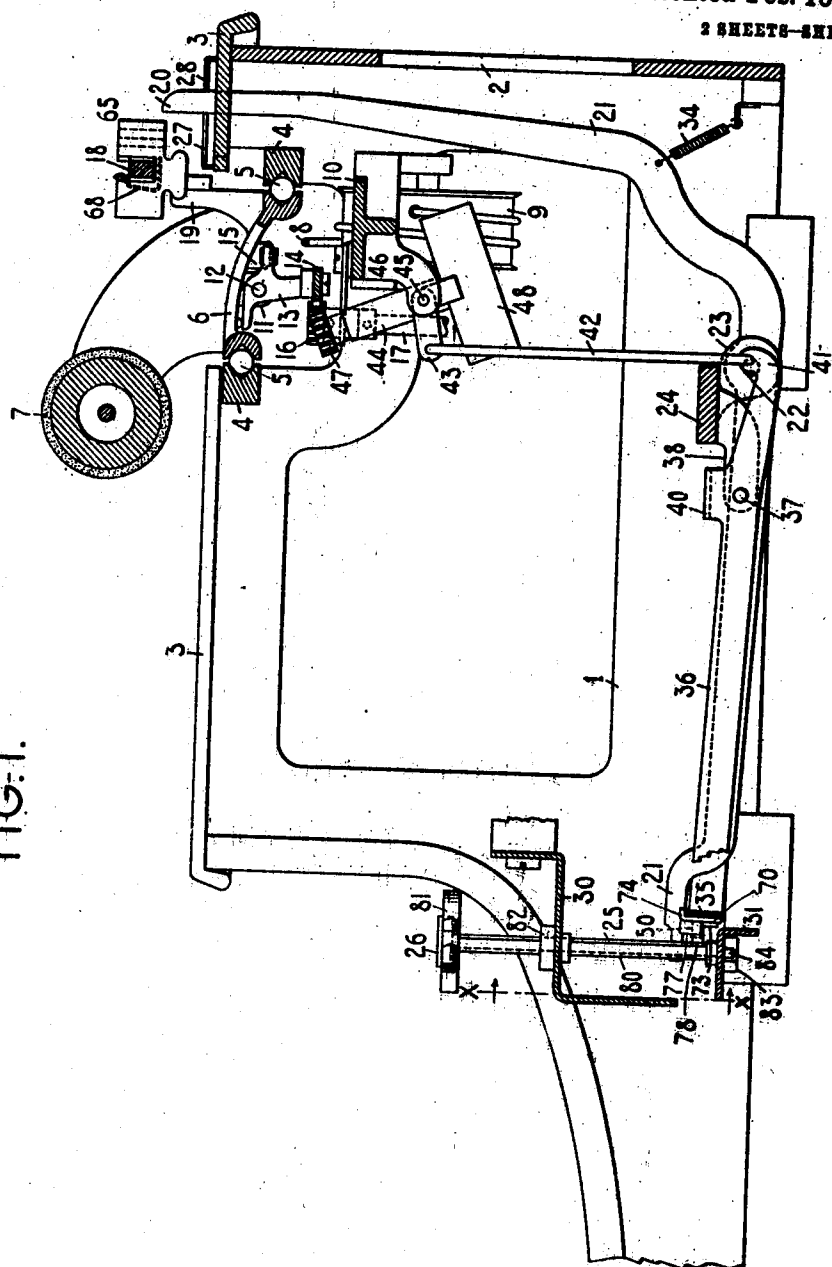


1,053,385.

Patented Feb. 18, 1913.
2 SHEETS-SHEET 1.

FIG. 1.



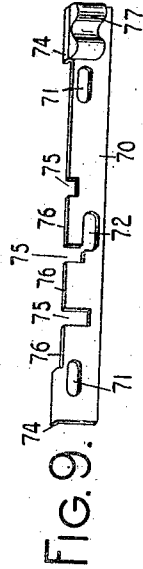
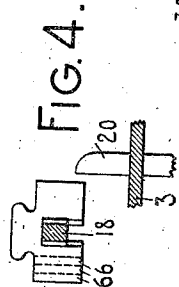
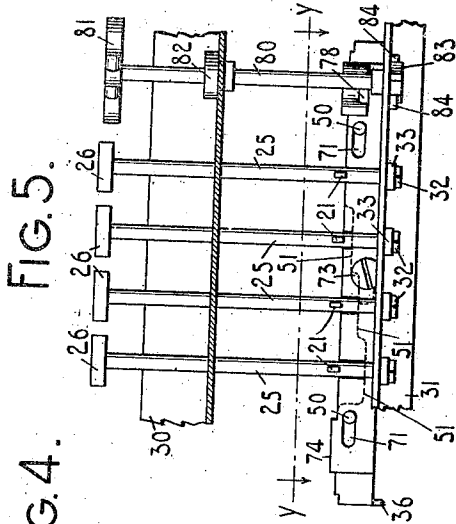
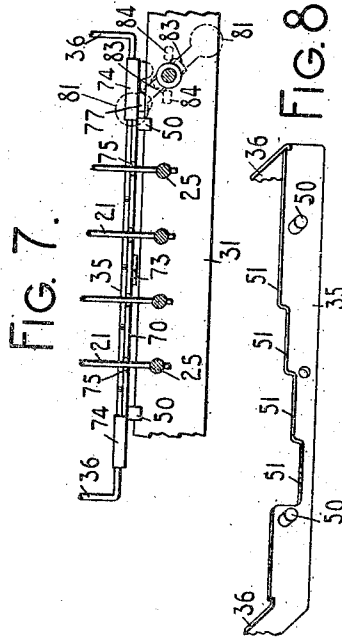
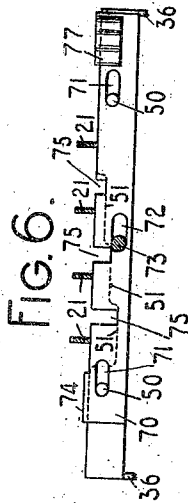
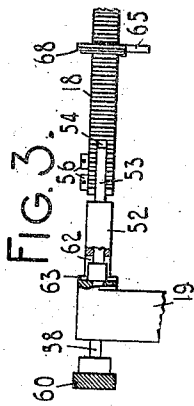
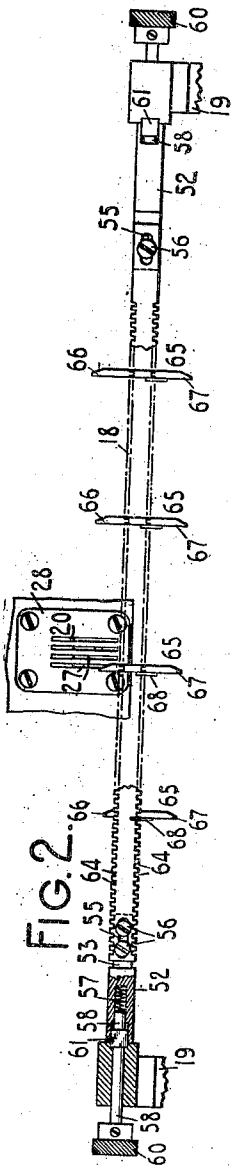
WITNESSES:
E. M. Wells
R. H. Crother

INVENTOR.
Joseph Harris
By James Field
HIS ATTORNEY

1,053,385.

Patented Feb. 18, 1913.

2 SHEETS—SHEET 2.



WITNESSES:

E. M. Wells
R. H. Krohn

INVENTOR:

Joseph Harris
By Jacob Feld
HIS ATTORNEY

UNITED STATES PATENT OFFICE.

JOSEPH HARRIS, OF LONDON, ENGLAND, ASSIGNOR, BY MESNE ASSIGNMENTS, TO
UNION TYPEWRITER COMPANY, OF JERSEY CITY, NEW JERSEY, A CORPORATION
OF NEW JERSEY.

TYPE-WRITING MACHINE.

1,053,385.

Specification of Letters Patent.

Patented Feb. 18, 1913.

Application filed January 13, 1912. Serial No. 671,092.

To all whom it may concern:

Be it known that I, JOSEPH HARRIS, British subject, and resident of 37 Goldhawk road, Shepherd's Bush, in the county of Middlesex and city of London, England, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

My invention relates to typewriting machines and more particularly to the tabulator mechanism of such machines.

My invention has for its principal object to provide a tabulator that can be used either as a denominational tabulator or as a column selecting tabulator.

I have provided a machine in which the same keys and stops are capable of use for either of the above mentioned purposes, certain readily shiftable devices being provided to convert the tabulator either into a denominational or into a column selecting tabulator. This is to be distinguished from those machines that have separate mechanisms for these two functions.

To the above and other ends, my invention consists in certain features of construction and combinations and arrangements of parts, all of which will be fully set forth herein and particularly pointed out in the claims.

One embodiment of my invention is illustrated in the accompanying drawings, in which—

Figure 1 is a front to rear vertical section of as much of a typewriting machine as is necessary to illustrate the embodiment of my invention therein. Fig. 2 is a top plan view of the tabulator stop devices. Fig. 3 is a fragmentary front view of one end of the column stop bar and associated parts. Fig. 4 is a fragmentary side view of the column stop bar set for denominational work. Fig. 5 is a front view of the key mechanism with parts in section on the line $x-x$ of Fig. 1. Fig. 6 is a front view of the universal bar mechanism with the keys and key stems removed or sectioned away. Fig. 7 is a top view in section on the line $y-y$ of Fig. 5. Fig. 8 is a fragmentary perspective view of part of the universal bar mechanism. Fig. 9 is a similar view of the shiftable part of said mechanism.

My invention is capable of considerable modification to adapt it to different tabu-

lator mechanisms, and in the drawings I have shown an application or adaptation of it to the Yost No. 15 typewriter.

The form of the invention shown in the drawings may be said to be in the nature of a modification or adaptation of the tabulator shown in the patent to A. W. Smith, No. 974,836, dated November 8th, 1910.

The Yost No. 15 typewriter, which is shown conventionally in the drawings, has a main frame comprising side plates 1 which are connected at the rear by a vertical back plate 2 and which support plates 3 which may be designated as top plates. The side plates 1 also support stationary grooved carriage rails 4 which, through balls or rollers 5, support a carriage 6 in which is mounted a platen 7. The carriage of the Yost machine is only conventionally shown in the drawings as said carriage includes a number of devices and features that are not necessary to an understanding of the present invention. The carriage 6 is fed across the machine by a cord 8 wound on a spring drum 9 which is supported by a cross bar 10 constituting part of the stationary frame. Brackets 11 on the underside of the carriage, have pivoted thereto at 12, depending arms 13 which, at their lower ends, have rigidly mounted thereon a feed rack 14, which feed rack is normally pressed by a spring or springs 15 into engagement with a feed pinion 16 on the upper end of a vertical shaft 17 which, at its lower end, carries an escapement wheel forming part of the escapement mechanism of the typewriter. Said escapement mechanism and the printing mechanism and many other parts of the machine are omitted from the drawings, but all of these parts are well known in the art. The tabulator mechanism comprises a column stop bar which I have designated generally by the numeral 18, said stop bar being supported by brackets 19 at the rear part of the carriage 6.

The tabulator shown in the above mentioned patent to A. W. Smith, comprises key-operated stops 20 which consist of the upper ends of long bell-cranks 21, which bell-cranks are pivoted on a rod 22 passing through a slotted bracket 23 depending from a cross bar 24 in the base of the machine. Said bell-cranks have horizontal arms which, at their forward ends, are reduced and pass through holes made in the

stems 25 of tabulator keys 26, the construction being such that said bell-cranks at their forward ends are in effect pivoted to said key stems and such that when any of the keys 26 is depressed the horizontal arm of the corresponding bell-crank is depressed and the end 20 of said bell-crank is moved toward the front of the machine. The stop portions 20 of these bell-cranks are situated a letter-space distance apart and are guided in slots 27 made in a guide-block 28 secured to the top plate of the machine. The key stems 25 are guided in an upper transverse frame plate 30 and a lower transverse frame plate 31. As best shown in Fig. 5, each of said key stems has a screw 32 threaded into its lower end and having a washer 33 which presses against the underside of the plate 31 and limits the upward motion of the key. The keys and key-operated stops are restored to normal position by springs 34 connected to the bell-cranks 21 and to a stationary part of the machine. A universal bar 35 (Fig. 8) lies beneath the bell-cranks 21 just a little back of the key stems 25, and said universal bar consists of the cross bar of a yoke frame, which yoke frame also comprises arms 36 which are pivoted on pins 37 projecting from brackets 38, of the cross bar 24. The two arms 36 are connected near the pivots 37 by a cross bar 40. One of said arms 36 has a rearwardly directed arm 41 to which is pivoted the lower end of a push bar or link 42, the upper end of which is pivoted to an arm 43 projecting from a housing 44, which housing is pivoted at 45 to a bracket 46 of the cross bar 10. The housing 44 has a shaft journaled therein, which shaft at its upper end carries a pinion 47 that normally stands in the position shown in Fig. 1, a little in front of the feed rack 14; and the lower part 48 of that housing contains means for retarding the motion of the carriage. The construction is such that when any of the keys 26 is depressed, the universal bar 36 is depressed and the bar 42 is pushed upward, rocking the pinion 47 into engagement with the feed rack 14 and forcing said feed rack to the rear out of engagement with the feed pinion 16, thus releasing the carriage from its escapement mechanism and allowing it to run to the left until arrested by the tabulator stops, the motion at this time being controlled by the retarder 48.

The universal bar 35 of the A. W. Smith column finder used in the Yost machine, has two pins 50 projecting therefrom toward the front of the machine in position to be arrested by the cross bar 31 when said universal bar is depressed and thus to limit the downward motion of said universal bar and of the tabulator keys. Said universal bar is formed with a series of steps 51 of different heights so that the different keys

have to be pushed down different distances in order to cause the pins 50 to be arrested by the cross bar 31. The construction is such that the universal bar 35 always moves to the same extent and said universal bar therefore always operates the pivoted housing 44 to the same extent, but different extents of key depression are necessary in order to effect the necessary motion of the universal bar. The result of this construction is that, the different keys being pushed down different distances, the different stops 20 are moved forward different distances so as to arrest the graduated series of column stops, in the manner set forth in the patent to A. W. Smith above referred to.

The parts thus far described are, or may be, substantially identical with the parts shown in the A. W. Smith patent referred to. I have to some extent modified the construction and mounting of the column stop bar 18 so as to enable said stop bar to be turned about its longitudinal axis and to be set in either one of two positions by such a turning movement. I prefer to make the column stop bar of three sections, of which the middle and principal section is here specifically designated by the numeral 18. Said stop bar has two end sections 52 which are connected to the middle section 18 by means of a long tongue 53 of the section 52, which tongue extends into a slot 54 cut in from the end of the section 18. The tongue 53 is rectangular in cross section and one wall of the slot 54 has a longitudinal slot 55, Fig. 2, formed therein and one or more screws 56 pass through the slot 55 and are threaded into the tongue 53. This construction enables the middle section to be separated entirely from either of the end sections for the purpose of assembling and disassembling the parts, and the construction also provides for a longitudinal adjustment of the section 18 in order to bring said section 18 into its proper relation with the feed devices of the carriage. Each of the sections 52 has a hole bored in from the end thereof, in which hole is seated a compression spring 57 and a plunger 58, which plunger passes through a round hole in the bracket 19 and has a milled head 60 secured to its outer end. The plunger 58 has an enlargement 61 of rectangular cross section, which enlargement fits a slot 62, Figs. 2 and 3, cut across the end of the section 52. The enlargement 61, when in normal position, also fits into a shallow slot 63 cut in the face of the bracket 19. The parts normally stand as shown at Figs. 2 and 3 where it will be seen that the rectangular enlargement 61 is seated both in the slots 62 and 63 so that said enlargement acts as a sort of key between the column stop bar and the bracket 19, preventing rotation of said stop bar and locking said bar in its set

position. By pressing inward on the milled heads 60 the parts 61 are freed from the slots 63 in the brackets 19, and the stop bar can then be turned to any desired extent by turning the milled heads 60. It will be seen that the construction is such as to determine two set positions of the column stop bar, said stop bar being movable from one of said positions to the other by turning it through a half rotation. The parts are so adjusted that the outer ends of the two sections 52 rest snugly against the inner surfaces of the bosses of the brackets 19 so that endwise motion of the column stop bar is prevented. In making this adjustment the section 18 is first located with reference to one of the sections 52 so as to position said bar 18 correctly, and then the other section 52 is moved lengthwise into contact with the adjacent bracket 19 and the screws 56 are tightened.

The section 18 of the column stop bar, is formed with the usual notches 64 for the positioning and securing of adjustable column stops 65. These column stops have on one side thereof blades 66 of graduated lengths and on the other side of the stop bar each of said column stops is formed with a blade 67, all of said blades 67 being preferably of the same length. The column stops 65 are preferably provided with detents 68 for preventing accidental displacement of said column stops on the bar 18. In the present instance these detents consist of pieces of spring wire bent into such form as that one end of the wire springs over the bar, as shown. When the column stop bar stands in the position shown in Fig. 2, with the blades 66 projecting toward the rear in position to cooperate with the stops 20, the column stop bar is set for use in selecting columns in the manner set forth in the patent to Smith above referred to. When it is desired to use the tabulator for denominational work this stop bar is turned over to bring the blades 67 to the rear. These blades are all of such length that any of the stops 20 will arrest any of said blades so that said stops 20 are adapted to operate after the ordinary fashion of a denominational tabulator.

When the tabulator is used for denominational work, it is desirable that the keys 26 and stops 20 all have the same extent of movement instead of different extents, as is the case when the machine is set and used for column selecting. This can be done in a variety of ways. In the present adaptation of the invention to the Yost machine, I have provided a shiftable member on the universal bar 35, said member consisting of a plate or bar 70 slidably mounted on the bar 35. Said plate is formed with elongated slots 71 which fit over the pins 50, said slots being of a suitable length to allow an ap-

propriate amount of longitudinal sliding motion to the bar 70. In order to secure said bar 70 in place it is formed with a third slot 72 through which passes a shouldered and headed screw 73 threaded into the bar 35. I also preferably form ears 74 on the bar 70, said ears being bent back and overlying the top of the bar 35. The bar 70 is formed at its upper edge with notches 75 separated by abutments 76, Fig. 9, which abutments all stand at one elevation. When the bar 70 is slid toward the left, as shown in Figs. 5 and 7, the notches 75 come under the levers 21 so that said bar 70 has no effect on the operation of the keys, each of the notches 75 being of such depth as to allow the levers to strike the steps of the bar 35. If, however, the bar 70 be slid toward the right, as shown in Fig. 6, then the abutments 76 come under the levers 21 and as these abutments are all at the same elevation the keys all act alike on the bar 70 and through it on the bar 35, with the result that all of the stops 20 have the same action.

Any suitable means can be provided for shifting the bar 70. As here shown said bar is provided with a lug 77 having a notch in its forward face, into which notch a pin 78 projects from a vertical rock shaft 80 which is journaled in the plates 30 and 31 and which has upon its upper end a key 81. Up and down motion of the shaft 80 is prevented by a collar 82 that lies above the plate 30 and by a cross piece 83 which lies beneath the plate 31. As shown in Fig. 7, said cross piece has two arms which are adapted to contact with two pins 84 projecting from the plate 31 to limit the turning motion of the shaft 80. When the key 81 is turned to the position shown in Fig. 7, the bar 70 is in its left-hand position in which different extents of motion are allowed to the different keys; but by turning the key through a fraction of a turn, said bar can be slid to the right to the position shown in Fig. 6. It will be perceived that when the bar 70 is in its Fig. 6 position and the bar 18 is turned over so as to project the blades 67 toward the rear, the machine is adapted to operate as an ordinary denominational tabulator.

It will of course be understood that any desired number of keys 26 and stops 20 may be employed and it is not essential that all of said keys and stops be arranged for use as column selectors. In the present instance, I have shown four keys and stops and it will be noted that the right-hand one of said keys is not modified in its action either by the turning of the bar 18 or by the shifting of the bar 70. It will of course be understood that any desired number of additional keys 26 and stops 20 of the same sort as this right-hand one, can be added in case it is desired to give the denominational tabulator a

greater capacity than shown in the drawings. It will also be understood that various other changes can be made in the details of construction and arrangement, without departing from my invention.

What I claim as new and desire to secure by Letters Patent, is:—

1. In a typewriting machine and in tabulating mechanism, the combination of a column stop bar, a series of column stops mounted on said bar and each having two blades projecting in different directions, the blades projecting in one direction being graduated and the blades projecting in the other direction being uniform, means for turning said stop bar to bring either set of blades into operative position, a series of key-operated stops for coöperation with said column stops, and means for imparting to the different key-operated stops different extents of motion.

2. In a typewriting machine and in tabulating mechanism, the combination of a column stop bar, a series of column stops mounted on said bar and each having two blades projecting in different directions, the blades of the several column stops that project in one direction being graduated and the blades that project in the other direction being uniform, means for turning said stop bar to bring either set of blades into operative position, a series of key-operated stops for coöperation with said column stops, and means for governing the extents of motion imparted to said key-operated stops, said governing means being shiftable to give to the several key-operated stops either the same extent of motion or different extents of motion.

3. In a typewriting machine and in tabulating mechanism, the combination of a series of key-operated stops, means for operating said stops differentially, a series of column stops each having two stop blades, and means shiftable to cause said column stops to present to said key-operated stops either a uniform series of stop blades or a graduated series of stop blades.

4. In a typewriting machine and in tabulating mechanism, the combination of a series of tabulator keys, a universal member arranged to be operated by said keys, and means shiftable to cause said keys to operate said universal member uniformly in one position of said shiftable means and differentially in another position of said shiftable means.

5. In a typewriting machine and in tabulating mechanism, the combination of a series of tabulator keys, a universal member arranged to be operated by said keys, means shiftable to cause said keys to operate on said universal member uniformly in one position of said shiftable means and differentially in another position of said shiftable

means, stops operated by said keys, one stop for each key, coöperating stops, and a carriage release operated by said universal member.

6. In a typewriting machine and in tabulating mechanism, the combination of a series of tabulator keys, a universal bar for operation by said keys, and means shiftable to present to said keys uniform abutments on said universal bar in one position of said shiftable means and stepped abutments on said universal bar in another position of said shiftable means.

7. In a typewriting machine and in tabulating mechanism, the combination of a series of tabulator keys, a universal bar for operation by said keys, means shiftable to present to said keys uniform abutments on said universal bar in one position of said shiftable means, and stepped abutments on said universal bar in another position of said shiftable means, stops operated by said keys, one stop for each key, coöperating stops, and a carriage release operated by said universal bar.

8. In a typewriting machine and in tabulating mechanism, the combination of a column stop bar, a series of column stops having uniform blades and graduated blades, means for turning said bar to bring either set of blades into operative position, a series of key operated stops for coöperation with said column stops, and means for imparting to said key-operated stops either the same operation or differential operations.

9. In a typewriting machine and in tabulating mechanism, the combination of column stops, a series of tabulator keys, a series of key-operated stops, one for each key, and a switch whereby said keys and key-operated stops can be changed from column selecting keys and stops to denominational keys and stops, and vice versa.

10. In a typewriting machine and in tabulating mechanism, the combination of a series of column stops, a series of keys and key-operated stops, carriage release mechanism operated by said keys, and means settable to cause said keys to impart different extents of movement to the different key-operated stops for column selecting or uniform extents of motion for denominational tabulating.

11. In a typewriting machine and in tabulating mechanism, the combination of tabulator keys, a universal bar operated by said keys, a slide mounted on said universal bar and having abutments thereon at different heights, and means for shifting said slide to different positions, in one of which one set of abutments are presented for coöperation with said keys and in another of which another set of abutments are presented for coöperation with said keys.

12. In a typewriting machine and in tabu-

lating mechanism, the combination of tabulating keys, a universal bar operated by said keys, a slide mounted on said universal bar and having abutments thereon at different heights, means for shifting said slide to different positions in one of which one set of abutments are presented for cooperation with said keys and in another of which another set of abutments are presented for cooperation with said keys, and a hand-operated rocking member for shifting said slide.

13. In a typewriting machine and in tabulating mechanism, the combination of a column stop bar made in a plurality of sections, supports for said stop bar against which the ends of said bar abut, and means for securing said sections rigidly together, said means being arranged to allow of adjustment of said sections one with relation to another lengthwise of the bar.

14. In a typewriting machine and in tabulating mechanism, the combination of a column stop bar made in three sections consisting of a middle section adapted to have column stops adjustably mounted thereon, and of two end sections, supports for said end sections, and means for securing said sections rigidly together, said means being arranged to allow of adjustment lengthwise of the bar between the middle section and each of the end sections.

15. In a typewriting machine and in tabulating mechanism, the combination of a column stop bar made in three sections consist-

ing of a middle section adapted to have column stops adjustably mounted thereon and of two end sections, supports for said end sections, means for securing said sections rigidly together, said means being arranged to allow of adjustment lengthwise of the bar between the middle section and each of the end sections, pivotal connections between said end sections and said supports to permit said bar to be turned, and means for locking said bar in either of a plurality of the positions to which it can be turned.

16. In a typewriting machine and in tabulating mechanism, the combination of a column stop bar made in three sections consisting of a middle section adapted to have column stops adjustably mounted thereon, and of two end sections, supports for said end sections, means for securing said sections together, said means being arranged to allow of adjustment lengthwise of the bar between the middle section and each of the end sections, and an endwise movable plunger connecting one of said end sections with its support, said plunger having a part that acts as a key so that the bar can be turned and locked by said key.

Signed at Antwerp in the Province of Antwerp and Kingdom of Belgium this 30th day of December A. D. 1911.

JOSEPH HARRIS.

Witnesses:

G. DE LERG,
F. ADAMS.