J. C. McLAUGHLIN.

TYPE WRITING MACHINE.

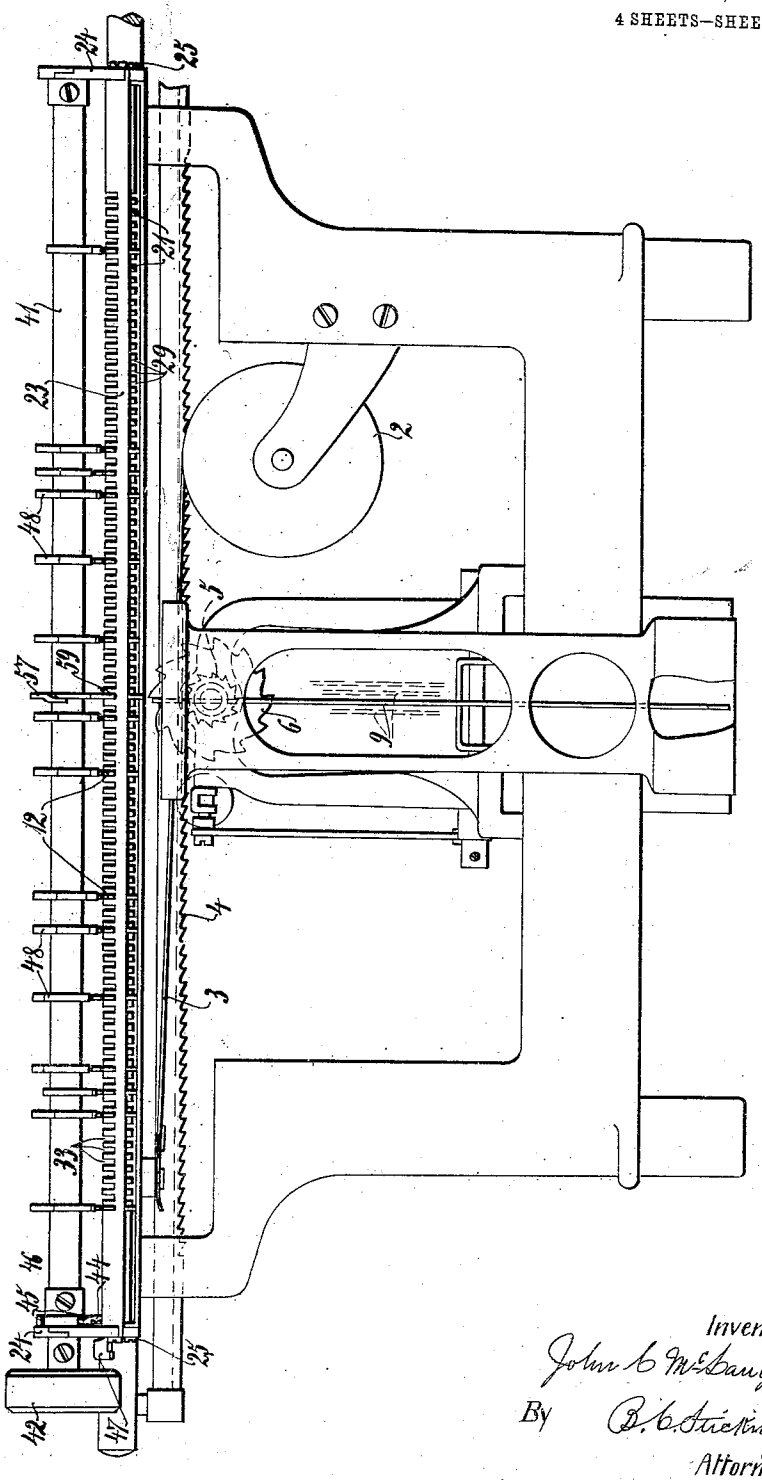
APPLICATION FILED MAY 26, 1908.

941,166.

Patented Nov. 23, 1909.

4 SHEETS—SHEET 1.

Fig. 1.



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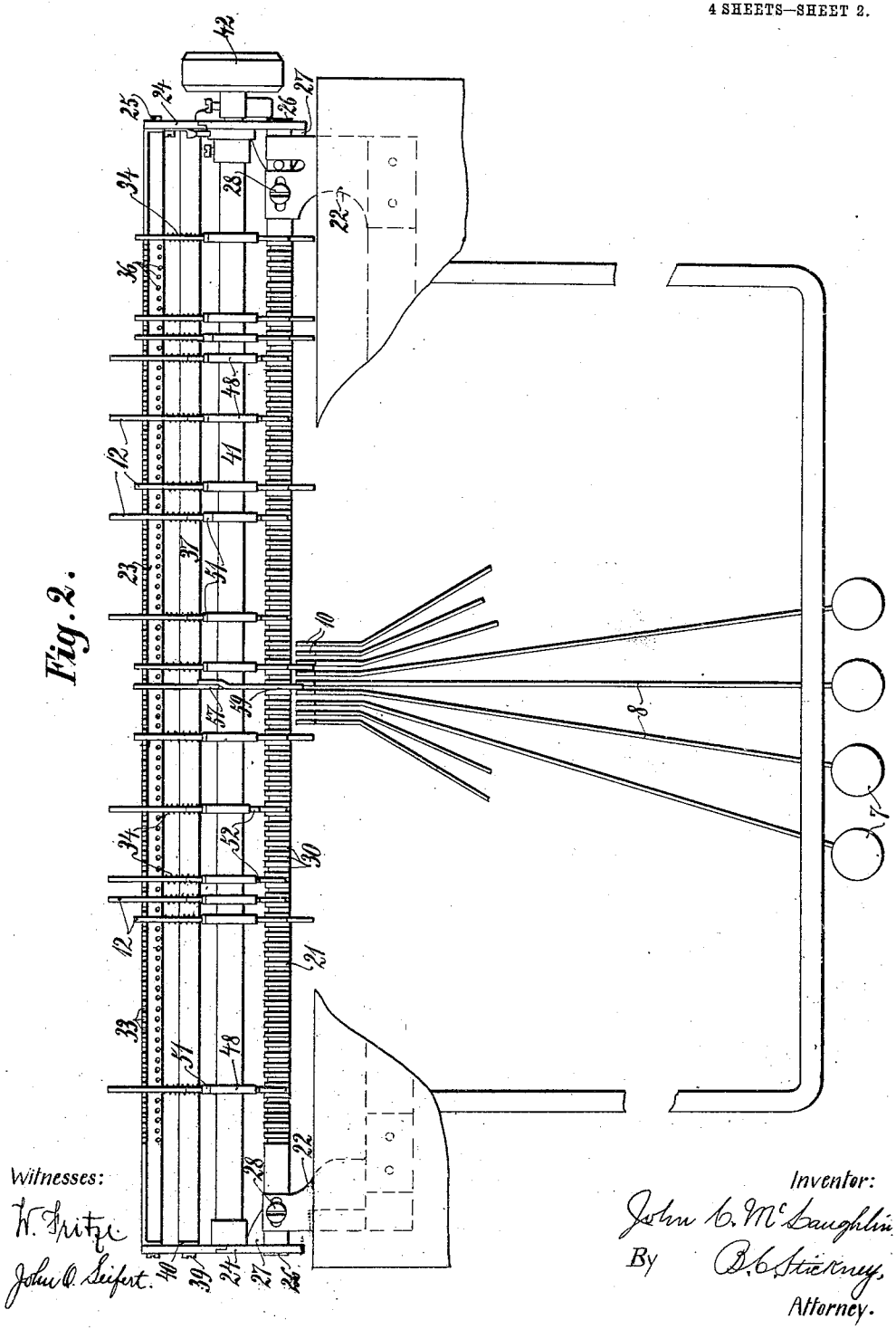
4 SHEETS—SHEET 2.

Fig. 2.



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4 SHEETS—SHEET 3.

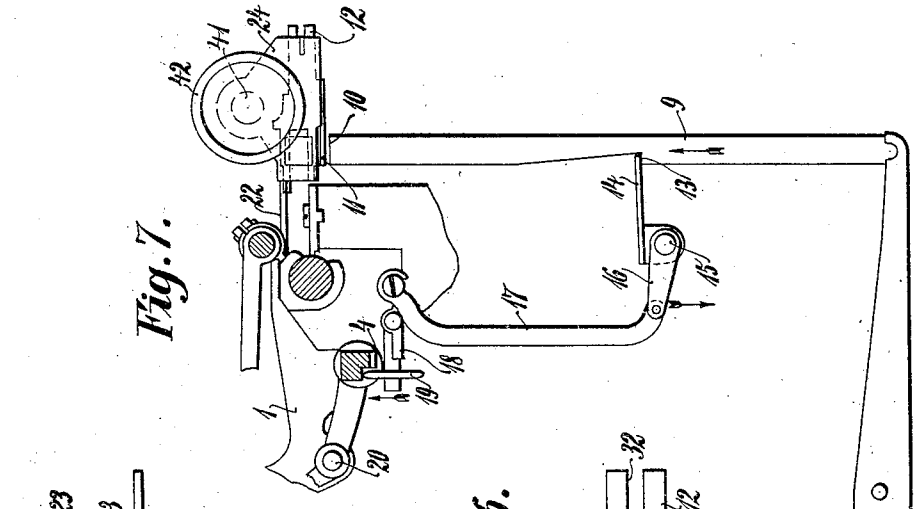

Fig. 7.

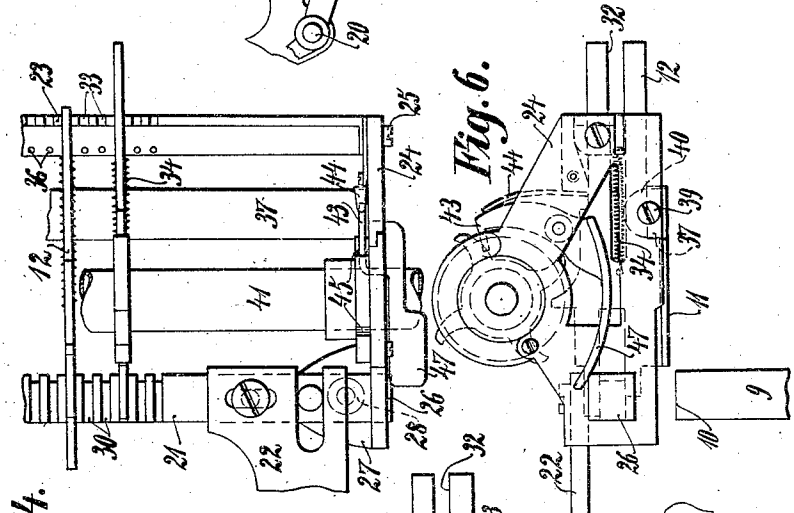

Fig. 6.

Fig. 4.

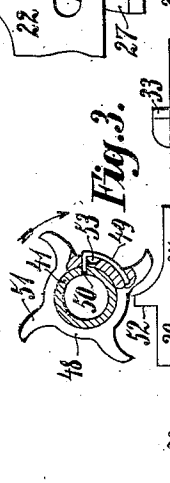

Fig. 3.

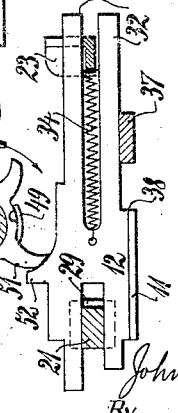

Fig. 5.

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941,166. Patented Nov. 23, 1909.

4 SHEETS—SHEET 4.

Fig. 8.

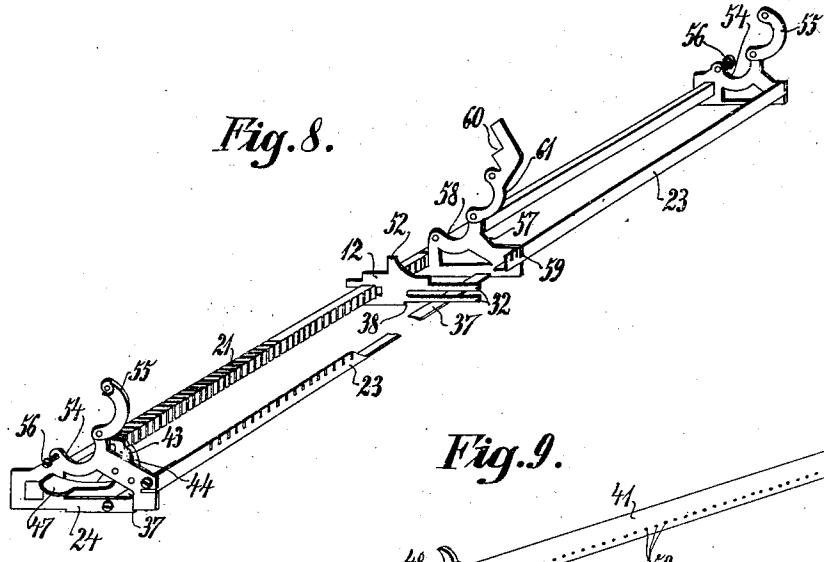


Fig. 9.

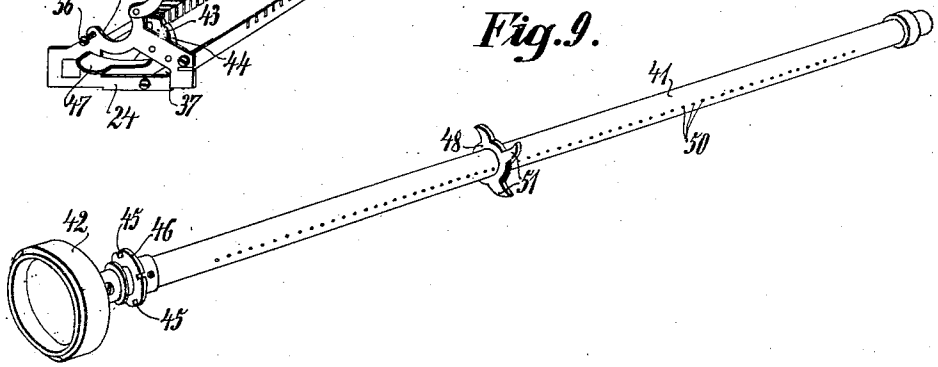


Fig. 10.

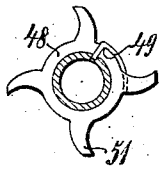


Fig. 11.

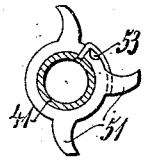


Fig. 12.

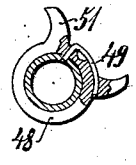


Fig. 13.

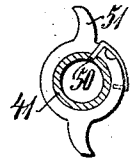
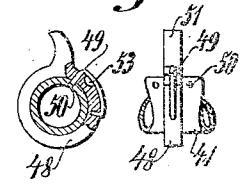


Fig. 14.



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UNITED STATES PATENT OFFICE.

JOHN C. McLAUGHLIN, OF JERSEY CITY, NEW JERSEY, ASSIGNOR TO UNDERWOOD TYPEWRITER COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

TYPE-WRITING MACHINE.

941,166. Specification of Letters Patent. Patented Nov. 23, 1909.

Application filed May 26, 1908. Serial No. 435,161.

To all whom it may concern:

Be it known that I, JOHN C. McLAUGHLIN, a citizen of the United States, residing in Jersey City, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

This invention relates to tabulating mechanisms of typewriting and other machines, and is in the nature of an improvement on the devices disclosed in United States Patent No. 820,505. In said patent is shown a row of column stops, and a rotatable shaft or bar extending along the row, and having projections formed thereon to select or act upon different sets of column stops and move some of the latter to idle positions.

The objects of the present invention are to enable the column stops to be disposed at letter space intervals where desired, to improve and simplify the construction and operation of the column stops and selectors, and to avoid the necessity of forming the selectors directly upon the selector bar, and also to make it practicable to set up a machine for any desired variety of tabulating work, by the use of previously manufactured parts.

In carrying out the present invention, the column stops are formed upon sliding plates, the latter mounted in racks to permit the column stops to slide into and out of working positions. The plates are adjustable to any desired positions along the racks.

In place of forming the selectors or cams directly upon the rotative selector bar, by cutting notches in said bar, as in said patent, I employ a plain bar or shaft upon which I set the desired selectors at the desired points. The bar or shaft is preferably cylindrical and the selectors are in the forms of collars placed upon the bar and having diversified cams, adapted to engage lugs upon the column stop plates to set different sets of column stops to working positions, according to the point to which the selector shaft is rotated. The cam collars may be adjusted along the shaft to correspond with the adjustment of the column stop plates, and hence the machine may be set up for any desired variety of tabulating work, and may readily be readjusted as required.

Other features and advantages will hereinafter appear.

In the accompanying drawings, Figure 1 is a rear elevation of an Underwood front strike writing machine, showing my improvements applied thereto. Fig. 2 is a plan of the tabulating devices. Fig. 3 is a sectional elevation illustrating the column-stop plate in normal ineffective rear position. Fig. 4 is a fragmentary plan taken at one end of the carriage. Fig. 5 is a view similar to Fig. 3 showing the column stop advanced in working position. Fig. 6 is an end elevation of the parts seen at Fig. 4. Fig. 7 is an elevation showing the principal members of the tabulating mechanism. Fig. 8 is a perspective of the two racks of the tabulator, to illustrate the manner of mounting the column stop thereon, and also to illustrate the latches for releasably holding the selector shaft in its bearings. Fig. 9 is a perspective of the selector shaft. Figs. 10 to 14 inclusive show different varieties of selector collars, Fig. 14 also showing an edge elevation of one of the collars.

A paper carriage 1 is propelled by a spring barrel 2 through a strap 3, and has an escapement rack 4 to mesh with a pinion 5 connected with an escapement wheel 6. Upon depression of any one of a series of denomination keys 7 its lever 8 is vibrated, and its rod 9 thrust up to cause a denomination stop 10 at its upper end to rise into the path of a column stop 11 formed on the forward end of a slidable plate 12 mounted upon the carriage. Each rod 9 has a jog 13 to operate a universal bar 14, fulcrumed at 15 and having an arm 16 to thrust up a link 17, the latter connected to a lever 18 having a roll 19 to lift the rack 4 about its hinge 20 out of mesh with the escapement pinion 5, so that the carriage is drawn along by the spring barrel 2 and strap 3 until arrested by engagement of the column stop 11 with the elevated denomination stop 10. Upon

release of the key the parts resume their normal positions, and the rack 4 reëngages the escapement pinion 5.

The main or forward column-stop rack 21 is supported on a pair of arms 22 extending rearwardly from the ends of the carriage. A rear rack 23 is detachably supported at its ends upon arms 24 by means of screws 25; said arms rigidly secured at their forward ends upon the ends of the rack bar 21, being preferably perforated as at 26 to receive the ends of said bar and also having ears 27 underlying said ends and attached thereto by screws 28.

Each column stop plate 12 is forked at its forward end as at 29 to slide in notches 30, 31 formed on the top and bottom respectively of the rack bar 21. It is also forked at its rear end at 32 to fit onto the rear rack bar 23, the latter being in the form of a channel bar having notches 33 in its upright flange, to receive the upper rear fork of the slide. A draw-spring 34 occupies the rear fork of each slide, being caught at its forward end in a hole 35 in the slide, and at its rear end in a hole 36 formed in the horizontal member of the angle bar 23; whereby the column stop plate is normally held back against a stop bar 37; the plate being formed with a jog 38 to engage said bar, and the latter being detachably secured at its ends by screws 39 in the arms 24, said bar having ears 40 to receive the screws. It will be seen that each column-stop plate is supported by its ends upon said racks, extending from one to the other thereof, and that the plates are sufficiently thin to enable them to be disposed at letter space intervals whenever desired, that is, in adjoining notches in the rack.

Whenever it is desired to set the column stops along the rack, the stop bar 37 may be removed and the spring 34 detached from the rack 23, whereupon the column-stop plate is pushed back to become released from the rack bar 21. It may then be tipped up at its forward end and pulled forwardly to release it from the rear rack. It may then be mounted at any other point along the rack device, by reversing this operation.

The selectors are mounted upon a rotatable shaft 41 preferably tubular and having at its end a finger wheel 42, by which it may be set to four different working positions. A pawl 43 is pressed by a spring 44 into any one of four notches 45 formed in a collar 46 fixed upon the shaft, to detain or lock the shaft in any of said four positions. The pawl 44 is formed with a liftable finger-piece or key 47, whereby the pawl may be thrown back to release the selector shaft for rotation.

At Figs. 10 to 14 are shown five different kinds of selectors. Each selector comprises a collar 48 to fit loosely upon the shaft 41, and has a spring finger 49 to fit in any of a row of openings 50 extending along the shaft, whereby displacement of the selectors along the shaft is avoided. The spring fingers 49 also in this instance cause the collars to turn with the cylindrical shaft. The openings or perforations 50 are formed at letter space intervals along the shaft to agree with the spacing of the notches in the rack device, seen at Fig. 8, so that the selectors may be set directly over their associated column-stop plates 12. Each selector collar 48 has one or more cams 51 to engage a lug 52 formed upon the column-stop plate 12, whereby by rotating the shaft in the direction of the arrow, the column-stop plate may be moved from an inoperative position at Fig. 3 forwardly to the operative position at Fig. 5, in which position the column stop 11 may engage any elevated denomination stop 10. Normally the pendent column stops 11 form a row in rear of the denomination stops, as at Fig. 6.

Fig. 10 shows a selector having four cams, Fig. 11 shows three cams, Figs. 12 and 13 each two cams, and Fig. 14 a single cam. At Fig. 12, the cams are at an interval of 90 degrees, and at Fig. 13 at an interval of 180 degrees. It will be understood that the cams on all the collars are alined and form diversified rows, the selector shaft 41 usually having several of each of the varieties, seen at Figs. 10—14, and these cam collars being irregularly spaced along the shaft, whereby, as will be understood, four diversified rows of cams project from said shaft, to move different sets of column stops into working positions, according to the points to which the shaft is set or turned. In turning the shaft from the Fig. 5 position in the direction of the arrow, the cam 51 first presses the column-stop plate 12 forwardly a little and then escapes from the lug 52 altogether, so that the spring 34 may draw the column-stop plate 12 back, to be then controlled by the succeeding cam 51, if any. If there is no succeeding cam, the spring returns the plate 12 to normal position, as at Fig. 3, where it remains until the shaft is again advanced. When it is desired to adjust a collar along the shaft 41, a pin or nail may be inserted in a recess 53 formed in the collar, beneath the movable end of the spring finger 49, to lift said finger from the opening 50 and release the collar. The selector shaft 41 is preferably journaled at its ends in open bearings 54 formed on the arms 24, and is releasably held therein by latches 55, the latter being secured by screws 56. The shaft may hence be withdrawn from over the column stop slides to facilitate the adjustment, removal or insertion of the latter. If desired, a third support for the shaft may

be added about midway between the supports 24, in the form of a plate 57 having an open bearing 58 for the shaft and forked at its rear end at 59 to fit upon the rear rack 23, and also forked at its front end to fit upon the forward rack, one member 60 of the fork being formed upon a latch 61 which corresponds to the latch 55. The support 57 may be placed at any desired points along the racks, and it will be understood may occupy any notches that are not required for the column-stop plates 12.

Variations may be resorted to within the scope of the invention, and portions of the improvements may be used without others.

Having thus described my invention, I claim:

1. A tabulating mechanism for a typewriter carriage, including a series of column stops mounted at intervals each of one or more letter-spaces, each stop being supported for movement into and out of working position independently of the others, and means to move different sets of column stops simultaneously into working positions, including a shaft extending along the column stop series, and collars secured at intervals upon said shaft, said collars provided with diversified cams to move the column stops.

2. A tabulating apparatus or mechanism for a typewriter carriage, including a rack having notches at letter-space intervals, a set of plates having column stops formed thereon, said plates constructed to be set either into adjacent notches or at greater intervals in said rack, each plate being movable in its notch into and out of working position independently of the others, a rotatable shaft extending along said rack, and collars secured upon said shaft, means being provided to space the collars at intervals to correspond with the spacing of the column-stop plates, and diversified cams being provided upon said collars to move the column-stop plates into working positions.

3. A tabulating apparatus or mechanism for a typewriter carriage, including a rack device having notches at letter-space intervals, a set of plates having column stops formed thereon, said plates constructed to be set into said rack either in adjacent notches or at greater intervals, each plate being movable in its notch into and out of working position independently of the others, a rotatable shaft extending along said rack and having openings at letter-space intervals, and collars mounted upon said shaft and having means to engage said openings and also having diversified cams to move the column-stop plates, one collar for each column-stop plate.

4. A tabulating mechanism for a typewriter or other carriage, including a series of column stops, a rack for the stops, the stops being insertible in any selected notches in the rack, a movable shaft or bar extending along the rack, and diversified cams operable by said shaft to move different sets of column-stops, the cams adjustable independently of one another along said shaft.

5. A tabulating mechanism for a typewriter or other carriage, including a series of column stops, a rack for the stops, the stops being insertible in any selected notches in the rack, a movable shaft or bar extending along the rack, and diversified cams mounted upon said shaft to move different sets of column-stops, the cams adjustable independently of one another along said shaft; and means being provided to retain the cams at positions upon the bar to correspond with the positions to which the column stops are adjustable.

6. A tabulating mechanism for a typewriter carriage including a series of column stops, each movable into and out of working position independently of the others, and sets of shifters to move different sets of column stops into working positions, said shifters adjustable independently of one another along the series of column stops.

7. A tabulating mechanism for a typewriter carriage including a series of column stops, each movable into and out of working position independently of the others, and a movable bar upon which are mounted sets of shifters to move different sets of column stops into working positions, said shifters adjustable independently of one another along said bar.

8. A tabulating mechanism for a typewriter carriage including a series of column stops, each movable into and out of working position independently of the others, a movable bar upon which are mounted sets of shifters to move different sets of column stops into working positions, said shifters adjustable independently of one another along the series of column stops, and releasable means to hold said bar in different positions with different sets of shifters in use.

9. A tabulating mechanism for a typewriter carriage, including a series of column stops independently movable into and out of working positions, a bar or shaft extending along said series and having diversified sets of cams adjustable therealong to control the stops, and means for shifting said bar to predetermined points to bring either one or another set of cams and their associated column stops into use.

10. In a typewriting and tabulating mechanism, the combination with a carriage and a stop, of a series of column stops, a rotatable shaft extending along the series of

column stops, and diversified cams upon said shaft to engage said column stops, to control the movements thereof into and out of working positions, each cam adjustable along the shaft.

11. In a typewriting and tabulating mechanism, the combination with a carriage and a stop, of a series of column stops, a rack in which the column stops are independently slidable into and out of position to coöperate with the first-mentioned stop, a rotatable shaft extending along the series of column stops, and diversified cams upon said shaft to engage said column stops, to control the movements thereof into and out of working positions, each cam adjustable along the shaft.

12. In a typewriting and tabulating mechanism, the combination with a carriage and a stop, of a series of column stops, a rotatable shaft extending along the series of column stops, and diversified cams upon said shaft to engage said column stops, to control the movements thereof into and out of working positions, each cam adjustable along a rack provided on the shaft, and means to detain the shaft in different rotative positions, whereby different sets of column stops are brought into use.

13. A tabulating mechanism for a typewriter or other carriage, including a series of adjustable column stops, having means whereby they may be detained at different points in a row extending along the carriage, a rack, and a series of adjustable stop-selecting cams having means whereby they may be detained by said rack at points to correspond to the positions of the column stops.

14. A tabulating mechanism for a typewriter or other carriage, including a series of adjustable column stops having means whereby they may be detained at different points in a row extending along the carriage, and a series of adjustable stop-selecting cams having means whereby they may be detained at points to correspond to the positions of the column stops, and means for moving a plurality of cams simultaneously to cause different sets of column stops to be moved into and out of working positions.

15. A tabulating mechanism for a typewriter or other carriage, comprising a rack device having notches, a set of column stop plates inserted in the notches, and therein movable into and out of working positions independently of one another, a shaft or bar extending along the rack device and having openings, and a series of collars or plates positioned at different points along said shaft and having means to engage said openings to cause them to move with the shaft, diversified cams being provided upon said collars to actuate said plates.

16. A tabulating mechanism for a typewriter or other carriage, comprising a rack device having notches, a set of column stop plates inserted in the notches, and therein movable into and out of working positions independently of one another, a shaft or bar extending along the rack device and having openings, and a series of collars or plates positioned at different points along said shaft and having means to engage said openings to cause them to move with the shaft, diversified cams being provided upon said collars to actuate said plates; said rack device comprising a pair of racks, and each column stop plate extending from one rack to the other.

17. A tabulating mechanism for a typewriter or other carriage, comprising a rack device having notches, a set of column stop plates inserted in the notches, and therein movable into and out of working positions independently of one another, a shaft or bar extending along the rack device and having openings, and a series of collars or plates positioned at different points along said shaft and having means to engage said openings to cause them to move with the shaft, diversified cams being provided upon said collars to actuate said plates; said rack device comprising a pair of racks, and each column stop plate extending from one rack to the other and having an individual returning spring and provided with an ear to be engaged by its associated cam-collar.

18. A tabulating mechanism for a typewriter or other carriage, comprising a rack device having notches, a set of column stop plates inserted in the notches, and therein movable into and out of working positions independently of one another, a shaft or bar extending along the rack device and having openings, and a series of collars or plates positioned at different points along said shaft and having means to engage said openings to cause them to move with the shaft, diversified cams being provided upon said collars to actuate said plates; said rack device comprising a pair of racks, and each column stop plate extending from one rack tot he other and having an individual returning spring and provided with an ear to be engaged by its associated cam-collar, the cams being constructed to alternately set and release their associated column-stop plates during the revolution of the shaft in a single direction.

19. A tabulating mechanism for a typewriter or other carriage, comprising a rack device having notches, a set of column stop plates inserted in the notches, and therein movable into and out of working positions independently of one another, a shaft or bar extending along the rack device and having openings, and a series of collars or

plates positioned at different points along said shaft and having means to engage said openings to cause them to move with the shaft, diversified cams being provided upon said collars to actuate said plates, each of the cam-collars having releasable means to engage its opening in the shaft, said openings and said notches being formed at letter-space intervals along the shaft and rack device respectively, and the column-stop plates being insertible in any selected notches.

20. In a tabulating mechanism, the combination with a carriage and a stop, of a rack device, a set of plates having column stops thereon and mounted in said rack device at intervals of either one or more letter-spaces, each plate being movable in its notch into and out of working position independently of the others, a movable shaft or bar extending along said rack, collars mounted upon said shaft and having diversified cams to operate said column-stop plates, means being provided upon said shaft or bar to space said collars to match the column-stop plates, and individual springs to return the latter to normal positions.

21. A tabulating apparatus or mechanism for a typewriter carriage, comprising a pair of racks, sliding plates mounted on the racks, each plate extending from one rack to the other and having a column stop movable into and out of working position, a rotatable shaft extending along the racks, collars mounted upon the shaft at intervals of either one or more letter spaces, diversified cams upon the collars to engage and move the column stop plates, and springs to return the column stop plates to normal positions.

22. A tabulating mechanism for a typewriter or other carriage, comprising a series of column-stop plates, a plurality of racks to support the column-stop plates by their opposite ends, the plates being movable in said racks into and out of working positions, and means to detain different sets of column-stop plates in working positions.

23. A tabulating mechanism for a typewriter or other carriage, comprising a rack bar having notches, column-stop plates each forked at one end to engage notches in the rack bar, a second rack bar, each of the column-stop plates being also forked at its other end to engage the second rack bar, and means for detaining different sets of column-stop plates in working positions.

24. A tabulating mechanism for a typewriter or other carriage, comprising a rack bar having notches on its opposite sides, column-stop plates each forked at one end to engage notches in the rack bar, a second rack bar, each of the column stop plates being forked at its other end to engage the second rack bar, and means for selecting and setting different sets of column stop plates; one fork in each of said column-stop plates containing a spring to return the stop.

25. A tabulating mechanism for a typewriter or other carriage, comprising rack bars, column-stop plates each forked at both ends to engage notches in the rack bars, each of said plates having an ear or lug, and diversified sets of cams to engage the ears to move or select different sets of column stops.

26. A tabulating mechanism for a typewriter or other carriage, comprising a pair of rack bars, column-stop plates each forked at both ends to engage notches in the rack bars, means for detaining, selecting and setting different sets of column-stop plates, one fork in each of said column-stop plates containing a spring to return the stop, and a stop bar to limit the movements of the stops effected by said springs.

27. A tabulating mechanism for a typewriter or other carriage, comprising a rack bar having notches on its opposite sides, column-stop plates each forked at one end to engage notches in the rack bar, a second rack bar, each of the column-stop plates being forked at its other end to engage the second rack bar, means for detaining different sets of column-stop plates in working positions, one fork in each of said column-stop plates containing a spring to return the stop, and a stop bar to limit the movements of the stops effected by said springs; each of said column stops having a jog to be engaged by said stop bar.

28. A tabulating mechanism for a typewriter or other carriage, comprising rack bars, column-stop plates to engage the rack bars, means to move different sets of stops to effective positions, springs to return the stops, and a stop bar to limit the movements of the stops effected by said springs; said stop bar being detachable or withdrawable to permit detachment of the plates from the racks and readjustment thereof in different position on the racks.

29. A tabulating mechanism for a typewriter or other carriage, comprising a front rack bar having notches on its opposite sides, column-stop plates each forked at its front end to engage notches in the rack bar, a rear rack bar, each of the column-stop plates being forked at its rear end to engage the second rack bar, and means for detaining different sets of column-stop plates in working positions; a tongue projecting from the bottom of the lower front fork to form a column stop; and a coöperating set of denomination stops to arrest the carriage.

30. A tabulating mechanism for a typewriter or other carriage, comprising a row of column stops, and a revoluble selector bar

provided with diversified individual controllers mounted thereon for selecting and moving different sets of stops, both the column stops and the controllers being individually adjustable in the direction of the run of the carriage, racks being provided for said stops and controllers.

31. A tabulating mechanism for a typewriter or other carriage, including a series of column stops mounted at irregular intervals, each stop supported for movement into and out of working position independently of the others, and a shaft having collars secured at intervals thereon, one collar for each column stop, said collars provided with cams to move the column stops, some of said collars having more cams than others, and the cams forming a plurality of diversified rows extending along the series of column stops.

32. A tabulating apparatus or mechanism for a typewriter or other carriage, including a plurality of racks each having notches at letter-space intervals, a set of plates having column stops formed thereon, said plates constructed to be set either into adjacent notches or at greater intervals in said racks, each plate supported at its end in said racks for movement into and out of working position independently of the others, a shaft or bar extending along said racks, and devices secured upon said shaft to move the column-stop plates into and out of working positions.

33. A tabulating apparatus or mechanism for a typewriter carriage, including a plurality of rack bars each having notches at letter-space intervals, a set of plates having column stops formed thereon, each of said plates constructed at its ends to be set into said racks, each plate being slidable in its notches into and out of working position independently of the others, a rotatable shaft extending along said racks, and diversified cams upon the shaft to move the column-stop plates.

34. A tabulating mechanism for a typewriter or other carriage, including a series of column stops, a movable shaft or bar extending along the series of column stops, and cams operated by said bar to select or move different sets of column stops, said cams adjustable independently of one another along said bar, and having springy detents to engage openings formed at letter-space intervals in the shaft.

35. A tabulating mechanism for a typewriter or other carriage, including a series of column stops, a rack for the stops, the stops being insertible in any selected notches in the rack, and diversified selectors to move or set the column stops, the selectors adjustable independently of one another to correspond with the adjustment of the column stops.

36. A tabulating mechanism for a typewriter carriage including a series of column stops, each movable into and out of working position independently of the others, and selectors to move different sets of column stops into working positions, said selectors adjustable independently of one another and relatively to the column stops.

37. A tabulating mechanism for a typewriter carriage including a series of column stops, each movable into and out of working position independently of the others, selectors to move different sets of column stops into working positions, said selectors adjustable independently of one another along the series of column stops, and releasable means to hold different sets of selectors in use.

38. A tabulating mechanism for a typewriter carriage, including a series of column stops independently movable into and out of working position, individual cam members adjustable independently of one another along the run of the carriage, to control the stops, each cam member having a plurality of cams thereon, the cams on some members different from those on others, the cams forming diversified rows or sets, and means for shifting one or another set of cams and their associated column stops into use.

39. In a typewriting and tabulating mechanism, the combination with a carriage and a stop, of a series of column stops, a rotatable shaft extending along the series of column stops, and diversified cams upon said shaft to engage said column stops, to control the movements thereof into and out of working positions, each cam adjustable along the shaft, and means to detain the shaft in different rotative positions, whereby different sets of column stops are brought into use; the cams forming diversified rows to correspond with the different positions at which the shaft may be set and detained.

40. A tabulating mechanism for a typewriter or other carriage, including a series of adjustable column stops having means whereby they may be detained at different points in a row extending along the carriage, and a series of adjustable stop-selecting cams having means whereby they may be detained at points to correspond to the positions of the column stops; said cams being mounted in a manner to permit simultaneous withdrawal of all of them to facilitate adjustment of the column stops.

41. A tabulating mechanism for a typewriter or other carriage, including a series of adjustable column stops, having means whereby they may be detained at different points in a row extending along the carriage, and a series of stop-selecting cams mounted

upon a rotatable shaft and having means whereby they may be detained at points to correspond to the positions of the column stops, whereby said selectors may be moved simultaneously to cause different sets of column stops to be moved into and out of working positions; said shaft releasably held in bearings by means of latches.

42. A tabulating mechanism for a typewriter or other carriage, comprising a rack device having notches, a set of column stop plates inserted in the notches, and therein movable into and out of working positions independently of one another, a shaft extending along the rack device, and a set of collars positioned at different points along said shaft and having means to cause them to move with the shaft; cams being provided upon said collars to actuate said plates, and the set of collars including one-cam, two-cam, three-cam and four-cam collars.

43. A tabulating mechanism for a typewriter or other carriage, comprising a rack device having notches, a set of column stop plates inserted in the notches, and therein movable into and out of working positions independently of one another, a shaft or bar extending along the rack device and having openings, and a series of collars or plates positioned at different points along said shaft and having means to engage said openings to cause them to move with the shaft, diversified cams being provided upon said collars to actuate said plates, each of the cam-collars having releasable means to engage its opening in the shaft, said openings and said notches being formed at letter-space intervals along the shaft and rack device respectively, the column-stop plates being insertible in any selected notches, and the shaft or bar being mounted in a manner to permit its withdrawal, to facilitate the adjustment of the column-stop plates.

44. A tabulating mechanism for a typewriter carriage, including a rack device, a series of column stops movable upon said rack device into and out of working positions, a rotatable shaft extending along the rack and supported at its ends for rotation, diversified cams upon said shaft to engage the column stops, and a midway support for said shaft in the form of a plate supported upon said rack; the cams being adjustable along the shaft and the shaft-supporting plate being insertible in any of the rack notches.

45. A tabulating mechanism for a typewriter carriage, including a rack device, a series of column stops movable upon said rack device into and out of working positions, a rotatable shaft extending along the rack and supported at its ends for rotation, diversified cams upon said shaft to engage the column stops, and a midway support for said shaft in the form of a plate supported upon said rack, the cams being adjustable along the shaft and the shaft-supporting plate being insertible in any of the rack notches, all of the shaft bearings being open to permit withdrawal of the shaft, and having latches or means to detain the shafts in the bearings.

46. A tabulating mechanism for a typewriter carriage including a pair of racks, a series of column stops movable upon said racks into and out of working positions, a rotatable shaft extending along the racks and supported at its ends for rotation, diversified cams upon said shaft to engage the column stops, and a midway support for said shaft in the form of a plate supported upon both of said racks, the cams being adjustable along the shaft, and the shaft-supporting plate being insertible in any of the notches in either rack.

47. A tabulating mechanism for a typewriter carriage including a rack device, a series of column stops movable upon said rack device into and out of working positions, a rotatable shaft extending along the rack and supported at its ends for rotation in bearings which are open to permit withdrawal of the shaft, latches or means being provided to detain the shafts in the bearings, diversified cams upon said shaft to engage the column stops, and a midway support for said shaft in the form of a plate supported upon said rack, the cams being adjustable along the shaft and the shaft-supporting plate being insertible in any of the rack notches.

48. A tabulating mechanism for a typewriter carriage including a rack device, a series of column stops movable upon said rack device into and out of working positions, a rotatable shaft extending along the rack and supported at its ends for rotation in bearings which are open to permit withdrawal of the shaft, latches or means being provided to detain the shafts in the bearings, diversified cams upon said shaft to engage the column stops, and a midway support for said shaft in the form of a plate supported upon said rack, the cams being adjustable along the shaft and the shaft-supporting plate being insertible in any of the rack notches, and having an open bearing to receive the shaft and a latch or releasable means to hold the shaft in said bearing.

49. A tabulating mechanism for a typewriter carriage including a rack device, a series of column stops movable upon said rack device into and out of working positions, a rotatable shaft extending along the rack and supported at its ends for rotation in bearings which are open to permit with-

drawal of the shaft, latches or means being provided to detain the shafts in the bearings, diversified cams upon said shaft to engage the column stops, and a midway support for said shaft in the form of a plate supported upon said rack, the cams being adjustable along the shaft and the shaft-supporting plate being insertible in any of the rack notches, and having an open bearing to receive the shaft and a latch or releasable means to hold the shaft in said bearing, the last-mentioned latch formed with a tooth to engage a notch in the rack device.

JOHN C. McLAUGHLIN.

Witnesses:
K. FRANKFORT,
JOHN O. SEIFERT.