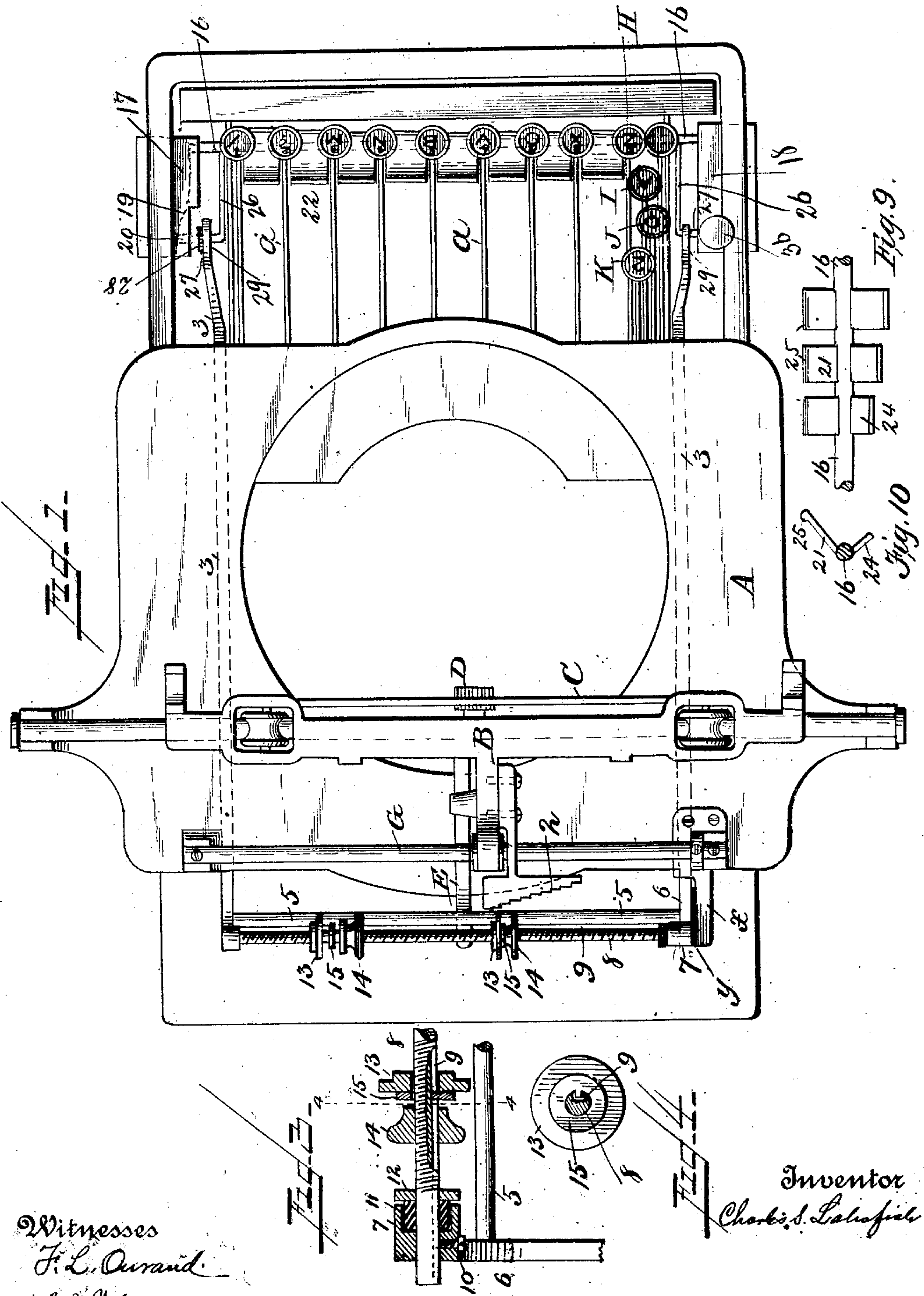


C. S. LABOFISH.  
 TABULATING DEVICE FOR TYPE WRITERS.  
 APPLICATION FILED JAN. 9, 1901.

940,395.

Patented Nov. 16, 1909.

4 SHEETS—SHEET 1.



Witnesses  
 F. L. O'Rand  
 S. J. Mober

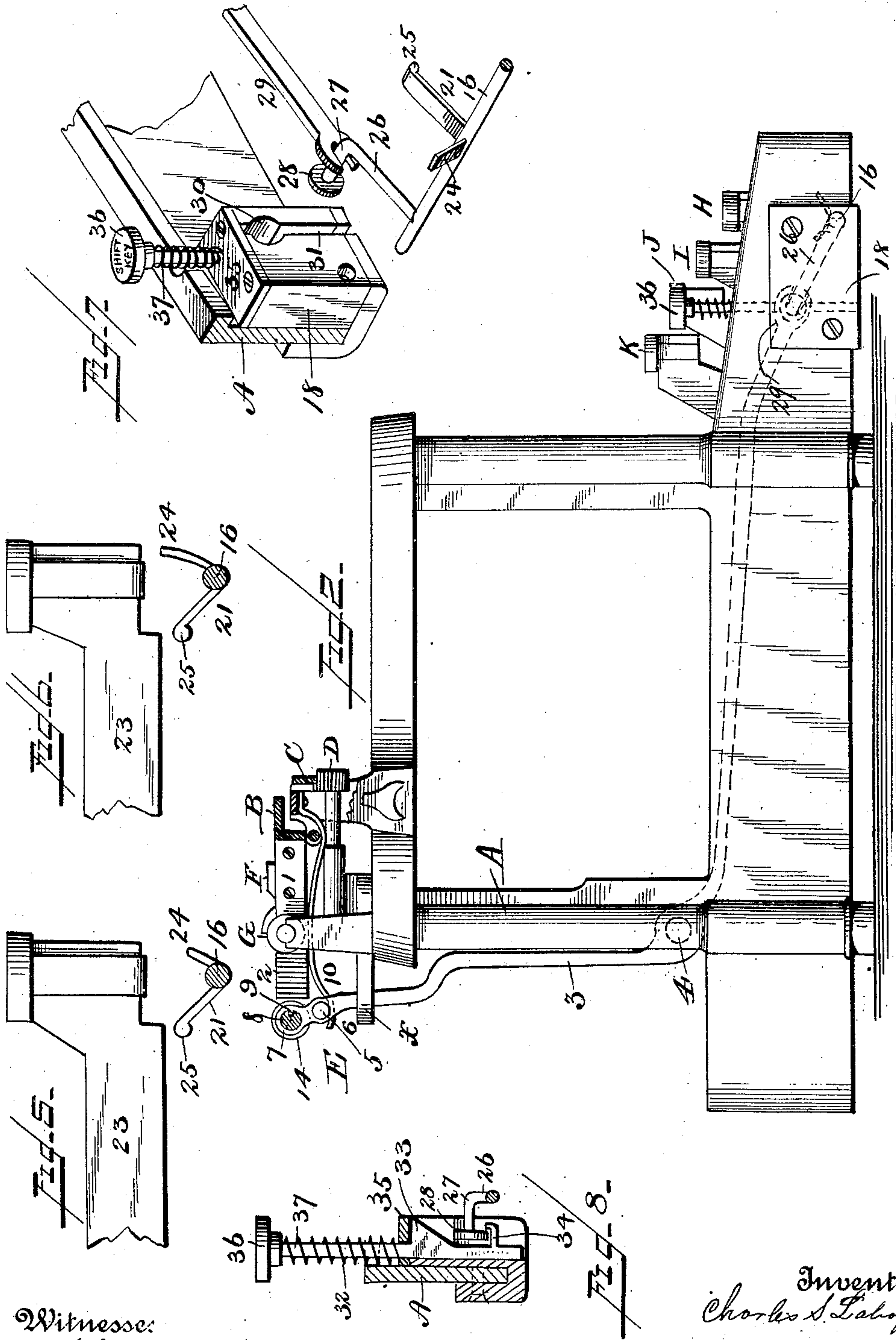
Inventor  
 Charles S. Labofish

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4 SHEETS—SHEET 2.



Witnesses:  
 F. L. Owen d.  
 E. J. Weber

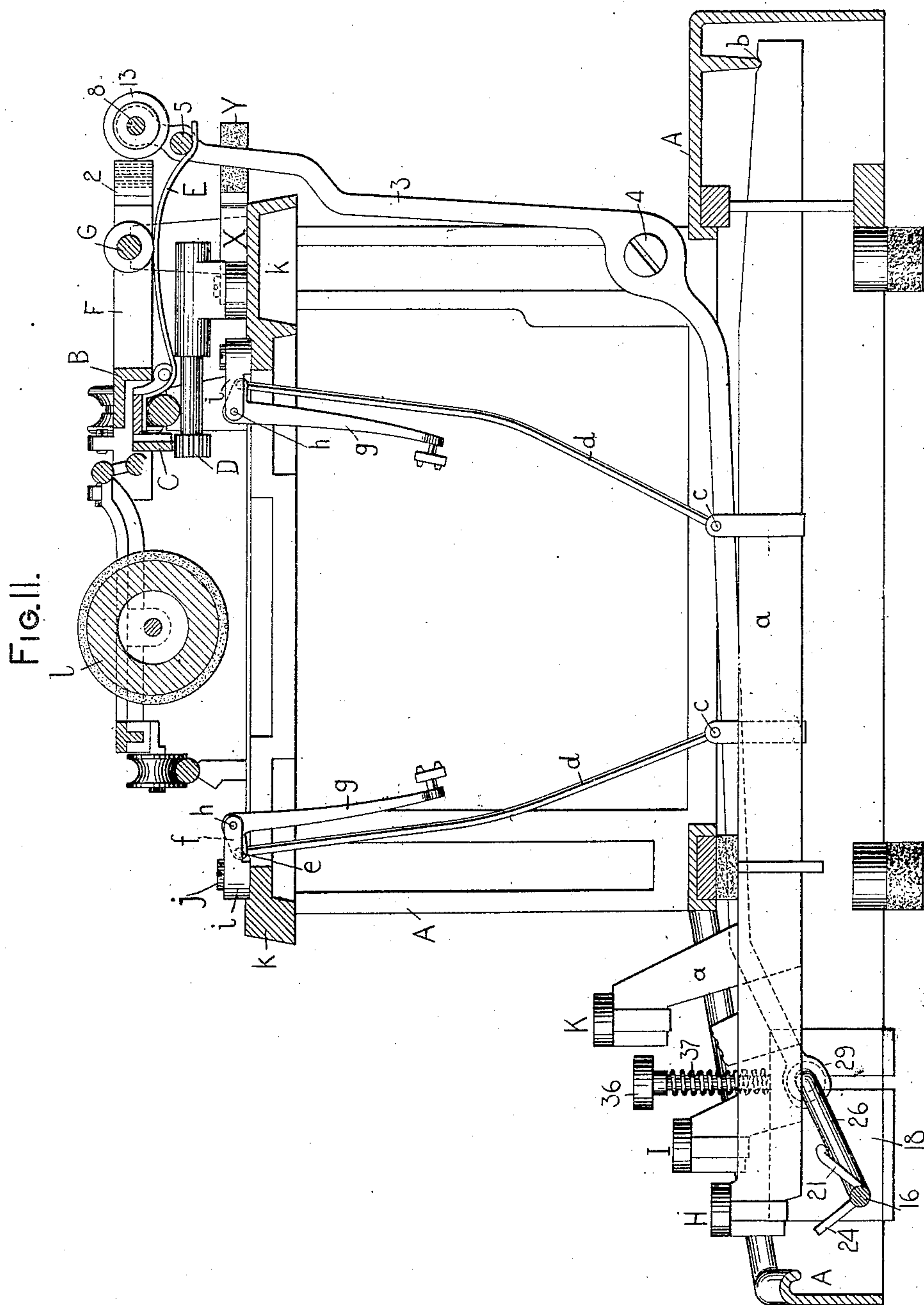
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4 SHEETS—SHEET 3.



WITNESSES:

K. V. Donovan,

Charles E. Smith

INVENTOR:

Chas. S. Labofish

By Jacob F. Fabel

HIS ATTORNEY



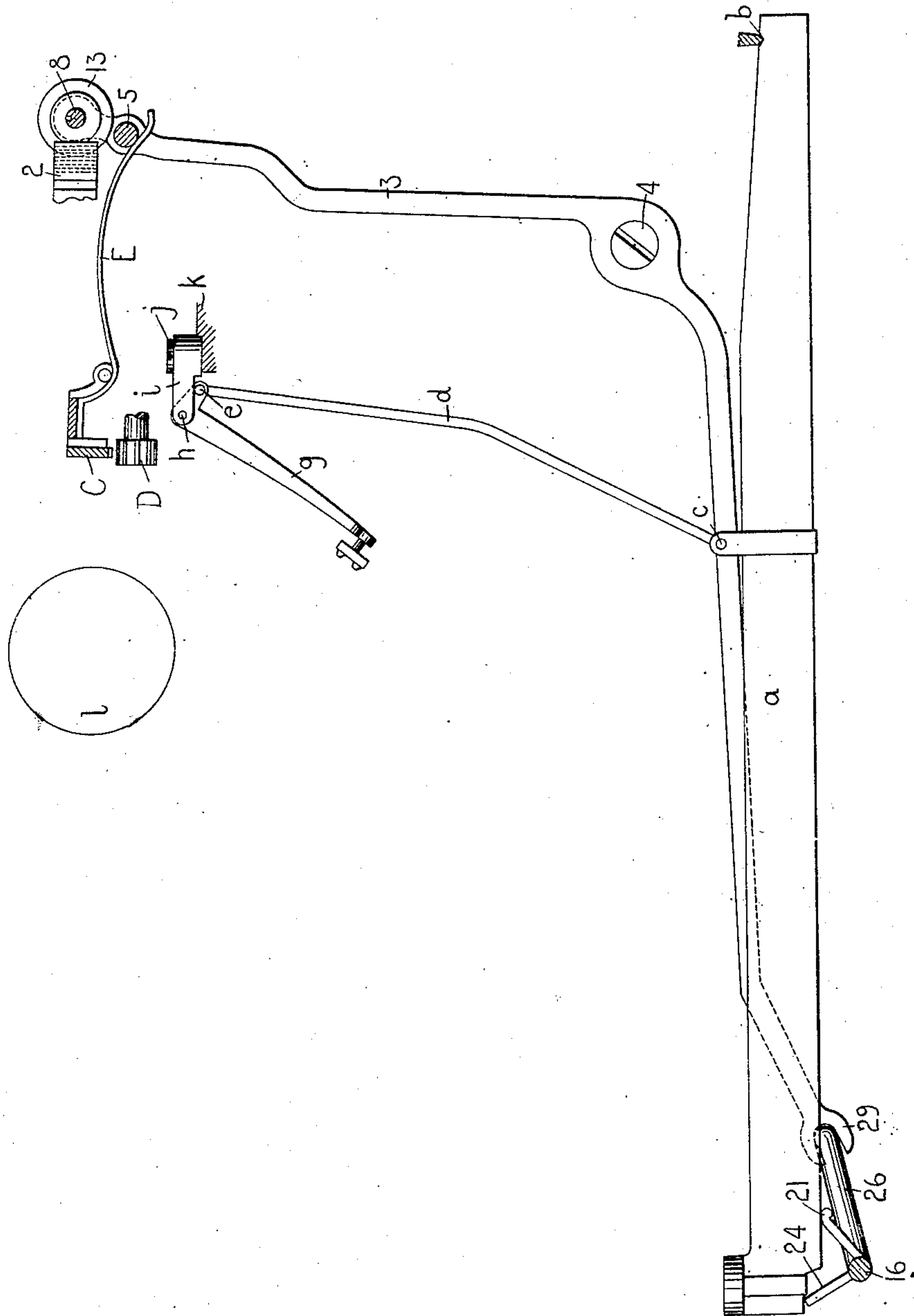
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4 SHEETS—SHEET 4.

FIG. 12.



WITNESSES:

*H. V. Donovan.*

*Wm. E. Smith*

INVENTOR.

*Chas. S. Labofish.*

*by Jacob F. Felt*

HIS ATTORNEY



# UNITED STATES PATENT OFFICE.

CHARLES S. LABOFISH, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNOR TO UNION TYPEWRITER COMPANY, OF JERSEY CITY, NEW JERSEY, A CORPORATION OF NEW JERSEY.

TABULATING DEVICE FOR TYPE-WRITERS.

940,395.

Specification of Letters Patent.

Patented Nov. 16, 1909.

Application filed January 9, 1901. Serial No. 42,676.

To all whom it may concern:

Be it known that I, CHARLES S. LABOFISH, citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Tabulating Devices for Type-Writers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in tabulating devices for typewriters, such as are used to stop the carriage at a predetermined point or points to bring the column or columns of figures into perfect alinement automatically, and the objects of my invention are, first, to produce a tabulator which is extremely simple in construction, neat in appearance, and comprehensive in its operation; second, to produce a tabulator which can be operated by the typewriter keys, thereby dispensing with the auxiliary set of keys or other means usually employed to accomplish the results; third, to produce simple and efficient means for effecting minute adjustments of the tabulating or column stops, thereby insuring absolute accuracy; and, fourth, to produce simple and efficient means for locking the tabulator securely when not in use, thereby preventing every possible chance of interfering with the working of the machine, by the tabulating mechanism rattling loose or releasing itself and catching when the typewriter is being rapidly operated.

To the above and other ends which will hereinafter appear, my invention consists of the features of construction, arrangements of parts and combinations of devices to be hereinafter described and claimed.

I attain the objects set forth by the construction shown in the accompanying drawings, in which—

Figure 1 is a plan view of the typewriter fitted with my tabulating device. Fig. 2 is a side elevation of same. Fig. 3 is a longitudinal sectional view through a portion of the bracket with the two connecting rods and one of the column stops, the parts being shown on an enlarged scale. Fig. 4 is a detail transverse sectional view of the same taken on the line 4—4 of Fig. 3. Figs. 5 and 6 are side views of portions of the typewriter keys and sections of the rock-shaft

with its rockers. Figs. 7 and 8 are fragmentary detail perspective and vertical sectional views respectively of the shift key and shifting mechanism. Figs. 9 and 10 are detail plan and transverse sectional views respectively of the rock-shaft and its rockers, showing how they are shaped and graded. Fig. 11 is a vertical front to rear sectional view of one form of typewriting machine embodying my invention, the parts being shown in their normal positions. Fig. 12 is a diagrammatic side elevation illustrating a finger key depressed to actuate the tabulating mechanism, the type-bar being shown arrested to prevent a complete printing movement thereof.

Similar letters and figures of reference refer to similar or corresponding parts throughout the several views.

Referring to the drawings, A indicates the typewriter frame; B, the traveling carriage; C, the rack; D, the pinion which meshes with the rack; E is an extended release arm or lever, which by depression disengages the rack from the pinion, and releases the carriage.

F designates a guide piece which cooperates with a rod G to guide the carriage in its movement from end to end of the machine.

H indicates the first or front bank of typewriter or printing keys; I, the second bank; J, the third, and K, the fourth bank or row of typewriter or printing keys. Each of the key levers *a* of the various banks of printing keys H I J and K is fulcrumed at *b* upon a fulcrum bar which extends from side to side of the machine and each key lever is connected at *c* to a link *d* which in turn is connected at *e* to a crank arm *f* that projects from the heel of a type bar *g*, pivoted at *h* to a hanger *i* that is secured by a screw *j* to the top plate *k*, the latter constituting a portion of the frame A of the machine; the various type bars cooperating with the platen *l* and all of said parts being constructed and operating in the usual manner as in the No. 6 Remington machine for instance, except the release lever E. To the guide piece F is secured a block 1, formed with a series of steps 2, which constitutes tabulating, or more specifically speaking, denominational stops. The contact faces of these steps are in vertical parallel planes that extend fore and aft of the



machine and are situated near the carriage from right to left. In other styles of typewriters which have no guide piece the block 1 may be secured direct to any convenient part of the carriage.

Two bell-crank like brackets or levers 3 are pivoted to the frame A at 4 so as to rock freely; the upright arms of the said brackets being connected by a rod 5 at 6; the said rod being screwed or riveted in the brackets in order to hold them the proper distance apart, and form a unitary and rigid structure of the two brackets so that they will rock together.

Upon reference to Figs. 1 and 3, it will be seen that the extreme ends 7 of the vertical arms of the brackets or levers are enlarged to form bearings for a rod 8. This rod 8 is screw-threaded throughout its length, except at and near the ends thereof, and has a longitudinal groove 9 in which screws 10 are seated near the ends of the rod in order to prevent it from turning in its bearings. The left-hand bearing 7 is further bored or countersunk for about one-half of its width, and a yielding collar or buffer 11, which is preferably of india rubber, but may be a metal spring if desired, is fitted therein and extends beyond the inner face of the bearing 7. A washer 12 is fitted securely upon the rod so as to contact with the exposed end of the buffer and leave a small space between the washer and the bearing 7. The rod 8 has a slight longitudinal movement in its bearing against the tension of the yielding collar which acts as a cushion to absorb the shock caused by the sudden arrest of the released carriage.

Several internally screw threaded disks 13 and thumb nuts 14 are threaded upon the rod 8; a toothed washer 15 being interposed between each disk and thumb nut, which parts form column or tabulating stops. An inwardly projecting tooth on each washer 15 engages the groove 9 and the washer is thereby held non-rotatably upon the rod. The disks 13 can thus be adjusted to a nicety and locked securely by the thumb nuts against the non-rotating lock washers so that the impact of the carriage cannot dislodge or move the parts which constitute each stop.

Beneath the front bank of typewriter keys H is a shaft 16 journaled in blocks 17 and 18, secured to the typewriter frame A. The shaft 16 has a longitudinal movement in the blocks, and is held normally toward the left by a spring 19, which is secured in the hollow portion of the block 17 by a screw 20 and bears upon the right-hand end of the shaft 16, as shown in Fig. 1. The shaft 16 has cast integral therewith or otherwise rigidly secured thereto a series of rockers 21 and a corresponding series of arresting projections 24, the arms or projections of the

two series being preferably set in substantially V-shaped arrangement (see Figs. 9 and 10) to form two pivot bearings. The spaces 22, between the projections 21 and 24 of the different sets, are of such a width as to admit the typewriter key levers *a* and permit a free vertical movement thereof and the forwardly extending projections 24 are graded or stepped in relative proportion to the graduations of the steps on the block 2, and substantially in the same direction, that is, they decrease in length from right to left, while the rearwardly extending projections 21 project to equal extents from the rock-shaft and upon the opposite side thereof from the projections 24, so that the contact edges or faces of the projections 21 are situated in the same horizontal plane. The projections 21 are preferably slightly curved rearwardly or rounded at their free ends as at 25 in order that the key levers may have a better bearing (see Figs. 5 and 6). To the shaft 16 are secured two projecting arms 26 which are bent outwardly and are headed at their outer extremities so as to leave shanks 27 and heads 28; the shanks being in constant engagement with forked ends 29 of the brackets or levers 3.

From the foregoing description it will be seen that the rock-shaft 16 and the parts carried thereby constitute a frame which is adapted to turn on the axis of the shaft as a center to transmit a rocking motion to the brackets 3 and the column stop rod carried thereby.

In the block 18 is formed a cavity 30 of a size sufficient to admit the head 28 of the arm 26 to enter freely and a vertical slot 31 is milled in the said block and intersects the cavity 30. A sliding shift key 32 is received and moves within the slot 31 and the cavity 30 and this key is provided with a cam 33 and a latch 34 and is limited in its upward movement by a plate 35 secured to the block 18. The said shift key is further fitted with a screw cap 36 and a coiled spring 37, the latter serving to hold the key in the elevated position with the cam 33 thereon in the position shown in Fig. 8 and the latch 34 engaging the head 28 on the left-hand crank arm 26.

In operating my tabulating device the carriage is adjusted upon the typewriter scale in the usual manner, so that the pointer indicates the graduation mark where the units of the column will appear when printed. A disk 13 is then adjusted so as to come directly opposite the highest step 2, or so that the contact face of the column stop is in the same plane as the contact face of the rearmost stop 2 and the column stop is locked in its adjusted position with the thumb nut 14 bearing against the lock washer 15, as shown in Fig. 1. The carriage is then returned to its normal position.



Now we will suppose that it is desired to print the amount of 10,000 underneath an amount already printed. The shift key 36 is depressed; this causes the cam 33 to eject the head 28 at the left-hand side of the machine from the cavity 30, at the same time shifting the shaft 16 and the parts carried thereby toward the right just sufficient to bring the curved rockers 21 immediately underneath the key levers *a* of the first row of keys H. While pressure is still maintained on the shift key 36 the printing key bearing the numeral "5" is depressed and its lever will bear first upon the face or rearwardly extending projection 21 of the associated V-shaped rocker, causing it to incline, its inclination being limited by reason of the face or rearwardly extending projection 24 of the rocker touching the key lever, and arresting it from further downward movement, thereby preventing the type bar from completing its printing movement, as indicated in Fig. 12. This inclination of the rocker arm 21 is effective to rock the shaft 16 with its arms 26, which are as stated above operatively connected to the brackets 3 to such an extent as to bring the disk 13 in the path of movement of the fifth step 2 of the block 1. The movement of the rod 5 toward the front of the machine depresses the rear end of the release arm or lever E, thereby elevating the feed rack to effect a release of the carriage, which will travel toward the left under the power of the spring drum until the fifth step 2 on the carriage (counting from right to left) meets a column stop. When the pressure upon the key 5 is removed, the parts will be restored to their normal positions and it will be found that the carriage has been arrested at the fifth denominational position, when the figures 10,000 may be written and the zero representing the unit will appear exactly in the place where the carriage was set and in line with the unit above it. The same operation is repeated to tabulate the next amounts of the column, and so on, until the column is completed, when all the figures of the column or columns will appear in perfect alinement in their respective denominational positions.

It will be observed that the moment the pressure upon the shift or tabulator controlling key 36 and the typewriter key is removed the brackets or levers 3 return to their normal position by gravity and the head 28 at the left-hand side of the machine enters its cavity 30 and the latch 34 re-engages the head and locks it securely, thereby preventing any possibility of an accidental contact of the disks 13 with the block 1, or the key levers *a* with rocker arms 21 by the rattling of the parts or other causes during an operation of the machine.

To prevent possible injury to the brackets

or levers 3 by the forcible striking of the released carriage against the disks 13 carried by the brackets 3, a stop or block X is secured to the top plate *k* of the typewriter frame A. This stop is preferably lined with soft, yielding material Y (see Figs. 1 and 11) and is placed in close proximity to the brackets 3, so that, when the sudden jar of the carriage tends to deflect the bracket, the latter will be caught by block X, and further deflection is thereby prevented, as will be apparent from an inspection of Figs. 1 and 2.

From the foregoing description it will be seen that the tabulating mechanism is independent of the ordinary carriage-feed mechanism and that the arrest of the carriage at the proper denominational position is not dependent upon or controlled by said mechanism.

It is evident that numerous changes might be made in the general construction and formation of parts of my device, without departing from the spirit and scope of my invention. Hence I would have it understood that I do not limit myself to exact construction and formation of parts herein shown and described, but consider myself at liberty to make any such alterations that fairly fall within the spirit and scope of my invention.

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

1. The combination with tabulating mechanism, of keys for actuating said tabulating mechanism, means for rendering the tabulating mechanism operable by said keys, and means for locking the tabulating mechanism out of control of said keys.

2. In a typewriting machine, the combination of printing mechanism, a series of printing keys therefor, tabulating mechanism adapted to be actuated by said printing keys, means for rendering the tabulating mechanism operable by said keys, and means for locking said tabulating mechanism out of control of said printing keys.

3. In a typewriting machine and tabulating mechanism, the combination of a carriage, printing instrumentalities, printing keys therefor, mechanism for arresting the carriage at a predetermined point, the arresting mechanism being controlled by said printing keys, means for rendering the arresting mechanism inoperative by the printing keys, and means for locking the arresting mechanism in the inoperative position.

4. In a typewriting machine and tabulating mechanism, the combination of a carriage, printing instrumentalities, printing keys therefor, means for automatically releasing the carriage, mechanism for arresting the carriage at a predetermined point, the releasing means and arresting mechanism being controlled by said printing keys, means for rendering the releasing means and



arresting mechanism inoperative by the printing keys, and means for locking the releasing means and arresting mechanism in the inoperative position.

5 5. In a typewriting machine and tabulating mechanism, the combination of a carriage, printing instrumentalities, printing keys therefor, means for automatically releasing the carriage, denominational mechanism for arresting the carriage at the  
10 proper denominational position, the releasing means and denominational mechanism being controlled by said printing keys, means for rendering the releasing means and  
15 denominational mechanism inoperative and to permit a free and independent actuation of the printing keys, and means for locking the releasing means and denominational mechanism in the inoperative position.

20 6. In a typewriting machine and tabulating mechanism, the combination of a carriage, printing instrumentalities, printing keys therefor, a tabulating stop on the carriage, a cooperating tabulating stop, a rock  
25 shaft which is adapted to be turned by said printing keys, and intermediate connections between said rock shaft and one of said stops, whereby one stop may be moved into the path of the other on the depression of a  
30 printing key and the carriage arrested at a predetermined point.

7. In a typewriting machine and tabulating mechanism, the combination of a carriage, printing instrumentalities, printing  
35 keys therefor, denominational stops, a cooperating tabulating stop, a rock shaft which is adapted to be turned to different extents by said printing keys, and intermediate connections between said rock shaft  
40 and one of said denominational and tabulating stops, whereby one stop may be moved into the path of the other on the depression of a printing key and the carriage arrested at the proper denominational position.

45 8. In a typewriting machine and tabulating mechanism, the combination of a carriage, printing instrumentalities, printing keys therefor, denominational stops, a cooperating tabulating stop, a rock shaft which  
50 is adapted to be turned to different extents by said printing keys, means controlled by said rock shaft for releasing the carriage, and intermediate connections between said rock shaft and one of said denominational  
55 and tabulating stops, whereby one stop may be moved into the path of the other and the carriage released on the depression of said printing keys.

9. In a typewriting machine and tabulating mechanism, the combination of a carriage, printing instrumentalities, printing  
60 keys therefor, denominational stops, a cooperating tabulating stop, a rock shaft which is adapted to be turned to different extents  
65 by said printing keys, means controlled by

said rock shaft for releasing the carriage, intermediate connections between said rock shaft and one of said denominational and tabulating stops, whereby one stop may be  
70 moved into the path of the other and the carriage released on the depression of a printing key, and means for rendering the tabulating mechanism inoperative and to permit a free actuation of the printing keys independently thereof.

10. In a typewriting machine and tabulating mechanism, the combination of a carriage, printing instrumentalities, printing  
75 keys therefor, a tabulating stop on the carriage, a cooperating tabulating stop, a rock shaft which is adapted to receive a longitudinal movement as well as a turning movement, projections which extend to different  
80 extents from said rock shaft and which are adapted to cooperate with and be moved by said printing keys, intermediate connections between said rock shaft and one of said tabulating stops, and means  
85 for moving said rock shaft longitudinally to move the projections thereon to positions where printing keys are ineffective to cooperate therewith.

11. In a typewriting machine and tabulating mechanism, the combination of a carriage, printing instrumentalities, printing  
90 keys therefor, a tabulating stop on the carriage, a cooperating tabulating stop, a rock shaft which is adapted to receive a longitudinal movement as well as a turning movement, projections which extend different  
95 extents from said rock shaft, and which are adapted to cooperate with said printing keys, intermediate connections between said rock shaft and one of said tabulating stops, means for moving said rock shaft longitudinally  
100 to move the projections thereon to positions where the printing keys are ineffective to cooperate therewith, and means for locking the rock shaft in the inoperative position.

12. In a typewriting machine and tabulating mechanism, the combination of a carriage, carriage escapement mechanism, printing  
105 instrumentalities, printing keys therefor, a tabulating stop on the carriage, a cooperating tabulating stop, a rock shaft which is adapted to receive a longitudinal movement as well as a turning movement, projections which extend different extents  
110 from said rock shaft and which are adapted to cooperate with said printing keys, intermediate connections between said rock shaft and one of said tabulating stops, and between the rock shaft and the escapement  
115 mechanism, and means for moving said rock shaft longitudinally to move the projections thereon to positions where printing keys are ineffective to cooperate therewith.

13. In a typewriting machine, and tabulating mechanism, the combination of a  
120  
125  
130



carriage, carriage escapement mechanism, printing instrumentalities, printing keys therefor, denominational stops on the carriage, a cooperating tabulating stop, a rod which extends in the direction of the travel of the carriage and on which said tabulating stop is adjustable, a rock shaft which is adapted to receive a longitudinal movement as well as a turning movement, projections which extend different extents from said rock shaft and which are adapted to cooperate with said printing keys, intermediate connections between said rock shaft and said tabulating stops, and between the rock shaft and the escapement mechanism, whereby a depression of a printing key may effect a movement of the tabulating stop into the path of a denominational stop, and means for moving said rock shaft longitudinally to move the projections thereon to positions where the printing keys are ineffective to cooperate therewith.

14. In a typewriting machine, the combination of printing mechanism, printing keys therefor, tabulating mechanism adapted to be operated by said printing keys, said tabulating mechanism including a rock shaft and projections on said rock shaft which limit the movement of the printing keys when the tabulating mechanism is operated and prevent a printing operation of said printing mechanism.

15. The combination in a typewriter, of typewriter keys, a rock shaft provided with rockers having graded projections arranged beneath the depressible typewriter keys and operatively connected to devices adapted to stop the carriage at a predetermined point.

16. A tabulating device for typewriters, comprising two fulcrumed bell-crank-like brackets, connected by a rod carrying a column stop in combination with a graded block secured to the traveling carriage adapted to contact with the said column stop substantially as described.

17. A tabulating device for typewriters, comprising two rockable brackets, said brackets being connected by two rods, one of them being screw threaded and having a column stop thereon, substantially as described.

18. A tabulating device for typewriters, comprising two rockable brackets, said brackets being connected by two rods, one of them being screw threaded and having a longitudinal groove therein, said groove being adapted to hold non-rotatable devices upon the said rod, as set forth and described.

19. A tabulating device for typewriters, comprising bell-crank-like rockable brackets, said brackets being held pivotally upon the typewriter frame, the horizontal extremities of the said brackets being forked for the purpose of receiving actuating devices adapted to rock said brackets, as set forth.

20. In a tabulating device for typewriters, the combination of rockable brackets supporting devices adapted to obstruct the travel of the typewriter carriage at a predetermined point, of a rock-shaft arranged beneath a row of typewriter keys, and an operative connection between the said rock-shaft and the said rockable brackets, substantially as described.

21. In combination with the typewriter key levers, of a rock shaft formed with a series of graded projections upon which the key levers bear to rock the said shaft various distances, said projections being spaced apart so that the said key levers are adapted to move freely between the projections.

22. In combination with the typewriter key levers, of a rock shaft formed with a series of two point bearing projections, one point being adapted to rock the shaft by the depression of the typewriter key, and the other point being adapted to limit the downward movement of the said key lever, as set forth.

23. In combination with the depressible key levers of a typewriter, of a shiftable rock shaft provided with a series of rockers upon which the said key levers bear to rock said shaft, said rockers being spaced apart so as to afford a free vertical movement of said key levers between the rockers when desired.

24. A shiftable rock shaft arranged beneath a row of typewriter keys, said rock shaft being provided with a series of rockers which are spaced apart and suitable means adapted to engage rockable brackets supporting devices adapted to arrest the typewriter carriage at a predetermined point, as set forth.

25. A shiftable rock shaft provided with a series of curved rockers adapted to be rocked by the depression of the typewriter key levers, the faces of the said curved rockers being level on one side of the said shaft, and graded at the opposite side, for the purpose of imparting variable motion to the said shaft, substantially as described.

26. A tabulating device for typewriters, comprising rockable brackets bearing devices adapted to engage the typewriter carriage and arrest its movement at a predetermined point, in combination with a shiftable rock shaft provided with a series of rockers and arms in engagement with the said rockable brackets, and suitable means for shifting said rock shaft to bring said rockers beneath the depressible typewriter keys, as set forth.

27. In a tabulating device for typewriters, the combination of a rock shaft and depressible key provided with a cam adapted to control the shifting movement of said rock shaft into and out of operative tabulating position.



28. In combination with a tabulating device for typewriters adapted to obstruct the typewriter carriage at a predetermined point, of means for locking said tabulator  
5 against accidental engagement with the said carriage when not in use, as set forth.

29. In a tabulating device for typewriters, a depressible key adapted to shift and lock a rock shaft, said key being provided with a  
10 cam adapted to control the shifting movement of said rock shaft, and a latch adapted to engage said rock shaft when the said cam is out of engagement therewith, as set forth.

30. A tabulating device for typewriters,  
15 comprising two rockable brackets connected by a screw threaded rod, a series of screw threaded disks traversing said rod, a non-rotatable washer upon the said rod, and a thumb nut adapted to lock said disk in posi-  
20 tion upon the said rod, and means for imparting variable motion to the said brackets.

31. In a typewriting machine, the combination of printing mechanism, keys therefor, tabulating mechanism adapted to be actuated by said keys, controlling means for  
25 placing the tabulating mechanism under control of said keys and for normally maintaining said tabulating mechanism out of control of said keys, and means for locking the controlling means in normal position.  
30

32. In a typewriting machine and tabulating mechanism, the combination of a carriage, a screw-threaded rod that extends longitudinally in the direction of the travel of  
35 the carriage, a threaded stop adjustable along said rod, a non-rotatable washer upon the rod, and a nut adapted to lock the stop in its adjusted position on said rod.

33. In a typewriting machine and tabulating mechanism, the combination of a carriage, a tabulating stop, a denominational stop device, a series of key levers, a universal sub-lever which is adapted to be actuated  
40 by all of said key levers, and intervening connections between said tabulating stop and the universal sub-lever for moving said tabulating stop to different extents by the  
45 actuation of the different key levers.

34. In a typewriting machine and tabulating mechanism, the combination of a power driven carriage, a tabulating stop, a rock shaft which carries said tabulating stop, a denominational stop device, a series of key  
50 levers, a universal sub-lever which is adapted to be actuated by all of said key levers, and intervening connections between said rock shaft and the universal sub-lever for moving said tabulating stop to different extents by the actuation of the different key  
55 levers.

35. In a typewriting machine and tabulating mechanism, the combination of printing instrumentalities, keys therefor, tabulating means including a series of adjustable column stops and denominational stop devices  
60

coöperative therewith, key actuated means for placing said tabulating means under control of the printing keys to be actuated thereby, and means for locking said tabulating mechanism out of control of the printing  
70 keys.

36. In a typewriting machine and tabulating mechanism, the combination of printing instrumentalities, keys therefor including numeral keys, tabulating means, and hand  
75 controlled means comprising an oscillatory device common to all of said numeral keys and operatively connected to said tabulating means and arranged below said keys and adapted to be moved into and out of the  
80 paths of said numeral keys.

37. In a typewriting machine and tabulating mechanism, the combination of printing instrumentalities, keys therefor including numeral keys, tabulating means, hand controlled means comprising an oscillatory device common to all of said numeral keys and operatively connected to said tabulating means and arranged below said keys and adapted to be moved into and out of the  
85 paths of said numeral keys, and means for locking said oscillatory device in the inoperative position.  
90

38. In a typewriting machine and tabulating mechanism, the combination of a series of key actuated tabulator actuating devices, and an actuating rock shaft with a series of two point bearing projections thereon with which said actuating devices coöperate, one point of each set being adapted to rock the  
95 shaft through an operation of the associated actuating device and the other point being adapted to coöperate with said device to limit the movement thereof.  
100

39. In a typewriting machine and tabulating mechanism, the combination of a key-actuated stop-carrying frame pivoted to swing, and a rigid stop carried by the frame of the machine, said rigid stop being independent of the pivot bearing of said stop-carrying frame and coöperative with the  
105 latter in the various positions to which the stop carrying frame may be swung, to resist a movement of said stop carrying frame when it receives the impact of the carriage.  
110

40. In a typewriting machine, the combination with a main frame and a carriage movable across said frame, of a denominational tabulator comprising a stepped stop, a tabulator stop coöperating with said  
115 stepped stop, the tabulator stop and stepped stop being relatively adjustable in the direction of the travel of the carriage, printing keys, and means controlled by said printing keys to effect a variable relative adjustment  
120 between said stops to bring them into coöperative relation.  
125

41. In a typewriting machine, the combination with a series of keys, of a tabulating device comprising a frame common to all of  
130



said keys and having fixed parts adapted to limit the motion of the keys and mounted to slide into and out of cooperative relation with said keys.

42. In a typewriting machine, the combination of a carriage and a tabulating stop device therefor, a series of keys, and a frame movable at will into and out of cooperative relation to the keys, said frame having parts cooperative with said keys for variably limiting the movements thereof and for operating said stop device.

43. In a typewriting machine, the combination with printing means and keys for operating the same, of a tabulating device comprising a frame common to all of said keys and having parts adapted to limit the motion of the keys, and mounted to slide into and out of cooperative relation to the keys.

44. In a typewriting machine, the combination of a carriage and a tabulating stop therefor, printing means and keys for operating the same, and a frame movable at will into and out of cooperative relation to the keys, said frame having parts for variably limiting the movements of said keys and for operating said stop.

45. In a tabulating device, a series of movable key members, a rock shaft provided with a series of differently placed projections adapted for engagement with said key members, stop devices comprising a movable stop connected with said rock shaft and adapted to be adjusted to different denominational positions according to the movement of said shaft, and a carriage release device operated by the movement of said key members.

46. In a typewriting machine and tabulating mechanism, the combination of a carriage, printing instrumentalities, printing keys, tabulating devices comprising a graduated contact piece and a stop cooperative therewith to arrest the carriage, and means under control of said printing keys for effecting different extents of relative movement between said cooperative stop and graduated contact piece and for bringing them into cooperative relation.

47. In a typewriting machine and tabulating mechanism, the combination of a carriage, printing instrumentalities, printing keys, tabulating devices comprising a graduated contact piece and a stop cooperative therewith to arrest the carriage, means under control of said printing keys for effecting different extents of relative movement between said cooperative stop and graduated contact piece and for bringing them into cooperative relation, and means controlled by said printing keys for releasing the carriage when said tabulating devices are actuated.

48. In a typewriting machine and tabulating mechanism, the combination of a carriage, printing instrumentalities, printing

keys, tabulating devices comprising a graduated contact piece and a stop cooperative therewith to arrest the carriage, means under control of said printing keys for effecting different extents of relative movement between said stop and graduated contact piece and for bringing said stop and graduated contact piece into cooperative relation, and key controlled means operable at will to render the printing keys operative to actuate the tabulating devices.

49. In a typewriting machine and tabulating mechanism, the combination of a carriage, printing instrumentalities, printing keys, tabulating devices comprising a graduated contact piece and a stop cooperative therewith to arrest the carriage, means under control of said printing keys for effecting different extents of relative movement between said stop and graduated contact piece and for bringing said stop and graduated contact piece into cooperative relation, means controlled by said printing keys for releasing the carriage when said tabulating devices are actuated, and means operable at will to render the printing keys operative to actuate said tabulating devices and to release the carriage.

50. In a typewriting machine and tabulating mechanism, the combination of a carriage, printing instrumentalities, printing keys, tabulating devices comprising tabulator stops, and means under control of said printing keys for moving certain of said stops different extents to determine the denominational position of arrest of the carriage.

51. In a typewriting machine and tabulating mechanism, the combination of a carriage, printing instrumentalities, printing keys, tabulating devices comprising tabulator stops, means under control of said printing keys for moving certain of said stops different extents to determine the denominational position of arrest of the carriage, and means operable at will to render the printing keys operative to actuate the tabulating devices.

52. In a typewriting machine and tabulating mechanism, the combination of a carriage, printing instrumentalities, printing keys, tabulating devices comprising tabulator stops, and means under control of said printing keys for moving certain of said stops different extents to determine the denominational position of arrest of the carriage and for releasing the carriage when said tabulating stops are brought into cooperative relation.

53. In a typewriting machine and tabulating mechanism, the combination of a carriage, printing instrumentalities, printing keys, tabulating devices comprising tabulator stops, means under control of said printing keys for moving certain of said stops



different extents to determine the denominational position of arrest of the carriage and for releasing the carriage when said tabulating stops are brought into coöperative relation, and hand actuated means operable at will for rendering said printing keys operative to actuate the stop devices and release the carriage.

54. In a typewriting machine and tabulating mechanism, the combination of a carriage, printing instrumentalities, printing keys, tabulating devices comprising a graduated contact piece with denominational stops thereon situated a letter space distance apart and a coöperative stop, and means for rendering the printing keys operative to move said coöperative stop different distances to bring different denominational stops on the graduated contact piece into operation to determine the denominational position of arrest of the carriage.

55. In a typewriting machine and tabulating mechanism, the combination of a carriage, printing instrumentalities, printing keys therefor, denominational stops carried by the carriage, a revoluble tabulating stop carried by a fixed portion of the machine and movable in a plane that extends fore and aft of the machine, and means controlled by said printing keys for turning the tabulating stop to different extents and into the paths of the different denominational stops.

56. In a typewriting machine and a tabulating mechanism therefor, the combination of a carriage, printing instrumentalities, printing keys therefor, a plurality of denominational stops carried by the carriage and each of which travels in a different fixed path that is parallel to the path of the carriage, a coöperating tabulating stop and means under control of said printing keys for turning said tabulating stop to different extents in a direction transverse to the travel of the denominational stops and so as to bring the tabulating stop into the path of any of the denominational stops on the carriage and to arrest the carriage at different denominational positions according to the extent of rotation of the tabulating stop.

57. In a typewriting machine and tabulating mechanism, the combination of a power driven carriage, printing instrumentalities, printing keys therefor, a tabulating stop on the frame of the machine, a series of denominational stops on the carriage, and a universal frame connected to said tabulating stop, said printing keys coöperating with said universal frame so as to move it different distances.

58. In a typewriting machine and tabulating mechanism, the combination of a carriage, a series of denominational stops, a tabulating stop movable to a plurality of de-

nominal positions, a universal bar connected to said stop, and a plurality of numeral printing key levers all acting on said universal bar to variably move the tabulating stop.

59. In a tabulating attachment for typewriting machines, the combination with the transversely movable paper carriage, of a rock shaft, a stop mounted upon said shaft and adapted to coöperate with the paper carriage to arrest the latter at different denominational positions, and means for turning said rock shaft to different positions to adjust said stop to arrest the paper carriage at the desired denominational position, said means comprising a series of printing keys.

60. In a tabulating attachment for typewriting machines, the combination, with the transversely movable paper carriage, of printing instrumentalities, printing keys therefor, a rock shaft, a stop mounted thereon and adjustable longitudinally thereof to different columnar positions, and means under control of said printing keys for turning said rock shaft to different positions to adjust the stop to arrest the paper carriage at the desired denominational position.

61. In a tabulating attachment for typewriting machines, the combination, with printing instrumentalities and printing keys therefor and with a transversely movable carriage, of a stop movable transversely of the machine by hand and adapted to be set in different columnar positions, and also adjustable to arrest the carriage in different denominational positions, and means under control of the printing keys for adjusting the stop to any desired denominational position and for releasing the carriage by a single operation of any of said keys.

62. In a tabulating attachment for typewriting machines, the combination, with printing instrumentalities, printing keys therefor and a transversely movable carriage provided with a graduated contact piece, of a plurality of stops for successively arresting the paper carriage at different columnar positions and simultaneously adjustable by said printing keys relatively to the graduations of the contact piece to arrest the carriage at any desired denominational position in a column.

63. In a tabulating attachment for typewriting machines, the combination of printing instrumentalities, printing keys therefor, a transversely movable carriage provided with a graduated contact piece, a plurality of stops adapted to coöperate successively with the contact piece upon the carriage, and means under control of said printing keys for adjusting all of said stops simultaneously relatively to the graduations of the contact piece and for releasing the carriage by a single operation of any of said keys.

64. In a tabulating attachment for type-



writing machines, the combination, with the transversely movable paper-carriage, of a stop movable transversely of the machine by hand and adapted to be set in different columnar positions, and also adjustable to arrest the paper-carriage in different denominational positions in the column, printing instrumentalities, a plurality of printing keys, connections for adjusting the stop and releasing the paper-carriage by the operation of any one of said keys, and means operable at will to render the printing keys operative on said connections.

65. In a typewriting machine and in a tabulating mechanism, the combination of a power-driven carriage, a stop member thereon, a second stop member mounted upon a

vibratory support substantially as long as the platen and arranged parallel therewith and movable different degrees toward and from the carriage-stop member, so as to be variably engaged therewith and disengaged therefrom, one of said stop members being provided with a series of stop faces arranged in different vertical planes, printing instrumentalities, printing keys therefor, and means operative by said printing keys for actuating said vibratory support.

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

CHARLES S. LABOFISH.

Witnesses:

GUY E. PADGETT,  
R. SAXGER.