

J. A. SMITH.

TABULATING MECHANISM FOR TYPE WRITING MACHINES.

APPLICATION FILED JUNE 14, 1902.

NO MODEL.

4 SHEETS—SHEET 1.

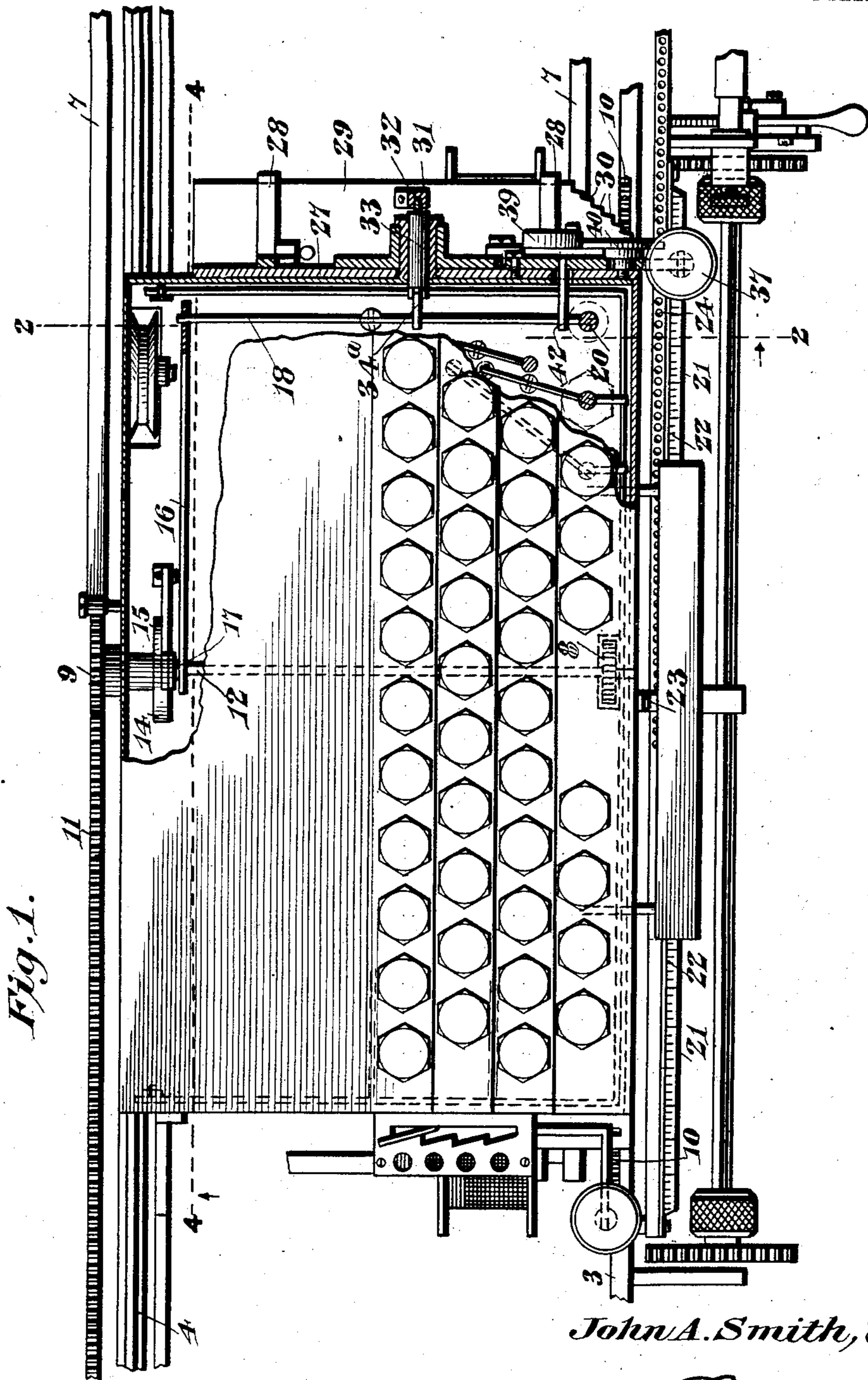


Fig. 1.

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By

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Witnesses
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Louis Gulik

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4 SHEETS—SHEET 2.

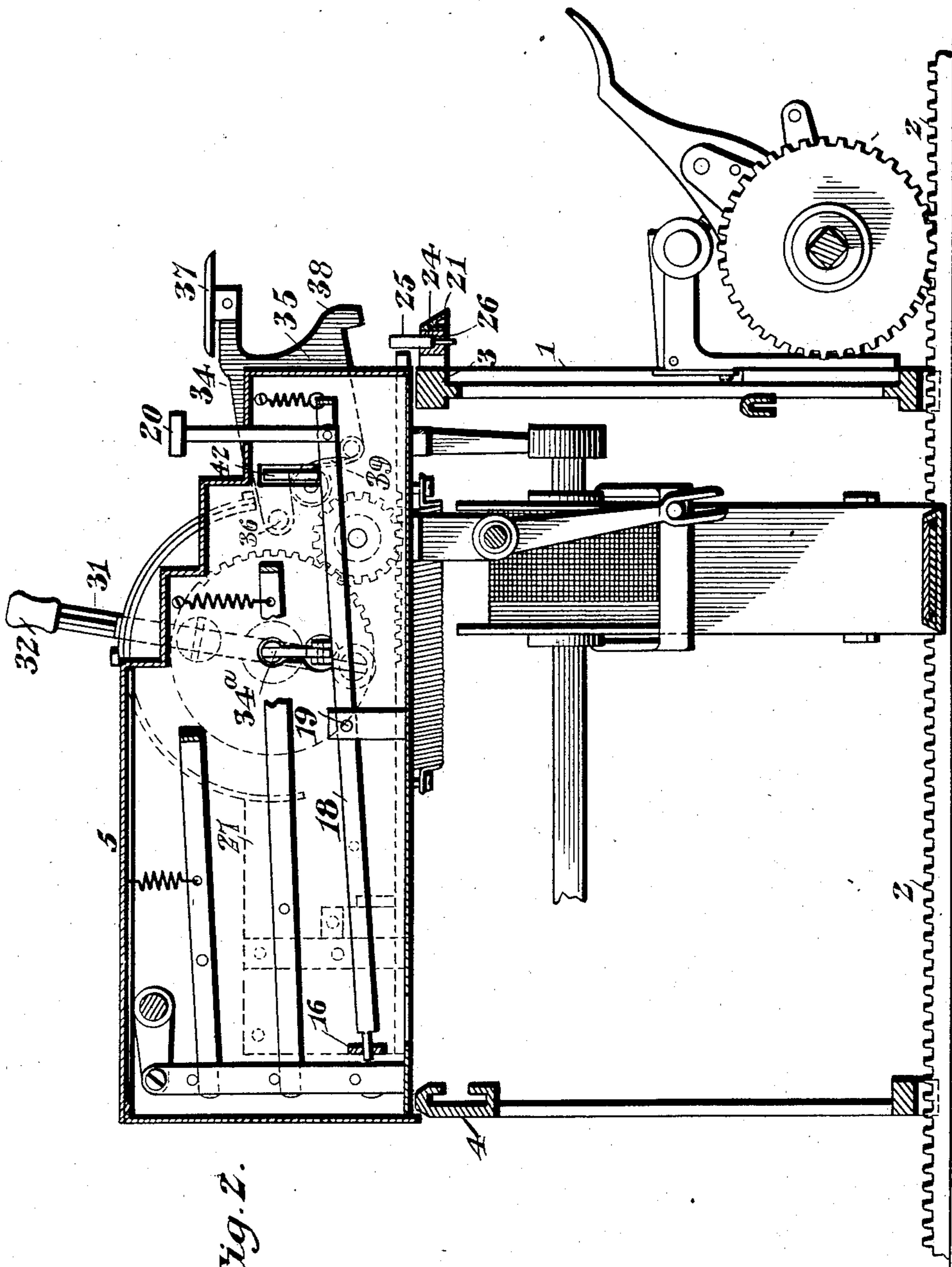


Fig. 2.

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No. 723,937.

PATENTED MAR. 31, 1903.

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4 SHEETS—SHEET 3.

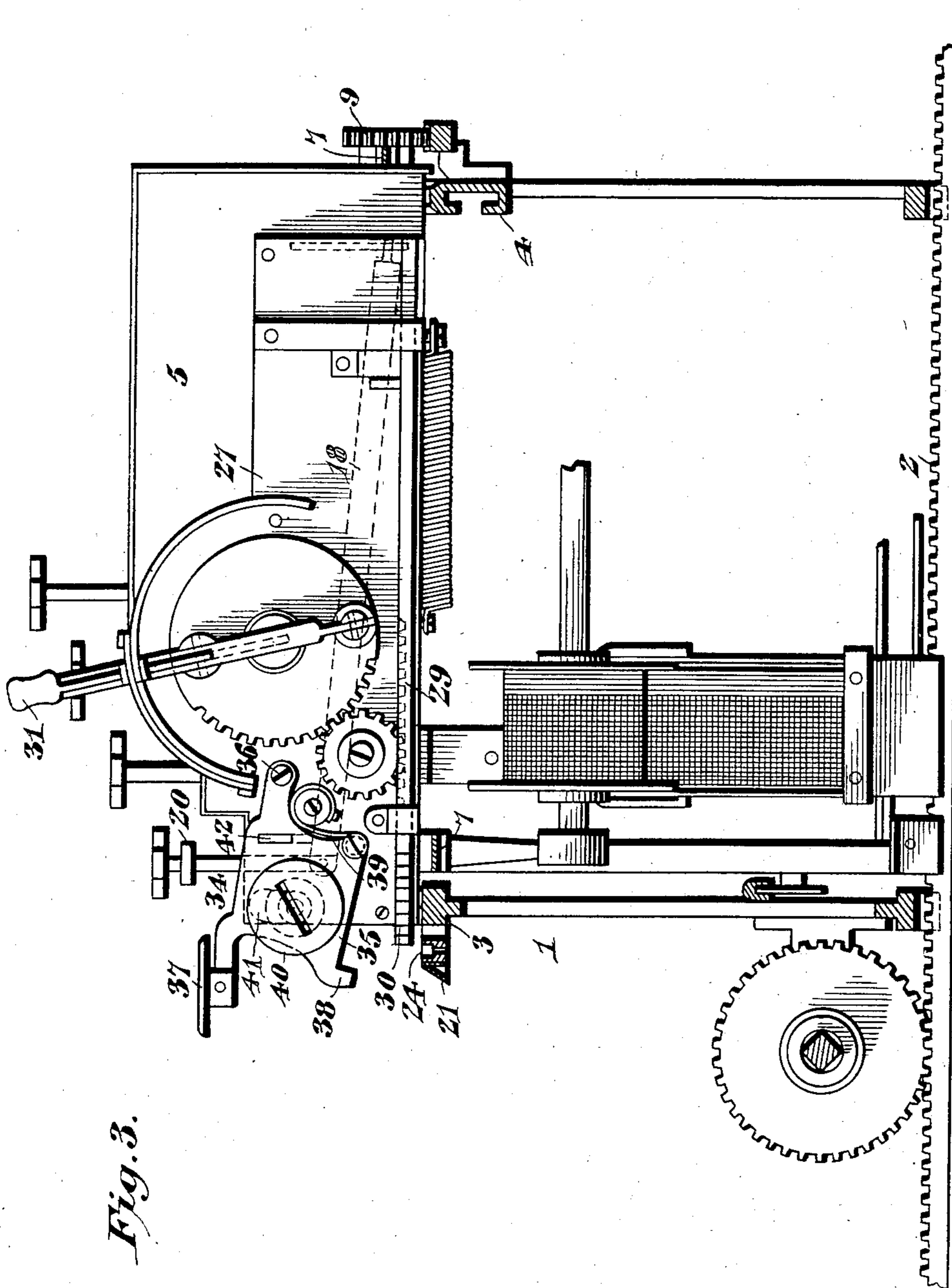


Fig. 3.

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4 SHEETS—SHEET 4.

Fig. 4.

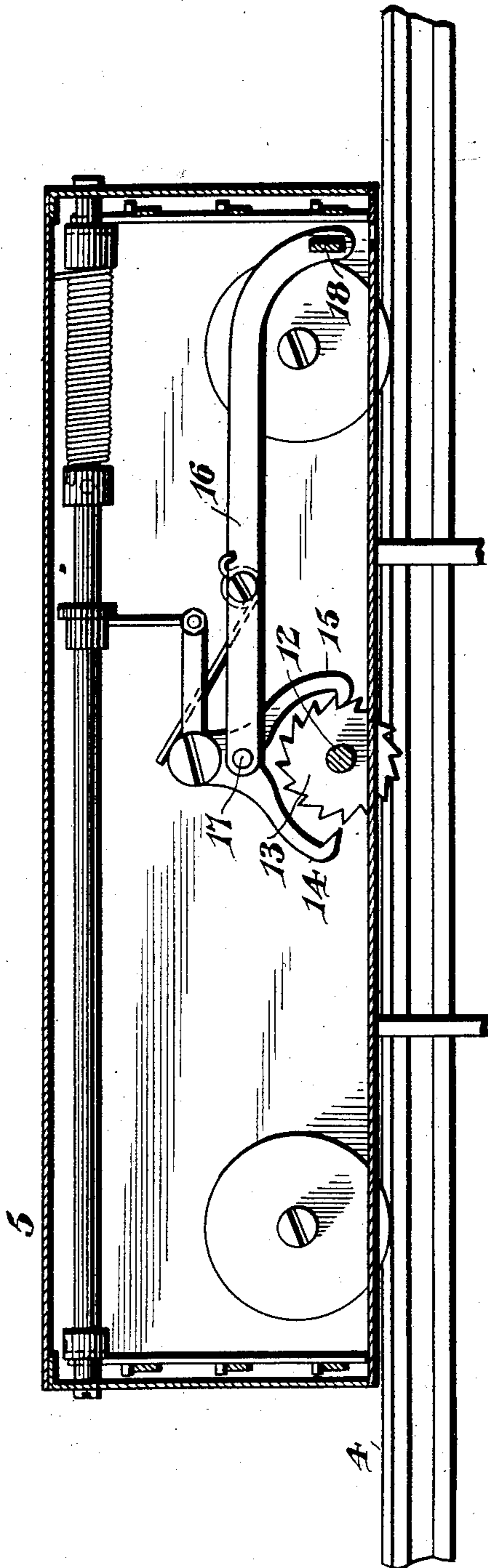


Fig. 6.

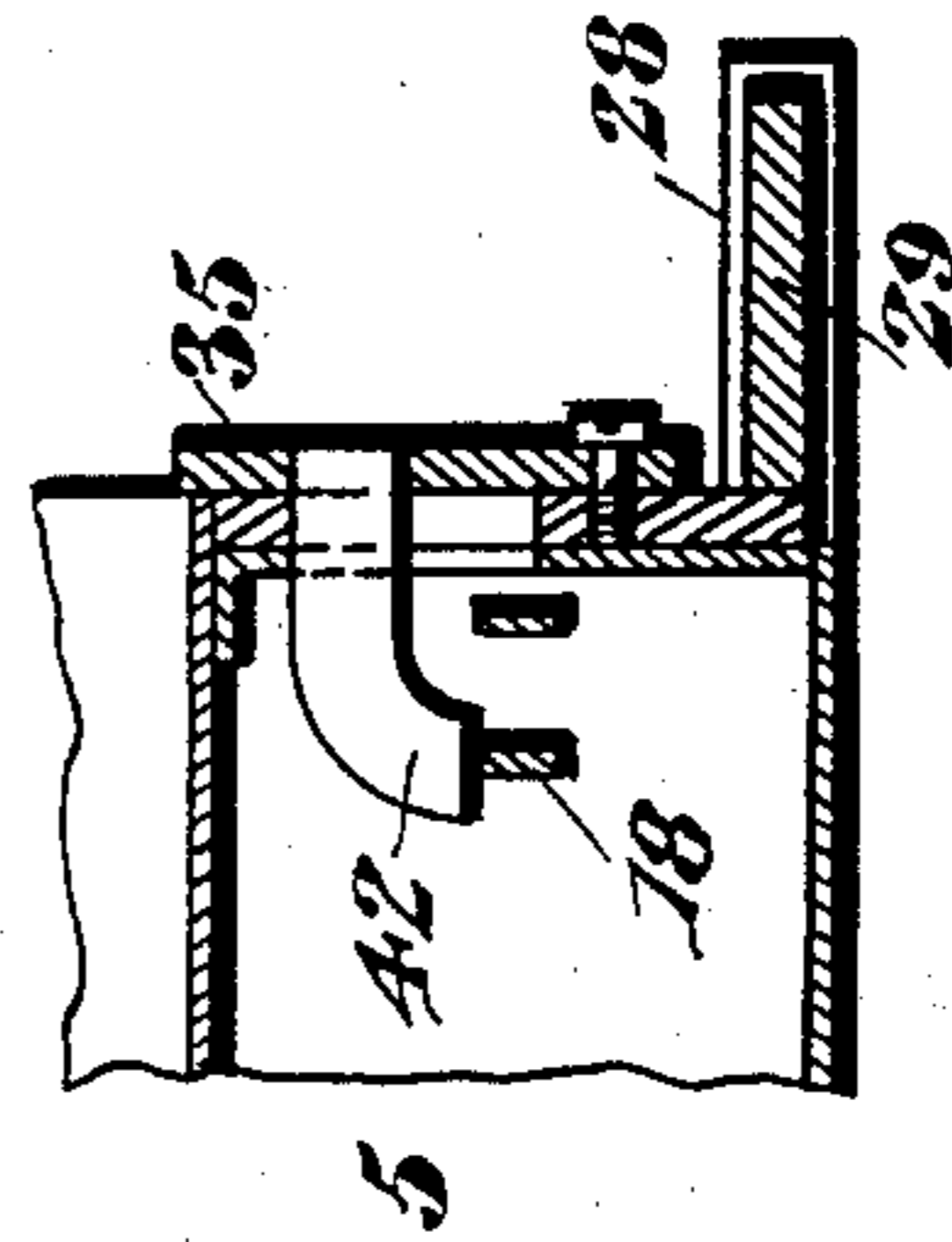


Fig. 7.

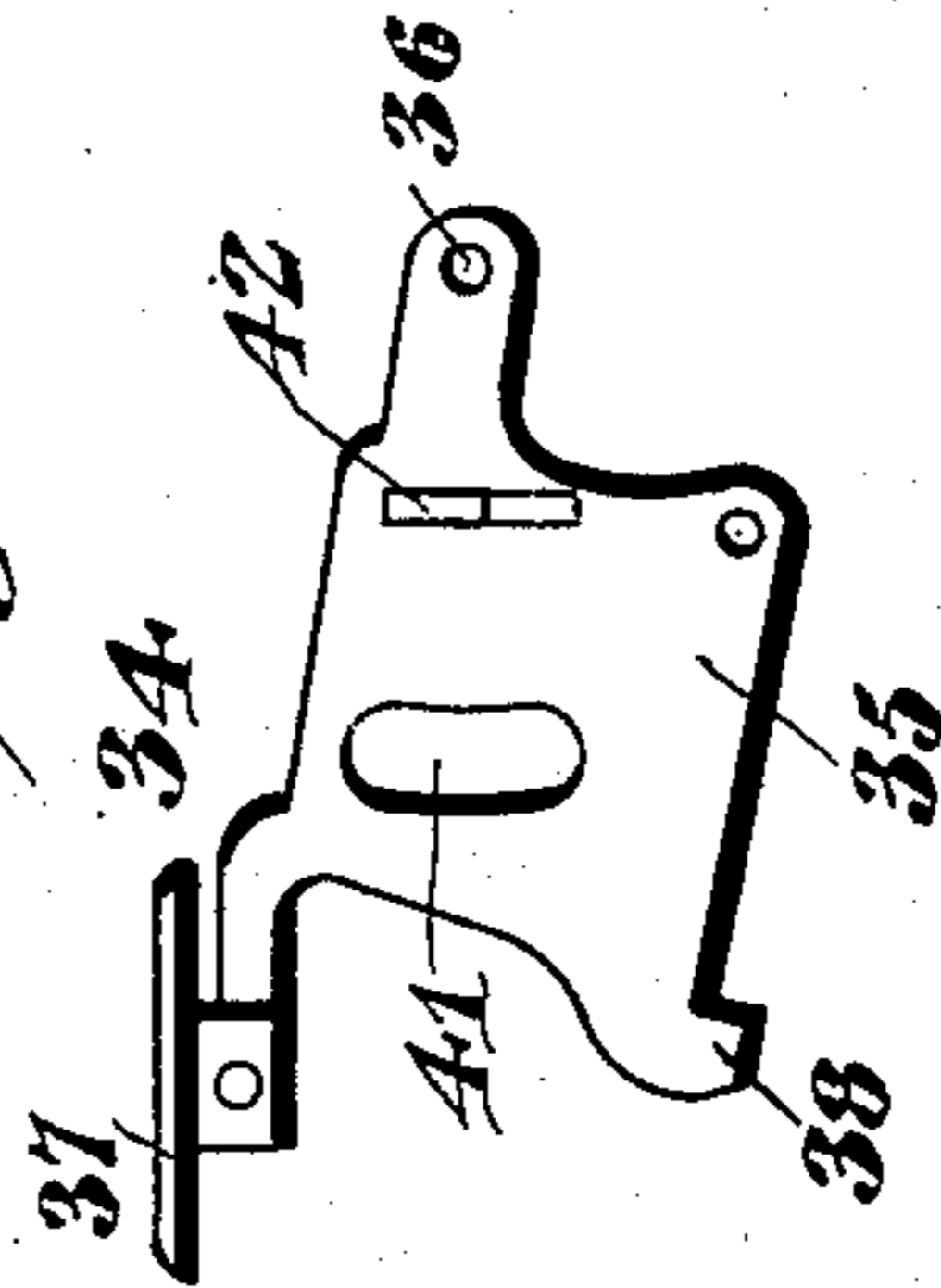
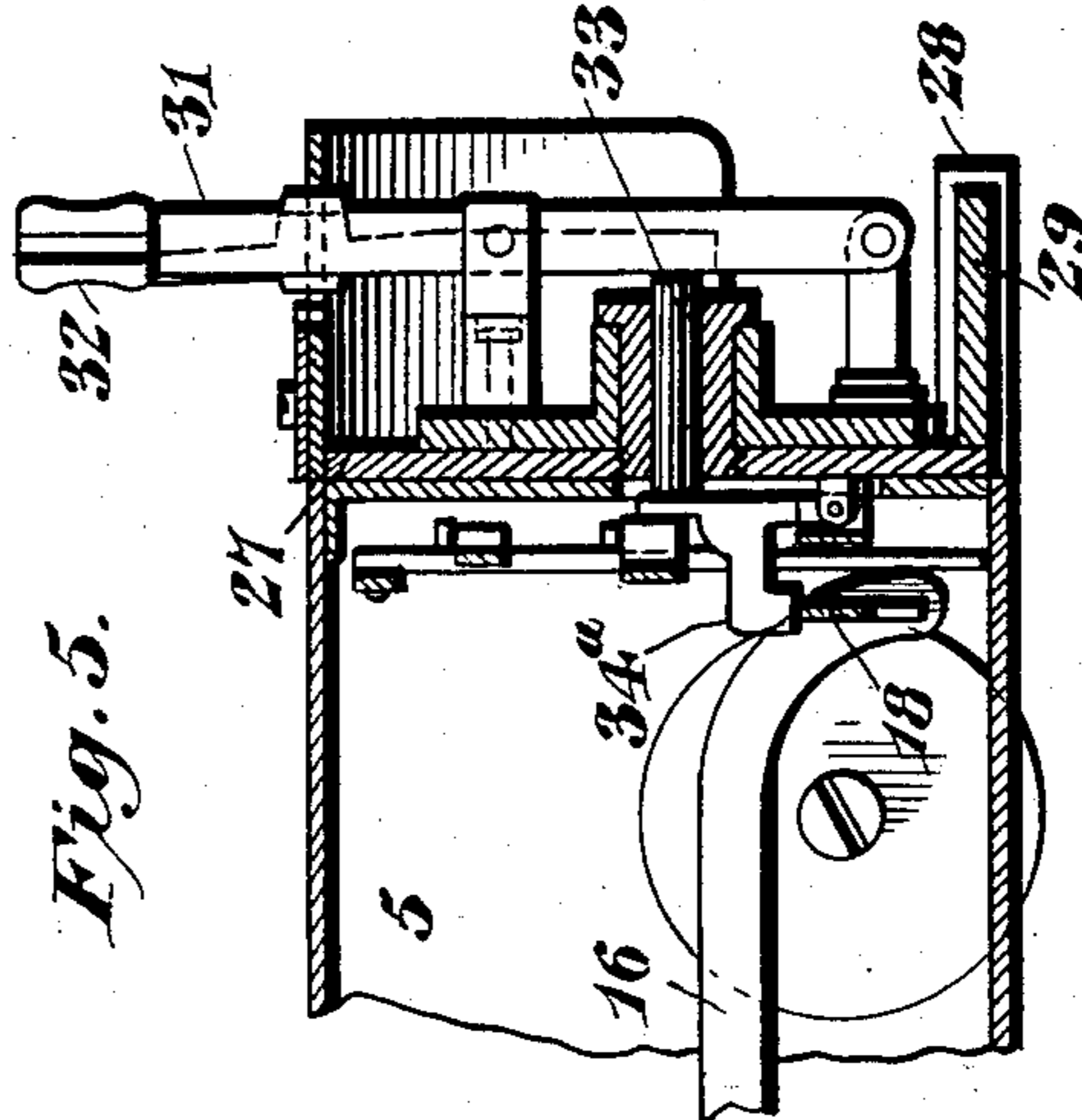


Fig. 5.



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UNITED STATES PATENT OFFICE.

JOHN A. SMITH, OF CLEVELAND, OHIO, ASSIGNOR TO THE FISHER BOOK TYPEWRITER COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF DELAWARE.

TABULATING MECHANISM FOR TYPE-WRITING MACHINES.

SPECIFICATION forming part of Letters Patent No. 723,937, dated March 31, 1903.

Application filed June 14, 1902. Serial No. 111,637. (No model.)

To all whom it may concern:

Be it known that I, JOHN A. SMITH, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a new and useful Tabulating Mechanism for Type-Writing Machines, of which the following is a specification.

This invention relates to improvements in type-writing machines, but more particularly to tabulating mechanism therefor.

The object of the invention is, primarily, to secure speed and accuracy in tabulating work where it is necessary to print words and numbers in definite columns; but more specifically the object of the invention is to provide a variable catch device for arresting the carriage at different distances from a predetermined point and a tabulator unit-catch for arresting the carriage directly at the predetermined point, one of said devices facilitating the printing of numbers terminating at the decimal for instance, and the other serving to facilitate the proper tabulation, for instance, of words the first letters of which must be arranged directly one under the other.

A further object of the invention is to effect an independent connection between each of the catch devices and the carriage-release mechanism, so that when a catch is moved to its operative position the carriage will be automatically released, the independence of the two catches serving to permit the use of the tabulator unit-catch without interference therewith by the variable or denominational catch.

To the accomplishment of these objects and others subordinate thereto the invention consists in that construction and arrangement of parts to be hereinafter described, illustrated in the accompanying drawings, and defined in the appended claims.

In said drawings, Figure 1 is a plan view, partly in section, of a Fisher type-writing machine equipped with the subject-matter of my invention and showing the relation of the carriage-release mechanism, the shift-key, tabulator-actuating lever, and the tabu-

lator stop or key. Fig. 2 is a vertical transverse sectional view on the line 2 2 of Fig. 1. Fig. 3 is an end view of the subject-matter of Fig. 1. Fig. 4 is a vertical sectional view on the line 4 4 of Fig. 1. Fig. 5 is an enlarged vertical sectional view of the Laganke tabulating attachment and the adjacent portion of the carriage, showing the relation of said attachment to the subject-matter of my invention. Fig. 6 is a detail sectional view showing the connection between the tabulator-key and the carriage-release lever, and Fig. 7 is a detail view of the tabulator stop or key detached.

The several aggroupments of elements cooperatively related and constituting the subject-matter of the present invention are capable of use in connection with various kinds of type-writing machines. In order, however, to facilitate the disclosure of the invention in that connection for which it is best adapted, I have illustrated it in the drawings as associated with a machine of that type now in extensive use and known commercially as the "Fisher type-writing machine." The Fisher machine is designed particularly for writing in books or upon letter-sheets, bills, cards, and other work elements supported in a flat spread-out condition upon a flat platen, over which the printing mechanism is moved.

The machine illustrated involves in its general organization a carriage-supporting frame 1, designed to travel upon the main tracks or guides 2 and provided with parallel front and rear carriage-guides 3 and 4, upon which is mounted to travel in the direction of letter-spacing the carriage 5, usually provided with a pendent type-bar-supporting ring. The "traveling-machine frame" or the "carriage-supporting frame" 1, as it is variously called, is equipped with ordinary line-spacing mechanism 6. The carriage 5 is arranged to be drawn to the right or in the direction of letter-spacing by spring-actuated straps or tapes 7 and is provided with carriage-feeding pinions 8 and 9, which mesh, respectively, with the front and rear racks 10 and 11, arranged in parallelism with and secured to or formed

upon the front and rear carriage-guides 3 and 4 of the machine-frame. The carriage-feeding pinions 8 and 9 are mounted on a common transversely-disposed spindle or shaft 12, upon which is mounted at a point within the carriage-casing a ratchet or escapement wheel 13 in coöperative relation with a pair of escapement-dogs 14 and 15, operated in the manner set forth in the patent to R. J. Fisher, No. 573,868, and constituting the main carriage-feed or letter-spacing mechanism of the Fisher type-writing machine. With this carriage-feeding mechanism for regulating the step-by-step feed of the carriage in the direction of letter-spacing is combined a carriage-release mechanism including a trip-lever 16, mounted within the carriage-casing and carrying at one end a trip-pin 17, working between the escapement-dogs 14 and 15 to provide for their engagement or release from the ratchet or escapement wheel for the purpose of permitting the carriage to move freely upon its guides in the manner described in the Fisher patent aforesaid. Within the carriage 5, preferably adjacent to one end thereof, is pivotally mounted at a point intermediate of its ends, as indicated at 19, a release-lever 18, constituting the primary element of the carriage-release mechanism and connected at one end with a trip-lever 16, the opposite end of said release-lever being connected to the stem of the release-key 20.

The described construction is not novel and constitutes no part of my present invention except in so far as it enters into a novel combination, and thereby contributes to the ends sought to be attained. It will be evident that while the carriage-release mechanism is operated to permit the step-by-step advance of the carriage in the direction of letter-spacing in a manner which it is not necessary to explain the complete release of the carriage to permit the free movement thereof in either direction may be effected by the depression of the release-key, which, through the medium of the levers 18 and 16, throws both of the escapement-dogs out of engagement with the escapement-wheel 13 to permit such unrestricted movement.

Inasmuch as the Laganke tabulating attachment is one of several devices usually constituting parts of the Fisher type-writing machine which are operated to effect the total release of the carriage, I have deemed it desirable to illustrate such attachment in the accompanying drawings. The Laganke tabulating attachment (see Figs. 1, 2, 3, and 5) includes a straight scale-bar 21, secured to the front carriage-guide 3 and provided with the usual front space-scale 22 of the machine. The indicator or pointer 23, attached to the front side of the carriage 5, moves over the scale 22 and indicates the position of the carriage in a manner well understood. The scale-bar 21 is provided with a longitudinal series of vertically-disposed pin-openings 24, corresponding to the scale-graduations of the scale

22 and designed for the reception of space-pins 25, constituting column-stops and varying in number according to the number of columns to be imprinted upon the sheet. Each of the space-pins consists of a straight stem counterturned to produce an annular shoulder 26, which rests upon the scale-bar when the reduced portion of the pin is fitted in one of the pin-openings. The space-pins constitute stops or obstructions to the movement of the carriage under certain conditions and are for this reason located beyond the front side of the carriage, so as to be removed from interfering relation therewith under ordinary circumstances—that is to say, when the machine is not being employed for tabulating purposes.

The principal portion of the Laganke tabulating attachment is mounted on the machine-carriage at the right-hand end thereof for convenient manipulation by the operator and is sustained in place by a supporting-plate 27, fitted to the end of the carriage-casing and retained by any suitable means. The plate 27 is formed with suitable guides 28 for the slidable reception of the variable stop-plunger or denomination stop or catch 29, having the form of a flat rectangular plate, provided at its front end with a stepped series of stop-shoulders 30, which coöperate with the space-pins 25 in a specific manner, which does not concern the present invention and need not, therefore, be described. It need only be stated in this connection that the stop-plunger 29 is arranged to be thrown into a path obstructed by the space-pins through the medium of an operating-lever 31, provided with the auxiliary lock-lever 32, which when the operating-lever has been moved to a given denominational position is operated to urge a sliding pin 33 in a longitudinal direction. The pin 33 is imposed against one arm of a bell-crank release-dog 34^a, pivotally supported at its angle within the carriage-case and disposed in operative relation with the release-lever 18, constituting, as stated, the primary element of the carriage-release mechanism. Thus the Laganke attachment may be said to constitute variable stop mechanism and to comprehend an operating element capable of effecting the complete release of the carriage, so that the latter may be moved freely from one column to another, the relative locations of these columns being determined by the positions of the space-pins or column-stops with which the stop-plunger or denomination-catch is designed to contact to arrest the movement of the carriage at predetermined points.

We have now seen that the carriage may be released by the actuation of either the release-key or the auxiliary lever of the variable-stop mechanism, and it may be stated that this entire organization of parts is illustrated and described in the patent to Laganke, hereinbefore identified. In addition to these elements, however, the present invention contemplates the employment of a tabulator

unit-stop or tabulator-key 34, designed to supplement the Laganke attachment and intended for use when the tabulating desired to be done is not of that kind which necessitates the beginning of the printing operation at variable distances from a predetermined point. The tabulator-key comprehends a swinging arm or plate 35, pivoted at its rear end upon one end wall of the carriage-case, as indicated at 36, and provided at its other end with a finger-piece or key proper, 37, below which is located a projecting stop element 38. The tabulator-key is designed to be normally urged to its elevated position by a spring 39, mounted in any suitable manner—as, for instance, as shown—and is guided in its movement by a headed stud 40, secured to the carriage-case and passed through an arcuate slot 41 in the plate 35. This tabulator-key I shall refer to as a “tabulator unit-stop” mounted independently of the variable stop or stop-plunger 29 of the Laganke attachment.

The variable-stop mechanism is designed to be utilized where numbers of different denominations are designed to be imprinted one under another to the left of a predetermined point—that is to say, in printing numbers in tabulated form the decimal-points of the several numbers are necessarily arranged one under the other in a direct line, and this line constitutes that predetermined point to the left of which the various numbers are imprinted. Thus if the number “1,000” is to be imprinted the variable stop is operated to arrest the machine four type-spaces to the left of the space-pin or column-stop which indicates the position of the decimal, and as this stop is variable it may also be utilized to arrest the carriage at a greater or less number of type-spaces from the decimal, so that the numbers can be properly tabulated irrespective of the number of individual numerals embraced thereby. In certain other classes of tabulating—as, for instance, in imprinting a series of words one under the other—there is no necessity for arresting the carriage at variable distances from a predetermined point, inasmuch as the first or initial letters of the words are designed to be arranged one under the other, and the words, regardless of the number of letters therein, are written to the right of this predetermined starting-point. In this latter character of tabulation, therefore, the employment of the variable or denominational stop is not necessary, and a simple key-operated unit-stop such as I have described may therefore be utilized to advantage. The tabulator-key is preferably arranged in a convenient position at the right-hand end of the keyboard and slightly in front thereof, so that when said key is depressed by the operator the stop element or tabulator-catch 38 will be presented in a path of movement obstructed by the space-pins. The operator engaged in word-tabulating simply presses the tabulator-key to present the

stop 38 in its effective position and to simultaneously release the carriage, so that the latter may travel to the predetermined printing-point.

The mechanism employed to insure the release of the carriage upon the depression of the tabulator-key is shown in Fig. 6 of the drawings, and consists simply in providing the body portion of said key with a laterally-extending release-arm 42, passed through an opening in the end wall of the carriage-case and extended into operative proximity to the release-lever 18. (See also Figs. 1, 2, and 3.)

It should be noted that while the depression of the tabulator-key operates the carriage-release mechanism to release the carriage the depression of the release-key does not depress the tabulator-key, inasmuch as the release-arm 42 of the tabulator-key merely rests upon and is not connected to the release-lever 18, and the latter may therefore be depressed to release the carriage without moving the tabulator-key from its normal position. This relation of the parts is of some importance, because the release-key is intended to be depressed for the purpose of permitting the carriage to be shifted freely any desired distance in either direction, and if the depression of the shift-key effected the depression of the tabulator-key such free movement of the carriage would be rendered impossible by the contact of the unit-stop 38 with the space-pins or column-stops upon the space-bar. It will thus appear that the variable or denominational stop constitutes means for arresting the carriage in proper position to print a series of characters—as, for instance, numerals terminating at a given point indicated by a column-stop—and that the tabulator unit-stop constitutes means for arresting the carriage in proper position to print a series of characters—as, for instance, letters—beginning at a predetermined point indicated by a column-stop, the employment of these independent stop devices of different characters serving to facilitate the tabulation of numbers or words, as the case may be.

It is thought that from the foregoing description the construction, operation, and many advantages of the invention will be clearly understood; but while the illustrated embodiment of said invention is thought at this time to be preferable I desire to be understood as reserving to myself the right to effect such changes, modifications, and variations of the illustrated structure as may be properly comprehended within the scope of the protection prayed.

What I claim is—

1. In a type-writing machine, the combination with a movable carriage, of a variable catch for arresting the carriage at different distances from a predetermined point, and an independent catch for arresting the carriage at said predetermined point.

2. In a type-writing machine, the combination with a frame and a movable carriage, of

a column-stop, a variable catch disposed to contact with the column-stop to arrest the carriage in different denominational positions, and an independent catch for arresting the carriage at a predetermined point by contacting with said stop.

3. In a type-writing machine, the combination with a frame, a movable carriage, and a column-stop mounted on the frame, of a variable catch disposed to arrest the carriage at different distances from the column-stop, and a unit-catch independent of the variable catch and disposed to contact with the column-stop to arrest the carriage, said unit-catch being movable with the carriage.

4. In a type-writing machine, the combination with a frame, a movable carriage, and a column-stop shiftable to various positions on the frame, of a variable catch mounted to travel with the carriage and movable into operative relation with the column-stop to arrest the carriage in different denominational positions in advance of a predetermined point, and an independent unit-catch also mounted to travel with the carriage and movable into operative relation with the column-stop to arrest the carriage at said predetermined point.

5. In a type-writing machine, the combination with a frame, a carriage, carriage-release mechanism, and a column-stop, of a series of denominational catches simultaneously movable to present any one of them into operative relation with the column-stop to arrest the carriage at the desired denominational position, and an independent single unit-catch for arresting the carriage at the point indicated by the column-stop, the several denominational catches and the single unit-catch all being operatively connected to the carriage-release mechanism.

6. In a type-writing machine, the combination with a frame, a movable carriage, and a column-stop, of a single catch member having a series of graduated denominational catches for arresting the carriage at various denominational positions, and an independently-movable single unit-catch for arresting the carriage at a given point, both of said catches being mounted on and movable with the carriage to engage the column-stop.

7. In a type-writing machine, the combination with the frame, a movable carriage, and a column-stop shiftable to various positions on the frame, of a variable catch mounted on the carriage and movable into operative relation with the column-stop to arrest the carriage in different denominational positions, and a tabulator-key pivoted upon the carriage and movable independently of the variable stop, said tabulator-key being provided with a unit-catch for arresting the carriage at a predetermined point.

8. In a type-writing machine, the combination with the frame, a movable carriage, carriage-release mechanism, and a column-stop, of a variable catch for arresting the carriage at different denominational positions, and a

unit catch device movable independently of the variable catch both catches being mounted on and movable with the carriage and operatively related to the carriage-release mechanism.

9. In a type-writing machine, the combination with the frame, a movable carriage, carriage-release mechanism, and a column-stop, of a variable catch for arresting the carriage in different denominational positions and operatively related to the carriage-release mechanism, a release-key connected to the carriage-release mechanism, and a unit-catch movable independently of the variable catch and disposed to operate the carriage-release mechanism, said release-key being operative to release the carriage without moving either catch to its operative position.

10. In a type-writing machine, the combination with the frame, a movable carriage, carriage-release mechanism, and a column-stop, of a variable catch for arresting the carriage in different denominational positions, an independent unit-catch for arresting the carriage in a given position, a release-key disposed to operate the carriage-release mechanism, without operating the variable catch or the unit-catch, each of said catches being disposed to operate the carriage-release mechanism without moving the other catch to its operative position.

11. In a type-writing machine, the combination with a frame, a movable carriage, a column-stop, and carriage-release mechanism including a release-lever, of a release-key connected to said lever, a variable catch device for arresting the carriage in different denominational positions, and an independent unit catch device for arresting the carriage at a predetermined point, both of said catch devices being disconnected from, but operatively related to, the release-lever.

12. In a type-writing machine, the combination with a frame, a movable carriage, a column-stop, and carriage-release mechanism including a release-lever, of a variable catch device for arresting the carriage in different denominational positions, a release-dog intermediate of said catch device and the lever, and an independent tabulator-key provided with a unit-catch for arresting the carriage at a given point and with a release-arm extended into operative relation with the release-lever.

13. In a type-writing machine, the combination with a frame, a carriage, carriage-release mechanism, and a column-stop, of a variable catch device, and an independent unit catch device mounted to travel with the carriage, said catch devices being operatively related to the carriage-release mechanism and disposed for movement in different directions to present them into operative relation with the column-stop.

14. In a type-writing machine, the combination with a frame, movable carriage and keyboard, of a column-stop mounted on the

frame, and a tabulator unit-key movable with the carriage and having a catch disposed to contact with the column-stop to arrest the carriage, said tabulator unit-key being disposed in front of the keyboard.

15. In a type-writing machine, the combination with a frame, movable carriage and keyboard, of a column-stop mounted on the frame, and a tabulator unit-key mounted on the carriage for movement therewith and provided with a catch disposed to contact with the column-stop to arrest the carriage, said tabulator unit-key being disposed in front of the keyboard and at the right-hand side thereof to permit its actuation by the hand of the operator without removing the fingers from the keyboard.

16. In a type-writing machine, the combination with a movable carriage, carriage-release mechanism, and a column-stop, of a variable catch and a unit-catch both connected to the carriage-release mechanism and both movable to engage the column-stop.

17. In a type-writing machine, the combination with a movable carriage, carriage-release mechanism, and a column-stop, of a variable catch and a single unit-catch both mounted upon the same end of the carriage and operatively connected to the carriage-release mechanism, said catches being independently movable to engage the stop.

18. In a type-writing machine, the combination with a movable carriage, carriage-release mechanism, and a column-stop, of a variable catch and a single unit-catch independently mounted one above the other, said catches being operatively connected to the carriage-release mechanism and movable to engage the stop.

19. In a type-writing machine, the combination with a movable carriage, carriage-release mechanism, and a column-stop, of a release-key, a variable catch and a single unit-catch

all mounted at one end of the carriage and operatively related to the carriage-release mechanism, said catches being movable independently of each other to engage the column-stop, and said release-key being movable independently of both catches to effect the release of the carriage.

20. In a type-writing machine, the combination with a movable carriage, and a column-stop, of carriage-release mechanism including a release-lever within the carriage, and a variable catch and a single unit-catch both mounted upon the same end of the carriage and operatively connected to the release-lever therein, said catches being independently movable to engage the column-stop.

21. In a type-writing machine, the combination with a movable carriage, and a column-stop, of carriage-release mechanism including a release-lever, a variable catch slidably mounted at one end of the carriage and operatively connected to the carriage-release mechanism, and a single unit-catch pivoted above the variable catch and operatively related to the carriage-release mechanism independently thereof.

22. In a type-writing machine, the combination with a frame including carriage-guides, a movable carriage received by the guides, and a keyboard movable with the carriage, of a column-stop mounted on the frame, and a tabulator unit-key movable with the carriage and associated with the keyboard, said tabulator unit-key having a catch extending forwardly beyond a carriage-guide to engage the column-stop.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JOHN A. SMITH.

Witnesses:

JOHN H. SIGGERS,
GEORGE TATE.