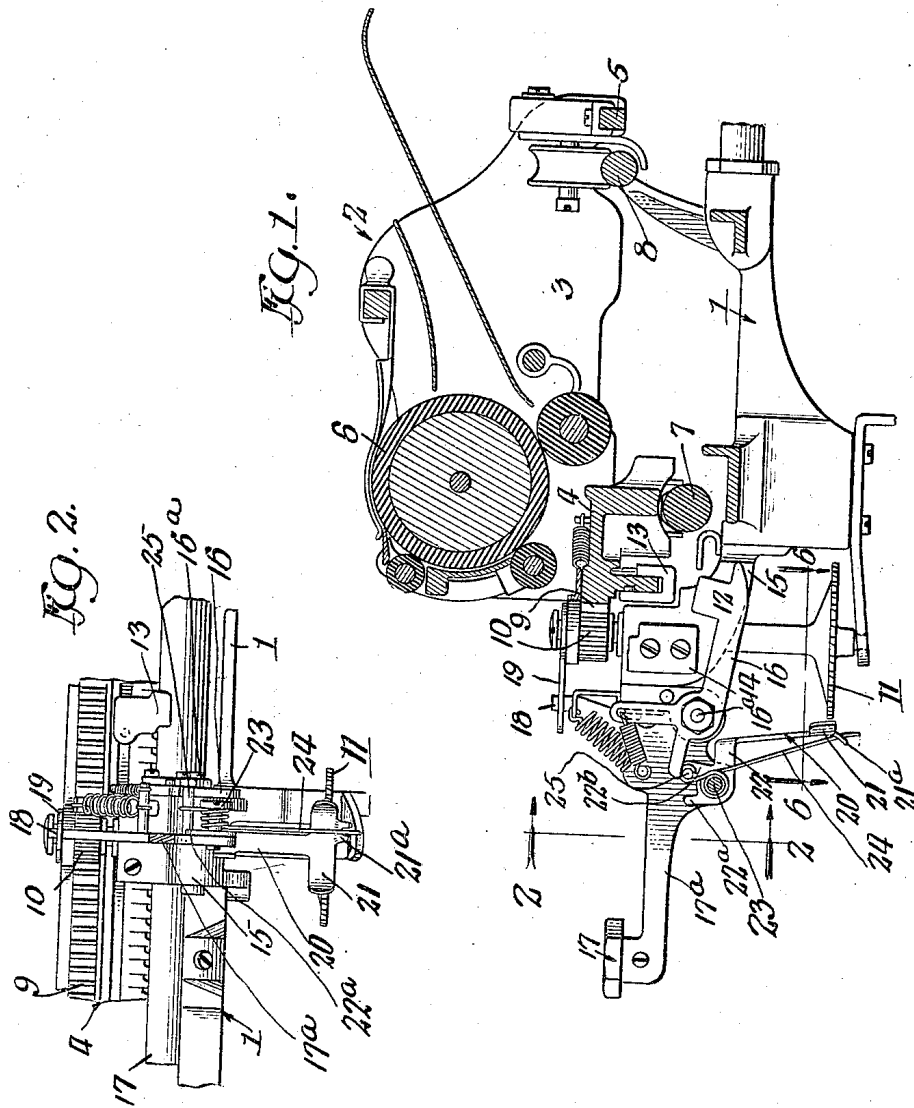


T. L. KNAPP,  
 TABULATING MECHANISM FOR TYPE WRITING MACHINES  
 APPLICATION FILED JULY 20, 1910.

984,934.

Patented Feb. 21, 1911.

2 SHEETS—SHEET 1.



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*H. R. Wilkins*

Inventor:  
*Theron L. Knapp*  
 by *Pool & Brown*  
 Attys

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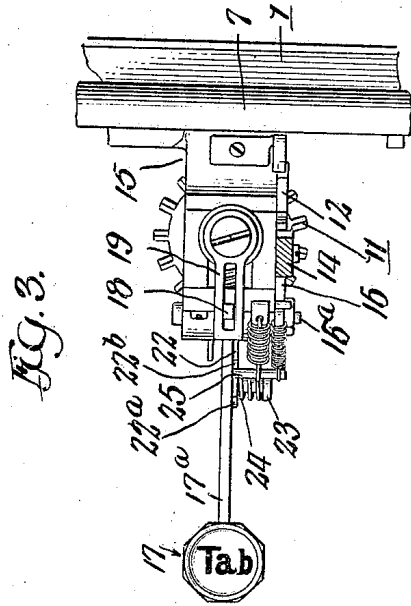


Fig. 3.

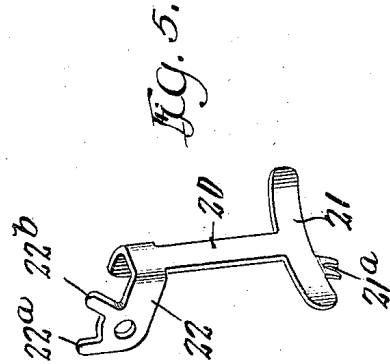


Fig. 5.

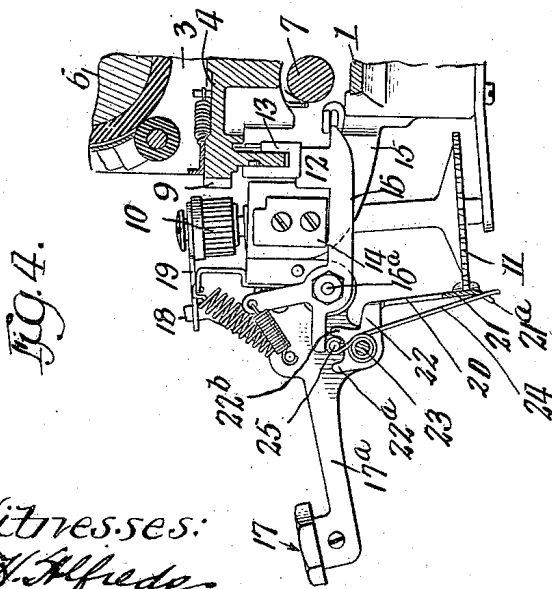


Fig. 4.

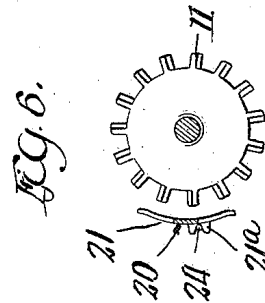


Fig. 6.

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# UNITED STATES PATENT OFFICE.

HERON L. KNAPP, OF WOODSTOCK, ILLINOIS, ASSIGNOR TO THE OLIVER TYPEWRITER COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

TABULATING MECHANISM FOR TYPE-WRITING MACHINES.

984,934.

Specification of Letters Patent.

Patented Feb. 21, 1911.

Application filed July 20, 1910: Serial No. 572,816

*To all whom it may concern:*

Be it known that I, THERON L. KNAPP, a citizen of the United States, and a resident of Woodstock, in the county of McHenry and State of Illinois, have invented certain new and useful Improvements in Tabulating Mechanism for Type-Writing Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to improvement in tabulating or column-stop mechanism for typewriting machines by means of which the carriage is released from the control of the usual letter-spacing mechanism to permit of its movement under the force of its actuating spring to a predetermined point or points where its movement is arrested for the purpose of printing items or numbers in one or more vertical columns.

The invention relates particularly to an improved form of brake mechanism for checking the rotary motion of the escape wheel when the gear pinion on the escape shaft is released from the carriage rack-bar by the tabulator key, so that upon the re-engagement of said pinion with said rack-bar, upon the release of the tabulator key, the parts of the letter-spacing mechanism will be in the same relative position as they were before their release from the carriage.

The invention is an improvement upon a device of this character shown in Letters Patent of the United States No. 959,061, granted May 24th, 1910, to T. L. Knapp and C. C. Harting.

The invention consists of the matters hereinafter described and more particularly pointed out in the appended claims.

In illustrating and describing the invention I have shown it applied to a typewriting machine of the kind known as an "Oliver", but it will be apparent that it may, with equal readiness, be applied to other machines.

I have shown the same general construction of the shift frame and the key actuating stop controlling the tabulating mechanism as that shown in the patent above referred to, that is to say, No. 959,061.

As shown in the drawings:—Figure 1 is a vertical section of the shift-frame and

paper-carriage of a typewriting machine. Fig. 2 is a partial vertical section through Fig. 1, on the line 2—2 thereof. Fig. 3 is a top plan view of the parts shown in Fig. 2. Fig. 4 is a partial vertical section similar to that shown in Fig. 1 with the tabulating key and brake-mechanism for the escape-wheel shown in that position which they occupy when the tabulating key is depressed. Fig. 5 is a perspective view of the brake for the escape wheel. Fig. 6 is a partial horizontal section through Fig. 1 on the line 6—6 thereof.

1 represents the shift frame; 2, the paper-carriage comprising the end plates 3, and front and rear bars 4, 5; 6, the platen; and 7, 8 the front and rear guide-bars supported by the shift-frame upon which the carriage rides.

9 is the rack on front of the bar 4 engaged by a pinion 10 operated by the escape gear 11 which provides for the usual letter-spacing.

12 is the key-actuated stop constructed to move upwardly to engage the stop member 13, said stop being limited in its upward movement by means of a block 14 secured to a bracket 15 attached to the shift-frame 1. The lever 16, at the end of which the stop 12 is formed, is pivoted on a pin 16<sup>a</sup> projecting from the bracket 15. The stop 12 is actuated by a key 17 at the end of a lever 17<sup>a</sup> which is also pivoted on the pin 16<sup>a</sup>. The lever 17<sup>a</sup> is provided with an upright arm 18 which, through a link 19, disengages the pinion 10 from the rack 9 when the stop 12 is raised into its operative position. These parts operate as described in the patent referred to above and require no further description here.

20 is a brake arm attached to and depending from the key lever 17<sup>a</sup>. It is provided at its lower end with a curved brake-member or shoe 21 adapted for contact with the ends of the peripheral teeth on the escape wheel 11 when the key lever is depressed. Said arm has an extension 22 at its upper end which is offset from the main body of the arm and is provided with spaced, upright lugs 22<sup>a</sup>, 22<sup>b</sup>. Said brake arm is pivotally connected to the key-lever 17<sup>a</sup> by a screw 23 which engages an aperture in said extension.

24 is a spring which bears at its lower end against the shoe and at its upper end

is coiled about the screw 23 and then connected to a stud 25 made rigid with the key lever 17<sup>a</sup>. Said stud is located between the upright lugs 22<sup>a</sup> and is normally engaged by the rear lug 22<sup>a</sup> held against it by the action of the lower end of the spring 24 which tends to rotate the arm 20 rearwardly. The shoe 21 is provided with a notched extension 21<sup>a</sup> to receive and hold the lower end of the spring 24.

When the key lever 17<sup>a</sup> is depressed to release the pinion 10 from its associated rack in the operation of the tabulating mechanism, the brake shoe 21 is caused to yieldingly engage the peripheral teeth of the escape-wheel 11 and holds said escape wheel and with it the pinion 10 from turning during the time that said gear pinion is released from the carriage rack-bar, so that upon the reengagement of said pinion with said rack bar upon the release of the key-lever 17<sup>a</sup>, the parts of the letter-spacing mechanism will be in the same relative positions as they were before the release of the carriage.

I claim as my invention:—

1. In a typewriting machine, the combination of a paper-carriage provided with a rack-bar, letter-spacing mechanism for controlling the movement of the carriage embracing a shaft provided with a gear pinion, adapted to be engaged with and disengaged from said rack-bar, and with an escape-wheel, column-stop mechanism for releasing said carriage from the letter-spacing mechanism and arresting its movement

at a predetermined point embracing a key-lever for operating said column-stop mechanism, a brake-arm pivotally connected to said key-lever and provided with a shoe adapted to engage the peripheral teeth of said escape wheel, said brake-arm having limited movement toward the escape-wheel, and a spring adapted to hold said brake-shoe yieldingly engaged with said escape wheel when said key-lever is depressed.

2. In a typewriting machine, in combination with an escape wheel, and column-stop mechanism including an operating key, a brake adapted to engage the escape wheel when said key-lever is operated, embracing a brake arm provided with an extension offset from said arm, a screw or bolt pivotally connecting said extension to said key-lever, engaging parts on said key-lever and said brake-arm extension adapted to limit the movement of said brake-arm toward said escape wheel, a shoe carried at the lower end of said arm, and a spring having engagement at its lower end against said brake and its upper end being coiled about said pivotal bolt or screw and engaged with a rigid part of said key-lever.

In testimony that I claim the foregoing as my invention I affix my signature in the presence of two witnesses, this 13th day of July A. D. 1910.

THERON L. KNAPP.

Witnesses:

EUGENE R. HOY,  
B. C. YOUNG.