No. 755,608. PATENTED MAR. 29, 1904.

M. H. BLAKESLEE.

TABULATING MECHANISM FOR TYPE WRITING MACHINES.

APPLICATION FILED JAN. 17, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 6.

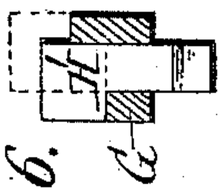

Fig. 4.

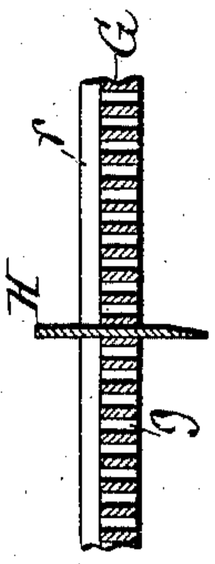

Fig. 3

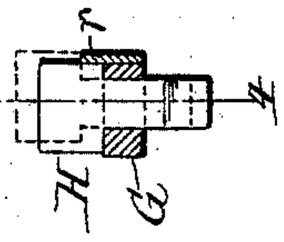

Fig. 1.

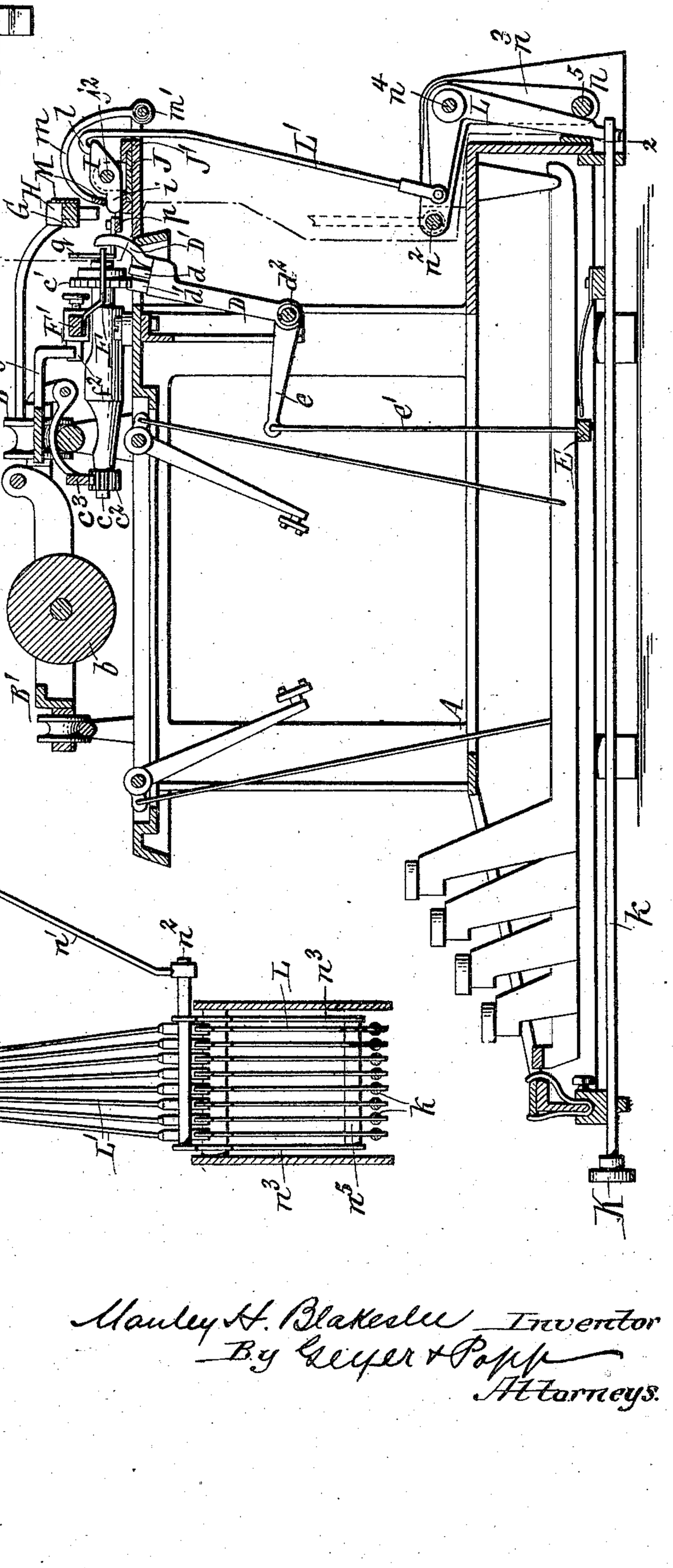

Fig. 2.

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M. H. BLAKESLEE.

TABULATING MECHANISM FOR TYPE WRITING MACHINES.

APPLICATION FILED JAN. 17, 1903.

NO MODEL. 2 SHEETS—SHEET 2.

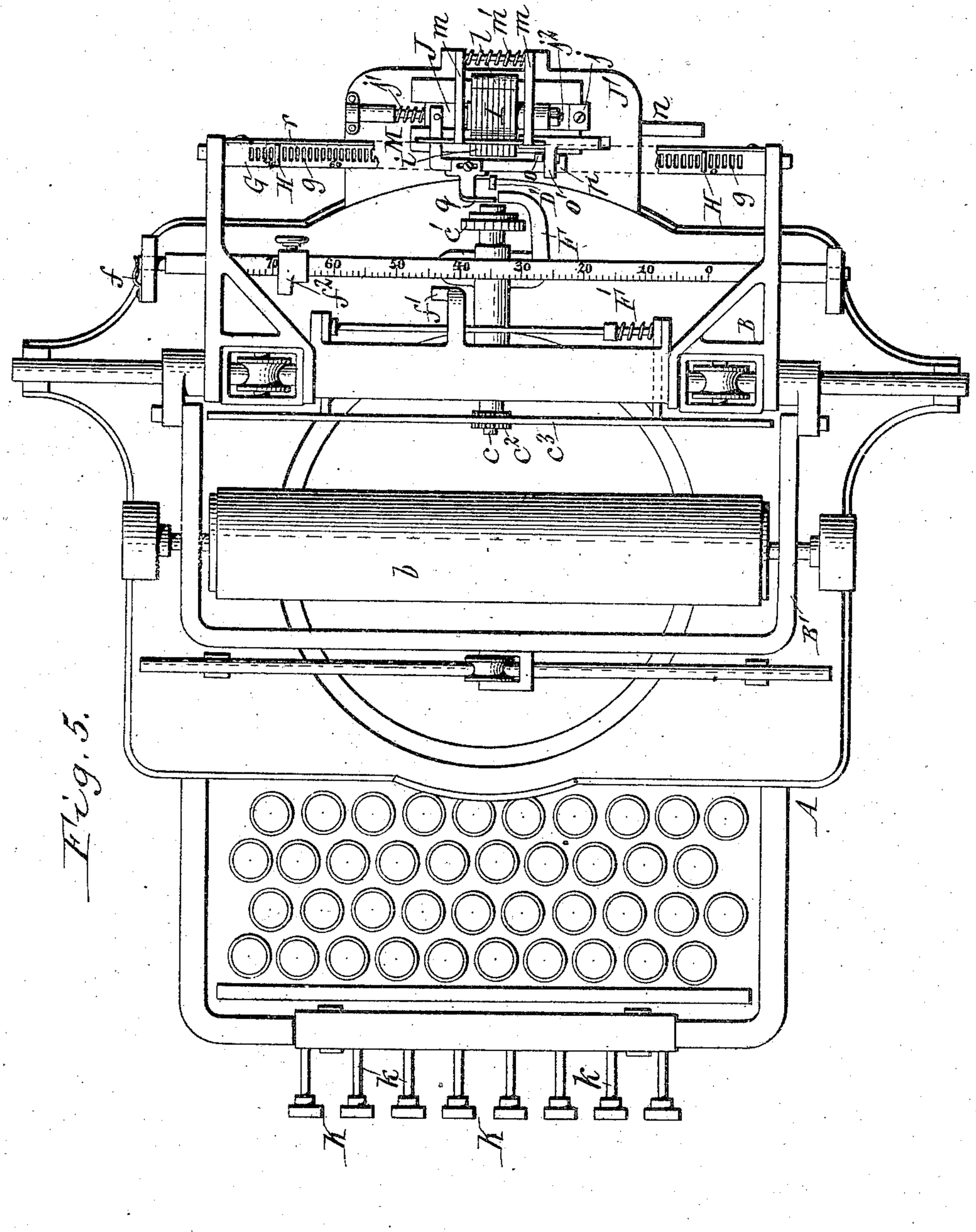

Fig. 5.

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No. 755,608. Patented March 29, 1904.

UNITED STATES PATENT OFFICE.

MANLEY H. BLAKESLEE, OF BUFFALO, NEW YORK, ASSIGNOR TO JARVIS TYPEWRITER & TABULATOR COMPANY, OF BUFFALO, NEW YORK.

TABULATING MECHANISM FOR TYPE-WRITING MACHINES.

SPECIFICATION forming part of Letters Patent No. 755,608, dated March 29, 1904.

Application filed January 17, 1903. Serial No. 139,448. (No model.)

To all whom it may concern:

Be it known that I, MANLEY H. BLAKESLEE, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented new and useful Improvements in Tabulating Mechanism for Type-Writing Machines, of which the following is a specification.

This invention relates generally to tabulating mechanism for type-writing machines, but more particularly to improvements in the tabulating mechanism described and shown in Letters Patent of the United States No. 699,389, granted to the Jarvis Typewriter & Tabulator Company, and in an application for patent filed by Harold Jarvis and myself on the 1st day of February, 1901, Serial No. 45,625. Such mechanism comprises, essentially, one or more adjustable stops or tappets mounted on a supporting-rack secured to the paper-carriage, a corresponding series of denomination dogs or detents adapted to be moved into or out of the path of said tappets for intercepting or clearing the same, and a row of tabulating-keys for moving said dogs into their operative position, these keys when pushed acting also to throw the ordinary step-by-step feed mechanism of the carriage out of action and subsequently permitting said feed mechanism to return into action for arresting the paper-carriage at the desired point in a manner common to this class of tabulating devices. In the construction shown and described in the above-mentioned patent and application the dogs are mounted on a slide or carriage movable laterally of the dogs, and the latter are automatically returned to their inoperative position by a spring-pressed restoring-bar, which when the step-by-step feed mechanism is in gear is held clear of the dogs by a latch. The unlocking movement of this latch is controlled by a releasing-hook carried by the dog-carriage, so that when said carriage is shifted forwardly by the impact of a tappet against one of the dogs the latch is unlocked, allowing the restoring-bar to descend and return the projected dog to its retracted position.

If a careless operator should push a tabulating-key after the last tappet on the paper-carriage has passed beyond the dogs, the projected dog will remain in that position in the absence of some means for retracting it, inasmuch as the release of the elevated restoring-bar depends upon the forward movement of the dog-carriage. In drawing the paper-carriage back to its initial position its rearmost tappet will therefore forcibly strike the projecting dog, blocking the return of the carriage and rendering the tabulating mechanism liable to be injured or broken.

One of the objects of my invention is to provide reliable means for automatically retracting the dogs under the above-described conditions, so as to avert all danger of injury to the tabulating mechanism and permit the unrestrained return of the paper-carriage at all times.

A further object is to improve the construction of the carriage-tappets and their supporting-rack so as to insure the proper insertion of the stops in the seats of the bar.

In the accompanying drawings, Figure 1 is a vertical longitudinal section of a Remington type-writing machine embodying my improvements. Fig. 2 is a fragmentary transverse section of the machine in line 2 2, Fig. 1. Fig. 3 is a cross-section, on an enlarged scale, of the tappet-rack of the tabulating mechanism. Fig. 4 is a longitudinal section thereof in line 4 4, Fig. 3. Fig. 5 is a top plan view of the machine, a portion of the tappet-rack being broken away to expose the parts below it. Fig. 6 is a view similar to Fig. 3, showing a modification of the tappet and rack.

Similar letters of reference indicate corresponding parts throughout the several views.

A indicates the stationary frame of the machine, B the rear portion of the customary paper-carriage, and B′ its vertically-swinging front portion, which carries the platen *b*. The carriage is advanced by the usual spring-drum, which is not shown in the drawings, and controlled by a uniform or step-by-step feed mechanism of any suitable or well-known con-

struction. The feed mechanism shown in the drawings consists of a longitudinal shaft *c*, journaled on the top frame of the machine and provided at its rear end with an escapement-wheel *c'* and at its opposite end with a gear-pinion *c²*, which meshes with a transverse gear-rack *c³*, mounted on the carriage and movable into and out of gear with said pinion for coöperating with the tabulating mechanism in arresting and releasing the carriage.

D indicates the vibrating escapement-arm, carrying the usual fixed and movable pawls *d d'*, which alternately engage with the escapement-wheel *c'*, and *d²* is the shaft of the escapement-arm, which is rocked from the customary universal bar E by a rock-arm *e* and a connecting-rod *e'*.

F indicates the usual line or marginal stop of the Remington machine, which is automatically shifted in front of the usual finger D' of the escapement-arm D when the carriage reaches the end of its travel, so as to render the writing-keys ineffective after wrtiing a character in the last letter-space in a well-known manner. The marginal stop F is carried by the usual sliding scale-bar F', which latter is held in its initial position by the spring *f* and shifted by the carriage-trip *f'* striking a collar *f²*, secured to said scale-bar, thereby advancing the marginal stop to a position in front of the escapement-arm and blocking the forward movement of the latter.

Referring to the preferred tabulating mechanism shown in the drawings, G indicates the rack or bar mounted on the rear portion of the paper-carriage and carrying the stops or tappets H, which are adjustably seated in slots or seats *g* of the rack. These tappets coöperate with the denomination dogs or detents I in a well-known manner.

J indicates the transverse slide or carriage, upon which the dogs are mounted and which is guided in suitable ways secured to a rearward extension J' of the top plate of the main frame. The slide is constantly urged against a front stop *j* on said extension by a spring *j'*. The dogs I are pivoted side by side on a rod *j²*, mounted lengthwise on the slide J, so that they may be turned to bring their noses *i* into or out of the path of the carriage-tappets H.

K indicates the usual tabulating-keys, secured to the front ends of longitudinal rods *k*. Each of these keys actuates the corresponding dog I through an elbow-lever L, having its lower arm connected with the rod *k*, and a connecting-rod L', pivoted to the upper arm of said elbow-lever and provided at its upper end with a hook *l*, which engages over the tail of the dog, as shown in Fig. 1.

M indicates the restoring-bar, by which the dogs are automatically depressed to their inoperative position after having been elevated and which is pivoted, by means of arms *m*, to the frame extension J' and held yieldingly against the upper sides of the noses of the dogs by a spring *m'* acting upon said arms. In the act of pushing a tabulating-key the restoring-bar is elevated clear of the dogs by a vertically-swinging lifting-lever *n*, pivoted to the top plate of the frame and engaging with its front arm under the bar, as seen in Fig. 2. The rear arm of this lever is connected by a rod *n'* with a horizontal rod *n²*, carried by the upper arms of a pair of upright bell-crank levers *n³*, which are pivoted to the frame at *n⁴*. The lower arms of these bell-crank levers are connected by a universal rod *n⁵*, which extends across the rear sides of the lower arms of the adjacent elbow-levers L, so that upon pushing a tabulating-key the restoring-bar is elevated through the medium of the elbow-levers, connected bell-crank levers *n³*, connecting-rod *n'*, and lifting-lever *n*.

o is the latch or supporting-post, by which the restoring-bar M is temporarily supported after having been raised by the lifting-lever *n*. This latch is pivoted at its lower end to an ear of the top plate in such a manner as to swing laterally or lengthwise of the slide J, as shown in Fig. 2. When this slide is advanced, the latch *o* engages under a lug *o'*, projecting from the adjacent side of the lifting-lever *n*, thereby holding this lever and the restoring-bar in their elevated position.

p indicates the releasing-hook, which withdraws the latch laterally out of engagement with the lug *o'* of the lifting-lever *n* when the slide J is advanced, thereby allowing the restoring-bar M to descend under the action of its spring for depressing the elevated dog. This releasing-hook is secured to the slide J, as seen in Fig. 1, so as to move therewith.

q indicates a tappet or projection carried by the releasing-hook *p* and arranged in the path of the marginal stop F, so as to be struck or tripped by it when the same is shifted in front of the finger D' of the escapement-arm D at the end of the travel of the paper-carriage. When this occurs, the releasing-hook *p* is compelled to move forwardly with said marginal stop, thus moving the latch *o* aside and permitting the restoring-bar to descend and retract any projected dog to its inoperative position. By this provision in case a careless operator should push any of the tabulating-keys after the last tabulating-stop H of the paper-carriage has passed beyond the denomination-dogs the releasing-hook *p* will be actuated by the marginal stop instead of through the medium of the slide J, thereby insuring the restoration of any projecting dog to its inoperative position and preventing the carriage-stops H from encountering it upon returning the paper-carriage to its starting-point. All liability of breakage or injury to the tabulating devices is thus obviated, and these devices can under no circumstances in-

terfere with the return movement of the carriage.

It will be understood from the foregoing description that the marginal stop F or equivalent member forms a trip device which acts upon the projection *q* of the hook *p* and which is controlled by the movement of the paper-carriage.

In order to prevent the denomination-dogs I from being blocked by striking the lower ends of the carriage-tappets H and displacing the same, said lower ends are preferably thinned as much as practicable by chamfering or beveling them on their rear sides, as shown in Fig. 4. When the tappets are thus constructed, operators are liable to insert them with their chamfered sides facing forwardly instead of rearwardly. In order to compel operators to insert the tappets properly, the tappet-rack G is provided at one edge, preferably its rear edge, with a baffle or stop rail *r*, which projects above the upper side of the rack, and the head of each tappet is arranged to project farther beyond one edge of its stem than the other, or, in other words, the stem is offset with reference to the center of the head. By this construction upon properly placing the tappet in its seat the less salient side of its head will clear the baffle-rail and permit the tappet to be fully inserted, as shown in Fig. 3, while if the tappet be improperly entered—that is, with its beveled side forward—the more salient side of the head will encounter the baffle-rail, as shown by dotted lines in said figure, rendering it impossible to fully insert the tappet in the wrong position. For this purpose the extent of projection of the less salient side of the tappet-head must not exceed the distance between the baffle-rail and the adjacent ends of the slots in the rack, while the extent of projection of the more salient side of the head must be greater than that distance. As shown in Fig. 5, the baffle-rail of the stop-rack extends throughout the portion of the rack containing the tappet-slots.

While I prefer to employ the above-described T-shaped tappet, the same result may be attained with an L-shaped tappet H′ or one in which the head projects only beyond one side of the stem, as shown in Fig. 6.

I have herein shown and described my improvements in connection with the line or marginal stop of a Remington type-writing machine and the particular tabulating mechanism shown and described in the Letters Patent hereinbefore referred to as the preferred embodiment of the invention. The same are not, however, intended to be limited in their application to those particular mechanisms, but may without departing from the spirit of the invention be applied to other tabulating type-writers and attachments of the same general class.

I claim as my invention—

1. The combination of the paper-carriage having a tappet-support, movable denomination dogs or detents adapted to intercept the tappets applied to said support, a restoring device for returning said dogs to their inoperative position, means for holding said restoring device in its inoperative position, and a releasing device controlled by the paper-carriage and arranged to act upon said holding means, substantially as set forth.

2. The combination of the paper-carriage having a tappet-support, movable denomination dogs or detents adapted to intercept the tappets applied to said support, a restoring device for returning said dogs to their inoperative position, a latch for holding said restoring device in its inoperative position, and a releasing device controlled by the paper-carriage and arranged to engage said latch, substantially as set forth.

3. The combination of the paper-carriage having a tappet-support, movable denomination dogs or detents adapted to intercept the tappets applied to said support, a slide carrying said dogs, a restoring device for returning the dogs to their inoperative position, a latch for holding said restoring device in its inoperative position, releasing means movable with said slide and arranged to withdraw said latch, and a trip device controlled by the paper-carriage and arranged to engage said releasing means, substantially as set forth.

4. The combination of the paper-carriage having a tappet-support, movable denomination dogs or detents adapted to intercept the tappets applied to said support, a slide carrying said dogs, a restoring device for returning the dogs to their inoperative position, a latch for holding said restoring device in its inoperative position, a releasing-hook engaging with said latch and having an actuating-tappet, and a trip device controlled by the paper-carriage and arranged to engage the tappet of said releasing-hook, substantially as set forth.

5. In a tabulating mechanism for type-writing machines, the combination of the paper-carriage, a rack or support movable with the carriage and provided with tappet-seats and adjacent to said seats with a baffle device, and a tappet adapted to enter one of said seats and constructed to encounter said baffle device in one position of the tappet and to clear the same in another position thereof, substantially as set forth.

6. In a tabulating mechanism for type-writing machines, the combination of the paper-carriage, a rack or support movable with the carriage and provided with tappet-seats and adjacent to said seats with a baffle device, and a tappet adapted to enter one of said seats and having an offset head arranged to clear said

baffle device in one position of the tappet and to encounter the same in another position thereof, substantially as set forth.

7. In a tabulating mechanism for type-writing machines, the combination of the paper-carriage, a rack or support movable with the carriage and having tappet-seats and provided along one edge with a baffle-rail projecting above the rack, and a tappet comprising a stem adapted to enter one of said seats and an offset head constructed to clear said baffle-rail in one position of the tappet and to encounter the same in another position thereof, substantially as set forth.

Witness my hand this 24th day of December, 1902.

MANLEY H. BLAKESLEE.

Witnesses:
THEO. L. POPP,
EMMA M. GRAHAM.