

993,583.

G. W. DAVIS.  
TABULATOR MECHANISM FOR TYPE WRITERS.  
APPLICATION FILED JAN. 3, 1907.

Patented May 30, 1911.

2 SHEETS-SHEET 1.

Fig. 4.

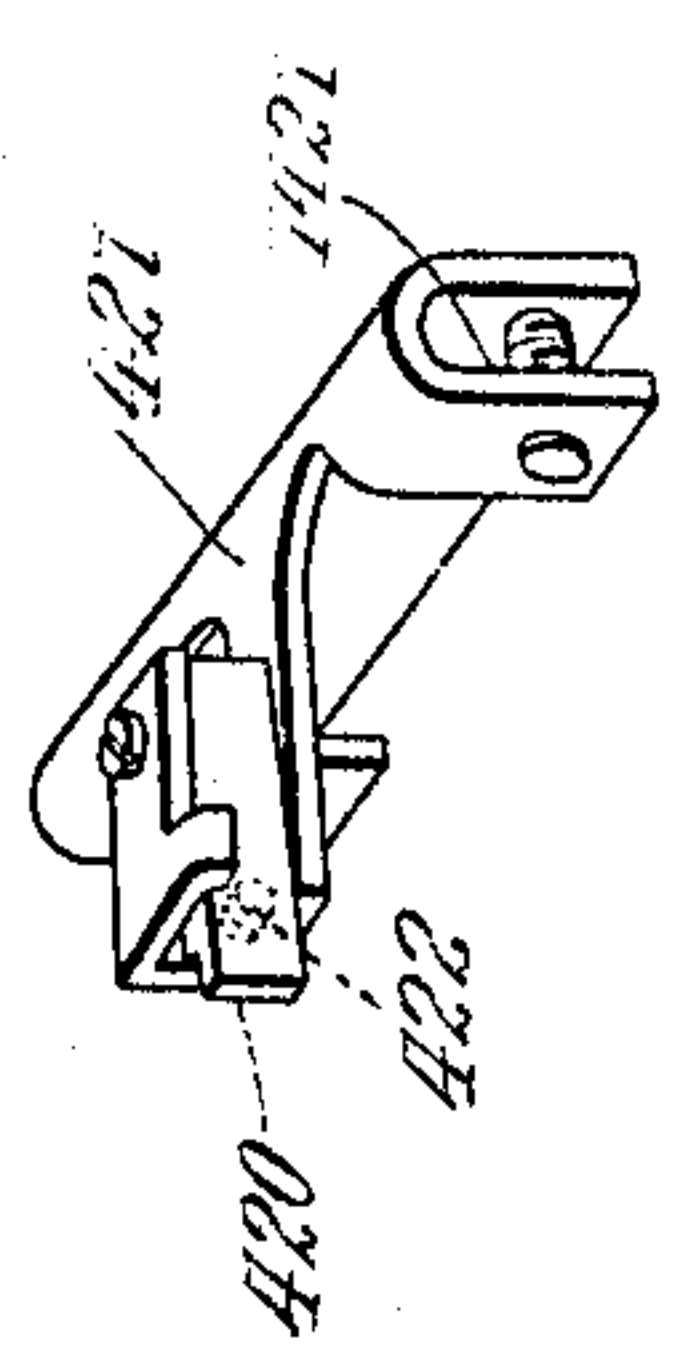


Fig. 3.

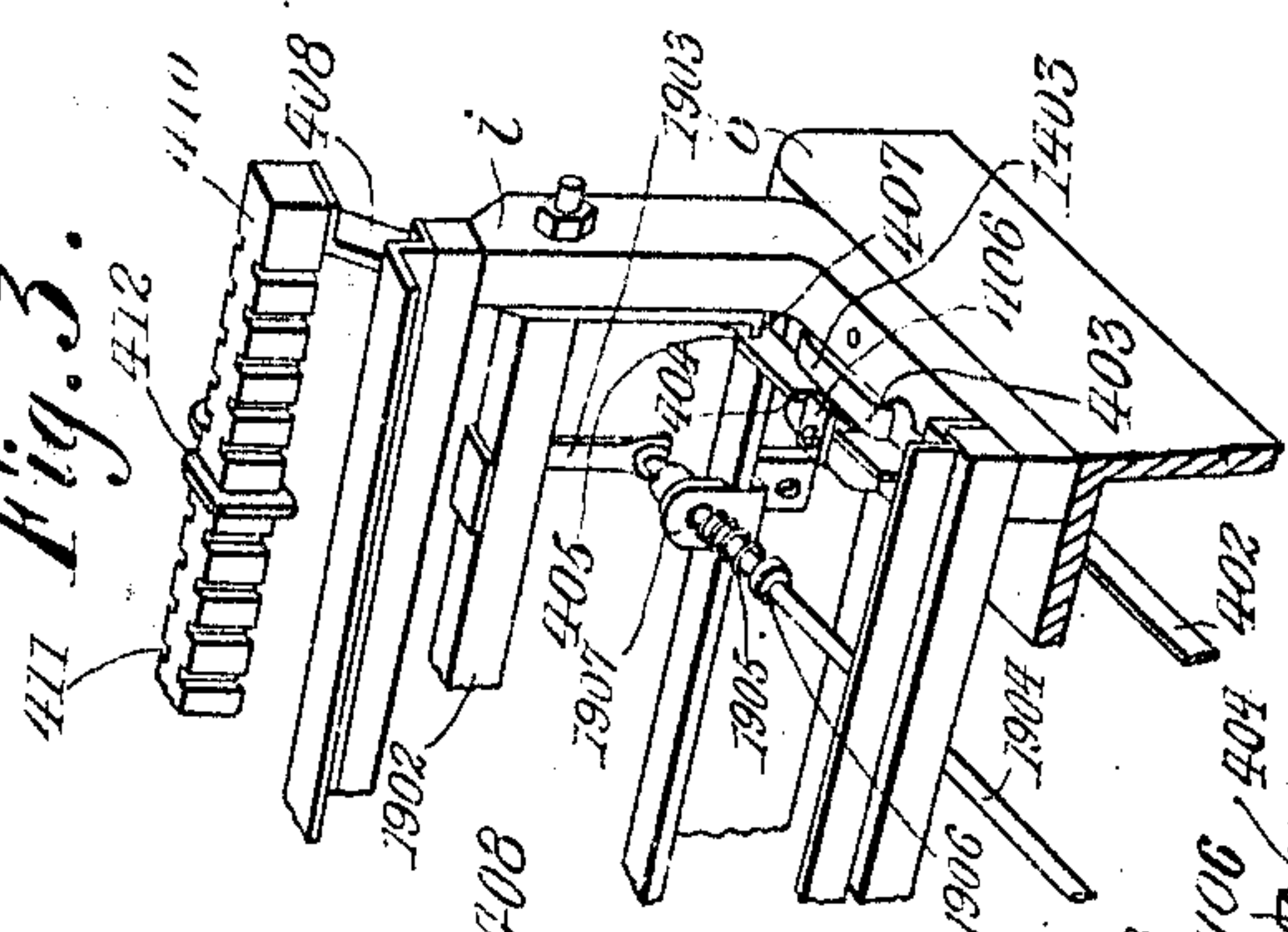


Fig. 2.

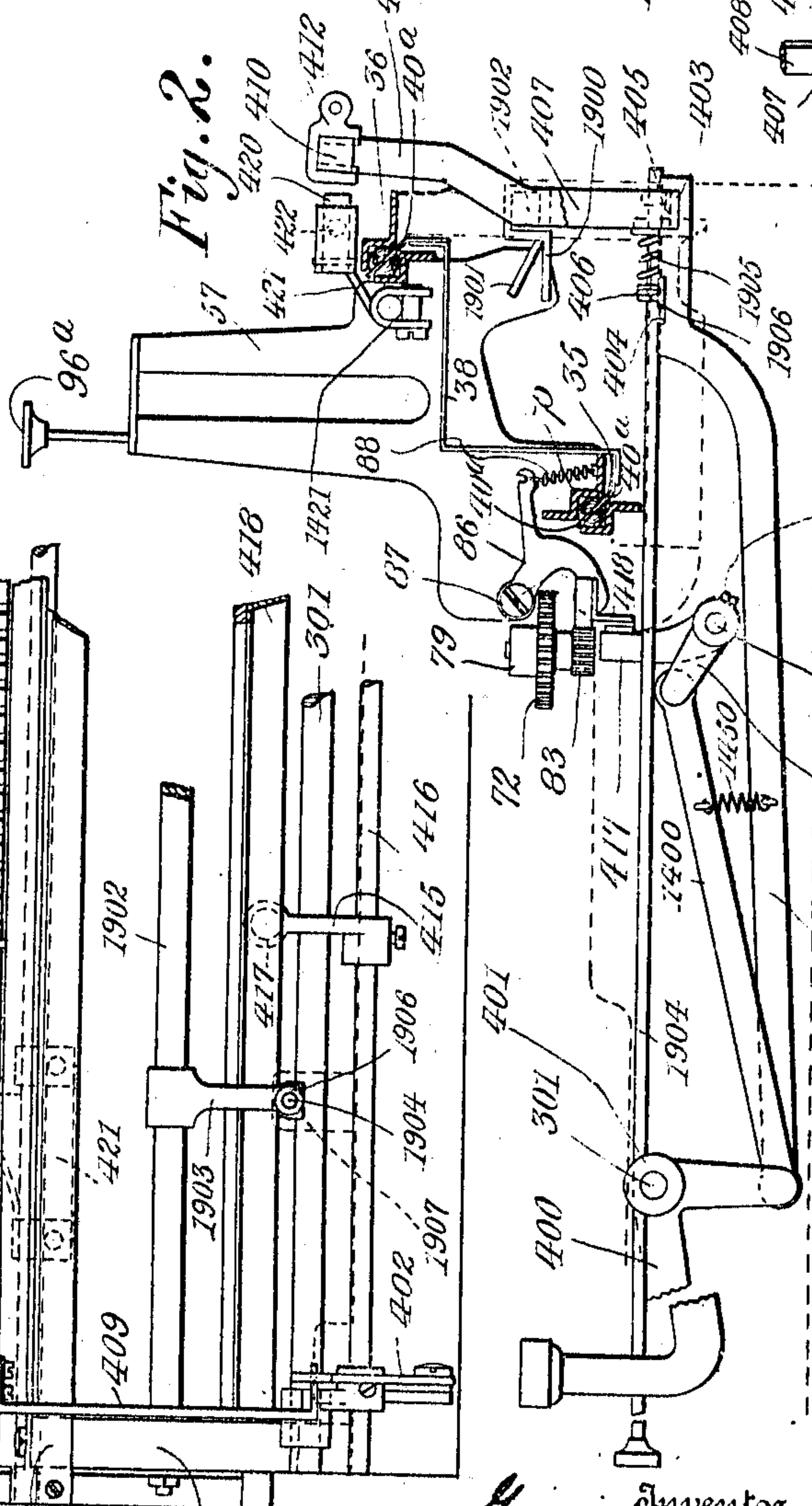
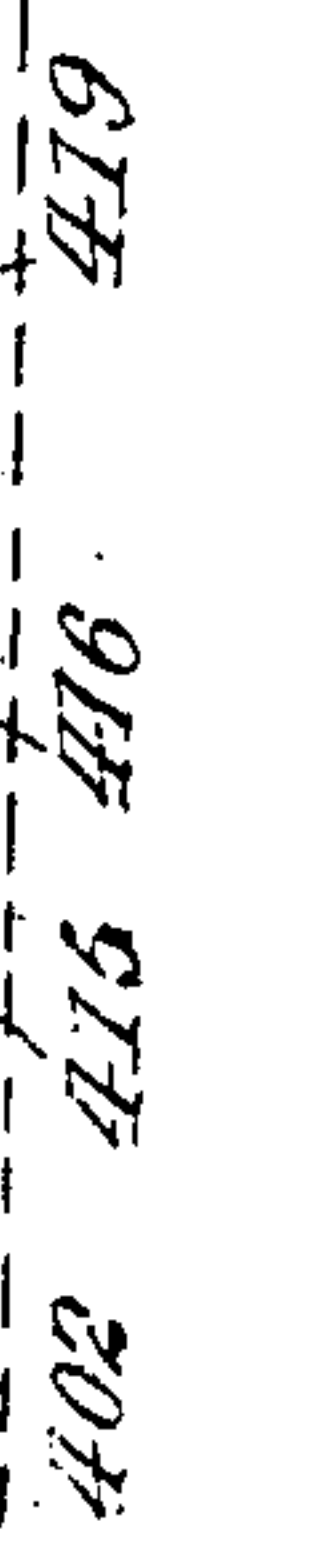


Fig. 5.



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2 SHEETS—SHEET 2.

Fig. 6.

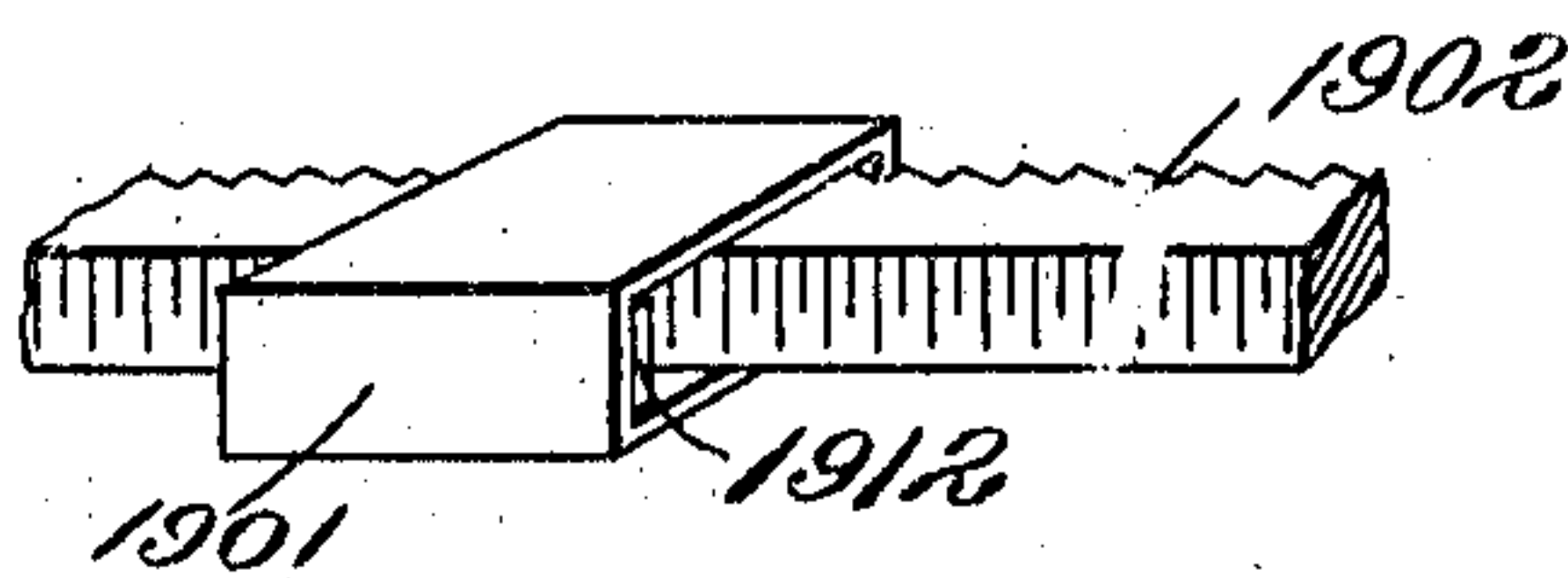


Fig. 7.

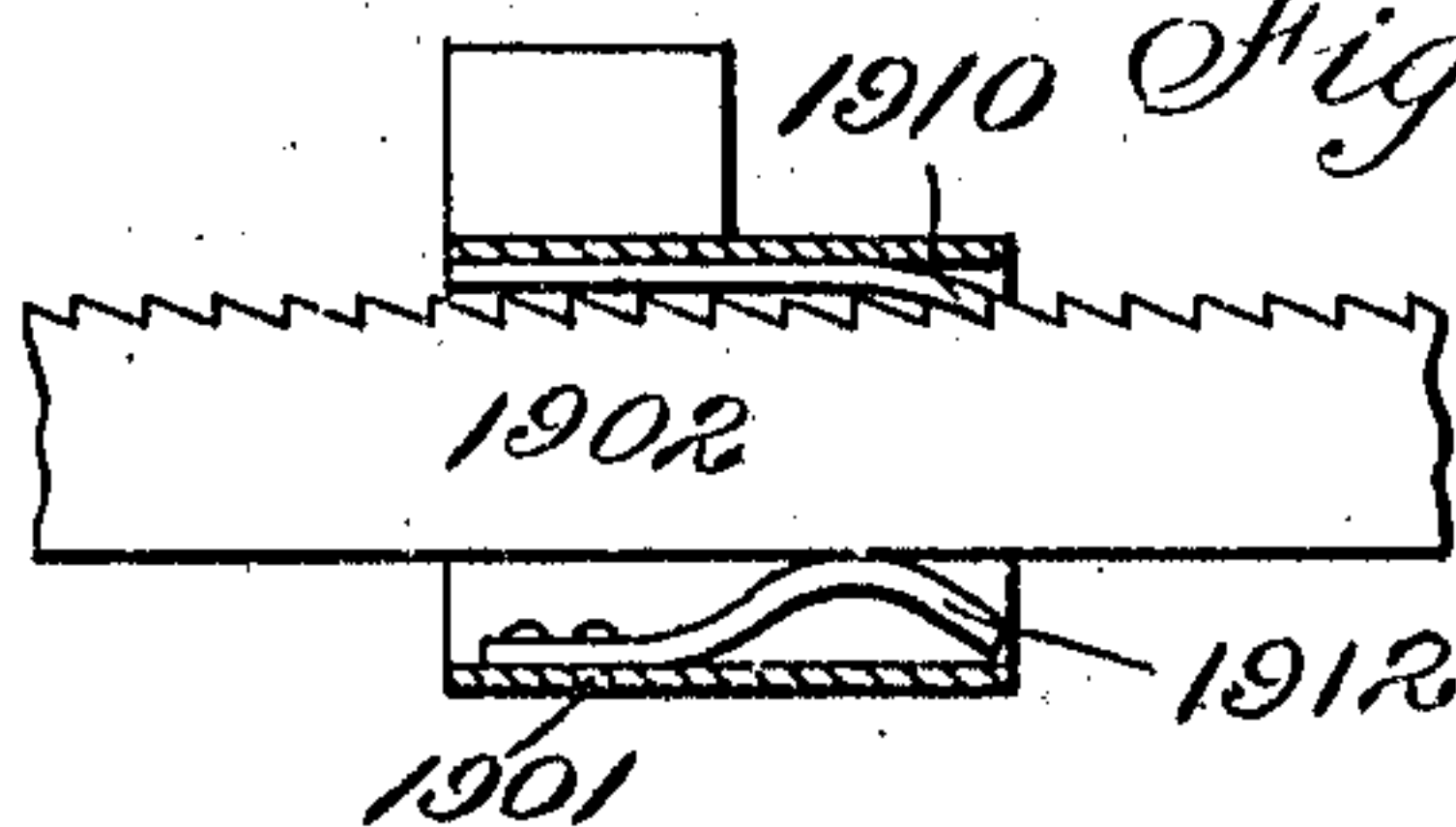
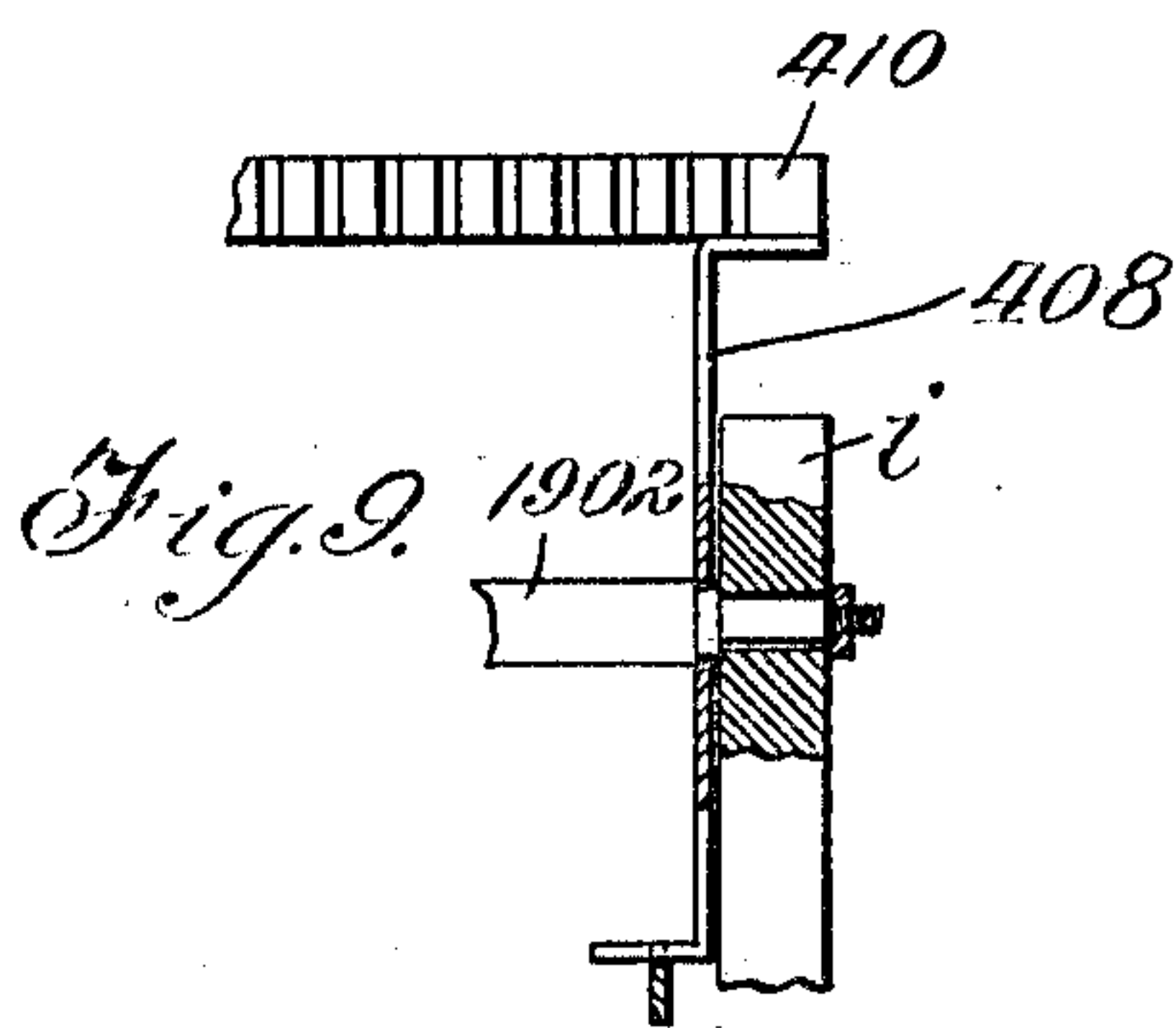


Fig. 8.



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# UNITED STATES PATENT OFFICE.

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## TABULATOR MECHANISM FOR TYPE-WRITERS.

993,583.

Specification of Letters Patent.

Patented May 30, 1911.

Application filed January 3, 1907. Serial No. 350,634.

*To all whom it may concern:*

Be it known that I, GEORGE WILLIAM DAVIS, of Westmount, district of Montreal, Province of Quebec, Canada, have invented certain new and useful Improvements in Tabulator Mechanism for Type-Writers; and I do hereby declare that the following is a full, clear, and exact description of the same.

My invention may be said to consist of the several combinations and arrangements of parts hereinafter described and pointed out in the claims.

For full comprehension, however of the invention, reference must be had to the accompanying drawings forming a part of this specification in which like symbols indicate the same parts, and wherein,

Figure 1 is a rear elevation of one end of the machine with the carriage removed; Fig. 2 illustrates in transverse sectional view, the tabulator mechanism and brake co-acting therewith, the escapement and the marginal stop mechanism; Fig. 3 is a perspective view of the end of the machine illustrated in Fig. 1 the machine being turned around; Fig. 4 illustrates the pawls of the tabulating mechanism; Fig. 5 is a perspective view illustrating in detail the operative connection between the two of the parts of the tabulator mechanism. Figs. 6, 7, and 8 are detail views illustrating one of the marginal stops Fig. 6 being a perspective view of a portion of the toothed carrying bar with a sleeve thereon and Fig. 7 is a horizontal sectional view of the sleeve and plan view of the portion of the bar upon which it slides, while Fig. 8 is a transverse sectional view of the bar and end elevation of the sleeve, and Fig. 9 is a detail view illustrating partly in elevation and partly in section, the pivotal structure of the tabulator bar.

The tabulator mechanism comprises a key lever 400 of bell-crank form and provided with a hub 401 through which it is fulcrumed upon the rigid shaft 301. A push bar 402 is pivotally connected at one end to this bell-crank lever and its opposite end is slidably supported in a slot 403 in a raised portion 1403 of the rear part *b* of the main frame. This bar is formed with a pair of notches 404 and 405 the former (404) receiving a narrow cap 406 secured rigidly to the main frame and retaining such bar against vertical displacement, while allowing it a limited longitudinal movement. The

notch 405 receives the lower bent end 407 of an arm 408 which with a second arm 409 supports a bar 410 notched on its opposite vertical sides as at 411 to receive the tabulator stops 412. These arms 408, 409 are fulcrumed upon the bar 1902 of the marginal stop mechanism as shown particularly in Fig. 9. When the carriage is released in connection with the use of these tabulator stops, it is usual to control the speed of its travel to avoid undue wear of or damage to the mechanism. According to this invention the brake utilized is made to perform the double function of releasing the carriage and retarding its speed of travel. The depending arm of the key lever 400 is connected by a rigid link 1400 to an arm 415 connected by a clamping screw 419 to a rock shaft 416 mounted in bearings in the main frame, and such shaft 416, having a brake head 417 mounted rigidly thereon. This brake head is adapted to act upon a brake-rail 418 secured rigidly to a pair of bell-crank levers 86 fulcrumed to opposite ends of the carriage and normally yieldingly held in position to be engaged by the brake head by means of springs 88, one only of which is shown. These bell-crank levers also carry the escapement rack which engages the pinion 83 when such bell-crank levers are in normal position. A spring pawl 420 adapted to coact with the tabulator stops, is carried by one of the tie rods of the main carriage. It is mounted in a bracket 421 secured by a clamp 1421 to the tie rod, and retained by a spring 422, out of bearing relation with the bracket. The push bar 402 and link 1400 are retained yieldingly in their normal position with the lever 400 raised, by means of a retractile spring 1450 connected between the said bar and link, the specific effect being that the spring tends (through the toggle action of the link and lever arm 415) to increase the distance between the shaft 416 (a fixed point) and the depending arm of lever 400 which results in moving the latter toward the key board and the bar 402 with it.

The operation of the tabular mechanism is as follows:—The stops 412 are placed as usual to establish the spaces required for tabulation. Upon the depression of the key-lever 400 first the push-rod 402 moves the tabulator bar 410 into position to place the stops in the path of the pawl 420, and then the brake head acts upon the brake rail and



moves the escapement rack out of engagement with the pinion 83 thereby releasing the carriage and allowing it to move, and it then travels until the pawl 420 engages the first stop in its path. The brake meanwhile acting upon the brake rail and retarding the speed at which the carriage travels. The resistance offered by the brake is varied by adjusting the arm 415 to different angular positions around the shaft 416. The key-lever is held down until the pawl comes into contact with the stop. It is then released and the escapement rack again engages the pinion, thus locating the carriage in the required position, and, simultaneously, the tabulator bar 410 swings back to its normal position, thereby removing the tabulator stops from the path of the pawl. The object of normally yieldingly retaining the pawl out of bearing relation with its supporting bracket is to enable the carriage to be run to, say, the first stop, without touching the space bar, and be free to be moved to next stop. This result is obtained by the spring 22 moving the pawl beyond the stop it last engaged immediately it is released therefrom, otherwise the pawl would strike this stop and prevent the carriage being released.

The marginal stop 1900 and write-over-marginal-stop 1901 are arranged in different angular positions relatively to a rocking bar 1902 upon which they are adjustably mounted. This bar is rocked by means of an arm 1903 secured rigidly to the bar forked at its lower end to straddle and effect a pivotal connection with the rear end of a push-rod 1904 held yieldingly in its forward position by a spring 1905 bearing between a collar 1906 upon the rod and a bracket 1907 in which the rod is guided. These stops 1900 and 1901 are formed integrally with a pair of sleeves slidable upon the bar 1902 which is toothed on one side and graduated on the other as shown in Figs. 2, 6, 7 and 8, each of such sleeves and its stop being formed by bending a single length of metal into the required form and turning its outer end outward to constitute the stop and its inner end inward as at 1910 to constitute a pawl to engage the teeth of the bar. These sleeves are of greater width than the bar to allow of their movement transversely thereto to disengage the pawls from or engage them with the teeth of such bar, and each sleeve carries a bow spring 1912 bearing upon the bar and holding the pawls yieldingly in engagement. The graduations upon the bar are, as usual, to indicate letter spaces.

I claim:

1. In a typewriting machine the combination with the carriage, of tabulator mechanism comprising a bar mounted pivotally independently of the carriage and carrying movable stops, and means mounted rigidly upon the carriage and having a pawl

mounted therein, a horizontally slidable key operated member, and means operatively connecting the said member to the bar.

2. In a typewriting machine the combination with the carriage, of tabulator mechanism comprising a bar mounted pivotally independently of the carriage and carrying movable stops, means mounted rigidly upon the carriage and having a pawl mounted therein, a horizontally slidable key operated member having a notch, an arm carrying the bar and engaging the notch in the slidable member.

3. In a typewriting machine the combination with the carriage, of tabulator mechanism comprising a bar mounted pivotally independently of the carriage and carrying movable stops, means mounted rigidly upon the carriage and having a pawl mounted therein, a horizontally slidable key operated member, an arm carrying the bar and pivotally connected to the slidable member.

4. In a typewriting machine the combination with the carriage, of tabulator mechanism comprising a bar mounted pivotally independently of the carriage and carrying movable stops, a pawl upon the carriage, a slidable key operated member having a pair of notches, an arm operatively connected to the bar and engaging one of the notches in the slidable member, a lug carried by the frame of the machine and of less width than and projecting into the other notch.

5. In a typewriting machine the combination with the carriage, of tabulator mechanism comprising a bar mounted pivotally independently of the carriage and carrying movable stops, a pawl upon the carriage, a member projecting downwardly from such bar; a key; a horizontally slidable bar, a pivotal connection between the slidable bar and the said member; means operatively connecting the key to the slidable bar; a movable support upon the carriage; means yieldingly retaining such support in normal position; a brake rail upon the yielding support, an oscillatory arm carrying a brake head, and means operatively connecting the key to the oscillatory arm.

6. In a typewriter the combination with a key lever and a pair of instrumentalities operated thereby, of a pair of members connected at one end to the key lever and at their opposite ends to the said respective instrumentalities, such members normally lying in close proximity; and a retractile spring yieldingly retaining the members against displacement away from each other, for the purpose set forth.

7. In a typewriter the combination with a carriage carrying a brake rail, of a key lever 400 of bell crank form, a tabulator bar 410, an arm 407, 408 carrying the said bar, a bell crank lever carrying a brake head adapted to act upon the brake rail, a push bar



402 connecting together the first mentioned bell crank lever and the tabulator arm, a link connecting together the said bell crank levers, and a retractile spring connected at its ends to the push bar and link. for the purpose set forth.

8. In a typewriting machine the combination with the carriage, of a key, a brake rail, means yieldingly securing such brake rail upon the carriage, a bell crank lever carrying a brake head in position to be caused to engage the brake rail, and means operatively connecting the key to the bell crank lever.

9. In a typewriting machine the combination with the carriage, of a key, a pair of bell-crank-levers upon the carriage, a brake rail carried by such bell-crank-levers, means yieldingly retaining such bell-crank-levers against movement, an oscillatory arm carrying a brake head, and means operatively connecting the key to the oscillatory arm.

10. In a typewriting machine the combination with the carriage, of brake mechanism comprising a stop bar 410, supporting arms 408, 409, push bar 402, shaft 416 provided with a brake head 417, an operating arm 415, a bell-crank-key operatively connected to the bar 402, an arm 1400 connecting the bell-crank key and the operating arm, a pinion, a yielding member, an escapement rack carried by such member and normally engaging the pinion, and a brake rail carried by such member in position to be borne upon by the brake head.

11. In a typewriting machine the combination with the carriage having a rigid rod, and a movable tabulator bar carrying a movable stop, of a bracket clamped upon the rod and presenting a sleeve projecting toward the tabulator bar, a spring actuated pawl mounted in such bracket and adapted to engage the stop upon the tabulator bar.

12. In a typewriter, the combination with the frame thereof, a carriage supported upon said frame, a stop upon the carriage, means for automatically feeding said carriage from one side of said frame to the other, of a rocking-bar carried by the frame parallel

to the line of travel of and adjacent to said carriage, a marginal-stop and a write-over-marginal-stop both carried by said bar and extending at different angles therefrom, means for adjusting said two last mentioned stops, relatively to one another and longitudinally of said bar, a movable key means connecting the movable key to the bar whereby the latter is rocked to different degrees for the purpose of causing either the marginal or write-over-marginal stops to intersect the path of the stop upon the carriage.

13. In a typewriter, the combination with the frame thereof, a carriage supported upon said frame, means for automatically feeding said carriage from one side of said frame to the other, and a stop upon the carriage, of a rocking-bar carried by the frame parallel to the line of travel of and adjacent to said carriage, a series of teeth upon one side of said bar, a one piece sheet metal sleeve upon said bar and slidable along same, such sleeve being of greater transverse area than the cross-section of such bar, and having one end of the sheet metal from which it is formed adapted to present a finger at the side of said sleeve opposite to the teeth and projecting toward the carriage and the opposite end of such sheet metal being bent to form an internal pawl arranged to engage the teeth, a spring carried by the side of the sleeve opposite to the pawl and bearing upon the graduated side adjacent thereto of the bar, a movable key and an operative connection between said movable key and the bar whereby said bar is rocked to move said finger into or out of the path of the stop upon the carriage for the purpose of establishing a margin upon the sheet being written or allowing said margin to be overwritten.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

GEORGE WILLIAM DAVIS.

Witnesses:

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