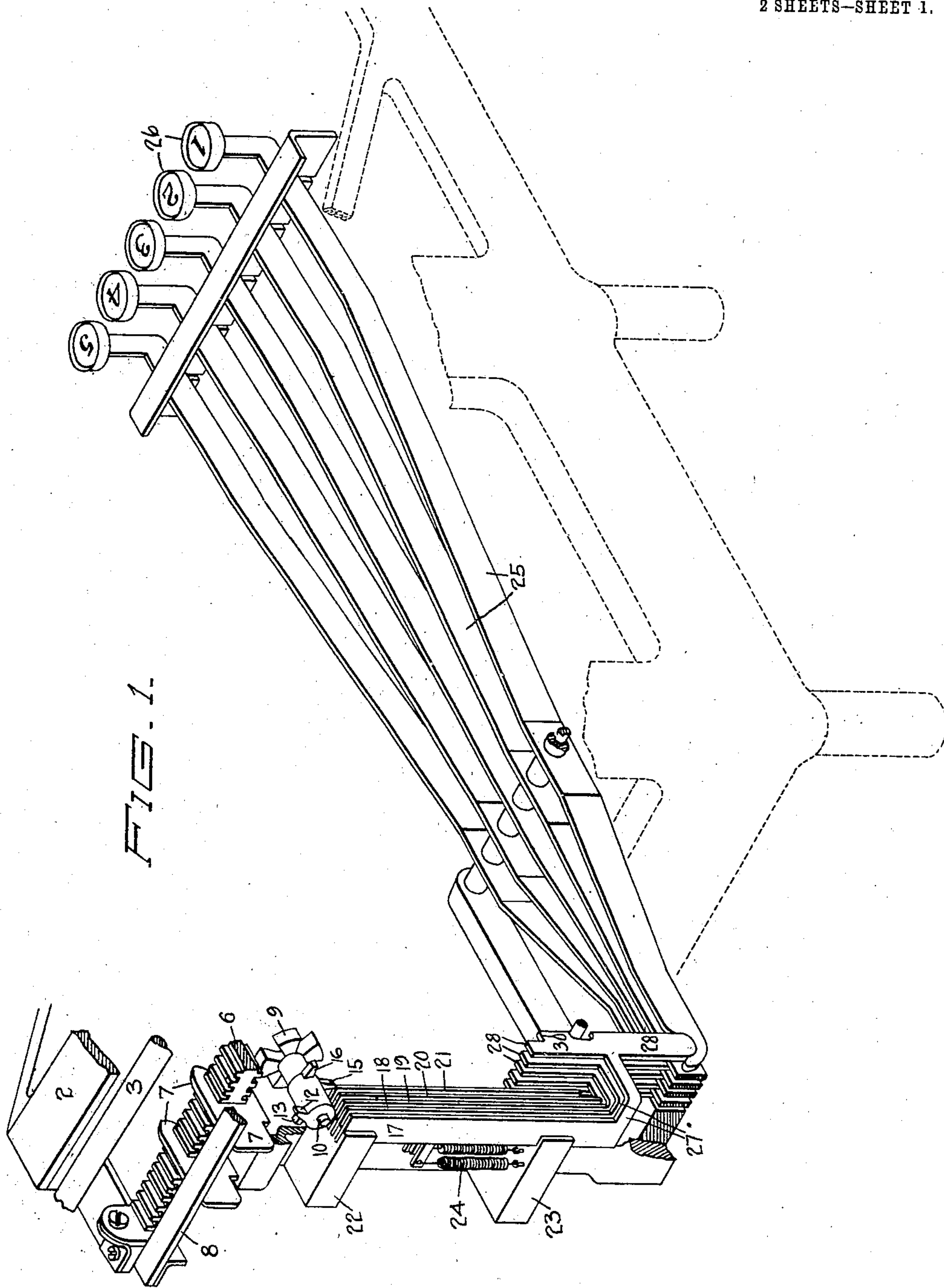


J. C. DOANE.
TYPE WRITING MACHINE.
APPLICATION FILED APR. 16, 1909

931,688.

Patented Aug. 17, 1909.
2 SHEETS—SHEET 1.



WITNESSES:
John C. Seifert
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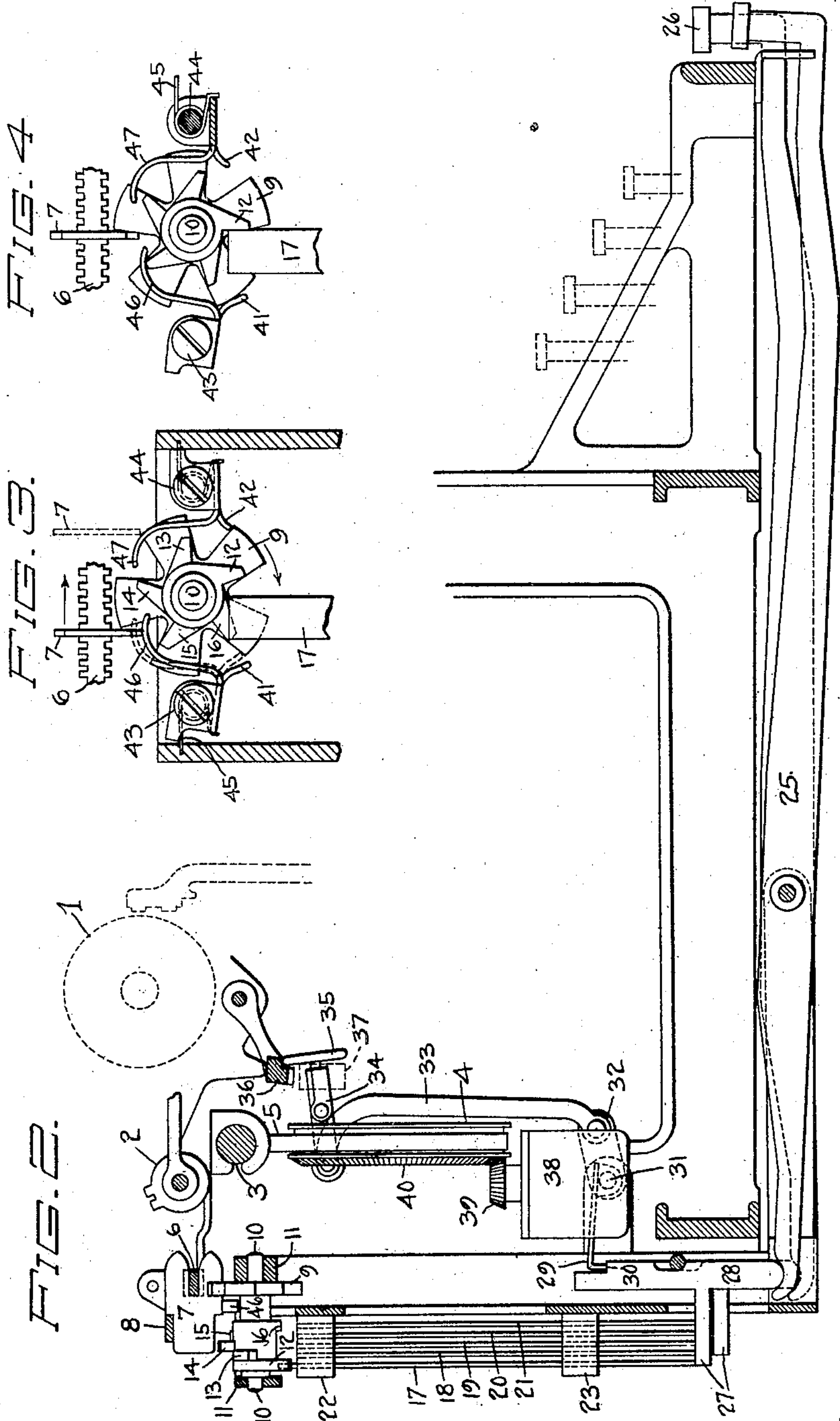
INVENTOR:
John C. Doane,
BY *B. B. Stickney*
ATTORNEY

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UNITED STATES PATENT OFFICE.

JOHN C. DOANE, OF HARTFORD, CONNECTICUT, ASSIGNOR TO UNDERWOOD TYPEWRITER COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

TYPE-WRITING MACHINE.

No. 931,688.

Specification of Letters Patent.

Patented Aug. 17, 1909.

Application filed April 16, 1909. Serial No. 490,366.

To all whom it may concern:

Be it known that I, JOHN C. DOANE, a citizen of the United States, residing in Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

This invention relates generally to tabulating mechanism for typewriting and other machines, and particularly to means for enabling the carriage to jump to any selected column or field, such devices known in the art as "column skippers".

The principal object of the invention is to produce a simple and inexpensive mechanism readily applicable to typewriting machines for effecting such jumping of the carriage.

According to the present invention, a pinion is mounted in proximity to the usual column stop rack on the carriage, to be engaged successively by the column stops as the carriage travels, and thereby caused to rotate.

Upon the pinion shaft is a succession of stops to revolve with the pinion, these stops preferably having a helical arrangement. Below the helical series of stops is disposed a series of thrust rods, and these are operated by keys, whereby any thrust rod may be thrown into the path of its associated revolving stop, thereby arresting the carriage at the desired column.

In the accompanying drawings, Figure 1 is a rear perspective view of my improvements applied to an Underwood front strike writing machine; the parts shown in normal positions, and certain features being omitted for the sake of clearness. Fig. 2 is a sectional side elevation of the parts seen at Fig. 1. Fig. 3 is a rear elevation illustrating the normal positions of the parts, and also showing how each column stop releases the pinion for rotation. Fig. 4 is a view similar to Fig. 3, but showing the stop and hence the carriage arrested by the tabulating mechanism.

The platen 1 is mounted upon a carriage 2, which travels upon tracks 3, and is propelled by a spring barrel 4, the latter connected to the carriage by a strap 5. Upon the carriage is a rack 6 in which are placed column stops 7, which may be say five in number, each adjustable along the rack independently of the others, and all held in

place by a keeper 8, as usual. Each column stop projects below the rack in position to engage the teeth of a pinion 9, which is fixed upon the forward end of a horizontal shaft 10 usually supported in fixed bearings 11 and extending forwardly or rearwardly, or at right angles to the rack.

Upon the pinion shaft 10 are stops 12, 13, 14, 15 and 16, five in all, one for each of the teeth of the pinion 9; the series of stops being fixed to the shaft 10, and preferably extending in the form of a helix around the same. Standing vertically under the helical stops are thrust rods 17, 18, 19, 20 and 21, occupying positions directly below the respective stops 11 to 16, and suitably mounted in fixed guides 22, 23, and held down out of the paths of said stops by springs 24, Fig. 1. Any thrust rod may be moved up into the path of its associated revolving stop for arresting the same and thereby stopping the carriage. Said thrust rods are connected by levers 25 to depressible keys 26 arranged at the front of the machine. The thrust rods are arranged one behind another, and for convenience are connected by nested elbows 27 to short vertical bars 28 placed side by side across the machine, and at their lower ends resting upon the rear ends of the key levers 25.

From the foregoing, it will be understood that when any key is depressed, as for instance key 1, its associated lever 25 is turned, and the bar 28 is lifted, and the rod 17 thrust up, so that its stop moves into the path of the associated revolving stop 12, as at Figs. 2 and 3, for the purpose of arresting the carriage. The carriage is simultaneously released through the following connections: A universal bar 29 is engaged by a jog 30 on the upright bar 28, and turns a rock shaft 31, upon which is provided an arm 32, connected by a link 33 to a carriage-releasing lever 34, which has a roll 35 to lift the carriage-feeding rack 36 from the usual escapement pinion 37. The carriage being thus released, the first stop 7 engages the pinion 9, and turns the latter until the revolving stop 12 strikes the upper end of the thrust rod or stop 17, Fig. 4, thereby arresting the carriage. It will be observed that a brake barrel 38 is provided upon the rock shaft 31, so that its pinion 39 may be turned into mesh with a gear 40 provided upon the carriage-driving spring-barrel 4, to check

the speed of the released carriage. Upon relief of the key from pressure, the parts return to their normal positions, the feeding-rack 36 reengaging the escapement pinion 37.

5 Any desired stop 17 to 21 may be thrust up by depressing the corresponding key 26, and the pinion will be rotated by the column stops in succession, until finally said pinion is engaged by the column stop that corre-
10 sponds to the depressed key, whereupon the associated revolving stop will engage the elevated thrust rod, and the carriage will be arrested, as at Fig. 4.

It will be understood that during the re-
15 turn movement of the carriage, the pinion and its stops are revolved idly by the column stops, and further that the pinion is revolved idly in both directions by the column stops during the ordinary typewriting operations
20 of the carriage, when ordinary matter is being written without tabulating. The normal position of the pinion is indicated at Fig. 3, from which will be seen that one of the teeth of the pinion stands about ver-
25 tically above the shaft 10, and in position to be engaged on either edge by the traveling column stops 7. In order to hold the pinion normally in the Fig. 3 position, there are provided opposite pawls 41, 42 pivoted at
30 43, 44 on the framework and operated by any suitable springs 45. The pawl 44 is shown in normal position to prevent the pinion from turning to the left, as at Fig. 3. The pawl 41, however, which is shown
35 in dotted lines as normally preventing rotation of the pinion to the right, is shown in full lines released to permit such rotation under the driving power of the column stop 7. This release is effected by a cam arm 46
40 in the path of the column stop 7, to be depressed thereby from the dotted line to the full line position. The other pawl is provided with a similar cam arm 47, which is
45 rocked down out of the path of the advancing stop 7 by the engagement of the advancing tooth of the pinion with the pawl 42, both 42 and 47 rocking down about the pivot 44 to a position corresponding to the full line position of 41 and 46. Upon the
50 succeeding movement of the stop 7 to the left at Fig. 3, said stops engage the cam arm 47 in succession to release the pawl 42 to permit the pinion to be revolved to the left by said stop 7, and the teeth of the wheel
55 itself depress the pawl 41 and its arm 46, as will be understood by reference to Fig. 4. Hence the carriage may be at any time run freely in either direction, and the pinion with its stop will freely revolve; while at
60 any time any of the keys 26 may be depressed to release the carriage and cause it

to be arrested by the corresponding column stop.

Having thus described my invention, I claim:

1. In a tabulating mechanism, the combination with a series of column stops, of a pinion rotatable by the column stops, a helical rotary series of stops connected to the pinion, and a set of key-operated stops movable into the path of the rotary stops, one key-operated stop for each of the rotary stops. 65 70

2. In a tabulating mechanism, the combination with a series of column stops, of a pinion rotatable by the column stops, pawls normally preventing rotation of the pinion, means to enable the column stops to release the pawls, a helical series of stops connected to the pinion, and key-operated stops movable into the paths of the helical stops. 75 80

3. In a tabulating mechanism, the combination with a series of column stops, of a pinion engageable by the column stops, oppositely disposed spring pawls normally preventing rotation of the pinion and each having a cam to be engaged by the column stops in succession to enable them to release the pinion for rotation, a helical series of stops connected to the pinion to rotate therewith, and key-operated stops movable into the paths of the helical stops for arresting the carriage. 85 90

4. In a tabulating mechanism, the combination with a carriage rack, of a series of column stops thereon, a revolving shaft, mounted transversely to the rack, a pinion on said shaft to be revolved by the column stops, stops on said shaft, stops mounted upon the framework, and keys movable independently of one another and connected to the last-mentioned stops to project any selected stop into the path of the corresponding revolving stop. 95 100

5. In a tabulating mechanism, the combination with a carriage rack, of a series of column stops thereon, a horizontal revolving shaft extending transversely to the rack, a pinion on said shaft to be revolved by the column stops, a helical series of stops on said shaft, a series of upstanding thrust rods mounted one behind another beneath the revolving stops, each of said thrust rods movable independently of the others into the path of its associated revolving stop to arrest the pinion, rack and carriage, and keys connected to said thrust rods. 105 110 115

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Witnesses:

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