

No. 877,241.

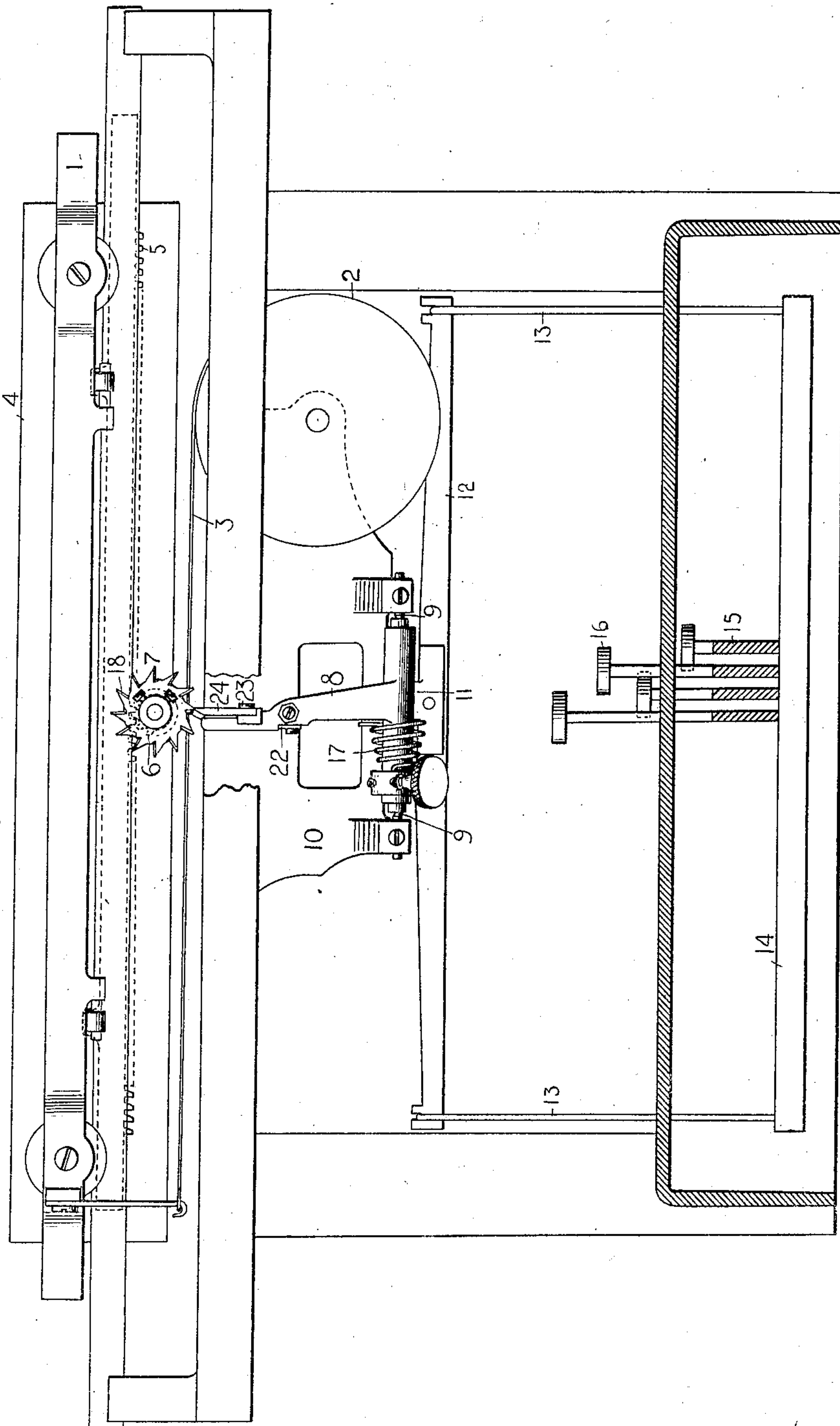
PATENTED JAN. 21, 1908.

C. H. SHEPARD.
TYPE WRITING MACHINE.

APPLICATION FILED MAR. 11, 1901.

2 SHEETS—SHEET 1.

FIG. 1.



WITNESSES:

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Florence Keeling

INVENTOR:

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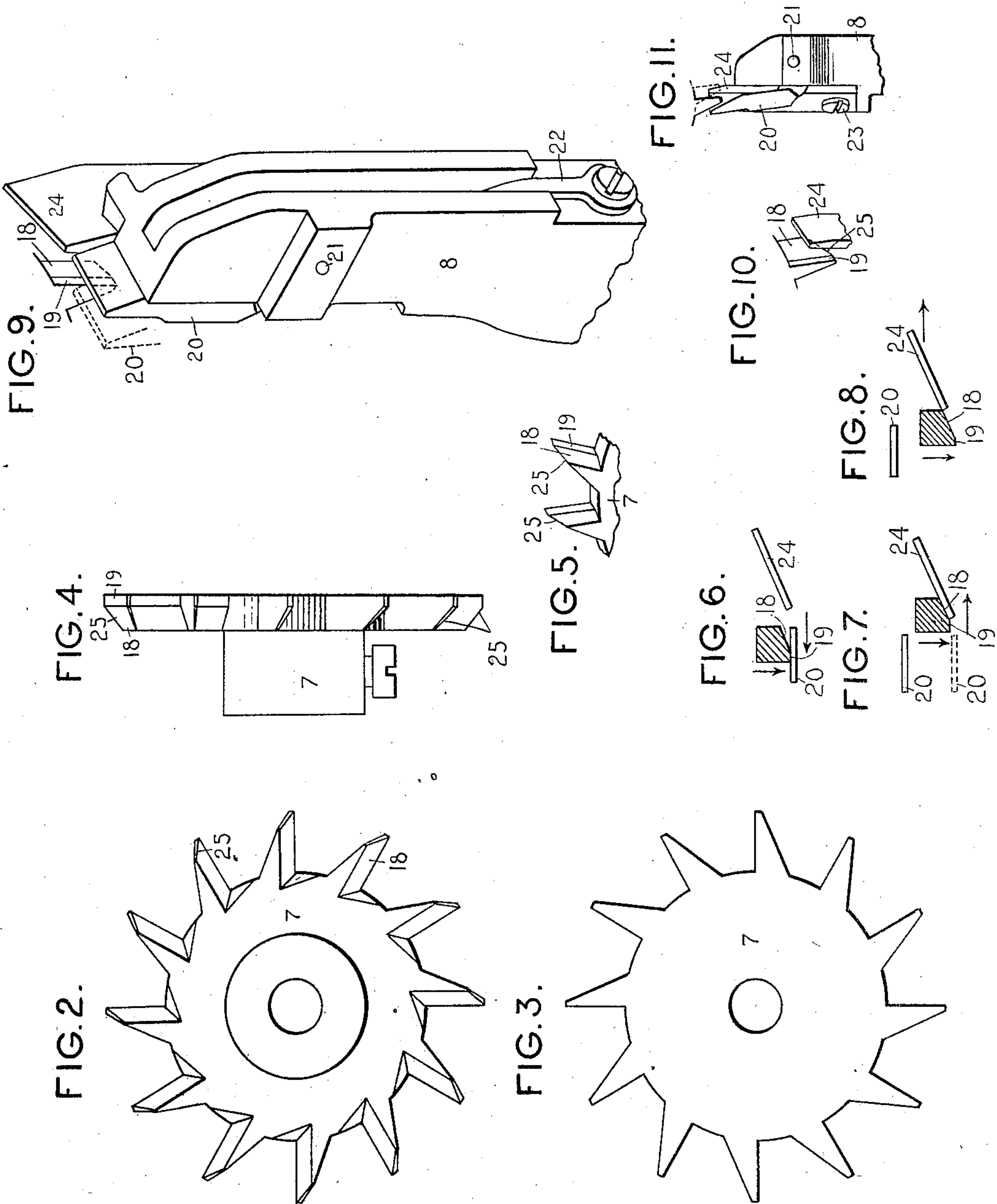
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UNITED STATES PATENT OFFICE.

CHARLES H. SHEPARD, OF NEW YORK, N. Y., ASSIGNOR TO WYCKOFF, SEAMANS & BENEDICT,
OF ILION, NEW YORK, A CORPORATION OF NEW YORK.

TYPE-WRITING MACHINE.

No. 877,241.

Specification of Letters Patent.

Patented Jan. 21, 1908.

Application filed March 11, 1901. Serial No. 50,650.

To all whom it may concern:

Be it known that I, CHARLES H. SHEPARD, citizen of the United States, and resident of borough of Brooklyn, in the city of New York, in the county of Kings and State of New York, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

This invention relates to carriage escapement mechanisms of typewriting machines.

The principal object of my invention is to secure a prompt advance movement of the carriage after each type impression is made.

The invention consists in certain combinations of devices, features of construction and arrangements of parts, all as will be hereinafter set forth and particularly pointed out in the concluding claims.

In the accompanying drawings, Figure 1 is a rear sectional elevation of a Remington No. 6 typewriting machine, showing my improvements applied thereto. Figs. 2, 3 and 4 are respectively rear, front and edge views, enlarged, of an improved escapement wheel. Fig. 5 is a perspective fragmentary view of the escapement wheel. Fig. 6 is a diagrammatic plan, showing both a cross section of an escapement wheel tooth, and a top edge view of the escapement dogs, the latter being in normal position. Fig. 7 is a view similar to Fig. 6, but showing in full lines the positions assumed by the dogs at the depression of a key. Fig. 8 is a view similar to Fig. 6, but showing the positions of the parts at a point in the return movement of the dog rocker. Fig. 9 is an enlarged perspective view of an upper fragment of the dog rocker and a tooth of the escapement wheel. Fig. 10 is a fragmentary perspective view, and Fig. 11 is a fragmentary front view, showing how a quicker advance movement of the carriage than usual heretofore, is secured.

In the several views, similar parts are designated by similar numerals of reference.

1 designates a longitudinally traveling carriage, which is propelled by a spring barrel 2 and strap 3, and carries a platen 4.

Upon the carriage is mounted a rack 5, which meshes with a pinion 6, the latter being connected to an escapement wheel or curved rack 7, whose movements are controlled by dogs mounted upon the upper end of a rocker 8. Said rocker is pivoted at

9 to a bracket 10, the axis of the rocker being transverse to the axis of the wheel 7, and is provided with an operating arm 11, having a cross bar 12. Hung upon the ends of the cross bar by means of hooks 13 is a universal bar 14, extending transversely beneath a series of levers 15, which are operated by keys 16. These levers also operate the usual type bars (not shown). The dog rocker is provided with an adjustable returning spring 17. So far as specifically described, these devices are in common use in the Remington No. 6 typewriting machine. My improvements relate particularly to the construction and arrangement of the teeth of the escapement wheel and of the dogs which coöperate therewith.

Heretofore it has been common to form the teeth of the escapement with plain working faces, such that a cross-section of a tooth would have the form of a rectangle, while the tips of the teeth have been square, so that the working face of each tooth, considered as a whole, has been substantially rectangular in outline. In practice it has been found that such teeth do not permit a sufficiently prompt advance movement of the carriage, and hence during rapid work there is constant liability of a failure of the carriage, after receiving one type impression, to complete its letter space movement by the time the next impression is made, so that the written characters are frequently irregularly spaced and sometimes overlap. In order to overcome this objection, I form upon each wheel tooth an oblique working face 18, which is produced by cutting away the rear corner of the tooth, or in other words, by beveling the usual working face of the tooth. A small portion 19 of the usual face and which extends at right angles or substantially right angles to the plane of the rack or escapement wheel is preferably retained for coöperation with the ordinary feeding dog, which is designated as 20. In other words, the plain or flat working face 19 of each tooth extends at an angle to the working face 18 thereof and is of sufficient width to prevent the feeding dog from being cut by the wheel tooth, thus insuring a free action of the dog during its disengaging movements. Said feeding dog 20 is pivoted at 21 on the upper portion of the rocker 8, and is provided with the usual spring 22, which tends to move said dog towards the left, (viewed from the

front of the machine) so that, after escaping from the wheel tooth, said dog may spring past the same and take a position opposite the next notch in the wheel, as usual.

5 In rear of the normally engaged feeding dog 20, I fix upon the rocker, by means of a screw 23, a normally disengaged detent dog 24, whose working face is preferably substantially parallel with the beveled working
10 face 18 of the engaged escapement wheel tooth when the parts are in the normal position (Fig. 6) and preferably at an angle of about thirty degrees to the working face of the feeding dog 20. The forward vertical
15 edge of the dog 24 is preferably separated from the rear vertical edge of the dog 20 by a gap whose width is about one-third of the thickness of the wheel tooth. The forward vertical edge of the detent dog is preferably
20 directly in rear of the rear vertical edge of the feeding dog, so that the working face of the detent dog forms practically a continuation of the working face of the feeding dog. It will be seen that the entire dog 24 is placed
25 obliquely upon the dog rocker, but it will be understood that this is not essential, since only the actual working face of the dog needs to have an angular position.

In operation, when a key lever 15 is de-
30 pressed for the purpose of impressing its associated type upon the paper carried by the platen, the universal bar 14 is forced down, and by means of the hooks 13 pulls down the cross bar 12 and vibrates the rocker 8 for-
35 wardly so that the feeding dog 20 is moved transversely of the wheel and is enabled to escape from the wheel tooth, as indicated in dotted lines at Fig. 7, whereupon said dog is vibrated by its spring 22 past the engaged
40 wheel tooth, to the position shown at full lines in said figure and in Fig. 9. At the same time the oblique dog 24 is carried forwardly by the rocker. At the instant when the stepping dog 20 escapes from the wheel tooth,
45 the detent dog 24 contacts with the beveled face 18 thereof, so that the latter is not permitted to advance under the pull of the carriage spring 2. Upon the return movement of the key lever and dog rocker, the dog 20
50 enters the next notch in the wheel, while the dog 24 is withdrawn, thereby releasing the wheel and permitting the latter to be rotated by reason of the pull of the carriage driving spring 2. During this movement of the
55 wheel the succeeding tooth thereon is brought against the dog 20, and, overcoming the tension of the spring 22, moves said dog in the plane of the wheel back to its normal position against the upper end of the rocker 8, thus
60 arresting the wheel and the carriage.

It will be seen that by reason of the angular or oblique arrangement of the face 18 of the wheel tooth, a slight advance movement thereof is permitted during the entire with-
65 drawing movement of the oblique detent 24,

as indicated diagrammatically at Fig. 8. Thus the advance movement of the carriage and the return stroke of the dog rocker begin simultaneously, which is a feature of great importance, as the spacing movement of the
70 carriage is completed sooner than in prior constructions where the carriage was held stationary during a considerable portion of the return movement of the dog rocker; and as a result of this improvement, the spacing
75 of the written characters is improved.

As a further improvement, I form the tip of each wheel tooth with an inclined working edge or working tip 25, which is formed by beveling off the rear corner at the tip of the
80 tooth, so that at its rear side the tooth is shorter than at its front side. It will be understood that the tooth tips during the rotation of the wheel, so that if said corner were retained, it would immediately begin to bear
85 upon the working face of the detent dog 24, and would to an undue extent block the movement of the wheel. But by cutting away or beveling said tip, as described, a greater extent of rotation of the wheel is per-
90 mitted during the withdrawal of the detent dog, and before the disengagement thereof; than would be permitted if said tip were not beveled. This will be understood by refer-
95 ence to Figs. 5, 9 10 and 11. In the last named figure, the wheel tooth is shown in full lines as having swung slightly from its normal vertical position during the retraction of the dog rocker, and in dotted lines at a later
100 period, or at the moment when the tooth is released by the detent 24. It will be perceived that at the releasing moment the body of the tooth considerably overlaps the forward vertical edge of the detent dog 24, and
105 it will be understood that the forward corner or side edge of the detent is at this moment engaging the beveled tip 25 upon the wheel tooth as shown in Fig. 10. It will also be understood that if it were not for the bevel
110 25, the movement of the wheel during the withdrawal of the detent dog would not be so great as represented at dotted lines at Fig. 11, but that the wheel tooth would now stand at a position about midway between the full
115 line and dotted line positions at said figure. Hence by the provision of the beveled working edge 25, a greater advance movement of the carriage is secured before the final release of the wheel, which is an important advantage. Thus it will be seen that by the pro-
120 vision of the bevel 18 upon the wheel tooth and of the oblique working face of the detent dog 24, I am enabled to secure a prompt advance movement of the carriage, which begins simultaneously with the upstroke of the
125 key; and that by the further provision of the beveled tip 25 upon the tooth, I am enabled to increase the "lead" of the carriage during the early part of the return movement of the
130 key. Thus the movement of the carriage is

completed promptly, and the liability of overlapping of type impressions is avoided. Further, the promptness of the carriage movement is not dependent to such a great extent as heretofore upon the tension of the dog-returning spring 17, and hence the latter may be so adjusted as to afford a light tension without jeopardizing the action of the mechanism, and thereby the key resistance may be much reduced, rendering the machine easier to operate.

Various changes may be made within the scope of the invention. Obviously my improvements may be applied to straight escapement racks.

What I claim as new and desire to secure by Letters Patent, is:—

1. In a typewriting machine, the combination of a power driven carriage; an escapement mechanism therefor, said escapement mechanism comprising a rack each tooth of which has a single working face at substantially right angles to the plane of the rack and a second working face oblique to said first mentioned working face, a loose dog and a fixed dog arranged side by side, one of said dogs having a single working face corresponding to and coöperating only with the right-angle face on each tooth of the rack and the other dog having an oblique face matching and coöperating only with the oblique working face on each rack tooth, the loose dog being pivoted to move in the direction of movement of the rack.

2. In a typewriting machine, the combination of a power-driven carriage; and escapement mechanism therefor, said escapement mechanism comprising an escapement wheel, each tooth of which has a single working face at substantially right-angles to the plane of the wheel and a second working face oblique to the first mentioned working face, a loose dog and a fixed dog, the loose dog having a single working face corresponding to and coöperating only with the right-angle face on each tooth of the escapement wheel and the fixed dog having an oblique face matching and coöperating only with the oblique working face on each tooth of the escapement wheel, the loose dog being pivoted to move in the direction of movement of the escapement wheel.

3. In a typewriting machine, the combination with a power-driven carriage, of an escapement rack, each of whose teeth is provided with two working faces 18 and 19 that extend at an angle to each other, and two key-operated transversely moving dogs, one of said dogs normally engaging only said face 19 and being pivoted to vibrate in the same general direction as the escapement rack and the working face of the other dog being substantially parallel to a face 18 of a rack tooth.

4. In a typewriting machine, the combina-

tion with a power-driven carriage, of an escapement wheel, a transversely movable dog normally engaging said rack, the working face of said dog being in a plane at right angles to the plane of the escapement wheel, and a detent dog normally disengaged from the rack and having its working face extending obliquely from the working face of said normally engaged dog, the working face of said oblique dog when the parts are in normal position being adjacent to and practically forming a continuation of the right-angle working face of the normally engaged dog.

5. In a typewriting machine, the combination with a power-driven carriage, of an escapement rack, a transversely movable dog normally engaging said rack and movable for a limited distance therewith and having a working face that extends at right-angles to the plane of the said rack, and a detent dog normally disengaged from the rack and having a working face which extends obliquely from the working face of said normally engaged dog and forms a practical continuation thereof.

6. In a typewriting machine, the combination of a power-driven carriage, an escapement wheel, a beveled working tip 25 formed upon each tooth of the escapement wheel, and key operated dogs coöperating with said wheel, one of said dogs having a beveled working face with which said beveled working tip coöperates.

7. In a typewriting machine, the combination of a power-driven carriage, an escapement wheel, a beveled working face 18 formed upon each tooth thereof, a beveled working tip 25 also formed upon each tooth, a feeding dog 20, and an oblique detent dog 24.

8. In a typewriting machine, the combination of a power-driven carriage, an escapement wheel, a beveled face 18 formed upon each tooth of the escapement wheel, a key operated dog rocker, a feeding dog 20 and an oblique dog 24 thereon, and a beveled tip 25 formed upon each escapement wheel tooth for coöperation with a side edge of the detent dog.

9. In a typewriting machine, the combination of a power-driven carriage, an escapement wheel, each tooth whereof has a beveled working face 18, a working face 19 at right-angles to the plane of the escapement wheel and a beveled working tip 25, and key-controlled dogs coöperating with said working faces and beveled working tips.

10. In a typewriting machine, the combination of a power-driven carriage; an escapement mechanism therefor, said escapement mechanism comprising a rack, each tooth of which has a single working face at substantially right angles to the plane of the rack, a single working face oblique to the first mentioned working face and a beveled working

- tip, a loose dog and a fixed dog one having a single working face corresponding to and cooperating with the right-angle face on each tooth of the rack and the other dog having an oblique face matching and cooperating with the oblique working face and the beveled working tip on each rack tooth, the loose dog being pivoted to move in the plane of the rack.
- 10 11. In a typewriting machine, the combination of a power-driven carriage, an escapement mechanism therefor, said escapement mechanism comprising an escapement wheel each tooth of which has a single working face at substantially right angles to the plane of the escapement wheel, a single working face oblique to the first mentioned working face and a beveled working tip, a loose dog and a fixed dog, the loose dog having a single working face corresponding to and cooperating only with the right-angle face on each tooth of the escapement wheel and the fixed dog having an oblique face matching and cooperating with the working face and the beveled working tip on each tooth of the escapement wheel, the loose dog being pivoted to move in the plane of the escapement wheel.
- Signed at the borough of Manhattan, in the city of New York, in the county of New York, and State of New York, this ninth day of March; A. D. 1901.
- CHARLES H. SHEPARD.
- Witnesses:
K. V. DONOVAN,
E. M. WELLS.