

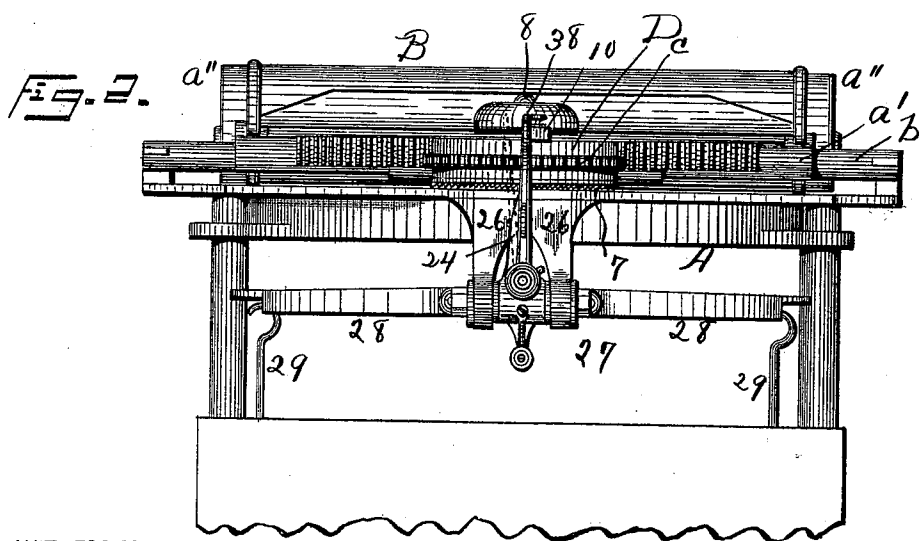
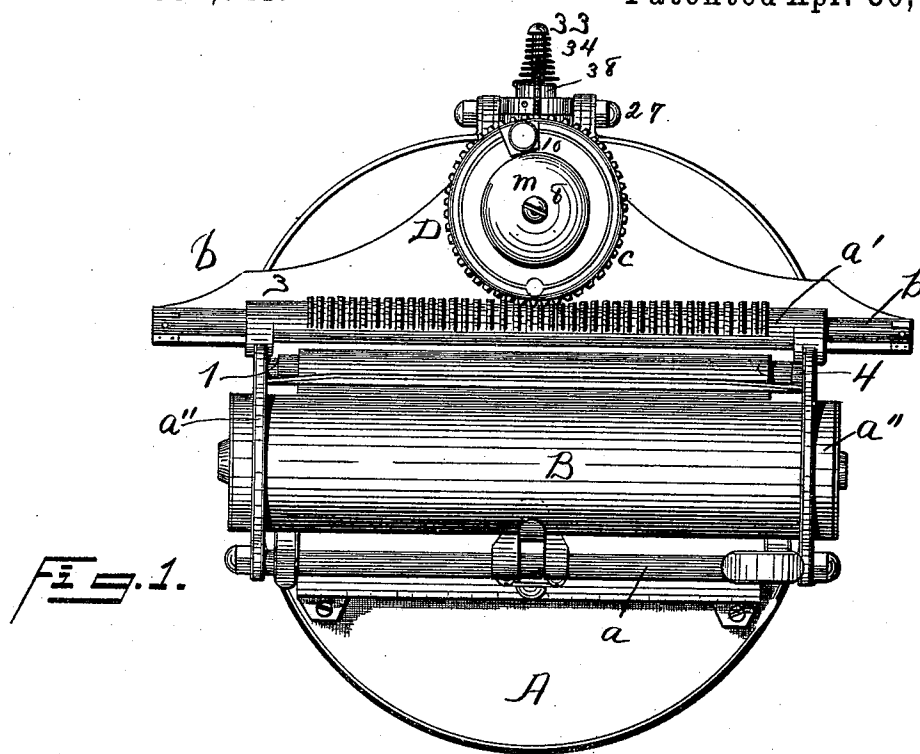
(No Model.)

3 Sheets—Sheet 1.

L. S. CRANDALL.
TYPE WRITING MACHINE.

No. 538,641.

Patented Apr. 30, 1895.



WITNESSES:

Chas W. Marvin.
H. A. Carhart.

INVENTOR

Lucien S. Crandall.

BY

Smith & Wadsworth
ATTORNEYS.

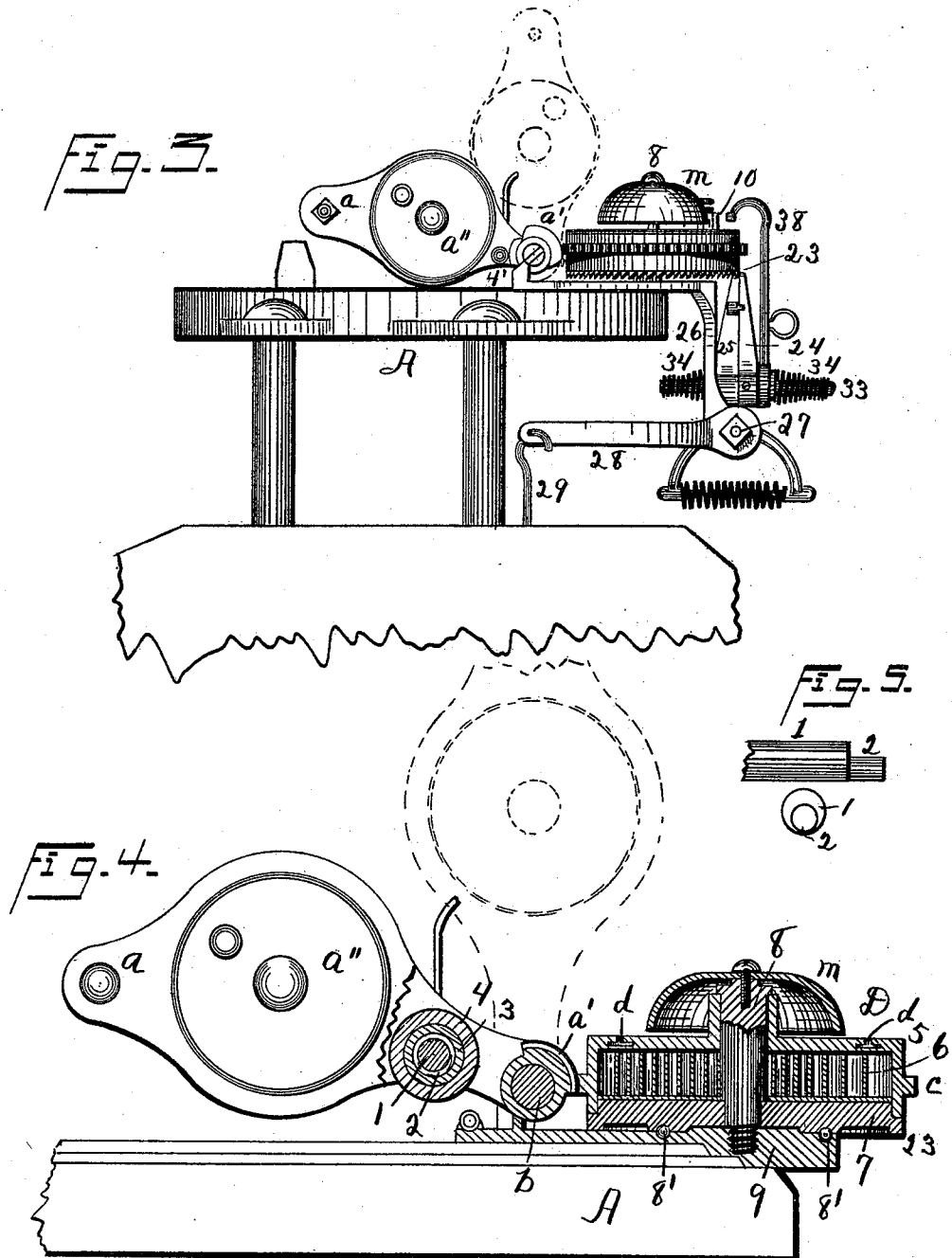
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L. S. CRANDALL.
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WITNESSES:

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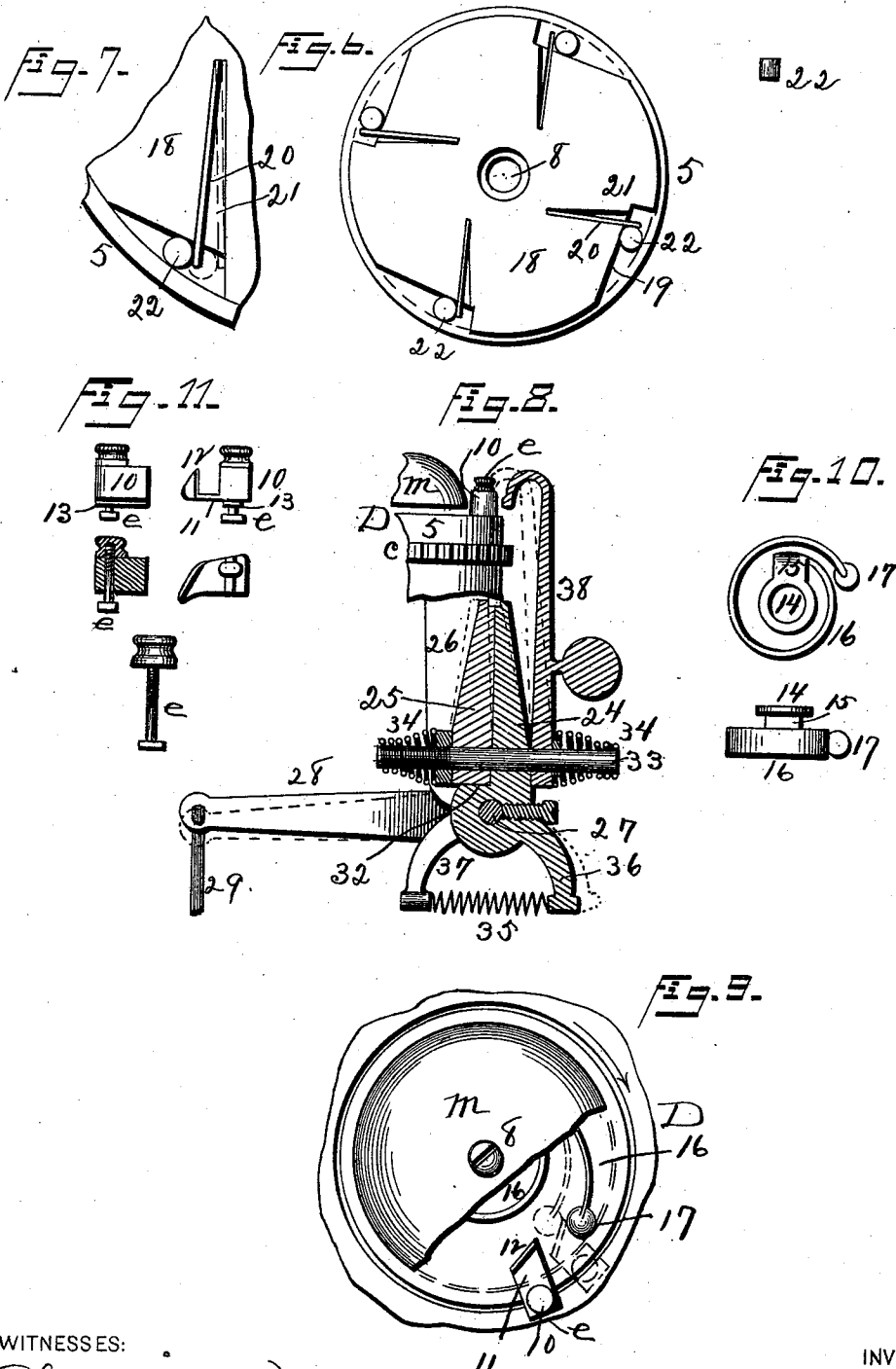
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3 Sheets—Sheet 3.

L. S. CRANDALL.
TYPE WRITING MACHINE.

No. 538,641.

Patented Apr. 30, 1895.



WITNESSES:

Charles Marvin.
H. A. Carhart.

INVENTOR

Lucien S. Crandall

BY

Smith & Morrison

ATTORNEYS.

UNITED STATES PATENT OFFICE.

LUCIEN S. CRANDALL, OF SYRACUSE, NEW YORK, ASSIGNOR, BY MESNE ASSIGNMENTS, TO WILLIAM A. SWEET, OF SAME PLACE.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 538,641, dated April 30, 1895.

Application filed December 11, 1893. Serial No. 493,394. (No model.)

To all whom it may concern:

Be it known that I, LUCIEN S. CRANDALL, of Syracuse, in the county of Onondaga, in the State of New York, have invented new and useful Improvements in Type-Writing Machines, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

My invention relates to type-writing machines and particularly to the mechanisms therein, for adjusting the spring-wheel to vary the length of the line of printing, for stopping the carriage at the end of the line, for printing upon said line beyond the stop, for the word or letter spacing escapement, for connecting the spring case to the escapement rack by a clutch so that both rotate together in one direction, and the spring case only will rotate in the opposite direction, said rack being then stationary, and for shifting the paper-feed rollers toward or away from the platen, according to the number of sheets of paper to be inserted; and for a novel bell-ringing mechanism.

My object is to improve the construction, operation and utility of type-writing machines by the embodiment of part or all of the above broadly defined mechanisms in the machine, and to that end my invention consists in the several novel mechanisms and features of construction and operation hereinafter described and which are specifically set forth in the claims hereunto annexed.

It is constructed as follows, reference being had to the accompanying drawings, in which—

Figure 1 is a top plan of the machine, omitting the key-board. Fig. 2 is a rear elevation thereof. Fig. 3 is a side elevation thereof. Fig. 4 is a sectional elevation thereof on a line diametrical to the spring-wheel. Fig. 5 shows a side and an end elevation of the rod eccentric to the sleeve thereon which carries the paper-feed roll. Fig. 6 is a top-plan of the lower or escapement rack-section of the spring-wheel, showing also the clutch mechanism by which it is intermittently connected to the upper section. Fig. 7 is a detail of part of the same, showing the sections connected, the dotted lines indicating them disengaged. Fig. 8 is a sectional elevation of the escapement mechanism, the

spring-wheel, the printing-line stop, and the devices for permitting printing beyond the end of the line. Fig. 9 is a top plan of the spring-wheel, showing part of the bell broken away to expose the bell-ringing hammer and striking mechanism. Fig. 10 shows a top plan and side elevation of the hammer-mounting. Fig. 11 shows a front elevation, a side elevation, a vertical section, and a top plan of the striking mechanism, and an elevation of the locking and adjusting bolt.

A— is the top-plate of a type-writing machine.

B— is the impression platen mounted in a carriage consisting of a front rail —a—, a rear rail —a'— and sides —a''— said rear-rail constituting also the rack-bar by which the carriage is intermittently operated, said sides being also provided with caps in which the ends of the platen are journaled, said rear rack-bar being tubular and fitting upon the rear track —b— and adapted to traverse it, and the front of the carriage being also carried upon the track —b''—; said rack-bar being also in direct engagement with the gear —c— upon the periphery of the spring-wheel —D— and the carriage is driven thereby; said rear rail also constituting the hinge-pintle upon which the carriage is tilted to expose the line of printing. These parts are not more specifically described here, because they form part of the subject matter of another application filed December 11, 1893, Serial No. 493,395, wherein they are respectively fully described and claimed.

The shaft —1— having its ends cut away to form bearings —2— eccentric to the body thereof, is journaled in the sides of the carriage. A sleeve —3— is loosely mounted upon said shaft, and —4— is the rubber tube mounted upon said sleeve, said sleeve and rubber tube constituting the paper feed-roll and a thumb-nut —4'— is mounted upon one of said bearings exterior to the side of the carriage by which said shaft can be rotated and set at any desired point by tightening said nut, in order to vary the space between the otherwise rigid and unyielding feed-roll, and the platen, according to the number of sheets of paper to be inserted.

The spring wheel —D— comprises a case —5—, within which the spring —6— is

mounted, as usual, and a bottom —7— both being journaled upon the arbor —8— secured in the top plate; said bottom or lower section being also mounted upon balls —8'— mounted in races cut in the top-plate, or in the super-imposed plate —9— and in the lower face of said lower section. A T groove —*d*— is cut in the top of the case concentrically, and in it, a T bolt —*e*— is inserted, a block —10— mounted thereon having a side arm —11— and an inclined lip —12—, or upturned flange, and a bottom rib —13— upon said block fitting in said groove, all being adjustably secured at any desired point in the groove; a ring —14— being secured upon said arbor, having a bent arm —15—, a spring —16— secured to such spring, all so that the rotation of the spring wheel to move the carriage for word or letter spacing will when near the end of a line of print cause the hammer to ride said incline, compressing said spring, and then snap from it to strike a blow upon the bell —*m*—, said incline being a cam in its effect.

A disk —18— is secured upon the lower section of the case, provided with cam notches —19—. Springs —20— are mounted in slits —21— substantially radial to this disk, and —22— are metallic balls or cylinders normally held in contact with the inner wall of the spring case, and the cam adjacent thereto, and all constituting a clutch by which the lower section intermittently rotates the spring case, to drive the carriage in printing a line.

The lowerside of the lower section is flanged and teeth are cut therein, thereby creating a circular escapement rack-bar —23— with which the escapement dogs —24— and —25— alternately engage, to permit the spring wheel to rotate this rack-bar, and also to stop it; and also to permit the spring case to be rotated to wind up the spring by the reversal of the carriage.

Arms —26— project downward from the top-plate and in them a rock shaft —27— is journaled to which the crank arms —28— are secured, and —29— are the rods connecting them to the escapement bar (not shown) which is operated by the type levers, or space key in the usual manner. Upon this shaft the escapement dog —24— is secured, and —25— is the other dog carried by a shoulder —32— upon the dog —24—. These dogs are also connected by the bolt —33— and the springs —34— thereon, and —35— is a return spring connected at one end to the arm —36— integral with or secured to one of the arms —26— and at the other to the arm —37— integral with the arm —26—. The operation, or vibration of these dogs is shown by the dotted lines. Upon said bolt —33— the lock bar —38— is secured, its vibration simultaneous with that of said dogs being shown by the dotted lines, its hooked end being adapted to strike against the block —10— at the end of the line, in such manner as to abort the action of the escapement mechanism and prevent

the further operation of the type levers, or space key. The springs on said bolt —33— are also adjusted to permit it to be rocked, and to return it to its normal position. It is rocked at the end of a line of print by pushing the lock-bar laterally out of its stop engagement which will release the escapement to permit the printing of a few additional letters at the end of a line of print, as to finish a word.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a type-writer, a spring wheel consisting of an upper spring-case section, and a lower escapement-rack section, and a clutch intermittently connecting said sections.

2. In a type-writer, a spring wheel consisting of an upper spring-case section, and a lower escapement-rack section, a clutch intermittently connecting said sections, escapement dogs engaging with said rack and means to operate said dogs.

3. In a type-writer, the combination with a carriage and an impression platen mounted thereon, and a rack-bar upon the carriage, of a spring wheel engaging with said rack-bar, a circular escapement rack, a clutch intermittently connecting them, escapement dogs engaging with said rack and means to operate them.

4. In a type-writer, a rotatable spring case journaled upon an arbor, a bell upon said arbor, a spring connected to said arbor, a hammer upon said spring, and a cam mounted upon said spring case with which said hammer intermittently engages.

5. In a type-writer a rotatable spring case journaled upon an arbor, a bell upon said arbor, a spring connected to said arbor, a hammer upon said spring and a cam adjustably mounted upon said spring case with which said hammer intermittently engages.

6. In a type-writer a rotatable spring case, a circular rotatable escapement rack intermittently connected thereto, escapement dogs engaging with said rack, and means to operate them, in combination with a block upon said spring case and a hooked arm connected to one of said pawls and adapted to engage with said block.

7. In a type-writer a rotatable spring case, a block adjustably mounted thereon and a vertical lock-bar arching over the edge of the case adapted to engage with said block, to lock said spring case, in combination.

8. In a type-writer a rotatable spring case, a block adjustably mounted thereon, and a lock-bar adapted to be vibrated to engage with said block, and to be swung laterally out of engagement therewith.

In witness whereof I have hereunto set my hand this 30th day of November, 1893.

LUCIEN S. CRANDALL.

In presence of—

M. M. BORST,
HOWARD P. DENISON.