

H. H. STEELE.
TYPE WRITING MACHINE.
APPLICATION FILED OCT. 15, 1910.

1,043,166.

Patented Nov. 5, 1912.

2 SHEETS—SHEET 1.

FIG. 1.

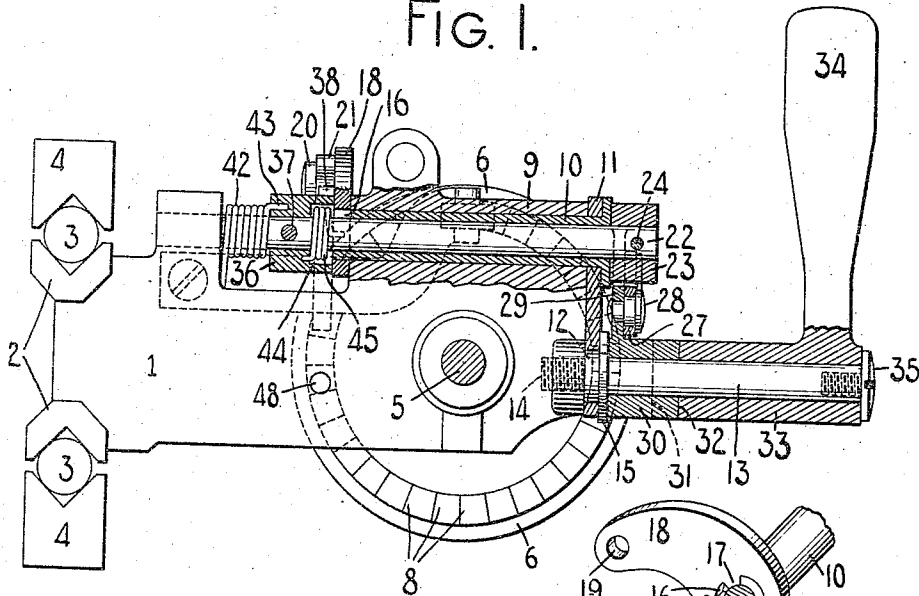


FIG. 5.

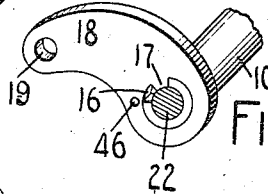


FIG. 2.

FIG. 3.

FIG. 6.

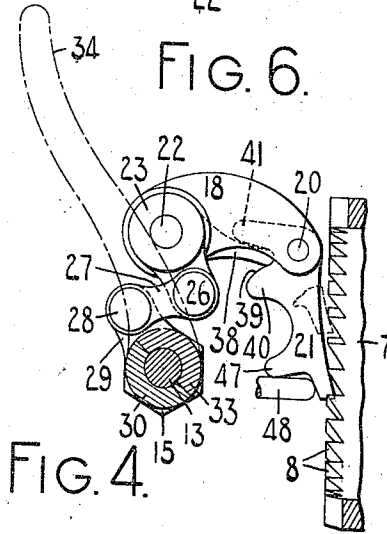
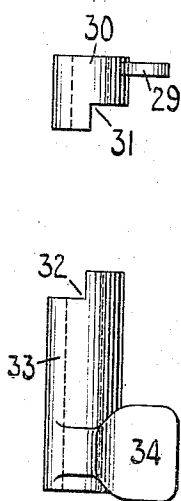
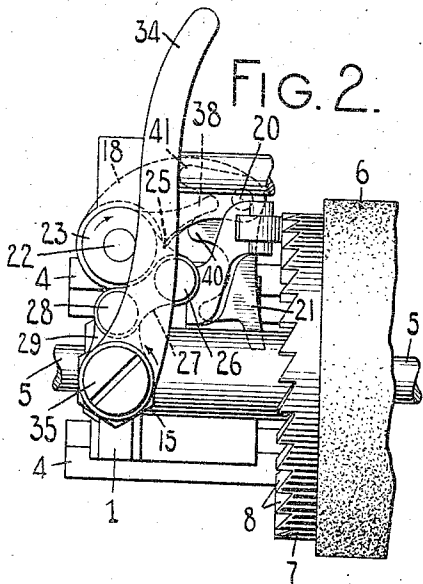


FIG. 4.

WITNESSES:

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Charles Smith

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By Jacob Felbel
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2 SHEETS—SHEET 2.

FIG. 7.

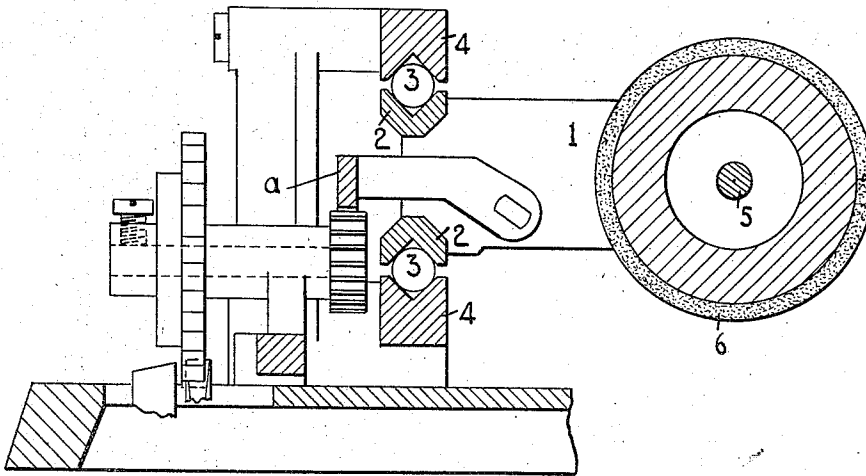
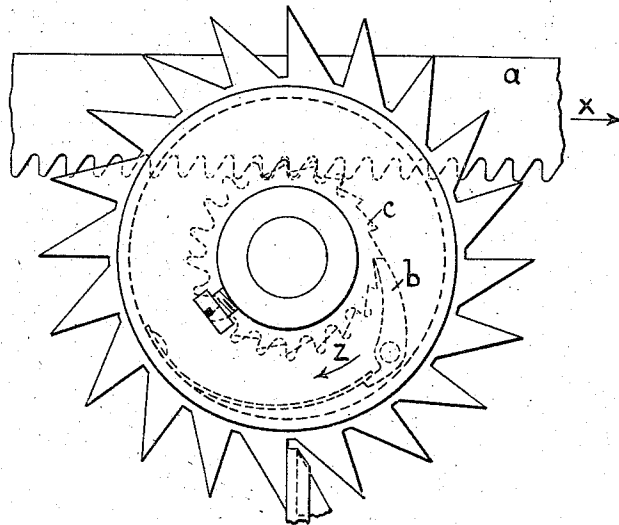


FIG. 8.



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UNITED STATES PATENT OFFICE.

HERBERT H. STEELE, OF MARCELLUS, NEW YORK, ASSIGNOR TO THE MONARCH TYPE-WRITER COMPANY, OF SYRACUSE, NEW YORK, A CORPORATION OF NEW YORK.

TYPE-WRITING MACHINE.

1,043,166.

Specification of Letters Patent.

Patented Nov. 5, 1912.

Application filed October 15, 1910. Serial No. 587,221.

To all whom it may concern:

Be it known that I, HERBERT H. STEELE, a citizen of the United States, and resident of Marcellus, in the county of Onondaga and State of New York, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

My invention relates to typewriting machines and more particularly to line spacing mechanism.

The main object of the invention is to provide simple and efficient means for effecting a line spacing of the platen in a machine in which the carriage receives its letter feed movement from left to right, and is returned to the left to begin a new line of writing; as is the case in writing Arabic or Hebrew characters.

A further object of my invention is to provide such a construction in which pressure applied to a finger piece from right to left is effective to produce a line spacing movement of the platen and also to move the carriage from right to left.

To the above and other ends which will hereinafter appear, my invention consists in the features of construction, arrangements of parts and combinations of devices to be hereinafter described and particularly pointed out in the appended claims.

In the accompanying drawings, wherein like reference characters indicate corresponding parts in the various views, Figure 1 is a side elevation with parts in section of a carriage of a typewriting machine embodying my invention. Fig. 2 is a fragmentary detail front elevation showing a portion of the carriage and the line spacing devices. Figs. 3 and 4 are detail top plan views of parts of the line spacing mechanism to be hereinafter described. Fig. 5 is a detail fragmentary perspective view showing a portion of the line spacing mechanism. Fig. 6 is a diagrammatic front elevation showing some of the parts represented in Fig. 2, the parts being shown in the positions they assume at the end of an actuation of the line spacing mechanism. Fig. 7 is a fragmentary end elevation, with parts in section, of the carriage and other parts and a portion of the

escapement mechanism. Fig. 8 is an enlarged detail fragmentary rear elevation showing a portion of the escapement mechanism.

I have shown my invention in the present instance embodied in a typewriting machine resembling the Monarch machine. It should be understood, however, that in the present instance the construction is such that the carriage is moved from left to right under the power employed to move it, and under the step-by-step control thereof effected by suitable letter space mechanism, such, for instance, as that disclosed in my application, Serial No. 588,682, filed October 24th, 1910; and that a free movement of the carriage from right to left is afforded to begin a new line of writing. I have not deemed it necessary to show the mechanism for controlling the feed of the carriage in its entirety since any suitable mechanism may be employed for this purpose so long as it affords a free return movement of the carriage from right to left.

The carriage comprises end plates 1, united by a rear cross bar, including oppositely grooved carriage rails 2 which receive anti-friction balls or rollers 3; which rollers are likewise received in oppositely grooved fixed carriage rails 4 that are carried by brackets secured to the top plate of the machine. I have shown only so much of the escapement mechanism as may be necessary to indicate that the carriage is restrained against movement from left to right and is free to be moved from right to left to begin a new line. From an inspection of the parts represented in Figs. 7 and 8, it will be understood that the feed rack *a*, the cooperating feed pinion, the escapement wheel, the backing pawl *b*, the cooperative ratchet wheel *c*, and the feed dogs are all of the usual Monarch construction except that the parts have a reverse arrangement from that ordinarily employed so as to afford a step-by-step letter space movement of the carriage from left to right and a free movement from right to left. Thus when pressure is applied to return the carriage to the left, or in the direction of the arrow *a*, as the parts are shown in Fig. 8, the pawl *b* will rotate,

in the direction of the arrow *z*, with the escapement wheel shaft and the housing connected therewith, thereby carrying the pawl *b* freely around the teeth of the ratchet wheel *c* which is connected with the escapement wheel. This enables a free movement of the carriage from right to left to be effected. Spring pressure exerted on the carriage in the opposite direction is resisted by the pawl *b* engaging the ratchet wheel *c* and one of the feed dogs resisting a rotative movement of the escapement wheel in a direction opposite to that indicated by the arrow *z*. A platen is supported by the carriage in the usual manner for movement therewith over the top plate from side to side of the machine. Thus a platen shaft 5 extends through bearing openings in the end plates 1 and supports a rotative cylindrical platen 6. The left-hand end of the platen is provided with a line spacing ratchet wheel 7, having line spacing crown teeth 8 thereon, as in the Monarch machine.

The left-hand end plate 1 of the carriage is provided with a bearing 9 which receives a bearing sleeve or support 10 therein. A depending arm 11 is fixed to the sleeve 10 in any suitable manner, and the lower end portion of the arm 11 bears against the forward face of the left-hand end plate and is apertured to receive a shoulder 12, formed on a bearing spindle 13. The inner end of the bearing spindle is threaded at 14 and is received in a tapped opening in the left-hand end plate of the carriage. An octagonal engaging portion 15 is formed on the spindle 13 and is adapted to bear against the outer face of the arm 11, so as to bind it against the forward face of the left-hand end plate of the carriage; the octagonal engaging portion 15 constituting means by which the spindle may be turned to thread it into place in the tapped opening in the end plate. It will thus be understood that the spindle 13 is rigidly secured to the end plate and engages the lower end of the arm 11 and holds it against movement, so as to hold the sleeve 10 against movement.

The rear end of the sleeve 10 is cut away at 16 to receive an inwardly projecting stud 17 on a carrier or crank arm 18 which surrounds the sleeve 10 that is supported thereon. The arm or carrier 18 is apertured at 19 to receive a pivot 20 of a line spacing pawl 21, which coöperates with the teeth 8 of the line spacing wheel during the downward movement of the pawl; the pawl engaging the teeth in the rear of the platen shaft.

A rock shaft 22, which extends fore and aft of the machine, is received in the bearing sleeve 10 and has a hub 23 fixed to the forward end thereof by a pin 24. This hub has a crank arm 25 extending therefrom and a pivot 26 connects this crank arm with a

link 27. The opposite end of the link 27 is connected by a pivot 28 with a crank arm 29 projecting from a hub 30. The hub 30 is cut away at 31 to provide a clutch section which coöperates with a corresponding clutch section 32, on a sleeve or hollow rock shaft 33 provided with an upwardly extending finger piece 34. The two members 30 and 33 are received and turn on a spindle 13, and are held against displacement therefrom by a headed screw 35 which likewise holds the two clutch sections in engagement. It will be understood that the spindle 13 extends fore and aft of the machine, so that the axis of the hollow rock shaft 30—33 extends fore and aft of the machine parallel with the axis of the rock shaft 22, and that the finger piece is arranged to receive a movement from the position shown in Fig. 2 to that indicated in Fig. 6, and in the general direction of the travel of the carriage. It will also be understood that pressure applied from right to left on the finger piece 34 is effective to move the finger piece from the position shown in Fig. 2 to that represented in Fig. 6, to effect a forward line spacing movement of the platen and also to move the carriage from right to left to begin a new line of writing. Motion of the finger piece from right to left is transmitted through the hollow shaft 30—33 and link 27 to the rock shaft 22.

The rear end portion of the rock shaft 22 has a hub 36 secured thereto by a pin 37. A crank arm or finger 38 projects from this hub and is received in a cut-out or recess 39 in the line spacing pawl so that said crank arm is adapted to engage the arms 40 and 41 of the line spacing pawl. A coiled spring 42 surrounds the rock shaft 22 near the rear end thereof and is secured at one end to the left-hand end plate 1 of the carriage, whereas the opposite end of this spring is secured at 43 to the hub 36. This spring is tensioned so as to restore the rock shaft 22 and the parts connected therewith to normal position. The hub 36 is recessed at 44 to receive a coiled spring 45 one end of which is secured to the hub and the other end of which is received in an opening 46 (see Fig. 5) in the carrier or arm 18. The purpose of this spring is to normally maintain the carrier 18 in elevated or normal position with the stop 17 against one of the stops formed by the cut-out 16 in the sleeve 10. The normal position of the carrier determines the extent of movement that may be transmitted to the line spacing pawl; which in the present instance is invariable and corresponds to the two teeth 8 of the line spacing wheel. It should be understood that a swinging movement of the finger piece 34 from right to left causes a rotative movement of the hollow rock shaft 33—30 in the corresponding direction,

as indicated by the lowermost arrow in Fig. 2. The intermediate connections between this hollow rock shaft and the shaft 22, however, cause the latter shaft to be turned in an opposite direction, so that the crank arm or finger 38 will effect an actuation of the pawl 21. When pressure is first applied to the finger piece 34, this pressure will be transmitted through the intermediate connections to the crank arm or finger 38, which is effective first to turn the line spacing pawl 21 on its pivot 20 to bring the engaging nose of the pawl into engagement with the line spacing wheel as indicated in dotted lines in Fig. 6. During this initial movement of the finger piece the carrier 18 will remain at rest by reason of the surplus pressure of the spring 45 exerted thereon. When, however, the line spacing pawl is brought into engagement with a tooth of the ratchet wheel, a continued pressure exerted upon the finger piece 34 will cause the line spacing pawl, ratchet wheel and the carrier 18 to move together, to effect a forward line spacing movement of the platen. This simultaneous movement of the parts will be continued until a shoulder 47 on the pawl has been brought into engagement with and arrested by a stop pin 48. As soon as pressure is released upon the finger piece the spring 42 restores the finger piece to its initial position, and at the first portion of this return movement the crank arm or finger 38 will be brought into contact with the arm 41 on the pawl, thus throwing the pawl out of engagement with the teeth on the ratchet wheel. A continuation of the return movement of the shaft 22 causes the carrier 18 to be turned back to the initial position. It will be observed that the motion which is communicated to the carrier 18 is exerted through the crank arm or finger 38 by the direct action thereon upon the line spacing pawl; and that the carrier is carried along with the pawl.

The present invention is in the nature of an improvement on the form of line spacing mechanism ordinarily employed in the Monarch machine and by the present construction the same general character of line spacing mechanism may be employed in a machine in which the carriage receives its step-by-step or letter-feed movement from left to right instead of from right to left as is ordinarily the case. The direction of movement of the finger piece 34 in line spacing movement is changed, by the intermediate connections between said finger piece and the line spacing pawl, so as to effect an ordinary or forward line spacing operation as in the Monarch machine, by a movement of the finger piece 34 in a direction opposite to that which it ordinarily receives in said machine. The construction of the present invention also embodies many, if not all, of

the advantages which are obtained from the construction in general use in the Monarch machine.

Various changes may be made without departing from the spirit and scope of my invention.

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

1. In a typewriting machine, the combination of a carriage normally free to be moved from right to left in a direction opposite to that of its step-by-step feed; a platen; and line spacing mechanism including a finger piece for actuating said line spacing mechanism, the finger piece being mounted for movement from its normal position in the general direction of the travel of the carriage in its free movement from right to left, and means whereby pressure exerted on said finger piece from right to left effects a forward line spacing movement of the platen and a movement of the carriage from right to left.

2. In a typewriting machine, the combination of a rotative platen; and line spacing mechanism therefor, said line spacing mechanism including a finger piece mounted for movement from right to left from its normal position, and means whereby such movement of said finger piece is operative to effect a forward rotative movement of the platen.

3. In a typewriting machine, the combination of a rotative platen; and line spacing mechanism therefor, said line spacing mechanism including a line spacing pawl-carrier, a finger piece, and intermediate connections between said finger piece and carrier for causing the carrier and finger piece to move in opposite directions, whereby a line spacing movement of the finger piece in one direction will cause a corresponding movement of the carrier in the opposite direction.

4. In a typewriting machine, the combination of a carriage normally free to be moved from right to left in a direction opposite to that of its step-by-step feed; a rotative platen; and line spacing mechanism therefor including a finger piece which is mounted for movement from its normal position in the general direction of the carriage in the movement of the latter from right to left, a line spacing pawl, a carrier therefor, and intermediate connections between said finger piece and carrier to cause the finger piece and carrier to move in opposite directions, so that a movement of the finger piece in one direction will cause a corresponding movement of the carrier in the opposite direction, whereby pressure exerted from right to left on the finger piece is effective to produce a forward line spacing movement of the platen and a movement of the carriage from right to left.

5. In a typewriting machine, the combina-

tion of a rotative platen; and line spacing mechanism therefor comprising two members mounted to turn on parallel axes which extend fore and aft of the machine, intermediate connections between said members for causing them to turn in opposite directions, a line spacing pawl actuated by one of said members, and a finger piece connected to the other of said members for actuating it, the movement of said finger piece being in the general direction of the travel of the carriage.

6. In a typewriting machine, the combination of a rotative platen; and line spacing mechanism therefor, comprising two rock-shafts mounted to turn on parallel axes that extend fore and aft of the machine, intermediate connections between said rock-shafts for causing them to turn in opposite directions, a line spacing pawl actuated by one of said rock shafts, and a finger piece carried by and fixed to turn with the other of said rock-shafts, said finger piece swinging in the general direction of the travel of the carriage.

7. In a typewriting machine, the combination of a carriage free to be moved from right to left; a rotative platen carried thereby; and line spacing mechanism comprising two rock-shafts mounted to turn on parallel axes that extend fore and aft of the machine, intermediate connections between said rock-shafts for causing them to turn in opposite directions, said connections including a link for transmitting motion from one of said rock-shafts to the other, a line spacing pawl actuated by one of said rock-shafts, and a finger piece carried by and fixed to turn with the other of said rock-shafts, said finger piece swinging in the general direction of the travel of the carriage and the movement of the finger piece from right to left effecting a line spacing movement of the platen and a forward movement of the carriage from right to left.

8. In a typewriting machine, the combination of a platen, a line spacing ratchet wheel connected thereto, a pivoted carrier, a line spacing pawl pivoted to said carrier, a spring restored finger piece movable from its normal position from right to left, a connection between the finger piece and pawl by which a movement of the finger piece from right to left is operative to effect a forward line spacing movement of the platen, and an independent spring for normally maintaining said carrier against movement while the pawl is moved independently thereof.

9. In a typewriting machine, the combination of a platen, a line spacing ratchet wheel connected thereto, a pivoted carrier, a pawl movably connected to said carrier, a finger piece movable from its normal position from right to left, means controlled by said finger piece and including a connection for first

positively moving the pawl on its carrier into engagement with the line spacing ratchet wheel and for then moving the pawl, line spacing ratchet wheel and carrier together forwardly in a line spacing direction when the finger piece is moved from right to left, a spring for maintaining said carrier against movement while the pawl is moved independently thereof, and a fixed stop with which the pawl is brought into direct engagement at the last portion of the stroke for limiting the feed movement of said pawl and for holding it in engagement with the line spacing wheel to prevent an overthrow of the platen.

10. In a typewriting machine, the combination of a platen, a platen frame, a line spacing ratchet wheel connected to said platen, a line spacing pawl, a movable carrier to which said pawl is movably connected, a rock shaft that turns in bearings on the platen frame, a finger piece movable from right to left and operative during such movement to effect a forward line spacing of the platen, said finger piece being separated from but operatively connected to said rock shaft so that the two turn in opposite directions, and a crank arm or finger connected to said rock shaft and directly operative on said pawl to positively move the pawl into engagement with the teeth of the line spacing ratchet wheel.

11. In a typewriting machine, the combination of a platen, a platen frame, a line spacing ratchet wheel connected to said platen, a line spacing pawl, a movable carrier to which said pawl is movably connected, a rock shaft that turns in bearings on the platen frame, a finger piece mounted for movement from its normal position from right to left, intermediate connections between said finger piece and rock shaft to cause them to turn in opposite directions, a crank arm or finger connected to said rock shaft and directly operative on said pawl to first positively move the pawl into engagement with the teeth of the line spacing ratchet wheel and then effect a movement of the pawl, line spacing wheel and carrier together, whereby a movement of the finger piece from right to left is operative to effect a forward line spacing movement of the platen.

12. In a typewriting machine, the combination of a platen, a line spacing ratchet wheel connected to said platen, a cooperating line spacing pawl, a carrier to which said pawl is movably connected, a finger piece mounted for movement from its normal position from right to left, and operative connections between said finger piece and pawl whereby the pawl will first be moved on its carrier and then the pawl, line spacing wheel and carrier will be moved together and whereby a movement of said

finger piece in one direction will cause a movement of said carrier in the opposite direction, so that a movement of the finger piece from right to left will cause a forward line spacing movement of the platen.

13. In a typewriting machine, the combination of a platen, a line spacing ratchet wheel connected to said platen, a cooperating line spacing pawl, a carrier to which said pawl is movably connected, a rock shaft, a hand-actuated finger piece movable from right to left and operative during such movement to effect a forward line spacing movement of the platen, said finger piece being mounted to turn on an axis parallel with the axis of the rock-shaft, intermediate connections between said finger piece and rock shaft for causing the rock shaft and finger piece to turn in opposite directions, and a crank finger carried by said shaft and directly engaging said pawl.

14. In a typewriting machine, the combination of a platen, a line spacing ratchet wheel connected to said platen, a cooperating line spacing pawl, a carrier to which

said pawl is movably connected, a sleeve on which said carrier has a limited movement, a rock shaft journaled in said sleeve, a hand actuated finger piece movable from right to left and operative during such movement to effect a line spacing movement of the platen, said finger piece being mounted to turn on an axis parallel with the axis of the rock shaft, intermediate connections between said finger piece and rock shaft for causing the rock shaft and finger piece to turn in opposite directions, and a crank arm or finger on said rock shaft that is received within a recess in the pawl and is effective to positively move the pawl into and out of engagement with the teeth of the line spacing wheel.

Signed at Syracuse, in the county of Onondaga and State of New York, this 13th day of October, A. D. 1910.

HERBERT H. STEELE.

Witnesses:

HILDA M. PERKINS,
FRANK MEIER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."