

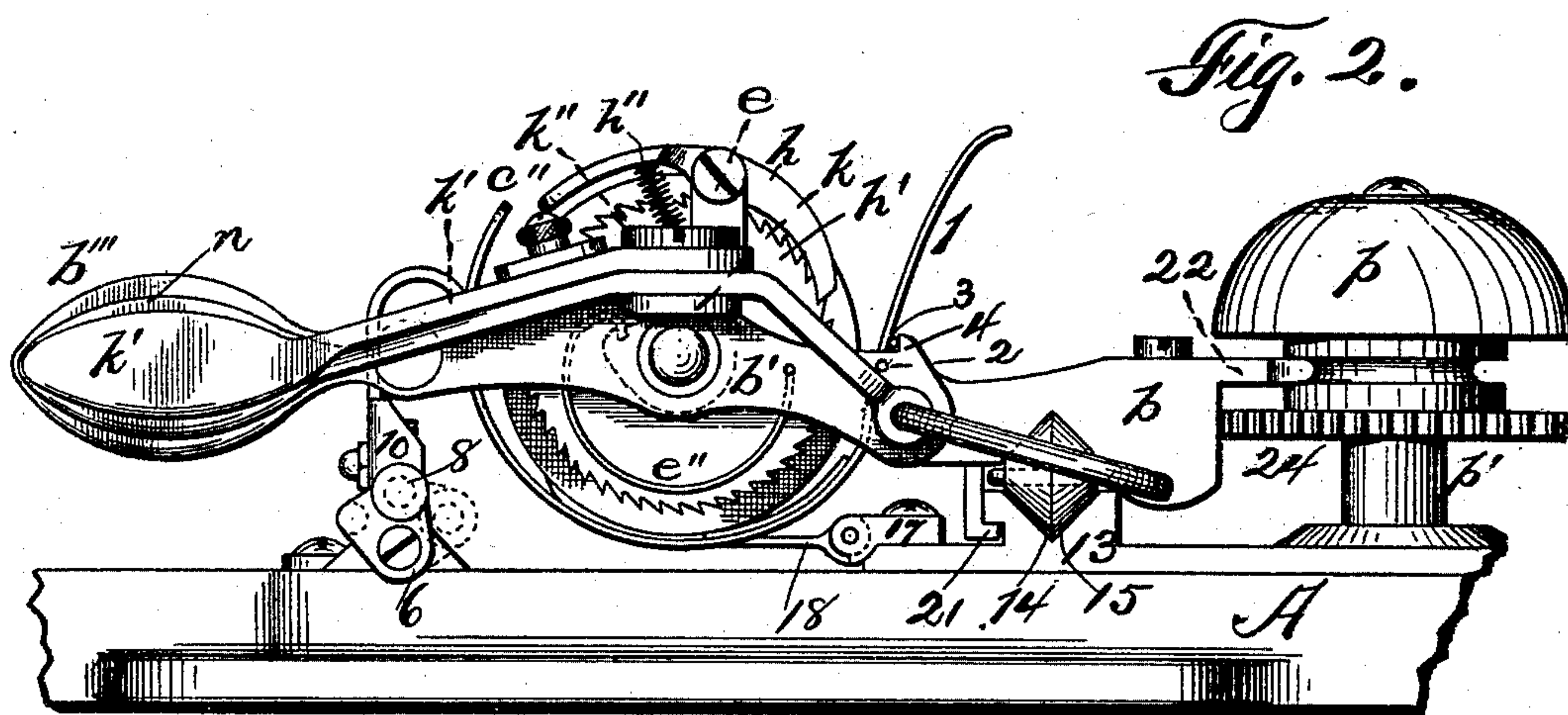
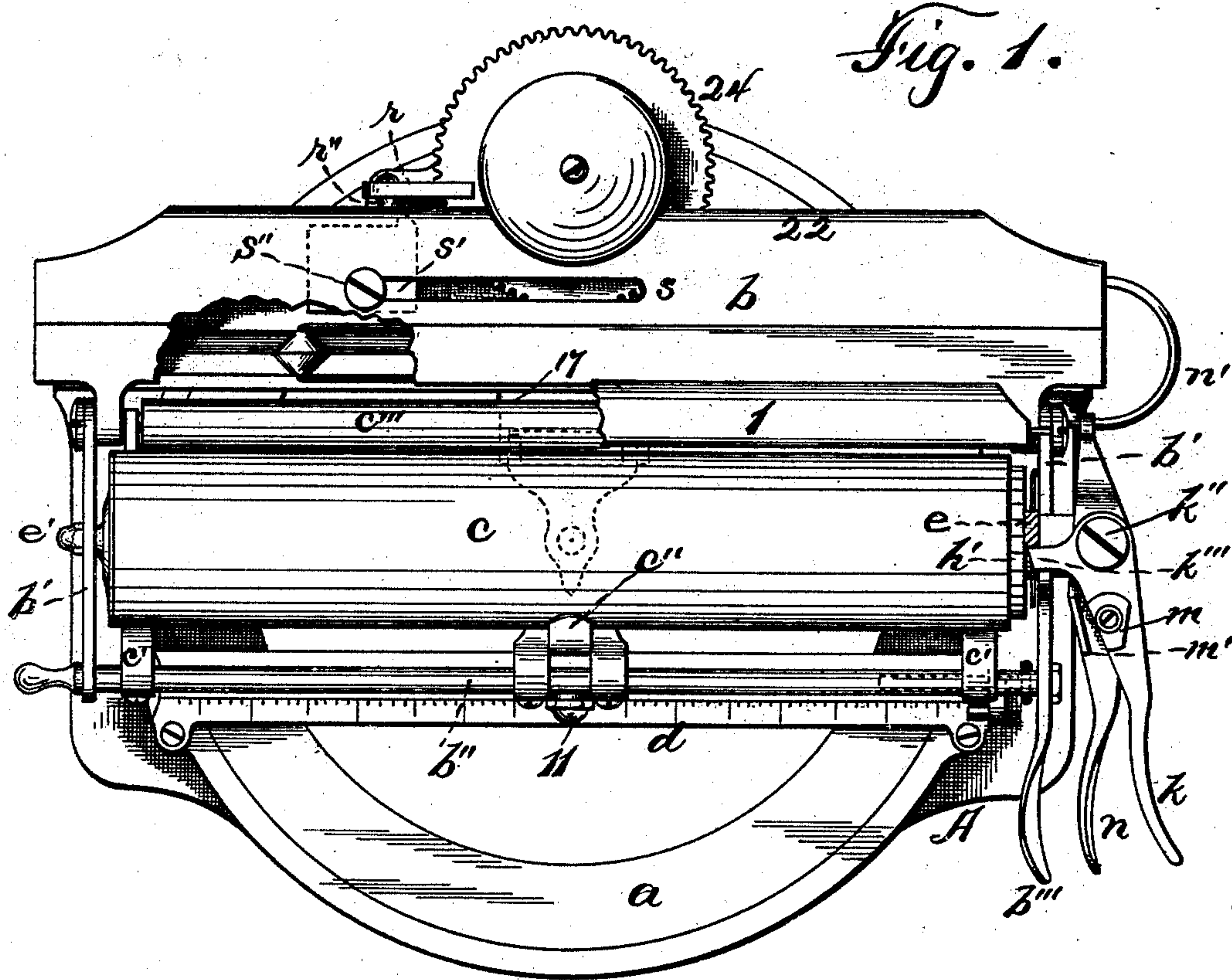
(No Model.)

L. S. CRANDALL.  
TYPE WRITING MACHINE.

2 Sheets—Sheet 1.

No. 509,720.

Patented Nov. 28, 1893.



WITNESSES:

H. A. Carhart  
C. B. Kinnel

INVENTOR

Lucien S. Crandall.

By Smith & Benson

ATTORNEYS.

(No Model.)

2 Sheets—Sheet 2.

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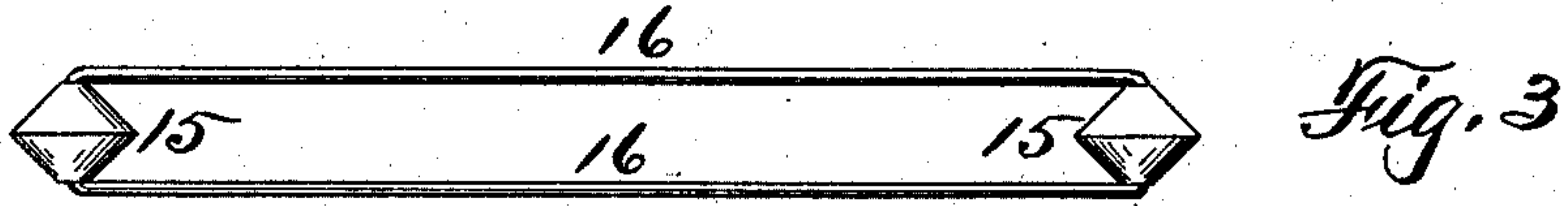


Fig. 3

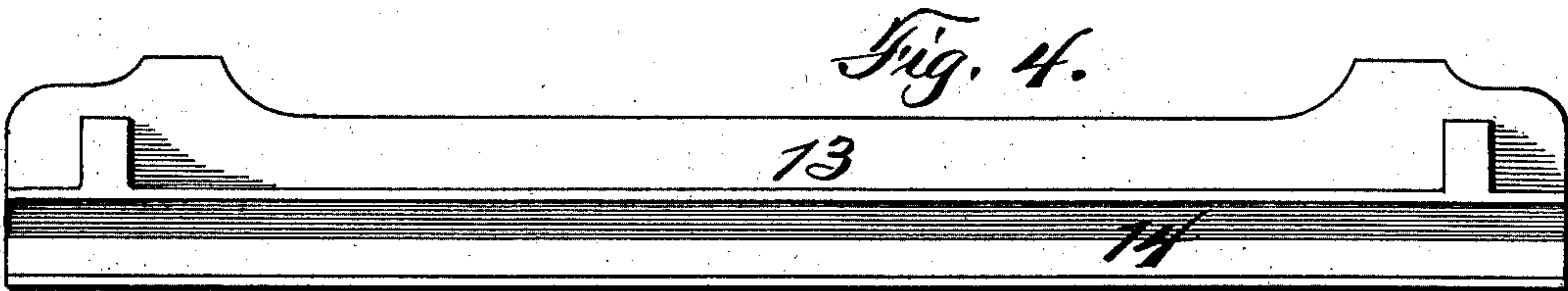


Fig. 4.

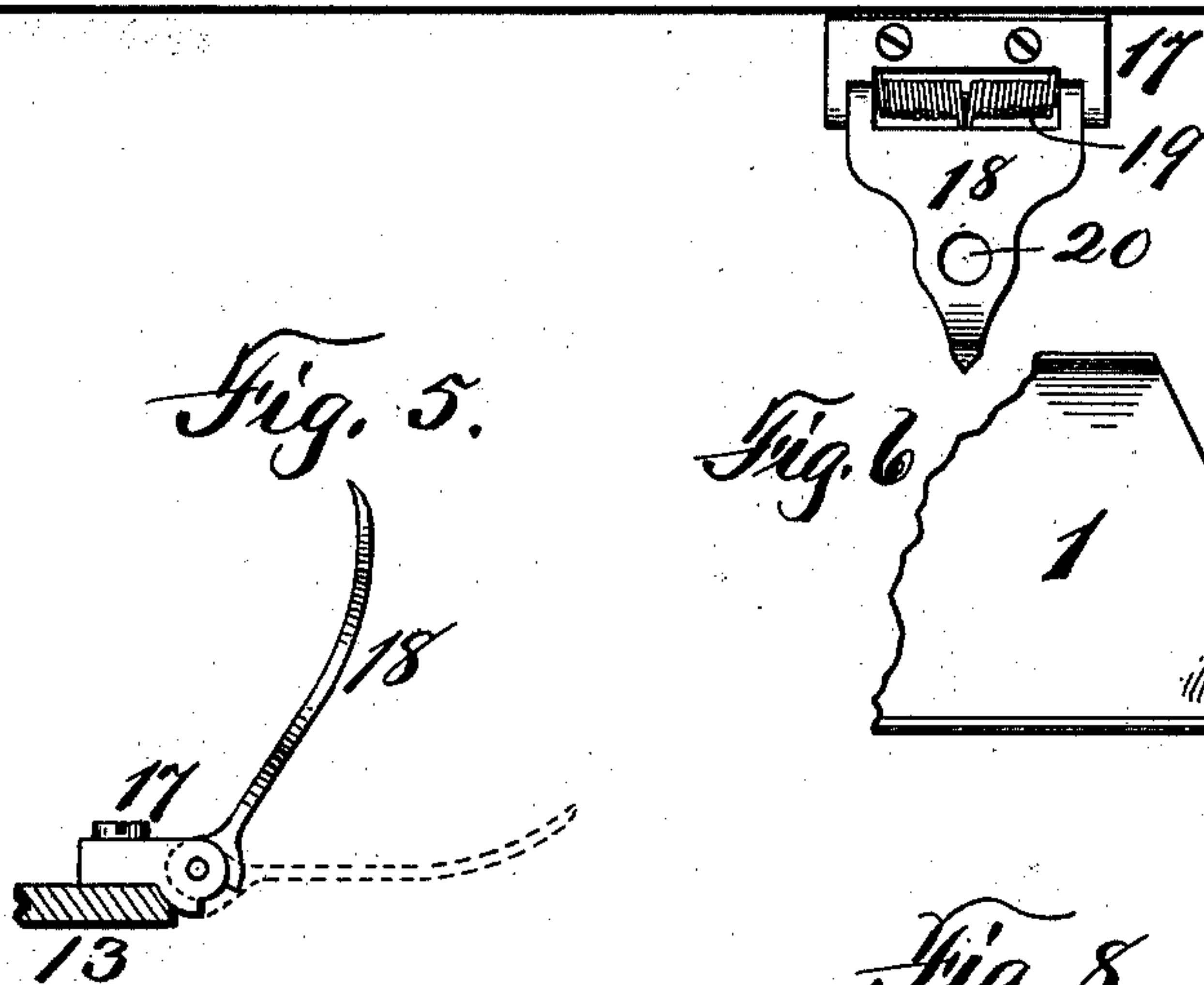


Fig. 5.

Fig. 6.

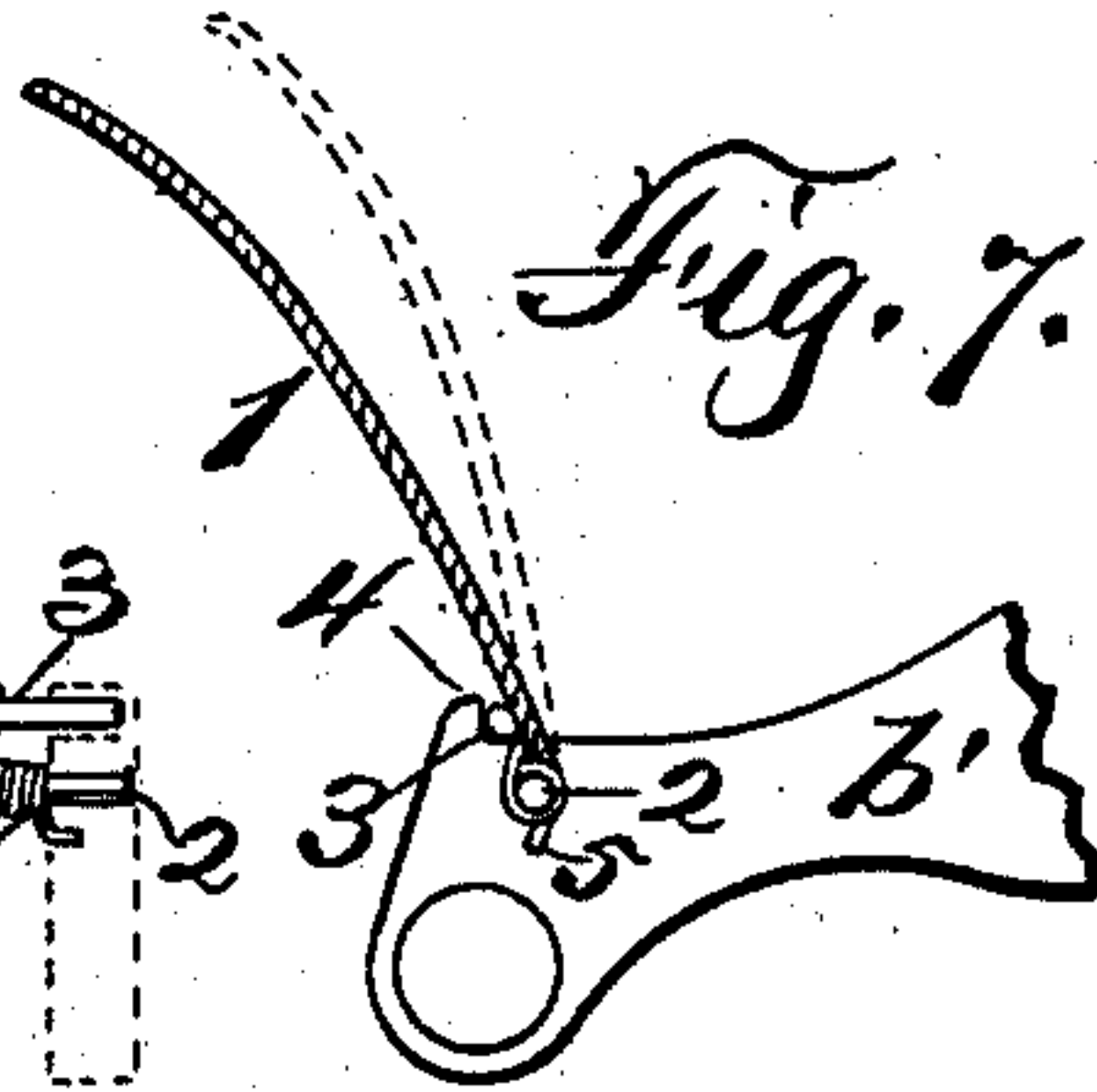
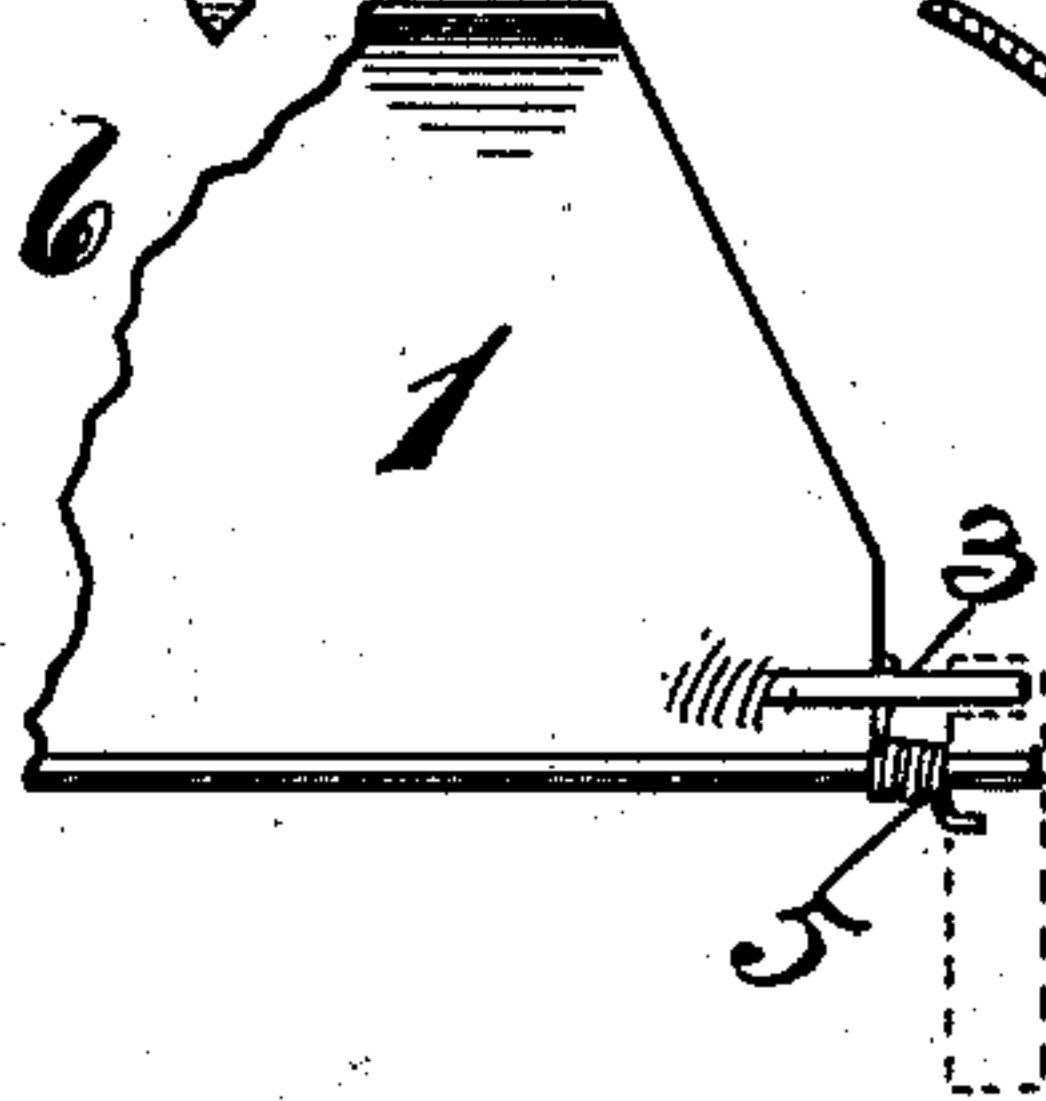


Fig. 7.

Fig. 8.

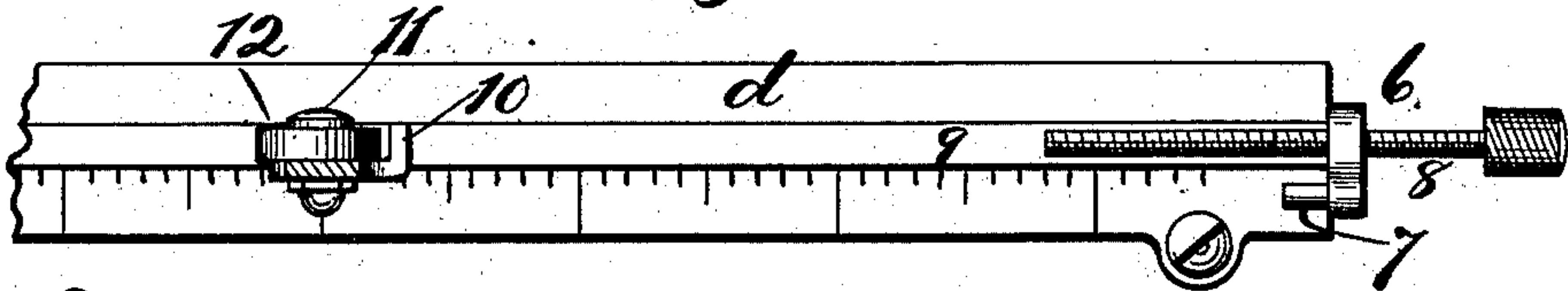


Fig. 9.

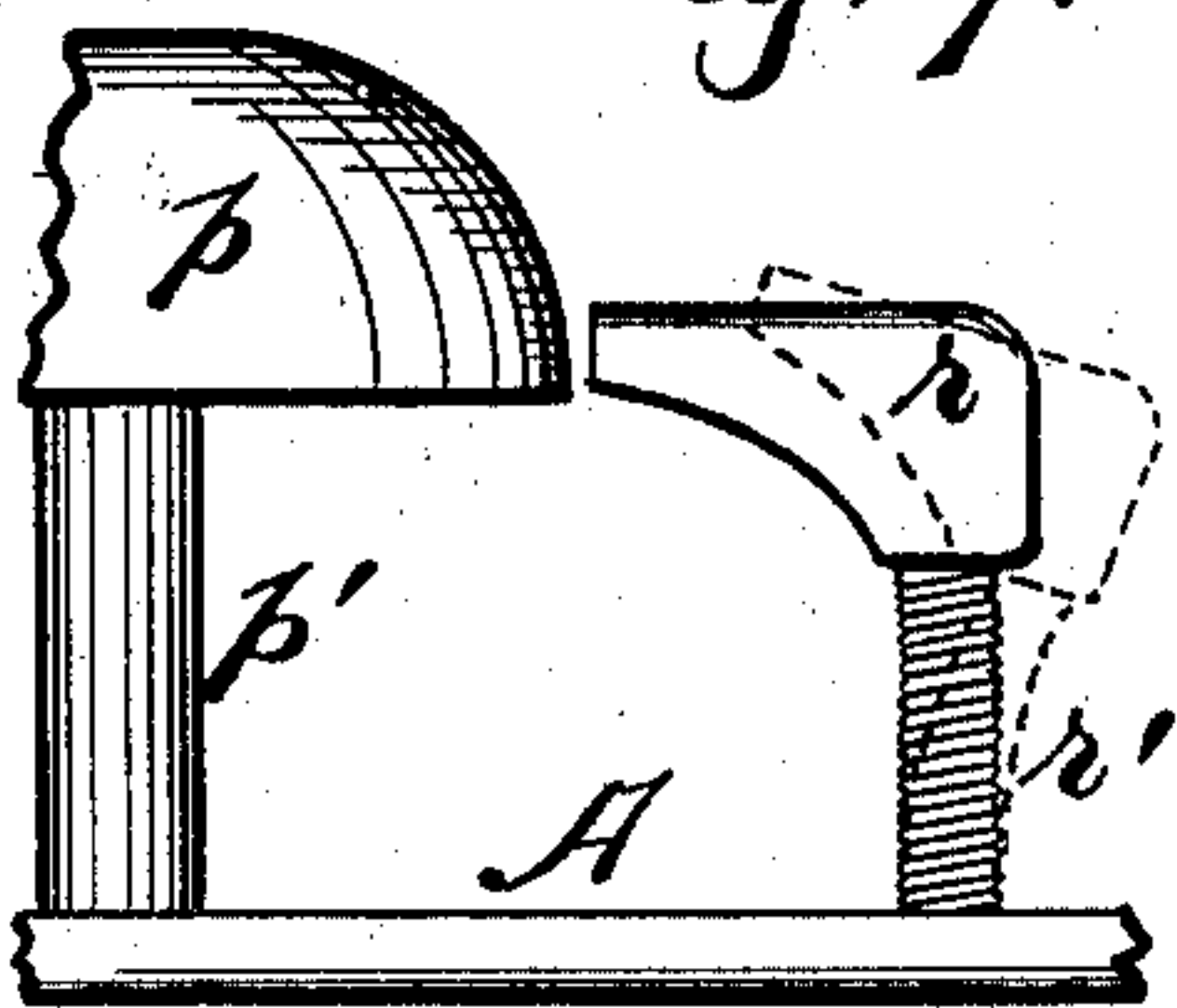
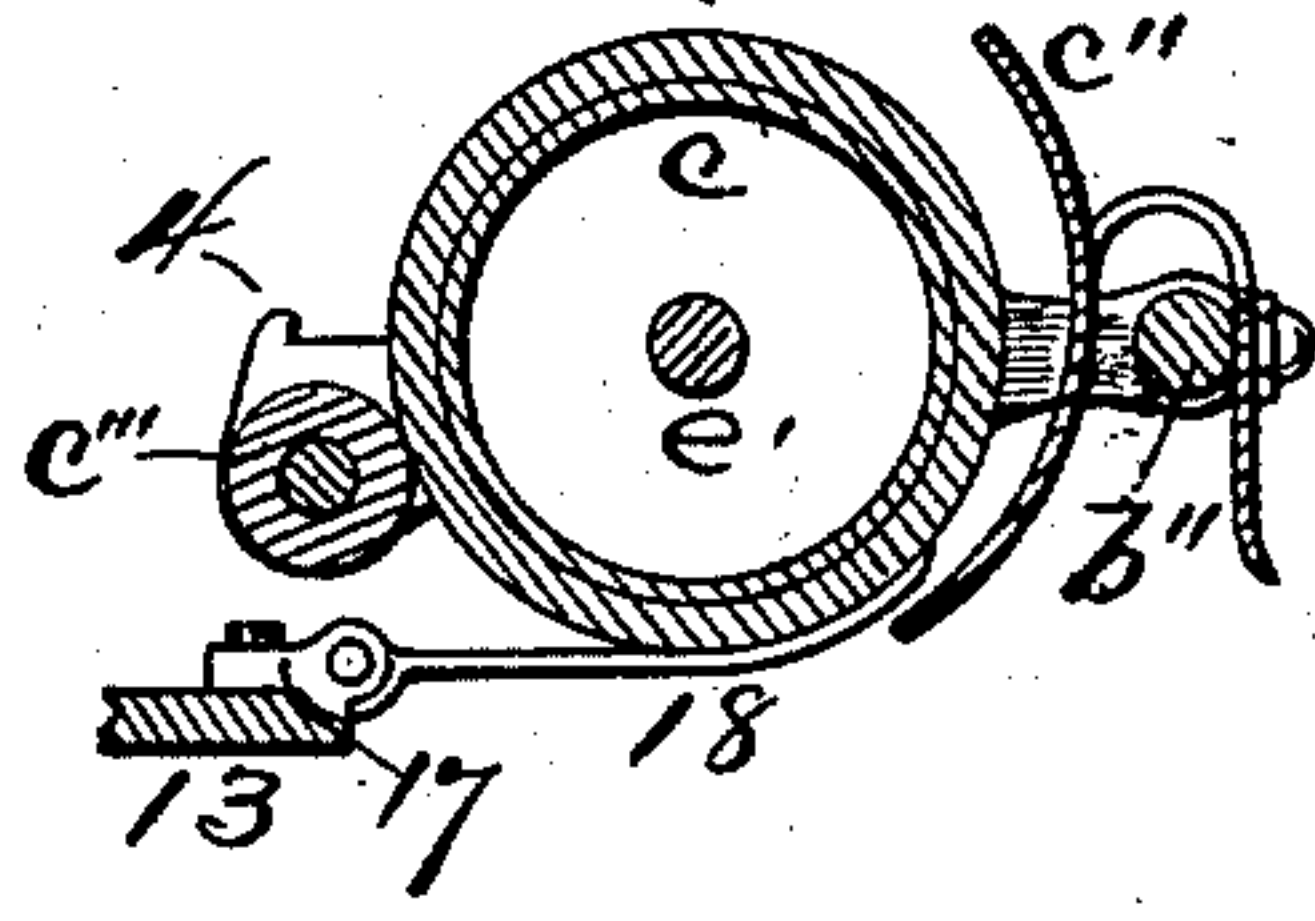
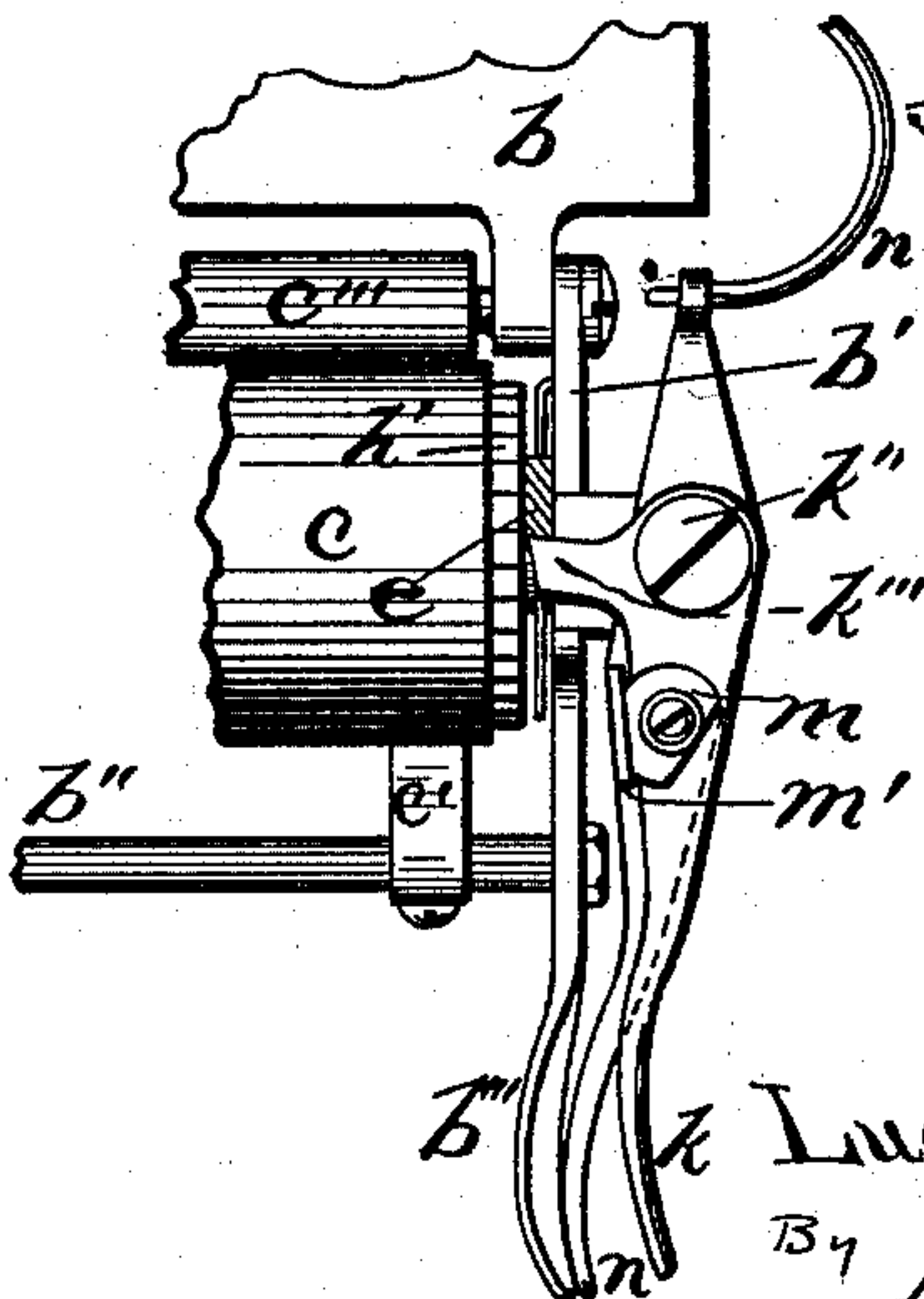


Fig. 10

Fig. 11.



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# UNITED STATES PATENT OFFICE.

LUCIEN S. CRANDALL, OF PARISH, ASSIGNOR TO WILLIAM A. SWEET, OF SYRACUSE, NEW YORK.

## TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 509,720, dated November 28, 1893.

Application filed January 21, 1893. Serial No. 459,058. (No model.)

*To all whom it may concern:*

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

My invention relates to type-writers, and  
10 particularly to the carriage, its mounting upon the top-plate of the machine, and the mechanisms carried by the carriage for the purpose of line-spacing, bell-ringing, feed apron, margin-regulating, marking printing (as for  
15 folioing) and for indicating the letter last printed, or the place for making a correction, when the platen frame is lifted, and also the mounting of a tilting platen frame in a carriage adapted to travel across the top-plate  
20 of the machine.

My object is to provide a type-writer with improved mechanisms for the above mentioned purposes; and my invention consists in the several novel features of construction and  
25 operation hereinafter described and which are specifically set forth in the claims hereto annexed. It is constructed as follows, reference being had to the accompanying drawings, in which—

30 Figure 1, is a top plan of a type-writer carriage, partly broken away. Fig. 2, is an end elevation of the same. Fig. 3, is a detail, in top plan, of the roller frame carrying the rear of the carriage. Fig. 4, is a top plan of the  
35 rear trackway across the top plate of the machine, upon which the carriage travels, and of the pointer and paper-guide combined, connected thereto. Fig. 5, is a side elevation of said pointer, the dotted lines indicating its  
40 normal position when the platen is in position for printing, and the full lines indicating its position when the platen is raised for inspection of the printing. Fig. 6, is a detail of one end of the rocking paper-feed apron, and its  
45 mounting. Fig. 7, is a sectional elevation of said apron and its mounting, upon the end rails of the platen-frame, the dotted lines indicating its rocking to a partial extent. Fig. 8, is a top plan of the scale bar across the top-  
50 plate, the roller carrying the front of the carriage, and the margin regulating screw mount-

ed upon said scale-bar. Fig. 9, is a detail of the bell and its hammer, the dotted lines indicating the swing of the hammer. Fig. 10, is a top plan of one end of the platen and its  
55 frame, showing the line spacing lever under pressure to rotate the platen, and the letter spacing escapement-lever also under pressure to release the carriage from engagement with the escapement rack-bar, by raising the dogs  
60 on pawls clear from said rack-bar. Fig. 11, is a vertical transverse section of the platen, feed roller, the platen frame and front pointer in sectional elevation and the front paper  
65 guide in section, and the combined paper guide and letter pointer and its mounting in sectional elevation.

A, is the top-plate of the machine; —a— the type-bar ring; —b— the body of the carriage; —b'— the end rails of the platen frame; 70 —b''— the front rod of said frame, said end rails being hinged to the carriage-body; —c— the platen, suitably journaled in said end rails; —c'— the paper-guide fingers at the ends of the platen; —c''— the central paper-  
75 guide finger; —c'''— the paper-feed roller, journaled in the platen frame; and —d— the scale-bar secured upon the top-plate of the machine; and inasmuch as these parts are of ordinary construction, except as hereinafter  
80 specifically set forth, no further description is here given of them.

One of the end rails —b'— is provided with an outward extension —b'''— which constitutes the handle by which the platen frame 85 is tilted for inspection of the work.

The line-spacing mechanism is constructed and operated as follows: A post —e— is pivoted upon the platen shaft —e'—; —e''— is a spring engaging therewith to hold it in its  
90 normal vertical position; —h— is a pawl pivoted on said post and held in engagement with the platen ratchet —h'— by the spring —h''—; —k— is a lateral arm upon the end rail of the platen frame; —k'— a lever pivoted upon said arm by a screw —k''— and  
95 having a lateral stud —k'''— adapted to engage with said post; and —m— is a button pivoted on said lever and having its sides cut away unequally on opposite sides of its pivot, 100  
said sides being adapted to engage with a vertical stud —m'— upon the escapement



lever—*n*—; all so that when said lever—*k'*— is pressed inwardly its stud—*k'''*— will engage with and push the post—*e*— backward and through the pawl—*h*— will rotate the platen for line spacing, either for single or double spacing according to how the spacing button—*m*— is set.

Inasmuch as the whole escapement mechanism is a part of another application filed January 21, 1893, Serial No. 459,059, it is deemed sufficient to only state here with reference thereto that the operation of the escapement lever—*n*— when pressed inwardly, through the escapement pawl bar—*n'*— pivotally connected to said lever, is to move said pawl bar longitudinally, throwing the escapement pawls (not shown) out of engagement with the escapement rack-bar (not shown) which is mounted upon the top-plate of the machine.

The bell-ringing mechanism to sound an alarm when near the end of a line of printing, comprises a bell—*p*—, set upon a standard—*p'*— erected upon the top-plate of the machine, a hammer—*r*— mounted upon a coiled spring post—*r'*—, and provided with a spur—*r''*— on its front face, a slot-way—*s*— in the carriage body, a tappet—*s'*— adjustably mounted under said carriage body by the screw—*s''*— and having a point upon its rear edge (see dotted lines Fig. 1) which is adapted by the travel of the carriage, in printing, to be brought into contact with said spur—*r''*—, spring the hammer away from the bell (see dotted lines Fig. 9) and when it slips off from said spur, the hammer is released to strike its blow and sound the alarm. When the carriage is reversed the beveled face of said point simply springs the hammer laterally backward in passing. The platen is released to be rotated freely by hand, by depressing the front end of said pawl—*h*— and raising its point out of its engagement with the platen ratchet.

The paper-feed apron is constructed, mounted and operated as follows: This apron—*1*— consists of a sheet-metal body, having end trunnions—*2*— journaled in the end rails—*b'*— of the platen frame, and provided with lateral arms—*3*— which engage with spurs—*4*— upon said end rails, and having a spring—*5*— coiled around each trunnion and having one end in engagement with an arm—*3*— and the other in engagement with or connected to an end rail, the action of said spring being adjusted so as to normally support said apron in substantially the position shown in Fig. 2; and then when the platen frame is raised, the apron is brought into contact with the carriage body, before the platen is fully raised, and is then forced forward upon its journals toward the platen so that when the platen is fully raised, it rests upon and is supported by the folded apron; and when the platen is lowered to its normal position, said springs restore the apron to its normal position.

The margin-regulating and marginal-print-

ing mechanism, is constructed and operated as follows: Upon the end of the scale-bar—*d*— (Fig. 8) a button—*6*— is pivoted, provided with a pin—*7*— adapted to engage with the scale-bar proper, and—*8*— is a screw having a milled head inserted through said button so that it is adapted to lie parallel to and above the raised trackway—*9*—, which is integral with the scale bar, and when in that position the margin is regulated by the adjustment of said screw, its inner end being adapted to engage with an arm—*10*— secured to the front rod of the platen frame, upon the bolt—*11*—, which is also the axle upon which the front wheel—*12*— of the carriage is mounted, said wheel traveling upon said trackway; and when said adjusting screw engages with said arm, the travel of the carriage to the right is stopped, at the marginal point at which said screw is adjusted. For marginal printing said button is tilted back upon its pivot until the stop pin—*7*— engages with the side of the trackway which throws the adjusting screw out of the way and the carriage can travel clear to the end of the line.

The carriage is mounted at the rear as follows: The rear trackway bar—*13*— is secured upon the top-plate of the machine, and is provided with a longitudinal V-shaped groove—*14*— which is the trackway in which double cone-faced rollers—*15*— travel, the upper track-way therefor in the carriage-body being of like form, and said rollers are journaled upon the end bars of the frame—*16*—, thus creating an auxiliary carriage upon which the main carriage travels.

The mechanism for guiding the paper through under the platen until it is caught by the front finger or guide, for indicating the last letter printed, or the point at which a correction is to be made, is constructed and operated as follows: An arm projects from the rear track-bar, upon which the plate—*17*— is secured, to which the pointer and guide combined—*18*— is hinged; and—*19*— is a spring or springs around the hinge pintle, one end of which engages with said plate and the other with the pointer, the tension being exerted to hold said pointer, whether lowered or raised, said pointer being provided with an opening—*20*— through which the type pass in printing, but are not guided in any manner by its edges, and also extending forward beyond the lower edge of the front paper guide—*c''*—, mounted upon the front of the platen frame, so that when the paper is fed through between the feed-roll and the platen, it is guided by the pointer around under the platen until it engages with the front guide. This pointer also operates to hold the paper at the printing point, closely against the platen, and to prevent the ribbon from being thrown up against the paper to smut it. When the platen is raised the curved apex of the pointer will follow the platen, sliding over its surface, until when it is fully



raised, the apex will be directly below the letter last printed. Also as this carriage can be shifted when the platen frame is raised, when it is so shifted as to bring said apex to the place where a correction is to be made, then when the carriage is lowered the type to be operated will print at the right place. This carriage body —b'— is provided with an angular arm —21— (Fig. 2) which fits freely in a groove in the front face of the rear trackway bar, and is also provided with a rearward extension —22— which engages with a groove out in the bell standard, and with said arm —21— prevents any rocking of the carriage body when the platen frame is raised, so that the carriage can then be shifted either way, entirely independent of the front roller, which only comes into use when the platen frame is lowered.

The gear wheel —24— shown in Figs. 1 and 2 mounted upon the hammer standard, is a part of the spring mechanism by which the carriage is retracted and as this mechanism is part of the subject matter of another application filed concurrent with this, Serial No. 459,059, it is not further described here, nor fully illustrated in the drawings.

It will be seen that the rolls of the arms at the front of the plate —17— and those at the rear of the pointer —18— are so constructed that the joint is like unto the joint in buggy-top braces, and that thereby the apex of the pointer cannot be depressed below the rear end of the front paper guide, when said apex and guide are out of alignment so as to permit the paper being introduced to pass under said guide.

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

1. In a type-writer, the combination with the carriage and a stop-arm upon its front rod, of a screw adjustably mounted above the

top plate with which said stop is adapted to engage to stop the carriage, and means to drop said screw out of the path of said stop.

2. In a type-writer, the combination with the carriage and the stop thereon, of an adjustable margin-regulating screw having its bearing in a block pivotally erected above the top-plate of the machine.

3. In a type-writer, the combination with the carriage and the stop thereon, of a margin regulating screw having its bearing in a block pivotally mounted above the top-plate of the machine, and means to regulate the pivotal swing thereof.

4. In a type-writer, in combination, a lifting arm integral with the platen frame, a line spacing platen rotating lever, and a carriage releasing lever pivoted upon said frame and standing contiguous to and in substantially horizontal alignment with said arm.

5. In a type-writer, a lifting arm integral with the platen frame, in combination with a line-spacing platen-rotating lever, and a carriage releasing lever pivoted upon said frame and contiguous to and in substantially horizontal alignment with said arm, and adapted to be operated jointly or severally.

6. In a type-writer, a carriage composed of a body and a platen frame hinged thereto, a rear trackway and roller bearings therein upon which the carriage traverses, an arm upon said carriage body, hooking under said trackway, and a rearward extension of said body engaging with a standard erected upon the top-plate of the machine.

In witness whereof I have hereunto set my hand this 24th day of December, 1892.

LUCIEN S. CRANDALL.

In presence of—

C. W. SMITH,  
HOWARD P. DENISON.