(No Model.) 2 Sheets—Sheet 1.

# J. P. SMITH.

## TYPE WRITING MACHINE.

No. 527,083. Patented Oct. 9, 1894.

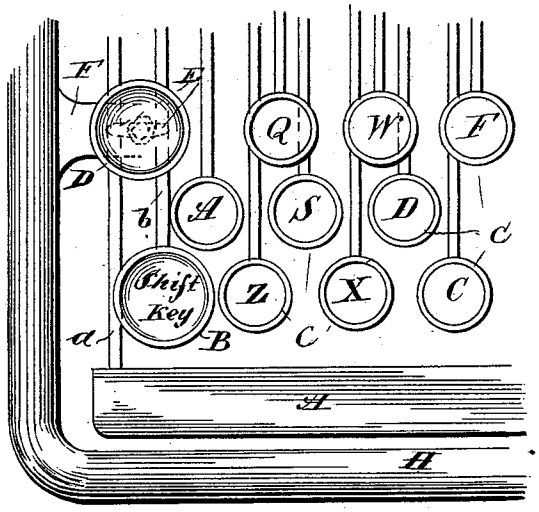


Fig. 1

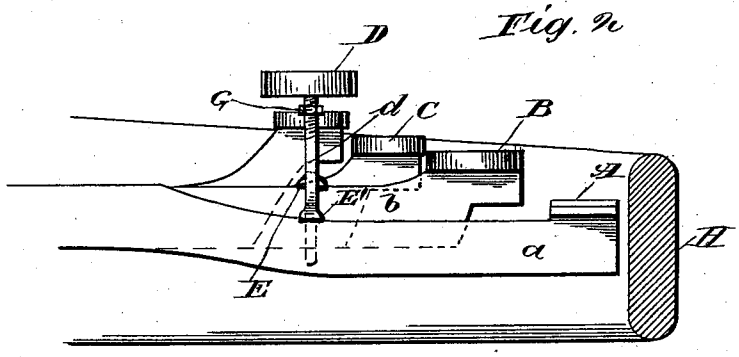


Fig. 2

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Inventor:
John P. Smith.
by George C. Wing,
his Attorney.

(No Model.) 2 Sheets—Sheet 2.

# J. P. SMITH.

## TYPE WRITING MACHINE.

No. 527,083. Patented Oct. 9, 1894.

*Fig. 3.*

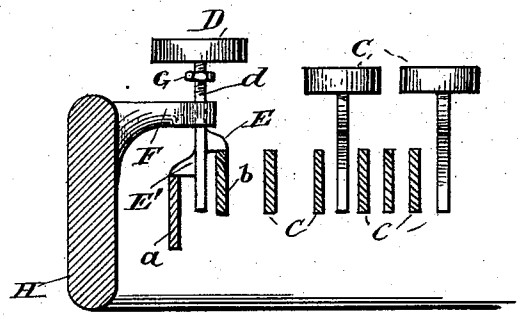
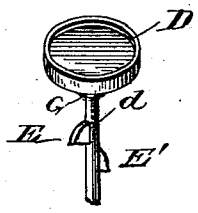



*Fig. 4.*




Witnesses
Wm. M. Monroe,
E. T. Sewell

Inventor:
John P. Smith,
by George C. Wing,
his Attorney.

# UNITED STATES PATENT OFFICE.

JOHN P. SMITH, OF CLEVELAND, OHIO.

## TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 527,083, dated October 9, 1894.

Application filed February 19, 1894. Serial No. 500,762. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN P. SMITH, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a new and useful Improvement in Type-Writing Machines, of which the following is a specification.

The improvement which is the subject of my present invention relates to that class of typewriting machines wherein the type-bars are provided with a second type-letter or character equi-distant from its companion letter on the same type, and are adapted to be struck against the platen after the latter has been shifted for the purpose to a second type center. The mechanical expedients by which these movements are accomplished vary somewhat in detail in the several machines in use, but they consist essentially in an aggregation of compound levers manipulated at the keyboard in the manner familiar to those versed in the art, and a carriage bearing the platen, adapted to travel longitudinally above one type-center when in its normal position, but to be shifted transversely to above the second type-center whenever a shifting lever is depressed for the purpose, and, in turn, to automatically resume its said normal position whenever pressure upon the said shifting lever is relaxed. The said shifting lever, by which the aforesaid transverse movement of the carriage is effected, is usually provided with a thin bar like arm which projects forwardly into the keyboard in close juxtaposition to a similar arm of the spacing lever and parallel with and slightly above the upper edge of the same. As will be recognized by those acquainted with the class of machines referred to, the operative possibilities of the same—unless provided with special attachments for the purpose—are restricted to printing letters or symbols along the common base line alone. This for the reason that—until such special provision is made—there will be no intermediate stations between the normal place of the platen and its place when moved backwardly to above the second, or upper case, type-center. Under these conditions the transverse movement of the platen is limited to that required to gain the latter point—and to spring back therefrom when released—and thereby regain its original or lower case position. Devices have heretofore been made having for their operative object to arrest the said transverse movement of the platen at predetermined points intermediate between the extreme points above referred to—and—by this means—to enable a type impression to be struck at an elevation from the base line. None of these devices, however, have rendered it possible to print a second letter or symbol within the letter-space area allotted to the elevated character—and—in consequence—for instance—to print numerators directly over their denominators, or abbreviation marks, or chemical symbols, in the same space as the letter to which they relate, whether their relative positions be above or below such letter, as, for instance, in printing the abbreviation "Esq.," or, the chemical notations $\overset{\cdots}{S}$, $\overset{\cdots}{T}$, or $\overset{+}{M}$.

The chief purpose and object of my present invention may therefore be said to be to enable an operator of a machine of the above class to not only force the platen to a station on its transverse route midway to the said limit, and to thereby print a character in elevation in respect to its position when printed at the limit of the said travel; but also to enable the operator at the same time to retain the said platen against longitudinal movement until other and additional type characters are struck on the paper immediately below the character so printed in elevation, and within the same superficial type area or letter-space. I accomplish the said purposes by the specific device and attachment hereinafter particularly described, and illustrated by the several drawings accompanying, and made a part of this application.

In the said drawings Figure 1 is a superficial view of a portion of a keyboard containing my said device looking downwardly upon the same. Fig. 2 is a side and Fig. 3 an end view of the same in partial cross-section. Fig. 4 is a perspective view of the stop-key constituting the principal element of the specific device or apparatus described.

In each of the said figures similar parts are denoted by similar letters.

In the several drawings H represents a sec-

tional part of the frame of a keyboard in a typewriting machine of the character universally known.

A is the wooden space key, and *a*, one of the usual space-levers or arms that are actuated thereby, and which themselves actuate the pawl and rack movement by which the longitudinal travel of the carriage is alternately checked and released, in the manner well known to those familiar with the art. In close juxtaposition thereto, as usually constructed, and with its upper edge slightly above the upper edge of the said space-lever or arm *a*, is the shifting-arm, or lever *b*, by means of which the platen is thrown backwardly across its longitudinal route as hereinbefore referred to. The said lever, or arm *b*, is manipulated by depressing the key thereon denoted by B in the figures. The relative normal position of the upper edge of the bar-like arms, or levers, *a* and *b*, appears in Figs. 2 and 3.

C C are, severally, some of the usual letter keys on the board.

An operative form of a stop-key device specifically adapted for use in a typewriting machine constructed in the manner illustrated by the drawings is shown, detached, in Fig. 4. It consists of the pad, or top D, and the projection or stem *d*, beneath the same. The upper portion of the said stem *d*, is preferably threaded, and is provided with a limiting nut or stop G for the purpose that will hereinafter more fully appear. At predetermined points upon opposite sides of the said stem *d* are lugs, or bearing projections E, E′.

F is a bracket projecting from the frame H and overhanging the intervening space between the arms or levers *a* and *b*. It is perforated at about the middle point of said space in order to admit the stem *d* to be inserted, and to allow the stem to be reciprocated vertically therethrough. The said perforation may be oblong rather than circular in form, in order to correspond with a desirable form of the stem *d*, and thereby maintain the said stem, and the said lugs E E, in the same relative position with respect to the said bracket F. It is obvious that the precise character of the said bracket, its mode of attachment or the special detail by which its functions in the connection are insured, are not essential to my invention, which on the contrary covers any means of obtaining the requisite support and bearing for the parts D and *d*, that is substantially equivalent to that shown in the drawings.

Having shown and described the several parts of my said device, its mode of attachment and operation are easily apparent. The part D may be made detachable from its stem *d*, as well as the limiting nut or stop G, and, having been first detached accordingly, the said stem *d* is inserted upwardly through the bracket F until the lugs E E respectively rest upon and ride the upper edges of the levers *a* and *b* when the latter are in their normal position. The limiting nut G is next screwed upon the stem *d*, and then the top, or key-plate D. The said nut G, and the lugs E E, should be located upon the stem *d*, at such points respectively that when the nut G is forced downwardly into bearing with the bracket F, the lug E′ will have meanwhile engaged with and depressed the spacing arm, or lever *a*, until the carriage is securely locked against longitudinal travel. Such locked condition—by reason of depressing the spacing arm or lever—*a*, is effected in consequence of the usual connection of said lever *a*, with a ratchet, or pawl that is movably fixed to the frame of the machine in such manner that when said lever is depressed as above described, the said ratchet will be correspondingly deflected—in opposition to a spring action—into engagement with the teeth of a rack on the carriage, and thereby check or lock the latter against further travel until such pressure on the lever *a*, is withdrawn. The lug E will likewise have engaged with the shifting lever *b*, and thereby shifted the said carriage transversely to such a point intermediate between the upper and lower case letters as will enable one of the type characters to be struck against the paper at the slight elevation desired above the regular base line. If, now having thus printed a letter or other symbol, the pressure upon the stop-key D is withdrawn, while however the spacing lever A—by an independent manipulation, or down pressure upon the same, by the operation—is still retained at the degree of depression to which it was carried by the said stop-key—the carriage will instantly regain its normal position over a type-center, but will remain locked against forward travel or spacing, when, by reason of this condition, it is evident, a lower case type may now be struck and printed below the said elevated letter, and within the area of its space.

The mode of operation just described is particularly available for the rapid and accurate printing of common fractions. As is well known the recurrence of these characters in documents like bills of materials of constructions, inventories and invoices of every sort, is frequent and under conditions where it is important to economize space. When printed by machines without facilities for varying the type alignment—as above described—numerators and denominators must necessarily occupy distinct spaces and appear upon the same base line not only with one another but with the integral to which they belong. In such cases, in spite of the intervention of the upward diagonal line, the numerators are liable to be confused with their whole numbers, and the fractions themselves are not readily distinguishable. By employing my said device however, and first printing the numerator in the upper part of the space area, and, thereafter allowing the platen to present the lower part of said area for the denominator, as I have already de-

scribed, it is evident that a fraction will be distinctly denoted and in the conventional form.

In making use of the said device to print certain abbreviations or symbols that require an additional letter in elevation only, such as $M^c$, $M^r$., $C^4$, or the various chemical notations, the only movements necessary are to depress the stop-key D and to release the same as soon as the elevated character is struck.

I do not intend to limit my invention, as aforesaid, to a device that is affixed and supported in the precise manner illustrated herein. Nor is it my intention to confine the same to the particular apparatus as shown in other regards. Nor is it essential to my invention, in its broader scope, that it should be operated with or attached to a machine constructed precisely as that hereinbefore generally indicated. The location of the spacing, or shifting lever, or both may likewise be in an entirely different part of the key-board, and a stop-key that will enable them to be simultaneously actuated to the degree required to accomplish the motion described, will still be within the spirit and meaning of my present invention.

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

In a typewriting machine, provided with spacing and shifting levers, a stop-key adapted to be reciprocated through a predetermined range and to engage with and simultaneously actuate the said spacing and shifting levers, substantially as shown and described.

JOHN P. SMITH.

Witnesses:
GEORGE C. WING,
M. MILLARD.