(No Model.) 2 Sheets—Sheet 1.

A. T. VIGNERON.

TYPE WRITING MACHINE.

No. 524,290. Patented Aug. 7, 1894.

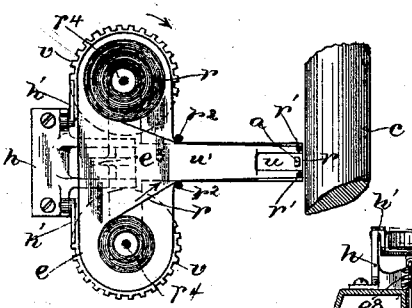


Fig 3.

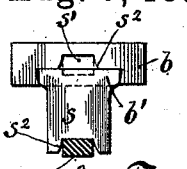


Fig 14.

Fig 1.

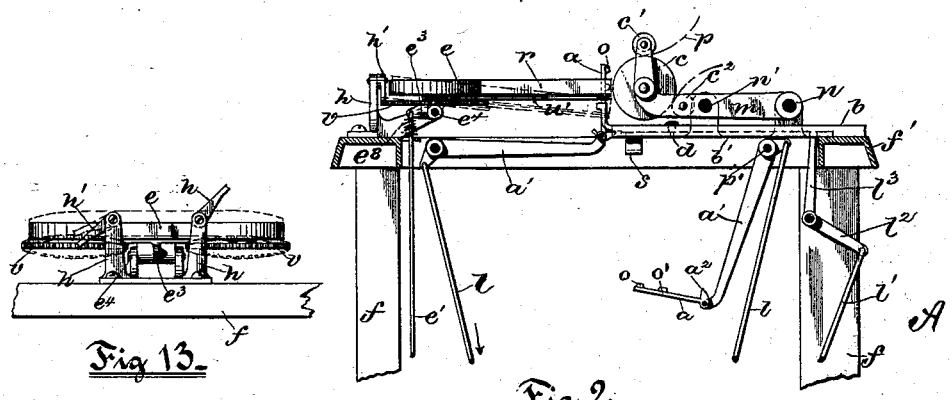


Fig 2.

Fig 13.

Witnesses.

Charles W. Boudureau

Ida M. Warren

Inventor.

Adolphus T. Vigneron.

by Remington & Henthorn

attys.

(No Model.) 2 Sheets—Sheet 2.

A. T. VIGNERON.

TYPE WRITING MACHINE.

No. 524,290. Patented Aug. 7, 1894.

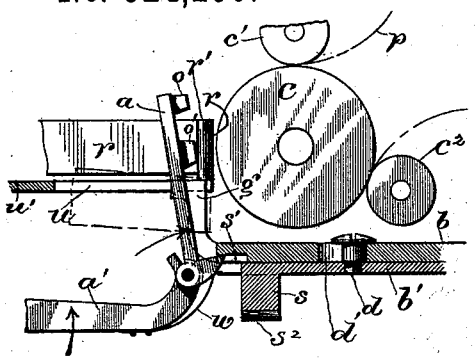


Fig 4.

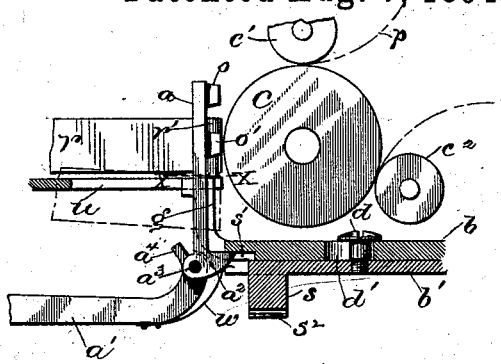


Fig 5.

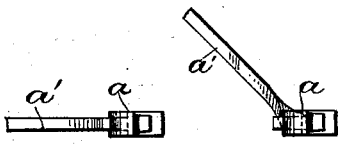


Fig 8.

Fig 9.

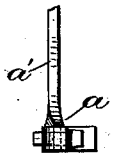


Fig 10.

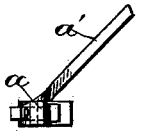


Fig 11.

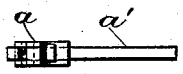
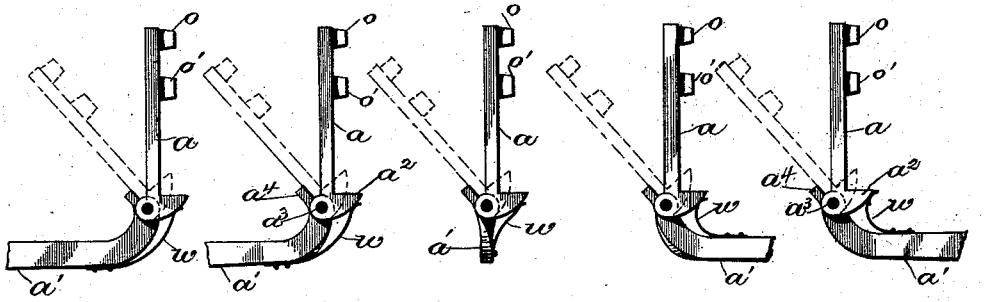


Fig 12.



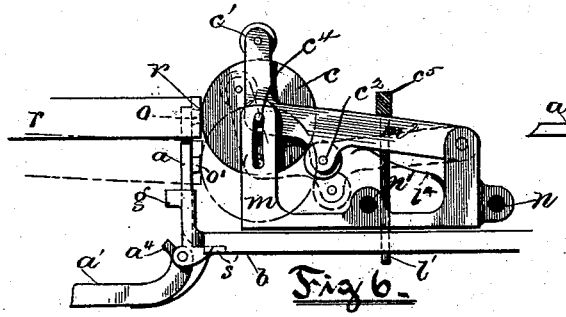


Fig 6.

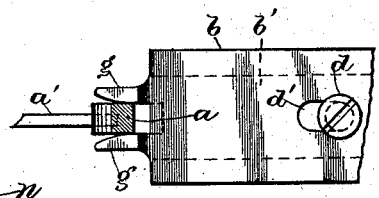


Fig 7.

Witnesses.

Charles W. Boardman

Ida M. Warren.

Inventor.

Adolphus T. Vigneron.

by Remington P. Stenthorn.

Attys.

UNITED STATES PATENT OFFICE.

ADOLPHUS T. VIGNERON, OF PROVIDENCE, RHODE ISLAND.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 524,290, dated August 7, 1894.

Application filed June 12, 1893. Serial No. 477,373. (No model.)

To all whom it may concern:

Be it known that I, ADOLPHUS T. VIGNERON, a citizen of the United States, residing at Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Type-Writing Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

My present invention relates to certain improvements in type writing machines in which the writing or printing is made upon the paper by means of axially movable type-carrying bars acting upon a movable ink-ribbon interposed between the type-face and the intermittingly movable impression cylinder or platen carrying the paper. The "Remington" and "Caligraph" are well known examples of the class of type-writing machines referred to; and it is to machines of such or a similar type that my improvement is well adapted to be used.

In type-writing machines as hitherto made it has been usual to so construct and arrange the type-arms or bars and the coacting mechanism that the impression or writing is made at the under side of the cylinder. While possibly such former arrangement may in some respects be to the advantage of the manufacturer in the matter of assembling the parts, &c., yet to the operator or user it is a decided disadvantage since the arrangement necessarily renders the last written line or the line being written invisible unless the cylinder be first swung upwardly, or rotated ahead sufficiently to bring the line into view.

The object I seek to attain is to provide machines of the class above referred to with means whereby not only the last written lines are exposed at all times but each individual letter or character as it is produced upon the paper is exposed immediately succeeding its impression.

To that end my invention consists, essentially, of a resilient type-bar proper or holder jointed to the lever or operating arm, combined with a stop or contact plate and an intermittingly-movable ink-ribbon; it also consists of certain other novel mechanisms combined with adjunctive devices, all as will be more fully hereinafter set forth and claimed.

By means of my improvement the upper and lower case letters and characters may be employed with equal facility; the spacing and alignment are more uniform; the writing as produced is exposed and in full view of the operator without raising the cylinder, and the novel manner of mounting and operating the ink-ribbon adds materially to the efficiency of the machine.

In the accompanying two sheets of drawings, Figure 1, Sheet 1, is a vertical sectional view of a type-writing machine embodying my improvements; some of the usual devices or mechanisms to which my present invention has no special reference being omitted. The type-bar is represented in the act of impressing say a capital or "upper case" letter upon the paper wrapped around the cylinder. Fig. 2 is a substantially similar view, but showing the type-bar in the act of printing a "lower case" letter. Fig. 3 is a plan view of a portion of the cylinder and the inking device. Fig. 4, Sheet 2, is an enlarged vertical sectional view, showing the relation of the type-bar, &c., at the instant of its engagement with the stop. Fig. 5 represents the same while the impression is being made. Fig. 6 is a view similar to that last described, showing a modification of the manner of mounting the cylinder, so as to change its relation to the type-bars. Fig. 7 is an enlarged horizontal sectional view, taken on line $x\,x$ of Fig. 5, showing the manner of guiding and centering the type-bars so as to insure a more uniform alignment. Figs. 8 to 12, inclusive, represent side and plan views of the type-bars as adapted to properly engage the cylinder. Fig. 13 is a front view of the ribbon-holder, &c., and Fig. 14 is an enlarged front end elevation of the type-holder stops, the relation of the parts being substantially as shown in Fig. 1.

In carrying out my invention I have represented a type-writing machine embodying some of the characteristic features of the well-known "Remington" and other machines; that is to say the operating levers or arms a', the keys and key-levers k' and connections l

are or may be made, mounted and actuated substantially as common to machines of this class; and since the carriage-feeding and paper-feeding devices form no part of my present invention I have omitted said mechanisms from the drawings.

The frame *f*, is provided with a suitable base portion and uprights and is surmounted by a fixed bed or table *f'* to which latter the several arms *a'* are jointed or pivoted on pins *p'* as common. The usual impression cylinder *c* is mounted to revolve in the carriage *m* which is supported on ways or guide-rods *n*, *n'*. The paper *p*, shown by dotted lines, is kept in contact with the cylinder by means of combined guide and feed rolls *c'*, *c*².

To the rear side of the table is secured a horizontal plate *b*, the same extending toward the front of the machine and is provided on the under side at or near its free end with a recess *s'* having beveled or slightly rounded sides *s*², and forming a fixed stop for arresting the upward movement of the said arms *a'*. This stop, when coacting with the type-holders *a*, soon to be described, causes the holders to swing into position to produce an impression, the inclined sides of the stop and the vertical guides *g* at the same time serving to centralize the holders and insure comparatively perfect alignment of the work. The plate *b* is further provided, on its under side, with ways in which a secondary or stop-plate *b'* is mounted to move endwise. A pin *d* secured to the piece *b'*, passes upwardly through a slotted opening *d'* formed in plate *b*, as clearly shown in Figs. 4, 5, &c.; the ends of the slot serving to limit the movement of stop-plate *b'*. The latter it will be seen has a downwardly extending lug *s* formed on its front end, the same being cut away to receive the toes of the type-holders, see also Fig. 14. As drawn, when the toes engage the upper or fixed stop *s'*, the lower case characters or types are brought into action, and when the lower or movable stop *s* is advanced into position, as in Fig. 1, the upper case letters are brought into use. In said Fig. 1, it will be seen that springs *k*² cause the several levers *a'* as well as the stop *s* to return to the normal position. In the case of the stop *s* a connection *l'* jointed both to the pivoted short lever *l*² and the arm of the key *k*⁴ transmits the movement of the latter through the lever *l*³ to the plate *b'*, so that when the key *k*⁴ is depressed the said levers, &c., will retract the stop to its limit, as shown in Figs. 2 and 4. Obviously, the parts may be arranged so that upon depressing the key *k*⁴ the stop will be advanced into position for use, a spring automatically returning the stop to the position shown in said Figs. 2, 4 and 5.

The case keys *k* may be arranged in two or more rows as common, and the space-key *k*⁶ may be a long bar located in front of the other keys and connect with the usual feeding mechanism.

The series of pivotally mounted swinging levers or arms *a'* may be arranged in an oval or circular form in such a manner that the outer or free ends thereof will, when elevated to a horizontal position, lie in a practically common center or point. The end of each bar is bent upwardly and is provided with a short lug *a*⁴, spring *w*, and joint-pin *a*³; to the latter of which is fulcrumed the type-holder *a* carrying at its upper portion two types or characters *o*, *o'*; these may be similar or dissimilar. In the drawings the capitals or upper case characters are indicated by *o* and the lower case by *o'*. Each holder is provided at its lower end with a toe *a*² extending at substantially right angles therefrom; the upper face of the toe being adapted to engage the stops *s*, *s'*, before described. The spring *w* bears against the toe so as to keep the holder in normal contact with the lug *a*⁴. In Figs. 8 to 12 the normal position of the holders is indicated by dotted lines; the full lines representing the position of the holders at the instant of printing. Fig. 8 represents side and plan views of the front central type-holder and the contiguous portion of the working-arm *a'*; Fig. 12 shows the corresponding rear central type-holder; Fig. 10 the central left lateral holder, and Figs. 9 and 11 the front and rear left diagonal holders. It will be seen that all the holders are so arranged and jointed to the arms *a'* that the angular movements of the former are substantially alike while in contact with the stops *s* or *s'*.

The following describes the manner of mounting and operating the ink-ribbon: This ribbon *r* I prefer to make narrow, say from three-eighths inch to one-half inch wide, the same being arranged to wind from one tension spool or arbor *r*⁴ to the other. The spools are mounted to revolve in a tilting shallow frame or casing *e* located at the center and on top of the front portion of the table *b*. As drawn, each spool is provided at the bottom with a ratchet-wheel *v* into which the click-pawls *h'* engage; the pawls being jointed to a bracket or stand *h* fixed to the table; the stand is provided with two rearwardly extending arms *e*⁴ in which the ribbon-frame is jointed and adapted to vibrate; said movement being effected through the medium of a short bottom arm *e*³ of the frame to which is jointed a link *e'* connected at the bottom of the machine with a transverse bar *e*² in engagement with the under side of the series of key-levers *k'*. The bottom *u'* of the ribbon-frame extends rearwardly to or nearly to the cylinder *c*; said extension is quite narrow and cut away at *u* at its outer end (see Fig. 3) to permit the passage of the type-holders. It is also provided with short vertical guides *r'*, *r*², for leading the ribbon to the cylinder, as clearly shown in said Fig. 3.

From the foregoing it is apparent that the act of depressing any of the keys tilts the ribbon upwardly into position contiguous to the cylinder, as shown by full lines in Figs. 1,

2, 4, 5 and 6; it being automatically returned to its normal position, shown by dotted lines, by means of a spring e^8 upon removing pressure from the key. When in the last-named position it is clear that the entire printing is exposed.

The two vertical guides g fixed to the plate b contiguous to the stop or contact recess s' are arranged to freely receive the holders a and at the same time prevent them from moving laterally, thus increasing the efficiency of the machine; Fig. 7 shows a plan view of said parts in enlarged scale. The guides are so constructed that the ink-ribbon is exterior to and moves up and down past them without touching. I would add that the ribbon-spools are rotated intermittingly by means of the pawls h' combined with the toothed wheels v. By referring to Fig. 13 it will be seen that the left pawl is working to wind the ribbon upon the corresponding spool, the other pawl meanwhile being idle. The tilting of the ribbon-frame, &c., causes the pawl to slip from tooth to tooth, the rotation being effected during the upward movement of the wheel. After the spool has been filled the corresponding pawl is lifted and the other one dropped into gear, thereby reversing the operation before described and resulting in unwinding the ribbon from the filled spool onto the empty one.

The operation of a type-writing machine provided with my improvements may be described substantially as follows, assuming first, however, that the machine is also provided with the usual co-operating or adjunctive devices for receiving and feeding the paper, propelling and releasing the carriage, impression roll, keys, &c. The paper p is next introduced and wrapped partly around the cylinder, the lower stop s being already advanced into position. Now, upon striking a key k the corresponding arm a' is instantly elevated to a nearly horizontal position which causes the toe of the holder a to engage the stop, thus arresting the arm's movement and at the same time rapidly swing the upper printing character rearwardly into engagement with the ribbon, thereby printing or making an impression upon the paper, as shown in Fig. 1. Upon releasing the finger from the key a spring k^2 returns the key and type-holder to the normal position, or as indicated by dotted lines in Fig. 1. I would further state that the act of depressing the key operates also to elevate or tilt the ink-ribbon and its frame to the full-line position, Fig. 1, preparatory to being struck by the printing type; said frame, &c., dropping to the dotted line position through the medium of the spiral spring e^8. The vibratory movement of the ribbon-frame advances the ribbon intermittingly, by the means before described. Thus it is obvious that the several lines of printing are continuously exposed and the character last printed is uncovered and exposed as soon as formed; it being kept in mind that the ribbon extends longitudinally of the cylinder but a short distance, say one-half an inch or less.

In order to print from the lower case types o' the lower stop s is forced rearwardly (Fig. 2) by means of the key k^4 or other suitable mechanism after which the printing is accomplished as just described, the type-holder toes then engaging with the upper or fixed stop s', as shown in Figs. 2, 4 and 5. It will be apparent that the upwardly extending stationary side guides g, having a well-rounded mouth, serve to keep the holders a in position laterally while the impression is being made, thus producing better work by reason of the superior alignment, as before stated.

In lieu of employing two stops s, s', one of which is movable, I may use a single fixed stop s' and move the cylinder c vertically. Such an arrangement I have represented in Fig. 6, wherein the sliding carriage m is also provided with swinging arms m^2 in which the cylinder and feed rolls are journaled. As drawn a spring l^4 maintains the cylinder in the elevated position to receive the impression from the upper-case types. In order to print from the lower-case characters o' the cylinder is first depressed to the dotted line position, Fig. 6; said movement being effected through the medium of the bar c^5, resting upon the top of the arms m^2, and link l' attached thereto and connected say with a key-lever, as k^4, adapted to be manipulated by the finger of the operator. It may be added that the extreme vertical movement of the cylinder is just equal to the distance from center to center between the types o, o', of the holder; said distance being also equal to the space between the two stops s, s', vertically.

I claim as my invention and desire to secure by United States Letters Patent—

1. In a type-writing machine the combination with an impression surface of a type-lever, a type-carrying arm pivoted to the end of said lever, means for moving the type-lever, and means for arresting the movement thereof and thereby imparting to the type-carrying arm a printing stroke, causing it to strike the impression surface at a point in view of the operator, substantially as described.

2. In a type-writing machine, the combination with a impression surface, of a type-lever, a type-carrying arm pivoted at the end of said lever, a stop in the path of movement of said lever adapted to arrest the same and to impart to said type carrying arm a printing stroke in a direction approximately perpendicular to the impression surface, so that the type strikes the latter at a point in view of the operator, substantially as described.

3. In a type-writing machine the combination with an impression surface, of a type-le-

ver, a type-carrying arm pivoted at the end of said lever, a stop in the path of movement of said lever adapted to arrest the same and thereby impart to said type-carrying arm a printing stroke, and a spring for returning said type-arm to its normal position after each stroke, substantially as described.

4. In a type-writing machine a series of type-levers and actuating mechanism therefor, type-carrying arms pivoted to the ends of said levers, each arm carrying a plurality of characters, means for arresting the movement of the type-levers and swinging the type arms to the printing point, and means for changing the relative positions of the cylinders and type-arms to bring different characters to the common printing point, substantially as described.

5. The combination with the impression cylinder, a series of type-levers and actuating mechanism therefor, type-arms each provided with a plurality of characters arranged in different planes and adapted to produce an impression at a common printing point, a fixed stop with which said type-arms engage to bring one set of characters to a printing position, and a suitably operated movable stop for bringing another set of characters to a printing position, substantially as described.

6. In a type-writing machine, the combination with the impression cylinder, key-levers, &c., an ink-ribbon and mechanisms actuated by the key-levers for feeding and intermittingly moving it up and down in front of the cylinder, of a series of levers connected with and actuated by said keys, a yielding arm provided with two printing characters or types jointed to the external end of said levers, a fixed stop, for engaging the several type-arms to swing them into position for printing from one of said types, a movable stop, arranged to arrest the levers so as to print from the other series of types, and means for moving the stop into and out of position, substantially as set forth.

7. In a type-writing machine the combination with the impression cylinder of an inking ribbon and operating mechanism therefor, the inking ribbon being carried forward to the printing point at the front of the cylinder in a narrow loop, said loop in its normal position exposing the common impression or printing point, mechanism operated by the key-levers for oscillating said loop to shift it to the printing point, a series of type-levers and actuating mechanism therefor, type-carrying arms pivoted to the ends of said levers, means for arresting the type-levers and swinging the type-carrying arms upwardly with the loop to the printing point, substantially as described.

8. In a type-writing machine the combination with a pivoted type-arm having a toe or projection thereon, of a stop formed with a bevel-sided recess therein, in which said toe or projection engages to swing the free end of said type arm to a printing point, substantially as described.

9. In a type-writing machine provided with an impression cylinder, ink-ribbon and suitable cooperating devices, the combination therewith of a series of swinging operating levers a' arranged in a circular or oval form, key-levers connected therewith for actuating the same, a series of yielding type-holders a jointed to the outer or free ends of the levers a', and a common stop, or stops, arranged to engage the several holders a, constructed and adapted for operation substantially as described and for the purpose set forth.

In testimony whereof I have affixed my signature in presence of two witnesses.

ADOLPHUS T. VIGNERON.

Witnesses:

GEO. H. REMINGTON,

IDA M. WARREN.