(No Model.) 3 Sheets—Sheet 1.

C. E. ALLEN.

CHARACTER SELECTING DEVICE FOR TYPE WRITING OR OTHER MACHINES.

No. 562,562. Patented June 23, 1896.

Fig. 1.

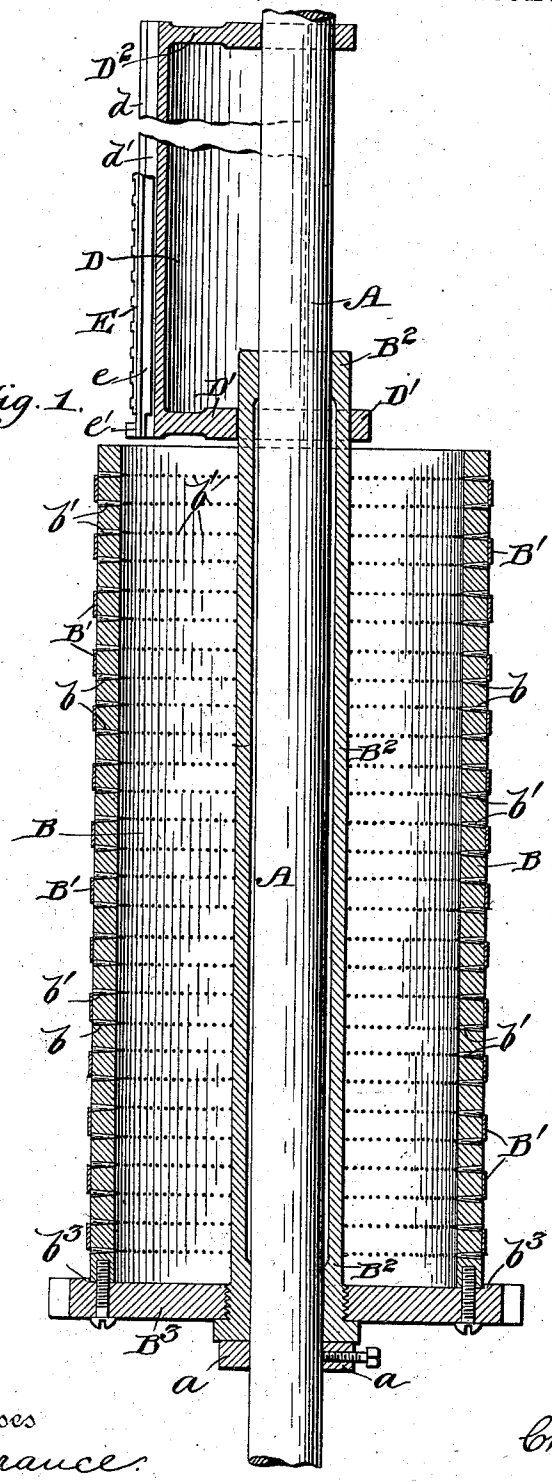
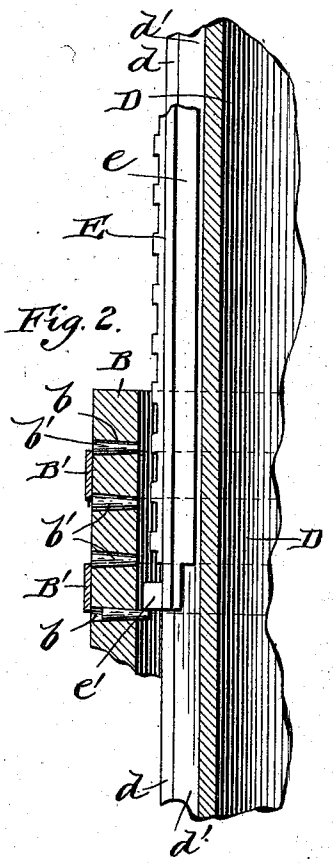


Fig. 2.



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ANDREW B. GRAHAM, PHOTO-LITHO. WASHINGTON, D.C.

(No Model.) 3 Sheets--Sheet 2.

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Fig. 3.

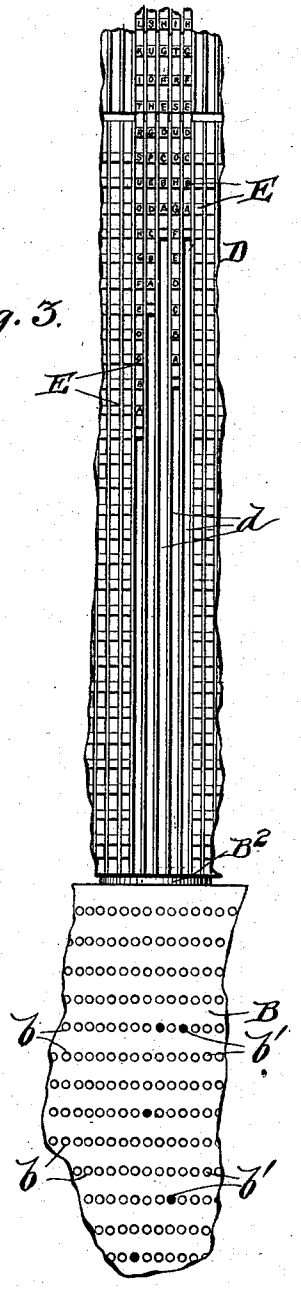


Fig. 4.

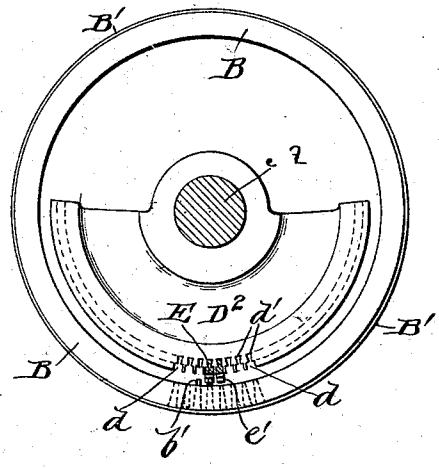
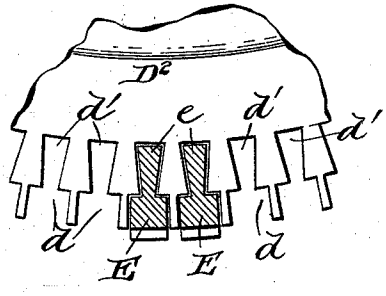


Fig. 5.



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(No Model.) 3 Sheets—Sheet 3.

C. E. ALLEN.

CHARACTER SELECTING DEVICE FOR TYPE WRITING OR OTHER MACHINES.

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Fig. 6.

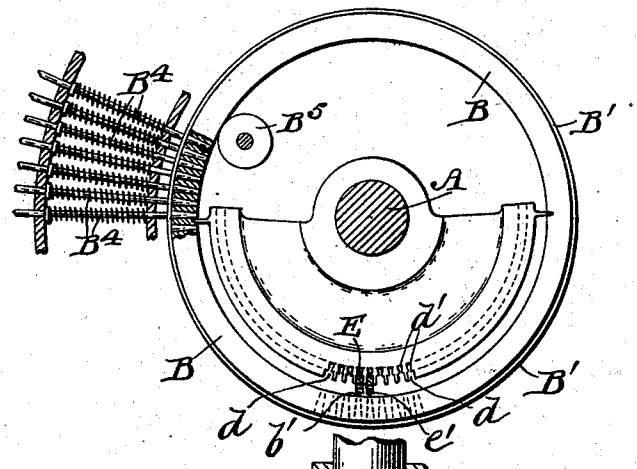

Fig. 7.

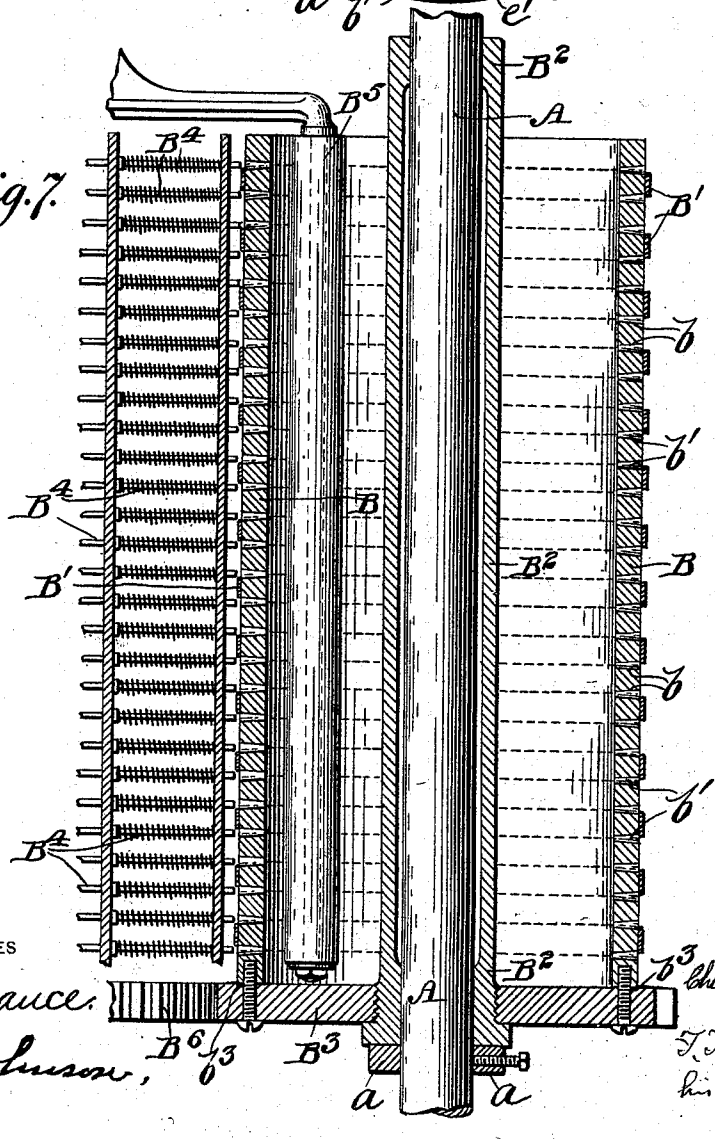

Fig. 8.

WITNESSES

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UNITED STATES PATENT OFFICE.

CHARLES ELMER ALLEN, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNOR TO THE STENOTYPE COMPANY, OF PORTLAND, MAINE.

CHARACTER-SELECTING DEVICE FOR TYPE-WRITING OR OTHER MACHINES.

SPECIFICATION forming part of Letters Patent No. 562,562, dated June 23, 1896.

Application filed July 17, 1894. Serial No. 517,798. (No model.)

To all whom it may concern:

Be it known that I, CHARLES ELMER ALLEN, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Character-Selecting Devices for Type-Writing Machines, &c.; and I do 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 the letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in type-writing, type-setting, and type-printing machines, and has for its object the provision of a machine that is simple in construction, reliable in action, and durable, and in which the working parts are reduced to a minimum, and which will perform all the functions of type setting, printing, &c., in a thoroughly reliable manner at a greatly-increased rate of speed.

The invention relates more particularly to character-selecting devices for type-writing machines and machines of a similar character; and it consists, essentially, of a hollow cylinder provided with suitable selecting devices mounted upon a shaft in combination with a portion of a cylinder carrying a number of movable type-bars and so mounted upon said shaft as to telescope the said cylinder for the purpose of throwing or setting a number of predetermined letters or other characters into position and alinement on the curved surface of the portion of the cylinder carrying the type-bars from which the printing is to be done.

The invention further consists in the novel construction and arrangement of the several parts of the device hereinafter described, illustrated in the drawings, and more particularly pointed out in the claims hereunto annexed.

In the drawings, Figure 1 is a vertical sectional view of the cylinder and telescoping segment or portion of cylinder on which are mounted and carried the movable type-bars. Fig. 2 is an enlarged broken detail in section, showing the pins and a type-bar in elevation, the said type-bar having been thrown or moved into printing position by means of a pin in the cylinder. Fig. 3 is a broken elevation of the cylinder and the telescoping segment which has telescoped the cylinder and been withdrawn therefrom, showing a number of the movable type-bars in printing position and alinement thereon. Fig. 4 is a top view of the cylinder and segment, showing their relative positions upon the shaft and to each other. Fig. 5 is an enlarged broken detail view showing a portion of the segment, also showing the manner of mounting and securing the type-bars upon the telescoping segment. Fig. 6 is a top plan view of the cylinder, a portion thereof being broken away to show the pins therein, the segment carrying the type-bars in position to telescope the said cylinder, rods for projecting the pins into said cylinder, and a slicker for returning the pins to their normal position in the cylinder after they have performed their proper office. Fig. 7 is a vertical sectional view of the cylinder, showing the arrangement of the push-rods for projecting the selecting-pins and a slicker for returning the said selecting-pins to their normal positions in the cylinder. Fig. 8 is a detail view of one of the selecting-pins, showing how a letter may be placed on the head thereof when desired.

Similar letters of reference indicate corresponding parts in all the figures where they occur.

Referring to the drawings by letter, A represents the shaft, and *a* a stop or collar secured thereon near its lower end in any suitable manner, and upon which said stop *a* a sleeve B^2 rests and is supported.

B^3 is a disk or gear secured upon the sleeve B^2, rigid therewith, near its lower end, and is provided on its upper side near its outer circumference with an annular rib b^3. Upon this disk or gear B^3 within the annular rib b^3 is set and securely fastened the hollow tube or cylinder B. This hollow cylinder B is of any suitable height and diameter, and has throughout its entire curved surface, arranged in parallel rows, both longitudinally and circumferentially, conical holes or openings *b*, extending through the wall of the cylinder, as shown.

b' are conical pins having the same pitch as the holes or openings b and equal in length to the thickness of the wall of the cylinder, so that when the pins are in the holes or openings and in their normal positions they will be wholly within the wall of the cylinder. The pins b' fit loosely in the said holes b in order that they may have a slight play so that they may be caused to project a short distance into the interior of the cylinder when desired.

B′ are stop-bands or checks upon the outer surface of the cylinder, and are so placed as to cover a very small portion of each hole or opening b for the purpose of preventing the pins b' falling from their seats in the said holes or openings b. These bands or checks are so placed around the cylinder as to afford stops for all of the pins in the openings or holes in the said cylinder, as is apparent.

Instead of the stop-bands B′ any other means desired may be employed to prevent the pins b' falling from their positions in the conical openings b in the cylinder, as is evident.

The sleeve B^2 extends a short distance above the top of the cylinder, as shown, and serves as a brace to steady the said cylinder, and at the same time affords a bearing-surface for the lower head D′ of the telescoping segment, and a stop to limit the downward movement of the segment.

D is a portion or segment of a cylinder mounted upon the heads D′ and D^2, the head D′ being mounted upon and running on the sleeve B^2, and the head D^2 upon the shaft A, as shown. This section of a cylinder or segment is about twice the height of the cylinder B and has grooves d running longitudinally thereof, the bottom of said grooves being dovetailed, as shown at d', Fig. 5. In these grooves d are mounted type-bars E, having type or other characters on one side and a dovetail portion e on the opposite side, the said type-bar E being mounted and held upon the segment in the slots or grooves by means of the dovetail portion e, as shown in Fig. 5 of the drawings. On the lower end of each type-bar is a lug or boss e' by means of which and the pins in the cylinder the types on the type-bars are brought into alinement on the curved surface of the segment to be printed from. Upon each of these type-bars is placed a complete alphabet, grammatical points, or other desired characters, arranged one beneath the other in any desired or prearranged sequence, the arrangement upon each bar being identical with that upon every other one.

The operation of the device is as follows: The pins in the cylinder may, if desired, have upon their heads or enlarged ends letters or other characters, or they may be connected with and operated by keys bearing letters or other characters through suitably-arranged push-rods B^4, so that when it is desired to set up a particular letter or character the pin representing this letter or character is caused to project toward the interior of the cylinder, and the pin representing the next letter of the word desired to be produced in the row immediately following the first row used is also caused to project toward the interior of the cylinder, and so on, each succeeding letter being selected in each succeeding row on the cylinder until the word or words desired are fully represented by the pins. When it is desired to space between the words, a row of pins can be passed over, so that there will be a row of pins from which no pin will project. When all the pins desired are projected toward the interior of the cylinder, the segment D is caused to telescope. The letters or other characters on the type-bars are so placed that when the lugs or bosses on the lower ends of the said bars contact with the projecting pins b', the pin will cause the desired letter on the type-bar to be thrown into alinement and printing position. When all the letters or other characters have been thrown into alinement by reason of the ends of the bars on which they are situated contacting with the corresponding pins in the cylinder, the telescoping portion of cylinder or segment is then withdrawn from the cylinder and is then ready to be printed from. In the machine to which this device is to be attached the cylinder is caused to revolve upon the shaft A by any suitable means, and when a sufficient number of pins have been projected in the cylinder the said telescoping segment will enter the cylinder and by reason of being locked thereto as soon as it starts to enter will turn therewith so long as it remains therein. This telescoping segment will never cover more than one-half of the interior surface of the cylinder, and as it does not commence to telescope until all the pins in its path of descent have been projected, or intentionally skipped, and the last vertical row of pins operated upon has, by the revolving of the cylinder, passed the point at which the projecting takes place, as shown in Fig. 6 of the drawings, before the said telescoping commences, the work of throwing the pins into engaging position is not interfered with by the said telescoping segment, but can proceed as if the segment was not in the cylinder, as each time a pin is projected into the cylinder the said cylinder moves a predetermined distance, bringing a new row of pins into position to be acted upon.

The design of this device is that the relative speed of the revolving of the cylinder, and the descent and rise of the telescoping segment, will be such that the said segment will be in the cylinder during one-fourth a revolution only.

The telescoping segment D, from the instant that it commences its telescoping movement, has made its entire descent and returned to its normal position above the cylinder, is locked thereto by suitable beads upon the head and grooves on the interior of the cylinder between the rows of pins, or in any other

suitable manner, and moves therewith. This, it will be seen, is necessary to cause a proper alinement of the proper types or other characters. It is designed in this device that the cylinder shall make one-fourth a revolution on the shaft while the telescoping and withdrawing of the segment are in progress. It will thus be seen that there will be a quarter or one-fourth of the cylinder that will never be entered by the segment, and that there will be at all times at least one-half of the interior surface of the hollow cylinder that will not be covered by or in line of descent of the segment, and it is the projecting of the pins in this free half of the cylinder that occurs while the segment is in operation. A suitable slicker B^5 is placed by means of a bracket in the cylinder to return the pins to their normal position immediately after the segment is withdrawn from the cylinder. The replacing of the pins is done by the revolving of the cylinder, whereby the projecting pins are brought into contact with the slicker B^5 and returned to their normal position. For convenience the slicker is located at one side of the point at which the pins are projected, as shown in Fig. 6.

It will be observed that by this arrangement and construction of the cylinder and the telescoping segment the projecting of the pins toward the interior of the cylinder can continue at the same time that the said segment is telescoping with and being withdrawn from the cylinder, and when the matter thereon set up is printed from the segment can be immediately again telescoped and another line of letters or other characters thrown into alinement and position for printing without loss of time, thus making the operation and working of the device continuous and uninterrupted.

In Fig. 3 of the drawings I have shown the word "these" thrown into alinement and ready for printing. The several pins in the cylinder which have caused this alinement of the word are indicated by black dots, as will be apparent.

It will be observed that, by reason of the conical shape of the openings or holes *b* in the cylinder B and the conical shape of the pins *b'*, fitting therein, when the said pins are thrust toward the interior of the cylinder they will become locked and held in their proper position until caused to return to normal by a slicker or other suitable means.

This character-selecting device may be used in connection with a type-writing, type-setting, or type-printing machine designed for rapid and continuous operation, and is preferably caused to revolve upon the shaft A by an escapement mechanism of any suitable construction, as shown at B^6. The pins in the cylinder may be projected through the instrumentality of a bank of electromagnets, which bank of electromagnets and escapement mechanism are operated and controlled by and through a suitable keyboard. The above-referred-to mechanisms are not essential to the operation of this character-selecting device, as it may be operated entirely by hand, if so desired. This device is, however, found to be most advantageously used in connection with a machine such as shown and described in my application for improvements in linotype-machines filed on or about July 24, 1895, Serial No. 556,980.

The type-bars are so nicely fitted into the grooves in the telescoping segment that when placed in any one position in the groove they will not move therefrom until caused to do so by contacting with some means for moving them.

It will also be apparent that the purpose for which the cylinder and segment or the character-selecting device is constructed is to set up and aline the type on a curved surface so that the printing from the types so set up may be done by the segment bearing the type turning or revolving in the direction opposite to that of the shaft, or in the same direction, if so desired, over the material to be printed on, whereby no time is lost, as would be the case if the types were set up on a flat surface and a stop made to print from them before the operation of setting up another row of selecting-pins could be commenced.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In character selecting and alining devices the combination of a revolving pin-holder, movable pins in said holder, and a series of longitudinally-movable type-bars adapted to be engaged by the pins in the pin-holder to aline said type-bars, as set forth.

2. A character-selecting device for type-writing and type-setting machines consisting of a revolving cylinder provided with selecting-pins and a telescoping segment having movable type-bars thereon, as set forth.

3. A character-selecting device for type-writing, type setting and printing machines consisting of a cylinder provided with selecting-pins, a revolving segment or rack carrying movable bars thereon, the said cylinder and segment or rack telescoping to bring the desired type into alinement upon the curved surface of the segment, as set forth.

4. A character-selecting device for type-writing, type setting and printing machines consisting of a hollow revolving cylinder having suitably-arranged holes or openings in the wall thereof, pins fitting in said openings or holes, and a telescoping segment having movable type-bars thereon, as set forth.

5. A character-selecting device for type-writing, type-setting and type-printing machines consisting of a hollow cylinder having suitably-arranged conical holes or openings in the wall thereof, conical pins fitting in said openings, and a telescoping segment having movable type-bars thereon, as set forth.

6. A character-selecting device for type-writing, type-setting and type-printing ma-

chines consisting of a hollow cylinder having suitably-arranged conical holes or openings in the wall thereof, conical pins fitting in said openings, stop-bands or checks for said pins, and a telescoping segment having movable type-bars thereon, as set forth.

7. In a character-selecting machine for type-writing, type-setting and type-printing machines a revoluble cylindrical segment having longitudinal grooves therein and movable type-bars seated in said grooves, in combination with a traveling pin-holder having adjustable pins therein, adapted to engage the said type-bars to select and aline letters thereon, as set forth.

8. In a character-selecting device a revolving, telescoping cylindrical segment having longitudinal grooves therein having dovetail bottoms, and movable type-bars in said grooves, in combination with a revolving pin-holder and type-bar-selecting devices therein, as set forth.

9. A character-selecting device for type-writing and type-setting machines consisting of a cylinder having suitably-arranged holes or openings in the wall thereof, pins fitting in said openings, in combination with a telescoping segment having grooves therein having dovetail bottoms, movable type-bars in said grooves having dovetail portions to fit and run in the dovetail bottoms of said grooves, as set forth.

10. A character-selecting device for type-writing and type-setting machines consisting of a hollow cylinder having suitably-arranged conical holes or openings in the wall thereof and conical pins fitting in said openings, in combination with a telescoping segment having grooves therein having dovetail bottoms, movable type-bars in said grooves having dovetail portions to fit and run in the dovetail bottoms of said grooves, as set forth.

11. A character-selecting device for type-writing and type-setting machines consisting of a shaft, a hollow cylinder having suitably-arranged holes or openings in the wall thereof, pins fitting in said openings, in combination with a telescoping segment also mounted on said shaft and having grooves therein and movable type-bars in said grooves, as set forth.

12. A character-selecting device for type-writing, type-setting and type-printing machines consisting of a shaft, sleeve surrounding said shaft, a hollow cylinder mounted on said sleeve and having suitably-arranged conical holes or openings in the wall thereof and conical pins fitting in said openings, in combination with a telescoping segment having movable type-bars thereon, as set forth.

13. A character-selecting device for type-writing, type-setting and kindred machines having a cylinder provided with suitable pins throughout its curved surface for alining type or other characters on a curved surface and adapted to revolve to bring different rows of pins in position to be projected, as set forth.

14. A character-selecting device for type-writing and type-setting machines and machines of a kindred character having a surface provided with conical holes or openings and conical pins fitting in said openings and adapted to be projected into the path of a sliding or moving type-bar, or mechanism controlling type-bars, as set forth.

15. A character-selecting device for type-writing and type-setting machines having a cylinder provided with suitable conical holes or openings therein and conical pins in said openings adapted to be thrust toward the interior of said cylinder and locked in said projected position by the contact of the conical surfaces, as set forth.

16. In a character-selecting machine revoluble selecting devices, means for placing said devices in selecting position, in combination with a rotating and reciprocating type-holder, means to reciprocate said holder to cause the type thereon to contact with the predetermined selecting devices to aline the types, as set forth.

17. In a character-selecting device the combination of a revoluble cylinder having type-selecting devices around the same, with a rotating and reciprocating segmental type-holder having a series of adjustable types thereon, the selecting devices being adapted to be continuously operated, whereby while one set of selected devices is being operated to position and aline the types another set may be in the process of selection, as set forth.

18. In a character-selecting device for type-writing, type-setting type-printing and matrix-making machines, a revolving carrier supporting selecting mechanisms, in combination with a reciprocating carrier having movable types adapted to engage with the selecting mechanisms to bring predetermined type or other characters into alinement, as set forth.

19. In a character-selecting device a cylinder provided with selecting mechanism mounted upon a revolving shaft, a telescoping segment also mounted upon said shaft, but not rigid therewith, carrying movable type thereon, and adapted at stated intervals to telescope said cylinder, withdraw therefrom, and return to its normal position to again telescope the said cylinder, as set forth.

20. In a character-selecting device for type-writing, type-setting and kindred machines a pin-holder provided with conical holes or openings and movable conical pins therein, as set forth.

21. The combination of a series of movable type-bars, a multiplicity of series of type-bar stops, keys and connections for continually shifting said stops, and means whereby the type-bars are brought into contact with sets of projected stops in some of the series, while

stops in the remaining series are being shifted in readiness to properly shift type-bars, and means whereby the said stops are returned to normal after they have shifted the type-bars, as set forth.

22. The combination of a multiple series of vertical and horizontal rows of type-bar stops or shifters moving in an endless path, means for projecting stops in each series located at one side of their path, and means for returning the stops to normal position before they again pass the projecting devices, as set forth.

23. The combination of a multiple series of vertical and horizontal rows of type-bar stops or shifters moving in an endless path, means for projecting stops in the rows located at one side of their path, and means for returning the stops to normal before they again pass the projecting devices, with a series of parallel movable type-bars, and means for causing said bars to contact with and be adjusted by the projected stops, whereby the characters on said bars are simultaneously alined, as set forth.

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

CHARLES ELMER ALLEN.

Witnesses:

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CHAS. S. M. BRIS.