

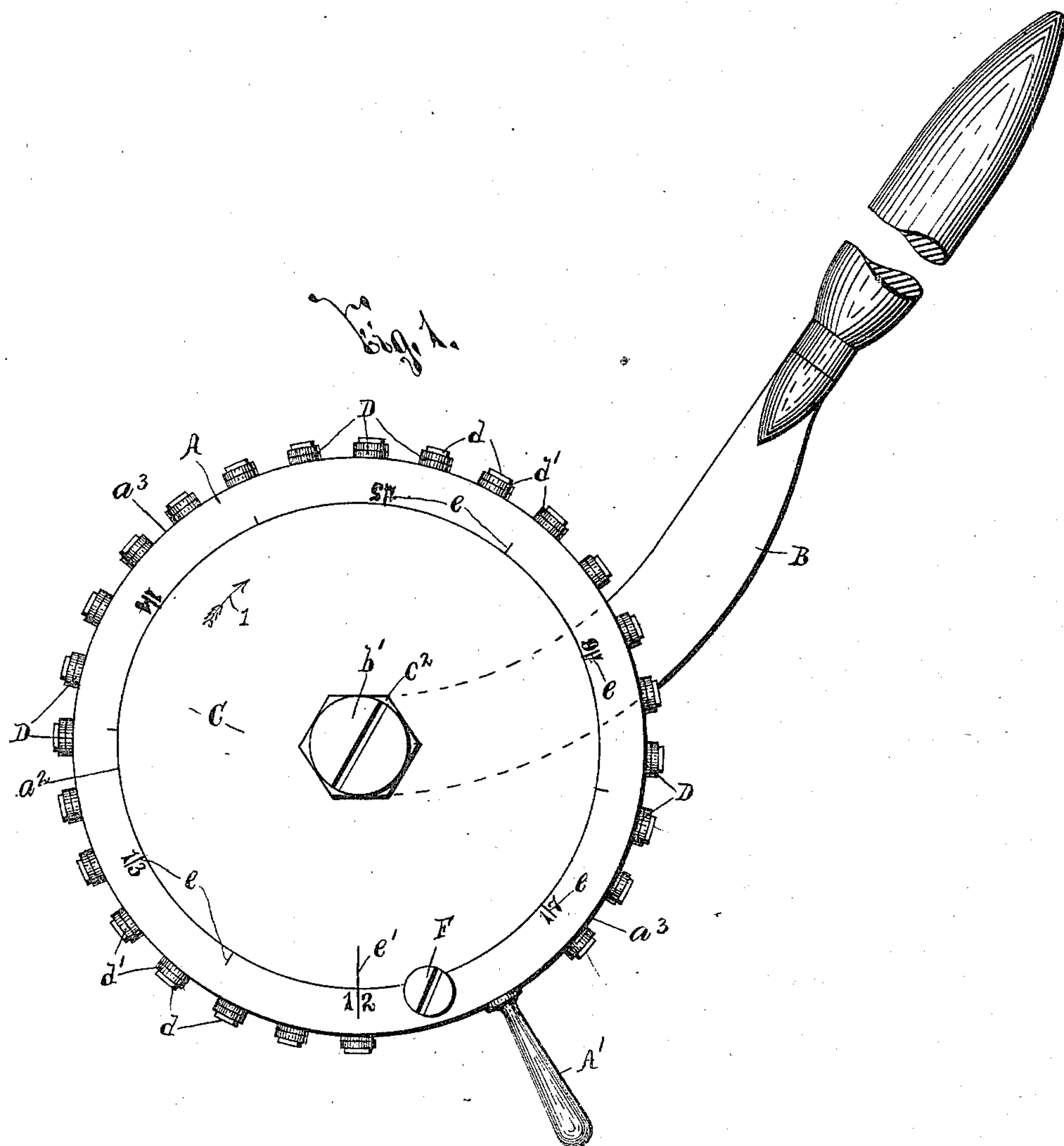
(No Model.)

2 Sheets—Sheet 1.

C. B. KIES.  
PRINTING DEVICE.

No. 573,003.

Patented Dec. 15, 1896.



WITNESSES:

*H. O. Chase,*  
*L. Schoruck,*

INVENTOR

*Charles B. Kies*

BY

*Wm. Parsons*

ATTORNEYS.

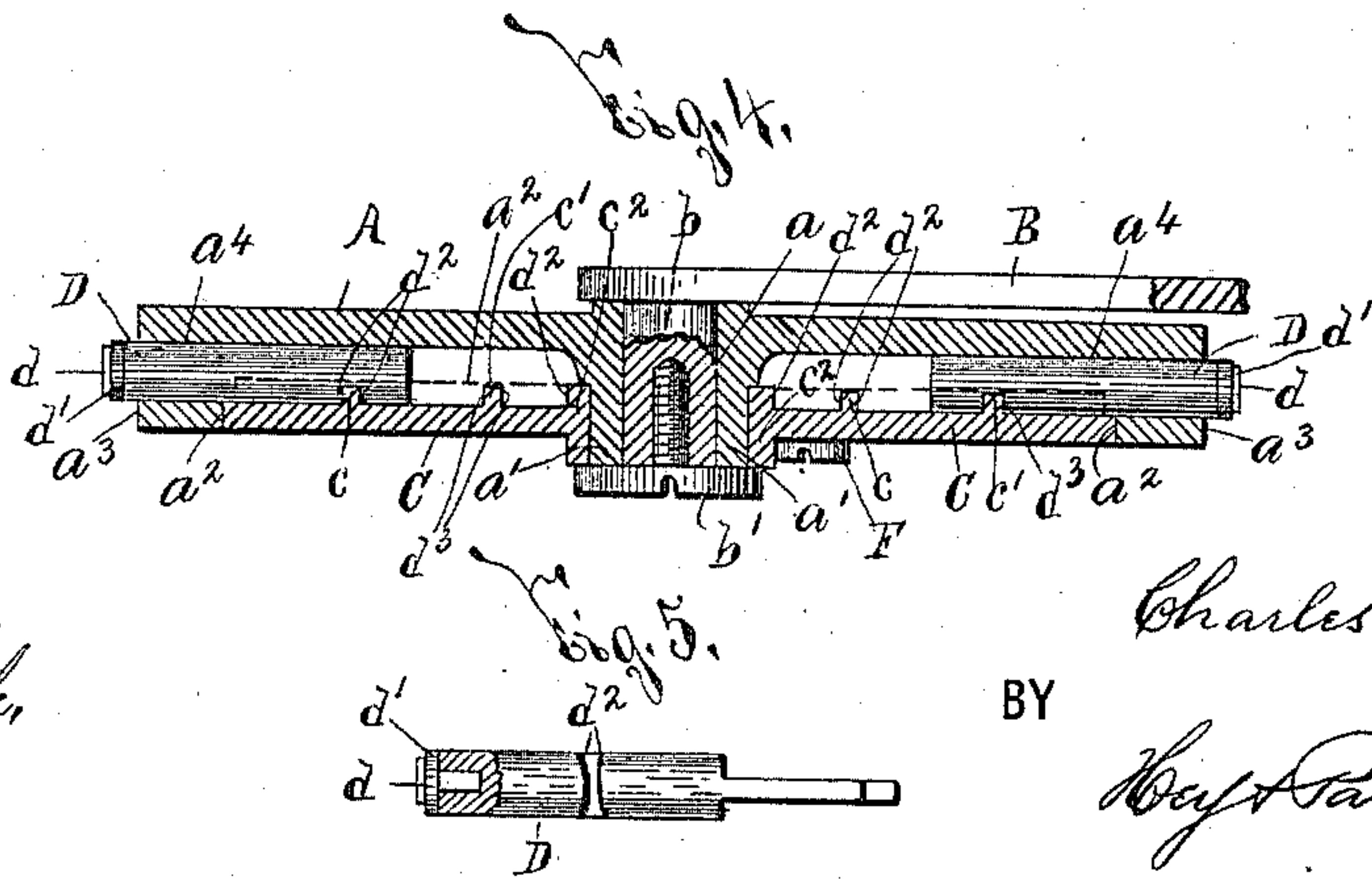
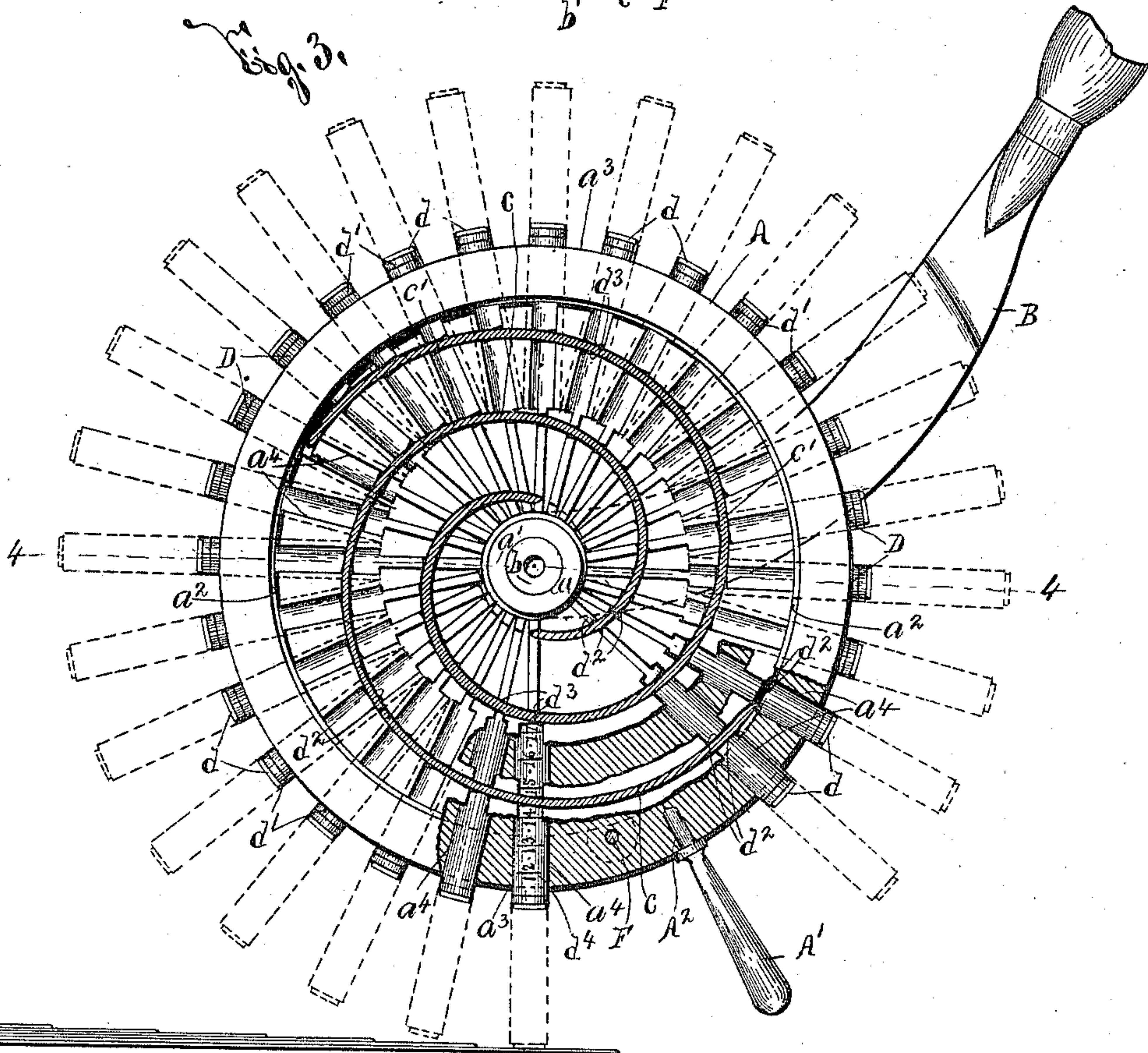
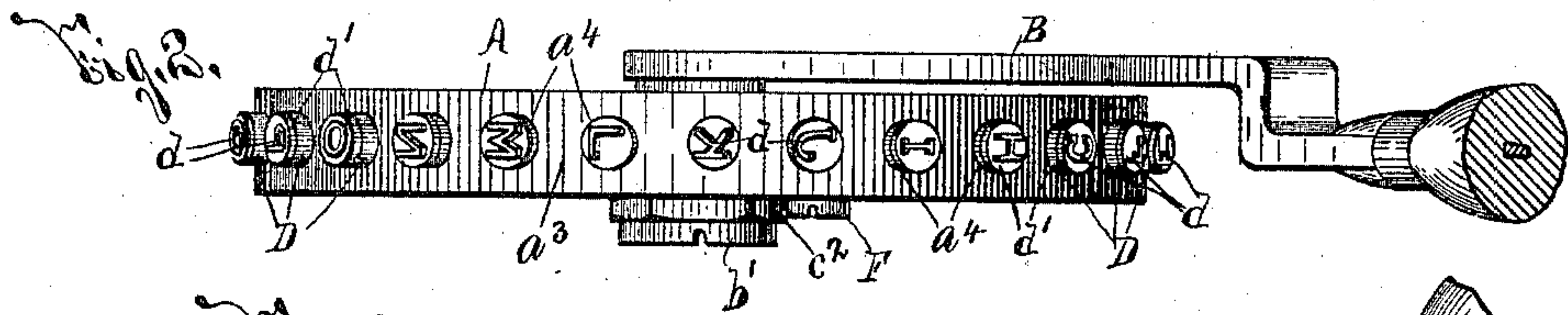
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ATTORNEY S,



# UNITED STATES PATENT OFFICE.

CHARLES B. KIES, OF ROCHESTER, NEW YORK.

## PRINTING DEVICE.

SPECIFICATION forming part of Letters Patent No. 573,003, dated December 15, 1896.

Application filed April 22, 1895. Serial No. 546,630. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES B. KIES, of Rochester, in the county of Monroe, in the State of New York, have invented new and useful Improvements in Printing Devices, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to improvements in printing devices, particularly applicable for printing the indexes of books, &c., and has for its object the production of a device which is highly efficient and is readily adjusted for use upon pages of different lengths; and to this end it consists, essentially, in a frame, movable type-bars guided in the frame and provided with engaging shoulders, and a substantially spiral cam for engaging said shoulders and varying the position of the type-bars.

The invention also consists in the detail construction and arrangement of the component parts, all as hereinafter more particularly described, and pointed out in the claims.

In describing this invention reference is had to the accompanying drawings, forming a part of this specification, in which like letters indicate corresponding parts in all the views.

Figures 1 and 2 are respectively face and edge views of my improved printing device, a portion of its handle being broken away and its type-bars being shown as adjusted inwardly to their initial position. Fig. 3 is an elevation, partly in section, of said printing device, the disk provided with the adjusting-cam being removed for the purpose of illustrating said cam and the type-bars being indicated by dotted lines as adjusted to their extreme outward position. Fig. 4 is a sectional view taken on line 4-4, Fig. 3; and Fig. 5 is an elevation of one of the detached type-bars.

A represents the frame of my improved printing device, which is of any desirable construction, but is preferably formed circular, and is journaled upon a spindle *b*, projecting from a handle B, only part of which I have here illustrated. The spindle *b* is passed through an aperture *a* in the frame A and is provided with a socket extending inwardly from its free extremity, and a suit-

able screw or other clamping device *b'* is provided with a shank arranged in said socket and with a head which is formed of greater diameter than the outer end of the spindle *b* and is engaged with said outer end of the spindle and with the outer face of a hub *a'*, projecting from the adjacent face of the frame A. The front side face of the frame A is formed with an annular recess *a<sup>2</sup>*, encircling the hub *a'*, and a suitable disk C is arranged within this recess for closing the same. The outer face *a<sup>3</sup>* of the frame A is preferably circular, and extending radially therefrom are a series of guides *a<sup>4</sup>*, having their inner ends arranged adjacent to the hub *a'* and their sides adjacent to the disk C, opening from the recess *a<sup>2</sup>*.

D are type-bars movable in the guides *a<sup>4</sup>* and having their outer ends projecting beyond the face *a<sup>3</sup>* and provided with suitable type *d*, which are preferably formed upon separable extremities or end pieces *d'* of the bars D. These extremities or end pieces are fixed to the remaining portion of the bars in any suitable manner, as by sweating, and it will be understood that, if desired, the type *d* may be secured in any other suitable manner to the type-bars. The outer ends of the guides *a<sup>4</sup>* and the type-bars D are preferably circular in cross-section for facilitating their manufacture, and the inner ends of said guides and bars are angular in cross-section for preventing twisting of the type-bars.

The type-bars D, although arranged radially, do not preferably form a complete circular series, as two of the bars are considerably separated, as clearly seen at Figs. 1 and 3, and form the beginning and end of the curved plane in which said bars are arranged.

The outer side of each of the type-bars D adjacent to the disk C is provided with a transverse groove and a pair of separated convex shoulders *d<sup>2</sup>*, forming the sides of said groove, and said shoulders are preferably arranged in a substantially spiral plane, having its opposite extremities extended beyond each other and formed of substantially the same curvature.

The disk C, previously mentioned, is formed with a spiral-shaped cam *c*, of any desirable construction, arranged in substantially the same plane as the shoulders *d<sup>2</sup>*, and, as clearly



seen at Fig. 3, the cam is interposed between the shoulders  $d^2$  of each type-bar, and is therefore capable of reciprocating the same in opposite directions. Although a single  
 5 cam  $c$  may be used for reciprocating the type-bars D, I preferably use a second cam  $c'$  of similar construction, secured to the disk C and engaged with spirally-arranged shoulders  $d^3$ , which are provided upon the bars D and  
 10 are formed by additional transverse grooves in said bars arranged at the inner sides of the grooves forming the shoulders  $d^2$ . The cam  $c'$  is substantially a duplicate of the cam  $c$ , and is arranged with its extremities diametrically opposite to the extremities of said  
 15 cam  $c$ .

The disk C closely fits the recess  $a^2$ , and its central portion is formed with a hub  $c^2$ , journaled on the hub  $a'$  between a shoulder at  
 20 the base of said hub and the head of the screw  $b'$ , and consequently the disk C is free to revolve or rock on substantially the same axis as the frame A. As the disk C is revolved in the direction indicated by arrow 1 at Fig.  
 25 1 the position of the cams  $c$   $c'$  is changed and the type-bars are reciprocated within the guides  $a^4$ , and consequently the length of the curved plane in which their outer ends are arranged is greater than the plane in which  
 30 their ends are arranged at Figs. 1 and 2.

The disk C is capable of sufficient movement in the direction indicated by arrow 1 at Fig. 1 to force the type-bars D outwardly until they assume the position indicated by dotted lines at Fig. 3; but it is evident that any  
 35 desired adjustment of the type-bars may be effected, and that, if desired, the length of the type-bars and the size and curvature of the cams  $c$   $c'$  may be varied to render my invention capable of any desired use.

In order that the cams  $c$   $c'$  may be readily moved, one end of a suitable hand engaging piece  $A'$ , Fig. 3, is removably arranged in a  
 45 socket  $A^2$  in the edge of the frame A, and the user of the device readily holds the frame A from movement as he adjusts the disk C. It is very desirable to regulate the amount of adjustment of the cams  $c$   $c'$ , and consequently the front face of the frame A is formed with  
 50 a series of graduations  $e$  adjacent to the recess  $a^2$ , and the front face of the disk C is formed with an indicator  $e'$ , consisting, preferably, of a radial line, which may be alined with the graduation  $e$ . The graduations  $e$   
 55 are here shown as provided with indicating-numerals, as 12 13 14 15 16 17. The disk C is thus adjusted until the indicator  $e'$  is alined with the desired graduation  $e$ , whereupon the disk is held in its adjusted position  
 60 by a suitable clamping device, (here shown as a screw F,) having its shank movable in the outer face of the frame A and its head engaged with said disk C.

In a common construction of my printing device the curved plane in which the outer ends  
 65 of the type-bars are arranged measures twelve inches, and the printing device is then ad-

justed for use upon pages twelve inches long, and if one or more of said pages are provided with indicating-surfaces equal in number to the numbers of the type-bars D each indicating-surface will be provided with an indicating-character as the frame A is rolled  
 70 lengthwise of the page. Should this construction of my machine be required for use upon a page seventeen inches long, the disk C is moved around its axis until the graduation "17" thereon is in alinement with the indicator  $e'$ , whereupon the outer ends of the  
 75 type-bars are arranged in a curved plane seventeen inches long and are suitably adjusted.

Providing it is desired to vary the number of indicating-characters to be placed upon the book or other article to be printed with  
 85 said characters, one or more of the end type-bars are removed from the frame A, and without other change in my invention the cams  $c$   $c'$  then operate to adjust the remaining type-bars in the same manner that they  
 90 adjust all of the type-bars when none are removed. The adjustment upon the outer face of the frame A and the disk C is inadequate for determining the adjustment of the type-bars when one or more of the end type-bars  
 95 are removed, as the adjustment on said frame and disk is only correct when all of the type-bars are in position. Consequently one or more of the type-bars are provided with a series of graduations  $d^4$ , which are alined  
 100 with the face  $a^3$  as said bars are adjusted outwardly, and thus indicate the desired adjustment when one or more of the type-bars are removed from the frame A. In practice I usually remove but one of the type-bars  $d$ ,  
 105 and consequently only one of the remaining type-bars is provided with graduations  $d^4$ , but it is obvious that additional type-bars may be removed and that suitable graduations may be formed upon additional remain-  
 110 ing type-bars.

The operation of my invention will be readily perceived upon reference to the foregoing description and the accompanying drawings, and it will be particularly noted that a book-  
 115 binder or printer provided therewith can quickly letter pages of different length and can positively and quickly adjust the type-bars for the desired length of the pages upon which the index is printed.

The exact construction and arrangement of the parts of my printing device may be somewhat varied without departing from the spirit of my invention, and hence I do not  
 120 herein specifically limit myself thereto.

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

1. In a printing device, the combination of a handle, a frame A connected to the handle  
 130 and having one of its side faces provided with an annular recess, said frame being provided with a series of guides  $a^4$  extending radially from its peripheral face and having their in-



ner ends communicating with said recess, the  
outer ends of the guides  $a^4$  being formed sub-  
stantially circular in cross-section and the  
inner ends thereof being formed angular in  
5 cross-section and of less width than said outer  
ends, a disk C arranged in the recess  $a^2$  and  
having its inner side face provided with a  
projecting spiral cam  $c$ , and an additional  
projecting spiral cam  $c'$  arranged with its ex-  
10 tremities diametrically opposite to the ex-  
tremities of the cam  $c$ , and type-bars D mov-  
able in the guides  $a^4$  and engaged with the ad-  
jacent faces of the frame A and the disk C,  
the outer ends of the type-bar being formed  
15 substantially circular in cross-section and the  
inner ends thereof being formed of angular  
cross-section and of less thickness than said  
outer ends, and each of said type-bars having  
a transverse groove provided with convex  
20 faces formed in its outer end for engaging  
one cam, and an additional groove formed in

its inner end for engaging the other cam, sub-  
stantially as and for the purpose set forth.

2. In a printing device, the combination of  
a frame, type-bars guided in the frame and 25  
movable beyond its outer peripheral face, one  
of said bars being removable from the frame,  
a cam for varying the position of the remain-  
ing type-bars, and graduations upon one of  
the remaining type-bars for indicating the 30  
adjustment of the remaining type-bars when  
said one of the type-bars is removed, sub-  
stantially as described.

In testimony whereof I have hereunto  
signed my name, in the presence of two at- 35  
testing witnesses, at Rochester, in the county  
of Monroe, in the State of New York, this  
22d day of March, 1895.

CHARLES B. KIES.

Witnesses:

HAMPDEN HYDE,  
E. A. WEISBURG.