C. C. POOLE.

LINE SPACE INDICATOR FOR TYPE WRITERS.

APPLICATION FILED MAR. 8, 1906.

927,750.

Patented July 13, 1909.

2 SHEETS—SHEET 1.

Fig. 1.

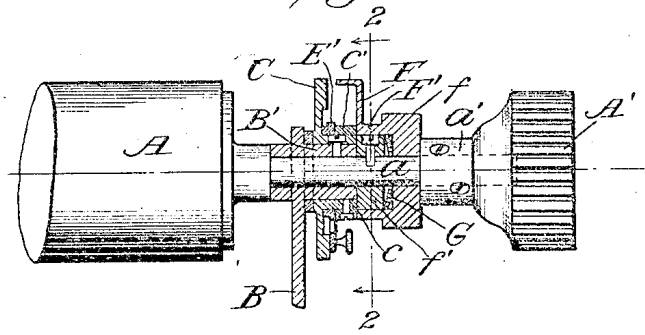


Fig. 2.

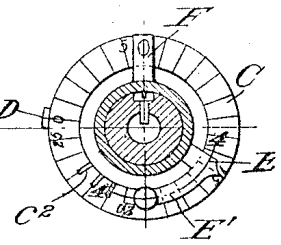


Fig. 3.

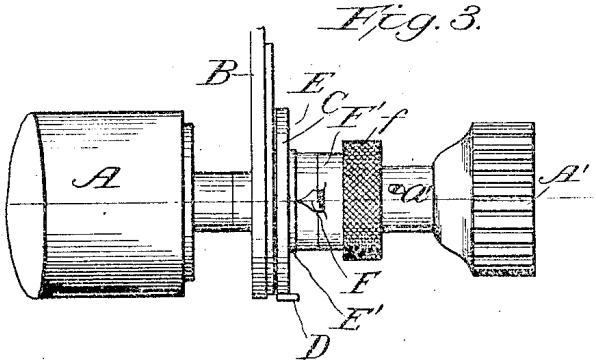


Fig. 4.

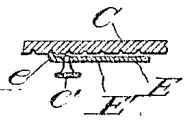


Fig. 5.

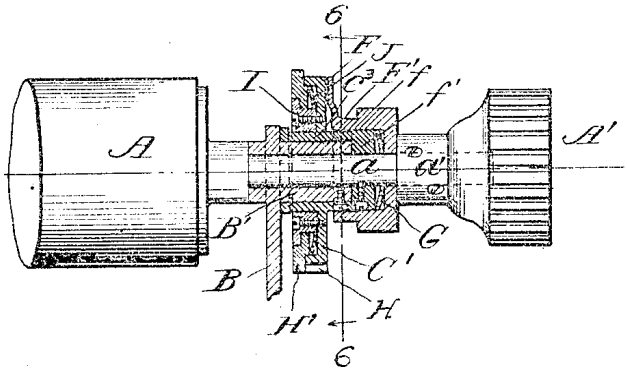
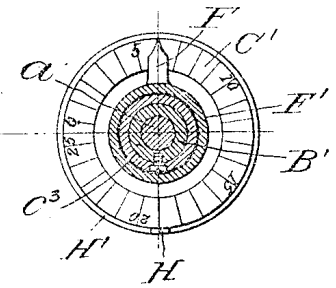


Fig. 6.



Witnesses

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2 SHEETS—SHEET 2.

Fig. 7.

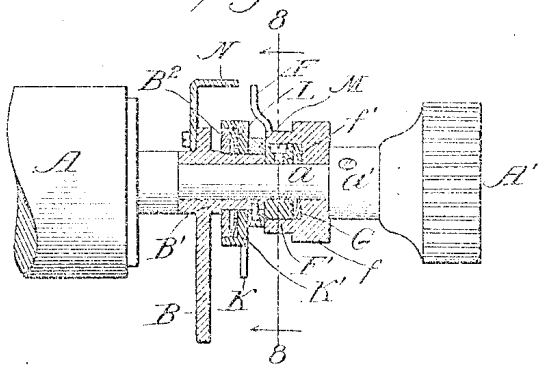


Fig. 8.

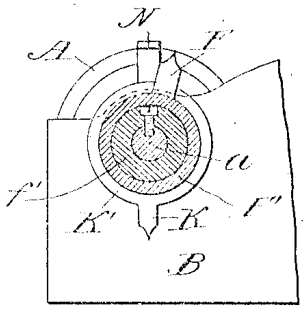


Fig. 9.

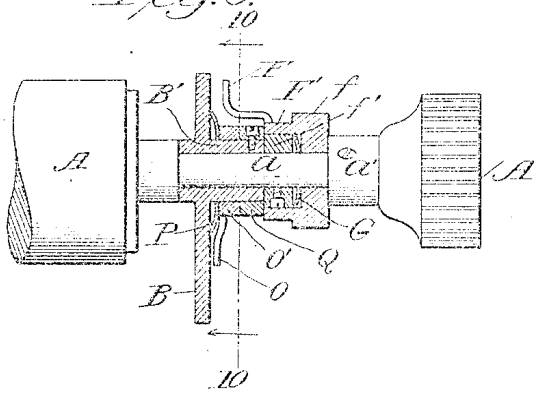
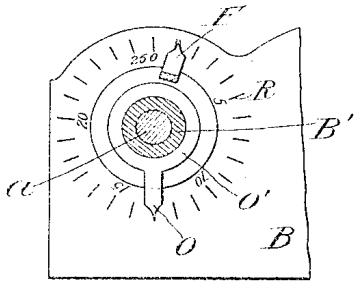


Fig. 10.



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UNITED STATES PATENT OFFICE.

CHARLES C. POOLE, OF EVANSTON, ILLINOIS, ASSIGNOR TO THE OLIVER TYPEWRITER COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

LINE-SPACE INDICATOR FOR TYPE-WRITERS.

No. 927,750. Specification of Letters Patent. Patented July 13, 1909.

Application filed March 8, 1906. Serial No. 304,975.

To all whom it may concern:

Be it known that I, CHARLES C. POOLE, a citizen of the United States, of Evanston, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Line-Space Indicators for Typewriters; and I do hereby declare that the following is a full, clear, and exact description thereof, 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 novel features of construction in the paper feeding devices of typewriting machines and more especially to an indicating mechanism adapted to indicate the extent to which the platen must be turned backward by hand at the time of inserting new original sheets when making carbon copies of a number of writings on a single record strip or sheet with uniform predetermined spaces between said carbon copies.

The invention consists in the matters hereinafter described and more particularly pointed out in the appended claims.

In the accompanying drawings illustrating my invention: Figure 1 is a sectional view taken on a vertical plane passing through the central axis of the platen shaft, showing in side elevation the right hand end of the platen and platen shaft and the turning knob on said platen shaft and illustrating, in vertical section, the bearing for the platen shaft and parts constituting my invention. Fig. 2 is a sectional elevation, taken on line 2—2 of Fig. 1. Fig. 3 is a plan view of the parts shown in Fig. 1. Fig. 4 is a detail section, taken on the curved line 4—4 of Fig. 2. Fig. 5 is a sectional view, like Fig. 1, illustrating a modified construction of the parts constituting my invention. Fig. 6 is a sectional elevation, taken on line 6—6 of Fig. 5. Fig. 7 is a sectional view, like Fig. 1, showing another form of device embodying the principal features of the invention. Fig. 8 is a sectional elevation, taken on line 8—8 of Fig. 7. Fig. 9 is a sectional view like Fig. 1, illustrating still another form of device embodying the principal features of my invention. Fig. 10 is a sectional elevation, taken on line 10—10 of Fig. 9.

As shown in said drawings, A indicates the platen or paper supporting roller of a typewriting machine, and B the right hand end plate or frame piece of the paper carriage, or frame in which the platen is mounted. The platen is provided with a platen shaft *a* which is mounted to turn in a bearing sleeve B^1 rigidly attached to the frame piece or plate B. To the outer end of the platen shaft *a* is secured the platen turning knob A^1 by which the platen may be turned by the hand of the operator.

The parts above described, as illustrated, correspond with those now used in typewriting machines of the kind known as the "Oliver".

Referring now more particularly to the form of the device shown in Figs. 1, 2, 3 and 4, C indicates an annular member or disk which is rigidly attached to the machine frame concentrically with the platen and platen shaft. Such disk C is provided with circumferential graduations or scale marks spaced at uniform angular distances apart to correspond with the line space movements of the platen. Said disk is provided with a zero mark and preferably with an affixed pointer D coinciding with said zero mark. The graduation or scale marks are progressively numbered from the said zero mark or pointer around the disk.

E indicates an index finger or pointer, which is mounted to turn on the machine frame concentrically with the disk C and which is adjustable circumferentially of the disk, so that it may be placed at varying angular positions with respect to the zero mark or pointer D and will remain at any point to which it is moved or adjusted.

F indicates an index finger or pointer which is mounted upon and turns with the platen shaft and is adapted to be turned or rotated relatively to the platen and to remain at any point to which it may be moved or adjusted. So far as the general ends to be attained are concerned, the pointer F may be engaged with the platen shaft by any form of device adapted to hold said pointer from freely turning on the platen shaft while adapting it to be turned or rotatively shifted on the shaft by the hand of the operator, as desired. Likewise the pointer E may be connected with the frame of the machine, or the disk C, by means adapted to retain said pointer in any position in which it may be placed or to which it may be adjusted with respect to the pointer D, while enabling said pointer E to be readily shifted or adjusted when desired.

In the embodiment of my invention illustrated in Figs. 1 to 4, the pointer F is frictionally engaged with the shaft so that it turns with the shaft but may be readily turned thereon to effect its adjustment while the pointer E is held in adjusted position relatively to the disk C by an interlocking connection between said pointer and the disk.

Now referring to the details of construction in the features above referred to, illustrated in Figs. 1, 2, 3 and 4 of the drawings, the disk C is rigidly attached to the sleeve B^1 which forms the bearing of the platen shaft, which sleeve is extended outwardly from the frame plate B to receive said disk; the disk being conveniently provided with a hub or sleeve *c* which surrounds the sleeve B^1 and is secured thereto by a screw or other attaching means. The pointer E has the form of an arm attached to a ring E^1 which turns on the hub *c* of the disk C and is held thereon by a collar c^1 secured to said hub. Near its outer end the pointer E is provided with a laterally extending spring-arm E^1 the extremity of which is provided with a holding tooth *e* that extends toward the face of the disk and is adapted to engage either one of a series of radial notches c^2 formed in the face of the disk and preferably coinciding with the scale marks thereon. The spring-arm E^1 is provided with a button or handle e^1 by which the arm may be drawn out or away from the face of the disk, to disengage the holding tooth *e* therefrom, and by which the pointer E may be turned or rotated in the act of adjusting it on the disk.

The pointer F is attached to a sleeve F^1 which is mounted to turn on the platen shaft outside of the disk C. Said sleeve is provided with a knurled flange *f* by which said sleeve F^1 and the pointer F may be easily rotated on the shaft by the fingers. Frictional connection between the sleeve F^1 and the shaft is afforded by means of a stationary collar f^1 affixed to the shaft and located within a concentric recess formed in the inner face of the sleeve F^1 and a concave, sheet-metal, elastic spring-ring or washer G interposed between the collar f^1 and the bottom of the recess in the sleeve F^1. Said sleeve F^1 is pressed toward the collar f^1 and the spring-washer G maintained in bearing contact with said parts by the collar a^1 of the turning-knob A^1, the inner end of which collar a^1 forms a shoulder against which bears the outer end of the sleeve F^1.

The operation of the indicating device described will be understood from the following: The general purpose of the line space indicating device is to indicate to the operator the extent to which the platen must be turned backward when inserting a sheet of paper into the machine in order to bring the first line of printing the desired distance from the top margin of the paper, according to the space occupied by the heading on the sheet. More particularly, the indicating device is designed for use in cases where it is desired to make out a number of bills or invoices and to make carbon copies of the same on a single strip or long sheet of paper. In a case of this kind, it is desirable that the copies should be spaced as closely as possible on the record strip but at uniform distances apart, or with equal spaces between several records or copies, and the line space indicating device is employed to enable the operator to readily insert a new sheet for each separate original bill or invoice in such manner that the first printed line of the carbon copy shall be located at a desired distance from the last printed line of the preceding carbon copy. As for instance, supposing the record strip and a sheet of paper for the original bill or invoice have been together inserted into the machine with carbon paper between them, the first bill or invoice may be printed and the carbon copy will be made in the usual manner on the record strip. The printing of the bill or invoice having been completed, the platen will then be turned to carry the original sheet out of the machine, and the platen then turned backwardly to move or shift the record strip backwardly to such a point that, when a new sheet is inserted, the part of the new sheet on which the first line is to be printed, will be located at such distance from the last line of the carbon copy as to leave a desired space between the carbon copies, on the record strip.

In using the indicating device described, the operator sets the pointer E at a distance from the pointer D or zero-mark on the disk C, equal to the distance which it is necessary to turn the platen backward after printing the last line of one bill or invoice in order to start a new original sheet into the machine in such manner that the first line of the next bill or invoice when started at its proper place on the sheet will, on the carbon copy sheet, come at a distance desired, as two, three or four line-spaces from the last line of the preceding carbon copy. The setting of the pointer E may be effected as follows: In the case of an "Oliver" typewriter, one of the original sheets or blanks for a bill or invoice, which usually has a printed heading, is inserted in the machine with its advance margin against the lower guide roller or gripping roller by which the sheet is fed forward, and in position to be gripped and fed forward when the platen is turned in its usual feeding direction. The pointer F is, at this time, turned on the platen shaft to bring the same opposite the zero-mark or pointer D on the disk. The platen is then turned to feed the paper forward until brought into position for printing the first line, which is usually the date line. The platen is then turned forward

a space of two or three additional lines according to the distance desired between the carbon copies on the record sheet. The operator then notes the point on the scale at which the pointer F stands. He then releases the pointer E from the disk and turns said pointer until it stands at a point on the scale, counting backward from the zero point, corresponding with the distance that the pointer was turned forward from the zero point in advancing the paper. That is to say, the pointer E is placed at an angular distance backward from the zero point equal to the angular distance the pointer was turned forward from the zero point in advancing the paper; this distance having been noted by him at that time, as above stated. The angular distance between the zero mark or pointer D and the pointer E will then be equal to the distance which it is necessary to turn back the platen for inserting a new sheet, this distance being represented by the length of the heading on the blank bill or invoice plus the distance around the platen from the gripping roller to the striking point of the type, plus the space to be left between the carbon copies on the record sheet. The parts will now be adjusted for use in connection with the same bill or invoice heads or sheets, so long as it may be desired to use the same.

In the use of the device in printing, the bill or invoice sheet and the record sheet are inserted into the machine, with the carbon paper between them, in the usual manner. After the printing of the first invoice is finished, on completion of the last line thereof, the sleeve F^1 will be turned on the platen shaft to bring the pointer F thereon opposite the zero mark or pointer D and the said pointer F will be allowed to remain in this position. The platen will then be turned forward far enough to remove the original sheet and then turned backward until the pointer F is carried past the zero-point and around the disk until it reaches the pointer E when it is stopped. The platen will then be in position for the insertion of the next original sheet which will be inserted by thrusting it into the machine until its top edge comes in contact with the first guide roller by which the sheet is gripped to the platen, and the platen will then be turned forwardly to carry the record sheet and the new original sheet into position for printing the first line on said new original sheet. It follows that by the use of the device described, the operator having once determined the angular distance or number of line spaces through which the platen must be turned backwardly before starting a new sheet into the machine, in every instance, or when inserting each new original sheet for an original bill or invoice, is enabled to invariably turn the platen backward the same distance, according to the angular distance between the zero-mark or pointer D and the pointer E on the disk. The operator will thus be able to invariably bring the first printed line of each carbon copy on the record sheet at the same distance from the last printed line of the previously made copy on said record sheet, thereby leaving uniform spaces between the several carbon copies on the record sheet.

The graduations or scale-marks on the disk C are not essential or necessary but are useful only to enable the pointer E to be set by the operator in desired positions for original sheets having headings of different widths, when the operator knows from recollection the places on the scale at which the pointer must be located for different original sheets. Moreover, as the graduations correspond with the line spaces, if the operator desires to make the spaces between carbon copies greater or less this can be done by merely shifting the pointer E backward or forward one or more spaces as desired.

Inasmuch as the angular distance between the pointers D and E will, in any case, correspond with the extent of backward turning movement of the platen required, it is immaterial whether the pointer D or zero-mark, or the adjustable pointer E be used to mark the starting point of the backward turning movement. In this latter case, in first effecting adjustment of the pointer E, the pointer F will be set at the zero mark when the top edge of the sheet is in contact with the lower gripping roller and the platen turned to feed forward the paper until the paper is brought into position for printing the first line thereon, and two or three additional line spaces, to give the desired spaces between the carbon copies, in the manner before described. The pointer E will then be placed at the point on the scale reached by the pointer F at the end of its forward turning movement. The distance through which the platen must be turned backward in inserting each new sheet will then be measured backwardly along the scale from the pointer E to the zero point, and at the completion of the last line of each bill or invoice the pointer F will be turned on the platen-shaft to bring the same opposite the pointer E, and the platen will then, preparatory to the insertion of a new sheet, be turned backwardly until the said pointer F reaches or coincides with the zero-point on the stationary scale.

In Figs. 5 and 6 is shown a modified form of construction in the mounting of a pointer which is adjustable on a stationary disk and in means for holding said pointer adjustably in position relatively to the said disk. In this instance, a disk C^1 is employed which is provided with a hub or sleeve c^3 that surrounds and is rigidly attached to the stationary sleeve B^1. The said disk C^1 is provided with an annular recess in its inner face, and against

the marginal part of its inner face is mounted a rotative ring H^1 adapted to turn on the disk and the margin of which projects slightly beyond the disk and is preferably knurled to enable said ring to be easily turned by the fingers. Said ring H^1 is held against the disk by means of a ring I surrounding the hub c^3 at the inner face of the disk C^2 and secured to said disk by screws or otherwise; said ring I having an outwardly extending flange that overlaps the inner margin of the ring H^1. Between the inner face of said ring H^1 and the bottom of the annular recess in the disk C^1 is located a concave, spring ring or washer J which is confined between said parts and affords frictional resistance to the turning of the ring H^1 on the disk C^1. The said ring H^1 carries a pointer H that extends horizontally from the ring across the cylindric face of the disk C^1 and terminates at the outer face of said disk and adjacent to the scale marks on said disk. By turning said ring H^1 on the disk, the pointer H is brought into any desired position on the scale, or, in other words, adjusted to any desired angular position with respect to the zero mark on the disk. In this instance, the pointer F is mounted on the platen shaft in the same manner as shown in Figs. 1, 2 and 3, these parts being like those described in connection with said Figs. 1, 2 and 3 and correspondingly lettered on the drawing. The form of construction shown in said Figs. 5 and 6 affords a means for adjusting the pointer H relatively to the disk which may be very easily and conveniently manipulated.

The graduations or scale-marks on the disk, being used merely for convenience in setting the pointer E from memory and not being necessary for use in setting said pointer, said disk C and its graduations may be omitted and in that case the pointer D, or the zero-mark on the disk, may be replaced by an indicating arm or pointer fixed upon the frame and adapted to co-act with a pointer having angular adjustment with respect to said fixed pointer. A construction of this latter kind is shown in Figs. 7 and 8. In this instance, a stationary pointer N is secured fixedly to the frame, preferably extending upwardly from the frame vertically above the platen shaft and having its upper end or point directed forwardly or outwardly, parallel with the said shaft. On the stationary sleeve B^1 is mounted an adjustable pointer K which is attached to a ring K^1 that turns on said sleeve B^1. Between the ring K^1 and a fixed collar B^2 on the sleeve B^1 is located a concave spring-washer L which is held in compression between the ring K^1 and the collar B^2 by means of a ring M secured by a screw or otherwise to the outer end of the sleeve B^1, and against which bears the ring K^1. This construction enables the pointer K to be moved or rotated about the fixed sleeve B^1 by hand, the frictional connection between the said pointer and sleeve serving to hold the pointer in any angular position to which it may be adjusted. In this instance, the platen shaft is provided with a pointer F which is mounted on the platen shaft in the same manner as is the like pointer shown in Figs. 1, 2 and 3. The operation of the form of device shown in said Figs. 7 and 8 is the same as that of the form first described; the distance through which the platen must be turned backward to give uniform spaces between the carbon copies on the record sheet being determined by the angular distance apart of the fixed pointer N and the angularly adjustable pointer K. The original setting of the pointer K in this form of construction may be conveniently effected as follows: One of the sheets on which the bill or invoice is to be printed, the same usually having a printed heading, is placed in the machine with its upper edge in position to be gripped by the first guide roller. The collar F^1 will then be turned on the platen shaft to bring the pointer F opposite the fixed pointer N. The platen will then be turned forward to carry the sheet into position for printing the first line thereon and two, three or four additional line spaces as required for the distance between the carbon copies on the record sheet. The pointer K will then be turned on the sleeve B^1 until it reaches a position coinciding with the new position of the pointer F. The distance between the pointers N and K will then indicate the angular distance that the platen must be turned backward preparatory to inserting each new or additional sheet. When the last line on a bill or invoice has been printed, the pointer F will be turned on the platen shaft to bring it opposite the pointer K, the platen will then be turned forward to carry the printed sheet out of the machine and then backward, past the stationary pointer N, to said pointer K. The new sheet may then be inserted and the platen turned forwardly to bring the sheet into position for printing.

A circular scale may be marked or formed directly upon the end plate of the carriage frame, instead of being formed upon a circular disk applied to the bearing sleeve of the shaft as in the form of construction shown in Figs. 1 to 6, which were designed for convenience in applying the device to the carriage of an "Oliver" machine as now made. A construction in which the circular scale is marked directly upon the end plate of the carriage frame is shown in Figs. 9 and 10. In this instance, as clearly seen in Fig. 10, said end plate B of the carriage frame is so shaped as to give space for the marking thereon of a circular scale concentric with the platen-shaft, as indicated by R in Fig. 10. An adjustable pointer O, in this instance, is used

in connection with said scale, said pointer having the form of an arm on a ring O' which surrounds the bearing sleeve B' of the platen shaft adjacent to the outer face of the end-plate B. A concave, spring-washer P, is interposed between the said ring O' and the adjacent face of the plate B. A collar Q, secured to the outer end of the sleeve B', holds the ring O' from outward endwise movement on the sleeve B', and maintains the spring-washer P in frictional contact with said ring O' and with the plate B. The pointer O may be turned or adjusted to any angular position relatively to the zero-mark of the scale and will be held by friction in any position to which it may be adjusted. The platen shaft is, in this instance, provided with a pointer F, like that shown in the other figures of the drawings, and which has rotative adjustment on the shaft by means of a frictional connection with the shaft, like that hereinbefore described and the parts of which are lettered in Figs. 9 and 10 to correspond with the like parts shown in Figs 1, 2 and 3. In the use of this form of the device the pointer C may be originally adjusted in the same manner as before described in connection with the pointer K shown in Figs. 7 and 8, and the device may be used in the same way; the zero mark on the scale K serving in place of the stationary pointer N of Figs. 7 and 8.

I claim as my invention:—

1. The combination with a rotative platen and a frame in which it is mounted, two pointers mounted on the frame, one of which is fixed to the frame and the other of which has angular adjustment on said frame relatively to the fixed pointer and a third pointer which turns with and has rotative adjustment relatively to said platen.

2. The combination with a rotative platen, a platen-shaft and a frame in which the platen-shaft is mounted, of two pointers mounted on the frame, one of which is fixed to the frame and the other of which has angular adjustment on the frame relatively to the fixed pointer and a third pointer which is carried by the platen-shaft and turns with, and has rotative adjustment relatively to, said platen.

3. The combination with a rotative platen, and a frame in which it is mounted, of two pointers mounted on the frame, one of which is fixed to the frame and the other of which is movable on the frame in a curved path concentric with the platen, means for holding said second pointer at different angular positions on the frame relatively to the fixed pointer, and a third pointer which turns with and has rotative adjustment relatively to the platen.

4. The combination with a rotative platen and its shaft and a frame in which said shaft is mounted, of two pointers mounted on the frame, one of which is affixed to the frame and the other of which is movable on the frame in a curved path concentric with the platen, means for holding the said second pointer in different angular positions on the frame relatively to the fixed pointer, and a third pointer which is mounted on and turns with said platen-shaft and is capable of rotative adjustment on said shaft.

5. The combination with a rotative platen and its shaft, and a frame in which said shaft is mounted, of two pointers mounted on the frame, one of which is fixed to the frame and the other of which is adjustable on the frame in a curved path concentric with the platen, and a sleeve mounted on said shaft and carrying a third pointer, said sleeve turning with the shaft and being capable of rotative adjustment thereon.

6. The combination with a rotative platen and its shaft, and a frame in which said shaft is mounted, of two pointers carried by the frame, one of which is fixed to the frame and the other of which has angular adjustment on said frame relatively to the first pointer, and a third pointer which is mounted on and turns with the said platen-shaft and has frictional engagement with said shaft affording rotative adjustment thereof on said shaft.

7. The combination with a rotative platen, a platen-shaft and a frame in which said shaft is mounted, provided with a fixed bearing sleeve for the shaft, of two pointers carried by the frame, one of which is fixed to the frame and the other of which is mounted on said bearing sleeve and has angular adjustment thereon relatively to the fixed pointer, and a third pointer which is mounted on and turns with the platen-shaft and which is capable of rotative adjustment on said shaft relatively to the platen.

8. The combination with a rotative platen, a platen-shaft and a frame in which said platen-shaft is mounted, of two pointers carried by the frame, one of which is fixed to the frame and the other of which has angular adjustment on the frame relatively to the fixed pointer, a sleeve which is mounted on and turns with said platen-shaft, said sleeve being provided with a knurled, annular surface and being capable of rotative adjustment upon said shaft, and a third pointer affixed to said sleeve.

9. The combination with a rotative platen, a platen-shaft and a frame in which said platen-shaft is mounted, of two pointers carried by the frame, one of which is fixed to the frame and the other of which has angular adjustment on the frame relatively to the fixed pointer, a sleeve which is mounted on and turns with said platen shaft and is capable of rotative movement thereon, said sleeve being provided with a knurled annular sur-

face, a third pointer affixed to said sleeve, and means affording frictional engagement of said sleeve with the shaft.

10. The combination with a rotative platen, a platen-shaft, and a frame in which said platen-shaft is mounted, of two pointers carried by said frame, one of which is fixed to the frame and the other of which has angular adjustment on the frame relatively to the fixed pointer, and a sleeve which is mounted on and turns with the said platen shaft and is capable of rotative movement thereon, said sleeve being provided with a knurled annular surface, a third pointer affixed to said sleeve, and a spring washer interposed between the said sleeve and the shaft to frictionaly hold the sleeve from turning on the shaft.

11. The combination with a rotative platen, a platen-shaft provided at one end with a turning knob, and a frame in which said shaft is mounted provided with a fixed bearing sleeve for the shaft which extends from the frame outwardly toward said knob, of a fixed pointer on the frame, a second pointer mounted to turn on said bearing sleeve, means for locking said second pointer to the frame in different angular positions relatively to the fixed pointer, a sleeve which is mounted on and turns with the shaft, said sleeve being located on said shaft between said fixed and adjustable pointers and the turning knob and being provided with a knurled flange, a third pointer affixed to said sleeve, and means affording frictional engagement of said sleeve with the shaft.

12. The combination with a rotative platen and a frame in which said platen is mounted, of a fixed pointer on the frame, a disk attached to the frame concentrically with the platen, a ring mounted to turn on said disk, a second pointer attached to said ring, and a third pointer which turns with and has rotative adjustment relatively to the platen.

13. The combination with a rotative platen and a frame in which said platen is mounted, of a fixed pointer on the frame, a disk attached to the frame concentrically with the platen, a ring mounted to turn on said disk and having frictional engagement therewith, a second pointer attached to said ring, and a third pointer which turns with said platen and has rotative adjustment relatively to the platen.

14. The combination with a rotative platen and a frame in which said platen is mounted, of a fixed pointer on the frame, a disk fixed to the frame concentrically with the platen, a ring mounted on the disk and adapted to turn on the same, said ring extending outside of the margin of the disk and being provided with a knurled edge, a second pointer attached to said ring, and a third pointer which turns with and has rotative adjustment relatively to the platen.

In testimony, that I claim the foregoing as my invention I affix my signature in presence of two witnesses, this 8th day of March A. D. 1906.

CHARLES C. POOLE.

Witnesses:
G. R. WILKINS,
BLANCHE L. CHADWELL.