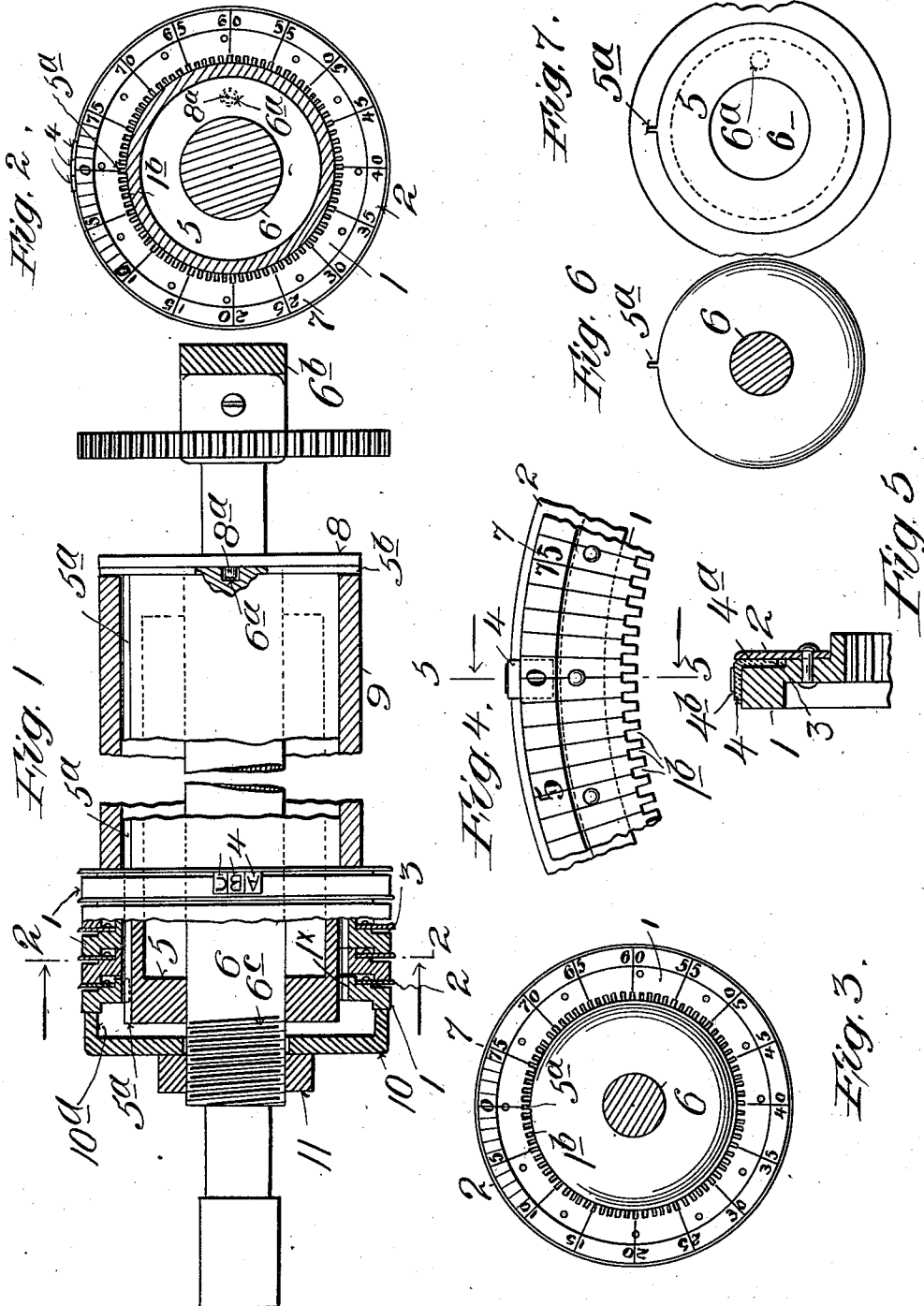


J. STEEL.
TYPE DISK SUPPORTING DEVICE.
APPLICATION FILED MAY 14, 1908.

1,000,635.

Patented Aug. 15, 1911.

2 SHEETS—SHEET 1.



Witnesses:
W. M. Benjamin
Marie F. Haining

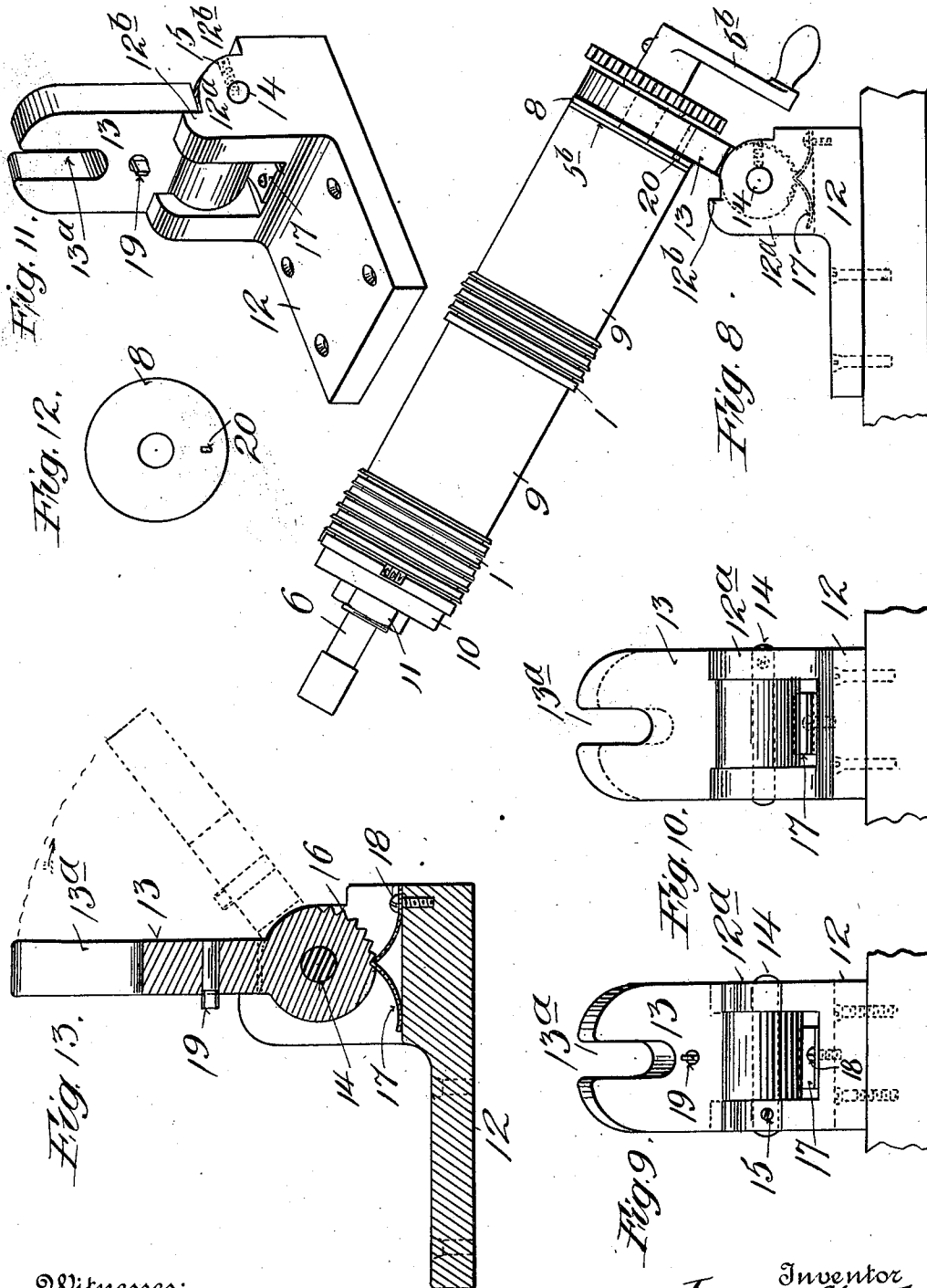
Inventor
James Steel.
By his Attorney
R. F. Bourne

J. STEEL.
TYPE DISK SUPPORTING DEVICE.
APPLICATION FILED MAY 14, 1908.

1,000,635.

Patented Aug. 15, 1911.

2 SHEETS—SHEET 2.



Witnesses:
Wm. J. Hainwright
Mar. 3. Hainwright.

Inventor
James Steel.
By H.S. Attorney
D. F. Bourne

UNITED STATES PATENT OFFICE.

JAMES STEEL, OF LITTLE FALLS, NEW JERSEY.

TYPE-DISK-SUPPORTING DEVICE.

1,000.635.

Specification of Letters Patent. Patented Aug. 15, 1911.

Application filed May 14, 1908. Serial No. 432,770.

To all whom it may concern:

Be it known that I, JAMES STEEL, a citizen of the United States, and resident of Little Falls, in the county of Passaic and State of New Jersey, have invented certain new and useful Improvements in Type-Disk-Supporting Devices, of which the following is a specification.

My invention relates to improvements in the class of printing devices wherein type are detachably supported upon the periphery of disks, which type may be applied thereto by means of the type setting and assembling mechanism set forth in United States Letters Patent No. 870,699, granted Nov. 12, 1907, and No. 880,341, granted Feb. 25, 1908, to Elah Terrell. In such class of printing devices the disks carrying the type are arranged side by side upon a shaft and used substantially in the manner of cylinder printing, and the object of my invention is to enable an assembled set or series of type-carrying disks to be removed from their operating shaft without disturbing the relative positions of the disks, to keep such set of type ready for use as desired for replacement upon the shaft, and a further object of the invention is to provide means for holding such shaft in various positions while the type carrying disks are being applied and set in the required positions with respect to each other.

My invention comprises the novel details of improvement that will be more fully hereinafter set forth and then pointed out in the claims.

Reference is to be had to the accompanying drawings forming part hereof, wherein,

Figure 1 is a partly sectional view illustrating my improvements; Fig. 2 is a cross section, substantially on the line 2, 2, in Fig. 1 looking in the direction of the arrows, Fig. 3 is an end view of Fig. 1 showing the shaft in section and the cap 10 removed, Fig. 4 is an enlarged detail view of part of one of the disks, Fig. 5 is a section on the line 5, 5, in Fig. 4, Fig. 6 is a detached end view, illustrating the mandrel, sleeve or support to receive the type disks, Fig. 7 is an end view of said mandrel, sleeve or support showing parts at the rear thereof, Fig. 8 is a side view of the stand for holding the shaft while applying the disks thereto, Fig. 9 is a rear view of the stand looking from the right in Fig. 8, Fig. 10 is a front view of the stand looking from

the left in Fig. 8, Fig. 11 is a perspective view of the stand, Fig. 12 is a face view of the disks on the type carrying shaft, and Fig. 13 is an enlarged sectional view through the stand.

Similar numerals of reference indicate corresponding parts in the several views.

In the accompanying drawings the numeral 1 indicates type carrying disks which are shown on one face provided with relatively thin metal plates 2 which may be riveted to the disks, spaces being provided at 3 in which the arms 4^a of type 4 are pushed when the type are applied to the disks, whereby said type are held in position upon the disks with their characters exposed outwardly from the long arms 4^b of the type. I have shown disks 1 as provided with annular recesses adjacent the plates or disks 2 to provide the spaces 3 to receive the type arms 4^a. The disks 1 have central openings 1^x and are adapted to fit side by side upon a support 5, shown in the form of a mandrel, sleeve or tube 5 in such manner as to readily slide on and off the latter, and said support is shown provided on its surface with a longitudinally extending key 5^a, in the arrangement shown the bore 5^b of said support being adapted to freely slide upon shaft 6 for ready mounting thereon, although if the shaft 6 were of sufficient diameter the type disks could fit directly on the same, and its corresponding longitudinal key, and thus in a broad sense the sleeve or shaft constitutes the support for the type disks. The inner circumferences of disks 1 at openings 1^x are provided with recesses 1^b adapted to receive key 5^a whereby said disks may be slid along the support to any desired extent and are kept from rotating thereon. The recesses 1^b of the disks are produced of such a number as correspond to the number of type that may be placed upon the periphery of the disks, as for instance, if 80 type each of suitable width fit completely around the periphery of the disk a recess 1^b will correspond to each such type, there thus being 80 of such recesses. Upon one face of each disk I produce a scale corresponding in relation to the type, which scale may comprise lines 6, leading to the corresponding recesses 1^b, with indicating numerals 7 produced upon the side of the disk, said numerals being shown running from zero to 75 with indicating lines for the intermediate numbers. This ar-

rangement is such as to enable the operator who assembles the type upon the disks, and the latter upon their support, to readily aline the type of the different disks longitudinally along their support, or indent the type for paragraphing or for tabulating as may be required. For instance, when the type are assembled upon the disk, as by the machines of the patents before mentioned, and the disk is to be placed upon its support, the operator will note the number of the scale at which the margin or left hand type of the line on the disk alines, and will place the disk on the support in such position that the corresponding recess 1^b will receive the key 5^a, and when a paragraph or other indented line is to be set, as for tabulating, the operator will calculate for such disk the number of recesses 1^b at one side of the scale at which the left hand type on the disk is located and so set the disk upon support 5 that such recess will receive the key 5^a, and so on as the disks are placed upon support 5, thus being enabled to accurately aline the different disks side by side on the support, to produce the margin of the various lines of type and the indented spaces of other lines of type. Shaft 6 is shown provided with a flange or disk 8 against which the end of support or sleeve 5 may bear, and the corresponding end of said support is provided with a recess 6^a adapted to receive a pin or projection 8^a from flange 8, both said recess and pin being set in a definite position with relation to the operating handle 6^b and in corresponding relation to the key 5^a, so that when the support or sleeve is in connection with pin 8^a and the disks mounted on the support in definite relation to key 5^a, such relation of the parts will remain permanent with respect to handle 6^b if the support or sleeve and its attached disks be removed from shaft 6 and then re-applied to the latter. Support 5 at its inner end is shown provided with a flange 5^b against which the disks 1 may bear or against which interposed spacing members or disks 9, adapted to fit upon the support, may bear. At 10 is a cap having a central bore adapted to slide upon shaft 6 and shown provided with a flange 10^a adapted to bear against a disk 1, a suitable nut 11 engaging threads 6^c on shaft 6 being provided to press cap 10 against the adjacent disk, whereby all the disks, or the disks and the spacing disks 9, upon their support may be securely fastened in position between flange 5^b and cap 10 in permanent printing relation, as shown in Figs. 1 and 8.

When the disks, or the disks and the spacing disks 9, are mounted upon support or sleeve 5 that is located upon shaft 6 and nut 11 drawn up against cap 10 the disks bearing the type are in position for use in the manner of a printing cylinder in a suit-

able printing machine or press, and when it is desired to retain the type set and to use the same shaft for further printing the support 5 with its attached type disks or spacing disks may be removed from shaft 6 and then re-applied to the same when desired, and as pin 8^a always enters recess 6^a in the same relation to handle 6^b the same register of the type with respect to the printing machine parts may be maintained.

In order to enable the operator to conveniently and expeditiously apply the disks upon support 5 and to readily observe the key 5^a for fitting the recesses 1^b of the disks to such key, I provide a stand having an adjustable member adapted to support shaft 6 and to move to varying inclined positions for the different purposes required in applying the disks to their support. Such arrangement is shown in Figs. 8 to 13 inclusive, wherein 12 indicates a suitable base adapted to be secured upon a support and shown provided with ears 12^a between which an adjustable arm 13 is pivoted. Such arm is shown mounted upon a pin 14 passing through ears 12^a, and which may be held by a screw 15, and said ears are shown provided with stops 12^b at distances apart against which the side portions of arm 13 may bear to limit the upward and downward movements of said arm. The lower part of said arm is shown provided with teeth 16 adapted to engage a suitable retaining spring 17 that is secured upon base 12, as by screw 18, for holding arm 13 in positions of adjustment. Arm 13 is provided with a recess 13^a in its outer end adapted to receive shaft 6, as shown in Fig. 8, which shaft may be slid sidewise into said recess. Arm 13 has a pin or projection 19 extending inwardly adapted to enter a hole or recess 20 in flange 8 of shaft 6, which hole or recess is in definite relation to pin 8^a and recess 6^a, and in corresponding relation to handle 6^b, whereby when the shaft 6 having support or sleeve 5 mounted upon it is placed in recess 13^a of arm 13 and pin 19 enters hole or recess 20 of flange 8 the key 5^a of support or sleeve 5 will be brought into operative position in front of the operator.

In operation shaft 6, either of such diameter as to directly receive the type disks or carrying a sleeve 5 is placed in position upon arm 13 and the latter raised or tilted into convenient position above the horizontal, as illustrated in Fig. 8, so that the shaft will be inclined in such position that the disks 1 tend to slide toward the lower end of the shaft. The disks 1 are then placed upon the shaft or sleeve according to the positions required with respect to the type 4 on the disks, in accordance with the recesses 1^b and key 5^a as before explained, spacing disks 9 being also applied on the shaft or sleeve as

required, and as the disks are thus placed upon the shaft or sleeve, they will tend to slide or may be pushed down along the same and remain in the lowered position on the shaft or sleeve, preventing the disks from sliding back off the same. When the required number of disks, with or without spacing disks, are applied upon their support, and without requiring shaft 6 to be removed, the cap 10 may be placed over the shaft and secured by the nut 11, whereby all the disks are readily assembled and the complete number of disks required are secured together side by side, or spaced apart as desired in position for use. The shaft so fitted with the required disks may then be removed from the stand and used in a printing machine or press. The shaft may also be fitted to the stand in the manner described when the type support and its disks are to be removed therefrom, so that with the shaft held in an inclined position the removable support with the attached disks may be pulled off the shaft with the flange 5^a of the support lowermost, whereby the disks are kept from sliding off their support and are maintained in their proper relation during such manipulation.

While I have shown the support 5 for the type disks substantially in the form of a sleeve adapted to be slipped on and off shaft 6, whereby said disks while mounted upon such sleeve may be removed from the shaft and re-applied thereto in the same definite relation, so that the same shaft may be used with different sleeves, whereby to reduce the number of shafts required when assembled type disks are to be retained for further use, yet, as before stated, by having the shaft of sufficient diameter to properly receive the bores of the type disks the shaft with its longitudinal key may be used directly as the type disks support and set aside with the disks thereon for further use in the same manner as described with respect to the sleeve-support.

Having now described my invention what I claim is:

1. The combination of a shaft and means for removably retaining type disks thereon, with a stand having an adjustable arm provided with means to support said shaft at one end leaving its opposite end free and unobstructed, means to retain said arm in positions of adjustment and means to retain said shaft in set position respecting said arm.

2. The combination of a shaft, and means for removably retaining type disks thereon, with a stand having an adjustable arm provided with means to support said shaft at one end leaving its opposite end free and unobstructed, means to retain said arm in positions of adjustment, and complementary positioning and retaining devices between said

arm and shaft to retain said shaft in set position respecting said arm.

3. The combination of a shaft and means for removably retaining type disks thereon, with a stand having an adjustable arm provided with means to support said shaft at one end leaving its opposite end free and unobstructed, means to retain said arm in positions of adjustment, said arm having a projection, and said shaft being provided with a part having a recess adapted to receive said projection.

4. The combination of a shaft provided with means for removably retaining type disks thereon, with a stand having an adjustable swinging arm provided with means to support said shaft so that it will swing in the line of its longitudinal axis in the path of movement of said arm, means to limit the swinging movement of said arm in opposite directions, means to retain said arm in positions of adjustment and means to retain said shaft in set position respecting said arm.

5. The combination of a shaft provided with means for removably retaining type disks thereon, with a stand having an adjustable arm provided with means to support said shaft, means to limit the swinging movement of said arm in opposite directions, said arm being provided with teeth, and a retaining spring connected with the stand to engage said teeth to hold the arm in positions of adjustment.

6. A stand for adjustably supporting a type-disk-carrying shaft comprising a base, an arm pivotally connected therewith, and provided with means to removably support a shaft at one end only, and with means to definitely position the shaft and keep it from rotation, and means to retain said arm in positions of adjustment.

7. A stand, for adjustably supporting a type disk carrying shaft comprising a base, an arm pivotally connected therewith and provided with an upwardly extending slot whose open side faces in the line of movement of said arm to removably support a shaft, and means to retain said arm in positions of adjustment, said base having stops at distances apart to limit the movement of said arm in opposite directions.

8. A stand for adjustably supporting a type disk carrying shaft comprising a base, an arm pivotally connected therewith and provided with means to removably support a shaft, and a spring and tooth connection between said stand and arm for holding said arm in positions of adjustment.

9. A stand for adjustably supporting a type disk carrying shaft comprising a base, an arm pivotally connected therewith and provided with means to removably support a shaft, and a spring and tooth connection between said stand and arm for holding said

arm in positions of adjustment, said arm having a projection extending laterally to co-act with such shaft for retaining the latter in operative position upon the arm.

- 5 10. A stand for adjustably supporting a type disk carrying shaft comprising a base, an arm pivotally connected therewith, and provided with a recess in one end to receive a shaft and having an inwardly projecting
10 pin, said stand having stops to limit the movement of said arm in opposite directions, and means for retaining said arm in positions of adjustment between said stops combined with a shaft having a recess to receive said pin, said shaft being provided
15 with a longitudinal key in definite relation to said recess.

11. The combination of a shaft provided

with a sleeve detachably mounted upon the shaft, said shaft and sleeve being provided 20 with a complementary pin and recess for maintaining the relative position of the sleeve upon the shaft, a stand having an adjustable arm, a complementary pin and recess between said arm and shaft for positioning 25 the latter with respect to said arm and thereby with respect to said sleeve, and means for holding said arm in positions of adjustment.

Signed at Columbus, in the county of 30 Franklin, and State of Ohio, this 12 day of May, A. D. 1908.

JAMES STEEL.

Witnesses:

J. W. FISCHER,

JOHN L. MONFORT.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."