(No Model.) 2 Sheets—Sheet 1.

# A. R. BAKER.

## NUMBERING ATTACHMENT FOR PRINTING PRESSES.

No. 305,780. Patented Sept. 30, 1884.

Fig. 1.

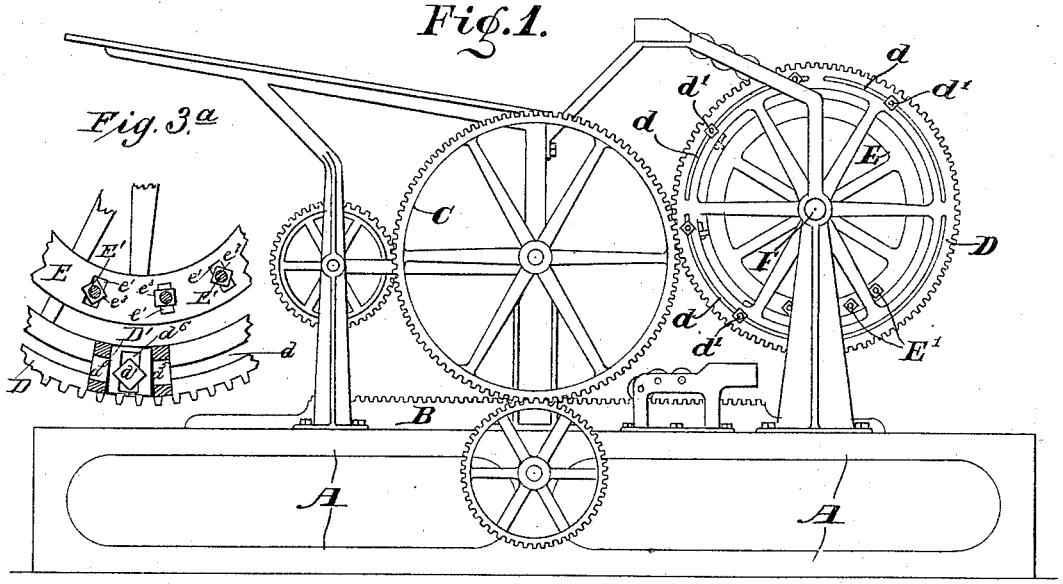


Fig. 3a



Fig. 2.

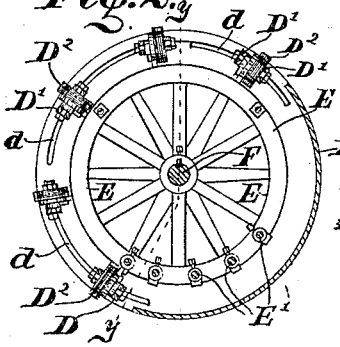


Fig. 4.

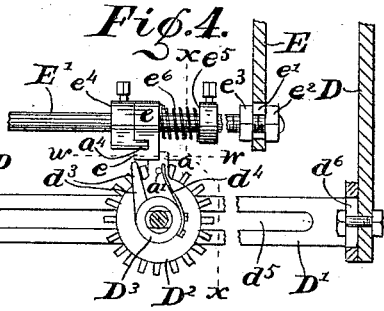


Fig. 3.

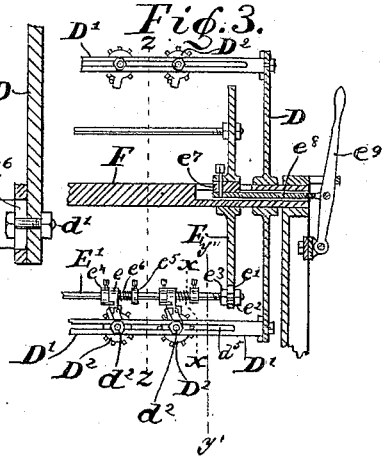


Fig. 6.

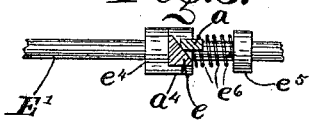


Fig. 5.

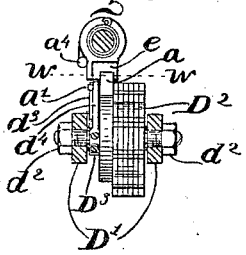
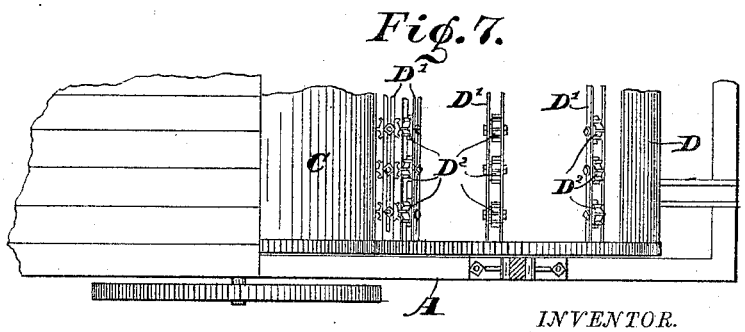


Fig. 7.



WITNESSES.

Solon C. Kemon

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(No Model.) 2 Sheets—Sheet 2.

# A. R. BAKER.

## NUMBERING ATTACHMENT FOR PRINTING PRESSES.

No. 305,780. Patented Sept. 30, 1884.

Fig. 8

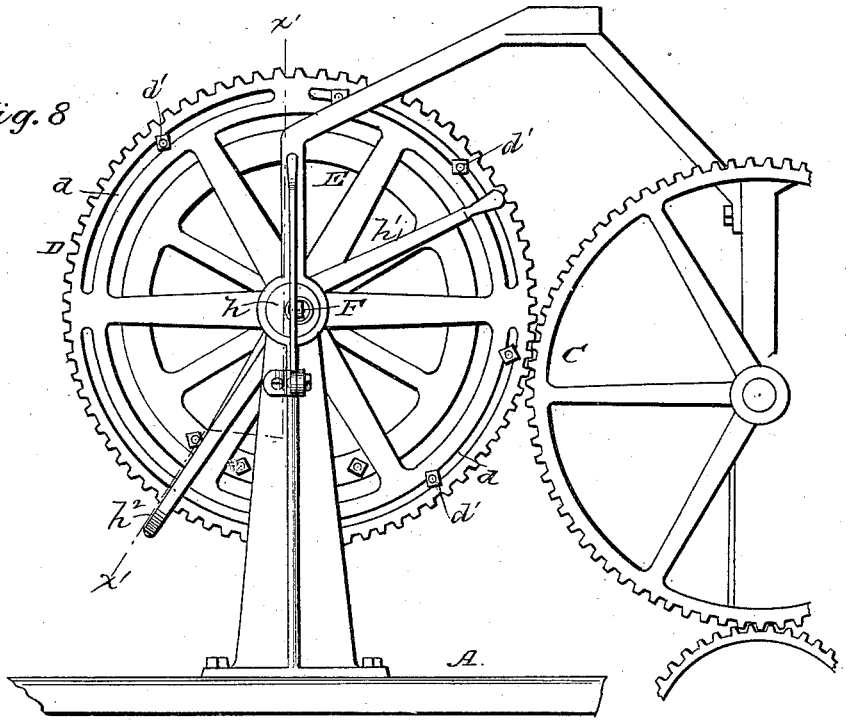



Fig. 9.

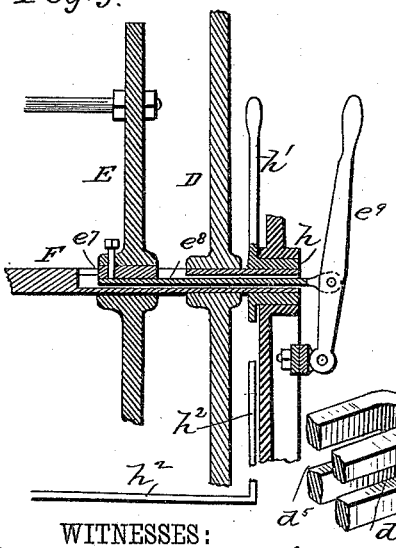



Fig. 10

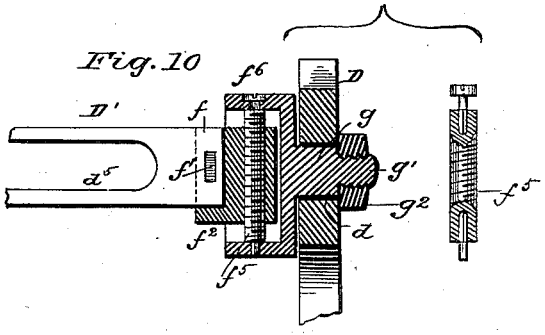
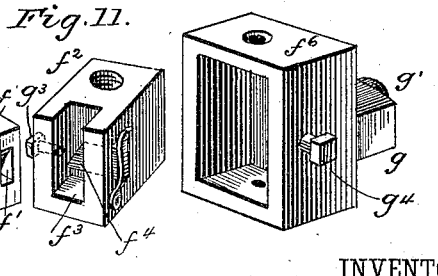



Fig. 11.




WITNESSES:

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# UNITED STATES PATENT OFFICE.

ALBERT R. BAKER, OF INDIANAPOLIS, INDIANA.

## NUMBERING ATTACHMENT FOR PRINTING-PRESSES.

SPECIFICATION forming part of Letters Patent No. 305,780, dated September 30, 1884.

Application filed October 31, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, ALBERT R. BAKER, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Numbering Attachments for Printing-Presses, of which the following is a description.

In a preceding application for patent, filed October 6, 1883, No. 108,260, to which I refer for a better understanding of the following, I have shown a movable carrier containing a series of numbering devices arranged in one or more rows extended either in the direction of the movement of the carrier or at right angles thereto, and a series of operating devices arranged in one or more rows extended in the direction of the movement of the carrier, and corresponding to the position of the numbering devices, whereby each operating device of a given row may act upon the numbering device or all the numbering devices of its corresponding row, to the end that any number of blanks in sheets may be numbered consecutively from sheet to sheet.

My present invention consists in the construction whereby I apply such a twofold series of numbering devices and operating devices to a cylinder printing-press, as hereinafter described and claimed.

In carrying out my invention I mount upon the press an additional cylinder having numbering-heads properly mounted therein, and appropriate mechanism for operating said numbering-heads, said cylinder being in such relation to the regular cylinder that the numbers in said numbering-heads will come in contact with the paper thereon as the cylinders revolve, as will be hereinafter more particularly described.

Referring to the accompanying drawings, which are made a part hereof, and on which similar letters of reference indicate similar parts, Figure 1 is a side elevation of so much of a printing-press as is necessary to illustrate my invention, said invention being shown as part thereof; Fig. 2, a transverse section of the numbering-cylinder, looking to the right from the dotted line $z\,z$ in Fig. 3; Fig. 3, a longitudinal section on the dotted line $y\,y$ in Fig. 2; Fig. $3^a$, a section on the line $y'\,y'$ in Fig. 3, looking to the right; Fig. 4, a detail view showing a portion of Fig. 3 on an enlarged scale; Fig. 5, a detail sectional view looking to the left from the dotted line $x\,x$ in Fig. 4; Fig. 6, a detail sectional view looking upwardly from the dotted line $w\,w$ in Figs. 4 and 5; and Fig. 7, a top or plan view of a portion of the machine. Fig. 8 is a side elevation of part of a printing-press, showing the opposite end of the numbering-cylinder from that shown in Fig. 1, and embodying a modification. Fig. 9 is a section on line $x'\,x'$ of Fig. 8, being partly broken away. Fig. 10 is a detail sectional view showing a modified form of device for adjustably supporting the bar carrying the numbering devices; and Fig. 11 is a perspective view of the devices shown in Fig. 10 detached and in position for being placed together.

In said drawings the portions marked A represent the frame of the press; B, the bed; C, the ordinary cylinder; D, the numbering cylinder or carrier; E, the trip-cylinder, and F the shaft on which cylinders D and E are mounted.

The several portions, with the exception of the numbering-cylinder and parts immediately connected therewith, possess no essential peculiarities of construction, and need no special description beyond such reference thereto or to some of their parts as will occur incidentally in describing the invention.

The numbering-cylinder D is mounted loosely on the shaft F, and revolves thereon. In one side are bars D′, which support the numbering-heads $D^2$, the shafts of said heads being rigidly mounted in slots $d^5$ in said bars, as shown. The bars D′ are to be adjustable both to and from each other, and radially with respect to the cylinder D. For this purpose they may be formed with slots $d^6$, as shown in Fig. 4, and be connected to the cylinder D by bolts $d'$, secured in said slots $d^6$ and the segmental slots $d$ in the heads of said cylinder. I prefer, however, to form the bars D′ with solid ends $f$, having recesses $f'$ in one side thereof, as shown in Fig. 11, and to connect each end $f$ with one of the segmental slots $d$ by a block, $f^2$, having a recess, $f^3$, for receiving said end, and a spring-catch, $f^4$, for engaging the recess $f'$ in said end, which block

$f^2$ is mounted on a screw, $f^5$, loosely supported in a socket-piece, $f^6$, which has a lug, $g$, fitted in the segmental slot $d$, and a threaded projection, $g'$, and nut $g^2$.

The screw $f^5$ may be secured in the socket-piece by means of pivots having squared shanks, which are to be driven into the ends of the screw $f^5$ after the latter is placed in the socket-piece, the socket-piece being provided with openings for the pivots. The screw $f^5$ may be rotated by means of a screw-head on one of the pivots, as shown. The screw $f^5$ is arranged in the direction of the radius of the cylinder in order that, by rotating said screw, the block $f^2$, which is held from turning by the socket-piece $f^6$, will move along this screw, and thus adjust bar D' radially with respect to the cylinder D.

To hold the end $f$ firmly in recess $f^3$ the block $f^2$ is provided with a set-screw, $g^3$, adapted to bear against said end, and the socket-piece $f^6$ is likewise provided with a set-screw, $g^4$, to hold the block $f^2$ firmly in any desired position.

The lug $g$, as shown in Fig. 11, is formed with flat sides, to prevent it from turning in the slot $d$. The heads are also adapted to be moved along the bars D' when the nuts $d^2$ on the shafts of said heads are loosened. Thus the position of the heads can be varied as desired in either direction. The bars D' are longitudinally-slotted bars, as shown most plainly in Figs. 5, 7, and 11, and thus support both ends of the shafts of the numbering-heads equally.

Instead of the slotted bar D', for supporting the numbering-heads, an ordinary shaft may be used, and the numbering-heads may be journaled upon the shaft in parallel planes, in which case they will occupy a position at right angles to the position shown in the drawings.

The numbering-heads $D^2$ are or may be similar to those used in ordinary numbering-machines, and operate in the same manner. Each has a projection, $a$, which is adapted to come in contact with the trips $e$ as the cylinder revolves, and be thus partially rotated in the usual manner. A hub, $D^3$, is located alongside each numbering-head and rigidly secured in that position. Each hub is provided with a rigid arm, $d^3$, and a spring-arm, $d^4$, which engage with the stud $a'$ on the projection $a$—one on one side and one on the other. (See especially Fig. 4.) The arms $d^3$ prevent the ratchet-wheels of the numbering-heads from being thrown too far back or out of position, and the spring-arms $d^4$ serve to throw them back into position after being operated by the trips $e$.

The reasons for moving the bars D' radially, as above described, are to permit the use of different-sized numbering-heads, which is sometimes desirable, as the size ordinarily used is larger than can be used on very small work, and to permit the heads to be depressed, so as not to come in contact with the work when it is desired to throw part or all of them out of use instead of going to the trouble of removing said bars D' altogether from the cylinder.

The trip-cylinder E is so mounted on the stationary shaft F as not to revolve thereon. In one side are rods E', extending from one head to the other, upon which are mounted the trips $e$. These rods are adjustable in the cylinder, being adapted to be moved in the radial slots $e'$ in the heads of said cylinder (see Fig. 4) when the nuts $e^2$ $e^3$ are loosened.

Upon the rods E' are mounted the trips $e$, the collars $e^4$ and $e^5$, and the spring $e^6$. The trip $e$ projects downwardly, and said projection is inclined or cam-faced, as shown, (see particularly Fig. 6,) and thus when the projections on the numbering-heads come in contact therewith as the numbering-cylinder revolves the proper disk or disks in said numbering-heads are partly revolved and a new number brought into position for printing, as will be readily understood. The collar $e^4$ is rigidly secured to the shaft, and has a wing, $a^4$, which prevents the trip from being turned in one direction, although said trip is mounted loosely on the rod. The collar $e^5$ is also rigidly mounted on the rod. The spring $e^6$ is connected to the collar $e^5$ at one end and to the trip $e$ at the other, and thus holds said trip forward against the wing $a^4$, except when overcome by some greater force, as in case the cylinder D should be turned backward and the projections $a$ thus be brought in contact with the flat side of said trip instead of against its beveled side, as during the ordinary operation of the machine.

In the drawings (see especially Figs. 4 and 5) the projections $a$ and trips $e$ are shown in contact and said projections partly operated by said trips. The rods E' are made radially adjustable, (by means of the slots $e'$,) for the reason that when larger or smaller numbering-heads are used the position of the trips should be changed to correspond. Except for this, and in any cases where one size of numbering-head is continually used, and also when all the trips on some of the rods are to be dispensed with, the position of these rods need not be changed.

It is frequently desirable to stop the progression of the numbers without stopping the motion of the press. To accomplish this purpose I attach to the spline $e^7$, which secures the head of the cylinder E from rotating on the shaft F, a push-rod, $e^8$, which passes out through a hole formed to receive it in said shaft F, and connect to said rod a lever, $e^9$. When it is desired to stop the progression, as aforesaid, the rod $e^8$ is pushed in by means of said lever, and the whole cylinder E is thus moved endwise and the trips pushed out of the way of the numbering-heads. The numbers in said numbering-heads are thus allowed to remain in the same position notwithstanding the continued motion of the press.

In order that the cylinders D and E, together

with the shaft F, may be adjusted bodily to and from the cylinder C, I provide the said shaft with movable eccentric bearings *h*, as shown in Figs. 8 and 9, instead of supporting it merely in the frame-work, as shown in Figs. 1 and 3. The bearings *h*, of which there are to be two, are supported in the frame-work at opposite ends of the cylinder D, and are to be connected together and provided with a lever, *h'*, attached to one of them, whereby they may be partially rotated to swing the shaft outward from cylinder C.

The two bearings *h* may be connected together through the medium of shaft F; but I have shown a bar, $h^2$, extended radially from one of the bearings, and bent at right angles to extend along the outside of cylinder D longitudinally to the other bearing. The object of so adjusting the cylinders D and E is to throw the numbering-heads out of contact with the impression-cylinder, to prevent printing while the press is moving.

The operation of my said invention is as follows: The numbering-cylinder D is additional to the parts ordinarily composing a printing-press, and is to be constructed of the same size, or one-half the same size, and geared to run at the same speed as the regular cylinder, so as to print the numbers onto the paper once at each revolution of said cylinder, to correspond with the number of impressions made by the type on the platen. The bars D' are adjusted to a distance apart to correspond to the width of the blanks to be printed, where several blanks are printed on a sheet, and the number of bars is made to correspond to the number of said blanks, bars being added or removed for that purpose, or, rather, raised and lowered, in the manner before described. Where only a single blank is printed on a sheet in this direction, only a single bar will be used. The numbering-heads $D^2$ are adjusted along the bars to correspond to the number of blanks to be cut from the sheet in this direction, or the number of numbers desired on a sheet. Where only a single number is desired in this direction, only a single numbering-head will be used on a bar, and the remainder can be either removed or moved along to the end of the bar, where they will be inoperative.

The most common use to which my invention is likely to be applied is the printing of checks, receipts, and such matters having one or more stubs.

The drawings show an arrangement where five blanks can be printed on a sheet, each having two stubs—*i e*, with five bars, each carrying three numbering-heads. (See for this Figs. 2 and 7.)

The trip-cylinder E contains as many trips as there are numbering-heads in the numbering-cylinder, which are arranged in a similar manner, so that in ordinary use one head on each bar comes in contact with one trip on each of the several rods E' at each revolution of the press. This causes the numbers to advance successively, and the forms, as the sheets pass through the press, to be numbered consecutively, each sheet commencing with the number succeeding the highest number on the preceding sheet.

When, as is sometimes the case, it is desired that all the blanks on the same sheet bear the same number, all the rods but one are either removed or depressed into the cylinder out of the way; and to this end, or rather the end that the number of trips to be kept in use can be varied at pleasure, each one of the rods carrying the trips can be depressed into the cylinder by means of the radial slots, and thus thrown out of position, where the projections on the numbering-heads cannot come into contact therewith, in a similar manner, as the bars carrying said numbering-heads are depressed, as before described, and the trouble of entirely removing and replacing said rods as the press is made ready for different kinds of work thus avoided.

When it is desired to move some of the trips on a rod out of position, it can be done by simply loosening the set-screws in the collars $e^4$ and $e^5$ and moving said trips, collars, and the springs therewith along the rods to a position where the projections on the numbering-heads cannot come in contact with the trips.

I do not mean to claim in this application the construction and arrangement of the numbering-heads mounted on shafts and provided with projections having studs thereon, and the hubs rigidly secured to said shafts alongside the numbering-heads, and having rigid arms and spring-arms; nor the combination therewith of trips mounted on bars under the bed supporting the shafts of the numbering-heads for operating the latter, as claimed in my application No. 108,260, filed October 6, 1883. Neither do I broadly claim in this application the combination of a movable carrier or bed having numbering-heads arranged in one or more rows, and a series of devices for operating the numbering-heads, which devices are arranged in one or more rows extended in the direction of the movement of the bed, and each of which rows corresponds in position to one or more of the numbering-heads, and which devices are either stationary, or are made adjustable to adapt them to be moved severally in or out of acting position, as claimed in my said application No. 108,260. Neither do I claim in this application the combination, with a numbering-cylinder carrying numbering-heads, of a sliding trip-frame arranged outside the said cylinder, as claimed in my application No. 110,394, filed October 30, 1883.

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

1. In a cylinder printing-press, the combination of a rotary cylinder, a series of numbering-heads placed therein and arranged in

one or more rows, and a series of independently-supported trips arranged in one or more rows extended in the direction of the rotation of the said rotary cylinder, and corresponding to the position of the numbering-heads, substantially as shown and described, whereby each trip of a given row shall act upon the numbering-head, or all the numbering-heads of its corresponding row, for the purpose specified.

2. In a cylinder printing-press, the combination of the ordinary impression-cylinder, a second cylinder, bars mounted thereon, numbering-heads mounted on said bars and arranged in one or more rows extended in the direction of rotation, and trips mounted on suitable supports within said second cylinder and arranged in rows extended in the direction of rotation and corresponding to the position of the numbering-heads, and adapted to engage with and operate said numbering-heads, whereby the numbers in said numbering-heads are advanced in successive order, and the forms being numbered are numbered consecutively without reference to the number of heads, substantially as set forth.

3. In a cylinder printing-press, the combination of the ordinary impression-cylinder, a revoluble numbering-cylinder, bars mounted on said cylinder, numbering-heads mounted on said bars and arranged in rows extended in the direction of rotation, and trips mounted on a stationary support within said revoluble cylinder and arranged in rows extended in the direction of rotation, and adapted to engage with and operate said numbering-heads, substantially as described, and for the purposes specified.

4. In a cylinder printing-press, the combination of the ordinary impression-cylinder, a revoluble numbering-cylinder, bars mounted in suitable bearings therein, numbering-heads mounted on said bars and arranged in rows extended in the direction of rotation, a stationary cylinder located within said numbering-cylinder, and a number of trips sufficient to do the work to be performed adjustably mounted in said stationary cylinder and arranged in rows corresponding to the rows of numbering-heads, and adapted to engage with and operate said numbering-heads, whereby the numbers in said numbering-heads are advanced successively, and the forms being numbered are numbered consecutively without regard to the number of heads employed, substantially as set forth.

5. The combination, in a cylinder printing-press, of the ordinary impression-cylinder, a rotary numbering-cylinder mounted on a stationary shaft, numbering-heads mounted therein, a stationary cylinder mounted on the same shaft within said rotary numbering-cylinder, said stationary cylinder being provided with rods, and trips mounted on said rods in rows extended in the direction of the movement of said rotary numbering-cylinder, and adapted to engage with and operate the numbering-heads of said numbering-cylinder, substantially as set forth.

6. In a cylinder printing-press, a rotary numbering-cylinder having bars D′ mounted therein, said bars being secured to the cylinder-heads by means of radially-adjustable supports, substantially as described, and for the purposes specified.

7. In a cylinder printing-press, the combination, with a rotary numbering-cylinder having a segmental slot in its head, of the bar D′, having solid end $f$, notch $f'$, block $f^2$, having recess $f^3$ and catch $f^4$, and the socket-piece $f^6$, having screen $f^5$, carrying said block, and having lug $g$, fitted to slide in said slot, and means for locking the same in the slot, substantially as shown and described, whereby said bar is rendered both circumferentially and radially adjustable, as set forth.

8. In a cylinder printing-press, a rotary numbering-cylinder having bars D′ mounted therein, said bars being secured to the cylinder-heads by means of radially-adjustable supports, and being provided with longitudinal slots $d^5$, and numbering-heads mounted on their shafts between the flanges or ribs of said bars, whereby said numbering-heads are adapted to be adjusted both radially and longitudinally of the cylinder, substantially as set forth.

9. In a printing-press, a trip-cylinder rigidly mounted within a numbering-cylinder, said trip-cylinder being provided with rods bearing trips which extend from one cylinder-head to the other, said heads being provided with radial slots, in which said shafts are mounted, whereby said trips are adapted to be radially adjusted, substantially as described, and for the purposes specified.

10. In a cylinder printing-press, the trip-cylinder E, provided with rods E′, adjustably mounted in the heads thereof, said rods having trips $e$ mounted thereon, and said trips being provided with cam-faced projections, which are adapted to partially rotate the disks of the numbering-heads when the projections of said numbering-heads come in contact therewith, substantially as set forth.

11. The combination, in the trip-cylinder E for a printing-press, of the rods E′, adjustably mounted in the heads of said trip-cylinder, trips $e$, loosely mounted on said rods, a collar, $e^4$, having a wing, $a^4$, rigidly mounted on said rod alongside each trip, a collar, $e^5$, also rigidly mounted on said bar on the other side of said trip, and a spring, $e^6$, located between said collar $e^5$ and the trip $e$, which operates to keep said trip in contact with the said wing $a^4$ on the collar $e^4$, substantially as described, and for the purposes specified.

12. In a cylinder printing-press, the combination of the ordinary impression-cylinder, a rotary numbering-cylinder, a non-revoluble trip-cylinder mounted within said numbering-cylinder on the same shaft, provided with trips adapted to engage with and operate the num-

bering-heads of said numbering-cylinder, and said trip-cylinder being also adapted to slide endwise on the shaft, whereby said trips are thrown out of contact with the numbering-heads and the numbers allowed to remain in the same position, notwithstanding the continued motion of the press, substantially as set forth.

13. The combination, in a cylinder printing-press, of the ordinary impression-cylinder, a rotary numbering-cylinder mounted on a stationary shaft, a non-revoluble trip-cylinder mounted within said numbering-cylinder on the same shaft, the heads of said trip-cylinder being secured to said shaft by means of splines $e^7$, and a push-rod, $e^8$, attached to said spline $e^7$, and extending out to the end of the shaft through a hole formed to receive it in said shaft, where it is attached to means, substantially as described, for operating the same, substantially as set forth.

ALBERT R. BAKER.

Witnesses:
A. G. LYNE,
SOLON C. KEMON.