

No. 768,773.

PATENTED AUG. 30, 1904.

J. ROWE.

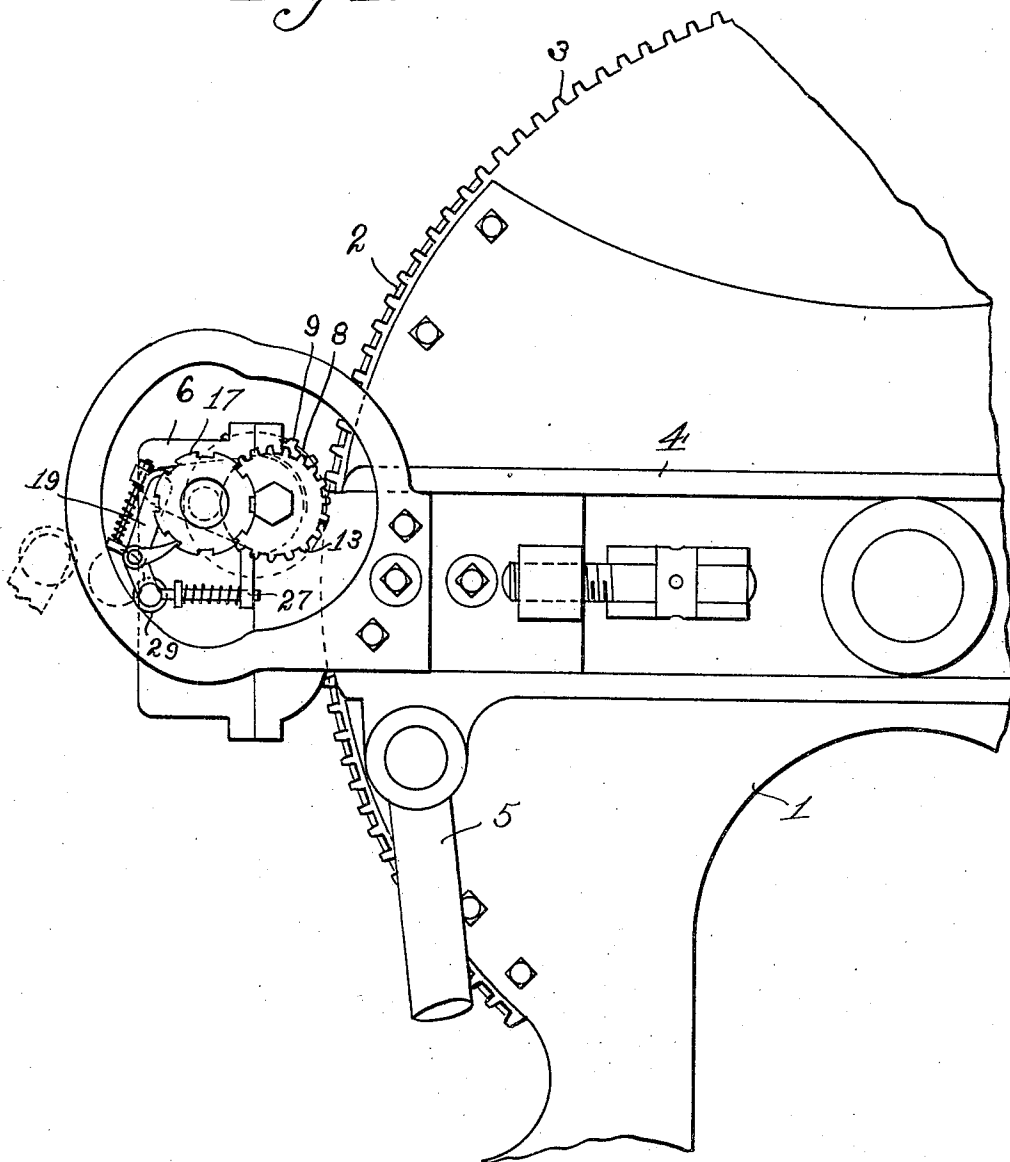
NUMBERING ATTACHMENT FOR PRINTING PRESSES.

APPLICATION FILED AUG. 7, 1903.

NO MODEL.

5 SHEETS—SHEET 1.

Fig. 1.



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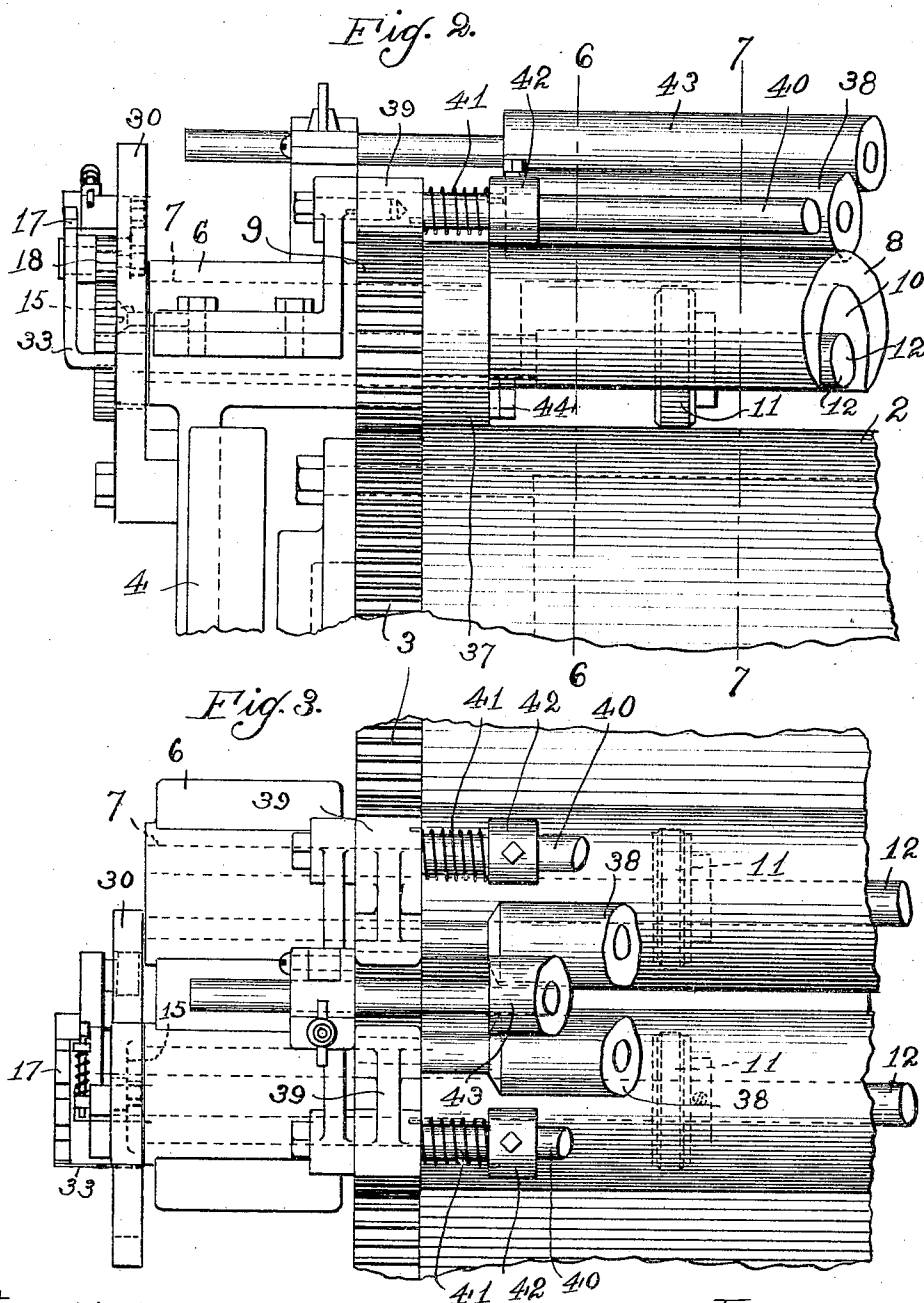
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NO MODEL.

5 SHEETS—SHEET 2.



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5 SHEETS—SHEET 3.

Fig. 4.

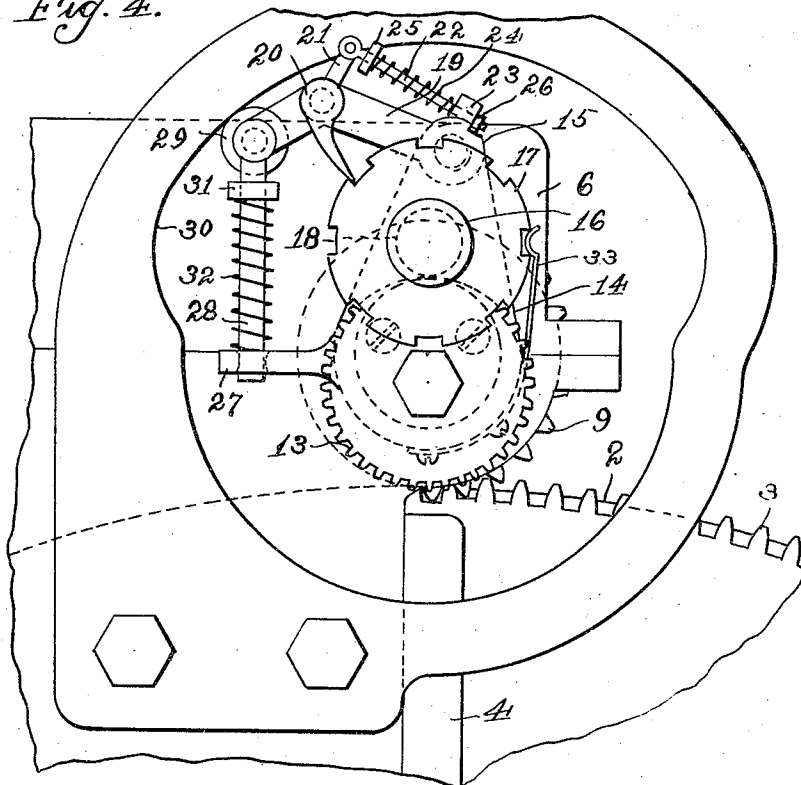
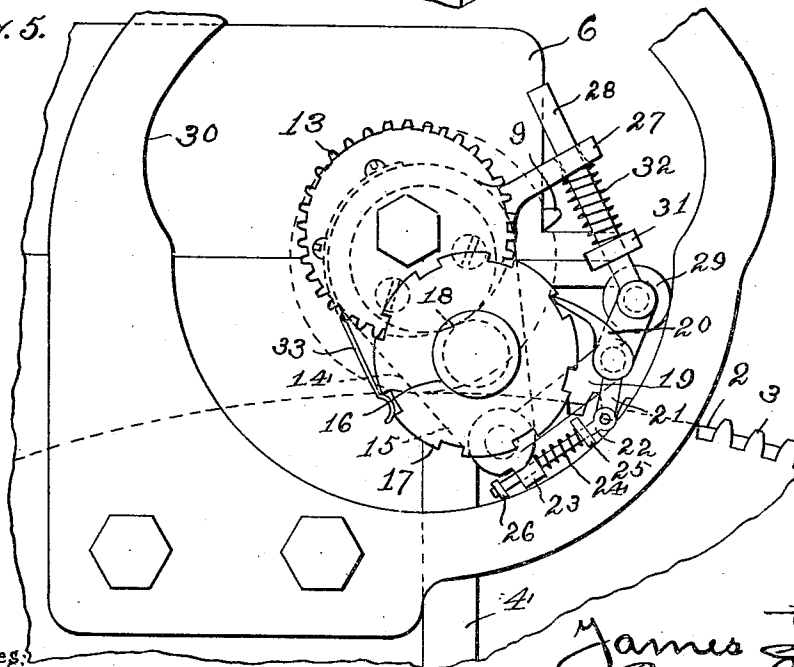


Fig. 5.



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5 SHEETS—SHEET 4.

Fig. 6.

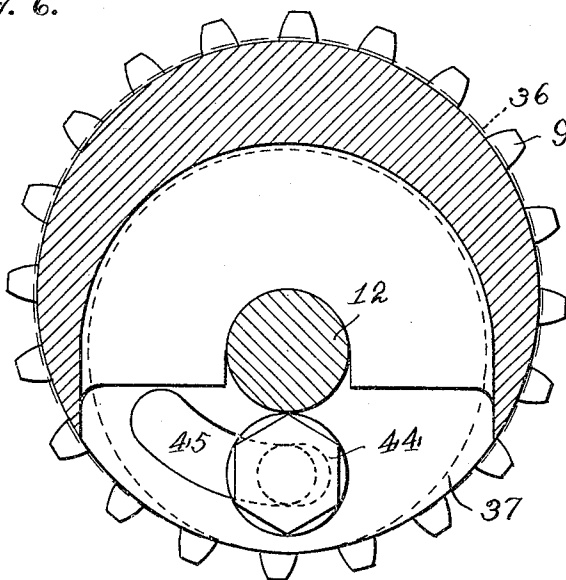


Fig. 8.

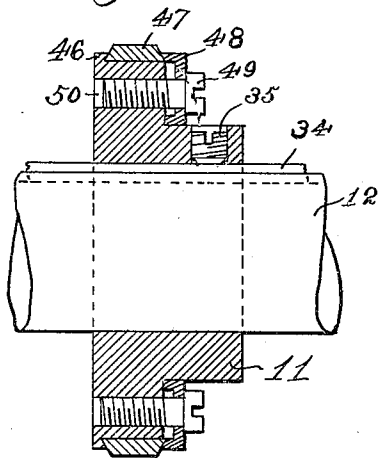
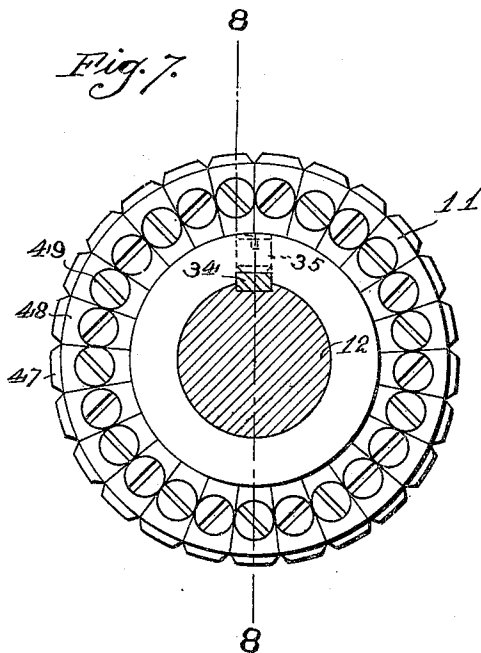


Fig. 7.



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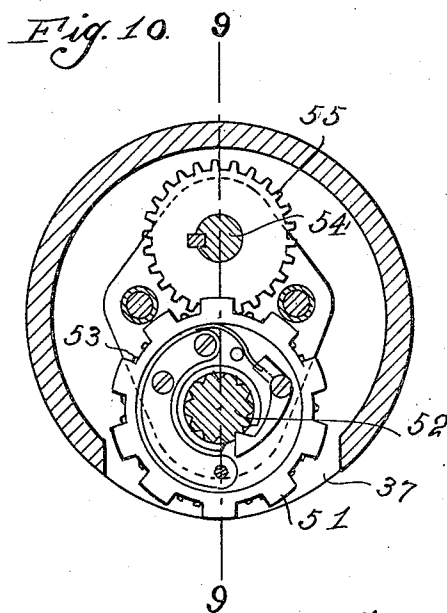
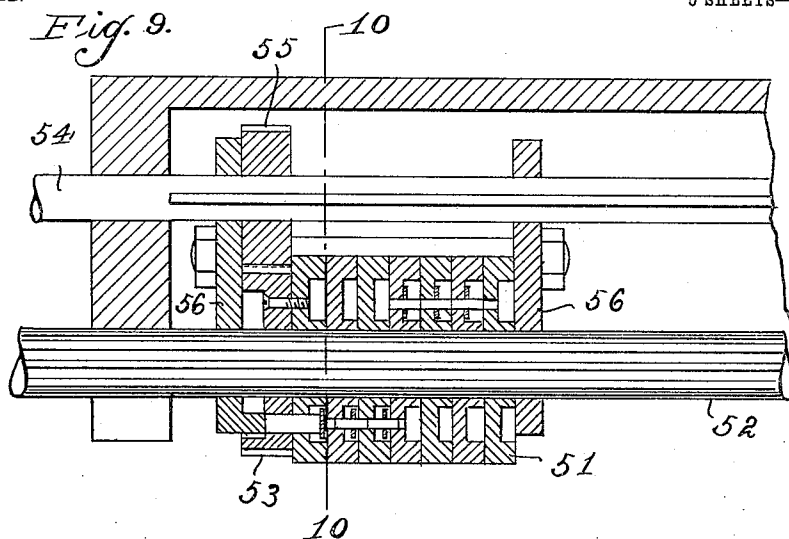
J. ROWE.

NUMBERING ATTACHMENT FOR PRINTING PRESSES.

APPLICATION FILED AUG. 7, 1903.

NO MODEL.

5 SHEETS—SHEET 5.



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UNITED STATES PATENT OFFICE.

JAMES ROWE, OF CHICAGO, ILLINOIS.

NUMBERING ATTACHMENT FOR PRINTING-PRESSES.

SPECIFICATION forming part of Letters Patent No. 768,773, dated August 30, 1904.

Application filed August 7, 1903. Serial No. 168,654. (No model.)

To all whom it may concern:

Be it known that I, JAMES ROWE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have
5 invented certain new and useful Improvements in Numbering Attachments for Printing-Presses; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others
10 skilled in the art to which it appertains to make and use the same.

My invention relates to a novel construction in a numbering attachment for printing-presses, the object being to provide a device
15 of this character of simple and durable construction and efficient operation which is particularly adaptable for special purposes; and it consists in the features of construction and combinations of parts hereinafter fully described and claimed.

In the accompanying drawings, illustrating my invention, Figure 1 is a fragmentary side elevation showing part of a printing-press provided with a numbering attachment constructed
25 in accordance with my invention, the latter being shown in end elevation. Figs. 2 and 3 are fragmentary views in elevation of my said numbering device. Figs. 4 and 5 are fragmentary end elevations, on an enlarged scale, showing the mechanism for turning the
30 numbering wheel or wheels in two positions. Fig. 6 is a detail transverse section, on an enlarged scale, on the line 6 6 of Fig. 2, showing means for varying the printing position
35 of the numbering wheel or wheels relative to the cylinder by which they are carried. Fig. 7 is a detail transverse section, on an enlarged scale, on the line 7 7 of Fig. 2, the crescent cylinder, &c., being removed. Fig. 8 is a section of same on the line 8 8 of Fig. 7. Fig.
40 9 is a fragmentary detail longitudinal section of a slightly-modified construction of my device. Fig. 10 is a transverse section of same on the line 10 10 of Fig. 9.

In illustrating my invention I have shown the same and in the following pages will describe it as applied to a printing-press of my
45 own invention forming subject of a companion application filed simultaneously herewith, having chosen this for greater convenience;

but it will be readily seen that my present device can be applied with equal advantage to almost any printing-press now used.

In said drawings the frame 1 of the printing-press is provided with a segmental impression-bed 2, at each side of which is a rack 3.
55 Mounted on trunnions concentric with said bed 2 is an oscillating frame 4, receiving its motion from a reciprocating piston 5, actuated in any suitable manner. Journaled in bearings 6 in the outer end of said oscillating frame
60 4 are the trunnions 7 of what I will term a "cylinder" 8, which carries the numbering mechanism, and rigid with said cylinder 8 are spur-gears 9, meshing with said racks 3, where-
65 by said cylinder is revolved alternately in opposite directions. Said cylinder 8 is hollowed out, so as to leave a crescent-shaped wall, or, in other words, to provide a cylindrical chamber 10, which is eccentric to said cylinder 8
70 and within which the numbering-wheel 11 fits and revolves. The latter is rigidly mounted on a shaft 12, which passes eccentrically through the trunnions 7 and at one end carries a spur-gear 13, which is rigid therewith. Mounted
75 on the trunnions 7, adjacent which said gear 13 is located, is a plate 14, having a tapered arm 15, which carries a stud 16, on which a ratchet-wheel 17 is journaled, which is rigid with a spur-pinion 18, meshing with said spur-gear 13.
80

Pivotaly mounted in the free end of said arm 15 is the free end of one arm of a bell-crank lever 19, in the elbow of which a dog
85 20 is pivotaly mounted, which engages said ratchet-wheel 17. Said dog is provided with an arm 21, in the free end of which a plunger 22 is pivotaly secured, which passes at its free end through a collar 23 on the free end
90 of the arm 15 of said plate 14 and on which a spiral compression-spring 24 is coiled, which bears at one end on said collar 23 and on its other end against a collar 25 on said plunger, thereby normally holding said dog 20 in en-
95 gagement with said ratchet-wheel 17. In order to prevent said dog 20 from turning out of engagement with said ratchet-wheel, a second collar 26 may be secured to the projecting end of said plunger to prevent the latter
100 from pulling out of said collar 23. On said

plate 14 is a projecting arm 27, in the free end of which is an opening through which one end of a plunger 28 passes, said plunger being pivotally connected at its other end with the free end of the other arm of said bell-crank lever 19, the latter carrying a stud on which an antifriction-roller 29 is journaled, which travels on the inner face of a cam 30, rigidly secured to said oscillating frame 4.

The said plunger 28 is provided with a collar 31, between which and said arm 27 a spiral compression-spring 32 is interposed, which serves to hold said antifriction-roller 29 in contact with said cam 30.

The said cam 30 consists of a plate provided with an opening which is practically semicylindrical at one side and enlarged at its other side, so that in traveling around on the wall of said opening said antifriction-roller 29 would be deflected twice during one revolution; but as said cylinder 8 is rocked said roller 29 is deflected inwardly each time the frame 4 approaches one limit of its movement, thus turning the lever 19 on its pivot and causing the dog 20 to revolve the wheel 17 a distance equal to that between two adjacent teeth of said wheel.

Assuming that the numbering-wheel has twenty-five divisions and the spur-gear 13 has fifty teeth, then the pinion 18 would be provided with sixteen teeth and the ratchet-wheel 17 with eight teeth, so that the numbering-wheel would thus be revolved a distance equal to that between two adjacent divisions each time that the ratchet-wheel 17 is actuated. A spring 33, secured to said plate 14, enters the notches of said ratchet-wheel 17 successively and serves not only to hold same against reverse movement, but also acts to compensate for any lost motion of the dog 20 to insure proper position of the numbering-wheel. The stroke of the oscillating frame 4 is such as to impart to the cylinder 8 more than a half-revolution at each movement and less than one and one-half revolutions, so that the position of said numbering-wheel cannot be shifted more than once for each stroke of said frame 4.

Fig. 4 shows the oscillating frame 4 practically at the middle of its stroke, while Fig. 5 shows same at one limit of its stroke, both said figures showing clearly the relative positions of the numbering-wheel-shifting mechanism.

The said numbering-wheel 11 is longitudinally movable on said shaft 12, the latter being provided with a longitudinal rib or key 34, entering a corresponding groove in said wheel 11, the hub of the latter being provided with a set-screw 35, bearing on said rib or key 34.

It will be noted that, as indicated by the dotted pitch-line 36 in Fig. 6, the cylinder 8 is not a true cylinder, the walls 37 at the ends of the chamber 10 being eccentric to said cyl-

inder and projecting beyond the radius of said cylinder. The printing-surface of the numbering-wheel is practically flush with the outermost points of said end walls, extending only so far beyond the latter as is necessary to effect printing; but, as will be obvious, only one division of said numbering-wheel can be in printing position at one time. The surface of said cylinder serves as an ink-distributing surface which coacts with the inking-rollers 38 to properly spread the ink. The said inking-rollers are journaled in the free ends of arms 39, which are pivotally mounted on tie-rods 40, connecting the ends of the arms of the oscillating frame 4 on opposite sides of the printing-bed. Spiral springs 41, engaging said arms at one end, are coiled on said rods 40 and at their other ends are secured to adjustable collars 42 on said rods, said springs serving to hold said inking-rollers 38 in contact with the surface of said cylinder 8. Said inking-rollers 38 are fed from an inking-roller 43, which in turn receives ink from other rollers. (Not herein shown.)

It will be noted that in Figs. 2 and 3 I have shown two of said cylinders 8. It is my intention to use both and have one of same carry a numbering-wheel bearing the odd numbers and the other the even numbers. The devices for actuating the numbering-wheel of the second cylinder are located on the opposite side of the frame 4 and correspond exactly with the devices hereinbefore described.

The said spur-gears 13 are held rigid with the cylinder 8 by means of a set-screw 44 entering screw-threaded openings in said gears and passing through segmental slots 45 in said end walls 37 of said cylinder, thereby enabling said cylinder to be adjusted relatively to the impression-bed of the press to vary the point thereon at which the numbering-wheel prints, so that the position of the number relatively to the other printed matter on the sheet can be adjusted at will. The said numbering-wheel 11 is provided with a circumferential flange 46 on one edge, the inner face of which is undercut on a bevel in order to receive the beveled edges of the plates or type 47 containing the numerals to be printed. At their opposite edges said plates or type 47 are clamped in position by means of small channeled plates 48, having one of their flanges beveled at its free end to engage the beveled edge of the plate 47, said plates 48 being secured in place by means of set-screws 49 entering screw-threaded openings 50 in said wheel 11.

The devices hereinbefore described are intended to print the numerals ranging from one to fifty or to one hundred on sheets, such as purchase or sale checks, &c., which are intended to be put up in blocks of fifty or one hundred, so that after having completed one series it will begin a second series, and so on.

If, however, it is desired to print numbers consecutively to any desired denomination, my device may be easily modified to accomplish this. Figs. 9 and 10 illustrate such modification, the consecutive numbering device 51, consisting of a plurality of numbering-wheels suitably geared together to advance the numeral one unit at each operation, being mounted on a longitudinal grooved shaft 52, which is rigid with the cylinder and on which the spur-gear 53, connected with the unit-disk of the numbering device 51, is loosely mounted. On the counter-shaft 54, which carries the ratchet-wheel 17, is a spur-gear 55, meshing with said gear 53 and actuating the latter. The said numbering device 51 and the gearing for actuating same are held between two plates 56, forming a frame therefor, and are longitudinally movable on said shafts 52 and 54. The same means for adjusting the cylinder 8, carrying said devices, relatively to the impression-bed are employed, as are shown in Fig. 6, thus enabling the number to be printed at any desired point relatively to the other printed matter on the sheet.

The operation of my device is as follows: As the frame 4 oscillates the cylinder or cylinders 8 are rotated back and forth, the numbering-wheels being caused to print a new number at each movement and always when the frame 4 is about midway between the limits of its movement. The press herein shown is so arranged that each time that the frame 4 approaches either limit of its movement the continuous web to be printed is shifted to present a fresh surface, the mechanism for effecting this forming subject of a separate application and being, therefore, omitted. Hence each time that one or both the cylinders 8 pass over said web they print at different points on its surface. Where the two cylinders are used, one of which prints the even and the other the odd numbers, said numbers must obviously not appear upon the same section of the web, so that in this case the web is shifted a distance equal to the combined length of two sections or sheets at each operation, so that two of said sections or sheets are simultaneously numbered at each operation. The inking-surface of the cylinder does not come into contact with the web owing to the fact that its radius is smaller than the radial distance from its axis to the printing-surface of the numbering-wheel.

This manner of printing the numerals on the sheet is very much superior to the usual method employed, in which the numbering device is reciprocated toward and away from the impression-bed, for the reason that the numbering device is relieved of the jar and the great pressure to which it is otherwise subjected, thereby rendering it more durable.

I claim as my invention—

1. In a device of the kind specified, the combination with the bed of a printing-press and

a frame, relatively reciprocally movable, of a revoluble member carried by said frame, a numbering-wheel carried by said revoluble member eccentric to the latter, a cam rigid with said frame, devices carried by said revoluble member and engaging said cam to be actuated thereby, and gearing between said devices and said numbering-wheel for shifting the latter at intervals.

2. In a printing-press, the combination with an impression-bed and a frame relatively reciprocally movable, of a revoluble member carried by said frame, a numbering-wheel revolubly mounted within said revoluble member and eccentric thereto, gearing between said revoluble member and said numbering-wheel for shifting the latter at each stroke of said revoluble member, and devices carried by said frame and engaging a part of said gearing for actuating the latter to turn said numbering-wheel constantly in one direction.

3. In a printing-press, the combination with the impression-bed and a member mounted on the frame of the machine, said bed and member being relatively reciprocally movable, of a cylinder journaled in said member, a recess in said cylinder, a revoluble numbering-wheel mounted in said recess eccentrically to said cylinder and projecting at one point beyond the plane of said cylinder, gearing between said cylinder and said numbering-wheel for shifting the latter at each stroke of said cylinder, and devices carried by said member and engaging a part of said gearing for actuating the latter to turn said numbering-wheel constantly in one direction.

4. In a printing-press, the combination with the impression-bed and a member mounted on the frame of the machine, said bed and member being relatively reciprocally movable, of a cylinder journaled in said member, a recess in said cylinder, a revoluble numbering-wheel mounted in said recess eccentrically to said cylinder and projecting at one point beyond the plane of said cylinder, gearing between said cylinder and said impression-bed for revolving said cylinder, gearing between said cylinder and said numbering-wheel for actuating the latter at each stroke of said cylinder, and devices extending into the path of said last-named gearing and engaging a part thereof for actuating the same at intervals during the revolutions of said cylinder to turn said numbering-wheel constantly in one direction.

5. In a printing-press, the combination with the impression-bed, a rocking cylinder movable reciprocally over same, and gearing between said bed and said cylinder for rocking the latter, of a recess in said cylinder, a numbering-wheel revolubly mounted in said recess eccentrically to said cylinder, devices carried by said cylinder for actuating said numbering-wheel, and devices located in the path of said numbering-wheel-actuating de-

vices for imparting motion thereto relatively to said cylinder in one direction.

6. In a printing-press, the combination with the impression-bed and a revoluble printing member relatively reciprocally movable, and a numbering-wheel carried by said printing member, of gearing between said printing member and said numbering-wheel for turning the latter relatively to the former, a member engaging part of said gearing for actuating same at intervals, and devices located in the path of said member for imparting motion thereto.

7. In a printing-press, the combination with the impression-bed and a revoluble printing member relatively reciprocally movable, and a numbering-wheel carried by said printing member, of gearing between said printing member and said numbering-wheel for turning the latter relatively to the former, a ratchet-wheel rigid with one member of said gearing, a dog engaging same, and devices located in the path of said dog for imparting motion thereto at intervals to actuate said gearing and shift said numbering-wheel at intervals.

8. In a printing-press, the combination with a rotatable ink-distributing member and inking-rollers coacting therewith, of a number-printing member carried by said ink-distributing member and movable relatively thereto, gearing between said number-printing member and said ink-distributing member, and means engaging said gearing for actuating same at intervals.

9. In a printing-press, a revoluble ink-distributing member, inking-rollers coacting therewith, a number-printing member carried by said ink-distributing member and adapted to receive ink from said rollers, and means for revolving said number-printing member relatively to said ink-distributing member at intervals.

10. In a printing-press, the combination with the bed and a frame relatively movable, of a revoluble member journaled in said frame and movable over said bed, a number-printing device carried by said revoluble member rotatable relatively thereto, gearing between said number-printing device and said revoluble member, including a ratchet-wheel and a dog engaging same, and devices carried by said frame and located in the path of said dog for actuating the latter to turn said ratchet-wheel at intervals.

11. In a printing-press, the combination with the bed and a frame relatively movable, of a revoluble member journaled in said frame

and movable over said bed, a number-printing device carried by said revoluble member rotatable relatively thereto, gearing between said number-printing device and said revoluble member, including a ratchet-wheel and a spring-actuated dog engaging same, and devices located in the path of said dog for actuating same against the action of the spring to turn said ratchet-wheel at intervals.

12. In a printing-press, the combination with the bed and a frame relatively reciprocally movable, of a cylinder journaled in said frame, inking-rollers movable over said cylinder and coacting with the latter to distribute ink, gearing between said cylinder and said bed for rocking said cylinder, a longitudinal slot in said cylinder, a longitudinal shaft in said slot revoluble relatively to said cylinder, number-printing devices carried by said shaft and projecting from said slot beyond the plane of said cylinder, gearing between said shaft and said cylinder, and a cam on said frame engaging said gearing to actuate the same at intervals to shift the position of said number-printing devices relatively to said cylinder.

13. In a printing-press, the combination with the bed and a frame relatively reciprocally movable, a cylinder provided with hollow trunnions journaled in said frame, racks at each side of said bed, a longitudinal recess in said cylinder, a shaft in said recess eccentric to said cylinder and journaled in the hollow trunnions thereof, number-printing devices carried by said shaft and projecting at one point beyond the plane of said cylinder, gear-wheels adjustably secured to said cylinder concentric therewith and meshing with said racks, said gears being adapted to be shifted relatively to said cylinder to determine the point at which said numbering devices impress on said bed, an arm rigid with one of the trunnions of said cylinder, a spur-pinion rotatably mounted on said arm and meshing with a spur-gear on said shaft, a ratchet-wheel rigid with said spur-pinion, a dog engaging said ratchet-wheel, and a cam carried by said frame and engaging said dog for actuating said gearing at intervals to rotate said numbering devices relatively to said cylinder.

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

JAMES ROWE.

Witnesses:

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