This invention is a novel inking mechanism for printing presses, and while it is particularly designed for use on high speed rotary newspaper presses, it is also adapted to be used on any other presses in which a rotary distributing inking drum is used in the inking system. The object of the present invention is to enable ink to be supplied directly from the fountain roll to the ink drum without having to move either the ink fountain or the ink roll, to or from the ink drum. Another object of the invention is to provide a novel ink fountain roll whereby the ink may be supplied directly from the fountain to the ink drum without any lateral movement of either fountain, roll, or ink drum. Another object is to provide a fountain roll which is preferably provided with one or more spaced segments by which ink will be supplied to the ink drum in the desired quantity, while the ink roll may be continually rotated. Another object is to provide a fountain roll adapted to supply ink to the drum, and permit the drum to be rotated to the right or to the left according to the lead of the web. Another object is to dispense with any ductors or any means for moving the fountain to or from the roller drum or with any means for reciprocating the fountain roll to or from the drum. Another object is to provide a simple and efficient inking mechanism whereby ink may be supplied directly from the fountain to the drum. Other minor objects and advantages of the invention will be hereinafter set forth.

I will explain the invention with reference to the accompanying drawings, in which is conventionally illustrated inking mechanism embodying the invention, and an understanding thereof will enable others to adopt and use the invention. In the claims I have summarized the essentials of the invention and the novel features of construction and novel combinations of parts for which protection is desired.

In said drawings:

Figure 1 is a diagrammatic side elevation or a rotary printing web press unit with inking mechanisms constructed in accordance with my invention.

Figure 2 is an enlarged plan view of the ink fountain roll detached.

Figure 3 is a transverse section of said roll on line 3-3, Fig. 2.

Figure 4 is a detail.

I have illustrated conventionally in Figure 1 an ordinary web perfecting unit comprising plate cylinders P, P' and interposed impression cylinders I, I' coacting with the impression cylinders to print a web W which may be directed between the cylinders in various ways. Coacting with each plate cylinder is an inking mechanism which may be of any suitable kind; and as shown includes a drum D to which ink is supplied from the fountain, as hereinafter explained; and distributing form rollers F by which ink may be supplied from the drum D to the plates on the plate cylinder. The particular construction of the inking mechanism so far as regards the drum and the number of rollers employed for carrying ink from the drum and applying same to the plates on the cylinders, may be varied to suit the press designer or constructor and forms no essential part of the present invention except that in the present invention because of the unusually uniform and well distributed supply of ink by the fountain roll to the drum, the number of distributing rollers required may be greatly reduced. The present invention resides more particularly in the novel construction of the fountain roll by which the ink is supplied direct from the fountain to the drum D.

The fountain 1, with the exception of the fountain roll, may be of ordinary construction; but instead of the usual roll employed in such fountain, I provide a novel segmental roll 2. This roll is preferably composed of two diametrically opposed segmental portions 2a rigidly connected by a series of intermediate ribs 2b, which may if desired be cast integrally with the portions 2a. The ribs 2b are spaced apart to permit the free passage of ink between them and between the segments. These ribs are also preferably not so long as the opposed faces of the segments 2b,
and thus leave gaps between the opposed ends of the adjacent segments. The outer faces of the segments are curved to correspond to the normal diameter of the roll, but the adjacent ends of the segments are separated by the gaps. The segments are adapted to be contacted by a scraper blade of the usual construction, and which may be such as is commonly used in the ordinary ink fountains, and as the fountain roll is rotated the segments move alternately past the scraper which latter is set to remove surplus ink from the faces of the segments, and at the end of each surface the surplus ink caught by the scraper blade will drop into the gaps and pass between the ribs back into the fountain. The gaps prevent accumulation of ink at the following or rear end of the segments.

The fountain roll may be provided with a shaft or trunnion as usual, which may be journaled in bearings in the ends of the fountain frame, as usual; and the fountain itself is fixedly supported by any suitable means beneath the related ink drum and in such proximity thereto that at each rotation of the drum the ink will be supplied thereto from and by the segments without the use of any ductor, and without the necessity for raising or lowering the fountain, or the fountain roll; or the drum.

In this construction the fountain, the drum, and the fountain roll are all adjusted and relatively fixed, so that they do not have or require any movement (other than that of rotation of the drum and rotation of the fountain roll) during the operation of the machine.

The roll must always rotate in the direction of the arrow in order that the scraper blade can properly engage to remove the ink therefrom. Ordinarily, the roll is driven at much less peripheral speed than that of the drum. The roll may be driven by any suitable means. As shown in Fig. 1 the roll is driven by means of a large gear meshing with a pinion on the shaft of the drum, and the gears and 3 being so proportioned as to give any desired reduction of peripheral speed between the drum and the ink roll. This arrangement is used when the web is led through the press in the direction indicated in Figure 1. Sometimes it is desired to reverse the direction of the leads of the web, and in such case it is necessary to reverse the direction of rotation of the plate and impression cylinders and of the drum; this reversal can be accomplished by simply reversing the drive. In such case, the ink fountain roll should still be rotated in the same direction (anti-clockwise) so that it will be properly scraped by the blade 2; and therefore the gear 3 can be removed and substituted by a smaller gear 3, Fig. 4, and an intermediate gear 3 is placed on a stud and meshes with gears 3 and 2 (see Fig. 4) and thus insures the desired anti-clockwise rotation of the fountain roll. The gears 3, 3, 2, are preferably removable and interchangeable so that the press can be readily adapted to run with either lead of the web.

The reason for changing the gearing for driving the ink roll is that the ink roll must rotate anti-clockwise in order that the segments may properly engage the scraper blade. But if the fountain was provided with two opposed blades either of which could be brought into operation according to the rotation of the roll the fountain roll, it would be unnecessary to change the gearing.

By this invention I am enabled to greatly reduce the number of parts ordinarily required in inking systems for printing presses, where a fine distribution of ink is desired. Thus the inking mechanism indicated in Figure 1 takes the place of inking mechanisms in which were employed two drums, a ductor, and from four to six distributing rollers in order to produce the desired fine distribution of the ink between the fountain and the plate cylinder which distribution is obtained by the simple inking mechanism shown.

In the present invention, the drum receives ink direct from the fountain roll but takes it from the fountain roll segments in such manner that instead of the ink being thickly dabbed upon the inking drum at a number of different spots it is very uniformly supplied to the drum and uniformly distributed at and during the time of its application over a large area of the drum surface; and is so uniformly distributed over such surface that one or two distributors with the form rolls will suffice to give the desired fine distribution of the ink before being applied to the printing surface.

In assembling the apparatus the ink fountain or ink roll should be adjusted so that the inking segments will supply the ink direct to the drum, the amount of ink supplied being regulated by the blade, and the adjustment of the fountain roll relative to the ink drum insures that the latter will receive the desired amount of ink from the roll.

While I preferably employ a roll having two segments, it is obvious that in some cases one segment might be employed, and that in other cases the roll might have more segments; therefore I do not consider the invention limited to any particular number of roll segments; but I prefer to use two for the sake of balance and smoothness in operation, and also because with two segments the roll can be run at less speed than if only one segment is employed. The peripheral
length of the segments can be determined by the amount of ink which it is desired to deliver to the inking drum for each supplying operation, and the relative peripheral speed of the drum and segments can be determined by the amount of ink to be supplied to the drum and the extent of distribution of the ink on the drum surface during the supply of ink thereto by the segment.

1. In inking mechanism for the purpose specified, an ink drum mounted in fixed bearings, an ink fountain; an ink fountain roll segment adapted to transfer ink directly from the fountain to the drum and means for driving the drum at greater peripheral speed than the fountain roll segment.

2. In inking mechanism for the purpose specified, an ink drum mounted in fixed bearings, an ink fountain; an ink fountain roll having a plurality of segments adapted to transfer ink directly from the fountain to the drum, and means for driving the drum at greater peripheral speed than the fountain roll segments.

3. In inking mechanism for the purpose specified, an ink drum mounted in fixed bearings, an ink fountain; an ink fountain roll segment adapted to transfer ink directly from the fountain to the drum; means for removing surplus ink from the segment; means for rotating the segment, and means for driving the drum at greater peripheral speed than the fountain roll segments.

4. In inking mechanism for the purpose specified, an ink drum mounted in fixed bearings, an ink fountain; an ink fountain roll having a plurality of segments adapted to transfer ink directly from the fountain to the drum; means for removing surplus ink from the roll segments; means for rotating the fountain roll, and means for driving the drum at greater peripheral speed than the fountain roll segments.

5. In mechanism for the purpose specified an ink drum mounted in fixed bearings; an ink fountain; an ink fountain roll segment adapted to transfer ink directly from the fountain to the drum; a shaft carrying said segment; a scraper for removing surplus ink from the segment; and gearing between the segment shaft and the drum, whereby the drum is rotated at greater peripheral speed than the segment.

6. In mechanism for the purpose specified an ink drum mounted in fixed bearings; an ink fountain; an ink fountain roll comprising a plurality of segments adapted to transfer ink directly from the fountain to the drum; a shaft carrying said segments; means for removing surplus ink from the roll segments; and means for rotating the fountain roll at greater peripheral speed than the segments.

7. In mechanism for the purpose specified an ink drum; an ink fountain; an ink fountain roll comprising a plurality of segments adapted to transfer ink directly from the fountain to the drum; webs rigidly connecting the segments; a shaft carrying said webs and segments; a scraper for removing surplus ink from the roll segment; and gearing between the fountain roll and the drum.

8. An ink fountain roll comprising spaced segments between which ink can pass through the roll, and means connecting said segments.

9. An ink fountain roll comprising spaced segments between which ink can pass through the roll, and a shaft carrying said segments.

10. An ink fountain roll comprising a shaft; and a plurality of segments mounted thereon and spaced apart to permit ink to pass therebetween.

11. An ink fountain roll comprising a plurality of longitudinal segments spaced apart to permit ink to pass between them through the roll; and spaced means rigidly connecting the segments.

12. An ink fountain roll, comprising a plurality of longitudinal segments spaced apart to permit ink to pass between them through the roll; spaced means rigidly connecting the segments, and a shaft carrying said segments.

13. In inking mechanism for the purpose specified an ink drum, an ink fountain; an ink fountain roll having a plurality of segments adapted to transfer ink directly from the fountain to the drum, said segments being spaced apart to permit ink to pass between them through the roll; means for removing surplus ink from the roll segments; and means for rotating the fountain roll.

14. In mechanism for the purpose specified an ink drum; an ink fountain; ink fountain roll segments adapted to transfer ink directly from the fountain to the drum, said segments being spaced apart to permit ink to pass between them through the roll; a shaft carrying said segment; a scraper for removing surplus ink from the segments; and gearing between the segment shaft and the drum.

15. In mechanism for the purpose specified an ink drum; an ink fountain; an ink fountain roll comprising a plurality of segments adapted to transfer ink directly from the fountain to the drum, said segments being spaced apart to permit ink to pass between them through the roll; a shaft carrying said segments; means for removing surplus ink from the segments, and means for rotating the fountain roll.

16. In mechanism for the purpose specified an ink drum; an ink fountain; an ink
fountain roll comprising a plurality of segments adapted to transfer ink directly from the fountain to the drum, said segments being spaced apart to permit ink to pass between them through the roll; webs rigidly connecting the segments; a shaft carrying said webs and segments; a scraper for removing surplus ink from the segments; and gearing between the fountain roll and the drum.

In testimony that I claim the foregoing as my own, I affix my signature.

HENRY F. BECHMAN.