C. NORDFORS.

PRINTING COUPLE.

APPLICATION FILED SEPT. 26, 1918.

1,421,982.

Patented July 4, 1922.

2 SHEETS—SHEET 1.

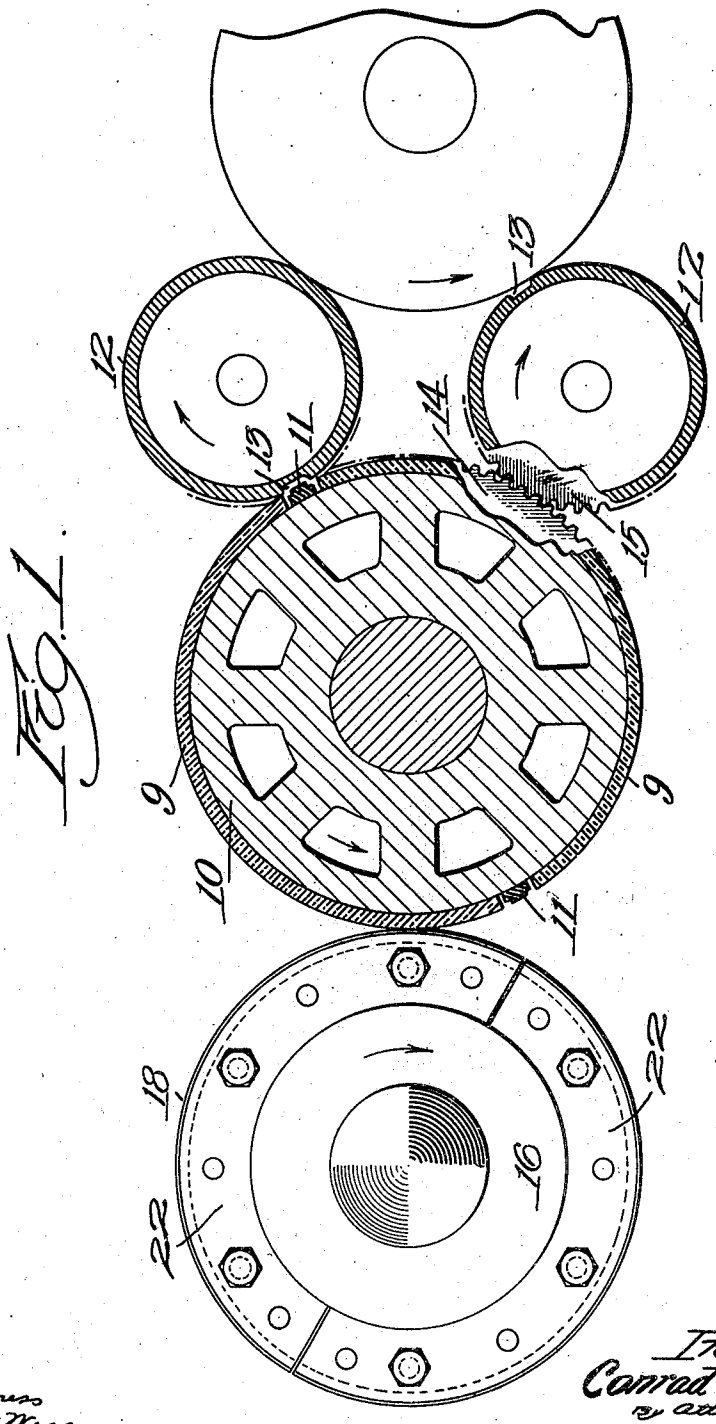

Fig. 1.

Witness
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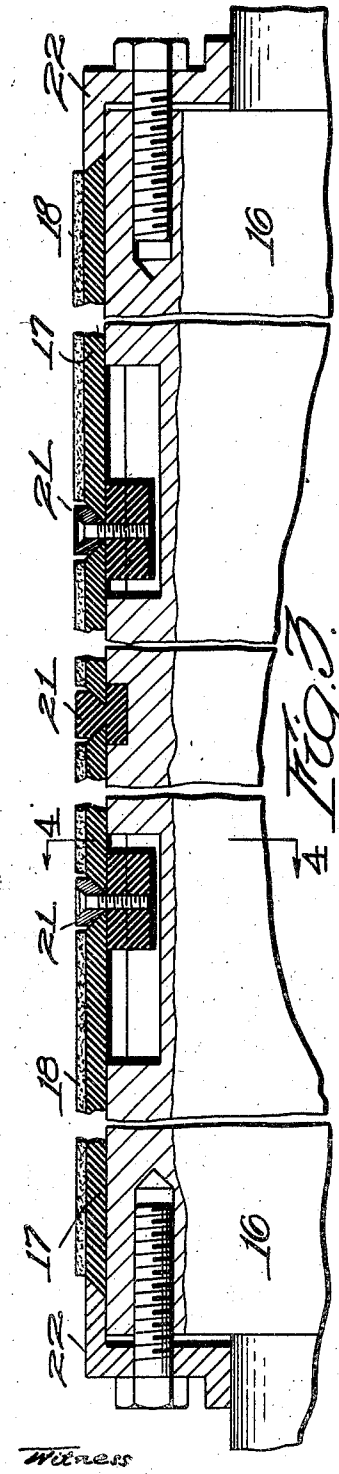

Fig. 3.

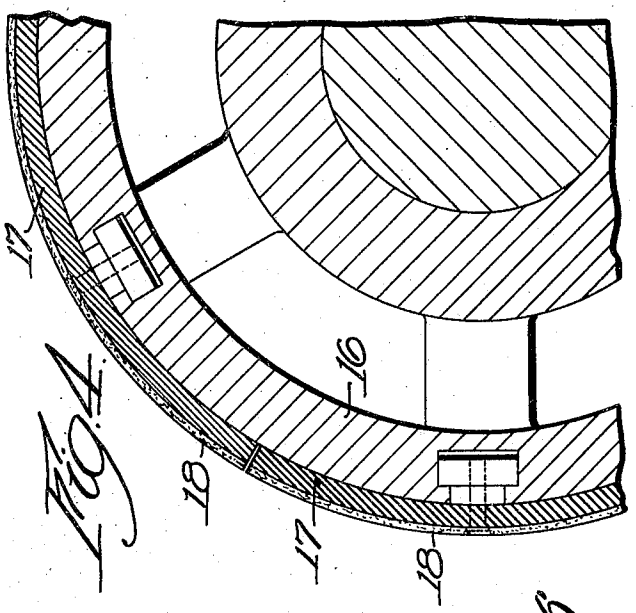

Fig. 4.

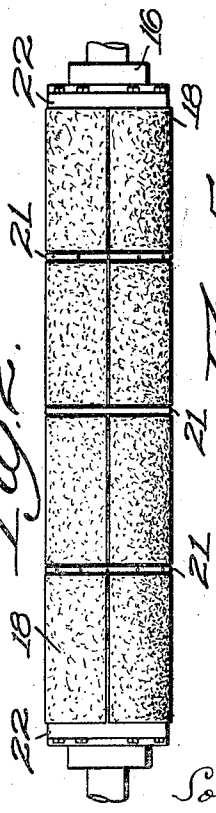

Fig. 2.

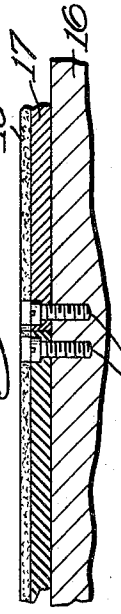

Fig. 5.

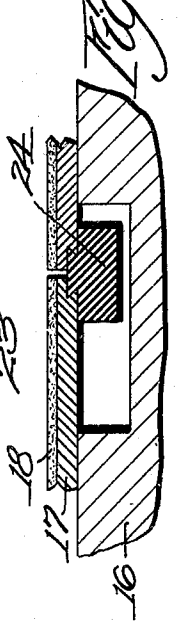

Fig. 6.

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UNITED STATES PATENT OFFICE.

CONRAD NORDFORS, OF JERSEY CITY, NEW JERSEY, ASSIGNOR TO WOOD NEWSPAPER MACHINERY CORPORATION, OF NEW YORK, N. Y., A CORPORATION OF VIRGINIA.

PRINTING COUPLE.

1,421,982. Specification of Letters Patent. **Patented July 4, 1922.**

Application filed September 26, 1918. Serial No. 255,848.

To all whom it may concern:

Be it known that I, CONRAD NORDFORS, a citizen of the United States, residing at Jersey City, in the county of Hudson and State of New Jersey, have invented a new and useful Printing Couple, of which the following is a specification.

This invention relates to the prevention of guttering when the margins of the plates pass the margin opening of the impression cylinder. The objections to the guttering are well understood. This guttering is caused by the fact that the two cylinders pass out of true rolling contact with each other when the depressed surface of the plate cylinder at the margin bars passes the depressed surface of the impression cylinder at the margin opening. As both cylinders are held in contact under heavy pressure while revolving on their bearings they naturally have a tendency to come together on leaving one rim of the margin opening and strike the opposite rim a more or less heavy blow, depending on the surface speed of the cylinders. At a high rate of speed this blow often causes the cylinders to vibrate and produce a number of heavy slurs across the sheet, the space between the slurs being very light and not readable.

According to this invention these difficulties are avoided by improving the mechanism in three respects. First, the margin bars on the plate cylinder are made plate high; second, the impression cylinder is provided with an impression surface made up of plates detachably mounted on it without any margin opening or corresponding space; and third, the inking rollers are provided with longitudinal spaces cut out so as to miss the margin bars and prevent inking them. In this way the two cylinders of the couple are kept in rigid and uniform contact throughout the entire revolution and there is no chance for guttering. This also makes a more durable construction because the impression cylinder is of a more permanent construction and because the vibration set up by the guttering is avoided.

Further objects and advantages of the invention will appear hereinafter.

Reference is to be had to the accompanying drawings in which—

Fig. 1 is a view partly in section of a printing couple and inking rollers constructed in accordance with this invention;

Fig. 2 is an elevation of the impression cylinder;

Fig. 3 is a longitudinal sectional view of the same on enlarged scale;

Fig. 4 is a sectional view on the line 4—4 of Fig. 3, and

Figs. 5 and 6 are views similar to Fig. 3 showing modifications.

In my improved printing couple I provide a plate cylinder 10, with its usual plates 9 and plate clamping means (not shown) and margin bars 11 for holding the plate in position and extending above the plate cylinder the same height as the printing plate surfaces. The ink rollers 12 are one half the size of the plate cylinder, and are provided with longitudinal depressions 13 registering with the margin bars 11 of plate cylinder 10 so as not to ink the margin bars. The rollers 12 are driven from gear 14 on the plate cylinder meshing with gears 15 on ink rollers.

Instead of the usual blanket cylinders I provide an impression cylinder 16 carrying a number of metal impression plates 17 whose surfaces are covered with suitable impression material 18, such as rubber, cork, linoleum, etc., vulcanized or cemented thereon, and corresponding in number and arrangement to the printing plates 9 on the plate cylinder. The impression plates may be secured to the cylinder in many ways as shown in the different views, Figs. 3, 5 and 6, on the drawing, and together they substantially cover the entire surface of the cylinder (Fig. 3) without any margin openings.

In the form of the invention shown in Figs. 2, 3 and 4, the impression plates are held by circumferential bars 21 and end plate clamps 22.

In the form shown in Fig. 5 the plates are secured in position by screws 23 while in Fig. 6 the cylinder is provided with recesses in which dove-tail holding bars 24 are located. The plate clamps at the ends are used in all cases preferably.

A pair of cylinders as above will revolve in constant rolling contact and produce good printing at any speed, no guttering being possible. It will also be seen that the impression plates may be shifted about very conveniently from one side of the cylinder to the other as one or the other surface may wear out.

The elimination of the vibration is also an important feature because it involves less strain and less variation in the strain and therefore less wear on the bearings and less liability of injury or loosening of the parts, such as the plate clamps.

Although I have illustrated and described only three forms of the invention I am aware of the fact that many modifications can be made therein by any person skilled in the art without departing from the scope of the invention as expressed in the claims.

Therefore I do not wish to be limited to all the details of construction herein shown and described, but what I do claim is:—

1. The combination with a printing plate cylinder, having plates thereon and between the plates plate high margin bars, of an inking roller therefor having a surface depression registering with the margin bars to prevent inking their surfaces.

2. The combination with a printing plate cylinder, having a pair of longitudinal plate high margin bars, of an inking roller of half the diameter of the plate cylinder geared thereto and having a single longitudinal depression in its surface adapted to register with one bar on one revolution of the inking roller and with the other bar on the next.

3. The combination with a printing plate cylinder having a plurality of plates thereon, a plurality of plate high margin bars holding the plates throughout their length, of an inking roller therefor having a surface depression registering with the margin bars to prevent inking their surfaces and an impression cylinder having its effective cylindrical surface continuous.

4. The combination with a printing plate cylinder, having a pair of plate high margin bars, of an inking roller of half the diameter of the plate cylinder geared thereto and having a single longitudinal depression in its surface adapted to register with one bar on one revolution of the inking roller and the other bar on the next, and an impression cylinder having a continuous cylindrical surface contacting with the plate cylinder with equal pressure throughout its length and throughout a complete revolution.

5. The combination with a printing plate cylinder, having plate high margin bars, of an impression cylinder having a continuous cylindrical surface formed of a plurality of rigid plates secured thereto.

6. The combination with a cylindrical plate member, of an impression cylinder for a printing press having its impression surface made up of a plurality of metallic impression plates, each covered with a soft layer and together constituting a substantially complete cylindrical surface.

7. The combination with a plate cylinder, of an impression cylinder for a printing press having its impression surface made up of a plurality of metallic impression plates, each having a permanently attached layer of soft material.

8. The combination with a plate cylinder, of an impression cylinder for a printing press having its impression surface made up of a plurality of metallic impression plates, and means for fastening them in position comprising devices having their outer surfaces lying in the same cylindrical surface as the plates.

In testimony whereof I have hereunto affixed my signature.

CONRAD NORDFORS.