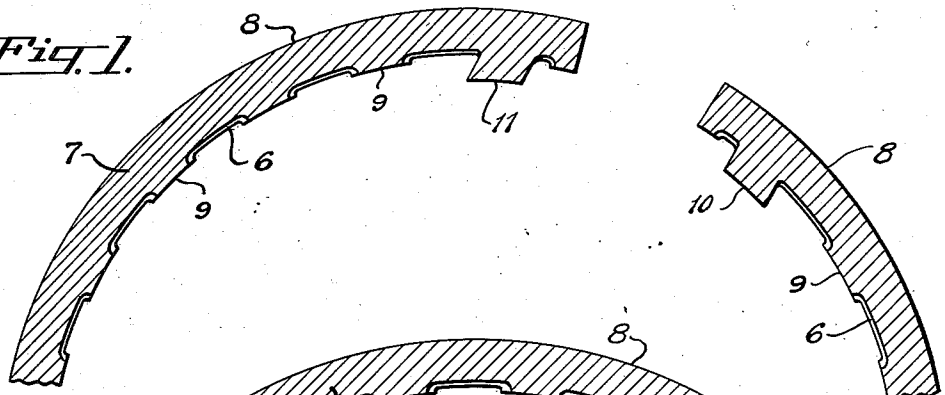
Sept. 1, 1936. F. A. FOSTER 2,052,758

STEREOTYPE PLATE

Filed Jan. 18, 1935

Fig. 1.



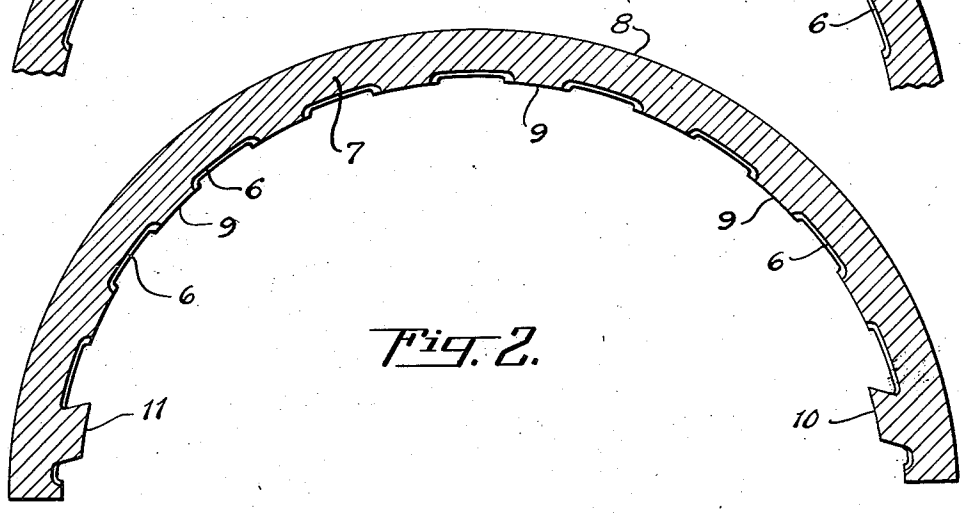


Fig. 2.

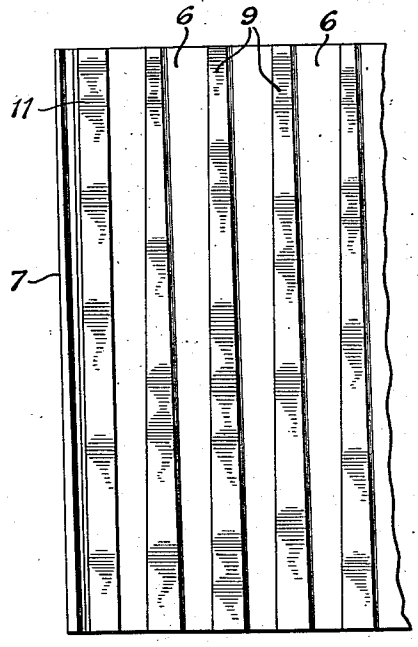


Fig. 3.

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STEREOTYPE PLATE

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Application January 18, 1935, Serial No. 2,343

3 Claims. (Cl. 101—375)

The invention relates to novel and useful improvements in stereotype plates, and more especially to such improvements in the parts of the plate that are subjected to finishing and in the devices which cooperate to tension the plate about the cylinder.

Objects and advantages of the invention will be set forth in part hereinafter and in part will be obvious herefrom, or may be learned by practice with the invention, the same being realized and attained by means of the instrumentalities and combinations pointed out in the appended claims.

The invention consists in the novel parts, constructions, arrangements, combinations and improvements herein shown and described.

The accompanying drawing, referred to herein and constituting a part hereof, illustrates one embodiment of the invention, and together with the description, serves to explain the principles of the invention.

Of the drawing:—

Figure 1 is a fragmentary elevation of the inner face of a plate embodying the invention;

Figure 2 is a fragmentary arcuate section through a plate; and

Figure 3 is a diagrammatic development of the back of the plate with the bevel of the ribs exaggerated.

An object of the invention is to provide a stereotype plate which is designed to be held to the cylinder by tension applied to the plate about the cylinder, that is, the entire holding stress upon the plate is tensional, angularly along the plate, and in the direction of the travel of the printing line pressure. The old systems of holding stereotype plates on the cylinder usually employed clamping devices which engaged the opposed edges of the plate, usually the beveled arcuate edges, and exerted opposed, inwardly directed compression strains. Such pressure tends to buckle the plate centrally and this acts destructively in connection with the very great centrifugal strains due to high cylinder speeds. The very great printing pressures used tend to create a buckle or roll in the plate which travels along the plate ahead of the printing line, and the application of clamping pressure of the kind described on the plate edges is a further cause of disruption and plate failure. When the plates are held to the cylinder by tension applied angularly about the plate between the head edge and the tail edge, the defects and disadvantages described are obviated.

The present invention provides an improved plate to be tensionally held to the cylinder, the plate having means for engaging with the tension exerting devices on the cylinder which are powerful, simple and efficient, and which are an element of added strength, a very valuable feature in view of the high speeds and great printing pressures employed. Another object of the invention is to provide a stereotype plate which has exceptional printing qualities at high speeds and under great pressure, and which may be finished accurately and expeditiously and so as to have its printing surface in the true cylinder necessary to secure excellent and uniform impressions. To this end the interior ribs or projections are disposed parallel to the axis of the plate, and are finished by being simultaneously operated on by a cutter having one or more arcuate or annular cutting edges, having the exact radius of the printing cylinder, and moving along the axis of the plate and of the cylinder during the finishing operation, while at the same time the printing surface of the plate is held firmly to the true cylindrical form and radius required for the press. A machine capacitated to so finish a plate of this kind is shown in copending application Ser. No. 744,762 filed September 20, 1934 by Charles Alonzo Harless.

This application is a division of my copending application Ser. No. 736,816 filed July 25, 1934.

In one figure (Fig. 1) of the drawing a stereotype plate 7 of the one plate around type is shown, and in the other figure (Fig. 2) a semi-cylindrical plate, that is, the two plates around type, is shown, as the invention is equally applicable for one, two or more plates around the cylinder. The particular form of tensioning devices here shown are adapted to cooperate with the form of plate tensioning devices shown in my aforesaid parent application Ser. No. 736,816, but other forms of plate tensioning devices may be employed so far as regards the main features of the invention. The printing surface 8 of the plate is cast as nearly an accurate cylindrical surface as is possible under casting conditions, and the finishing operation is designed to correct imperfections or aberrations due to or consequent upon the casting. The plate of the present invention is especially designed for a finishing process or method which is especially efficacious in bringing the printing surface to the desired true cylindrical form. On its inner side the plate is provided with longitudinally disposed, spaced apart ribs 9, preferably extending unbrokenly the entire length of the plate from one arcuate edge to the other, the ribs being in effect elements of a cylindrical surface, and the finished surfaces of these ribs rest upon

and along the plate cylinder to support the plate thereon.

The ribs are beveled slightly in cross section from their roots inwardly to the edges of the inner surfaces thereof (which surfaces after finishing rest upon the plate cylinder), to facilitate withdrawal of the plate from the casting core. The inner surface of each rib is beveled longitudinally from one end to the other, to facilitate withdrawal of the plate from the core in the endwise direction, if that should be desired. This longitudinal bevel of the rib faces is removed by the finishing operation and these inner faces are thereby brought to true cylinder-elements by the finishing operation, as shown in Fig. 1 (Fig. 7 of the parent application). In that figure the entire plate is shown as preferably having a very slight bevel, or increase in cross section, in the axial direction to facilitate removal of the plate from the core, the bevel in the unfinished portions between the ribs being indicated by numeral 6. A plate of this form may be finished by pressing the printing surface against a true cylindrical surface of the proper radius, that is, the radius of the perfect printing surface, and passing a cylindrical cutting and finishing tool axially within the plate, the cutting tool being of the same radius as the plate cylinder of the press and moving coaxially with the plate. Such a finishing operation is effected under the exact conditions of rotary printing and is effective to produce a very accurately dimensioned plate. Such a finishing process is described and claimed in the beforementioned copending application Ser. No. 744,762 filed September 20, 1934, by Charles Alonzo Harless.

In accordance with one feature of the invention, the lockup or tension effecting means on the plate are designed to cooperate with tension means on the plate cylinder located within the periphery of the cylinder. The embodied form of such means also contribute strength to the plate where it is most needed, as they project from the plate rather than being cut or depressed into it and thereby decreasing its cross sectional dimension at that point, with corresponding weakening of the plate. As embodied, there are cast with the plate lugs or bars 10 and 11, near the head and tail straight edges of the plate, which are adapted to engage with plate tensioning means located within the periphery of the plate cylinder as already referred to. These lockup lugs are shaped and positioned to tension the plate resiliently about the cylinder, to prevent radial displacement, to resist centrifugal stresses, and also to take up and resist the heavy tangential stresses due to impact of the printing pressure upon the head or lead edge of the plate in fast rotary printing.

As embodied said lugs project diagonally inwardly slightly away from the adjacent straight edge of the plate, that is, they have their surfaces which engage with the tensioning means on the plate inclined angularly somewhat off the radial line. The lugs may be formed with their surfaces slightly beveled to permit the plate to be readily removed from the casting core, and the lugs are thereafter brought to the size and form for cooperating with the cylinder tensioning devices, by the finishing operation or any suitable operation.

It will be understood that the form, proportions and other details of the interior members or elements of the plate may be varied from those herein disclosed without departing from the principles of the invention and without sacrificing its chief advantages.

What I claim is:

1. A cylindrical stereotype plate having internally projecting, spaced apart ribs disposed longitudinally on the interior of the plate as elements of a cylindrical surface, said ribs being slightly beveled in cross-section, and also longitudinally on their inner faces, to permit withdrawal of the plate longitudinally from the core of a casting machine and undercut devices formed on the inner surface of the plate adjacent to its ends whereby plate tensioning means may hold the plate about a cylinder.

2. A cylindrical stereotype plate having internally projecting, spaced apart ribs disposed longitudinally from the interior of the plate as elements of a cylindrical surface, said ribs on the plate as cast having been beveled in cross-section, and also longitudinally on their inner faces, to permit withdrawal of the plate longitudinally from the core of a casting machine, the inner faces of the ribs having been finished after casting to a true cylindrical surface to seat the plate on the press cylinder and undercut devices formed on the inner surface of the plate adjacent to its ends whereby plate tensioning means may hold the plate about a cylinder.

3. A cylindrical stereotype plate having an internal surface or surfaces, such as longitudinally disposed spaced apart ribs, adapted to seat on the surface of a plate cylinder, and having a lockup lug disposed longitudinally near the leading end of the plate, and projecting inwardly farther than the seating surface of the plate, the lockup bar being undercut or projecting diagonally to engage devices on the plate cylinder to prevent radial displacement of the plate and to prevent backward displacement of the plate around the cylinder.

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