C. E. DRANGE.

MEANS FOR ATTACHING PRINTING PLATES TO CYLINDERS.

APPLICATION FILED JAN. 20, 1916.

1,276,336. Patented Aug. 20, 1918.

3 SHEETS—SHEET 1.

Fig. 1.

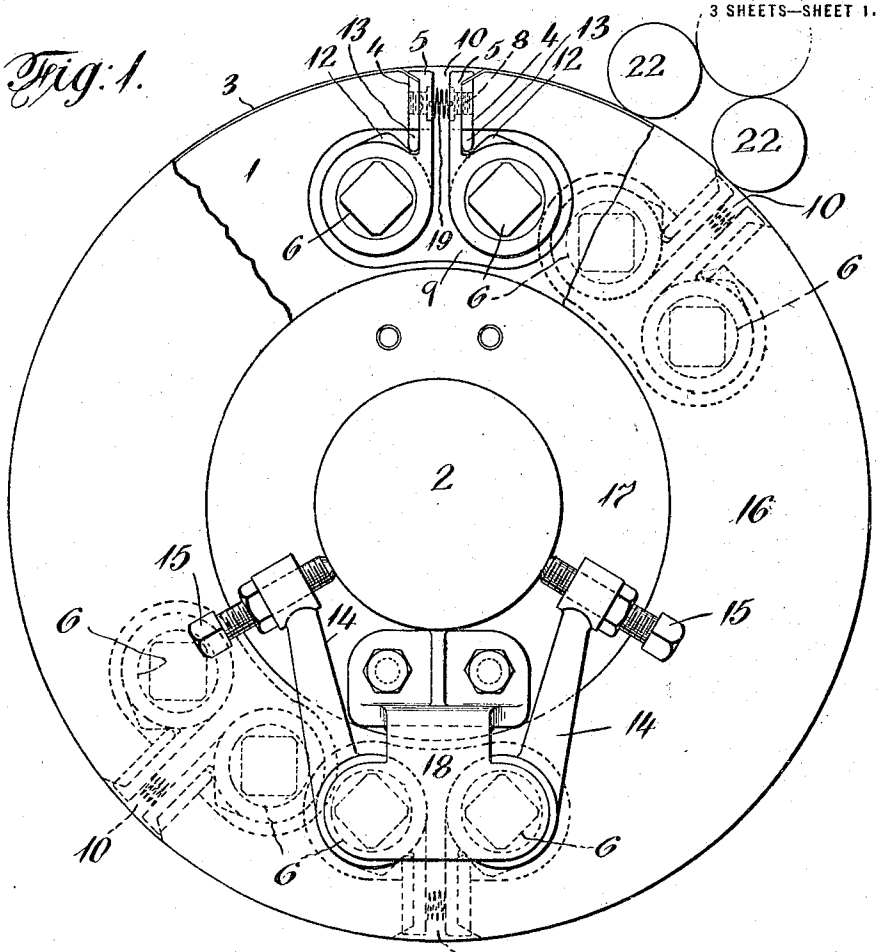
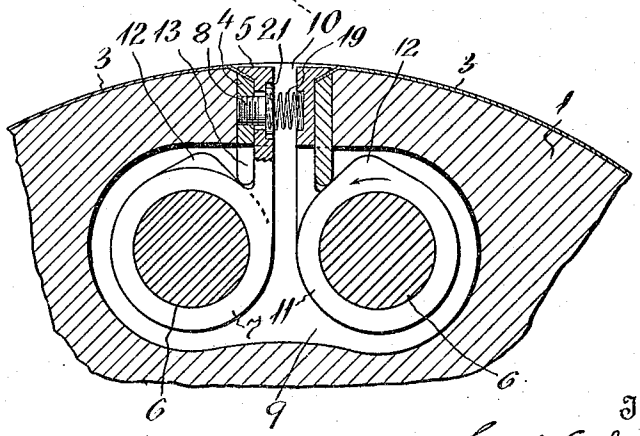


Fig. 2.



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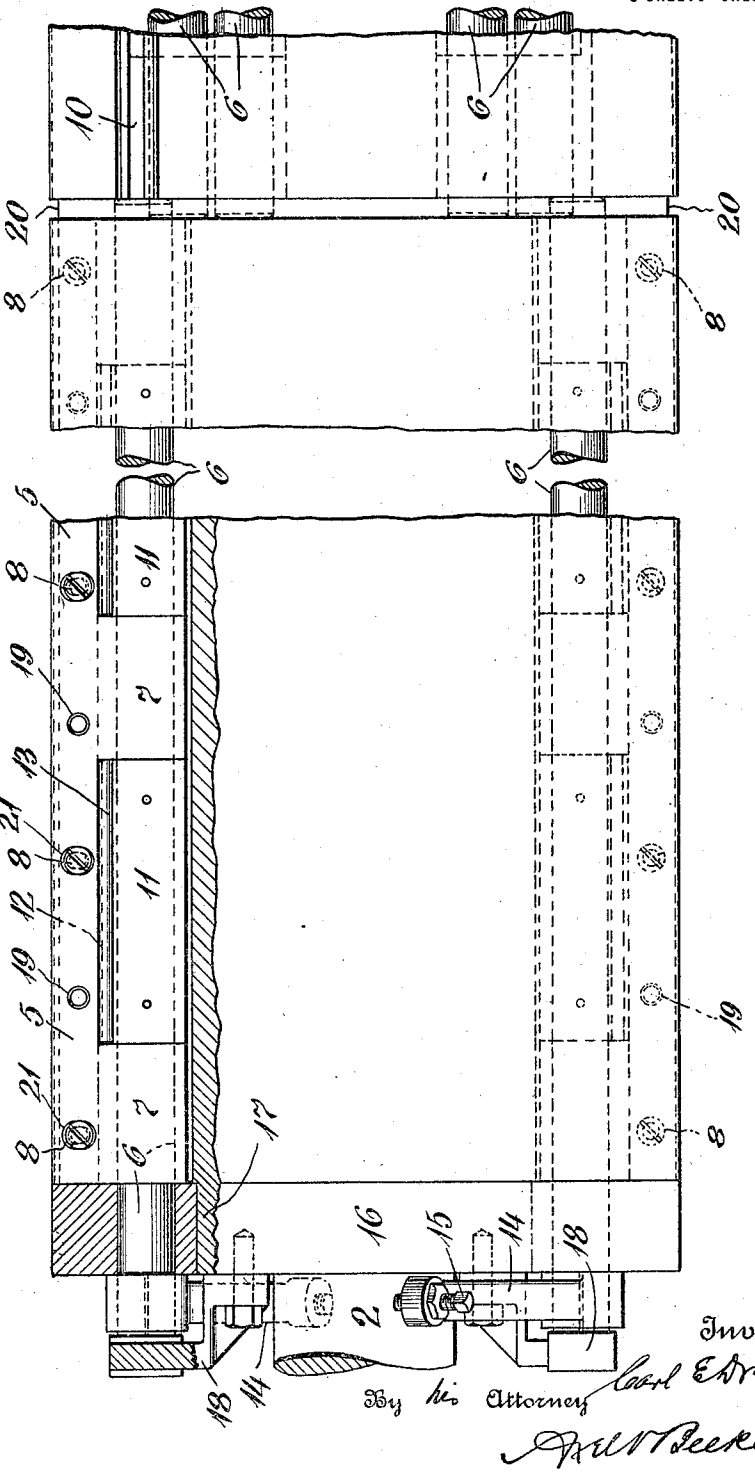
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3 SHEETS—SHEET 2.

Fig. 3.



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3 SHEETS—SHEET 3.

Fig. 4.

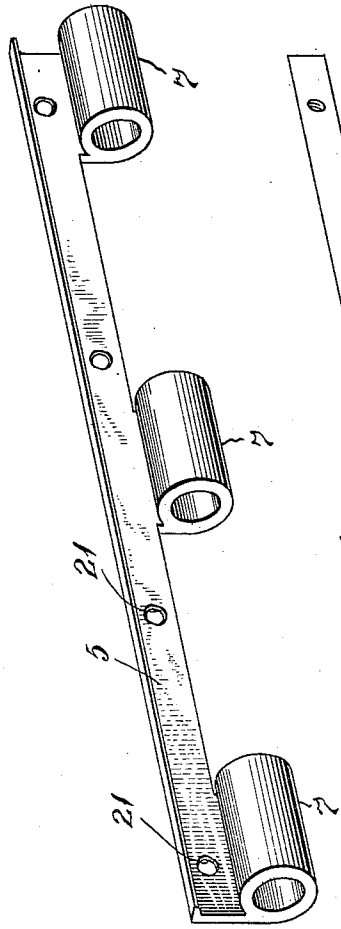


Fig. 5.

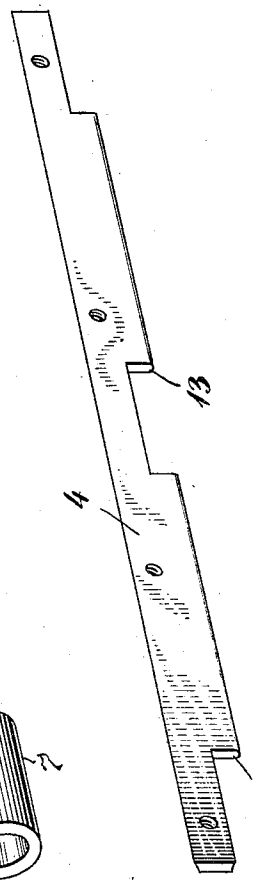


Fig. 6.

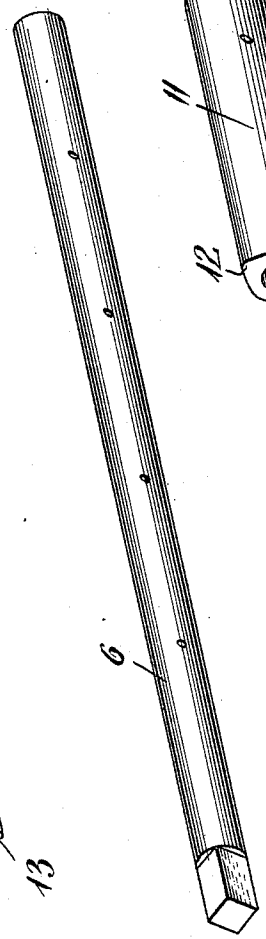


Fig. 7.

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UNITED STATES PATENT OFFICE.

CARL EBERHARD DRANGE, OF PLAINFIELD, NEW JERSEY, ASSIGNOR TO ISABELLA SCOTT AND DAVID J. SCOTT, EXECUTORS OF WALTER SCOTT, DECEASED.

MEANS FOR ATTACHING PRINTING-PLATES TO CYLINDERS.

1,276,336. Specification of Letters Patent. Patented Aug. 20, 1918.

Application filed January 20, 1916. Serial No. 73,092.

To all whom it may concern:

Be it known that I, CARL E. DRANGE, a citizen of the United States, and a resident of Plainfield, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Means for Attaching Printing-Plates to Cylinders, of which the following is a specification.

This invention relates to printing machines of the particular type in which flexible metal and other flexible printing plates are used.

Printing plates of this character are now coming into use in connection with newspaper and periodical work and it has been found difficult to so arrange a plurality of flexible printing plates on a cylinder, and to provide means for so securing the plate to the cylinder that the narrow margins between plates required in this character of work can be secured.

In this device the printing plates are reinforced at their ends by being gripped between clamping members, or jaws, pivotally mounted on a shaft which in turn is mounted in a hollowed out groove in the body of the cylinder which communicates with the periphery of the cylinder by means of a narrow slot. When the end of a flexible plate is inserted between the jaws of a reinforcing device, a rotary motion is given to the shaft by means of devices provided for this purpose on the end of the cylinder and the clamping members are caused first to grip or clamp the plate firmly between them and thereafter to strain, or pull, the plate to a close engagement with the surface of the cylinder.

Other features of construction will appear as the specification proceeds.

In the accompanying drawings in which the same reference characters designate corresponding parts:

Figure 1 illustrates a view in elevation of one end of a cylinder partly broken away showing the printing plates clamped in position for operation.

Fig. 2 is an enlarged view showing in detail the means for clamping the plates in position on the cylinder.

Fig. 3 is a view partly in elevation and partly in section of one side of the cylinder, showing the plate clamping means in detail.

Fig. 4 is a view in perspective of one of the clamping members.

Fig. 5 is a view in perspective of the remaining clamping member.

Fig. 6 is a view in perspective of the shaft on which the clamping members are carried.

Fig. 7 is a view in perspective of the cam sleeve adapted to be carried on the shaft and to actuate the clamping and plate straining device.

In the drawings, 1 is the plate supporting cylinder mounted on the shaft 2. At 3 are shown the flexible printing plates which are capable of being removably attached to the surface of its cylinder.

Each end of a printing plate is adapted to be firmly gripped in a reinforcing device composed of the two narrow clamping members, or jaws, 4 and 5. The jaw 5 is pivoted on a shaft 6 by means of the sleeve portions 7 and the jaw 4 is adapted to be carried by the jaw 5 by means of the screws 8. These clamping members together with the shafts on which they are carried are mounted in the hollowed-out pockets 9 in the cylinder.

It will be noted that when the reinforcing means are in place, the shaft 6 will lie in the pocket already referred to while the clamping jaws will extend radially outward into the slots 10 which cut the outer surface of the cylinder. The clamping jaws are comparatively narrow in section so that there will be space enough to provide for moving them in order to place a tensional strain on the plate to which they are attached.

The means for providing the tension in the plate by which the plate is caused to clamp firmly against the periphery of the cylinder, takes the form of the sleeve 11 mounted to turn with the shaft 6 between the sleeve portions 7 of the jaw 5. A dog, or lug, 12 on the sleeve 11 is adapted to engage a projection 13 on the jaw 4 to force this member into gripping engagement with the end of a plate 3 that may be interposed between the edge of jaw 4 and the over hanging edge of jaw 5, and to then give the entire reinforcing device a turning movement about the axis of the shaft 6 which will tend to pull the end of the plate 3 toward the central portion of the slot. As will be obvious this pulling action will cause the plate to clamp the surface of the cylinder.

In attaching a flexible plate to a cylinder one end of a plate is inserted in a slot and between the clamping members of a reinforc-

ing device. The shaft 6 is then turned sufficiently to cause the jaw 4 to slide on the jaw 5 and to thereby grip the end of the plate. This movement of the jaw 4 relatively to the jaw 5 is provided for by the elongated openings 21 in the jaw 5 through which the screws 8 extend.

When the plate end has been thus gripped, the cylinder is rotated to a position in which the remaining end can be secured in the clamping device provided for it, whereupon the shafts carrying the plate clamping members are manipulated to give the clamping devices as a whole a turning movement to strain the plate.

In order to rock the shaft 6 and the clamping members 4 and 5, the shaft 6 is provided with a squared end on which is fitted an arm 14 adapted to be moved by the operation of a screw 15 fitted in the end thereof and adapted to bear on the cylinder supporting shaft 2.

An annular head plate 16 is mounted on the cylinder to hold the reduced end of the tensioning devices in place. A holding member 18 is adapted to be bolted to the end of the reduced cylinder end 17 and to bear against the annular head 16 to hold the same in place.

In order to prevent rocking of the clamp members while a plate is being mounted and to facilitate the removal of the plates by insuring that they will become loosened from the cylinders when the dogs 12 are removed from engagement with the projection 13, springs 19 are provided which tend to force the two sets of clamping members in each slot into strain releasing position.

In order to provide a narrow margin between two plate sections which are separated by a plane transverse to the axis of the cylinder, the plate securing means of such sections are placed in a staggered relation, that is, they are not placed in alinement with each other along the axis of the cylinder. It will be seen that by this arrangement the ends of the shafts 6 which are supported in the web portion 20, do not interfere with each other and the space between the plate sections can be made comparatively narrow.

Another purpose for arranging the slots in a staggered relation is to prevent the jumping of the form rollers 22, a condition which is likely to arise because of the great length of the cylinders in newspaper presses. By thus placing the slots out of alinement no slot will extend from end to end of the cylinder lengthwise of the axis and a roller engaging the cylinder will therefore constantly have some portion of the cylinder surface in contact therewith.

What is claimed is:

1. A flexible plate attaching device comprising: a plate supporting cylinder having an opening, plate clamping means carried in the opening of the cylinder which, when idle, are separated to receive the end of a plate, and a rotatable supporting means carrying said plate clamping means which, when turned, act to close the clamping members on the plate and thereafter to strain the plate over the surface of the cylinder.

2. A flexible plate attaching device comprising: a plate supporting cylinder having a slot, plate clamping means adapted to be attached to the end of a plate, a shaft on which said clamping means are mounted, means on the shaft for operating the clamping means and means for turning said shaft to cause the clamping means to grip the plate.

3. A flexible plate attaching device comprising: a plate supporting cylinder having a slot, a flexible plate, plate clamping means adapted to be attached to the end of a plate, a shaft on which said clamping means are mounted said shaft being mounted in said slot, and means on said shaft for actuating said clamping means, whereby when said shaft is turned said clamping means will grip said plate.

4. A flexible plate attaching device comprising: a plate supporting member having the surface thereof provided with a narrow slot, a flexible plate, rigid reinforcing members adapted to grip an end of the plate, a hollowed-out opening in said cylinder communicating with said slot, a shaft mounted in said opening and carrying said reinforcing members, means on said shaft for moving said reinforcing members relatively to each other to grip the plate, and means for turning said shaft to thereby grip and strain said plate.

5. A flexible plate attaching device comprising: a plate supporting member having a relatively large opening terminating in a narrow slot on the surface thereof, a flexible plate, rigid reinforcing members adapted to grip an end of the plate, a shaft in said opening on which said reinforcing members are mounted, and means on said shaft adapted to move said reinforcing members relatively to each other to grip the plate, whereby when said shaft is turned said members will grip the plate and be tilted in said slot to strain said plate.

6. A flexible plate attaching device comprising: a plate supporting member having a relatively large opening terminating in a narrow slot on the surface thereof, a flexible plate, rigid reinforcing members adapted to grip an end of the plate, a shaft in said opening on which said reinforcing members are mounted, means on said shaft for engaging and moving one of said reinforcing members relatively to each other to grip the plate, means for turning said shaft to cause said reinforcing members to grip and strain said plate, and means normally tending to

move said reinforcing members to relieve the tension on said plate.

7. A flexible plate attaching device comprising: a plate supporting member having a relatively large opening terminating in narrow slots on the surface thereof, flexible plates, rigid reinforcing members adapted to be clamped to the ends of the plates, shafts on which said reinforcing members are mounted, said shafts being mounted in said opening, means on said shafts adapted to cause said reinforcing members to grip the plate, and means for turning said shafts to cause the reinforcing members to grip the plates and to pull the ends of the plates toward each other in said slots to strain said plates.

8. A flexible plate attaching device comprising: a plate supporting member having a relatively large opening terminating in a narrow slot on the surface thereof, a flexible plate having rigid clamping member attached to an end thereof, a shaft on which said clamping members are carried and mounted in said opening, and means on said shaft adapted to engage one of said clamping members to effect a clamping action and to move the clamping members to strain the plate.

9. A plate cylinder comprising: a cylindrical supporting member divided transversely of its axis into a plurality of plate supporting sections, flexible plates, and slots in said plate sections into which the ends of a plate are secured, the slots in adjacent plate sections being arranged in a staggered relation.

Signed at Plainfield in the county of Union and State of New Jersey this 18th day of January A. D. 1916.

CARL EBERHARD DRÅNGE.

Witnesses:

J. V. COLES,

J. W. DICKINSON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."