C. E. DRANGE.

MEANS FOR ATTACHING PRINTING PLATES TO CYLINDERS.

APPLICATION FILED JAN. 20, 1916.

1,373,656.

Patented Apr. 5, 1921.

3 SHEETS—SHEET 1.

Fig. 1.

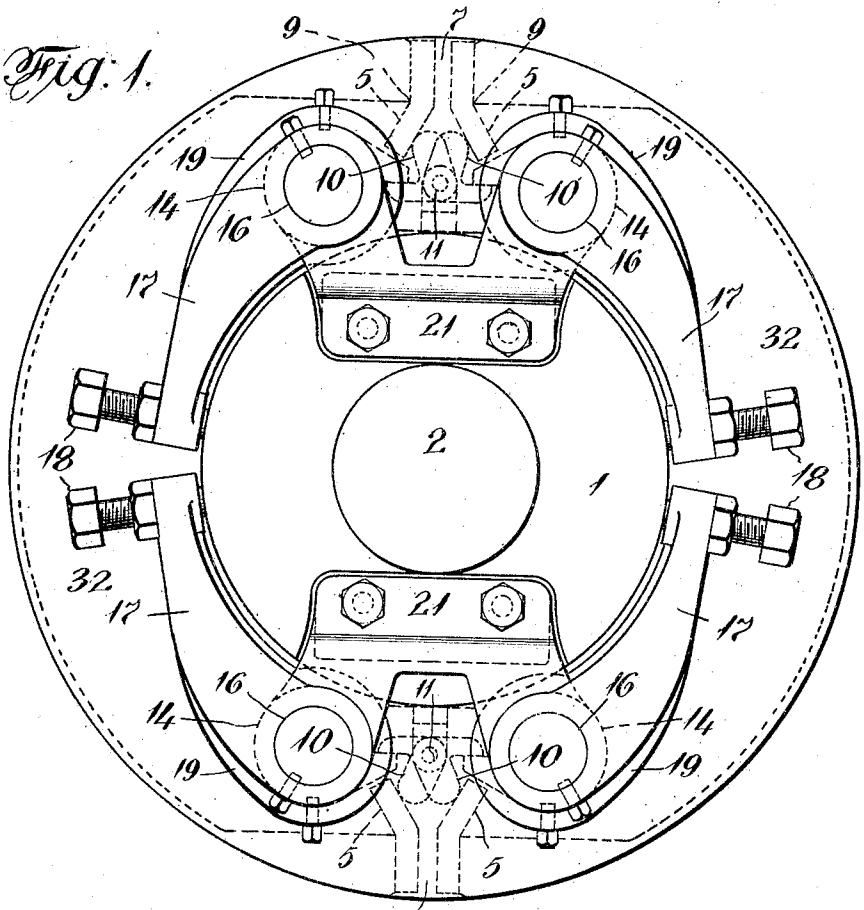
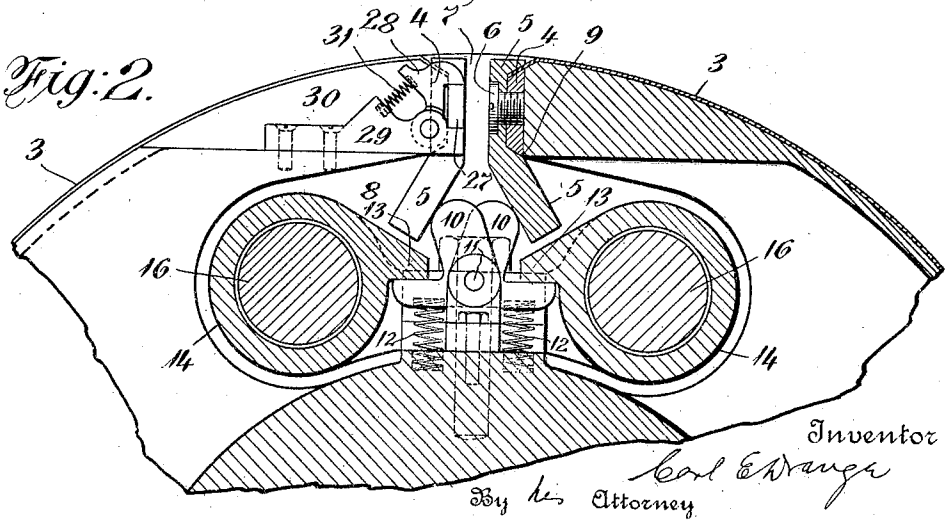


Fig. 2.



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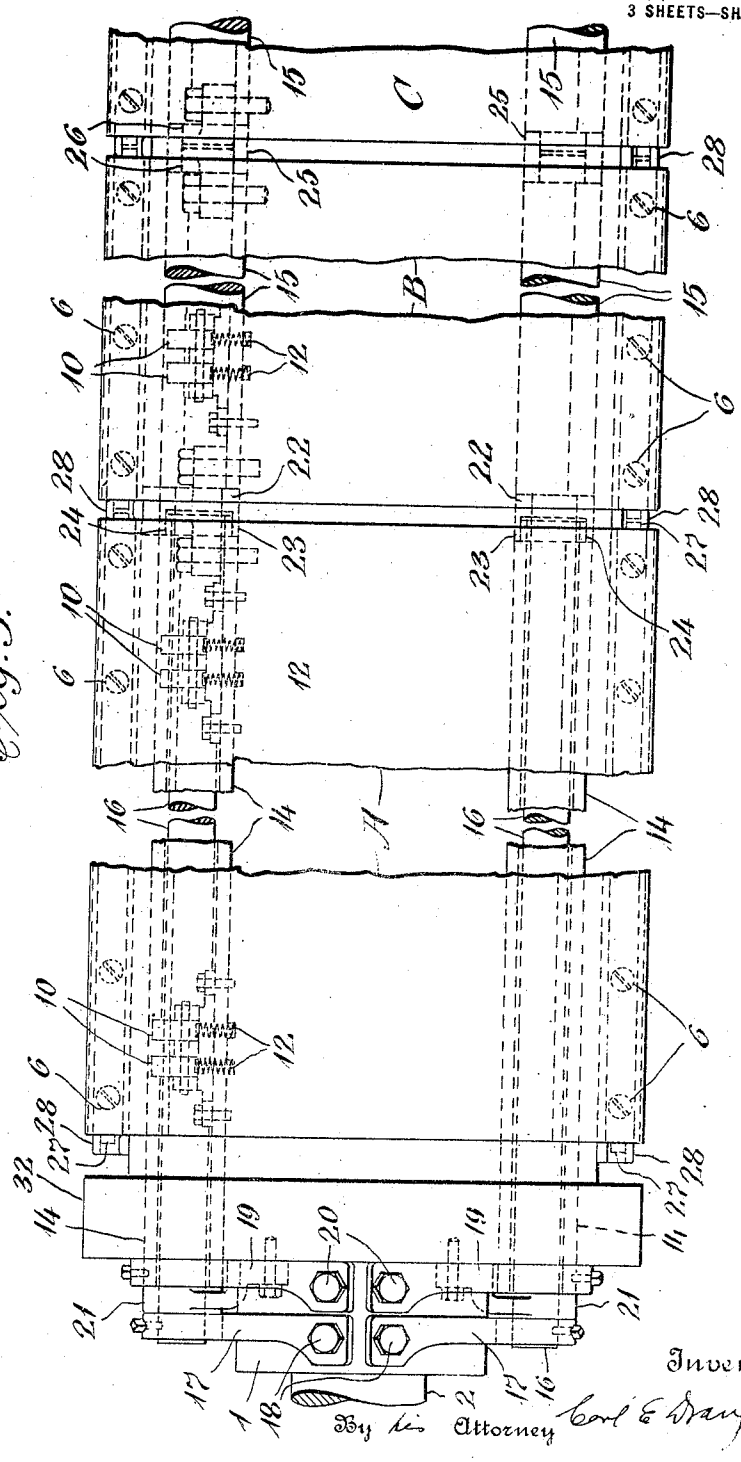
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3 SHEETS—SHEET 2.

Fig. 3.



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3 SHEETS—SHEET 3.

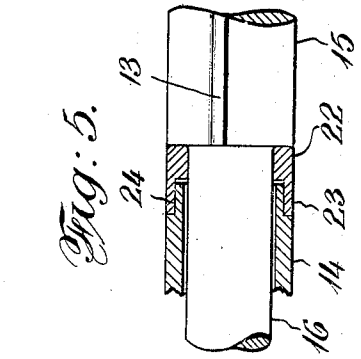


Fig. 5.

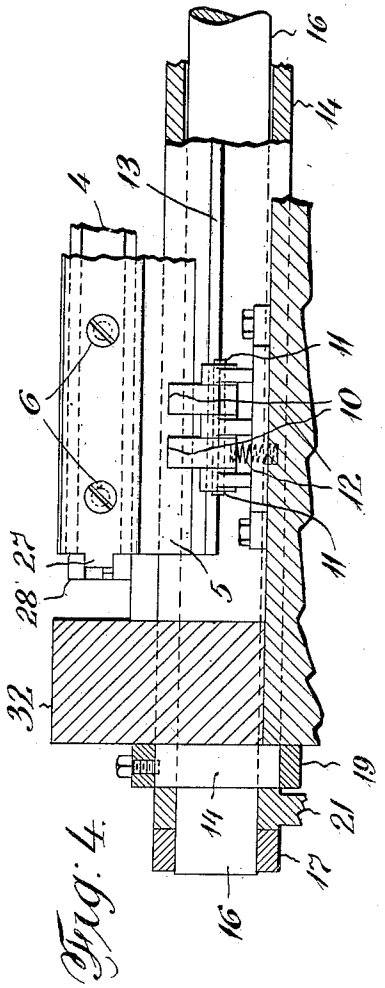


Fig. 4.

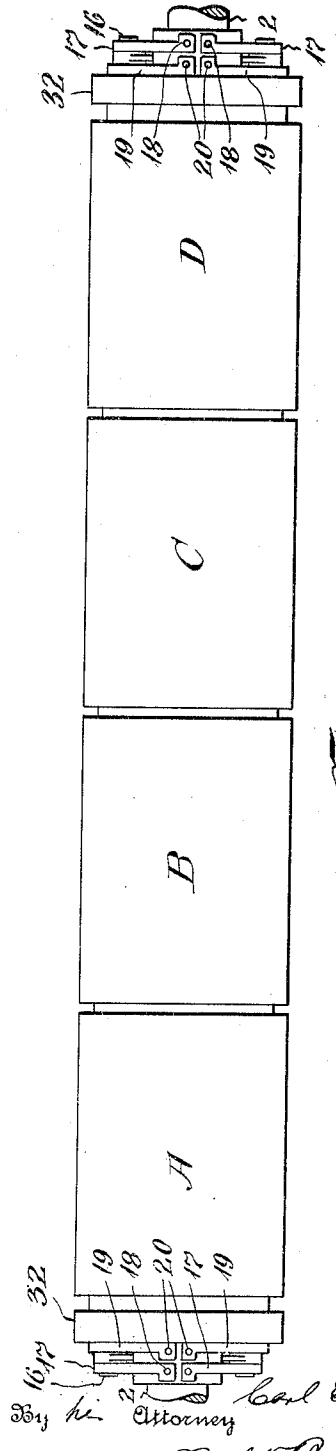


Fig. 6.

Inventor
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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 THE ESTATE OF WALTER SCOTT, DECEASED.

MEANS FOR ATTACHING PRINTING-PLATES TO CYLINDERS.

1,373,656. Specification of Letters Patent. Patented Apr. 5, 1921.

Application filed January 20, 1916. Serial No. 73,093.

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 type in which flexible printing members are used, such as offset lithographic presses, and is a development of the device disclosed in the copending application Serial No. 64,956, filed Dec. 4, 1915.

Flexible printing members, such as the flexible metallic plates used in offset printing, are now for the first time being employed in connection with the large machines used in the production of newspapers and, as a consequence, the number of printing members which are mounted both circumferentially of and lengthwise of the axis of a cylinder has been increased. An object of this invention is to so arrange the printing members that the margins between the members are very narrow, and to provide means whereby the members may be adjusted or removed independently of one another.

The invention consists principally in the provision of means for individually straining a plurality of flexible printing members mounted on a cylinder lengthwise of the axis thereof from one or both ends of the cylinder.

Other features of construction will appear as the specification proceeds.

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

Figure 1 illustrates a view in elevation of one end of a cylinder with the printing plates clamped in position for operation.

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

Fig. 3 is a side elevation of a cylinder partly broken away to show the construction.

Fig. 4 is a view taken at right angles to Fig. 2.

Fig. 5 is an enlarged view of the bearing 22.

Fig. 6 is a side elevation of a complete cylinder.

In the drawings 1 is the plate supporting cylinder which is mounted on the shaft 2. The numeral 3 designates the flexible plates which are fastened in place on the surface of the supporting cylinder.

Each end of a flexible plate is firmly gripped and held in a reinforcing device composed of the two clamping members 4 and 5. These members are preferably attached to the plates before the plates are placed in position on the supporting cylinder by means of the screws 6. In applying a plate to a cylinder the reinforcing device is dropped into a slot, or groove, 7, running the length of a section covered by a plate. When in position in the slot the longer member 5 of the clamping members extends into an enlarged opening or pocket 8 with which the slot communicates. In these pockets are mounted mechanisms for engaging the clamping members 5 and rocking them on the edges 9 of the cylinder so as to pull or strain the plate engaged thereby.

It is to be noted that the end of the shorter clamping members 4 so engages the fulcrum edge as to cause the member to wedge or grip more tightly against the end of the plate between the clamping members.

The means for engaging the members 5 to rock them about the fulcrums 9 take the form of the L-shaped members 10 mounted to rock on the axis 11. Springs 12 are provided normally tending to move the L-shaped members to inoperative position. One arm of each of the members 10 is arranged to engage one of the clamping members 5 while the other arm is arranged to be operated by a dog 13 on either of the shafts 14 or 15.

The hollow shaft 14 is equipped with a dog for operating the straining or clamping mechanism of the plate section adjacent the end of the cylinder while the shaft 15 is employed to operate the section remote from the end of the cylinder. A stem 16, integral with the shaft 15, extends through the hollow shaft 14 and projects beyond the end of the cylinder where means, such as the arm 17 and screw 18, are provided for turning the stem 16 and shaft 15 to operate the plate tightening devices of the second plate sec-

tion from the end of the cylinder. A similar arm 19 and screw 20 are used to operate the hollow shaft 14 and the tightening devices for the first plate section controlled thereby.

A bearing member 21, bolted to the end of the cylinder, supports the stem 16 of the shaft 15 against lateral play and at the same time acts as a retaining member to hold the hollow shaft 14 in place within the cylinder pocket. The head plate 32 serves as a bearing for the hollow shaft 14.

A second bearing member 22, provided with a flange 23, supports the stem 16 just at the end of the enlarged portion of the shaft and, by means of the flange 23, supports also a reduced end 24 of the hollow shaft 14.

A third bearing member 25 mounted at the center of the cylinder serves to support the reduced ends 26 of the solid shafts 15. Thus it will be noted that a supporting means for the shafts which operate the plate clamping or tightening device is provided at both sides of each plate section.

As has already been pointed out the reinforcing members are attached to the flexible plates outside of the cylinder and these members are then dropped into places in the slots when the plate is applied to the cylinder. Each set of clamping, or reinforcing members, is comparatively narrow so that two sets together do not fill the slot in which they are placed. The object of this construction is to provide space for the movement of the two sets of clamping members toward each other to pull the corresponding plates in opposite directions to clamp them into close contact with the surface of the cylinder.

In placing a plate in position on the cylinder it will be obvious that the plate ends carrying the reinforcing members must be dropped into place in the slots one at a time. In order to prevent the first end from dropping out while the second is being put into place and before the plate is clamped to the cylinder, each end of the clamping member 5 is provided with a projection, or tang, 27 and at each end of a plate section is mounted a latch member 28 adapted to project over the tang 27 and thereby prevent the clamping member 5 from falling out of the slot. The latch members 28 are carried by supporting blocks 29 mounted in the hollowed out portions 30 of the cylinder. Springs 31 are provided normally urging the latch members to operative position.

While in the illustration provision is made for mounting two plates around the circumference of the cylinder it will be obvious that this number may be increased or decreased as the development of the art demands. Also while in this disclosure it is proposed to provide a cylinder four plate sections in length such as A, B, C and D with plate adjusting means on each end of the cylinder, this is not intended to be a limitation and, it is obvious that a greater number of plates along the axis of the cylinder may be provided by a simple extension of the hollow shaft principle which is disclosed.

What is claimed, is:

1. A printing member comprising: a cylinder, a plurality of flexible printing surfaces mounted side by side on said cylinder lengthwise of the axis thereof, means for straining said surfaces circumferentially of the cylinder and independently one of the other, and a plurality of independent actuating means located at the same end of the cylinder for independently operating a plurality of straining means from one end of the cylinder.

2. A printing member comprising: a cylinder, a plurality of flexible printing surfaces mounted side by side on said cylinder lengthwise of the axis thereof, means for straining said surfaces circumferentially of the cylinder and independently one of the other, and a plurality of independent actuating means at each end of the cylinder for independently operating a plurality of straining means from each end of the cylinder.

3. A printing machine cylinder, a plurality of flexible printing members carried on the surface of said cylinder lengthwise of the axis of said cylinder, a plurality of flexible printing members mounted on said cylinder circumferentially thereof, and means for individually straining said members from one end of said cylinder.

4. A printing machine cylinder, a plurality of flexible printing members carried by said cylinder lengthwise of the axis thereof, means for securing said members to said cylinder, and means for manipulating the securing means of any one of a plurality of such plates from one end of the cylinder without disturbing the remaining ones.

5. A plate attaching device comprising: a plate cylinder having an opening terminating at the surface, and divided into sections lengthwise of the axis thereof, a flexible plate carried by each section, means mounted in the opening of each section adapted to be rocked to strain the corresponding plate, a hollow shaft extending from a section adjacent an end of said cylinder to said end, and a shaft extending from a section removed from said end through said hollow shaft to said end, said shafts being operable from said cylinder end to independently actuate said plate straining devices.

6. A printing machine cylinder, a plurality of flexible printing members mounted on said cylinder lengthwise of the axis thereof,

shafts axially mounted in said cylinder and extending to one end of the cylinder, and means operated by said shafts for straining said plates, certain of said shafts being hollow and certain other of said shafts being arranged to extend through said hollow shafts, and means mounted on the end of said cylinder for operating the shafts to actuate the straining means.

7. A printing machine cylinder, a plurality of flexible printing members mounted on said cylinder lengthwise of the axis thereof, shafts axially mounted in said cylinder and extending to opposite ends of the cylinder, certain of said shafts being hollow, and certain other of said shafts being arranged to extend through said hollow shafts, printing member straining means operated by said shafts, and means mounted on the ends of said cylinder for operating the shafts to actuate the straining means.

8. A printing member comprising: a cylinder, a plurality of circumferentially adjustable flexible printing surfaces mounted one behind the other lengthwise of the axis of the cylinder, means for straining said surfaces circumferentially of the cylinder and independently one of the other, and a plurality of independent actuating means located at the same end of the cylinder for independently operating the straining means of said plurality of surfaces.

9. A printing member comprising: a cylinder, a plurality of circumferentially adjustable flexible printing surfaces mounted one behind the other lengthwise of the axis of the cylinder, means for straining said surfaces circumferentially of the cylinder and independently one of the other, a plurality of independent actuating means located at one end of the cylinder for independently operating the straining means of some of said surfaces, and a plurality of independent actuating means located at the other end of the cylinder for independently operating the straining means of others of said surfaces.

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

CARL EBERHARD DRANGE.

Witnesses:
J. V. COLES,
J. W. DICKINSON.