C. E. DRANGE.

METHOD FOR ATTACHING PRINTING PLATES TO CYLINDERS.

APPLICATION FILED SEPT. 29, 1916.

1,360,377. **Patented Nov. 30, 1920.**

3 SHEETS—SHEET 1.

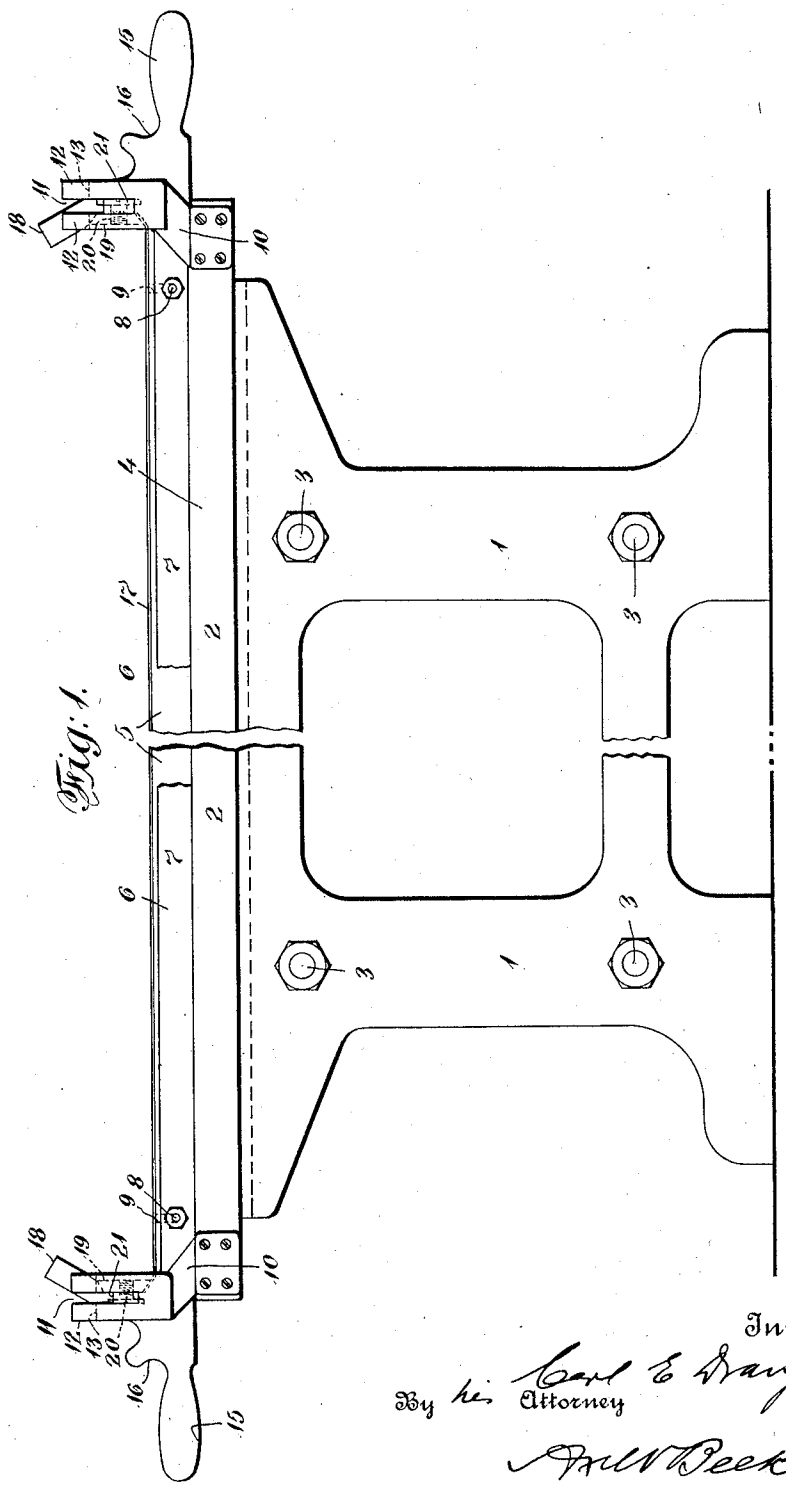


Fig. 1.

Inventor

By his Attorney

Carl E. Drange

Arthur Peeken

C. E. DRANGE.

METHOD FOR ATTACHING PRINTING PLATES TO CYLINDERS.

APPLICATION FILED SEPT. 29, 1916.

1,360,377. Patented Nov. 30, 1920.

3 SHEETS—SHEET 2.

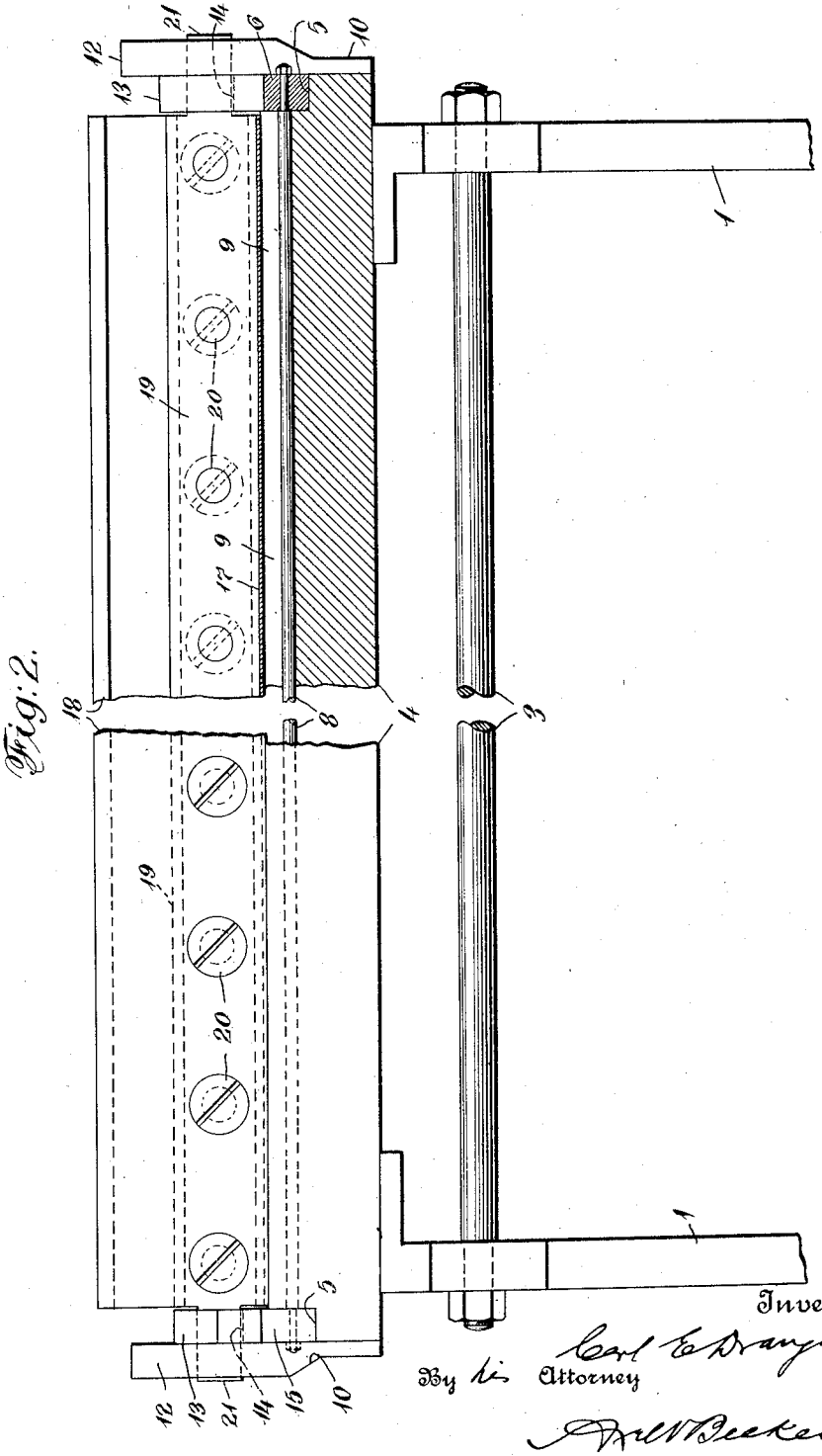


Fig. 2.

C. E. DRANGE.

METHOD FOR ATTACHING PRINTING PLATES TO CYLINDERS.

APPLICATION FILED SEPT. 29, 1916.

1,360,377.

Patented Nov. 30, 1920.

3 SHEETS—SHEET 3.

Fig: 4.

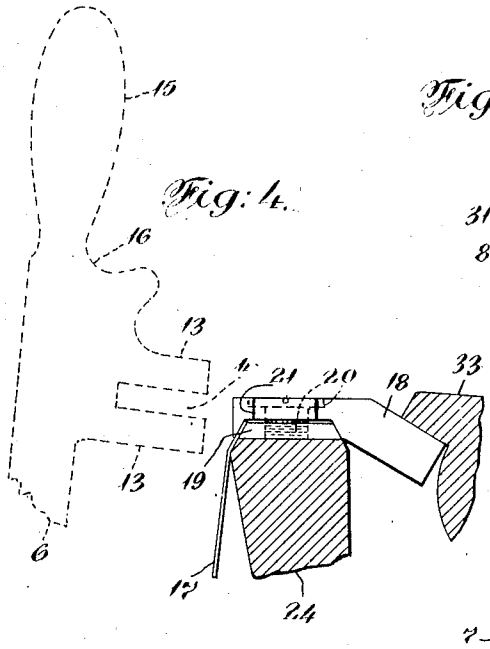


Fig: 3.

Fig: 5.

Inventor

By his Attorney Carl E. Drange

Fred V. Becker

UNITED STATES PATENT OFFICE.

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

METHOD FOR ATTACHING PRINTING-PLATES TO CYLINDERS.

1,360,377. Specification of Letters Patent. Patented Nov. 30, 1920.

Original application filed January 20, 1916, Serial No. 73,094. Divided and this application filed September 29, 1916. Serial No. 122,849.

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 Methods for Attaching Printing-Plates to Cylinders, of which the following is a specification.

This invention relates to the art of printing and particularly relates to a method for placing flexible printing plates in position on the supporting cylinders and is a division of application Serial No. 73,094, filed Jan. 20, 1916, in which the apparatus herein disclosed is claimed.

The size of presses using flexible metallic printing plates has increased with the beginning of the use of such plates in newspaper production. This has also necessitated an increase in the size of the plates themselves. Owing to the tendency of large and thin metal sheets to buckle, great difficulty has been experienced in placing the flexible plates in position on the cylinders. An object of this invention is to provide a method for rigidly holding the plates in a flat position until they are secured to the surface of the supporting cylinders.

To this end the process consists principally in mounting a flexible plate in a substantially flat position independently of the cylinder and in then bodily transferring the plate to the cylinder and applying it to the cylinder by the rotation thereof.

In carrying out this process means are provided in which a transporting frame, or bed, for the flexible plate is placed in a horizontal position on a supporting table. The plate is clamped into position on the frame which is then bodily lifted to a vertical position and the lower end thereof placed on carriers arranged to slide on vertical guide posts. When in this position the upper end of the frame is tilted against an adjacent plate cylinder whereupon the upper end of the plate is secured in a slot or groove provided for the purpose in the face of the cylinder. By rotating the cylinder the plate is caused to wrap itself about the cylinder, the carriers meanwhile sliding upwardly along the guide posts. This operation is continued until the lower end of the flexible plate has been brought opposite a corresponding slot in the cylinder whereupon the remaining end of the flexible plate is secured to the cylinder to complete the placing of the flexible plate in position on the cylinder.

In the accompanying drawings:

Figure 1 illustrates a view in side elevation of the supporting table on which the transporting frame is adapted to be placed in plate receiving position.

Fig. 2 is an end view partly in elevation and partly in section of the supporting table illustrated in Fig. 1.

Fig. 3 is an end view partly in elevation and partly in section of a part of a rotary press showing the manner of supporting and securing the flexible plate in position on the cylinder.

Fig. 4 is an enlarged view showing in detail the means for securing the upper end of the plate to the cylinder.

Fig. 5 is an enlarged view showing in detail one of the carriers for the lower end of the plate just after the sliding movement up the guide post has begun.

Similar reference characters refer to corresponding parts in the several views.

In the drawings 1 represents the lateral frame members of the table 2. The members 1 are rigidly connected by the rods 3. A bed 4 of wood or equivalent material forms the table top and has a cut-away portion 5 along the upper edge of either side which is adapted to receive a bar 6. The bars 6 form the side pieces of a transporting frame 7. Rods 8 serve to connect the side pieces of the frame together. Grooves 9, cut in the upper face of the table top are adapted to receive the transverse rods 8 when the frame is in position on the table.

A bracket 10 secured to the wooden bed 4 near the end of each lateral edge provides a slot 11 between the upstanding members 12. The bars 6 are also provided with spaced members 13 which provide slots 14 which register with the slots 11 in the brackets 10 when the frame is in place on the table.

Handles 15 at the ends of the bars 6 form a convenient means for carrying the frame from place to place. Closely adjacent each handle is a notch, or groove, 16 the purpose of which will be hereinafter explained.

Reinforcing means adapted to be clamped to each end of a flexible plate 17 are formed of the members 18 and 19. Screws 20 are employed to cause the members 18 and 19 to grip an end of the flexible plate therebetween. Tangs 21 rectangular in cross-section on the main clamping member 18 are adapted to fit into the slots 11 and 14 to hold the clamping members in position while the end of a plate is being fitted into place therebetween.

In Fig. 3 is shown at 22 a base member on which the frame member 23, shown as partly broken-away, is supported. Carried by the frame are the cylinders 24 and 25 one of which, as the cylinder 24, may be a form cylinder to which the flexible printing plates are applied.

Mounted in the base member 22 is shown at 26 one of a pair of guide posts on each of which is mounted a slidable support, or carriage 27. These supports take the form of sleeves from which extend lugs 28 forming between them a slot 29 adapted to receive that portion of the tangs 21 which has just been removed from the slots 11 in the table brackets 10. Projecting from each post 26 is an L-shaped lug 30 adapted to support a frame piece 6 by engagement with the notch 16 already referred to. A supporting lug 26 fixed in each post is adapted to hold the sleeves at a convenient distance above the lugs 30 so that the tangs 21 can be easily inserted into the slots 29 when the frame is being supported on the lugs 30.

Formed in the periphery of the plate cylinder 24 are the slots 31 which communicate with enlarged openings or pockets 32 within which are mounted devices 33 of the type shown in companion application Ser. No. 64956, for securing the plate reinforcing members and for placing the plate in a state of strain.

The operation of the device is as follows: The transporting frame 7 is first placed in position on the table 2. The plate-end reinforcing members are then placed in position with their tangs fitting into the slots 11 and 14 in the brackets 10 and bars 6. A printing plate 17 is then laid on the wooden table top and the ends made secure between the clamping members of the reinforcing means.

The whole frame with the flexible printing plate secured thereto is then transported bodily, by means of the handles 15, to the press where the slots 16 are placed in engagement with the lugs 30 on the guide posts 26. The frame is now swung to a vertical position on the lugs 30 as a pivot and the projecting portions of the tangs 21, which have previously occupied the slots 11 of the table, are placed in the slots 29 in the slidable members 27.

The upper edge of the frame is swung to a position closely adjacent the cylinder 24 and the cylinder is rotated until a slot 31 is brought into a position near the upper end of the printing plate. The reinforced end of the printing plate is next removed from the transporting frame and secured in position in the adjacent slot in the cylinder.

The frame can now be removed and a slow rotation of the cylinder will wrap the flexible plate closely and smoothly over the periphery thereof, the slidable members 27 rising on the posts 26 as the flexible plate is wound on the cylinder. When the lower end of the plate has been raised to a point adjacent the other slot in the cylinder, the corresponding reinforcing means is removed from the members 27 and secured in position in the slot in the cylinder.

The straining devices 33 are now manipulated by means of the screws 34 which bear on the straining device operating dogs 35 to pull on opposite ends of the printing plate and thus hold the plate securely and immovably in place on the cylinder.

What is claimed, is:

1. The method for placing a flexible sheet metal printing plate in position on a cylinder which consists in first securing the plate in a flat position to a portable rigid support, then bringing said plate into engagement with said cylinder by bodily movement of said support, and finally detaching said plate from said support and attaching said plate to said cylinder.

2. The method for placing a flexible sheet metal printing plate in position on a cylinder which consists in rigidly supporting said plate in a substantially flat position, then bodily moving said rigidly supported plate into engagement with said cylinder, then securing one end of said plate to said cylinder, then rotating said cylinder to apply said plate to the surface thereof, and finally securing the remaining end of said plate to said cylinder.

3. The method for placing a flexible sheet metal printing plate in position on a cylinder which consists in first securing the plate to a portable support in a horizontal position, then raising the support to a vertical position with the upper end adjacent the cylinder, and finally detaching the plate from the support and securing the same to the cylinder.

4. The method for placing a flexible sheet metal printing plate in position on a cylinder which consists in first securing the plate to a portable frame in a horizontal position, then placing one end of the frame in vertically movable devices adjacent the cylinder,

then tilting the frame to an upright position with the upper end adjacent the cylinder, then securing the upper end of the plate to the cylinder, then rotating the cylinder to raise the lower end of the plate, and finally securing the latter end of the plate to the cylinder.

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

CARL E. DRANGE.

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