

E. E. NOVOTNY.  
HOLDING MEANS FOR PRINTING PLATES AND SADDLES.  
APPLICATION FILED DEC. 30, 1916.

1,357,341.

Patented Nov. 2, 1920.

2 SHEETS—SHEET 1.

*Fig. 1.*

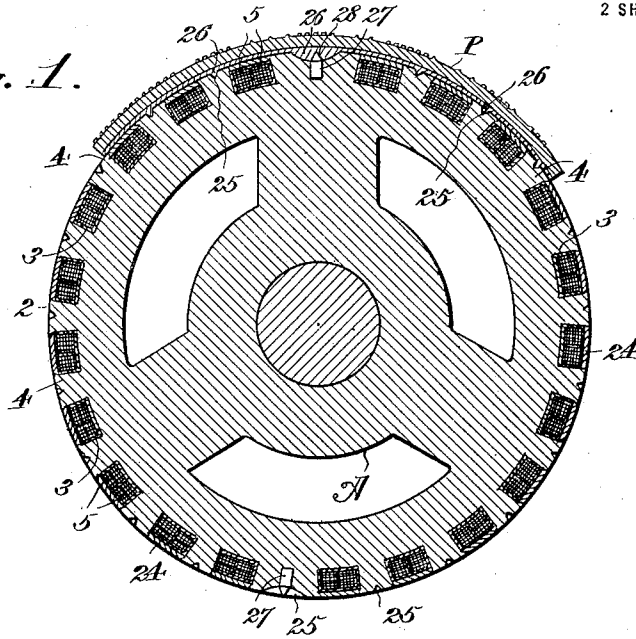


*Fig. 2.*

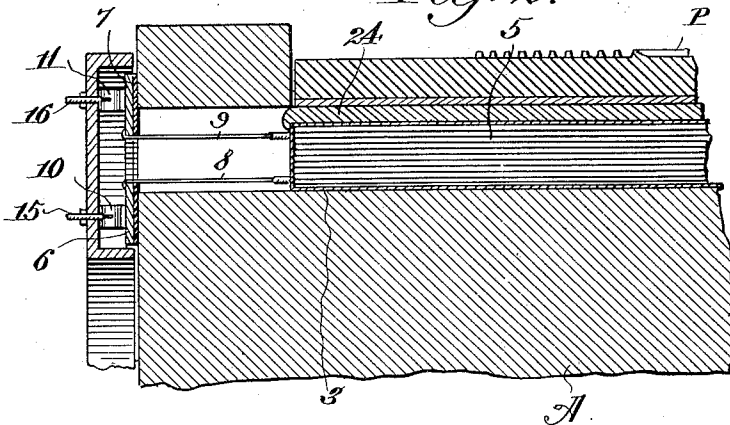
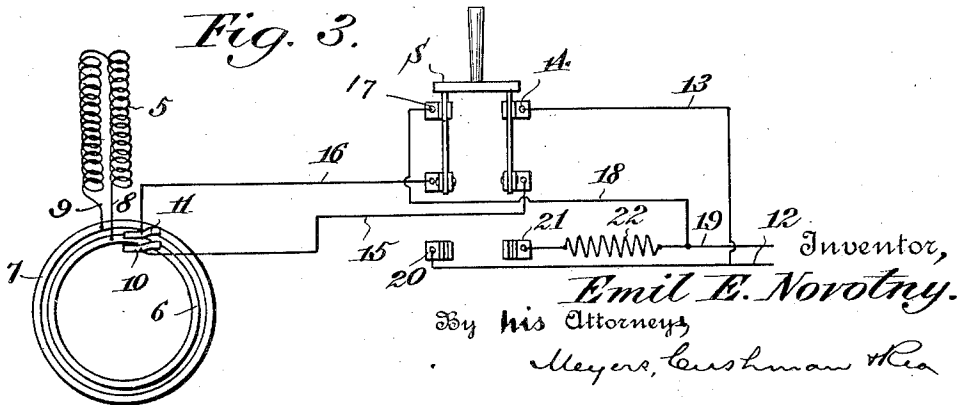


*Fig. 3.*



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*Fig. 4.*

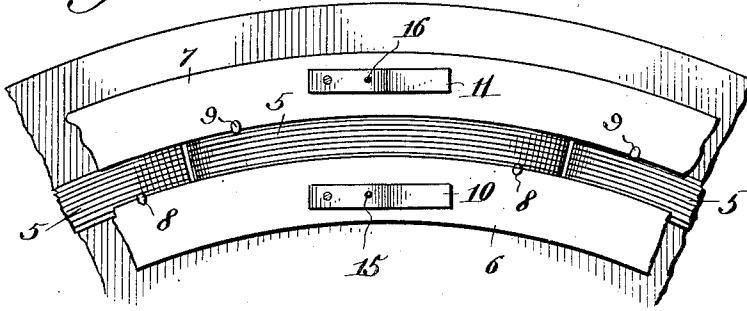


*Fig. 5.*

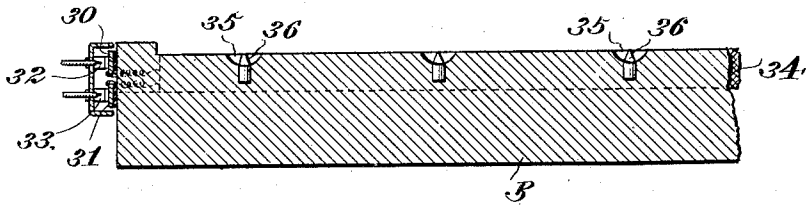
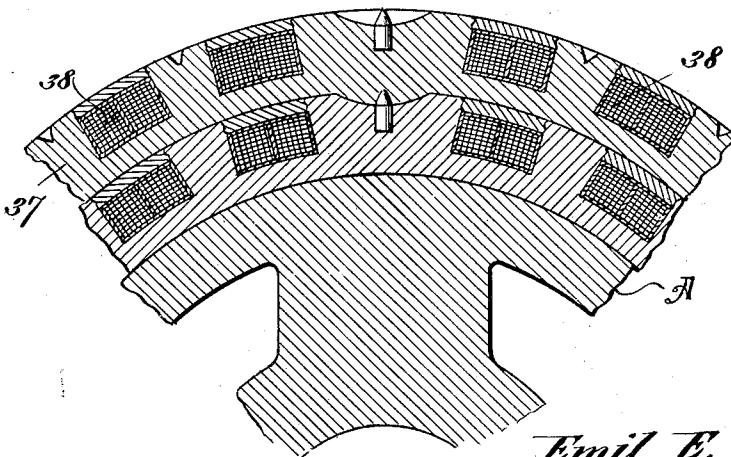


*Fig. 6.*



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# UNITED STATES PATENT OFFICE.

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## HOLDING MEANS FOR PRINTING PLATES AND SADDLES.

1,357,341.

Specification of Letters Patent.

Patented Nov. 2, 1920.

Application filed December 30, 1916. Serial No. 139,724.

*To all whom it may concern:*

Be it known that I, EMIL E. NOVOTNY, a citizen of the United States, residing at Riverside, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Holding Means for Printing Plates and Saddles, of which the following is a specification.

This invention relates to means for holding printing plates or printing plate saddles in proper position on printing presses, and has particular application to the utilization of electromagnetism for this purpose.

Although my invention is especially adapted for use in connection with plates or saddles used in ordinary relieve printing, I wish it to be understood that it is applicable to other forms of printing mechanisms, such as are employed in lithographic, offset work, steel and copper engraving and intaglio printing, the primary purpose of the invention being to furnish a positive, convenient and efficient means by which the plate or saddle may be almost instantly applied to and secured on the bed or cylinder of the press thus obviating the delay and labor incident to securing the ordinary plates or saddles in proper position for printing.

In the accompanying drawings,

Figure 1 is a transverse sectional view taken through a printing press cylinder, such as may be employed in connection with one embodiment of the invention.

Fig. 2 is a longitudinal sectional view taken through a portion of the cylinder shown in Fig. 1.

Fig. 3 illustrates diagrammatically an electric circuit or wiring arrangement, including a switch device which may be employed in connection with the invention.

Fig. 4 is a view of one end of the cylinder showing the commutator rings and brushes.

Fig. 5 is a view in elevation showing my invention embodied in a flat plate-supporting bed of a press.

Fig. 6 is a cross sectional view taken through a portion of a cylinder provided with a plate holding saddle and plate made in accordance with the invention.

Before entering into a detailed description of my invention I will briefly state that it embodies, among other features, the provision of a suitable number of electromagnetic coils on the plate carrying cylinder or bed of a press, such cylinder or bed having

a certain degree of residual magnetism. Of course the cylinder or bed is of a metallic magnetic body, and current is suitably supplied to the coils to energize the same so that when the printing plate, which is equipped with a metallic or partially metallic magnetizable back is applied to the cylinder or bed of the press it will be securely held by magnetic attraction in whatever position or location it may be placed. Suitable switching magnetism may be employed in connection with the magnetic circuit for the purpose of demagnetization to permit the removal of the plate when desired, and furthermore, if deemed advisable, suitable means may be used for neutralizing the residual magnetism of the cylinder or bed.

In some instances it may be preferred to employ additional mechanical means to insure that there will be no accidental slipping or shifting of the plate on the cylinder or bed, and I have hereinafter described an exceedingly simple yet efficient arrangement for this purpose, which in the form herein set forth involves the use of complementary projections and depressions on the plate and supporting cylinder or bed of a press, and when the plate is applied the projections of course seat in the depressions and obviate the liability of the shifting of the plate. Referring now to Figs. 1 to 4 inclusive of the drawings, wherein I have shown my invention as employed in connection with a press cylinder and a curved or segmental plate, the letter A indicates the cylinder body which may be of skeleton form, or cored out as usual, and is of course of metal. The exterior face of the shell 2 of the cylinder is formed with a series of grooves 3 which are spaced by the ribs 4, as clearly shown in Fig. 1. In the present instance I have shown these grooves and ribs as extending in spaced relation longitudinally of the cylinder shell, but I wish it to be understood that they may be arranged in any preferred manner or run in any other direction on the shell.

Within each groove 3 is arranged an electromagnetic coil 5 of any suitable design or make, these coils of course being so wound as to cause the ribs 4 to act as magnetic poles, alternating north and south as is obvious. The coils 5 which are herein merely conventionally shown are individually connected to contact rings 6 and 7 through wires 8 and 9, these contact rings 6 and 7 be-

ing concentrically arranged at one end of the cylinder, and turning therewith as will be understood by reference to Fig. 4. A contact brush or plate 10 normally bears upon the contact rings 6 while a similar contact brush or plate 11 bears against the ring 7. It will of course be understood that these brushes or plates 10 and 11 are stationary and simply bear against the faces of the wings as the latter revolve thus insuring that current will be supplied to the various coils 5 when the press is in operation, or when it is desired to secure the plates in position. In order to supply current through the brushes and rings to the coils 5 any suitable electrical arrangement may be employed, and in Fig. 3 I have shown one method of wiring, or an electric circuit for this purpose. In said Fig. 3 the current is supplied through the feed wire 12 and conductor 13, the pole 14 of the pole-changing switch S, and thence through said switch and the conductor 15 to the brush 10, ring 6, wire 8 and thence through the coil, the current leaving the coil flowing back through the ring 7, brush 11, conductor 16 to the opposite pole 17 of the switch, thence from the switch through the wire 18 to the return power line 19. To change the polarity the switch has poles 20 and 21, the pole 20 being connected of course with the feed wire 12 and the pole 21 being connected with return wire 19, the resistance coil 22 being preferably interposed between the pole 21, for instance, and the point of connection of the conductor 18 with the power line 19 so as to reduce the current and thus tend to neutralize the residual magnetism which will be induced in the cylinder shell 2. The use of the resistance although not necessary, may be deemed advisable in instances where it is desired to use very thin, large plates, as by so reducing the residual magnetism of the cylinder the plates may be more readily removed. Of course the wiring arrangement above described is simply for illustrative purposes as any suitable electrical equipment in this respect may be employed to suit the specific conditions of the particular press.

After the coils 5 have been inserted or seated in the grooves 3 they are preferably covered or faced with a suitable metal such as Babbitt metal for the purpose of keeping the dirt and grease from the coils and at the same time giving a smooth, continuous periphery to the cylinder, this coating or filling of the Babbitt metal is indicated by the numeral 24.

A curved printing plate is indicated as an entirety by the letter P. The back of this printing plate is preferably a magnetizable metal, and may be either in the nature of a solid homogeneous back, or may be of non-metallic material having particles or pieces

of magnetizable metal inserted or placed therein. In other words, it is only necessary that the back of the plate possess such magnetic characteristics as will insure that it will adhere to the cylinder through the magnetic attraction exercised by the energized coils. While the magnetic influence exercised by the coils is in many instances sufficient of itself to insure the holding or securing of the plate on the cylinder, without the use of additional means, yet in order to make certain that there will be no shifting or sliding of the plate on the cylinder, especially in the case of relatively large heavy plates, I prefer to form depressions or sockets 25 spaced distances apart in the top face of the ribs 4 of the cylinder shell, these sockets or depressions being complementary to spaced projections 26 formed on the under face of the printing plate, so that such projections may seat in the depressions when the plate is applied to the press. Furthermore, the projections on the plate are preferably spaced equidistances apart, and the depressions in the ribs of the cylinder are likewise so spaced, and are spaced the same distances as the projections of the plate, so that I am enabled to attain accurate registration of the plate on the cylinder without unnecessary delay. It will be evident that under such conditions all that it is necessary to do is to roughly determine in what position or location it is desired to place the plate upon the cylinder, and then the plate may be set with accuracy due to the fact that the bosses or projections on the bottom of the plate will always find alining depressions on the cylinder. If preferred, small cone-shaped pins 27 may be embedded in the ribs 4 of the cylinder shell, with the tapered ends of these pins projecting into the depressions 25, so that when the plate is positioned on the cylinder these tapered ends will find bearing and seat in small notches or sockets 28 in the bosses or projections 26. Thus it will be noted that I positively insure, through the use of mechanical means, that there will be no accidental shifting or sliding of the plate on the cylinder.

From the description above given the construction and operation of the invention as disclosed in Figs. 1 to 4 will be readily understood. When the plate has been properly positioned or set on the cylinder, it is only necessary to throw the switch to the proper position to energize the coils 5, thus setting up an electromagnetic influence in the cylinder which acting upon the metallic base portions of the plate will cause the plate to be attracted to, or adhere to the cylinder. When the printing operation has been completed and it is desired to remove the plate it is only necessary to throw the switch in the opposite direction thus changing the polarity and demagnetizing the press

cylinder which will naturally permit the ready removal of the plate, and another plate may be substituted therefor.

In Fig. 5 I have shown the invention as applicable to a flat plate holding bed, the bed proper being indicated by the letter B. In this instance contact strips or plates 30 and 31 properly spaced and related extend on one side of the bed and against these plates bear the current conducting brushes or contact plates 32 and 33. The electromagnetic coils, such as 34, are seated in grooves in the bed, and covered with Babbitt metal or similar material to take the same, as heretofore described for the cylinder structure, and also to present a smooth, flat bed face. This flat bed may likewise be provided with depressions 35 and pins 36 to anchor or hold the plates against shifting, the flat plates being provided on their under surface with bosses or sockets to receive the pins 36, as described for the curved plate.

In some instances it may be desired to employ a plate-holding saddle, which is in the nature of an intermediate plate imposed upon or secured to the cylinder of the bed or press which saddle itself carries the printing plate proper. This saddle may be either flat or curved, and in Fig. 6 I have shown a segmental or curved saddle which is indicated by the numeral 37. This saddle is also provided with electromagnetic coils 38 arranged in spaced grooves in the face of the saddle, these coils being connected in an electric circuit in the manner and for the pur-

pose as described for the cylindrical press. The printing plate is imposed upon the saddle, as indicated in Fig. 6, and is held thereon by magnetic attraction, the saddle being likewise maintained in position on the metallic cylinder of the press by the electromagnetism it exerts. In this instance the saddle may be kept from shifting on the cylinder by any suitable mechanical means, such for instance as by ordinary screws, pins or the like.

While I have herein shown and described certain preferred embodiments of my invention I wish it to be understood that I do not limit myself to all the precise details of construction herein set forth by way of illustration as modification and variation may be made without departing from the spirit of the invention or exceeding the scope of the appended claim.

What I claim is:

The combination with a support for a printing plate having a backing embodying magnetic material, said support having a series of grooves extending from end to end of the support and forming spaced ribs on the latter, of a series of electro-magnetic devices embedded in such grooves, means for supplying an electric current to the electromagnetic devices to energize the latter for causing the magnetic adherence of the plate to the support and means for positively holding the plate in a selected position, and against shifting on the support.

In testimony whereof I affix my signature.

EMIL E. NOVOTNY.