A. J. CONNELLY.

PLATE POSITIONING MEANS FOR PRINTING PRESSES.

APPLICATION FILED NOV. 2, 1914.

1,160,579.

Patented Nov. 16, 1915.

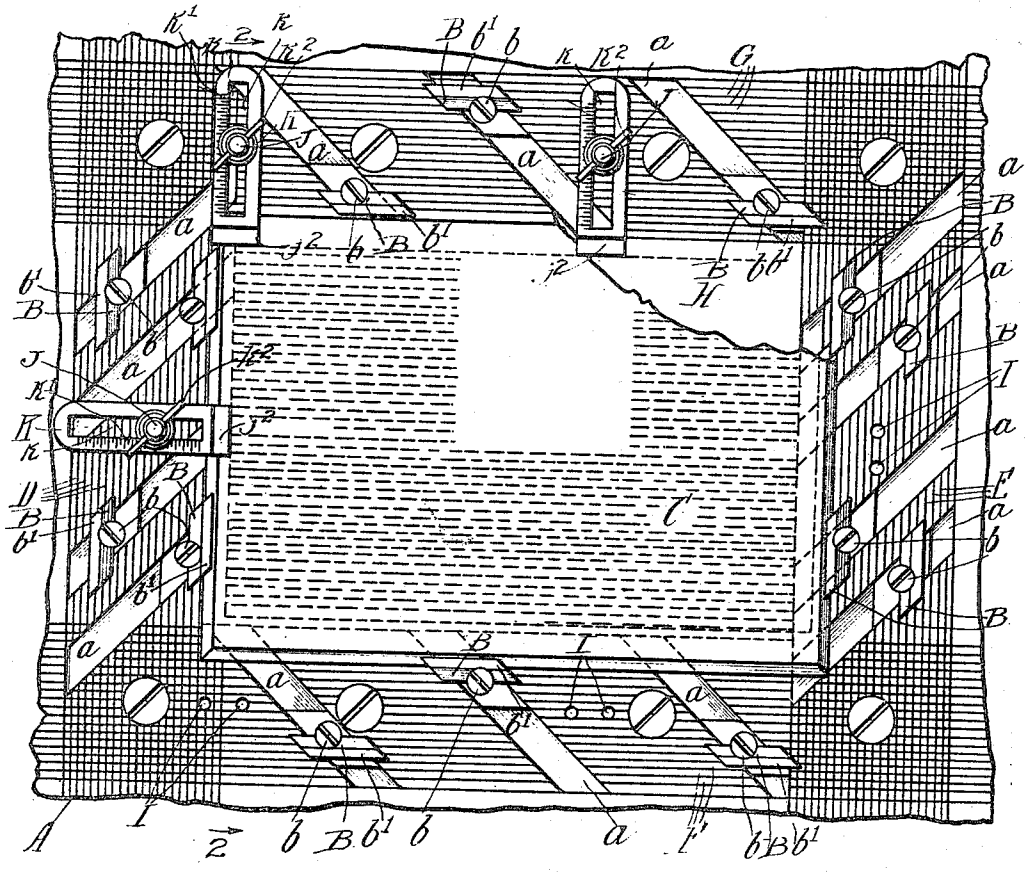


Fig. 1.

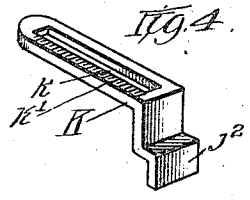


Fig. 4.

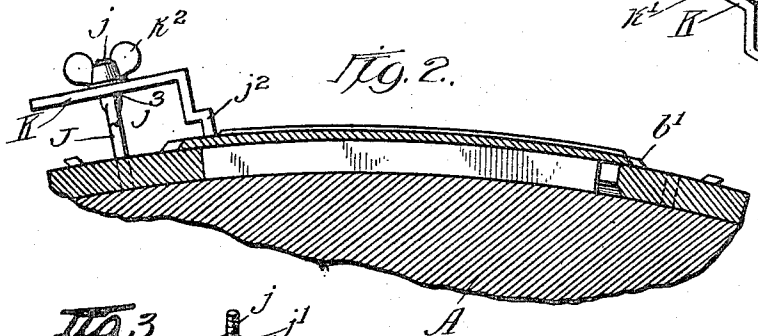


Fig. 2.



Fig. 3

Witnesses:

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UNITED STATES PATENT OFFICE.

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PLATE-POSITIONING MEANS FOR PRINTING-PRESSES.

1,160,579. Specification of Letters Patent. Patented Nov. 16, 1915.

Application filed November 2, 1914. Serial No. 869,760.

To all whom it may concern:

Be it known that I, ARTHUR J. CONNELLY, a citizen of the United States of America, and resident of 2017 Indiana avenue, Chicago, Cook county, Illinois, have invented a certain new and useful Improvement in Plate-Positioning Means for Printing-Presses, of which the following is a specification.

My invention relates to printing presses of that kind in which a support, either flat or cylindrical, is provided for printing plates, such as the plates by which a succession of colors is applied in multi-color work, or for printing reading matter in different colors, and in which means are provided for removably securing the said plates in position on said support. In printing presses of this kind considerable difficulty is often encountered in properly positioning the plates, with the result that the successive impressions are not in alinement, so to speak, or with the result that the printing on one side of the sheet does not coincide with the printing on the opposite surface thereof. To correct this difficulty it is frequently necessary to make several impressions on paper, and to then readjust the plates each time, until finally the impression shows that the plates have been correctly positioned. This is often slow and laborious, and frequently considerable time is required in which to correct the alinement of the plates, and thereby render the press suitable for actual work.

The object of my invention, generally stated, is to provide a plate support having means for gaging and determining the correct positions of the plates thereon, by suitably dividing the surface into clear spaces to receive the plates and by providing gaging devices which are removably placed, centrally of course, between said spaces to engage the plates and thereby accurately position each plate on its allotted space.

It is also an object to provide certain details and features of construction and combinations tending to increase the general efficiency of a printing press plate positioning arrangement of this particular character.

To these and other useful ends my invention consists in matters hereinafter set forth and claimed.

In the accompanying drawings: Figure 1 is a plan view of a portion of a cylindric plate support provided with plate positioning means embodying the principles of my invention, the balance of the said support being broken away for convenience of illustration, and showing the stereotype plate secured in position, but with one corner portion of said plate also shown broken away. Fig. 2 is a detail or fragmentary sectional view on line 2—2 in Fig. 1. Figs. 3 and 4 are perspectives of the parts of the gaging devices.

As thus illustrated, the plate support A is of the well known form, being cylindric in shape, and provided with obliquely disposed dove-tailed grooves *a* for the fastening devices B by which the stereotype plate C is removably secured in position. Each device B has a screw *b* which engages the bottom of the groove to hold the device against displacement therein, and to clamp the upper movable portion b^1 of said device firmly upon the beveled edge of said plate. This is all well known and does not require any further description.

The means for properly positioning the plates on the support are as follows: In Fig. 1 a group of lines D is shown extending vertically at the left of the figure, these lines being formed by cutting parallel grooves in the cylindric surface of the support. A similar group of lines E is formed at the right, and similar lines or grooves F and G are formed at right angles to the lines D and E, the space H between these four groups of lines constituting a plate section of the support. The groups D and E extend parallel with the axis of the cylinder, but the groups F and G form annular bands extending around the cylinder. It will be seen that the dove-tailed grooves *a* cross the said lines obliquely, so that the devices B are adjustable toward and away from the edges of the plate. The entire cylindric surface of the support A is thus divided in practice into rectangular spaces, like a checker board, said spaces being separated by the broad bands or strips formed by the different groups of lines, the groups of whatever character and however formed extend at right angles to each other, and this is also true of the grooves *a*, which latter are also in effect lines which are arranged in groups; for even without the lines D, E, F, and G, the cylinder surface would be divided into clear spaces with groups of lines

(such as the broad lines or grooves *a*) between the spaces and with well defined boundaries for the four sides of each rectangular space. For convenience of illustration, as shown in Fig. 1, only one of such spaces is shown in the drawings, but it will be understood that the other spaces and groups of lines are of the same character. The sockets I are formed in the support A, and are located in pairs along the stretches covered by the groups of lines. In this way these holes or sockets I are disposed or arranged in rows extending at right angles to each other, and each row forming the center line of one of said groups of lines—that is to say, the center between adjacent edges of the rectangular clear spaces. On a cylinder, of course, the natural method will be to divide the circumference equally, by the rows of holes I forming center lines which extend parallel with the axis of the cylinder, and to thus provide spaces which are equal in size around the cylinder. Thus the said center lines (in this case formed by the rows of holes I) define the spaces primarily, and serve as a means to accurately position the gaging devices on the cylinder, and the relatively fine and straight parallel lines, such as D, E, F, and G, then still further facilitate the accurate positioning of the plates on the surface of the cylinder, thus suitably divided into rectangular spaces, and equipped with removable gaging devices and adjustable fastening devices between said spaces. The devices for coöperating with said lines, both the fine lines or grooves D, E, F, and G, and the broad lines or grooves *a* to properly position the plates on the support are each composed of a staple shaped member J provided at its top with a threaded stem *j*, and with a square portion j^1, the feet of said member being adapted to enter the said sockets. A gage piece K is provided with a slot *k* which receives the square portion j^1, and with a depending gaging portion j^2, which latter is adapted to rest upon the plate and engage the edge of the type. The upper surface of the gage piece K may be provided with marks k^1 for assisting in positioning the gage piece relative to the other elements, in order to properly position the plate. The thumb nut k^2 is applied to the upper end of the stem *j* to clamp the horizontal portion of the piece K upon the shoulder j^3 of the staple shaped member. After the plate is properly positioned, the staple shaped members J are removed and the plate is secured accurately in place by the devices B, and the printing press is then in condition for operation. By means of the lines D, E, F and G, and the grooves or lines *a*, as well as the gaging and holding devices, all of the plates on the rotary cylinder A are properly positioned relative to each other. If these plates are for the first impression, and contain only printed matter, then the positioning is accomplished by the assistance of the portions j^2 which engage the edges of the type, as the extreme edges of the plates are not always true or uniform. On the next cylinder, and if the plates for the next impression are, for example, merely for adding certain things in color, then the gages K are not used, and the lines of this cylinder are relied upon to properly position the plates. The lines on the first cylinder can be counted to locate the edges of the plates, and then the corresponding lines of the next cylinder are used for printing the plates on this cylinder. The invention serves, therefore, to not only properly position the plates on the same cylinder, relative to each other, but also to insure accurate registration as between the plates of different cylinders, thereby insuring accuracy of the successive impressions. In this way exact alinement of the plates is insured from time to time without the necessity of readjusting the plates after making trial impressions therefrom, which latter is necessary when no means for accurately positioning the plate in the first instance are provided.

There are, of course, different ways in which the lines D, E, F and G and the gaging devices K and the lines *a* and devices B can be used by the plate setters or press operators and attendants for making sure that the plates are properly positioned on the cylinder or other support. The different cylinders or other supports are all scored or lined or grooved alike, and the devices K are adapted to be used in the rows of lines of sockets I of all the cylinders or supports; and by these means, keeping in mind the fact that the rows of holes I constitute the exact center between the spaces and form the primary division of the surface into rectangular spaces, the lines D, E, F, and G being supplemental and serving to more widely separate and clearly define said spaces, the plates are not only accurately positioned on the same cylinder or support, but also are given positions on the different cylinders or supports in a manner to insure not only proper registration of the successive impressions on the same page, but also accurate registration of the impressions on opposite pages of the same sheet, as will be readily understood by those skilled in the art. The spaces formed by the groups of lines make it easy to find the proper position for the plates as these spaces represent different pages. The same spaces on the different cylinders represent the same pages. I do not, therefore, limit myself to the exact construction shown and described.

The spaces formed between the groups of lines can be numbered, and these spaces

then represent, as previously explained, the different pages of a book or publication or other printed matter. The series of plates for use in printing one and the same page will, of course, occupy corresponding spaces on the different cylinders or plate supports. The first plate may occupy, for example, the number 7 space on the first cylinder, and the next plate for this same page will then occupy the number 7 space of the next cylinder; and if three color work is being used, the third plate for this same page will then occupy the number 7 space of the third cylinder. It is obvious at a glance where the different plates belong on the different cylinders, and the correct adjustment of each plate relative to its slotted space is then easily and quickly obtained by the coöperation of the lines and the adjustable gaging devices previously described. In any event, therefore, the surface of the cylinder is provided with grooves or lines or formations of any suitable character, arranged in groups at right angles, and by this I mean that some groups extend circumferentially of the cylinder and cross at right angles the other groups which extend longitudinally of the cylinder.

What I claim as my invention is:—

1. A printing press comprising a plate-support having the surface thereof provided with lines arranged in groups at right angles, said groups being spaced apart to divide the surface into rectangular clear spaces or plate sections representing different pages, and adjustable devices disposed between said spaces and coöperating with said lines and spaces to position the plates on said sections.

2. A printing press comprising a plate-support provided with lines arranged in groups at right angles, said groups being spaced apart to divide the surface into rectangular clear spaces or plate sections representing different pages, and adjustable devices disposed between said spaces and coöperating with said lines and spaces to position the plates on said sections, said support having separate groups of grooves for said groups of lines, and adjustable means coöperating with said grooves to removably secure the plates in the positions determined by said lines and said devices, each said space being contained between four groups of lines and four groups of grooves, and each group of grooves being common to and disposed between two spaces.

3. A printing press comprising a plate-support provided with lines arranged in groups at right angles, said groups being spaced apart to divide the surface into rectangular clear spaces or plate sections representing different pages, and adjustable devices disposed between said spaces and coöperating with said lines and spaces to position the plates on said sections, said support being provided with sockets for said devices, and each device being removable after the plates are positioned for printing.

4. A printing press comprising a plate-support provided with lines arranged in groups at right angles, said groups being spaced apart to divide the surface into rectangular clear spaces or plate sections representing different pages, and adjustable devices disposed between said spaces and coöperating with said lines and spaces to position the plates on said sections, said support having sockets disposed only in the groups of lines, said devices having feet for engaging said sockets, and each device having an adjustable gage for engaging the edge portion of the plate.

5. A printing press comprising a plate-support provided with lines arranged in groups at right angles, said groups being spaced apart to divide the surface into rectangular clear spaces or plate sections representing different pages, and adjustable devices disposed between said spaces and coöperating with said lines and spaces to position the plates on said sections, said support having sockets disposed only in the groups of lines, said devices having staple-shaped members for engaging said sockets, each member having a slotted gage adjustably held on the upper end thereof, and each gage having a depending portion for engaging the edge portion of the plate.

6. A printing press comprising a plate-support having the surface thereof provided with lines arranged in groups at right angles, said groups being spaced apart to divide the surface into rectangular clear spaces or plate sections representing different pages, and adjustable devices disposed between said spaces and coöperating with said lines and spaces to position the plates on said sections, said surface being cylindric, some of said groups forming annular bands extending around said support, and the other groups extending parallel with the axis of the cylinder.

7. A printing press comprising a plate-support provided with lines arranged in groups at right angles, said groups being spaced apart to divide the surface into rectangular clear spaces or plate sections representing different pages, and adjustable devices disposed between said spaces and coöperating with said lines and spaces to position the plates on said sections, said support having separate groups of grooves for said groups of lines, and adjustable means coöperating with said grooves to removably secure the plates in the positions determined by said lines and said devices, each said space being contained between four groups of lines and four groups of

grooves, and each group of grooves being common to and disposed between two spaces, said surface being cylindric, some of said groups forming annular bands extending around said support, and the other groups extending parallel with the axis of the cylinder.

8. A printing press comprising a plate-support provided with lines arranged in groups at right angles, said groups being spaced apart to divide the surface into rectangular clear spaces or plate sections representing different pages, and adjustable devices disposed between said spaces and coöperating with said lines and spaces to position the plates on said sections, said support being provided with sockets for said devices, and each device being removable after the plates are positioned for printing, said surface being cylindric, some of said groups forming annular bands extending around said support, and the other groups extending parallel with the axis of the cylinder.

9. A printing press comprising a plate-support provided with lines arranged in groups at right angles, said groups being spaced apart to divide the surface into rectangular clear spaces or plate sections representing different pages, and adjustable devices disposed between said spaces and coöperating with said lines and spaces to position the plates on said sections, said support having sockets disposed only in the groups of lines, said devices having feet for engaging said sockets, and each device having an adjustable gage for engaging the edge portion of the plate, said surface being cylindric, some of said groups forming annular bands extending around said support, and the other groups extending parallel with the axis of the cylinder.

10. A printing press comprising a plate-support provided with lines arranged in groups at right angles, said groups being spaced apart to divide the surface into rectangular clear spaces or plate sections representing different pages, and adjustable devices disposed between said spaces and coöperating with said lines and spaces to position the plates on said sections, said support having sockets disposed only in the groups of lines, said devices having staple-shaped members for engaging said sockets, each member having a slotted gage adjustably held on the upper end thereof, and each gage having a depending portion for engaging the edge portions of the plate, said surface being cylindric, some of said groups forming annular bands extending around said support, and the other groups extending parallel with the axis of the cylinder.

11. A printing press comprising a plate-support having the surface thereof provided with lines arranged in groups at right angles, said groups being spaced apart to divide the surface into rectangular clear spaces or plate sections representing different pages, and adjustable devices disposed between said spaces and coöperating with said lines and spaces to position the plates on said sections, each said group having means located along a line forming the center between spaces to receive said devices.

12. A printing press comprising a plate-support having the surface thereof provided with lines arranged in groups at right angles, said groups being spaced apart to divide the surface into rectangular clear spaces or plate sections representing different pages, and adjustable devices disposed between said spaces and coöperating with said lines and spaces to position the plates on said sections, said surface being cylindric, some of said groups forming annular bands extending around said support, and the other groups extending parallel with the axis of the cylinder, each said group having means located along a line forming the center between spaces to receive said devices.

Signed by me at Chicago, Cook county, Illinois, this 28th day of October, 1914.

ARTHUR J. CONNELLY.

Witnesses:
RACHEL J. RICHARDSON,
ROSE E. SEHNEM.