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MULTICOLOR ROTARY PROOF PRESS

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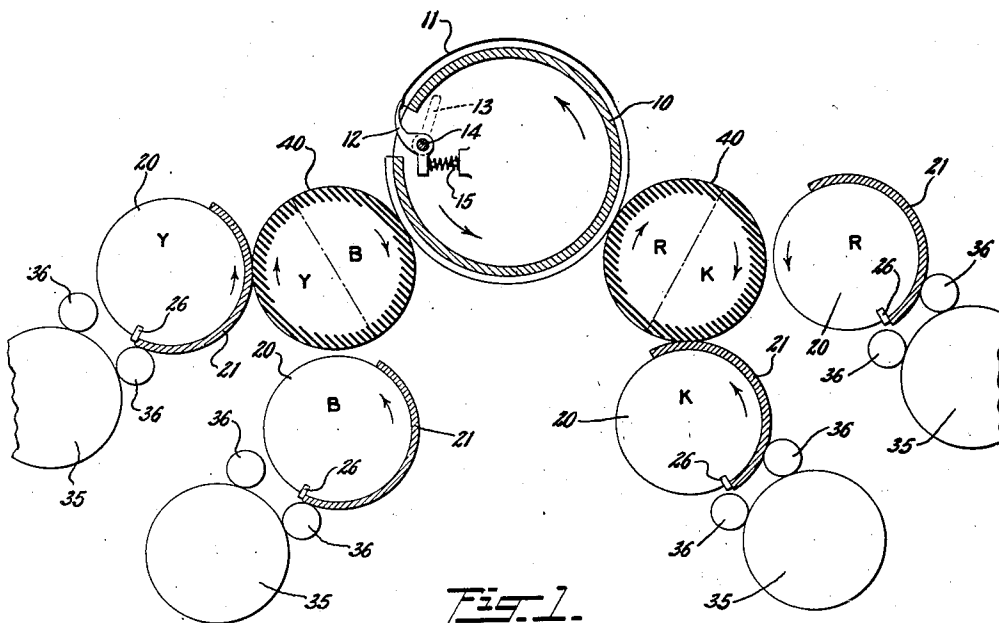


Fig. 1.

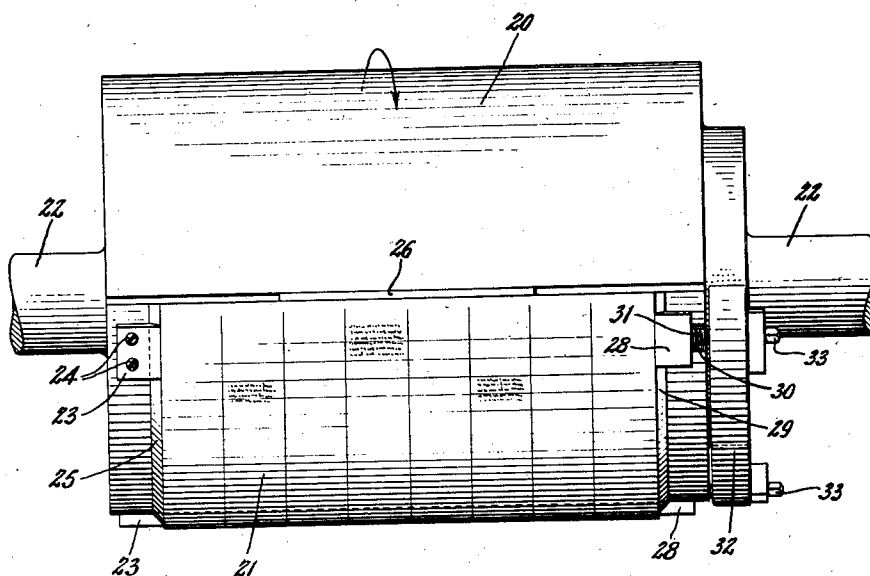


Fig. 2.

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MULTICOLOR ROTARY PROOF PRESS

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17 Claims. (Cl. 101-177)

This invention relates to improvements in multicolor rotary presses and more particularly to a novel and improved proof press having a single impression cylinder for proofing multicolor stereotype plates.

Objects and advantages of the invention will be set forth in part hereinafter and in part will be obvious herefrom, or may be learned by practice with the invention, the same being realized and attained by means of the instrumentalities and combinations pointed out in the appended claims.

The invention consists in the novel parts, construction, arrangements, combinations and improvements herein shown and described.

The accompanying drawing, referred to herein and constituting a part hereof, illustrates one embodiment of the invention, and together with the description, serves to explain the principles of the invention.

Of the drawing:

Figure 1 is a diagrammatic representation of an illustrative embodiment of the present invention; and

Figure 2 is a side elevation of one of the printing cylinders showing a stereotype plate secured thereto.

It is an object of the present invention to obtain quick accurate multicolor proofs of four color stereotype plates in newspaper work, the proofs accurately representing the results which will be obtained from the plates on the press.

With this object in view I provide a proof press having a single impression cylinder and a plurality of plate cylinders having plate clamps for securing the multicolor plates thereon in the same relative relationship as they will have on the newspaper press.

In the illustrative embodiment of the invention, the press comprises a plurality of transfer cylinders each adapted to receive and transfer impressions from a plurality of the plates to the single impression cylinder.

In the preferred embodiment the proof press comprises four plate cylinders, of the same diameter as the news press cylinders and the stereotypes, separate inking mechanism for each plate cylinder, so that the plates may be inked in colors the same as on the news press, two transfer or offset cylinders each to receive and transfer two of the impressions to a proof sheet supported on an impression cylinder.

The plate cylinders are provided with suitable plate clamping means accurately positioned to

clamp the plates in exactly the same relative positions as they will assume on the press.

The plate and transfer cylinders are preferably two page lengths in circumference, while the impression cylinder is preferably three page lengths in circumference. Suitable sheet grippers are provided on the impression cylinder for taking the lead end of the sheet, and the cylinders are intergeared to rotate at the same peripheral speed.

Preferably, the impression cylinder is positioned at the top of the proof press with the transfer cylinders, one on either side and slightly lower than the impression cylinder, while the plate cylinders are spaced substantially equidistant from the impression cylinder.

In operation, in taking proofs, the four plates are mounted on their respective plate cylinders, and a single page length sheet is placed on the impression cylinder, after which the impression cylinder is turned through two full revolutions. The plates print on their respective halves of the transfer cylinders which, in turn, offset onto the sheet and produce a multicolor proof corresponding to the result which will be obtained on the news press, except that that the impressions are positionally reversed. The operator may then determine whether the register is sufficiently good or some of the mats should be shrunk and new plates cast. For certain purposes the press may be operated also with longer sheets. By reason of the size ratio of the impression cylinder and offset cylinders, the design or designs on the latter will print on alternate spaces about the impression cylinder on successive revolutions. With the present arrangement this will give three four-color impressions around the impression cylinder when desired.

It will be understood that the foregoing general description and the following detailed description as well are exemplary and explanatory of the invention but are not restrictive thereof.

Referring now in detail to the illustrative embodiment of the invention as shown in the accompanying drawing, the multicolor press for proofing multicolor stereotype plates such as are used in the printing of newspapers is preferably adapted to receive and print from four multicolor plates.

An impression cylinder 10 is provided for receiving the sheet 11 to which the several multicolor proof impressions are transferred. Cylinder 10 is rotatably mounted in suitable bearings and is provided with an oscillatable gripper 12 adapted to be manually opened by operation of

lever 13 on shaft 14 and closed by means of a spring 15. Suitable packing may be provided between the sheet 11 and the impression cylinder 10.

5 The plate cylinders for rotatably supporting the semi-cylindrical stereotype plates are provided with suitable plate clamping means for securing the plates to the surface of the plate cylinders, these plate clamping means being adapted
10 to hold the plates in a definite position axially and circumferentially of their respective cylinders. One such plate cylinder is provided for each of the multicolor stereotype plates, and for the usual multicolor newspaper work four such cylinders
15 are provided. As embodied, each of the plate cylinders 20 is of the same diameter as the plate cylinders of the newspaper press on which the semi-circular stereotype plates are to be printed, and this diameter is the same as the diameter
20 of the internal or convex surface of the stereotype plate 21. Cylinder 20, at its ends, is provided with shafts 22 by which it is rotatably mounted in the side frames, not shown.

For securing the stereotype plates to their respective cylinders in the definite positions referred to, the cylinders near one end are provided with undercut, narrow clamps 23 secured to the surface of the cylinder by screws 24, and these clamps are adapted to engage the beveled edge
25 of one end of the plate 21. A stop 26, in the form of an axially-extending bar projecting slightly from the surface of the cylinder 20, is secured to the cylinder and is adapted to engage and drive the trailing edge of the plate 21. At the
30 end of the cylinder opposite the clamps 23, movable clamps 28 engage the other beveled edge 29 of the plate 21. Clamps 28 are preferably dovetailed and fitted within suitable channels 30 to prevent radial movement while permitting them
35 to be moved axially of the cylinder to press the plate against clamps 23 and thereby hold it on the surface of the cylinder. For moving the clamps 28 axially, each of these clamps is provided with a screw 31 threaded into a semi-circular
40 plate 32 fixed to one end of the cylinder 20, the inner end of screws 31 being rotatable within their respective clamps 28, while the outer ends are squared, as at 33, to facilitate turning.

For inking the several plates 21 in the required
50 colors, ink drums 35 rotate in contact with the form rollers 36, and transfer ink to the stereotype plates. One ink drum 35 and a pair of form rollers are provided for each of the stereotype plates, and the drums 35 may be inked by hand
55 in the proper colors.

A plurality of transfer cylinders 40 are also provided, each cooperating with a plurality of the plate cylinders 20, and these transfer cylinders are adapted to receive the ink impressions from the stereotype plates and transfer them
60 in superposed register onto the proof sheet 15 carried by the impression cylinder. As embodied, the transfer cylinders 40 are preferably two page lengths in circumference, as are the plate cylinders 20, and these transfer cylinders are positioned approximately 120° apart on the surface
65 of the impression cylinder 10 which is preferably three page lengths in circumference. The plate cylinders 20 are preferably positioned substantially equidistant from the impression cylinder 10 and are preferably approximately 90° apart measured on the circumference of their respective
70 transfer cylinders.

Means are also provided for gearing all of the
75 cylinders together for uniform rotation, and other

means may be provided for driving the impression cylinder 10 by hand or by means of a small motor. This gearing may be of any suitable form, but is preferably arranged so that the impression
5 from one of the plates 21 is printed on one half of its transfer cylinder 40, while the impression from the other plate is printed on the other half of the transfer cylinder 40. The impressions from one half of each transfer cylinder are transferred
10 to the proof sheet on the first revolution of the impression cylinder and the other impressions are transferred on the next revolution of the impression cylinder.

The plate clamps 23, 26 and 28, in accordance with the present embodiment of the invention, 15 are so positioned that the several plates will necessarily be positioned relatively to each other in exactly the same relation which these plates will bear when they are clamped to the plate cylinders of the rotary newspaper press on which
20 they are to be printed. This feature of the invention enables the operator to ascertain from the proof sheet what will be the exact appearance of the impressions to be printed on the newspaper press, and he can determine whether or
25 not the plates are registered with sufficient accuracy, or must be recast after treatment of the mats to render them more nearly the same size. This avoids the stoppage of the newspaper press while all this preliminary work is being carried
30 on, thereby increasing the productivity of the press.

In the drawing, the plate cylinders 20 and the transfer surfaces 40 are lettered Y, B, K and R to indicate yellow, blue, black and red, the
35 colors with which the plates may be inked for proving the plates.

The invention in its broader aspects is not limited to the specific mechanisms shown and described but departures may be made therefrom
40 within the scope of the accompanying claims without departing from the principles of the invention and without sacrificing its chief advantages.

What I claim is:

1. A multicolor proof press including in combination an impression cylinder to receive a proof sheet, a plurality of transfer cylinders, a plurality of plate cylinders for each transfer cylinder, means for securing printing plates on the plate
50 cylinders in registering relation and means for inking the plates.

2. A multicolor proof press including in combination an impression cylinder having a sheet gripper and means for opening and closing said
55 gripper, a plurality of transfer cylinders, a plurality of plate cylinders for each transfer cylinder, means for securing printing plates on the plate cylinders in registering relation, and means
60 for inking the plates.

3. A multicolor proof press including in combination an impression cylinder three page lengths in circumference, a pair of transfer cylinders, two pairs of plate cylinders, each of said transfer and plate cylinders being two page lengths in circumference, means for securing printing plates on the plate cylinders in registering relation and means for inking the plates, said cylinders being
65 rotatable in unison whereby two revolutions of the impression cylinder cause an impression of each plate to be transferred to a sheet on said impression cylinder.

4. A multicolor proof press including in combination an impression cylinder three page lengths in circumference having a sheet gripper
75

for holding a sheet on the cylinder surface, a pair of transfer cylinders, two pairs of plate cylinders, each of said transfer and plate cylinders being two page lengths in circumference, means for securing printing plates on the plate cylinders in registering relation and means for inking the plates, said cylinders being rotatable in unison whereby two revolutions of the impression cylinder causes an impression of each plate to be transferred to a sheet on said impression cylinder.

5. A multicolor proof press including in combination an impression cylinder three page lengths in circumference, a pair of transfer cylinders spaced a page length apart on the impression cylinder, two pairs of plate cylinders, each of said transfer and plate cylinders being two page lengths in circumference, means for securing printing plates on the plate cylinders in registering relation and means for inking the plates, said cylinders being rotatable in unison whereby two revolutions of the impression cylinder causes an impression of each plate to be transferred to a sheet on said impression cylinder.

6. A multicolor proof press including in combination an impression cylinder three page lengths in circumference, a pair of transfer cylinders, two pairs of plate cylinders, each of said transfer and plate cylinders being two page lengths in circumference, means for securing printing plates on the plate cylinders in registering relation with the plates and plate cylinders for each transfer cylinder so positioned as to print on opposite halves of their respective transfer cylinders whereby the impressions are not combined until they are transferred to the sheet, and means for inking the plates, said cylinders being rotatable in unison whereby two revolutions of the impression cylinder causes an impression of each plate to be transferred to a sheet on said impression cylinder.

7. A multicolor proof press including in combination an impression cylinder three page lengths in circumference, a pair of transfer cylinders spaced a page length apart on the impression cylinder, two pairs of plate cylinders, each of said transfer and plate cylinders being two page lengths in circumference, means for securing printing plates on the plate cylinders in registering relation with the plates and plate cylinders for each transfer cylinder so positioned as to print on opposite halves of their respective transfer cylinders whereby the impressions are not combined until they are transferred to the sheet, and means for inking the plates, said cylinders being rotatable in unison whereby two revolutions of the impression cylinder causes an impression of each plate to be transferred to a sheet on said impression cylinder.

8. A multicolor proof press including in combination an impression cylinder three page lengths in circumference having a sheet gripper for holding a sheet on the cylinder surface, a pair of transfer cylinders spaced a page length apart on the impression cylinder, two pairs of plate cylinders, each of said transfer and plate cylinders being two page lengths in circumference, means for securing printing plates on the plate cylinders in registering relation with the plates and plate cylinders for each transfer cylinder so positioned as to print on opposite halves of their respective transfer cylinders whereby the impressions are not combined until they are transferred to the sheet, and means for inking the plates, said cylinders being rotatable in unison whereby two revolutions of the impression cylinder causes an im-

pression of each plate to be transferred to a sheet on said impression cylinder.

9. A multicolor proof press for proving multicolor stereotype newspaper plates later to be printed on a rotary newspaper press including in combination an impression cylinder, cooperating plate cylinders corresponding in diameter to the plate cylinders of the newspaper press, inking means, and plate securing means on said plate cylinders, said securing means being positioned on said plate cylinders so as to secure the plates in exactly the same registering relation as the plates will have when clamped to the plate cylinders of the newspaper press.

10. A multicolor proof press for proving multicolor stereotype newspaper plates later to be printed on a rotary newspaper press including in combination an impression cylinder, cooperating plate cylinders corresponding in diameter to the plate cylinders of the newspaper press, transfer cylinders for transferring impressions from the plates to a sheet supported on the impression cylinder, inking means, and plate securing means on said plate cylinders, said securing means being positioned on said plate cylinders so as to secure the plates in exactly the same registering relation as the plates will have when clamped to the plate cylinders of the newspaper press.

11. A proof press for proving multicolor stereotype newspaper plates later to be printed on a rotary newspaper press including in combination an impression cylinder, a plurality of cooperating plate cylinders corresponding in diameter to the plate cylinders of the newspaper press, means in fixed position on said plate cylinders for positioning a curved and a straight edge of a stereotype plate in the same position that they will occupy on the printing press cylinder, and means for inking said plate.

12. A proof press for proving multicolor stereotype newspaper plates later to be printed on a rotary newspaper press including in combination an impression cylinder, an offset cylinder coacting therewith, a plurality of plate cylinders corresponding in diameter to the plate cylinders of a newspaper press, a plurality of said plate cylinders printing on different parts of the offset cylinder, means in fixed position on said plate cylinders for positioning a curved and a straight edge of a stereotype plate in the same position that they will occupy on the printing press cylinder, and means for inking said plate.

13. A proof press for proving multicolor stereotype newspaper plates later to be printed on a rotary newspaper press including in combination an impression cylinder, an offset cylinder coacting therewith, a plurality of plate cylinders corresponding in diameter to the plate cylinders of a newspaper press, a plurality of said plate cylinders printing on different parts of the offset cylinder, means in fixed position on said plate cylinders for positioning a curved and a straight edge of a stereotype plate in the same position that they will occupy on the printing press cylinder, and means for inking said plate, said impression cylinder being of greater diameter than said other cylinders.

14. A proof press for proving multicolor stereotype newspaper plates later to be printed on a rotary newspaper press including in combination an impression cylinder, a plurality of offset cylinders coacting therewith, a plurality of plate cylinders coacting with each offset cylinder, said plate cylinders corresponding in diameter to the plate cylinders of a newspaper press, the plate

5 cylinders for an offset cylinder printing on different parts circumferentially of said offset cylinder, means in fixed position on said plate cylinders for positioning a curved and a straight edge of a stereotype plate in the same position that they will occupy on the printing press cylinder, and inking mechanisms for said printing plates.

10 15. A proof press for proving multicolor stereotype newspaper plates later to be printed on a rotary newspaper press including in combination an impression cylinder, a plurality of offset cylinders coacting therewith, a plurality of plate cylinders coacting with each offset cylinder, said plate cylinders corresponding in diameter to the plate cylinders of a newspaper press, the plate cylinders for an offset cylinder printing on different parts circumferentially of said offset cylinder, and inking mechanisms for said printing plates.

20 16. A proof press for proving multicolor stereotype newspaper plates later to be printed on a rotary newspaper press including in combination an impression cylinder having a circumference of approximately three plate lengths, a

plurality of offset cylinders having a circumference of approximately two plate lengths, a plurality of plate cylinders coacting with each offset cylinder and being of the same circumference as the offset cylinder, a plate on each of said plate cylinders, said plates printing on different halves of their offset cylinder. 5

17. A proof press for proving multicolor stereotype newspaper plates later to be printed on a rotary newspaper press including in combination an impression cylinder having a circumference of approximately three plate lengths, a plurality of offset cylinders having a circumference of approximately two plate lengths, a plurality of plate cylinders coacting with each offset cylinder and being of the same circumference as the offset cylinder, a plate on each of said plate cylinders, said plates printing on different halves of their offset cylinder, and sheet holding means on the impression cylinder capacitated to carry the sheet around for a plurality of revolutions. 10 15 20

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