Nov. 1, 1966 J. P. WALSH 3,281,946

PRINTING APPARATUS

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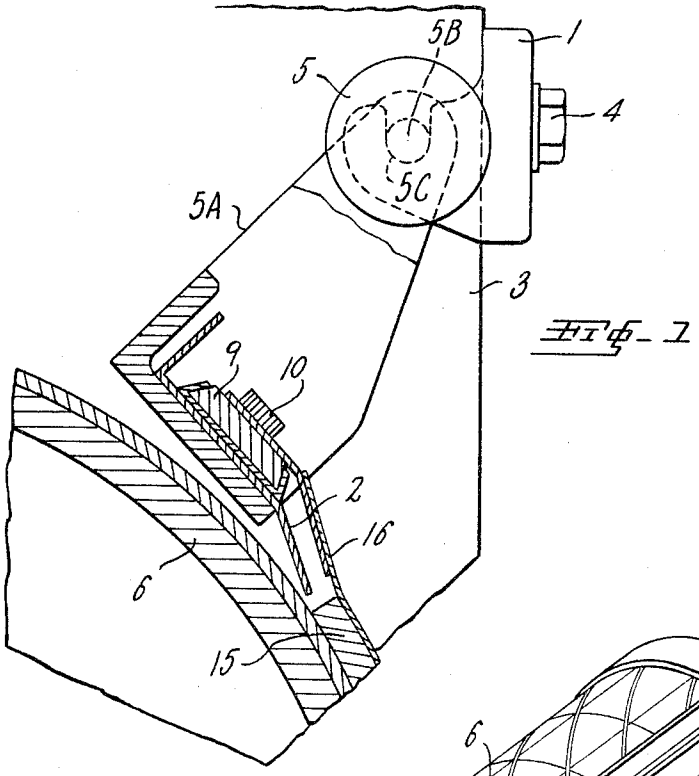



FIG. 1

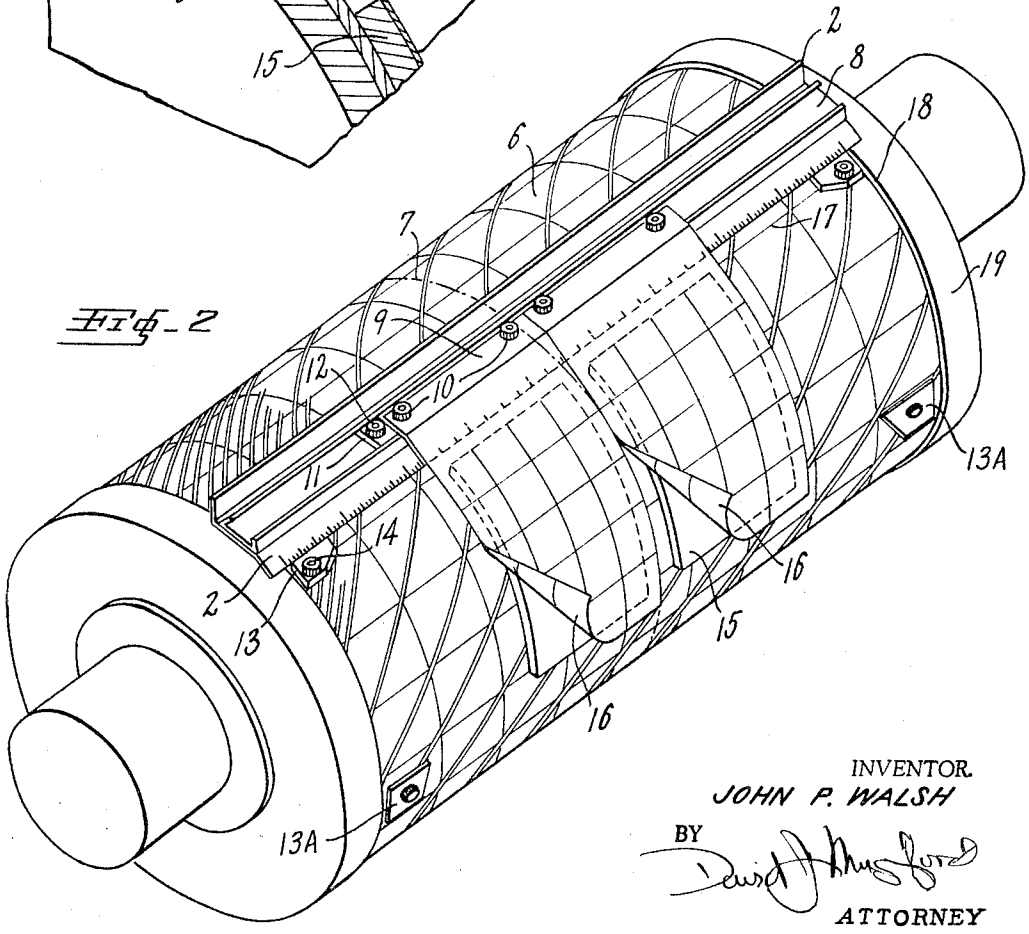



FIG. 2

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# PRINTING APPARATUS

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This application is a continuation-in-part of my co-pending application, Serial No. 36,883, filed June 17, 1960, now Patent 3,206,859.

This invention relates to a lineup and register system for use in positioning and registering printing plates on rotary presses, in their exact position as they will appear in a finished job of a book, magazine, or any other type of work printed on a letterpress rotary printing machine.

This system is equipped with lineup and register means to enable one to obtain faster form lockup, to eliminate guess work on the part of the operator and to reduce to a minimum preparation and make-ready cost.

It is an object of my invention to provide a system which can be used to position and register printing plates when placed in a form on a letterpress rotary plate cylinder.

Another object of my invention is to provide a lockup and register system which can be employed for step and repeat form, book work or any other type of form, with correct margins, trims or whatever instructions are set forth on the operator's job ticket.

Still another object of the invention is to provide a system from which one or more color forms can be made up and registered, thus speeding up lockup time and eliminating most of the plate moves now found necessary.

In addition another objective of the invention is to provide a system which can be employed to position and register flat printing plates on flat-bed cylinder presses, as well as curved plates on rotary presses.

All size forms from the smallest job to the largest form can be positioned and registered correctly with this invention saving valuable press downtime and turning it into profitable production time.

These and other objects will be apparent to one skilled in the printing arts from the description of my novel apparatus which is set forth hereinafter.

I accomplish these objectives by providing an apparatus described by me as a master bar or straightedge. Structurally, the apparatus is a single edge straightedge; this straightedge member being mounted on a rotary press frame in a manner permitting said member to be raised up and away or down to the plate cylinder bearers and to be inclined until the edge thereof is on a horizontal plane with the plate cylinder bearers. The apparatus contains means for releasibly locking the straightedge member in its inclined position, resting on the cylinder bearers of the plate cylinder.

I also provide the rotary plate cylinder with position gauges which are slidably mounted in the grooves of the rotary plate cylinder and positioned at the front edge of the straightedge at the paper line. The second row of gauges are lined up and positioned at the tail edge of a transparent sheet of plastic film which I call a master film. The gauges contain means of releasibly locking them in position with clamp screws.

I also provide the straightedge member with a channel running its full length in which a side guide and master slide bars which carry the transparent master film operate. Said master slide bars contain means for locking them in a manually set position. The transparent master film is used as a positive when copy is positioned on the film and as a negative when positioning printing plates on a rotary press plate cylinder.

The side guide and master slide bars which carry the master films are moved in the channel of the straightedge to any position desired and locked in place. All printing



plates are locked in relation to the set up. In this position the transparent master films can be raised and lowered to allow the operator to position and register the printing plates on the rotary press plate cylinder.

The accompanying drawings are illustrative of the principles of my invention.

FIG. 1 is a fragmentary cross-sectional view of one of the master bar brackets attached to the press frame of a rotary press which holds the master bar in position above the plate cylinder of a rotary press. Also it shows the master slide bar and side guage.

FIG. 2 is a perspective view of a master bar attachment for use with rotary presses, showing sheets of transparent master film attached to said master slide bars and extending over the printing plate cylinder. It also shows the cylinder position gauges locked at edge of master bar and lined up at bottom of the master.

Referring now in detail to the embodiment of the invention illustrated in the drawings, I have indicated that the plate cylinder **6** and master bar **2** are set up by the pressman with position guides **13** which slide in the grooves of the cylinder **6** and are locked in position with clamp screws **14** against the edge of the master bar **2** and guides **13A** are similarly locked in position at the bottom of the transparent master film **16**. The master bar **2** is set up with master slide bars **9** secured by screws **10** which carry the transparent master films **16** and slide along the channel **8**. The master slide bars **9** are positioned against a side guide **11** which is locked in place with a clamp screw **12**.

The pressman lays the printing plates **15** on the cylinder **6** in their proper position and the master film **16** is laid on top of the plates **15**. The master film **16** assures a straight plate lineup, showing all four margin readings, including the dead line **17** and gripper bite all at the same time. The master film **16** is raised and lowered to allow the pressman to move the printing plate **15** without any interference from the master film **16**.

When the front row of plates **15** are positioned on the cylinder **6**, the cylinder **6** is moved on to the second row of position gauges **13A** where they contact the master bar **2**. The second row of plates **15** are positioned and registered with the same master films **16** and the same set up. This operation continues until a complete form is locked on the cylinder **6**.

Heretofore, the usual procedure has been to lock up the printing plates **15** of various sizes on the plate cylinder **6** without the use of a positive guide or mechanism to indicate the correct position or alignment of each printing plate. With the use of the position guide **11** and master slide bar **9** and the transparent master film **16** the pressman can lay out the entire form according to his instructions; thus eliminating the guesswork procedure and enabling one to position the printing plates in the form with precision and accuracy.

The set up on the cylinder **6** and master bar **2** are left standing until a complete job of one or more forms are completed; with the set up standing a change in printing plates **15** can be made fast and accurately. One or more master films **16** can be used, one for each row of plates **15** and using one or more pressman to speed up the operation.

In FIG. 1 I show one of the brackets **1** that holds the master bar **2** to a rotary press frame **3** and the bolt **4** to hold it secure. I also show the master bar **2** and the lock nut **5** which keeps it in position on the cylinder bearers **6** when the operator is making up the form and in a locked position off the bed bearers when the press is operating. FIG. 1 shows the master arm **5A** with the threaded pivoting pin **5B**, cooperating with lock nut **5**, which rests in the socket **5C** of bracket **1** and allows the master bar

to pivot in the cylinder bearers when making up the form, and of the bearers when the press is operating.

In FIG. 2 I show a master bar **2** attachment for rotary presses. This shows cylinder **6**, cylinder center line **7**, master channel **8**, slide bar **9**, clamp screw **10**, master side guide **11** and clamp screw **12**, position gauge **13** and and clamp screw **14**, printing plate **15**, transparent master film **16**, dead line **17** and paper line **18** on cylinder **6**.

It is apparent to those skilled in the art that this system of lineup and register can be used in lining, squaring, positioning, and registering printing plates on rotary press plate cylinders, by using position gauges which operate in the grooves or on the surface of a plate cylinder, and a master bar equipped with a channel in which position gauges and master slide bars, carrying transparent master films, operate.

This is accomplished by laying out the cylinder with position gauges, which are the same height as the printing plates. The first row of position gauges are set at the gripper edge of the cylinder at the edge of the master bar and are positioned to avoid the gripper fingers on the impression cylinder. The second row of position gauges are set in line with the bottom of the master film. The same operation continues until a complete set up has been made on the cylinder. The master bar layout is accomplished with master slide bars, carrying a master film, with the correct information for positioning and registering printing plates along the channel of the master bar and being locked in position against a side gauge.

It may also be apparent to those skilled in the printing arts that a transparent master film cut to the untrimmed size of any single page of a book or job showing complete information is all that is necessary to position one or more pages, one or more colors, with one or more forms or a complete job when using my lineup and register system on a rotary press plate cylinder.

Having thus described my invention, what I claim and desire to protect by Letters Patent is:

**1.** A combination rotary lineup and register system to position and register printing plates on plate cylinders of a rotary press, including a rotary press having a framed plate cylinder, a straightedge and master bar member being mounted to the cylinder frame of the rotary press in a manner permitting said member to be inclined until either edge thereof rests on said cylinder, means for releasably locking said straightedge and master bar member in its inclined position without impairing rotation of the cylinder, the improvement of which is the combination of this apparatus with (1) position and register gauges which are slidably mounted circumferentially around each edge of said cylinder, and (2) a channel centrally positioned along the length of the straightedge and master bar member containing slidably mounted master slide bars to carry a sheet of transparent plastic film, and means for locking said master slide bars in a manually set position.



**2.** A combination rotary lineup and register system to position and register printing plates on plate cylinders of a rotary press, including a rotary press having a framed plate cylinder, a straightedge and master bar member being mounted to the cylinder frame of the rotary press in a manner permitting said member to be inclined until either edge thereof rests on said cylinder, means for releasably locking said straightedge and master bar member in its inclined position without impairing rotation of the cylinder, the improvement of which is the combination of this apparatus with (1) position and register gauges which are slidably mounted circumferentially around each edge of said cylinder, (2) a channel centrally positioned along the length of the straightedge and master bar member containing slidably mounted master slide bars to carry a sheet of transparent plastic film, and means for locking said master slide bars in a manually set position, and (3) a sheet of transparent film one edge of which is secured to said master slide bars.


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