May 28, 1940. H. M. BARBER 2,202,134

WEB PERFECTING ROTARY PRESS

Filed Oct. 4, 1938 2 Sheets-Sheet 1

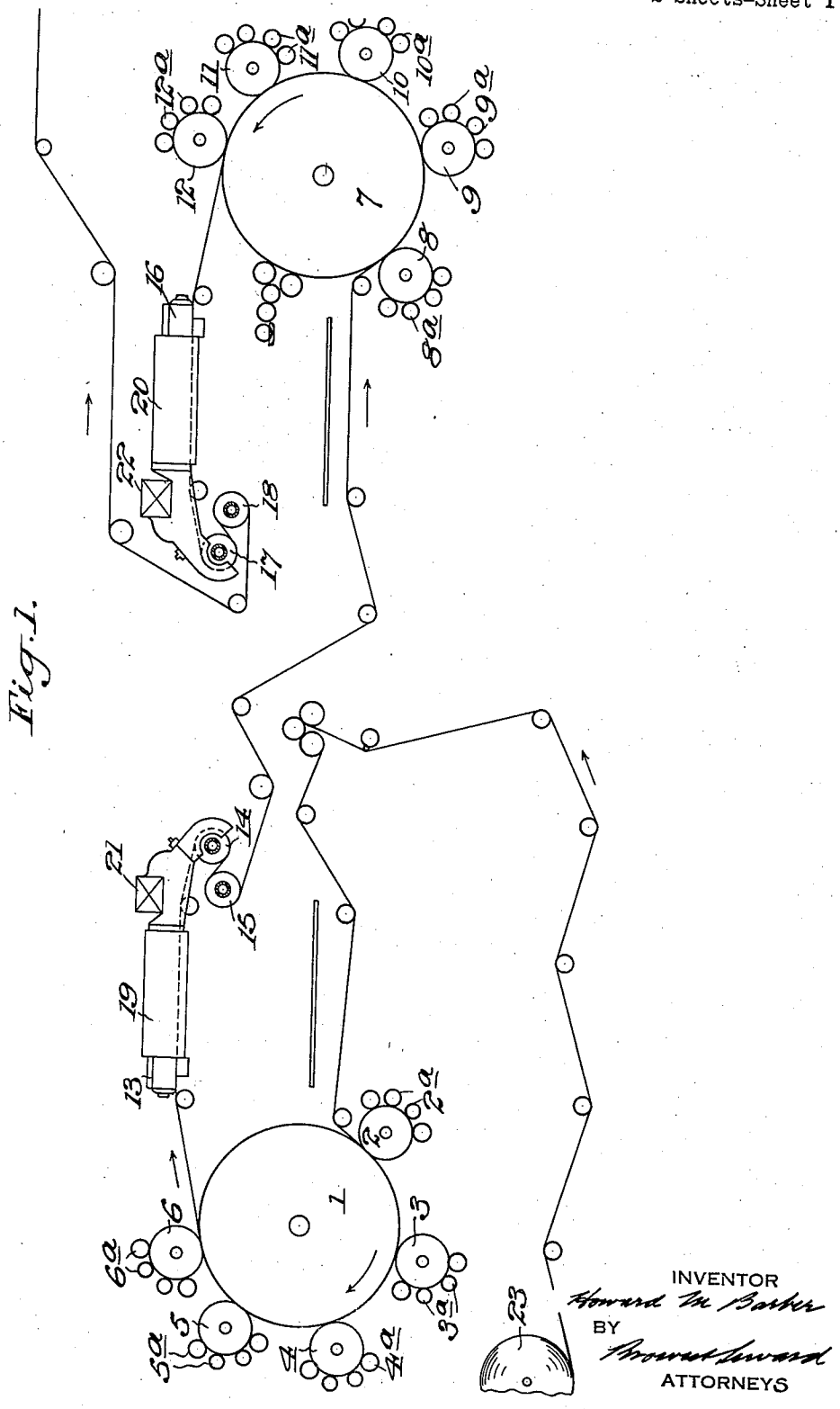


Fig. 1.

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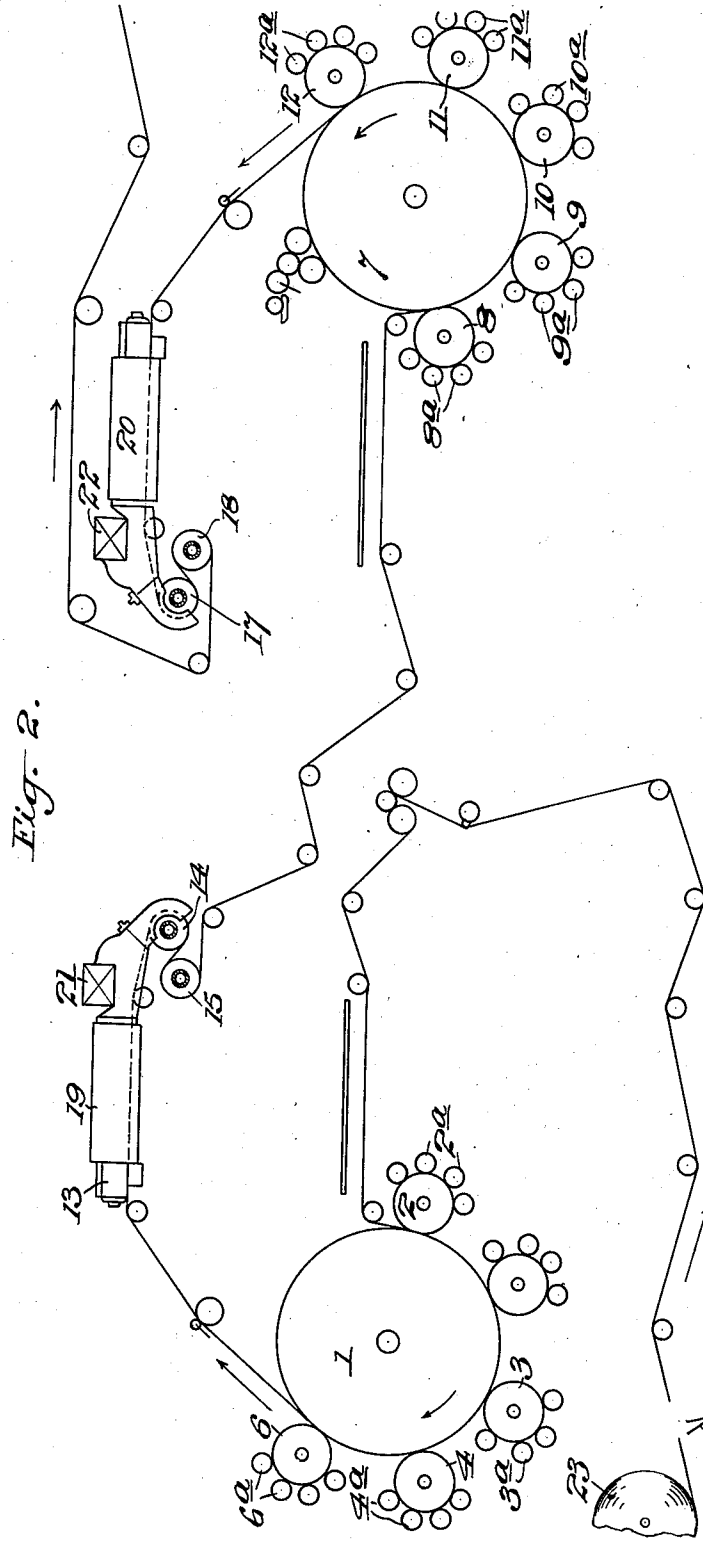


Fig. 2.

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UNITED STATES PATENT OFFICE

2,202,134

WEB PERFECTING ROTARY PRESS

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Application October 4, 1938, Serial No. 233,183

3 Claims. (Cl. 101—179)

In high speed web perfecting rotary printing presses where quick drying inks and web drying units are used in connection with the web printing units it is desirable to so locate the several units as to produce the best results while occupying a minimum amount of space.

The object of my invention is to facilitate handling of the several form cylinders, inking mechanisms, and web lead by providing an impression cylinder having the diameter equal to more than three times the diameter of each of its form cylinders.

Another object of my invention is to so locate the form cylinders about the impression cylinder as to allow greater freedom in "making ready."

My invention comprises, generally, first and second multicolor printing units, each of said printing units consisting of an impression cylinder having a diameter equal to more than three times the diameter of each of its form cylinders, form cylinders (in the present instance five form cylinders) arranged around their impression cylinder, inking mechanisms for the form cylinders, first and second drying units located above, between, and in line with the printing units and a web supply roll. Means are provided for passing the web from the supply roll to and through the first printing unit, then to and through the first drying unit, then to and through the second printing unit, then to and through the second drying unit, and finally directing the web therefrom in the desired direction.

Practical embodiments of my invention are represented in the accompanying drawings, in which

Fig. 1 represents a diagrammatic side elevation of one form of my invention in which the form cylinders are arranged four on one side of the impression cylinder and one on the opposite side thereof; and

Fig. 2 represents a diagrammatic side elevation of another form of my invention in which the form cylinders are arranged three on one side of the impression cylinder and two on the opposite side thereof.

In the form shown in Fig. 1, the first printing unit is herein represented as a five color unit, the impression cylinder being denoted by 1 and its five form cylinders by 2, 3, 4, 5 and 6, which form cylinders are arranged around the impression cylinder so that four are located on one side and one on the opposite side thereof. Inking mechanisms for the form cylinders are denoted by 2^a, 3^a, 4^a, 5^a and 6^a and apply the ink to their respective form cylinders in the usual manner.

The second printing unit for perfecting the web is herein represented as a five color unit, the impression cylinder being denoted by 7 and its five form cylinders by 8, 9, 10, 11 and 12, which form cylinders are arranged similarly to those of the first printing unit. The inking mechanisms for the form cylinders are denoted by 8^a, 9^a, 10^a, 11^a and 12^a and apply the ink to their respective form cylinders in the usual manner.

These two printing units are located in line with each other in the same horizontal plane at opposite ends of the press.

The first drying unit is herein represented as comprising a heating unit 13 such as a gas burner and two cooling cylinders 14 and 15.

The second drying unit is herein represented as comprising a heating unit 16 such as a gas burner and two cooling cylinders 17 and 18.

These two drying units are provided with shields 19 and 20 in order that the vapors arising from drying the web may be easily disposed of and dissipated by a blower or suction device 21, 22 so that they will not again come in contact with the printed surface of the web.

Any cooling medium such as water may be supplied to cooling cylinders 14, 15 and 17, 18.

The drying units are located above, between, and in line with the printing units.

It will be understood that the web may be fed in the usual manner from a web supply roll 23.

In the form shown in Fig. 2 the form cylinders are arranged three on one side of the impression cylinder and two on the opposite side thereof.

In operation the web is led from the supply roll to and through the first printing unit where the web is printed in multicolor on one side thereof. The web is then led to and through the heating unit 13 of the first drying unit with the printed side exposed to the source of heat therein and then to and around the cooling cylinders 14, 15 of the first drying unit. From thence the web is led to and through the second printing unit where the web is printed in multicolor on the other side thereof. The web is then led to and through the heating unit 16 of the second drying unit with the freshly printed side of the web exposed to the source of heat therein and then to and around cooling cylinders 17 and 18 of the second drying unit. The perfected

web may then pass in any desired direction to a delivery point.

The means for driving the several units is not shown or described herein but any well known or approved means may be used. It is to be understood that each unit may be driven separately either for the purpose of "making ready" or for any other reason.

It is to be understood that guide rolls are provided for passing the web from the supply roll in prescribed paths to and through the several units and to a predetermined delivery point.

It is also to be understood that any suitable heating medium such as gas may be supplied to heating units 13 and 16 and that any suitable cooling medium such as water may be supplied to the cooling cylinders 14, 15 and 17, 18.

It will also be understood that any well known or approved quick drying inks may be used in the printing units.

From the above description it will be seen that I have provided an arrangement of the several units of the press whereby the inks on the freshly printed sides of the web may be dried with a minimum travel of the web, the form cylinders of the two printing units at the same time being so arranged about their respective "four-way" impression cylinders that ready access thereto may be had for the purpose of "making ready" or otherwise handling the cylinders.

It is evident that various changes may be resorted to in the construction, form and arrangement of the several parts without departing from the spirit and scope of my invention, and hence I do not intend to be limited to the particular embodiments herein shown and described, but

What I claim is:

1. In a multicolor web perfecting rotary printing press, first and second printing units, first and second drying units therefor, said drying units being located in substantially the same horizontal plane, each printing unit comprising an impression cylinder and a plurality of form cylinders arranged around the same, said impression cylinder having a diameter equal to four times the diameter of each of its form cylinders, a web supply roll and means for leading the web through said units.

2. In a multicolor web perfecting rotary printing press, first and second printing units, first and second drying units therefor located above, between and in line with the printing units, each printing unit comprising an impression cylinder and five form cylinders arranged around the impression cylinder, four on one side and one on the opposite side of a transverse vertical plane taken through the axis of the impression cylinder, said impression cylinder having a diameter equal to four times the diameter of each form cylinder, a web supply roll and means for leading the web through said units.

3. In a multicolor web perfecting rotary printing press, first and second printing units, first and second drying units therefor located above, between and in line with the printing units, each printing unit comprising an impression cylinder and five form cylinders arranged around the impression cylinder, three on one side away from the drying unit and two on the opposite side thereof, said impression cylinder having a diameter equal to four times the diameter of each form cylinder, a web supply roll and means for leading the web through said units.

HOWARD M. BARBER.