Nov. 28, 1939. D. L. BOYD 2.181,690

HEATING MEANS FOR PLATE CYLINDERS OF ROTARY PRESSES

Filed Nov. 30, 1938 3 Sheets-Sheet 1

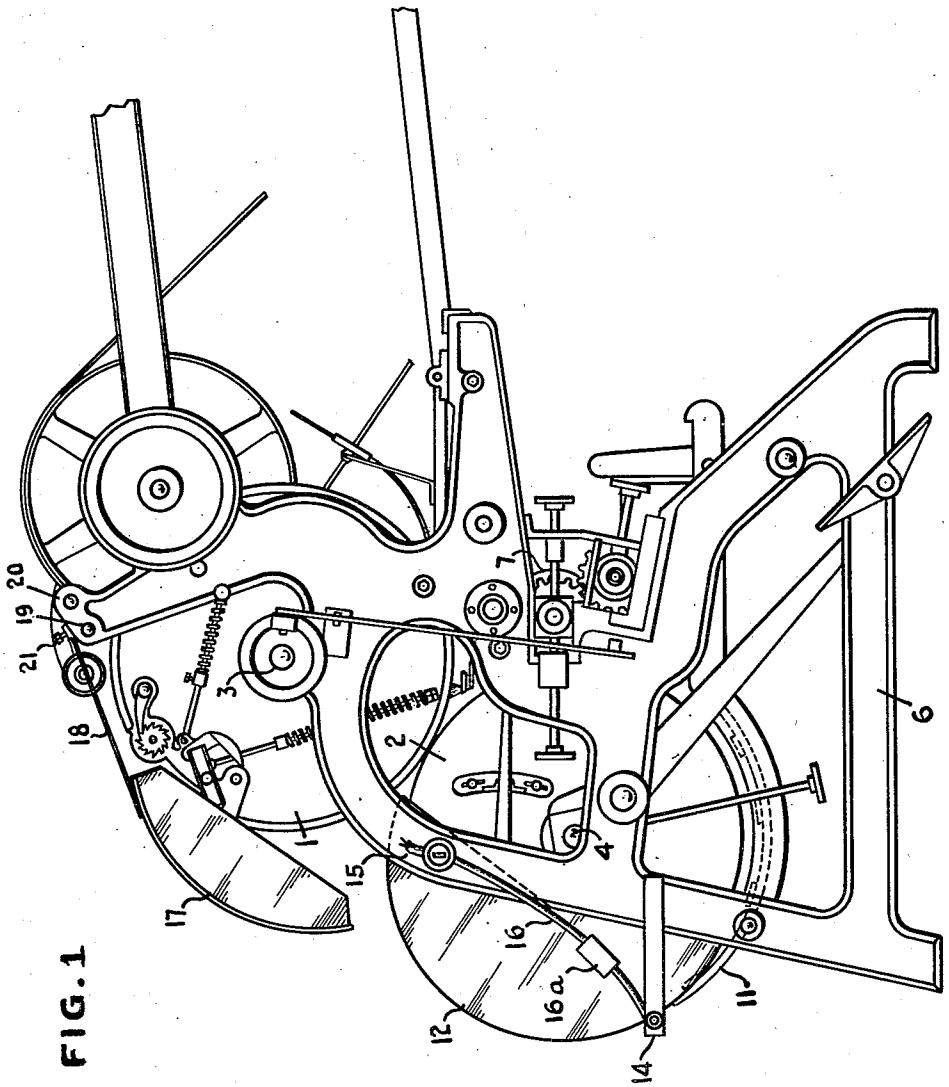


FIG. 1

Donald L. Boyd INVENTOR.

BY Harry Lea Dodson ATTORNEY.

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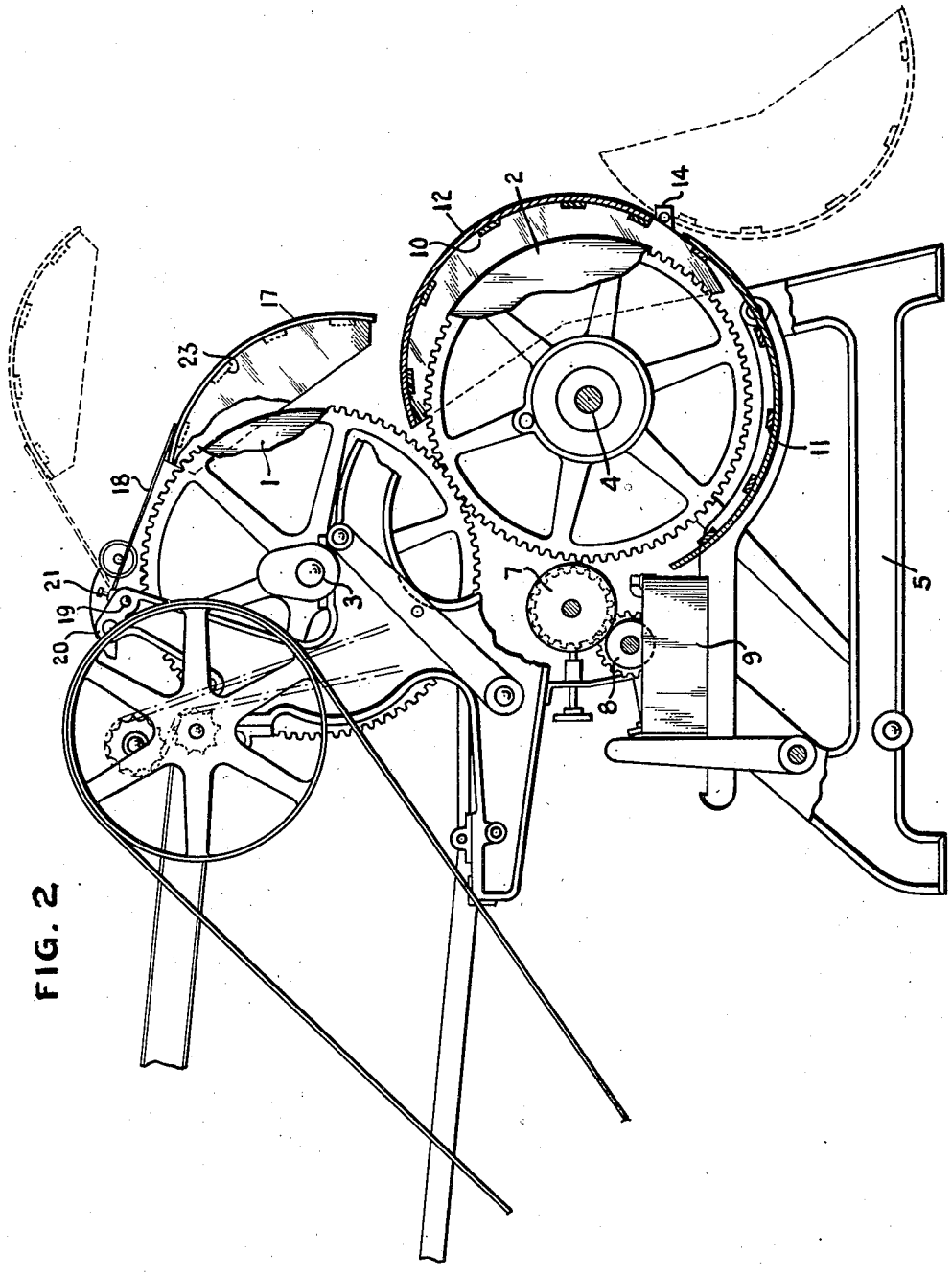


FIG. 2

INVENTOR.
Donald L. Boyd
BY Harry Lea Dodson
ATTORNEY.

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FIG. 3

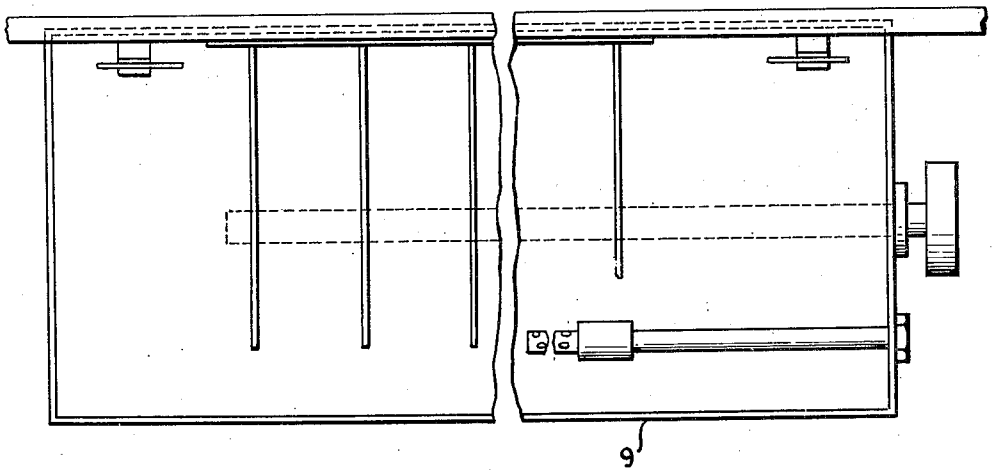


FIG. 4

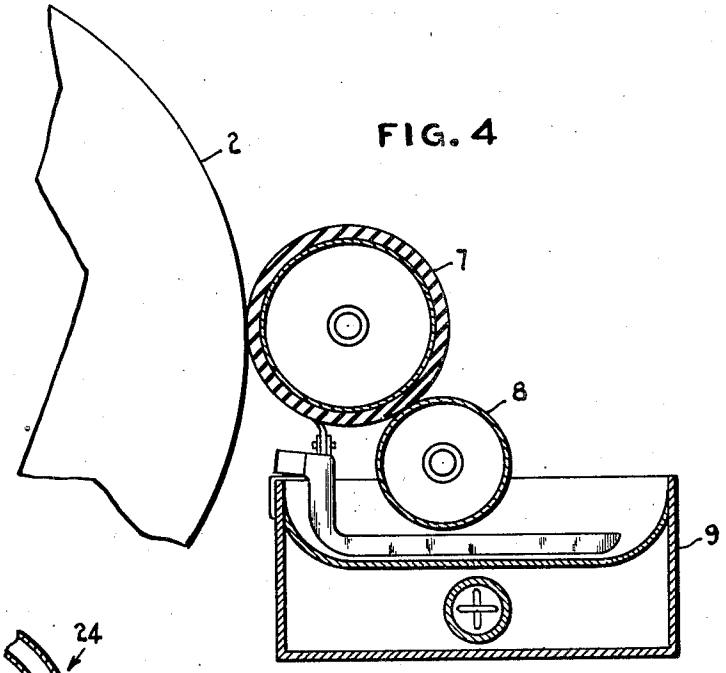
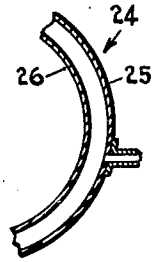


FIG. 5



INVENTOR.
Donald L. Boyd
BY
Harry Lea Dodson
ATTORNEY.

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UNITED STATES PATENT OFFICE

2,181,690

HEATING MEANS FOR PLATE CYLINDERS OF ROTARY PRESSES

Donald L. Boyd, Huntington, W. Va., assignor to Carb-O-Spot Corporation, Athens, Ohio

Application November 30, 1938, Serial No. 243,089

7 Claims. (Cl. 101—216)

My invention relates to that class of press which is employed for printing spots of wax carbon on sheets of paper. A press of this general type is described in my copending application, Serial No. 216,192, filed June 28, 1938.

Practice has shown that the wax carbon employed for this purpose is exceedingly difficult to handle and has to be maintained at a critical temperature or unsatisfactory results will follow. For example, if the temperature is too high, although the wax carbon will be transferred to the paper and apparently be a perfect piece of work, it will not make copy and will be useless for the purpose intended. This cannot be ascertained until one attempts to use the form thus produced.

On the other hand, if the wax carbon falls below the required temperature, it will not satisfactorily transfer to the printing plate and again the press will not operate.

This is avoided in presses of the reciprocating type by having not only the rollers heated, but the ink plate, type bed, and various other parts of the press must be heated.

In the rotary presses, it is customary to heat the rollers as well as the ink fountain in which the wax carbon is melted. This is done in some instances with electricity. In other cases, with various types of heating fluids such as steam, hot oil or water.

In practice, some difficulty has been found in retaining the hot water or hot oil in the joint which connects the rotating parts of the press with the stationary pipe lines through which the hot oil or water travels.

It has been found impractical to heat the plate cylinder of the press, and for that reason it has been found necessary to employ the heating means as above described.

I have discovered that I can entirely avoid the necessity of heating any of the rollers if I enclose the plate cylinder within a heated hood.

The principal object of my invention is to provide a construction which will enable heat to be applied to the plate cylinder so as to maintain a temperature which will receive the ink from the form roller and transfer it to the paper.

In practice I have been able to produce a highly satisfactory and commercial job in this manner.

My means of accomplishing the foregoing object may be more readily understood by having reference to the accompanying drawings which are hereunto annexed and are a part of this specification, but which are furnished solely for illustrative purposes, inasmuch as it will be obvious to persons skilled in the art that my invention can be applied to any type of press employed for this purpose which utilizes a printing plate cylinder. In these drawings:

Fig. 1 is a side elevation of my improvement on a press of the type described in my copending application, Serial No. 216,192;

Fig. 2 is the opposite side with the side frame omitted and some of the parts shown in section for the purpose of clearness;

Fig. 3 is a plan view of the ink fountain showing the heating means, and means for controlling the heating medium;

Fig. 4 is a sectional view of a portion of the ink fountain, ink fountain roller, form roller, and a fragment of the printing cylinder; and

Fig. 5 is an enlarged fragmentary detail view of a modified form of hood which is heated by fluid instead of by electricity.

Similar reference numerals refer to similar parts throughout the entire specification.

As shown in the drawings, the press comprises an impression cylinder 1, a printing plate cylinder 2, which are carried by suitable shafts 3 and 4 journalled in the side frames 5 and 6 of the press. The plate cylinder is contacted by a form roller 7 which in turn contacts the ink fountain roller 8, which is partially immersed in the ink fountain 9.

The ink fountain is preferably jacketed for the reception of a heating fluid. In Fig. 3 I have shown an electrical heating element mounted in the jacket, for the purpose of heating the fluid. I also show a thermostat which may be used to control the heat of the heating medium. Obviously, any form of heating for the ink fountain, which will serve to melt the wax carbon may be employed. Neither of the rollers 7 nor 8 is heated.

Radiant heat is supplied to the plate cylinder 2 by means of strip heaters 10 mounted on the inside of a hood. This hood may be formed in two parts 11 and 12 and the strip heaters 10 disposed at suitable intervals around the hood on the inside thereof.

The hood, when in position, as shown in full lines in Fig. 1, encloses the plate cylinder 2 as completely as is possible, and yet permits its operation.

The section 12 of the hood is carried by a support 14 and is pivotally secured thereto. This support 14 is attached to the frame in any suitable or convenient manner. This permits section

12 of the hood to be swung on its pivot when it is desired to gain access to the printing cylinder 2.

Suitable electrical connections 15 and 16 connect the strip heaters 10 to a source of electrical current supply (not shown). A standard thermostat 16a is mounted in the line to control and maintain the temperature of the strip heaters at the desired degree.

I have found in some cases that it is desirable to provide a supplementary hood 17 which is carried by an arm 18 secured to a shaft 19 mounted in a support 20 which is formed on the side frame. A set screw 21 provides means to hold the hood 17 in an elevated position when it is desired to get at the impression cylinder 1. Normally it occupies the position shown in full lines in Fig. 1.

This hood 17 may also be provided with a plurality of electrical strip heaters 23 and thus serve the double purpose of retaining the heat which is furnished by the heaters on the hood which encloses the printing cylinders and also by radiant heat sent out by the different parts of the press below it.

In some cases it may be found desirable to use another form of heating medium for the hoods. Another form is shown in Fig. 5 in which the hood 24 is formed with a double wall 25 and 26. The space intermediate the two walls being filled with steam or equivalent fluid heating means such as hot water or hot oil.

It will thus be seen that I have been able in this manner to entirely avoid the necessity of a connection between a rotating and non-rotating part thereof which must be used for the heating fluid. In practice this has been accompanied by highly satisfactory results. Instead of the floor adjacent the press being always surrounded with a mass of liquid caused by the condensation of the steam or leakage of the hot oil or hot water, it can be kept perfectly dry and clean, thus enabling the production of a higher grade of work.

It will also be apparent to persons skilled in the art that many changes can be made in the construction adopted to utilize my invention. For example, it may in some cases be found possible to utilize a sun ray lamp or strip heaters might be mounted on a skeleton frame instead of a hood. For these reasons, therefore, I do not wish to be understood as limiting myself to the precise form of press or enclosing hood illustrated; as any heating medium which controls the temperature of the plate or printing cylinder, is intended to be within the scope of the hereinafter contained claims.

Having described my invention, what I regard as new and desire to secure by Letters Patent is:

1. In a press of the character described, an ink fountain, an ink fountain roller partially immersed therein, a form roller contacting said fountain roller and a plate cylinder contacting said form roller; heating means for said fountain, rollers and cylinder consisting solely of heating means for said fountain to maintain fluidity of its contents and external radiant heating means for said cylinder.

2. In a press of the character described, an ink fountain, an ink fountain roller partially immersed therein, a form roller contacting said fountain roller and a plate cylinder contacting said form roller; heating means for said fountain, rollers and cylinder consisting solely of heating means for said fountain to maintain fluidity of its contents and external radiant heating means partially surrounding said cylinder.

3. In a press of the character described, an ink fountain, an ink fountain roller partially immersed therein, a form roller contacting said fountain roller and a plate cylinder contacting said form roller; heating means for said fountain, rollers and cylinder consisting solely of heating means for said fountain to maintain fluidity of its contents and external radiant heating means arranged in a plurality of hoods partially enclosing said cylinder.

4. In a press of the character described, an ink fountain, an ink fountain roller partially immersed therein, a form roller contacting said fountain roller and a plate cylinder contacting said form roller; heating means for said fountain, rollers and cylinder consisting solely of heating means for said fountain to maintain fluidity of its contents and external radiant electrical heating means for said cylinder.

5. In a press of the character described, an ink fountain, an ink fountain roller partially immersed therein, a form roller contacting said fountain roller, a plate cylinder contacting said form roller, and an impression cylinder; heating means for said fountain, rollers and cylinders consisting solely of heating means for said fountain to maintain fluidity of its contents and external radiant heating means for said cylinders.

6. In a press of the character described, an ink fountain, an ink fountain roller partially immersed therein, a form roller contacting said fountain roller and a plate cylinder contacting said form roller; heating means for said fountain, rollers and cylinder consisting solely of heating means for said fountain to maintain fluidity of its contents and external radiant heating means for said cylinder, and means to control the temperature of said radiant heating means.

7. In a press of the character described, an inking mechanism comprising an ink fountain and a printing mechanism comprising a plate cylinder in cooperation with said inking mechanism; heating means for said mechanisms consisting solely of a fountain heater and radiant heating means externally adjacent said printing mechanism.

DONALD L. BOYD.