March 30, 1926. 1,579,084

L. CORNAZZANI

SYSTEM FOR ELECTRICALLY HEATING THE INK ROLLERS OF PRINTING PRESSES

Filed August 4, 1925 2 Sheets-Sheet 1

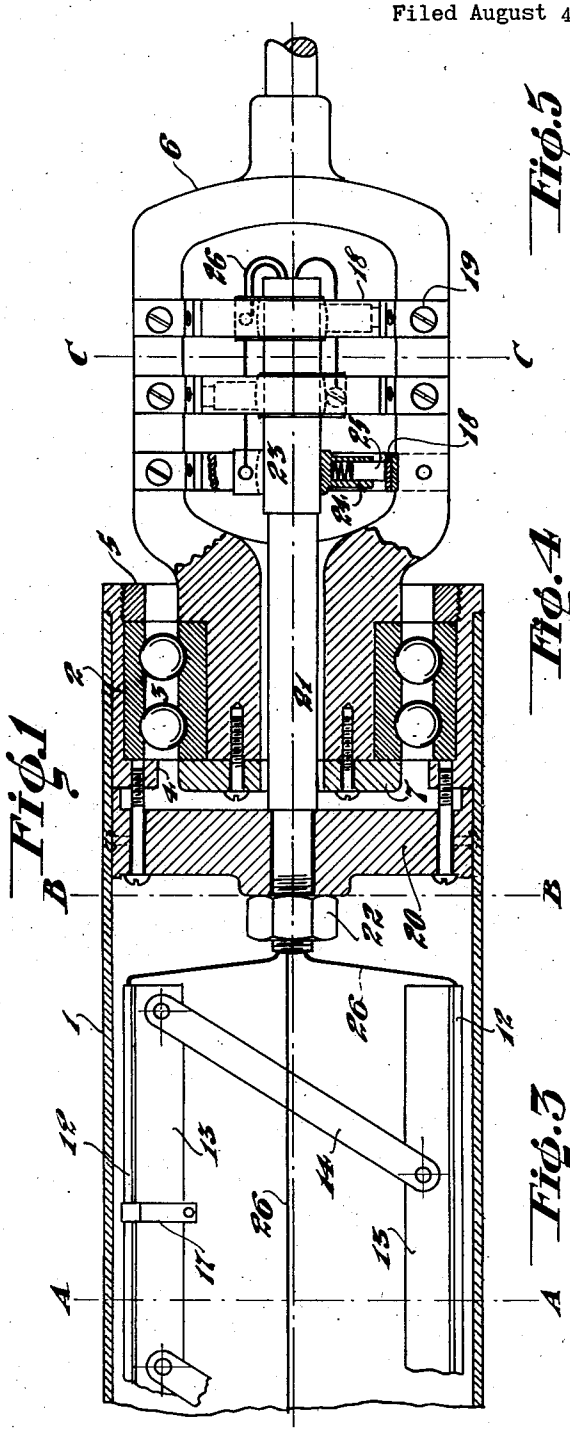


Fig. 1

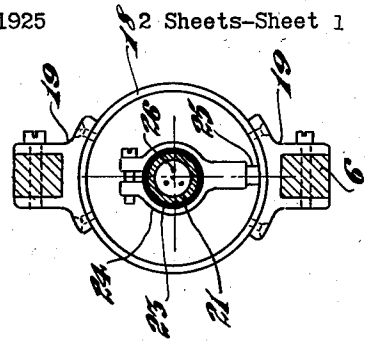


Fig. 5

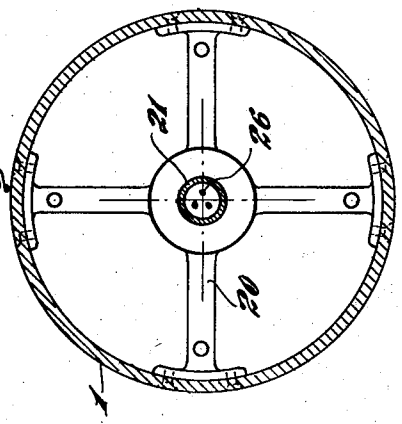


Fig. 4

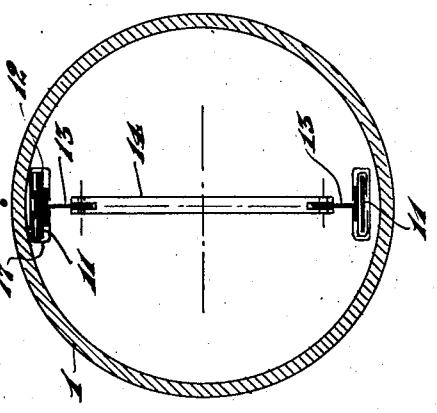


Fig. 3

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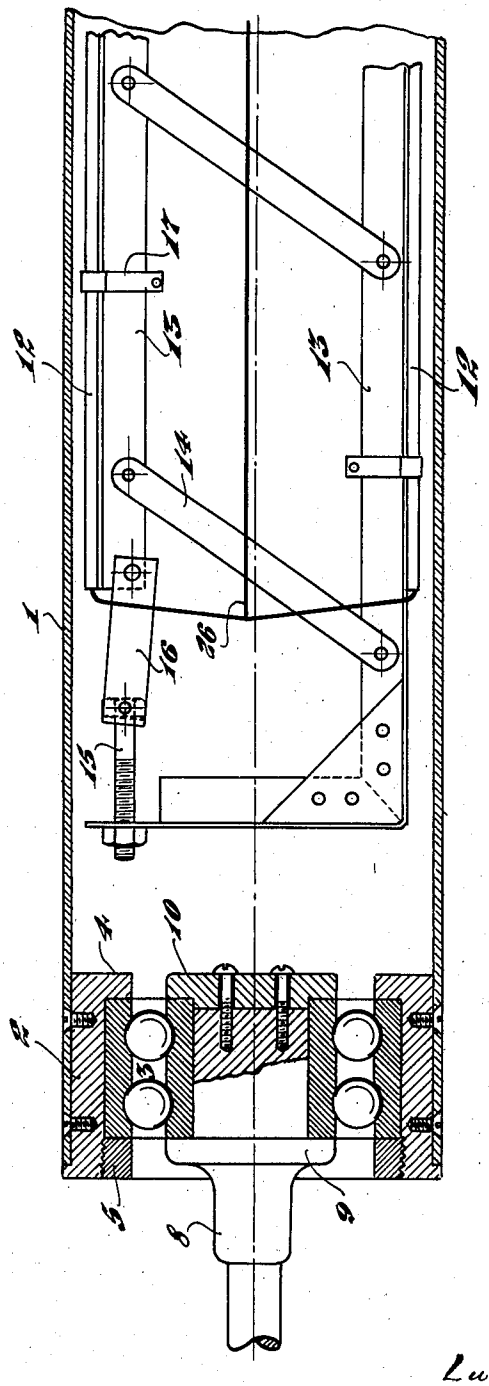


Fig. 2.

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Patented Mar. 30, 1926. 1,579,084

UNITED STATES PATENT OFFICE.

LUIS CORNAZZANI, OF REMEDIOS ESCALADA, ARGENTINA.

SYSTEM FOR ELECTRICALLY HEATING THE INK ROLLERS OF PRINTING PRESSES.

Application filed August 4, 1925. Serial No. 48,106.

To all whom it may concern:

Be it known that I, LUIS CORNAZZANI, subject of the King of Italy, residing at 6124 Centenario, Remedios Escalada, F. C. S., Argentina, have invented certain new and useful Improvements in Systems for Electrically Heating the Ink Rollers of Printing Presses, of which the following is a specification.

This invention relates to a system for electrically heating the ink rollers of printing presses, being especially intended to enable the ink to be kept at a proper temperature in those machines which are not provided with heating apparatus and which are situated in cold localities.

Another object of this invention is to provide an apparatus forming an independent entirety, so that nothing more is necessary than the adding of two suitable supports to the printing press.

A further object of this invention is to provide an economical system which can be easily graduated as regards the heat to be developed.

A still further object of this invention is to provide an apparatus which can be adapted to any system of printing presses.

It is well known that great difficulties arise from the low winter temperatures which cause the ink to thicken, thus preventing a perfect impress. When the machines are not provided with heating apparatus it is necessary to keep the premises at an adequate temperature day and night, otherwise after starting the press a long time is necessary until both machine and premises are warming up.

With the system which is the object of this invention, the ink rollers are brought to the temperature desired in a few minutes, and this temperature can be maintained and regulated with great accuracy without the need of heating the premises or the whole of the press.

This system consists in its essential parts of a metal cylinder provided with bearings at its ends, which revolve in fixed pieces which can easily be set in adequate supports attached to the printing press. This cylinder, resting against one of the ink rollers of the press, revolves with the roller and supplies it with the heat which is developed by some electric coils placed in the interior of the cylinder, these coils being connected with the main current by means of rotary collectors.

The accompanying drawings illustrate one convenient form of construction, which is shown by way of example. In these drawings:

Fig. 1 is a longitudinal section of one end of the cylinder which carries the collectors of the current.

Fig. 2 is a longitudinal section of the other end of the cylinder.

Fig. 3 is a cross section on line A—A in Fig. 1.

Fig. 4 is a cross section on line B—B in Fig. 1.

Fig. 5 is a cross section on line C—C in Fig. 1.

In all these drawings the same reference numbers indicate the same or corresponding parts.

Referring to the drawings, the heating cylinder which forms the object of this invention comprises a cylindrical metal tube 1, having fitted inside its two extremities the collars 2, which are secured by means of screws or in some other suitable manner. Within these collars are lodged the ball bearings 3, secured lengthways by the shoulders 4 of the bottom of the collars 2, and by the rings 5 screwed into the ends of said collars.

On the side of the accumulators or commutator the bearing is firmly mounted onto the cylindrical end of a fork-shaped piece 6, and is kept in place by the washer 7, which is fastened by screws to the end of said fork. On the side opposite to the accumulators the bearing is supported by a journal 8, provided with a shoulder 9 and a washer 10, thus fastening the bearing longitudinally. The cylindrical extremities of the journal and the fork, fitted concentrically to the imaginary axis of the cylinder, act as support to the whole cylinder. Having been suitably attached to the printing press, they

allow the movable part of the cylinder to revolve freely by means of the ball bearings 3.

The heating parts comprise two electrical coils 11, arranged flatwise in a sheet-metal covering 12, with some insulating material, such as mica, interposed (not shown). These two parts are pressed against the inner face of the cylinder by means of a truss in the form of a parallel joint formed of two T irons 13, connected together by the transverse pieces 14, the two extremities of which are jointed to the stems of these two irons. The extremity of one of these irons is bent at a right angle, having a screw 15 at this point which can be passed through a bore therein. The head of this screw is connected to the extremity of the other iron 13, by means of the small connecting rod 16 which is jointed at either end onto the two pieces. The heating parts are carried on the T's of the irons 13 and are attached by means of the clamps 17.

It is thus seen that by screwing up the nut of the screw 15, the two irons 13 are further separated and therefore the heating pieces can be firmly pressed against the inner face of the cylinder.

The current collectors allow the current to be carried to the coils by a rotatory movement. This part comprises three fixed collars 18, supported concentrically on the imaginary axis of the cylinder between the two prongs of the fork 6, by means of the pieces 19 which are suitably screwed onto the said collars and fork.

Naturally a thickness of insulating material, which is not shown in the drawings, must be interposed between the pieces 19 and the collars or the fork, and equally, contact with the screws must be prevented. But these are details of little or no importance, as they can be resolved by any person competent in this work. The cylinder itself has a cross-bar 20, fastened in its interior by any suitable means, immediately behind the collar 2. Through a bore in the centre of this crosspiece a tube 21 passes, which is fastened to the crosspiece by the nut 22 and which runs through a larger opening in the extremity of the fork, thus reaching in front of the collars 18. The corresponding extremity of this tube is covered with a thickness of insulating material 23, onto which are fastened the three brush-holders 24, separated from one another and so arranged that each is in the plane of one of the collars 18. The construction of these brushes is of no importance as regards the invention. In the drawings they are shown formed of a carbon prism 25 which can be set radially in the tube of the brush-holder, a spring being inserted at the bottom of this latter by which the carbon is pressed against the inner face of the collar 18. Three wires 26 run through the interior of the tube, connecting the three brushes to the end of the coils, which are arranged in series, and to the point of union between the two coils. The current is conveyed to the apparatus by three wires which are not shown in the drawing, and which must be connected to the three collars 18.

The number of collars, brushes and wires, which in this present example is 3, corresponds to a certain combination of coils by which variations in the heat are obtained. Naturally there could be only two accumulators, and this would mean that there would be only one coil in series; there could also be more than three accumulators, corresponding to several coils and methods of coupling them up. The arrangement of this example makes it possible to place the two coils in series under current or in parallel thereto, or also to place only one of the coils under current. In this way three heat values can be directly obtained.

The commutator necessary to make these combinations does not need description, as it is easily fixed up by any competent person, and moreover can be bought in the market. In addition to the above three combinations it is possible to vary the heat developed from zero up to a given maximum by means of an exterior rheostat inserted in the circuit of the coils.

It is evident that as regards its construction and proportions, the apparatus may comprise several variations of the present example. The bearings and their attachment to the cylinder and to the fixed pieces, the collectors of the current and also the truss supporting the electric coils, can all be constructed differently from those illustrated. For example, the coils could be rolled around an interior cylinder, concentric to the exterior cylinder.

The heating cylinder is adaptable to every kind of printing press, whether of flat, rotary or Minerva type. Said cylinder must be placed so that it is in actual contact with one of the metal ink rollers. For this purpose suitable supports, one on each side of the press, can be arranged to take the extremities of the two fixed parts of the cylinder, that is the fork 6 and the sleeve 8. This arrangement is so simple that it requires no illustration.

By the mere fact of the heating cylinder being in contact wth one of the ink rollers of the press, it will revolve with the rotation of this latter. Then the heating cylinder, the surface of which is heated by the electric coils, gives off its heat to the ink roller, which in its turn, passes on the heat to the other ink rollers of the printing press, whether they be of metal or of paste. Finally, after a space of a few minutes' running, the ink reaches the type or electrotype in

the state of fluidity necessary to make a good impress.

By means of the different coupling combinations of the coils, a great heat can be given off at the start, when the press is cold, and this heat can be diminished once the press has acquired the necessary temperature. With an exterior rheostat it is possible to obtain the exact degree of fluidity required for the ink.

I claim:

1. An electrically-heated ink roller for printing presses comprising a metal tube having bearings at each end; a plurality of coils of wire secured in said tube; a fork-shaped member at one end of said tube and comprising the bearing for that end of said tube and having a commutator; and a tube, having a plurality of contacts, secured to said metal tube and adapted to support the connecting wires from the coils to the contacts, said commutator cooperating with said electric contacts in order to convey the electric current to the coils.

2. An electrically-heated ink roller for printing presses comprising a metal tube having bearings at each end; a plurality of truss members in said tube; a coil of wire for each truss member, said coils being adapted to heat the tube when an electric current is traversing the coils; a fork-shaped member at one end of said tube comprising the bearing for that end of said tube and having a commutator; and a tube secured to said metal tube and having a plurality of contacts adapted to cooperate with said commutator, said tube being adapted to support the connecting wires in order to convey the electric current from the contacts to the coils.

3. An electrically-heated ink roller for printing presses comprising a metal tube having bearings at each end; a plurality of truss members in said tube; a coil of wire for each truss member, said coils being adapted to heat the tube when an electric current is traversing the coils; a fork-shaped member at one end of said tube comprising the bearing for that end of said tube and having a commutator; a tube secured to said metal tube and having a plurality of contacts adapted to cooperate with said commutator, said tube being adapted to support the connecting wires in order to convey the electric current from the contacts to the coils; and means for forcing said truss members against the inside walls of the tube in order to facilitate heating.

4. An electrically-heated ink roller for printing presses comprising a metal tube rotatably mounted at each end; a plurality of coils of wire secured in said tube; a cross bar secured at one end in said tube; a tube mounted in said cross bar and having a plurality of contacts mounted thereon, said coils and contacts being connected by wires which are carried in said tube; and a member having a commutator which is adapted to contact with said contacts in order to conduct an electric current to said coils to thus heat the metal tube.

5. An electrically-heated ink roller for printing presses comprising a metal tube mounted to rotate freely at each end; a plurality of coils of wire comprising heat units when traversed by an electric current; means for adjustably supporting said coils in said tube; and means for leading an electric current to said coils.

6. An electrically-heated ink roller for printing presses comprising a metal tube mounted to rotate at each end; a plurality of coils of wire comprising heat units when traversed by an electric current; means for adjustably supporting said coils in said tube; and a commutator associated with the tube for leading an electric current to said coils.

7. An electrically-heated ink roller for printing presses comprising a metal tube mounted to rotate freely at each end; a plurality of coils of wire comprising heat units when traversed by an electric current; means for adjustably supporting said coils in said tube; a commutator associated with said tube and adapted to rotate therewith; and a plurality of stationary contacts adapted to contact with said commutator in order to convey an electric current to said coils.

8. An electrically-heated ink roller for printing presses comprising a metal tube mounted to rotate freely at each end; a cross bar secured at one end in said tube; a tube secured to said cross bar; a plurality of contacts on said last-named tube; a fork-shaped member associated with said last-named tube and having a commutator adapted to contact with said contacts; and a plurality of coils in said metal tube electrically connected to said contacts by means of wires in said last-named tube, said coils being adapted to heat said metal tube.

9. An electrically-heated ink roller for printing presses comprising a metal tube mounted to rotate freely at each end; a cross bar secured at one end in said tube; a tube secured to said cross bar; a plurality of contacts on said last named tube; a fork-shaped member associated with said last-named tube and having a commutator adapted to contact with said contacts; a truss-work provided in said metal tube; and a plurality of coils mounted on said truss-work, said coils being electrically connected to said contacts by means of wires and being adapted to heat said metal tube.

10. An electrically-heated ink roller for printing presses comprising a metal tube mounted to rotate freely at each end; a cross bar secured at one end in said tube; a tube secured to said cross bar; a plurality

of contacts on said last-named tube; a fork-shaped member associated with said last-named tube and having a commutator adapted to contact with said contacts; a truss-work provided in said metal tube; a plurality of coils mounted on said truss-work, said coils being electrically connected to said contacts by means of wires and being adapted to heat said metal tube; and means for adjusting said truss-work in order to adjust the pressure between the coils and the inside of the metal tube.

In testimony whereof I affix my signature.

LUIS CORNAZZANI.