

Aug. 29, 1933.

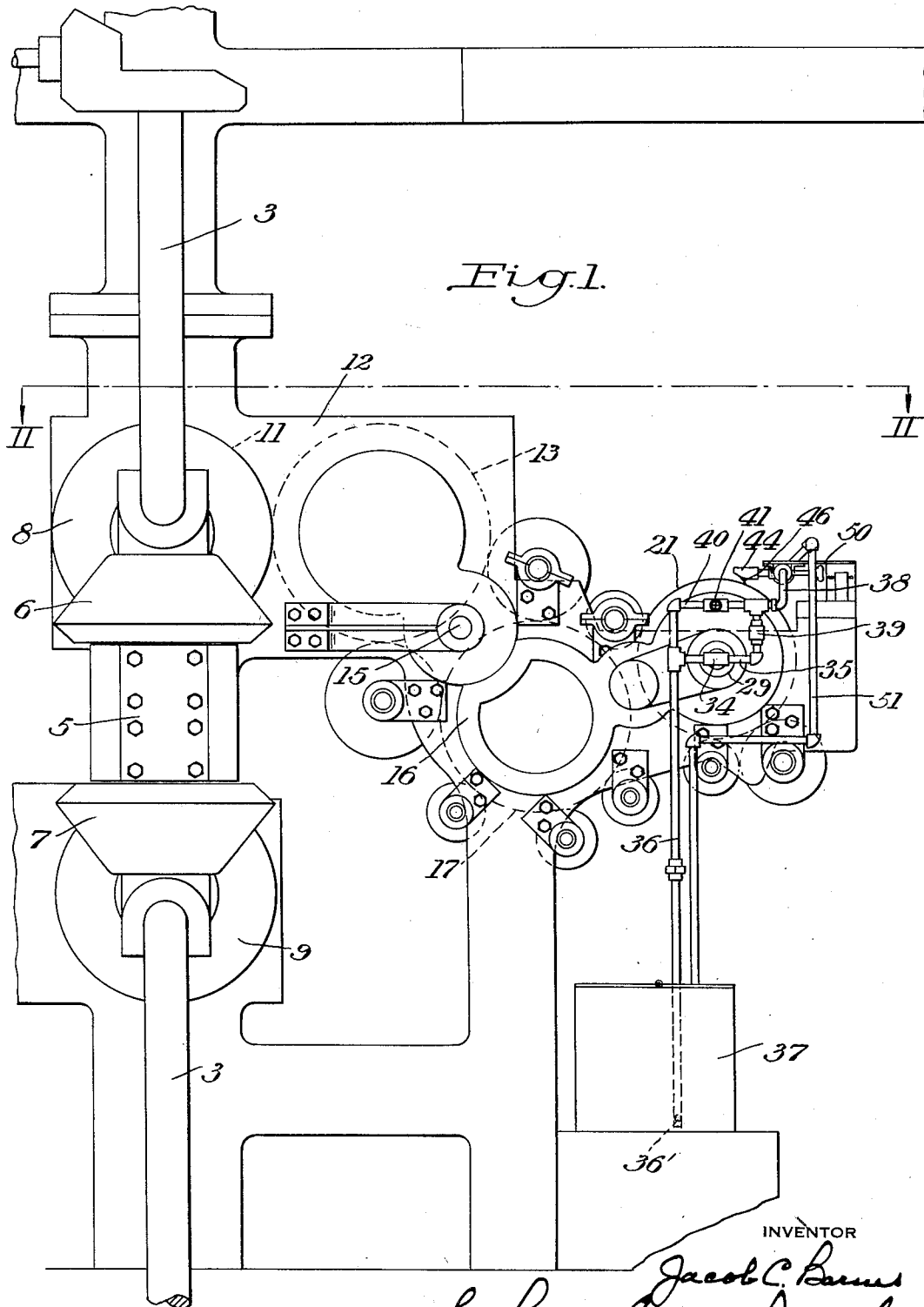
J. C. BARNES

1,924,731

SUPPLY MECHANISM

Filed July 27, 1932

3 Sheets-Sheet 1



INVENTOR

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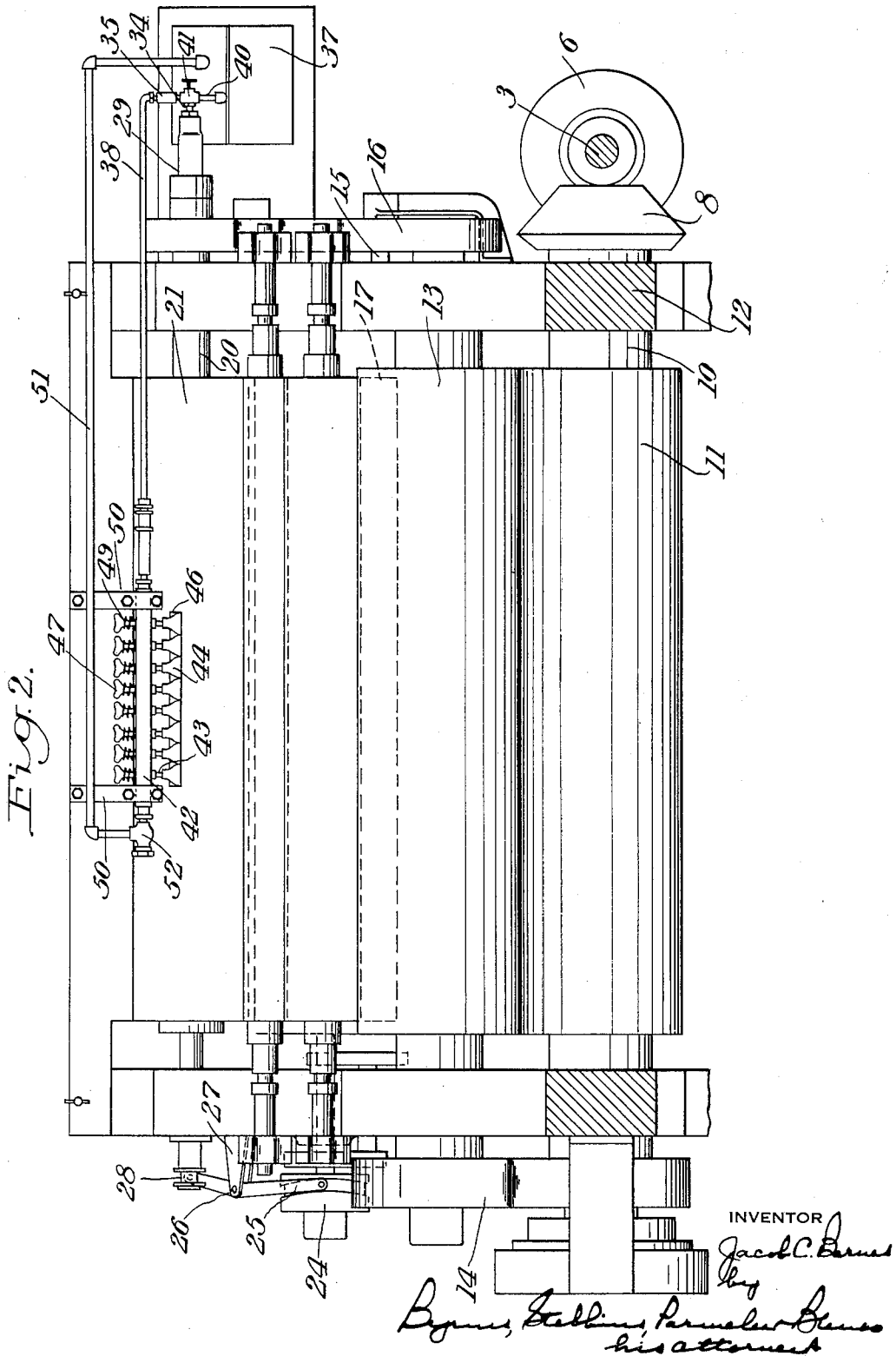
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SUPPLY MECHANISM

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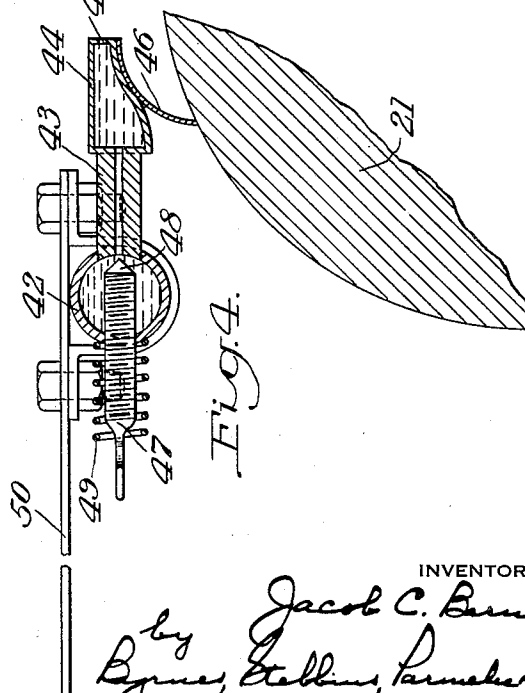
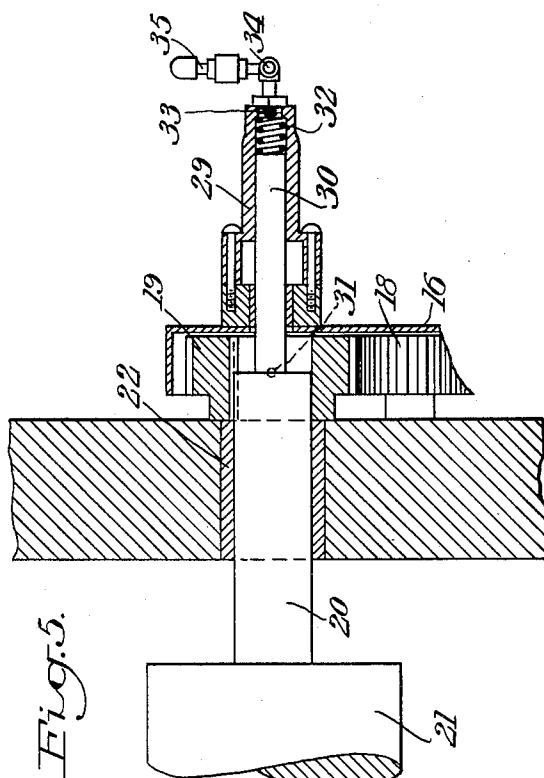
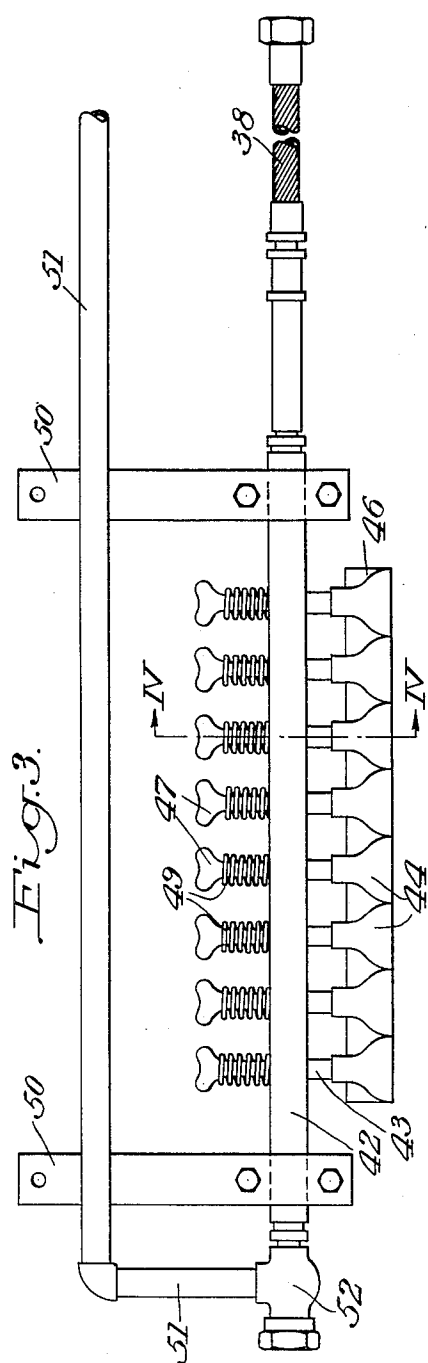
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SUPPLY MECHANISM

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3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE

1,924,731

SUPPLY MECHANISM

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Application July 27, 1932. Serial No. 624,914

8 Claims. (Cl. 101—366)

This invention relates broadly to supply mechanism, and more particularly to supply mechanism directly actuated by a rotary and axially reciprocable member. The invention further relates to supply mechanism particularly adapted for use in connection with a printing press for supplying ink thereto.

In certain of its more specific aspects the invention relates to ink supply mechanism directly operable by an ink distributing roll which is both rotatable and axially reciprocable and which mechanism is effective for delivering ink to the surface of the ink distributing roll.

For purposes of illustration the invention will be shown and described as embodied in ink supply mechanism for a printing press, although in its broader aspects the invention is not limited to such an embodiment.

Certain standard types of printing presses embody an ink distributing roll which, in addition to being rotatable, is also axially reciprocable to assist in more uniformly and evenly distributing the ink. Ink is supplied to the surface of such ink distributing roll, and from such roll is transferred through other rolls to the form cylinder where it is applied to the type form. Various mechanisms for supplying ink to the surface of the ink distributing roll have heretofore been provided, such mechanisms, generally speaking, being of relatively complicated and expensive construction and involving numerous operating parts readily subject to becoming out of order or adjustment. Some of such mechanisms have been actuated indirectly from the ink distributing roll.

I utilize the axially reciprocable movement of the ink distributing roll for directly pumping the ink through a conduit from which it is supplied to the surface of the ink distributing roll. I prefer to utilize a piston in direct connection with the ink distributing roll and which is actuated by the axially reciprocable movement of such roll, such piston being operable within a cylinder having ink connections therewith to pump the ink from an ink supply through the conduit which delivers ink to the surface of the ink distributing roll.

Other details, objects and advantages of the invention will become apparent as the following description of a present preferred embodiment thereof proceeds.

In the accompanying drawings I have shown a present preferred embodiment of the invention, in which

Figure 1 is a diagrammatic elevational view of

a portion of a printing press showing mechanism for supplying ink thereto;

Figure 2 is a horizontal cross-sectional view taken at the level of the line II—II of Figure 1;

Figure 3 is a detail plan view to enlarged scale of a portion of the mechanism;

Figure 4 is a vertical transverse cross-sectional view taken along the line IV—IV of Figure 3 but to enlarged scale; and

Figure 5 is an enlarged longitudinal vertical cross-sectional view through a portion of the supply mechanism.

The printing press, shown more or less diagrammatically in the drawings, may be of standard construction, and as no novelty is claimed herein for the press itself, it will not be described in detail. Certain portions of the press cooperating with the ink supply mechanism will be described with sufficient particularity to enable a clear understanding of the cooperative relationship therebetween.

Referring more particularly to the drawings, there is provided a suitable source of power (not shown) such, for example, as an electric motor, which drives, through suitable gearing, a shaft 3. The shaft 3 is mounted within a bearing 5 and carries bevel gears within casings 6 and 7 which mesh with bevel gears within casings 8 and 9, respectively. The bevel gear within the casing 8 is carried by the neck 10 of an impression roll 11 journaled within a frame and bearing structure 12.

There is also provided a form cylinder 13, also journaled within the structure 12, and which is driven from the impression roll 11 by intermeshing spur gears contained within a casing 14. At its opposite end the form cylinder carries a gear which intermeshes with an idler carried by a stub shaft 15. The gears are contained within a casing 16. The idler meshes with and drives a gear connected with an ink roll 17, which, through an idler 18 (see Figure 5), drives a gear 19.

The gear 19 is splined to the neck 20 of an ink distributing roll 21. Such roll, as will presently be described, partakes not only of rotary motion, but also of axially reciprocable motion, and although the gear 19 partakes of rotary motion with the ink distributing roll 21, such roll in its axial movement moves relatively to the gear. The gear is held against axial movement in one direction by the bearing 22 and in the opposite direction by the casing 16.

The shaft of the ink roll 17 carries a cam 24 with which cooperates a follower 25 pivoted at 26 to a bracket 27, the opposite extremity of which

follower engages within a groove 28 on the shaft of the ink distributing roll 21. Therefore, upon operation of the press the ink distributing roll 21 is rotated by the gear 19 and is axially reciprocated by the cam follower 25 actuated by the rotary cam 24.

Connected with the casing 23 is a cylinder 29 within which operates a piston 30. The piston abuts by means of a ball bearing 31 against the extremity of the neck 20 of the ink distributing roll 21 and is preferably coaxial therewith. The piston 30 is urged toward the left, viewing Figure 5, by a coil spring 32 and thus is at all times maintained in contact with the ball bearing 31 and hence in abutting relationship with the roll neck 20 during axial reciprocation thereof. The outer end of the cylinder 29 is open, as at 33, and is connected with a T 34. A piping system 35, as shown in Figure 1, is connected with the T 34 and includes a pipe 36 leading to an ink reservoir 37 and having a ball check 38' at its lower extremity and a pipe 38 leading to the mechanism which applies the ink to the surface of the roll 21, as will presently be described. A ball check 39 and the ball check 38' prevent back flow of ink in a downward direction, and a by-pass 40 having therein a valve 41 may be provided to regulate the quantity of ink supplied.

Upon movement of the roll 21 toward the left, viewing Figure 5, withdrawal of the piston 30 draws ink through the pipe 36 and T 34 into the cylinder 29. The ball checks 36' and 39 prevent ink from returning therethrough to the reservoir 37 but permit upward flow of ink. Upon movement of the roll 21 toward the right the piston 30 is likewise moved toward the right, compressing the spring 32 and expelling the ink previously drawn into the cylinder, such ink moving through the right-hand extremity of the T 34, viewing Figure 1, and up through the ball check 39 and thence to the pipe 38. The adjustment of the valve 41 in the by-pass 40 controls the amount of ink supplied at each reciprocation of the roll 21.

The pipe 38 leads to a conduit 42 provided with a plurality of outlets 43 spaced at equal intervals along the conduit 42, as shown in Figure 3. Each of the outlets 43 is connected with and carries a reservoir 44 having in its outer extremity an opening 45. Ink flows through the conduit 42, the outlets 43, the reservoirs 44 and openings 45 and down the surface of a wiper 46 and thence onto the surface of the ink distributing roll 21. The axial reciprocatory movement of the roll 21 assists in distributing the ink evenly over the surface of the roll.

Opposite each outlet 43 a valve 47 is threaded through the rear wall of the conduit 42, each valve 47 having a conical nose 48 adapted to co-operate with the inner extremity of the duct which extends through the outlet 43. Each valve 47 may be adjusted by turning the same so as to vary the opening to the outlet and thus control the amount of ink flowing therethrough. A coil spring 49 is used to bias each of the valves 47 and hold the same in adjusted position during operation of the press. The mechanism just described is held in place by brackets 50 connected to the press frame. A return pipe 51 provided with a valve 52 returns excess ink to the reservoir 37.

The ink is transferred from the ink distributing roll through other rolls to the form cylinder in well known manner, and inasmuch as this forms no part of the present invention, it need not here

be described. Various of the rolls of a standard type printing press used for transferring the ink are shown more or less diagrammatically in the drawings.

I have thus provided an extremely satisfactory and efficient ink supply mechanism operable directly by the axial reciprocatory movement of the ink distributing roll and effective for supplying desired quantities of ink to the surface of the ink distributing roll. The mechanism is simple and foolproof and its cost is a small fraction of the cost of the complicated mechanism heretofore used for supplying ink to the surface of the ink distributing roll.

While I have shown and described a present preferred embodiment of the invention, it is to be distinctly understood that the same is not limited thereto, but may be otherwise variously embodied within the scope of the following claims.

I claim:

1. Supply mechanism, comprising a rotary and rectilinearly reciprocable member, a cylinder, a piston operable in said cylinder and separate from said member but operable upon reciprocation thereof, and fluid connections with said cylinder.

2. Supply mechanism, comprising a rotary and rectilinearly reciprocable member, a cylinder, a piston abutting an end of said member and operable in said cylinder, said fluid connections with said cylinder.

3. Supply mechanism, comprising a rotary and rectilinearly reciprocable member, a cylinder, a piston separate from said member and operable in said cylinder upon reciprocation of said member, spring means for biasing the piston, and fluid connections with said cylinder.

4. Supply mechanism, comprising a rotary and rectilinearly reciprocable member, a cylinder, a piston separate from said member and operable in said cylinder upon reciprocation of said member, a bearing between said piston and member, and fluid connections with said cylinder.

5. Supply mechanism, comprising a rotary and axially reciprocable roll, a cylinder adjacent an end of such roll, and a fluid conduit associated with said cylinder and roll, and axially reciprocable movement of the roll being directly effective in combination with said cylinder and conduit for supplying a fluid to the surface of the roll.

6. Ink supply mechanism, comprising an ink distributing roll which is both rotatable and axially reciprocable, an ink conduit for delivering ink to the surface of such roll, and means directly operable by the axially reciprocable movement of the roll for forcing ink through said conduit.

7. Ink supply mechanism, comprising an ink distributing roll which is both rotatable and axially reciprocable, an ink pump directly associated with an end of the ink distributing roll and having a reciprocable piston operable upon axial reciprocation of the roll, and a conduit for delivering ink from the pump to the surface of the roll.

8. A machine utilizing a fluid, comprising a rotary and rectilinearly reciprocable element effective in operation of the machine, means associated with said element so constructed and arranged that the reciprocable movement of said element is rendered directly effective for pumping a fluid, and connections supplying said pumped fluid to said machine.

JACOB C. BARNES.

CERTIFICATE OF CORRECTION.

Patent No. 1,924,731.

August 29, 1933.

JACOB C. BARNES.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 2, line 105, claim 2, for "said" second occurrence, read "and"; and line 122, claim 5, for "and" second occurrence, read "the"; and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 24th day of October, A. D. 1933.

(Seal)

F. M. Hopkins
Acting Commissioner of Patents.