

Dec. 1, 1959

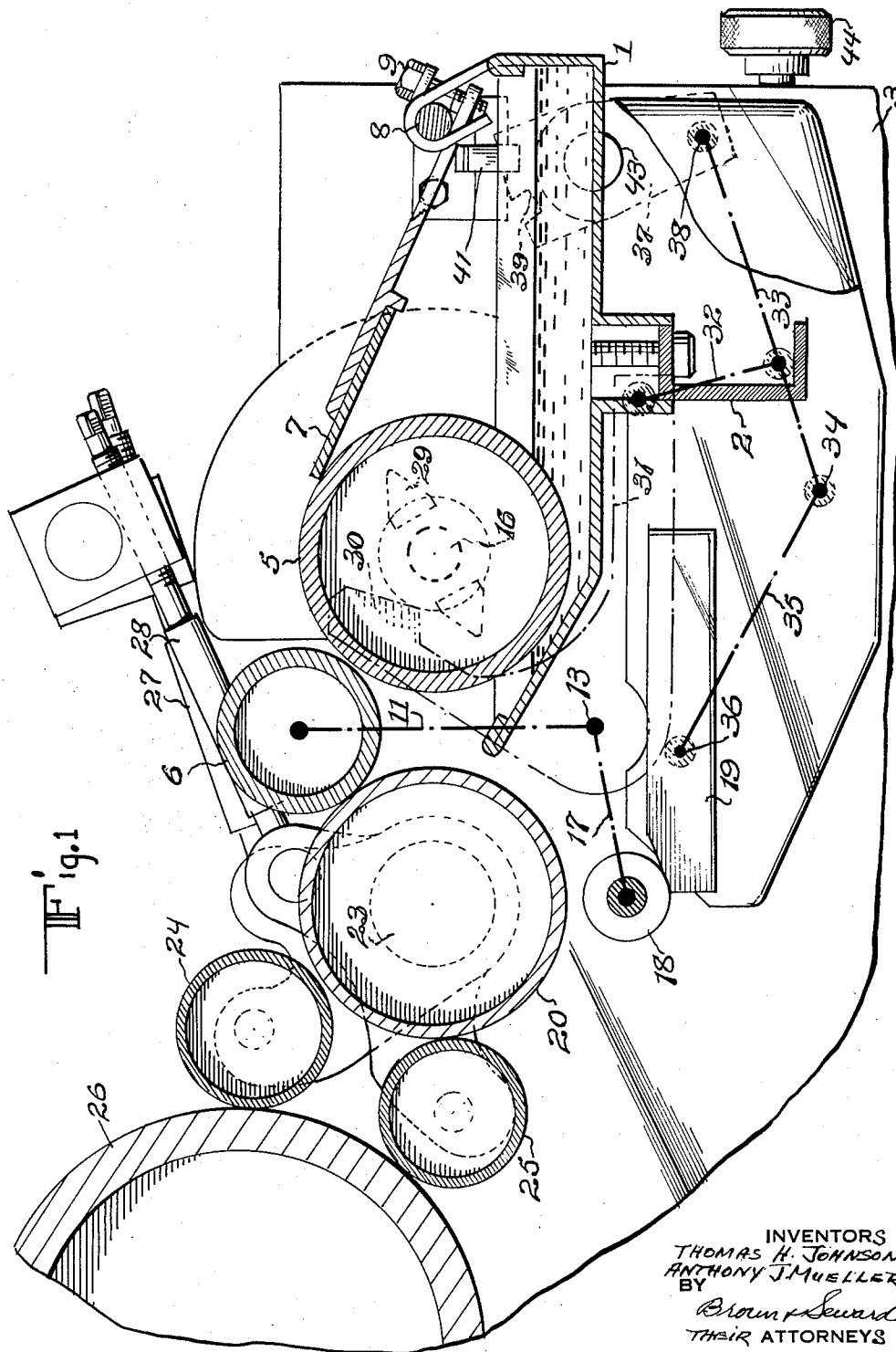
T. H. JOHNSON ET AL

2,915,007

DAMPENING DEVICE FOR LITHOGRAPHIC PRESSES

Filed Oct. 17, 1957

6 Sheets-Sheet 1



INVENTORS
THOMAS H. JOHNSON
ANTHONY J. MUELLER
BY
Brown & Seward
THEIR ATTORNEYS

Dec. 1, 1959

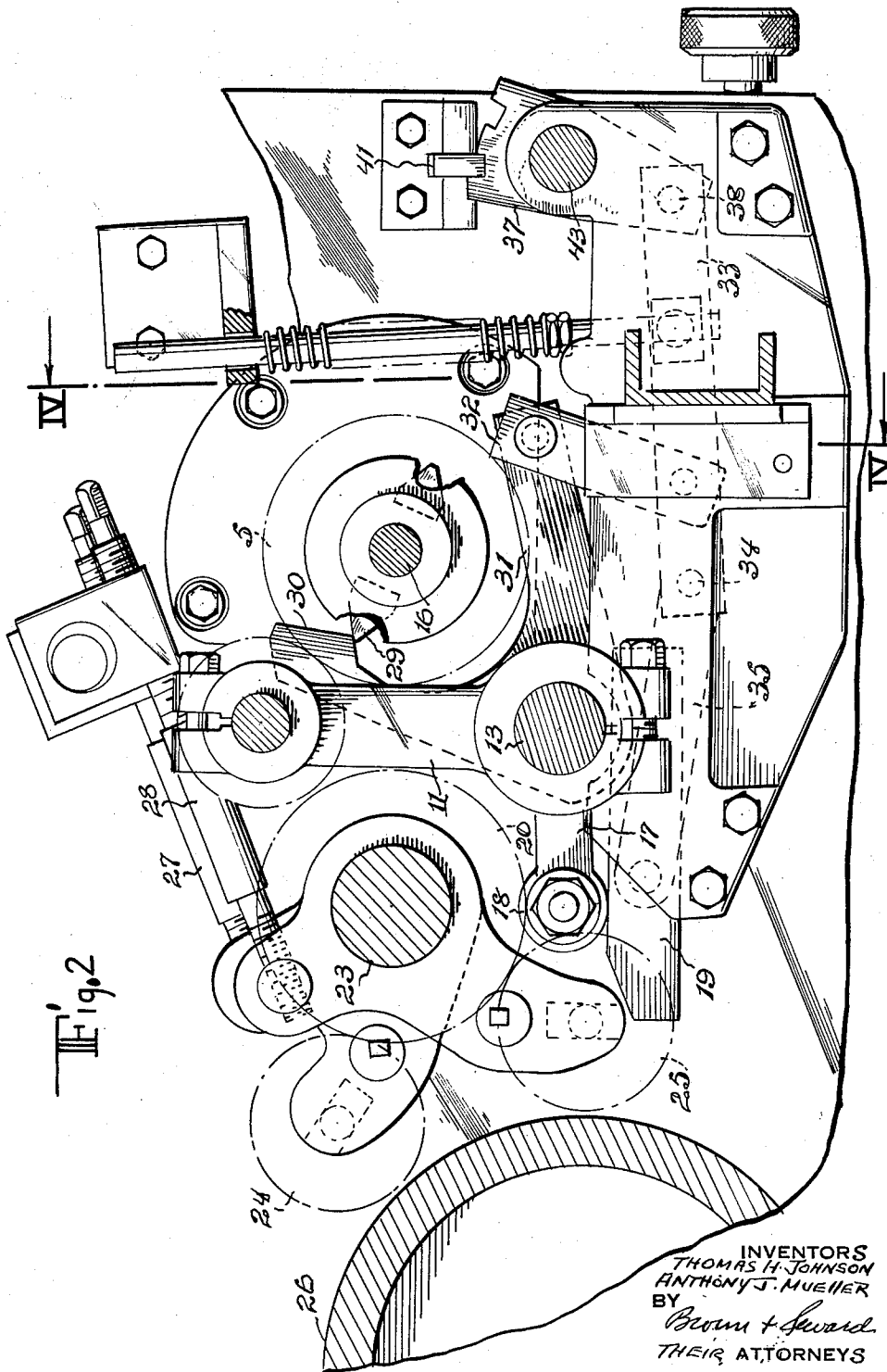
T. H. JOHNSON ET AL

2,915,007

DAMPENING DEVICE FOR LITHOGRAPHIC PRESSES

Filed Oct. 17, 1957

6 Sheets-Sheet 2



Dec. 1, 1959

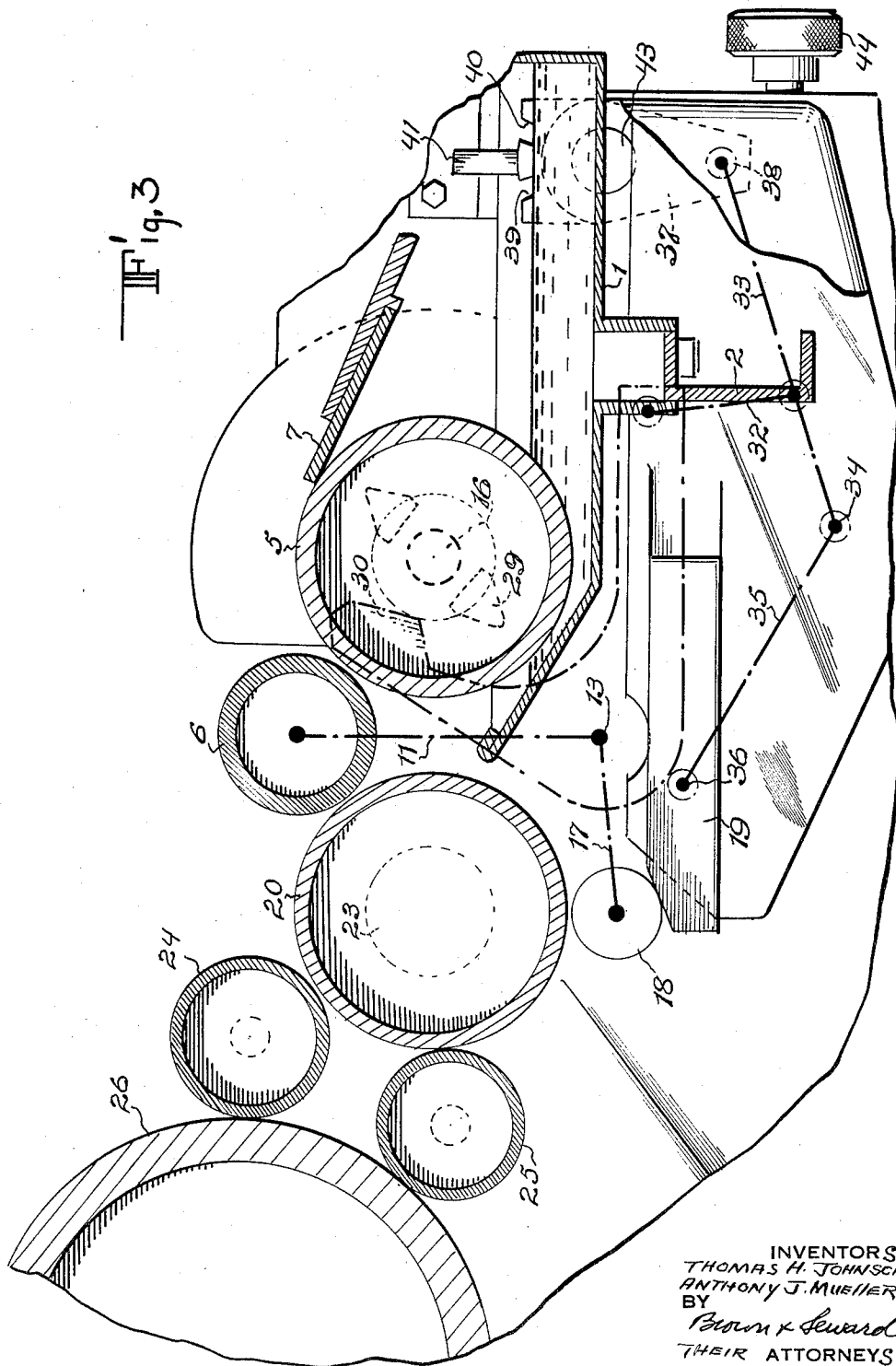
T. H. JOHNSON ET AL

2,915,007

DAMPENING DEVICE FOR LITHOGRAPHIC PRESSES

Filed Oct. 17, 1957

6 Sheets-Sheet 3



INVENTORS
THOMAS H. JOHNSON
ANTHONY J. MUELLER
BY
Brown & Seward
THEIR ATTORNEYS

Dec. 1, 1959

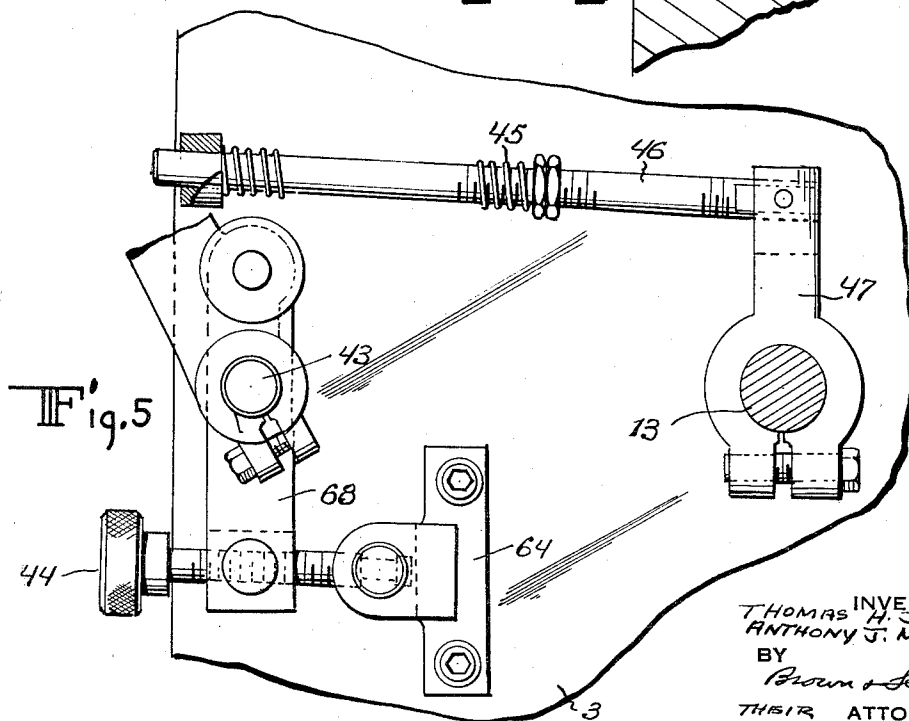
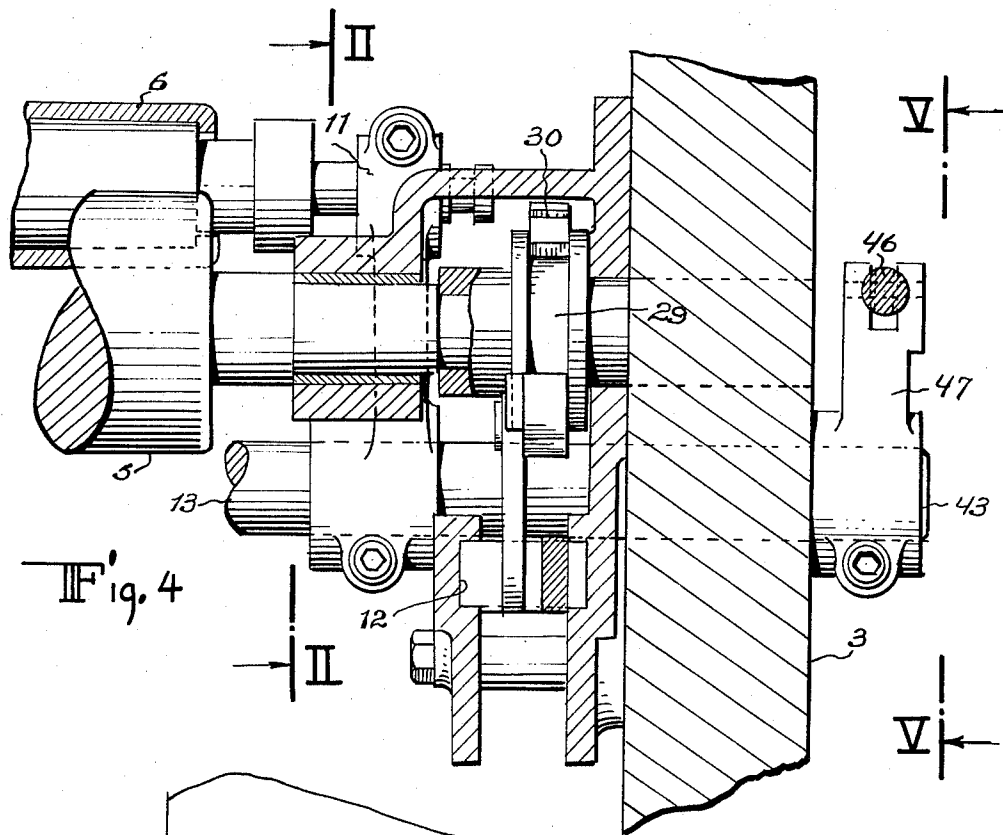
T. H. JOHNSON ET AL

2,915,007

DAMPENING DEVICE FOR LITHOGRAPHIC PRESSES

Filed Oct. 17, 1957

6 Sheets-Sheet 4



INVENTORS:
THOMAS H. JOHNSON
ANTHONY J. MUELLER
BY
Brown & Seward
THEIR ATTORNEYS

Dec. 1, 1959

T. H. JOHNSON ET AL

2,915,007

DAMPENING DEVICE FOR LITHOGRAPHIC PRESSES

Filed Oct. 17, 1957

6 Sheets-Sheet 5

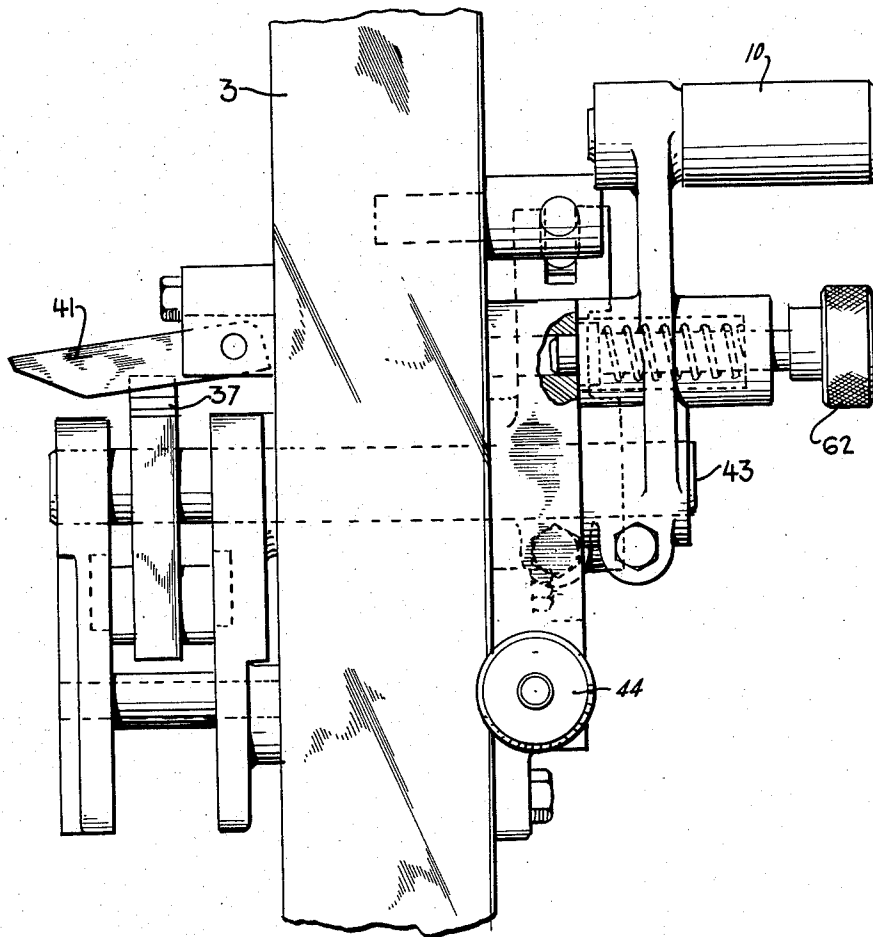


Fig. 6

INVENTORS
THOMAS H. JOHNSON
ANTHONY J. MUELLER
BY *Brown & Seward*
THEIR ATTORNEYS

Dec. 1, 1959

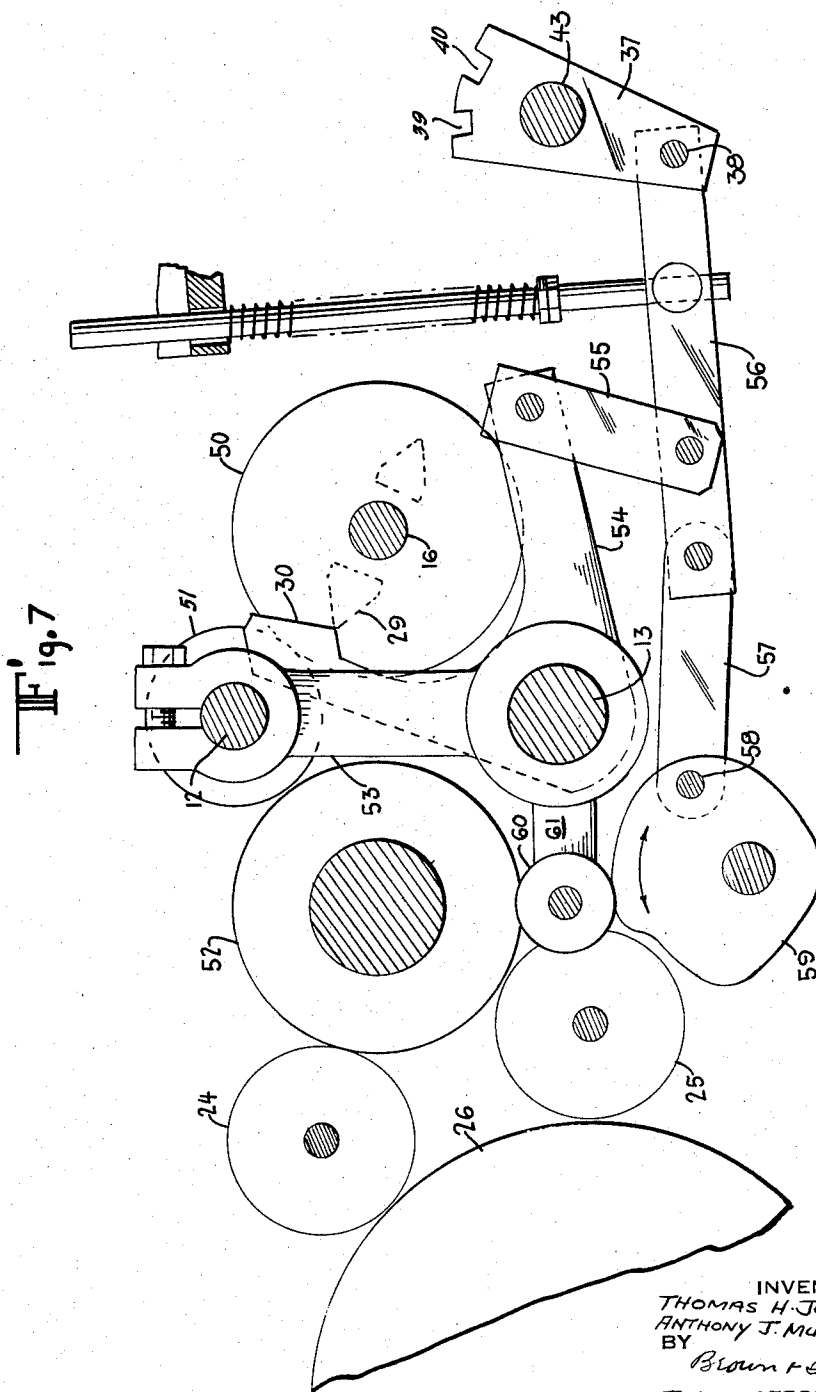
T. H. JOHNSON ET AL

2,915,007

DAMPENING DEVICE FOR LITHOGRAPHIC PRESSES

Filed Oct. 17, 1957

6 Sheets-Sheet 6



1

2,915,007

DAMPENING DEVICE FOR LITHOGRAPHIC PRESSES

Thomas H. Johnson, Westerly, R.I., and Anthony J. Mueller, Pawcatuck, Conn., assignors to The Cottrell Company, Westerly, R.I., a corporation of Delaware

Application October 17, 1957, Serial No. 690,816

12 Claims. (Cl. 101-148)

As is well known in this art, it is necessary to apply moisture to the printing plate or printing surface prior to the application of ink thereto. The amount of moisture required varies with printing conditions and depends upon a large variety of factors well known to those skilled in the art.

The object of the present invention is to provide a means for applying a predetermined amount of moisture to the desired surface by controlling the location of the ductor roll which is operably interposed between the moisture supply and the printing plate carried by the plate cylinder.

A further object is to provide a means for controlling the dwell of the ductor on both a pick up roll and pan roller by novel mechanism for moving and maintaining the ductor in the desired location with respect to the rolls or rollers with which it normally cooperates, or in an intermediate position therebetween.

Another object is to provide mechanism whereby the ductor may be moved from its present condition in contact with its cooperating roll or roller, out of contact therewith, and back to its original position by a remote control of the presentation of a desired cam surface.

A further object is to provide a mechanism of the character described in which the dwells of the ductor in anyone of at least three positions may be secured by the longitudinal displacement in a right line of a single cam.

A further object is to provide an apparatus by which the above and other objects may effectively be attained as will hereinafter appear from the detailed specification which follows.

Broadly, my invention comprises a dampening device for a lithographic press including a pan roll, a plate cylinder, a plate thereon, a pick up roll and a ductor roll operable to successively contact the pick up roll and pan roll and means for controlling the dwell of said ductor roll in at least three positions including in contact with the pan roll, the pick up roll and in a position intermediate the two.

Referring to the accompanying drawings bearing numerals in the respective figures to designate the described parts.

Fig. 1 represents in sectional side elevation and partly in diagram a dampening unit constructed according to my invention, the ductor roll contacting the pick up roll.

Fig. 2 represents, partly in section, a side elevation of a unit similar to that shown in Fig. 1, the parts being in the position they assume when the ductor roll contacts the pan roller.

Fig. 3 represents a dampening unit embodying my invention and similar to that shown in Figs. 1 and 2 in which the parts are shown, in side elevation, partly in diagram and partly in section, in the positions assumed where the ductor roll is maintained out of contact with either the pick up roll or pan roller, i.e., in an intermediate position from which it may successively contact both.

Fig. 4 represents a front elevation of one end of the

2

cylinders, illustrating the mounting of same together with a portion of the means for positioning same.

Fig. 5 represents an outside end view of the adjusting and biasing mechanism illustrated in Fig. 4.

Fig. 6 represents a front view of the means for adjusting the latch lever and means for mounting same; and

Fig. 7 represents a diagram, a side elevation of a modified form of my invention in which a desired cam surface is presented to a follower by rocking the cam thru a system of levers, said system being that illustrated in Figs. 1, 2 and 3.

As clearly illustrated in Fig. 1, the usual water pan 1 containing liquid of the desired mixture of water and small amounts of acid; or other solutions, is mounted in brackets 2 between the side frames 3, 4, so as to extend across the full width of the working or printing area of the press.

The roll 5, commonly known as the "pan" roll, is rotatably mounted on shaft 16 to extend across said printing area and for rotation while partially immersed in the water mixture or other solution of pan 1. It will be understood that the pan roll 5 picks up a thin film of the mixture and carries same on its surface to a point where it is transferred to a second roller 6, known as the ductor roll. Ordinarily, scrapers 7 (also known as water stops) are mounted in position to contact roll 5 at points where a minimum of water is desired and said scrapers 7 are swingably mounted at 8 as shown in Figs. 1 and 3, the U-shaped end of same being releasably secured to rod 8 by the action of threaded bolt 9 on the ends of the U. Said scrapers may be swung to inoperative position as desired.

The ductor 6, normally provided with a porous cloth stocking or other surface adapted to carry the liquid obtained by its contact with the surface of roll 5, is mounted at its ends on levers 11, the latter being pivoted on shaft 13, mounted in frames 3, 4 (see Fig. 4). The arm 17, forming the lower element of lever 11, extends horizontally and longitudinally of the press and is provided with a cam follower 18 adapted to ride on the upper surface of wedge shaped cam 19 which is slidably mounted in groove 12 (see Fig. 4). The motion imparted to the cam follower 18 is transmitted through arms 17 and 11 to the ductor 6 as will be more fully described below.

A pick up roll 20 is mounted for rotation on a shaft 23, mounted in frames 3 and 4 (on bushings) in position to pick up moisture from ductor 6 and transfer same through contact therewith to a pair of rollers 24, 25, surfaced similarly to the ductor 6, said rollers 24, 25 being adapted to transfer the moisture from roll 20 to the printing plate or surface on cylinder 26. Said rollers 24 and 25 are adjustable thru means 27 and 28. Adjustment as above is required in order to properly set the rollers 24 and 25 to compensate for changes in size thereof due to differences in the conditions under which they operate.

The several elements are actuated as follows:

The pan roll 5 and pick up roll 20 are constantly driven through a gear train interconnected with the press drive in the usual manner, their speed being maintained in a fixed relation to the press speed.

Ductor roll 6 and a pair of rollers 24, 25 are driven by surface friction from pan roll 5 and pick up roll 20, respectively, ductor roll 6 alternately contacting the pan roll 5 and pick up roll 20; the pair of rollers 24, 25 contacting pick up roll 20 and the printing surface on cylinder 26. It should be noted that since rolls 5 and 20 are driven at different speeds roll 6 will be accelerated and decelerated according to said speeds of the respective rolls which it successively contacts.

Mounted at one end of the pan roller shaft 16 is a rotary cam 29 and said cam surface engages the upper arm of a cam follower lever 30 thereby actuating said

lever 30 which is pivoted on shaft 13 and provided with an arm 31, which in turn, is connected to a link 32, the latter being itself connected to link 33 (see Fig. 3). Cam 29 is so shaped as to coact with lever 30 to give a sudden "drop-off" to afford only a minimum contact of the ductor with the pan roll.

Link 33 is pinned at 34 to one end of the link 35, the other end of link 35 being attached to a horizontal pin 36 in wedge cam 19, the latter being mounted for slidable movement in groove 12 (see Fig. 4).

Link 33 at its opposite end is pivoted to the lower end of latch lever 37 by a pin 38.

Said latch lever 37 is notched at its upper end at 39 and 40, said notches being located to receive the manually releasable finger 41 adapted to hold the lever in a predetermined position according to the notch engaged by said finger. The lever 37 is so constructed as to be held in a position intermediate those notches when the said lever is engaged by a spring biased plunger 62 operable on the outside of the frame as shown in Fig. 6. The lever 37 may be moved to its desired position by means of its handle 10 around its pivot 43, it being understood that motion of lever 37 changes the angular relationship between pivots 38 and 34 and hence moves link 33, lever arm 35 and cam 19, as arm 35 is attached to the horizontal cam pin 36.

Cam 19 is thereby caused to be moved in a right line whereby a different cam surface is presented to follower 18. From the connections of follower 18 with arm 17 and lever 11, the change in travel of the follower is transmitted to the ductor 6, so that the actions of the latter are determined by the operative positions of cam 19.

For example, when the lever 37 has its notch 39 engaged by the finger 41, follower 18 rides on the flat upper surface of cam 19, as shown in Fig. 2. Since the follower is beyond the limit of the low, or slanting nose, on said cam the ductor roll 6 will stay in contact with the pan roll 5.

When the lever 37 has its notch 40 engaged by finger 41, the cam 19 is so positioned that follower 18 rides on the "low" surface, or slanting nose, thus permitting the ductor roll 6 to remain in contact with the pick-up roll 20 (Fig. 3).

When lever 37 is located in a position intermediate those just described (as shown in Fig. 3), cam 19 is positioned so that follower 18 rides both the high and low cam surfaces thereby imparting the desired motion to ductor 6 whereby it is caused to successively contact rolls 5 and 20 for the purposes set forth above.

In this latter position a screw bolt 44 may be manipulated whereby lever 37 is rocked on its pivot, the position of pin 38 is moved, and through the linkage described above, cam 19 is moved in a right line whereby the surface of same presented to the cam follower 18 transmits the desired effect to ductor roll 6, i.e., its dwell on rolls 5 and 20 is controlled by being increased or decreased on either as desired.

Said movement of pin 38 is caused by the turning of screw bolt 44 threaded through lever 68, and anchored at 64 to the frame (as shown in Fig. 5) so as to rock inner lever 37 on pivot 43 and change the location of pivot 38.

A spring 45 is so located as to normally urge the cam follower 18 toward the lower or inclined portion of cam 19 as it serves to bias rod 46 and arm 47, secured thereto as shown in Fig. 5, arm 47 being mounted on shaft 13.

In the modified form of my invention as diagrammatically illustrated in Fig. 7 the rolls shown are pan roll 50, ductor roll 51, the pick up roll 52 transfer rolls 24, 25 and printing cylinder 26. The pan roll and pick up roll are driven from the press and in timed relation therewith; the ductor getting its drive from these two driven rolls in the usual manner, i.e., by contact therewith as above described.

In this instance the ductor roll 51 is mounted in a pair

of cranks 53, connected by arm 54 and 55, to links 56 and 57, which correspond to levers 33 and 35 of the preferred form heretofore described. The link 57 is connected to a pin 58 in rocking cam 59 which is adapted to present the desired cam face to follower 60 carried in one arm 61 of the bell crank pivoted at 13, arm 53 of said bell crank carrying the mounting for ductor roll 51. As set forth above the location of follower 60 on cam face 59 will control the actions of the ductor, said cam being rockable through the system of links 56, 57 connected to 37.

It will be seen from the foregoing that I have provided a mechanism of the type described which is capable of maximum flexibility and fine adjustment, and which is comprised of parts tending to minimize costs.

Since it is evident that various changes may be made in the construction from and arrangement of the several elements without departing from the spirit and scope of my invention, I do not intend to be limited to the specific embodiments herein shown and described except as set forth in the appended claims.

What we claim is:

1. In a rotary printing press, in combination, a cylinder, means for driving said cylinder, a printing surface carried thereby, at least one roller in contact with said surface, a distributing roller contacting said first named roller, a liquid conveying roller and an adjustable ductor mounted for movement between said distributing and liquid conveying rollers and driven therefrom, means for driving said distributing and conveying rollers at predetermined speeds relative to the speed of the printing cylinder, a longitudinally movable cam means for cyclically moving it, means cooperating with the cam and ductor for moving the latter when the cam is moved, and means actuated by said cam controlling the motion of said ductor.

2. An apparatus according to claim 1 in which the cam is slidable longitudinally.

3. An apparatus according to claim 1 in which the cam is slidable longitudinally in a right line.

4. An apparatus according to claim 1 in which the cam is slidable longitudinally, and the means for sliding the cam comprises at latch lever for initially holding the cam in any one of at least three positions namely, with the ductor in contact with the distributing roll, or in contact with the liquid conveying roll, or in an intermediate position out of contact with either of said rolls.

5. An apparatus according to claim 1 in which the cam is rockable longitudinally to present the desired cam surface to said means for controlling said ductor motion.

6. In a rotary printing press, in combination, a cylinder, a printing surface thereon, at least one roller contacting said surface, a distributing roller contacting said first named roller, a fountain roller, a ductor means for oscillating it between said distributing roller and said fountain roller and means for controlling the throw of said ductor between said distributing and fountain rollers, said last named means comprising a cam driven with said fountain roller a rock lever actuated thereby a latch lever, a system of links connected with said rock lever and latch lever, a second system of links connected to said latch lever, a second cam connected thereto through said second system, both lever systems being interconnected, means for changing the throw of said second lever system, whereby said last named cam is shifted longitudinally and means for maintaining the latch lever in any one of three positions, namely with the ductor in contact with the fountain roller or in contact with the distributing roller, or in an intermediate position out of contact with either of said rollers.

7. An apparatus according to claim 6 in which the means for changing the throw of said second lever system comprises a preset latch lever and an outer lever, said

5

outer lever being mounted on the same pivot shaft as the latch lever and a fine adjustment means connected to said outer lever for swinging same on said common pivot whereby said latch lever is rocked on said pivot.

8. An apparatus according to claim 6 in which the means for changing the throw of said levers comprises operatively connected inner and outer levers, the parts being so constructed and arranged that the position of the inner lever is changed by the subsequent change of the outer lever.

9. A structure according to claim 6 in which the means for maintaining the latch lever in anyone of three positions comprises an inner finger and an outer spring biased plunger.

10. An apparatus according to claim 6 in which the cam driven with the fountain roller and the arm actuated by said cam are so constructed and arranged that the arm is abruptly actuated by said cam.

6

11. An apparatus according to claim 6 in which means are provided for shifting the last named cam longitudinally, said means comprising an adjustable inner lever, means for maintaining said lever in its adjusted position, and another means for adjusting said lever while in its adjusted position.

12. An apparatus according to claim 6 in which the means for changing the throw of said levers is operable only when said ductor roller is in a position intermediate the distributing and fountain rollers.

References Cited in the file of this patent

UNITED STATES PATENTS

1,683,243	Blaine	Sept. 4, 1928
2,165,235	Curtis	July 11, 1939
2,425,643	Royer	Aug. 12, 1947

UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 2,915,007

December 1, 1959

Thomas H. Johnson et al.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 4, line 32, after "cam" insert a comma; line 35, after "cam" insert -- for --.

Signed and sealed this 24th day of May 1960.

(SEAL)

Attest:

KARL H. AXLINE

Attesting Officer

ROBERT C. WATSON
Commissioner of Patents