

Feb. 14, 1933.

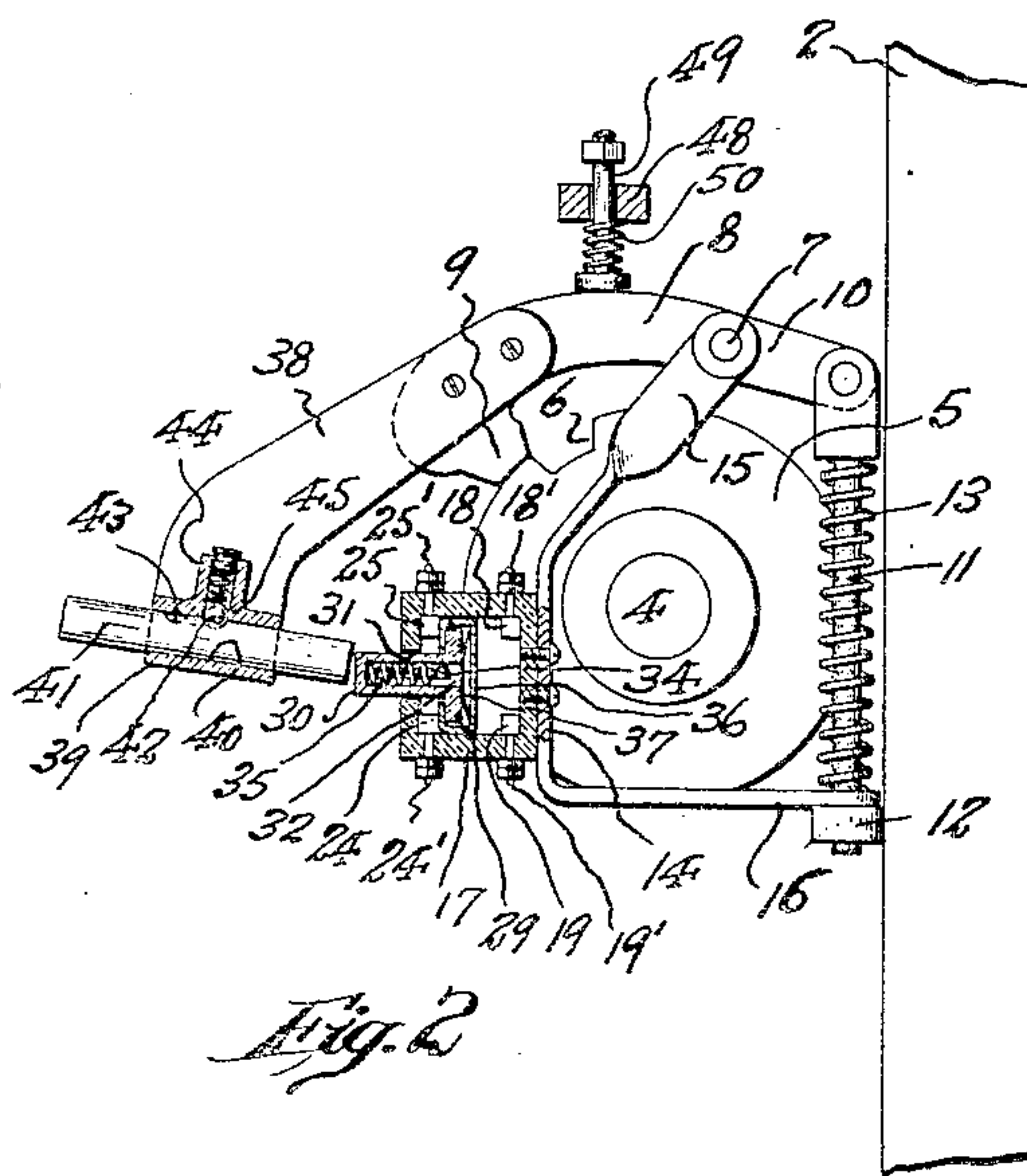
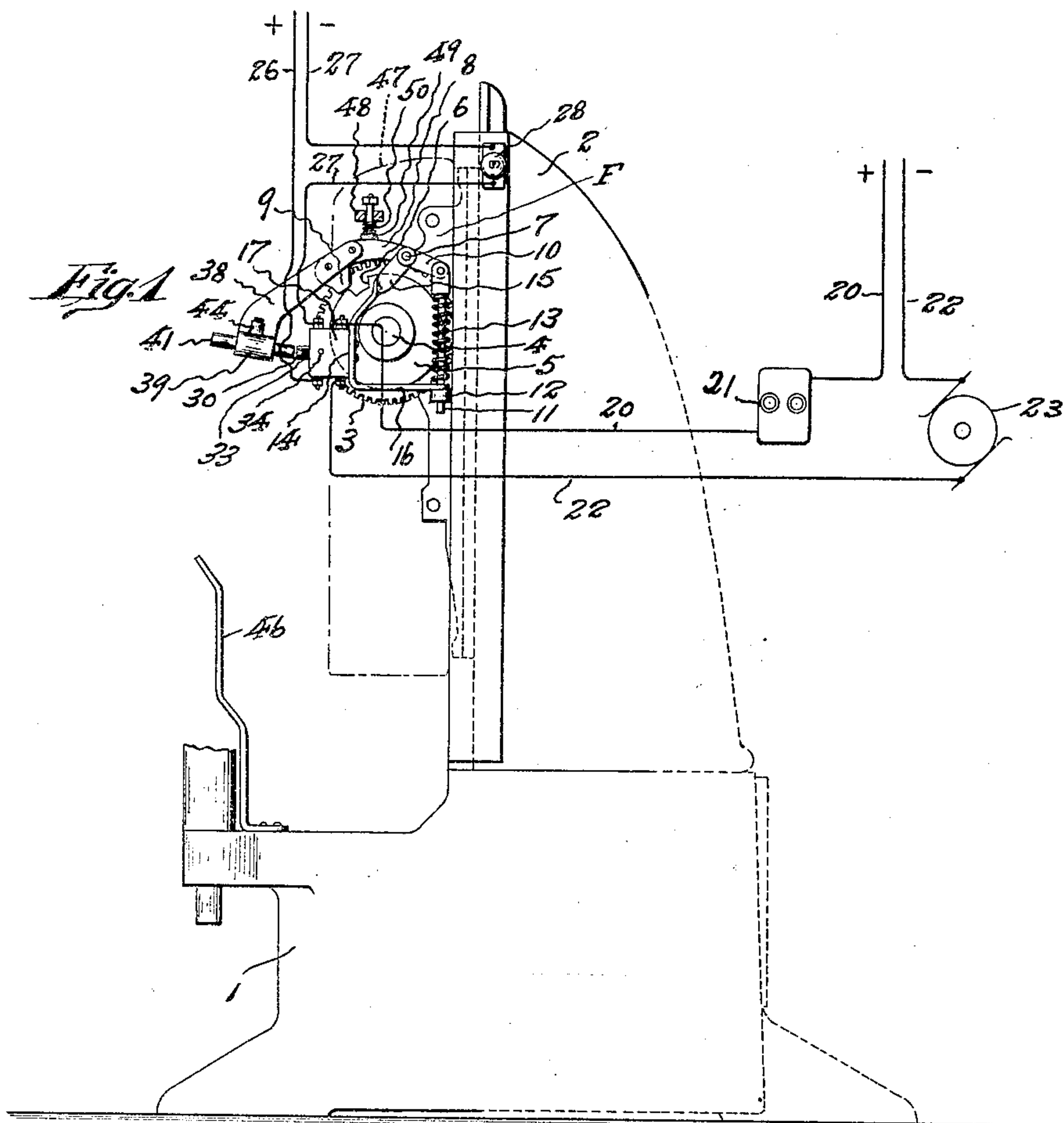
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1,897,592

POWER CIRCUIT CONTROL MEANS FOR VERTICAL PRINTING PRESSES

Filed Jan. 5, 1932

2 Sheets-Sheet 1



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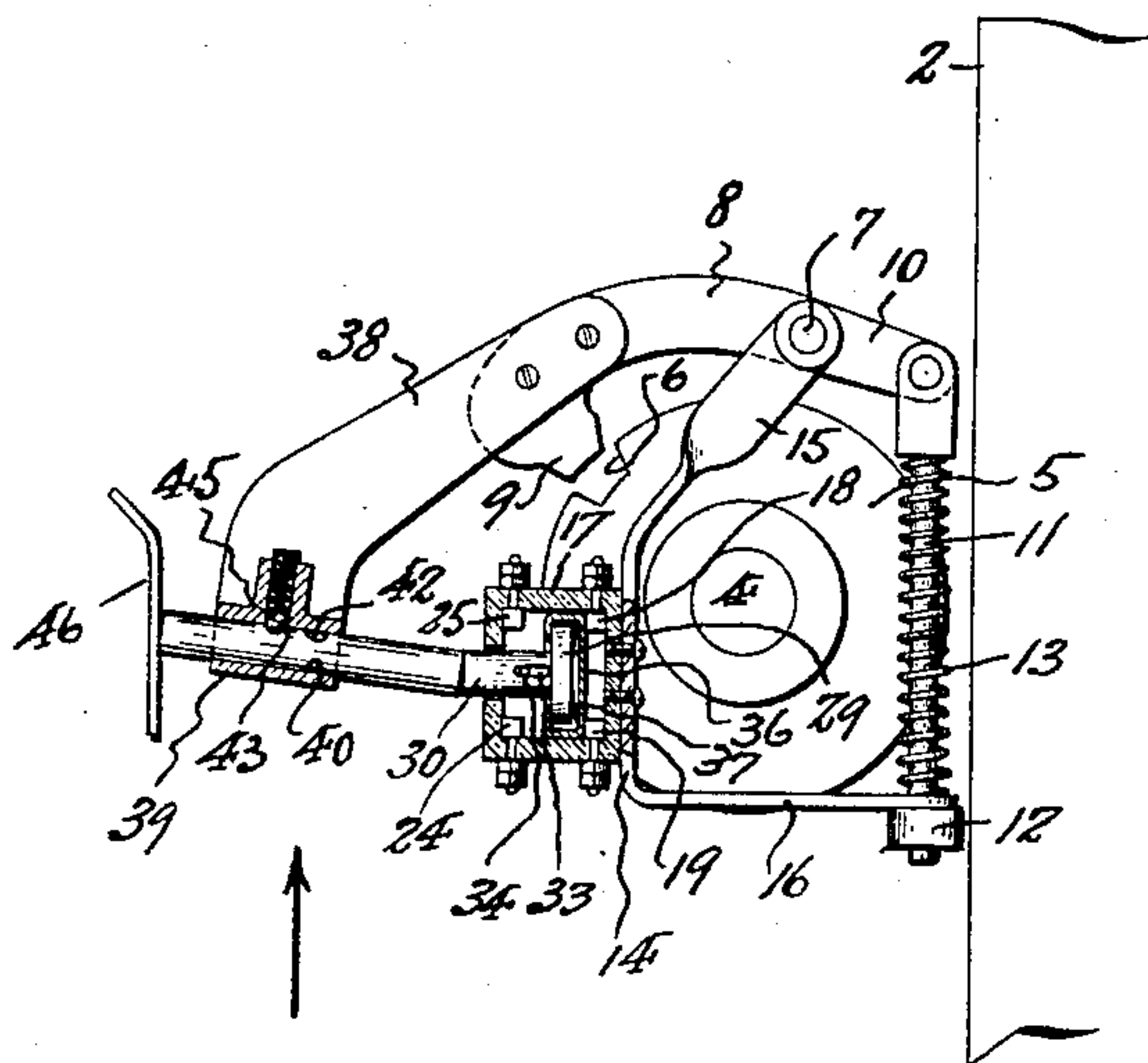
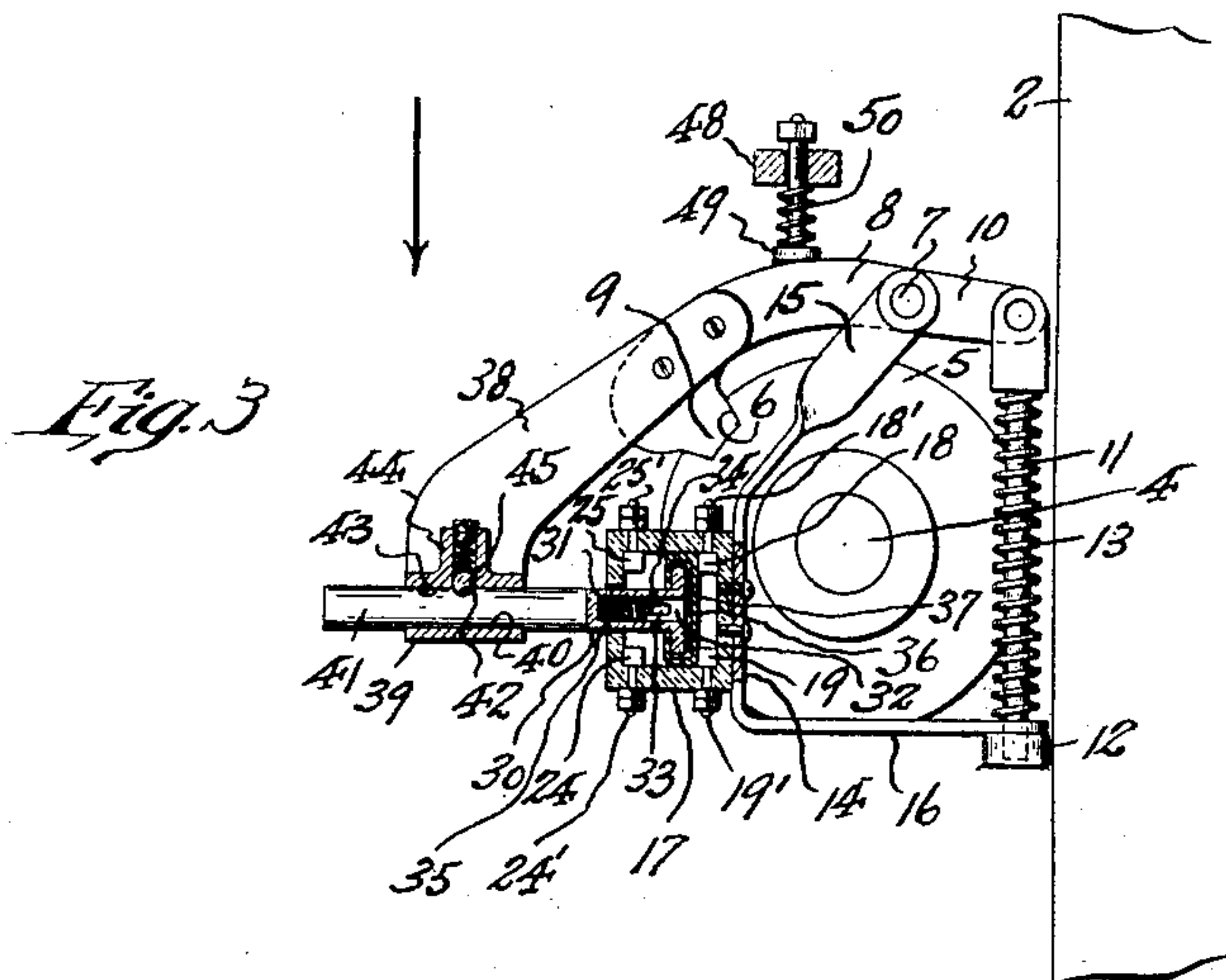


Fig. 4

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UNITED STATES PATENT OFFICE

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POWER CIRCUIT CONTROL MEANS FOR VERTICAL PRINTING PRESSES

Application filed January 5, 1922. Serial No. 534,764.

This invention relates to a power circuit control means cooperative with the stop mechanism of the impression cylinder of a vertical printing press, and adapted to prevent application of driving power to the press when the impression cylinder is released from its normal timed relation to its stop mechanism, as e. g. when inspecting or applying packing or tympan thereto, thus preventing the operator from inadvertently starting up the press while the cylinder is out of time with risk of injury to the type form, cylinder tympan or both.

This invention has for its object to provide a power circuit control means for the purposes mentioned in connection with a vertical printing press of the type in which the cylinder and type bed are arranged to reciprocate vertically in opposite directions, and in which clutch means is provided together with automatic stop mechanism operative to connect the cylinder to its rotary driving means during its upward printing movement so as to rotate the same relative to the type bed, and to disconnect the cylinder from its rotary driving means during its descending movement and while the same is held by the stop mechanism against rotation preparatory to receiving a sheet to be printed from sheet feeding mechanism; suction means, controlled by sheets as fed to be printed, operating to actuate the clutch and stop mechanism when the cylinder is positioned in properly timed relation to the driving and stop means.

Another object of this invention is to provide a circuit control means including a signal means for indicating the released or out of time condition of the impression cylinder.

Another object of this invention is to provide a novel arrangement and construction of make and break switch for controlling power and signal circuits, together with means operated by the stop cam lever of the cylinder stop mechanism for actuating said switch.

A further object of the invention is to provide means cooperative with the switch mechanism for holding the latter in power circuit closing condition during a certain phase of the impression cylinder movement and while the stop mechanism is released.

Other objects of this invention, not at this time more particularly enumerated, will become apparent in the following detailed description.

An illustrative embodiment of this invention is shown in the accompanying drawings, in which:—

Fig. 1 is a schematic side elevation in part of a vertical printing press showing an end view of the cylinder stop cam and cooperating locking lever together with the novel power circuit control means of this invention; Fig. 2 is an enlarged view of the power circuit control means, with the switch mechanism in section, and as disposed to interrupt the power circuit while the impression cylinder is released or out of time with the actuating means thereof, this view showing the closing of a signal circuit under such conditions; Fig. 3 is a view similar to that of Fig. 2 showing the cylinder locked in operative timed relation to the actuating means thereof, and with the switch in power circuit closing condition; and Fig. 4 is another similar view, showing the means for holding the switch in power circuit closing condition when the cylinder reaches the lower limit of its vertical movement and while unlocked for rotation during its upward printing movement.

Similar characters of reference are employed in the above described views, to indicate corresponding parts.

Referring to the drawings, the reference character 1 indicates the base frame of the press upon which is supported the guide frame 2 upon which vertically reciprocates the impression cylinder carriage and type bed in opposite directions, in the manner familiar to those acquainted with the art, and as exemplified in vertical printing presses of the type manufactured by the Miehle Printing Press and Manufacturing Company. In this type of press, as disclosed in United States Letters Patent to Dudley, No. 1,587,513, dated June 8th, 1926, the cylinder is held against rotation by a stop mechanism during its downward movement and is released for rotation during its upward or printing movement; in the latter case a suitable automatic clutch mechanism functioning to couple the

cylinder with a driving gear 3 (see Fig. 1) which meshes with a rack (not shown) carried by the type bed, whereby rotative movement is transmitted to the cylinder.

5 In such type of press, in order to apply, inspect or adjust the tympan on the impression cylinder, it is necessary to release the cylinder from the restraint of the stop cam mechanism so that it may be turned freely
10 about its axis, and when this is done the cooperating parts of the automatic clutch mechanism of the cylinder for engaging the driving gear 3, are moved out of normal timed or cooperative relation with each other. As
15 a consequence of this, should the press be inadvertently started up by the operator before the cylinder is moved back to normal timed relation to its driving and stop mechanism, the cylinder would be dragged back
20 and forth over the type form without properly controlled rotative movement, thereby involving risk of injury to the type form, tympan or both, or perhaps other injury to the press mechanism. It is the purpose of
25 this invention to prevent operation of the press under such conditions, and incidentally to furnish the operator with a signal, which may be of an audible or visible nature, to give warning that the cylinder remains in abnormal released condition.
30

Fixed on a journal 4 of the impression cylinder is a cylinder stop cam 5 provided in its periphery with a stop notch 6. Pivotally
35 mounted on a fixed stud 7, carried by the cylinder carrying frame F, is a cylinder stop cam lever 8 having at its forward or outer end a stop or lock lug 9 shaped to engage, at proper times, in said stop notch 6 of
40 said stop cam 5. Pivotally connected with the tail-piece 10 of said stop cam lever 8 is a spring rod 11, the lower end of which slides through an abutment lug 12 connected with the cylinder carrying frame F. A compression spring 13 is mounted on
45 said rod 11 to exert a thrust upon its stop cam lever 8 tending to yieldably urge the lock lug 9 toward the stop cam periphery, and, when aligned therewith, into the stop notch 6. When the cylinder occupies a position
50 in which the cooperating parts of its automatic clutch mechanism are in properly timed relation ready to function, the lock lug 9 of the stop cam lever 8 is aligned with and engaged in the stop notch 6 of the stop
55 cam 5.

The reference character 14 indicates a bracket member which is mounted in connection with the cylinder frame F. Preferably this bracket member possesses an upper
60 arm having a perforate end portion 15 to engage over the fulcrum stud 7 of the stop cam lever 8 to thus support one end of the bracket member. At its lower end said bracket member is provided with a rearward-
65 ly extending arm 16 to engage the abutment

lug 12 and spring rod 11 to thereby support the lower end of the bracket member. As thus arranged the bracket member lies exteriorly of but adjacent to the stop cam and its lever. 70

Supported by said bracket member 14 is a switch mechanism, comprising a suitable casing 17, preferably made of insulating material. Arranged in connection with opposite walls of said casing at its rearward end, and preferably the top and bottom side walls, are a pair of terminal contacts 18 and 19, which are thus spaced apart in electrically insulated relation one to the other within
75 the rear interior portion of the casing. The respective terminal contacts 18 and 19 are provided with exteriorly projecting binding post portions 18' and 19', whereby electrical conductors of a power circuit may be operatively connected therewith. The power circuit of the press comprises an incoming circuit conductor 20 leading from a source of electrical energy through the usual manually manipulatable switch 21 to the binding post
80 portion 18' of the terminal contact 18. Connected with the binding post portion 19' of the other terminal contact 19 is an outgoing or return circuit conductor 22, in the line of which is operatively connected the electric motor 23 which drives the press. The manually manipulatable switch 21 is thus connected in series with the terminal contacts
85 18—19 of the automatic switch. Also arranged in connection with opposite walls of said casing 17 at its forward end, are a pair of terminal contacts 24 and 25, which are likewise spaced apart in electrically isolated relation within the forward interior portion of said casing. Said terminal contacts 24—25
90 are likewise respectively provided with exteriorly projecting binding post portions 24' and 25', whereby electrical conductors of a signal circuit may be operatively connected with the automatic switch. The signal circuit comprises an incoming circuit conductor 26 leading from a source of electrical energy to the binding post portion 24' of the terminal contact 24. Connected with the binding post
95 portion 25' of the other terminal contact 25 is an out-going or return circuit conductor 27, in the line of which is connected a signal member, such as an electric lamp 28 or other suitable form of signal furnishing device, either visible or audible. The signal lamp 28, when utilized is preferably mounted on the press frame in a position easily within the range of vision of the operator, when the latter stands in front of the press for packing
100 the impression cylinder. Movable back and forth within the interior of the switch casing 17 is a switch block 29 having a push-piece or shank 30 slidable through an aperture 31 in the front wall of the casing so as to freely project exteriorly therefrom. Said switch block and its push-piece is preferably made
105 110 115 120 125 130

of electrically non-conductive material. Said switch block and its push-piece is provided with an axial bore 32 extending forwardly thereinto from the rear end thereof, and the sides of said push-piece are further provided with elongated slots 33. A guide-pin 34 extends transversely through the interior of said casing 17 from side wall to side wall thereof and through the slots 33 and bore 32 of the switch block and its push-piece. Arranged in the bore 32 intermediate its inner end and said guide-pin 34 is a compression spring 35 which yieldingly thrusts the switch block and its push piece to a forwardly moved position relative to the casing 17. Suitably mounted around said switch block 29 is a bridging contact element 36 cushioned by a spring means 37 and having its end portions engaged over the forward face of said switch block while its main body extends along the rearward face of the latter. Suitably secured to the free forward end of said stop cam lever 8, so as to form a rigid extension therefrom, is a lever extension 38. Formed in the free end of said lever extension 38, in substantially longitudinally aligned relation to the projecting push-piece 30 of the switch mechanism is a guide member 39 having a guideway 40 extending there-through. Extending through the guideway 40 is a push-bar 41 provided in its upper margin with a pair of longitudinally spaced detent seats 42 and 43. Formed in connection with said guide member 39 is a boss 44 having an internal bore in which is mounted a spring pressed detent element 45 to selectively cooperate with the detent seats 42—43 of said push-bar 41. Preferably said detent element is in the form of a ball as shown.

Fixed in suitable location in connection with a stationary part of the press frame, as e. g. in connection with the base frame 1, and so as to be disposed in the path of the outer end of the push bar 41, as the same is carried up and down during the vertical reciprocatory movement of the impression cylinder, is a stationary cam bar 46, the purpose of which will appear in the following description of the operation of the automatic power circuit control means.

When the press operator has occasion to apply, inspect or adjust the tympan on the impression cylinder, the latter is stopped at the upper limit of its reciprocatory movement, and by means of a suitable pin wrench is turned about its axis of rotation by hand. In thus turning the cylinder the lock lug 9 of the stop cam lever 8 is lifted out of the stop notch 6 of the stop cam 5, whereby the forward end of said stop cam lever is swung upward, thus also swinging upward the lever extension 38 so that the inner end of the push-bar 41 is carried outwardly away from the exterior end of the push-piece 30 of the automatic switch mechanism. When the push-

piece 30 is thus relieved from the intrust-ing pressure of the push-bar, the spring 35 will move the switch-block 29 forwardly within the casing 17, thereby carrying the bridging contact element 36 out of bridging electrical engagement with the terminal contacts 18—19 and into bridging electrical engagement with the terminal contacts 24—25, whereby the power circuit is interrupted and the signal circuit closed so that the signal lamp 28 lights (see Figs. 1 and 2). The signal lamp 28 remains lit so long as the cylinder is turned out of normal starting position as determined by engagement of the stop cam mechanism, and gives visible indication that the cylinder is abnormally positioned or out of time with respect to its driving mechanism. Should the operator, while the parts are thus disposed, inadvertently close the manually manipulatable switch 21 before returning the cylinder to normal timed relation to its driving mechanism, the press will not start operation, since the power circuit remains interrupted by the described operation of the automatic switch. In such event the operator would open the switch 21, and there-upon turn the cylinder by hand until the lock lug 9 engaged in the stop-notch 6 thereby effecting a downward swinging movement of the stop cam lever 8 and the extension lever 38. This downward swing of the extension lever 38 carries the push-bar 41 thrustingly against the push-piece 30 of the automatic switch mechanism whereby the switch-block 29 is moved rearwardly within the casing 17 so as to carry the bridging contact element 36 out of bridging electrical engagement with the terminal contacts 24—25 and into bridging electrical engagement with the terminal contacts 18—19, thus opening the signal circuit and closing the power circuit through the automatic switch (see Fig. 3), whereupon the operator may close the manual switch 21 and thus complete the power circuit to start operation of the press.

As the press operates, the impression cylinder descends and the type bed rises, during which movement the former is held against rotation, but in position ready to receive the sheet to be printed when fed thereto by the sheet feeding mechanism of the press. As the impression cylinder reaches the lower limit of its reciprocatory movement, the clutch mechanism of its rotative driving means functions to couple the cylinder with the driving gear 3, whereby, as the type bed descends and the cylinder rises, the latter will be rotated to carry the sheet to be printed onto the tympan of the cylinder while at the same time impressing said sheet against the type form to receive the imprinted impression therefrom. As the cylinder starts to rotate, the lock lug 9 of the stop cam lever 8 is withdrawn from the stop notch 6 of the stop cam 5, so that the stop cam lever 8 and

its extension lever 38 are swung upwardly, with tendency to withdraw the push-bar 41 from inwardly thrusting relation to the switch push-piece 30 and switch block 29. Such operation, were no means provided to prevent, would obviously result in an interruption of the power circuit and an undesired stoppage of the press. In order to prevent interruption of the press operation while the stop cam mechanism is released to permit the necessary rotative movement of the cylinder, the push-bar 41 is temporarily shifted to maintain its inward thrusting relation to the switch-block push-piece 30. This is accomplished as follows:

As the descending cylinder approaches the limit of its downward movement, the outer end of the push-bar 41 will pass into abutting relation to the stationary cam bar 46, by which it will be held against outward displacement from its inward thrusting relation to the switch-block push-piece 30. The push-bar 41 being thus held, as the stop-cam mechanism releases when the limit of descent of the cylinder is reached, the consequent upward swing of the stop-cam lever 8 and the extension lever 38 will merely cause the guide member 39 of the latter to slide outwardly relative to the thus held push-bar 41, so that the detent element 45 is removed from the normally engaged inner seat 42 of the push-bar and thereupon engaged in the outer seat 43 of the latter (see Fig. 4). As the cylinder is carried up on its printing movement, with accompanying rotation, and the push-bar 41 moves away from the stationary cam bar 46, the detent element 45, as engaged in the outer seat 43 of the push-bar, will serve to retain the latter in inwardly thrusting relation to the switch-block push-piece notwithstanding the up-swung position of the stop-cam lever 8 and lever extension 38, and consequently the automatic switch will be maintained in power circuit closing condition during the ascending movement of the cylinder.

As the cylinder approaches the limit of its ascending movement, the same will also approach the end of its printing revolution, and consequent upon completion of these movements the stop notch 6 of the stop cam 5 will be again carried into alignment with the stop lug 9, whereupon the spring 13 will produce a downward swinging movement of said stop-cam lever 8 with resultant engagement of the stop-lug and stop notch, while at the same time the clutch mechanism of the cylinder will release the same from driven engagement with the gear 3. The downward movement of the extension lever 38 in company with stop cam lever 8 will cause the guide member 39 of the former to slide inwardly relative to the push-bar until the detent element 45 is displaced from the outer seat 43 of the push-bar and is engaged with the inner seat 42 thereof, the parts thus re-

gaining normal initial positions with the power circuit contacts of the automatic switch remaining electrically engaged by the bridging contact element 36, so that the cylinder is again stopped against rotation during the descending period of a succeeding cycle of the press operation, which cycles are successively repeated until the manual switch 21 is opened and the press stopped. It may be desirable to assist the spring 13 in urging the stop-cam lever to cylinder stopping position as the cylinder reaches the upper limit of its ascending movement, and for this purpose the following means may be optionally employed. As indicated by dot and dash lines in Fig. 1, the press guide frame 2 is usually provided at its side with a suitably fixed guard plate 47 bordering the path of reciprocation of the cylinder carrying frame F. Mounted on the inner face of the guard plate 47 is a guide lug 48 vertically apertured to slidably support the stem of a plunger 49 which depends therefrom, and which is urged downwardly by a compression spring 50. This spring pressed plunger 49 lies above and in the path of the up-swung stop-cam lever 8 as the same is carried upwardly by the ascending movement of the cylinder, and consequently is engaged as the limit of ascending movement is approached so as to be pressed upward with compressing effect upon the spring 50, whereby as the stop-notch 6 of the stop-cam 5 moves into alignment with the lock lug 9 of the lever 8, the compressed spring 50 will thrust downwardly upon the plunger 49 and thus aid the exerted tension of the main spring 13 in quickly moving the stop-cam lever and its lock lug into cylinder stopping relation to the stop-notch of the stop-cam.

From the above description it will be obvious that this invention provides a very simple and yet efficient automatic power circuit control means which functions to prevent operation of the press unless and until the impression cylinder is returned to normal operative relation to the associated press mechanism, if for any reason such cylinder has been moved out of such relation.

The form of the novel automatic power circuit control means is such that it is admirably adapted to be made and installed on presses already in use as a valuable accessory thereto, although equally adapted to be initially built into new presses as part of the standard equipment thereof.

As many changes could be made in the above described constructions, and many apparently widely different embodiments of this invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

I claim:

1. In a printing press operated by electric power having a cylinder mounted for rectilinear and rotary movements and means for driving the same, a cylinder stop mechanism for determining the normal operative timed relation of the cylinder and its driving means, a power circuit, a switch in said circuit, and means actuated by said stop mechanism for automatically opening said switch when the cylinder is moved out of operative timed relation to its driving means. 70
2. In a printing press operated by electric power having a cylinder mounted for rectilinear and rotary movements and means for driving the same, a cylinder stop mechanism for determining the normal operative timed relation of the cylinder and its driving means, a power circuit, a signal circuit, and means actuated by said stop mechanism for automatically interrupting said power circuit and closing said signal circuit when the cylinder is moved out of operative timed relation to its driving means. 80
3. In a printing press operated by electric power having a cylinder mounted for reciprocable movement and means for rotating said cylinder when moving in one direction, stop means to arrest said cylinder in a predetermined non-rotative position on completion of its rotary movement, said stop means comprising a stop cam rotatable with said cylinder and a movable stop element cooperative with said cam, a power circuit, a switch in said power circuit, and switch actuating means operated by said movable stop element. 85
4. In a printing press operated by electric power having a cylinder arranged for descending and ascending movement traversing a type bed and having timed means for rotating the same during its ascending movement, a stop cam rotatable with the cylinder, a pivoted stop lever cooperative with said stop cam to arrest said cylinder in a predetermined position relative to its rotating means on completion of its revolution and accompanying ascending movement, a power circuit, a switch means having terminal contacts connected in said power circuit and a movable switch element engageable therewith, and means actuated by said stop lever to disengage said switch element from said terminal contacts to interrupt said power circuit when said cylinder is turned out of timed relation to its rotating means. 90
5. In a printing press operated by electric power having a cylinder arranged for descending and ascending movement traversing a type bed and having timed means for rotating the same during its ascending movement, a stop cam rotatable with the cylinder, a pivoted stop lever cooperative with said stop cam to arrest said cylinder in a predetermined position relative to its rotating means on completion of its revolution and accompanying ascending movement, a power circuit, a signal circuit, a switch means having power circuit terminal contacts and signal circuit terminal contacts and a movable switch element selectively engageable therewith, and means actuated by said stop lever to disengage said switch element from said power circuit contacts and engage the same with said signal circuit contacts when said cylinder is turned out of timed relation to its rotating means. 95
6. In a printing press operated by electric power having a cylinder arranged for descending and ascending movement traversing a type bed and having timed means for rotating the same during its ascending movement, a stop cam rotatable with the cylinder, a pivoted stop lever cooperative with said stop cam to arrest said cylinder in a predetermined position relative to its rotating means on completion of its revolution and accompanying ascending movement, a power circuit, a signal circuit, a switch means having power circuit terminal contacts and signal circuit terminal contacts and a movable switch element selectively engageable therewith, and means actuated by said stop lever to disengage said switch element from said power circuit contacts and engage the same with said signal circuit contacts when said cylinder is turned out of timed relation to its rotating means. 100
7. In a printing press operated by electric power having a cylinder arranged for descending and ascending movement traversing a type bed and having timed means for rotating the same during its ascending movement, a stop cam rotatable with the cylinder, a pivoted stop lever cooperative with said stop cam to arrest said cylinder in a predetermined position relative to its rotating means on completion of its revolution and accompanying ascending movement, a power circuit, a signal circuit, a switch means having power circuit terminal contacts and signal circuit terminal contacts and a movable switch element selectively engageable therewith, and means actuated by said stop lever to disengage said switch element from said power circuit contacts and engage the same with said signal circuit contacts when said cylinder is turned out of timed relation to its rotating means, while disposed at the limit of its ascending movement, said latter means including a shiftable push-bar engageable with said movable switch element, and means 105

operative on completion of descending movement of said cylinder to shift said push-bar to maintain said switch element engaged with said power circuit contacts when said stop lever is released from cylinder arresting relation to said stop cam preparatory to ascending and rotative movement of said cylinder.

8. In combination with the cylinder stop mechanism of an electric power driven vertical printing press including a stop cam and a movable stop lever cooperative therewith, a power circuit control means comprising a switch having power circuit contacts and a movable switch element coacting therewith, an extension lever movable with said stop lever, and means carried by said extension lever to move said switch element into circuit closing relation to said power circuit contacts when said stop lever moves into cylinder arresting relation to said stop cam.

9. In combination with the cylinder stop mechanism of an electric power driven vertical printing press including a stop cam and a movable stop lever cooperative therewith, a power circuit, a signal circuit, a power and signal circuit control means, said control means comprising a switch having power circuit contacts and signal circuit contacts and a movable switch element selectively engageable therewith, and an extension lever movable with said stop lever having means cooperative with said switch element to cause engagement thereof with said power circuit contacts when said stop lever is in stopping relation to said stop cam but engagement thereof with said signal circuit contacts under certain conditions when said stop lever is released from stopping relation to said stop cam.

10. In combination with cylinder stop mechanism of an electric power driven vertical printing press including a stop cam and a movable stop lever cooperative therewith, a power circuit control switch, an extension lever movable with said stop lever, a guide member carried by said extension lever, a push bar shiftable in said guide member, yieldable detent means to hold said push bar in selected operative positions, said push bar being adapted in one operative position to be carried by said extension lever into switch closing engagement when said stop lever moves into cylinder arresting relation to said stop cam, and means to shift said push bar to another operative position adapted to hold said switch closed under certain conditions when said stop lever is released from said stop cam.

11. In combination with cylinder stop mechanism of an electric power driven vertical printing press including a stop cam and a movable stop lever cooperative therewith, a power circuit, a signal circuit, a switch means having power circuit contacts and signal circuit contacts and a movable switch ele-

ment selectively engageable with said respective contacts, an extension lever movable with said stop lever, a guide member carried by said extension lever, a push bar shiftable in said guide member, yieldable detent means to hold said push bar in selected operative positions, said push bar being adapted in one operative position to move said switch element from signal circuit closing position to power circuit closing position when said stop lever moves to cylinder arresting relation to said stop cam, and means to shift said push bar to another operative position adapted to hold said switch element in power circuit closing position under certain conditions when said stop lever is released from said stop cam.

12. In a printing press operated by electric power having a cylinder arranged for descending and ascending movement traversing a type bed and having timed means for rotating the same during its ascending movement, a stop cam rotatable with the cylinder, a pivoted stop lever cooperative with said stop cam to arrest said cylinder in a predetermined position relative to its rotating means on completion of its rotation and accompanying ascending movement, a power circuit, a signal circuit, a switch means having power circuit contacts and signal circuit contacts and a movable switch element selectively engageable with said respective contacts, an extension lever movable with said stop lever, a guide member carried by said extension lever, a push bar shiftable in said guide member, yieldable detent means to hold said push bar in selected operative positions, said push bar being adapted in one operative position to hold said switch element in power circuit closing position when said stop lever engages said stop cam in cylinder arresting relation but to release said switch element to interrupt said power circuit and close signal circuit when said stop lever is released from said stop cam by turning said cylinder out of timed relation to its rotating means while at the limit of its ascending movement, and a stationary cam operative on completion of descending movement of said cylinder to shift said push bar to another position whereby said switch element is maintained in power circuit closing position when said stop lever is released from cylinder arresting relation to said stop cam preparatory to ascending and rotative movement of said cylinder.

13. In a printing press operated by electric power having a cylinder arranged for descending and ascending movement traversing a type bed and having timed means for rotating the same during its ascending movement, a stop mechanism to arrest said cylinder in a predetermined position relative to its rotating means on completion of its rotation and accompanying ascending movement, a power circuit control switch having

a movable switch element, a lever movable with said stop mechanism, a guide member carried by said lever, a push bar shiftable in said guide member, yieldable detent means
5 to hold said push bar in selected operative positions, said push bar being adapted in one operative position to hold said switch element in power circuit closing position when said stop mechanism functions to arrest said cyl-
10 inder but to release said switch element to interrupt said power circuit when said stop mechanism is released by turning said cylinder out of timed relation to its rotating means while at the limit of its ascending movement,
15 and a stationary cam operative on completion of descending movement of said cylinder to shift said push bar to another position whereby said switch element is maintained in power circuit closing position when said
20 stop mechanism is released preparatory to ascending and rotative movement of said cylinder.

14. In combination with cylinder stop mechanism of an electric power driven ver-
25 tical printing press, means actuated by said stop mechanism to interrupt the power circuit of said press when said stop mechanism is released by manual rotation of the press cylinder.

30 15. In combination with cylinder stop mechanism of an electric power driven vertical printing press, a power circuit, a signal circuit, and means actuated by said stop mechanism to interrupt said power circuit
35 and close said signal circuit when said stop mechanism is released by manual rotation of the press cylinder.

In testimony, that I claim the invention set forth above I have hereunto set my hand
40 this 30th day of December, 1931.

SOLOMON SCHWARTZMAN.

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