

April 12, 1960

G. KANITZ

2,932,250

PROOF-PRINTING MACHINE

Filed Nov. 23, 1955

2 Sheets-Sheet 1

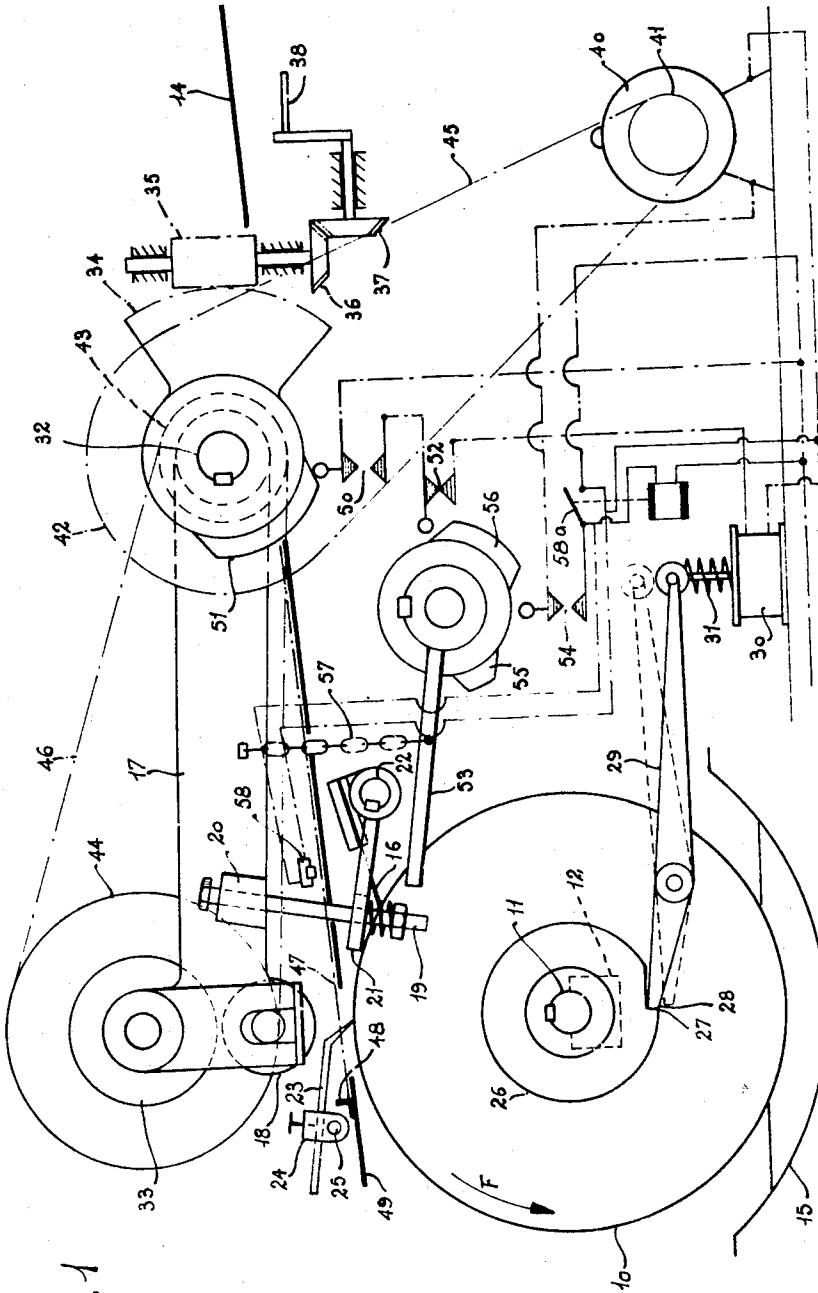


Fig. 1

INVENTOR
GEORGES KANITZ
BY *Young, Emery & Thompson*
ATTYS

April 12, 1960

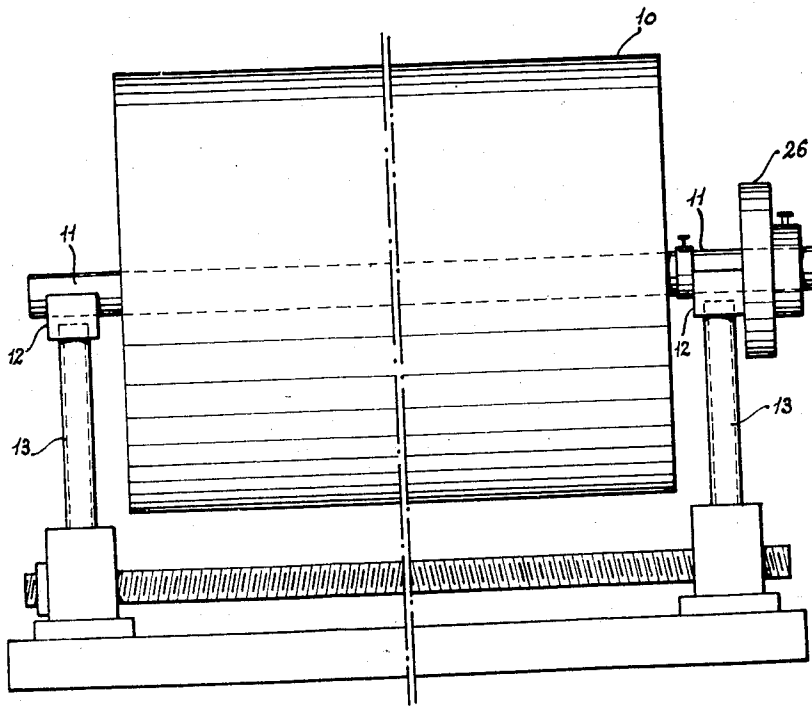
G. KANITZ
PROOF-PRINTING MACHINE

2,932,250

Filed Nov. 23, 1955

2 Sheets-Sheet 2

Fig. 2



INVENTOR

GEORGES KANITZ

By *Young, Emery & Thayer*
ATTYS

1

2,932,250 PROOF-PRINTING MACHINE

Georges Kanitz, Paris, France

Application November 23, 1955, Serial No. 548,743

Claims priority, application France November 27, 1954

5 Claims. (Cl. 101—245)

The present invention relates to proof-press machines for taking proofs from cylindrical printing formes or from printing plates mounted on cylindrical mandrels, this forme or plate mounted on a mandrel being termed in the text which follows "proof cylinder" and being etched, i.e. helio-engraved or hollow-engraved, and more particularly to machines of the type referred to which work on paper in sheets in a non-continuous manner, that is to say in which the proof cylinder is stopped before the printing of each sheet.

Machines of this kind, the operation of which differs considerably from that of production printing machines, are of relatively simple and compact construction, enabling tests to be made of the engraving without waste of raw material. In spite of these advantages, however, machines of the type referred to have the drawback that the proof cylinder must be suitably located in position each time a print is made. This positioning is generally either long and complicated in known machines of this kind, or alternatively it is not accurate.

The present invention has for its object a machine for taking printing proofs of the kind described, which is free from these defects, and in which the location of the position of the cylinder before each printing is at the same time both rapid and accurate, while the construction of the machine is convenient and its operation is simple.

Further objects, features, and advantages of the invention will furthermore be brought out from the description which follows below of one form of construction chosen by way of example, reference being made to the attached drawings, in which:

Fig. 1 is a diagrammatic view of the machine in side elevation;

Fig. 2 is a partial front view of the machine.

In the embodiment shown in Figs. 1 and 2, the proof cylinder 10, which is directly helio-engraved or is provided with a helio-engraved plate stretched over a cylindrical mandrel, is supported by its shaft ends 11 in journal bearings 12 carried by jacks 13 on the two frames of the machine. A suitable adjustment of these jacks enables cylinders of different diameters to be tested, while maintaining the same work height with respect to the feed table 14 of the machine. The cylinder 10 rotates in the direction of the arrow F and is driven either by a handle or preferably by a small motor which is coupled to it through the intermediary of a torque limiter friction clutch device. The cylinder 10 dips into an ink-er 15 which contains the fluid ink used in helio-gravure.

The scraper 16 is coupled to the arm 17 of the pressure roll 18 by a threaded rod 19 fixed to the arm 17 at 20. The other extremity of the rod 19 is engaged between the two arms of a fork formed at the end of a lever 21. The latter is keyed on the shaft 22 of the scraper 16. In accordance with the position of the arm 17, the extremity of the scraper 16 makes contact with the surface of the proof cylinder 10 or is kept away therefrom.

2

The sighting device of the machine is constituted by the bent finger 23 which is mounted in the support 24 so as to be able to be moved forward or back with reference to a point engraved on the cylinder. The spindle 25 of the support 24 is mounted on the framework of the machine or on the table 14. It is parallel to a generatrix line of the cylinder, and the support 24 is arranged to slide on this spindle. The point of the finger 23 is of plastic material, metal, or any other suitable material which is less hard than the copper with which the cylinder 10 is generally covered. The adjustment of the pointer 23 is chosen so that the point is located close to the line of contact between the cylinder 10 and roll 18, the position of this line remaining always the same, even for proof cylinders of different diameters in the machine.

The stopping or locking device for the cylinder 10 comprises a cam 26 which is adjustably fixed on the shaft of the cylinder 10, and on which a tooth 27 serves as an abutment for the extremity 28 of a lever 29. This lever 29 is shown in Fig. 1 in full lines in the operative position in which it is engaged with the tooth 27, and in dotted lines in the inoperative position when it is disengaged from the said tooth. The electro-magnet 30 serves to actuate the stop-lever 29. In Fig. 1, the lever is shown freed from the cam 26 when the supply circuit of the electro-magnet 30 is broken, and is in engagement with the cam 26 when the said circuit is closed. It is of course also possible to arrange the plunger directed downwards, which would reverse the relation between the stop device and the closing or opening of the circuit of the electro-magnet. The spring 31 restores the stop-lever 29 to the disengaged position after the breaking of the circuit of the electro-magnet.

The pressure roll means of the machine is composed of two arms 17 keyed on the shaft 32 and carrying the pressure roll 18 and the counter-pressure roll 33. The upward and downward movement of these arms is controlled by a first actuating means comprising a toothed segment 34 which is keyed on the shaft 32 and which is in engagement with a screw 35, a pair of bevelled gears 36—37 and a crank-handle 38.

The rotary movement of the cylinder 10 during the inking or preparation period, with the pressure roll 18 in its inoperative position remote from the proof cylinder 10, is obtained, as has already been stated, either by hand or by motor means (not shown on the drawing). This auxiliary motor is not directly coupled to the cylinder but through the medium of a friction coupling. This motor may thus continue to rotate, even when the cylinder 10 has been stopped by the stop device of the machine. In order to make less abrupt the stoppage of the cylinder produced by the cam 26 and the lever 29, provision may be made for breaking the circuit of the auxiliary motor which drives the cylinder, a little before the engagement of the stopping device, and then to reclose its circuit immediately afterwards.

The drive of the cylinder 10 in the printing position of the pressure roll means 33—18 is effected by means of the motor 40 which drives the counter-pressure roll 33 through the pairs of pulleys 41, 42, 43, 44 and the corresponding belts 45 and 46. The rotary movement of the counter-pressure roll 33 is transmitted to the cylinder 10 by contact through the intermediary of the pressure cylinder 18, when this latter is brought into contact with the cylinder 10. The table 14 is used for the introduction of the sheet 47 to be printed. The guides 48 which are located on the extension 49 of the table serve to locate the sheet in its correct position.

In the electric circuit of the electromagnet 30 is included a switch 50. This switch is open when the pressure roll 33 is in its raised position (such as that shown

in Fig. 1). The switch 50 is closed by the cam 51 rigidly fixed to the arm 17, when the pressure roll 33 has moved sufficiently close to the cylinder 10. A switch 52 is mounted in series with the switch 50 and is shown in its closed position in Fig. 1. It can be opened by a cam 56 carried by a second actuating means comprising a lever 53 which operates the printing motor 40.

The circuit of the printing motor 40 can be opened by a switch 54. The closure of this switch 54 is effected by a cam 55 when the lever 53 reaches its bottom position. A one-way connection means comprising a chain 57 couples the lever 53 to the arm 17 of the roll 18 and prevents the motor 40 from being set in operation for certain positions of the said pressure roll. The chain 57 is fixed by one of its ends to the arm 17 and by the other end to the lever 53. A photoelectric cell 58 is mounted on the feed table 14 and is directed towards the sheet 47. The cell 58 controls a switch 58a of the circuit of the motor 40 in such manner that it opens the circuit of this motor each time the sheet 47 to be printed is not in front of the cell, and re-closes the circuit when a part of the said sheet arrives at that point. In other words, the function of the cell 58 is to cut off the electric current to the motor when each printed sheet has left the field of the cell. This arrangement permits proof cylinders 10 of various diameters, the only precaution being to prepare sheets of convenient length. Even when the sheets are fed manually, the cell is useful since its function is not preventive but is to adjust the length of the printing proportionally to the length of the sheet.

The proof cylinder 10 is mounted by its shafts 11 in the journal bearing 12 of the proof machine. The jacks 13 (see Fig. 2) serve to bring the cylinder 10 to the working height of the machine, which corresponds roughly to a tangential relation of the table 14.

The pointer 23 of the sighting member is placed so as to coincide with a predetermined point on the engraving to be tested. The pressure roll 18 is lowered on to the surface of the cylinder 10 by means of the crank-handle 38 and the control 37—36—35—34. During this operation, the cam 51 closes the electric switch 50 and excites the electro-magnet 30 which, in its turn, pulls down the stop-lever 29 from its free position into the locking position.

The cam 26 is mounted on the shaft 11 of the cylinder 10 in such manner that the notch 27 of the cam 26 is in close contact with the extremity 28 of the stop-lever 29. The cylinder is then laterally locked in position in the machine, with abutment locking rings or any other suitable means. By means of this setting, the position of the engraving to be tested is fixed in the machine. The stop device will ensure that before each printing operation, the cylinder will be in a position identical with that previously given by the sighting device, but without any subsequent recourse to the use of this latter. The pressure roll 18 is raised by means of the crank-handle 38 into the disengaged position shown in Fig. 1. The sighting devices 23—24—25 is then removed and the stopping of the cylinder before each printing operation is effected only by the stop device 26—29 actuated by the electromagnet 30.

The cylinder 10 is rotated in the direction of the arrow F by a crank-handle fixed on the shaft, or by its motor which is coupled to the cylinder by a torque limiter friction clutch. The scraper 16, during this period, is slightly raised from the surface of the cylinder by virtue of the suspension action of the forked lever 21, in cooperation with the shaft 22, the threaded rod 19 and the arm 17. The whole surface of the cylinder thus remains covered by a coating of ink.

The sheet 47 to be printed is then placed on the feed table 14 and this sheet is adjusted against the guides 48. These guides may be and are preferably made fixed, since the stop device 26—29 reproduces exactly before

each printing operation, the same position fixed once and for all by the sighting device 23—24—25. Any adjustment of the guides would even be a drawback, since it would even prevent the discovery of incorrect positions of the engravings on the cylinder. When the pressure means 18 is lowered against the cylinder 10, the shape of the sheet 47 becomes arcuate and the front edge of the sheet is thus raised above the guides 48.

The pressure roll 18 is lowered by means of the crank handle 38 towards the trial cylinder 10. The threaded rod 19 is adjusted in such manner that the scraper 16 begins to touch the surface of the cylinder a little before the end of the travel of the roll 18. A stoppage of this kind will be produced when the cam 51 keyed on the shaft 32 closes the switch 50 at the same time as the circuit of the electromagnet 30. The lever 29 comes into engagement with the notch 27 of the cam 26 and stops the cylinder 10 in the position previously fixed by the sighting device 23—24—25. By turning the crank handle 38 still further, the pressure roll 18 is brought into contact with the sheet 47, which is applied in its turn against the cylinder 10. It is to be noted that even if the pressure roll is lowered by crank handle 38, the lever 53 remains normally in its initial position of rest and has to be moved by the operator for energizing the motor 40 as now described.

In order to begin printing, the operating lever 53 is lowered. This movement of the lever 53 first of all opens the switch 52, which breaks the circuit of the electromagnet 30, frees the lever 29 from the slot 27 of the cam 26, and releases the cylinder 10. The cam 55 which is fixed for rotation with the lever 53, then closes the switch 54 and starts up the printing motor 40. The motor 40 causes the counter-pressure roll 33 to rotate and, the pressure roll 18 being pressed against the cylinder 10, causes the rotation by these applications of the cylinder 10 in the direction of the arrow F. As the cylinder 10 rotates, the sheet 47 also moves forward and, by virtue of the pressure applied on its surface by the pressure roll 18, the sheet 47 receives the ink which the scraper 16, which is lowered before the cylinder is stopped, has left only in the hollow parts of the engraving. Before the sheet 47 has completely passed between the cylinder 10 and roll 18, the printing is stopped by raising the lever 53 from its lower position towards its initial position. The cam 55 again breaks the circuit of the motor 40 and the cam 56 leaves still open the circuit of the electromagnet 30. In order to complete the cycle, the pressure roll 18 is raised by means of the crank handle 38 into its position away from the cylinder 10.

The chain 57 replaces the lever 53 in the initial position, as shown in the drawings. The cycle being completed, the cylinder 10 continues to be rotated in the direction of the arrow F, the scraper 16 being once more moved away.

If it is desired to regulate the length of printing automatically with the photoelectric cell 58, the operation is the same, except that the breaking of the circuit of the motor 40 will take place without actuation of the lever 53, as soon as the sheet 47 has passed completely in front of the cell 58.

In other words, the operation of the proof-press machine in accordance with the invention comprises substantially a preparatory stage, a first control stage, and a second control stage, as follows:

Preparatory stage.—The controls 38 and 53 are at rest. The pressure roll means 18 and the scraper 16 are up. The switch 54 is open and motor 40 is stationary. The switch 52 is closed but the switch 50 is open and the arm 29 is lowered. The proof cylinder 10 is rotated, for instance by an assistant, with a thick layer of ink thereon which is prevented from drying.

First control stage.—The handle 38 is actuated. The switch 50 closes. The arm 29 stops the cylinder 10.

The roll 18 applies against the cylinder while the scraper 16 is made operative.

Second control stage.—The lever 53 is lowered. The switch 52 opens. The arm 29 releases the cylinder 10. The switch 55 closes and energizes the motor 40. The printing is started.

It is to be noted that the operator attacks the second control stage by the lever 53 selectively as soon as the first control stage by the handle 38 is completed, whereby the time during which the cylinder 10 does not rotate is reduced to a minimum and the ink cannot possibly dry. The printing quality is thereby always fine. The chain 57, however, avoids any premature actuation of the lever 53.

What I claim is:

1. A proof-press machine for taking proofs from etched cylinders, comprising in combination, a rotatable etched proof cylinder, an inker receiving said cylinder therein for inking said cylinder, a scraper applicable against said cylinder for removing excess ink therefrom, a stopping means for stopping in one predetermined angular position said cylinder during rotation thereof, said stopping means being movable between an operative and an inoperative position, a pressure roll means for pressing a sheet against said cylinder for printing said sheet, said pressure roll means being mounted between a printing position and an inoperative remote position, a first actuating means for moving said pressure roll means between said positions thereof, a motor means for driving said pressure roll means in rotation and thereby driving said sheet and said cylinder when said pressure roll means is in the printing position, a second actuating means movable from a position of rest to a position energizing said motor means, a one-way connection means between said pressure roll means and said second actuating means for impeding actuation of said second actuating means from its position of rest when said pressure roll means is in its inoperative remote position, a first member on said pressure roll means controlling said stopping means for rendering it operative while said pressure roll means is moved from the inoperative remote position towards the printing position, and a second member on said second actuating means and controlling said stopping means for rendering it inoperative while said second actuating means is moved from its position of rest towards its position energizing said motor means.

2. A machine as defined in claim 1 further comprising

ing resilient restoring means for putting said stopping means in the inoperative position, a first electric circuit, an electromagnet in said circuit adapted to overcome said resilient restoring means for putting said stopping means in the operative position, and a first and a second switch in series in said circuit, said first switch being controlled by said first member for being opened when said pressure roll means is in its inoperative remote position and for closing while said pressure roll means is moved towards its printing position, said second switch being controlled by said second member for being closed when said second actuating means is in its position of rest and for opening while said second actuating means is moved from its position of rest towards its position energizing said motor means.

3. A machine as defined in claim 1 wherein said motor means is an electric motor means, further comprising a second electric circuit for feeding said motor means, and a third switch in said second circuit, said third switch being controlled by said second actuating means.

4. A machine as defined in claim 3 further comprising a fourth switch in said second circuit, and a third member responsive to the presence of a sheet to be printed for closing said fourth switch when said sheet is present and opening said fourth switch when said sheet is not present.

5. A machine as defined in claim 1 further comprising a connection means between said pressure roll means and said scraper for applying said scraper on said cylinder when said pressure roll means is in its printing position and for removing said scraper from said cylinder when said pressure roll means is in its inoperative remote position.

References Cited in the file of this patent

UNITED STATES PATENTS

450,369	Kellberg	Apr. 14, 1891
1,542,027	Blaine	June 16, 1925
1,983,921	Persson	Dec. 11, 1934
2,158,237	Huck	May 16, 1939
2,539,965	Moss et al.	Jan. 30, 1951
2,641,998	Donald	June 16, 1953

FOREIGN PATENTS

712,164	Germany	Oct. 14, 1941
---------	---------	---------------