Feb. 24, 1953 R. B. SMITH 2,629,300

SHEET COUNTING AND TAB INSERTING DEVICE

Filed Feb. 16, 1949 3 Sheets-Sheet 1

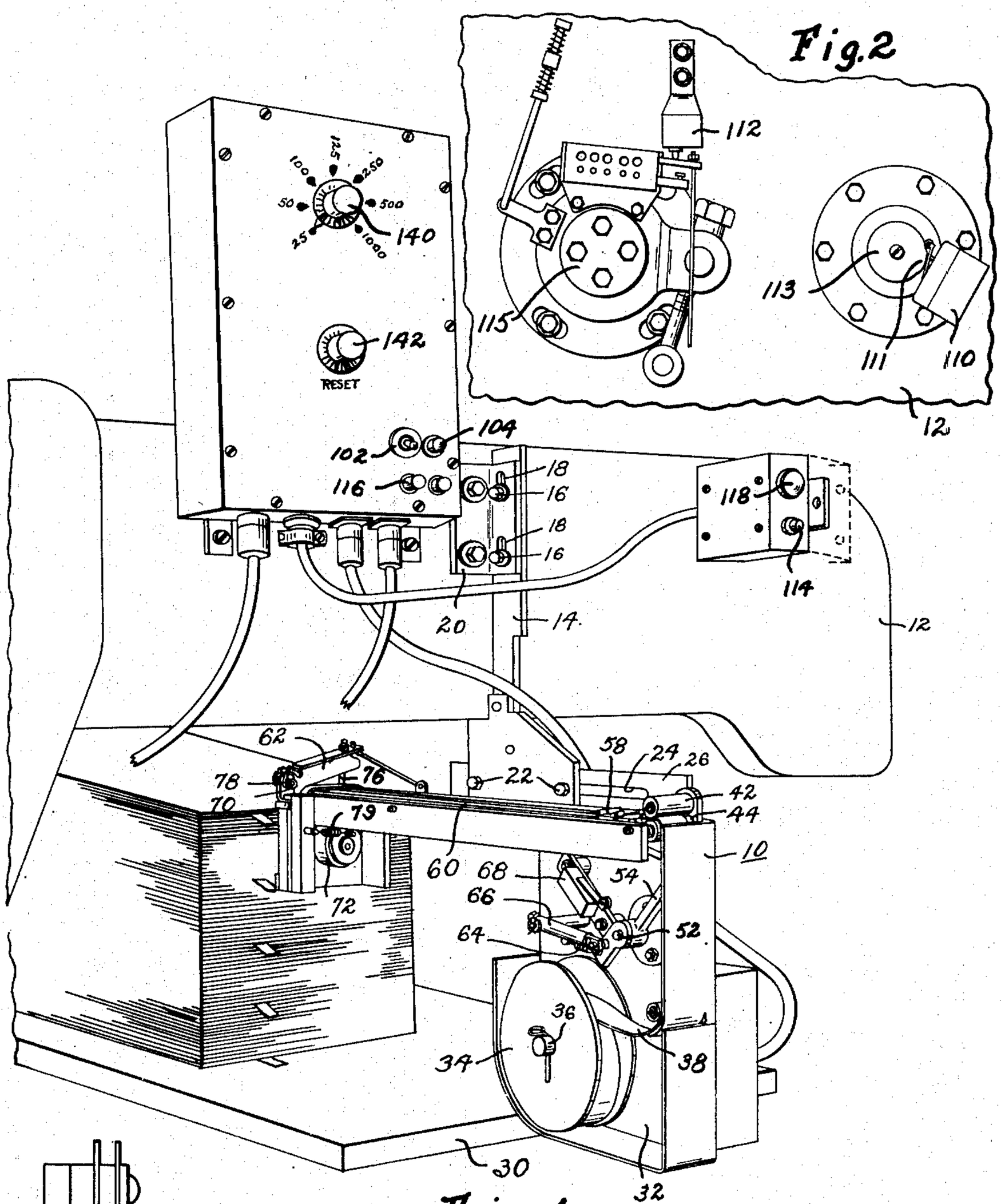


Fig.1

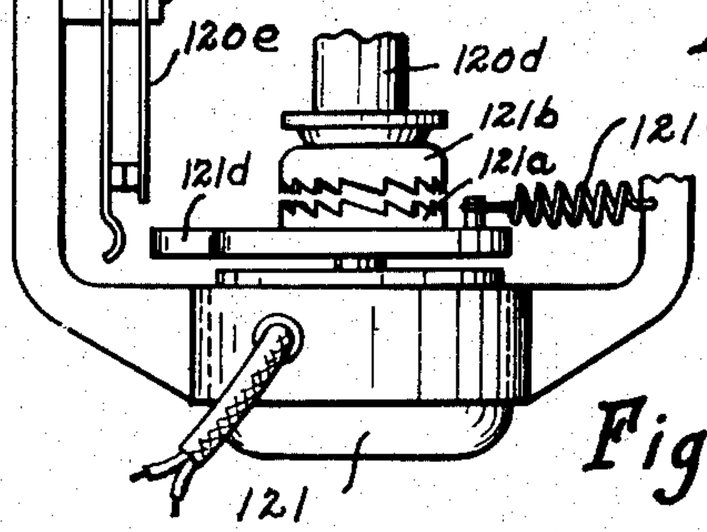


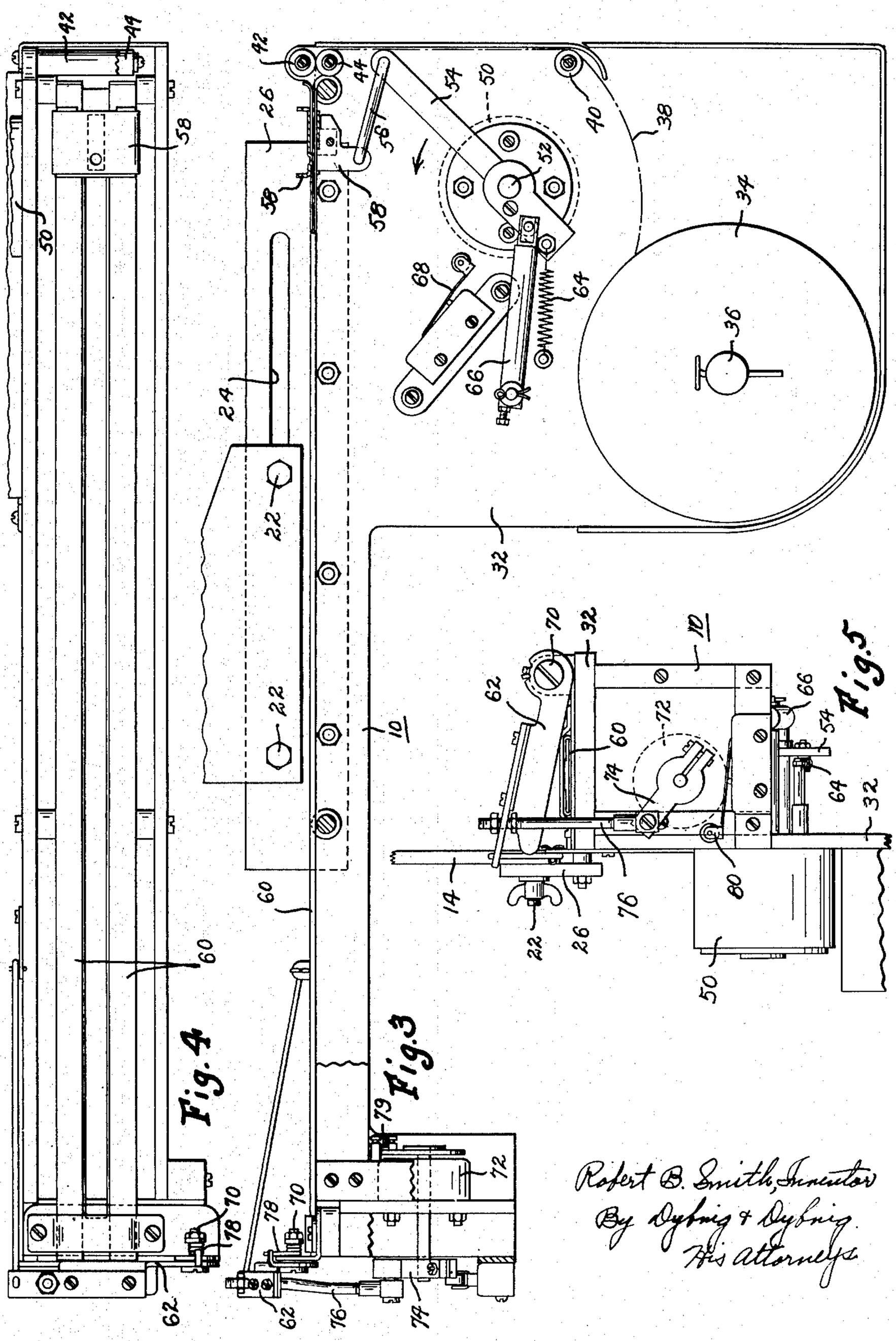
Fig.7

Robert B. Smith, Inventor.
By Dybrig & Dybrig.
His Attorneys.

Feb. 24, 1953 R. B. SMITH 2,629,300

SHEET COUNTING AND TAB INSERTING DEVICE

Filed Feb. 16, 1949 3 Sheets-Sheet 2



Robert B. Smith, Inventor
By Dybvig & Dybvig
His attorneys

Feb. 24, 1953 R. B. SMITH 2,629,300

SHEET COUNTING AND TAB INSERTING DEVICE

Filed Feb. 16, 1949 3 Sheets-Sheet 3

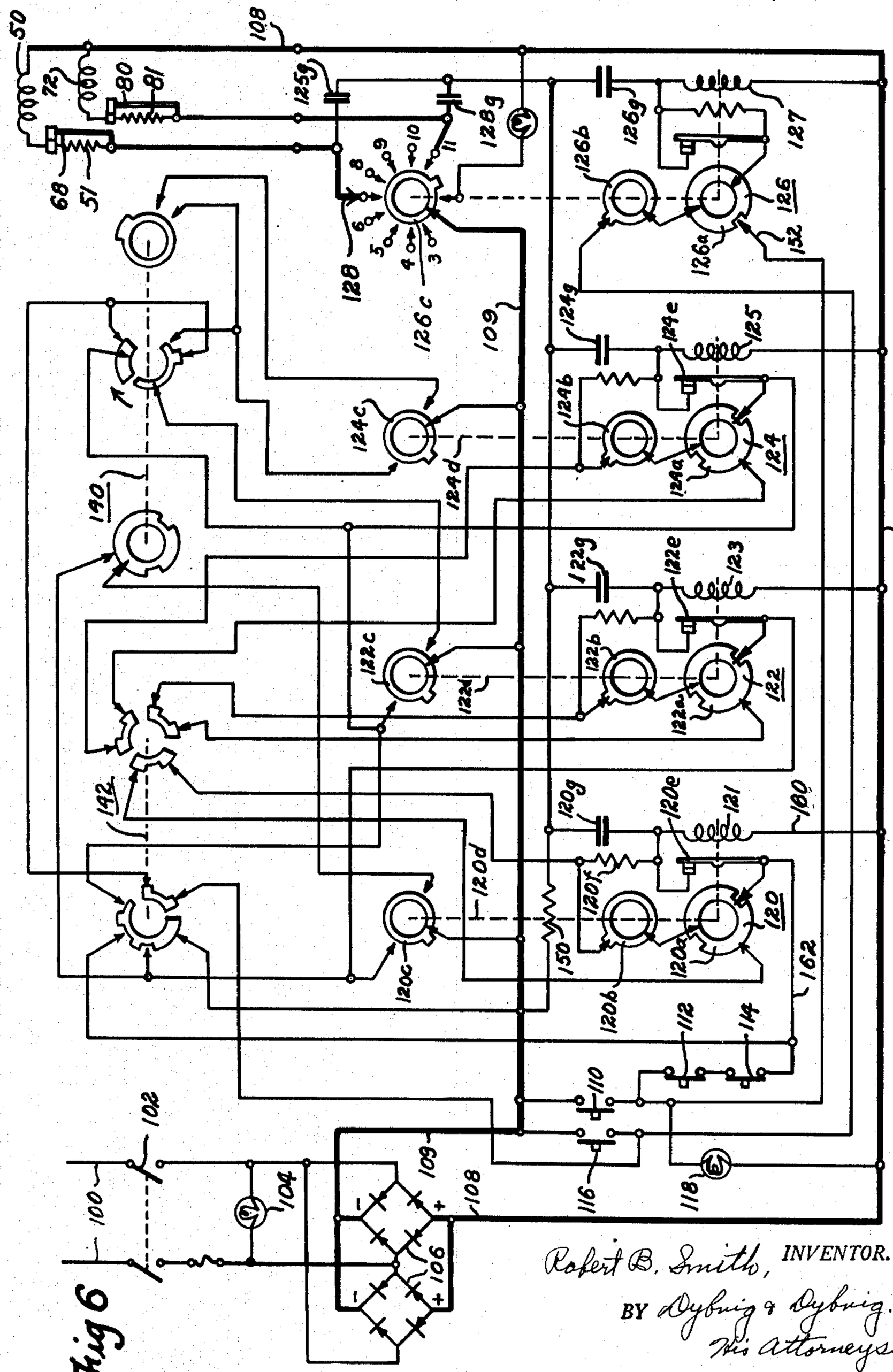


Fig 6

Robert B. Smith, INVENTOR.

BY Dybvig & Dybvig.

His attorneys.

Patented Feb. 24, 1953 2,629,300

UNITED STATES PATENT OFFICE

2,629,300

SHEET COUNTING AND TAB INSERTING DEVICE

Robert B. Smith, Dayton, Ohio, assignor to The Reynolds & Reynolds Company, Dayton, Ohio, a corporation of Ohio

Application February 16, 1949, Serial No. 76,712

6 Claims. (Cl. 93—93)

1

This invention relates to an automatic tab inserter and more particularly to a mechanism for use in combination with printing presses and the like for inserting tabs at given points in the stack of paper issuing from the printing press.

A large number of tab inserting devices have been designed and used from time to time with varying degrees of success. These tab inserters have not been too practical in that they have failed to properly compensate for malfunctions or other peculiarities of the printing press or have otherwise been unsatisfactory. The problem of providing a means for inserting tabs at predetermined intervals in a stack of sheets being printed is somewhat complicated by the use of offset presses in which the press continues to operate even though sheets are rejected at the guide for registration and by the further fact that a number of printed sheets are in the gripper bars and will be added to the stack of printed sheets after the press stops printing any additional sheets. Some tab inserters have used devices for counting the sheets actually delivered onto the stack, but counters of this type are unsatisfactory in that they take up valuable space or interfere with the proper operation of the press. Some of the prior art tab inserters have been operated in response to a predetermined number of revolutions of the impression cylinder shaft or some other movable part of the press, but these are impractical unless they take into consideration various facts such as the fact that the impression cylinder makes several revolutions before the first printed sheet is delivered to the lay-boy.

It is an object of this invention to provide a tab inserter mechanism which includes a counter capable of taking into consideration various factors such as the fact that the impression cylinder makes a predetermined number of revolutions before the first sheet is delivered onto the lay-boy and the fact that there will be times when the impression cylinder will operate when sheets are being rejected at the guide for registration.

It is another object of this invention to provide an automatic tab inserter which is simple and inexpensive and yet reliable in operation.

Another object of this invention is to provide automatic tab inserting means which does not interfere with the mechanism used in printing or stacking the sheets of paper or the like.

Another object of this invention is to provide a mechanism which may be installed on existing printing presses without the need for making any change in the printing press.

2

Another object of this invention is to provide a simple arrangement for straightening the paper strip from which the tabs are cut as it unwinds from the roll.

Another object is to provide a tab inserting arrangement in which the outer end of a roll of paper is projected onto the stack of paper and is held there until several sheets of paper weight the tab down before it is severed from the roll.

Another object of this invention is to provide an arrangement whereby the same mechanism may be used for inserting tabs at various predetermined intervals.

It is another object of this invention to provide a tab inserter which may be set to insert the tabs at various predetermined intervals depending upon the number of sheets of paper to be packaged or grouped together.

Other objects and advantages reside in the construction of parts, the combination thereof and the mode of operation, as will become more apparent from the following description.

In the drawings:

Figure 1 is a perspective view showing the tab inserter attached to the side frame member of a printing press;

Figure 2 is a fragmentary elevational view showing the relationship of two of the control switches to the impression cylinder shaft and the blanket cylinder shaft;

Figure 3 is a side elevational view of the tab inserting mechanism with parts broken away;

Figure 4 is a plan view of the tab inserting mechanism;

Figure 5 is a fragmentary end elevational view of the tab inserting mechanism;

Figure 6 is a diagrammatic view showing the control circuit; and

Figure 7 is a fragmentary elevational view showing one of the switch operating mechanisms.

The tab inserting mechanism disclosed herein is especially adapted for use on standard offset presses of the type in which an impression cylinder continuously rotates and sheets of paper are normally fed continuously through the press but may be rejected for some reason or the other at the conventional guide for registration, in which case the pressure between the blanket and plate cylinders automatically cuts off and no sheets are printed until the guide for registration again begins to accept sheets which are fed in proper registration. The mechanism is also well suited for use in presses wherein the press automatically stops in the event of malfunction of the printing mechanism.

In offset presses the pressure between the blanket and plate cylinders cuts off when for any reason sheets are rejected and when this occurs, the journal for the blanket cylinder moves relative to the main frame of the printing press. Advantage is taken of this movement for controlling the operation of the sheet counter, as will be explained hereinafter.

The tab inserting mechanism is of the type in which the tabs are cut from a strip of paper fed from a roll and in which an electronic control is provided for operating the mechanism which feeds the strip of paper and cuts the strip into tabs.

Referring now to Figure 1 of the drawings, reference numeral 10 designates generally the tab inserting mechanism which is adapted to be secured to the side frame 12 of a printing press by means of an adjustable bracket arrangement 14. The bracket 14 is held in place by means of bolts 16 which pass through slots 18 in an angle bracket 20 which is directly secured to the frame 12. The lower end of the bracket 14 is provided with bolts 22 which fit within the slot 24 provided in the member 26 which supports the tab inserting mechanism. By virtue of the above described arrangement, it is possible to vertically adjust the tab inserting mechanism relative to the printing press frame and it is also possible to horizontally adjust the relationship of the tab inserter mechanism to the stack of sheets fed onto the lay-boy 30 by the printing press.

The tab inserting mechanism comprises a main frame 32 on which there is rotatably supported a spool or roll of paper 34 which is freely rotatable about the stationary pivot pin 36 carried by the support 32. A strip of paper 38 is fed from the roll 34 past the guide roller 40 which is arranged as best shown in Figure 3. As the paper leaves the guide roller 40, it passes between a pair of rollers 42 and 44 which help to take the bend out of the paper leaving the roll 34. As indicated in Figure 1 of the drawings, the paper 38 leaving the roll 34 is fed between the rollers 42 and 44 in such a manner as to reverse the natural curvature of the paper which would otherwise cause trouble as the end of the strip of paper is fed onto the stack of sheets.

The mechanism for feeding the paper from the roll consists of a rotary solenoid 50 which serves to oscillate the shaft 52 to which the arm 54 is secured. Rotary solenoids of this type are now well-known and need no further description other than to state that energization of the solenoid imparts rotary movement to the solenoid shaft 52. The upper end of the arm 54 is connected to a link 56 which in turn is pivotally connected to a paper feeding slide mechanism 58. Paper feeding slide mechanisms of this type are now well-known and need no further description other than to explain that as the solenoid 50 is energized and the arm 54 moves in the direction indicated by the arrow in Figure 3 of the drawings, the paper feeding slide mechanism 58 will grip the strip of paper and cause a predetermined length of paper to be fed between the conventional paper guide 60 which guides the paper toward the cutoff knife 62. The knife 62 is located at the very end of the projecting portion of the paper guide 60 so as to be close to the stack of papers on the lay-boy.

The pivoted arm 54 is biased into the position in which it is shown in Figure 3 by means of a spring 64. A dash-pot 66 is provided for retarding the rate of movement of the paper feeding mechanism so as to avoid backlash of the paper on the roll.

The arm 54 is adapted to move into engagement with a control switch 68 which, as will be explained more fully hereinafter, serves to place a resistance 51 (see Figure 6) in circuit with the solenoid 50 after the solenoid has completed its forward or paper feeding stroke. The purpose of inserting a resistance in series with the solenoid after it has fed the paper is to eliminate needless flow of current through the solenoid after it has completed its work and before it is deenergized. Upon deenergization of the solenoid 50, the spring 64 serves to return the paper strip feed mechanism to the position in which it is shown in Figure 3 of the drawings.

The paper cutoff mechanism comprises the cutoff knife 62 which is mounted on a stationary pivot pin 70 carried by the main frame 32, as best shown in Figure 5. A rotary type of solenoid 72 is provided for oscillating the crank arm 74 which in turn is connected to the cutoff knife 62 by means of a link 76. A torsion spring 78 carried by the pivot pin 70 and a coil spring 79 are arranged to urge the cutoff knife 62 and the operating mechanism therefor into the position in which it is shown in Figure 5 of the drawings.

Upon energization of the solenoid 72, the free end of the cutoff knife 62 will be pulled down by the link 76 until the lower end of the link 76 strikes the switch 80 which serves to insert a resistance 81 in series with the solenoid 72, so as to prevent unnecessary flow of current through the solenoid 72 after the cutting operation has been completed but before the circuit to the solenoid has been broken. Upon deenergization of the solenoid 72, the springs 78 and 79 will return the cutoff knife or blade 62 to the position in which it is shown in Figure 5 preparatory to reoperation of the tab inserting mechanism.

The tab inserting mechanism just described may be controlled by means of either a mechanical or an electronic counter so long as the counter is capable of taking into consideration all of the factors affecting the delivery of printed sheets onto the lay-boy. Thus, it is essential that the counter be capable of operating the tab inserting mechanism in response to the actual delivery of a predetermined number of sheets onto the lay-boy. Consequently, it is desirable that the counting mechanism include means for counting the number of revolutions of the impression cylinder shaft, making proper compensation for operation of the impression cylinder shaft at such times when the press is operating but the sheets are rejected at the guide for registration. In a standard offset press the impression cylinder shaft operates continuously, as explained hereinabove, but there will be times when the sheets to be printed will be rejected at the guide for registration, in which cases rotation of the impression cylinder shaft is not truly indicative of the number of sheets being fed through the press.

For purposes of illustration we have shown an electronic counter system in which an impulse is set up once for each revolution of the impression cylinder shaft and in which these impulses are fed into an electrical accumulator which may be set to accumulate a predetermined number of impulses before the tab inserting mechanism is

energized. The means for setting up the impulses includes a switch 110 (see Figures 2 and 6) which is operated by a cam 111 on the end of the impression cylinder shaft 113. Suitable delay means, which will be described hereinafter, is provided for compensating for the fact that the impression cylinder shaft will make a predetermined number of revolutions at the beginning of the printing operation before the first printed sheet is delivered onto the lay-boy. The number of revolutions of the impression cylinder shaft required before a printed sheet is delivered onto the lay-boy varies in different types of printing presses and for that reason the counting mechanism disclosed herein includes means for adjusting the amount of delay so as to make the device applicable to different types of printing presses.

A suitable count selector arrangement has also been provided so as to select the frequency at which the tabs are inserted. For purposes of illustrating the invention, there is shown a count selector which may be set to insert a tab after each 25 sheets or after various multiples of 25, whereas the device could be designed so as to insert sheets at some other scheduled frequencies. The counting mechanism also includes a reset arrangement which makes it possible to reset the counter to zero after a given counting operation.

Referring now to Figure 6 of the drawings wherein I have shown a preferred embodiment of the circuit for use in the counting mechanism, reference numeral 100 designates conventional 115 volt A. C. power lines which supply electrical energy to the mechanism. A master control switch 102 is provided in the main power lines for turning on and off the apparatus. A pilot light 104, which is directly connected across the power lines 100, serves the purpose of giving an indication as to whether or not the switch 102 has been closed. A pair of rectifiers 106 have been provided for rectifying the alternating current and for supplying direct current to the direct current power lines designated by the reference characters 108 and 109. The power lines 108 and 109 have been shown in heavy lines for the purpose of distinguishing the main power lines from the other lines involved.

The counting mechanism includes a first cam operated switch 110 which is arranged adjacent the impression cylinder shaft 113 so as to be closed once for every revolution of the impression cylinder shaft. Reference numeral 112 designates a switch which is adapted to be closed in response to eccentric movement of the blanket cylinder journal 115 (see Figure 2). Thus, if for any reason the printing press fails to print a sheet during any given revolution or revolutions of the impression cylinder shaft 113, the switch 112 will be opened.

Reference numeral 114 designates a manually operable switch which is arranged to momentarily nullify the effect of opening and closing the cam switch so that if it is desired to remove a number of sheets from the lay-boy for any reason whatsoever, such as when imperfections appear in the sheets, it is possible for the attendant to open the switch 114 for a given number of revolutions of the impression cylinder shaft so as to automatically compensate for sheets removed from the stack being counted. Reference numeral 116 designates a switch which under certain circumstances can be used for manually energizing the tab inserter so as to insert a tab at a desired point in the stack. A unit count light 118 has been provided in the circuit in such a place that it will flash once for each revolution of the impression cylinder shaft. The purpose of this light is to assist the press operator in determining how long to hold the noncount switch open so as to compensate for sheets removed by him from a given stack.

The electronic counter comprises a series of rotatable wafer switches which are designed to interpret the impulses which result from the opening and closing of the switches 110, 112, 114 and 116. Three of these wafer switches, which have been designated generally by the reference numerals 120, 122 and 124, are adapted to be operated by means of a rotary solenoid of the type shown in Figure 7 and which will be described more fully hereinafter. These three switches make one complete revolution for each 10 impulses transmitted to the solenoids which operate the respective switches. A fourth switch 126, which may be referred to as a delay counter switch, is designed so as to require 12 impulses for each revolution of the switch.

In Figure 7 of the drawings there is shown somewhat diagrammatically the arrangement of the switch actuating mechanism used for actuating the switches 120, 122, 124 and 126. Since the operating mechanism for all four of these switches is basically the same, only the operator for the one switch 120 will be described. Reference numeral 121 designates a conventional rotary solenoid which is used for operating the oscillatable ratchet disc 121*a* which in turn operates a complementary rotatable ratchet disc 121*b* so as to step the switch operating shaft 120*d* around one revolution for each ten electrical impulses received by the solenoid 121. In other words, the arrangement of the switch contacts and the ratchet elements 121*a* and 121*b* is such that the rotatable contact wafers carried by the shaft 120*d* normally make one revolution for each ten revolutions of the impression cylinder shaft 113.

Upon deenergization of the solenoid 121, the coil spring 121*c* returns the ratchet element 121*a* to its zero position whereby it is ready to reengage the ratchet element 121*b* to step it around another step. Since more power is required for actually rotating the wafer switches than is required to overcome the action of the spring 121*c*, provision is made for reducing the flow of current through the solenoid 121 upon the completion of its switch operating stroke. This latter means comprises a switch 120*e* which is adapted to be opened by means of a cam projection 121*d* formed on the ratchet element 121*a*. Opening of the switch 120*e* places the resistance 120*f* in series with the solenoid 121 so as to reduce the flow of current through the solenoid 121 to an amount which is merely adequate to prevent the spring 121*c* from returning the solenoid to its zero position.

The various stationary contacts which are arranged to be engaged by the contact wafers have been designated by arrows, it being understood that each arrow designates a stationary contact which is adapted to make contact with any portion of the rotatable contact wafer having any part movable into contact with the arrow. In order to eliminate unnecessary prolixity, the construction of the wafer switches will not be described in greater detail as they are of standard construction and are now well-known to all those skilled in the art. The shape of the various wafers and the arrangement of the station-

ary contacts are those shown in the drawings.

Each of the wafer switches 120, 122, 124 and 126 is adapted to be electrically operated in the same general manner. The switch operating solenoids 123, 125 and 127 are similarly provided with resistance inserting switches 122*e*, 124*e* and 126*e* respectively which serve to insert resistances in series with the respective solenoids.

Suitable spark suppression condensers 120*g*, 122*g*, 124*g*, 126*g* and 128*g* have been arranged as shown in circuit with a high resistance 150. Spark suppression means of this type are well-known and need no further description.

The switch 120 may be conveniently referred to as the first cascade switch. The arrangement of the circuit and the design of this switch is such that essentially it will accumulate five impulses before transferring one impulse to the second cascade switch 122. Cascade switch 122 in turn accumulates five impulses before transmitting an impulse to the third cascade switch 124. Reference numeral 126 designates the delay counter which operates to delay the transfer of impulses and consequently the insertion of the sheets during the time when the press first starts up and the time when it delivers its first sheet to the lay-boy, as will be explained more fully hereinafter. The normally stationary contact 128 may be manually shifted from one contact to another so as to be in engagement with any one of the numbered stationary terminals provided on the delay counter switch 126. The numbers adjacent the contacts represent the delay which each would provide. Thus, when the contact 128 is arranged to engage the stationary contact No. 7, as shown, there will be a delay of 7 between the time that the cam switch 110 first starts operating and the time that the first tab is inserted.

Another function of the delay counter switch 126 is to delay the energization of the cutoff solenoid a predetermined number of impulses after the energization of the tab inserting operation. It will be noted that contact No. 11 of the delay counter switch 126 is connected to energize the cutoff solenoid when the projection on the wafer 126*c* contacts the same and consequently the cutoff solenoid will not be energized until the 11th impulse has been transmitted to the delay counter switch 126. By virtue of this arrangement, assurance is given that the end of the paper strip 38 will be properly held in place by printed sheets which have been piled thereon before the knife cuts off the tab. With the contact 128 of the delay counter arranged to contact the No. 7 contactor of the switch 126, it is obvious that there will be four sheets delivered to the lay-boy between the time a tab has been inserted and the time that the tab is cut off. However, if the contactor 128 were arranged to engage contact No. 5, there would be six sheets delivered to the lay-boy between the insertion of a tab and the cutting of the tab.

Reference numeral 140 generally designates a manually operable count selector switch of the wafer type which sets up the necessary circuits to adjust the tab inserting mechanism to insert a tab at the desired count intervals. The setting of the count selector, as shown, is such that a tab will be inserted for every 25 sheets delivered to the lay-boy. By moving the count selector switch in the direction indicated by the arrow, it can be set to insert tabs at any one of the following intervals: 50, 100, 125, 250, 500, or 1,000. A manual reset switch of the wafer type, generally designated by the reference numeral 142, has been provided for clearing the circuits and resetting them to the zero position at the beginning of a given printing job.

A brief description of the manner in which the system operates will now be given. When the printing press goes into operation, the impression cylinder shaft starts to rotate and serves to close the switch 110 once for each revolution of the impression cylinder shaft. Closing of the switch 110 automatically connects the unit count lamp 118 across the output of the rectifiers 106. Closing of the switch 110 also connects the stationary contact 152 of the delay counter switch 126 directly to the negative side of the power circuit, so that when the solenoid 127 is energized so as to move the contact wafer 126*a* one step, the wafer 126*a* will be connected to the negative side of the line and will remain thus connected during the eleven succeeding impulses received by the solenoid 127. Closing of the cam switch 110 also connects the nonprint switch 112 to the negative side of the circuit. Just as soon as the sheets to be printed reach the guide for registration, the blanket cylinder will move toward the plate cylinder in accordance with standard practice in offset printing presses, and as the blanket cylinder thus moves, the nonprint switch 112 will be moved into the closed position so as to connect the solenoid 121 of the first cascade switch 120 into the circuit. The noncount switch 114 normally remains closed at all times except when the press operator manually opens the same so as to prevent impulses from reaching the solenoid 121 even though the cam switch 110 and the nonprint switch 112 indicate that sheets are being printed.

Assuming that the switches 112 and 114 remain closed, the solenoid 121 will be energized every time the cam switch 110 is closed in response to rotation of the impression cylinder shaft 113. In referring to Figure 6 of the drawings, the reason for this is very apparent, since the one terminal of the solenoid 121 is always connected to the positive side of the power line 108 by means of the conductor 160 and the other terminal of the solenoid 121 is connected to the negative side of the circuit through the switch 120*e*, the conductor 162 and switches 114, 112 and 110. By tracing the various other circuits shown in Figure 6, one would find that when the first impulse is set up by the closing of the cam switch 110 (again assuming that switches 112 and 114 are closed), the solenoids 121, 123, 125 and 127 will be energized and that upon reopening of the switch 110, the solenoids 123 and 125 will remain energized but solenoids 121 and 127 become deenergized. The second impulse coming from the switch 110 causes the circuits to the solenoids 121, 125 and 127 to be closed and the circuit to the solenoid 123 to be opened. Reopening the switch 110 leaves all of the solenoids, with the exception of the solenoid 125, deenergized. Upon the third closing of the switch 110, the solenoids 121 and 125 are energized. The solenoid 125 then remains energized until the sixth time that the switch 110 closes. When the switch 110 opens after the sixth impulse, the solenoid 123 remains energized until the seventh impulse, at which time the solenoid 123 becomes deenergized. After the eleventh impulse, the delay counter switch quits operating until the twenty-fourth impulse (assuming that the count selector is set to insert a tab at 25 sheet intervals). Twenty-five impulses after the first tab was inserted, the tab feeding solenoid 50 will be energized and four impulses thereafter (assum-

ing that the contact 128 is arranged to engage contact No. 7 of switch 126), the tab cutoff mechanism will come into operation. Since the arrangement of the contacts and the contact actuating mechanism is clearly disclosed in Figure 6, and since anyone skilled in the art could construct a counter from the description given hereinabove when taken in the light of the disclosure in the drawings, it is not necessary to go into greater detail in describing or tracing the large multitude of circuit arrangements which result from the operation of the device.

While the solenoids used for operating the wafer switches and the tab inserting mechanism are extensively known in the industry as "rotary" solenoids and have thus been referred to herein, they rotate through only a fraction of a complete revolution and then are returned to the starting position by some means such as the springs shown herein. Thus, the paper feeding solenoid 50 (Figures 3 and 5) rotates through 90° and the cutoff solenoid 72 rotates through only 45° before being returned to starting position. The shafts of the rotary solenoids move axially a small amount when the solenoids are energized and it is this movement which causes the ratchets 121*a* and 121*b* shown in Figure 7 to engage one another. Since rotary solenoids of this type are now very well-known and are used extensively in the art and since the internal structure of the solenoids is not set forth in any of the claims, it is not believed necessary to further describe the solenoids.

While I have shown a tab inserting mechanism wherein the tabs are inserted at intervals which are multiples of 25, it is obvious that the mechanism could be adopted for counting in dozens or multiples of a dozen or in quantities such that a tab would be inserted every so many inches or feet. Likewise, the tab inserting mechanism could be used in paper mills where four or five rolls are sheeted at one time. In this latter case, by using the 125 count setting, it would be possible to sheet four rolls and have 4×125 or 500 sheets or one ream between the tabs. In a paper mill installation, the counter could be operated in response to operation of the cutting bar or some other suitable part of the mill.

Although the preferred embodiment of the device has been described, it will be understood that within the purview of this invention various changes may be made in the form, details, proportion and arrangement of parts, the combination thereof and mode of operation, which generally stated consist in a device capable of carrying out the objects set forth, as disclosed and defined in the appended claims.

Having thus described my invention, I claim:

1. In combination with an offset printing press having an impression cylinder and a blanket cylinder; means for inserting tabs at predetermined intervals in the stack of printed sheets leaving the printing press comprising, means for supporting a roll of flexible strip material, counting means operated in response to rotation of said impression cylinder, tab feeding means for feeding the end of said flexible strip material onto the top of the stack of printed sheets, and means operated by said counting means in response to delivery of a predetermined number of printed sheets after each operation of said tab feeding means for severing the end portion of said flexible strip material, said counting means including a first switch means operative in response to rotation of said impression cylinder and a second switch means operative in response to sidewise movement of said blanket cylinder for modifying the operation of said counting means so as to compensate for failure of the printing press to print sheets while the impression cylinder is still operating.

2. In a printing press, means including a rotating impression cylinder for printing and stacking sheet material, sheet counting means including means operated by said impression cylinder for counting the number of sheets passing over said impression cylinder, means operated by said counting means for inserting tabs at predetermined intervals in said stack of sheet material, and manually operable means for momentarily rendering said counting means inoperable, said counting means including means for delaying the insertion of a tab at the beginning of the printing operation so as to compensate for the delay between the time the first sheet passes over the impression cylinder and the time that the sheet is delivered to the stack.

3. In a machine of the character described, continuously operable means for feeding, printing and stacking sheet material, means for supporting a roll of flexible strip material, counting means operable by said sheet feeding means for counting the number of sheets fed onto said stack, first means operated by said sheet counting means at given count intervals for projecting the end of said flexible strip material onto the stack of said sheet material and second means operated by said counting means for severing marker tabs from the end of said flexible strip material, a signal light, means for momentarily energizing said signal light once for each sheet passing through said sheet feeding means, and manually operable means for rendering said counting means inoperable during a predetermined number of flashes of said light whereby said predetermined number of sheets may be removed from the stack without altering the number of sheets delivered to said stack between adjacent marker tabs.

4. In combination with a printing press having a continuously rotatable impression cylinder and a blanket cylinder which moves sideways when sheets are rejected at the guide for registration, means responsive to rotation of said impression cylinder for setting up electrical impulses, an electrical accumulator for accumulating impulses set up in response to rotation of said impression cylinder, and tab inserting means operated in response to the accumulation of a predetermined number of electrical impulses by said accumulator, said electrical accumulator comprising means for delaying the accumulation of impulses for a predetermined number of impulses at the beginning of the printing operation so as to allow the first sheet to be printed to pass through the press before the accumulation of impulses begins.

5. In combination with a printing press having a continuously rotatable impression cylinder and a blanket cylinder which moves sideways when sheets are rejected at the guide for registration, means responsive to rotation of said impression cylinder for setting up electrical impulses, an electrical accumulator for counting impulses set up in response to rotation of said impression cylinder, tab inserting means operated at predetermined counts in response to the accumulation of a predetermined number of electrical impulses by said accumulator, said electrical accumulator comprising means for delaying the accumulation of impulses for a prede-

termined number of impulses at the beginning of the counting operation, and means operated in response to sideways movement of said blanket cylinder in response to rejection of sheets at the guide for registration for rendering said electrical accumulator ineffective for accumulating impulses set up in response to rotation of said impression cylinder for a predetermined number of impulses corresponding to the number of sheets rejected at the guide for registration.

6. A tab inserter for use in inserting tabs in the stack of sheets delivered onto a lay-boy by a printing press comprising in combination, a main frame having a first portion adapted to be located at the side of the printing press and a second portion adapted to extend toward the sheets being fed onto the stack, means on one side of said first portion for supporting a roll of paper ribbon, a rotary solenoid located on the opposite side of said first portion, means for guiding paper from said roll along said second portion, means operated by said rotary solenoid for feeding paper from said roll through said guide means, a cutoff knife mounted adjacent the end of said second portion for cutting said paper ribbon into short tabs, a second solenoid for operating said cutoff knife, and means for counting the number of sheets delivered onto the lay-boy, said counting means including means for operating said first solenoid at a given count interval and for energizing said second named solenoid a predetermined count interval after the operation of said first named solenoid.

ROBERT B. SMITH.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,118,009	Huckins	Nov. 24, 1914
1,119,861	Niles	Dec. 8, 1914
1,770,973	Coy	July 22, 1930
2,122,710	Bidwell	July 5, 1938
2,346,869	Poole	Apr. 18, 1944
2,382,998	Kleinschmidt	Aug. 21, 1945