

April 7, 1953

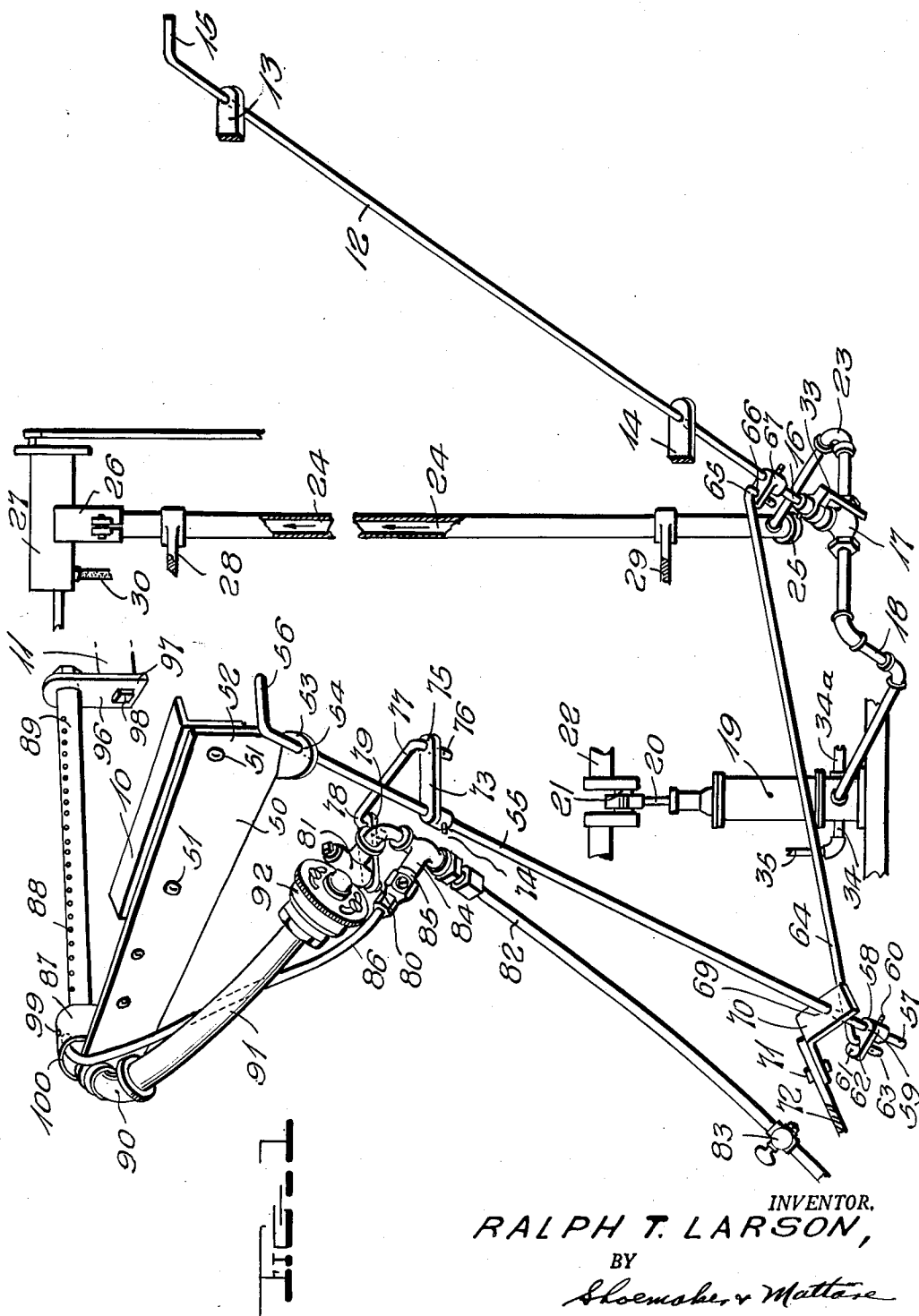
R. T. LARSON

2,633,797

PNEUMATIC SHEET FEEDER FOR PRINTING PRESSES

Filed March 19, 1948

3 Sheets-Sheet 1



INVENTOR,
RALPH T. LARSON,

BY

Shoemaker & Mattare

ATTORNEYS

April 7, 1953

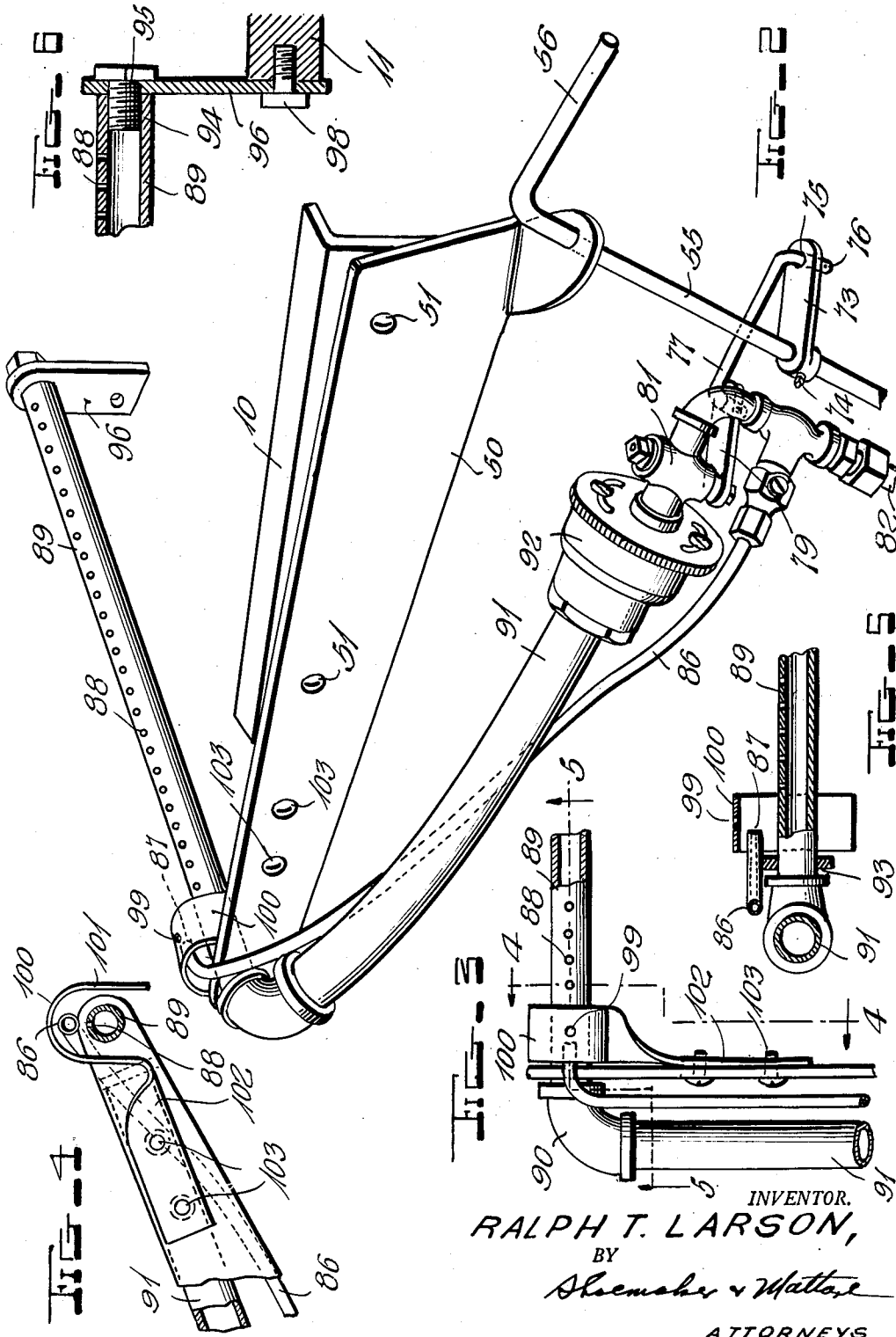
R. T. LARSON

2,633,797

PNEUMATIC SHEET FEEDER FOR PRINTING PRESSES

Filed March 19, 1948

3 Sheets-Sheet 2



INVENTOR.
RALPH T. LARSON,

BY

Shoemaker & Mattare

ATTORNEYS

April 7, 1953

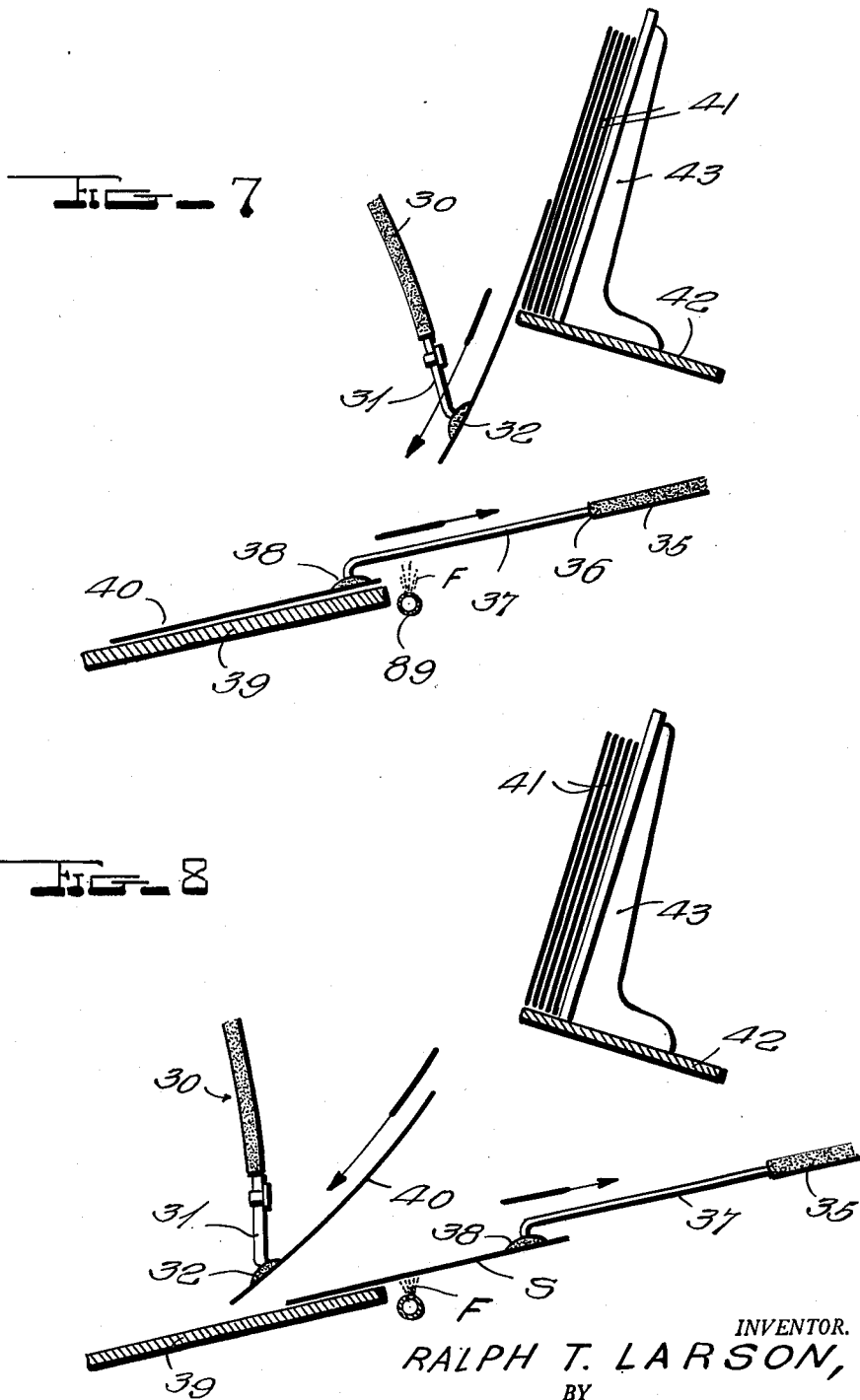
R. T. LARSON

2,633,797

PNEUMATIC SHEET FEEDER FOR PRINTING PRESSES

Filed March 19, 1948

3 Sheets-Sheet 3



INVENTOR.
RALPH T. LARSON,

BY

Sloemaker & Mattore

ATTORNEYS

UNITED STATES PATENT OFFICE

2,633,797

PNEUMATIC SHEET FEEDER FOR PRINTING PRESSES

Ralph T. Larson, Washington, D. C.

Application March 19, 1948, Serial No. 15,795

4 Claims. (Cl. 101—287)

1

My invention relates to improvements in printing presses.

The invention is more particularly directed to improvements in printing presses with respect to offset control, viz., the drying of the ink on the paper while the sheet is being drawn over flame jets of a gas burner or the like, the elimination of static electricity from the paper sheets which is accomplished by means of heat from the said burner jets, and more particularly and in association with the foregoing a novel form of dual control of the suction for feeding and delivering the sheets of paper to and from a printing position in the printing machine and which dual control is operable from either side of the printing machine, depending where the operator of the machine is standing or positioned at the time that regulation or control of the suction is necessary.

My invention also comprehends the combination of a dual control for the suction producing means for the feeding and delivering of the sheets of paper in a printing press with a regulatable means for supplying the proper amount of gas to the burner which eliminates offset in the printing process and static electricity from the sheets that are handled in the printing machine.

In printing machines now available on the market and one type of which is hereinafter more fully described, such machines are furnished to the trade and include a single control which is usually at the right front side of the printing press, which control is for the suction producing means for the feeding and delivering of the paper sheets in the course of printing. Further, with available printing machines or printing presses of the so-called platen type, there is no provision made for the prevention of offset, nor is there provision made for the elimination of static electricity that exists when sheets of paper to be printed are stacked together and delivered to the platen for printing and likewise when delivered from the platen after printing has been accomplished. Thus, it is clear that the now available printing presses while quite satisfactory to a degree do actually possess some disadvantages in that the operator must be adjacent the right front side of the machine in order to regulate or control the amount of suction that is supplied to the suction feeding and delivering means for the paper sheets. If it should happen that the operator is on the left side of the machine at the time, and frequently he is, then he must walk around either the back of the machine or the front to get to the right front side in order

2

to regulate the suction means. Therefore, it is readily seen that considerable effort and time is lost on the part of the operator and there may be times when the regulation of the suction should be effected and with the operator out of position with respect to the positioning of the operating rod for controlling the suction means, this control might be overlooked and, therefore, an effective printing, regardless of its nature, would not result.

Further, with regard to the printing presses now available, and lacking the means for elimination of static electricity from the sheets of paper and the prevention of offset, there quite frequently results smeared printing and the continuous operation of the press is not possible due to the sheets becoming adhered to one another as the result of the inherent static electricity and thus not properly fed to the platen and away from the same.

In my improvements for printing machines or printing presses, I definitely overcome the disadvantages of the printing presses and machines that are now available in that automatically during the course of printing the paper, the static electricity is eliminated and offset is prevented and the operator may operate and control the suction means from either side of the printing press depending upon which is the most convenient to him as regards his location and the duties or observations of the machine that he may be performing or overseeing at the time.

With the foregoing in mind, it is an object of my invention to provide simple and inexpensive means for the elimination of static electricity in the course of printing paper sheets or the like and the prevention of offset and a dual control for the suction means for the feeding and delivering of the paper sheets.

Another object of my invention is to provide simple and inexpensive means for the dual control of the suction for the feeding and delivering of paper sheets in standard or conventional printing presses and without in any way altering to any extent the printing machine or press as is furnished to the trade.

Another object of my invention is to provide inexpensive means for attachment to a standard or conventional printing press whereby static electricity in the sheets of paper and offset is prevented.

Another object of my invention is to provide inexpensive means for attachment to a standard or conventional printing press whereby static electricity in the sheets of paper and offset is

prevented and in combination with a dual control for regulating and controlling the suction means for feeding and delivering sheets of paper.

Another object of my invention is to provide in combination a simple and relatively inexpensive attachment for conventional printing machines or presses wherein two separate but connected controls for the suction means for feeding and delivering the sheets of paper are provided, and whereby when either one of the controls for the suction means is operated, the amount of gas supplied to a burner for the prevention of offset and the elimination of static electricity is automatically and simultaneously accomplished.

Another object of my invention is to provide a control means for the suction feeding and delivering of the sheets of paper in a printing press that is attached to a similar control means supplied with said press and capable of being operated at a distance remote from the last mentioned control means.

Another object of my invention is to provide a very inexpensive attachment for conventional printing presses which will enable the operator of the press to control the feeding and delivering of the sheets of paper from either side or front of the press.

With the above and other objects in view, the invention consists in the construction and novel combination and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings and pointed out in the claims hereto appended, it being understood that various changes in the form, proportions, and minor details of construction, within the scope of the claims, may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings, like reference numerals denote the same parts in the several figures.

Fig. 1 is a perspective view showing the dual control arrangement for the suction for feeding and delivering the sheets of paper and the control of the gas for the burner for the prevention of offset of the printed sheets and elimination of static electricity in the handling of the sheets of paper, certain portions being shown in cross section;

Fig. 2 is a perspective view on an enlarged scale showing more in detail the control means for the supply of gas and the pilot gas burner and depicting a portion of the control means for the suction producing means for feeding and delivering the sheets of paper to and from the platen of the press.

Fig. 3 is a plan view with parts broken away in section, showing particularly the structural features embodied in the burner;

Fig. 4 is a transverse vertical section taken on the line 4—4 of Fig. 3;

Fig. 5 is a detail longitudinal sectional view with parts broken away in section, taken on the line 5—5 of Fig. 3 and looking in the direction of the arrows;

Fig. 6 is a detail vertical sectional view showing the mounting of one end of the burner proper and how it is bolted to the delivery track bracket end plate which is a conventional part of a printing press;

Figs. 7 and 8 are schematic views showing some of the essential parts of the printing press and more particularly as to how the sheets are fed from a stack to the platen and delivered from said platen after being printed.

The invention will be more readily understood by referring to the drawings in detail. The following is a description of the essential parts of a conventional printing press and actually forms no part of my invention except as hereinafter described in combination. The conventional printing press includes an upper left side frame 10 which is in the form of an angle iron. The delivery track bracket and plate of the printing press is denoted at 11 and is disposed at the right side of the machine. The conventional printing press is placed on the market and includes a suction feed cut-off lever 12 which is slightly angularly disposed with respect to the perpendicular and is mounted in spaced brackets 13 and 14 that are suitably attached to the machine frame. This cut-off lever at its upper end is in the form of a handle 15 and the lower end 16 thereof is connected with the stem of a rotary suction feed cut-off valve 17 and which valve is connected by means of the piping 18 with the vacuum or suction creating pump 19 and which pump has a connecting rod 20 connected with a crank 21 of the crank shaft 22, the ends of which shaft are suitably positioned in bearings in the opposite side frames of the printing press. The suction feed cut-off valve 17 is connected by piping 23 to an upstanding hollow feeder arm post 24 that is closed at its lower end 25 and has connected therewith at its upper end 26 a feeder arm post head 27. The feeder arm post 24 is connected by means of spaced brackets 28 and 29 to a suitable part of the frame of the printing press. A flexible suction pipe 30 is attached at one end to the feeder arm post head 27 and the other end thereof is connected with a rigid hollow pipe 31, on the end of which is a flexible pick-up cup 32. It is understood that a plurality of the pick-up or suction cups 32 are provided for feeding paper sheets from the stack to the printing press platen as is later described herein more in detail. The suction feed cut-off valve is provided with a rotatable depending arm 33 which limits the amount of opening of that valve. The vacuum or suction pump is provided with a take-off in the form of a pipe and nipple 34 to which is indirectly attached a flexible suction hose 35. The free end of this hose, 36, has connected therewith a rigid arm 37 to which is attached a suction or sucking cup 38 which acts to deliver the printed sheets from the platen. The platen 39 serves to receive thereon sheets 40 that have been delivered from a stack of sheets 41 by means of the feeder arms and suction cups 31 and 32. After the sheets have been delivered to the platen and printing effected, they are delivered from the platen by means of the suction cups 38 on the ends of the rigid arms 37. A blower pipe hose is connected with rigid nipple 34 on the suction pump. The stack of sheets 41 are supported on their sides or ends in a suitable support 42 provided with a follower 43. This support acts as a stock or stack magazine for the unprinted sheets of paper.

The essential parts of the printing press that are described immediately above, for example are those parts of a printing press on the market known as the Kluge press and the sheet delivering feature of such press is shown in the Kluge et al. Patent No. 1,621,547, March 22, 1947. As already stated, the parts that are described above are conventional parts of a Kluge or other similar printing press or printing machine and are merely illustrated in order to associate there-

with my invention which constitutes the dual

5

control for the suction producing means for the feeding and delivering of the sheets of paper and/or in connection and combination with the gas or other burner or heater for prevention of offset and elimination of static electricity from the sheets of papers handled in the course of printing.

In coming to my invention, I provide an elongated metallic or other rigid bracket 50 that is attached by means of bolts or screws 51 to the flange of the angle iron frame 10 of the press. The forward end of the bracket 52 at its lower portion is provided with a suction feed control or cut-off lever guide or support 53 which has an opening 54 therein through which my suction feed cut-off or control lever 55 extends downwardly and at substantially the same angle with respect to the perpendicular as the first mentioned suction feed cut-off and control lever 12. One end of my lever is provided with a handle 56 and adjacent the other end 57 thereof I provide an arm 58 that has an opening 59 therein and is fixedly secured adjacent the end 57 by means of a bolt or screw 60. This arm includes an outwardly extending portion 61 provided with an opening 62 into which projects the down-turned end 63 of a connecting link 64, the other end of which, 65, extends through an opening 66 in an arm 67 that is affixed by means of a screw 68 to adjacent the lower end of the control lever 12. My control and cut-off lever 55 adjacent its lower end extends through an opening 69 in a bracket 70, the latter being attached by means of a bolt 71 to a part of the printing press 72. Thus, it will be seen that with the bracket 70 and the support or guide 53, the control and feed cut-off lever 55 is mounted for rotation or oscillation in the guide and the bracket and is prevented from being accidentally displaced therefrom in substantially the same manner that the control and cut-off lever 12 is mounted in the brackets 13 and 14 that are conventional parts of the printing press.

From the foregoing, it will be seen that I have provided an additional suction feed control or cut-off lever 55 that in viewing the printing press in front elevation is at the left front side of the printing press, whereas the suction feed control and cut-off lever 12 that is supplied originally with the press is at the right front side of the printing press. Thus, with my control and cut-off lever connected by the link 64 to the control and cut-off lever 12, it will be clear that when either the lever 12 or 55 is operated that in turn the suction feed cut-off valve 17 is necessarily operated and can control either one of said levers 12 or 55. With this arrangement the operator can control the suction feed cut-off valve 17 from either side or front of the printing press.

My invention allows the press to continue in motion with both the gas burner and the suction to the feeder arm of the press completely shut off with the exception of a small guarded pilot flame, hereinafter referred to. Moreover, my invention results in a very efficient operation of platen presses which require greater starting inertia due to a heavy flywheel and it is not necessary to stop the press when the gas and the suction is turned off. Further, my invention eliminates any damage to rubber suction tips and hose due to exposure of the gas flame while the press is running at any time with the suction feed cut off, as for instance, when inking up the press. Then, too, fire hazard is eliminated in the use of my invention in that the dual control of the

6

gas valve and feeder suction cut-off valve allows simultaneous cut-off of both valves in the event of a misguided sheet. In the use of my invention the suction valve cut-off is extended from the right side of the press to the left (the operating side of the press) and allows the operator to have better supervision of the printed sheets and easier access to the cut-off control lever to the suction valve.

In some instances, it is desirable that the operation of either of the levers 12 or 55, in addition to controlling the suction, should automatically and simultaneously control the gas supplied to a gas burner which prevents offset and eliminates static electricity of the sheets of paper being handled in the printing press. To accomplish this result I fixedly attach an out-standing arm 73 by means of a bolt or screw 74 to my suction feed control and cut-off lever 55 immediately below the bracket 50. The free end of this arm 73 is provided with an opening 75 through which projects the down-turned end 76 of a substantially U-shaped link 77, the other end of which extends through an opening 78 in the free end of an adjacent arm 79, which arm at its other end is attached to the shaft 80 of a regulatable gas valve 81 that is supplied with gas through a pipe 82 from a suitable source, not shown. There is a main cut-off gas valve 83 and in the pipe line 82 a T connection 84 is provided, one branch of which, 85, has connected therewith a pilot tube 86, the free end of said tube, 87, terminating adjacent perforations 88 in a hollow tubular burner 89, one end of which is connected by means of an elbow 90 to a pipe 91, the latter having associated therewith the usual and conventional connection and air mixer 92 that is connected directly with the connection control and supply valve 81. The burner 89 has one end connected into the elbow 90 and as will be seen particularly in Fig. 3 that end of the burner 89 passes through an opening 93 in the unattached end of the elongated bracket 50, which bracket acts as a partition support for the burner and the gas supply pipe for the same. The burner 89 is elongated and as stated is provided with a plurality of spaced apertures 88 and the unconnected end thereof, 94, is plugged and closed by means of an exteriorly threaded and headed bolt 95 which passes through an upstanding bracket 96, the latter having one end 97 attached by means of a bolt 98 to the end of the delivery track bracket and plate 11. By means of this bolt 95, the free end of the burner 89 is supported at the end opposite from that end which is supported by the end of the elongated bracket 50. It is to be understood that this elongated tubular or hollow burner 89 extends transversely across the printing machine slightly behind and below the platen 39. The end 87 of the pilot tube 86 is disposed slightly below an opening 99 in a pilot flame guard 100, which flame guard, or that portion thereof that is about one end of the burner 89, is substantially U-shaped denoted at 101, see Fig. 4, and has a flat extension 102, the latter being fixedly secured to the inner wall or face of the bracket 50 by means of the bolts or other securing means 103.

From the foregoing description of the necessary parts and elements of a conventional printing press, and when considered along with the description of my invention, it is believed clear that the operation of the press including my invention is substantially as follows:

We will first assume that the operator of the

press merely wishes to have the dual control for the suction feed cut-off valve which controls the suction to the feeding arms and suction cups 32 for feeding the paper from the stack to the platen 39. With this in mind, the substantially U-shaped connecting link 77 will be removed from the arm 73 and the arm 78 that is attached to the connection control valve. Thus, with the suction feed control and cut-off lever 12 that is supplied with the printing press and having connected with it by means of the link 64 another suction feed control or cut-off lever 55 which is in the opposite front side of the machine to that of the lever 12, the operator, depending upon where he happens to be positioned when the suction means needs regulation or control, can grasp the handles 15 or 56 respectively of the rods 12 and 55 and thus save himself that time and effort which would be necessary to walk around the press if only the lever 12 were applied to the press. In other words, with this arrangement, I provide a dual lever control system for the suction feed cut-off valve of the printing press, one of such controls being substantially at the right front side of the press and which control is conventional but having associated and connected therewith my control lever at the direct opposite front side of the printing press, thus eliminating lost motion and time on the part of the operator when merely one such control, for instance the control lever 12, is applied to the press.

In order to simultaneously control and regulate the amount of gas supplied to the burner 89 along with the control of the suction feed and cut-off valve 17, it will be understood that the substantially U-shaped link 77 will have been connected with the arm 73 on the control lever 55 and the arm 79 on the control lever 78, the latter being attached to the valve that supplies gas to the gas and air mixer 92 and through the conduit or pipe 91 to the burner proper 89. When this link 77 is connected as aforesaid, the mere turning of either the lever 12 or the lever 55 will result in turning the rotary valve 81 and consequently regulate the amount of gas supplied to the burner 89. It being assumed that the main gas valve 83 has been opened and that the pilot has been lighted, and with the turning of either of the levers 12 or 55, the gas will be discharged outwardly through the orifices or the openings 88 in the elongated burner 89 which is disposed slightly rearwardly and below the platen 39, see Figs. 7 and 8, so that as the connection is regulated the gas supply is regulated and consequently the amount of flame from the series or plurality of orifices. The operation of the printing press is conventional insofar as the feeding of the paper to the platen is concerned and the delivery from said platen after the printing has been effected. However, it is at this point, namely, between the feeding and the final delivery, that the burner 89 has its effect in preventing or eliminating offset of the printing, due to the heat of the flame, when the already printed sheet S as in Fig. 8 is being delivered from the platen and quickly past the burner, the flame of which is denoted at F. This action in delivering the already printed sheet quickly over the flame F prevents the offset and likewise due to the heat removes the static electricity from the paper sheets. The feeding of the paper sheets from the stack, see Fig. 7 and Fig. 8, is as usual in that the plurality of suckers 32 reciprocates and pick one sheet at a time from the inclined stack 41 and deliver that sheet onto the face of the platen 39 after which and quickly,

of course, the sheet is printed and upon completion of printing the plurality of delivery suckers 38 engage the sheet and move it quickly past the flame F of the burner 89 thus preventing the offset and removing the static electricity from the sheet.

In some instances it may be desirable to use only the burner arrangement for prevention of offset and elimination of static between the sheets of paper. This can be readily accomplished by simply removing the link 64 that connects the two levers 12 and 15. Thus the lever 55 would then only serve the purpose of operating the gas valve that controls the flow of gas to the burner 89.

I claim:

1. In a printing press including means for producing a suction having associated therewith suction means for handling paper in the course of printing and delivering of such paper, a pipe line connected with the suction producing means and the suction means for handling the paper, a valve in said pipe line, an elongated lever having a free end thereof in the form of a handle and with its other end secured to said valve for purposes of regulating or cutting off said valve for the control of the suction; an arm fixedly secured to the said lever and having an outwardly projecting portion with an opening therein, another lever similar to the first mentioned lever but in spaced relation thereto, an arm secured to the last mentioned lever and which arm has an opening therein, a link, each end of which is downturned and inserted into the openings of the arms on the said levers and serving as a connection between the two said levers, whereby when either one of the levers is operated the valve is regulated or controlled, which effects the suction or said valve may be readily cut off to prevent any suction whatsoever being applied to the means for handling the paper.

2. In a printing press including means for producing a suction having associated therewith suction means for handling paper in the course of printing and delivering of such paper, a valve control for the suction producing means, an elongated lever for regulating and controlling the said valve, the lever being positioned adjacent one front side of the press and having one of its ends directly connected to the valve with the other end free for operation of the valve, spaced brackets in which said lever is mounted for rotation; another lever substantially of the same size and height as the first mentioned lever and in spaced relation to the first mentioned lever positioned adjacent the other front side of the press, a bracket secured to the press frame adjacent the top thereof, a portion of said bracket serving as a guide or support for the second mentioned lever adjacent one end of the lever, and a bracket secured to the press adjacent the bottom thereof serving as a further support for the elongated second mentioned lever, and a removable link connection between the two said levers, which link connection extends transversely across the press adjacent the lower portion thereof, whereby when either one of the levers is operated the suction valve is either controlled or regulated or cut off.

3. A printing press as defined in and by claim 1, including burner means for prevention of offset and elimination of static electricity, the said burner being of an elongated type that extends transversely of the press adjacent and slightly below the platen and including a pipe system for

the supply of gas to the burner, a valve for regulating and controlling the fuel in the piping system, and a connection between one of the levers and the said fuel valve, whereby when either lever is actuated the suction valve and the fuel valve are both simultaneously regulated and controlled. 5

4. In a printing press as defined in and by claim 2, including burner means for prevention of offset and elimination of static electricity, the said burner being of an elongated type that extends transversely of the press adjacent and slightly below the platen and including a pipe system for the supply of gas to the burner, a valve for regulating and controlling the fuel in the piping system and a connection between one of the levers and the said fuel valve, whereby when either lever is actuated the suction valve and the fuel valve are both simultaneously regulated and controlled. 10 15

RALPH T. LARSON. 20

REFERENCES CITED

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

UNITED STATES PATENTS

Number	Name	Date
1,236,178	Jenkins	Aug. 7, 1917
1,468,289	Eschenbach	Sept. 18, 1923
1,538,092	Cole	May 19, 1925
1,547,724	Berry	July 28, 1925
1,621,546	Kluge	Mar. 22, 1927
1,668,154	Kelly	May 1, 1928
1,836,536	Lance	Dec. 15, 1931
2,091,322	Kluge	Aug. 31, 1937
2,205,720	Goebel	June 25, 1940
2,206,620	Schwartz	July 2, 1940
2,251,122	Dobson	July 29, 1941