No. 852,429. PATENTED MAY 7, 1907.

O. S. GAUCH.

PRESS.

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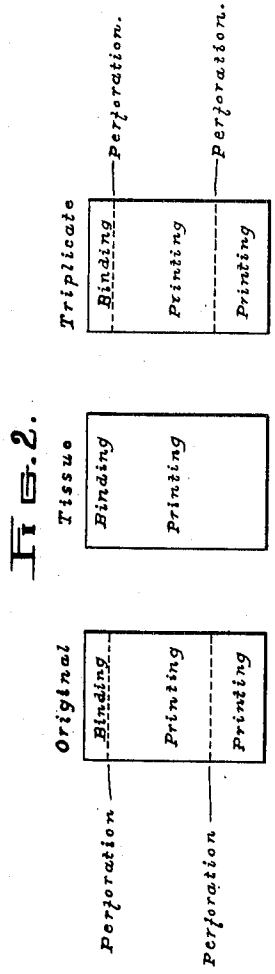


Fig. 2.

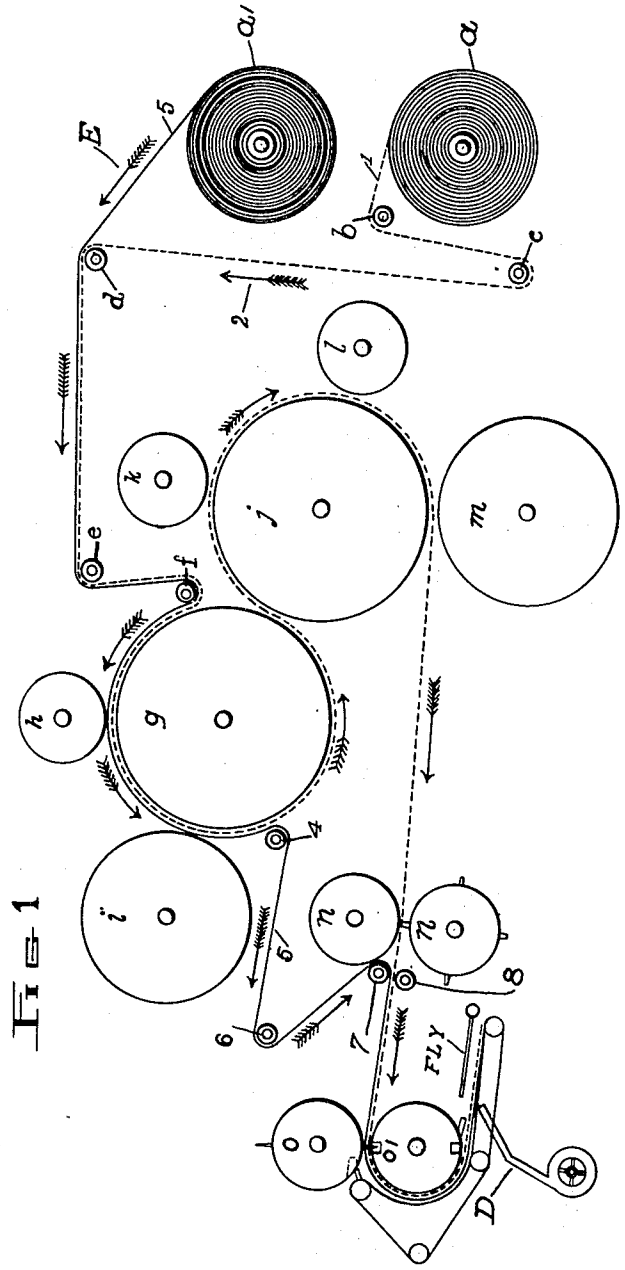


Fig 1

Witnesses

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UNITED STATES PATENT OFFICE.

ORLANDO S. GAUCH, OF SHELBY, OHIO, ASSIGNOR TO THE SHELBY PRINTING COMPANY, OF SHELBY, OHIO, A CORPORATION.

PRESS.

No. 852,429. Specification of Letters Patent. Patented May 7, 1907.

Application filed June 2, 1905. Serial No. 263,470.

To all whom it may concern:

Be it known that I, ORLANDO S. GAUCH, a citizen of the United States of America, and a resident of Shelby, Richland county, Ohio, have invented certain new and useful Improvements in Presses, of which the following is a specification.

My invention relates to an improved method of manufacturing sales books in which a tissue sheet in conjunction with ordinary paper is used together with a carbon sheet for the purpose of making one or more copies from an original impression.

It is especially adapted to be used in the manufacture of triplicating sales books requiring an original to be printed, numbered and perforated; a duplicate to be printed or numbered (or both) to remain in the book, consisting of a tissue sheet, and a triplicate, numbered, printed and perforated.

It is well known to those skilled in this art that the operation of printing and numbering tissue paper is a very slow, laborious and expensive process. It has been found impractical to print paper of this description on a rotary printing press, because tissue is so light in weight that it is not much heavier than the air through which it must pass, and the resistance of the air retards its movement and forces it out of its usual course of travel, crumples it up and delivers it in a very irregular and unreliable manner; therefore means must be employed to counteract the resistance of the air.

The objects of my improvements are, first to afford facilities for printing, numbering and perforating the duplicate (or tissue) leaf at the same time with the original or triplicate leaf of a sales or order book thereby increasing the production of the press and at the same time to divert the travel of the tissue (or duplicate) web in such a manner as to permit its delivery with the original or triplicate leaf without perforation. Second, to provide a means of feeding, transmitting and directing the tissue web in its travel through the press continuously and at the same speed as is obtained in the travel of the ordinary papers through the press; third, to provide means of overcoming and counteracting the resistance of the air to permit the delivery of the tissue sheet uniformly and at the same speed as the paper sheet. I attain these and other objects by the mechanism illustrated in the accompanying drawings in which.—

Figure 1, is a side view of the cylinders and rollers of a rotary press showing the travel of the paper, the application of my device, and the method used to divert and deliver the tissue sheet. Fig. 2, is a top plan view of an original, tissue (or duplicate), and triplicate leaf in the shape they are after passing through the press preparatory to binding.

In the drawings (*a*) represents a roll of paper mounted on a suitable cylinder used on presses of the rotary type. The paper web for the original or triplicate leaf is fed into the press from the roller (*a*) first passing over the idler (*b*). It then takes a downward course passing under the tension roller (*c*); thence upward over the idlers (*d*) and (*e*); thence under the idler (*f*) to the periphery of the impression cylinder (*g*) where the subject matter is printed by the printing cylinder (*h*) in the usual manner, and at the same time each leaf is numbered if desired by the numbering cylinder (*i*). The paper web is then carried over the impression cylinder (*j*) and brought in contact with the printing cylinders (*k*) and (*l*) which prints the opposite side of the paper; thence to the numbering cylinder (*m*). From the numbering cylinder (*m*) the paper web passes between the cylinders (*n n'*) which perform the function of perforating the leaves as desired. The paper web is then carried between the cutting cylinders (*o*) and (o^1) passing around and under the cylinder (o^1) to the "fly" from which it is delivered to the packer. (Not shown on the drawing).

The travel of the paper web from which the original and triplicate sheets are made is specifically shown by the dotted line (1) and the arrows. The travel of the paper web as it first leaves the cylinder is indicated by the arrow (2).

I have described the travel of the paper web from the feed roll or cylinder of a rotary press which performs the functions described in order to show the application of my invention to the press and the means employed to feed the tissue web into and through the press, omit the perforation and deliver it with the same efficiency and high speed as the usual paper sheet is delivered.

Reference letter and figure (a^1) indicate an auxiliary roller upon which the tissue paper

is rolled preparatory to feeding it into the press. This roller may be secured to the frame of the press above the roller (*a*) or any other suitable place. The tissue web is drawn from this roller over the periphery of the idler (*d*) and on top of the paper web indicated by the dotted line.

The tissue web travels in close contact with the paper from the idler (*d*) over the idler (*e*); thence under the idler (*f*). The tension of the sheets being such as to exclude and displace the air between the two webs. The tissue web then travels with the paper web over the impression cylinder (*g*) passing under the printing and numbering cylinders (*h*) and (*i*) respectively, for the purpose of numbering and printing if desired. An idler (4) is secured to the frame of the press below the center of the cylinder (*g*). The tissue web as shown by the full line (5) is separated from the paper web, diverted and carried under the idler (4); thence over the idler (6); thence at an angle downward passing between the idler (7) and idler (8) which brings the tissue web in close contact with the paper web, displacing and excluding the air by the tension as described above. The idlers (4) and (6) which are fitted to the frame substantially on a plane with each other are provided with a means of adjustment for the purpose of increasing or decreasing the length of the tissue sheet between the idlers (4) and (6). The paper and tissue webs travel together again from the idler (7) passing between the cutting cylinders (*o*) and (*o*^{1}), which cuts the webs simultaneously into sheets. The sheets, after being cut, are stripped from the upper cutting cylinder by means of stripper fingers which direct and guide the sheets to a series of tapes which carry the sheets partly around and in contact with the lower cutting cylinder. Of said series of tapes, two on the outer sides known as delivery tapes, extend to the rear of the packer, the sheets being retained in close contact with these two delivery tapes by two other tapes running above them and pressing the sheet against them. These two latter tapes run from the stripper fingers on the lower cutting cylinder to the rear of the packer. The sheets are stripped from the lower cylinder by stripper fingers and carried forward by these four tapes.

When running one sheet there is a tendency to "sag" between these tapes. It will be noted that the paper and tissue sheets by the means employed are delivered into the packer together, the weight and protection of the paper permitting the delivery of both sheets at the same rate of speed obtained when using the paper alone.

The current of air caused by the raising and lowering of the "fly" in the ordinary working of the press, invariably diverts the sheets upward or downward, making it difficult if not impracticable to deliver the tissue sheet from the press, even at a very low rate of speed, I therefore, prefer to employ a fan which I will now describe.—

Reference letter (D) designates the admission inlets of air communicating with a fan. The air generated by the fan is directed slantingly against the tissue sheet, preserving its contact with the paper, which it will be observed is the upper sheet at this point of its travel. The pressure of this current of air holds the tissue sheet against the paper sheet, preventing it from sagging and admitting air between the sheets, thereby supporting and assisting the forward travel of the sheets until they are deposited in the packer by the "fly." The arrow (E) and those following and pointed in the same direction indicate the course of travel of the tissue sheet.

I do not confine myself to the exact means of diverting the tissue web by means of bars or rollers as described, as many changes or alterations can be made in placing the roller or bars and diverting the travel of the web without deviating from the principle involved in my invention as herein described.

What I, claim and desire to secure by Letters Patent is.—

1. In a printing press having means to print, number and perforate a series of leaves for sales books, a drum having a tissue web mounted thereon, idlers arranged to carry and transmit said tissue web in close contact with the ordinary paper web, means to divert the travel of the tissue web to omit perforating, means for again bringing the tissue web in close contact with the paper web, a fly, means for directing a current of air slantingly against the tissue sheet keeping it in contact with the paper sheet and to counteract the suction or vacuum caused by the upward stroke of the "fly."

2. In a printing press adapted to prepare a series of leaves for use in the manufacture of sales or order books, a drum carrying a tissue web, a drum carrying a paper web idlers so arranged as to transmit said tissue web partially through the press with the paper web and displacing the air between them, perforating rolls, means for diverting the travel of the webs to permit the perforation of the paper web and avoid perforating the tissue web, means to bring the webs together before delivery, means to direct the impact of air currents against the tissue sheet, forcing it in close contact with the paper sheet.

3. In a printing press of the rotary type having means to print, number and perforate leaves for sales or order books, drums having tissue and paper webs mounted thereon, means to feed said tissue and paper webs through the press to prepare said paper for use, idlers arranged to carry and transmit said paper and tissue webs together and in divergent

paths in such a manner as to omit perforating the tissue sheet, and to bring said sheets together before delivery, means for directing an air current against the tissue sheet to impinge it against the paper sheet substantially as described and set forth.

4. In a printing press of the rotary type having means to print, number and perforate leaves for sales or order books, drums having tissue and paper webs mounted thereon, means to feed said tissue and paper through the press to prepare said paper for use, idlers arranged to carry and transmit said paper and tissue webs together and in divergent paths in such a manner as to omit perforating the tissue sheet, means to deliver said sheets.

5. In a press for preparing sales books printing, numbering and perforating rolls, means for feeding webs of paper together to said printing and numbering rolls, means for diverting one web to the perforating rolls, and means for diverting the other of said webs away from the perforating rolls to avoid perforation thereof, and means for subsequently bringing said webs together for delivery.

6. In a rotary printing press adapted for use in preparing leaves for use in sales books, printing, numbering, and perforating mechanism drums having rolls of paper mounted thereon, means for feeding said webs together to the press, means for diverting one of the said webs from the other in order to avoid perforation of said webs and means to bring the webs together for delivery as described and set forth.

Signed at Shelby, Ohio, this 27th day of May, 1905.

ORLANDO S. GAUCH.

Witnesses:
C. F. FISH,
JEANNETTE HEATH.