(No Model.) 2 Sheets—Sheet 1.

L. C. CROWELL.

DELIVERY MECHANISM FOR PRINTING MACHINES.

No. 419,644. Patented Jan. 21, 1890.

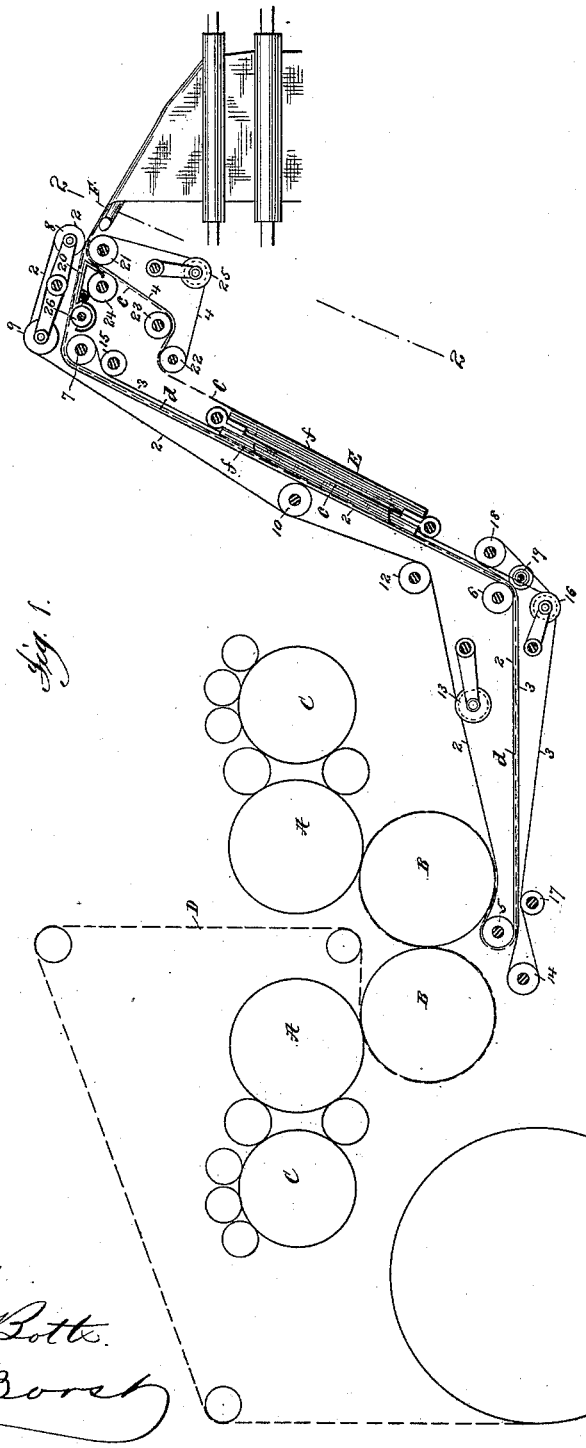

Fig. 1.

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(No Model.) 2 Sheets—Sheet 2.

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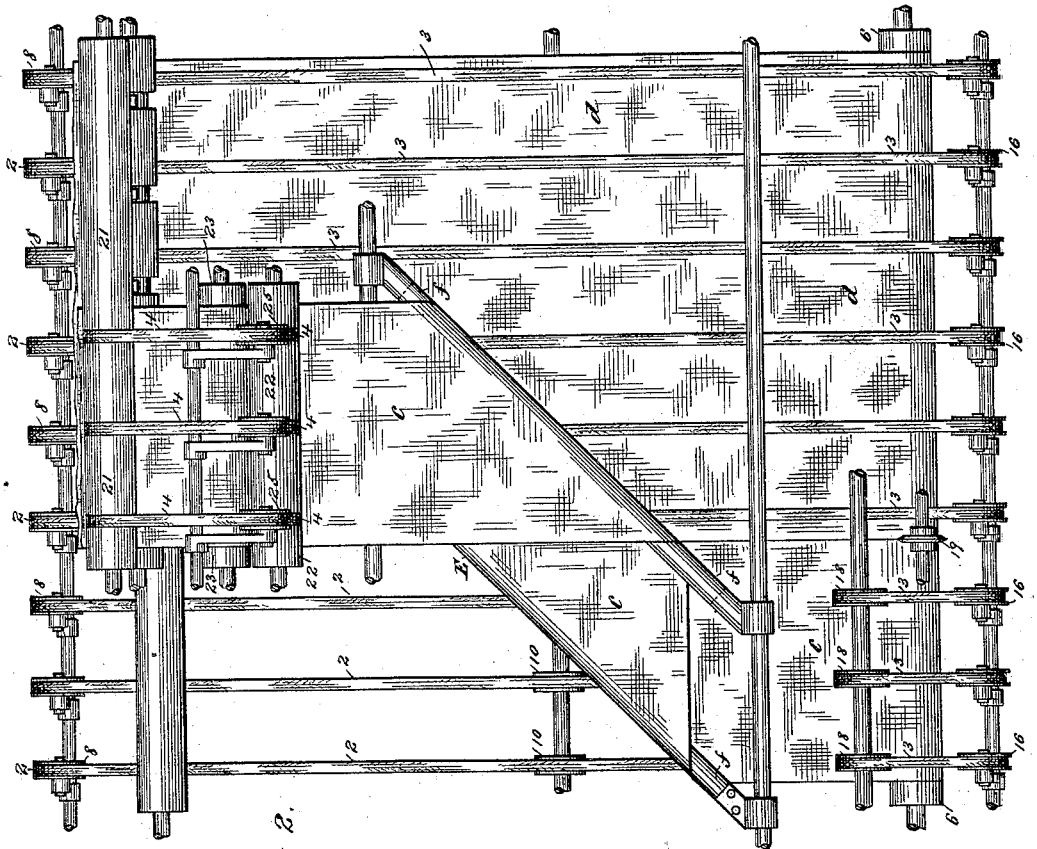

Fig. 2.

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UNITED STATES PATENT OFFICE.

LUTHER C. CROWELL, OF BROOKLYN, NEW YORK.

DELIVERY MECHANISM FOR PRINTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 419,644, dated January 21, 1890.

Application filed February 7, 1889. Serial No. 298,942. (No model.)

To all whom it may concern:

Be it known that I, LUTHER C. CROWELL, a citizen of the United States, residing at Brooklyn, county of Kings, and State of New York, have invented certain new and useful Improvements in Delivery Mechanism for Printing-Machines, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates to a means for associating and registering the printed webs or longitudinal sections of a split web as they are delivered from a web-printing mechanism.

The invention consists in the combination, with a web-associating mechanism, of a system of tapes and rolls or pulleys by which the printed web or webs is or are conducted from the printing mechanism to the associating mechanism and from the latter mechanism to the delivery mechanism proper in such manner that the two webs or sections of a web are associated and respectively caused to travel the proper distances after being brought into proper position to be associated, so that when finally brought together and associated their printed pages will be in proper register.

A full understanding of the invention can be best given by an illustration and a detailed description of a mechanism embodying the same. All further preliminary description will therefore be omitted and a full description given, reference being had to the accompanying drawings, in which—

Figure 1 is a side view of the apparatus embodying the present invention, showing also a diagram of a web-printing mechanism with which it is arranged to co-operate. Fig. 2 is an enlarged front elevation of the apparatus, taken on the line 2 2 of Fig. 1, looking to the left.

Referring to said figures, it is to be understood that the web-printing mechanism therein indicated consists of form-cylinders A and impression-cylinders B, which are arranged in substantially the manner shown and described in my prior application for Letters Patent filed March 7, 1888, Serial No. 266,393, the cylinders A being provided with suitable inking mechanisms C, and the cylinders A B being, as shown in the present case, of sufficient length to perfect a main and a supplement web, or a web which is of sufficient width when split longitudinally to provide a main and a supplement web. The particular form of web-printing mechanism indicated has been selected merely for the purpose of illustration, as the invention is equally applicable to any other form of web-printing mechanism having the required capacity.

The web D is led from a roll and, after being printed upon both sides by the cylinders A B, passes into the control of two series of tapes 2 3, by which, after the web is split, the main web *d* is conveyed to the delivery mechanism and the supplement web *c* to the associating or transferring mechanism. For this purpose the tapes 2 3 are arranged as follows: The tapes 2 pass around a roll 5, thence forward around a roll 6, and upward past the associating or transferring mechanism E, and over a roll 7, and thence forward around pulleys 8, located at the base of a longitudinal folder F, which in the case illustrated constitutes the first folder of the delivery mechanism. From the pulleys 8 the tapes 2 return around pulleys 9, past pulleys 10 12, and over stretching-pulleys 13. This series of tapes, as will be observed, occupy the entire width of the machine. The series of tapes 3 correspond in number with the tapes 2 and pass around a roll 14, thence forward with the tapes 2 beneath the roll 6. From the roll 6 the tapes of the series which occupy that portion of the width of the machine corresponding to the main web *d* pass upward with the tapes 2 past the associating mechanism E and over the roll 7. From the roll 7 these tapes 2 return inside a roll 15 around stretching-pulleys 16 and above a roll 17. The remainder of the tapes of the series 3 which occupy that portion of the width of the machine corresponding to the supplement web *c* pass from the roll 6 around pulleys 18 and return around stretching-pulleys 16 and above the roll 17.

As the web D is conveyed from the printing-cylinders by the tapes 2 3 and passes the roll 6 it is acted upon by a slitter 19, which operates to divide the web into two portions—a main web *d* and a supplement web *c*, the latter being one-half the width of the former. After passing the slitter the main web *d* is

carried upward between the tapes 2 3, past the associating mechanism, and over the roll 7, from which point it is forwarded by the tapes 2 over stationary guides 20 and delivered from between the pulleys 8 and a companion roll 21. The supplement portion *c* of the web, after passing the slitter, is led around the transferring-bars *f*, which form the associating mechanism E, by which it is transferred laterally, so as to be brought directly beneath the adjacent one-half of the main web *d*, after which, instead of being associated directly with the main web, it is led above a register-roll 22, thence outward beneath a register-roll 23, and then upward between the rolls 21 24 and outward between rolls 8 21, in passing which it is associated with the main web, as indicated in Fig. 2. After leaving the rolls 8 21 the associated webs pass over the longitudinal folder F or to any other form of delivery mechanism.

For the purpose of forwarding the supplement web from the pulleys 18 to the bight of the pulleys 8 and roll 21 there are provided a series of supplemental feeding-tapes 4, which occupy that portion of the machine equal to the width of the supplement web and pass around the roll 22, beneath the roll 23, and upward over the roll 21, returning around stretching-pulleys 25.

The several series of tapes are properly driven by motion imparted to any suitable one or more of the rolls or series of pulleys around which they pass, so that they impart a positive feed to the webs to maintain them under proper tension and also to serve in conveying them from the printing-cylinders to the delivery mechanism in threading up the machine. In performing these functions the feeding-tapes 4 are an important element, because it is found in practice that where a web is led around transferring-bars or turning-bars—such as the bars *f*—the friction of the bars tends constantly to cause the web so led around the bar or bars to lag and thus destroy the register between the two webs. By imparting a positive feeding movement, however, to the supplement web after it has been transferred by being led around the bars and before it is associated with the main web, this tendency to lag is overcome, and by properly adjusting and timing the feeding-tapes and their rolls the register between the two webs can readily be maintained.

If it is desired to unite the two webs so that the supplement sheets severed from the supplement web will be united with the sheets severed from the main web, it may readily be accomplished by providing a pasting mechanism 26, which will operate to apply a line of paste to the central margin of the main web, as shown; or the pasting mechanism may be arranged to supply a line of paste to the supplement web. It is of course to be understood that pulleys may be substituted for some of the rolls around which the tapes pass, or that rolls may be substituted for some of the pulleys. The bars *f* of the associating mechanism E are arranged and operate in substantially the usual manner, which is clearly shown in the drawings and well understood in the art, and need not, therefore, be more particularly described. It is also of course to be understood that the supplement web *c* and the main web *d* may be led from separate rolls, and in such case, of course, the slitter can be dispensed with.

What I claim is—

The combination, with a web-printing mechanism and a web-associating mechanism, of feeding-tapes 2 3, for conveying a main web from said printing mechanism past the associating mechanism and for conveying the supplement web from the printing mechanism to the associating mechanism, and supplemental feeding-tapes 4 and register-rolls 22 23, for conveying the supplement web from the associating mechanism to the main web and delivering it in proper register therewith, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

LUTHER C. CROWELL.

Witnesses:
J. J. KENNEDY,
T. H. PALMER.