

No. 795,588.

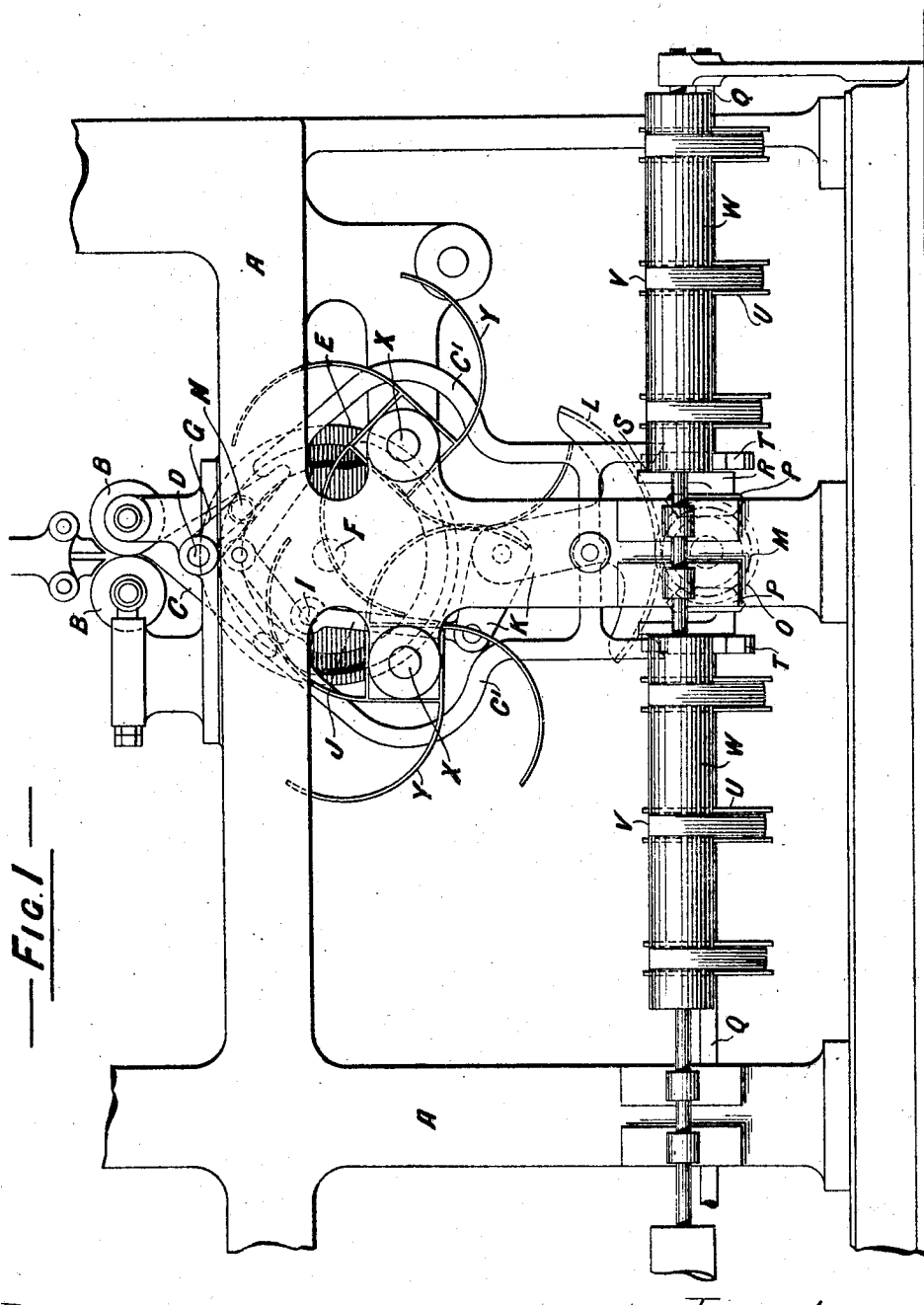
PATENTED JULY 25, 1905.

W. S. DOW & E. J. SMITH.

DELIVERY MECHANISM FOR ROTARY WEB PRINTING MACHINES.

APPLICATION FILED SEPT. 29, 1903.

2 SHEETS—SHEET 1.



—Fig. 1—

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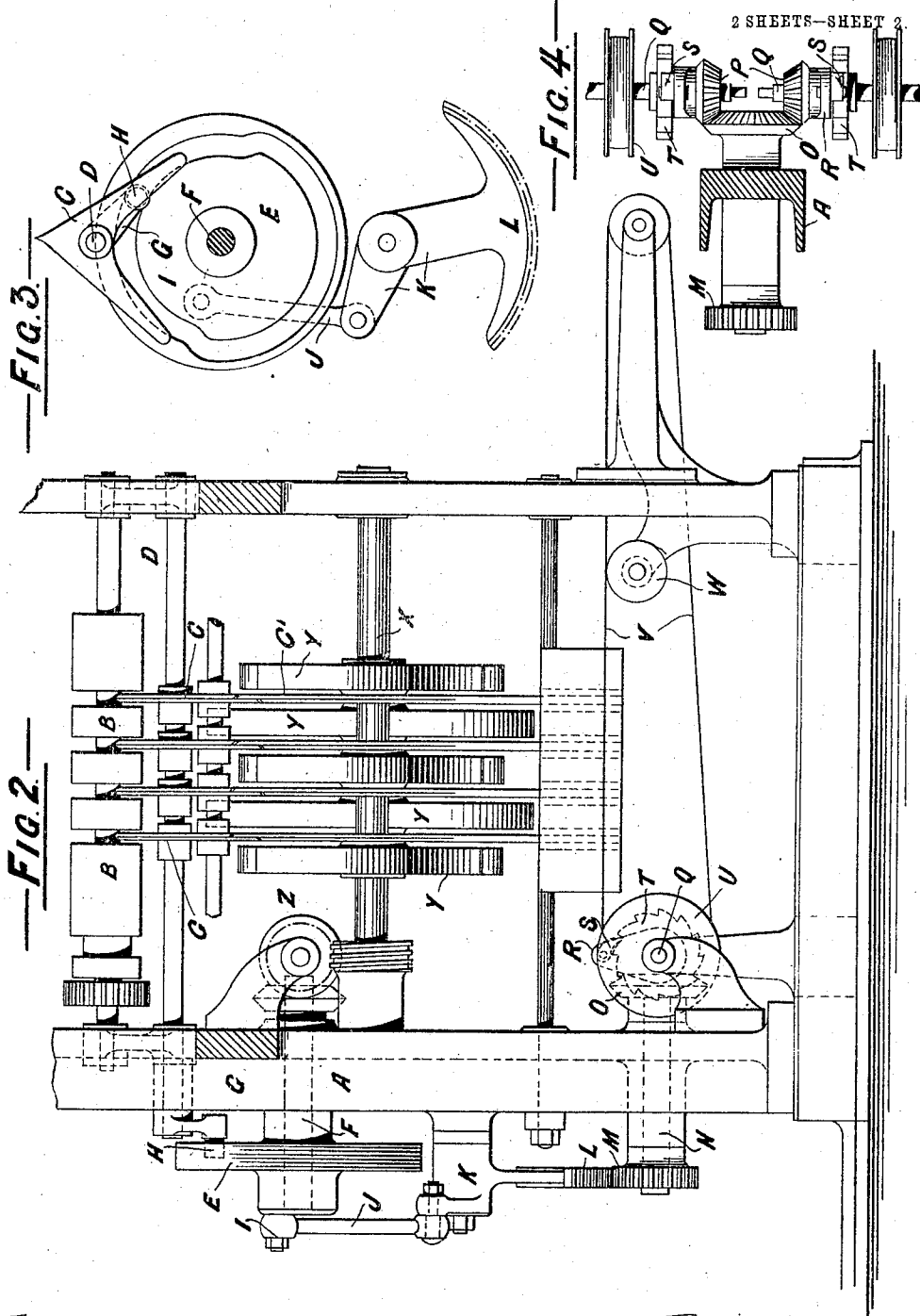
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# UNITED STATES PATENT OFFICE.

WILLIAM SAUNDERS DOW, OF SHOOTERS HILL, AND ERNEST JAMES SMITH, OF PLUMSTEAD, ENGLAND, ASSIGNORS TO ROBERT HOE AND CHARLES WHITNEY CARPENTER, TRADING AS R. HOE & CO., OF NEW YORK, N. Y., A FIRM.

## DELIVERY MECHANISM FOR ROTARY WEB-PRINTING MACHINES.

No. 795,588.

Specification of Letters Patent.

Patented July 25, 1905.

Application filed September 29, 1903. Serial No. 175,020.

*To all whom it may concern:*

Be it known that we, WILLIAM SAUNDERS DOW, a resident of 15 Cantwell road, Shooters Hill, and ERNEST JAMES SMITH, a resident of 22 Ennis road, Plumstead, in the county of Kent, England, subjects of the King of Great Britain, have invented certain new and useful Improvements in Delivery Mechanism for Rotary Web-Printing Machines, of which the following is a specification.

In the accompanying drawings, Figure 1 is an elevation of the delivery end of a web-machine constructed according to our invention with the printing mechanism omitted and looking from the right-hand side of Fig. 2. Fig. 2 is an elevation, partly in section, at right angles to Fig. 1; and Figs. 3 and 4 are detached views of parts of the mechanism, which will be more particularly referred to hereinafter.

This invention relates more particularly to the delivery mechanism of a pictorial web-machine in which a picture is printed in several colors consecutively in the same machine on a web of paper before the web is cut into sheets and before the delivery of the sheets; but it is obviously applicable to ordinary letter-press printing.

Hitherto it has been usual to deliver the color-printed sheets singly onto a continuously-traveling apron or tapes, with the result that the sheets overlap one another. The sheets are liable during the progression to shift their position in relation one to the other, and thus cause the smearing of the more or less wet colors, greatly detracting from the appearance of the colored pictures.

Now the object of the present invention is to prevent the smearing above mentioned, which object is effected by making a pile of a certain number of the printed sheets on a stationary receiving device—that is to say, an apron or set of tapes and moving the apron with the pile thereon when the proper number has been collected. By these means no movement of the sheets one on another takes place and there is no smearing. Any set-off that there may be is on the backs of the superposed sheets, which has no detrimental effect on the picture below, inasmuch as the sheets do not move after being once deposited.

In carrying out this invention two receiving devices, which may consist of aprons or sets of tapes, are employed, as well as two sets of delivery-arms, and switches are provided to guide the sheets to one or other set of arms, as required. The switches are operated by a grooved cam suitably driven, which, through a crank-pin on the back and suitable beveled and other gears, drives the aprons alternately to effect the removal of the piles of sheets.

In order that the invention may be clearly understood, it will now be described with reference to the accompanying drawings.

A is the frame of the machine, and B the delivery-rollers of the printing mechanism.

C is a series of switches mounted on a shaft D, capable of rocking in bearings in the frame.

E is a grooved cam carried by a shaft F, mounted in a sleeve on the frame. The shaft D carries an arm G, having a bowl or roller H at its outer end, which bowl or roller works in the cam-groove, and thus as the cam rotates the shaft is rocked. The arrangement of switches and cam and the mode of operating the switches are clearly indicated at Fig. 3.

On the back of the cam E is a crank-pin I, which is connected by a link J with a bell-crank lever K, suitably mounted on an axle carried by the frame A. The other end of the bell-crank is formed with a toothed sector L, which gears with a pinion M, mounted on one end of a short shaft N, carried in a sleeve on the frame. The other end of this shaft N is provided with a beveled wheel O, which gears with a pair of beveled wheels P, mounted loosely on shafts Q, placed transversely of the machine. (See Fig. 1.) Connected to these beveled wheels P are arms R, carrying pawls S, and these pawls take into ratchet-wheels T, keyed on the shafts Q. The pawls and ratchet-wheels are so set as always to drive in the same direction. As the beveled wheels P rotate the arms R rotate with them and the pawls S will drive one ratchet-wheel T and slip the other. On the same shaft are mounted pulleys U for tapes V, (or it may be endless aprons,) the said tapes also passing round supporting and tension drums W, suitably mounted for the purpose.

It will be seen that while one set of tapes is being driven the other is at rest; but the direction of driving will be the same for both sets.

X X are shafts suitably mounted in the frame and carrying sets of curved delivery-arms Y Y of the usual type. These arms receive the sheets of paper as they come from the rolls B B and deposit them in a pile on the tapes V.

The shafts X X are driven from the prime mover (not shown) by suitable gearing, and through worm-gearing Z and beveled wheels one of the shafts X actuates the shaft of the cam E and through the cam the driving mechanism of the tapes V, as clearly indicated in Fig. 2.

Attached to the frame are guide-bars C', which will constitute, with the arms of the switches C, guides for guiding the sheets of paper into the curved delivery-arms Y Y.

The printed sheets coming from the printing mechanism pass through the rolls B B and are directed by the switches C to the right or left, as the case may be, into the delivery-arms Y Y on the same side. These arms deposit the sheets on the set of tapes V, which for the time being is stationary, until the correct number of sheets has been deposited in a pile thereon. By this time the cam E will have rotated so as to change the position of the switches in order that they may deliver to the other side. The toothed sector L will be continuously swinging to one side or the other under the influence of the rotating crank-pin I, and will thus drive the shafts Q through the beveled gears M R and one or other of the ratchet-motions R S T, the moving tapes V always being those on

which the full pile of sheets has been deposited.

The movements of the various parts will be properly timed according to the speed of the printing mechanism and the number of sheets required in the pile, any alterations of speed being effected by means of change-wheels or in any other convenient manner.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. A delivery mechanism for rotary web-printing machines, comprising two sets of curved delivery-arms, rocking switches for guiding the cut sheets to the said arms, a grooved cam for operating said switches, a swinging toothed sector, means for operating said sector from the cam-disk, two sets of receiving devices and means for driving said sets of receiving devices alternately from the toothed sector, all combined, arranged and coacting together, as herein shown and described.

2. In a delivery mechanism for rotary web-printing machines, the combination of two sets of receiving devices, means for progressing said sets of devices alternately, means for laying sheets in a pile on one set of the receiving devices which is stationary while the other moves, and means for directing the sheets to said laying devices as and for the purpose set forth.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

WILLIAM SAUNDERS DOW.

ERNEST JAMES SMITH.

Witnesses:

R. WESTACOTT,

ALFRED SAMUEL BISHOP.