

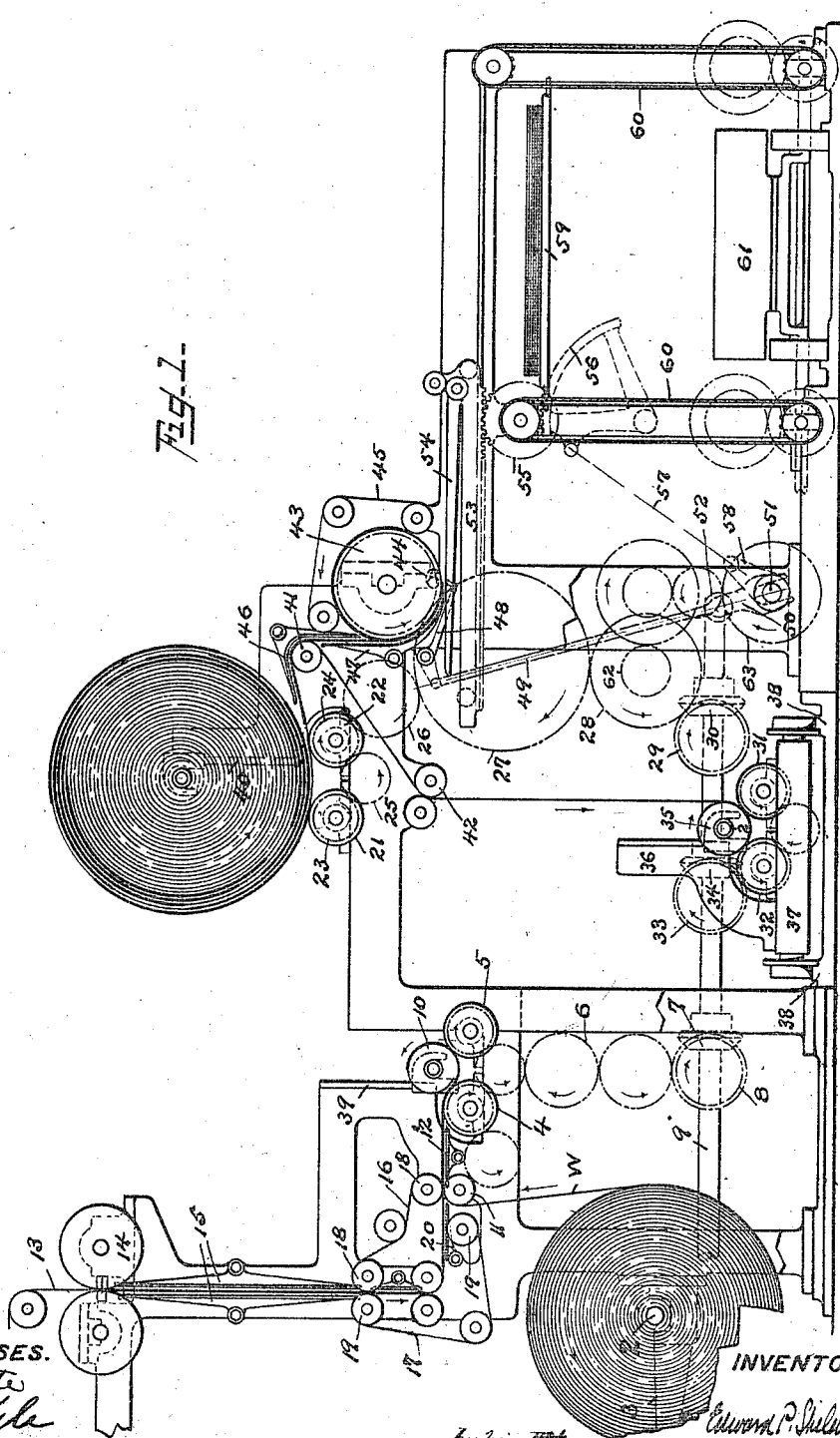
1,049,413.

E. P. SHELDON.  
OFFSET DEVICE.  
APPLICATION FILED APR. 10, 1908.

Patented Jan. 7, 1913.

2 SHEETS—SHEET 1.

Fig. 1.



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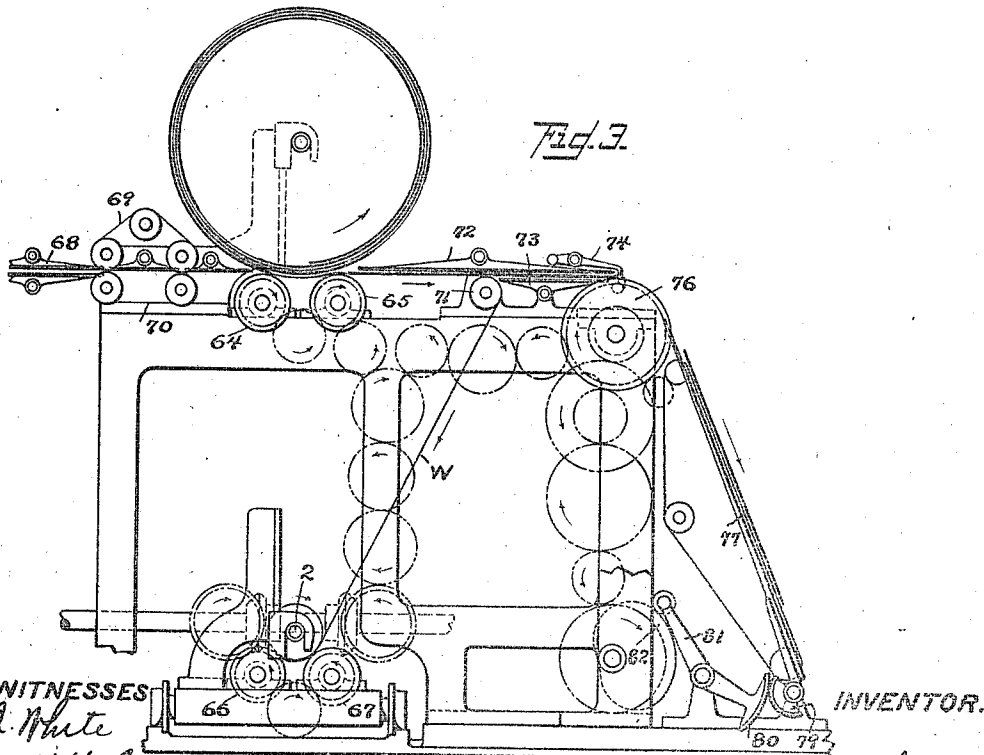
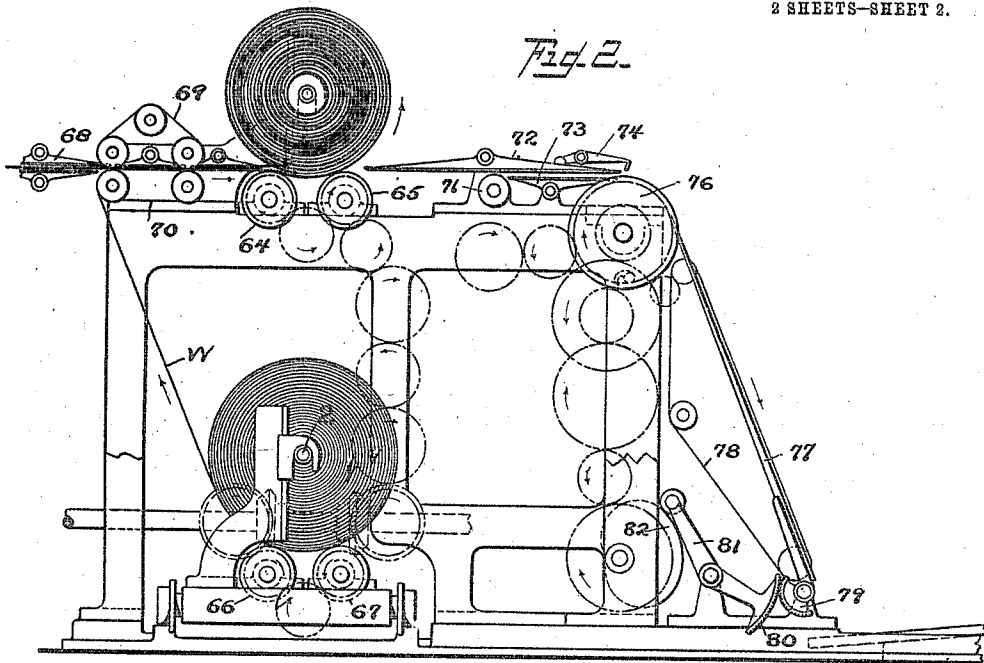
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2 SHEETS—SHEET 2.

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# UNITED STATES PATENT OFFICE.

EDWARD P. SHELDON, OF NEW YORK, N. Y., ASSIGNOR, BY MESNE ASSIGNMENTS, TO  
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## OFFSET DEVICE.

1,049,413.

Specification of Letters Patent.

Patented Jan. 7, 1913.

Application filed April 10, 1908. Serial No. 426,192.

*To all whom it may concern:*

Be it known that I, EDWARD P. SHELDON, a citizen of the United States, residing at New York, county of Kings, and State of New York, have invented certain new and useful Improvements in Offset Devices, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

This invention relates to certain improvements in offset-preventing mechanism for printing machines.

The difficulties arising from the offsetting of the ink from heavily printed sheets is well known, and many expedients have been suggested for preventing such offsetting. Among such suggestions it has been proposed to provide a roll of offset material suitably supported at or near the delivery end of the printing machine, and to provide a rewinding shaft, to which the offset web from the roll is led, the mechanism being so arranged that the freshly printed sheets are introduced between the convolutions of the roll as the material is rewound. While this idea has certain advantages, it is objectionable because no efficient means was provided for controlling the delivery of the sheets to the roll of offset material as it was rewound. Further, no proper means was provided to effect the delivery of the printed sheets from the roll after they had been introduced thereinto. The suggestion referred to has not, therefore, gone into use.

The present invention has for one of its objects to provide mechanism for controlling the delivery of sheets to a roll of offset material as it is wound up so that the sheets may be properly arranged in the roll and may be readily and speedily delivered therefrom as the roll is unwound.

A further object of the invention is to provide an improved delivery mechanism in which sheets, after having been introduced between the convolutions of a roll of offset material, may be rapidly and speedily delivered in flat form.

A further object of the invention is to provide an improved offset mechanism for printing machines in which the printed sheets may be introduced between the convolutions of a roll of offset material, as the roll is being wound up, and simultaneously therewith to deliver the sheets from another

roll previously wound, having printed sheets interposed between its convolutions, so that the operation of the printing machine and its delivery mechanism may be continued simultaneously.

With these and other objects in view, the invention consists in certain constructions, parts, improvements and combinations as will be hereinafter described and pointed out.

Referring to the drawings, which constitute a part of the specification, and in which like characters of reference indicate the same parts,—Figure 1 is a side elevation of a delivery mechanism for printing machines constructed in accordance with the invention. Figs. 2 and 3 illustrate a modified form of delivery mechanism constructed in accordance with the invention.

Referring to the drawings, and more particularly to Fig. 1, the offset material W will be obtained, in the construction there shown, in web form, from a suitable source of supply. This source of supply may, as shown in said figure, consist of a roll mounted on a suitable core or shaft 2, this shaft being in turn supported in suitable bearings on brackets 3 extending from the frame of the machine. In the construction illustrated in Fig. 1, a rewinding mechanism for the web W is employed, and this rewinding mechanism may conveniently include rolls 4, 5. These rolls 4 and 5, when this form of rewinding mechanism is employed, may be driven in any suitable manner, as, for instance, by a train of gearing 6, this train being in turn driven from a pair of beveled gears 7, 8, one of which may be mounted on the main shaft 9 of the delivery mechanism. The cores employed in connection with the winding rolls may be provided with circular bearers 10 which cooperate with the rewinding rolls at the beginning of the rewinding operation. In the particular machine illustrated in Fig. 1, the offset web, as it is led from the roll, passes over a suitable guide roll 11, over a suitable guide 12, and to the core which is being operated upon by the re-winding rolls.

The sheets which are to be interposed between the convolutions of the offset web as it is wound up, may be supplied in any suitable manner. The particular delivery mechanism illustrated in Fig. 1 is intended to on-

erate in connection with a high speed web machine, the web from which, marked 13, being there shown as passing between cutting cylinders 14 of any usual type. After leaving these cylinders, the sheets, separated by them, may pass between guides 15 of usual construction.

The sheets from whatever source they may be derived, will be operated upon by a suitable mechanism which will operate to space successive sheets so that they will be prevented from overlapping in the roll and may be readily delivered therefrom. This spacing of the sheets may be effected by a suitable accelerating mechanism. While this accelerating mechanism may be of any desired form, in the construction illustrated in Fig. 1 it comprises tapes 16, 17, these tapes running around suitable rolls. A pair of the rolls which carry the tapes 16, are marked 18, and a pair of the rolls which carry the tapes 17 are marked 19. After leaving the accelerating mechanism, the sheets meet the web W before referred to, and are forwarded thereby. When tapes such as illustrated in Fig. 1 are employed to accelerate the sheets, a suitable guide, as 20, may be employed to insure the delivery of the sheets to the web.

From the mechanism so far described it will be understood that the offset web W will be drawn from the roll supported on the brackets 3 and will be rewound by the action of the rolls 4 and 5, and that the sheets, as they are forwarded, will be interposed between the convolutions of the rolls, successive sheets being spaced apart more or less by the action of the accelerating mechanism so that the ends of succeeding sheets are spaced apart in the composite roll of web and sheets.

Where it is desired to have the printing machine and delivery mechanism operate continuously, as will usually be the case where the offset delivery mechanism is employed with fast running presses, there will be provided an unwinding mechanism which may conveniently consist, as illustrated in Fig. 1, of a pair of unwinding rolls 21, 22, on which the composite roll of web and sheets is supported. These unwinding rolls may be driven in any suitable manner. In the particular construction illustrated in Fig. 1, the shafts of these unwinding rolls are provided with gears, indicated at 23, 24, these gears being in mesh with an intermediate, indicated at 25. The gear 24 may be in mesh with the gear indicated at 26, this gear being driven by a large gear 27, which derives its motion from a gear 28. This gear 28 is driven from one of a pair of beveled gears 29, the other gear 30 of the pair being mounted on the main shaft 9 before referred to.

The mechanism may also include a second

rewinding device consisting of a pair of rolls 31, 32, corresponding in construction to the rolls 4, 5, before referred to, these rolls being driven by a pair of beveled gears 33, 34, the gear 34 of this pair being mounted on the shaft 9. The shaft 2, on which the roll is rewound, may be engaged at its ends by hooked bearings 35, and a pair of these bearings may be employed with the several rewinding and unwinding devices to steady the rolls as they are being wound and unwound. The bearings 35 used in connection with the rewinding rolls 31 and 32 may slide in suitable ways formed in brackets, one of these brackets being illustrated and marked 36. These brackets 36, together with the rewinding rolls 31, 32 and their driving mechanism, may be mounted on a truck 37, which may, if desired, travel on ways 38 suitably formed in the frame. By this construction a wound-up roll can be readily removed from the printing machine. The bearings 35 employed in connection with the rolls 4 and 5 may slide in suitable ways formed on the frame of the machine, one of which is indicated at 39. The bearings 35 used in connection with the rolls 21, 22 may also slide in ways formed on the frame of the machine, as indicated at 40.

As the offset web is unwound by the action of the devices 22, 23, it may pass over guide rolls 41, 42, by which it is directed to the shaft or roll being operated upon by the rewinders 32, 33.

Where it is desired to deliver the sheets flat, a suitable gathering mechanism may be employed between the flat delivery and the unwinding mechanism. While the construction of this gathering mechanism may be varied, it may conveniently consist of a cylinder 43 suitably supported in the frame of the machine, said cylinder, as is usual, being provided with taking grippers 44. Suitable tapes, as indicated at 45, may be used in connection with this cylinder to hold the sheets thereon.

The sheets may, as shown in Fig. 1, pass over the roll 41 before referred to, and between it and a suitable guide 46, which may serve to properly direct the sheets toward the cylinder. If desired, an additional guide, as 47, may be employed to control the sheets and properly direct them to the gathering cylinder, when this form of gathering mechanism is employed.

It may happen that the sheets will be so delivered to the composite rolls of sheets and web that the ends of successive sheets will be varying distances apart. It is, therefore, desirable to use an evening mechanism cooperating with the gathering mechanism to bring all the sheets into register. While the details of construction of this evening mechanism, when it is employed, might vary, it may well include, as shown in Fig. 130

1, a pivoted sheet stop 48, which may be thrown into the path of the incoming sheets and stop them until the grippers 44 are in position to take them. This stop may be operated in any suitable manner, as, for instance, by a rod 49 having a fork 50 at its lower end, this fork embracing a cam shaft 51 and being provided with a roll 52 which coöperates with a cam on that shaft.

The means for delivering the sheets after they have been suitably gathered, if the gathering mechanism be employed, may be widely varied. In the construction illustrated in Fig. 1, they are delivered to an ordinary flat delivery mechanism which may include a carriage, as 53, and sheet-supporting fingers 54. This carriage may be operated intermittently by a gear 55, which may be in turn operated by a sector 56. This sector may be operated through a connecting rod 57 from a crank 58 on the cam shaft 51 before referred to. The sheets may be delivered by the flat delivery mechanism referred to, to a table, as 59, supported so as to be lowered at suitable times by chains 60. The details of construction of such a delivery mechanism as that just referred to are well understood in the art. Inasmuch as a full description of them will in no way conduce to a clear understanding of this invention, no attempt has been made to fully describe and illustrate them. The table 59 may, when filled, be received on a suitable truck, indicated at 61.

The cam shaft 51 before referred to may be driven from a gear 62 fast on the same shaft as the gear 28, this gear, through a suitable reducing train, indicated in dotted lines, driving the gear 63 on the shaft 51. This gearing may be so proportioned as to operate the delivery mechanism after a suitable number of sheets have been taken by the gathering mechanism.

It will be understood that by the construction so far described a rapidly operating web printing machine may be continuously operated in connection with an offset mechanism such as described and in connection with a delivery mechanism operating simultaneously therewith, after one composite roll of sheets and offset web has been formed and placed in position on the unwinding rolls 21, 22. The driving mechanism is such that the parts may be driven in unison, and, therefore, while a second composite roll is being formed, the first roll may be unwound and the sheets therein contained delivered.

In case it is not desired to continuously operate the printing machine simultaneously with the delivery mechanism, a mechanism such as that illustrated in Figs. 2 and 3 may be employed. In the construction shown in these figures, the winding mechanism consists of rolls 64, 65, which rolls may be simi-

lar in all respects to those previously described. The unwinding mechanism may consist of rolls 66, 67, mounted similarly to, and driven in the same way as, the rewinding rolls 31, 32 described in connection with the printing machine illustrated in Fig. 1. The sheets may enter, through suitable guides, as 68, and be taken by a set of accelerating tapes 69, 70, the offset web W also passing between these tapes. When a composite roll has been formed, it may be turned end for end on the rewinding rolls 64, 65, and the offset web may be led in the opposite direction and over a guide roll 71. From the roll 71 the web may be led to the shaft 2 of a roll on the unwinding rolls 66, 67, which now become rewinding rolls.

In the construction illustrated in Figs. 2 and 3, a fly delivery mechanism is employed instead of the flat delivery mechanism like that illustrated in Fig. 1. The sheets may, as illustrated in Figs. 2 and 3, after leaving the offset web, pass between guides 72, 73, and the guide 72 may, if desired, be long enough to control the sheets from the time when they first leave the composite roll. A suitable evening mechanism, consisting of a pivoted sheet stop 74, may be employed in connection with these guides, and there may also be employed a gathering cylinder 76 similar to the cylinder 43 before described. This gathering cylinder may discharge to a pivoted fly 77 of ordinary construction, the sheets being carried down the fly by the usual tapes 78. This fly may be operated in any suitable manner, as by a pair of intermeshing sectors 79, 80, the sector 80 being operated through a rock-arm 81 from a cam 82 on one of the driven shafts of the machine. Gearing may be employed as indicated in Figs. 2 and 3, but as its operation is obvious a description of it is unnecessary. It will be understood, of course, that the gearing for operating the fly is so reduced as to operate the fly after a given number of sheets have been delivered to it by the gathering cylinder.

Changes and variations may be made in the construction by which this invention is carried into effect. The invention is not, therefore, to be limited to the specific constructions herebefore described and illustrated in the accompanying drawings.

What is claimed is:—

1. The combination with means for forwarding a web and cutting it into sheets, of means for winding up a web of offset material, and means for accelerating the sheets and delivering them to the web to be wound so that they will be spaced from each other when so interposed.

2. The combination with means for unwinding a composite roll of offset material and sheets, of a gathering mechanism, means for evening up the sheets delivered

to said gathering mechanism, and means for delivering the gathered sheets.

3. The combination with means for unwinding a composite roll of offset material and sheets, of a gathering cylinder, a sheet stop for evening up the sheets taken by the cylinder, and means for delivering the gathered sheets.

4. In a printing machine, the combination with means for supplying a web of offset material, of winding mechanism to which the web is led, means for introducing sheets between the convolutions of the roll of offset material as it is wound, an unwinding device for the roll of web and sheets, a rewinding device for the web thus unwound, and a delivery mechanism for the sheets.

5. In a printing machine, the combination with means for forming a roll of offset material in web form having sheets interposed between its convolutions, of rewinding mechanism for the offset material unwound, said roll forming means and rewinding mechanism being capacitated for simultaneous operation, means for delivering the sheets flat, and a gathering mechanism between the unwinding mechanism and the delivery.

6. In a printing machine, the combination with means for forming a roll of offset material in web form having sheets interposed between its convolutions, of rewinding mechanism for the offset material unwound, means for delivering the sheets flat, a gathering mechanism between the unwinding mechanism and the delivery,

and means for evening up the sheets taken by the gathering mechanism.

7. In a printing machine, the combination with means for supplying a web of offset material, of winding mechanism to which the web is led, means for introducing sheets between the convolutions of the roll of offset material as it is wound, an unwinding mechanism for the roll of web and sheets, a rewinding mechanism for the web thus unwound, means for delivering the sheets flat, a gathering mechanism between the unwinding mechanism and the delivery, and means whereby said parts may be driven in unison.

8. In a printing machine, the combination with means for supplying a web of offset material, of winding mechanism to which the web is led, means for introducing sheets between the convolutions of the roll of offset material as it is wound, an unwinding mechanism for the roll of web and sheets, a rewinding mechanism for the web thus unwound, means for delivering the sheets flat, a gathering mechanism between the unwinding mechanism and the delivery, means whereby said parts may be driven in unison, and means for evening up the sheets taken by the gathering mechanism.

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

EDWARD P. SHELDON.

Witnesses:

F. W. H. CRANE,  
GEO. V. WILLIAMSON.