D. J. SCOTT.

WEB PRINTING MACHINE.

APPLICATION FILED APR. 19, 1916.

1,217,646.

Patented Feb. 27, 1917.

2 SHEETS—SHEET 1.

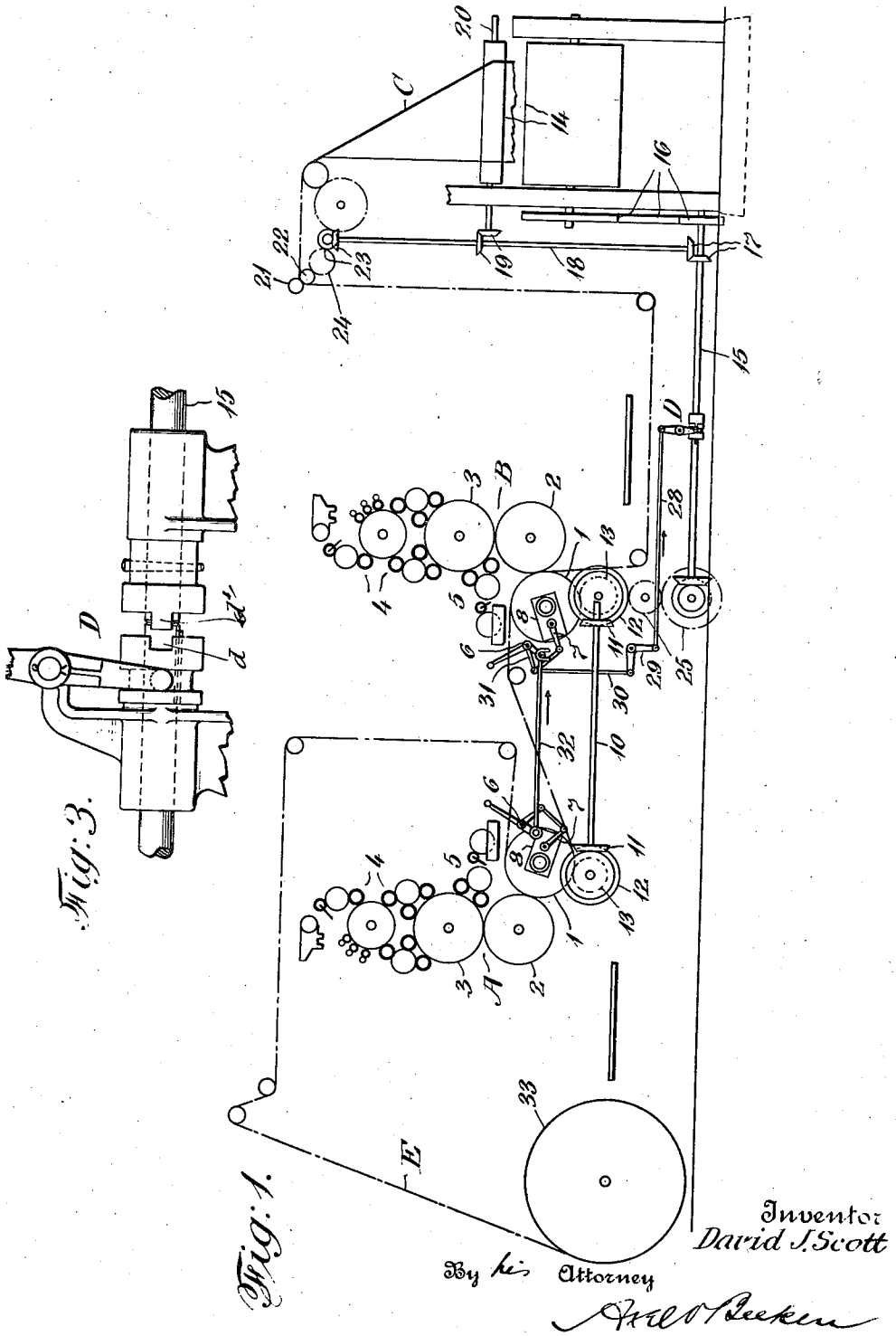


Fig. 1.



Fig. 3.

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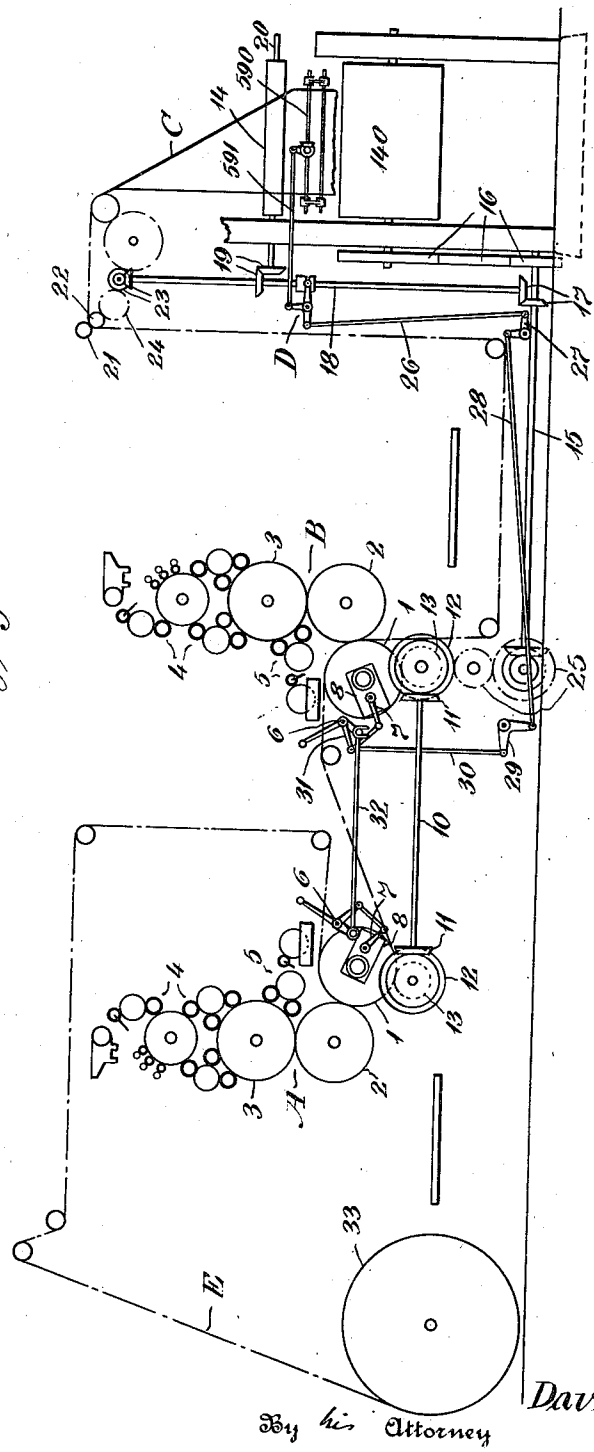
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2 SHEETS—SHEET 2.

Fig. 2.




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# UNITED STATES PATENT OFFICE.

DAVID J. SCOTT, OF PLAINFIELD, NEW JERSEY, ASSIGNOR TO ISABELLA SCOTT AND DAVID J. SCOTT, EXECUTORS OF WALTER SCOTT, DECEASED, LATE OF PLAINFIELD, NEW JERSEY.

## WEB-PRINTING MACHINE.

1,217,646. Specification of Letters Patent. Patented Feb. 27, 1917.

Original application filed April 10, 1915, Serial No. 20,402. Divided and this application filed April 19, 1916. Serial No. 92,098.

*To all whom it may concern:*

Be it known that I, DAVID J. SCOTT, a citizen of the United States, and a resident of Plainfield, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Web-Printing Machines, of which the following is a specification.

The present invention relates to web printing machines whether of the rotary or flat bed type, but is especially advantageous on a rotary lithographic machine, either printing directly from lithographic plates on the impression receiving material, or printing by the offset process, that is, through the medium of a transfer member carrying a rubber blanket.

The present case is a division of one filed April 10, 1915, Serial No. 20,402.

In all lithographic presses the process of inking up the plates, and, in offset presses also the process of inking up the blanket, requires the operation of the press so that the printing plate shall be dampened and inked in the same way as when the press is in actual operation during printing, so as to bring out the details of the work properly. Since this preliminary inking up operation is apt to last for some time—in some cases as long as 10 or 15 minutes at a stretch—a considerable amount of paper is wasted, because, while no printing is being done, the threaded web continues to be forwarded through the press. This can be avoided by breaking the web when the machine is being run for the purpose of inking up the forms, but this has the disadvantage that it requires the web to be rethreaded before the actual printing can take place. Also it is obvious that the delivery mechanism, or certain parts thereof, bear a timed relation to the printed matter upon the web since folding or cutting must only take place in the margins between the printed matter, and that therefore when threading up the web again care must be taken to restore this proper timed relation between the printing means and the delivery means. In order to rethread the press it is customary therefore to stop the press and such action, in a lithographic press, involves gumming up the plate to prevent the form from oxidation while the press is standing, and again washing off the gum before starting up and printing.

It is the object of the present invention to provide means whereby the printing machine can be operated with the impression tripped and without moving a web threaded therethrough and through web forwarding or delivery means, so that the waste of paper, due to the incidental operation of working on the plates, may be reduced to a minimum.

Accordingly the invention consists in a web printing machine comprising web printing means and web delivery means, through which the web is threaded, together with means for driving said printing and delivery means to print and deliver the web, and means for driving the printing means without printing the web, and means for stopping the delivery means so that the web will remain stationary.

The printing means may be of any type suitable for printing a web, and the delivery mechanism may be of any approved form, and may be adapted to deliver the web in sheet form, either in a folded or unfolded condition.

The means for permitting the operation of the printing members without printing or advancing the threaded web may consist of well known means for tripping the printing members or may comprise means for separating said members or cylinders of any suitable construction, together with means of any suitable character for stopping the delivery mechanism. Said means for stopping the delivery mechanism may consist of any suitable devices, a simple form of which would be the removal or uncoupling of a gear or belt or other transmission mechanism. Preferably, as shown, a clutch is utilized, which clutch will preferably be of such a character that the parts can be connected up only in their proper timed relation.

Any suitable means may be utilized to operate the tripping means and stopping means for the delivery mechanism, and such means may be actuated separately by the pressman, but, in the preferred form as herein disclosed, a common operating means is provided whereby the impression is tripped and the delivery mechanism stopped.

In the accompanying drawings the invention is disclosed in several concrete and preferred forms from which, however, changes may be made without departing from the

legitimate and intended scope of the invention as expressed in the appended claims.

In the drawings:

Figure 1 is a diagrammatic side elevation of a printing machine embodying a preferred form of the invention.

Fig. 2 is a side elevation of a modification.

Fig. 3 is a detail view of the clutch used.

Similar characters of reference indicate corresponding parts in the different views.

The printing means consist of the two printing couples A and B which are adapted to print and perfect a web, each couple consisting in this instance of an impression cylinder 1, a transfer cylinder 2, a plate cylinder 3, together with the usual inking devices 4 and dampening mechanism 5. Adjacent to each impression cylinder is a trip shaft 6 which, by means of well-known connections such as 7, causes the impression cylinder to move in the sliding boxes 8, thereby permitting the impression and blanket cylinders to become separated or to be brought together.

Power is supplied to the machine in any suitable way not shown, and the two printing couples A and B are geared together in a well-known manner, here indicated as a shaft 10, having bevel gears 11 which mesh with corresponding bevel gears 12 with which moves spur gears 13 meshing with similar spur gears on the impression cylinders 1, from which latter motion is transmitted to the other cylinders in a known manner.

Confining now our attention to Fig. 1, C represents a delivery here shown as a former folder of any suitable character, the cylinders and rollers 14 of which are driven from a shaft 15 through the train of spur gears 16 and through bevel gears 17, upright shaft 18, bevel gears 19 and shaft 20. 21 and 22 indicate pulling or feeding rollers, the latter of which is driven from the upright shaft 18 through the train of gears 23 terminating in the intermediate 24. The shaft 15 is driven from the shaft 10 by means of the train of gears 25.

The shaft 15 is made in two parts, and a clutch D is used to connect or disconnect said parts. In the present instance this clutch is controlled by means of rod 28, bell crank 29, rod 30, secured to the bell crank 31 on one of the trip shafts 6, the two trip shafts being preferably connected together by means of the rod 32 as shown.

The web E comes from the source of supply 33 and is guided over suitable rollers to the impression cylinder 1 of the couple A, thence by suitable means to the impression cylinder 1 of the couple B, and thence by means of suitable guide rollers to the pulling or feeding rollers 21 and 22, and thence to the delivery C.

When either of the trip shafts 6 is operated, the two impression cylinders 1 will be separated from their coacting transfer cylinders and at the same time motion will be transmitted through the connections 30, 29 and 28 to the clutch D which results in stopping the delivery mechanism C as a whole, as well as stopping the rotation of the driven roller 22, whereby all movement of the web ceases.

If the machine as a whole is now operated with the parts tripped and the web stopped but in threaded position, it is obvious that no printing or feeding of the web will take place but that, nevertheless, the timed relation between the delivery and the printing machine will be maintained. This timed relation is in the present instance maintained by so arranging the clutch D that it can be thrown in only when the elements comprising the delivery bear the proper timed relation to the printing means. This is done by providing the clutch members $d$ and $d'$ at proper circumferential positions with respect to each other. In the present instance this is accomplished by having a single toothed clutch so that the parts $d$ and $d'$ can be connected up only when they are in the right positions circumferentially with respect to each other. The tension on the paper roll is sufficient to prevent the running cylinders 1 from feeding the web by friction on account of the wrap of web around cylinders 1.

In the form shown in Fig. 2, the elements are substantially the same as those shown in Fig. 1 except that here the clutch D is interposed in the shaft 18 so that when it is disengaged from its companion member the roller 22 will be stopped as will also the roller 14, while the cylinder 140 will continue to operate in timed relation with the printing means. The connections for driving the parts in unison and for controlling the operation of the clutch are the same in this figure as in Fig. 1 except that the rod 28 here connects to a bell crank 27 which in turn is connected to the clutch D by means of the rod 26. In this form, therefore, only a part of the folder is rendered inactive.

In connection with the invention a web severing means may be employed. This is indicated in Fig. 2 where a breaker knife 590 is located adjacent to the cylinder 140 and is actuated by a suitable connection 591 which extends over to and is operated from the clutch D as shown. In the form shown in Fig. 1 the cylinder 14 and usual parts coöperating therewith constituting the delivery mechanism, will sever the web. It will be observed, however, that in both instances the severing of the web does not necessitate a rethreading of it through the machine.

What is claimed, is:

1. A web printing machine comprising:

web printing and delivery means through which a web is threaded, means for driving said printing and delivery means to print and deliver the threaded web, means permitting the driving of the printing means without printing the web, and means for stopping the delivery means so that the threaded web remains stationary.

2. A web printing machine comprising: web printing means and delivery means through which a web is threaded, means for driving said printing and delivery means to print and deliver the threaded web, and means permitting the driving of the printing means independently of the delivery means while the threaded web remains unprinted and stationary.

3. A web printing machine comprising: printing means and delivery means through which a web is threaded, means for driving the printing and delivery means, means for tripping the printing means, and means for stopping the operation of the delivery means, whereby the threaded web remains unprinted and stationary.

4. A web printing machine comprising: printing means, forwarding rollers and delivery means through which a web is threaded, means for driving the printing means, the forwarding rollers and delivery means, thereby printing and delivering the web, and means permitting the driving of the printing means independently of the delivery means without printing or moving the web.

5. A web printing machine comprising: printing means, forwarding rollers and delivery means through which a web is threaded, means for driving the printing means, the forwarding rollers and delivery means, thereby printing and delivering the web, means permitting the printing means to operate without printing the web, and means for stopping the operation of the forwarding rollers and the delivery means.

6. A web printing machine comprising: web printing and delivery means through which a web is threaded, means for driving said printing and delivery means to print and deliver the threaded web, means permitting the driving of the printing means without printing the web, and means for disconnecting and connecting the delivery means from the driving means constructed and arranged to permit connection being made only when the printing means and delivery means bear the proper timed relation to each other.

Signed at Plainfield, in the county of Union and State of New Jersey, this 13th day of April, A. D. 1916.

DAVID J. SCOTT.

Witnesses:
CARL E. DRAUGE,
J. V. COLES.