

F. WAITE.
 ROTARY LITHOGRAPHIC OFFSET AND OTHER PRINTING MACHINE.
 APPLICATION FILED APR. 20, 1912.

1,051,653.

Patented Jan. 28, 1913.
 2 SHEETS—SHEET 1.

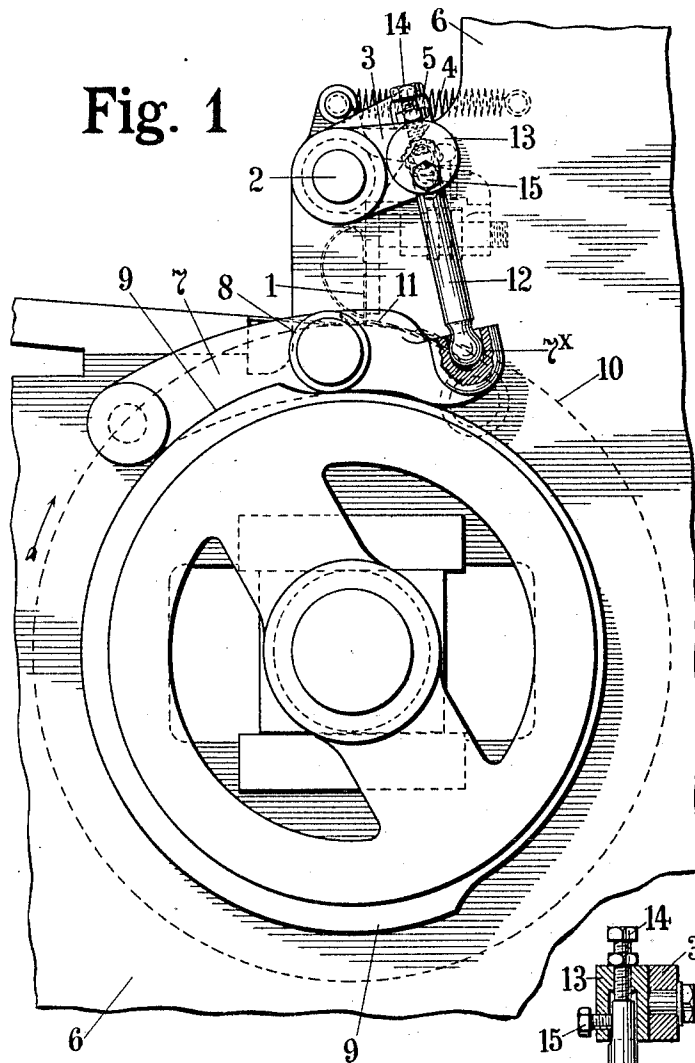
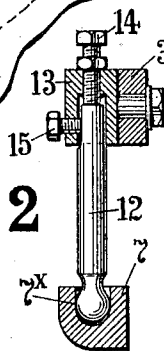


Fig. 2



WITNESSES:
M. E. Smyth.
W. D. Smith.

INVENTOR.
Fred Waite
 by his attorney
R. L. Smith.

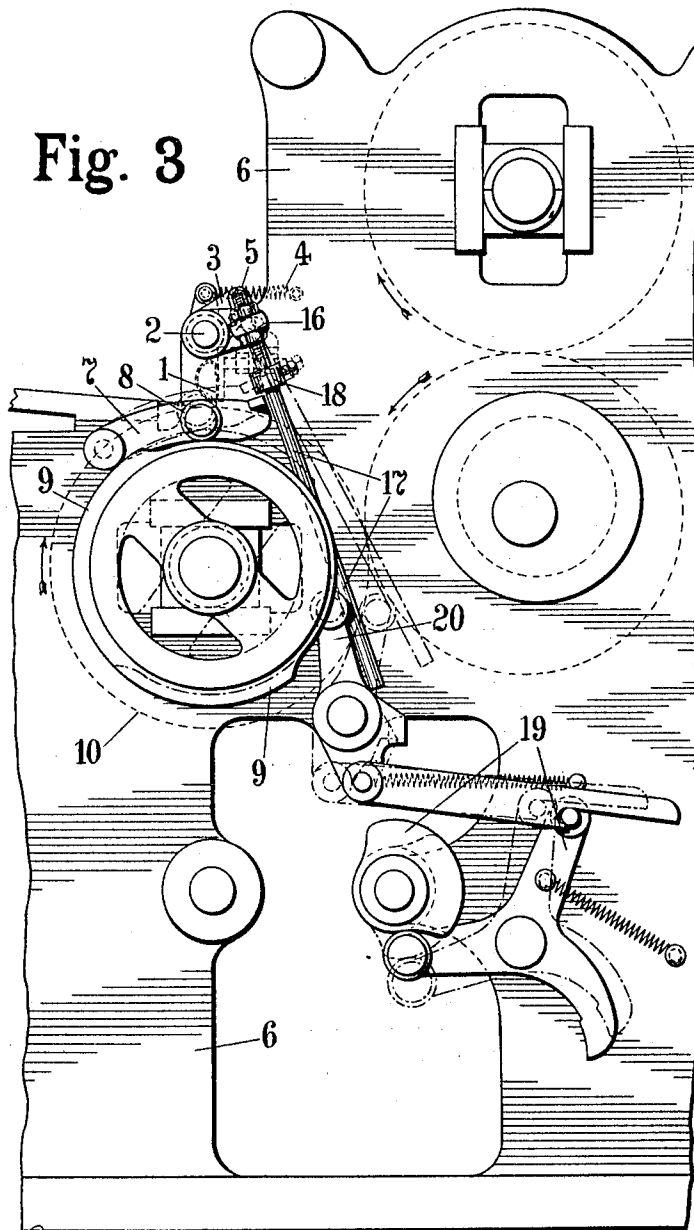
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2 SHEETS-SHEET 2.

Fig. 3



WITNESSES:

M. D. Snook
W. H. Lamb

INVENTOR.

Fred Waite
 by *his attorney*
R. L. Swin

UNITED STATES PATENT OFFICE.

FRED WAITE, OF OTLEY, ENGLAND.

ROTARY LITHOGRAPHIC OFFSET AND OTHER PRINTING-MACHINE.

1,051,653.

Specification of Letters Patent.

Patented Jan. 28, 1913.

Application filed April 20, 1912. Serial No. 691,994.

To all whom it may concern:

Be it known that I, FRED WAITE, a subject of the King of Great Britain, residing at Otley, in the county of York, England, printers' engineer, have invented certain new and useful Improvements in Rotary Lithographic Offset and other Printing-Machines, and of which the following is a specification.

In rotary lithographic offset and other printing machines, wherein the sheet or card to be printed is fed up to the front of feeding gages, which are required to retire at the moment when the grippers of the impression cylinder take hold of the sheet or card, it is highly important that the said feeding gages be moved away from the fed sheet or card at the identical moment when the grippers take hold of the said sheet. This invention refers to machines in which the said front feeding gages are mounted on a rock shaft which is limited in its forward movement by means of a stop coming in contact with the frame, and which rock shaft is kept holding the feed gages in a forward position up to the said stop by means of a spring, and the said rock shaft is turned against the action of the spring by means of lever connections actuated by a bowl running in contact with an operating cam carried by the impression cylinder, the communication between the said rock shaft and the lever connections being by means of a connecting rod communicating with an arm carried on such rock shaft. In this way the rotation of the cylinder which controls the closing of the grippers on the front edge of the sheet, also controls the withdrawal of the feeding gages which register the front position of the sheet immediately prior to the grippers taking hold of the same, and as the actual moment of gripping must vary in accordance with the thickness of the sheet to be gripped, it is necessary that an adjustment must be provided in connection with the feeding gages so that the withdrawal of said gages is coincident with the movement of the grippers.

In feeding into a revolving cylinder, the grippers will grip and move a card earlier than a thin sheet of paper, therefore to insure register it is important that there be no interval between the movement of the gages and the gripping of the card or sheet; and the object of this present invention is to provide means of a simple character for use in connection with feeding gages where-

by the movement imparted thereto by the operating cam can be accurately adjusted to suit the thickness of the sheet or card to be printed, so as to insure true and correct register at all times whether the sheets or cards are fed by hand or by an automatic feeder.

According to my invention, instead of connecting the arm of the gage-carrying rock shaft (which is held against the stop on the frame by spring pressure) to the cam-operated bowl lever through the medium of a rigid rod or link as is now customary, I connect the bowl lever to the arm of the gage-carrying rock shaft by means of an adjustable rod or link so arranged as to provide a variable idle space between the operating and operated parts, by which the timing of the movement of the feeding gages relatively to the grippers can be minutely and accurately adjusted according to whether the machine is required to print thin sheets or thick cards. In employing this arrangement, the lift of the operating cam is always the same as in the case of a rigid connecting link, but the variation desired as between a thin sheet and a thick card in the timing of the feed gages is obtained by regulating the adjustable connecting rod or link, and thus the retention of the sheet in the correct position is insured until the cylinder takes possession of the said sheet.

The invention will now be described with reference to the examples of construction shown in the accompanying drawings, in which corresponding reference numerals indicate like parts in all the figures; wherein:-

Figure 1 is a part sectional side elevation of the feed-gage mechanism of a rotary offset printing machine designed to print at every revolution of the impression cylinder, fitted with gage-timing means in accordance with my invention: and Fig. 2 is a sectional end elevation of the same gage-timing means detached from the machine. Fig. 3 is a side elevation of the feed-gage mechanism of a rotary offset printing machine designed to print either at every revolution or at every alternate revolution of the impression cylinder, fitted with gage-timing means in accordance with my invention. In the drawings, the feed gages 1 carried by the rock shaft 2 fitted with the operating-arm 3 are normally held in the down position by the spring 4 with the stop 5 in contact with the

frame 6, while the pivoted actuating lever 7 is lifted through its bowl 8 by the cam 9 of the impression cylinder 10 at the moment the grippers 11 come to the feeding position; all of which are of ordinary construction.

According to this invention and with particular reference to Figs. 1 and 2 of the drawings, the pivoted bowl lever 7 is connected to the arm 3 of the gage-carrying rock shaft 2 through the medium of a short rod 12 whose lower end takes into a footstep bearing 7* formed on the lever 7 while its upper end passes into a swiveling boss 13 provided on the arm 3, which boss 13 is fitted with an adjustable set-screw 14 whose lower end is caused to engage against the inner end of the rod 12 so as to regulate its distance within the boss 13. In this way, the length of the rod 12 between the arm 3 and the lever 7 is made adjustable at will; and after adjustment the said rod 12 is fixed in the boss 13 by a set-screw 15. The amount of lift of the pivoted actuating-lever 7 by the cam 9 is constant as before; and it will be seen that by increasing or diminishing the length of the connecting rod 12 in the manner just described the idle space between the lower end of the said rod 12, and the footstep bearing 7* of the lever 7 will be diminished or increased accordingly, and thus the engagement of the actuating lever 7 with the rod 12 can be accelerated or retarded at will to cause the movement of the feed gages 1 to be minutely and accurately timed relatively to the grippers 11 of the impression cylinder 10.

Referring particularly to Fig. 3 of the drawings, the arm 3 of the gage-carrying rock shaft 2 is fitted with a swiveling boss 16 through which is passed an adjustable rod 17 provided with a fixed collar 18 with which the free end of the pivoted actuating lever 7 is adapted to engage. By adjusting the position of the rod 17 in its carrying boss 16 the space between the collar 18 and the free end of the lever 7 can be diminished or increased at will, and thus the engagement of the actuating lever 7 with the collar 18 of the rod 17 can be minutely and accurately timed so as to cause the feed gages 1 to be moved relatively to or in unison with the grippers of the impression cylinder 10. When the machine is required to print at every revolution, the rod 17 is allowed to remain in the position shown in full lines so that its collar 18 is free to be engaged by the actuating lever 7 at every revolution of the impression cylinder 10; but on the machine being adjusted to print at every alternate revolution, the ordinary tripping mechanism 19 of the machine, through the medium of a pivoted rock-lever 20, moves the adjustable rod 17 outward so as to disengage its collar 18 from the end of the actu-

ating lever 7 (as shown in dotted lines) at every alternate revolution of the impression cylinder 10. In this way the adjustment of the feed gages both for printing at every revolution and every alternate revolution is provided for, and in either case such adjustment insures true and correct register at all times.

What I claim as my invention and desire to secure by Letters Patent is:—

1. In feed mechanism of rotary printing machines; the combination with a rock shaft carried in the frame of the machine, feed gages mounted on said rock shaft, a stop on said rock shaft normally held in contact with the frame by a spring to retain said gages in the down position when feeding the sheet or card thereto, an arm on said rock shaft, and a cam mechanism adapted to actuate said arm so as to rock said shaft against the action of the spring to cause said gages to swing inward and allow the grippers of the impression cylinder to take the fed sheet or card; of an adjustable operative connection between said rock-shaft arm and said cam-mechanism so arranged as to provide a variable idle space between such operated and operating parts by which the movement of said arm can be hastened or delayed at will to cause the feed gages to be raised at the proper moment.

2. In feed mechanism of rotary printing machines; the combination with a rock shaft carried in the frame of the machine, feed gages mounted on said rock shaft, a stop on said rock shaft normally held in contact with the frame by a spring to retain said gages in the down position when feeding the sheet or card thereto, an arm on said rock shaft, a cam-operated bowl-lever pivoted on the frame adapted to actuate said arm so as to rock said shaft against the action of the spring to cause said gages to swing inward and allow the grippers of the impression cylinder to take the fed sheet or card; of an adjustable rod forming an operative connection between said rock-shaft arm and said cam-operated bowl-lever so arranged as to provide a variable idle space between such operated and operating parts by which the movement of said arm can be hastened or delayed at will to cause the feed gages to be raised at the proper moment.

3. In feed mechanism of rotary printing machines; the combination with a rock shaft carried in the frame of the machine, feed gages mounted on said rock shaft, a stop on said rock shaft normally held in contact with the frame by a spring to retain said gages in the down position when feeding the sheet or card thereto, an arm on said rock shaft, a cam-operated bowl-lever pivoted on the frame adapted to actuate said arm so as to rock said shaft against the action of the spring to cause said gages to swing inward

and allow the grippers of the impression cylinder to take the fed sheet or card; of a boss swiveled to the end of said arm, and a rod adjustably connected at one end to said boss so arranged as to provide a variable idle space between its opposite end and said bowl-lever by which the operating engagement of said rod can be hastened or delayed at will to cause the feed gages to be raised at the proper moment.

4. In feed mechanism of rotary printing machines; the combination with a rock shaft carried in the frame of the machine, feed gages mounted on said rock shaft, a stop on said rock shaft normally held in contact with the frame by a spring to retain said gages in the down position when feeding the sheet or card thereto, an arm on said rock shaft, a cam-operated bowl-lever pivoted on the frame adapted to actuate said arm so as to rock said shaft against the action of the spring to cause said gages to swing inward and allow the grippers of the impression cylinder to take the fed sheet or card; of a boss swiveled to the end of said arm, a recess in said boss, a rod one end of which is adapted to enter said recess, a set-screw in said boss adapted to engage said rod to adjust its length within said recess, and a second set-screw in said boss adapted to engage said rod to clamp same in its adjusted position, the arrangement being such as to provide a variable idle space between the opposite end of said rod and the free end of said bowl-lever by which the operating engagement of said rod can be hastened or delayed at will to cause the feed gages to be raised at the proper moment.

5. In feed mechanism of rotary printing machines; the combination with a rock shaft carried in the frame of the machine, feed gages mounted on said rock shaft, a stop on said rock shaft normally held in contact with the frame by a spring to retain said gages in the down position when feeding the sheet or card thereto, an arm on said rock shaft, a cam-operated bowl-lever pivoted on the frame adapted to actuate said arm so as to rock said shaft against the action of the spring to cause said gages to swing inward and allow the grippers of the impression cylinder to take the fed sheet or card; of a boss swiveled to the end of said arm, a recess in said boss, a rod one end of which is adapted to enter said recess, a set-screw in said boss adapted to engage said rod to adjust its length within said recess, a second set-screw in said boss adapted to engage said rod to clamp same in its adjusted position, and a footstep bearing formed at the free end of the pivoted bowl-lever adapted to receive the opposite end of said adjustable rod, the arrangement being such as to provide a variable idle space between the free end of said rod and said footstep bearing by which the operating engagement of said rod can be hastened or delayed at will to cause the feed gages to be raised at the proper moment.

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

FRED WAITE.

Witnesses:

JOHN JOWETT,

VANCE EWART GALLOWAY.