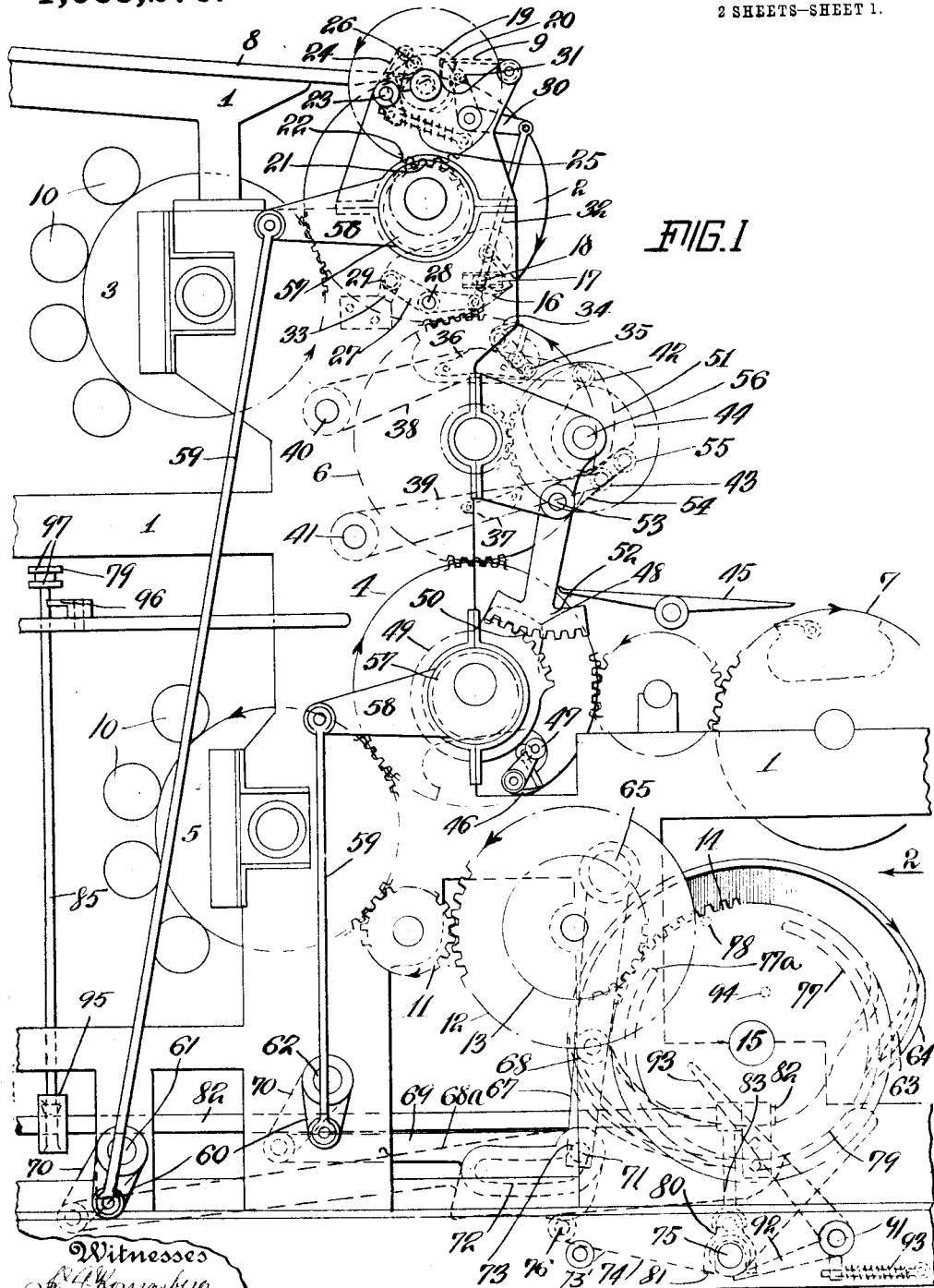


W. SCOTT, DEC'D.
I. & D. J. SCOTT, EXECUTORS.
MULTICOUPLE MULTIREVOLUTION PRINTING MACHINE.
APPLICATION FILED DEC. 19, 1905.

Patented June 17, 1913.

2 SHEETS-SHEET 1.

1,065,276.



Witnesses
H. H. Henshaw
Anna D. Henshaw

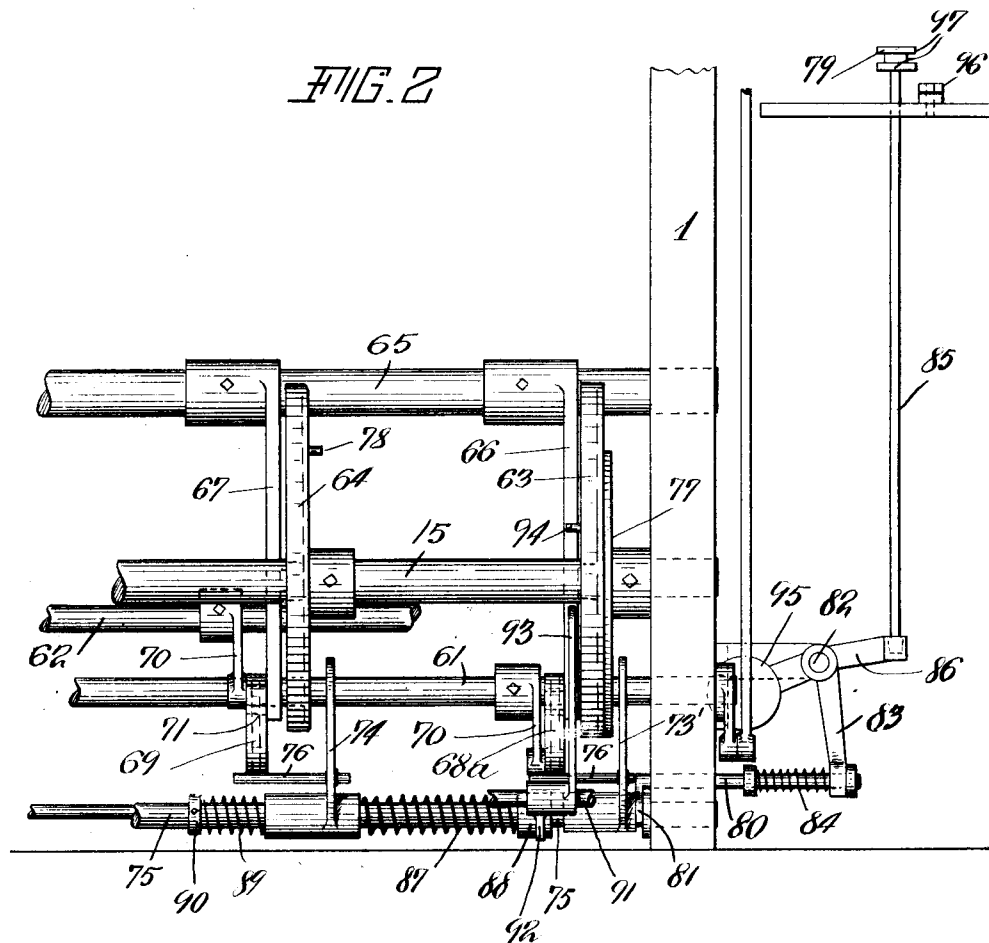
Walter Scott INVENTOR
BY HIS ATTORNEYS (McKen & Spaulding)

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2 SHEETS—SHEET 2.



Witnesses
H. H. Herington
Anna J. Herington

Walter Scott Inventor
By his Attorneys
Becker & Spaulding

UNITED STATES PATENT OFFICE.

WALTER SCOTT, OF PLAINFIELD, NEW JERSEY; ISABELLA SCOTT AND DAVID JOHN SCOTT EXECUTORS OF SAID WALTER SCOTT, DECEASED.

MULTICOUPLE MULTIREVOLUTION PRINTING-MACHINE.

1,065,276.

Specification of Letters Patent.

Patented June 17, 1913.

Application filed December 19, 1905. Serial No. 292,437.

To all whom it may concern:

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

The present invention relates generally to printing machines, and has more particularly reference to the arrangement and construction of the parts of a multi-couple multi-revolution machine, and to tripping mechanism connected therewith.

In Patent No. 1,040,783 of October 8, 1912, there is disclosed a construction embracing a plurality of printing couples adapted to print on the same side of the sheet, in combination with means for automatically and periodically, at regular intervals, tripping and untripping the impression of the members composing the several couples, together with means, under the control of the operator or of an automatic feeder, for maintaining the members in their separated position, the said means being operable from a single actuating device to communicate the motion to the members of all the couples in regular sequence, and whereby when the said actuating device is released, the machine will resume its former operation and be tripped and untripped again automatically. The present invention is characterized by a greater simplicity of structure than the one disclosed in my said prior application. Furthermore, in the said prior application, the means for interrupting the operation of the automatic tripping and untripping devices not only act sequentially, but are positioned sequentially. The present structure is distinguished by the fact that the several means for interrupting the operation of the several automatic tripping means of two adjacent couples are positioned substantially simultaneously, but nevertheless act on successive cycles or sequentially.

The form and impression members comprising the printing couple will preferably be of the rotary type, and are so shown in the drawings forming a part of this specification, though I do not wish to limit my-

self for all purposes to a construction involving rotary printing couples.

The invention further consists, in a new and improved arrangement of sheet carrying devices on the impression and transfer cylinders, whereby the said sheet carrying devices, such as grippers, are operated in harmony with the rotation of the several cylinders and are capable of seizing and releasing the sheets whether or not the impression is tripped.

Other objects and features of construction will appear as the specification proceeds.

The invention is embodied in a concrete and preferred construction in the accompanying drawings; it is, however, susceptible of wide modifications without departing from the true spirit of the invention.

In the said drawings: Figure 1 is a side elevation of so much of a printing machine as is necessary to properly illustrate the invention. Fig. 2 is an end view looking in the direction of the arrow 2 in Fig. 2, broken away and with parts omitted.

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

1 indicates a framework of any suitable construction for properly supporting the parts comprising the machine. In this framework are mounted a plurality of printing couples, preferably of a rotary nature, there being in the present instance two such couples, arranged substantially one above the other. It will be understood, however, that the present invention may be extended to include three or more printing couples, if desired. Each couple consists of a form and impression member, and is adapted to make a number of revolutions to each impression. In the present instance, the cylinders revolve twice to each impression.

2 is the impression cylinder, and 3 the form cylinder of the first printing couple, while 4 is the impression cylinder and 5 the form cylinder of the second printing couple. The impression and form cylinders are preferably of equal diameter as are the transfer cylinders 6 and 7, which are interposed respectively between the first and second impression cylinders, and between the second impression cylinder and a suitable delivery mechanism (not shown). This last-men-

tioned cylinder 7 may be a collecting cylinder, if desired.

All of the impression and transfer cylinders, except the first impression cylinder, are provided with grippers, closed by springs in the usual way, and opened by means of cams. The first impression cylinder, however, is provided with tumbling grippers, which are caused to tumble back and forth nearly one-half of a revolution by suitable means as will be more fully hereinafter described. In the present style of machine, this construction, in which the first impression cylinder is provided with tumbling grippers, is advantageous for the reason that the sheet must be positively seized and that the feed board might interfere with the operation of spring-seated grippers which have to be raised above the surface of the cylinder when the feeding point is reached. In the present instance, the arrangement is such that the sheet will be received and printed during the first revolution of the impression cylinders, and will be delivered during a portion of the second revolution of the said cylinders.

8 is the feed board adjacent to which are the gages 9 against which sheets are fed, and which are raised in a well known manner when the grippers on the cylinder 2 seize the sheet.

10 indicates inking mechanism of any suitable construction used in connection with each plate cylinder.

All of the cylinders are geared together, being driven from the driving pinion 11, which latter also transmits its motion through the intermediate gear 12 and pinion 13 to the gear 14, mounted on the cam shaft 15. The cylinder 2 is provided with grippers 16 which are arranged to tumble backward and forward nearly half a revolution by means of the cross-head 17, provided with a slot in the usual manner, and mounted on the gripper shaft 18. Suitable means are provided for closing the grippers on one revolution, and for opening them on the next revolution of the cylinder. These means, in the present instance, take the form of two rotating cams 19 and 20, which are driven so as to rotate once to a number of revolutions of the impression cylinder by means of the pinion 21 and the gear 22.

Mounted on the stud 23 in the framework, is an arm 24 having a friction roll which is held in constant engagement with the cam 19 by means of the spring 25. This stud 23 carries a second arm having a pin 26 which projects at the beginning of every other revolution into the plane of the cross-head 17 of the gripper shaft so as to close the said grippers and seize a sheet.

Pivoted in the framework adjacent to the underside of the cylinder 2, is a lever or arm 27 adapted to rock about the center 28 as a pivot and provided at its outer end

with the friction roll 29, which is designed to be moved into the plane of the cross-head 17 once to every two revolutions in alternation with the movements of the pin 26. This lever 27 is operated from the cam 20 by means of the bell crank 30, provided with a friction roll 31 at one end, and having a connecting rod 32 attached to its other end, whereby motion is transmitted to the lever 27. A suitable stop, as 33, may be employed for the purpose of limiting the outward movement of the roll 29, if desired.

The transfer cylinder 6 is provided with spring-seated grippers 34 of the usual construction, and is provided with a crank carrying the roll 35. These grippers are opened and closed twice during one revolution, and remain idle during the remainder of their cycle. Means for effecting this may be varied, but preferably I employ two rocking cams 36 and 37 mounted on the arms 38 and 39, which are pivoted at 40 and 41 in the framework. At the outer end of the arms 38 and 39 are friction rolls 42 and 43, which, in the present instance, both engage with the cam 44, so shaped and timed as to move the rocking cams 36 and 37 into and out of the plane of the grippers on the cylinder during alternate revolutions.

The second impression cylinder preferably does not deliver its sheet to the transfer cylinder 7, but delivers it to a suitable guide 45 interposed between the said impression and transfer cylinders, so that the sheet may be carried on to be delivered with its printed side out. It is obvious, further, that the transfer cylinder 7 may be a collecting cylinder, and from this transfer cylinder the sheet may be delivered in any suitable way as by a drop delivery or otherwise. This is fully disclosed in an application filed by me on the 11th day of August, 1902, Ser. No. 119212, and it is therefore thought unnecessary to enter into the details of this part of the machine in the present application. The said second impression cylinder is provided with spring-seated grippers 46 of the usual and ordinary construction, having a crank with friction roll 47, adapted to come in contact with a suitable cam for opening the said grippers. Inasmuch as the delivery point of this cylinder is but a short distance away from the receiving point or from the axial line between the transfer cylinder 6 and the impression cylinder 4, only one cam is necessary, in this instance, to open the gripper mechanism in the proper manner. This cam, which is designated by the numeral 48, is adapted to open the gripper mechanism during the first revolution of the cylinder to receive the sheet, and again to open the gripper mechanism during its second revolution to deliver the sheet, the said cam being moved into different positions to effect this operation. In other words, the cam is in the

plane of the gripper mechanism during every revolution of the cylinder, but opens the grippers at a different point of the rotation of the cylinder. The precise means for carrying out this may of course be varied, but preferably this cam is caused to oscillate around the shaft of the cylinder by being provided with the sleeve 49, which, at its outer end, is provided with a gear segment 50, adapted to be operated by any suitable means to shift the cam back and forth a certain distance from the receiving point to the delivery point of the cylinder. Preferably this cam is operated from the rotating cam 51 by means of the gear sector 52, pivoted at 53, and provided with an arm 54 having a friction roll 55 which engages with the said cam 51. This cam 51 is conveniently mounted on the same shaft 56 as the cam 44.

Each of the impression cylinders is mounted in an eccentric bushing 57 upon its shaft, whereby, when the said eccentric bushings are turned, the impression cylinders will be moved in and out of printing contact with the plate cylinders. The distance which it is necessary to raise these impression cylinders in order to trip the impression, is only about $\frac{1}{8}$ of an inch, so that the gears on the respective cylinders need not be out of mesh with each other. This tripping of the impression cylinders does not affect their relation to the transfer cylinders to any appreciable extent, and the sheet is always capable of being passed through the machine whether or not the impression is tripped. The said eccentric bushings 57 are connected by means of the short arms 58, connecting rods 59 and levers 60 to the rockshafts 61 and 62, there being provided one rockshaft for each impression cylinder. Suitable means are provided for rocking these rockshafts at regular intervals, so as to automatically trip and untrip the impression cylinders at predetermined intervals. In the present instance, the impression cylinders are tripped during their second revolution of each cycle of the machine. Obviously, the means for accomplishing this may be varied widely, but preferably there is mounted upon the cam shaft 15, two cams 63 and 64, which, as previously explained, are given one revolution to a number of revolutions (in the present instance, to every two revolutions) of the machine.

65 is a shaft extending transversely of the machine, and on which are loosely mounted a plurality of arms (in the present instance two) one for each impression cylinder, and numbered respectively 66 and 67. Each of the said arms is provided with a roller 68 which engages in its respective cam groove on one of the cams 63 and 64. Suitable means are provided for communicating the motion of the arms 66 and 67 to the rockshafts 61 and 62. In the present instance,

these means take the form of slotted connections 68^a and 69, connected, by means of the levers 70, to the rockshafts aforesaid, and receiving the motion of the arms aforesaid by means of the pins 71, carried at the lower ends of the said arms and adapted to play in the slots 72 of the connections aforesaid, and to be locked with the said connections when the pins 71 are in the recess 73 of the said slots. From this it will be understood that during the normal operation of the machine, the cams 63 and 64, by their rotation, will cause the arms 66 and 67 to oscillate, thereby moving the slotted connections aforesaid, and rocking the rockshafts. This causes the impression cylinders to be moved alternately into and out of contact with the form members. Means are provided, however, for lifting the slotted connections so as to cause the pins 71 to play idly in the slots 72, whereby the form and impression members will be maintained separated as long as the slotted connections are held in their elevated position. In other words, an interrupting means is provided for the automatic tripping and untripping means. The means for effecting this may of course take many forms, but, in the present instance, there is provided a plurality of rocking cams 73' and 74. These cams are mounted slidably upon the shaft 75, and are provided with pins 76 extending in under the slotted connections aforesaid, so that when they are moved into the plane of the cam or pin 77 and 78, which are conveniently mounted on the cams 63 and 64, the said cam or pin 77 and 78 will come in contact with the cam portions 79 of the said rocking cams 73' and 74, thereby rocking them and lifting the slotted connections up, so that the pins 71 will play idly in the slots 72. The parts should of course be so arranged that these several cams 73' and 74 can be positioned from a single actuating device, but so constructed, however, as to cause the said cams 73' and 74 to act sequentially or upon succeeding cycles, in order that the sheet, properly printed by the first printing couple, may be allowed to pass through the machine and be printed by the second or other remaining couples before the respective automatic tripping mechanism is rendered incapable of returning the members of the printing couple into printing contact.

In the prior application, Ser. No. 287863, previously referred to, the several interrupting means were timed by reason of the fact that connections were made between the interrupting means of the second printing couple and the slotted connection of the first printing couple and so on, whereby the interrupting means of two adjacent couples not only acted sequentially but were positioned sequentially. In the present case,

the device has been considerably simplified by dispensing with these connections and connecting up the interrupting means of two adjacent couples direct, in such a manner that they are positioned substantially simultaneously, but act sequentially. The means for effecting this may take various forms, but, in the present instance, there is provided a treadle 79, which, when it is depressed, will, through suitable connections, move the member 80, so as to cause the latter, by means of its bifurcated end 81, to move the rocking and sliding cam 73' into the plane of the cam 77. This may be effected by various mechanical contrivances, but, in the present form, there is shown a rockshaft 82 suitably mounted in the framework, provided with a bifurcated lever 83 in engagement with the member 80, and which, when operated, will cause the said member to be moved inward against the pressure of the spring 84. The rockshaft 82 is suitably connected to the foot treadle by means of the rod 85 and lever 86.

Interposed between the two cams 73' and 74 is a spring 87 with which moves a collar 88 of a slightly larger diameter than the bushing of the cam 73'. On the other side of the cam 74 is a spring 89 abutting against the collar 90. Mounted on the shaft 91 is a latch 92 which is adapted, under the pressure of the spring 93, to move in behind the sleeve 88 when the latter is moved over far enough to allow the said latch to move in behind it. Connected to this latch is a release arm 93 which is adapted to be operated by the pin 94 conveniently mounted on the cam 63.

The cam 77, which acts to operate the interrupting means for the first printing couple, is in the form of a continuous rim extending for a suitable distance which varies according to the requirements for any particular machine and serves as a means for timing the operation of the interrupting means of the automatic tripping means.

When the treadle is depressed, the member 80 will be caused to move inward, carrying the cam 73' with it until the inward movement of the said cam is arrested by the continuous rim or timing cam 77, and which movement will cause the bushing of the said cam 73' to abut against the sleeve 88. The additional power exerted by the foot treadle will be stored by the spring 84. The rotation of the cam 63 will eventually bring the gap in the timing cam 77 opposite to the cam 73', which will thereby, under the pressure stored in the spring 84, move inwardly into the plane of the said timing cam. This additional movement will also cause the compression of the spring 87 by reason of the fact that the sleeve 88 has been moved a distance inward, sufficient to compress the said spring, and to move the

cam 74 into the plane of the pin 78. Thus both of the rocking cams 73' and 74 are positioned substantially simultaneously and the latch 92 will fall in behind the sleeve 88 and prevent the return of the cam 74. The cam 77 will now act upon the cam 73' by means of the end 77^a of the said cam 77 coming in contact with the cam surface 79, thereby turning the cam 73' and lifting the slotted connection up and allowing the pin 71 to play idly in the slot 72. This point 77^a of the cam 77 is therefore the equivalent of the pin 78 on the cam 64. This pin 78 is, however, so positioned, that at the moment when both cams 73' and 74 are moved into the plane of their respective operating mechanism, the said pin 78 will then have passed beyond the point where it would be effective on the cam surface of the cam 74. Hence, during this cycle, only the slotted connection 68 will be raised, the latch 92 holding the cam 74 in proper position in the plane of the pin 78. Upon the succeeding cycle, however, the pin 78 will tilt the cam 74 and raise the slotted connection 69, thereby maintaining the members of the second printing couple in their separated position. The pin 94, which acts against the release arm 93, is so positioned, that it will reach the said release arm subsequently to the time when the pin 78 acts on the cam 74. If the foot treadle has not been depressed during the entire interval desired, that is during two cycles of the machine, the counterweight 95 will have restored the member 80 to its original position, thereby carrying the cam 73' outward. The latch having now been released, the spring 89 will sequentially move the cam 74 back to its original position against the pressure of the spring 87, thus allowing the automatic means to regain control of the members of the couple. Should it be desired to maintain the members of the printing couple separated for a longer period than one cycle of the machine, the foot treadle is maintained in its depressed position either by the operator keeping his foot thereon, or by moving the latch 96 in between the two collars 97 of the foot treadle, or by any other suitable means. Under these circumstances, the release arm will move the latch outward when the pin 94 comes around in its regular rotation, but this will not restore the control of the parts to the automatic tripping and untripping means, for the spring 93 will immediately move the latch back again inasmuch as the cam 73' is maintained in its inward position.

In the claims, the words "first" and "second" printing couple, etc., have been used, but such terms are not to be construed to exclude a combination involving more than two printing couples and in which the said

printing couples might not be "first" and "second." Also some parts are claimed as moving "inward," etc. This term is purely relative as used in these claims.

5 What is claimed is:

1. In a multi-couple, multi-revolution printing machine, the members of which are adapted to print on the same side of the sheet, the combination with the members of two adjacent printing couples, of automatic means for periodically tripping and untripping the members of each couple, interrupting means for the automatic means of each couple normally inactive but adapted to act sequentially during successive cycles of the machine, when properly positioned, and means for positioning both of said interrupting means during the same cycle of the machine.

2. In a multi-couple, multi-revolution printing machine, the combination with the members of two adjacent printing couples, of automatic means for periodically tripping and untripping the members of each couple, interrupting means for the automatic means normally inactive but adapted to act sequentially during successive cycles, when properly positioned, means for positioning both of the said interrupting means during the same cycle of the machine, and means for locking the interrupting means of the second couple, when properly positioned, adapted to be released after the automatic means of the first printing couple have regained control of the same.

3. In a multi-couple, multi-revolution printing machine, the members of which are adapted to print on the same side of the sheet, the combination with the members of two adjacent printing couples, of automatic means for periodically tripping and untripping the members of each couple, interrupting means for the automatic means normally inactive but adapted to act sequentially during successive cycles, when properly positioned, means for positioning both of the said interrupting means during the same cycle of the machine, and means for locking the interrupting means of the second couple, when properly positioned, adapted to be released after the automatic means of the first printing couple have regained control of the same.

4. In a multi-couple, multi-revolution printing machine, the combination with the members of two adjacent printing couples, of automatic means for periodically tripping and untripping the members of each couple, interrupting means for the automatic means normally inactive but adapted to act sequentially during successive cycles, when properly positioned, means for positioning both of the said interrupting means during the same cycle of the machine, and means for locking the interrupting means of the

second couple, when properly positioned, adapted to be released after the automatic means of the first printing couple have regained control of the same, and means for restoring the interrupting means of both printing couples to their original position.

5. In a multi-couple, multi-revolution printing machine, the members of which are adapted to print on the same side of the sheet, the combination with the members of two adjacent printing couples, of automatic means for periodically tripping and untripping the members of each couple, interrupting means for the automatic means normally inactive but adapted to act sequentially during successive cycles, when properly positioned, means for positioning both of the said interrupting means during the same cycle of the machine, and means for locking the interrupting means of the second couple, when properly positioned, adapted to be released after the automatic means of the first printing couple have regained control of the same, and means for restoring the interrupting means of both printing couples to their original position.

6. In a printing machine, the combination with the members of a printing couple, automatic means for periodically tripping and untripping the members of the said couple, means for interrupting the operation of the said automatic means, and means for actuating the said interrupting means comprising a rocking cam slidably mounted, a rotatable cam for rocking the rocking cam having a circumferential rim provided with a gap, means for moving the said cam toward the rotatable cam aforesaid, its movement being arrested by the circumferential rim aforesaid, the said rocking cam moving within the active plane of the said rotatable cam to be rocked thereby when the gap in the circumferential rim comes opposite to the said rocking cam.

7. In a printing machine, the combination with the members of a printing couple, automatic means for periodically tripping and untripping the members of the said couple, means for interrupting the operation of the said automatic means, and means for actuating the said interrupting means comprising a rocking cam slidably mounted, a rotatable cam for rocking the rocking cam having a circumferential rim of a length equal to substantially five-sixths of a circle, means for moving the said rocking cam toward the rotatable cam aforesaid, its movement being arrested by the circumferential rim aforesaid, the said rocking cam moving within the active plane of the said rotatable cam to be rocked thereby when the gap in the circumferential rim comes opposite to the said rocking cam.

8. In a multi-couple multi-revolution printing machine, the members of which are

adapted to print on the same side of the sheet, the combination with the members of two adjacent printing couples; of automatic means for periodically tripping and untripping the members of each couple, interrupting means for the automatic means of each couple normally inactive, but adapted to act sequentially when properly positioned, means for positioning both of the said interrupting means substantially simultaneous, and means for locking the interrupting means of the second printing couple, when properly positioned, adapted to be released after the automatic means of the first printing couple have regained control of the same.

9. In a multi-couple multi-revolution printing machine, the members of which are adapted to print on the same side of the sheet, the combination with the members of two adjacent printing couples, of automatic means for periodically tripping and untripping the members of each couple, interrupting means for the automatic means of each couple normally inactive, but adapted to act sequentially when properly positioned, means for positioning both of the said interrupting means substantially simultaneous, means for locking the interrupting means of the second printing couple, when properly positioned, adapted to be released after the automatic means of the first printing couple have regained control of the same, and means for restoring the interrupting means of both printing couples to their original position.

10. In a printing machine, the combination with two multi-revolution printing couples composed of form and impression members, two rockshafts, connections between the rockshafts and one of the members of each printing couple for moving the said members into and out of contact, two rotating cams, connections for operating the rockshafts adapted to be actuated by the rotating cams, two rocking cams adapted to render the connections for operating the rockshafts inoperative when properly positioned, means for simultaneously positioning the said rocking cams, means for rocking the rocking cam of the second couple, means for rocking the rocking cam of the first couple adapted to prevent the proper positioning of both rocking cams until the means for rocking the rocking cam of the second couple has passed beyond the point of operation, a latch for locking the rocking cam of the second printing couple after it has been moved into the plane of its rocking means, and means controlled by the first printing couple adapted to release the said latch.

11. In a printing machine, the combination with two multi-revolution printing couples composed of form and impression members, two rockshafts, connections between

the rockshafts and one of the members of each printing couple for moving the said members into and out of contact, two rotating cams, connections for operating the rockshafts adapted to be actuated by the rotating cams, two rocking cams adapted to render the connections for operating the rockshafts inoperative when properly positioned, means for simultaneously positioning the said rocking cams, means for rocking the rocking cam of the second couple, means for rocking the rocking cam of the first couple adapted to prevent the proper positioning of both rocking cams until the means for rocking the rocking cam of the second couple has passed beyond the point of operation, a latch for locking the rocking cam of the second printing couple after it has been moved into the plane of its rocking means, means controlled by the first printing couple adapted to release the said latch, and means for restoring both rocking cams to their original position.

12. In a printing machine, the combination with two multi-revolution printing couples composed of form and impression members, two rockshafts, connections between the rockshafts and one of the members of each printing couple for moving the said members into and out of contact, two rotating cams, connections for operating the rockshafts adapted to be actuated by the rotating cams, an auxiliary cam shaft, two rocking cams slidably mounted thereon adapted to render the connections for operating the rockshafts inoperative, when properly positioned, a spring interposed between the said two rocking cams, a spring acting against the rocking cam of the second printing couple in opposition to the spring interposed between the two rocking cams, means for rocking the rocking cam of the second printing couple, when properly positioned, means adapted to arrest the inward sliding movement of the rocking cam of the first printing couple for a predetermined period and for subsequently acting thereon to rock the same when moved within its plane, an actuating member, having a spring for storing power, which, when operated, acts to move the rocking cam of the first printing couple inward until its movement is arrested, the continued inward movement of the rocking cam of the first printing couple, effected by the power stored in the spring aforesaid, moving the said rocking cam within the plane of the means aforesaid for acting thereon, and simultaneously therewith acts through the spring interposed between the two rocking cams to bring the rocking cam of the second printing couple within the plane of the means for operating the same, a latch for preventing the return of the second rocking cam, and means for releasing the said latch

after the automatic means aforesaid of the first printing couple have regained control thereof.

13. In a printing machine, the combination with two multi-revolution printing couples composed of form and impression members, two rockshafts, connections between the rockshafts and one of the members of each printing couple for moving the said members into and out of contact, two rotating cams, connections for operating the rockshafts adapted to be actuated by the rotating cams, an auxiliary cam shaft, two rocking cams slidingly mounted thereon adapted to render the connections for operating the rockshafts inoperative, when properly positioned, a spring interposed between the said two rocking cams, a spring acting against the rocking cam of the second printing couple in opposition to the spring interposed between the two rocking cams, means for rocking the rocking cam of the second printing couple, when properly positioned, means adapted to arrest the inward sliding movement of the rocking cam of the first printing couple for a predetermined period and for subsequently acting thereon to rock the same when moved within its plane, an actuating member, having a spring for storing power, which, when operated, acts to move the rocking cam of the first printing couple inward until its movement is arrested, the continued inward movement of the rocking cam of the first printing couple, effected by the power stored in the spring aforesaid, moving the said rocking cam within the plane of the means aforesaid for acting thereon, and simultaneously therewith acts through the spring interposed between the two rocking cams to bring the rocking cam of the second printing couple within the plane of the means for operating the same, a latch for preventing the return of the second rocking cam, means for releasing the said latch after the automatic means aforesaid of the first printing couple have regained control thereof, and means for restoring the rocking cam of the first printing couple to its original position.

14. In a multi-couple multi-revolution printing machine, the members of which are adapted to print on the same side of the sheet, the combination with the members of two adjacent printing couples, of automatic means for periodically tripping and untripping the members of each couple, interrupting means for the automatic means of each couple normally inactive, but adapted to act sequentially when properly positioned, a single actuating device for positioning both of the said interrupting means substantially simultaneously, and means for locking the interrupting means of the second printing couple, when properly positioned, adapted

to be released after the automatic means of the first printing couple have regained control of the same.

15. In a multi-couple multi-revolution printing machine, the members of which are adapted to print on the same side of the sheet, the combination with the members of two adjacent printing couples, of automatic means for periodically tripping and untripping the members of each couple, interrupting means for the automatic means of each couple normally inactive, but adapted to act sequentially when properly positioned, a single actuating device for positioning both of the said interrupting means substantially simultaneously, means for locking the interrupting means of the second printing couple, when properly positioned, adapted to be released after the automatic means of the first printing couple have regained control of the same, and means for restoring the interrupting means of both printing couples to their original position.

16. In a printing machine, the combination with two multi-revolution printing couples composed of form and impression members, two rockshafts, connections between the rockshafts and one of the members of each printing couple for moving the said members into and out of contact, two rotating cams, connections for operating the rockshafts adapted to be actuated by the rotating cams, two rocking cams adapted to render the connections for operating the rockshafts inoperative when properly positioned, a single actuating device for simultaneously positioning the said rocking cams, means for rocking the rocking cam of the second couple, means for rocking the rocking cam of the first couple adapted to prevent the proper positioning of both rocking cams until the means for rocking the rocking cam of the second couple has passed beyond the point of operation, a latch for locking the rocking cam of the second printing couple after it has been moved into the plane of its rocking means, and means controlled by the first printing couple adapted to release the said latch.

17. In a printing machine, the combination with two multi-revolution printing couples composed of form and impression members, two rockshafts, connections between the rockshafts and one of the members of each printing couple for moving the said members into and out of contact, two rotating cams, connections for operating the rockshafts adapted to be actuated by the rotating cams, two rocking cams adapted to render the connections for operating the rockshafts inoperative when properly positioned, a single actuating device for simultaneously positioning the said rocking cams, means for rocking the rocking cam of the second couple, means for rocking the rock-

ing cam of the first couple adapted to prevent the proper positioning of both rocking cams until the means for rocking the rocking cam of the second couple has passed beyond the point of operation, a latch for locking the rocking cam of the second printing couple after it has been moved into the plane of its rocking means, means controlled by the first printing couple adapted to re-

lease the said latch, and means for restoring both rocking cams to their original position.

Signed at New York city this 13 day of December 1905.

WALTER SCOTT.

Witnesses:

RAYMOND C. SPAULDING,
H. M. SEAMANS.