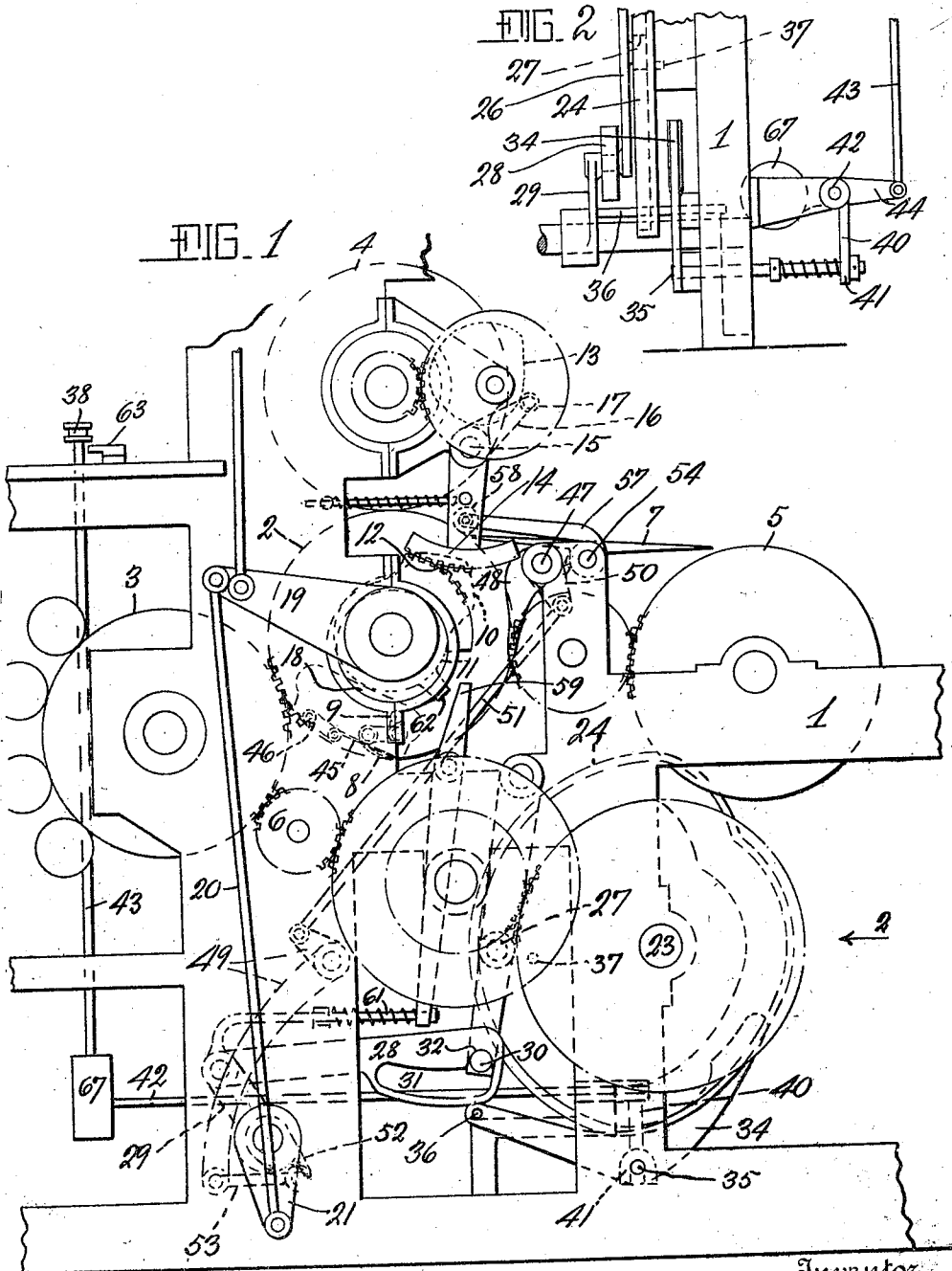


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I. & D. J. SCOTT, EXECUTORS.
PRINTING COUPLE APPLIANCE.
APPLICATION FILED MAY 20, 1907.

Patented Jan. 17, 1911.

2 SHEETS—SHEET 1.

981,951.



Witnesses:
J. H. H. H. H.
R. S. H. H.

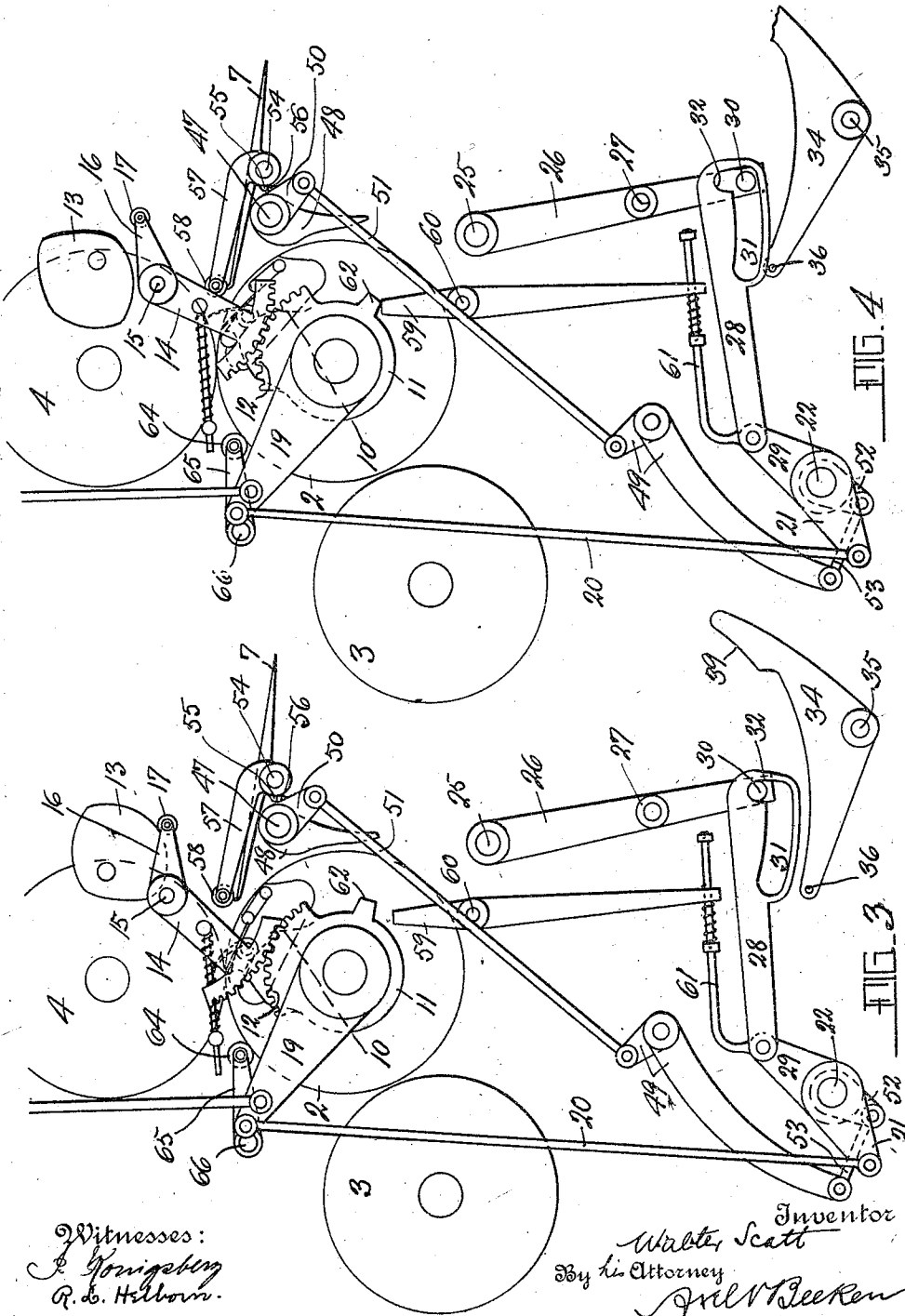
Inventor
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UNITED STATES PATENT OFFICE.

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

PRINTING-COUPLE APPLIANCE.

981,951.

Specification of Letters Patent. Patented Jan. 17, 1911.

Original application filed December 30, 1905, Serial No. 293,884. Divided and this application filed May 20, 1907. Serial No. 374,550.

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 Printing-Couple Appliances, of which the following is a specification.

The present invention relates generally to printing machines, and has more particularly reference to printing couple appliances.

This case is a division of an application filed December 30, 1905 Serial #293884. In that application certain printing couple appliances are claimed in combination with a tripping mechanism for the cylinders of the machine. The present application is intended to cover this certain construction of printing couple appliances without reference to the tripping mechanism for the printing couple.

The object of the present invention is to retain a sheet as long as may be desired on an impression or other cylinder.

To this end the invention embraces grippers on the impression cylinder and means for tripping the said grippers. In connection with the above there may also be employed throw-off fingers and guides which can be tripped and untripped simultaneously with the grippers. While the object of this as has been previously stated is to maintain a sheet as long as may be desired on an impression or other cylinder, it is obvious that the invention herein disclosed may be employed for any purpose for which it may be found useful, and the object of the invention is therefore not to be construed as a limitation of its functions.

Other features of construction, arrangement of parts and combination of elements will appear as the specification proceeds.

In the accompanying drawings the invention is embodied in a concrete and preferred form. It is obvious however, that a wide departure may be made from the particular construction disclosed without departing from the legitimate and intended scope of the invention.

In the said drawings:—Figure 1 is a side

elevation of so much of the printing machine as is necessary to properly illustrate the invention, showing the members adjacent to the impression cylinder in the proper position to deliver the sheet. Fig. 2 is an end view looking in the direction of the arrow. 2 of Fig. 1 with parts broken away. Fig. 3 is a detail view of the members adjacent to the impression cylinder showing them in the position which they occupy when the said impression cylinder is about to receive a sheet. Fig. 4 is a view similar to Fig. 3 but showing the effect of the interrupting means and the members adjacent to the impression cylinder.

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

1 indicates a frame work of any suitable construction for properly supporting the parts comprising the machine.

2 indicates an impression cylinder and 3 the plate cylinder, the two constituting together a printing couple of the rotary multi-revolution type. Adjacent to the impression cylinder is a transfer or other cylinder 4, and another transfer cylinder 5 is disposed adjacent to the impression cylinder and adapted to receive sheets therefrom. This cylinder 5 may be a collecting cylinder as desired. All of the cylinders are connected by gearing in the usual manner and receive their motion preferably from the driving pinion 6.

The impression cylinder preferably does not deliver its sheet to the transfer cylinder 5, but delivers it to suitable guides 7 interposed between the said impression and transfer cylinders, so that the sheet may be carried on to be delivered with its printed side up. From the transfer or collecting cylinder 5 the sheet may be delivered in any suitable way, as by means of a drop delivery or otherwise. The said impression cylinder is provided with spring-seated grippers 8 of the usual and ordinary construction, having a crank with friction roll 9 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 re-

ceiving point or from the axial line between the transfer cylinder 4 and the impression cylinder 2, only one cam is necessary in this instance to open the gripper mechanism both to receive and release the sheet. This cam, which is designated by the numeral 10, 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. Preferably this cam is caused to oscillate around the shaft of the cylinder by being provided with the sleeve 11, which, at its outer end, is provided with the gear segment 12 adapted to be operated by any suitable means to shift the cam back and forth a certain distance or to properly position the said cam with reference to the receiving or the delivery point, as the case may be.

13 is a rotating cam which imparts proper motion to the gear sector 14, pivoted at 15, and provided with an arm 16 having a friction roll 17 which engages with the said cam 13. This cam 13 makes one revolution to every two revolutions of the impression cylinder. The movement of the cam 13 will thus be imparted to the segment 12 through the instrumentality of the gear sector 14.

The impression cylinder is mounted in an eccentric bushing 18 upon its shaft, whereby, when the said eccentric bushing is turned in opposite directions, the impression cylinder will be moved in and out of printing contact with the plate cylinder. The distance which it is necessary to raise this impression cylinder in order to trip the impression is only about one-eighth of an inch, so that the gears on the respective cylinder need not be out of mesh with each other. The said eccentric bushing 18 is connected by means of the short cam 19, connecting rod 20, and lever 21 to the rockshaft 22. Suitable means are provided for rocking this rockshaft at regular intervals so as to automatically trip and untrip the impression at predetermined intervals. In the present instance, the impression is tripped during the 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 23 a cam 24 which is given one revolution to a number of revolutions (in the present instance to every two revolutions) of the machine.

Mounted loosely on the stud 25 is an arm 26 provided with a roller 27 adapted to engage in the cam groove of the cam 24. Suitable means are provided for communicating the motion of the arm 26 to the rockshaft 22. In the present instance, these means take the form of a slotted connection 28

connected, by means of the lever 29, to the rockshaft aforesaid, and receiving the motion of the arm aforesaid by means of a pin 30 carried at the lower end of the said arm and adapted to play in the slot 31 of the connection aforesaid, and to be locked with the said connection when the pin 30 is in the recess 32 of the said slot.

Interrupting means are provided for lifting the slotted connection so as to cause the pin 30 to play idly in the slot 31, whereby the form and impression members will be maintained separated or tripped as long as the slotted connection is held in its elevated position. In other words, an interrupting means is provided for the automatic tripping and untripping means. This interrupting means will preferably take the following form: A rocking cam 34 is mounted slidably on the shaft 35 and is provided with the pin 36 extending in under the slotted connection so that when the said rocking cam 34 is moved into the plane of the cam or pin 37, conveniently mounted on the cam 24, the said pin 37 will come in contact with the cam surface 39 of the rocking cam 34, thereby rocking the latter and lifting the slotted connection up so that the pin 30 will play idly in the slot 31. The said interrupting means may of course be operated from any suitable actuating device under the influence of an automatic feeder, or, as in the present instance, under the control of the operator. I have here shown a conventional treadle 38 which, when it is depressed, will, through suitable connections, move the member 40 so as to cause the latter, by means of its bifurcated end 41 to move the rocking and sliding cam 34 into the plane of the pin 37. This may of course be effected by various mechanical contrivances, but, in the present instance, there is shown a rockshaft 42 suitably connected to the foot treadle by means of the rod 43 and lever 44.

Mounted on the impression cylinder, are suitable throw-off fingers 45 having a crank carrying the roll 46 in the usual manner. Mounted on the stud 47 is a throw-off cam 48 which is adapted to be positioned so as to be in the plane of the roll 46 during the second revolution of the impression cylinder, and to be out of the plane of the said roll 46 during the first revolution of the said cylinder. This throw-off cam is operated synchronously with the tripping and untripping of the impression, and is therefore conveniently operated from the rock shaft 22 by any suitable means such as the bell crank 49 connected to the arm 50 of the throw-off cam by means of the rod 51 and connected to the rock shaft 22 by means of the arm 52 and lever 53. The guides 7 are mounted on the pivot 54 and are positioned synchronously or simultaneously with the throw-off cam to receive the sheet, and are

therefore conveniently operated from the latter by means of the projection 55 and the jaws 56. Preferably these guides carry a stop to prevent them from digging into the cylinder, conveniently taking the form of an arm 57 provided with a friction roll 58 which is adapted to rest on the surface of the cylinder.

59 is a stop for preventing the positioning of the cam 10 to release the sheet when the impression remains tripped. This stop 59 is pivoted at 60 and is also conveniently operated from the rockshaft 22 by means of the bent projection 61 connected to the lever 29 and connected at its other end to the lower end of the stop 59. A suitable means or projection 62 is provided on the sleeve 11 which is adapted to abut against the said stop 59 under certain conditions.

When a sheet reaches the axial line between the cylinders 4 and 2 the cam 10 will be in the position shown in Fig. 3 so as to allow the grippers on the said impression cylinder to seize the sheet. At this time, however, the guides 7 and the throw-off cam 48 will be in the position also shown in Fig. 3, so that the sheet will be carried past them and will receive an impression between the cylinders 2 and 3. At this time also the stop 59 will be in the plane of the projection 62. The sheet will then be carried around past the axial line between the cylinders 4 and 2, when the cam 10 will have moved into the position shown in Fig. 1, the throw-off cam 48 and guides 7 will be properly positioned so as to cause the sheet to be released from the cylinder 2, and deposited on the guides 7. The stop will also have moved out of the plane of the projection 62 as shown.

It will be clear that during the normal operation of the machine, the automatic means previously described will trip and untrip the impression, the timing of the parts being such that the impression will be untripped after the sheet has been taken on by the impression cylinder and carried a certain distance over the same. The cylinders are then moved into printing contact so as to allow the sheet to be properly printed during the first revolution and simultaneously therewith the connections from the rockshaft 22 will operate to position the throw-off cam 48 and the guides 7 while the cam 10 will be moved into the position shown in Fig. 1 and the stop 59 moved out of the plane of the projection 62. The impression is then tripped again, and the elements moved into the position shown in Fig. 3 before the next sheet is received.

Assuming now that it is desired to maintain the parts in their tripped position, the parts being in the position shown in Fig. 3, the operator will then depress the treadle, before the printing cylinders are moved

into printing contact thereby maintaining them in their separated position. Obviously then the parts will remain in the position shown in Fig. 3. The operating means for the cam 10 will attempt to move it into the position shown in Fig. 1, but the cam will be prevented from oscillating owing to the fact that the stop 59 will be in the path of the projection 62 and the parts will therefore assume the position shown in Fig. 4 whereby the sheet which has been received from the transfer cylinder will be carried around on the impression cylinder without being printed, and as the cams 10 and 48, as well as the guides 7, are not properly positioned so as to release the sheet and deliver it to the guides 7, the sheet will be held on the said impression cylinder as long as it remains tripped. If it is desired to maintain the parts tripped for more than one cycle, the operator can move the locking member 63 into engagement with the treadle, and thus trip it for any period desired. Since, however, the cam 10 will be in the plane of the grippers on the impression cylinder at the point where they receive a sheet, the said grippers will be opened once to every revolution, but there being no sheet to receive, they will close again on the same sheet which is already on the cylinder and continue to carry the same around. In order to assist in holding the said sheet in the bite of the grippers on the second impression cylinder, I provide the rollers 64 which are adapted to rest on the margins of the sheet or elsewhere, to assist in propelling the sheet at the time when the grippers are opened. These rollers are mounted on the arm 65 pivoted at 66. If the interrupting means are released, the automatic means for tripping and untripping the cylinders will regain control of the machine, and the sheet on the impression cylinder, will be printed during the succeeding revolution, and placed on the guides 7. When the treadle is released, the counterweight 67 will move the rocking and sliding cam out of the plane of the pin on the cam 24.

What is claimed is:—

1. In a printing machine, the combination with an impression or other cylinder, of grippers on the said cylinder, throw-off fingers adjacent thereto, means for opening the said grippers at a certain point during the revolution of the impression cylinder, means for operating the throw-off fingers in harmony therewith, and means normally inoperative for preventing the operation of the said opening means of the grippers and the means for operating the throw-off fingers.

2. In a printing machine, the combination with an impression or other cylinder, of grippers on the cylinder, throw-off fingers adjacent thereto, means for opening the said grippers at a certain point once to a num-

ber of revolutions, means for operating the throw-off fingers in harmony therewith, and means for tripping the said opening means of the grippers and the means for operating
5 the throw-off fingers.

3. In a printing machine, the combination with an impression or other cylinder, of grippers on the cylinder, throw-off fingers adjacent thereto, means for opening the said
10 grippers at a certain point once to every two revolutions, means for operating the throw-off fingers in harmony therewith, and means normally inoperative but adapted to be actuated for tripping the said opening
15 means for the grippers and the operating means for the throw-off fingers.

4. In a printing machine, the combination with a cylinder, of grippers mounted thereon, throw-off fingers adjacent to the said grippers, cams for opening the grippers at a
20 certain point to release the sheet, and for operating the throw-off fingers, and means normally inoperative but adapted when actuated to cause the cams to move out of their
25 operative position with relation to the grippers and throw-off fingers.

5. In a printing machine, the combination with a cylinder, of grippers mounted thereon, a cam adapted to open the grippers at one
30 point when properly positioned, means for positioning the said cam, and a stop for preventing it from being positioned.

6. In a printing machine, the combination with a cylinder, of grippers mounted thereon,
35 a cam loosely mounted on the cylinder shaft adapted to open the grippers at one point when proporely positioned, means for oscillating the said cam to properly position the same, and a stop for preventing its oscillation.
40 tion.

7. In a printing machine, the combination with a cylinder, of grippers mounted thereon, throw-off fingers adjacent thereto, a cam
45 for opening the grippers to release the sheet when properly positioned means for positioning the said cam once to a number of revolutions, a cam adapted, when properly positioned, to operate the throw-off fingers
50 once to a number of revolutions in harmony with the opening of the grippers, a stop to prevent the positioning of the cam for opening the grippers adapted to be in the path of the said cam when the latter is not positioned, means for positioning the cam for
55 the throw-off fingers, means for moving the stop into and out of the path of the gripper cam, means for interrupting the movement of the throw-off cam so that it is not positioned, and means for interrupting the movement of the stop so that it remains in the
60 plane of the gripper cam, thereby preventing the said gripper cam from being positioned.

8. In a printing machine the combination with a cylinder, of grippers mounted thereon,

throw-off fingers adjacent thereto, a cam
65 for opening the grippers to release the sheet when properly positioned, means for positioning the said cam once to a number of revolutions, guides for receiving the sheet
70 from the cylinder, when properly positioned once to a number of revolutions, a cam adapted, when properly positioned, to operate the throw-off fingers once to a number of revolutions in harmony with the opening of the
75 grippers and the proper positioning of the guides to receive the sheet, a stop to prevent the positioning of the gripper cam adapted to be in the path of the said cam when the latter is not positioned, means for positioning
80 the guides and the throw-off cam, means for moving the stop into and out of the path of the gripper cam, means for interrupting the movement of the guides and throw-off cam so that they are not positioned, and means
85 for interrupting the movement of the stop so that it remains in the plane of the gripper cam, thereby preventing the said gripper cam from being positioned.

9. In a printing machine, the combination with a cylinder and grippers carried thereby,
90 means for opening the grippers, means for shifting the opening means to cause the grippers to be opened at different points and means adapted to be actuated to prevent such
95 shifting of the opening means.

10. In a printing machine, the combination with a cylinder and grippers thereon, a
100 cam for opening the grippers, and means for shifting the cam to cause opening movement of the grippers at different points, in the revolution of the cylinder and means adapted to be positioned to prevent shifting
of the cam.

11. In a printing machine, the combination with a cylinder and grippers, a cam
105 causing operation of the grippers, means for shifting the cam to cause operation of the grippers at different points in the revolution of the cylinder, and means for holding the cam to prevent operation of the grippers.
110

12. In a printing machine, the combination with a cylinder, grippers carried by the
115 cylinder, a cam for opening the grippers at different points to receive and release sheets, means for automatically shifting the cam to receiving and releasing positions, and means adapted to be actuated to prevent the automatic operation of the cam.

13. In a printing machine, the combination with a cylinder and grippers, a cam for
120 opening the grippers, means for automatically moving the cam to cause it to operate the grippers at different points, and means for holding the cam in such a position as to render the grippers inoperative.
125

14. In a printing machine, the combination with a cylinder, grippers and throw-off
fingers on the cylinder, a cam to open the

grippers, means for shifting the cam to cause the grippers to open at different points to receive and release sheets, a cam to cause operation of the throw-off fingers in synchronism with the grippers, and means for tripping the parts to cause the grippers and throw-off fingers to remain inactive.

Signed at Plainfield N. J. this 17 day of May 1907.

WALTER SCOTT.

Witnesses:

J. B. COWARD,
DAVID J. SCOTT.