

No. 758,709.

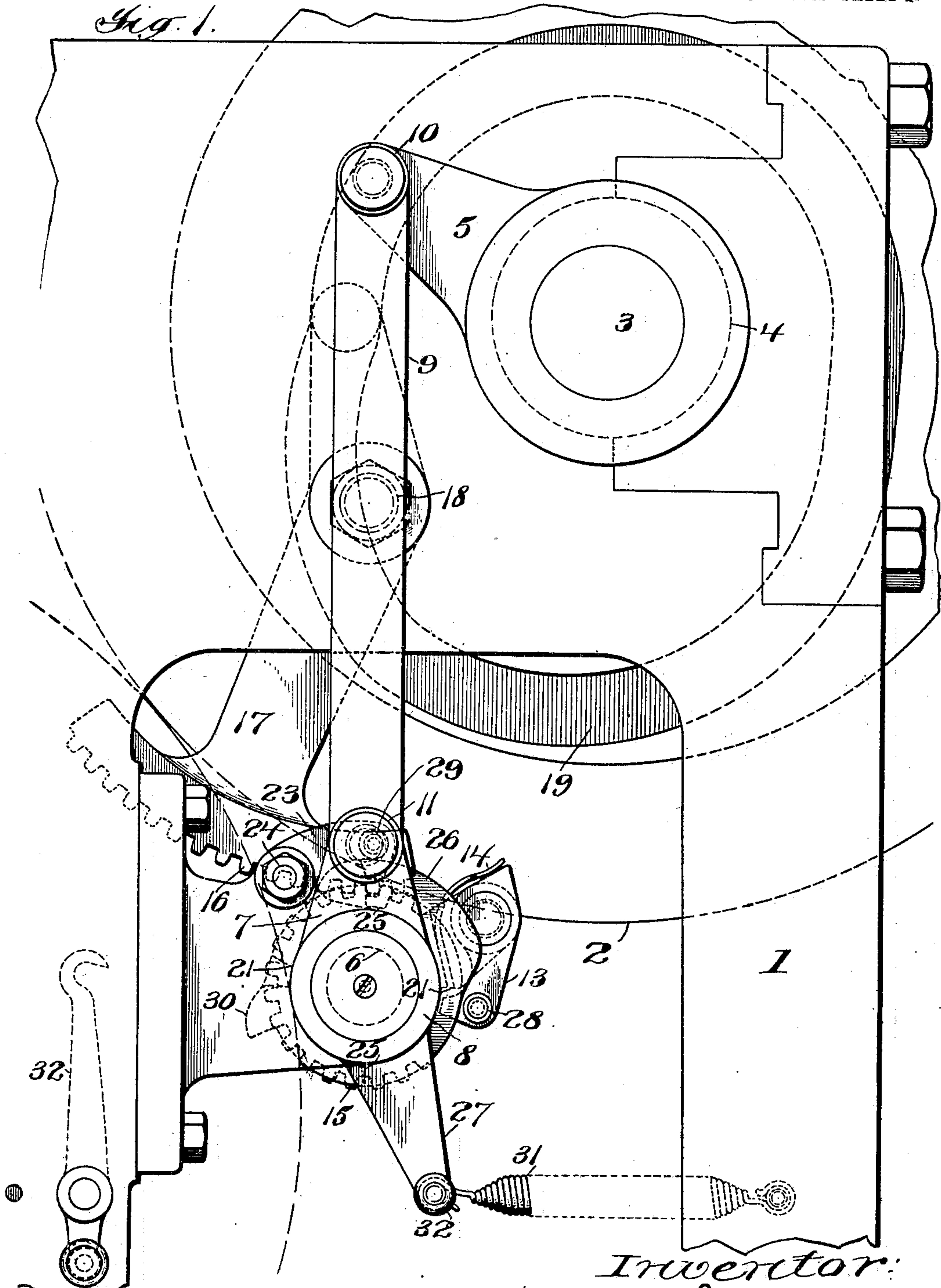
PATENTED MAY 3, 1904.

W. SPALCKHAVER.
TRIP MECHANISM.

APPLICATION FILED NOV. 11, 1902.

NO MODEL.

3 SHEETS—SHEET 1.



Attest.
A. White
Witness.

Inventor:
William Spalckhaver
by Philipp Sawyer Rice & Kennedy
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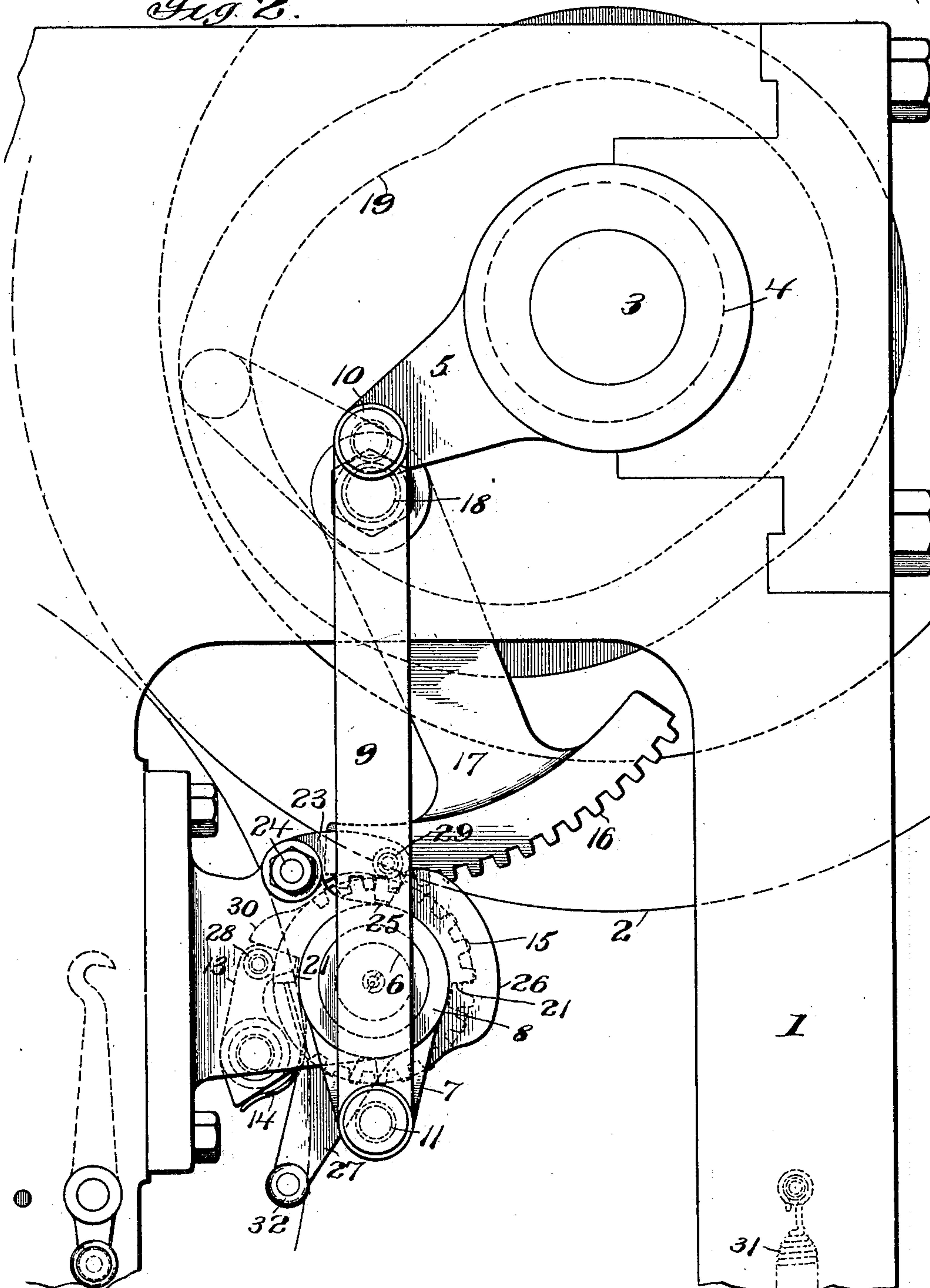
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3 SHEETS—SHEET 2.

Fig. 2.



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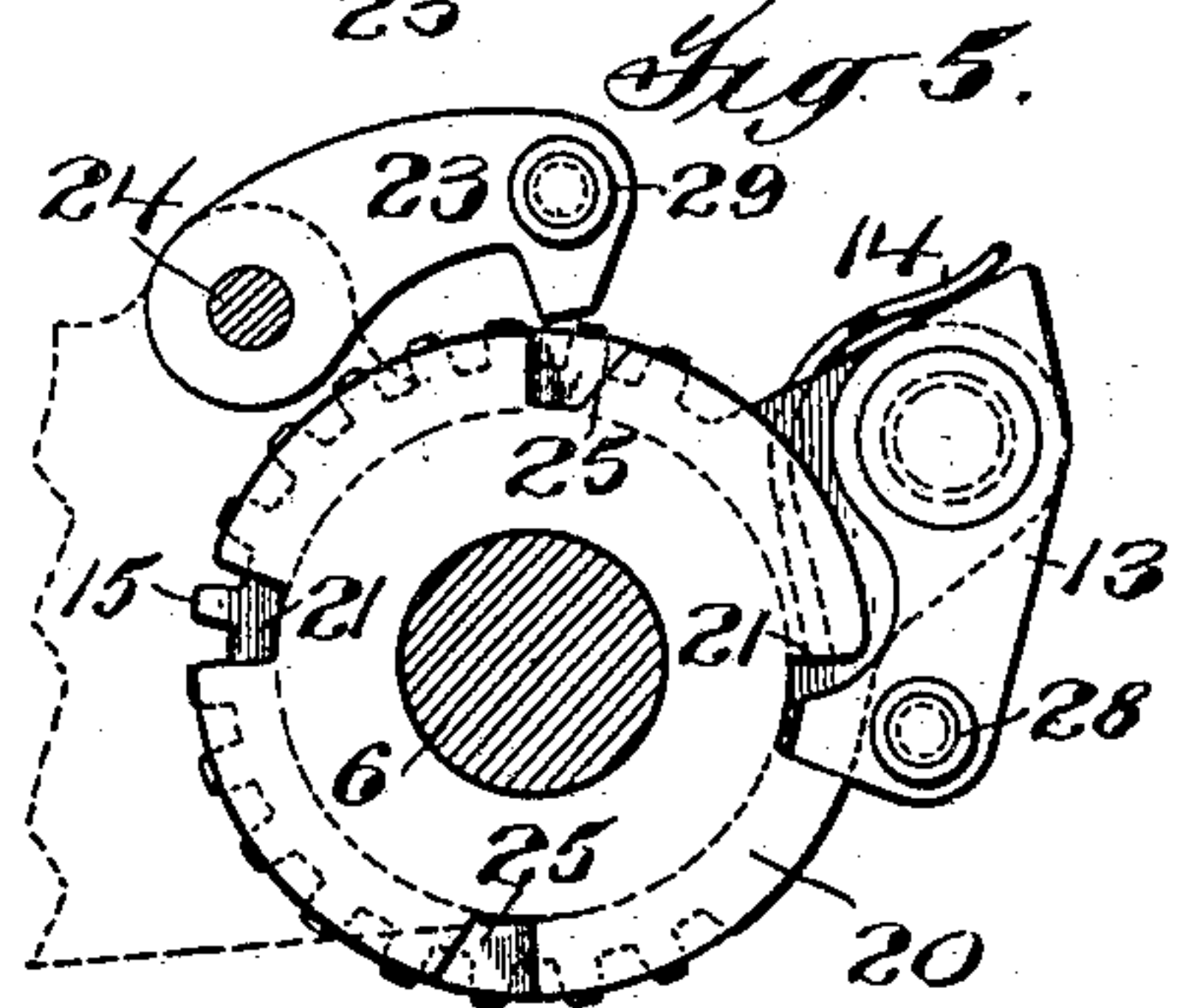
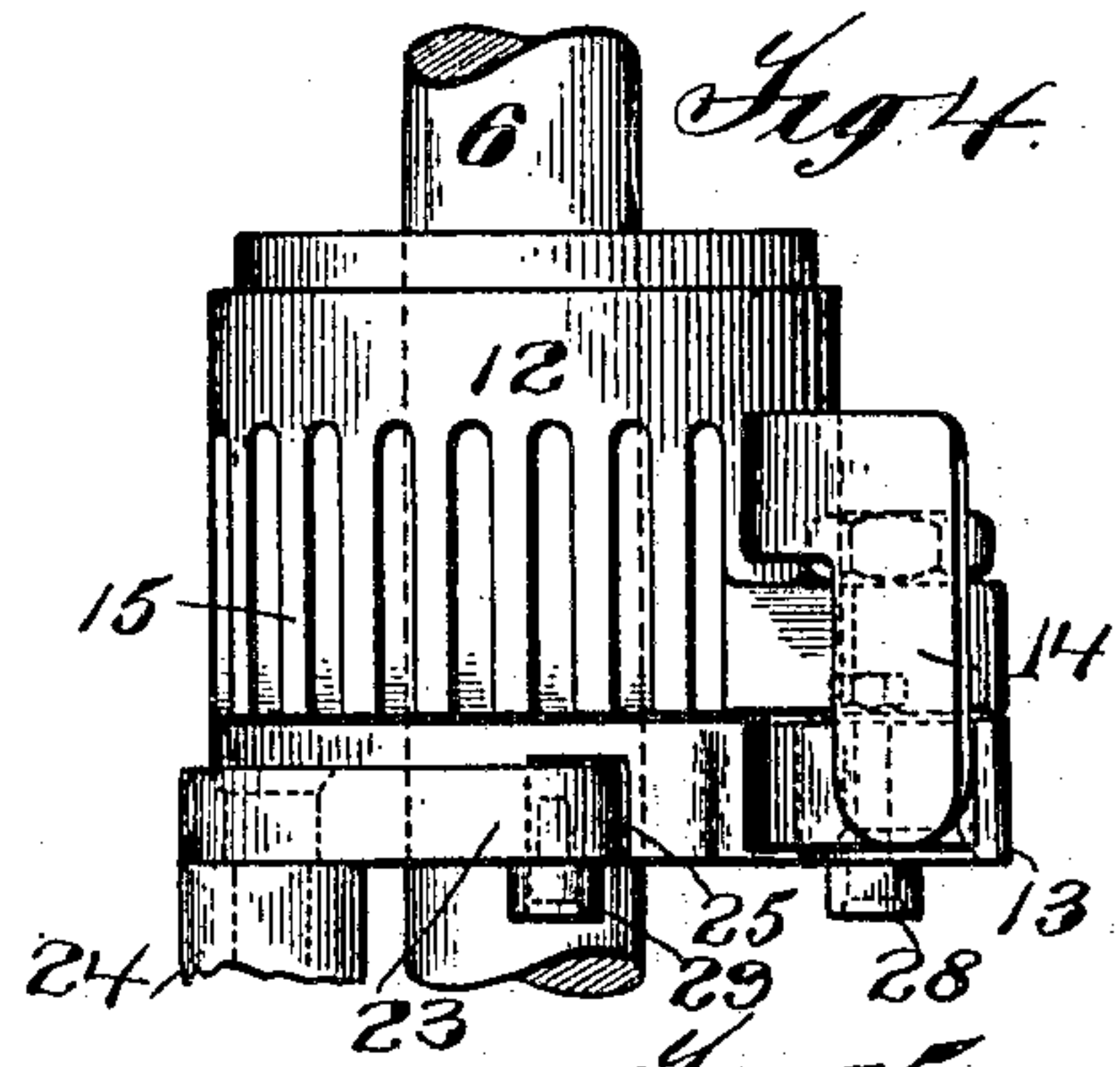
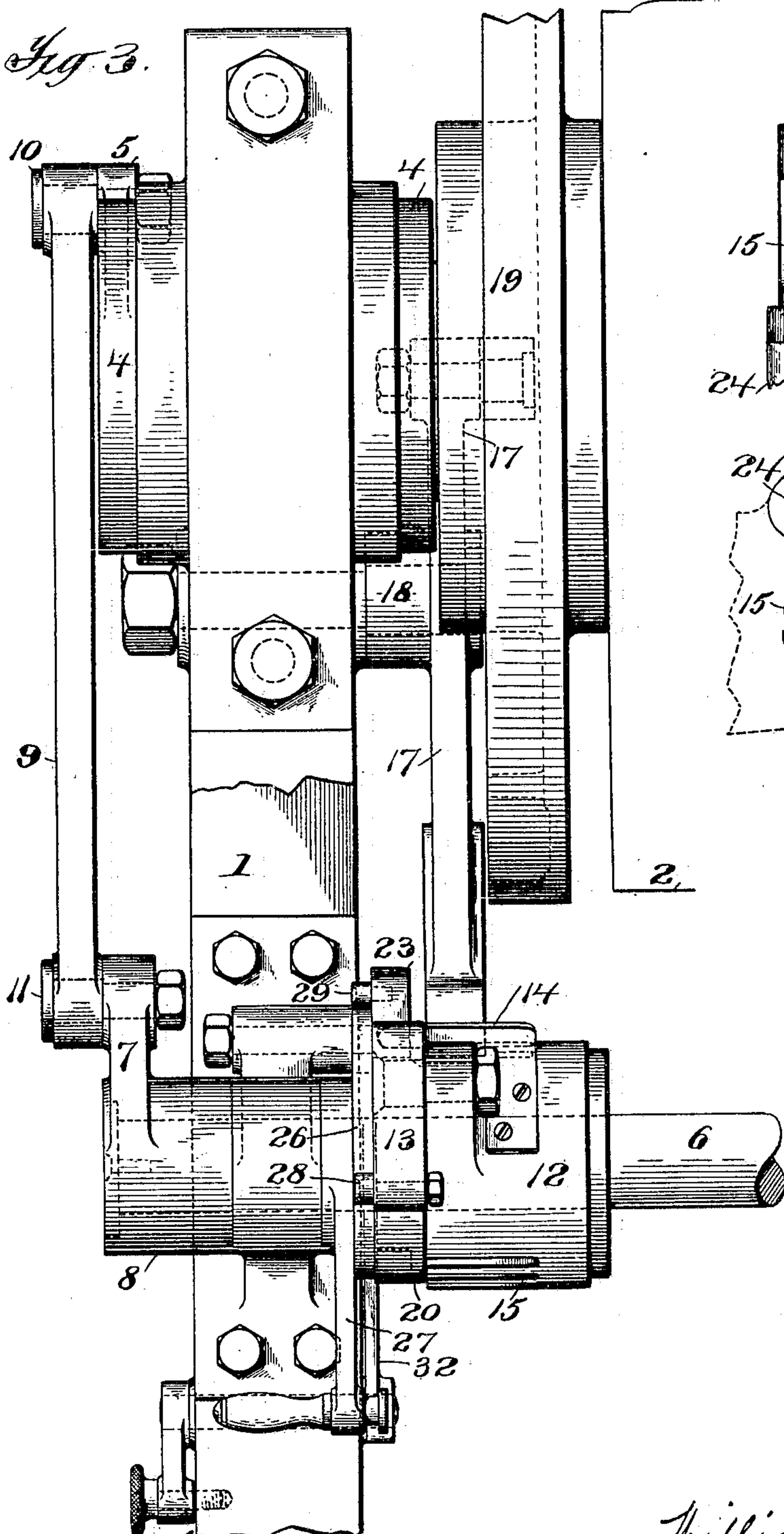
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3 SHEETS—SHEET 3.



Attest:
A. White
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UNITED STATES PATENT OFFICE.

WILLIAM SPALCKHAVER, OF NEW YORK, N. Y., ASSIGNOR TO ROBERT
HOE, OF NEW YORK, N. Y.

TRIP MECHANISM.

SPECIFICATION forming part of Letters Patent No. 758,709, dated May 3, 1904.

Application filed November 11, 1902. Serial No. 130,829. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM SPALCKHAVER, 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 Trip Mechanisms, 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 throw-off devices for cylinder printing-machines.

This invention has for one of its objects to produce a simple, inexpensive, and reliable mechanism for preventing the cylinder of a printing-couple from coming into coöperative relation with the other member of the couple whenever desired.

A further object of the invention is to produce an improved throw-off mechanism which can be readily adapted for use with a cylinder which is to be tripped at the will of the operator or automatically on every other revolution, as desired.

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

In the accompanying drawings, Figure 1 is an elevation of so much of a printing-machine as is necessary to an understanding of the invention, the throw-off mechanism being arranged for double rolling, or for a two-revolution machine. Fig. 2 is a view of the mechanism shown in Fig. 1, but with the cylinder shown in its tripped position. Fig. 3 is an end elevation, and Figs. 4 and 5 are detail views.

Referring to the drawings, which illustrate one embodiment of the invention, 1 indicates the frame of a printing-machine, which may be of any desired construction, and 2 indicates the cylinder, said cylinder being mounted on a shaft 3. In order that the cylinder may be tripped, cylinder-moving means are provided, which may be widely varied in construction. As shown, the shaft 3 of the cylinder is mounted at each end in an eccentric

bushing 4, the outer line of said bushing being indicated by dotted lines in Figs. 1 and 2. These bushings are mounted in the usual bearings in the frame. Extending from the eccentric bushings 4 are arms 5, through which the bushings are turned to move the cylinder in its bearings toward and away from the other member of the printing-couple, which may be a companion cylinder or a reciprocating bed, as desired. The construction shown is intended more particularly to apply to a couple in which both members are cylinders, although it can be applied without substantial change to a couple in which one of the members is a reciprocating bed. The devices by which the cylinder-moving means are operated may also be varied widely in construction. As shown, there is provided a shaft 6, which will extend across the machine from side to side. Inasmuch, however, as both sides of the machine will be alike so far as the cylinder-moving means and the connections between it and the shaft are concerned only one side of the cylinder is shown in the drawings. The connections between the cylinder-moving means and the shaft by which the shaft is enabled to operate said means may be widely varied in construction. As shown, the shaft is provided at each end with a crank-arm 7, which extends from a hub 8, fast on the shaft. A connecting-rod 9 is pivoted to the arm 5 of the eccentric bushing at 10 and to the crank-arm 7 at 11, this connecting-rod construction being used on both sides of the machine. It is apparent that by rotating the shaft 6 the eccentric bushings will be rocked and the cylinder moved toward and away from the companion member of the couple. Any desired means may be employed for rotating the shaft. In the preferred form of the construction, however, the means will preferably be such as to give the shaft a movement always in the same direction. As shown, there is mounted on the shaft (see Fig. 3) a pawl-carrier 12, to which the pawl 13 is pivoted, said pawl being backed up by the usual spring 14. The pawl-carrier 12 is loose on the shaft and is provided with teeth 15, which are engaged by the teeth on a segment-rack 16,

said rack being formed on a segment-lever 17, pivoted to the frame of the machine at 18. The segment-lever may be operated in any desired manner. Preferably, however, it will
 5 be operated from a cam 19, carried on the cylinder-shaft, the end opposite the segment-carrying end being provided with a bowl, as clearly shown in dotted lines in Figs. 1 and 2, which engages the groove of the cam. With
 10 this construction the movement of the cam always corresponds exactly to that of the cylinder. Although the movement of the cam with the cylinder might be obtained in other ways, the construction shown is preferred on
 15 account of its simplicity. In order to enable the pawl-carrier and its pawl to turn the shaft in the construction shown, there is provided a disk 20, (see Fig. 5,) fast on the shaft 6. This disk is provided with two notches 21,
 20 which will preferably be substantially diametrically opposite each other in the disk. The movement imparted to the pawl-carrier in the construction shown is an oscillating one. The pawl 13, therefore, as it engages
 25 one of the notches 21 in the disk gives the shaft a half-revolution, after which the pawl-carrier is returned, the pawl slipping easily out of the notch. At the end of its return stroke the pawl is in position to engage the
 30 other notch 21 and give the shaft another half-revolution. The stroke of the pawl and the notches in the disk are preferably so arranged with respect to the point of connection of the
 35 rod 9 with the crank-arm 7 that the rotation of the shaft ceases at the time when the crank-arm is in a locking position with respect to the other connections—that is to say, when
 40 the strain imparted to the arm by the connections is in a line which passes through the center of rotation of the shaft and the points 10 and 11. When so arranged, any force exerted by a
 tendency of the eccentric bushings to turn will not tend to turn the shaft 6. Notwithstanding the arrangement of the crank-arms
 45 and their connections so that a locking position is obtained at the end of each stroke of the pawl, additional locking means may be provided to insure absolute immovability of the parts, if desired. This additional locking
 50 device may be of any desired construction. As shown, there is provided a pawl 23, pivoted to the frame of the machine at 24. In order that this pawl 23 may discharge its function, the disk 20 is provided with notches 25, which
 55 are arranged diametrically opposite each other, as is shown in Fig. 5. These notches will be alternately in the path of the operating-nose of the pawl 13, and to prevent it dropping into them the notches are preferably made of
 60 less width than the width of the pawl, as is indicated in Figs. 4 and 5. In other words, the operating-nose of the pawl 13 is wider than the operating-nose of the pawl 23. The pawl 23 will therefore drop into the notches
 65 25 when they are in position to receive it; but

the pawl 13 will pass over these notches without engaging them.

It is obvious that when the locking-pawl 23 is used it must be lifted out of its locking-notch 25 whenever it is desired that the pawl 70 13 turn the shaft 6, and it is furthermore obvious that since the oscillating movement of the pawl 13 is continuous this pawl must be kept out of the notches 21 whenever it is desired that the cylinder remain tripped or un- 75 tripped. While the function above referred to may be accomplished in various ways, in the construction shown there is provided a guard 26, which is in the form of a collar loose on the shaft 6, said guard being pro- 80 vided, as shown, with an operating extension 27. The pawl 13 is provided with a projection 28 and the pawl 23 with a similar projection 29. When the edge of the guard 26 underlies the projections 28 and 29 of the 85 pawls 13 and 23, these pawls are lifted, so that their noses will not engage their cooperating notches. When the cylinder is running and is to remain untripped, the guard 26 is so positioned that its operating edge is alongside 90 one of the notches 21 and is left in this position. When the guard is in this position, the pawl 13 will be moved idly forward and back by its operating devices, the projection 28 riding on the extension 27 of the guard. When 95 it is desired to trip the cylinder, the guard is moved by its operating extension 27, so that the notch 21 is uncovered, and the pawl 13 is permitted to engage said notch. The movement given the guard is in a direction reverse 100 to the direction of rotation of the operating movement of the pawl 13, and the operating edge 27 of the guard is of such a length that as the pawl drops into the notch 21 the pawl 23 is raised out of the notch 25, the operating 105 edge of the guard taking under the projection 29 and lifting the pawl. If only a single operation is performed on the cylinder—that is, if it is either to be moved into or out of impression relation with the cooperating mem- 110 ber of the couple and allowed to remain in this position—it is obvious that the guard must be restored to position before the pawl finishes its return movement, at which time it would be in position to engage the other 115 notch 21. This may be effected by any desired means. As shown, the guard is provided with a projection 30, which is engaged by the forward end of the pawl 13 just before the pawl completes its forward stroke. The 120 guard is accordingly advanced by the movement of the pawl, so that the pawl on its return movement cannot engage the notch, and at the same time this movement of the guard permits the locking-pawl 23 to drop into one 125 of the notches 25, and thus lock the parts securely in position. It will be seen that with the parts arranged as shown the pawl will be given an oscillation by the cam 19 once for each revolution of the cylinder. Should it 130

be desired, therefore, to move the cylinder away from its cooperating printing member on one revolution and move it back on the next revolution—as, for instance, should it be desired to use this device on a two-revolution printing-machine or on a single-revolution machine and provide for double rolling—it is only necessary to manipulate the guard 26 so as to cause it to uncover one of the notches 21 each time the pawl 13 is in position to engage it. This may be accomplished in various ways; but it will preferably be accomplished through an automatically-disconnectable connection—such, for instance, as a spring 31. This spring 31 is secured to the frame and to the extension 27 at 32. When the spring is connected to the extension 27, as shown in Fig. 1, the guard 26 will follow the pawl 13 on its backward stroke and will consequently raise the locking-pawl 23 out of engagement with its notch 25 and leave one of the notches 21 uncovered, so that it may be engaged by the pawl 13 on its forward movement. Should it be desired to cause the cylinder to remain in a tripped position, this can be done by automatically preventing the return of the guard 26. Any suitable means may be provided for this purpose. In the construction shown a hook 32 is provided, which is pivoted on the side of the frame and which will engage the extension 27, to which the spring 31 is connected.

Changes and variations may be made in the construction shown and described by which the invention is carried into effect. The invention is not, therefore, to be limited to the precise details of construction hereinbefore described.

What is claimed is—

1. The combination with the cylinder of a printing-couple, of cylinder-moving means, a crank, a connecting-rod pivoted to the crank and connected to the cylinder-moving means, and means for rotating the crank through substantially a half-revolution from a locking position on one side of its center of rotation to a locking position on the other side of its center of rotation, substantially as described.

2. The combination with the cylinder of a printing-couple, of cylinder-moving means, a shaft, operating connections between the shaft and the cylinder-moving means, means including a continuously-moving pawl for rotating the shaft, and means for preventing the pawl from rotating the shaft except when desired, substantially as described.

3. The combination with the cylinder of a printing-couple, of cylinder-moving means, a shaft, operating connections between the shaft and the cylinder-moving means, means including a continuously-moving pawl for rotating the shaft always in the same direction, and means for preventing the pawl from rotating the shaft except when desired, substantially as described.

4. The combination with the cylinder of a printing-couple, of cylinder-moving means, a shaft, a crank on the shaft, connections between the crank and the cylinder-moving means, operating means including a pawl for driving the shaft always in the same direction, means including a cam for operating the pawl, and means for preventing the pawl from operating the shaft except when desired, substantially as described.

5. The combination with the cylinder of a printing-couple, of cylinder-moving means, a shaft, connections between the shaft and the cylinder-moving means, a pawl for moving the shaft in one direction, means for preventing the pawl from rotating the shaft except when desired, a pawl-carrier, and means including a cam rotating with the cylinder-shaft for oscillating the pawl-carrier, substantially as described.

6. The combination with the cylinder of a printing-couple, of cylinder-moving means, a shaft, connections between the shaft and the cylinder-moving means, a pawl for moving the shaft in one direction, means for preventing the pawl from rotating the shaft except when desired, a pawl-carrier, and means including a cam carried on the cylinder-shaft for oscillating the pawl-carrier, substantially as described.

7. The combination with the cylinder of a printing-couple, of an eccentric for moving the cylinder, a shaft, a crank on the shaft, connections between the crank and the eccentric, a pawl for rotating the shaft always in the same direction, a pawl-carrier, means for giving the pawl-carrier a continuous oscillating movement, and a guard for preventing the pawl from rotating the shaft except when desired, substantially as described.

8. The combination with the cylinder of a printing-couple, of cylinder-moving means, a shaft, connections between the shaft and the cylinder-moving means, an operating device for moving the shaft always in the same direction, a locking device, and means for preventing the simultaneous operation of the operating device and the locking device, substantially as described.

9. The combination with the cylinder of a printing-couple, of cylinder-moving means, a shaft, connections between the shaft and the cylinder-moving means, means including a pawl for rotating the shaft always in the same direction, a device for locking the shaft, and a single means for preventing the simultaneous operation of the pawl and the locking device, substantially as described.

10. The combination with the cylinder of a printing-couple, of cylinder-moving means, a shaft, a crank on the shaft, connections between the cylinder-moving means and the crank, means including a pawl and pawl-carrier for moving the shaft in one direction, means for oscillating the pawl-carrier, a lock-

ing device, and a guard alternately in engagement with the locking device and the pawl, substantially as described.

11. The combination with the cylinder of a printing-couple, of cylinder-moving means, a shaft, connections between the shaft and the cylinder-moving means, an operating device for the shaft, a locking device, and means controlled by the operating device for permitting the locking device to come into operation, substantially as described.

12. The combination with the cylinder of a printing-couple, of cylinder-moving means, a shaft, connections between the shaft and the cylinder-moving means, means including a pawl for rotating the shaft always in the same direction, a locking device, and means operating alternately on the pawl and the locking device for holding them out of operation, said means being operated by the pawl to permit the locking device to come into operation, substantially as described.

13. The combination with the cylinder of a printing-couple, of cylinder-moving means, a shaft, a crank on the shaft, connections between the crank and the cylinder-moving means, a pawl and pawl-carrier for rotating the shaft always in the same direction, means including a cam for oscillating the pawl-carrier, a locking member, and a rotary guard for holding the locking member and the pawl alternately out of operation, said rotary guard being actuated by the pawl to permit the locking member to come into operation, substantially as described.

14. The combination with the cylinder of a printing-couple, of cylinder-moving means, a shaft, a crank on the shaft, a pawl and pawl-carrier for rotating the shaft, a cam on the cylinder-shaft, a rock-lever operated by the cam for rotating the pawl-carrier always in the same direction, a locking device, a guard operating to alternately prevent the operation

of the locking device and the pawl, and a projection on the guard in the path of the pawl whereby as the pawl completes its stroke it throws the guard and permits the locking device to come into operation, substantially as described.

15. The combination with the cylinder of a printing-couple, of cylinder-moving means, a shaft, connections between the shaft and the cylinder-moving means, a pawl and suitable operating devices for moving the shaft always in the same direction, a locking device, a guard for alternately preventing the operation of the pawl and locking device, means whereby the pawl operates the guard to permit the locking device to come into action, and disconnectible means for returning the guard and throwing the locking device out of operation when it is desired to move the cylinder on each revolution, substantially as described.

16. The combination with the cylinder of a printing-couple, of an eccentric for moving the cylinder, a shaft, a crank on the shaft, connections between the crank and the eccentric, an operating-pawl, means including a lever and a cam for moving the pawl a substantially half-revolution, a locking member, a guard for alternately preventing the operation of the locking member and the pawl, means whereby the pawl operates the guard to prevent the locking member from coming into operation, and means including a disconnectible spring for returning the guard and throwing the locking member out of operation when it is desired to move the cylinder on each revolution, substantially as described.

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

WILLIAM SPALCKHAVER.

Witnesses:

F. W. H. CRANE,
W. F. MORGAN.