June 10, 1924.

1,497,347

H. J. PLANT

PRINTING MACHINE

Filed Dec. 22, 1922 2 Sheets-Sheet 1

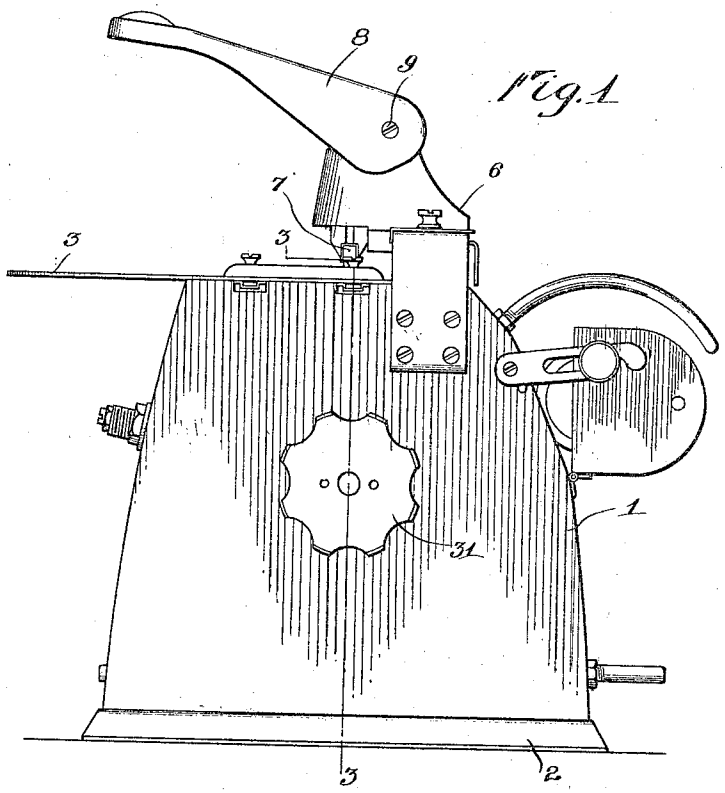


Fig. 1

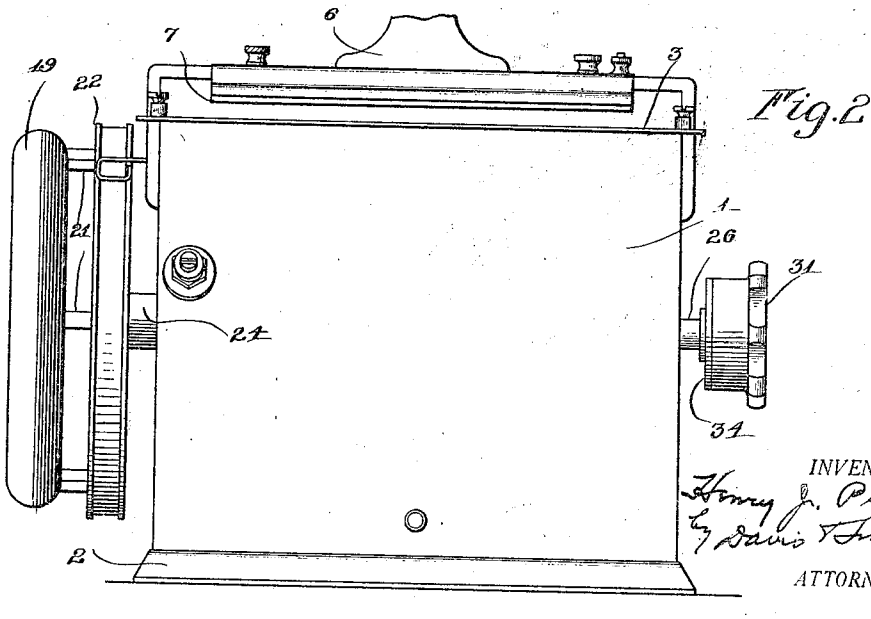


Fig. 2

INVENTOR.
Henry J. Plant
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Fig. 3

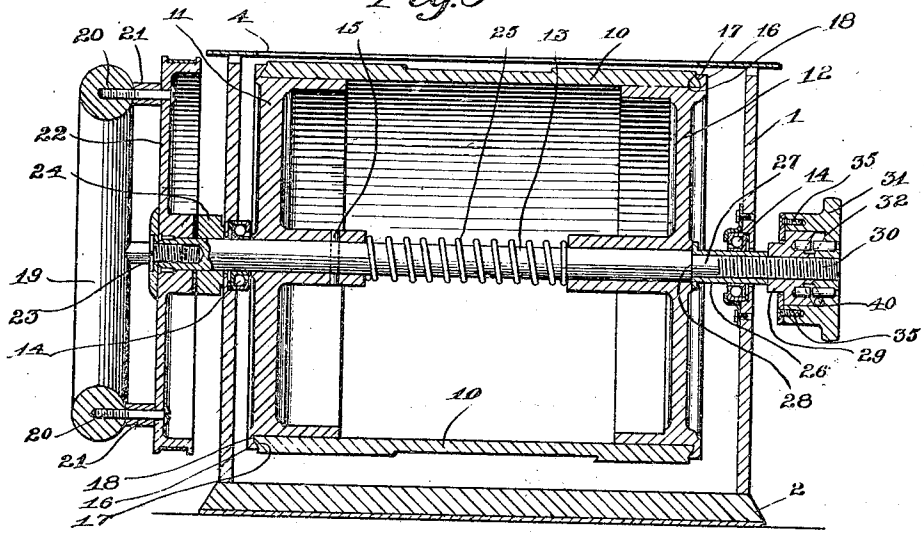


Fig. 4

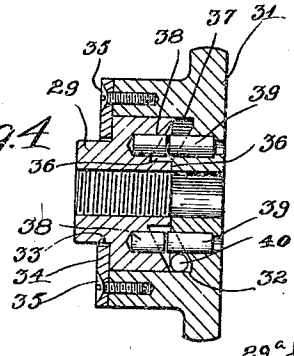


Fig. 5

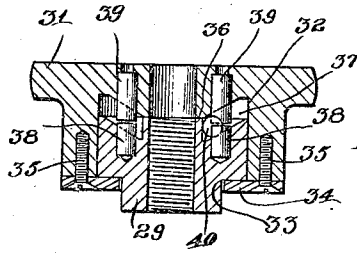


Fig. 6

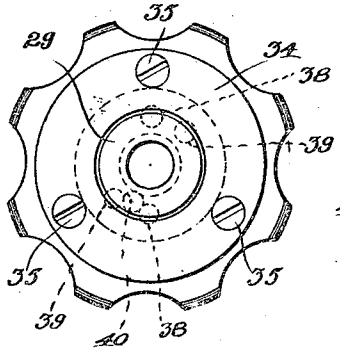


Fig. 7

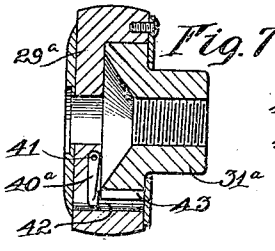


Fig. 8

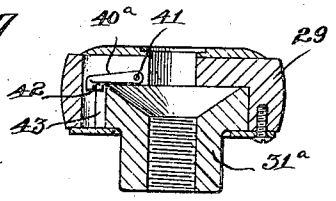
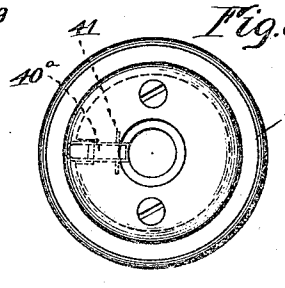


Fig. 9



INVENTOR.
Henry J. Plant
BY
Davis & Simmons
his ATTORNEYS.

Patented June 10, 1924. 1,497,347

UNITED STATES PATENT OFFICE.

HENRY J. PLANT, OF ROCHESTER, NEW YORK, ASSIGNOR OF ONE-THIRD TO FRED G. YAWMAN AND ONE-THIRD TO W. ROBERT BRUCE, BOTH OF ROCHESTER, NEW YORK.

PRINTING MACHINE.

Application filed December 22, 1922. Serial No. 608,574.

To all whom it may concern:

Be it known that I, HENRY J. PLANT, a citizen of the United States, and resident of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Printing Machines, of which the following is a specification.

The present invention relates to printing machines and more particularly to the type in which a casing is provided, enclosing a printing member detachably secured to a rotatably mounted supporting means. An object of this invention is to provide means for controlling the connection between the printing member and the rotatably mounted supporting means from the exterior of the casing. A further object of the invention is to provide a controlling member for controlling the connection between the printing member and the supporting means, such controlling member in the normal position of the casing being unconnected with the parts which it controls and in an abnormal position of the casing automatically connecting with said parts.

To these and other ends, the invention consists of certain parts and combinations of parts, all of which will be hereinafter described: the novel features being pointed out in the appended claims.

In the drawings:

Fig. 1 is a side view of a printing machine constructed in accordance with this invention;

Fig. 2 is a front view with the platen supporting means partially broken away;

Fig. 3 is a section on the line 3—3, Fig. 1;

Fig. 4 is a sectional view through the connection between the controlling member and the nut which holds the two heads in cooperative relation with the printing segments, this connection being shown in the position it occupies when the casing is in normal position;

Fig. 5 is a similar view of the connection showing connection established between the controlling member and the nut, as when the casing is in an abnormal position;

Fig. 6 is a rear view of the controlling member and the nut;

Fig. 7 illustrates in section the controlling member and the nut, with another form of connection between them, the parts being shown in the normal position;

Fig. 8 is a view similar to Fig. 7, showing connection established between the controlling member and the nut; and

Fig. 9 is a front view of the nut and controlling member illustrated in Figs. 7 and 8.

The present invention is shown embodied in a printing machine in the type illustrated in Patent No. 1,352,690, granted to me on September 14, 1920. In the illustrated machine there is employed a casing 1 with a removable bottom 2 and a top plate 3, serving as a work support on which the work to be separated is placed, face downward, over a slot 4 in said plate 3. Arranged on the casing is a frame 6 on which a platen 7 is guided toward and from the slot, the movement toward the slot being effected through a lever 8 pivoted at 9 and cooperating with the platen in any particular manner as, for instance, shown in the patent hereinbefore mentioned. This platen forces the work on the work supporting plate 3 through the opening into engagement with the printing member mounted within the casing, as will be hereinafter set forth.

The printing member, in this instance, embodies a plurality of segmental cylindrical sections 10, preferably two, in this instance, detachably carried by a rotatably mounted supporting means which, in this instance, comprises two heads 11 and 12, mounted upon a shaft 13 supported in a ball bearing 14 in opposite side walls of the casing 1. The head 11 is rigidly secured to the shaft as by a pin 15, whereas the head 12 has an axial movement on the shaft. Each head 11 and 12 has an annular rib 16 thereon, and this rib is under cut at 17 to receive one of the bevelled edges 18 on the printing member segments, thus forming means for securing the printing member detachably to the supporting means. It is apparent that the movement of the heads 11 and 12 one toward the other will cause the under cut rib 17 to cooperate with the opposite edges of the printing cylinder segments and hold said segments firmly to the heads, whereas a movement of the head 12 away from the head 11 will free said segments and permit them to be removed and other segments fitted in place on the head. A hand wheel 19 is connected through bolts 20 and sleeves 21 with a dial wheel 22 which is in turn secured by a screw 23 to one end of a shaft 13, the dial wheel having a sleeve 24

which abuts the side of the casing. This hand wheel serves as a rest for supporting the casing in an abnormal position during the removing or the fitting of the printing member. When it is so supported, the bottom 2 of the casing is opened, so as to expose the printing member and the head 12 is moved relatively to the head 11 to free the printing segments.

The movement of the head 12 is controlled from the exterior of the casing and this control is effected preferably through the arrangement of a helical spring 25 about the shaft 13 between the two heads, so that said spring tends to move the head 12 away from the head 11 in the direction of the axis of the shaft 13. On the opposite side of the head 12 a sleeve 26 surrounds a reduced portion 27 on the shaft and has one end arranged to cooperate with said head 12 to control the movement of the head and also with a shoulder 28 formed on the shaft between the reduced portion 27 and the main portion 13 to limit the movement of the head 12 toward the head 11 under the action of the nut. The sleeve 26 turns in the bearing 14 with the shaft and extends to the exterior of the casing 1. With the exterior end of the sleeve 26, a nut 29 cooperates, this nut operating upon a screw threaded portion 30 formed on the reduced part of the shaft. The turning of the nut on the screw portion effects the movement of the sleeve 26 axially of the head 12 in one direction against the action of the spring 25 and in the other direction under the action of said spring.

In order that the nut 29 will not be accidentally turned to loosen the cylinder from its heads, this nut is preferably covered by an operating or controlling member 31 which is provided with a pocket 32 in which the nut is received, the wall of this pocket being cylindrical and the outer face of the nut being also cylindrical and formed with an annular shoulder 33. A retaining ring 34 is secured by screws 35 to the rear face of the operating or controlling member 31 and serves to hold the nut 29 in the pocket against a wall 36. The opposite inner faces of the nut and the operating or controlling member are provided respectively with grooves 36 and 37 in each of which two projections 38 and 39 are respectively arranged. When the printing member is in a normal and horizontal position, a ball 40, which operates between the nut and the operating member, will run in the groove 37 to one side of the projections 39, but, when the printing member is turned to an abnormal position so that its axis of turning extends vertically, the ball 40 will fall into the groove 36 and lie in the path of the projections 38 and 39, so as to form a connection between one of said projections 38 and one of the projections 39, as illustrated in Fig. 5, thus establishing connection between the operating or controlling member and the nut.

Another connection between the nut and the operating member is shown in Figs. 7 to 9, inclusive, in which 29^a indicates the operating or controlling member and 31^a the nut. A detent or pawl 40^a is pivoted at 41 to the operating member 29^a and has a nose 42 adapted to engage a notch or recess 43 formed in the nut 31^a. When the printing member is arranged horizontally, this detent through gravity will swing out of the path of the nut 31^a, but, when the printing member is moved to upright position, the detent 40^a will by gravity swing so that the nose will enter the recess 43 and provide an interlocking connection between the operating member 29^a and the nut 31^a.

From the foregoing it will be seen that there has been provided a printing machine of the type in which the connection of the printing member with its rotary supporting means is controlled from the exterior of the casing. This controlling means, when the printing member is arranged horizontally, is inoperative, but when the printing member with its casing is shifted so that the axis of the member is upright, an operating connection is provided between the controlling member and the means for securing the printed cylinder to the shaft.

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

1. A printing machine comprising a rotary supporting means, a printing member, means for detachably securing the printing member to the rotary supporting means, a controlling member for said printing member securing means, and means for disconnecting said controlling member from said printing member securing means when the machine is in normal position and connecting said locking member with the printing member securing means when the machine is in abnormal position.

2. A printing machine comprising a printing cylinder, a shaft, two printing-cylinder supporting and securing heads mounted on said shaft, one being moved relatively to the other, a nut mounted on the shaft and connected with one of the heads for effecting its movement toward the other head, a controlling member mounted to turn relatively to the nut, and means for connecting and disconnecting said controlling member from the nut.

3. A printing machine comprising a casing, a rotary supporting means within the casing, a printing member, means detachably securing the printing member to the rotary supporting means, a controlling member for

said printing member securing means arranged exteriorly of the casing, and means disconnecting said controlling member from said printing member securing means when the casing is in normal position, and connecting said controlling member with the printing member securing means when the casing is in an abnormal position.

4. A printing machine comprising a casing, a rotary supporting means, a printing member, means detachably securing the printing member to the rotary supporting means, a controlling member arranged exteriorly of the casing for controlling said printing member securing means, and a gravity operated device movable to a position to effect connection between the controlling member and the printing member securing means when the casing is moved to an abnormal position and to break connection between said controlling member and the printing member securing means when the casing is moved to normal position.

5. A printing machine comprising a casing, a shaft arranged in said casing and projecting through one wall thereof, two heads, one of which is movable relatively to the other on said shaft and each of which has cylinder securing means thereon, a segmental cylinder held to the heads by said securing means, a spring tending to separate said heads, a sleeve cooperating at one end with one of the heads and extending to the exterior of the casing, a nut on the shaft cooperating with the other end of the sleeve, a controlling member for said nut, and movable means for connecting the controlling member with the nut, said movable means having a position, when the casing is in normal position to disconnect the controlling member from the nut, and said movable means having another position, when the casing is in an abnormal position, to effect connection between the controlling member and the nut.

6. A printing machine comprising a casing, a printing cylinder, a shaft mounted to turn in said casing, two cylinder supporting and securing heads mounted on the shaft, one of which is movable toward and from the other, a nut mounted on the shaft to effect the movement of one of the heads, a controlling member arranged exteriorly of the casing, and movable means arranged to connect the controlling member with the nut when the casing is in an abnormal position and to disconnect the controlling member from the nut when the casing is in normal position.

7. A printing machine comprising a printing cylinder two printing-cylinder supporting and securing heads mounted on the shaft, one being movable relatively to the other, a spring tending to separate said heads, a nut mounted to turn on the shaft, and an axially movable sleeve surrounding the shaft between the nut and the head and arranged to effect the movement of the movable head toward the other head against the action of the spring.

8. A printing machine comprising a casing, a rotary supporting means mounted within the casing and having a shaft extending to the exterior thereof, a printing member detachably secured to the supporting means, a device mounted to turn on the shaft and having connection with the supporting means for effecting the connection of said supporting means and said printing member or the disconnection of said two parts, a rotary controlling member mounted to turn relatively to said rotary device, and means for connecting said rotary controlling member with said rotary device to permit the controlling member to turn the rotary device.

9. A printing machine comprising a casing, a printing member, rotary means for supporting said printing member, a shaft turning in the casing and extending to the exterior thereof, means carried by said rotary securing means for detachably securing said printing member to said rotary securing means, a nut mounted on the shaft to control the movement of said securing means, a controlling member arranged exteriorly of the casing, and movable means arranged to connect the controlling member with the nut when the casing is in an abnormal position and to disconnect the controlling member from the nut when the casing is in a normal position.

HENRY J. PLANT.