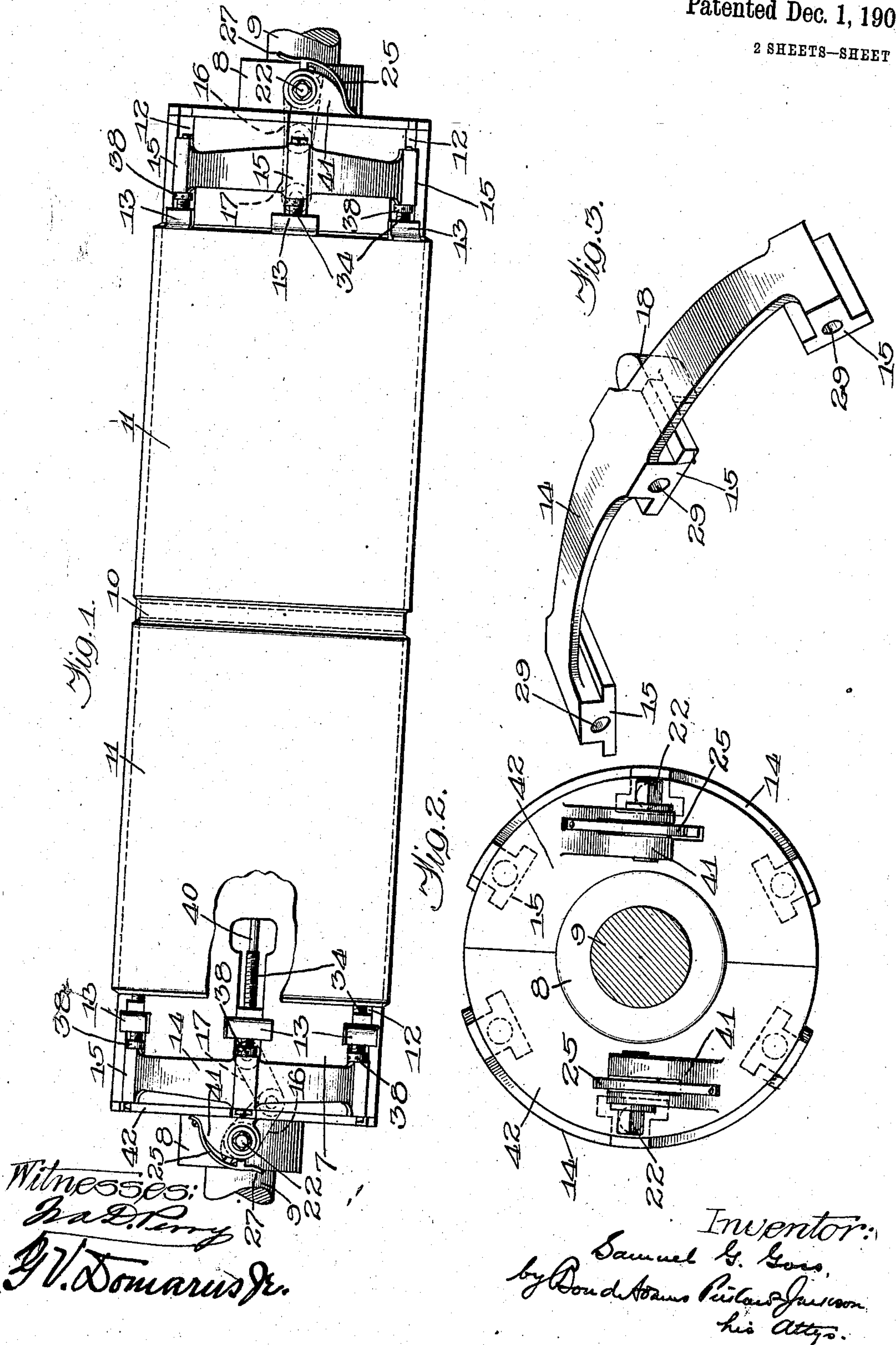


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 PLATE CLAMPING MECHANISM FOR PRINTING PRESSES.  
 APPLICATION FILED MAR. 14, 1908.

905,173.

Patented Dec. 1, 1908.

2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.

Fig. 4.

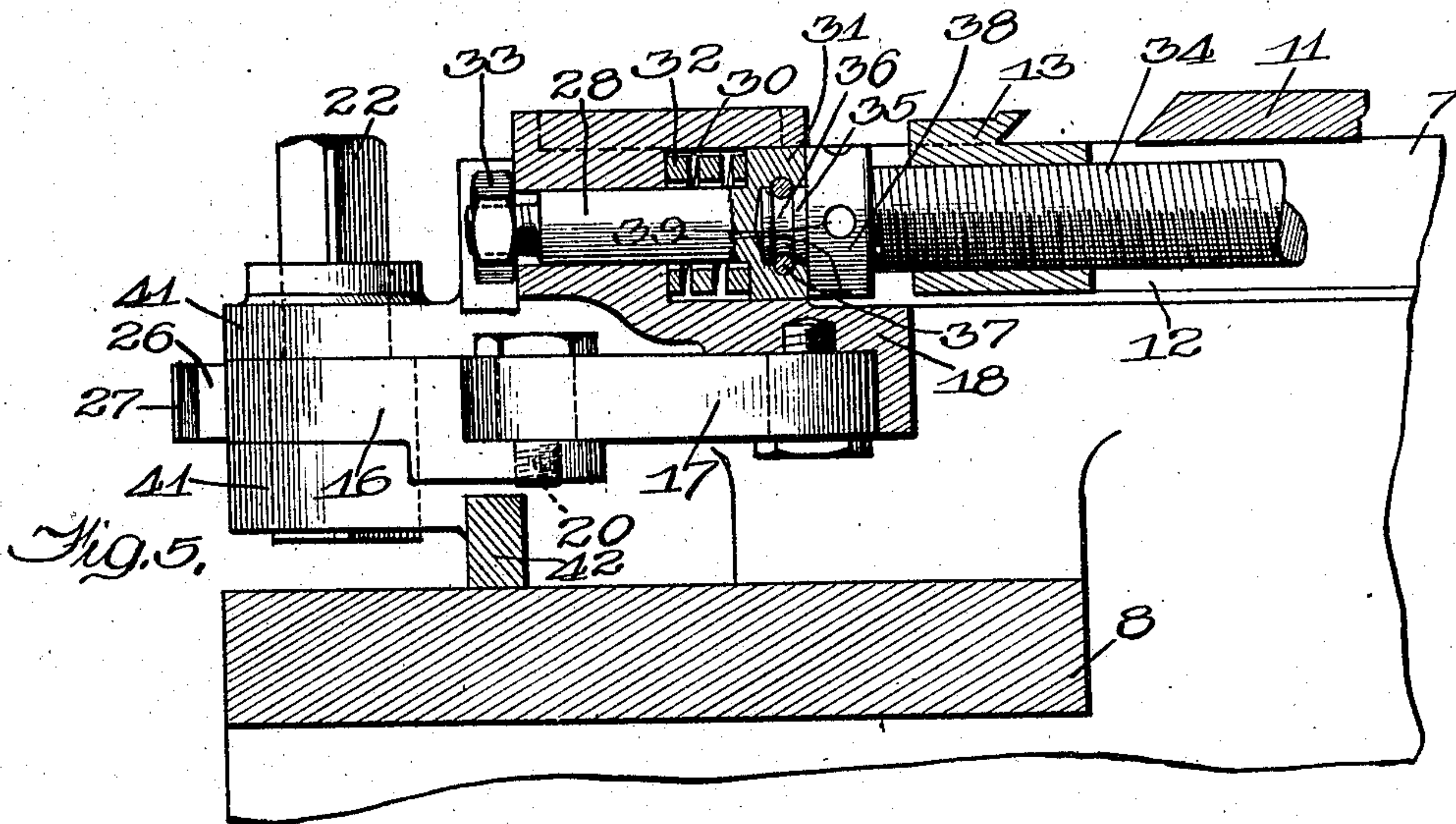
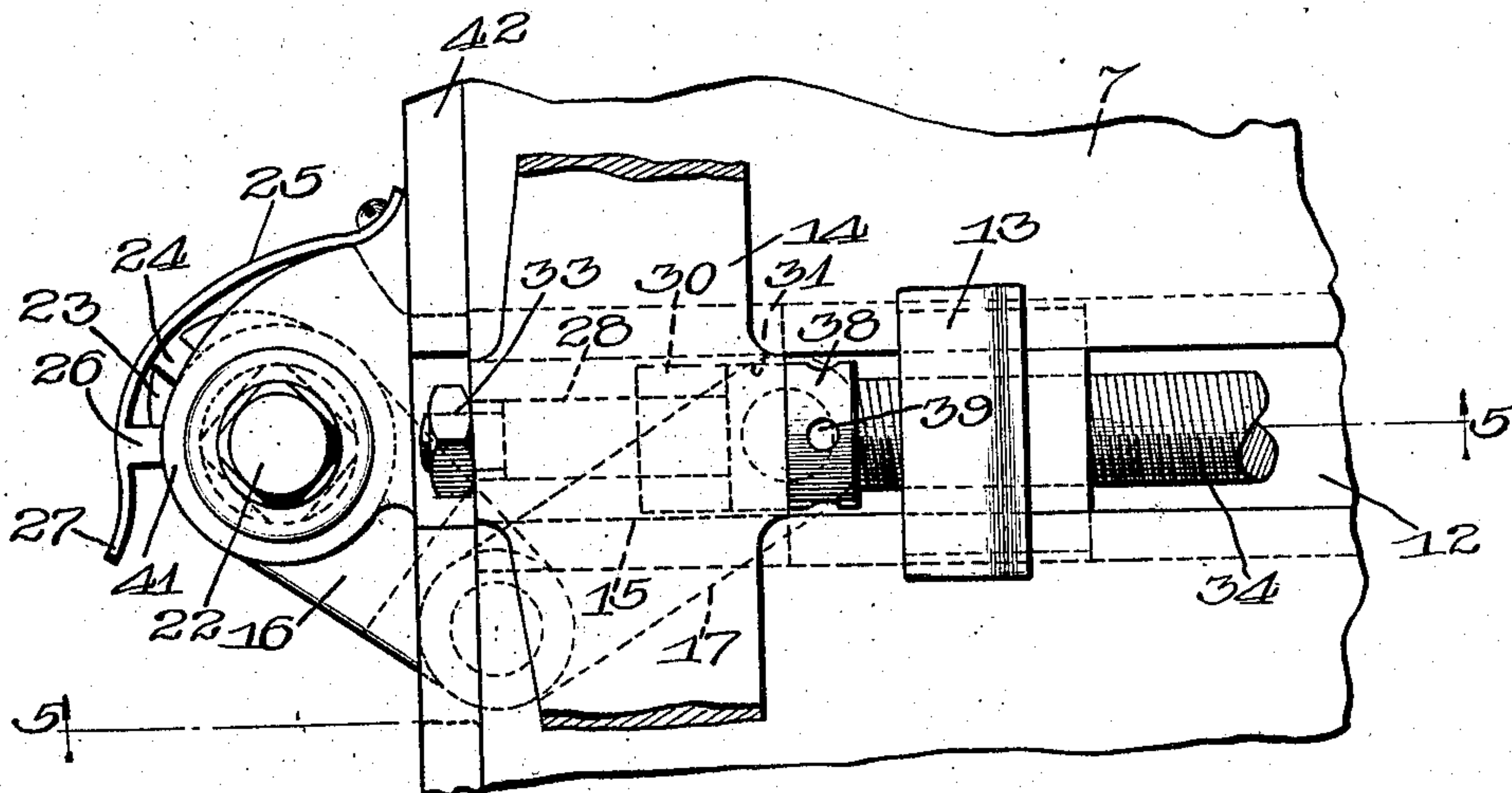
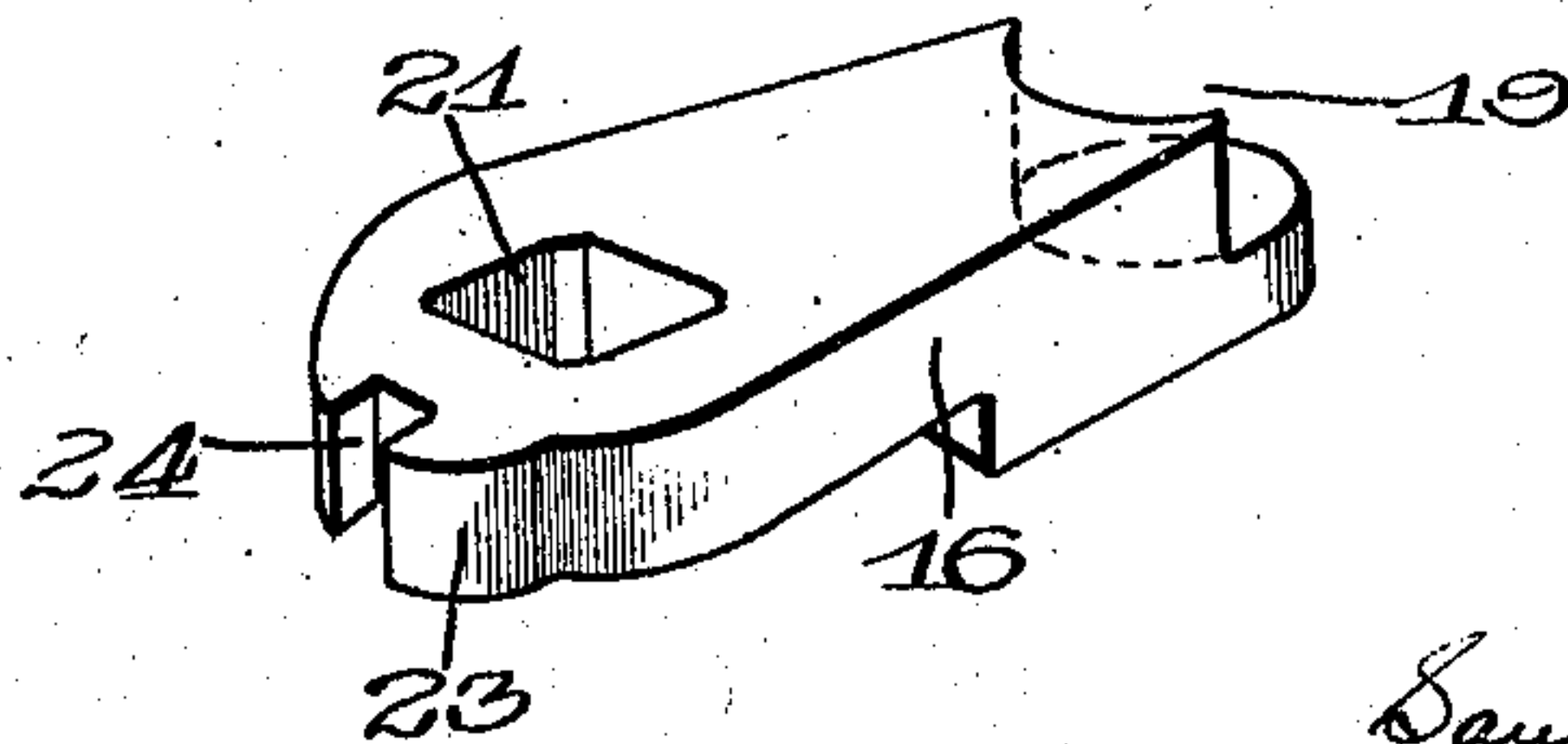


Fig. 6.



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# UNITED STATES PATENT OFFICE.

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## PLATE-CLAMPING MECHANISM FOR PRINTING-PRESSES.

No. 905,173.

Specification of Letters Patent.

Patented Dec. 1, 1908.

Application filed March 14, 1908. Serial No. 421,009.

*To all whom it may concern:*

Be it known that I, SAMUEL G. GOSS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Plate-Clamping Mechanism for Printing-Presses, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to plate-clamping mechanism for rotary printing presses, and its object is to provide clamping mechanism for holding plates upon the plate cylinder which can be operated quickly and easily, which is positive in its action, and cannot become loose after it is once tightened, and will yet have a grip upon the plates sufficiently yielding to insure the holding of the plate at several points; and also to provide a new and improved mechanism by which the clamps may be independently adjusted and by which, when adjusted, they may be simultaneously moved to clamp the plate in place.

As is well known, stereotyped plates, while formed upon their edges which are engaged with the clamps with general accuracy, nevertheless are likely to vary somewhat from a perfectly straight edge. If, therefore, the clamps are so constructed as to be simultaneously moved to lock the plate in place, it is very likely that these irregularities in the edge of the plate which is engaged by the clamps will cause some of the clamps to either not engage the plate at all or to improperly engage it, leaving the plate clamped by an insufficient number of clamps. On the other hand, if the clamping is done by separately adjusting each clamp upon the plate, this requires time, which, as is well known, is of great value when a newspaper is going to press. Several devices have been tried to obviate these difficulties, all of which are objectionable for one reason or another. For example, one mechanism used has been to provide a hollow shaft for the plate cylinder and to connect the plate clamps by means of levers with a bar running through the hollow shaft, and by the movement of the bar to move the plate clamps simultaneously upon one plate. Another device that has been used was to provide each of the screws by which the plate clamps were moved with a coarse pitched thread, and to gear all the clamps together whereby, by

operating any one of the gears by suitable means, the clamps might be simultaneously moved. These devices have proved objectionable because they would not at the same time be powerful enough to hold the plate and flexible enough to adjust themselves to irregularities in the plate edges, and because they could not be satisfactorily constructed for use upon a cylinder of three or more pages in width and for plate forms which might be of varying length,—for example, seven or eight columns in width when the column rules were circumferential of the plate cylinder.

It is the principal object of my invention to provide mechanism by means of which these difficulties may be obviated, and clamping mechanism constructed in which the several clamps may be separately adjustable to different widths of plates and may be also, when generally adjusted to the form width, simultaneously moved to lock the plates upon the plate cylinder positively and firmly and with sufficient yielding to insure that every clamp will engage the edge of the plate.

It is the further object of my invention to improve plate-holding mechanism in sundry respects hereinafter pointed out.

In the drawings,—Figure 1 is a plan view of one plate cylinder; Fig. 2 is an end view of the same; Fig. 3 is an enlarged detail, being an isometric view of one of the movable arms upon which the clamp-operating screws are carried; Fig. 4 is an enlarged detail, being a view of a portion of one end of the cylinder, showing the mechanism for moving the clamps and movable arms; Fig. 5 is an enlarged detail, being a section on line 5—5 of Fig. 4; and Fig. 6 is an enlarged detail, being a view of one arm of the toggle-lever.

Referring to the drawings,—7 indicates a plate cylinder of the usual form and construction provided with hubs 8 and mounted on a shaft 9. 10 represents the central annular plate-stop of the usual form and construction mounted on said cylinder and adapted to engage the inner ends of the plates.

11 indicates stereotype plates carried on the cylinder 7. The cylinder 7 is provided at each end with a plurality of slots 12 extending a suitable distance into the cylinder longitudinally thereof, in which are



slidingly mounted plate clamps 13 which are also of the usual form and construction and are adapted to engage the outer edges of the stereotype plates 11.

14 indicates arms which, as is best shown in Figs. 2 and 3, are in an arc shape concentric with the cylinder 7 and whose under side is adapted to slidingly rest upon the surface of the cylinder at each end. In the construction shown in the drawings these arms or movable members 14 are four in number, two at each end of the cylinder and one upon each semicircumference. The arms or movable members 14 are provided with downward-projecting shoulders 15 which are adapted to enter into and slide within the slots 12 longitudinally of the cylinder, the arms thus being supported upon the cylinder near its ends so as to slide longitudinally thereof.

16—17 indicate two arms which together form a toggle-joint lever and are pivotally connected with one another at their ends. The arm 17 is pivotally connected at one end to a shoulder 18 which projects downward from the middle shoulder 15 and at the inner end thereof and moves within the plate cylinder 7.

As is best shown in Figs. 5 and 6, the arm 16 is cut away at its inner end to form a circular shouldered recess 19 within which the free end of the arm 17 rests and turns, and they are held together pivotally, as above stated, by means of a screw 20 (see Fig. 5).

The outer end of the arm 16 is pivotally mounted between shoulders 41 which are secured to or preferably formed integral with semiannular plates 42 which are secured to the end of the cylinder with their inner surface bearing upon the hubs 8. The inner end of the arm 16 at its pivotal point between the shoulders 41 is provided with a squared opening 21 which is adapted to receive a key 22, whereby, by means of a suitable wrench, the arm 16 may be turned so as to bring the arms 16—17 in alinement and operate the toggle lever. The surface of the arm 16 is provided with a cam portion 23 having a notch 24 located upon the central longitudinal line of the arm 16.

25 indicates a spring, which is secured upon the hub 8 at one end and has near its other end a lug 26 which bears upon the cam surface 23 and is adapted to enter the notch 24 when the toggle lever—composed of the arms 16—17—is turned to move the arm 14 and by its engagement thus to lock the arm in position. The spring is adapted to be lifted out of engagement with the notch 24 by manually moving it away by means of the projecting end 27. It will be obvious that, the parts being in the position shown in Figs. 1 and 4, by turning the key 22 by means of a wrench, or other suitable mechanism, the two arms of the toggle lever

will be brought into alinement with one another, moving the arms 14 inwards on the cylinder, the shoulders 15 sliding in the slots 12.

28 indicates pins which are journaled in the shoulders 15 of the arms 14 in suitable openings 29. The openings 29 are expanded at the inner ends of the shoulders 15 to form chambers 30, and the pins 28 are provided at their inner ends with shoulders 31 adapted to move within the chambers 30 and preferably formed integral with the pins 28.

32 indicates compression springs, which are mounted in the chambers 30 and bear against the shoulders 31 and the bottom of the chambers 30, thus permitting the pins 28 to yield outward against the pressure of the springs. The pins 28 are screw-threaded at their inner ends to receive nuts 33 to hold them in position.

34 indicates screws, which are adapted to engage suitable screw-threaded openings in the clamps 13 so that by their rotation the clamps may be moved inwards and outwards longitudinally of the cylinder, sliding in the slots 12. The outer ends of the screws 34 are provided with a projecting end 35 (see Fig. 5) of smaller diameter than the rest of the screw and adapted to be journaled in a suitable opening in the ends of the pins 28. The ends 35 of the screws 34 are provided with a circumferential groove 36 which, when the pins are in position, lies within the shoulder 31, and the screws are revolvably secured in the heads of the pins 28 by means of a key 37.

38 indicates a head formed integral with the screws 34 and lying, as is best shown in Figs. 4 and 5, within the slots 12 between the plate clamps 13 and the inner surface of the shoulders 15 and provided with a plurality of openings 39 which are adapted to be engaged by a pin or wrench, or other suitable tool, so as to turn the screws 34. By the turning of the screws 34 by means of the heads 38 the plate clamps 13 may be adjusted longitudinally of the cylinder, the screws and slots 34 being made of sufficient length to cause and permit such movement of the clamps as may be desired for adjusting them to different widths of plates. The inner ends of the screws, as is best shown in Fig. 1, are provided with a smaller projection 40 which is slidingly journaled in suitable openings in the interior of the plate cylinder 7.

The operation of the devices above described is as follows: The screws 34 being turned by means of the heads 38, the clamps 13 are separately adjusted upon the cylinder to correspond with the width of the plate desired to be used. The plates are then placed upon the cylinder in the usual manner, and by the operation of the toggle lever 16—17 the arms or movable members 14 are



moved positively inward, causing the several  
 plate clamps to engage the edge of the plate  
 and lock it firmly in position,—the screws  
 and the clamps in case of any irregularity  
 5 on the edge of the plate at the point of en-  
 gagement of the clamps yielding against the  
 springs 32 to cause an engagement of all the  
 clamps and to lock the plate firmly in posi-  
 tion. The length of the screws and of the  
 10 slots in which the plate clamps are mounted  
 will, of course, depend upon the amount of  
 adjustment desired. In the form in which  
 my invention is illustrated I have shown a  
 15 two-plate-wide cylinder. If the cylinder is  
 designed to hold either a seven-column or an  
 eight-column plate the adjustment of the  
 clamps will have to be at least an amount  
 equal to the amount of one column. In  
 case my devices should be used upon a  
 20 double-width cylinder, each end containing  
 upon each semicircumference two plates, a  
 change of plates from an eight to a seven  
 column width will require, of course, an ad-  
 justment of the clamps at least equal to the  
 25 width of two columns, and so on. The  
 movement of the arms or movable members  
 to lock the plates in position and to free  
 them to permit the plates to be removed  
 will be just sufficient to permit a clearance  
 30 of the usual beveled-edge plates from the en-  
 gaging edges of the clamps when the arms  
 are moved away from the plates. When the  
 two arms of the toggle lever are moved into  
 alinement and the plates engaged and locked  
 35 upon the cylinders, the arms will be locked  
 in position by means of the shoulder 26 on  
 the spring 25 engaging the recess 24 on the  
 ends of the toggle arm 16. When it is de-  
 sired to remove the plates from the cylinder,  
 40 the spring 25 will be moved to free the lug  
 26 from the shoulder 24 and the toggle lever  
 operated by the squared pin 22 to bring the  
 parts in the position shown in Fig. 4, and,  
 moving the arms outward, free the clamps  
 45 from the cylinder.

I have illustrated and described my in-  
 vention as applied to a plate cylinder of a  
 circumference adapted to hold upon each  
 half a plate upon each semicircumference  
 50 and with a pair of movable arms at each  
 end of the cylinder each adapted to lock one  
 plate in position, and in so far as the circum-  
 ference of the cylinder is concerned this is  
 the usual form of plate cylinder and the  
 55 form which I prefer to use. It is obvious,  
 however, that without departing from my  
 invention a plate cylinder might be used of  
 such circumference as to carry more than  
 two plates upon each semicircumference, in  
 60 which case the number of arms would, of  
 course, be correspondingly varied as there  
 should, of course, be one of these movable  
 arms for each integral stereotype-plate. I  
 have also, for convenience of illustration.

shown my invention as applied to a single- 65  
 width cylinder—that is to say, of a length  
 sufficient to carry two plates end to end. It  
 will, of course, be obvious that my invention  
 can be applied to plate cylinders of different  
 lengths,—for instance, to plate cylinders in 70  
 printing presses of what is known as double-  
 width, that is to say, cylinders adapted to  
 carry four plates abreast,—without any  
 changes in structure except what is obvious  
 to anyone skilled in the manufacture of 75  
 printing presses.

While I have shown and described a plate  
 cylinder, plate clamps adapted to engage the  
 edge of a plate and movable longitudinally  
 of the cylinder, a movable member, clamp 80  
 operating mechanism carried by said mov-  
 able member and adapted to engage the  
 clamps and separately adjust the same on the  
 cylinder, and means for moving said mov-  
 able member longitudinally of the cylinder, 85  
 I do not broadly claim that combination  
 herein, as that invention, broadly stated, is  
 the invention of another,—namely, William  
 Evensen,—who has filed application for Let-  
 ters Patent therefor. 90

That which I claim as my invention, and  
 desire to secure by Letters Patent, is,—

1. The combination with a plate cylinder  
 and plate clamps slidingly mounted thereon  
 and movable longitudinally thereof, of an 95  
 arm slidingly mounted on the surface of  
 said cylinder, screws carried by said arm  
 and each engaging one of said plate clamps,  
 and a toggle lever engaging said arm and  
 said cylinder and adapted by its operation 100  
 to move said arm longitudinally on said  
 cylinder.

2. In combination, a plate cylinder, a plu-  
 rality of slots on the end of said cylinder  
 and extending longitudinally thereof, a plu- 105  
 rality of plate clamps mounted one in each  
 of said slots and movable longitudinally  
 therein, an arc-shaped arm carried on the  
 end of said cylinder and provided with  
 shoulders adapted to engage said slots and 110  
 movable longitudinally therein, a plurality  
 of spring-seated screws carried by said arm  
 and adapted each to engage one of said  
 clamps, a toggle lever connected at one end  
 with said plate cylinder and at the other 115  
 end with said arm, and means for operating  
 said toggle lever.

3. In combination, a plate cylinder, slots  
 in the end of said plate cylinder extending  
 longitudinally thereof, a plurality of plate 120  
 clamps slidingly mounted one in each of said  
 slots, an arc-shaped arm resting upon said  
 cylinder and provided with shoulders adapt-  
 ed each to slidingly engage one of said slots,  
 a plurality of spring-seated pins carried by 125  
 said arm, a plurality of screws revolubly  
 secured one in each of said pins and adapted  
 to severally engage said plate clamps, a



toggle lever connected at one end with said plate cylinder and at the other end with said arm, means for operating said toggle lever to move said arm, and means for locking said toggle lever in its extended position.

4. In combination, a plate cylinder; slots in the end of said plate cylinder extending longitudinally thereof, a plurality of plate clamps slidingly mounted one in each of said slots, an arc-shaped arm resting upon said cylinder and provided with shoulders adapted each to slidingly engage one of said slots, a plurality of spring-seated pins carried by said arm, a plurality of screws revolubly secured one in each of said pins and adapted to severally engage said plate clamps, means for turning said screws, a toggle lever connected at one end with said plate cylinder and at the other end with said arm, means for operating said toggle lever to move said arm, and means for locking said toggle lever in its extended position.

5. In combination, a plate cylinder, slots in the end of said plate cylinder extending longitudinally thereof, a plurality of plate clamps slidingly mounted one in each of said slots, arms at each end of said cylinder and provided with shoulders adapted each to slidingly engage one of said slots, a plurality of spring-seated pins carried by said arm, a plurality of screws revolubly secured one in each of said pins and adapted to severally engage said plate clamps, means for turning said screws, a toggle lever connected at one end with said plate cylinder and at the other end with said arm, means for operating said toggle lever to move said arm, and

means for locking said toggle lever in its extended position.

6. The combination with a plate-holding member, of a plate clamp slidingly mounted on said plate-holding member, a support, and a screw spring-seated and rotatably mounted in said support and having its screw-threaded portion in constant engagement with said plate-clamp.

7. The combination with a plate cylinder, of a plate-clamp slidingly mounted thereon, a support on said plate cylinder, and a screw spring-seated and revolubly mounted in said support and having its threaded portion in constant engagement with said plate clamp.

8. The combination with a plate cylinder, and a plate clamp slidingly mounted thereon, of a support on said plate cylinder, a pin slidingly mounted in said support and spring-seated therein, and a screw rotatably mounted on said pin and adapted to engage said plate clamp and by its rotation move the same longitudinally of said cylinder.

9. The combination with a plate cylinder and a plate clamp longitudinally movable thereon, of a support and a screw having an unthreaded portion at one end and a threaded portion at the other end slidingly and rotatably mounted at its unthreaded end in said support and spring-seated therein and having its threaded portion in constant engagement with said plate clamp.

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