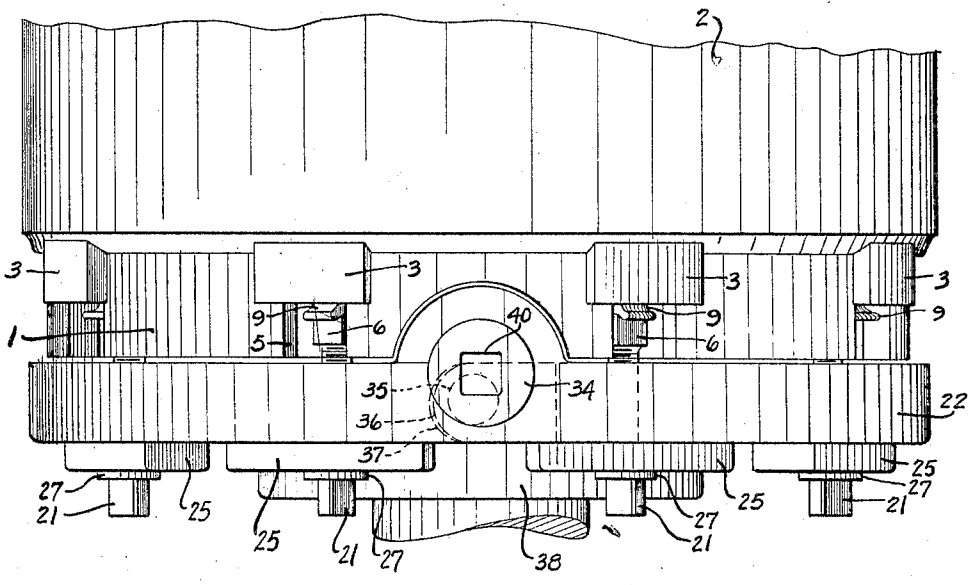
Feb. 7, 1928. **1,658,033**

R. A. BELL

QUICK LOCK-UP FOR PLATE CYLINDERS

Filed Dec. 4, 1925 3 Sheets-Sheet 1

Fig 1



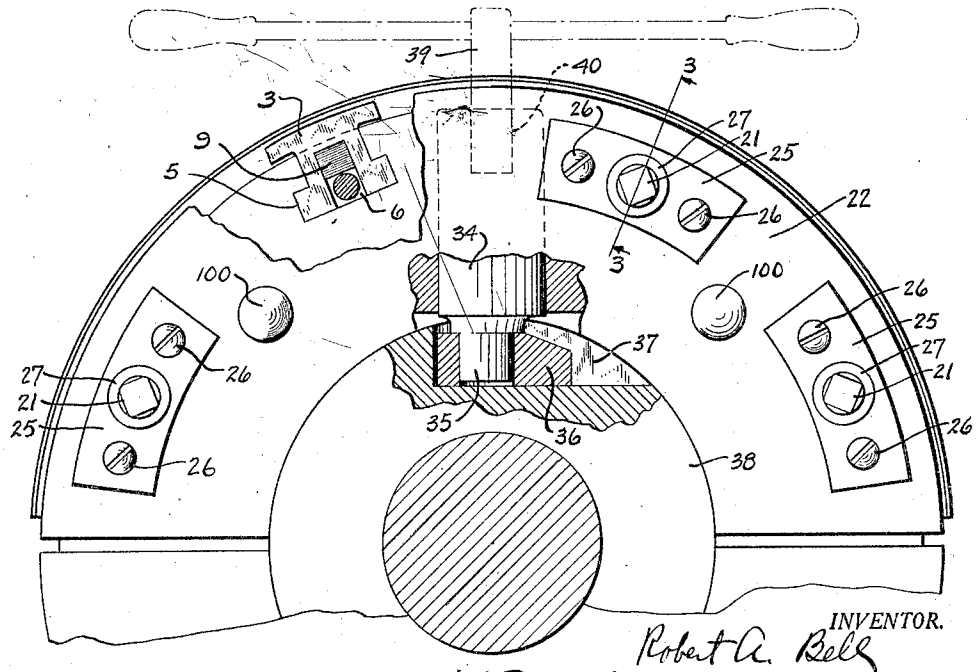


Fig 2

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3 Sheets-Sheet 2

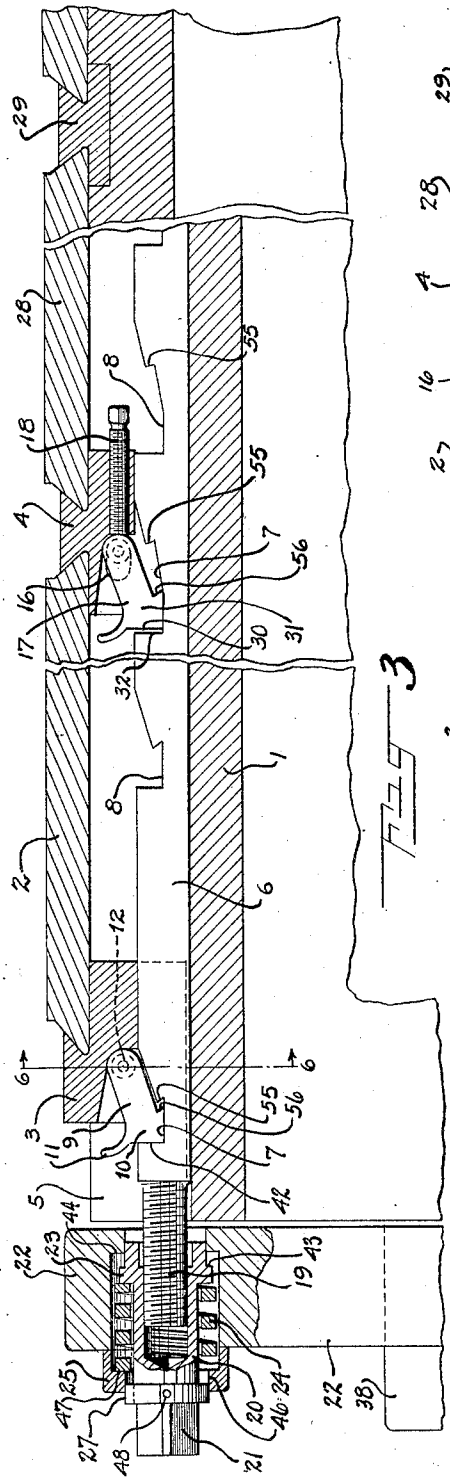


Fig. 3

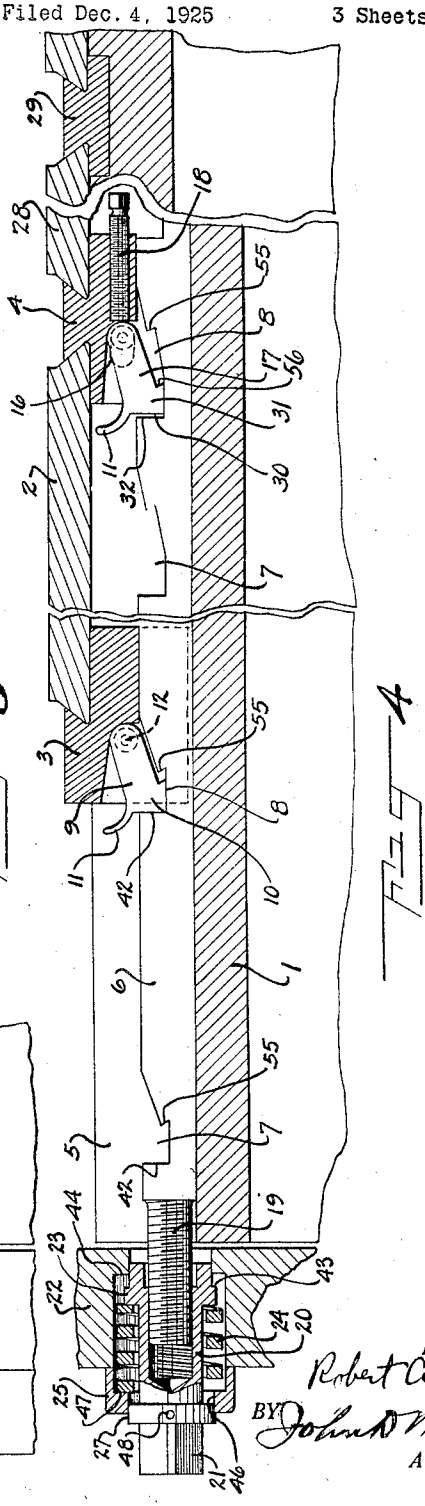


Fig. 4

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QUICK LOCK-UP FOR PLATE CYLINDERS

Filed Dec. 4, 1925 3 Sheets-Sheet 3

Fig 5

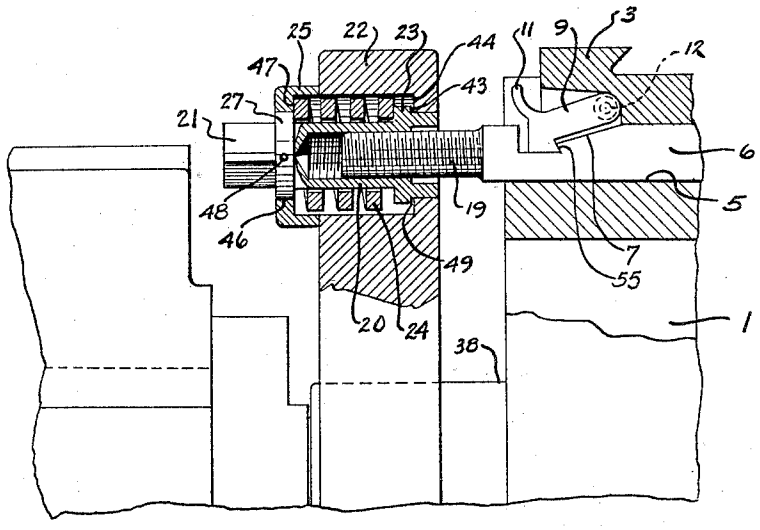
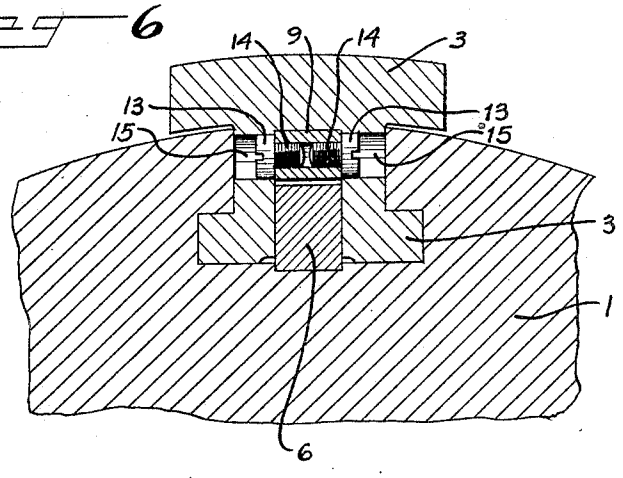


Fig 6



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Patented Feb. 7, 1928. 1,658,033

UNITED STATES PATENT OFFICE.

ROBERT A. BELL, OF CHICAGO, ILLINOIS, ASSIGNOR TO GOSS PRINTING PRESS COMPANY, A CORPORATION OF ILLINOIS.

QUICK LOCK-UP FOR PLATE CYLINDERS.

Application filed December 4, 1925. Serial No. 73,141.

My invention relates to printing presses, and more particularly to a quick lock-up for plate cylinders, in which the clips can be quickly changed to different positions, to correspond with different numbers of columns, or sheet widths, which may be desired to be printed on a newspaper, or other printed product.

Objects and advantages of the invention will be set forth in part hereinafter and in part will be obvious herefrom, or may be learned by practice with the invention, the same being realized and attained by means of the instrumentalities and combinations pointed out in the appended claims.

The invention consists in the novel parts, constructions, arrangements, combinations, articles of manufacture, and improvements herein shown and described.

The accompanying drawings, referred to herein and constituting a part hereof, illustrate one embodiment of the invention, and together with the description, serve to explain the principles of the invention.

Of the drawings:—

Fig. 1 is a plan view of the end of a plate cylinder, showing a printing plate locked in position;

Fig. 2 is a fragmentary end elevation of a part of the printing plate cylinder shown in Fig. 1, a portion of the cylinder being broken away;

Fig. 3 is a fragmentary vertical section, substantially on the line 3—3 of Fig. 2, through the plate cylinder, showing the clips adjusted for a seven column paper, or other printed product;

Fig. 4 is a fragmentary vertical section, similar to Fig. 3, but showing the parts adjusted to print a six column newspaper, or other printed product;

Fig. 5 is a detail sectional view showing one of the clip rods in its unlocked position;

Fig. 6 is a sectional view on line 6—6 of Fig. 3.

In printing a newspaper, or other printed product, it is frequently necessary to change the clips, holding the plates on the cylinder, so that a newspaper, or other printed product, of a different number of columns can be printed. For purposes of illustration I will refer to Fig. 3 as showing the position of the parts to print a newspaper of seven columns, and Fig. 4 the position of the clips to print a newspaper, or similar product, of six columns. While I will refer to printed products of six or seven columns, it is to be understood that these are simply illustrative, for my invention is adapted to be employed to make any suitable adjustment for different sheet widths, as for example, 8, 7 or 6 columns. It is also adapted to make adjustment for different column widths; for example for a sheet of 8 columns, 12 ems, to a sheet of 8 columns, 13 ems, or any other suitable adjustment can be made.

In the form of my invention, shown by way of illustration, 1 is any suitable form of plate cylinder upon which is secured the printing plate 2 by the outer clips 3, 3 four such clips being shown in Fig. 1. Cooperating with these outer clips 3, 3 are the inner clips 4, 4, one being shown in Figs. 3 and 4. It is understood that there are four of such inner clips 4 for each printing plate, making eight clips in all for each printing plate.

Mounted on the periphery of the plate cylinder 1 are a plurality of longitudinally extending grooves 5 within each of which slide an outer and an inner clip 3 and 4, and also a clip rod 6, which is preferably non-circular. This clip rod is provided with different locking or engaging surfaces, two sets 7, 7 and 8, 8 being shown by way of illustration, to correspond with the particular widths of sheets which it is desired to print. Preferably, though not necessarily, these locking or engaging surfaces 7, 7 and 8, 8 on the clip rod 6, are formed as locking grooves to cooperate with locking members carried by the outer clip 3 and the inner clip 4. These locking members, which are shown by way of illustration, are pivoted pawls 9, and have a head 10, a handle 11, and a pivot 12, preferably formed by the heads 13, 13 of screws 14, 14 which are screwed into the end of the pawl (Fig. 6) and form trunnions supporting the pawl in a transverse bearing 15 in the outer clip 3.

The inner clip 4 is substantially the same as the outer clip 3, except that it is also provided with a longitudinally extending slot 16, within which the heads 13, 13 of the screws 14, 14 are mounted. The position of the pivot of the inner pawl 17, along the slot 16 is determined by an adjustable set

screw 18, (Figs. 3 and 4), to be more fully hereinafter described.

The end of the clip rod 6 is provided with male screw threads 19, cooperating with female screw-threads in the sleeve or thimble 20, which sleeve is provided with a square end 21 to engage with any suitable form of tool. The lock-up plate 22, supported by the guide studs 100, 100, is recessed to receive the end of the clip rod 6 and also the sleeve 20. This sleeve is provided with a shoulder 23 against which bears a coil spring 24, the other end of the spring engaging with an end plate 25, which is secured to the face of the lock-up plate 22 by the screws 26, 26 (Fig. 2), there being, in the form shown, a separate end plate for each clip rod 6 and its complementary parts. On the sleeve 20 I mount a collar 27 for a purpose to be more fully hereinafter described.

Assuming that the plate cylinder 1 is to print from an inner plate 28, as well as from an outer printing plate 2, and that the newspaper, or other printing product, is for example to have seven columns, my lock-up will be in the position shown in Fig. 3, in which the inner plate 28 cooperates with the fixed center clip 29, and with the movable inner clip 4 and the outer clip 3. When an outer plate 2 is used, I preferably render the pawl 17, on the inner clip 4, inoperative by unthreading the set screw 18 sufficiently to leave a clearance 30 between the head 31 of that pawl and the shoulder 32 on the clip rod 6, for a purpose to be more fully hereinafter described.

I employ the usual eccentric lock-up formed of a shaft 34 mounted in the lock-up plate 22, the eccentric end 35 of the shaft 34 being mounted in a shoe 36, mounted in a recess 37 in the end 38 of the hub of the plate cylinder 1. By placing the key 39 in the seat 40, formed for its reception in the end of the shaft 34, the lock-up plate 22 is caused to move to or from the plate cylinder to actuate the different clip rods 6, 6 to lock or unlock the different plates carried by the plate cylinder.

When the key 39 is operated, in the manner just described, to lock the outer printing plate 2 and the inner plate 28 to print a newspaper, for example, having seven columns, the parts will be in the position shown in Fig. 3, where the spring 24 is compressed between the end plate 25 and the shoulder 23 on the sleeve 20, thereby firmly but yieldingly pressing the non-circular clip rod 6 to the right and into the position shown in Fig. 3, the shoulder 42 on the clip rod 6 engaging with the head 10 of the pawl 9 on the movable clip 3. This transmits the locking spring pressure from the clip rod 6 to the movable clip 3, thence to the outer printing plate 2, and through that plate 2 to the inner clip 4, inner printing plate 28, and to fixed center clip 29.

It will be noted that in this position of the parts the set screw 18 has been so adjusted that there is a space 30 between the head 31 of the pawl 17 on the inner clip 4, and the shoulder 32 on the clip rod 6, so that as these two parts do not engage, the pawl 17 is practically inoperative in this locking position, thereby permitting the entire strain of the locking spring 24 to be transmitted through the outer and inner printing plates to the center fixed clip 29.

To release the printing plates 2 and 28 the eccentric lock-up is operated by the key 39 in the opposite direction to permit the lock-up plate 22 with its end plates 25 to move to the left of the position shown in Fig. 3 and into the position shown in Fig. 5, which is the unlocked position. This permits the outer and inner printing plates to be removed and replaced with other plates to print a newspaper, or other printed product, of the same width of sheet, here referred to, for purposes of description, as seven columns.

In unlocking the eccentric lock-up and with more particular reference to Fig. 5, it will be seen that when the spring 24 is released it will have a tendency to force the end plate 25 and the lock-up plate 22, on which it is mounted, so far to the left in Fig. 5, that the surface 44 on the lock-up plate 22 would engage with the surface 43 on the shoulder 23 of the sleeve or thimble 20, were it not prevented from doing so. To prevent these two surfaces 43 and 44 from contacting with each other, I mount the collar 27 on the sleeve 20, which collar passes freely in the opening 46 in the end plate 25. The coil spring 24 is sufficiently large that it not only engages with the interior surface 47 of the end plate 25, but also with the inner surface of the collar 45, when the parts are unlocked as shown in Fig. 5. This collar 27 is adjusted by the set screw 48 to a position on the sleeve so that it will engage the spring 24 before the spring can bring the surface 44 on the lock-up plate 22 into contact with the surface 43 on the sleeve 20, leaving a space or clearance 49 as shown in Fig. 5.

This is particularly desirable, for if these two surfaces 43 and 44 contacted with each other under the action of the spring 24, so much friction would be developed at this point that it would be difficult for a hand tool to operate the end 21 of the sleeve to adjust the sleeve 20 on the threaded end 19 of the clip rod 6. This separate adjustment of each clip rod 6 is desirable to secure an equal tension of all the clips on the printing plates. After the sleeves 20, 20 and clip rods 6, 6 are once adjusted they are substantially permanently fixed in proper posi-

tion to cooperate with the clips which are movable by hand along the clip rods for the different widths of sheet or number of columns to be printed.

With the clip rods 6 permanently adjusted, as shown for example in Fig. 3, and it is desired to print a newspaper, or other printed product, of a less number of columns, as for example six columns, all that is necessary is for the operator to lift the pawls 9 and 17 by their handles 11, 11, and slide the clips along the clip rods 6, from the position shown in Fig. 3, to that shown in Fig. 4, so that pawls 9 and 17 will be removed from the notches 7, 7 and relocated in the notches 8, 8, in the same clip rod 6, so as to hold the smaller outer plate 2 and inner plate 28 in the position shown in Fig. 4. This change can be made very quickly, so that plates having a different number of columns may be quickly locked by the lock-up plate 22 in the manner previously described. After printing from the plates having, for example, six columns, the plate cylinder can almost instantly be changed to print from plates of, for example, seven columns, by simply sliding the pawls 9 and 17 with their respective clips 3 and 4 back to their original predetermined locking or engaging surfaces 7, 7. While, of course, for purposes of description I have referred to a newspaper, or other printed product, of six and seven columns, it is, of course, to be understood, that by properly arranging the engaging surfaces 7, 7 and 8, 8 in the clip rods 6 that sheets of eight, seven or six columns may be printed, or that the columns may have different widths, as for example, a sheet of 8 columns 12 ems, and a sheet of 7 columns, 13 ems, all as previously pointed out.

When it is desired to operate the plate cylinder 1 without an outer plate 2, this can readily be done for the pressure of the lock-up spring 24 will be transmitted through the clip rod 6, which will cause the shoulder 32 of the clip rod 6 to bear directly against the head 31 of the pawl 17 when the eccentric lock-up is operated to lock the inner plate 28.

When the plate 28 is unlocked, the releasing surface 55 on the clip rod 6 will be brought into engagement with the cooperating surface 56 on the pawl 17, which will draw the inner clip 4 away from the inner plate 28, permitting that plate to be lifted off of the plate cylinder 1 without interference. Each set of locking or engaging surfaces 7, 7 and 8, 8 is provided with similar releasing surfaces 55, to cooperate with similar surfaces 56 on their respective cooperating pawls.

In the specification and claims, reference has been made to different number of columns or different column widths, as well as to different number of columns or width of sheet to be printed. It is to be understood that these terms are meant to, and do cover different lengths of stereotype plates regardless of the width of sheet, or the width of printed matter, or the number of columns. It is clear that you can print any number of columns with the same length plate and with the same width of printed matter and the same width of sheet by varying the widths of the columns. It is also possible to vary the width of the printed matter without varying the length of the stereotype plates or the width of the printed sheet. In such case the width of the margin would vary, as for example, by casting a blank margin on the end of the stereotype plates. By arranging the printed matter and blank margin on the stereotype castings, it would be possible to print on different widths of sheets without varying the length of the plates. Again stereotype plates are not always cast with the columns transverse to the exis of the printing cylinder. They are often cast with the columns running parallel with the axis of the cylinder. In such cases the width of the printed matter would become the length of the columns, and a shorter or longer column might necessitate a shorter or longer plate. All these uses are, and are meant to be, included in the claims.

The invention in its broader aspects is not limited to the specific mechanisms shown and described but departures may be made therefrom within the scope of the accompanying claims without departing from the principles of the invention and without sacrificing its chief advantages.

What I claim is:—

1. The combination of a quick lock-up for plate cylinders including a plate cylinder provided with clip locking means properly spaced for papers having different number of columns, and clips having means to cooperate with said clip locking means.

2. The combination of a quick lock-up for plate cylinders including a plate cylinder provided with clip locking means properly spaced for papers having different number of columns, means to adjust the clip locking means, and clips having means to cooperate with said clip locking means.

3. The combination of a quick lock-up for plate cylinders including a plate cylinder provided with locking means properly spaced for papers having different number of columns, clips having means to cooperate with said locking means, and means to lock said clips to said locking means in position to secure a plate.

4. The combination of a quick lock-up for plate cylinders including a plate cylinder provided with locking means properly spaced for papers having different number

of columns, means to adjust the clip locking means, clips having means to cooperate with said locking means, and means to lock said clips to said locking means in position to secure a plate.

5. In a quick lock-up for plate cylinders, the combination of a plate cylinder, a clip rod having different locking surfaces to correspond with different number of columns or width of sheet to be printed, clips, means on the clips to cooperate with the locking surfaces on the clip rod, and means to lock the clips in position.

6. In a quick lock-up for plate cylinders, the combination of a plate cylinder, a clip rod provided with different locking surfaces properly arranged for papers of different number of columns or width of sheet, clips, means to secure the clips in the proper locking position on the clip rod for the particular number of columns to be printed, and means to lock the clips and clip rod in position to secure a plate.

7. In a quick lock-up for plate cylinders, the combination of a plate cylinder, a clip rod provided with different locking surfaces properly arranged for papers of different number of columns, or width of sheet, clips, means to secure the clips in the proper locking position on the clip rod for the particular number of columns to be printed, means to adjust the clip rod, and means to lock the clips and clip rod in position to secure a plate.

8. The combination in a quick lock-up for plate cylinders, of a plate cylinder, a plurality of clip rods having different locking surfaces to correspond with different number of columns or width of sheet to be printed, a plurality of clips, locking means on the clips to cooperate with the different locking surfaces on the clip rods for different number of columns or width of sheet to be printed, and a lock-up plate to lock the clip rods and clips.

9. The combination in a quick lock-up for plate cylinders, of a plate cylinder, a plurality of clip rods having different locking surfaces to correspond with different number of columns or width of sheet to be printed, a plurality of clips, pivoted locking means on the clips to cooperate with the different locking surfaces on the clip rods for different number of columns or width of sheet to be printed, and a lock-up plate to lock the clip rods and clips.

10. The combination in a quick lock-up for plate cylinders, of a plate cylinder, a plurality of clip rods having different locking surfaces to correspond with different number of columns or width of sheet, to be printed, means to adjust the clip rods, a plurality of clips, locking means on the clips to cooperate with the different locking surfaces on the clip rods for different number of columns or width of sheet to be printed, and a lock-up plate to lock the clip rods and clips.

11. A new article of manufacture for printing presses comprising an angular clip rod provided with different locking surfaces to correspond to different number of columns or width of sheet to be printed, said locking surfaces adapted to cooperate with clips.

12. A new article of manufacture comprising a clip for a plate cylinder printing press provided with pivoted locking means, said pivoted locking means having a handle moving pivotally therewith.

13. A new article of manufacture comprising a clip for a plate cylinder printing press provided with a locking dog pivoted to fall freely into engagement with locking surfaces carried by the plate cylinder.

14. A new article of manufacture comprising a clip for a plate cylinder printing press provided with a locking dog to engage locking surfaces carried by the plate cylinder, said locking dog being provided with a handle for manual manipulation.

15. A new article of manufacture comprising a clip for a plate cylinder printing press provided with pivoted locking means, and means to adjust the pivoted locking means with relation to the clip.

16. A new article of manufacture comprising a clip for a plate cylinder printing press provided with a pivoted locking dog to engage locking surfaces carried by the plate cylinder, the pivot of said locking dog being adjustable.

17. The combination in a clip for a plate cylinder printing press provided with pivoting slots for a pivoted locking pawl, a pivoted locking pawl pivoted in said slots, and means to vary the position of said pivoted locking pawl along said pivoting slots.

18. The combination in a clip for a plate cylinder printing press provided with pivoting slots for a pivoted locking pawl, a pivoted locking pawl pivoted in said slots, and a set screw to vary the position of said pivoted locking pawl along said pivoting slots.

19. In a quick lock-up for plate cylinders, the combination of a plate cylinder, a plurality of clip rods having different sets of locking surfaces for papers of different number of columns or width of sheet to be printed, clips, locking means between the clips and the locking surfaces on the clip rods, a lock-up plate, and means to independently adjust each clip rod.

20. In a quick lock-up for plate cylinders, the combination of a plate cylinder, a plurality of clip rods having different sets of

locking surfaces for papers of different number of columns or width of sheet to be printed, said rods having screw-threaded ends, clips, locking means between the clips and the locking surfaces on the clip rods, a sleeve secured on the end of each clip rod, a lock-up plate, and a spring mounted between the lock-up plate and the sleeve.

21. In a quick lock-up for plate cylinders, the combination of a plate cylinder, a plurality of clip rods having different sets of locking surfaces for papers of different number of columns or width of sheet to be printed, outer and inner clips, provided with locking means to cooperate with the locking surfaces on the clip rods, and means to render the locking means on the inner clips inoperative when an outer printing plate is mounted on the plate cylinder.

22. In a quick lock-up for plate cylinders, the combination of a plate cylinder, a plurality of clip rods having different sets of locking surfaces for papers of different number of columns or width of sheet to be printed, outer and inner clips, provided with locking means to cooperate with the locking surfaces on the clip rods, and adjustable means to render the locking means on the inner clips inoperative when an outer printing plate is mounted on the plate cylinder.

23. In a quick lock-up for plate cylinders, the combination of a plate cylinder, a plurality of clip rods having different sets of locking surfaces for papers of different number of columns or width of sheet to be printed, outer clips provided with locking means to cooperate with those on the clip rods, an inner clip provided with adjustable locking means to cooperate with the locking surfaces on the clip rod when no outer printing plate is used on the plate cylinder to secure the inner printing plate to the cylinder, and when an outer printing plate is used adapted to be adjusted to permit the inner printing plate to be clamped through the outer printing plate.

24. In a quick lock-up for plate cylinders, the combination of a plate cylinder, a plurality of clip rods having different sets of locking surfaces for papers of different number of columns or width of sheet to be printed, outer clips provided with locking means to cooperate with those on the clip rods, an inner clip provided with adjustable locking means, including a pivoted member and a set screw, to cooperate with the locking surfaces on the clip rod when no outer printing plate is used on the plate cylinder to secure the inner printing plate to the cylinder, and when an outer printing plate is used adapted to be adjusted to permit the inner printing plate to be clamped through the outer printing plate.

25. A new article of manufacture for printing presses comprising an angular clip rod provided with different locking surfaces to correspond to different number of columns or width of sheet to be printed, said locking surfaces adapted to cooperate with clips, and an adjustable sleeve mounted on the clip rod.

26. The combination in a quick lock-up for plate cylinders, of a plate cylinder, a plurality of non-circular clip rods having different locking surfaces to correspond with different number of columns or width of sheet to be printed, a plurality of clips, locking means on the clips to cooperate with the different locking surfaces on the clip rods, said clip rods and locking means on the clips having cooperating releasing members to release the clips from the plates when the plates are unlocked, and a lock-up plate to lock the clip rods and clips.

In testimony whereof, I have signed my name to this specification.

ROBERT A. BELL.