Feb. 7, 1928. 1,658,034

C. S. CRAFTS

QUICK LOCK-UP FOR PLATE CYLINDERS

Filed Dec. 4, 1925 3 Sheets-Sheet 1

Fig 1

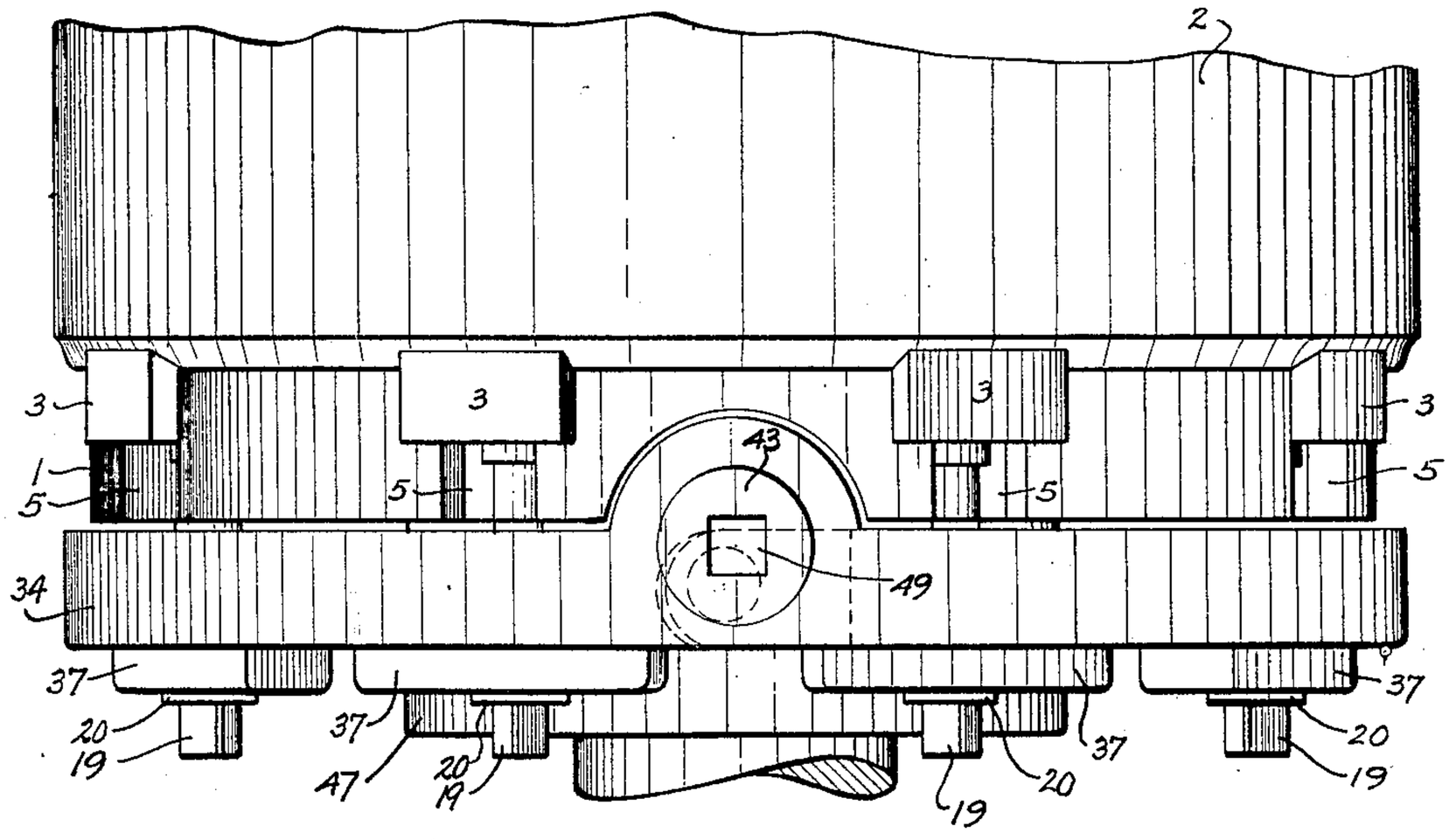
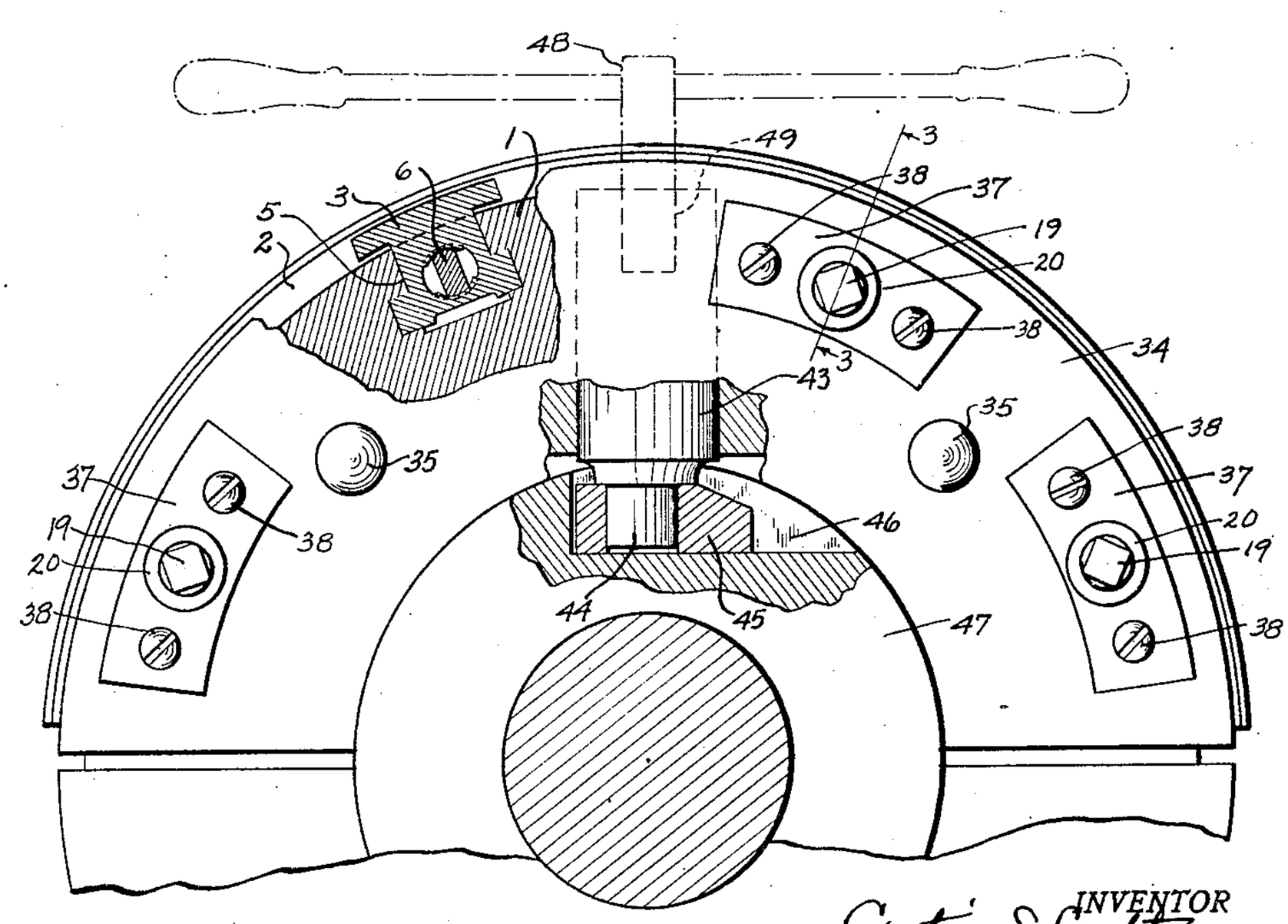


Fig 2



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QUICK LOCK-UP FOR PLATE CYLINDERS

Filed Dec. 4, 1925 3 Sheets-Sheet 2

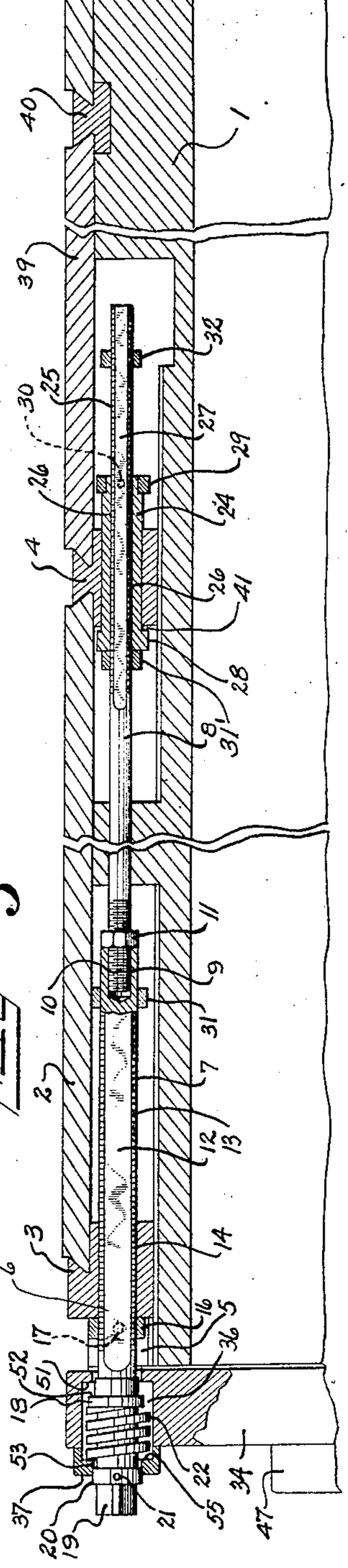

FIG. 3

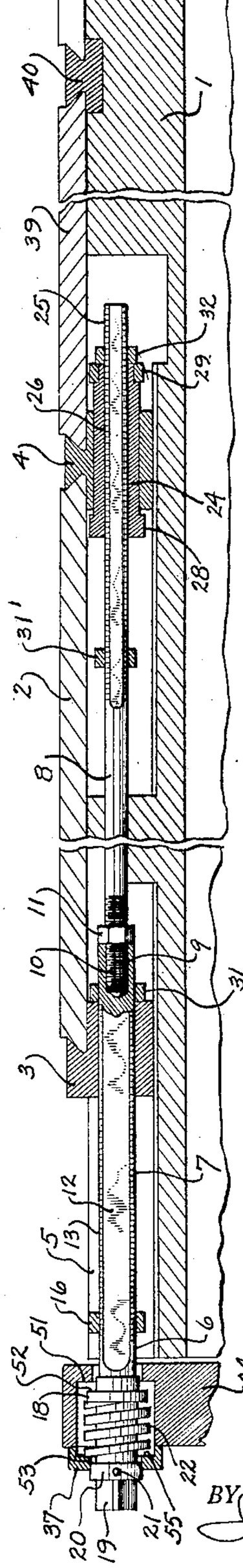

FIG. 4

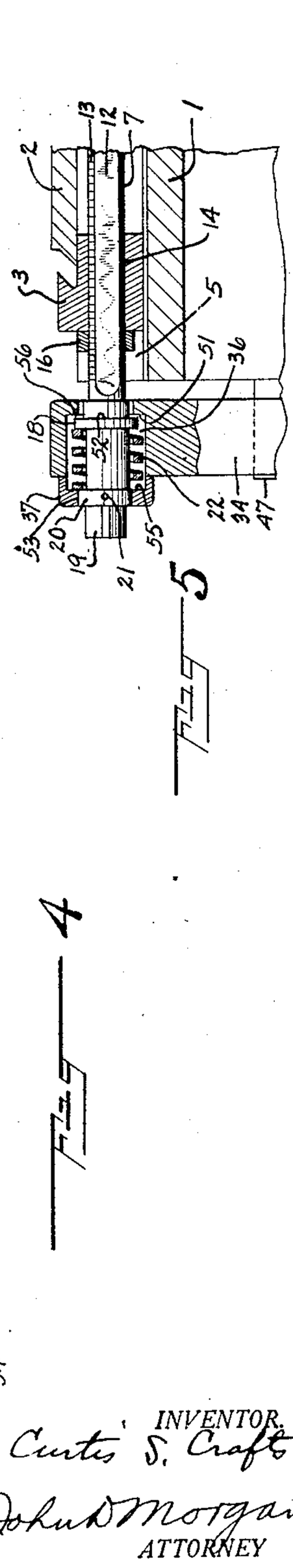

FIG. 5

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Filed Dec. 4, 1925 3 Sheets-Sheet 3

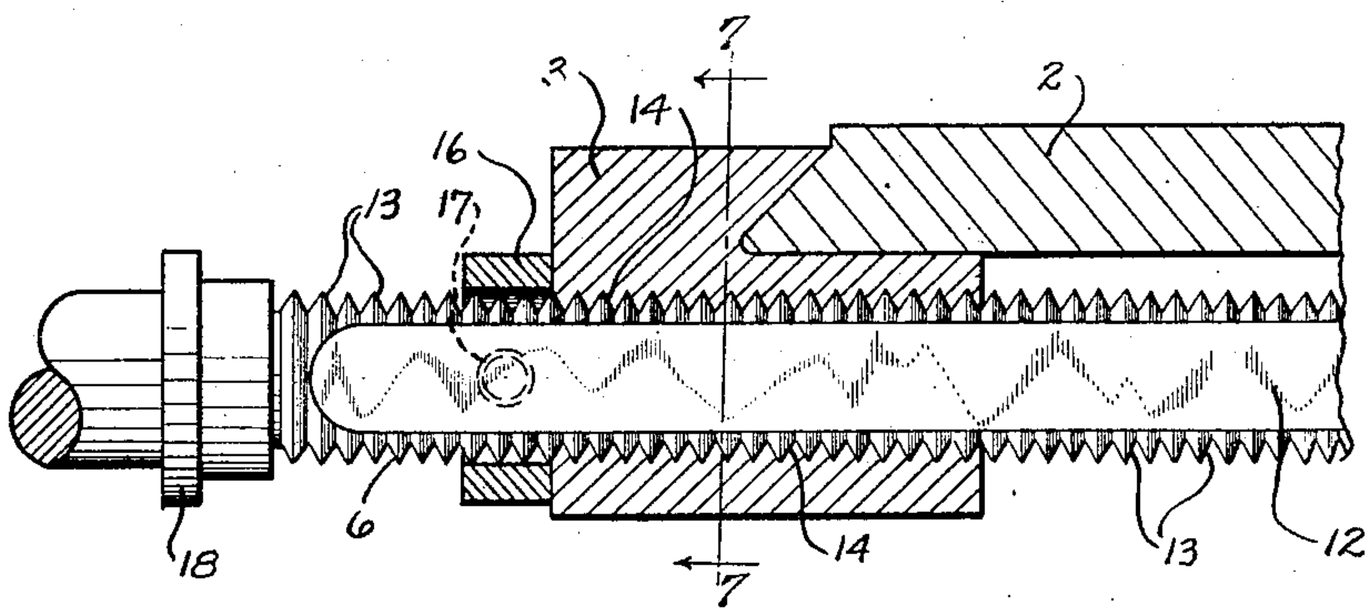

Fig 6

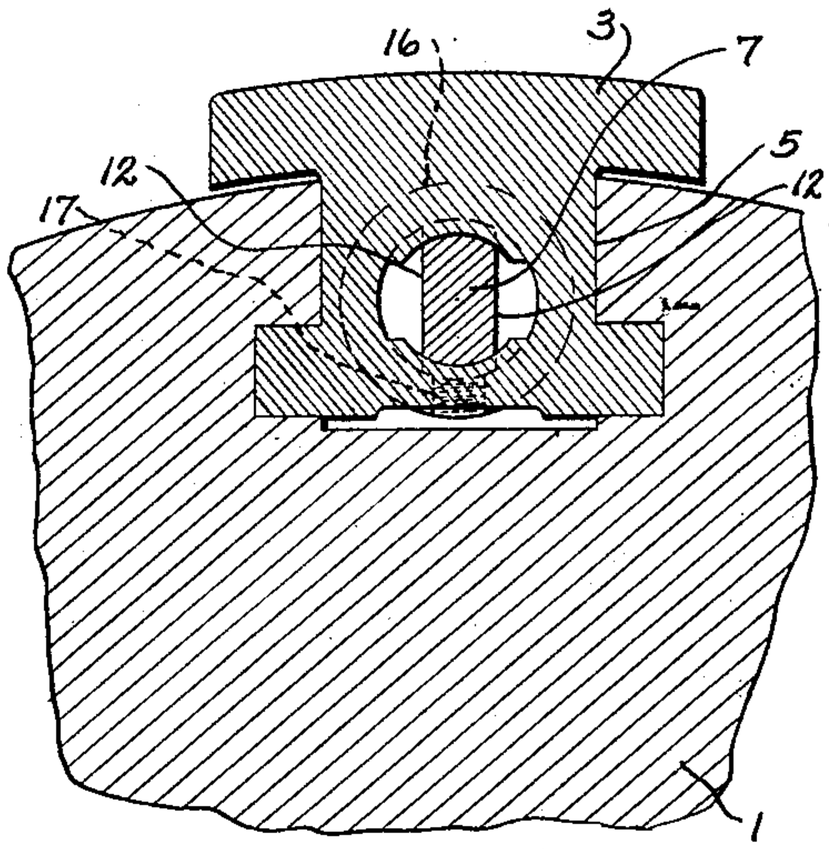

Fig 7

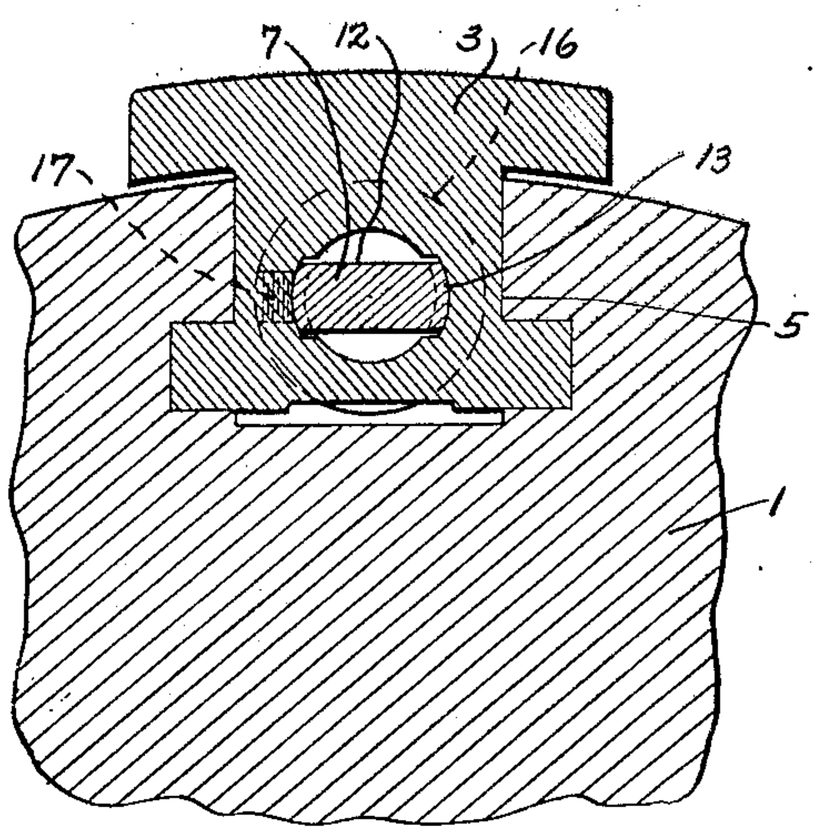

Fig 8

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BY John D Morgan

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Patented Feb. 7, 1928. 1,658,034

UNITED STATES PATENT OFFICE.

CURTIS S. CRAFTS, OF OAK PARK, ILLINOIS, ASSIGNOR TO GOSS PRINTING PRESS COMPANY, A CORPORATION OF ILLINOIS.

QUICK LOCK-UP FOR PLATE CYLINDERS.

Application filed December 4, 1925. Serial No. 73,115.

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 through the outer clip with the clip rod turned into the fixed position;

Fig. 7 is a detail vertical section on the line 7—7 of Fig. 5;

Fig. 8 is a sectional view through the outer clip, similar to Fig. 7, but showing the clip rod turned to permit the clips to slide on the clip rod.

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 adjustments for different column widths; for example for a sheet of 8 column, 12 ems, to a sheet of 8 column 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.

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. This clip rod 6 is preferably, for purpose of convenience in manufacture, formed of two parts 7 and 8. The end of the portion 7 is provided with female threads 9 to cooperate with the male threads 10 on the portion 8. A lock nut 11 is mounted on the threads 10.

The portion 7 of the clip rod 6 has its opposite sides milled off to form the flat sides 12, 12; it is provided, on a portion of its exterior, with locking means in the form of mutilated substantially parallel ribs 13, 13 to engage with the cooperating locking mutilated grooves 14, 14 in the outer clip 3. A check nut or stop 16 is mounted on the portion 7 of the clip rod 6 and is held in its adjusted position by the set screw 17.

The portion 7 of the clip rod is provided with a shoulder 18, the end 19 being preferably formed square, or non-circular, to be engaged by a spanner, monkey wrench, or other tool. Near the squared end 19, I se-

cure a collar 20 by a set screw 21 to engage with the coil spring 22 in the unlocked position of the clip rod, as will be more fully hereinafter described.

The inner clip 4 is loosely mounted on the round sleeve 24, which in turn is mounted on portion 8 of the clip rod 6. This portion of the clip rod is provided with locking means in the form of mutilated substantially parallel ribs 25, 25, cooperating with locking mutilated interior substantially parallel grooves 26, 26 on the sleeve 24. The portion 8 of the clip rod 6, is milled off on either side to form the two flat sides 27, 27.

Any known or other suitable means may be provided for preventing rotation of the sleeve 24 in order to keep the grooves on the sleeve and on the rod 27 in proper operative relation, such as a screw working in a slot, a spline or other known device.

The sleeve 24 is provided with an integral shoulder 28, and with a collar 29 held by a set screw 30. The shoulder 28 and collar 29 limit the travel of the inner clip 4 on the sleeve 24.

Check nuts or stops 16 and 31′ are spaced and secured on the clip rod 6 for a paper or other printed product of, for example, 7 columns. Check nuts or stops 31 and 32 are secured to the different members of the clip rod 6 for a different number of columns, for example, a six column newspaper or other printed product.

The lock-up plate 34, supported by the guide studs 35, 35 is provided with a recess 36 to receive the ends of the clip rod 6, and the coil spring 22 which bears against the shoulder 18 on the clip rod 6 and one of the end plates 37, which plates are secured to the face of the lock-up plate 34 by the screws 38, 38, there being, in the form shown, a separate end plate for each clip rod 6.

Assuming that the plate cylinder 1 is to print from an inner plate 39, as well as from an outer printing plate 2, and that the newspaper, or other printed product, is, for example, to have seven columns, my lock-up will then be in the position shown in Fig. 3, in which the inner plate 39 cooperates with the fixed center clip 40 and with the movable inner clip 4 and the outer clip 3. When an outer plate 2 is used I preferably adjust the check nut or stop 31′ on the member 8 to leave a space 41 between the shoulder 28 on the sleeve 24 and the inner clip 4, see Fig. 3, for a purpose to be more fully hereinafter described.

I employ the usual eccentric lock-up formed of a shaft 43 mounted in the lock-up plate 34, the eccentric end 44 of the shaft 43 being mounted in a shoe 45, mounted in a recess 46 in the end 47 of the hub of the plate cylinder 1. By placing the key 48 in the seat 49, formed for its reception in the end of the shaft 43, the lock-up plate 34 is caused to move to or from the plate cylinder to actuate the different clip rods 6, 6 to lock or unlock the different printing plates carried by the plate cylinder.

When the key 48 is operated, in the manner just described, to lock the outer printing plate 2 and the inner plate 39 to print a newspaper, for example, having seven columns, the parts will be in the position shown in Fig. 3, where the spring 22 is compressed between the end plate 37 and the shoulder 18 on the clip rod 6, thereby firmly but yieldingly pressing the clip rod 6 to the right, causing the locking mutilated ribs 13, 13 on the portion 7 of the clip rod 6 to force the outer clip 3, having the cooperating locking grooves 14, 14 to move to the right of Fig. 3 and transmit the locking spring pressure of the spring 22 through the outer clip 3, outer printing plate 2, inner clip 4, inner printing plate 39, and thence to the fixed center clip 40.

It will be noted that in this position of the parts that the space 41 between the shoulder 28 on the sleeve 24 and the inner clip 4 will prevent the portion 8 of the clip rod 6 transmitting any pressure through the check nut or stop 31 to the inner clip 4, thereby permitting the entire strain of the locking spring 22 to be transmitted through the outer and inner printing plates to the center fixed clip 40.

To release the printing plates 2 and 39 the eccentric lock-up is operated by the key 48 in the opposite direction to permit the lock-up plate 34, with its end plates 37, 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 22 is released it will have a tendency to force the end plate 37 and the lock-up plate 34, on which it is mounted, so far to the left in Fig. 5, that the surface 51 on the lock-up plate 34 would engage with the surface 52 on the shoulder 18, were it not prevented from doing so. To prevent these two surfaces 52 and 51 from contacting with each other, I mount the collar 20 on the clip rod 6, which collar passes freely in the opening 53 in the end plate 37. The coil spring 22 is sufficiently large that it not only engages with the interior surface 55 of the end plate 37, but also with the inner surface of the collar 20, when the parts are unlocked as shown in Fig. 5. This collar 20 is adjusted by the set screw 21 to a position on the clip rod 6 so that it will engage the spring 22

before the spring can bring the surface 51 on the lock-up plate 37 into contact with the surface 52 on the shoulder 18, leaving a space or clearance 56 as shown in Fig. 5.

This is particularly desirable, for if these two surfaces 51 and 52 contacted with each other under the action of the spring 22, so much friction would be developed at this point that it would be difficult for a hand tool to operate the clip rod 6.

With the parts in their unlocked position (Fig. 5), when 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 turn the square end 19 of the clip rod a quarter of a turn to free the parallel mutilated locking ribs 13, 13 on the clip rod 6 from the complementary mutilated locking grooves 14, 14 on the outer clips 3. This quarter rotation, at the same time, disengages the mutilated locking ribs 25, 25 on the portion 8 of the clip rod 6 from the complementary mutilated locking grooves 26, 26 in the sleeve 24 on which sleeve the inner clip is loosely mounted.

The operator can then slide by hand the outer clip 3, until it engages the check nut or stop 31, which has previously been adjusted for a six column newspaper, or other printed product; or adjusted for any other desired width of sheet. The sleeve 24 is then moved along the portion 8 of the clip rod 6 until the end of the sleeve engages with the check nut or stop 32. This check nut or stop 32 has been previously adjusted for six columns, or the desired width of sheet.

The end 19 of the clip rod 6 is then turned back a quarter turn into its original position when the mutilated parallel ribs 13, 13 on the clip rod will engage with their complementary mutilated grooves 14, 14 in the outer clip 3 and the mutilated ribs 25, 25 will engage with their complementary mutilated grooves 26, 26 in the sleeve 24.

The smaller printing plates are then located on the plate cylinder. The lock-up is then operated to lock up these smaller printing plates of six columns, or any other desired width of sheet to be printed.

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 22 will be transmitted through the clip rod 6 to the check nut or stop 30, shoulder 28, inner clip 4, and thence to the center clip 40. With no outer plate 2, the space 41 would be eliminated by movement of the clip rod 6 to the right of the position shown in Fig. 3. When the plates are unlocked by the eccentric lock-up the cooperating mutilated ribs 25, 25 on the clip member 8 of the clip rod 6, cooperating with the mutilated grooves 26, 26 on the sleeve 24 will cause the collar 29 to engage with the inner clip 4 and move it to the left of the position shown in Fig. 3, and away from the inner printing plate 39, so that the inner printing plate can be lifted off of the plate cylinder 1 without interference from the inner clip 4. The mutilated ribs 13, 13 on the portion 7 of the clip rod 6 cooperating with the mutilated grooves 14, 14 in the outer clip 3 will release the outer clip 3 from the outer printing plate 2 so that that printing plate can be lifted from the plate cylinder 1.

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 any number of columns can be printed with the same length plate and with the same width of printed matter and the same width of sheet by varying 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 axis 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 clip rod provided with locking means to engage with locking means carried by a clip, a clip provided with locking means to engage with the locking means on the clip rod, said locking means being engaged and disengaged on a partial rotation of the clip rod to permit the clip to be properly spaced for papers or other printed products having different number of columns or width of sheet, a second

clip associated with said clip rod, and means for equalizing the locking pressure of said clips.

2. The combination of a quick lock-up for plate cylinders including a clip rod provided with locking means to engage with locking means carried by a clip, a clip provided with locking means to engage with the locking means on the clip rod, said locking means being engaged and disengaged on a partial rotation of the clip rod to permit the clip to be properly spaced for papers or other printed products having different number of columns or width of sheet, and stops to properly position the clip for different number of columns, or width of sheet.

3. The combination of a quick lock-up for plate cylinders including a clip rod provided with locking means to engage with locking means carried by a clip, a clip provided with locking means to engage with the locking means on the clip rod, said locking means being engaged and disengaged on a partial rotation of the clip rod to permit the clip to be properly spaced for papers or other printed products having different number of columns or width of sheet, and check nuts to properly position the clip for different number of columns, or width of sheet.

4. The combination in a plate cylinder printing press of a quick lock-up including a clip, a clip rod, and locking means between the clip and clip rod operated by a partial rotation of one of said members, a second clip associated with said clip rod, and means for equalizing the locking pressure of said clips.

5. The combination in a plate cylinder printing press of a quick lock-up including a clip, a clip rod, and locking means between the clip and clip rod operated by a partial rotation of the clip rod, a second clip associated with said clip rod, and means associated with said clip rod for equalizing the locking pressure of said clips.

6. The combination in a plate cylinder printing press of a quick lock-up including a clip, a clip rod, and locking means between the clip and clip rod operated by a partial rotation of one of said members, and stops to properly position the clip for different number of columns or width of sheet to be printed.

7. The combination in a plate cylinder printing press of a quick lock-up including a clip, a clip rod, and locking means between the clip and clip rod operated by a partial rotation of one of said members, and check nuts to properly position the clip for different number of columns or width of sheet to be printed.

8. The combination of a quick lock-up for plate cylinders including a clip rod provided with locking means to engage with locking means carried by a clip, a clip provided with locking means to engage with the locking means on the clip rod, said locking means being engaged and disengaged on a partial rotation of the clip rod to permit the clip to be properly spaced for papers or other printed products having different number of columns or width of sheet, a lock-up plate to lock the clip rod and clip, and a second clip slidably associated with said clip rod.

9. The combination in a plate cylinder printing press of a quick lock-up including a clip, a clip rod, and locking means between the clip and clip rod operated by a partial rotation of one of said members, a second clip, and means including a lock-up plate for holding said clips in locking position with equal pressure.

10. The combination in a plate cylinder printing press of a quick lock-up including a clip, a clip rod, locking means between the clip and clip rod operated by a partial rotation of the clip rod, a second clip, and yieldable means associated with said clip rod for holding said clips in locking position and equalizing their locking pressure.

11. The combination in a plate cylinder printing press of a quick lock-up including a clip, a clip rod, locking means between the clip and clip rod operated by a partial rotation of one of said members, stops to properly position the clip for different number of columns or width of sheet to be printed, and a lock-up plate to lock the clip rod and clip.

12. The combination in a plate cylinder of a quick lock-up including an outer clip, an inner clip, a clip rod and locking means between the clip rod and the inner and outer clips operated by a partial rotation of the clip rod.

13. The combination in a plate cylinder of a quick lock-up including an outer clip, an inner clip, a clip rod and locking means between the clip rod and the inner and outer clips operated by a partial rotation of the clip rod, and stops to properly position the inner and outer clips for different number of columns or width of sheet to be printed.

14. The combination in a plate cylinder of a quick lock-up including an outer clip, an inner clip, a clip rod and locking means between the clip rod and the inner and outer clips operated by a partial rotation of the clip rod, and a lock-up plate to lock the clip rod, clips and printing plates.

15. The combination in a plate cylinder of a quick lock-up including an outer clip, an inner clip, a clip rod and locking means between the clip rod and the inner and outer clips operated by a partial rotation of the clip rod, and stops to properly position the inner and outer clips for different number

of columns or width of sheet to be printed, and a lock-up plate to lock the clip rod, clips, and printing plates.

16. The combination of a quick lock-up for plate cylinders including a clip rod and clip provided with interlocking mutilated ribs and grooves to permit the clip to be properly spaced for papers or other printed products having a different number of columns or width of sheet.

17. The combination of a quick lock-up for plate cylinders including a clip rod and clip provided with interlocking mutilated ribs and grooves to permit the clip to be properly spaced for papers or other printed products having a different number of columns or width of sheet, and stops to properly position the clip for the different number of columns or width of sheet to be printed.

18. The combination of a quick lock-up for plate cylinders including a clip rod and clip provided with interlocking mutilated ribs and grooves to permit the clip to be properly spaced for papers or other printed products having a different number of columns or width of sheet, a second clip, means for equalizing the locking pressure of said clips, and a lock-up plate to lock the clip rod and clips to a printing plate.

19. The combination of a quick lock-up for plate cylinders including a clip rod, an outer clip, said rod and clip being provided with interlocking mutilated ribs and grooves, an inner clip, a sleeve on which the inner clip is mounted, and interlocking mutilated ribs and grooves between the clip rod and the sleeve to permit the clip to be properly spaced for papers or other printed products having different number of columns or width of sheet.

20. The combination of a quick lock-up for plate cylinders including a clip rod, an outer clip, said rod and clip being provided with interlocking mutilated ribs and grooves, an inner clip, a sleeve on which the inner clip is mounted, and interlocking mutilated ribs and grooves between the clip rod and the sleeve to permit the clip to be properly spaced for papers or other printed products having different number of columns or width of sheet, and stops to properly position the outer clip and the sleeve for different number of columns or width of sheet to be printed.

21. The combination of a quick lock-up for plate cylinders including a clip rod, an outer clip, said rod and clip being provided with interlocking mutilated ribs and grooves, an inner clip, a sleeve on which the inner clip is mounted, and interlocking mutilated ribs and grooves between the clip rod and the sleeve to permit the clip to be properly spaced for papers or other printed products having different number of columns or width of sheet and a lock-up plate.

22. The combination of a quick lock-up for plate cylinders including a clip rod, an outer clip, said rod and clip being provided with interlocking mutilated ribs and grooves, an inner clip, a sleeve on which the inner clip is mounted, interlocking mutilated ribs and grooves between the clip rod and the sleeve to permit the clip to be properly spaced for papers or other printed products having different number of columns or width of sheet, stops to properly position the outer clip and the sleeve for different number of columns or width of sheet to be printed, and a lock-up plate.

23. The combination in a plate printing cylinder of an inner clip loosely mounted on a sleeve, a sleeve, a clip rod and locking members on the sleeve and clip rod operated by a partial rotation of one of the members.

24. The combination in a plate printing cylinder of an inner clip loosely mounted on a sleeve, a sleeve, a clip rod and locking members on the sleeves and clip rod operated by a partial rotation of the clip rod.

25. The combination in a plate printing cylinder of an inner clip loosely mounted on a sleeve, a sleeve, a clip rod and mutilated ribs and grooves between the clip rod and sleeve.

26. The combination of a quick lock-up for plate cylinders including a clip rod, an outer clip, means to lock the outer clip to the clip rod, an inner clip, means to lock the inner clip to the clip rod when no outer printing plate is used, said locking means being inoperative when an outer printing plate is employed.

27. The combination of a quick lock-up for plate cylinders including a clip rod, an outer clip, means to lock the outer clip to the clip rod, an inner clip, means to lock the inner clip to the clip rod when no outer printing plate is used, said locking means being inoperative when an outer printing plate is employed, and a lock-up plate.

28. The combination of a quick lock-up for plate cylinders including a clip rod, an outer clip, means to lock the outer clip to the clip rod, an inner clip, means to lock the inner clip to the clip rod when no outer printing plate is used, said locking means being inoperative when an outer printing plate is employed, stops to properly position the inner and outer clips for different number of columns or width of sheet to be printed, and a lock-up plate.

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

CURTIS S. CRAFTS.