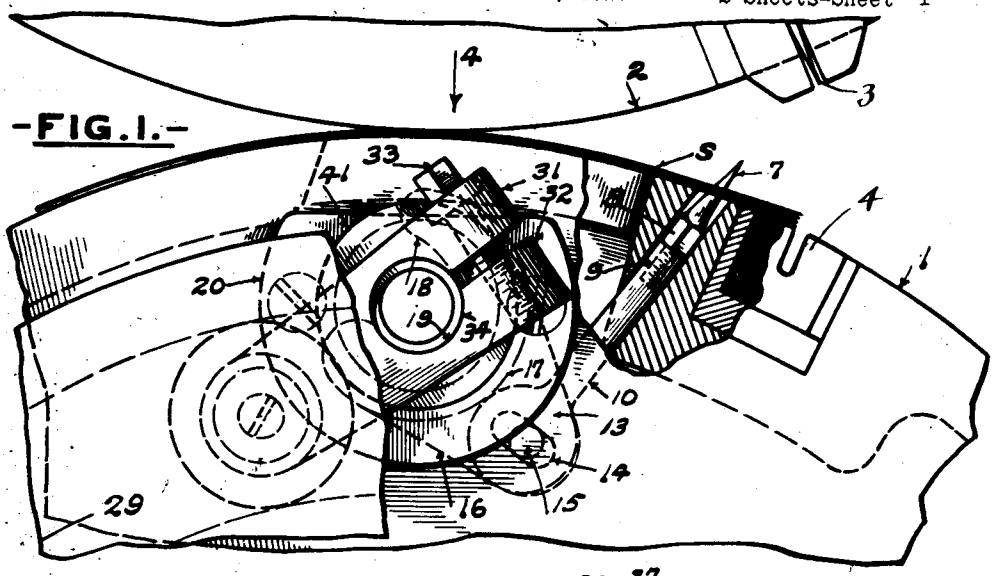
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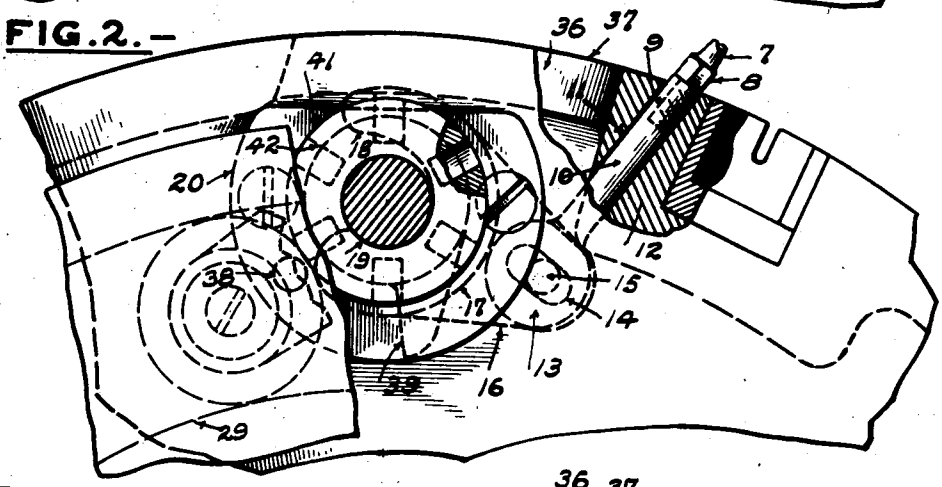
PIN ADJUSTING MECHANISM FOR FOLDING CYLINDERS

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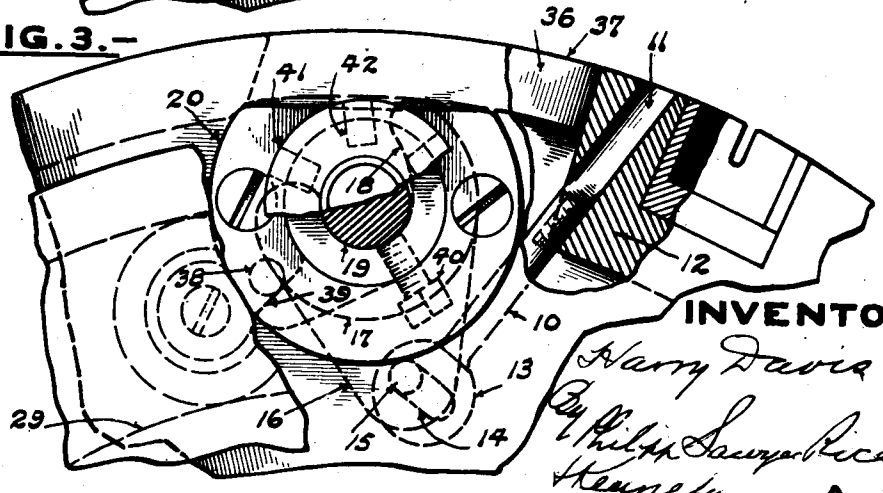
-FIG. 1.-



-FIG. 2.-



-FIG. 3.-



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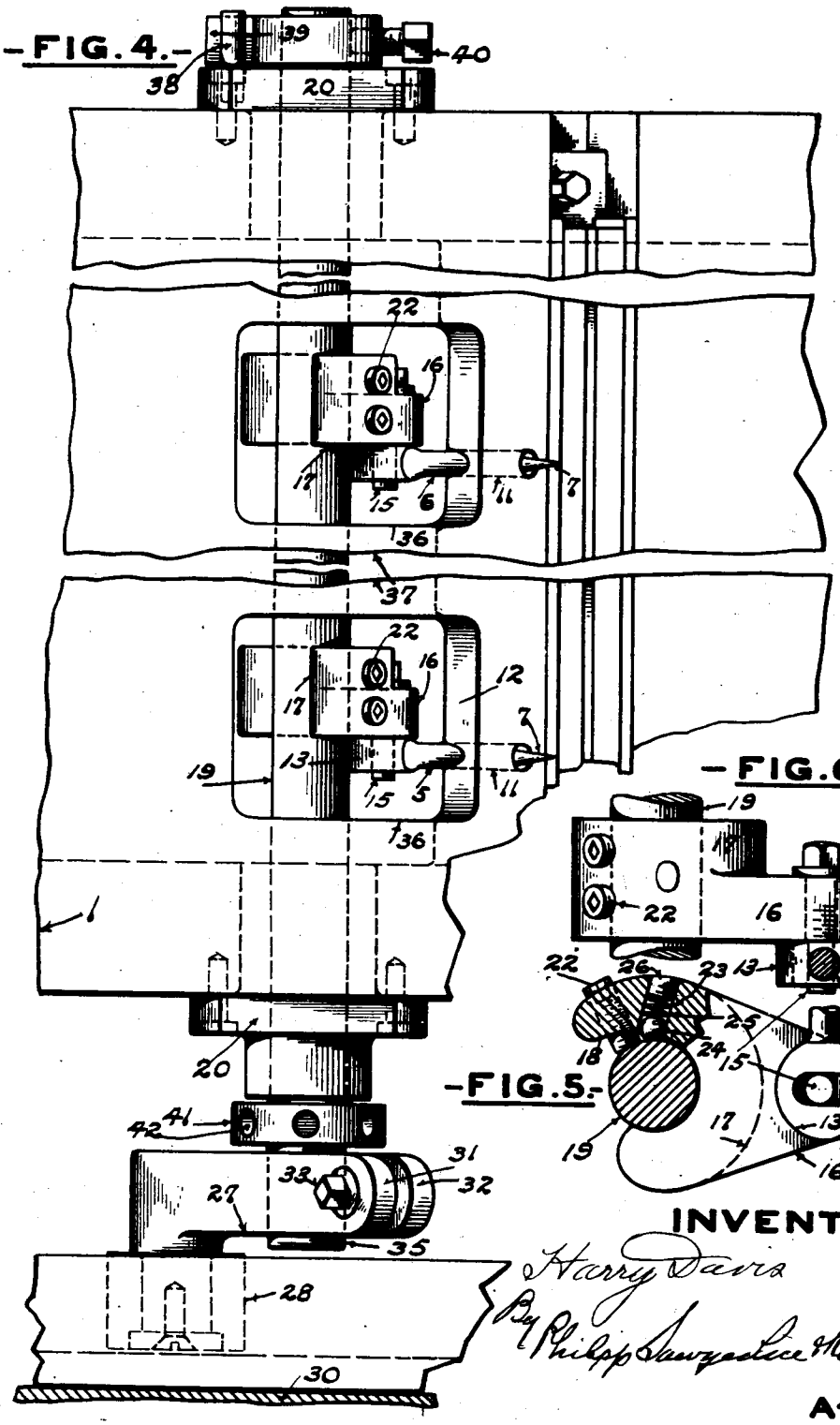
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PIN ADJUSTING MECHANISM FOR FOLDING CYLINDERS

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-FIG. 4.-



-FIG. 6.-

-FIG. 5.-

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Patented May 21, 1929. 1,713,644

UNITED STATES PATENT OFFICE.

HARRY DAVIS, OF ST. ALBANS, NEW YORK, ASSIGNOR TO R. HOE & CO., INC., OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

PIN-ADJUSTING MECHANISM FOR FOLDING CYLINDERS.

Application filed June 18, 1927. Serial No. 199,640.

This invention relates to certain improvements in folding cylinders used in rotary printing machines, and particularly to the mechanism for actuating the sheet taking pins which are used with such cylinders.

It is the especial object of the present invention to provide an improved arrangement for mounting and operating the pins and pin holders so that the pin points are readily accessible from outside the cylinder, so that they may be more quickly and readily removed and replaced than is the case in prior constructions.

It is a further object of the invention to provide an improved construction for mounting and operating the pin holders so that the holders may be readily removed from the cylinder without the necessity of removing or disconnecting any cooperating parts.

A further object of the invention is to provide an improved construction for mounting and operating a plurality of pin holders arranged in line across the cylinder, whereby all the holders may be simultaneously adjusted.

A further object of the invention is to provide certain improvements in the details of the mounting of the pin holders so that they can be readily adjusted individually.

With these and other objects not specifically referred to in view, the invention consists in certain novel parts, arrangements and combinations which will be fully described in connection with the accompanying drawings and the novel features pointed out in the claims hereunto annexed.

In these drawings,—

Figure 1 is a detail view, partly in section and partly broken away, of a collecting cylinder embodying the invention, showing the parts in the position they occupy when the pins are engaging the sheets;

Figure 2 is a view similar to Figure 1, with certain parts being omitted, showing the pin holders projected beyond the surface of the cylinder so that the pins may be readily removed from the holders;

Figure 3 is a view similar to Figure 2 showing the pins removed from the holders and the holders retracted so that they can be removed from the cylinder;

Figure 4 is a plan view of the construction shown in Figure 1, looking toward arrow 4 of that figure;

Figure 5 is a detail sectional view of one of the pin holder arms, and

Figure 6 is a top view of the construction shown in Figure 5.

Referring now to these drawings, the mechanism selected to illustrate the invention is a collecting and folding cylinder, though it will be understood that as to certain of its features the invention is intended for and may be used in other mechanisms and in other relations. There is shown a collecting and folding cylinder 1 which is mounted on a shaft, not shown, and driven in any usual or desired manner. In the particular construction illustrated, this cylinder 1 cooperates with a cutting cylinder 2 having a cutting knife 3 which cooperates with the usual cutting block 4 mounted in the wall of the cylinder 1.

In accordance with the invention, the cylinder 1 is provided with sheet taking pins and in the preferred construction there are a plurality of these pins mounted in line widthwise of the cylinder, two such pins 5, 6 (see Figure 4) being shown. The construction and the mounting of each of these pins are the same, and a description of one will suffice for all. As illustrated, each pin includes a pin point 7 which engages the sheets indicated by the letter S. This pin point has a squared shank 8, for the reception of a suitable tool, and a threaded end 9 which is threaded into a socket in a pin holder 10. This pin holder 10 has a reciprocating movement in a bore, indicated at 11, in a part 12 of the cylinder wall, thus forming a bearing for the holder. It will be observed that the bearing for the holder thus formed is of substantial length, thus affording an efficient support for the holders during their reciprocating movements.

In accordance with the invention, these holders are mounted and operated so that they can be protruded a sufficient distance to enable the pin points to be readily removed from outside the portion 12 of the cylinder wall by means of a suitable tool which will engage the squared portion 8 of the pin shank.

While these means may be varied somewhat in construction, in the particular construction illustrated the pin holder is provided with an enlarged end or head 13, which is provided with a slot 14. This slot engages a pin 15 which is carried in a hole in the end of an arm 16. This arm 16 is formed with a hub 17 having an open sided recess 18, into which fits an operating shaft 19 which is supported in a bearing 20 secured outside the cylinder wall. The arms 16 are held fast on shaft 19 in any suitable manner, as by set screws 22. In the best constructions, means are provided for frictionally holding the arms on the shaft so that the arm will stay in the position in which it is placed on the shaft before it is set up by the set screws 22, so that where a plurality of these arms are provided on a shaft they can be easily and quickly adjusted as desired.

While these means may vary somewhat in character, in the particular construction illustrated the hub 17 of the arm 16 is provided with a bore 23 (see Figure 5) in which is a retaining device in the form of a ball 24 backed up by a spring 25, the parts being held in position by a plug 26. With this construction it will be seen that the set screws 22 being loosened the arms may be snapped over the shaft and held in adjusted position by the ball and spring.

The shaft 19 is operated to cause the pin holders to move in and out at required times to take and release the sheets and, in accordance with the invention, means will be provided whereby the pin holders may be manipulated so as to protrude the pins beyond the cylinder wall, as above explained, and after the pins are removed to retract the holders so that they can be readily removed from the cylinder without disconnecting the holder arms or associated mechanism. While this may be effected in various ways, in the particular construction illustrated the shaft 19, at one end, has secured thereto an arm 27 which carries a cam roll 28 which rides in the groove of a fixed cam 29 secured to one of the side frames, which is indicated at 30 in Figure 4.

One of the features of the invention includes devices for securely locking the arm 27 to the shaft, so that there will be no danger of any slippage during the operation of the machine. In the particular construction illustrated for effecting this, the arm 27 is, as shown, a split arm, the ends 31, 32 of which may be drawn together by means of a clamping bolt 33. This arm has an interior threaded portion 34 (see Figure 1) which engages a correspondingly exterior threaded portion 35 on the end of the shaft 19. It will be observed that when the clamping bolt 33 is operated to clamp the parts together the internal threads on the arm are brought into close engagement with the external threads on the shaft, thus providing a positive gripping engagement between the parts, which holds them firmly in position.

By loosening the clamping bolt, the shaft may be turned relatively to the cam arm and the pin holder arms thus adjusted as desired, and this adjustment will be simultaneous for all pin holders. It will be further observed that by turning the shaft to the position shown in Figure 2 the holder arms will be operated so as to protrude the pin points sufficiently beyond the cylinder wall that they may be readily removed. By turning the shaft in the opposite direction, that is, to the position shown in Figure 3, the pin points having been removed, it will be observed that the holders are retracted almost to the end of the bore 11. As shown in Figure 3, the bore 11 is cut out at one side, at its lower end, so that when the pin holders have been retracted to the position shown in Figure 3 the holders may be readily removed from the cylinder through a recess 36 (see Figure 4), one of these recesses being provided in the cylinder wall for each of the pin holders. These separate recesses are preferred, in that a stronger cylinder construction is provided owing to the metal, indicated at 37, being left between the recesses. It will be seen that the pin holder may be removed by simply disengaging the head 13 from the pin 15, the opening at the lower end of the bore 11 permitting this to be done, so that the holders may be taken out and replaced without the disengagement or removal of any of the associated parts. Thus the holders can be readily and quickly changed.

In the best constructions, in order to prevent the holders from being retracted far enough so that they will entirely clear the bore 11 and thus be in danger of dropping off the pins 15 and falling into the interior of the cylinder, a stop is provided for stopping the shaft in substantially the position shown in Figure 3. While this may be of various characters, in the particular construction shown the outside bearing 20 has secured thereto a stop pin 38, with which is arranged to engage a stop 39 secured to the end of the shaft by a set screw 40.

Any suitable means may be provided for operating the shaft 19 to effect the various functions described, but in the best constructions such means will be operable from outside the cylinder. In the particular construction shown there is provided an adjusting collar 41 fast on the end of the shaft outside the cylinder, this adjusting collar being provided with holes 42 in which a suitable tool may be inserted for rotating the parts.

With the construction described it will be

seen that the pin holders can be thrown out of the cylinder far enough to permit the ready removal of the pins; the pin holders may be removed and replaced without disconnecting any of the operating parts, and all the pin holders may be simultaneously adjusted. Furthermore, all the adjustments may be made from outside the cylinder, so that there is no danger of injury to the operator if the press should be started without warning.

While the invention has been shown and described in its preferred form, it will be understood that various changes may be made in the specific construction and arrangement of the parts without departing from the invention as defined in the appended claims.

What I claim is:

1. In a mechanism for operating sheet taking pins, the combination of a cylinder, a pin holder, a pin point carried in the holder, an operating shaft for protruding and withdrawing the point beyond the periphery of the cylinder, and means located outside the cylinder for operating the shaft to protrude the point beyond the cylinder a sufficient distance that it may be removed from the holder from outside the cylinder wall.

2. In a mechanism for operating sheet taking pins, the combination of a cylinder, a pin holder, a pin point carried in the holder, an operating shaft, an arm on the shaft on which the holder is mounted, a recess in the cylinder, and means for turning the shaft to position the holder so that it may be removed through the recess without disconnecting the arm.

3. In a mechanism for operating sheet taking pins, the combination of a cylinder, a pin holder, a pin point carried in the holder, an operating shaft, an arm on the shaft on which the holder is mounted, means for operating the shaft so that when the shaft is turned in one direction the point is projected beyond the cylinder a sufficient distance so that it may be removed from the holder from outside the cylinder wall, and when the shaft is turned in the opposite direction the holder is positioned so that it may be removed from the cylinder without disconnecting the holder arm.

4. In a mechanism for operating sheet taking pins, the combination of a cylinder, an operating shaft, a plurality of pin holders operated by the shaft, and means for adjusting the shaft to effect a simultaneous adjustment of the pin holders.

5. In a mechanism for operating sheet taking pins, the combination of a cylinder, an operating shaft, a cam and roll for operating the shaft, arms on the shaft, pin holders supported on the arms, an arm on which the roll is carried, means for clamping the latter arm to the shaft, and means for adjusting the shaft relatively to the roll and its cam.

6. In a mechanism for operating sheet taking pins, the combination of a cylinder, an operating shaft having a threaded portion, a cam and roll for operating the shaft, an arm having an interior threaded portion on which the roll is mounted, means for clamping the threaded portions of the arm and shaft together, and a pin holder operated by the shaft.

7. In a mechanism for operating sheet taking pins, the combination of a cylinder, a pin holder, an operating shaft, an arm on the shaft on which the holder is mounted, means for operating the arm so that the holder may be removed from the cylinder without disconnecting the arm, and a stop for limiting the movement of the arm.

8. In a mechanism for operating sheet taking pins, the combination of a cylinder, a bore in the cylinder wall terminating at its outer end approximately at the surface of the cylinder, and having its lower end opening into the cylinder, a pin holder in the bore, an arm to which the holder is connected by a pin, and means to which the arm is secured for operating the arm to permit the holder to be removed from the bore without disconnecting the arm.

9. In a mechanism for operating sheet taking pins, the combination of a cylinder, a pin holder, an operating shaft, an arm on the shaft on which the holder is mounted, and means located outside the cylinder for turning the shaft to adjust the arm.

10. In a mechanism for operating sheet taking pins, the combination of a cylinder, an operating shaft, a stationary cam, a cam roll, connections between the roll and shaft, and an adjusting device outside the cylinder for rocking the shaft independently of the roll, and pin holders operated by the shaft.

11. In a mechanism for operating sheet taking pins, the combination of a cylinder, an operating shaft, a plurality of pin holders operated by the shaft, a recess in the cylinder wall adjacent each pin holder, and means for operating the shaft to position the pin holders so that they may be withdrawn from the cylinder through the recess.

12. In a mechanism for operating sheet taking pins, the combination of a cylinder, an operating shaft, a stationary cam, a cam roll, connections between the roll and shaft, an adjusting collar fast on the shaft outside the cylinder for rocking the shaft independently of the roll, a stop for limiting the movement of the shaft, and pin holders operated by the shaft.

13. In a mechanism for operating sheet taking pins, the combination of a cylinder, an operating shaft, a pin holder, an arm to which the holder is connected, means for

frictionally holding the arm in adjusted position on the shaft, means for positively holding the arm on the shaft, and means for operating the shaft.

14. In a mechanism for operating sheet taking pins, the combination of a cylinder, an operating shaft, a pin holder, an arm having an open side engaging the shaft, friction means for holding the arm in adjusted position on the shaft, means for positively holding the arm on the shaft, and means for operating the shaft.

In testimony whereof, I have hereunto set my hand.

HARRY DAVIS.