June 5, 1923. 1,457,501

P. F. COX

IMPRESSION THROW OFF AND ON DEVICE FOR TRAVELING CYLINDER PRESSES

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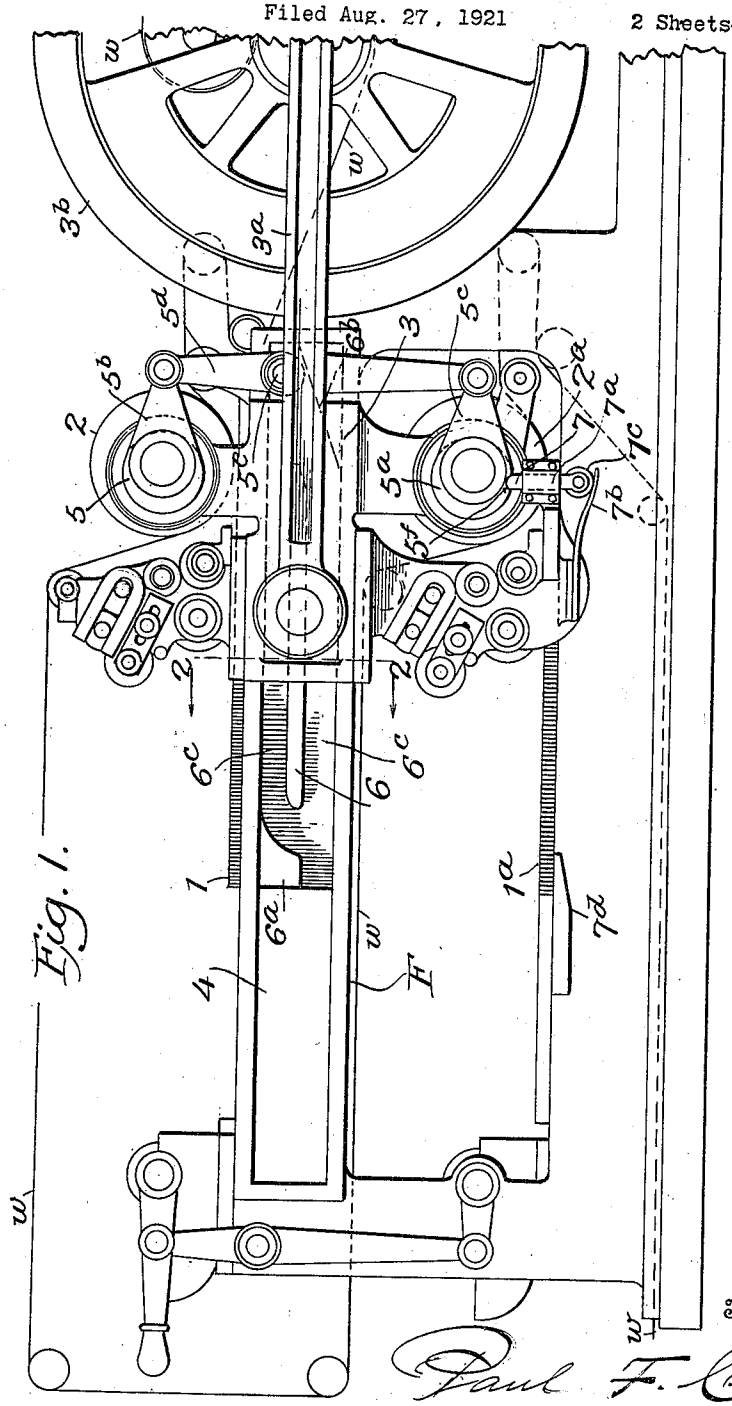


Fig. 1.

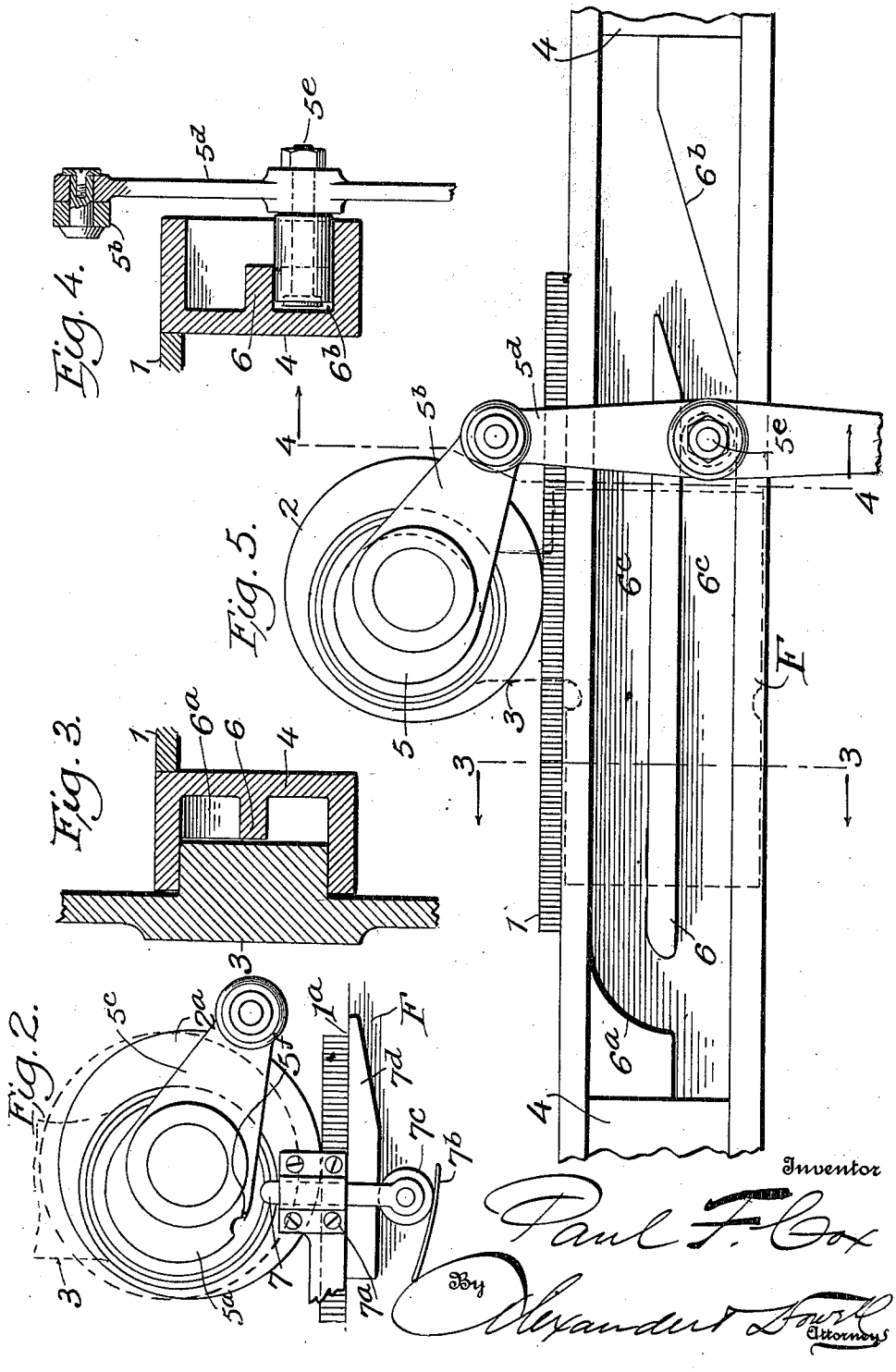
Inventor
Paul F. Cox
By Alexander Sewall
Attorne

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IMPRESSION THROW OFF AND ON DEVICE FOR TRAVELING CYLINDER PRESSES

Filed Aug. 27, 1921 2 Sheets-Sheet 2



Patented June 5, 1923. 1,457,501

UNITED STATES PATENT OFFICE.

PAUL F. COX, OF CHICAGO, ILLINOIS.

IMPRESSION THROW OFF AND ON DEVICE FOR TRAVELING-CYLINDER PRESSES.

Application filed August 27, 1921. Serial No. 495,872.

To all whom it may concern:

Be it known that I, PAUL F. COX, 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 Impression Throw Off and On Devices for Traveling-Cylinder Presses; and I hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form part of this specification.

This invention relates to improvements in flat-bed web perfecting printing presses in which the web is printed by means of traveling (oscillating) impression cylinders from flat forms of type, or plates, resting upon stationary beds; while the cylinders are moving in one direction; said cylinders returning over the beds out of contact with the printing forms, to give time for the intermittent spacing and feeding of the web of paper.

In such presses the impression cylinders are raised and held "off impression" upon one stroke, so as not to contact the printing forms; and are then lowered down to bearers, or printing line, and held firmly "on impression" during the return stroke of such cylinders. The principal object of this invention is to provide a simple novel mechanism for throwing the impression cylinders "off" and "on" impression on their alternate strokes.

In the embodiment of the invention shown in the drawings the cams for throwing the cylinders "on" and "off" impression, and the means for locking them "on" and "off" impression, are placed in the guideways in the main frames of the press, in which the guideways and cylinder carrying cross heads travel, the cams and locking devices being thus located in a most convenient position for coacting with the devices on the cross heads by which the cylinders are raised and lowered, and which must necessarily travel with the cross heads and impression cylinders.

While the invention is primarily designed for use in a web perfecting press, it is applicable to single acting presses; and to sheet presses; and to other types of machines in which traveling cylinders are employed which are to be "thrown off impression" on one stroke and "thrown on impression" on the return stroke.

I will explain the invention with reference to the accompanying drawings which illustrate so much of a well known type of web perfecting press as will enable the invention to be clearly understood. In the claims I have summarized the essentials of the invention, and the novel features of construction, and novel combinations of parts, for which protection is desired.

In the drawings:

Fig. 1 is a partial side elevation of a web printing press showing my novel mechanism for throwing the cylinders "on" or "off" impression and for holding the same "on" or "off" impression while the cylinders are passing over the forms.

Fig. 2 is an enlarged end elevation showing the latch bolt operating device shown in Fig. 1.

Fig. 3 is a sectional view on the line 3—3, Fig. 5, looking in the direction of the arrows on said line.

Fig. 4 is a similar sectional view on the line 4—4, Fig. 5, looking in the direction of the arrows on said line.

Fig. 5 is an enlarged side elevation showing the arrangement of the camways in the cross head guideway.

In the drawings 1 and 1^a designate parallel type beds arranged one over the other in a suitable main frame. Cooperating with bed 1 is a traveling impression cylinder 2, and cooperating with bed 1^a is a traveling impression cylinder 2^a. These cylinders are mounted in bearings in crossheads 3 which are guided in longitudinal guideways 4 in the sides of the press frame.

The cross heads 3 are reciprocated longitudinally of the guideways 4 so as to move the cylinders 2 and 2^a back and forth over the beds by any suitable means, preferably by means of pitmen 3^a connecting the crossheads 3 with crank gears 3^b which may be operated by any suitable mechanism.

The general construction and arrangement of such machine and of the aforesaid parts are well known and need no further detailed explanation herein.

The web *w* is led over suitable guiding rollers through the press and successively between the cylinder 2^a and bed 1^a, and then between the cylinder 2 and the bed 1, to the delivery; and suitable means are provided for intermittently drawing the web forward between successive impressions, and while the cylinders are thrown "off impression" but

traveling over the beds. The means for feeding, guiding, leading and shifting the webs, may be of any desired construction, form no part of the present invention, and are well understood, and need no further detailed explanation herein.

In the press shown the cylinders are "on impression" during one stroke, and "off impression" during the other stroke of the crossheads.

The cylinder 2 is shown as journaled in eccentric bearings 5 on the crosshead, and the cylinder 2^a in eccentric bearings 5^a on the crosshead. Such bearings are well known—as shown the bearings are provided with projecting arms 5^b and 5^c which are connected by a vertically disposed bar 5^d which carries a cam pin 5^e which projects into the adjacent guideway 4.

The connecting bar 5^d is arranged vertically beside the frame at the inner end of the crosshead and between the pitman 3^a and the frame of the press.

Arranged within the guideway adjacent the opposite limits of the linear travel of the pin 5^e are cams 6^a and 6^b. Cam 6^a is adapted to be engaged by the pin 5^e (which may be provided with an antifriction roller) as the crosshead reaches the limit of its outward stroke and depress the bar 5^b, thereby rocking the eccentrics 5, 5^a, so as to slightly lower the cylinders 2, 2^a, thereby throwing them "on impression" so that the surface of the cylinders will impress the web of paper upon the type forms upon the beds 1, 1^a during the following inward stroke of the crossheads.

Cam 6^b is arranged in the guideway 4 near the inner end thereof in such position that it will be engaged by the pin 5^e as the crossheads near the inner limit of their stroke, and after the cylinders have cleared the forms, so as to raise bar 5^d thereby rocking the eccentrics 5, 5^a and raising the cylinders 2, 2^a slightly (throwing them "off impression") so that on the following outward stroke of the cylinder they will clear the forms and not impress the web of paper thereon. While the cylinders are thus "off impression" and while they are moving outward the web *w* is shifted lengthwise between the beds and cylinders sufficiently to move the printed impressions clear of the forms, and bring the next succeeding un-printed portions of the paper in position to be printed on the next inward stroke of the cylinders and after the same have been thrown "on impression" by the action of the cam 6^a and lever 5^b as above described.

Arranged longitudinally of the guideway 4 and between the cams 6^b is bar 6 under which the pin 5^e travels during the inward stroke of the cylinders and over which the pin 5^e travels during the outward stroke of the cylinders and this bar serves to lock the pin 5^e and bar 5^d against vertical movement and prevents any accidental shifting of the cylinder bearings during the time that the cylinders are moving over the type forms on the beds. Thus the bar 6 and pin 5^e serve to lock the cylinders "on impression" during the printing stroke and to lock them "off impression" during the return stroke of the cylinders.

The cams 6^a, 6^b and locking bar 6 are so placed in the bottom of the guideway 4 that they do not interfere with the operation of the crossheads or the movement of the crossheads in the guideways 4; the pin 5^e projects sufficiently inward to engage the cams 6^a, 6^b and the upper and lower sides of the lock bar 6. The inner end of the pin 5^e traverses the camway 6^c which is formed in the inner side or bottom of the guideway 4 as indicated in the drawing. The cams thus located will not interfere with other parts and oil supplied to the crossheads serves to lubricate the ways and parts of the "throwoff" mechanism which are located in the same guideways.

If desired devices may be provided for preventing displacement of the bar 5^d and cylinders while the pin 5^e is moving across the space between the inner end of the lock bar 6 and the upper end of the cam 6^b. As shown a bolt 7 is confined in a keeper 7^a on the crosshead and is normally pressed upward to engage with a notch 5^f in the lower side of the eccentric 5^a, by a suitable spring. A flat spring 7^b is shown but any other suitable spring may be used. The bolt 7 carries a pin or roller 7^c on its lower end which is adapted to engage a cam 7^d which is attached to the side frame of the press, adjacent the outer limit of travel of the crosshead in position to cause pin 7^c to withdraw the bolt 7 from the notch 5^f as the cylinders near the outer limit of their movement, and just before the pin 5^e engages the cam 6^a. This latch bolt 7 insures that the bar 5^d will be held in raised position and keep the cylinders off impression while the pin 5^e is passing the gap between the inner end of the lock bar 6 and the upper end of cam 6^b.

The latch bolt 7 as stated is disengaged from the eccentric 5^a just before the pin 5^e engages the cam 6^a; and when the cylinders reach the outer end of their stroke the pin 5^e and cam 6^a shift the cylinders and eccentrics so that the notch 5^f is out of position to engage the latch pin 7, but it is pressed upward by the spring 7^b and will engage the notch 5^f as soon as it is again brought into position opposite the bolt by the action of the pin 5^e riding up on the cam 6^b. The bar 5^d and pin 5^e are depressed by the action of the cam 6^a, and will normally remain depressed while the pin is traversing the gap between the lower end of the cam 6^a and the outer end of the lock bar 6 during the inward stroke of the cylinders.

The locking bar 6 and pin 5e absolutely prevent the cylinders being shifted "on impression" during the outward stroke of the cylinders; and also insures holding the cylinders "on impression" during the inward stroke of the cylinders.

From the foregoing it will be seen that the invention provides a novel and cheaply constructed mechanism for throwing the impression cylinders on or off impression at the proper times; and provides most reliable and effective means for holding the cylinders on or off impression during the time that the cylinders are traveling over the forms.

What I claim is:

1. In a printing press, a bed, a cylinder, reciprocating crossheads carrying the cylinder, guideways for said cross heads in the main frame of the press, means for raising and lowering the cylinder carried by the crossheads, and cams in the guideway for alternately actuating the said means, substantially as described.

2. In combination with mechanism as set forth in claim 1, means adapted to lock the cylinder "off impression" during the non-printing stroke of the cylinder over the bed.

3. In mechanism as set forth in claim 1, a bar adapted to coact with said means to hold the cylinder on or off impression during the time the cylinder is moving over the bed.

4. In a printing press, a type bed, a cylinder, reciprocating crossheads carrying said cylinder, guideways in the frame for said crossheads, means carried by the crossheads for raising and lowering the cylinder, a member connected with said means and projecting into the guideway, and cams in the guideway adapted to be engaged by said member near the ends of the strokes of the crossheads to cause said means to throw the cylinders on or off impression.

5. In combination with mechanism as set forth in claim 4, a means adapted to lock the cylinder "off impression" during its non-printing stroke over the bed.

6. In mechanism as set forth in claim 4, a bar adapted to coact with said member to hold the cylinder on or off impression during the time it is moving over the bed.

7. In a printing press, a bed, a reciprocating cylinder, crossheads carrying the cylinder, guideways in the main frame of the press for said cross heads, means for raising and lowering the cylinder carried by the crossheads, a pin connected with said means and projecting into a guideway, and cams in the guideway adapted to be engaged by said pin to cause it to actuate the said means near the ends of the strokes of the crossheads.

8. In mechanism as set forth in claim 7, a bar arranged in said guideway between the cam adapted to coact with said pin to hold the cylinder on or off impression during the time it is moving over the bed.

9. In a printing press, a bed, a cylinder, crossheads, a cylinder carried by the crossheads, means for alternately throwing the cylinder on or off impression, and a relatively fixed member extending longitudinally of the path of the crossheads, and adapted to coact with said means to hold the cylinder on or off impression during the time the cylinder is moving over the bed.

10. In a printing press, a bed, a cylinder, reciprocating crossheads, means for alternately raising and lowering the cylinder carried by the crossheads and a relatively fixed bar extending longitudinally of the path of the crossheads and adapted to coact with said means to hold the cylinder on or off impression during the time the cylinder is moving over the bed.

11. In a printing press, a type bed, a cylinder, reciprocating crossheads carrying said cylinder, devices carried by the cross heads for raising and lowering the cylinder, a member connected with said devices, and cam means adapted to cause said devices to throw the cylinders on or off impression, with a relatively fixed bar extending longitudinally of the path of the crossheads and between the cams, and adapted to coact with said devices to hold the cylinder on or off impression during the time it is moving over the bed.

12. In a printing press, a type bed, a cylinder, reciprocating crossheads carrying said cylinder, means carried by the cross heads for raising and lowering the cylinder, a member connected with said means, and cams adapted to be engaged by said member near the ends of the strokes of the crossheads to cause said means to throw the cylinders on or off impression; with a relatively fixed bar extending longitudinally of the path of the crossheads and between the cams and adapted to coact with said member to hold the cylinders on or off impression during the time it is moving over the bed.

13. In a printing press, a main frame, type beds, reciprocating crossheads for carrying said cylinders, means on the crossheads for raising and lowering the cylinders, connections between said means, a member attached to said connections, cams adapted to be engaged by said member near the ends of the strokes of the crossheads to cause said means to throw the cylinders on or off impression, and a relatively fixed bar extending longitudinally of the path of the crossheads and between the cams and adapted to coact with said member to hold the cylinders on or off impression during the time the cylinders are moving over the beds.

14. In a printing press, a main frame having guideways, type beds, reciprocating

crossheads for carrying said cylinders guided by said guideways, means on the crossheads for raising and lowering the cylinders, connections between said means, a member attached to said connections and projecting into a guideway, cams in said guideway, adapted to be engaged by said member near the ends of the strokes of the cross heads to cause said means to throw the cylinders on or off impression, and a bar arranged in the guideway between the cams adapted to coact with said member to hold the cylinders on or off impression during the time the cylinders are moving over the beds.

15. In a printing press, a main frame, type beds, reciprocating cross heads for carrying said cylinders, guideways for said crossheads in the frame, means on the crossheads for raising and lowering the cylinders, connections between the means, a member attached to said connections and projecting into the guideway, and cams in the guideway adapted to be engaged by said member near the ends of the strokes of the crossheads and cause said means to throw the cylinders on or off impression.

16. In mechanism as set forth in claim 15, means adapted to lock the cylinders "off impression" during one stroke of the cylinders.

17. In mechanism as set forth in claim 15, a bar arranged adapted to coact with said member to hold the cylinders on or off impression during the time the cylinders are moving over the beds.

18. On a printing press, a main frame provided with guideways, type beds, cylinders, reciprocating crossheads mounted on the guideways for carrying said cylinders; eccentric devices on the crossheads for raising and lowering the cylinders; a bar connecting said eccentric devices; a pin connected with said bar and projecting into the guideway; and cams in the guideway adapted to be engaged by said pin near the ends of the strokes of the crossheads to throw the cylinders on or off impression.

19. In mechanism as set forth in claim 18, a bar arranged in said guideway between the cams adapted to coact with said pin to hold the cylinders on or off impression during the time the cylinders are moving over the beds.

20. On a printing press, a main frame provided with guideways, type beds, cylinders, reciprocating crossheads mounted on the guideways for carrying said cylinders; eccentric devices on the crossheads for raising and lowering the cylinders; a bar connecting said eccentric devices; a pin connected with said bar and projecting into the guideway; and cams in the guideway adapted to be engaged by said pin near the ends of the strokes of the crossheads to throw the cylinders on or off impression; with a bolt adapted to engage an eccentric and lock it when the cylinders are thrown off impression near the end of one stroke, and means to disengage the bolt near the end of the next succeeding stroke.

21. In mechanism as set forth in claim 20, a bar arranged in said guideway betweeen the cams adapted to coact with said pin member to hold the cylinders on or off impression during the time the cylinders are moving over the beds.

In testimony that I claim the foregoing as my own, I affix my signature.

PAUL F. COX.