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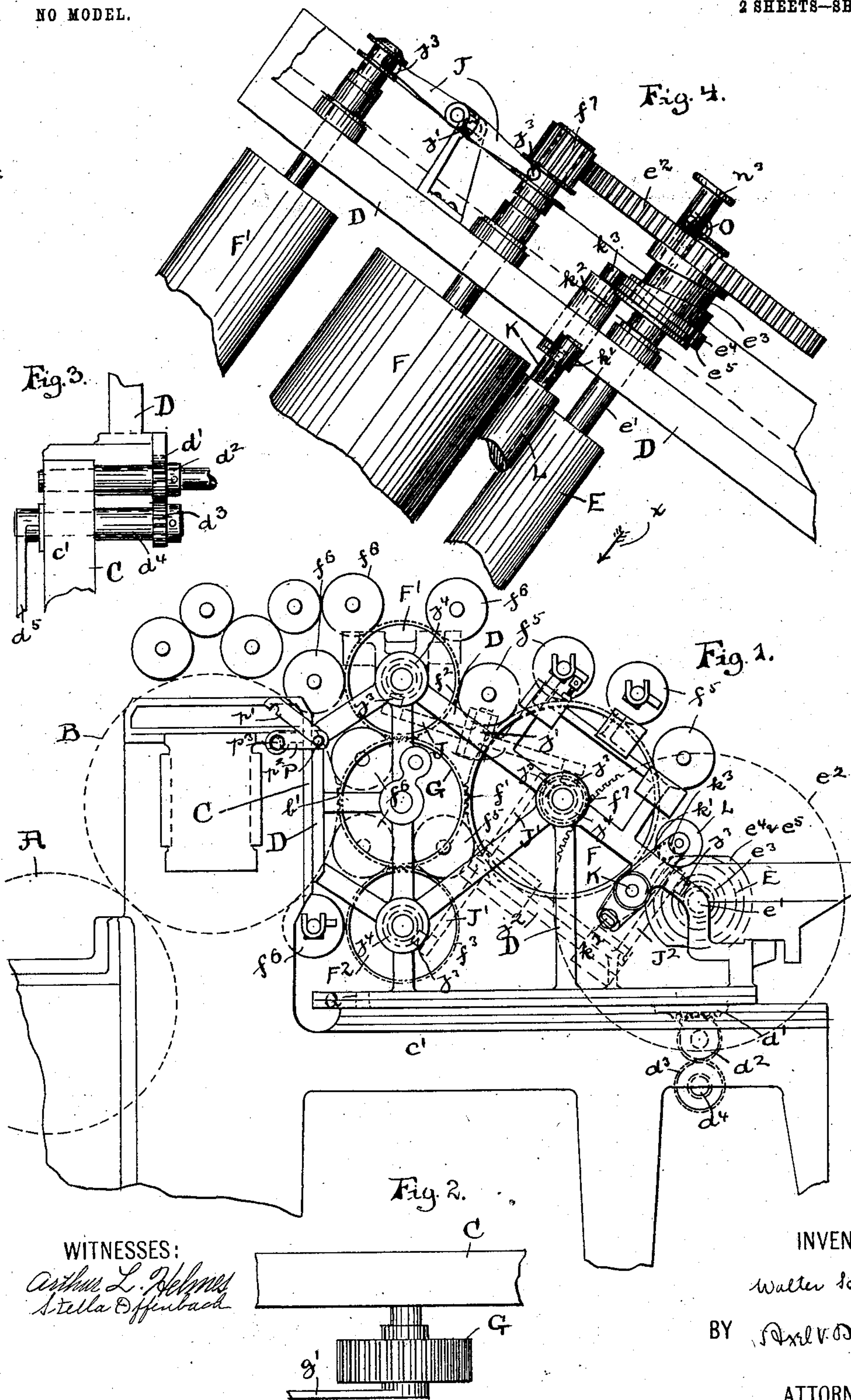
W. SCOTT.

INKING APPARATUS FOR PRINTING PRESSES.

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NO MODEL.

2 SHEETS—SHEET 1.



WITNESSES:

Arthur L. Holmes
Stella Offenberg

INVENTOR

Walter Scott

BY Axel V. Deeken

ATTORNEY

UNITED STATES PATENT OFFICE.

WALTER SCOTT, OF PLAINFIELD, NEW JERSEY.

INKING APPARATUS FOR PRINTING-PRESSES.

SPECIFICATION forming part of Letters Patent No. 751,351, dated February 2, 1904.

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To all whom it may concern:

Be it known that I, WALTER SCOTT, a citizen of the United States, and a resident of Plainfield, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Inking Apparatus for Printing-Presses, of which the following is a specification.

My invention relates generally to inking apparatus for printing-presses, and more particularly to improvements whereby the regulation of the supply of ink can be easily, accurately, and perfectly accomplished, and to other improvements more particularly hereinafter described.

I have embodied my invention in the rotary printing-press shown in the drawings, in which the inking apparatus is mounted on an independent framework, adapted to be moved back and forth by suitable means on the main framework, to bring the form-rolls in and out of contact with the form on the plate-cylinder. The invention, however, consists in making the inking apparatus "self-contained"—that is, constructed in such a manner that when the inking apparatus is moved away from the plate-cylinder, from which it derives its motion while operating, it may be operated to ink up all the ink-distributing rolls and cylinders by turning a single handle or hand-wheel. This may also be accomplished by the means hereinafter described, whereby the inking-apparatus gearing is kept in mesh with the gear on the plate-cylinder, but in such a manner that the form-rolls do not contact the form, so that no ink is transferred to the latter.

A further improvement consists in the means whereby the amount of ink supplied by the fountain can be regulated. This is accomplished by means of an adjustable split cam on the shaft of the fountain-roll or on a shaft separate from the fountain-roll, to regulate the length of dwell of the ductor-roll against the fountain-roll, the means being so constructed that such regulation may be made while the machine is in operation, so that the operator can increase or decrease the amount of ink supplied without stopping the machine.

Other improvements will appear farther on.

In the drawings I have shown a construction embodying my invention; but variations may of course be made to suit various requirements.

Figure 1 is a side elevation of the inking apparatus and adjacent elements embodying my invention. Fig. 2 is a top view of the gear which operates the inking apparatus. Fig. 3 is a side view of the means for running the inking apparatus back from the plate-cylinder. Fig. 4 is a top view at an angle of part of Fig. 1 looking in the direction of the arrow *x*. Figs. 5 and 6 are end and side views, respectively, of the means for regulating the supply of ink. Figs. 7, 8, 9, 10, 11, 12, 13, 14, and 15 are modifications of same.

Similar letters of reference indicate corresponding parts in the different views.

I shall describe the inking apparatus embodying my invention and adjacent elements of an inking apparatus and afterward point out the novel features in the claims.

A and B represent, respectively, the impression and plate cylinders mounted in the framework C of a suitable construction and provided with a bed-like extension *c'*. Upon this extension are slidably mounted the frames D, one on each side of the machine, constructed to carry the inking apparatus and provided with the racks *d'*, adapted to engage with the gear *d*². This gear in turn meshes with the gear *d*³, which is mounted on the cross-shaft *d*⁴ and provided with the handle *d*⁵. By turning this cross-shaft *d*⁴ the frames D, supporting the inking apparatus, are carried bodily backward and away from the form-cylinder B, thereby giving access to the latter and also to the form-inking rolls *f*⁶, which can be renewed or replaced without destroying their "set."

In the frames D is mounted the gear G, which serves to operate the whole inking apparatus either by deriving its motion from the gear *b'* on the form-cylinder or by means of the handle *g'*. Meshing with the gear G are the gears *f*¹, *f*², and *f*³, respectively, on the distributing-cylinders F, F', and F². Placed around these distributing-cylinders are the rollers *f*⁵, covered with composition, which distribute the ink and transfer it from the

cylinder F to the cylinders F' and F². From these two latter the ink is transferred by means of the form-inking rolls f^6 , mounted also in the frames D, to the form on the cylinder B.

5 By this means the inking apparatus can be operated when moved away from the plate-cylinder by simply turning the handle g' . This handle might of course be attached to any of the other gears in the train of gears shown.

10 The fountain-roll E is mounted on the shaft e' , which carries the large gear e^2 , which meshes with the pinion f^7 on the shaft of the cylinder F.

On the same side of the machine as that 15 which carries the gear and pinion just described are the rock-arms J J, J' J', and J², J J being carried by the stud j' and J' J' and J² by the rock-shaft j^2 . On the ends of all the rock-arms are friction-rollers j^3 of the 20 usual construction, which engage with collars j^4 on the ends of distributing-cylinders F, F', and F², the roller on the arm J² engaging with the cam e^3 on the shaft of the fountain-roll, by means of which the distributing-cylinders are caused to vibrate in an endwise di- 25 rection.

On the fountain-roll shaft e' and adjacent to the cam e^3 is the cam e^4 , provided with an adjustable portion e^5 . Between the fountain- 30 roll E and the distributing-cylinder F is placed a rock-shaft K, on each end of which is placed an arm k' , the upper ends of which carry the ductor-roll L. On one end of the shaft K is also placed an adjustable arm k^2 , on the end 35 of which is placed a friction-roll k^3 , which engages with the double cams e^4 and e^5 . With each revolution of the cams e^4 and e^5 the ductor-roll L is caused to vibrate twice between the fountain-roll E and the distributing-cyl- 40 inder F. In Fig. 15 are shown two cams similar to e^4 and e^5 , lettered e^{40} and e^{50} , constructed in such a manner that the ductor-roll vibrates only once to each revolution of said cams. The inner edge or circle of the adjustable 45 cam e^5 is formed into gear-teeth e^6 , which slide around and turn on the projection e^7 on the cam e^4 . These teeth engage with the pinion m' , whose shaft m^2 extends through the hubs of the cam e^3 and the gear e^2 . On the outer 50 end of this shaft m^2 is placed the worm-gear m^3 , which gear is controlled by the worm m^4 on the shaft m^5 . On the end of this shaft m^5 is a bevel-gear N, which meshes with another bevel-gear n' on the shaft n^2 , having a suit- 55 able hand-wheel n^3 . The shafts m^5 and n^2 are suitably mounted in the bracket O, which bracket is fastened to the hub of the gear e^2 . It will be observed that by turning the handle n^3 this cam e^5 can be moved to shorten or 60 lengthen the face of the cam e^4 and allow the ductor-roll to dwell a greater or less length of time in contact with the fountain-roll E, and thereby take up more or less ink with which to supply the distributing-cylinder F. By

this means the operator is enabled to regulate 65 the quantity of the ink to any desired degree, and that while the machine is in operation.

On the upper ends of the frames D and ad- 70 jacent to the frame C is placed a stud P, which carries two links p' and p^2 , which engage with the stud p^3 on the frame C. The link p' is slightly longer than the link p^2 , so that 75 when it is desired to run the inking apparatus and distribute the ink without putting the ink on the forms on the cylinder B the link p' is attached to the stud p^3 , which keeps the 80 form-rolls f^6 from coming in contact with the forms on the cylinder B and yet keeps the gear G in mesh with the main gear b' on the form-cylinder B. When the machine is ready 85 to print, the link p^2 will take the place of p' and hold the inking apparatus in proper position. Instead of the links p' and p^2 any other fastening, such as a bolt of any suitable kind passing through one of the two frames 90 D, as shown at Q, may be used, it being understood that any other suitable means can be used to hold the inking apparatus in the two different positions referred to.

From the foregoing it will be seen that I 90 have provided a suitable inking apparatus which in its several movements is entirely self-contained in the frames D and which can be run back from its working position in order 95 to facilitate the adjusting of the plates on the cylinder B and the rollers in the inking apparatus and which can be in turn either driven by hand by means of a handle or lever con- 100 nected to any suitable part of the inking apparatus or which can be run with the gear- ing in contact, so as to run the inking appara- 105 tus without placing the ink on the forms until such time as the machine is ready to begin printing on the sheets or web of paper.

Of course it is not necessary to run the ink- 105 ing apparatus from a gear on the plate-cylinder. It might be operated by means of a train of gears from another part of the machine, and the gears might be run in contact without putting the ink on the forms. 110

I show a modification of the adjustable cam in Figs. 7 and 8. Instead of using the worm and worm-gear in order to turn the pinion m' I simply put the hand-wheel n^3 on the end of 115 the shaft m^{20} , and I provide a toothed wheel R into the detents of which are pressed a spring r' to keep the cam e^5 from changing its position while in operation. This detent-wheel and spring may be constructed in any other 120 manner suitable for the purpose, or it may simply have a friction applied, so that it will not allow the cam e^5 to change its position.

In Figs. 11 and 12 I show a second modifi- 125 cation by placing on the outer end of the shaft m^{2000} the gear-wheel S and meshing with it and preferably in line with the shaft e' and constructed to slide around in same the pin-gear s' , consisting of two teeth, and extending there-

from a suitable hand-wheel s^2 . The construction and operation of the pin and gear wheels are well known, and by using this it will be understood that adjustment can be had only a certain distance, after which the parts jam so that displacement is impossible.

In case the double cam, with its adjusting means, is placed on the other end of the fountain-roll shaft a more simple mechanism may be used to adjust the same—as, for instance, shown in Figs. 9 and 10—in which case a spur-gear t and a pinion t' are utilized, the handle being mounted on the shaft m^{200} , or the device shown in Figs. 13 and 14, where a worm-gear t^2 and worm t^3 are used. Other modifications too numerous to mention might of course also be used to accomplish the same purpose.

It is of course obvious that the cams e^4 and e^5 may be mounted on a shaft separate from the fountain-roll, in which case the ductor-roll would make one vibration or two or more vibrations, as the case might be, with each revolution of the cams, the speed of the fountain-roll being immaterial.

Having thus described my invention, what I claim is—

1. The combination with a plate-cylinder having a gear, and a distributing-cylinder, also having a gear, adapted to receive ink from a ductor or other roll, of a main gear located intermediate the said distributing-cylinder and the said plate-cylinder and meshing with the gears on same, two distributing-cylinders having gears located above and below the main gear and in mesh with same, and distributing-rolls located intermediate the distributing-cylinders and the plate-cylinder, substantially as described.

2. The combination with a plate-cylinder having a gear, of an inking apparatus having the following elements, viz: a main gear adapted to mesh with the gear on the plate-cylinder, three distributing-cylinders, one of which is adapted to receive ink from a ductor or other roll, all having gears adapted to mesh with the main gear, distributing-rolls located intermediate the distributing-cylinders and the plate-cylinder, and a framework, carrying the said inking apparatus and foregoing elements, adapted to be moved toward and away from the plate-cylinder to effect or prevent the transfer of ink to the said plate-cylinder, substantially as described.

3. In a printing-press, the combination of a plate-cylinder mounted in a framework, a gear making one revolution with the plate-cylinder, an inking apparatus mounted on an independent framework adapted to be moved bodily away from the plate-cylinder, a gear mounted on the independent framework adapted to mesh with the first-mentioned gear, two links on the independent framework of different lengths, a bolt on the stationary framework adapted to cooperate with either of the two

links, so as to transfer ink from the inking apparatus or prevent its transfer according to the option of the operator, substantially as described.

4. In a printing-press, the combination of a rotatable cam, a second cam adapted to rotate with same, an internal toothed connection on the second cam concentric with same, and a means for engaging with said toothed connection located eccentrically of the two cams whereby the second cam is adjusted with relation to the first, substantially as described.

5. In a printing-press, the combination of a rotatable cam, a second cam adapted to rotate with same, an internal toothed connection on the second cam concentric with same, and a means for engaging with said toothed connection located eccentrically of the two cams whereby the second cam is adjusted with relation to the first, and means for maintaining the second cam in its adjusted position, substantially as described.

6. In a printing-press, the combination of a rotatable cam, a second cam adapted to rotate with same, an internal tooth-wheel in the second cam concentric with same, a pinion adapted to engage with the internal tooth-wheel whereby the second cam can be adjusted with relation to the first, a shaft carrying said pinion, a worm-wheel on the other end of said shaft, a worm operating said worm-wheel, and means for rotating the said worm-wheel, substantially as described.

7. In a printing-press, the combination of a rotatable cam, a second cam adapted to rotate with same, an internal tooth-wheel in the second cam concentric with same, a pinion mounted on a shaft adapted to engage with the internal tooth-wheel, a motion transmission device on the other end of said shaft, and means for operating the said motion-transmission device whereby the second cam is adjusted with relation to the first, substantially as described.

8. In a printing-press, the combination of a rotatable cam, a second cam adapted to rotate with same, an internal tooth-wheel in the second cam concentric with same, a pinion mounted on a shaft adapted to engage with the internal tooth-wheel, a motion-transmission device on the other end of said shaft, means for operating the said motion-transmission device whereby the second cam is adjusted with relation to the first, and means for maintaining it in the position to which it has been adjusted, substantially as described.

9. In a printing-press, the combination of a rotatable cam, a second cam adapted to rotate with same, an internal tooth-wheel in the second cam concentric with same, a pinion mounted on a shaft adapted to engage with the internal tooth-wheel, a motion-transmission device on the other end of said shaft, means for operating said motion-transmission device mounted on a second shaft, and means for op-

erating the means mounted on the said second shaft whereby the second cam is adjusted with relation to the first, substantially as described.

10. In a printing-press, the combination of a
5 rotatable cam, a second cam adapted to rotate with same, an internal tooth-wheel in the second cam concentric with same, a pinion mounted on a shaft adapted to engage with the internal tooth-wheel, a motion-transmission device
10 on the other end of said shaft, means for operating said motion-transmission device mounted on the second shaft, means for op-

erating the means mounted on the second shaft whereby the second cam is adjusted with relation to the first, and means for maintain- 15
ing the second cam in the position to which it has been adjusted, substantially as described.

Signed at New York, in the county of New York and State of New York, this 1st day of February, A. D. 1901.

WALTER SCOTT.

Witnesses:

T. HENRY DEWEY,
AXEL V. BEEKEN.