No. 807,615. PATENTED DEC. 19, 1905.

C. G. HARRIS.

NUMBERING ATTACHMENT FOR PRINTING PRESSES.

APPLICATION FILED JUNE 29, 1904.

3 SHEETS—SHEET 1.

Fig. 2.

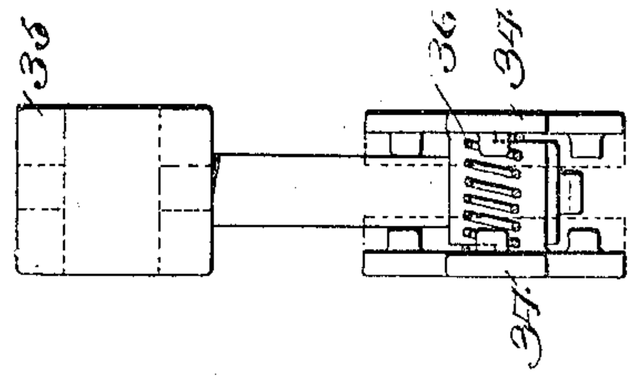
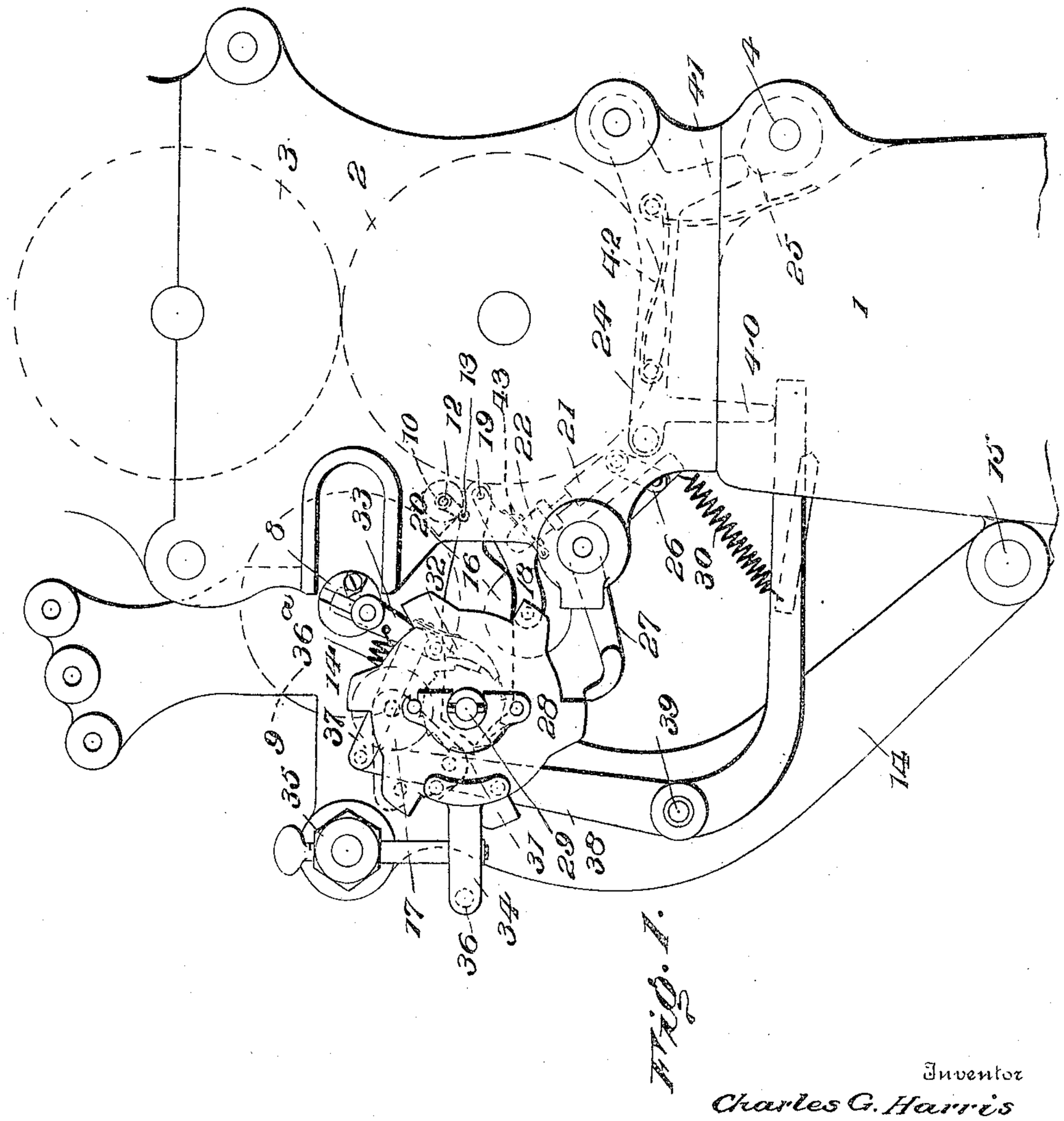


Fig. 1.



Witnesses

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3 SHEETS—SHEET 2.

Fig. 2.

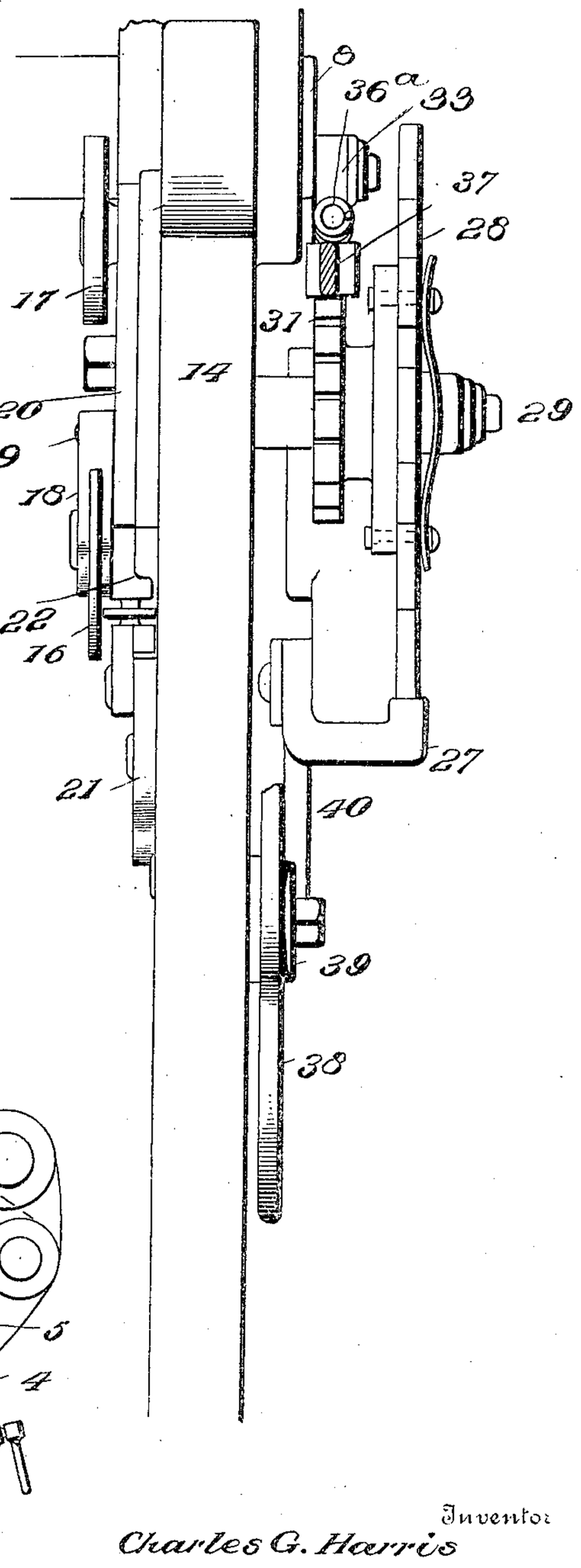


Fig. 5.

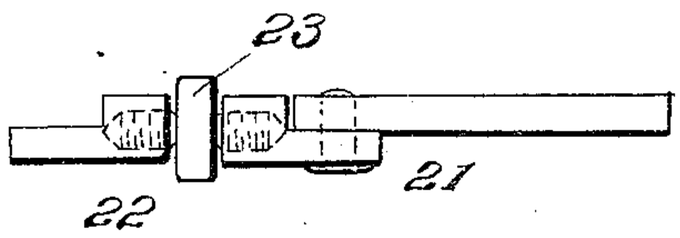
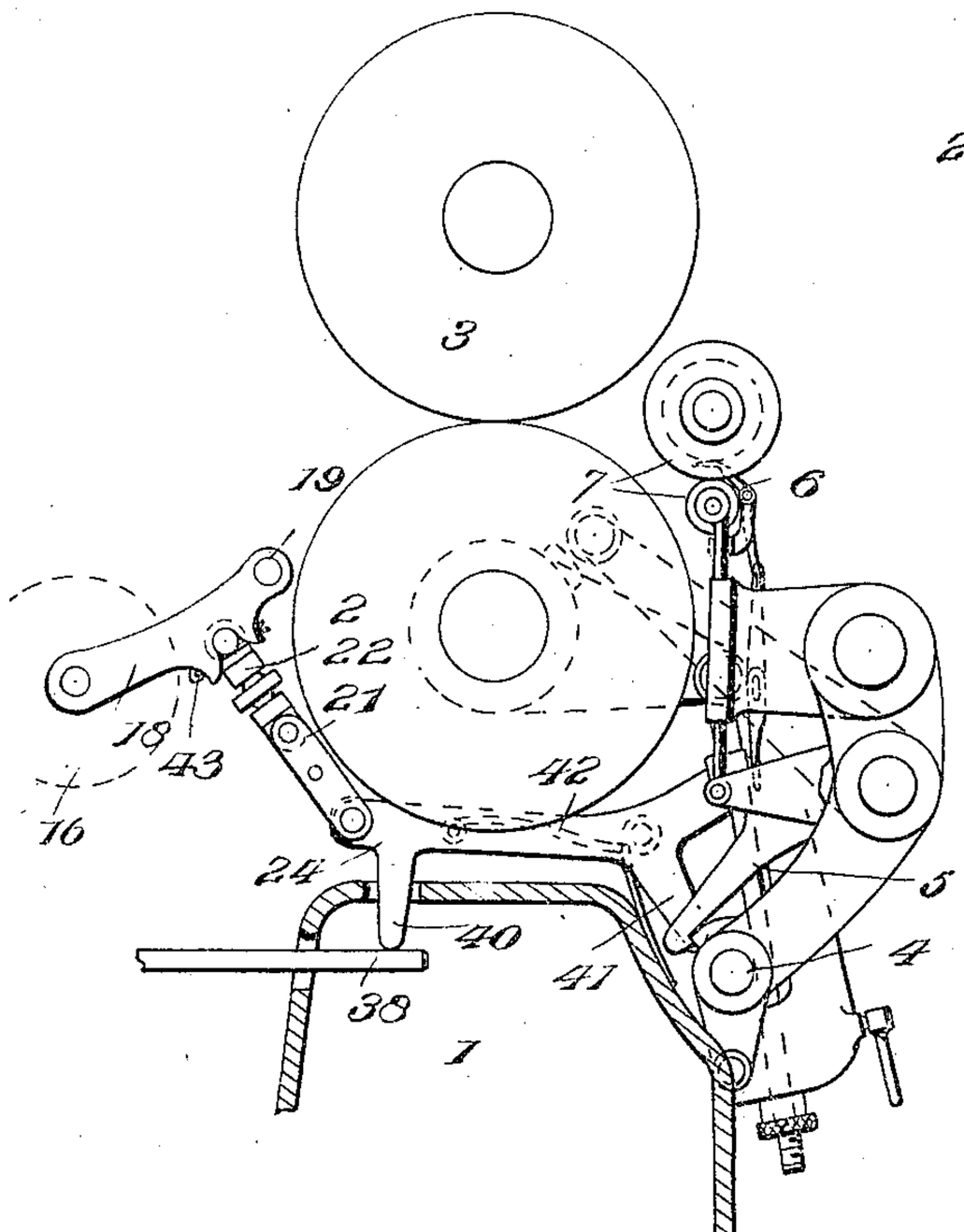


Fig. 6.



Witnesses

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3 SHEETS—SHEET 3.

FIG. 4.

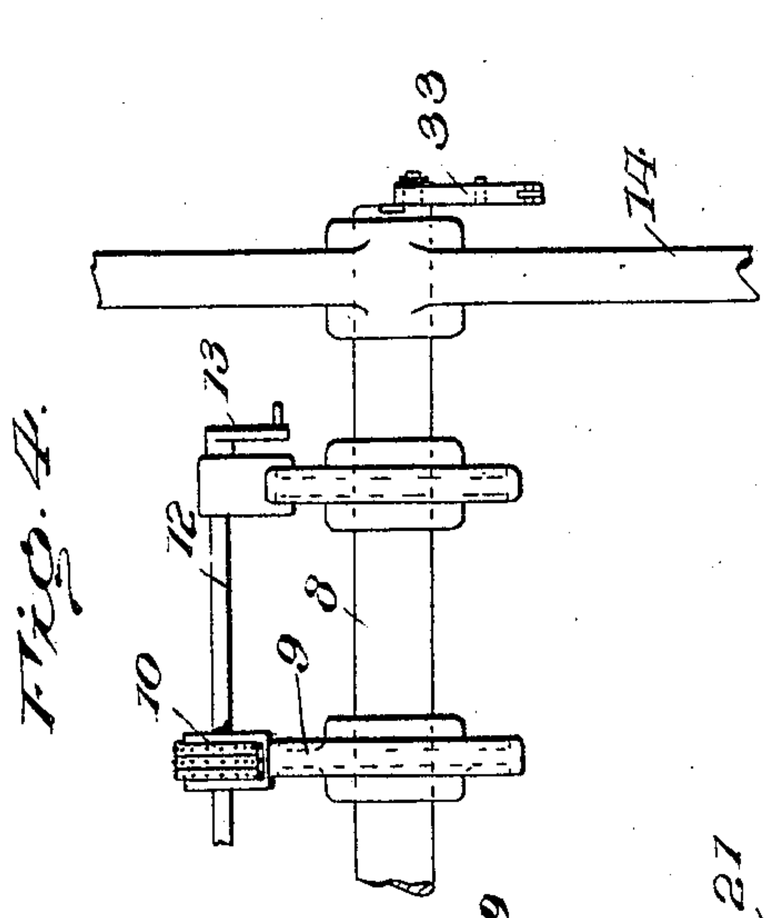

FIG. 3.

Witnesses

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UNITED STATES PATENT OFFICE.

CHARLES GRANT HARRIS, OF NILES, OHIO, ASSIGNOR TO THE HARRIS AUTOMATIC PRESS COMPANY, OF NILES, OHIO, A CORPORATION OF OHIO.

NUMBERING ATTACHMENT FOR PRINTING-PRESSES.

No. 807,615. Specification of Letters Patent. Patented Dec. 19, 1905.

Application filed June 29, 1904. Serial No. 214,662.

To all whom it may concern:

Be it known that I, CHARLES GRANT HARRIS, of Niles, in the county of Trumbull and State of Ohio, have invented certain new and useful Improvements in Numbering Attachments for Printing-Presses; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The primary object of this invention is to provide a numbering attachment for printing or other presses capable of duplicating or repeating the imprints of the numbering head or heads as often as desired, the dials of such heads being changed only once for a predetermined number of sheets passed through the machine; and a further object is to provide improved means for preventing any change in the numbering-heads in the event of failure in the feed-supply of the stock or the actuation of the throw-off mechanism of the printing or other press to which the attachment is applied.

The invention will be hereinafter fully set forth, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in side elevation of a portion of a printing-press equipped with my present invention, parts of the press being indicated in dotted lines and others broken away. Fig. 2 is a front end view. Fig. 3 is an enlarged view with parts omitted, showing the various positions of the levers in dotted lines. Fig. 4 is a plan view with parts omitted. Fig. 5 is a detail. Fig. 6 shows in general outline the throw-off device of a printing-press. Fig. 7 is a view of the brake.

In my application for Letters Patent, Serial No. 107,462, filed May 15, 1902, I showed and described a numbering attachment comprising a series of numbering-dies automatically actuated in each revolution of the attachment, the actuating means being automatically thrown off in the event of any interruption in the feed of the stock. By my present invention the several numbering-heads may repeat their imprints, the dials thereof remaining unchanged during the passage of a predetermined number of sheets.

Referring to the drawings, 1 designates the press-frame, a portion only of which is shown; 2, the impression-cylinder, and 3 the type-carrying cylinder, the former cylinder being capable of being automatically shifted or thrown off in the event of any interruption or failure in the feed-supply after the manner adopted in the press known as the "Harris Automatic." Such throw-off embraces a spring-actuated controlling-shaft 4, the partial turning whereof effects the shifting of the bearings of the impression-cylinder, such shaft being freed of its retaining-dog 5 only when the upward movement of the feeler-lever 6 of the throw-off device is not arrested by stock fed by rolls 7, all as clearly pointed out in Letters Patent No. 577,405, issued to me and John F. McNutt February 16, 1897, and Letters Patent No. 661,245, likewise issued November 6, 1900. Further reference to the throw-off mechanism is not necessary beyond identifying the office of the shaft 4.

8 designates a shaft whereon are mounted disks 9, carrying the numbering-heads 10, the several numbering-heads of any one row having a common actuating-rod 12, as pointed out in my before-noted application for patent, each of such rods carrying a crank 13 at one end. The shaft 8 is supported by the sides 14 of subframe, which sides are pivoted at 15 to the main frame 1. After a numbering-head or a series thereof make their imprint against the impression-cylinder the crank 13 of the actuating-rod thereof will engage a wheel 16, whose periphery intersects its line of travel sufficiently to effect the turning of the shaft to advance the head one number and in the further revolution of the numbering attachment such crank will engage a second wheel 17, set in such relation to the line of travel of the crank as to move it in the reverse direction in position to be again actuated upon contacting with wheel 16. This latter wheel is journaled in the bifurcated end of a bracket 18, pivotally hung at 19 to a plate 20, bolted or otherwise secured to one of the sides 14 of the subframe. This bracket is supported by two connected toggle-levers 21 22, the latter being formed in sections connected by a right and left hand screw-bolt 23 to permit of nicety of adjustment. The toggle-lever 21 is pivoted to one end of a lever 24, which is shown as being held in its normal position by the engagement with a finger thereof of a cam 25, fast on the throw-off shaft 4. This toggle-

lever 21 is connected by link 26 to a spring-held lever 27, which latter is rocked on its fulcrum by the teeth or proud portions of a cam 28, mounted on a stub-shaft 29. As long as lever 27 is in engagement with a tooth of this cam and lever 24 is in its normal position the crank-rod-actuating wheel 16 will occupy its normal position; but when the cam is turned sufficiently to carry a tooth thereof beyond the lever the latter will be moved inward against the reduced portion of the cam under the influence of its spring 30, as shown in dotted lines, Fig. 3. This movement of lever 27 will pull through link 26 on toggle-lever 21, breaking joint between the latter and toggle-lever 22, so as to permit bracket 18 to lower sufficiently to remove wheel 16 out of the line of travel of the actuating-rod, thus permitting the numbering head or heads to remain unchanged as to the number printed on the sheet when it passes on its next revolution. When lever 27 is again engaged by a tooth of cam 28, wheel 16 will be returned to its raised position. Likewise when lever 24 is shifted out of its normal position the parts will be so moved that the wheel 16 will be out of line of travel of the cranked end of rod 12.

Fast to cam 28 or fast on the shaft 29 thereof is a ratchet 31, designed to be engaged by a pawl 32, carried by an arm 33, actuated by the revolution of shaft 8. In each revolution of this shaft, and hence of the numbering attachment, the ratchet-wheel 31 is moved the extent of one tooth and the cam 28 is moved synchronously. Ordinarily the ratchet-wheel embodies twelve teeth, and hence in each revolution of the numbering attachment it will be moved one-twelfth of its circumference as long as the pawl is in engagement therewith. The cam 28, which is considerably larger, is shown as having six teeth. Hence, the ratio being two to one, each set of numbering-heads is allowed to print the same number in two revolutions, whereas if cam 28 had but four teeth the numbering-heads would make three imprints after each advance, while with a three-toothed cam there would be four imprints and with a two-toothed cam six imprints. The toothed cam is held as against any movement by momentum by a two-part brake 34, suspended from a sleeve 35, the movable side cheeks of such brake being held in frictional contact with the sides of the cam under the lateral pressure of a spring 36.

The pawl-carrying arm 33 is normally held by a spring 36^a, secured at one end to the frame, and this arm is connected by a link 37 to the upper end of a lever 38, fulcrumed at 39 on the frame side 14, the horizontal arm of such lever 38 being engaged by a second finger 40 of lever 24. When this lever is shifted or the press-throw-off mechanism is actuated and the proud portion of cam 25 is moved from beneath the finger 41 of such lever, the latter will occupy the position indicated in dotted lines, Fig. 3, under the action of a spring 42, thereby turning lever 38 on its pivot, so as to force the pawl 32 as against the tension of spring 36^a out of engagement with the ratchet-wheel, and thus throw the actuating means out of operation to prevent the numbering-heads from being advanced when no impression is being taken. The restoration of shaft 4 to its normal position will reposition lever 24, allowing lever 38 to move outwardly at its upper end under the action of spring 36^a, so as to permit the pawl to reengage the ratchet-wheel.

It is obvious from what has been said that the cranked actuating-rod of each series of numbering-heads will be turned to bring a new number into position upon such rod engaging the wheel 16, the shaft being returned to its former normal position upon engagement with the second wheel 17. The engagement of the cranked rod with wheel 16 is possible only when lever 27 is engaged by one of the proud portions of cam 28, lever 24 being in its normal position; but when lever 27 is free of the proud portions and is held under the recoil of its spring 30 the wheel 16 will be lowered out of the line of travel of the cranked rods, thus permitting as many repetitions of the numbers of the numbering-heads as is represented by the ratio between the number of teeth of the ratchet-wheel and the proud portions of the cam. Cams having different numbers of teeth may be readily substituted one for another.

From what has been said it will be seen that if stock should not be in position at the time the feeler-lever is moved to engage therewith the lever 24 will be so shifted as to move the support of wheel 16 and prevent the latter from being engaged by the cranked rod, and at the same time the pawl 32 will be thrown out of engagement with the ratchet 31. In this way the position of the lever-actuating cam 28 will not be changed until the feed-supply is reëstablished and lever 24 shifted to restore the support of wheel 16 to its former position. Hence the operation of the rod 12 of the numbering-heads is dependent not upon the number of revolutions of the press, but wholly upon the number of sheets printed or passed through the machine.

When it desired to swing the subframe outwardly, it is only necessary to withdraw the cotter-pin 43, by which the pin of the toggle-lever 22 is held between the cheeks of the bracket 18.

I claim as my invention—

1. The combination with a rotary numbering attachment having actuating means for the numbering head or heads, of a device for operating said actuating means having an element designed to be intermittently thrown into line to be engaged by, and effect the operation of, such means, means for controlling the position of such element and timing its

engagement by such actuating means, and means for throwing such element out of operative position in the event of any interruption in the feed-supply.

2. The combination with a rotary numbering attachment having actuating means for the numbering head or heads, of a device for operating said actuating means having an element designed to be intermittently thrown into line to be engaged by, and effect the operation of, such means, means for controlling the position of such element and timing its engagement by such actuating means, means for actuating this latter means, and means for throwing such element out of operative position and disengaging the actuating means of the controlling means in the event of any interruption in the feed-supply.

3. The combination with a rotary numbering attachment having actuating means for the numbering head or heads, of a device for operating said actuating means having an element designed to be intermittently thrown into line to be engaged by, and effect the operation of, such actuating means, means for controlling the position of such element and timing its engagement by such actuating means, means operated by the numbering attachment for actuating this latter means, and means for throwing such element out of operative position and throwing out the operation of the controlling means in the event of any interruption in the feed-supply.

4. The combination with a rotary numbering attachment having a numbering head or heads, means for actuating the latter comprising an intermittently-movable device, means for so moving such device, and means for automatically throwing such latter means out of operation in the event of any interruption in the feed-supply.

5. The combination with a rotary numbering attachment having actuating means for the numbering head or heads, of a device for operating said actuating means, comprising an element designed to be intermittently thrown into line to be engaged by, and effect the operation of, such means, a lever for moving such element into and out of position, a cam having a plurality of proud portions designed to intermittently engage said lever, a ratchet movable with said cam, and a pawl actuated by said numbering attachment for rotating said ratchet.

6. The combination with a press having throw-off mechanism, of a numbering attachment having a numbering head or heads, means for actuating the latter comprising an intermittently-movable device, means for actuating such device, and means controlled by the position of the throw-off mechanism for throwing out such actuating means in the event of the actuation of said throw-off mechanism.

7. The combination with a rotary numbering attachment having an actuating-rod for the numbering head or heads, of a wheel designed to be intermittently thrown into line to be engaged by, and effect the partial rotation of, such rod, a support for such wheel, a lever connected to said support, a spring secured to said lever for normally holding said wheel out of such line, and a rotary element for intermittently engaging said lever for moving said wheel into line to be engaged by said rod.

8. The combination with a rotary numbering attachment having an actuating-rod for the numbering head or heads, of a wheel designed to be intermittently thrown into line to be engaged by, and effect the partial rotation of, such rod, a support for such wheel, a toggle-lever engaging said support, a spring-held lever connected to said toggle-lever, and a rotary element for intermittently engaging said spring-held lever for moving said wheel into line to be engaged by said rod.

9. The combination with a rotary numbering attachment having an actuating-rod for the numbering head or heads, of an element designed to be intermittently thrown into line to be engaged by, and effect the partial rotation of, such rod, a rotary cam having a plurality of proud portions, and a device connected to said element and designed to be intermittently actuated by the said proud portions.

10. The combination with a rotary numbering attachment having an actuating-rod for the numbering head or heads, of an element designed to be intermittently thrown into line to be engaged by, and effect the partial rotation of, such rod, a rotary cam having a series of teeth, a ratchet movable with said cam having a greater number of teeth, a pawl actuated by the numbering attachment for engaging said ratchet, and a device connected to said element and designed to be intermittently actuated by the teeth of said cam, the ratio of said teeth to the teeth of the ratchet controlling the time of actuation of said actuating-rod.

11. The combination with a rotary numbering attachment having an actuating-rod for the numbering head or heads, of an element designed to be intermittently thrown into line to be engaged by, and effect the partial rotation of, such rod, a rotary cam having a series of teeth, a ratchet movable with said cam having a greater number of teeth, a pawl actuated by the numbering attachment for engaging said ratchet, a spring-held lever designed to be engaged by the teeth of said cam, a bearing for said element, and a connection between said bearing and said spring-held lever, as set forth.

12. The combination with a press having throw-off mechanism, of a numbering attachment having a numbering head or heads, and an actuating-rod therefor, of a wheel designed to be intermittently thrown into line to be engaged by, and effect the partial rotation of,

such rod, a movable bearing for said wheel, a cam having a series of teeth, a ratchet movable with said cam, a pawl, actuated by the numbering attachment, engaging said ratchet, a device designed to be engaged by said cam, toggle-levers supporting said bearing and to which said device is connected, a lever to which said toggle-levers are connected, said lever being actuated by the actuation of the throw-off mechanism, and means controlled thereby for throwing said pawl out of engagement with said ratchet.

13. The combination with the numbering attachment having an actuating-rod for the numbering head or heads, of the pivoted bracket, the wheel mounted thereon designed to be engaged by said rod, the toggle-levers supporting said bracket, the spring-held lever connected to said toggle-levers, a cam having a series of teeth designed to engage said spring-held lever, a ratchet carried by said cam, a pawl actuated by the numbering attachment normally in engagement with said ratchet, a lever connected to said pawl, and means for actuating said lever for throwing said pawl out of engagement with the ratchet, as set forth.

14. The combination with the numbering attachment and the pawl actuated thereby, of the ratchet engaged by said pawl, the cam having a series of teeth, a lever having a link connected to said pawl, a second lever engaging said former lever for normally allowing said pawl to engage said ratchet, a spring-held lever designed to be actuated by said cam, a wheel, a bearing therefor, a connection between said bearing and said spring-held lever, said bearing being also connected to said second lever, means for automatically shifting the latter, and numbering-heads having actuating means designed to be engaged by said wheel, as set forth.

15. A rotary numbering attachment having an actuating-rod for the numbering head or heads, a crank on such rod, two wheels designed to intersect the line of movement of said crank for moving the rod in opposite directions, one of said wheels being normally held out of such line, and means for intermittently moving such wheel into line to be engaged by said rod, as set forth.

16. A rotary numbering attachment having an actuating-rod for the numbering head or heads, a crank on such rod, two wheels designed to intersect the line of movement of such crank for moving the rod in opposite directions, a movable bearing for one of said wheels, a spring-held lever connected to said bearing by which such wheel is normally held out of the line of movement of the crank, a cam having a series of teeth for actuating said lever for moving said wheel into such line, and means for actuating such cam.

17. The combination with a printing-press, and means for feeding stock thereto, of a rotary numbering attachment having a numbering head or heads, means for automatically actuating such head or heads after a predetermined number of sheets has been passed through the press, and means for preventing the actuation of the numbering head or heads in the event of any interruption in the feed-supply.

18. The combination with a printing-press, and means for feeding stock thereto, of a rotary numbering attachment having a numbering head or heads, means for automatically actuating such head or heads after a predetermined number of sheets has been passed through the press, such means being controlled by the attachment, and means for automatically throwing off such actuating means in the event of any interruption in the feed of the stock.

19. The combination with a printing-press, and means for feeding stock thereto, of a rotary numbering attachment having a numbering head or heads, means for automatically actuating such head or heads but not in each revolution of the attachment, means constantly actuated for periodically acting on the last-mentioned means to effect the actuation of said head or heads, and means for automatically throwing off such constantly-actuated means in the event of any interruption in the feed of the stock.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

CHARLES GRANT HARRIS.

Witnesses:
C. G. PRITCHARD,
R. J. STORIER.