

Aug. 28, 1923.

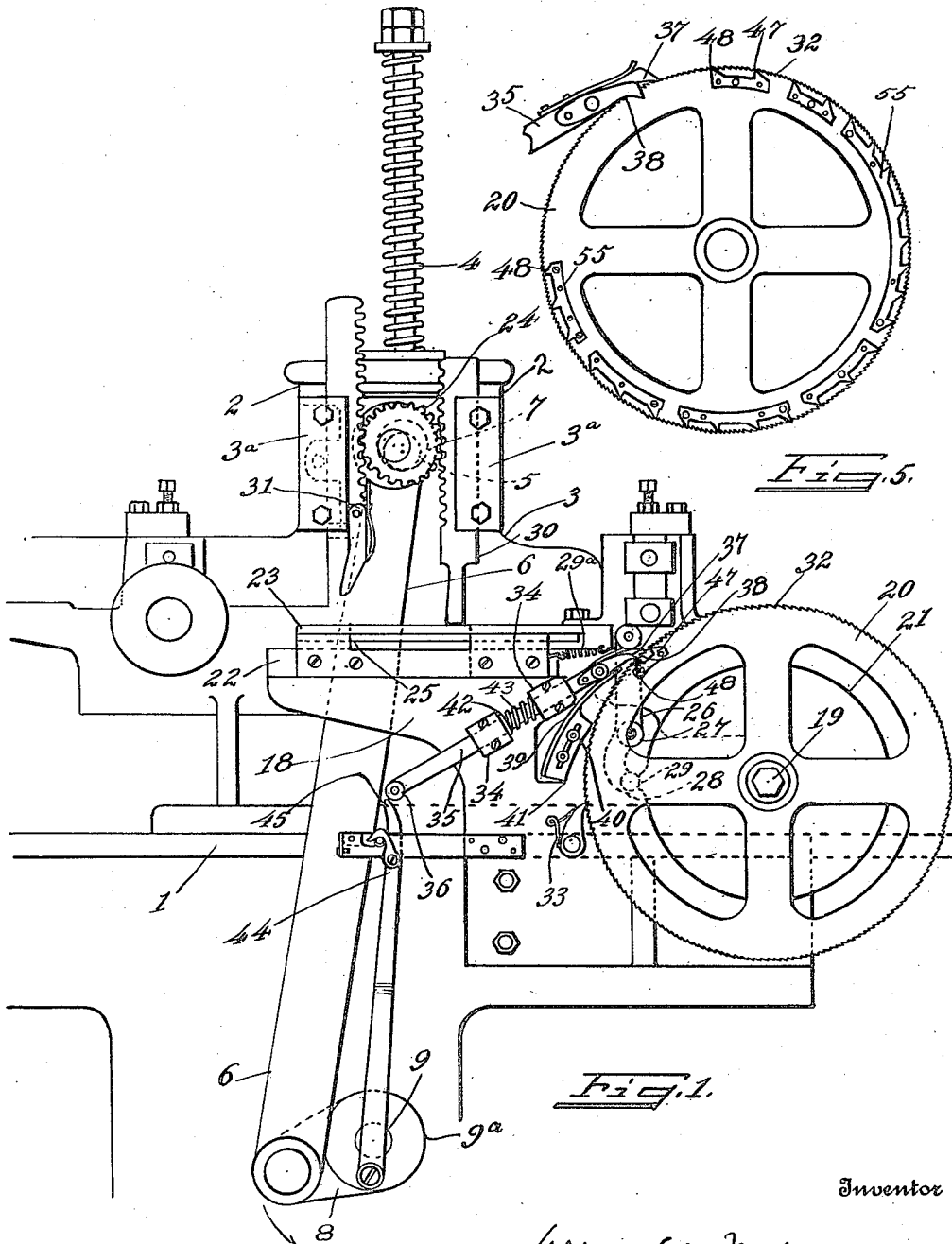
1,466,027

A. W. METZNER

PRINTING PRESS

Filed May 20, 1920

2 Sheets-Sheet 1



Witness

Inventor

Albert W. Metzner

By

Allen Keller

Attorney

Aug. 28, 1923.

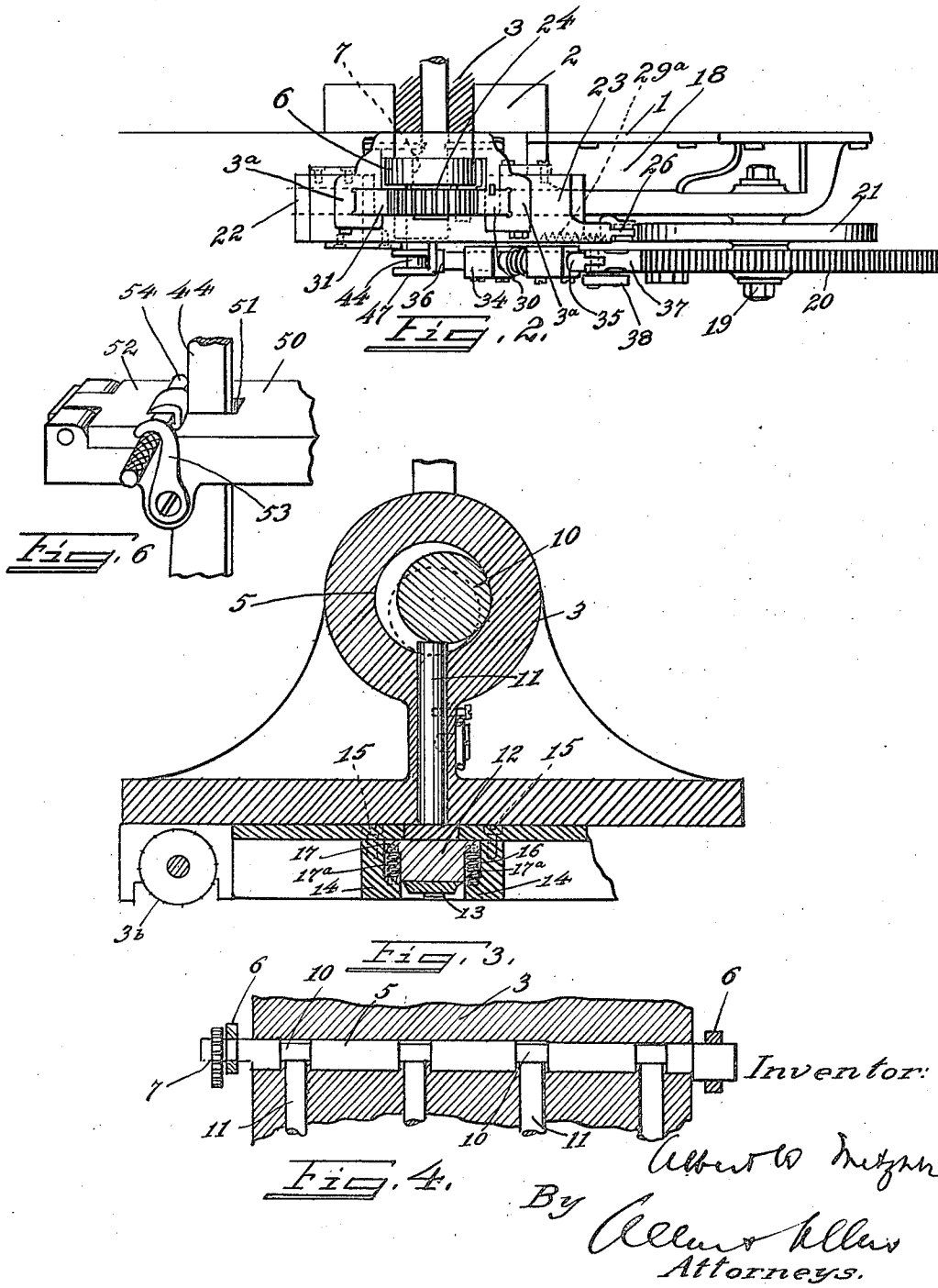
1,466,027

A. W. METZNER

PRINTING PRESS

Filed May 20, 1920

2 Sheets-Sheet 2



Patented Aug. 28, 1923.

1,466,027

UNITED STATES PATENT OFFICE.

ALBERT W. METZNER, OF DAYTON, OHIO, ASSIGNOR TO THE STANDARD REGISTER COMPANY, OF DAYTON, OHIO, A CORPORATION OF OHIO.

PRINTING PRESS.

Application filed May 20, 1920. Serial No. 382,879.

To all whom it may concern:

Be it known that I, ALBERT W. METZNER, a citizen of the United States, and a resident of the city of Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Printing Presses, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to the provision of a cancelling device to be employed with numbering machines.

In the machines now employed for numbering a succession of forms in long strips of paper, it is necessary at times to leave a few forms unnumbered, so as to permit the operative who rolls up or binds the forms, to make a break between one binder or roll and the next, while preserving successive numbers for the binders or rolls of a series.

In the numbering of the forms in autographic register paper, for example, which is sold in rolls, it is desirable to have say, five hundred forms on each roll, and to have each roll end and the next roll begin with successive numbers. The paper in autographic register practice is usually run the width of say three strips to form an original and two duplicates, and to form a break of sufficient width to allow for tearing and trimming, it is good practice to leave ten forms or thereabouts for each five hundred or whatever number is mounted on each roll.

To do this in the presses of today results simply in several of the forms being without numbers, and if the operator of the numbering press fails to mark off each form that is unnumbered with his pencil, and fails to keep accurate tab on his press so as to leave un-numbered the forms which should properly be left blank, trouble is sure to occur. In the first instance the workmen who cut and roll the paper, are likely to get an unnumbered form on a roll, and in the second instance, the number of forms to a roll will not be uniform.

Not only this, but it is quite a difficult operation for a workman to throw out his numbering device, and at the same time cancel off the unnumbered forms.

It is the object of my invention, therefore, to provide a device which in combination

with a numbering press head, will operate to throw out the numbering devices from operation for a given number of strokes at determined intervals of the press operation. It is further my object to provide a device which will print the word Void or some similar word, whenever the numbering device is thrown out of operation.

The above objects and other advantages to be noted I accomplish by that certain construction and arrangement of parts to be hereinafter more specifically pointed out and claimed.

In the drawings,

Figure 1 is a side elevation of the device of my invention.

Figure 2 is a top plan view of the same.

Figure 3 is a detail section showing one method of lowering the Void printing bar.

Figure 4 is a diagrammatic view illustrating the shaft and eccentrics of the device.

Figure 5 is a plan view of a modified form of cam controlling gear wherein by means of a number of tooth plates the speed of revolution of the wheel is greatly accelerated.

Figure 6 is a detail perspective of the device for preventing the operation of the operating device for the cam controlling gear.

In an endeavor to simplify the showing as far as possible I have not shown in detail the parts of a printing press, nor the numbering printing devices, and it will be understood that any press head or cross head, which is employed to do certain printing upon a strip of paper with its inking roll, and cooperative press bed, will suit my purpose herein. My invention relates to devices for raising the cross head out of normal printing position while at the same time projecting a different printing mechanism for contact with the paper on the press bed.

The frame of the flat bed press is illustrated at 1, having standards 2, 2 at each side thereof, which slidably carry the cross head or printing head 3, in the usual manner. As in the flat bed presses of normal present day type, the cross head is resiliently held downwardly on the standards by means of springs 4.

Extending through the cross head and journaled therein is a shaft 5, which is supported at each end by link arms 6, 6, of

which but one is shown, since their construction is the same on both sides of the press. These link arms are mounted over eccentric ends 7 of the shaft, and are themselves supported and operated by means of crank arms 8 located on a rocking shaft 9, that extends across beneath the press bed.

A rocking of the shaft 5, will operate to elevate the axis thereof with relation to the link arms, and hence elevate the position of the cross head with relation to the cross shaft 9. This will also elevate the head with relation to the bed of the press, which, as in normal construction, will bear a constant relation to the said shaft 9.

Nor normal printing devices are shown in connection with the cross head, except a diagrammatic showing of a number wheel 3^b, which is the form of printing device with which my invention is of particular value. It will be understood that whatever printing devices are employed, they will, as normally positioned in the cross head of the press, be held out of operation on the bed when the elevation of the head has been accomplished, as above set forth.

It follows from this, that the partial revolution of the shaft 5 at desired intervals will throw the normal printing device, such as a numbering counter, out of printing relation with regard to paper lying on the bed of the press.

The said shaft 5 has located at the desired intervals of its length within the cross head, eccentric portions 10, and the body of said head carries a series of plungers 11, which lie in the path of said eccentrics.

Through the center of the head, out of line with the normal printing or numbering devices, is a bar 12, which carries the desired number of type bars 13, said type bars having the word Void, or some other word denoting cancellation mounted thereon in the desired type.

The head is formed with inwardly flanged plates 14, 14, which are secured beneath the body, at 15, 15, so as to form a hollow rectangular space 16, running the length of the head. The bar 12 has a flange 17 which slides in the hollow space, and between this flange and the flanges of the plates 14, are located the desired number of spiral springs 17^a which act to keep the said bar upwardly away from printing position in the cross head. This keeping up of the bar also retains the plungers in contact with the eccentrics.

When the shaft 5 is rocked, however, to raise it upwardly on the link arms, as heretofore described, the plungers 11 will be forced downwardly by the eccentrics, and thereby force downwardly the type bars 13, so as to place them in a position to print against the bed of the press, even though the cross head be slightly elevated.

The automatic mechanism which is preferably employed to accomplish the rocking of the shaft 5 of the cross head, will now be described. It comprises a gear on the shaft, with racks to operate it, and a slide 70 which forces up one or the other rack dependent upon its position. For locating the slide, a cam is employed which is operated by a large ratchet wheel, which is moved step by step by a mechanism under 75 control of the shaft 9.

On the side of the press frame is mounted a support 18 which mounts a stub shaft 19, on which are the large ratchet wheel 20 and the cam disk 21. The ratchet wheel and 80 cam disk are journaled on the stub shaft and connected together.

The support provides a track 22, for a slide 23, which reciprocates beneath the gear 24 mounted on the shaft 5 of the press head, 85 outside of the journal of the link arm, which it will be remembered operated the head.

The slide is open through the middle, as at 25, and at its right hand end is provided with a pivotal connection with a lever 26. 90 This lever is fulcrumed at 27 on the support and has as its end beyond the fulcrum a roller 28, that contacts with a relatively small nose 29 on the cam. The movement of the cam into a position where the nose 95 contacts with the roller 28 will move the slide through the instrumentality of the lever for a short distance to the right.

The slide has springs 29^a, which serve to keep it in its left hand position except when 100 under control of the said cam nose.

The gear 24, while mounted on the eccentric 7, is formed with the shaft 5 as its center. Mounted to slide vertically in the two guides 3^a on the head, are rack bars 30, 31, 105 which mesh with the said gear. The ends of the rack bars during the movement of the head up and down, are carried along with the gear in a like up and down movement.

The opening in the slide is not wide 110 enough to permit the ends of both bars to move downwardly, and dependent upon the position of the slide either the right hand rack bar 30 or the left hand rack bar 31, will strike on the unslotted portion of the 115 slide, and thus revolve the gear.

The moving of the slide to the right will cause the left hand rack bar to contact with the slide, and will revolve the gear clockwise. This revolution will move the eccentric support 7 so that its longest radius 120 from the true center of the shaft will be downward, and will thus elevate the cross head shaft with relation to the operating links. This same clockwise movement will 125 throw downwardly the plungers and Void type bars.

Due to the construction above described, it is only during the period when the slide is under control of the cam nose, that this 130

clockwise motion of the shaft 5 is brought about.

The large ratchet must have the number of teeth therein corresponding to the desired number of times that the normal printing shall take place, and the cam nose must be of a dimension which will regulate the number of operations of the press head during which Void is to be printed.

In the device in autographic register paper printing, as was stated in the introductory matter hereto, there would be say five hundred and ten teeth on the large ratchet, and the cam nose would stay in contact with the slide operating lever for ten of the ratchet teeth.

The teeth 32 of the ratchet are spaced about its periphery and the ratchet controlled against reverse movement by a spring pawl 33. Mounted to slide in a pair of brackets 34 on the side support, is a sliding bar 35, carrying a roller 36 on its lower end, and a pair of spring pawls 37 and 38 on its upper end.

The pawl 37 contacts with the ratchet, and a guard plate 39 extending tangentially of the ratchet periphery prevents the successive contact of this pawl 37 with more than a span of one tooth on the ratchet. The guard plate is held adjustably by bolts 40 engaging in a slot 41 of the plate, so that if desired a span of two or three teeth for each operation may be arranged for.

The sliding bar 35 has a collar 42 and a coiled spring 43 bearing there-against, which retract it from contact with the ratchet, and the bar is moved toward the ratchet by any desired contact means mounted on the cross head operating link.

As a typical mechanism for this purpose, is a bar 44, having a contact nose 45, for the roller 36. This bar is pivotally mounted as shown, on the link, and is bent outwardly so as to clear the edge of the side support.

When in normal position the arm 44 is adapted to rise each time the shaft 9 is rocked and to force over the roller 36 thereby imparting a pawl actuation to the ratchet or gear wheel 20.

The arm is guided in a bar 50 which is mounted on the side support, and has a cut out portion 51 in which the arm 44 slides and is guided. A latch plate or abutment plate 52 is hinged at the outer end of the cut away portion 51, and serves to fill all but a small part of the cut when lowered and held by a hook 53 mounted on the bar 50 and engaging over a pin 54 on the plate.

When it is desired that the arm 44 cease to operate the hook is released and the plate lifted, whereupon the arm will be free to be deflected by the roller 36 instead of pressing it outwardly and upwardly. The use of this plate thereby permits of the cancel-

ling device being thrown permanently in or out of operation, at the desire of the operator.

The second pawl 38 on the slide bar is adapted for use in giving the ratchet an extra push at the two points when the cam nose is riding under, and riding away from the rack slide operating lever.

On the face of the large ratchet are placed two teeth 47 and 48. The teeth are so placed that when the nose is coming into operative position, the pawl 38 will contact with and move the tooth 47, and when the nose is moving out of operative position the pawl will contact with and move the tooth 48.

Between the contact of the extra pawl 38 with said two teeth, the peripheral teeth of the ratchet will time the operation of the cam.

It should be observed that the number of teeth on the face of the ratchet between teeth 47 and 48 is not the entire determining factor in the movement of the ratchet during the operation of the pawl 38, since the tooth 47 will come into the path of the pawl 38 in a few operations. The pawl 38 has a greater length of movement than the pawl 37 since it is not under control of the plate or finger 39 and will move the teeth 47 and 48 a greater distance than the pawl 37 will move the ratchet teeth. The teeth 47 and 48 are spaced so as to cancel but four or five checks. One thousand teeth on the ratchet may be applicable to the side roll which is made up of small checks, while in the neighborhood of one thousand large checks would make too large a roll to be manageable. The mechanism would thus not cancel the checks to be torn off in shaping up the separate rolls of paper, at the proper point where large checks were being run over the press, if close to one thousand were the amount to be numbered for each batch. As heretofore noted a ratchet having the desired number of teeth may be used, or I may provide additional tooth plates 55 in order to place additional teeth in the path of the extra pawl 38.

As shown in Figure 5 the ratchet will have say, one thousand teeth and these additional tooth plates are set in positions beginning at the desired number of ratchet teeth away from the cam shifting teeth 47 and 48, and much accelerate the movement of the ratchet 20.

The teeth of the plates 55 are spaced a distance which will bring the various teeth in contact with the pawl 38 at each operation of the bar 35, and as soon as the pawl 38 strikes these plates the ratchet is moved exclusively by the pawl 38, one wide spaced tooth at a time.

Thus in the illustration in Figure 5, the arrangement is as follows:—Beginning to count the teeth of the ratchet from the edge of the special lateral tooth 48, 308 teeth are

counted off. A plate 55 is then set so that the apex of the foremost tooth thereof will be six teeth away from the 308th tooth of the ratchet. A series of plates are arranged
5 around the ratchet, the teeth thereof being spaced to contact with the pawl 38 at each operation, until the teeth 47 are reached.

When the large ratchet has been turned step by step by the pawl 37 for 308 counts, the pawl 38 will then contact with the fore-
10 most tooth of the foremost plate 55. By count it will be noted that there are 25 teeth on the plates 55 and the result of this will be that in 25 operations of the numbering press, the teeth 47 will be reached. The spacing
15 of the teeth 47 and 48 will then permit four or five cancellations to take place after which the cam will shift and the operation begin over again. In the arrangement illustrated
20 333 checks will be numbered between each cancellation.

Any variation of this can be accomplished by a proper positioning of the plates 55, and the proper spacing of their teeth apart.

25 It is believed that the operation of the mechanism as a whole will now be apparent from the matter set forth above describing the operation of the various instrumentalities.

30 While described as having particular bearing to use with a numbering machine, and a Void printing mechanism when the numbering machine is out of operation, it is not desired that my invention be limited in its
35 scope to this special application.

Neither is it desired that reference to specific mechanism be construed as a limitation of my claims where their terminology permits of the substitution of equivalents
40 for those set forth.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. The combination with a movable cross
45 head for a printing press, for normal printing, of means for altering the path of operation of the movable cross head, cancellation devices mounted on said cross head, and means for moving said devices into position
50 to print during the altered position of the cross head.

2. The combination with a movable cross head for a printing press, for normal printing, of means for altering the path of operation of the movable cross head, cancellation
55 devices mounted on said cross head, and means for moving said devices into position to print during the altered position of the cross head, said two means being adapted to operate simultaneously.

3. The combination with a movable cross head for a printing press, for normal printing, of means for altering the path of operation of the movable cross head, cancellation
60 devices mounted on said cross head, and

means for moving said devices into position to print during the altered position of the cross head and means for automatically operating said two means.

4. The combination with a movable cross
70 head for a printing press, for normal printing, of means for altering the path of operation of the movable cross head, cancellation devices mounted on said cross head, and means for moving said devices into position
75 to print during the altered position of the cross head and means for automatically operating said two means, said automatic means being under control of the movable cross head.

5. The combination with a movable cross head for a printing press, for normal printing, of means for altering the path of operation of the movable cross head, cancellation
80 devices mounted on said cross head, and means for moving said devices into position to print during the altered position of the cross head and means for automatically operating said two means, said automatic
85 means being under control of the movable cross head, and adapted to operate during selected periods of the continuous operation of said cross head.

6. In combination with a movable cross head for a printing press of a driven shaft,
95 crank means on the driven shaft for moving the cross head, and automatic means for changing the position of the cross head on said crank means during selected operations thereof.

7. In combination with a movable cross head for a printing press of a shaft jour-
100 nalled in said cross head, a driven shaft, operating mechanism from the driven shaft to the cross head shaft for reciprocating the said head, eccentric connection for said operating mechanism with the cross head shaft, and means for turning said shaft.

8. In combination with a movable cross head for a printing press of a shaft jour-
110 nalled in said cross head, a driven shaft, operating mechanism from the driven shaft to the cross head shaft for reciprocating the said head, eccentric connection for said operating mechanism with the cross head
115 shaft, and means for turning said shaft, said means comprising devices under automatic control of said operating mechanism.

9. The combination with the movable printing head of a flat bed press, of means
120 for operating said head to effect a printing and means for preventing printing by the printing head, comprising in part a ratchet adapted for operation step by step successively with the printing head, and means
125 operatively connected to the ratchet and adapted to set in operation said preventing means at desired positions of the ratchet.

10. The combination with the movable printing head of a flat bed press, of means
130

for operating said head to effect a printing, means for preventing the normal printing of said head, and for simultaneously projecting a different printing element within said head into printing position, said means comprising in part a device movable step by step with the successive movements of the head, and adapted at the desired intervals to come into operation.

11. In a device of the character described, a movable printing head, a shaft journaled in said head, a mounting device for said head on an eccentric portion of said shaft, eccentric portions for said shaft interior the head, auxiliary printing devices in the head, and adapted to be projected into printing position, and means for revolving said shaft.

12. In a device of the character described, a movable printing head, a shaft journaled in said head, a mounting device for said head on an eccentric portion of said shaft, eccentric portions for said shaft interior the head, auxiliary printing devices in the head, and adapted to be projected into printing position, and means for revolving said shaft, comprising intermittent mechanism adapted to come into operation automatically during selected movements of the head.

13. In a device of the character described, a movable printing head, a shaft journaled in said head, a mounting device for said head on an eccentric portion of said shaft, eccentric portions for said shaft interior the head, auxiliary printing devices in the head, and adapted to be projected into printing position, and means for revolving said shaft, said means being under control of the movement of the head.

14. The combination with a movable printing head, of a shaft journaled in said head and having elements thereon to effect the printing operation of the head upon a rocking of the shaft, and means for rocking said shaft comprising a gear thereon, rack bars in mesh with the gear, and a contact element to operate selected rack bars, said contact element being intermittently timed with relation to the printing head movement.

15. The combination with a movable printing head of a shaft journaled in said head, and having elements thereon to effect the printing operation of the head upon a rocking of the shaft, and means for rocking the shaft comprising a gear thereon, rack bars in mesh with the gear, said bars having extending ends, and a slotted member lying in the path of movement of said rack bar ends during operation of the head, and adapted to operate one of the two rack bars dependent upon its position.

16. The combination with a movable printing head of a shaft journaled in said head, and having elements thereon to effect

the printing operation of the head upon a rocking of the shaft, and means for rocking the shaft comprising a gear thereon, rack bars in mesh with the gear, said bars having extending ends, and a slotted member lying in the path of movement of said rack bar ends during operation of the head, and adapted to operate one of the two rack bars dependent upon its position, a step by step mechanism adapted to operate in time with the head, and spaced means on said step by step mechanism for operating the slotted member.

17. The combination with a movable printing head, of a shaft journaled in said head and having elements thereon to effect the printing operation of the head upon a rocking of the shaft, and means for rocking said shaft comprising a gear thereon, rack bars in mesh with the gear, and a contact element to operate selected rack bars, said contact element being intermittently timed with relation to the printing head movement, and comprising a ratchet member under control of the printing head movement, and means on the ratchet member adapted to intermittently move said contact element.

18. In a device of the character described, the combination with the shaft in a printing head adapted to be rocked to effect the printing operation of said head, said shaft having a movement in a rectilinear plane, of means for rocking said shaft comprising a gear on the shaft, a pair of racks meshing on opposite sides of the gear and carried by the head, and means for interrupting the motion of one of the two racks comprising a slotted member having a slot of a width insufficient to permit the passage of both rack bars and means for automatically operating said slotted member.

19. In a device of the character described, the combination with the shaft in a printing head adapted to be rocked to effect the printing operation of said head, said shaft having a movement in a rectilinear plane, of means for rocking said shaft comprising a gear on the shaft, a pair of racks meshing on opposite sides of the gear and carried by the head, and means for interrupting the motion of one of the two racks comprising a slotted member having a slot of a width insufficient to permit the passage of both rack bars, a ratchet means connected with the printing head for operating the ratchet step by step, a cam under control of the ratchet, said cam having a nose of restricted width, and connection from said slide adapted to be operated by said nose.

20. In a device of the character described, the combination with a driving member, of a printing device operated by said member, said printing device having a plurality of printing elements, selective mechanism for throwing one or the other of the printing elements

into operation for said printing device and preventing operation of the one not thrown, and means under control of the driving member for operating said selective mechanism, said means comprising in part a reciprocating bar adapted to operate at each successive movement of the printing device and a step by step mechanism under control of said bar.

21. In a device of the character described, the combination with a driving member, of a printing device operated by said member, said printing device having a plurality of printing elements, selective mechanism for throwing one or the other of the printing elements into operation for said printing device, and means under control of the driving member for operating said selective mechanism, said means comprising in part a reciprocating bar and a step by step mechanism under control of the driving member for operating said selective mechanism and a guideway for said bar adapted to confine its movement to an operative path or release it for inoperative movement.

22. A selective mechanism for use with printing presses or the like comprising in part a rotary toothed member and a press controlling element operated by said rotary toothed member, a press actuated arm, a contact element positioned to operate the toothed member upon contact with the actuated arm, and means for preventing the action of the arm.

23. A selective mechanism for use with printing presses or the like comprising in part a rotary toothed member and a press controlling element operated by said rotary toothed member, a press actuated arm, a contact element positioned to operate the toothed member upon contact with the actuated arm, and means for preventing the action of the arm, comprising a slotted plate through which the arm passes, and a movable member in said slot adapted to confine the arm to one position therein or free it for oscillatory movement therein.

24. The combination with a movable printing mechanism for normal printing, of additional printing devices therefor, normally out of operation, and automatic mechanism for moving the additional printing devices into printing position and preventing simultaneously the normal printing comprising in part a step by step mechanism and automatic means for controlling the extent of the operative steps thereof.

25. The combination with a movable printing mechanism for normal printing, of additional devices for a changed printing normally out of operation, and mechanism comprising in part a step by step member adapted for timed movement with the printing mechanism and mechanism under control of the step-by-step member adapted to

move the additional printing devices into printing position after a desired number of forms.

26. The combination with a movable numbering device in a printing press, of additional devices for printing a cancellation mark, same being normally out of operation, and mechanism having a step by step movement timed with the numbering device movement mechanism under control of the step-by-step member, same being adapted to prevent the action of the numbering device after a desired number of forms and move the cancelling printing device into operative position.

27. The combination with a movable printing mechanism for normal printing, of additional devices for a changed printing, normally out of operation, a mechanism comprising in part a step by step member adapted for timed movement with the printing mechanism, and mechanism under control of the step-by-step member adapted to move the additional printing devices into printing position after a desired number of forms, and means for moving the said timed mechanism the desired number of steps at a time to control the point of movement of the additional printing mechanism with relation to the movement of the printing mechanism.

28. In a device of the character described a toothed member, a press controlling element operated thereby, a press operated member, a double pawl device under control of the press operated member and additional toothed elements on the toothed member whereby one pawl of the double pawl device will operate on the normal teeth of the member and the other pawl will operate on the additional toothed elements.

29. The combination with a movable printing mechanism for normal printing, of additional printing devices therefor, normally out of operation, an automatic mechanism for moving the additional printing devices into printing position and preventing simultaneously the normal printing, said mechanism comprising in part a rotary member adapted at a fixed point with reference to its rotation to effect said movement, and means moving with the movable printing mechanism for rotating said member a single step during each operation of the printing mechanism.

30. The combination with a movable printing mechanism for normal printing, of additional printing devices therefor, normally out of operation, and automatic mechanism for moving the additional printing devices into printing position and preventing simultaneously the normal printing, said mechanism comprising in part a rotary member adapted at a fixed point with reference to its rotation to effect said movement, and means moving with the movable print-

ing mechanism for rotating said member, said means being adjustable to effect different rotary speeds of the rotary member.

31. In a device of the character described
5 a toothed member, a press controlling element operated thereby, a press operated member, a double pawl device under control of the press operated member one of said

pawls being adapted for contact with and operation of successive teeth of said toothed member, and a plurality of additional teeth 10 mounted on said member in the path of the other pawl, and adapted for greater movements of the member than the normal successive tooth movement.

ALBERT W. METZNER.