

(No Model.)

J. H. REINHARDT.  
CONSECUTIVE NUMBERING HEAD.

No. 425,580.

Patented Apr. 15, 1890.

Fig. 1.

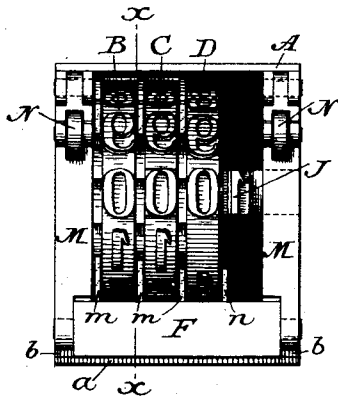


Fig. 2.

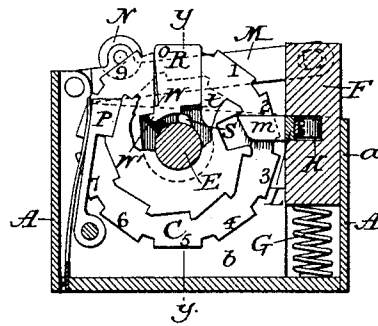


Fig. 3.

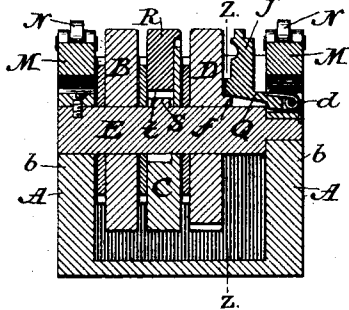


Fig. 4.

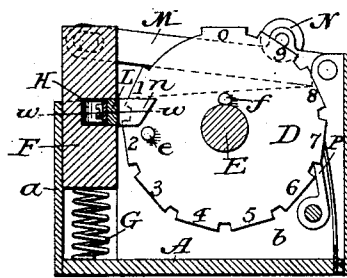


Fig. 5.

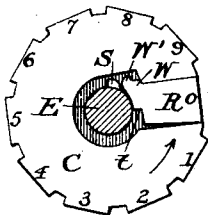


Fig. 6.

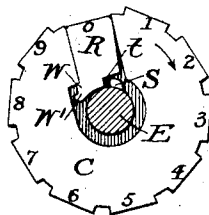


Fig. 7.

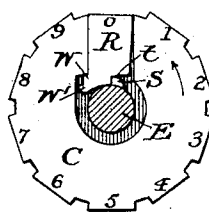


Fig. 8.

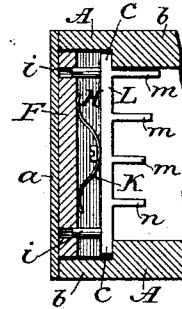


Fig. 9.

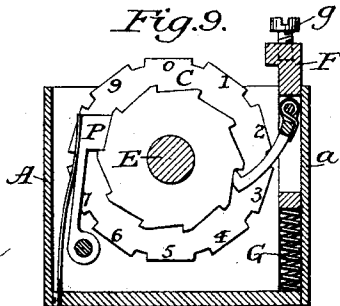
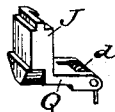


Fig. 10.



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# UNITED STATES PATENT OFFICE.

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## CONSECUTIVE-NUMBERING HEAD.

SPECIFICATION forming part of Letters Patent No. 425,580, dated April 15, 1890.

Application filed October 29, 1888. Serial No. 289,398. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES H. REINHARDT, of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Consecutive-Numbering Heads; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification, in which—

Figure 1 is a top view of my improved numbering-head; Fig. 2, a vertical section in line *x x* of Fig. 1; Fig. 3, a cross-section in line *y y* of Fig. 2; Fig. 4, a vertical section in line *z z* of Fig. 3. Figs. 5, 6, and 7 are side elevations of the tens-wheel fitted with the drop-cipher, illustrating three different positions thereof; Fig. 8, a transverse section in line *w w* of Fig. 4; Fig. 9, a sectional view similar to Fig. 2, illustrating a modification in arrangement of the pawls; and Fig. 10 is a detached view, in elevation, of the auxiliary movable type-block, with its lever and spring.

Similar letters indicate like parts in all of the figures.

My invention relates to a consecutive-numbering head for printing-presses of the class adapted to be actuated by the descent of the platen of the press, and has for its object to simplify the movements of the several parts of the head and to increase its range of usefulness.

It consists in the novel combination of devices hereinafter described, and particularly set forth in the claims.

In the accompanying drawings, A A represents the frame and casing of the machine, B C D its numbering-wheels, and E the fixed shaft upon which these wheels revolve. The numbering-wheels are mounted in a train to be operated in the customary manner, whereby the second or tens wheel C is moved one step at each complete revolution of the units-wheel B, the hundreds-wheel D one step at each revolution of the tens-wheel C, and so on, with this exception, however, that preferably, for reasons which will hereinafter appear, the last wheel D, of highest denomination in the train, is formed with eleven pe-

ripheral divisions or type-surfaces instead of ten, and is alone made to move one step after the preceding wheel C has completed its revolution and brought its cipher to line of print.

My invention dispenses with the swinging pawl-frame commonly employed for actuating the type-wheels in a numbering-head. In place thereof a plate or head F (see Figs. 1, 2, and 4) is mounted to slide vertically immediately in front of the numbering-wheels and in a plane parallel with the axis thereof in suitable recesses or ways formed in the end plates *b b* of the casing. It is confined by the front plate *a* of the casing, and is upheld upon one or more springs G placed beneath it, so that normally its upper edge shall be about on a level with the face of the uppermost type, or type at line of print, on the numbering-wheels.

A pawl-plate L (see Figs. 2, 4, and 8) is fitted to oscillate horizontally in a longitudinal recess H, cut in the inner face of the sliding head F, its outward movement being prevented by the engagement of its ends *c c* with the inner walls of the vertical recesses in the end plates *b b* of the casing, as shown in Fig. 8. It is steadied in its movement by means of pins *i i*, projecting rearwardly therefrom into suitable apertures or sockets in the head F, and it is automatically carried outward by means of a spring K, fitted within the recess H. The several pawls *m m m* are made to project from the edge of the pawl-plate L in position to engage severally the ratchets upon the numbering-wheels, and the end of each pawl is beveled upon its lower side, so that, as the sliding head F drops, the pawl will, in its contact with the ratchet-teeth, slide over the same and be forced inward against the stress of the spring K, and after passing the point of the tooth will spring under it in position to turn the ratchet and wheel as the head rises.

By making the pawl actuating each wheel shorter than that for the wheel next in order preceding it and providing a single interdental notch on each wheel which shall be deeper than the remainder the proper movement of the wheels in succession may be

readily produced in the usual well-known manner, and I have shown this device as applied to the numbering-head illustrated in the drawings.

- 5 In addition to the pawls *m m m*, engaging, as described, the ratchets on the several wheels, an extra pawl *n*, Figs. 1 and 4, is provided in position to engage a pin *e* upon the outer face of the last numbering-wheel D in the train, whereby, so soon as said wheel has made its move in unison with the wheel C next preceding it, it will be again moved a second step in unison with the next move of the units-wheel B.
- 10 The sliding head F is depressed against the stress of its spring G to actuate the pawls and move the numbering-wheels by the descent thereon of the platen of the press as it is brought down upon the type to produce an impression therefrom. As the head F is required to drop below the level of the type, the length of stroke or movement needed for the purpose is obtained without the necessity of making an attachment to the platen by means of levers M M, pivoted to the opposite side of the casing, one at each end of the machine, to extend across the same and be jointed to the upper edge of the head F, as shown in Figs. 2 and 4. Each lever M is fitted near to its pivoted end with an offset, or preferably with ears carrying a friction-roller N, to serve as a contact-point for the platen, whereby the platen just before reaching the type will bear down the lever, and with it the sliding head. As the platen rises, the head will be borne upward to its normal position by its springs G G, and in its movement will turn the numbering-wheels to bring the next type in order thereon to line of print for the next impression. A reverse movement of each numbering-wheel is prevented in the customary manner by a restraining-pawl P engaging the ratchet on the wheel, as shown in Figs. 2 and 9 of the drawings.
- 45 The second feature of my invention relates to an improvement in the device whereby the ciphers on each of the numbering-wheels following the units-wheel may be dropped out of line of print in beginning to number. To this end the cipher-type for each of said wheels may be formed upon a block R, as shown in the wheel C, (see Figs. 2, 3, 5, 6, and 7,) which is mounted to reciprocate in a radial recess in the numbering-wheel and to rest at its inner end upon the periphery of the fixed shaft E, upon which the wheel revolves. A cam S is formed upon the periphery of the shaft immediately under said block R, so that as, in the revolution of the numbering-wheel, the inner end of the type-block is brought to said cam, as shown in Fig. 5, it will ride up thereon and the block will be thereby carried outward far enough to bring its type to line of print, as shown in Fig. 2.
- 60 The wheel C, carrying the drop-cipher type-block R, is preferably fitted to revolve over the cam S, which actuates said block. The

cam in such case is of less width than the wheel, the revolution of the wheel over the cam being permitted by means of an annular recess cut in a suitable depth and width on the inner periphery of the wheel, as shown in Figs. 5, 6, and 7. To permit the type to be dropped when required without turning the wheel, a recess is preferably cut in the inner end of the block R to form a re-entrant angle *t* at the rear corner thereof deep enough to receive the cam S, as shown in Figs. 2, 5, 6, and 7, and the opposite face of the block is beveled inward to permit said inner end of the block to be swung forward far enough to allow the recess to register with the cam, and thereby permit the type-block to drop. To facilitate bringing the cam S and recess *t* into registry, the wheel may, however, be turned slightly forward, as shown in Fig. 6, and after the block has dropped be moved back again to its normal position, as shown in Fig. 7. The outward movement of the block R after it has been dropped out of line of print, in manner as described, is prevented by means of an offset or toe W, formed upon the inner end thereof opposite the recess which receives the cam, and adapted to pass, as shown in Fig. 7, into a recess cut in the wheel as an offset from the radial recess in which the block plays. A second projection or toe W' serves to engage the same recess and thereby prevent the block from moving outward beyond the line of print when lifted up upon the cam S, as shown in Fig. 2. When, as the wheel revolves, the toe W' strikes the cam S, the lower end of the block R will be thereby moved back far enough to permit the first offset W to clear its engaging recess as the block rides up upon the cam into the position shown in Fig. 2.

The third feature of my invention relates to a novel device whereby without the addition of an extra numbering-wheel an additional figure may be printed in connection with those on the wheels, so that with a train of wheels numbering, for example, up to 999, the number 1,000 may be printed. For this purpose an extra type-block J (see Figs. 3 and 10) is fitted to move vertically into and out of line of print alongside of the last wheel D. This block J is attached to the end of a lever Q, which, extending parallel with the shaft E and immediately above it to the end plate of the casing, passes at its outer end into a slot or recess in said plate, within which it is pivoted. A coiled spring *d* operates to bear down the lever Q and hold the block J normally with its type-face below line of print. The under side of the free end of the lever Q is beveled, and a pin *f* is fitted to project from the outer face of the proximate numbering-wheel D in position to bear against said inclined surface as the wheel revolves and thereby raise the lever and bring the type up to line of print synchronously with the cipher on said wheel. So soon as the cipher is carried beyond the line of print the extra type-

block J, being left unsupported, will drop under the stress of the spring *d*.

It is evident that the type may be placed directly upon the end of the lever Q without the intervention of the block J by mounting the lever in a plane nearer the periphery of the proximate type-wheel D, and that the device may be advantageously employed to bring any desired letter or character automatically at intervals to the line of print.

In the operation of the machine the train of numbering-wheels is actuated step by step after each imprint therefrom by the contact of the platen of the press with the friction-rollers on the levers M M, which, operating to depress the sliding pawl-carrying head F, leaves it free, as the platen ascends, to return to its normal position under the stress of its springs G, carrying up with it the pawls *m m* to produce a revolution of the wheels. When the wheels have thus been actuated until they present 999 for imprint, the next move of the platen upon bringing the ciphers on the several wheels to line of print will, by the action of the pin *f* on the lever Q, bring up the numeral 1 on the extra type-block J also into line for print, and so complete the number 1,000. The cipher on the wheel C may then be dropped by turning the wheels slightly forward, so as to allow the cam S on the shaft E to pass into the recess *t* at the lower rear angle of the cipher-block R, and thereby allow said block to move inward. At the next movement of the platen the units-wheel B and the hundreds-wheel D will both be moved in unison one step, and the 1 on the units-wheel and the blank on the hundreds-wheel will be thereby brought to line of print, the movement of the latter serving, however, to carry the supporting-pin *f* away from the lever Q, so that the type lifted thereby will drop out of print.

Instead of fitting the pawls *m m* to reciprocate horizontally in the inner face of the vertically-sliding head F, I contemplate pivoting them to oscillate in an opening cut in said block, so as to be free to swing out automatically under the action of a suitable spring into engagement with the ratchets on the numbering-wheels, as shown in Fig. 9 of the drawings. I contemplate, also, the combination of a set-screw *g* with the top of the head or pawl-carrier F, as shown in said Fig. 9, to serve as an adjustable contact-point for the platen of the press, in which case the levers M M may be dispensed with.

I claim as my invention—

1. The combination, with the type-wheels in a numbering-head and the ratchets actuating said wheels, of the spring-actuated head F, moving in front of the wheels in a plane parallel with the axis thereof, the pawls attached to said head and extending thence

into engagement with said ratchets, and a lever which, extending across the axis of the wheels at a right angle therewith, is connected to the head at one end and pivoted to the casing at the other, substantially in the manner and for the purpose herein set forth.

2. The combination, in a numbering-head, with its axial shaft, a peripheral cam upon said shaft, and a numbering-wheel revolving thereon adjacent to said cam, of the radially-adjustable type-block fitted in said wheel, having its inner end free to oscillate in a plane at a right angle to the axis of the wheel, and which is carried outward to line of print and supported thereat by engagement with said cam, and when at line of print is free to drop inward in front of the cam independently of any movement of the wheel, substantially in the manner and for the purpose herein set forth.

3. The combination, in a numbering-head, with a numbering-wheel and a radially-adjustable type-block in said wheel, having its inner end free to oscillate in a plane at a right angle to the axis of the wheel, of one or more projections W W' upon the front face of said type-block near its inner end to engage an offset in the wall of its inclosing-recess, substantially in the manner and for the purpose herein set forth.

4. The combination, in a numbering-head, with a numbering-wheel, its axial shaft, and a radially-adjustable type-block in said wheel having its inner end free to oscillate in a plane at a right angle to the axis of the wheel, and having one or more projections W W' upon its front face near its inner end to engage an offset in the wall of its inclosing-recess, of a cam upon said shaft made to engage the type-block in the revolution of the wheel, whereby the projections are automatically disengaged from the offset and the type-block is moved outwardly, substantially in the manner and for the purpose herein set forth.

5. The combination, in a numbering-head, of its casing, its numbering-wheels, a pivoted lever, a type fitted upon the free end of said lever to oscillate therewith into and out of line of print with the numbering-wheels, and means, substantially as described, whereby the proximate type-wheel is made to actuate said lever and cause the auxiliary type to be automatically carried to line of print by the revolution of the wheel, substantially in the manner and for the purpose herein set forth.

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

JAMES H. REINHARDT.

Witnesses:

A. N. JESBERA,  
E. M. WATSON.