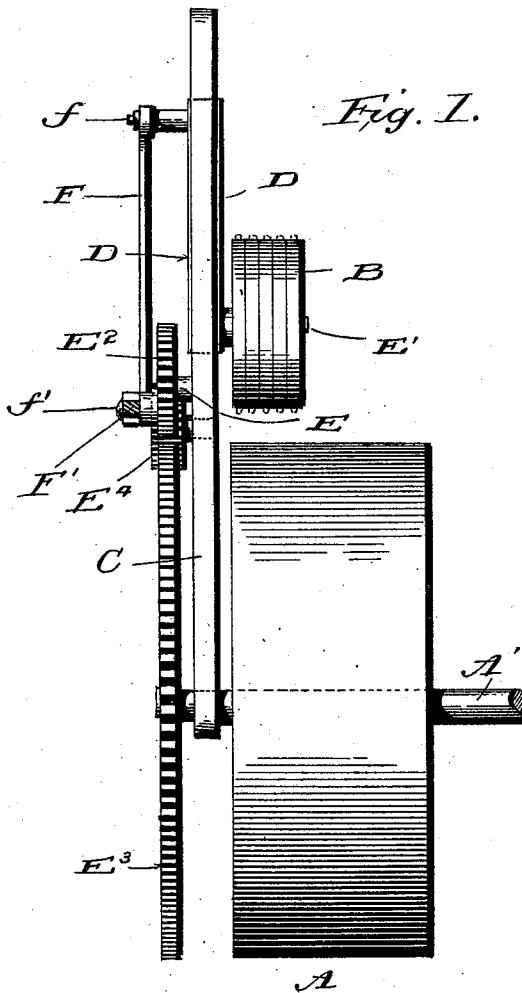


E. A. HENKLE & E. P. TEAL.

NUMBERING ATTACHMENT FOR PRINTING PRESSES.

No. 536,428.

Patented Mar. 26, 1895.



Witnesses:

*L. C. Mills.*  
*E. H. Bond*

*Inventors*  
*Edward A. Henkle.*  
*Edwin P. Teal.*  
*by E. B. Stocking*  
*Atty.*

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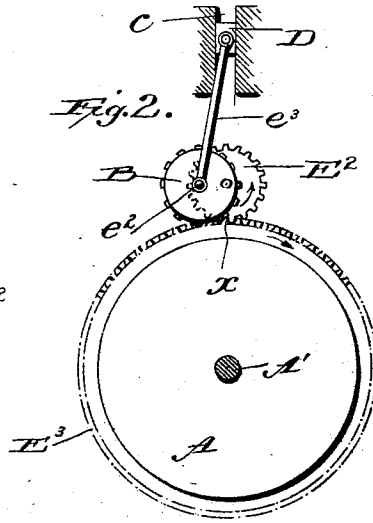
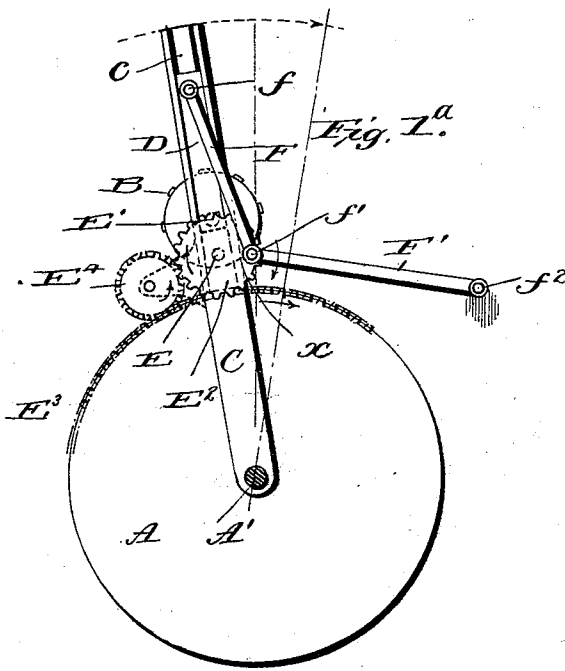
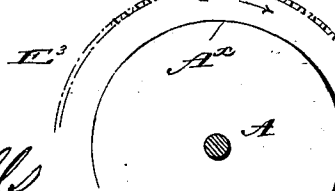
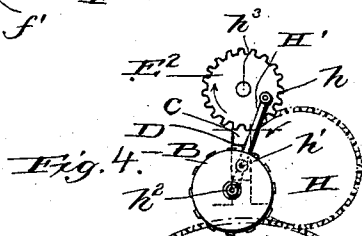
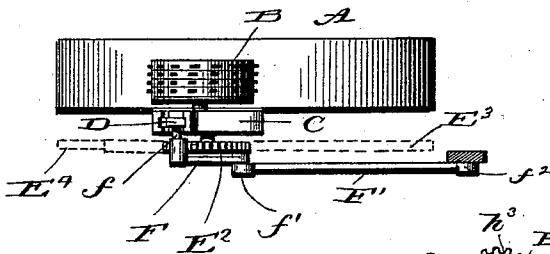


Fig. 3.



Witnesses:  
*L. C. Hills*  
*E. H. Bond*

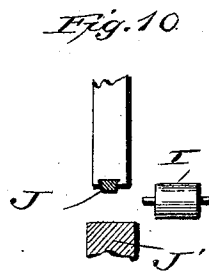
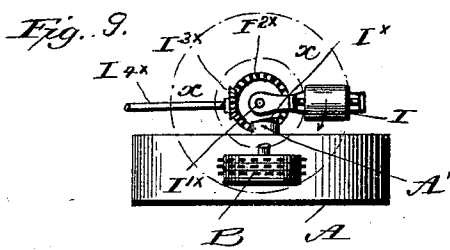
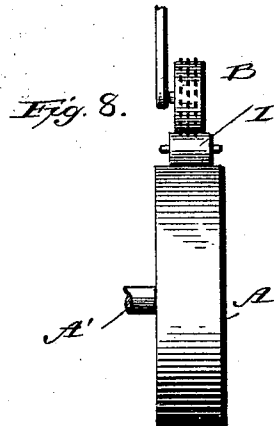
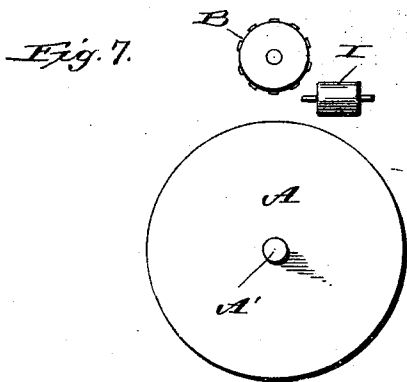
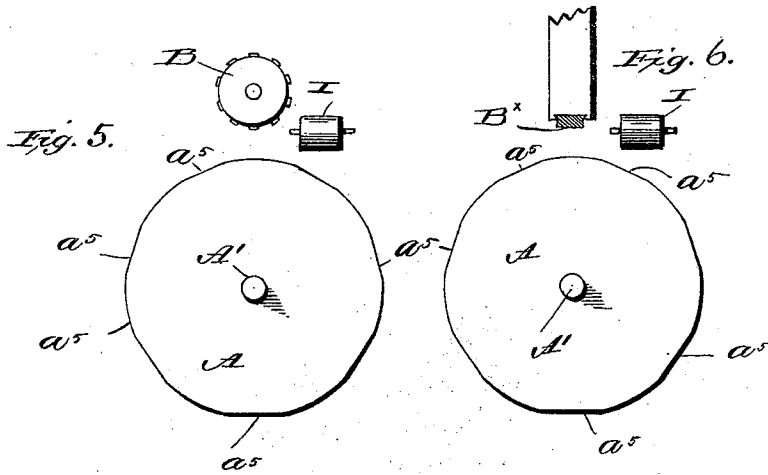
Inventors  
*Edward A Henkle,*  
*Edwin P. Teal,*  
 by *E. B. Stocking* Attorney

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*Edwin P. Teal,*  
*by E. B. Stocking* Attorney

# UNITED STATES PATENT OFFICE.

EDWARD A. HENKLE, OF PHILADELPHIA, AND EDWIN PERCY TEAL,  
OF UPPER DARBY, ASSIGNORS TO THE GLOBE TICKET COMPANY,  
OF PHILADELPHIA, PENNSYLVANIA.

## NUMBERING ATTACHMENT FOR PRINTING-PRESSES.

SPECIFICATION forming part of Letters Patent No. 536,428, dated March 26, 1895.

Application filed February 23, 1894. Serial No. 501,209. (No model.)

*To all whom it may concern:*

Be it known that we, EDWARD A. HENKLE, residing at Philadelphia, in the county of Philadelphia, and EDWIN PERCY TEAL, residing in Upper Darby township, in the county of Delaware, State of Pennsylvania, citizens of the United States, have invented certain new and useful Improvements in Numbering Attachments for Printing-Presses, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to certain new and useful improvements in means and devices for making printed or stamped impressions of numbers or any other desired characters upon material fed to and carried by a continuously revolving impression cylinder, and it has for its objects among others to provide a simple and efficient attachment to be applied to printing machines of known or special construction, which shall operate at high rates of speed and which will obviate the necessity of violent reciprocations.

We have devised novel means for operating the numbering head and also novel devices for inking the impression surfaces. We also provide for varying the interval between the impressions to admit of different sizes of work.

The inking is done by means of rollers carried in a frame which is mounted to revolve in a plane parallel with the impression surface, both rollers passing beneath the types while the numbering head is on the upper limit of its motion.

The invention is capable of embodiment in various forms, a number of which are herein shown. The parts are few in number, can be readily set up and require no attention on the part of the operator.

Other objects and advantages of the invention will hereinafter appear and the novel features thereof will be specifically defined by the appended claims.

The invention is clearly illustrated in the accompanying drawings, which, with the letters of reference marked thereon, form a part of this specification, and in which—

Figure 1 is a side elevation of the principal parts of the invention shown in their relative positions. Fig. 1<sup>a</sup> is a diagrammatic view

showing the impression cylinder, the numbering head and means for actuating the latter. Fig. 2 is a similar view showing a modified form of operating means. Fig. 3 is a plan of the parts shown in Fig. 1. Fig. 4 is a like view of another form. Fig. 5 is a diagrammatic view of the inking device. Fig. 6 is a like view showing a different form of numbering device. Fig. 7 shows another form. Fig. 8 is an edge view of Fig. 7. Fig. 9 is a plan of Fig. 8. Fig. 10 shows a stationary impression surface and a reciprocatory numbering device.

Like letters of reference indicate like parts throughout the several views in which they appear.

As the application and operation of our present improvement will be readily understood from the following description when taken in connection with the annexed drawings without illustrating all of the printing apparatus or press it has been deemed sufficient to illustrate only such parts thereof as are intimately connected with the said improvements and necessary to show its application and relative arrangement. Referring then to the details of the drawings by letter, A designates an impression cylinder which is designed to receive its motion in the usual or any desired way. A' is its shaft.

B is the numbering head of any form of construction and *x* is the point of actual impression between the impression cylinder and the impressing surface of the type or numbering head. This point of contact or impression is in direct line with the axis of the impression cylinder. Any suitable means may be employed for actuating the type rings of the numbering head.

Referring to Fig. 1, C is an arm pivotally mounted on the shaft A' and carrying a guide *c* beyond the periphery of the impression cylinder in which works a slide D in which is mounted the shaft E' carrying the numbering head B.

E is a crank shaft mounted in the arm C and carrying a gear wheel E<sup>2</sup> which derives its motion from a large gear wheel E<sup>3</sup> on the shaft of the impression cylinder through the medium of the small gear E<sup>4</sup> mounted in a bracket or projection of the arm C so as to

always remain in mesh with the gear  $E^2$  carried by said arm as shown.

To the slide near the upper end thereof is pivotally connected as at  $f$  one end of the arm  $F$ , the other end of which is mounted on a crank pin  $f'$  on the gear  $E^2$  which in turn is connected by the arm  $F'$  with some fixed point as at  $f^2$ .

With the parts thus constructed and arranged the operation is as follows: The impression cylinder is supposed to be revolving continuously, and it is desired to make impressions upon material, passing over its surface, at given intervals. The numbering head is shown in Fig. 1 as in the act of descending and when in its lowest position will have contact with its impression surface upon the impression cylinder at  $x$ . As the impression cylinder is revolved there are two distinct motions involved. The slide  $D$  carrying the numbering-head reciprocates in its guides, and the arm  $C$  vibrates upon its pivot, the movement thereof being indicated by the dotted lines in Fig. 1<sup>a</sup>. Both movements are obtained from the crank pin  $f'$ . The points at which this combined motion is operative are on its upper limit, when the impressor is inked, and its lower limit when the impression is made, the action being the same whether the impressions made are inked impressions or not.

In the form shown in Fig. 2 the gear  $E^4$  is not present, but the gear  $E^2$  meshes with the large gear  $E^3$  on the shaft or axis of the impression cylinder and the numbering head is mounted on the crank pin  $e^2$  and rigidly attached to the rod or arm  $e^3$  which, in turn, is connected by a pin with the slide  $D$  working in a suitable guide  $c$  as shown. The operation is thus: The gear  $E^2$  receives its motion through the medium of the large gear and as the small gear revolves, it causes the numbering head to move through a circular path, the slide reciprocating in its guide. The alignment of the impression surface of the head is maintained by the rod  $e^3$  which connects the crank pin and the axis of the head with the slide.

In the form illustrated in Fig. 4 the large gear  $E^3$  is present but it meshes with a gear  $H$  which, in turn, meshes with a gear  $E^2$ ; to the crank pin  $h$  which is connected to one end of the arm  $H'$  the other end of which is connected with the center of the numbering head  $B$  as seen at  $h^2$  and with a pin  $h'$  on the slide  $D$  which is mounted to reciprocate in a suitable guide  $c$  as shown. In operation the gear  $E^3$  drives the gear  $H$  which in turn revolves the small gear  $E^2$  and as the latter revolves, the head  $B$  is given the required motion through the medium of the connecting rod  $H'$  and the pins  $h$ ,  $h'$  and  $h^2$ .

A peculiarity of the construction shown in Fig. 4 lies in the adjustment provided for varying the interval of impression; *i. e.*, the time between the impressions. This is accomplished by changing the geared relation be-

tween the axes  $A$  and  $h^3$  and the position of the pin  $h'$  relative to the pins  $h$  and  $h^2$ , either way from normal. By increasing the distance between  $h$  and  $h'$  the motion of the impressor is diminished, and by decreasing the distance between  $h$  and  $h'$  the motion of the impressor is increased.

It will be observed that in all of the forms above described the motions of the impressor and the impression cylinder during the operative contact thereof are identical, thus producing clear and sharp impressions.

It will also be observed that in all of the forms shown and described the impressor is operated in its motions to and from the impression cylinder by a large gear wheel mounted on the shaft of the impression cylinder so as to rotate therewith and meshing with and driving a gear of much smaller diameter which is the medium which gives motion to the impressor so that said motion is repeated many times during a single rotation of the impression cylinder and the large gear aforesaid.

In cases where the extent of flat surface of the impressor is too great to admit of making a uniform impression upon the curved surface of the impression cylinder, we may flatten the latter to an extent covering the dimensions of said impressor. Such a construction is shown in Figs. 5 and 6 in which the impression cylinder  $A$  is provided with the flattened surfaces  $a^5$ .

In Figs. 5, 6 and 7 we have shown a diagram in elevation of the impression cylinder with the numbering head at the middle of its upward motion and with the ink roller  $I$  which is designed to receive the ink in any well known manner. This roller is carried in an arm designed to be geared to revolve coincidentally with the movement of the numbering head so that the roller or rollers shall pass beneath the head when the latter has receded to its full limit of motion from the impression cylinder and shall pass the impressor and deposit its ink thereon before the head has commenced to approach the impression cylinder. Where a more perfect distribution of the ink is desired than could be accomplished by a single roller as shown, two or more rollers may be employed.

In Fig. 8 the head is shown at the top limit of its motion and the inker is shown as passing beneath the same.

The construction shown in Fig. 7 is similar to that shown in Fig. 5 except that the impression cylinder is not provided with the flattened surfaces.

In Fig. 6 the impressor is shown with an extended printing surface  $B^x$  making the flattened surfaces on the cylinder desirable if not necessary.

Fig. 9 shows the path  $xx$  of the ink roller about its axis, while in Fig. 10 the ink roller is shown as adapted for use with a plane impressor  $J$  and a flat impression surface or abutment  $J'$ , it being caused to travel beneath

the impressor to apply ink thereto in the manner shown in Fig. 10.

A convenient means for causing the ink roller I to travel between the impression surface and the impressor would, for the purpose of making impressions solely, be a device for reciprocating the inking roller back and forth in its path but for very rapid impressions it is impracticable to return the inking roller between the impressor and the impression surface so that a rotary motion is utilized whereby a single passage of the ink roller can be produced with regularity and great rapidity.

The roller I is mounted in a crank I<sup>x</sup> which is rigidly connected with a shaft I<sup>x</sup> carrying a bevel gear I<sup>2x</sup>. Meshing with this bevel gear is a bevel pinion I<sup>3x</sup> secured to a shaft I<sup>4x</sup> so that when power is applied to the shaft I<sup>4x</sup> the crank I<sup>x</sup> is rotated in a circular path  $\alpha$  so as to cause the roller I to contact with the impressor and to continue its movement through the circular path while an impression is being made and the impressor is being raised for a succeeding impression, before, however, the roller has again passed in contact therewith and supplied the necessary ink for the succeeding impression.

By impressor we mean the actual surface making the impression. The term printing is used to describe the making of an impression, which may or may not be inked.

Various other modifications in detail may

be resorted to without departing from the spirit of the invention or sacrificing any of its advantages.

The impressor and the inking devices may be otherwise arranged relatively to the impression cylinder.

What is claimed as new is—

1. The combination with an impression surface, a numbering head, a slide, an oscillatory part carrying the shaft of the numbering head and connected to said slide and gearing operatively connected with the impression surface and the numbering head, substantially as specified.

2. The combination with a rotary impression cylinder, of a numbering head, a slide and a connecting rod, the shaft of the head mounted upon a support with means for giving the latter a series of simultaneous oscillatory and reciprocatory movements in a continuously curved path, a rotary inker mounted to continuously rotate and to move in a continuously curved path between said numbering head and impression cylinder, substantially as specified.

In testimony whereof we affix our signatures in presence of two witnesses.

EDWARD A. HENKLE.  
EDWIN PERCY TEAL.

Witnesses:

WALTER C. RODMAN,  
CHARLES S. WAGONER.