

2 Sheets—Sheet 1.

Patented Aug. 18, 1896.



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(No Model.)

2 Sheets—Sheet 2.

C. H. BUNTING.

MACHINE FOR PRINTING CYLINDRICAL ARTICLES.

No. 566,050.

Patented Aug. 18, 1896.

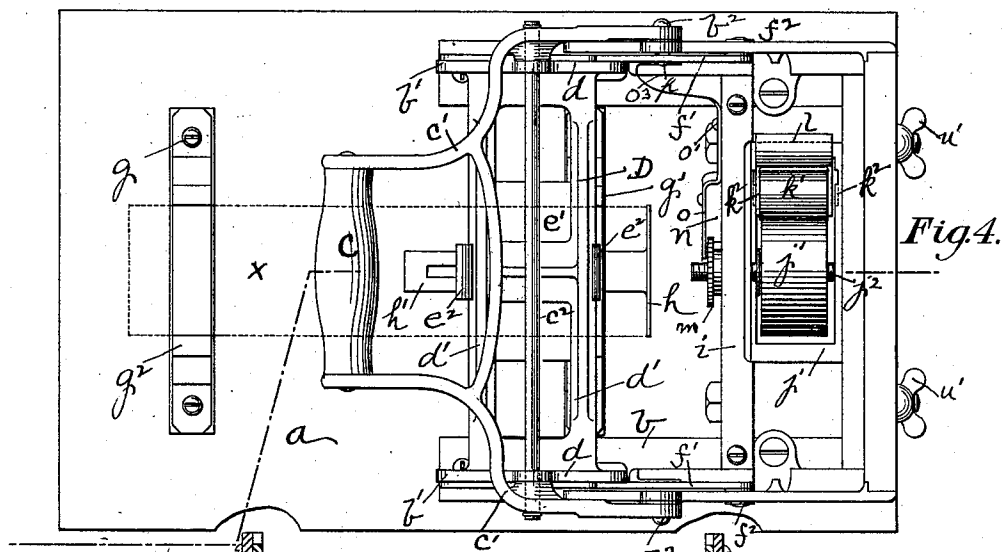


Fig. 4.

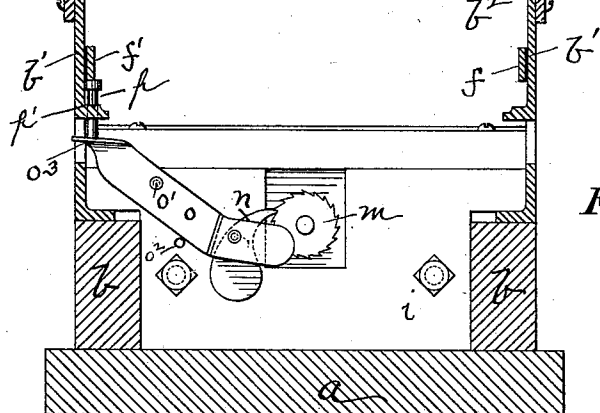


Fig. 5.

Fig. 7.

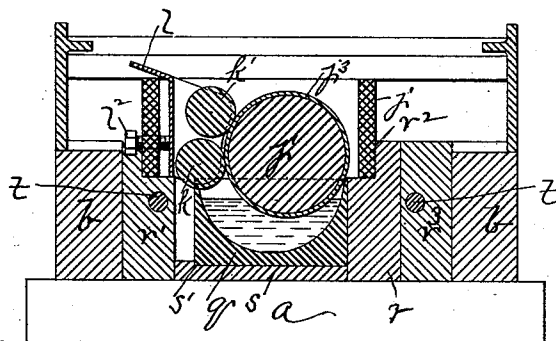
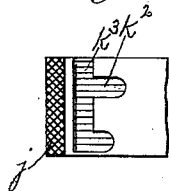


Fig. 6.

WITNESSES

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UNITED STATES PATENT OFFICE.

CHARLES H. BUNTING, OF PITTSBURG, PENNSYLVANIA.

MACHINE FOR PRINTING CYLINDRICAL ARTICLES.

SPECIFICATION forming part of Letters Patent No. 566,059, dated August 18, 1896.

Application filed August 13, 1895. Serial No. 559,140. (No model.)

To all whom it may concern:

Be it known that I, CHARLES H. BUNTING, a resident of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Machines for Printing Cylindrical Articles; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to machines for printing on cylindrical bodies, such as tumblers, electrical bulbs, lamp-chimneys, or other articles.

Of late years it has become a popular habit with glass-manufacturers to print upon lamp-chimneys or other articles of glassware their trade-marks or other symbols by which their goods are known to the trade. It is of course desirable that such printing be formed of delicate lines clearly distinguishable, and yet such as will not mar the appearance of the chimney or other article of glassware to which they are applied. Heretofore this printing upon glassware has been done by marking upon the glass article the design or mark with a mucilaginous substance and then sprinkling or powdering upon the same a material which can be baked into the glass body, this material being applied in a dried or powdered state and being permitted to dry. Any of such material not held by the mucilaginous substance was then brushed from the article and the design or mark was then baked into the glass by subjecting the same to heat in a furnace or to a flame. The difficulty in such a method was that it was practically impossible to obtain delicate and fine lines, as in the brushing off of the powdered material and in the baking of the mark into the glass the letters or designs often were blurred so that they were not only indistinct but detracted from the appearance of the chimney.

The object of my invention is to provide for the printing on cylindrical bodies of glassware so that the letters or designs will be reproduced in distinct and clear lines, and, furthermore, that the necessity of subjecting the article to heat to retain the design be obviated.

To these ends my invention comprises certain details of construction, all of which will be fully hereinafter set forth and claimed.

To enable others skilled in the art to make

and use my invention, I will describe the same more fully, referring to the accompanying drawings, in which—

Figure 1 is a side view of my improved printing-machine; partly in section, showing the type-block in contact with the acid-roller. Fig. 2 is a like view showing the type-block in contact with the article to be printed on. Fig. 3 is a section on line *xx*, Fig. 2. Fig. 4 is a plan view. Fig. 5 is a section on the line *yy*, Fig. 1. Fig. 6 is a cross-section of the acid roller and tank, and Fig. 7 is a detail view of the bearings for the distributing-rollers.

Like letters of reference indicate like parts in each of the figures.

In the drawings, *a* represents the base-plate, which may be clamped down to a table or other suitable support. Mounted on the base-plate *a* are the frame-supporting blocks *b*, said blocks having secured thereto the side plates or castings *b'*. Pivoted to the side plates *b* by means of the pivotal pins *b²* is the swinging handle *C*. This handle *C* has projecting downwardly therefrom the arms *c'*, which are pivoted, as before stated, to the side plates *b'*. A rod *c²* extends from one of said arms *c'* to the other, and depending from said rod *c²* is the type-block frame *D*. This type-block frame consists of the end plates *d* by which it is suspended from the rod *c²* and the cross-plate *d'*, to which the type-block is attached. The type-block *e* is mounted on a wooden block *e'*, said block having the clip *e²* secured thereto, one end of said clip being turned up to engage one side of the cross-plate *d'*, and the other end of said clip being turned up to engage the opposite side of said plate *d'*, whereby by simply pressing down the projecting tongue *e²* of said clip the type-block may be removed from the cross-plate *d'* for the purpose of cleaning said type-block or for adjusting a new one into position. The type-block *e* is formed of rubber or other acid-proof material, and is preferably hollow to allow for the compression of said block when it is brought into contact with the article to be printed on. The type-block has the printing-face *e⁴* thereon, which contains the mark or design to be employed. In this case the printing-face is in the form of a medalion.

In order to provide for the swinging of the type-block alternately into contact with the article to be printed on and the acid-block, the end plates *d* of the type-block frame *D* are
 5 connected to the side plates *b* by means of the pivotal arms *f'*¹, said arms being pivoted to said end plates *d* and the side plates *b*, respectively, by means of the pins *f*². In this manner, by grasping the handle *C* and drawing
 10 the type-block in the proper direction, said type-block is brought into contact with the article to be printed on, and by drawing said handle in the opposite direction the type-block is brought into contact with the
 15 acid-block, as will be more fully hereinafter set forth.

The base-plate *a* has erected thereon the supports *g g'*, having the concave seats or recesses *g*² constructed to conform to the shape
 20 of the article to be supported therein. In order to insure the printing of the mark at the same distance from the end of each article to be printed on, I employ a gage *h* in the rear of the rear support *g'*. The gage *h* has
 25 the slotted plate *h'* thereon, which presses on the base-plate *a* and which passes through an opening in the rear support *g'*, said opening forming a guide for said gage.

In order to regulate the distance of the gage
 30 from the rear support *g'*, a thumb-nut *h*³ engages a threaded stud *h*³ in said base-plate entering said slotted plate *h'*. It is apparent upon releasing said thumb-nut the gage may be fixed at any desired position to regulate
 35 the distance from the top of the article at which the mark or design is to be printed. Toward the rear end of the base-plate *a* is the cross-wall *i*, said cross-wall having the opening *i'*. Behind the cross-wall *i* is located the
 40 rectangular frame *j*, in which is mounted the acid-roller *j'*. This acid-roller *j'* is secured on the shaft *j*², journaled in said rectangular frame. The roller *j'* has its body portion preferably formed of gutta-percha, and has
 45 its working-face covered with a rubber band *j*³. A stationary acid-block may be employed if desired.

Both the gutta-percha and the rubber are indestructible under the action of the acid.
 50 The journal-box *j* itself is preferably formed of gutta-percha as well as the shaft *j*². Two acid-proof distributing-rollers *k k'* are also journaled within the rectangular frame *j*, the lower of said distributing-rollers being preferably
 55 formed of gutta-percha and the upper of rubber. In order to make said distributing-rollers adjustable to and from the roller *j'*, said rollers are inclosed within the guide *l*.

The journals of the distributing-rollers *k*
 60 extend through the openings formed for them in the guide *l*, and are journaled within the recesses *k*², formed in the inner walls of the rectangular frame *j*. Vertical grooves *k*³ permit of the insertion of the journals of the
 65 rollers *k* within the rectangular frame, while the recesses *k*² communicate with said vertical grooves, as shown in Fig. 7. By this con-

struction the rollers *k* can be moved to and from the acid-roller *j'*, and in order to provide means for adjusting the guide *l*, I employ the thumb-screw *l*², which passes through
 70 the end of the journal-box and is forced into contact with said guide. By turning said screw *l*² the guide *l* is advanced toward the acid-roller *j'*, and the journals of the distrib-
 75 uting-rollers move forward in the recesses *k*².

Mounted on the shaft *j*² is the ratchet-wheel *m*, which ratchet-wheel projects through the opening *i'* in the cross-wall *i*. This ratchet-wheel and its connections with the shaft *j*²
 80 are also preferably made of gutta-percha to prevent their being acted upon by the acid. The teeth of the ratchet-wheel *m* are engaged by the pawl *n*, which is carried by the arm *o*, pivoted at *o'* to the outer face of the cross-
 85 wall *i*. The stud *o*² in said cross-wall *i* regulates the distance to which said arm *o* can descend. The upper end of the arm *o* is bent to form the flattened portion *o*³. A pin *p*, inserted through the opening *p'* in one of the side
 90 plates *b*, rests in contact with the flattened portion *o*³ of the arm *o*. When the handle is in the position shown in Fig. 2, the pivotal arm *f'* on that side will force down the pin
 95 *p*, so that the flattened portion *o*³ of the arm *o* will be lowered. Consequently each time said handle is turned over to bring the type-block into contact with the article to be
 100 printed on the pawl *n* will be raised and will turn the ratchet-wheel *m*, whereby the acid-roller *j'* is rotated slightly upon each movement of the handle.

Below the rectangular frame *j* is the tank *q*, which contains the acid employed. This tank is preferably constructed of lead, which metal
 105 is not acted on by the acid. The acid-roller *j'* enters the tank *q* and takes up the acid therefrom. The distributing-rollers *k k'*, moving in contact with the acid-roller *j'*, act to distribute the acid evenly over said roller. As
 110 said roller *j'* revolves the roller *k* takes off the surplus acid taken up by said roller *j'*, while the roller *k'* distributes the acid evenly over said roller *j'*, so that when the printing-face of said type-block comes in contact with
 115 the roller *j'* it only takes up just enough of the acid to make the proper impression upon the article to be printed on.

In order to permit of the insertion of the ratchet-wheel *m* through the opening *i'* in the
 120 cross-wall *i* at the same time that the acid-roller *j'* is within the tank *q*, the rectangular frame *j* and said tank *q* are supported on the sliding blocks *r, r'*, and *s*, respectively. The sliding blocks *r r'* have the seats *r*² formed
 125 therein, within which the rectangular frame *j* rests, while the sliding block *s* has the seat *s'* therein to receive the tank *q*. Bolts *t* pass through the cross-wall *i* and through the sliding blocks *r*³ *r'* and from openings in the rear
 130 plate *u*. The said plate is then held in position by applying the thumb-nuts *u'* to said bolts. In this manner by removing the thumb-nuts from the bolts *t* the blocks *r, r'*, and *s*

may be drawn out, and with them the tank *q* and rectangular frame *j*.

The operation of my improved printing-machine is as follows:

5 Taking the lamp-chimney *X*, by way of illustration, as the article to be printed on, said chimney is placed in the seats *g'* in the support *g*, the upper end of the chimney being in contact with the gage *h*, said gage having
10 been adjusted at the proper position. The tank *q* having been filled with any suitable acid which has the property of etching the glass and the type-block bearing the mark or design to be imparted to the chimney having
15 been adjusted on the cross-plate *d'*, the operator then forces the handle to the rear of the machine, whereupon the type-face of the type-block will be brought into contact with the acid-roller *j'*. It is to be understood that
20 said acid-roller is first rotated so as to apply the acid to its periphery before the type-block is lowered thereon. The type-face of the type-block is brought into contact with the periphery of the acid-roller with sufficient
25 force to take up the acid, whereupon the operator then forces the handle *C* to the front of the machine. This brings the type-block with its type-face into contact with the chimney at the proper point, and by a slight pressure on
30 said handle *C* the mark or design is imparted to the said chimney. The mark or design in this manner is imparted to the chimney in clear and distinct lines, so that as the acid eats into the glass the outline of the figure is clear and distinct and without being blurred.
35 At the same time that the type-block is forced into contact with the chimney the pin *p* is forced down by the link *f*, thereby lowering the flattened portion *o*³ of the arm *o*. The lowering of this flattened portion *o*³ of the arm
40 *o* raises the inner end of said arm and consequently the pawl *n* pivoted on said arm. The pawl, being in engagement with the teeth of the ratchet-wheel *m*, imparts a partial rotation to said wheel, and consequently to the acid-roller *j'*. In this manner a gradual rotation
45 is imparted to the acid-roller *j'*, so as always to present a practically fresh portion of said roller's periphery to the type-face brought in contact therewith. In this manner the chim-
50 neys can be printed on in rapid succession, and as they require no reheating to bake in the design, as in the ordinary operation, the work of printing is greatly facilitated. At the same time, as the transmission of the acid from the roller to the chimney is a direct one, without the necessity of any application of powdered material, the operation can be performed by using a little care without fear of
60 blurring or making the outlines of the mark or figure too coarse. However, in cases where it might be desirable to dispense with the

use of the acid, my machine is equally suited for printing on glass articles with the ordinary mucilaginous substance and the application of the powdered material.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In machines for printing cylindrical bodies, the combination of a swinging frame 70 carrying a type-block, an acid-roller, a ratchet-wheel connected to said roller, a swinging arm, a pawl pivoted at one end of said arm and engaging said ratchet-wheel, a sliding pin engaging the upper end of said arm, said 75 sliding pin being lowered by the swinging of said frame, substantially as and for the purposes set forth.

2. In machines for printing cylindrical bodies, the combination with suitable sup- 80 ports, of a swinging handle, a swinging frame mounted on said handle, pivotal arms connecting said swinging frame with said supports, a type-block on said swinging frame, an acid-roller, a ratchet-wheel connected to 85 said acid-roller, a swinging arm, a pawl, one end of said arm engaging said ratchet-wheel, a sliding pin in said supports engaging the opposite end of said swinging arm, said sliding pin being in the path of one of said pivotal 90 arms, substantially as and for the purposes set forth.

3. In machines for printing cylindrical bodies, the combination with a suitable base-plate, of a swinging frame, a type-block on 95 said frame, a cross-wall on said base-plate having an opening therein, sliding blocks in the rear of said cross-wall on said base-plate, a journal-box supported by said sliding blocks, an acid-roller journaled in said journal-box, 100 a ratchet-wheel connected to said roller and extending through said opening in said cross-wall, mechanism for turning said ratchet-wheel upon the swinging of the frame, an acid-tank below said journal-box, said acid- 105 tank resting on sliding supports, substantially as and for the purposes set forth.

4. In a machine for printing on cylindrical bodies, the combination of a moving frame 110 carrying a type-block, a rectangular frame, an acid-roller journaled in said frame, an acid-tank below said frame within which said roller enters, said frame having elongated seats in its side walls, a guide, distributing- 115 rollers supported in said guide, the journals of said rollers resting in said elongated seats, and a set-screw for regulating the position of said guide, substantially as set forth.

In testimony whereof I, the said CHARLES H. BUNTING, have hereunto set my hand.

CHARLES H. BUNTING.

Witnesses:

ROBT. D. TOTTEN,
FRED T. GILBERT.