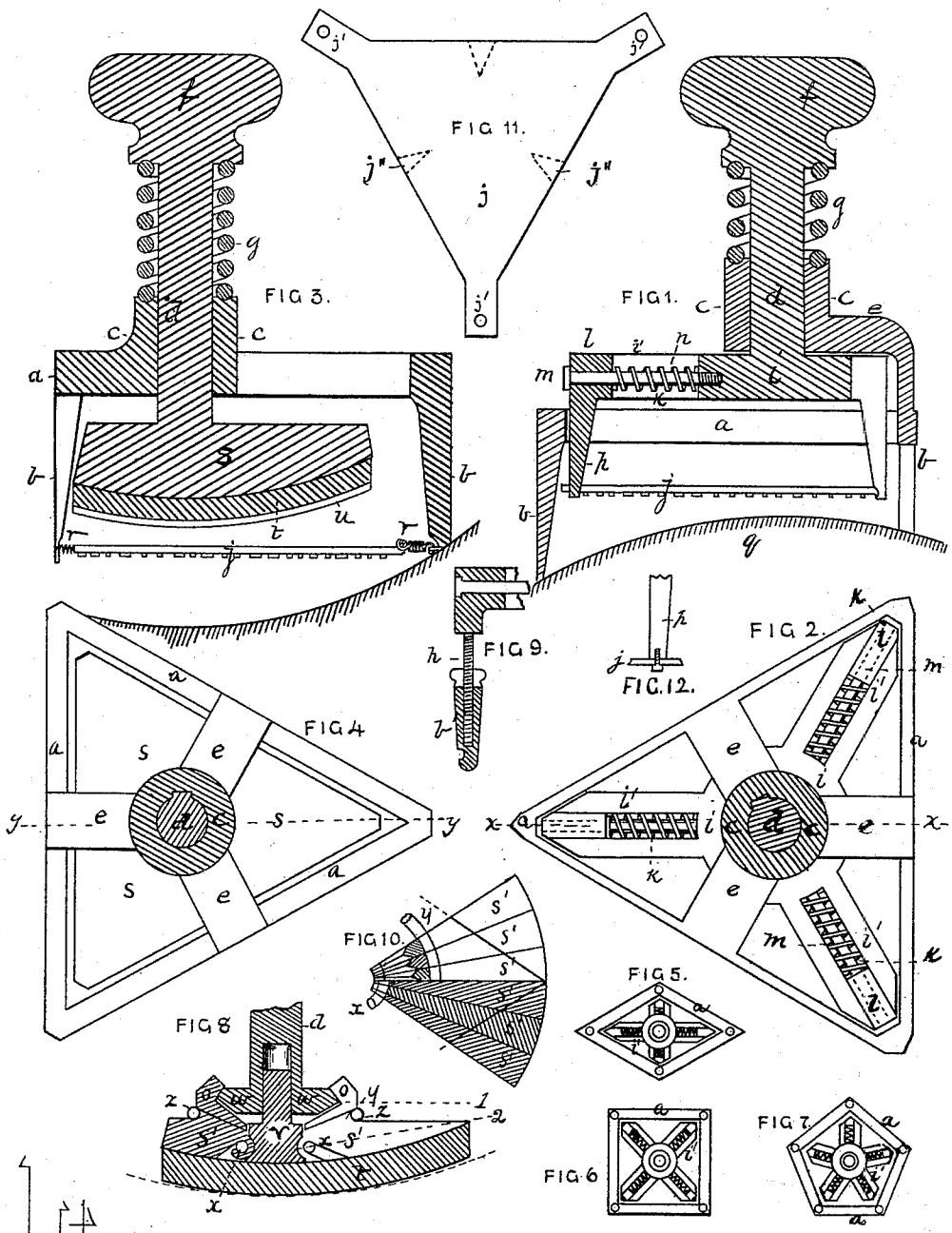
(No Model.)

H. SCHULZE-BERGE.

DEVICE FOR STAMPING DESIGNS ON GLASS, &c.

No. 418,236. Patented Dec. 31, 1889.



Witnesses.

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HERMANN SCHULZE-BERGE, OF ROCHESTER, PENNSYLVANIA.

DEVICE FOR STAMPING DESIGNS ON GLASS, &c.

SPECIFICATION forming part of Letters Patent No. 418,236, dated December 31, 1889.

Application filed January 11, 1884. Renewed August 24, 1889. Serial No. 321,866. (No model.)

To all whom it may concern:

Be it known that I, HERMANN SCHULZE-BERGE, of Rochester, in the county of Beaver and State of Pennsylvania, have invented a new and useful Improvement in Devices for Stamping Designs on Glass, &c.; and I do hereby declare the following to be a full, clear, and exact description thereof.

My improved stamping device is especially adapted for use in the decoration of hollow articles of china or glass ware the surface of which is of spheroidal or other curved shape, although it may be also used for printing or stamping on articles made of other material.

In the accompanying drawings, Figure 1 is a partial vertical section of my improved stamping device as constructed for printing upon convex surfaces, on line *x x*, Fig. 2. Fig. 2 is a plan view, partly in section, of the same device. Fig. 3 is a partial vertical section of my improved stamping device as constructed for printing upon concave surfaces, on line *y y*, Fig. 4. Fig. 4 is a plan view, partly in section, of Fig. 3. Figs. 5, 6, and 7 show modifications of shape of which my device is susceptible. Fig. 8 is a modified construction of the stamp for printing on concave surfaces. Fig. 9 is a detail. Fig. 10 is a plan view, partly in section, of a portion of the device shown by Fig. 8, being in section partly on the line 1 of Fig. 8 and partly on line 2. Fig. 11 is a representation of the flexible elastic sheet or pad. Fig. 12 is a view illustrating another way of attaching the pad *j* to the arms *p*.

In the several figures like letters are used to designate the same parts.

In Figs. 1 and 2, *a* represents the frame of the stamp, having three legs *b* (two only of which can be seen in Fig. 1) and a central tubular neck *c*, through which the shaft *d* passes, and which is connected with the frame *a* by three radial arms *e*, as shown in Fig. 2. At the top of the shaft *d* is a knob or handle *f*, and a spiral spring *g* around the shaft *d* between the tubular neck *c* and the under side of the knob *f* serves to keep the shaft *d* and the parts attached to it in an elevated position, as shown in Fig. 1.

The frame shown in Figs. 1 and 2 is triangular, having one leg extending downward at each angle; but it may, if preferred, be made square and rectangular, as shown in Fig. 6, or diamond-shaped, as in Fig. 5, or pentagonal, as in Fig. 7, or round, as indicated in Fig. 10, which is a segment of the device shown in Fig. 8, or of any other desired shape. The advantage of making it triangular is that the frame when applied to any convex or irregular surface will rest firmly without adjustment. If more than three legs are used they will need to be adjusted in length unless the convex surface to be printed on is accurately spherical or cylindrical, and for this purpose the legs are formed with a screw-rod *h*, (see Fig. 9,) which enters a screw-cavity in the adjustable leg *b'*, so that the length of the leg may be increased or diminished and thus adjusted at pleasure. Attached to the lower end of the shaft *d* is the center-piece *i* of the pad-frame, which carries the printing-pad *j*. The piece *i* may be made circular, and (if the frame is triangular, as in Fig. 1) has three arms *i' i' i'*, which radiate toward the angle of the frame *a*. As shown in Fig. 1, each of these arms *i'* has a slot *k*, in which is placed a slide *l*, through which a headed bolt *m* passes, the inner extremity of which has screw-threads, by means of which it is screwed into the circular frame *i*, as shown in Fig. 1. A spiral spring *n* around the bolt *m* and within the slot *k* serves to press the slides *l* outward from the center. At the outer extremity of each of the slides *l* is an arm *p*, which extends downward, but not so far as to reach to the lower extremity of the legs *b* of the frame *a*.

The function of the spring-arms *i'* is to keep the printing-pad *j* (which is a sheet of flexible elastic material) stretched tight, and yet to allow of the bend around a convex surface without too great a strain on the elasticity of the pad. The same purpose may be accomplished by making the arms without slots and dispensing with the slides *l* and spiral springs *n* and bolts *m*, and making a button at the end of each arm, and attaching the pad *j* thereto by means of elastic straps *j'* at the corners of the pad *j*, which have eyelet-holes in them for that purpose. The straps are formed of the same material and of one piece with the rest of the pad, as shown in Fig. 11. This printing-pad *j* is a sheet of flexible elastic material, india-rubber being

preferred, on which the desired pattern is formed in relief by molding, or the pattern may be made of gelatine or other suitable flexible and elastic material and attached to the pad *j*. The pad *j* is of the same shape (triangular, quadrangular, &c.) as the frame *a* of the stamp, and when the pad-frame is made with arms having a spring action, as shown in Fig. 1, the angular corners of the sheet are fastened by eyelets to the lower extremities of the arms *p*. The pad *j* is of such size that when attached to the arms *p*, as described, it is stretched tight by the elastic straps *j'* or by the springs *n*, as the case may be.

Thus constructed the stamp is used as follows: To the under surface of the printing-pad ink or other substance—as varnish, &c.—with which the design is to be printed is applied in any convenient manner—as, for instance, by depressing the frame *i* by means of the knob *f*, when the stamp-frame is placed on an inking-table, or by passing a roller coated with the coloring-matter or varnish, &c., over the surface of the pad *j*. The stamp is then placed on the article to be printed on, resting on its legs *b*. The printing-frame *i* is then pressed downward by the knob *f* until the surface of the printing-pad *j* touches the convex surface *q* to be printed on. As the pressure is increased the flexible elastic pad *j* yields to the pressure, the straps *j'* or slides *l* also yielding sufficiently to allow the entire surface of the pad *j* to come in close contact with the convex surface to be printed on. The pressure on the knob *f* is then withdrawn, and, the frame *i* being raised by the spiral spring *g*, the operation is complete.

When the surface to be printed on is very convex, the rubber sheet forming the pad *j* may have V-shaped gores cut out at the edges of the sheet midway between each adjoining pair of arms *l'* of the pad-frame, as illustrated at *j''* in Fig. 11, so as to allow of a greater degree of flexure of the pad than can be readily obtained by the elasticity of the pad without puckering the sheet. These gores are shown by dotted lines in Fig. 11.

For printing on concave surfaces—as, for instance, on the interior surface of a glass lamp-globe—the same flexible elastic pad *j* is used; but in this case it is attached to the lower extremity of the legs *b* of the frame *a* (see Fig. 3) by means of the straps *j'*, before referred to, or by means of a spiral spring *r*, the attachment being made at the corners or angles of the flexible elastic sheet *j*. The elastic straps *j'* (shown in Fig. 11) are a simpler construction; but with the springs *r* the frame *a* may be made of smaller size. In the construction shown in Fig. 3 for printing on concave surfaces the frame *i* is dispensed with, and in its stead there is attached to shaft *d* a block *s*, the under surface of which is curved convexly, so as to conform as nearly as possible to the contour of the article to receive the impression. The lower surface of the block *s* is faced with a cushion *t*, of some yielding or elastic substance—as curled hair, moss, or cotton—over which is placed a cover *u*, of cloth or other flexible material. In place of the cushion *t* and its cover *u* a cushion of gelantine may be employed, which forms a soft and yielding surface to the block *s*. This stamp is used in the same way as the stamp shown in Fig. 1, the springs *r* performing the same function as the spiral springs *n* in Fig. 1, to allow the flexible pad *j* to adapt itself to the curvature of the surface to be printed on.

A modification of construction of the block *s* for printing on concave surfaces is shown in Fig. 8, which allows of a greater degree of accommodation to the concave surface to be printed upon than can be readily obtained by the use of the cushion *t* of horse-hair or gelatine.

In Fig. 8 the shaft *d* is not rigidly attached to the sector-blocks *s'*, but is centered on a pin *v*, attached to the sector-blocks *s'*, the upper cylindrical end of which enters a cylindrical cavity formed axially in the lower end of the shaft *d*. A circular disk or flange *w*, with beveled edges, surrounds the lower extremity of the shaft *d*, so that when the shaft *d* is depressed it depresses the sectors *s' s'* of which the block is composed. These sectors *s'* have a curved hinge-like extremity at the end nearest the center of the block, and are held together by a ring *x*, (see Fig. 10,) which surrounds the lower end of the pin *v*. They have also a projection *y* on their upper surface, which, when the sectors are in place, forms a ledge which is surrounded by a split ring *z*. (See Figs. 8 and 10.) This split ring serves as a spring to bring the sectors back to their normal position after the pressure of the disk *w* has been withdrawn. Liners *o o*, attached by screws to the sectors, are placed between them and the beveled face of the disk *w*, as shown in Fig. 8. From this description it will be obvious that when the shaft *d* is depressed by pressure on the knob *f* the outer ends of the sectors will be depressed, as their center of motion is at the ring *x*, which is nearer to the line of the axis of the shaft *d* than the point at which the pressure of the disk *w* is applied to them. As they are thus depressed at the circumference, they will separate slightly one from the other; but the cushion *t*, which covers their under surface, has sufficient elasticity to permit of such separation without breaking the continuity of the surface of the pad. By this means, when pressure is applied to the shaft *d*, the operative face of the pad *t* assumes a surface of larger radius of curvature, as shown by the curved dotted lines in Fig. 8, and thus the block and pad will cause the flexible elastic sheet *j* to assume the contour of the article to be printed on.

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

1. A printing-stamp consisting of a frame

having three or more arms, to the lower extremities of which is attached a flexible elastic pad or sheet of suitable material—such as india-rubber—with raised characters or designs on one surface for the purpose of printing on concave or convex surfaces, substantially as described.

2. A stamp consisting of a frame having three or more arms, to the lower extremities of which is attached by elastic straps or springs a flexible elastic sheet having characters or designs formed in relief on its printing-surface, substantially as and for the purpose described.

3. A stamp having three or more sliding arms in a suitable frame and furnished with springs to allow the arms to be drawn toward a common center, in combination with a flexible elastic pad or sheet of suitable elastic material—such as india-rubber—attached at its corners to the extremities of the arms of the stamp, and with a frame for holding said arms, having three or more legs to support the stamp on the article intended to receive the impression, and a spiral spring to raise the stamp within the frame and allow it to be depressed by hand, substantially as and for the purpose described.

In testimony whereof I have hereunto set my hand this 15th day of December, A. D. 1883.

HERMANN SCHULZE-BERGE.

Witnesses:
W. BAKEWELL,
W. B. CORWIN.