No. 791,450. PATENTED JUNE 6, 1905.

C. L. BURDICK.

STENCIL PRINTING MACHINE.

APPLICATION FILED JAN. 27, 1904.

3 SHEETS—SHEET 1.

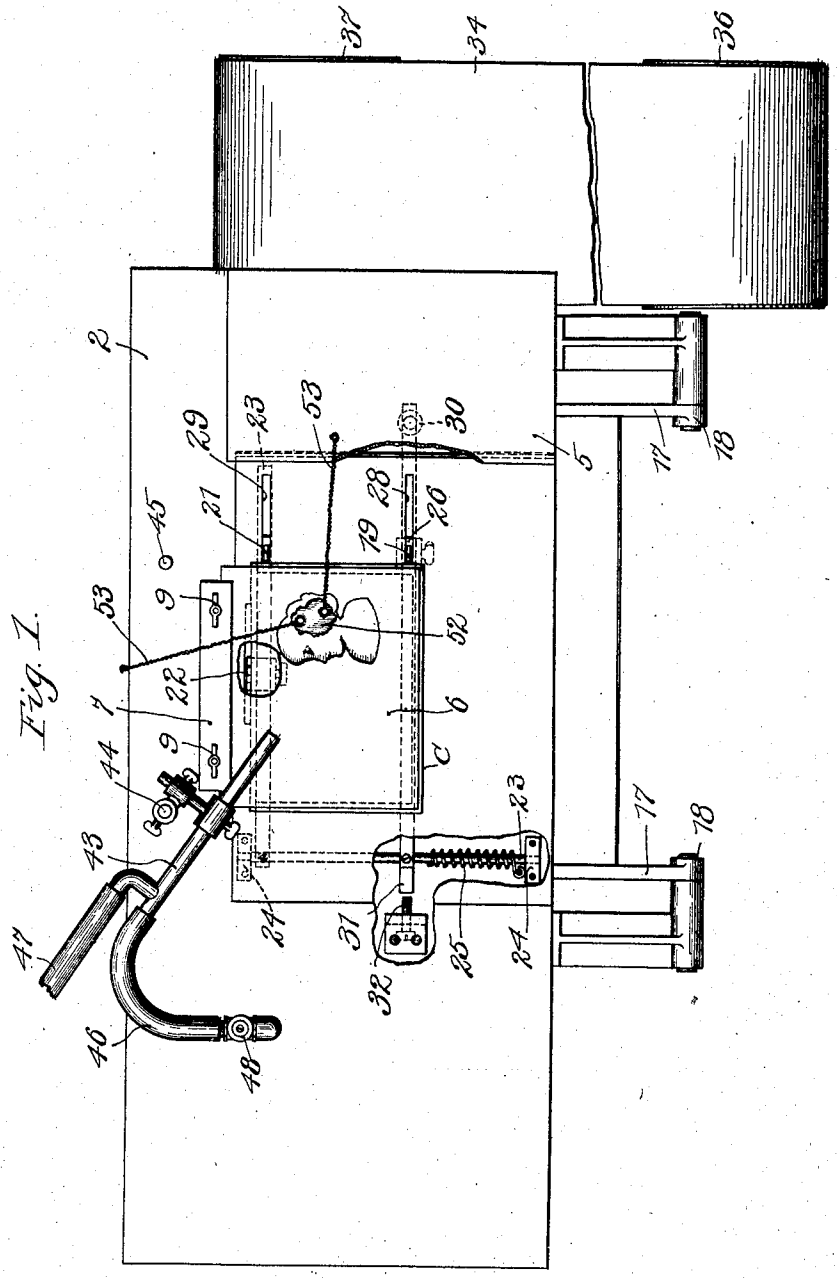


Fig. 1.

Witnesses:
Leonard W. Noonan.
John Stahr.

Inventor
Charles L. Burdick
By Charles A. Brown
Attorney

No. 791,450. PATENTED JUNE 6, 1905.

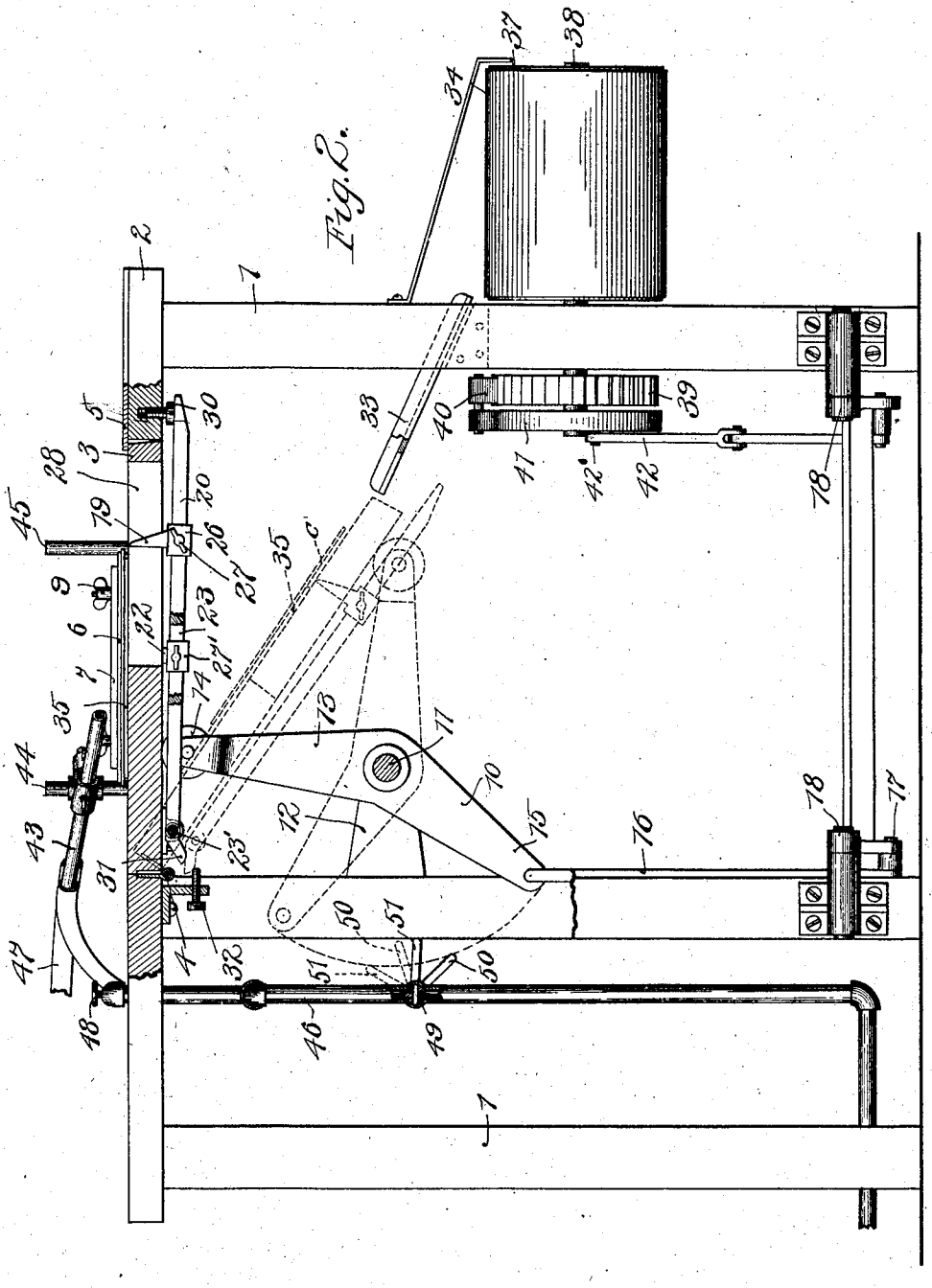
C. L. BURDICK.

STENCIL PRINTING MACHINE.

APPLICATION FILED JAN. 27, 1904.

3 SHEETS—SHEET 2.

Fig. 2.



Witnesses:

Edmund W. Novander.

John Stahr

Inventor

Charles L. Burdick

By Charles A. Brown

Attorney

PHOTO-LITHOGRAPHED BY SACHETT & WILHELMS LITHO. & PTG. CO. NEW YORK.

No. 791,450. PATENTED JUNE 6, 1905.

C. L. BURDICK.

STENCIL PRINTING MACHINE.

APPLICATION FILED JAN. 27, 1904.

3 SHEETS—SHEET 3.

Fig. 3.

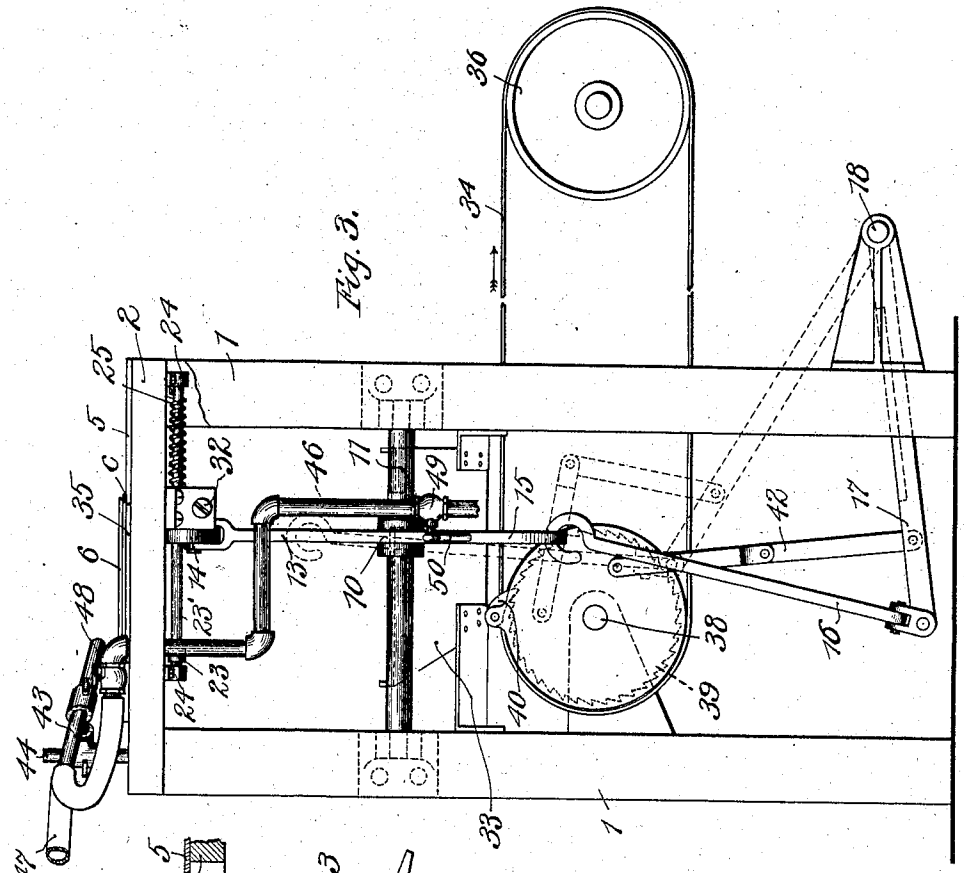
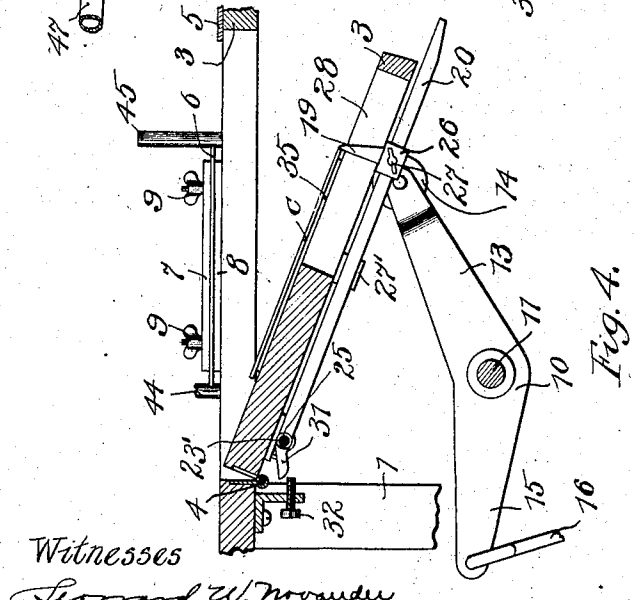


Fig. 4.



Witnesses

Leonard W. Novander.

John Stahr

Inventor

Charles L. Burdick

By Charles A. Brown

Attorney

No. 791,450. Patented June 6, 1905.

UNITED STATES PATENT OFFICE.

CHARLES L. BURDICK, OF LONDON, ENGLAND.

STENCIL-PRINTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 791,450, dated June 6, 1905.

Application filed January 27, 1904. Serial No. 190,827.

To all whom it may concern:

Be it known that I, CHARLES L. BURDICK, a citizen of the United States, residing at London, England, have invented a certain new and useful Improvement in Stencil-Printing Machines, (Case No. 3,) of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to stencil-printing machinery; and its object is to provide a more simple, a more efficient, and a more reliable machine.

Heretofore in machines of this class a stencil was brought into position over the card or other object to be printed and the necessary coloring-matter applied thereto. After application of the coloring-matter it was necessary to raise or move the stencil away from the printed object, which was then conveyed away in some cases by belt mechanism. The moving away of the stencil entailed a quantity of apparatus about the stencil, and this apparatus was continually in the way of the artist employing the coloring-matter, thus interfering with the efficiency of the machine. Difficulty was also experienced in properly applying apparatus for moving the printed object to or from its position below the stencil, this apparatus having been very complicated.

In the improved machine of my construction I provide a stencil which may be permanently fixed above the table of the machine, thus eliminating any apparatus for moving the stencil. I adapt the portion of the machine-table below the stencil to swing downwardly. When in this downward position, a card or other object to be printed is applied to the swinging portion, whereupon suitable mechanism is actuated to return the frame with its card to its position below the stencil, whereupon the artist may apply the coloring-matter, after which the swinging portion is lowered and the card falls therefrom. All the operating mechanism is thus disposed below the top of the machine, and the operator or artist is not interfered with. I also provide improved means for holding the card in position on the frame and for releasing the card after printing, the card falling from the frame to a belt, whereupon it is carried a distance until dry and then deposited in a receptacle. I also provide a burner near the stencil by means of which heated air may intermittently be blown over the stencil, the application of this heated air being automatically controlled to take place during the period of depression of the card-supporting frame.

I shall more clearly describe my invention by referring to the accompanying drawings, in which—

Figure 1 is a plan view of the machine. Fig. 2 is a side elevation thereof, partly in section. Fig. 3 is an end elevation thereof; and Fig. 4 is a view showing an intermediate position of the swinging card-supporting table, parts of the machine being broken away.

Like characters of reference refer to like parts throughout the various figures.

A table or frame 1 is provided with a top 2, of which the portion 3 is adapted to swing downwardly by a hinge 4, a stop-plate 5 preventing upward travel of said portion 3 beyond the upper plane of the top 2. The stencil 6 is secured at one of its edges to the rigid part of the top 2 at the sides of the swinging table 3 and is preferably clamped between clamp members 7 and 8 by means of thumb-screws 9 9. A lever 10 is pivoted at 11 at the end of a bearing-frame 12. The arm 13 of this lever is bifurcated at its end and supports a roller 14, adapted to engage the under side of the swinging table 3. The end of the arm 15 of the lever is engaged by a rod 16, connecting at its other end with the end of the treadle-frame 17, pivoted at 18 18. As the operator presses on the treadle the lever 10 is actuated to raise the table 3, carrying card *c* thereon, into position below the stencil. Upon release of the treadle the frame swings downwardly to deliver the printed card.

In order that the card may be properly placed on the table to aline with the stencil when applied thereto, I provide a finger 19, engaging a rod 20, and also fingers 21 and 22, engaging a similar rod 23. The rods 20 and 23 are parallel and secured to a shaft 23', pivoted in bearings 24 24 and secured to the under side of the swinging table near the hinged edge thereof. A spring 25, encircling the

shaft 23′, tends to hold these rods against the under side of the table 3. The finger 19 extends from a collar 26, longitudinally adjustable along the rod 20 and secured thereto in any position by a thumb-screw 27. The finger 19 extends upwardly through a slot 28, extending through the table 3, parallel with the rod 20. The finger 21 is supported like finger 19 and extends upwardly through a slot 29, parallel to the rod 23. The finger 22 is also adjustable along the rod 23; but this finger instead of extending upwardly from the center of the collar 27′, as do the fingers 19 and 21, extends forwardly from the outer side of its supporting-collar, and a card is held with its forward edge against the fingers 19 and 21 and its side edge engages the finger 22, the card being held in place to properly aline with the stencil when the table 3 is raised. I provide an adjustable screw 30, engaging the under side of the rigid top 2, to be engaged by the arm 20 as the table 3 is carried into position below the stencil. As the table is raised into position the screw 30, by engaging the rod 20, prevents the fingers 19 and 21 and 22 from extending beyond the upper plane of the machine, and they are consequently prevented from interfering with the operations of the artist, being protected also from the coloring-matter.

In order to withdraw the fingers from engagement with the card to allow the card to escape when the table has been lowered, I provide a tongue 31, extending from the rear end of the rod 20, which tongue engages an adjustable screw 32 as the table is lowered. The rods 20 and 23 when the tongue engages the screw are swung away from the table 3 to draw the fingers away from the card, the card thereupon falling into a chute 33 and onto a belt or conveyer 34. In order to obtain close engagement between the card and the stencil, I preferably provide a raised portion 35 on the upper surface of the table 3. This raised portion may be a thin block upon which the card is laid, and upon raising of the table 3 a more uniform and closer engagement will be obtained between the card and the stencil and spreading of the coloring-matter will be prevented.

The belt 34 passes over the drums 36 and 37, the drum 37 being secured to a shaft 38. A ratchet-wheel 39 is also secured to the shaft 38 and is engaged by a pawl 40, carried by the wheel 41, loosely mounted on the shaft 38. A connecting-rod 42 extends from the treadle 17 and engages a crank-pin 42′, extending from the wheel 41. As the treadle is pressed downwardly by the operator the cards delivered to the belt 34 are advanced a distance to leave sufficient space to accommodate the next card falling from the table 3. Each card is thus caused to travel a distance on the belt 34 and becomes thoroughly dry before it is gathered from the end of the belt or delivered into a receptacle.

In order to dry superfluous coloring-matter adhering to the stencil after each operation, I provide means for blowing heated air over the stencil after each printing of a card. A burner 43 may be adjustably secured to either of the posts 44 or 45, disposed at either side of the stencil, the burner being fed with air from a pipe 46 and with gas from a pipe 47, the valve 48 serving to engage the flow of air. To automatically control the flow of heated air to take place during the period while the card is being lowered and delivered, I provide a valve 49 in the pipe 46, said valve being provided with two levers 50 and 51, extending at an angle to each other, as shown in Fig. 2. The length of these levers is such that arm 15 of the lever 10 in its upward travel will pass by one of the levers and engage the other lever to close the valve to prevent flow of air when the card is supplied to the stencil and to pass by the lever just engaged and to engage the other valve-lever upon its downward travel to again open the valve to allow the air to flow, whereby the stencil is dried as the card-frame is being lowered.

The operation of the machine is as follows: When the machine is to be started, the card-table will be down and the arm 15 of the lever 10 will be up, as shown in dotted lines in Fig. 2, the valve in the pipe 46 being open and the levers disposed as shown in dotted lines. The treadle is now moved downward a slight distance to disengage the tongue 31 from the stop 32 to allow the fingers to extend through the table 3, whereupon the operator inserts a card in position between the fingers, and the treadle is then moved downwardly to lower the arm 15 of the lever 10 and to raise the arm 13 and the table engaged thereby to bring the card into engagement with the stencil, the fingers being again removed from above the surface of the table as the rod 20 engages the stop 30. The arm 15 in its downward travel passes by the valve-lever 51, but engages the valve-lever 50 to return the valve-levers to the position shown in full lines in Fig. 2, thus shutting off the flow of air to the burner. The artist may now apply the coloring-matter to the card, whereupon upon release of the treadle the card-table swings downwardly, and the tongue 31 engages the stop 32 to withdraw the fingers to release the card which passes through the chute 33 and to the belt 34, each downward movement of the treadle serving to carry the card a distance toward the receptacle. As the card-table swings downwardly the arm 15 is raised and passes by the lever 50, but engages the lever 51 to return these valve-levers to the dotted position to again open the valve 49 to feed the burner, which then serves to dry the stencil, and the same cycle of operation is repeated. Instead of

operating the machine by foot-power other power may be employed.

Where a stopping-out stencil is required, I preferably support the stop-out piece 52, such as is shown in Fig. 1, by wires 53 53, which extend from the rigid part of the table to fasten to the piece 52, these wires being preferably raised a distance, so as not to interfere with the application of coloring-matter thereunder.

I thus produce a machine for supporting a card against a stencil which upon its upper surface is practically free from mechanism and in which the operative parts are very simple, but very efficient.

As changes may readily be made by those skilled in the art without departing from the spirit or scope of the invention, I do not wish to be limited to the precise construction and arrangement of parts as shown; but,

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

1. In a machine of the class described, the combination with a fixed stencil, of a table adapted to be moved toward or away from said fixed stencil, slots through said table, fingers extending through said slots for retaining on said table an object to be printed, and levers for raising said table to bring said object into engagement with said stencil.

2. In a machine of the class described, the combination with a fixed stencil, of a table adapted to be moved toward or away from said fixed stencil, a frame engaging the under side of said table, and fingers adjustably secured to said frame and extending upwardly therethrough to hold in position thereon the object to be printed.

3. In a machine of the class described, the combination with a fixed stencil, of a supporting-table adapted to move toward or away from the said stencil, a frame hinged at its one end to the under side of said table, fingers adjustably mounted on said frame and extending therethrough to hold in position on said table the object to be printed and mechanism for repeatedly raising said table to bring the object thereon into engagement with said stencil.

4. In a machine of the class described, the combination with a fixed stencil, of a swinging table adapted to be moved toward or away from said stencil, fingers associated with said table and normally extending beyond the surface thereof to hold in position the object to be printed, mechanism for swinging said table to bring the object thereon into engagement with said stencil and means for automatically moving the fingers below the surface of said table when the object is in engagement with the stencil.

5. In a machine of the class described, the combination with a stencil, of a hinged table disposed below said stencil, a frame associated with said table, fingers adjustably mounted on said frame and extending upwardly through said table to hold in position thereon the object to be printed, and lever mechanism for swinging said table to bring the object thereon into engagement with said stencil.

6. In a machine of the class described, the combination with a stencil, of a table below said stencil adapted to be moved toward or away from said stencil, a frame associated with said table, fingers adjustably mounted on said frame and extending upwardly through said table beyond the upper edge thereof to hold in position thereon the object to be printed, lever mechanism for raising said table to bring the object thereon into engagement with said stencil, and means for lowering said fingers below the top surface of said table when the object is in engagement with the stencil.

7. In a machine of the class described, the combination with a stencil, of a table adapted to be moved toward or away from said stencil, a frame hinged at one end to the under side of said table, fingers adjustably mounted on said frame and extending upwardly through said table and beyond the upper surface thereof to hold in place thereon the object to be printed, lever mechanism for moving said table upwardly to bring the object into engagement with said stencil and a stop engaging the other end of said frame to lower said fingers below the upper surface of said table when in its upper position.

8. In a machine of the class described, the combination with a stencil, of a hinged table below said stencil adapted to be swung away from and toward said stencil, a frame disposed below said table, fingers adjustably mounted on said frame and extending beyond the upper surface of said table to hold in position thereon the object to be printed, means for swinging said table to bring the object thereon into engagement with said stencil, and means when said table is swung away from said stencil for lowering said fingers below the surface of said table to allow the object thereon to slide from said table.

9. In a machine of the class described, the combination with a stencil, of a table hinged below said stencil and adapted to be swung toward or away from said stencil, a frame below said table and hinged at its one end thereto, fingers adjustably mounted on said frame and extending beyond the upper surface of said table to hold in position thereon the object to be printed, a tongue extending from said frame, and a stop adapted to be engaged by said tongue when said swinging frame is lowered whereby the fingers are lowered below the surface of said table to allow the printed object thereon to slide from said table.

10. In a machine of the class described, the combination with a fixed stencil, of a table adapted to be moved away from or toward said stencil, fingers for said table normally

extending above the upper surface of said table to hold in position thereon the object to be printed, lever mechanism for moving said table to bring the object thereon into engagement with said stencil, means for moving the table away from said stencil, and means for withdrawing the fingers beneath the upper surface of the table when the table is moved away from said stencil to allow the printed object thereon to slide therefrom.

11. In a machine of the class described, the combination with a stencil, of means for bringing an object to be printed into engagement with said stencil, and automatically-actuated valving means for allowing application of heated air to said stencil while said object is removed therefrom.

12. In a machine of the class described, the combination with a fixed stencil, of a table adapted to be moved toward or away from said stencil, means for supporting on said table the object to be printed, means for raising said table to bring the object into engagement with said stencil, means for lowering said table away from said stencil, and automatically-actuated valving means for allowing application of heated air to said stencil after said table has been removed therefrom.

13. In a machine of the class described, the combination with a fixed stencil, of a table for supporting the object to be printed and adapted to be moved toward or away from said stencil, a burner for directing heated air to said stencil, a valve for said burner, lever mechanism for raising said table to bring the object thereon into engagement with said stencil, and automatic means associated with said lever mechanism for closing said valve when the table is raised and for opening said valve when said table is lowered away from said stencil.

14. In a machine of the class described, the combination with a stencil, of a table for supporting the object to be printed adapted to be raised toward or lowered from said stencil, a burner adapted to be directed against said stencil, a supply-pipe for said burner, a valve interposed in said pipe and provided with valve-levers, a lever engaging said table and adapted upon actuation to raise said table to bring the object thereon into engagement with said stencil, means for lowering said table away from said stencil, and an arm associated with said lever adapted automatically to close said valve when said table is raised, and to open said valve when said table is lowered.

15. In a machine of the class described, the combination with a stencil, of a table for supporting the object to be printed adapted to be moved toward or away from said stencil to bring the object thereon into and out of engagement with said stencil, means for releasing the object after its removal from the stencil and periodically-actuated conveying mechanism for conveying the printed object away from the machine.

16. In a machine of the class described, the combination with a fixed stencil, of a table adapted to be moved toward or away from said stencil, means for holding an object to be printed in position on said table, means for moving said table to bring the object thereon into engagement with said stencil, means for removing said table from said stencil, means for releasing the object on said table when removed from said stencil, belt-conveying mechanism for receiving the printed object upon release from the table, and means for periodically advancing the said conveying mechanism.

17. In a machine of the class described, the combination with a fixed stencil, of a table adapted to be moved toward or away from said fixed stencil, longitudinal slots through said table, fingers extending through said slots for retaining on said table an object to be printed, means for adjusting said fingers longitudinally in said slots to receive various-sized objects, and means for raising said table to bring the object thereon into engagement with said stencil.

18. In a machine of the class described, the combination with a fixed stencil, of a table adapted to be moved toward or away from said fixed stencil, fingers normally extending above the surface of said table for retaining thereon the object to be printed, levers for raising said table to bring said object into engagement with said stencil, means for moving said fingers below the surface when the table is in its uppermost position, and means for moving the fingers from the surface when the table is in its lowermost position.

19. In a machine of the class described, the combination with a fixed stencil, of a table adapted to be moved toward or away from said fixed stencil, slots through said table, fingers extending through said slots normally beyond the surface of the table for retaining thereon the object to be printed, means for moving said fingers below the surface when the table is in engagement with the stencil, and means for moving the fingers from the surface after the table has been removed from the stencil.

20. In a machine of the class described, the combination with a fixed stencil, of a table adapted to be moved toward or away from said stencil, a frame consisting of two side rods hinged below said table at one end thereof, fingers adjustably mounted on said rods, means for normally retaining said frame in position against said table to cause the ends of said fingers to project beyond the upper surface of said table to hold thereon the object to be printed, a stop engaging said rods when said table is in position against said stencil, whereby said fingers are moved below the surface of the table, and an additional stop engaging

said frame when said table has been moved a distance from said stencil, whereby said fingers are again withdrawn from the surface and the object on the table released.

21. In a machine of the class described, the combination with a fixed stencil, of a table hinged below said stencil, means for swinging said table against and away from said stencil, a frame hinged below said table having side rods, fingers adjustably mounted on said rods, means for normally retaining said frame in position with respect to said table to cause the ends of the fingers to project beyond the upper surface of the table to hold in position thereon the object to be printed, an adjustable stop engaging said frame when said table is in its uppermost position against the stencil, whereby said frame is moved to carry the finger ends below the surface of the table, and an additional adjustable stop engaging said frame when the table is in its lowermost position, whereby said fingers are again moved from the surface of the table to release therefrom the object printed.

22. In a machine of the class described, the combination with a fixed stencil, of a table adapted to be moved against and away from said stencil, fingers normally extending beyond the upper surface of the table to hold in position thereon the object to be printed, means for raising and lowering said table, means for automatically tripping said fingers to move them below the surface of the table when at the upper part of its stroke, and additional means for tripping said fingers to move the fingers from the surface of the table to release the object thereon when said table is at the lower end of its stroke.

23. In a machine of the class described, the combination with a fixed stencil, of a hinged table for carrying the object to be printed, a lever pivoted at an intermediary point, one end of said lever engaging said swinging table, treadle mechanism engaging the other end of said lever, actuation of said treadle mechanism causing said lever to raise the table to carry the object thereon into engagement with the stencil, means for retaining the object to be printed on said table, means when the table is in its lower position for releasing the printed object, and conveying mechanism for receiving the object, said conveying mechanism being periodically advanced upon actuation of said treadle mechanism.

24. In a machine of the class described, the combination with a fixed stencil, of a table for supporting the object to be printed, a lever pivoted at an intermediary point, one end of said lever engaging said table, treadle mechanism connected with the other end of said lever, actuation of said treadle mechanism causing said lever to move the table upwardly to bring the object thereon into engagement with the stencil, fingers for retaining the object to be printed on the table, means for releasing the object upon lowering of the table, conveying mechanism for receiving the object printed, and pawl-and-ratchet mechanism connecting said treadle mechanism with the conveying mechanism, whereby said conveying mechanism is periodically actuated upon actuation of said treadle mechanism.

25. In a machine of the class described, the combination with a fixed stencil, of a table for supporting the object to be printed, fingers associated with the table for retaining thereon the object to be printed, a lever pivoted at an intermediary point, one end of said lever engaging said table, treadle mechanism engaging the other end of said lever, actuation of said treadle causing said lever to raise said table to carry the object thereon into engagement with the stencil, a burner associated with said stencil, a supply-pipe for said burner, a valve in said supply-pipe, actuating-levers extending from said valve and in the path of the other end of said lever, actuation of said lever to raise the table causing said valve to be closed, and actuation of said lever to lower the table causing said valve to be opened, whereby the stencil is heated and dried.

In witness whereof I hereunto subscribe my name this 25th day of January, A. D. 1904.

CHAS. L. BURDICK.

Witnesses:
CHARLES J. SCHMIDT,
HARVEY L. HANSON.