(No Model.)

2 Sheets—Sheet 1.

# C. N. LEONARD.

## EMBOSSING MACHINE.

No. 602,560. Patented Apr. 19, 1898.

Fig. 3.

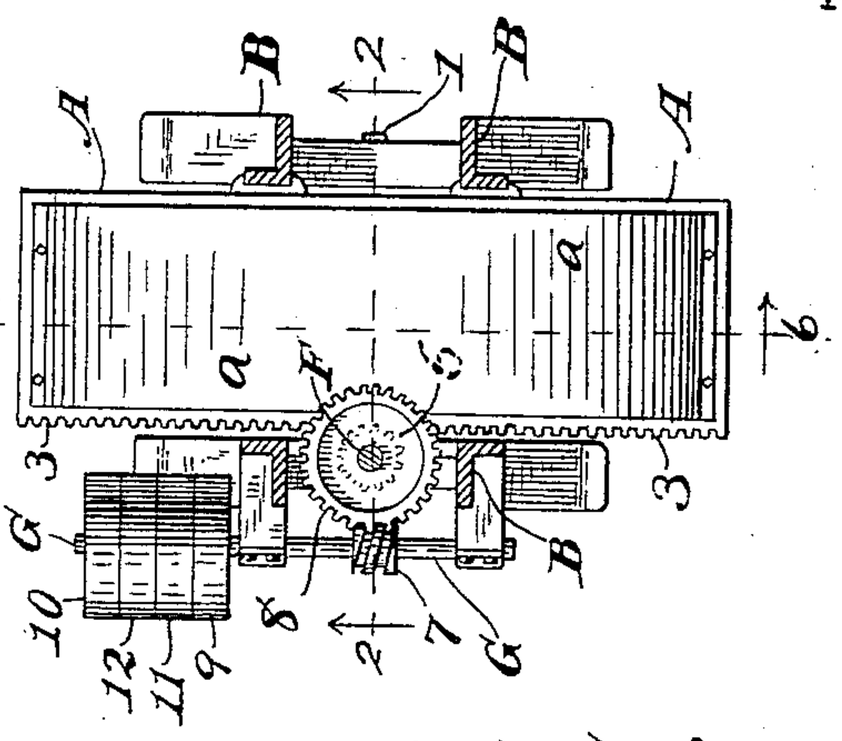



Fig. 2.

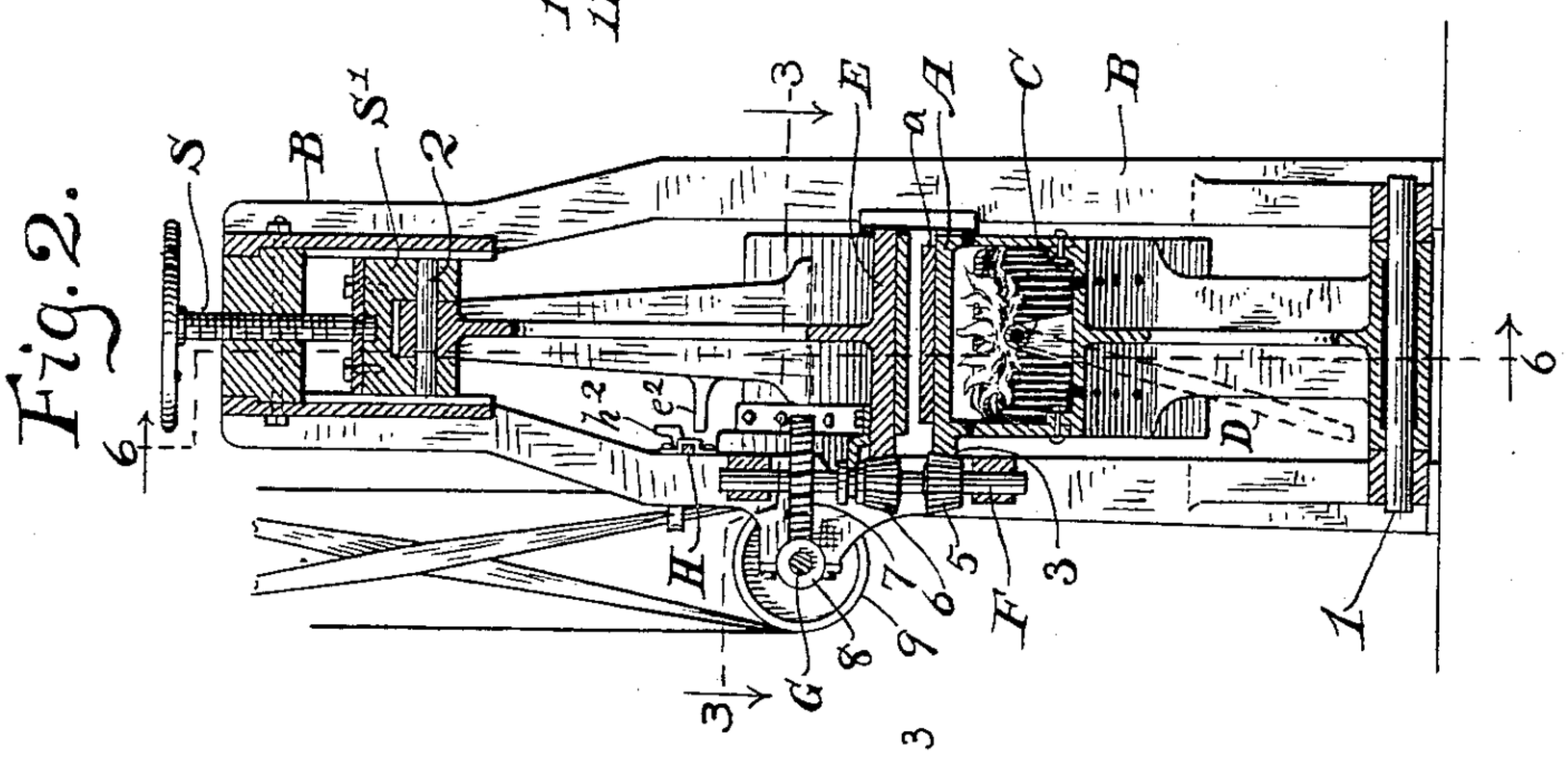
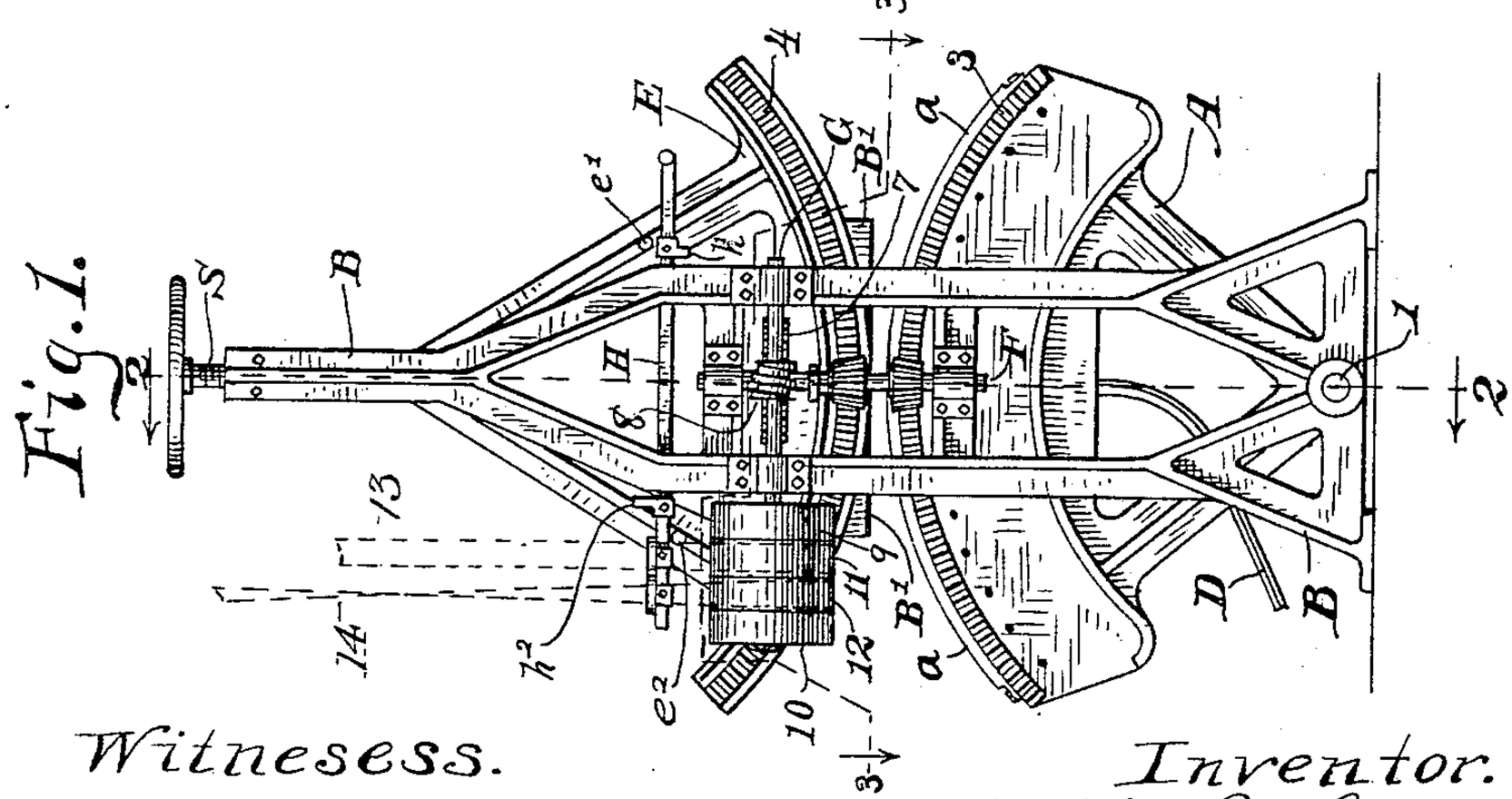



Fig. 1.




Witnesess.

J. A. Walsh.

H. D. Neary

Inventor.

Chas. N. Leonard.

By Chester Bradford.

Attorney.

(No Model.) 2 Sheets—Sheet 2.

# C. N. LEONARD.

## EMBOSSING MACHINE.

No. 602,560. Patented Apr. 19, 1898.

Fig. 7.

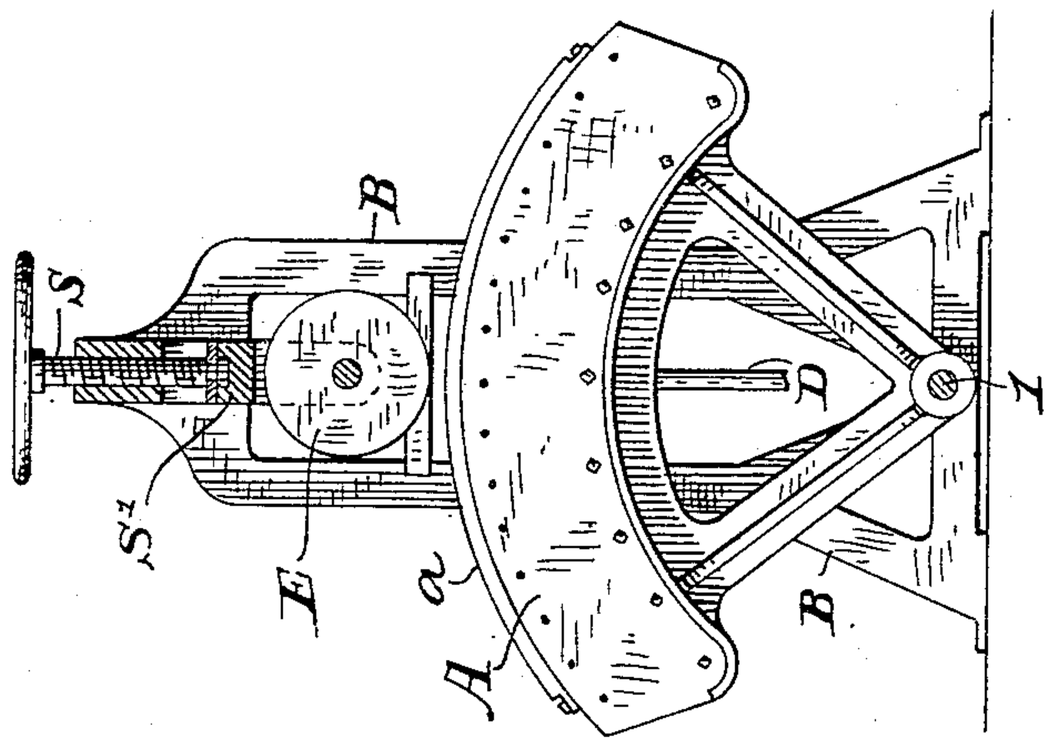



Fig. 6.

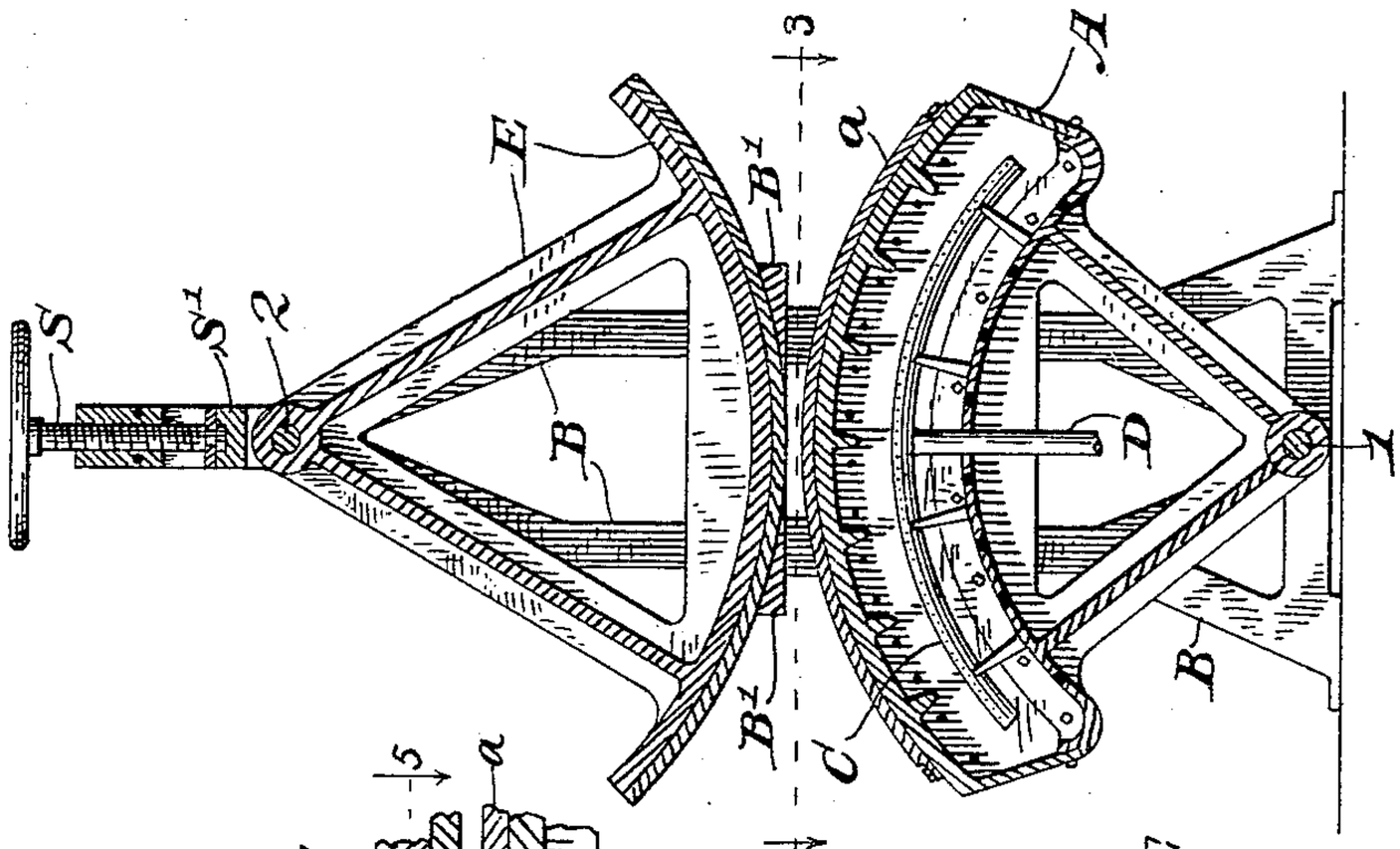



Fig. 4.

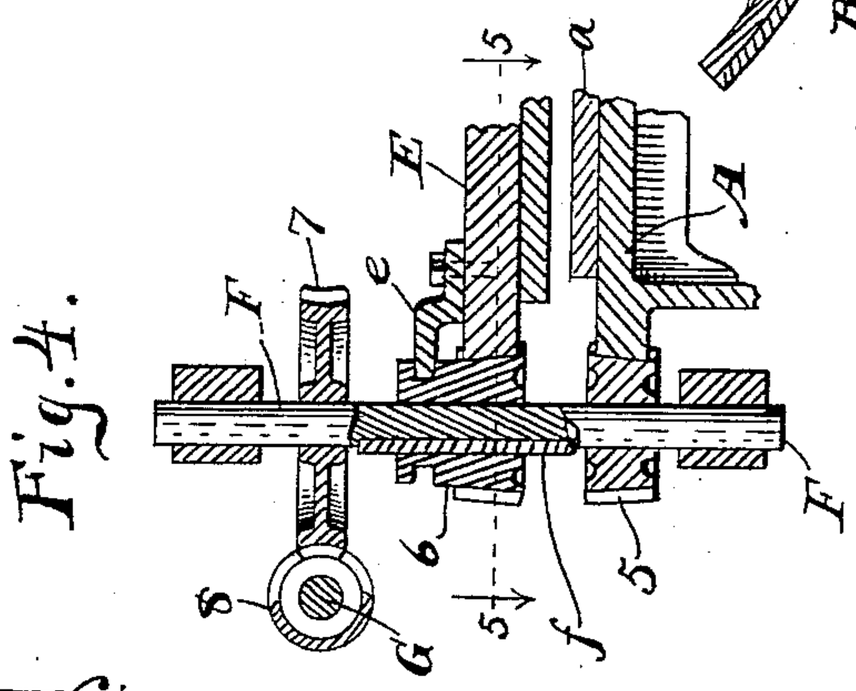
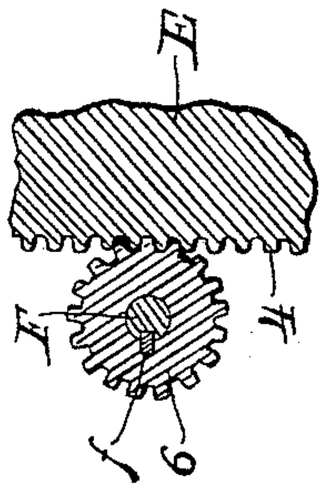



Fig. 5.




Witnesses.

J. A. Walsh.

E. D. Neally.

Inventor.

By Chas N. Leonard.

Chester P. Bradford,

Attorney.

# UNITED STATES PATENT OFFICE.

CHARLES N. LEONARD, OF INDIANAPOLIS, INDIANA, ASSIGNOR OF ONE-HALF TO WILLIAM B. DYER, OF SAME PLACE.

## EMBOSSING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 602,560, dated April 19, 1898.

Application filed May 4, 1897. Serial No. 635,048. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES N. LEONARD, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Embossing-Machines, of which the following is a specification.

My invention relates to that class of machines by which designs in imitation of carving are embossed upon wood or similar substance.

My principal objects are to secure a comparatively flat embossing-die and in which also the flame or heat may be directed onto that portion of the die by which the work is immediately performed as intensely as may be desired.

Said invention consists in the construction and arrangement of parts of a machine by which the desired work may be performed, as will be hereinafter more particularly described and claimed.

Referring to the accompanying drawings, which are made a part hereof and on which similar letters and numerals of reference indicate similar parts, Figure 1 is a side elevation of a machine embodying my present invention; Fig. 2, a vertical sectional view thereof as seen from the dotted line 2 2 in Fig. 1; Fig. 3, a horizontal sectional view as seen from the dotted line 3 3 in Fig. 1; Fig. 4, a detail sectional view illustrating some of the mechanism more clearly, being substantially a fragment removed from Fig. 2; Fig. 5, a fragmentary sectional detail on the dotted line 5 5 in Fig. 4; Fig. 6, a vertical sectional view through the machine as seen from the dotted lines 6 6 in Fig. 2, and Fig. 7 a view illustrating in a simple way and without details an alternative construction.

The machine consists, generally speaking, of a suitable framework, a segmental die, and a suitable platen whereby the work is forced against the die, with suitable mechanism for driving the parts and maintaining an equal pressure upon the work.

In my preferred form (illustrated in Figs. 1 to 6) the hollow segmental-die support A is mounted on a rock-shaft 1 in the base of the frame B, while the die proper, *a*, is suitably secured on the segmental surface. Within the die-support A is a burner C, which extends substantially its whole length and in equal proximity to its upper portion, which carries the die *a*, the fuel being preferably fluid in character and supplied through a flexible pipe D. Heretofore the bearings supporting the die structure have been near to the burner, and thus subject to injury from the heat.

In my improved machine, as will be readily seen, the pivot or rock-shaft 1 is so far removed from the burner as not to be affected by the heat, which, as those skilled in the art will readily understand, is a great advantage. With a cylindrical die-support such as is usually employed the size is also necessarily limited, because in order to secure the required heat the burner must be near the shell of the die-support, so as to operate substantially directly upon the die.

By my invention I secure facilities for placing the burner as near the shell as may be desired, while the radius on which the curvature is struck may be as great as desired. The die is thus also enabled to operate in a superior manner, as the surface has less curvature than usual. For fine designs especially a small cylindrical die-support having a correspondingly acute curvature is apt to do unsatisfactory work.

Carried by a heavy screw S in the upper end of the frame is a slide-block S′, and upon this is carried the frame of the platen E, by which the work is forced onto the die when the machine is in operation, and this platen-frame moves on a pivot or rock-shaft 2 similar to the pivot or rock-shaft 1 of the die-support A. As will be readily seen, the parts A and E are adapted to move uniformly and are each as long as or longer than the die which is to be employed.

Extending across below the under surface of the platen E are guide-bars B′, which are carried from the adjacent portions of the frame B. As best shown in Fig. 6, the lower sides of these bars B′ are arranged on a level, so that the material being embossed is prevented from tipping. The point of pressure, as will be readily seen, is at a central point between these two guide-bars.

Upon the edges of the parts A and E are segmental racks 3 and 4, as best shown in Fig. 1. A vertical shaft F is suitably mounted in suit-

able cross-bars in the framework and carries pinions 5 and 6, which engage with said racks and whereby the parts A and E are driven uniformly. As the machine is designed to operate upon material of varying thickness, it is of course necessary that the die and the opposing platen should be varying distances apart. This movement is provided for by the screw S, heretofore mentioned, while the continued engagement of the pinion 6 with the rack-bar 4 on the edge of the platen is insured by means (best shown in Fig. 4) consisting of a spline *f* in the side of the shaft F, which permits a movement of said pinion 6 longitudinally of said shaft, while preventing any rotary movement with respect thereto, and a flange *e* on the platen, which extends out and enters a corresponding groove in the hub of this pinion 6, and thus said pinion is caused to move with the platen and be maintained in uniform relation thereto at all times.

The shaft F is driven by a screw-gearing, of which the gear-wheel 7 is rigidly secured to said shaft, while the worm 8 is mounted on a transverse shaft G. Said shaft G has a series of tight and loose pulleys 9, 10, 11, and 12, of which the two former or outer ones are fast and the two latter or inner ones are loose, and these are driven by a straight and a crossed belt. Four pulleys instead of three are employed, for the reason that it is desirable to have the machine at a standstill at the midway point of shifting the belts 13 and 14, which is easily possible with four pulleys, the two center ones of which are loose, as described. By means of dotted lines in Fig. 1 I have shown the belts in the position they occupy when the machine is at rest. The belts are adapted to be automatically shifted, however, and for this purpose I have provided a shifting-bar H, mounted in suitable bearings on the framework and best shown in Figs. 1 and 2. Upon the frame of the platen E, I provide projections $e'$ and $e^2$, while on the bar H are fingers $h'$ and $h^2$. These are so arranged that when the machine reaches its extreme position, so that, for example, the projection $e'$ comes in contact with the finger $h^2$, the belts will be shifted and the machine caused to start on its return movement, and the like operation takes place when the projection $e^2$ strikes the finger $h'$.

The machine illustrated in Fig. 7 is substantially the same as that illustrated in the other figures, except that a roll-platen E′ is substituted for the segmental platen E in the principal figures. As the platen is smooth and is not subjected to heat, it is obvious that it may be in the form of a cylinder without noticeably impairing the efficiency of the machine. The driving mechanism may also be varied from without departing from my invention.

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

1. In an embossing-machine, the combination, of the frame, the platen, and a segment-shaped die structure formed hollow and containing the combustion-chamber, said structure being formed to bear the die on one side thereof and mounted to rock on bearings located on the opposite side thereof, substantially as set forth.

2. In an embossing-machine, the combination, with a suitable framework and platen and driving mechanism, of a segmental-die support containing a combustion-chamber and having a correspondingly-shaped burner arranged beneath the shell thereof and in close proximity thereto.

3. In an embossing-machine, the combination, of the frame, the platen, a segmental-die support carrying the die mounted to rock on bearings located on its side opposite its die-supporting face, said support being formed hollow and containing a combustion-chamber just below said die-supporting face, and mechanism for operating said platen and die-support uniformly, substantially as set forth.

4. The combination, in an embossing-machine, with a suitable frame and platen, of a segmental-die support mounted on a suitable rock-shaft, the segmental surface being of a length as great or greater than the desired length of die, substantially as shown and described, and a correspondingly-shaped burner also carried by said rock-shaft arranged beneath and in close proximity to its shell.

5. In an embossing-machine, the combination, of a frame, the platen, a segmental-die support mounted on bearings which are located at a point distant from the operating heated surface, said die-support being formed hollow and containing a burner located near said operating-surface, whereby said bearings are removed from danger of injury by heat, substantially as set forth.

6. In an embossing-machine, the combination, of the frame, a hollow segmental-die structure containing the heater and mounted to rock on bearings on its side opposite the operating-face, an opposing platen having a curved surface, and also mounted to oscillate on suitable bearings, and guide-bars carried by said frame and extended across below said dlaten on each side of the center thereof, whereby the material being embossed is guided and held to the proper position, substantially as set forth.

7. The combination, in an embossing-machine, of a suitable framework, a segmental-die support carrying a burner beneath its face, mounted on a rock-shaft or pivot therein, and provided with a rack on its edge, a segmental platen opposed to the die on said die-support and provided also with a rack on its edge, a shaft mounted in the framework alongside said die-support and said platen, and pinions thereon which engage with said racks and thus drive said die-support and platen uniformly, substantially as set forth.

8. The combination, in an embossing-machine, of a suitable framework, a segmental-die structure, an opposing platen, mechanism for driving the same, and mechanism for reversing the motion of the driving mechanism consisting of a shaft having two tight and two loose pulleys, and a straight and a crossed belt, the two loose pulleys being between the two tight pulleys, and suitable shifting mechanism operated by a moving part, substantially as shown and described.

In witness whereof I have hereunto set my hand and seal, at Indianapolis, Indiana, this 28th day of April, A. D. 1897.

CHAS. N. LEONARD. [L. S.]

Witnesses:

CHESTER BRADFORD,

JAMES A. WALSH.