(No Model.)

2 Sheets—Sheet 1.

G. S. CRAWFORD & B. F. KINNEAR.

WOOD EMBOSSING MACHINE.

No. 365,673. Patented June 28, 1887.

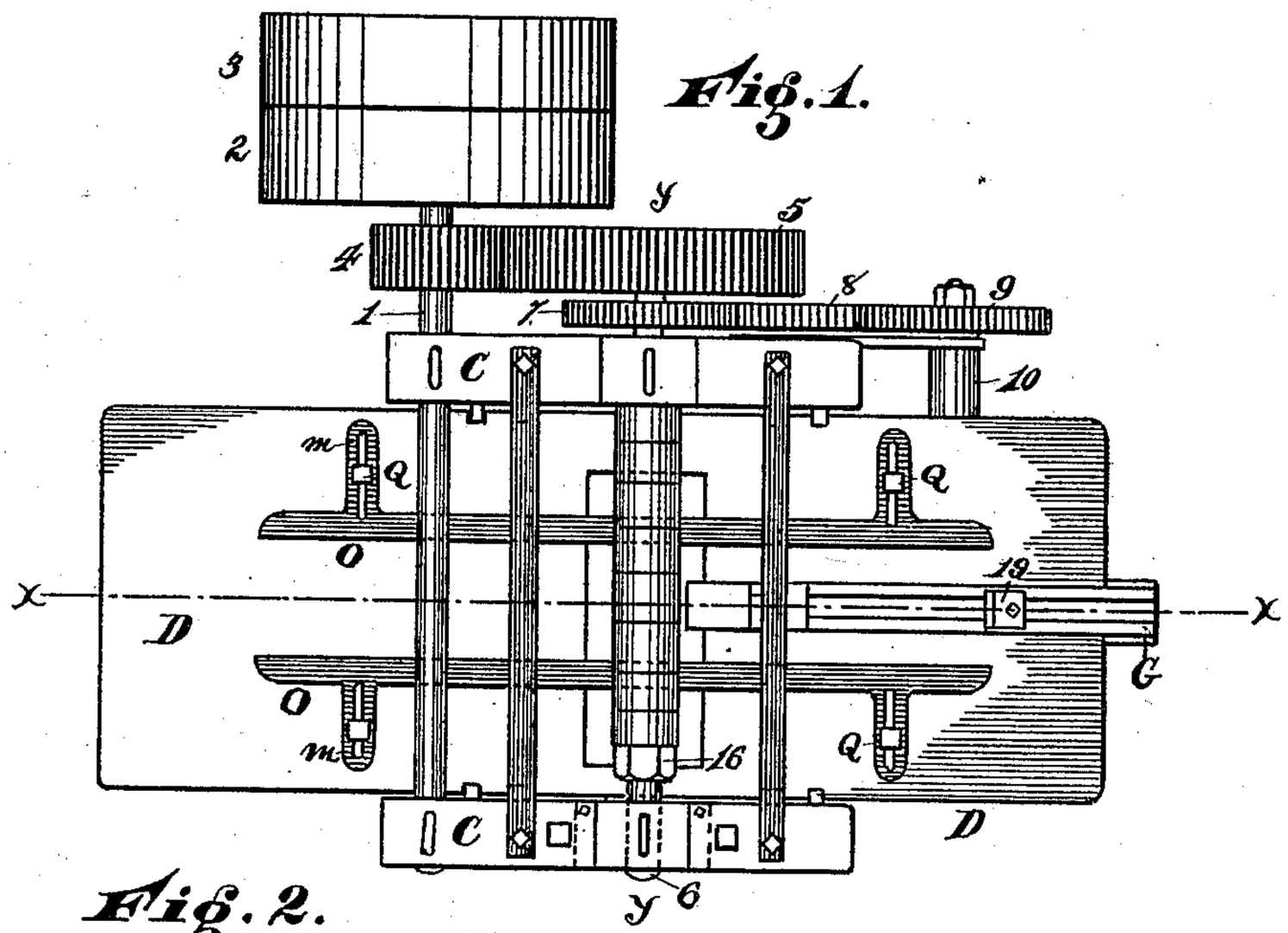
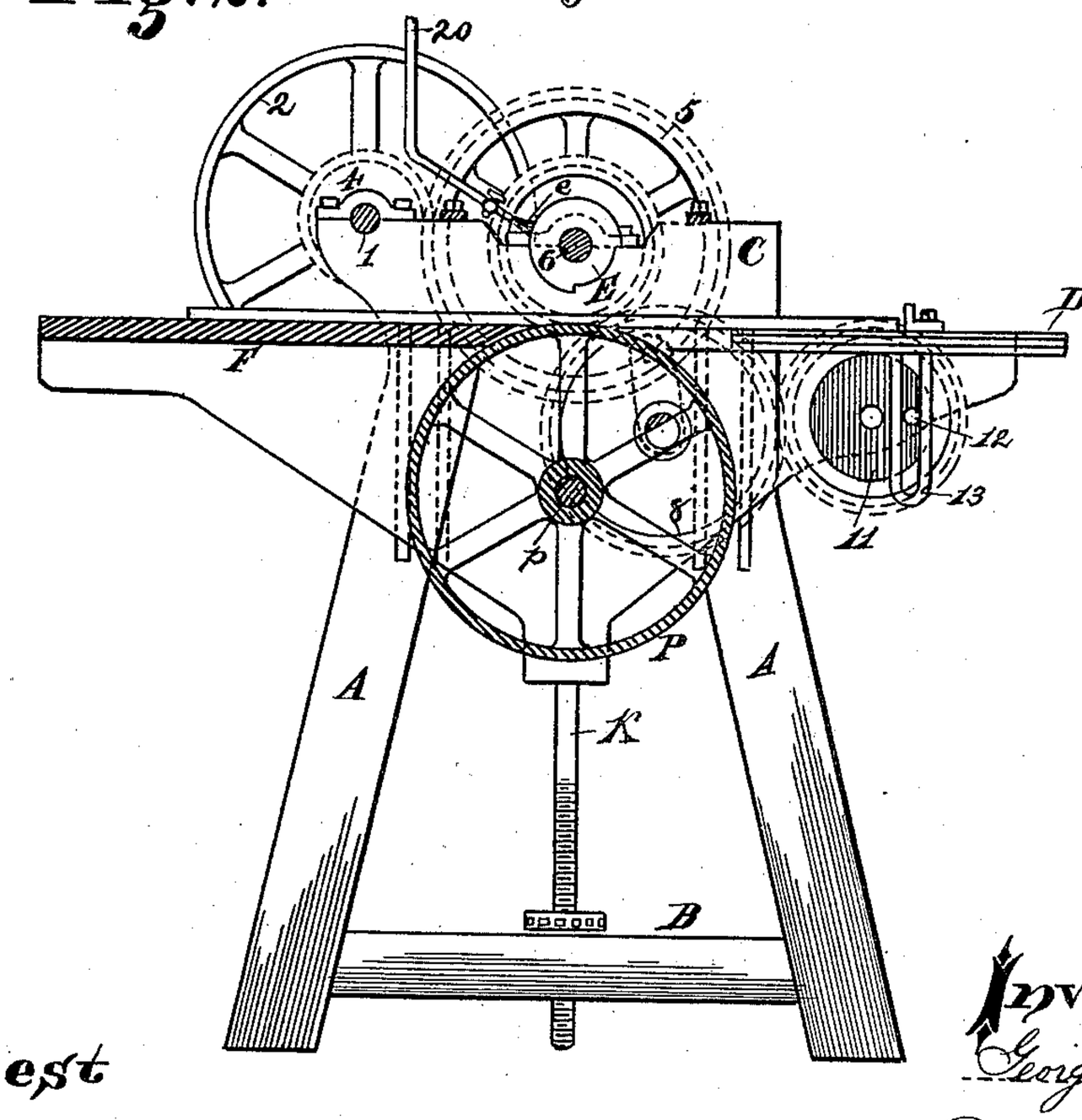


Fig. 1.

Fig. 2.



Attest

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their Attorneys

(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

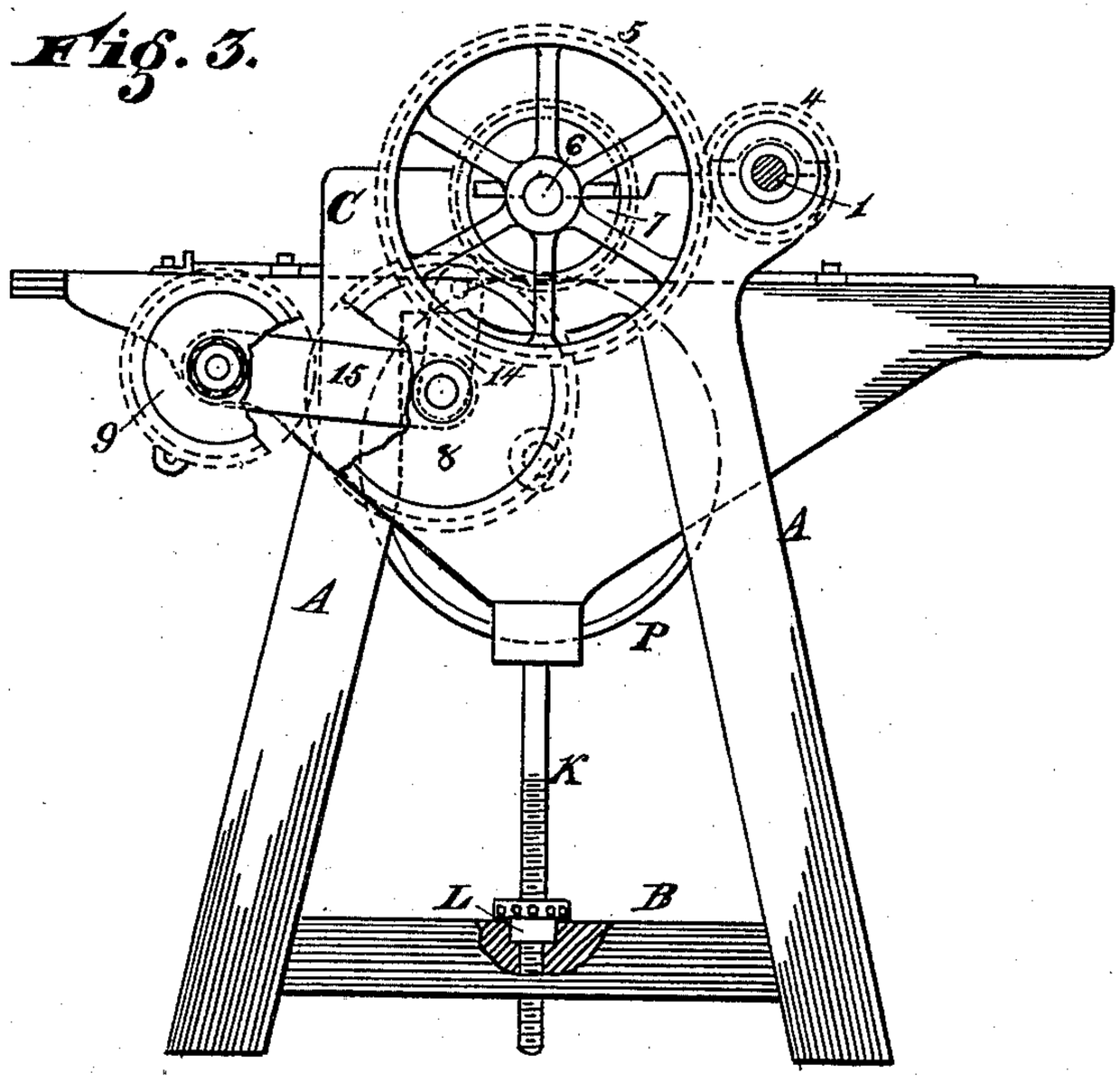


Fig. 6.

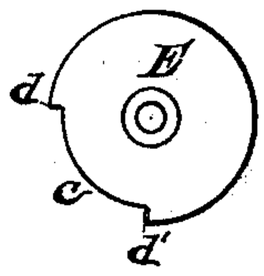


Fig. 5.

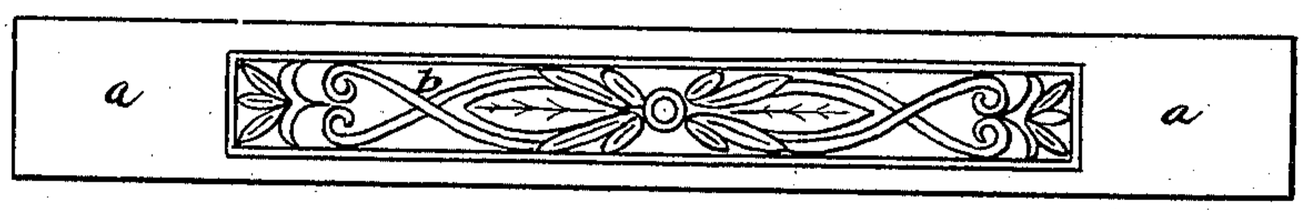
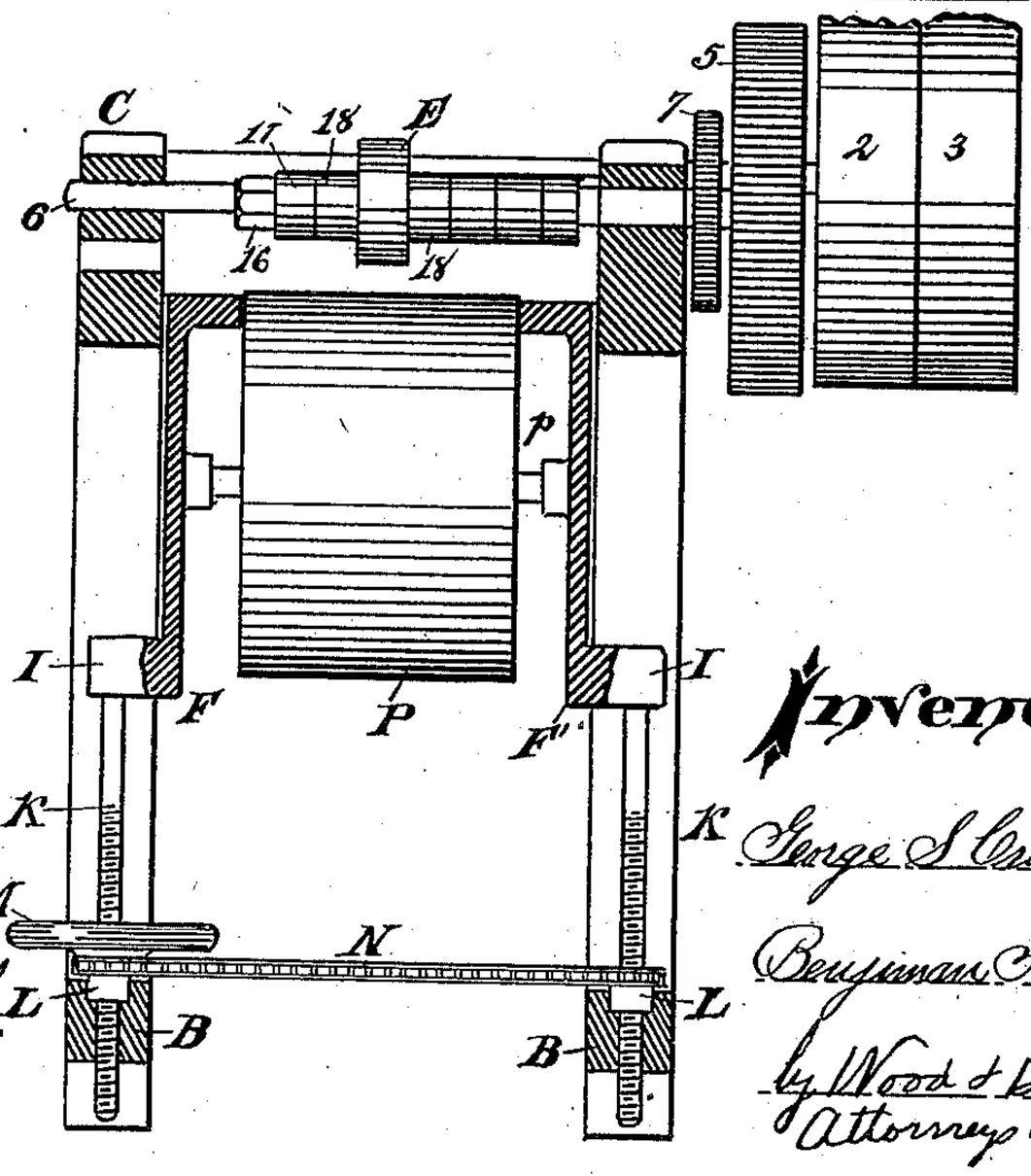


Fig. 4



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UNITED STATES PATENT OFFICE.

GEORGE S. CRAWFORD AND BENJAMIN F. KINNEAR, OF CINCINNATI, OHIO.

WOOD-EMBOSSING MACHINE.

SPECIFICATION forming part of Letters Patent No. 365,673, dated June 28, 1887.

Application filed March 14, 1885. Serial No. 158,893. (No model.)

To all whom it may concern:

Be it known that we, GEORGE S. CRAWFORD and BENJAMIN F. KINNEAR, both of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Wood-Embossing Machines, of which the following is a specification.

Our invention relates to a wood-embossing machine.

The object of our invention is, first, to provide a machine through which the material to be embossed can be fed rapidly and exactly.

Another object of our invention is to provide easy means for adjusting the machine to the different positions required for general use.

These objects we accomplish in the manner and by the means hereinafter described and claimed, reference being made to the accompanying drawings, illustrating our invention, in which—

Figure 1 is a top plan view of our improved machine. Fig. 2 is a vertical section on line *x x*, Fig. 1. Fig. 3 is a side elevation. Fig. 4 is a central cross-section on line *y y*, Fig. 1. Fig. 5 is a top plan view of a piece of wood as embossed by our machine. Fig. 6 is an end elevation of the configured roller.

A represents the posts of the machine; B, a cross-rail connecting the posts; C, a cross-piece forming the top of the frame of the machine.

D represents the table, which is made vertically adjustable within the frame, as will be hereinafter explained.

1 represents the main driving-shaft, which is journaled on the top of the cross pieces or plates C.

2 represents a driving-pulley keyed upon shaft 1.

3 is a loose pulley running on said shaft.

4 represents a spur-gear keyed upon shaft 1, meshing and driving the transmitting-gear 5, keyed upon shaft 6, which shaft is likewise journaled upon the frame-plates C.

E represents the configurating or embossing roller, which is keyed or rigidly secured to shaft 6.

7 represents transmitting-gear keyed on shaft 6, meshing with gear 8, which in turn drives the gear 9, which is keyed upon shaft 10.

11 represents a disk keyed upon the inner end of shaft 10.

12 represents a crank-pin inserted in disk 11, which enters the U-shaped guide 13.

Shaft 10 is journaled to the table D, and is raised and lowered with it. The necessity of raising and lowering the table D is occasioned by the use of different-sized configured rollers E. Different-sized rollers are required in order to produce different lengths of embossed figures, and the table must be adjusted relatively to the configurating-roller. It is desirable to have the configured or embossed portion of the stock made so as to leave blank spaces *a*, as shown in Fig. 5, upon either side of the embossed portion *b;* hence the material must be inserted to the roll at the right time. The roller E is constructed so as to have a segmental recess, *c*, (see Fig. 6,) upon its periphery which corresponds in length to at least one of the blank spaces *a* of the wrought material. It is preferable to have this recess *c* equal to both blank spaces *a*. In order that these two blank spaces may be equal to the material acted on by the machine, we have provided means for automatically feeding the piece under the roller while the blank space *c* is passing over the material.

The figure embossed in the wood is produced by raised surfaces between the points *d d'*. To accomplish this automatic feeding we have provided the following device:

G represents a slide working in a slot pierced in the top of the table D. The slide and slot are grooved so as to form guides, the slide G being adapted to be carried in or out by the action of the traveling guide 13, carried by crank-pin 12. In order that the length of the space *a* may be regulated, the gage 19 is adjusted to or from the roller E by a set-screw or other convenient detachable means employed in fastening it to the slide G. The piece to be wrought is placed upon the slide G, its rear end resting against the gage 19.

P represents an idler-roller, whose shaft *p* is journaled to the side pieces of the table F. Its upper periphery travels flush with the surface of the table D and assists in carrying the material through or under the embossing-roller E.

The machine is started in operation by shifting the belt from loose pulley 3 onto driving-pulley 2. Motion is transmitted through gear 4 to gear 8, setting in motion the embossing-roller E. Gear 7 transmits motion to gear 8,

and it to gear 9 and disk 11, which carries the crank-pin 12 around, it being engaged with the guide 13, which guide is secured in the under side of slide 9. Slide 9 is carried forward with the movement of disk 11, and during the time that the blank space or recess *c* is passing over the material. As soon as the embossed or raised portion of the roller E comes in contact with the material the pinch of the rollers will carry the material through between rollers P and E. As soon as roller E has made one revolution gage 19 has been carried back to the position shown in Fig. 2 by the revolution of crank-pin 12, ready for the second piece, which pushes the first one through as it is being moved up by the gage. As the table D must be adjusted up or down so that its distance from the roller E shall be such as to accommodate the different thicknesses of stuff to be embossed, we have provided the following instrumentalities for readily setting the table:

F F′ represent downwardly-projecting plates attached to either edge of the table D, and forming sides thereof.

I I represent ledges or projections formed on the sides of the table D, to which ledges screw-rods K are attached and project down through the cross-piece B.

L L represent nuts which seat and journal in the cross-beams B, and are turned to raise or lower the screw-rods K, and with them the table D, which rests upon and is sustained by said screw-rods.

M represents a hand-wheel, forming a part of one of the nuts L, so as to turn the same readily.

N represents a transmitting sprocket-chain, which engages over sprockets on the nuts L L. As the hand-wheel is turned, both nuts L L are revolved simultaneously and the screw-rods simultaneously raised and lowered, shaft 10 being journaled upon the under side of table D, and therefore adjusted up and down with it.

It is necessary to provide proper instrumentalities, for adjusting-gears 8 and 9 should be raised and lowered and yet have gear 8 in proper meshing relation with the gear 7 and the adjustable gear 9. To accomplish this we have provided the following instrumentalities:

14 represents a link pivoted to the frame-piece C of the machine at one end and upon the hub of gear 8 at the opposite end.

15 represents another link, likewise pivoted upon the hub of gear 8 and upon the hub of gear 9. Hence the gear 8 is sustained by the links 14 and 15, which allows the gear 9 to be raised and lowered with the table. The movement of the links allows the gear 8 to change its relative vertical position with the other two gears and yet to be always in mesh with the same.

O represents guides which are provided with ears *m n*, which ears are pierced with a slot, through which pass set-screws Q, which tap into the table D, so as to adjust guides O to or from the center of the table, so as to accommodate different widths of stuff and to prevent it from moving laterally under the action of the embossing-roller.

In order to readily change the embossing-roller E, we provide a set-screw, 16, and collars 17, which abut the hubs 18 of the embossing-roller. Hence any desired width of roller may be employed, as well as the change of rolls of different diameters. These can be used upon the single shaft 6 and changed by lifting one end of the shaft out of the journal-box inclosing nut 16 and removing the collars and embossing-roll E.

In order to keep the roll at the right degree of heat, we provide a steady flame, *e*, to impinge against the upper surface of the roller E and above the horizontal plane of its axis. This flame is supplied by a pipe, 20, which is supplied by gasoline from a tank located above and away from the machine, or in any other convenient manner.

Care must be taken as to the character of the flame employed to impinge upon the roller. Gas will not do, as it smokes and colors the roller and stains the wood. Neither must the flame strike against the roller below the horizontal line or plane of its axis, or the flame will scorch the wood and destroy the beauty of the embossing device. Hence, by providing a gasoline flame, *e*, and causing it to impinge upon the roller above its horizontal plane, the flame will not be turned down upon the wood, and the roller may be heated sufficiently to heat the roll without scorching or discoloring the embossed wood. The roll should be heated just below the point at which is will scorch the wood, and a set-screw is placed in the pipe to adjust the flame so as to accomplish this result.

We have found by experience that when the roller is heated just below the scorching-point the fibers of the wood are not cracked or broken, the indentations are more smoothly made by the compressions of the material between the rolls P and E, and it retains its shape much longer than when the material is embossed cold, or when it is embossed in a moist or steamed condition. By means of the adjusting-nuts L L the proper amount of compression can be brought upon the material by adjusting the roller P to or from the embossing-roller E.

We claim—

1. The combination of the table D, the feeding-slide G thereon, the shaft 10, a connection between the shaft and the slide for reciprocating the latter, the roller E, the main shaft 1, and gearing connecting the main shaft with the shaft 10, for simultaneously revolving the embossing-roller and reciprocating the feeding-slide, substantially as described.

2. The combination of the table D, the feeding-slide G, having the gage 19, the shaft 10, having a disk, 11, provided with a crank-pin, 12, a guide, 13, connected with the slide and

engaging said pin, and gearing for driving the shaft, substantially as described.

3. In combination with the embossing-roller E, journaled upon the main frame, the adjustable table D, squeezing-roller P, journaled upon the table D, and vertically-adjusting screws K, which support the table upon the frame, substantially as herein specified.

4. In combination with the embossing-roller E and the squeezing-roller P, journaled upon the table D, feeding-slide G, operated by a crank and gear connection between it and the shaft which operates the embossing-roller, whereby the parts are operated simultaneously, substantially as herein specified.

In testimony whereof we have hereunto set our hands.

GEORGE S. CRAWFORD.
B. F. KINNEAR.

Witnesses:
J. SIMPSON ROEBUCK, Jr.,
M. E. MILLIKAN.