

No. 764,872.

PATENTED JULY 12, 1904.

J. H. STEWART.  
PROCESS OF TREATING WOOD AND ITS PRODUCT.

APPLICATION FILED APR. 13, 1904.

NO MODEL.

2 SHEETS—SHEET 1.

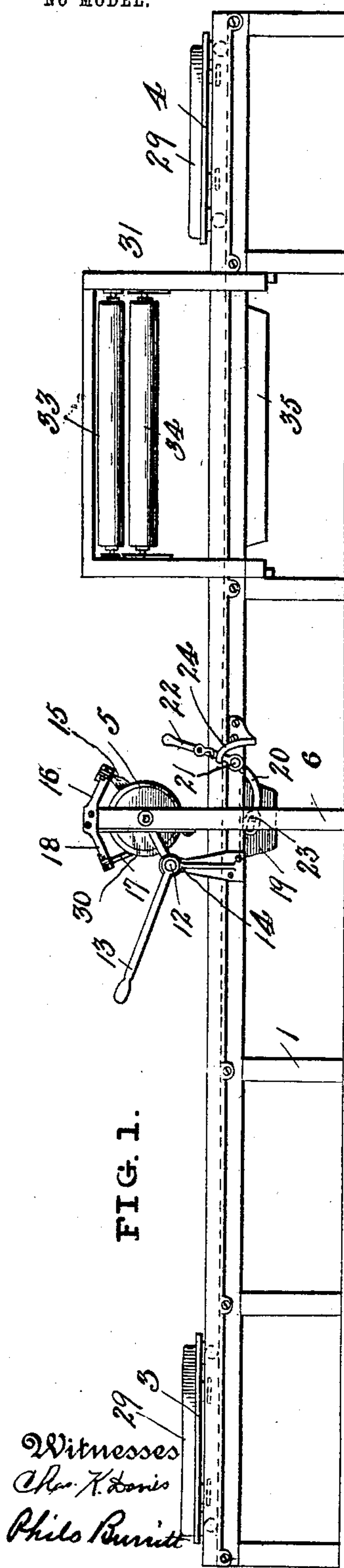


FIG. 1.

Witnesses  
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Phil B. Burritt

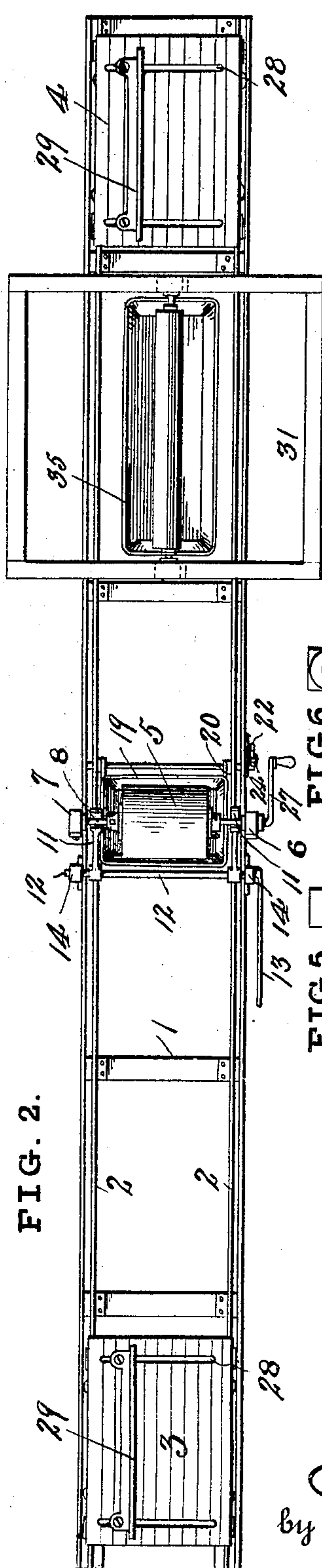


FIG. 2.

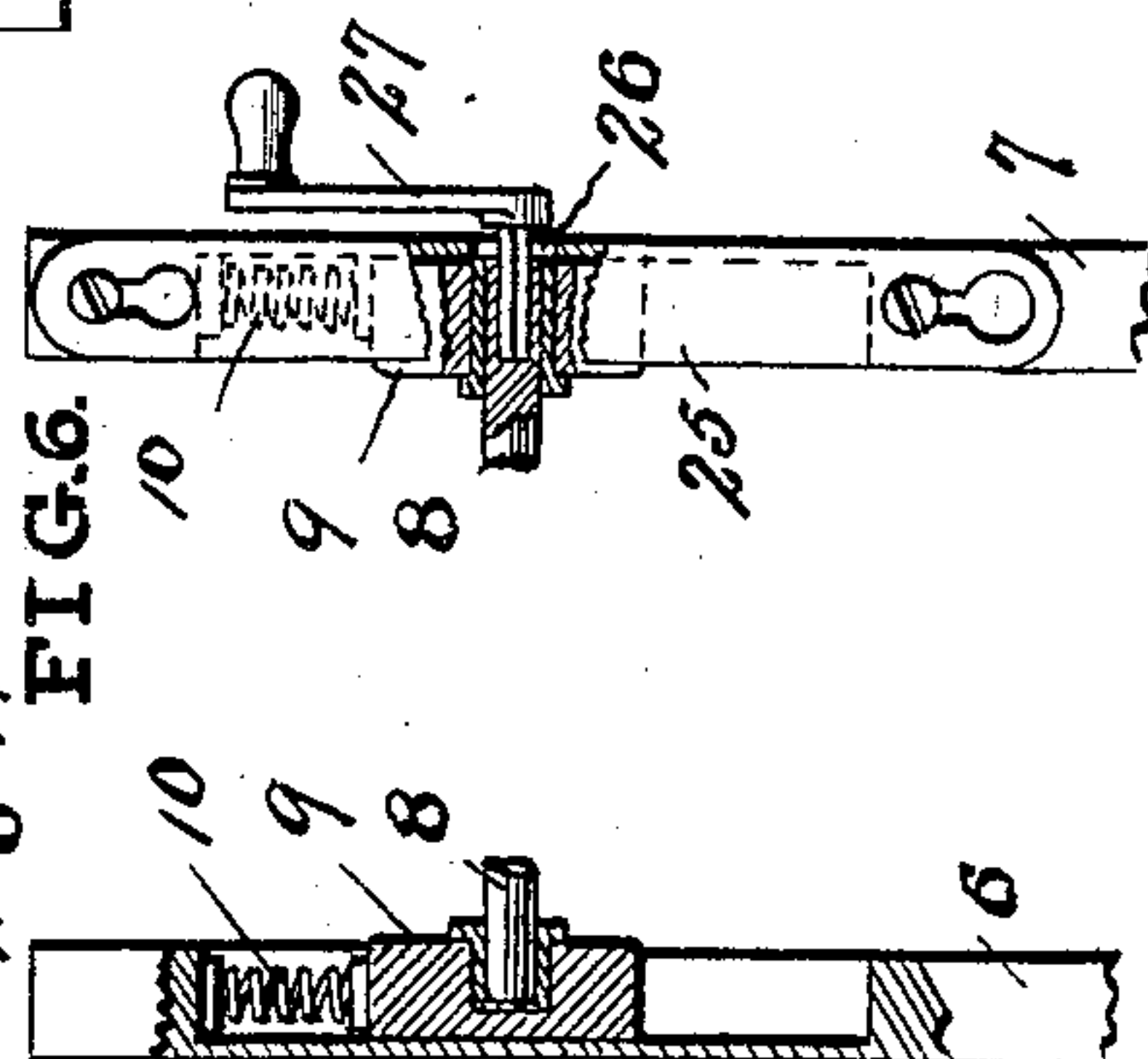


FIG. 3.

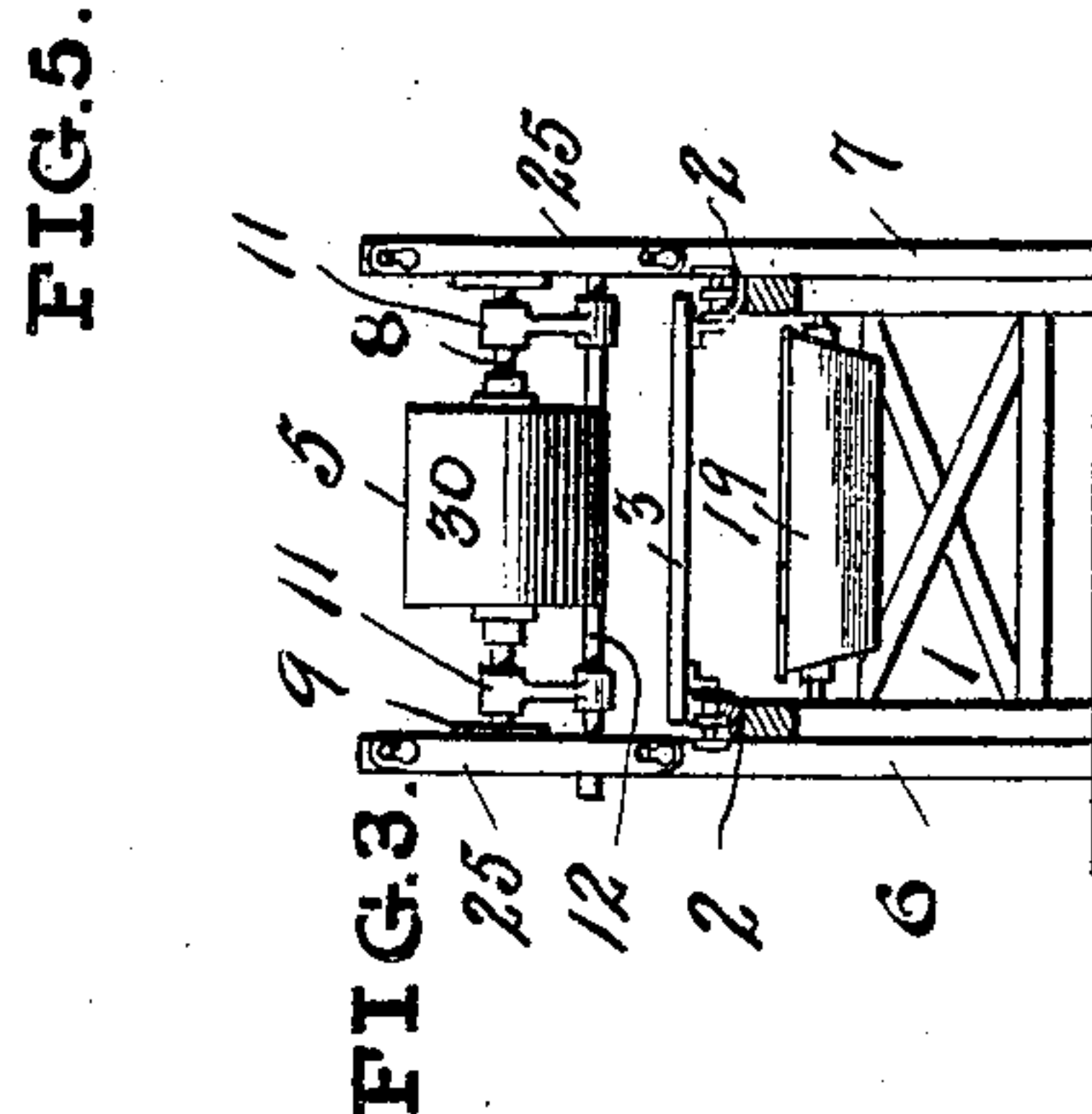


FIG. 4.

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2 SHEETS—SHEET 2.

FIG. 8.

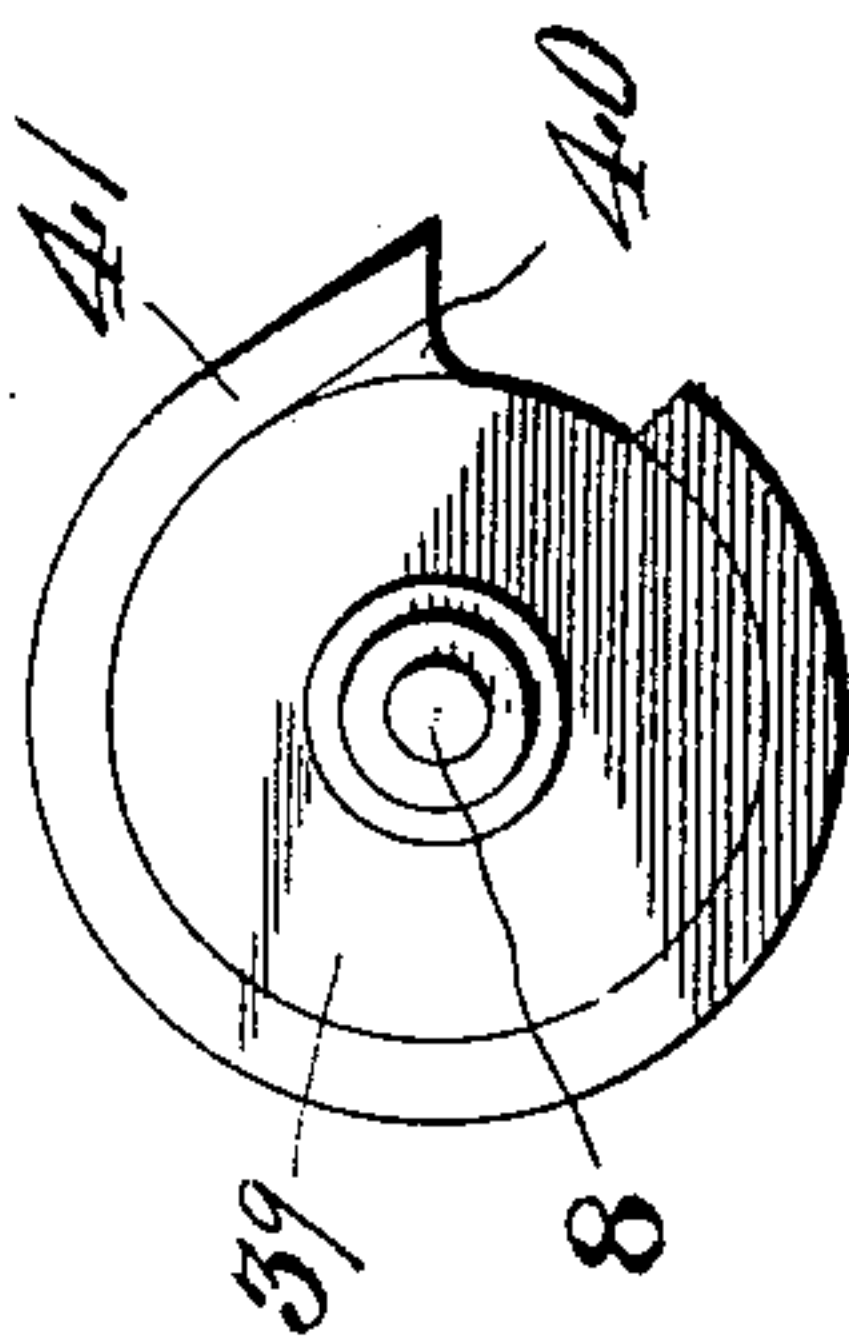


FIG. 7.

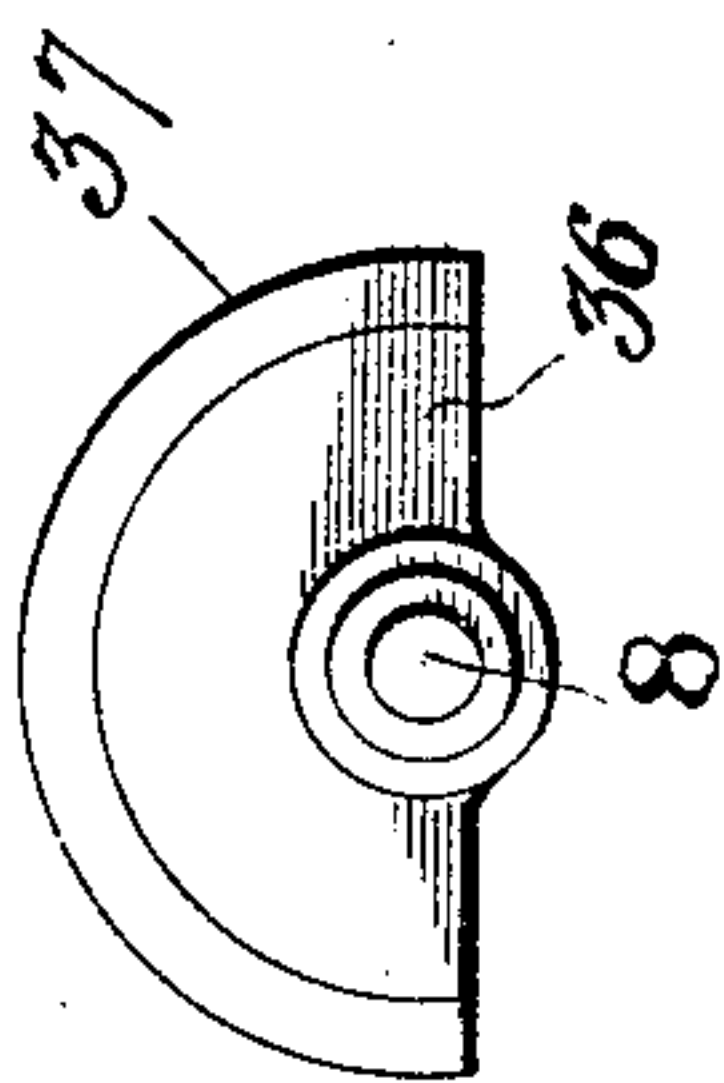


FIG. 10.

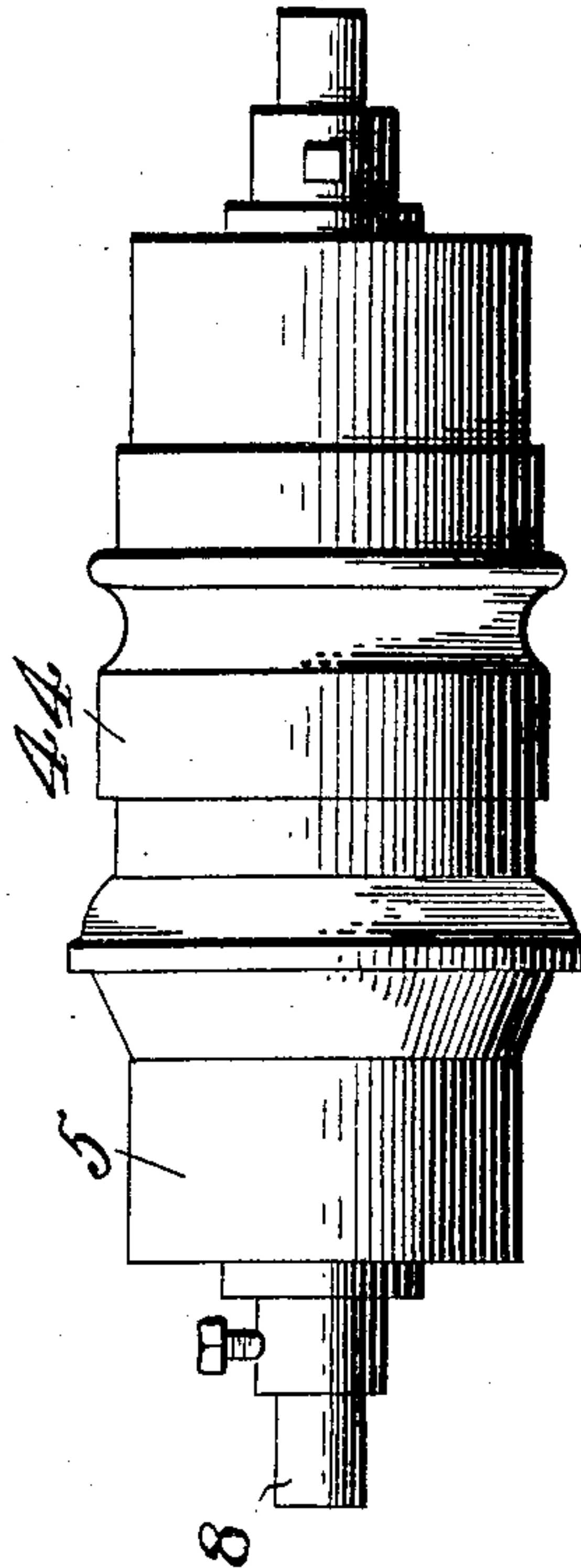
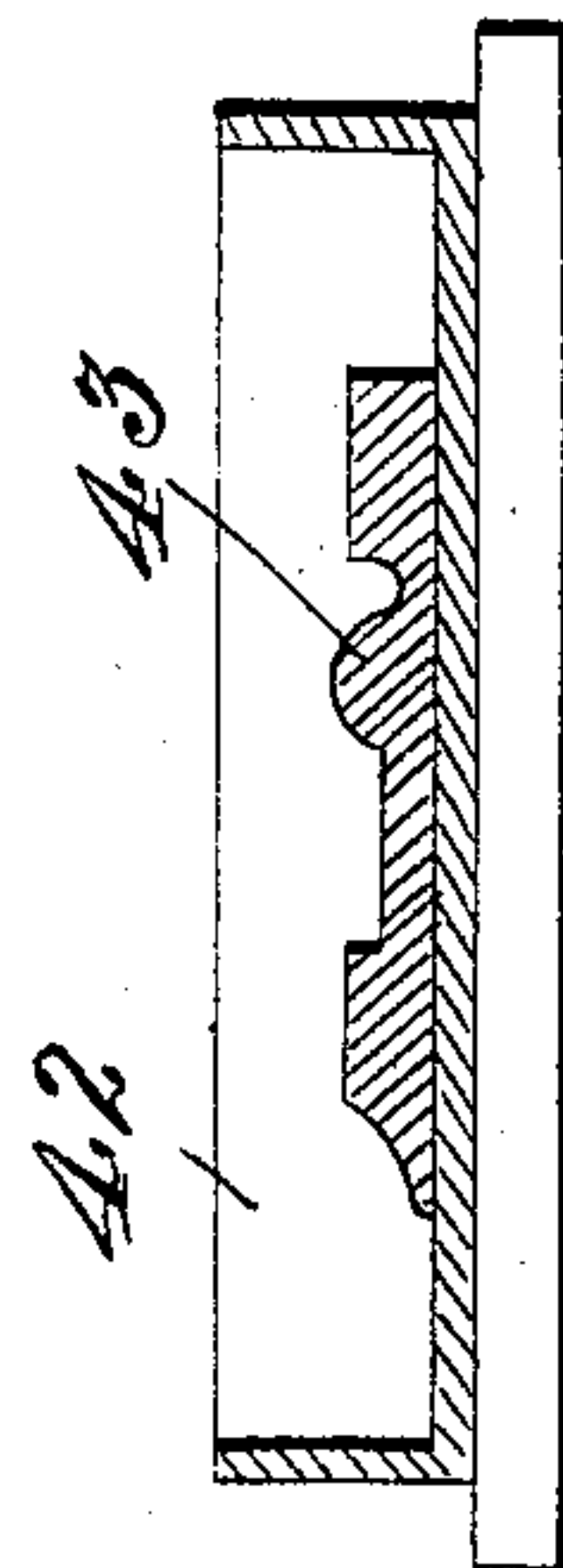


FIG. 9.



Witnesses  
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# UNITED STATES PATENT OFFICE.

JOHN H. STEWART, OF WILLIAMSPORT, PENNSYLVANIA.

## PROCESS OF TREATING WOOD AND ITS PRODUCT.

SPECIFICATION forming part of Letters Patent No. 764,872, dated July 12, 1904.

Application filed April 13, 1904. Serial No. 202,940. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN H. STEWART, of Williamsport, in the county of Lycoming and State of Pennsylvania, have invented certain  
5 new and useful Improvements in Processes of Treating Wood and Its Product; and I do hereby declare the following to be a full and clear description thereof.

My invention relates to a process for treating  
10 wood and a wood product.

The particular process and product—that is, the carrying out of the different steps of the process and a detailed description of the product—will first be fully described in connection  
15 with apparatus for effecting the results, and the patentable features will then be set forth and claimed.

Figure 1 is a side elevation of a machine used in carrying out the process. Fig. 2 is a  
20 top plan view of the same. Fig. 3 is an end elevation. Fig. 4 is a transverse section of the machine shown in Figs. 1 and 2. Fig. 5 is a detailed elevation and partial section of one of the standards of the machine. Fig. 6 is a  
25 similar view of another one of the standards. Fig. 7 is a detail end view of one of the rolls used in the machine. Fig. 8 is a detail end view of another one of the rolls used in the machine. Fig. 9 is a transverse section of a  
30 mold-box for forming one of the rolls of the machine. Fig. 10 is a side elevation of one of the rolls formed in connection with the mold-box in Fig. 9.

The object of the invention is to make absolute facsimile imitations of the grain of  
35 wood upon prepared surfaces, such as wood, adapted to receive the impression.

The process consists in preparing a piece of wood having distinctive grain-marks thereon,  
40 generally obtained by quartering the wood. This wood is treated with a compound, as caustic potash, adapted to eat into and destroy the cellular formation of the softer portions or interstices between the grain of the wood  
45 for the purpose of subsequently removing the same and bringing the harder grain and flake into relief. This compound is left upon the face of the wood—say fifteen or twenty min-

utes—until the solution has eaten the softer portions of the wood sufficiently, after which  
50 it is washed thoroughly with some cleansing agent, as benzene.

The process so far has acted to raise or swell the grain and flake or harder portions of the wood. As a further preparation the wood is  
55 then treated with wood-alcohol, which is allowed to stand upon the wood, say, five or six hours. Then another coating of alcohol is applied. During this latter application the surface of the wood is combed, the comb-  
60 ing being effected, preferably, by the use of a fiber-root brush. This brush is applied with the grain of the wood. The wood is then scoured out by the application of more wood-  
65 alcohol.

After this last process the board is allowed to dry. The printing-surface is then saturated with oil, preferably boiled linseed-oil, which is subsequently wiped off by the use of  
70 a soft application, such as cloth. The application of linseed-oil prevents the paint from sticking to the graining-wood. The wood is now in condition to receive the printing-ink or paint from which the transfer-surface is to  
75 be formed. I generally surround the board on three of its sides at this point with a raised edge, so that the ink will not run off the side of the board and allow the surplus ink to be  
80 wiped from the board at one end. Where the surface of the article to be grained is a plane surface, the graining-board is leveled with a smoothing-plane, which is run exactly parallel with the grain of the board to be treated.

In treating curved or irregular surfaces a mold or matrix of the surface is first pre-  
85 pared, from which an exact duplicate printing transfer-surface is made for the purpose of taking the impressions of the grain from such irregular surface and transferring them to a correspondingly-shaped piece of wood which  
90 it is desired to grain.

The transfer-surface is essentially an elastic plane surface adapted upon being applied to the inked grain-board to receive the impression from the grain-board and transfer it  
95 to the article to be grained.



I will now proceed to describe an apparatus by means of which this process can be carried out, here premising that the process and product is capable of being carried out by hand as well as by machine.

1 is a long table or framing; 2, ways thereon; 3, a table rolling or sliding on ways 2; 4, another table similar to table 3; 5, a transversely-arranged transfer-roller; 6, standards at one side of table 1 for carrying roll 5; 7, a standard opposite standard 6; 8, the shaft of the roll; 9, sliding boxes carried in standards 6 and 7 for giving vertical adjustability to roll 5; 10, springs for normally urging the roll 5 downwardly; 11, arms having open jaws or seats adapted to embrace shaft 8 at either side of the roll; 12, a shaft to which arms 11 are rigidly connected; 13, a lever rigidly connected with shaft 12 for raising roll 5 from arms 11; 14, standards in which shaft 12 is journaled; 15, a brush device; 16, an arm upon standards 6 and 7 for carrying brush 15; 17, a doctor or scraper; 18, an arm carrying the scraper 17, preferably located on the side opposite brush 15; 19, a pan or trough disposed below roll 5; 20, pivoted bracket-arms supporting trough 19; 21, a shaft to which arms 20 are rigidly secured; 22, a lever fast on shaft 21 for swinging bracket-arms 20 and trough 19 upwardly; 23, a pivotal connection between the bracket-arms 20 and trough 19, permitting the vertical movement of the trough; 24, a latch mechanism for locking the lever and the trough at the desired elevation; 25, detachable face-plates applied to standards 6 and 7 to permit the removal of sliding boxes 9 and roller 5 when desired; 26, an opening in the side of the standard; 27, a crank for rotating shaft 8, having a removable angular pin adapted to fit a corresponding opening in the end of shaft 8; 28, slots in tables 3 and 4; 29, alining-guides adjustable in slots 28; 30, an elastic plane printing-surface covering roll 5.

The graining-board, with its raised grain-surface, is alined upon one of the tables 3 and 4, having its interstices filled with the desired printing-color and the surplus color carefully wiped off. Upon the other table 3 or 4 is placed the material to the surface of which it is desired to transfer the grain of the board. If this surface be wood, it is generally given a preparatory filling-coat of the color of the grain of the wood which it is desired to imitate.

The lever 13 is thrown upwardly to allow the roll 5 to descend so that its lower surface is in line with the top of the moving tables or the graining-board thereon. The table, with the graining-board, is then moved under the roll 5, whose printing-surface 30 is rotated by contact therewith, and the ink in the interstices of the graining-board is transferred to the roll 5. The other table carries the surface to be ornamented. This table is

then moved under the transfer-roll having the impressions of the graining-board upon its surface, and the printing is effected in the well-known way.

When it is desired to clean the roll 5, it is elevated by means of lever 13 in contact with the brush 15 and scraper 17. The trough 19 is also elevated by means of the lever 22. Crank 27 is engaged with the shaft of the roll, and the latter is rotated and cleansed, the trough containing any desired cleansing compound.

Different widths and different lengths of rolls may be employed. When it is desired to remove or replace a roll, the crank 27 and face-plates 25 are removed and a new roll substituted.

It is desirable to apply this graining process also to curved surfaces. For this purpose 31 represents a framing mounted on table 1; 32, vertical ways depending from framing 31; 33, an elastic transfer impression-roller mounted in boxes and ways 32; 34, a cylindrical piece of wood treated in accordance with the process hereinbefore described for the purpose of raising the grain and removing the intervening softer cellular portions; 35, a trough similar to trough 19. It will be understood that the rolls 33 and 34 and the trough 35 have adjusting devices similar to those described in connection with roll 5 and trough 19. The roll 34 is filled with printing-color and wiped in accordance with the process before described. The two rolls are then brought under requisite pressure and rotated by means similar to that described in connection with roll 5. In this way the elastic transfer-roller 33 takes the impression from the roller 34, which is transferred thereto. The cylindrical wood which it is desired to ornament may be then substituted for the printing-roll 34 and the impression upon the transfer-roll 33 transferred thereto by rotating the two rolls in contact with each other.

Proceeding with the drawings, 36 is a mutilated roll; 37, an elastic covering terminating in angular faces; 39, another roll; 40, an inserted block-piece inserted upon the periphery thereof; 41, an elastic covering terminating in an angular face at each end.

In transferring grain-surfaces to panels or other portions flanked by raised edges it is impossible to ornament such surfaces completely by the use of an ordinary roll. In such cases the rolls are formed as shown in Figs. 7 and 8, whereby the angular edges of the elastic roll may be advanced into the angles of the surfaces, as will be readily understood. These rolls are mounted upon shaft 8.

In graining irregular surfaces—such, for instance, as a piece of molding having the cross-section shown in Fig. 9—I adopt the following process: 42 is a mold-box; 43, a strip of molding of indefinite length and having the



cross-section shown in Fig. 9; 44, an angular or irregularly-shaped printing-surface formed upon roll 5.

5 In this modified form of process the irregular surface or strip of molding 43 is placed in the mold-box 42 and covered with a coating which prevents the adhesion thereto of the matrix. The mold-box 44 is then filled with a plastic composition which is allowed  
10 to set or harden. The molding or pattern 43 is then removed from the matrix, forming a mold into which a plastic elastic compound is poured. This elastic cast of the molding is then preferably wrapped around the roll 5,  
15 making the irregular-shaped printing-surface 44. (Shown in Fig. 10.)

The apparatus here described for carrying out my process is merely of exemplifying character. The application of the process is not  
20 intended to be confined thereto.

I claim—

1. The process herein described, consisting in taking wood having distinctive grain-marks thereon, then applying a solvent to the softer  
25 wood between the grain, then applying a cleansing agent, and finally removing the softer wood at the surfaces between the grain.

2. The process herein described, consisting in taking wood having distinctive grain-marks

thereon, then applying a solvent to the softer 30 wood between the grain, and raising the grain, then applying a cleansing agent, and finally removing the softer wood at the surfaces between the grain.

3. The product herein described, comprising 35 wood having distinctive grain-marks, the surface of which has removed therefrom the softer cellular interstices between the harder grain.

4. The process herein described, consisting 40 in taking wood having distinctive grain-marks thereon, then applying a solvent to the softer wood between the grain, then applying a cleansing agent, and finally applying a relatively soft agent to remove the softer wood at 45 the surfaces between the grain.

5. The process herein described, consisting in taking wood having distinctive grain-marks thereon, then applying a solvent to the softer wood between the grain, and finally removing 50 the softer wood at the surfaces between the grain.

In testimony whereof I have affixed my signature in the presence of two witnesses.

J. H. STEWART.

Witnesses:

HUGH GILMORE,  
W. E. NICKLES.