

4 Sheets.—Sheet 1.

MACHINE FOR VENEERING.

Patented Nov. 19, 1889.



Inventors/
Henry H. King and
Berj. F. K. Jennings,
By H. A. Pauline, Attorney.

(No Model.)

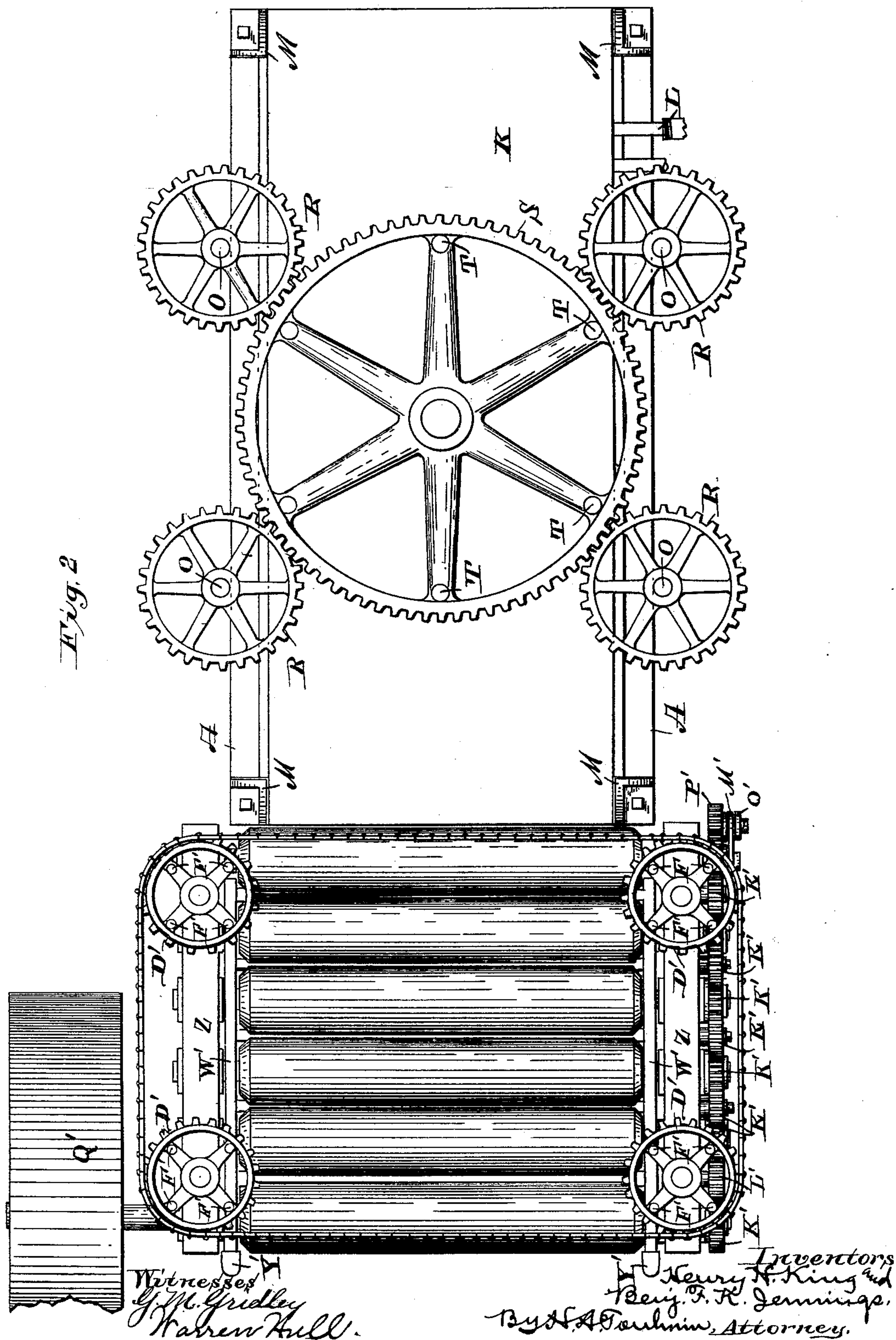
4 Sheets—Sheet 2.

H. H. KING & B. F. K. JENNINGS.

MACHINE FOR VENEERING.

No. 415,276.

Patented Nov. 19, 1889.

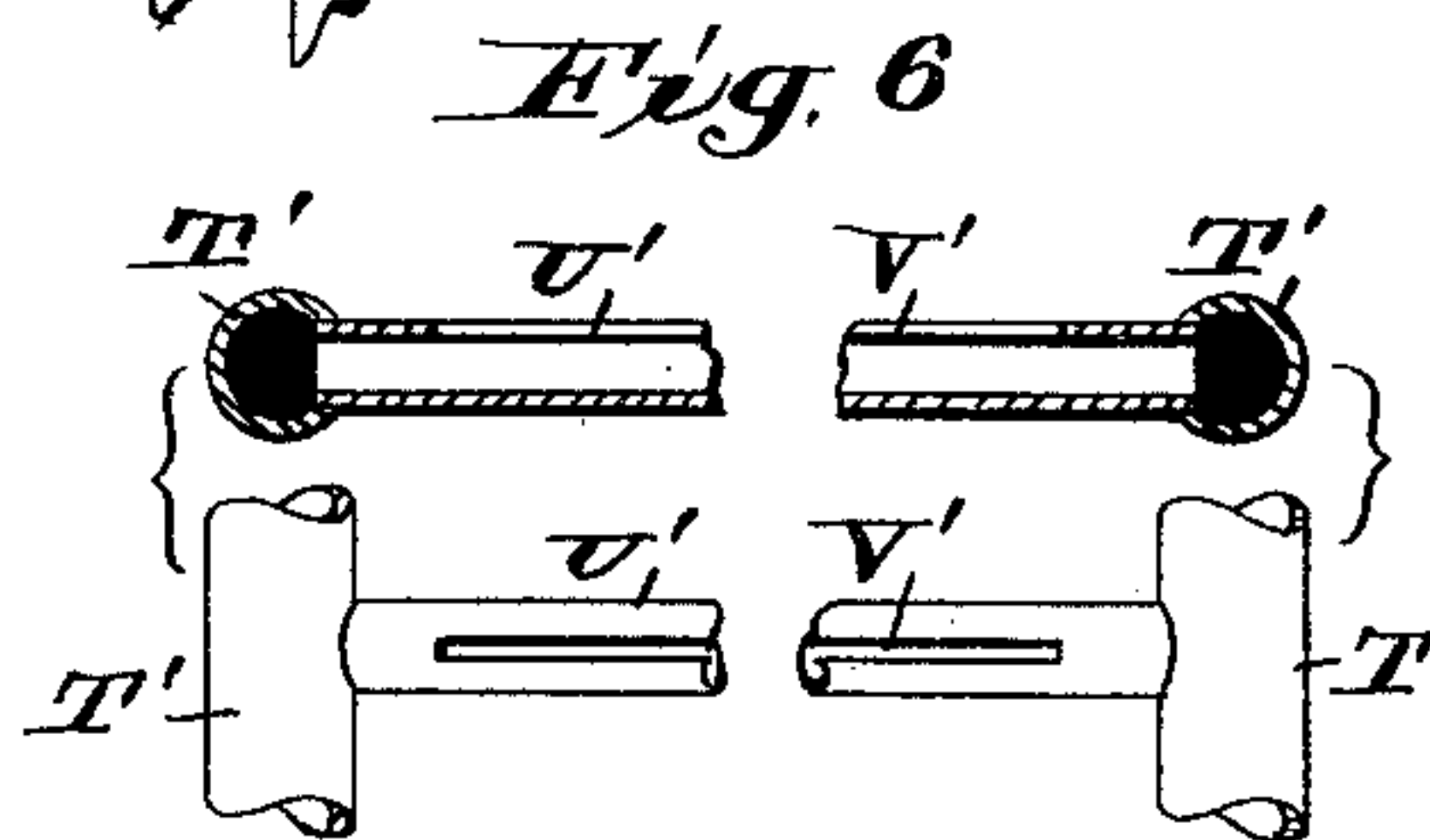
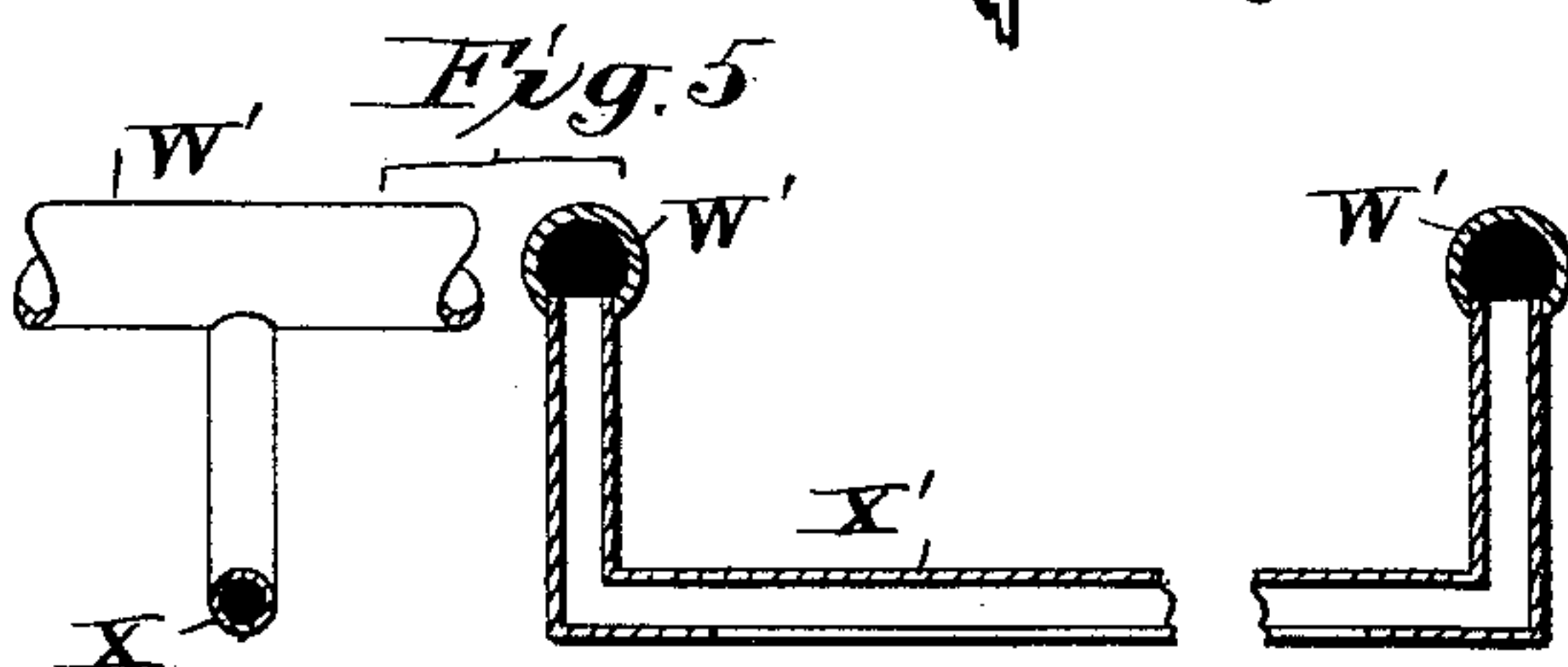
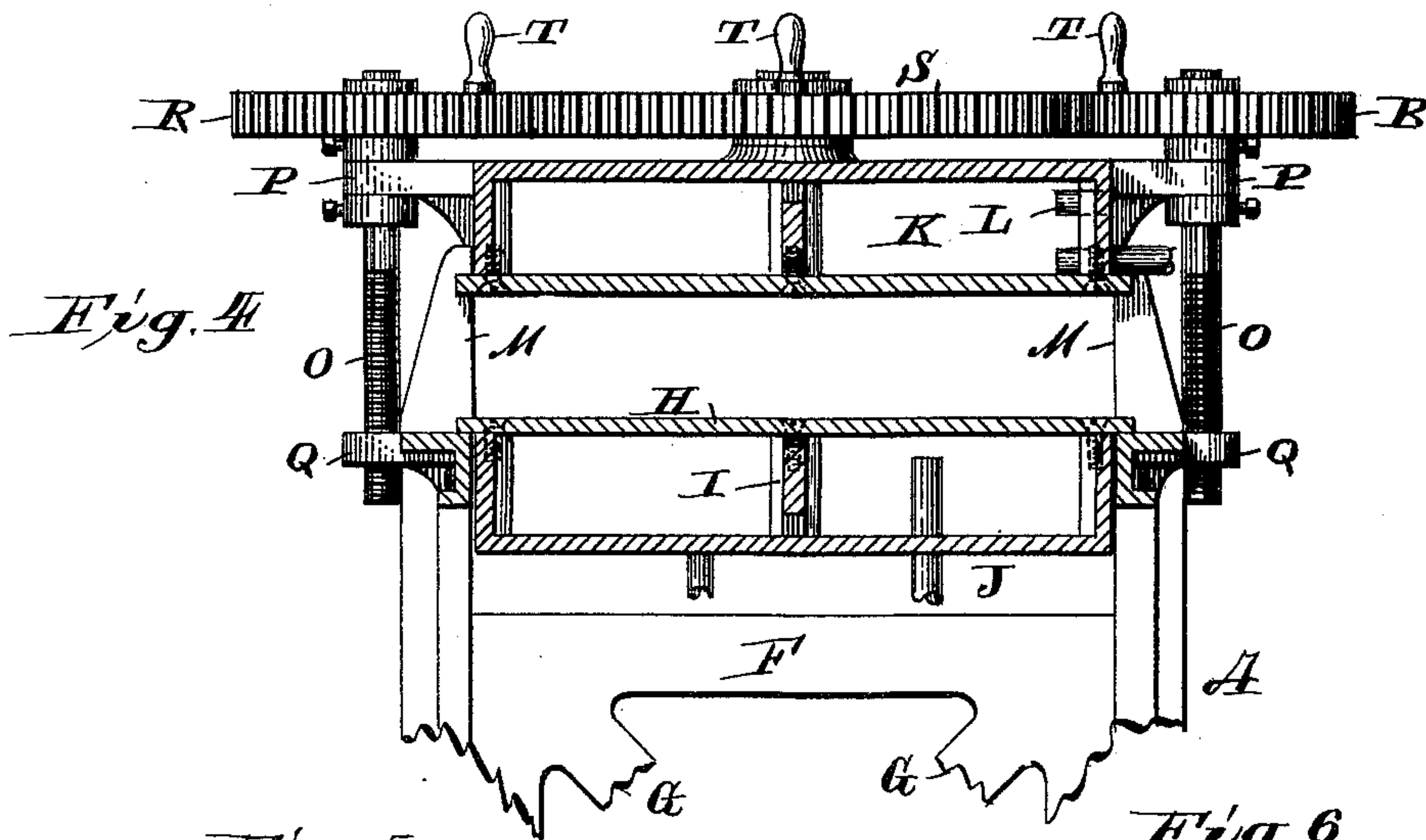
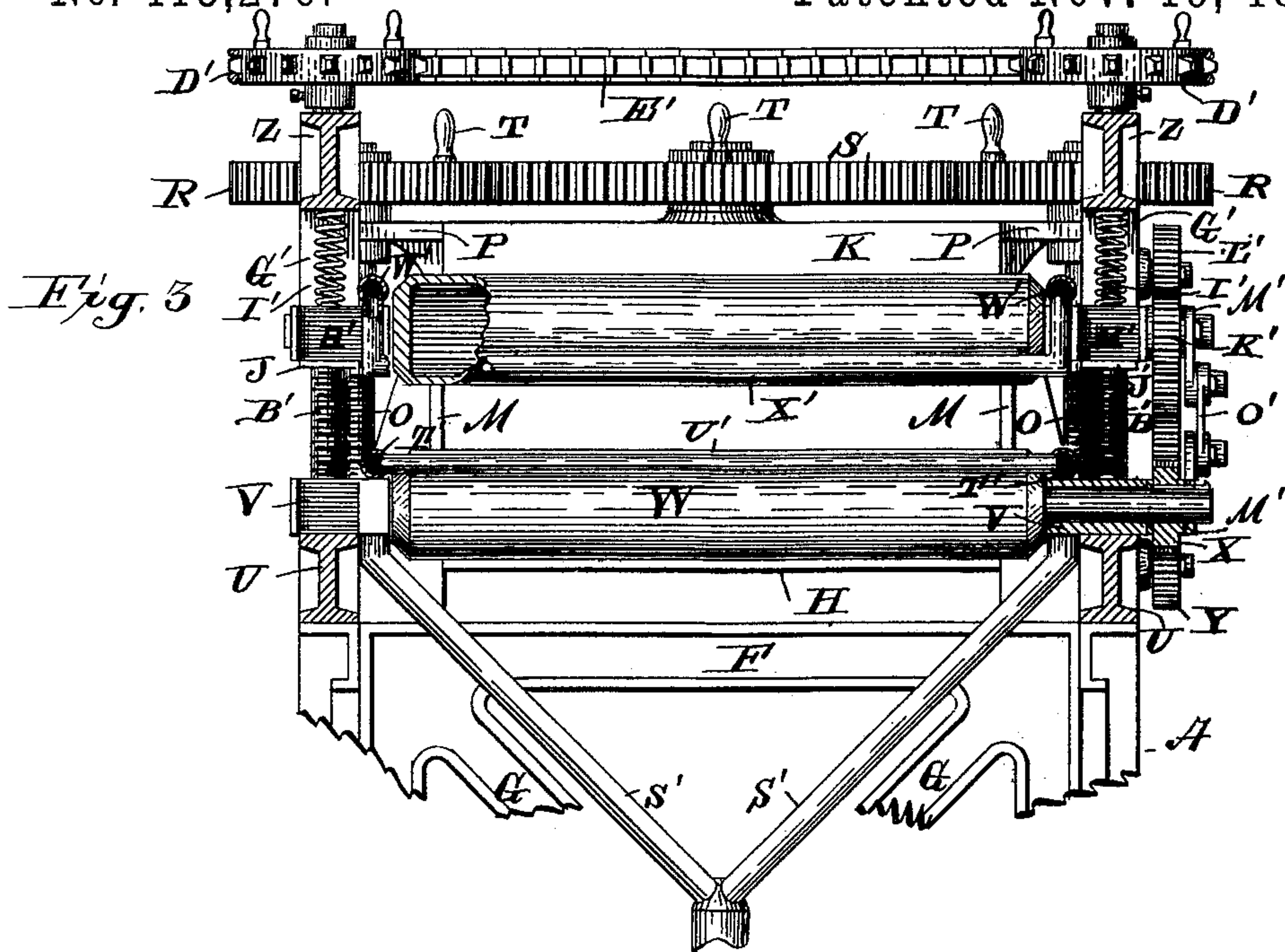


H. H. KING & B. F. K. JENNINGS.

MACHINE FOR VENEERING.

No. 415,276.

Patented Nov. 19, 1889.



Witnesses
G. M. Gridley
Warren Hull.

Inventors
Henry H. King and
Benj. F. K. Jennings,
By H. A. Faulkner, Attorney.

(No Model.)

4 Sheets—Sheet 4.

H. H. KING & B. F. K. JENNINGS.

MACHINE FOR VENEERING.

No. 415,276.

Patented Nov. 19, 1889.

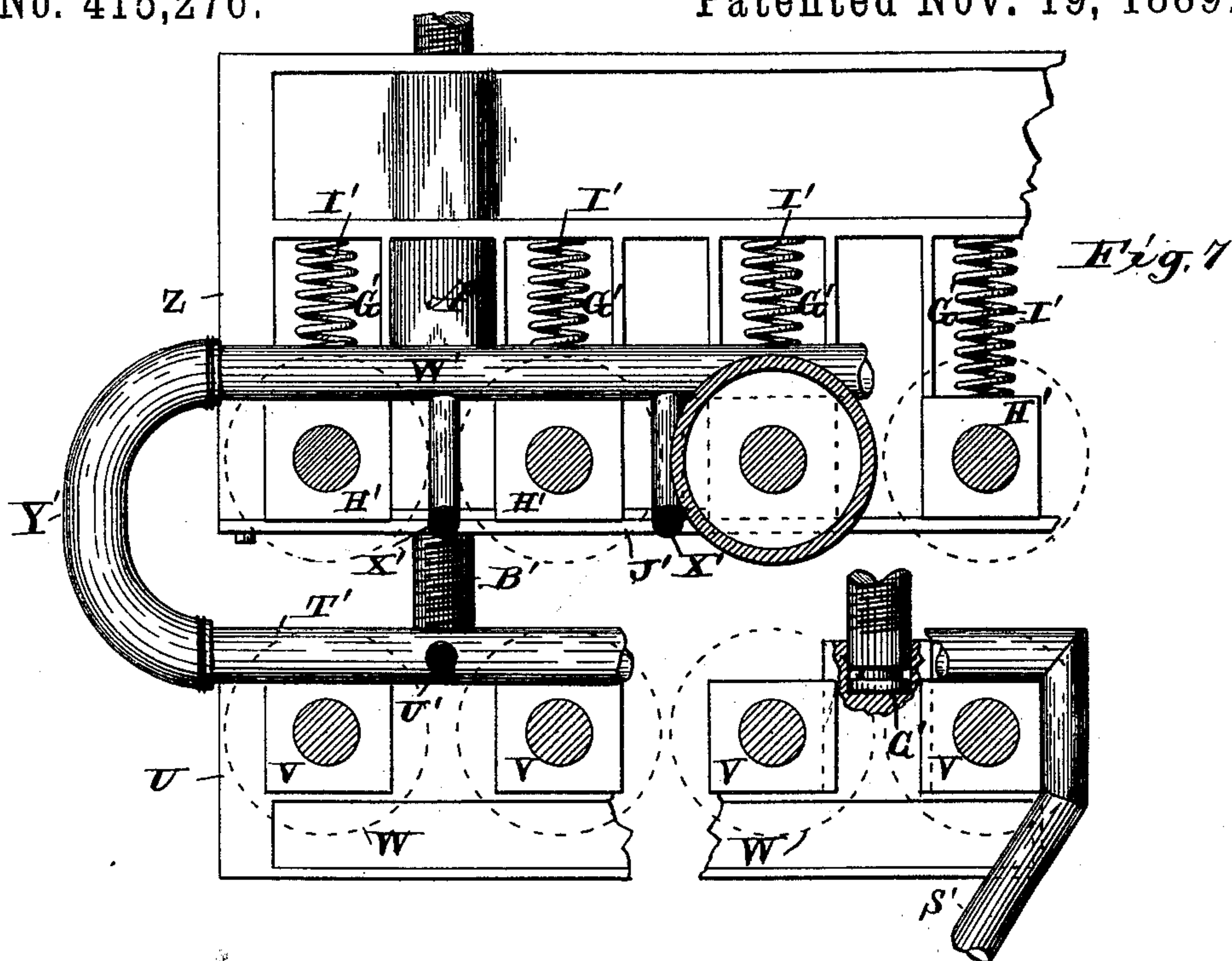
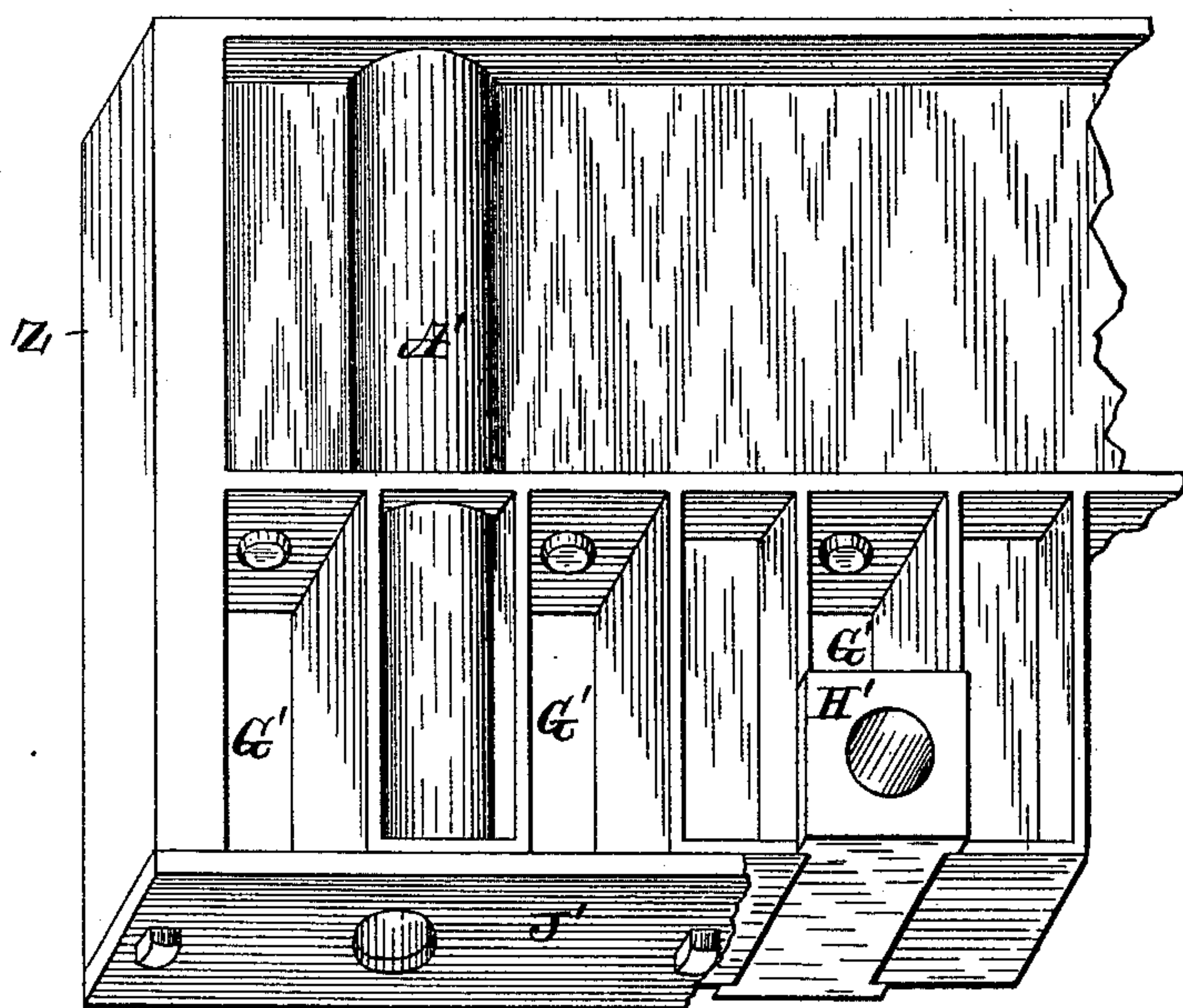


Fig. 8



Witnesses
G. M. Gridley
Warren Hill.

Inventors
Henry H. King and
Benj. F. K. Jennings.
By H. A. Tarhmin, Attorney.

UNITED STATES PATENT OFFICE.

HENRY H. KING, OF SPRINGFIELD, AND BENJAMIN F. K. JENNINGS, OF DAYTON, ASSIGNORS OF ONE-HALF TO RALPH A. WORTHINGTON, OF SPRINGFIELD, OHIO.

MACHINE FOR VENEERING.

SPECIFICATION forming part of Letters Patent No. 415,276, dated November 19, 1889.

Application filed March 9, 1889. Serial No. 302,698. (No model.)

To all whom it may concern:

Be it known that we, HENRY H. KING and BENJAMIN F. K. JENNINGS, citizens of the United States, the former residing at Springfield, Clark county, and the latter at Dayton, Montgomery county, Ohio, have invented certain new and useful Improvements in Machines for Veneering, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to improvements in an apparatus for securing thin sheets or veneers of costly and ornamental woods to a base or back of plainer wood.

Veneers of wood as usually found in stock are warped or crumpled into irregular shapes as a result of the method by which they are manufactured, and, owing to their thinness and fragile nature, they have to be very carefully handled in applying them to a base or back in the manufacture of articles of furniture, &c. In view of this condition of veneers our invention is designed, among other things, to flatten the veneers in a rapid manner and without liability to cracking or breaking them.

Our invention consists, essentially, of a flat bed and a platen movable to and from the bed, so as to press upon and flatten out the veneer, the platen or bed, or both, being arranged to impart heat to the woods; of a series of bed-rollers and a series of pressure-rollers, and air-blast apparatus arranged to direct violent air-currents against the woods as they pass between the respective sets of rollers.

In the accompanying drawings, forming a part of this specification, and on which like reference-letters indicate corresponding parts, Figure 1 represents a side elevation of our improved apparatus entire; Fig. 2, a plan view of the same; Fig. 3, a vertical sectional view on the line *x x* of Fig. 1; Fig. 4, a vertical sectional view on the line *y y* of Fig. 1; Fig. 5, detail elevation and sectional views of the upper air-pipes; Fig. 6, detail plan and sectional views of the lower air-pipes; Fig. 7, an enlarged side elevation of portions of the roller-frames, also showing the air-pipes; and Fig. 8, an enlarged detail perspective view of a portion of the upper roller-frame.

The letter A designates a stout frame, preferably of metal and of the type illustrated, in which the several sections B, C, and D are bolted together, as seen at E. These sections are suitably braced by the lateral and diagonal pieces F and G, as seen in Figs. 3 and 4.

The letter H designates a hollow bed, preferably made of cast-iron and fitted upon the frame A, as more clearly seen in Fig. 4. A central partition I may be employed to strengthen the bed. To this bed is connected a pipe J, through which steam, hot air, or other heating medium is conducted to the interior of the bed to raise its temperature and cause it to soften the veneer and make the glue more readily run into the pores of the woods.

We contemplate veneering both sides of a body of wood at the same time, in which instance it is preferred to heat the bed H. When veneering but one side of a board, however, the bed may not be heated, unless the veneer were placed beneath and the board above it.

The letter K designates a movable platen, also preferably constructed of cast-iron, and of the same dimensions and shape as the bed H. This platen is hollow and is provided with a pipe L, having a telescopic or flexible joint to compensate for the movements of the platen. Through this pipe steam or other heating medium is introduced. Standards M assist in guiding the platen, which is mounted upon stout screw-threaded rods O, which rotate in the lugs P on the platen and travel in the screw-threaded projections Q on the main frame. There are preferably four of these rods, and each carries a pinion R, which meshes with a central gear-wheel S, mounted on a stud carried by the platen. The central wheel is rotated either by power in any manner that may be preferred by the user or is rotated by hand. For convenience it is provided at intervals with handles T, which the operative may take hold of. This imparts uniform rotation to each of the rods O and manipulates the platen up and down in perfect alignment with the bed H. We do not desire to be understood as limiting ourselves to this peculiar arrangement of means for

manipulating the platen, as others may be used.

When a base or back of wood shall have been coated with glue or other adhesive substance and a veneer applied to either one or both sides of such base, the same are placed upon the bed and the platen gradually lowered upon them, flattening the veneer or veneers and bringing the several pieces into intimate contact. The heat of the platen or bed, or both, facilitates the flattening of the veneers and avoids breaking or cracking them, while the heat also causes the glue to unite with the pores of the woods. The material is kept under pressure and heat, according to the length of time necessary with different kinds of wood to accomplish the above objects.

We will now describe the series of rollers and their adjunctive devices.

The letter U designates the upper part of the section B of the frame and is fitted with a series of blocks V, in which are mounted the lower rollers W. There may be a greater or less number of these rollers, the number shown being ordinarily sufficient. From Fig. 1 it will be seen that the shaft of each roller at one end is provided with a pinion X, and that a series of idlers Y are mounted on the studs projecting from the frame U and serve to connect the rollers, so that they will rotate with uniform speed and in the same direction. The upper surface of these rollers is in the same plane as the bed H.

The letter Z designates a vertically-adjustable roller-frame, of which there is one at either side of the machine. These frames are provided with long screw-threaded sleeves A', as seen in Fig. 8, and in these sleeves are fitted threaded rods B', fitted to sockets C' in the frame U, as seen in Fig. 7. These rods serve to support the frames Z and to adjust them up and down, so as to accommodate the upper series of rollers to the thickness of the material to be veneered, and so as to increase and decrease the pressure of the upper rollers. The rods B' each carry a sprocket-wheel D', and a continuous sprocket-chain E' connects these wheels, so that they rotate in unison. They are to be rotated either by power or by hand in a similar manner to that described with reference to the gear-wheel S. Handles F' are provided for this purpose. Other means may be employed to adjust the frame up and down, but that shown and described is preferred.

The frame Z, as more clearly seen in Figs. 7 and 8, is constructed with a number of vertical slots G', into which are slidably fitted bearing-blocks H', with spiral springs I', arranged to normally press the bearing-blocks downward against the plate J' of the frame Z. This construction affords a yielding support for the upper series of rollers. Each of the upper rollers carries a pinion K' of the same diameter as the pinions X, and a simi-

lar series of idlers L' is also provided to connect the upper rollers. It is preferred that both sets of rollers shall be positively rotated, but at uniform speed, and therefore we have mounted plates M' upon the arbors of the first roller in the upper and lower series, connecting these plates by an intermediate bolt O', and thus affording bearings for the intermediate idler-pinions P'. In Fig. 3 will be seen a driving-pulley Q', designed to receive a belt, by which rotation is transmitted to the two series of rollers.

We will now refer to the means for cooling the material being veneered. Of course the particular construction and arrangement may obviously be varied, and yet the means about to be described is that preferred. This consists of a rotary fan-blower R', of any of the approved types, preferably secured to the machine or in proximity thereto, and connected by branch pipes S' to lengthwise pipes T', located along and near the ends of the lower series of rollers, as more clearly seen in Figs. 3 and 7. At suitable intervals—say between each pair of rollers—a transverse pipe U' connects with the pipes T' and serves to discharge air-currents through a slot or a series of perforations V' beneath and against the underside of the material passing through this part of the machine. These air-currents spread and reach the entire surface of the material, acting to cool it with rapidity and uniformity. Similarly arranged with respect to the upper series of rollers are lengthwise pipes W', also connected together by transverse pipes X', which extend downward at the sides of the machine, and thence crosswise in a plane slightly above the lower plane of the upper series of rollers. These pipes discharge air upon and against the upper veneer in the same manner that the air is discharged by the lower transverse pipes. The lower set of longitudinal pipes T' are connected with the upper set by a suitable flexible tube or conduit Y', so as to compensate for the vertical adjustments of the frame Z.

It will now be understood that after the veneers have been pressed firmly against the base, and after the glue by the application of the heat has been made to enter the pores, the platen is raised and the material advanced within the grasp of the upper and lower rollers, which, being in motion, move the material on through the rollers, maintaining the intimate contact of the veneers and the base as the violent currents completely envelop, act upon and rapidly chill the glue, and fix the material in permanent union. While one piece of material is passing between the rollers, another piece or pieces may be under the operation of the platen and the bed. The fan is driven by a counter-shaft in any of the usual ways.

We make no claim herein to the method of securing the veneers to the bases or backs, as

the method forms the subject of a separate application, filed July 17, 1889, Serial No. 317,819.

5 Having thus fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a veneering-machine, the combination, with a bed and a platen, means to adjust one with respect to the other, and a heating medium applied to the platen and bed, or either, of an upper and lower series of rollers located near one extremity of said bed and platen, and air-blast devices arranged to discharge air-currents near said rollers and upon the material passing between them.

2. In a veneering-machine, the combination, with a fixed bed, a platen, and mechanism to force the platen upon the material on the bed, and means to conduct a heating medium to said platen and bed, or either of them, of an adjustable upper series of rollers and a series of stationary lower rollers mounted near one extremity of said platen and bed, means to rotate said respective series of rollers at substantially a uniform speed, and air-blast devices arranged to discharge air-currents near said rollers and against the material passing between them.

3. In a veneering-machine, the combination, with a hollow bed, means to heat the same, a hollow platen, means to heat the same, and means to adjust it to and from the bed, of a series of stationary rollers located contiguous to one end of the bed and a series of adjust-

able upper rollers located contiguous to the same end of the platen, a fan-blower, and pipes connected therewith and located at the sides of and between said lower and upper rollers and constructed to discharge air-currents violently against the material passing between said rollers.

4. In a veneering-machine, the combination, with an upper and lower series of rollers, of air-pipes located near the respective sets of rollers and arranged to discharge air-currents upon and against material passing between the rollers, and a blast-producing device connected with said device.

5. In a veneering-machine, the combination, with a stationary lower series of rollers and an adjustable upper series of rollers, the lower and upper series being geared to rotate at a common speed, of air-pipes located near the ends and between the upper rollers and similar air-pipes located near the ends and between the lower rollers, a flexible connection between the said sets of pipes, and a fan-blower connected with one of said sets.

In testimony whereof we affix our signatures in presence of two witnesses.

HENRY H. KING.

BENJAMIN F. K. JENNINGS.

Witnesses to Henry H. King's signature:

WARREN HULL,

G. M. GRIDLEY.

Witnesses to B. F. K. Jennings's signature:

J. P. LASURE,

J. A. WORTMAN.