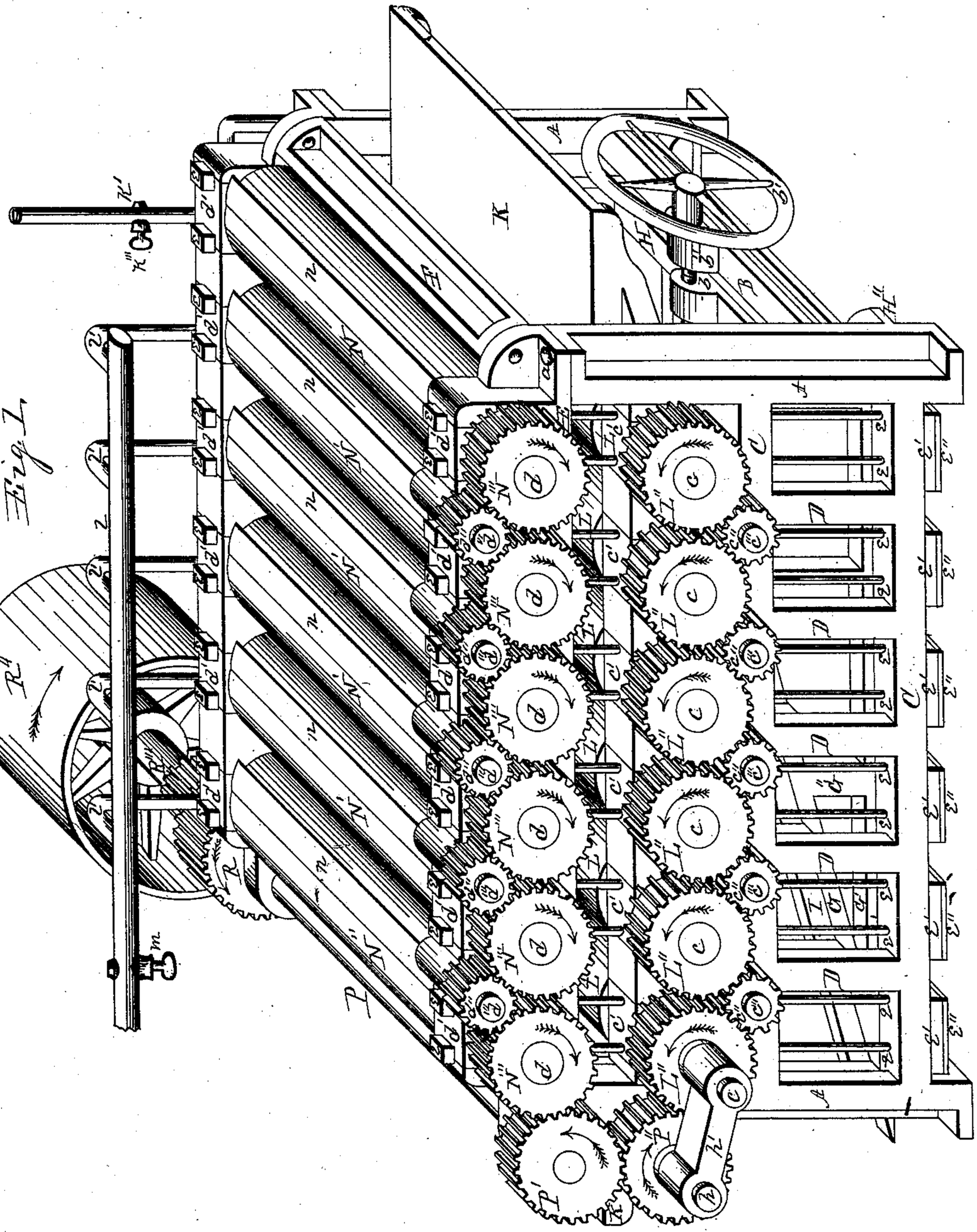
(No Model.) 3 Sheets—Sheet 1.

A. C. JOHNSON.

VENEERING MACHINE.

No. 352,131. Patented Nov. 9, 1886.



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(No Model.) 3 Sheets—Sheet 2.

A. C. JOHNSON.

VENEERING MACHINE.

No. 352,131. Patented Nov. 9, 1886.

Fig. 2.

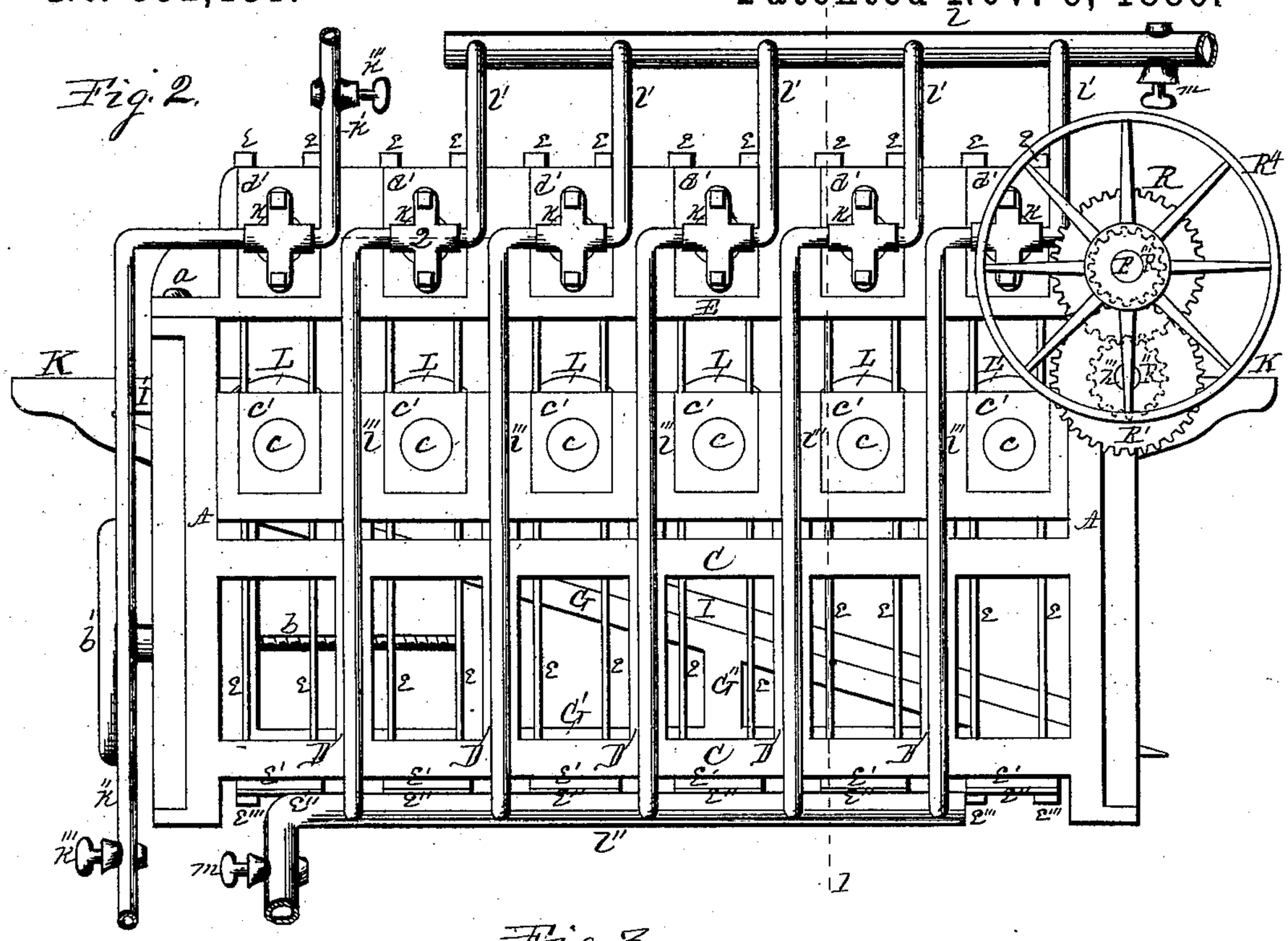
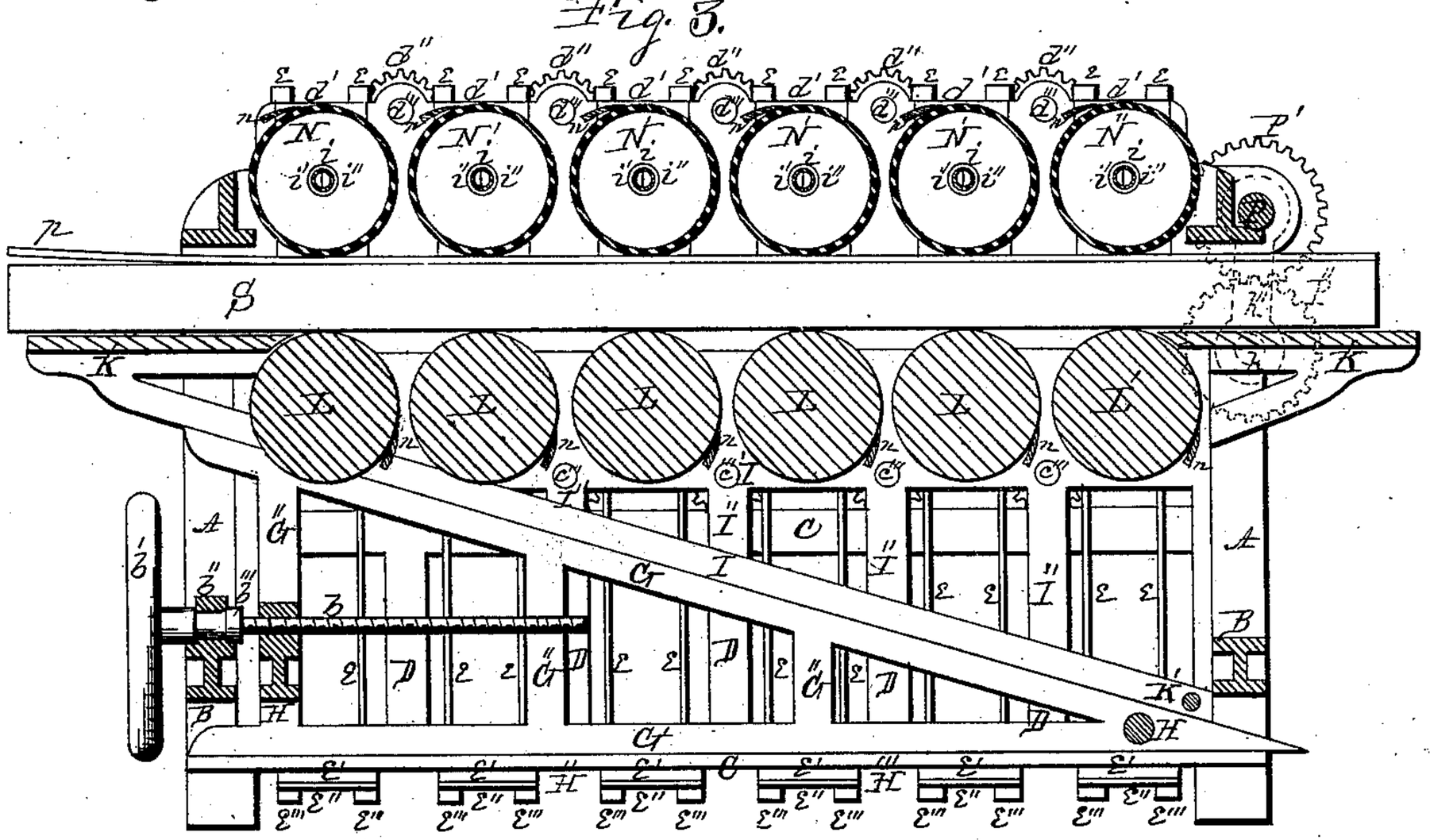


Fig. 3.



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(No Model.) 3 Sheets—Sheet 3.

A. C. JOHNSON.

VENEERING MACHINE.

No. 352,131. Patented Nov. 9, 1886.

Fig. 4.

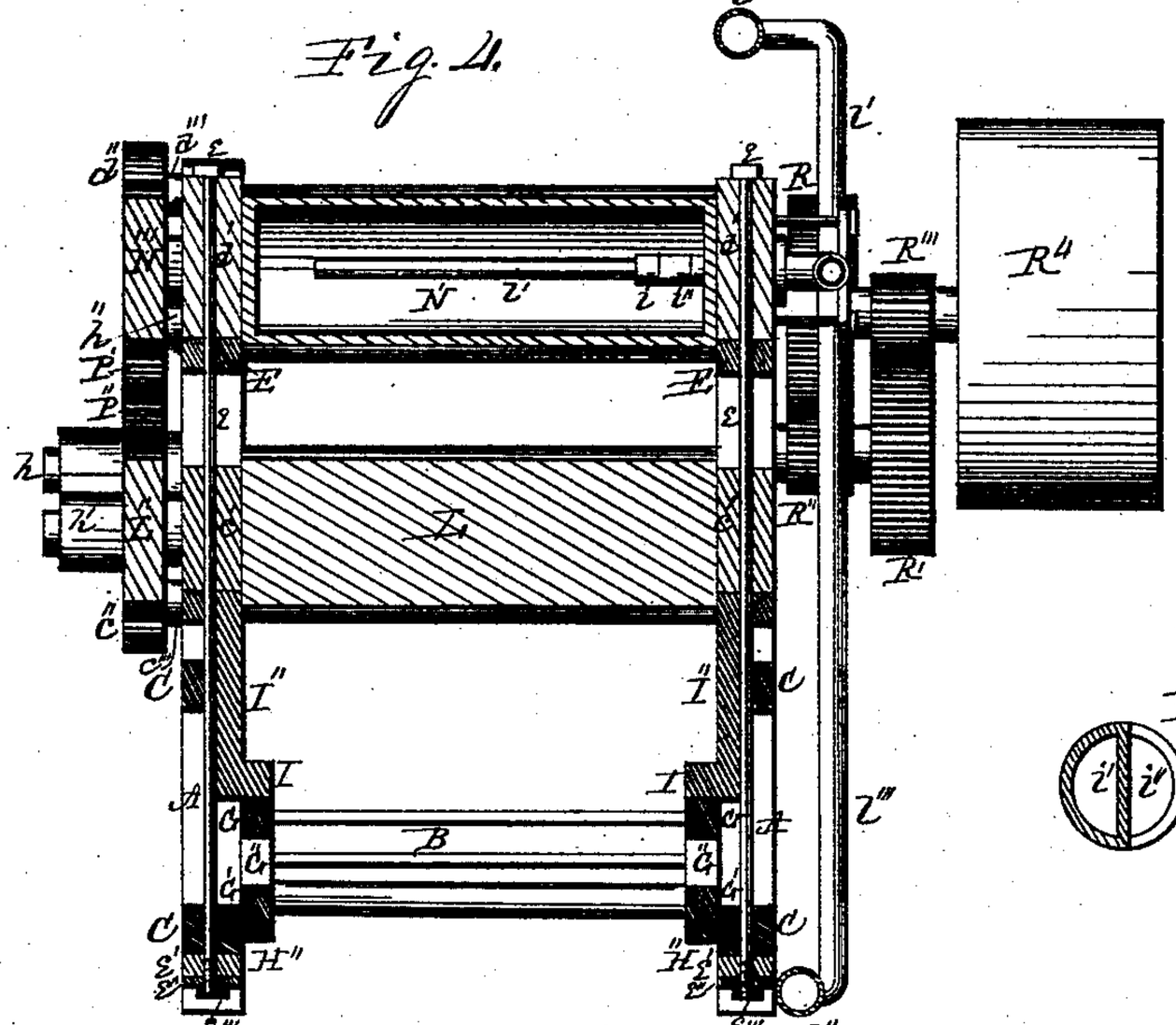
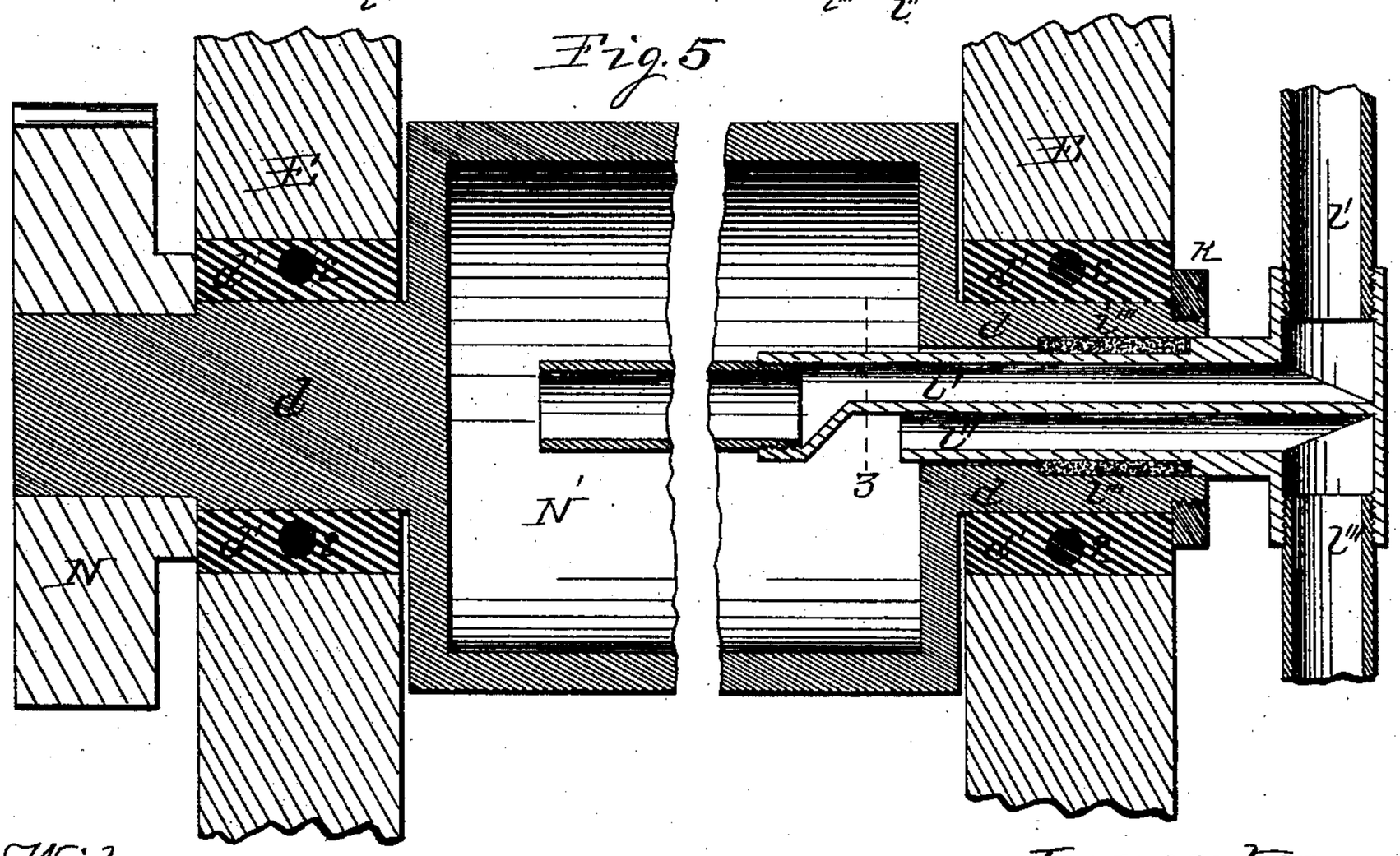


Fig. 6.

Fig. 5



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UNITED STATES PATENT OFFICE.

ANDREW C. JOHNSON, OF ROCKFORD, ILLINOIS.

VENEERING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 352,131, dated November 9, 1886.

Application filed October 29, 1885. Serial No. 181,285. (No model.)

To all whom it may concern:

Be it known that I, ANDREW C. JOHNSON, a citizen of the United States, residing in the city of Rockford, in the county of Winnebago and State of Illinois, have invented a new and useful Veneering-Machine, of which the following is a specification.

This invention relates to a class of machines employed in fixing veneers in the process of gluing them to surfaces.

Its object is to facilitate the laying of veneers; and it consists, essentially, in a system of hot and cold compress-rollers, between which the glued work is passed.

In the accompanying drawings, Figure 1 is an isometrical representation of a machine embodying my invention. Fig. 2 is a side elevation opposite to the side shown in Fig. 1. Fig. 3 is a vertical lengthwise central section. Fig. 4 is a transverse vertical section on dotted line 1 on Fig. 2. Fig. 5 is an enlarged horizontal central section on dotted line 2 on Fig. 2, and Fig. 6 is a transverse section of the induction-pipe on dotted line 3 on Fig. 5.

The main supporting-frame of my improved veneering-machine is rectangular in plan, and consists of a lower and an upper section. The lower section of the frame is composed of vertical corner-posts A, horizontal end bars, B, horizontal side bars C, and vertical supports D; and the upper section consists of side bars E and end bars F, having a screw-bolt connection with the end portions of the side bars.

The upper and lower sections of the supporting-frame are joined to each other by corner-bolts *a*. A wedge-formed adjusting-frame, rectangular in plan, consisting of like angle side frames composed of inclined bars G, horizontal bars G′, and vertical supports G″, having end connections, H and H′, is supported on a ledge, H″, projecting inward from the lower side bars of the supporting-frame, and on which it is capable of an endwise movement. A screw, *b*, with hand-wheel *b*′, is supported to rotate in bearings *b*″, and is provided with collars *b*‴, to prevent endwise movement in its bearings; and the screw *b* has a screw-threaded connection with the end connection H of the adjusting-frame, by which the frame is made to move endwise back and forth as the screw is turned in one or the other direction.

A wedge-formed roll-supporting frame, rectangular in plan, consisting of like angle side frames, composed of inclined bars I, horizontal bars I′, and vertical supports I″, having end table-connections, K, and lower edge end connection, K′, is supported within the lower section of the supporting-frame, with its lower inclined edges resting on the upper inclined edges of the adjusting wedge-formed frame.

Carrying-rollers L and L′ are supported to revolve on their journal-bearings *c* in removable box-bearings *c*′, supported at proper intervals in the horizontal side rails, I′, of the roll-supporting frame. The journal-bearings *c* of the carrying-rollers L and L′ project on one side of the supporting-frame, and their projecting ends are provided with toothed gear-wheels L″. Intermediate or idle gear-pinions, *c*″, are supported to revolve on stud journal-bearings, *c*‴, projecting from the horizontal bar I′ in such position relatively with the gear-wheels that the teeth of the pinions shall engage the teeth of the gear-wheels in working contact to cause the rollers to revolve in the direction indicated by the arrows on the gear-wheels.

Compress-rollers N, N′, and N″ are supported to revolve on their journal-bearings *d* in removable box-bearings *d*′, supported at proper intervals in the side bars E of the upper section of the supporting-frame.

The journal-bearings *d* of the compress-rollers project on one side of the supporting-frame in the same vertical plane of the projecting journals of the carrying-rollers. The projecting journal ends *d* of the compress-rollers are provided with toothed gear-wheels N‴. Intermediate or idle gear-pinions, *d*″, are supported to revolve on stud journal-bearings *d*‴, projecting from the side bar E in such position relatively with the gear-wheels that the teeth of the pinions shall engage the teeth of the gear-wheels in working contact to cause the rollers to revolve in the direction indicated by the arrows on the gear-wheels. The box-bearings of the carrying and compress rollers are supported in position on their respective frames by vertical bolts *e*, passed through the parts to prevent lateral or endwise movement. The heads of the bolts *e* rest on the upper face of the bearings of the compress-rollers, and their depending ends extend through elastic cushions *e*′, and through a

metallic plate, *e''*, placed on the outside of the cushion, and receive a screw-nut, *e'''*, to clamp and hold the compress-rollers in a manner to permit of a limited elastic or yielding vertical movement.

A driving-shaft, P, is supported to revolve in bearings in the end of the upper section of the supporting-frame, and on its projecting end, on one side of the frame, is fixed a driving toothed-gear wheel, P', in such position relatively with the toothed gear-wheel N''', on the delivery end compress-roll N'', that their gear-teeth shall engage each other in working contact.

An intermediate toothed gear-wheel, P'', is supported to revolve on a swinging bearing, *h*, having a yoke-connection, *h'*, with the projecting journal-bearing *c* of the delivery end carrying-roll L', and on the inside by a yoke, *h''*, with the driving-shaft P in such a manner as to hold the intermediate gear in working contact with the driving-gear P' and the gear L'' of the delivery end carrying-roll, and permit the series of carrying-rollers L and L' to be raised or lowered and still hold the gear-wheels in working contact. A toothed gear-wheel, R, is fixed on the driving-shaft on the side of the machine.

A counter-toothed gear-wheel, R', and a counter-toothed gear-pinion, R'', having a sleeve-connection, are mounted to revolve on a stud-journal, *h'''*, projecting from the corner-post of the frame in position to place the gear-wheel R and counter gear-pinion R'' in working contact. A driving toothed gear-pinion, R''', and a pulley, R⁴, to receive a driving-belt having a sleeve-connection, are mounted to revolve on the projecting end of the driving-shaft, and the teeth of the driving-pinion R''' engage the teeth of the counter gear-wheel R. This system of the belt-pulley R⁴, driving-pinion R''', counter gear-wheel R', counter gear-pinion R'', and gear-wheel R on driving-shaft constitutes a reducing system, through which motion imparted to the belt-pulley will be transmitted to the system of carrying and compress rollers to lessen their velocity and cause them to revolve in the direction indicated.

The compress-rollers N, N', and N'' are hollow, and their end journals opposite the journals on which the gear-wheels are fixed are tubular and receive a divided tube, *i*, having an induction-opening, *i'*, extending far into the opening in the roller, and exhaust-openings *i''* of less length. The divided tubes *i*, in their connection with the tubular journals, are fitted to receive a packing, *i'''*, to produce a steam or water tight joint. A screw-washer, *k*, is fitted on the projecting ends of the tubular journals to prevent endwise movement of the rollers. A steam-supply pipe, *k'*, connects with the induction side of the divided tube in the compress-receiving end roll, N, and an exhaust-steam pipe, *k''*, is connected with the exhaust side of the divided tube to permit steam to pass through the roll, and these pipes are fitted with stop-cocks *k'''*, to regulate the flow of steam. A water-supply pipe, *l*, is provided with branch induction-pipes *l'*, connecting with the induction side of the divided tube in the intermediate and delivery end compress-rollers N' and N''. A water-exhaust pipe, *l''*, is provided with branch pipes *l'''*, connecting with the exhaust side of the divided tube in the intermediate and delivery end compress-rollers N' and N''. The water-induction pipe *l* and the exhaust-pipe *l''* are provided with stop-cocks *m* to regulate the flow of water through the rollers.

Knife-edge scrapers *n* have their ends fixed in the roll-supporting frames in such relative position with the rollers that their knife-formed edge shall engage the periphery thereof, and in the rotations of the rollers operate to remove adhering particles therefrom.

A plank or board, S, with a veneer, *p*, placed on its upper face, is represented placed between the carrying and compress rollers.

In the use of my improved veenering-machine steam is passed through the receiving end compress-roll, and by means of the valves in the supply and exhaust pipes the flow of steam is regulated to properly heat the roll. Cold water is passed through the remaining compress-rollers, and by means of the stop-cocks in the supply and exhaust pipes the flow of the water is regulated to give the required temperature to the rollers. The carrying-rollers, by means of the adjusting-screw, are then adjusted relatively with the compress-rollers to receive the work to be glued with a proper pressure. Motion is then imparted to the rollers by means of a belt-connection of its belt-pulley with a prime mover. Glue is then spread upon one or both of the surfaces to be joined, which are then placed together, and are then passed through the machine between the carrying-rollers and the compress-rollers, with the veneer side in contact with the compress-rollers, and upon entering the machine the veneer side will engage the heated roller, which will cause the glue to enter the pores of the wood, and the compression will force the glued surfaces in contact, and in its passage under the water-cooled rollers the glue will be chilled and the surfaces fixed to each other. In this process portions of the glue will be forced from the edges of the work, and will to some extent be received by the rollers, and in their rotations will be removed therefrom by the knife-edge scrapers. In this instance I have employed but one hot roll. Others, however, may be employed, and any number of rollers, more or less than shown, may be employed to adapt the machine to the work required.

I make no claim in this application to the process hereinbefore described, as said process is claimed in a separate application filed by me April 29, 1886, Serial No. 200,313.

I claim as my invention—

1. In a machine for applying veneering to a base, the combination, with a series of car-

rying-rollers, of compress-rollers, one or more of which are heated, while the remainder are chilled, substantially as described.

2. In a machine for applying veneering to a rigid base, the combination, with a series of adjustable carrying-rollers, of a series of compress-rollers heated and chilled respectively, substantially as described.

3. In a veneering-machine, the combination, with a series of heated and chilled compress-rollers, of a gear-train consisting of gear-wheels fixed to the rollers, and intermediate gear-wheels connecting the gear-wheels of the rollers, substantially as and for the purpose set forth.

4. In a veneering-machine, the combination, with a series of carrying-rollers, of a series of hollow compress-rollers, and steam-pipes for heating one or more of said hollow rollers, and water-pipes for cooling the remainder of said hollow rollers, substantially as described.

5. The combination, in a veneering-machine, of a bed of carrying-rollers and a series of hollow compress-rollers and heating and cooling pipes, whereby the front compress roller or rollers will serve to melt the glue to hold the veneering, and the rear compress-rollers will chill and set the glue, substantially as described.

6. In a veneering-machine, the combination of a series of heated and chilled rollers having a gear-train connection, a driving-gear connecting with the gear-train of the rollers, a series of carrying-rollers having a gear-train connection, and an intermediate gear-wheel connecting the driving-gear with the gear-train of the carrying-rollers, said intermediate gear-wheel having a swinging journal-support by yoke-connection with the driving-gear shaft and with the shaft of a carrying-roll, substantially as and for the purpose set forth.

7. In a veneering-machine, the combination, with compress and carrying rollers, of holding-bolts connecting the roller-bearings with the supporting-frame, said holding-bolts made yielding in their connection with the compress-rollers, substantially as and for the purpose set forth.

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A. O. BEHEL.