No. 779,970. PATENTED JAN. 10, 1905.

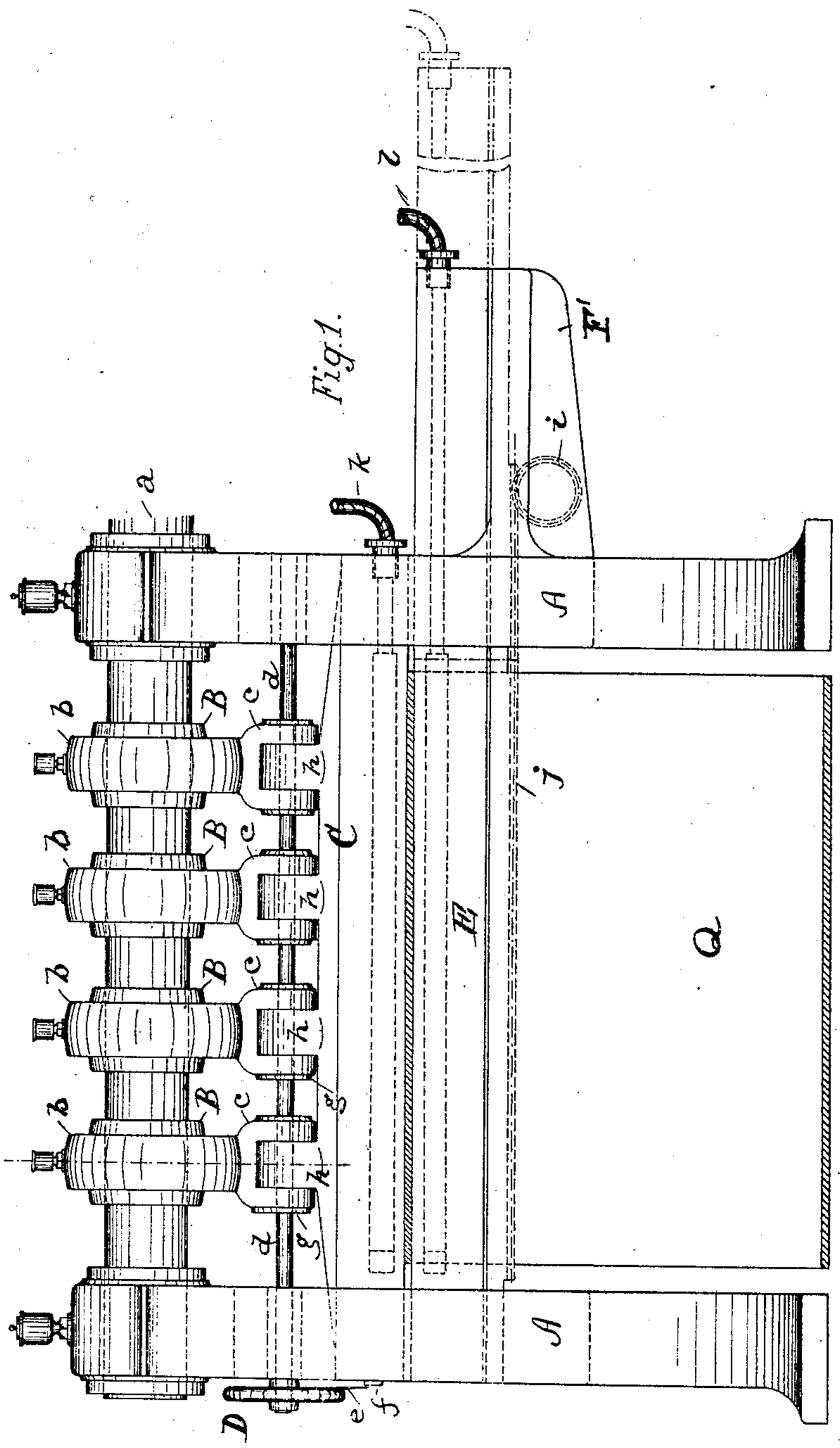
H. ROMÜNDER.

OVERLAP JOINING MACHINE.

APPLICATION FILED JUNE 27, 1903.

4 SHEETS—SHEET 1.

Fig. 1.



Witnesses:
Carl L. Fiedler.
Walther Ständliker.

Inventor:
Hermann Romünder

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4 SHEETS—SHEET 2.

Fig. 4

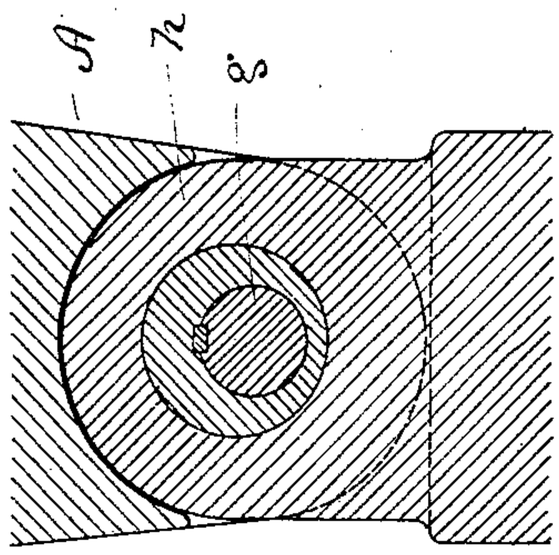


Fig. 5.

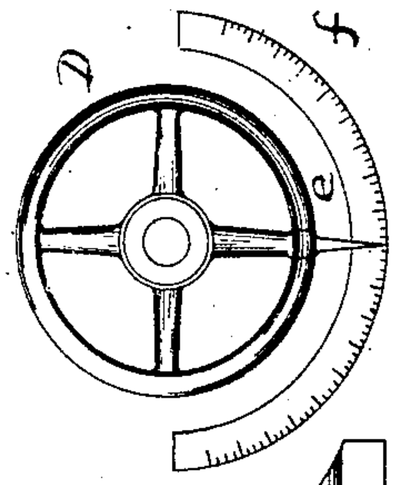
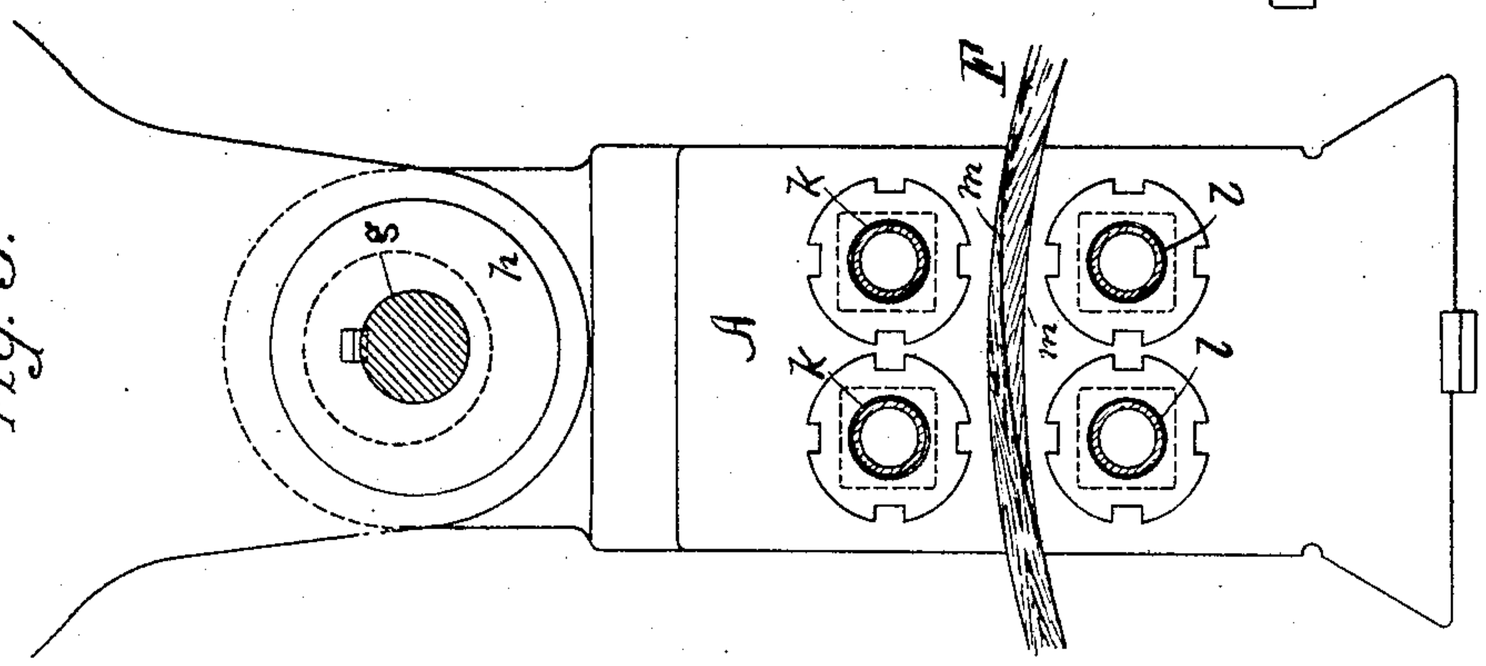


Fig. 2.

Fig. 3.



Witnesses:
Carl S. Fiedler.
Walther Ländliker.

Inventor:
Hermann Romünder.

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4 SHEETS—SHEET 3.

Fig. 8.

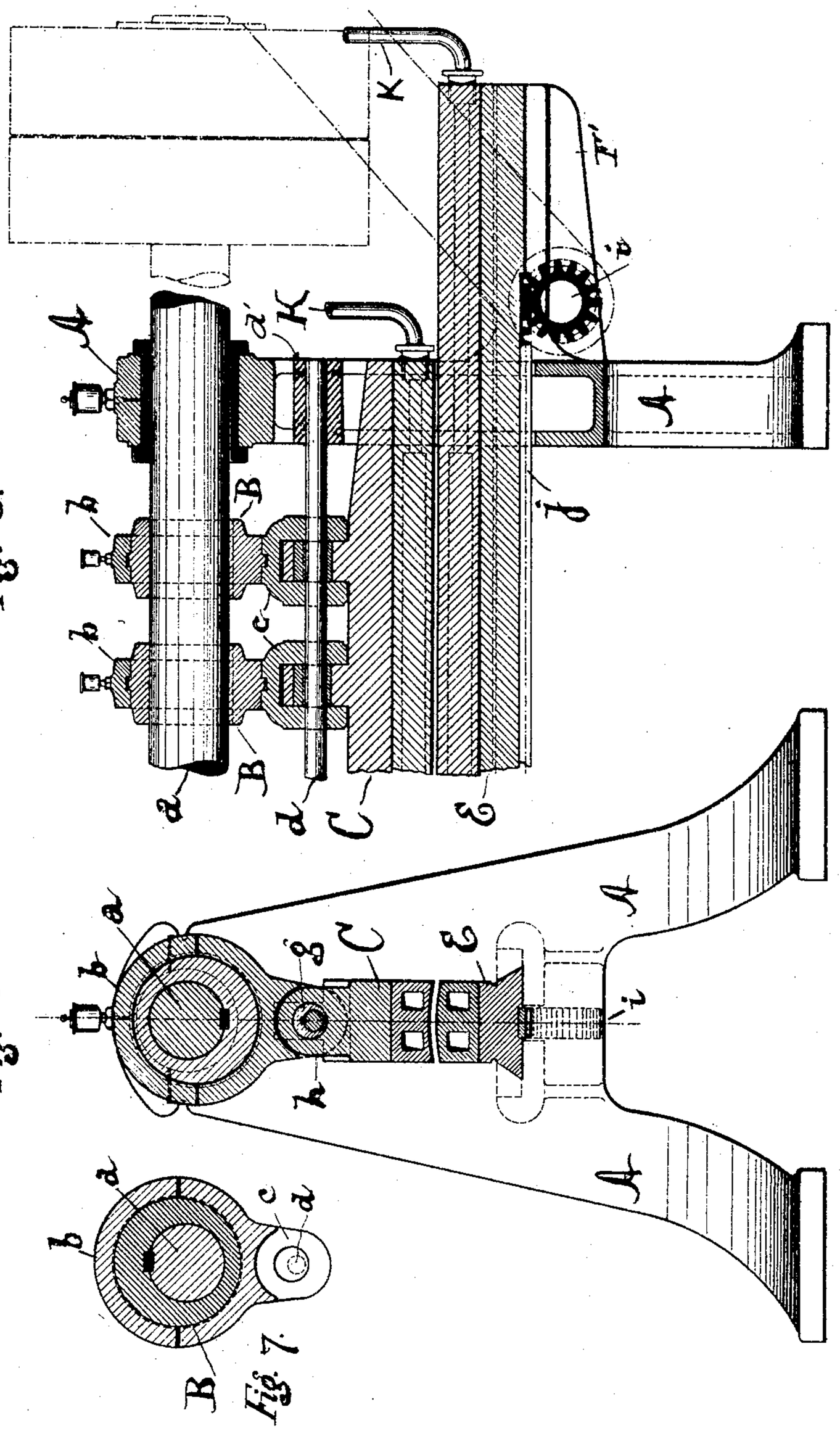

Fig. 6.

Fig. 7.

Witnesses:
Carl L. Fiedler.
H.
Paula Rosemark.

Inventor:
Hermann Romünder.

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4 SHEETS—SHEET 4.

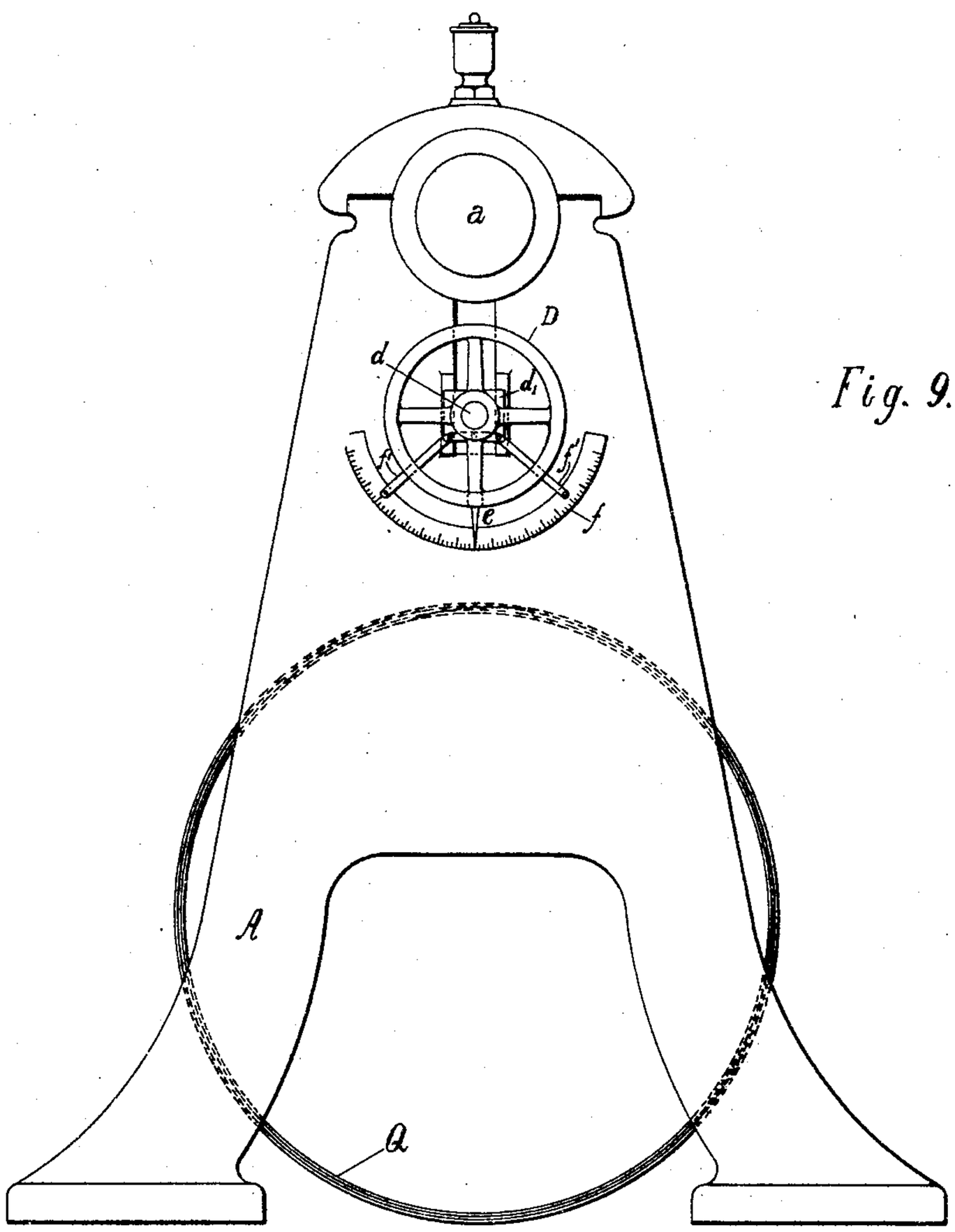

Fig. 9.

Witnesses:

Carl L. Freder

Paula Rosemark.

Inventor:

Hermann Romünder.

No. 779,970. Patented January 10, 1905.

UNITED STATES PATENT OFFICE.

HERMANN ROMÜNDER, OF BLOOMSBURY, NEW JERSEY.

OVERLAP-JOINING MACHINE.

SPECIFICATION forming part of Letters Patent No. 779,970, dated January 10, 1905.

Application filed June 27, 1903. Serial No. 163,358.

To all whom it may concern:

Be it known that I, HERMANN ROMÜNDER, a citizen of the United States, and a resident of Bloomsbury, county of Hunterdon, State of New Jersey, have invented certain new and useful Improvements in Overlap-Joining Machines, of which the following is a specification.

My invention relates to machines in which under the action of heat and pressure the overlapping portions of sheets of wood, generally in the form of veneers, are forced into intimate union with each other to form a practically continuous sheet.

The object of my invention is to provide an efficient, economical, and rapid machine whereby the overlapping portions of two or more layers of wood veneer, whether straight or bent, may be brought under the influence of heat and pressure into this homogeneous union, resulting in the formation of circular or oval wood-veneer cylinders, which are practically seamless and which when thus constructed may be used for various purposes. This machine I call an "overlap-joining" machine.

In the accompanying drawings, Figure 1 is a side view of a machine or press embodying my invention. Fig. 2 is an end elevation taken from the right in Fig. 1. Fig. 3 is an enlarged detail of part of Fig. 2. Fig. 4 is an enlarged detail of part of Fig. 6. Fig. 5 is a detail of the regulating device. Fig. 6 is a section on line 1 1 of Fig. 1. Fig. 7 is a section through the casing *b*, eccentric B, and shaft *a*. Fig. 8 is a section (partial) explanatory of Fig. 1. Fig. 9 is an end view taken from the left in Fig. 1, showing the scale and pointer.

Same letters indicate similar parts in the different drawings.

A A represent the framework, consisting chiefly of two uprights or posts on which the moving parts are mounted. The main shaft *a* is journaled in the top of the posts A A and driven from a source of power (not shown) by belting or other suitable connecting means. On this shaft are mounted a number of eccentrics B B, each contained in a casing *b*. These casings are raised and lowered by the revolution of the eccentrics and are connected with the upper press-plate C by the joints *c c*. Through these joints passes a shaft *d*, vertically slidable, which is journaled in suitable journal-boxes, as *d'*, one being shown in Fig. 8, and, as indicated in dotted lines in Fig. 1, arranged to slide vertically in the posts A A, said shaft bearing at one end the regulating-wheel D, which carries the pointer *e*. This pointer turns about the scale *f*, which is fastened to the end of one of the vertically-slidable journal-boxes *d'*, as by arms *f'*, whereby the pointer is adapted to take a position on said scale corresponding to the upper plane of the material to be inserted between the press-plates. The shaft *d* carries a number of eccentrics *g g* inside the casings *h h*, which form an integral part of the top of the upper press-plate C. It is obvious, therefore, that by turning the regulating device D to the desired position the upper press-plate C, which hangs from the shaft *d* through the medium of the eccentrics *g g* and casings *h h* and is movably mounted in slides in the posts A A, will be raised or lowered into a fixed relation with the axis of the shaft *a*. E is the lower press-plate, supported by the posts or framework A A and by the extension or bracket F', which may be integrally provided on or detachably connected to one of the posts A, said press-plate E being movable forward and back by any suitable means, as by a cog-wheel *i*, that is mounted in the bracket F' and meshes with the rack *j*, suitably provided on said press-plate E. By these means the press-plate E may be brought into alinement with the vertically-movable press-plate C to bridge a clearance-space in the framework and may be removed from said alined position. Both said press-plates C and E are preferably hollow and arranged to be heated by any suitable means, as electricity, gas, steam, or other sources of heating. In the drawings each of these press-plates is shown as adapted to receive steam through an inlet *k* and to discharge the same through the outlet *l*, whereby the pressing-surfaces of the two press-plates may be heated to the desired degree to act upon the material to be pressed. This material F consists of two or more sheets of wood veneer with,

preferably, tapering overlapping portions *m m*, which are designed to be pressed together between the press-plates C E under sufficient heat and pressure and continued thereunder for a sufficient time to enable them to set and become virtually integral with each other. One of the most advantageous products of this machine is a cylindrical tube Q, composed of overlapping portions thus joined together at one or more points, as may be most convenient.

It will be noted that the removal of the lower press-plate E from its alined or operative position, in conjunction with the upper press-plate C, removes all obstruction to the clearance-space between the posts A A of the frame, permitting the placing in position of a cylindrical article whose overlapped edges or portions are to be united by the machine. Then by returning the lower press-plate to its operative position in alinement with the upper press-plate said lower press-plate E is caused to bridge the clearance-space aforesaid, passing through the cylindrical article, which it supports during the joining operation. In order to remove the cylindrical article after the joining operation has been completed, it is necessary to withdraw the press-plate E, which is accomplished in the manner before described.

The operation of my improved machine is as follows: The machine standing idle and the lower pressure-plate being in its outer position, as shown in dotted lines in Fig. 1, the overlapping portions of the veneers to be treated are placed in position between the pedestals, having previously been covered with any suitable waterproof gluing composition—such, for example, as a compound of glue and potash—and are held in the desired curved position by rings, clamps, or other means. (Not shown.) The lower press-plate is then moved forward by the cog-wheel *i* until it comes under the top press-plate C, which has been previously set, by means of the regulating device D, to the desired height, whereby the overlapping parts of the material are interposed between the upper and lower press-plates. The machine is then started sufficiently to rotate the main shaft *a* enough to cause the eccentrics carried thereon to force the top plate down by means of the casings *b b* and *h h* through the joints *c c*, and thereby compress the veneers against the top of the lower plate. The machine is then stopped and then allowed to stand, exerting this fixed pressure until the overlapping veneers have assumed permanent union, it being understood that the press-plates C and E are sufficiently heated by steam or other means to bring about the desired result under simultaneous heat and pressure. The eccentric pressure is then released and the press-plate C raised, and the press-plate E moves back to its outer position out of alinement with plate C by the reverse action of cog-wheel *i*, whereafter the material may be released and removed from the machine.

By means of this improved machine I am able to produce a large variety of structures in which plates or veneers of wood may be joined so as to present a continuous homogenous body which may be tubular and of cylindrical or oval cross-section or a simple or compound open curve and suitable for arches or other structures in which curvature of greater or less pitch is desired.

I claim—

1. An overlap-joining machine which consists of a frame, a vertically-reciprocating press-plate movable within and supported by said frame, over a clearance-space, an opposed press-plate movably supported in said frame, and means for moving said opposed press-plate into and out of alinement with said vertically-reciprocating press-plate, the said opposed press-plate, when in alined position, spanning the clearance-space within the frame.

2. An overlap-joining machine which consists of a frame, a press-plate supported by said frame and adapted to reciprocate horizontally through a clearance therein, and to span the same, and a vertically-reciprocating press-plate movable within and supported by said frame, said press-plates being adapted to receive between them the overlapped portions of material to be joined, together with means for moving said horizontally-reciprocating press-plate beneath the vertically-reciprocating press-plate, means whereby the vertically-reciprocating press-plate forces and holds the overlapped material against the horizontally-reciprocating press-plate during compression, and means whereby said press-plates may be heated.

3. An overlap-joining machine composed of a frame including two upright posts, a press-plate supported by said posts and adapted to reciprocate horizontally through and span a clearance between said posts, and a vertically-reciprocating press-plate movable between and supported by said posts, together with means for moving said horizontally-reciprocating press-plate beneath the vertically-reciprocating press-plate, means whereby the vertically-reciprocating press-plate forces and holds interposed overlapped material against the horizontally-reciprocating press-plate during compression, and means whereby both said press-plates are heated.

4. An overlap-joining machine composed of a suitable framework consisting chiefly of a number of upright posts, a horizontally-reciprocating press-plate supported by said framework and adapted to span a clearance therein, and a vertically-reciprocating press-plate, means whereby the said horizontally-reciprocating press-plate may be operated forward and back, a number of eccentrics mounted on a shaft suitably provided and journaled

in said upright posts, means whereby said eccentrics raise and lower the vertically-reciprocating press-plate, and means whereby both said press-plates may be heated.

5. An overlap-joining machine composed of a suitable framework, consisting chiefly of upright posts, a vertically-reciprocating press-plate, and an opposed press-plate mounted within said frame, said opposed press-plate being movable in a horizontal plane and adapted to bridge a clearance-space in the framework, said press-plates being adapted to receive between them the overlapped material to be joined, means whereby said opposed press-plate may be moved in one direction into alinement with the vertically-reciprocating press-plate for compression of the overlapped material, and in the opposite direction for removal of the material after compression, means whereby the vertically-reciprocating press-plate may be raised and lowered and the overlapped portions of the material held and compressed between both said press-plates, and means whereby both said press-plates may be heated and the overlapped portions of the material heated during compression.

6. A wood-veneer-overlap-joining machine composed of a suitable framework, press-plates supported by said framework and arranged to be heated by steam or other means, one of said press-plates being movable vertically within a clearance-space in said framework, and the other press-plate being movable laterally, into and out of alinement with said vertically-moving press-plate to bridge the clearance-space in the framework, to allow the placing in position of the wood-veneer material, the overlapped portions of which are to be joined under simultaneous heat and pressure, and the removal of the material after compression.

7. An overlap-joining machine composed of a suitable framework consisting chiefly of upright posts, a vertically-reciprocating press-plate movable within a clearance-space between and supported by said posts, an opposed press-plate also supported by said posts and adapted to reciprocate horizontally and span said clearance-space, a cog-wheel suitably mounted in said frame and meshing with a rack provided on the horizontally-reciprocating press-plate, a main shaft *a*, journaled in the posts and operated by suitable means of power, a number of eccentrics mounted on said shaft *a* and contained in suitable casings joined to the vertically-reciprocating press-plate, a shaft *d* passing through the joints of the said casings and the vertically-reciprocating press-plate, and vertically slidable in the posts, a number of eccentrics mounted on said shaft *d* and contained in suitable casings forming an integral part of the vertically-reciprocating press-plate, a regulating device suitably provided, whereby the overlapping portions of material of any desired thickness may be compressed and joined between both said press-plates, and means whereby both said plates may be heated.

8. An overlap-joining machine composed of a suitable frame, consisting chiefly of a base and a number of upright posts, and press-plates supported by and movably mounted in said frame, and arranged to be heated by steam or other means, one of said press-plates being movable vertically within a clearance-space in the frame by means of eccentric pressure alternately exerted and released, and the other press-plate being movable horizontally into and out of alinement with the vertically-movable press-plate and adapted to span said clearance-space by means of a cog-wheel suitably mounted in said frame, and meshing with a rack provided on the said horizontally-movable press-plate, said cog-wheel operating the said horizontally-movable press-plate successively in one direction in alinement with the vertically-movable press-plate, for the compression of the interposed material, and in the opposite direction to allow the placing in position of the material to be pressed and the removal of the material after compression.

HERMANN ROMÜNDER.

Witnesses:
CARL L. FREDLER,
WALTHER DANDLIKER.