

F. DIEHL.
MACHINE FOR PREPARING WOOD FOR GLUING.
APPLICATION FILED MAY 7, 1908.

920,280.

Patented May 4, 1909.

3 SHEETS—SHEET 1.

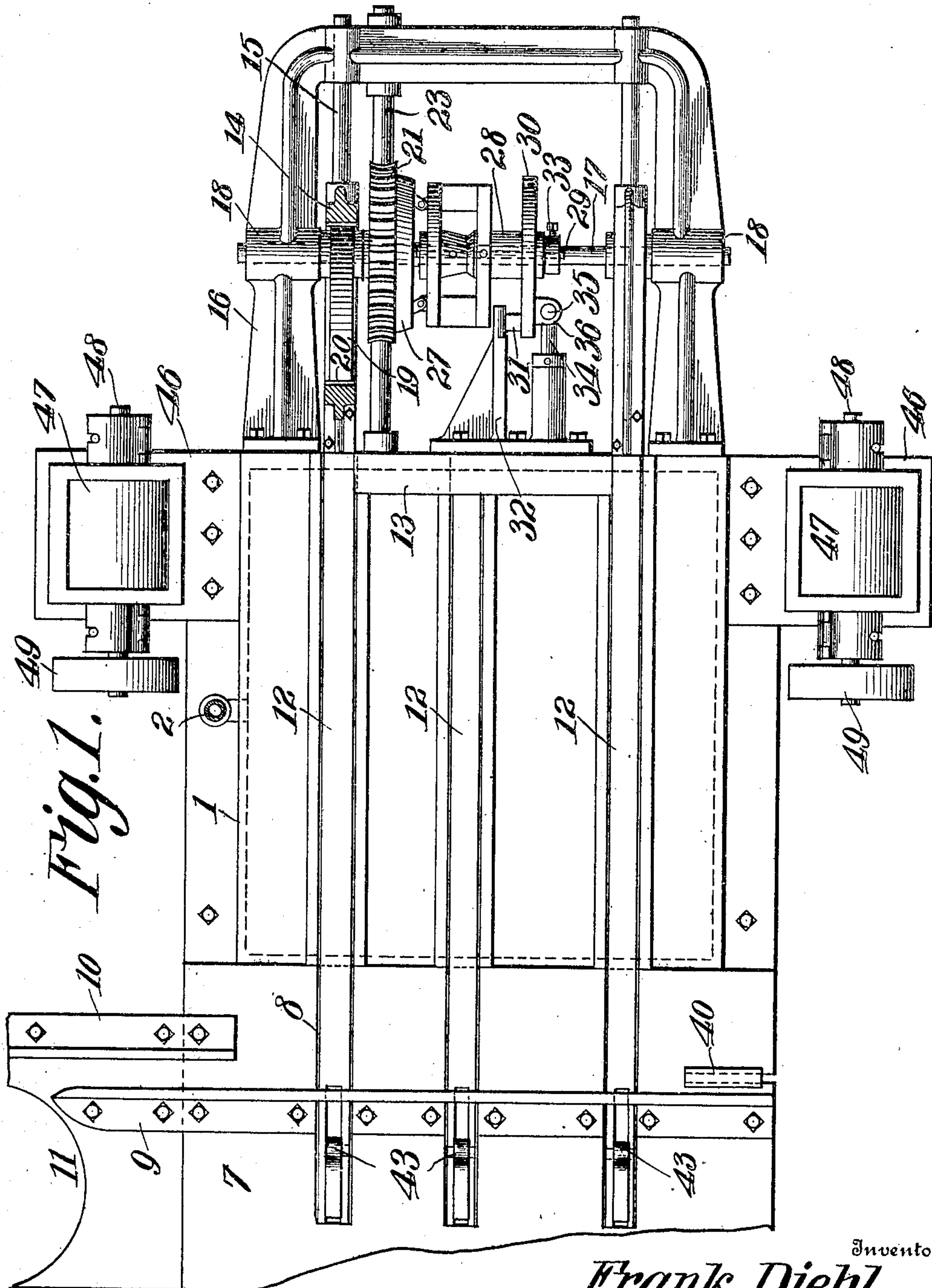


Fig. 1.

Witnesses

E. J. Hunt
F. J. Chapman

Inventor,
Frank Diehl.

334

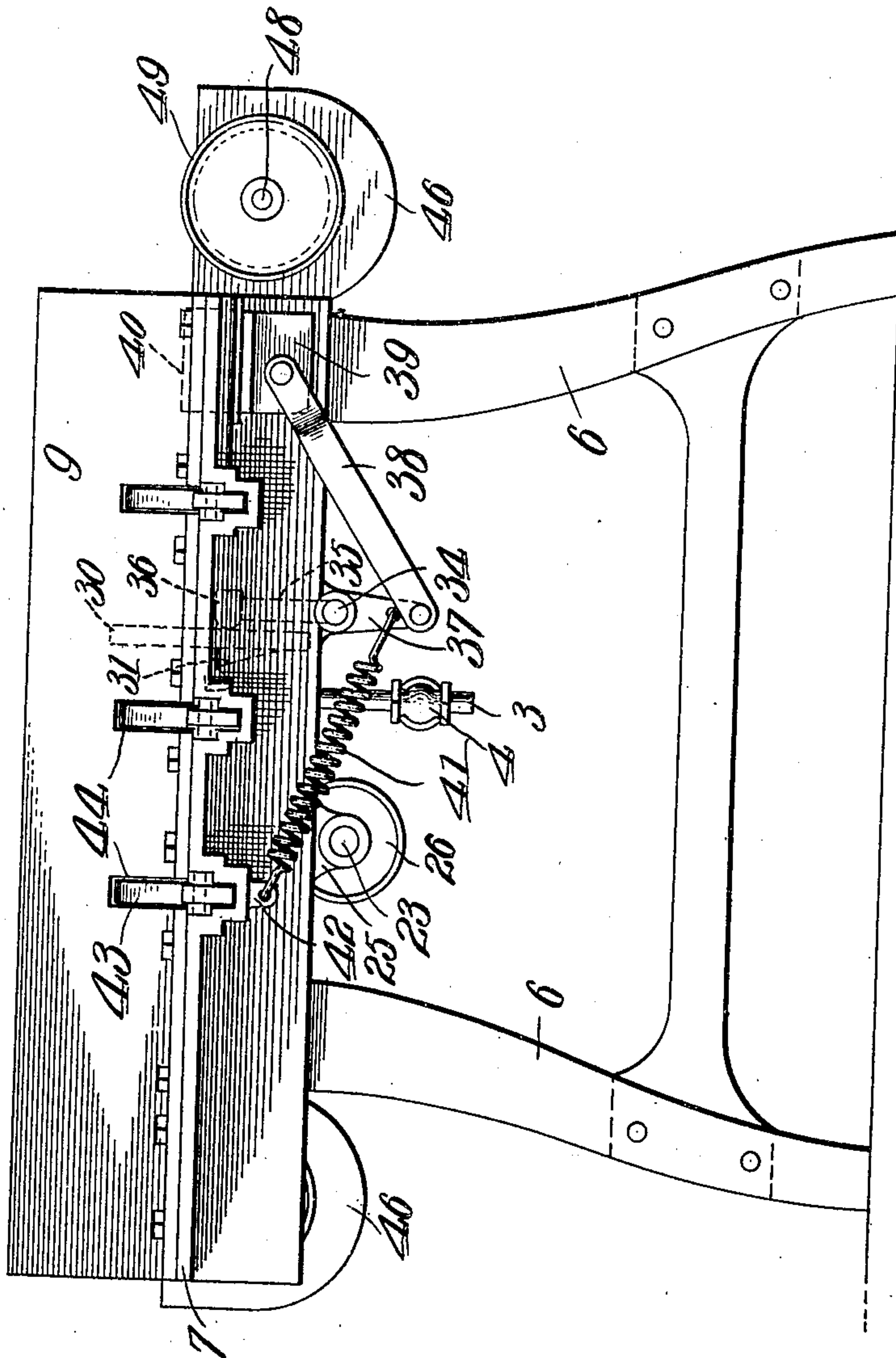
C. A. Snow & Co.
Attorneys

F. DIEHL.
MACHINE FOR PREPARING WOOD FOR GLUING.
APPLICATION FILED MAY 7, 1908.

920,280.

Patented May 4, 1909.
3 SHEETS—SHEET 2.

Fig. 2.



Frank Diehl,

Inventor.

Witnesses

E. J. H. H. H.
J. J. Chapman.

By

C. A. Snow & Co.

Attorneys

F. DIEHL.
MACHINE FOR PREPARING WOOD FOR GLUING.
APPLICATION FILED MAY 7, 1908.

920,280.

Patented May 4, 1909.

3 SHEETS—SHEET 3.

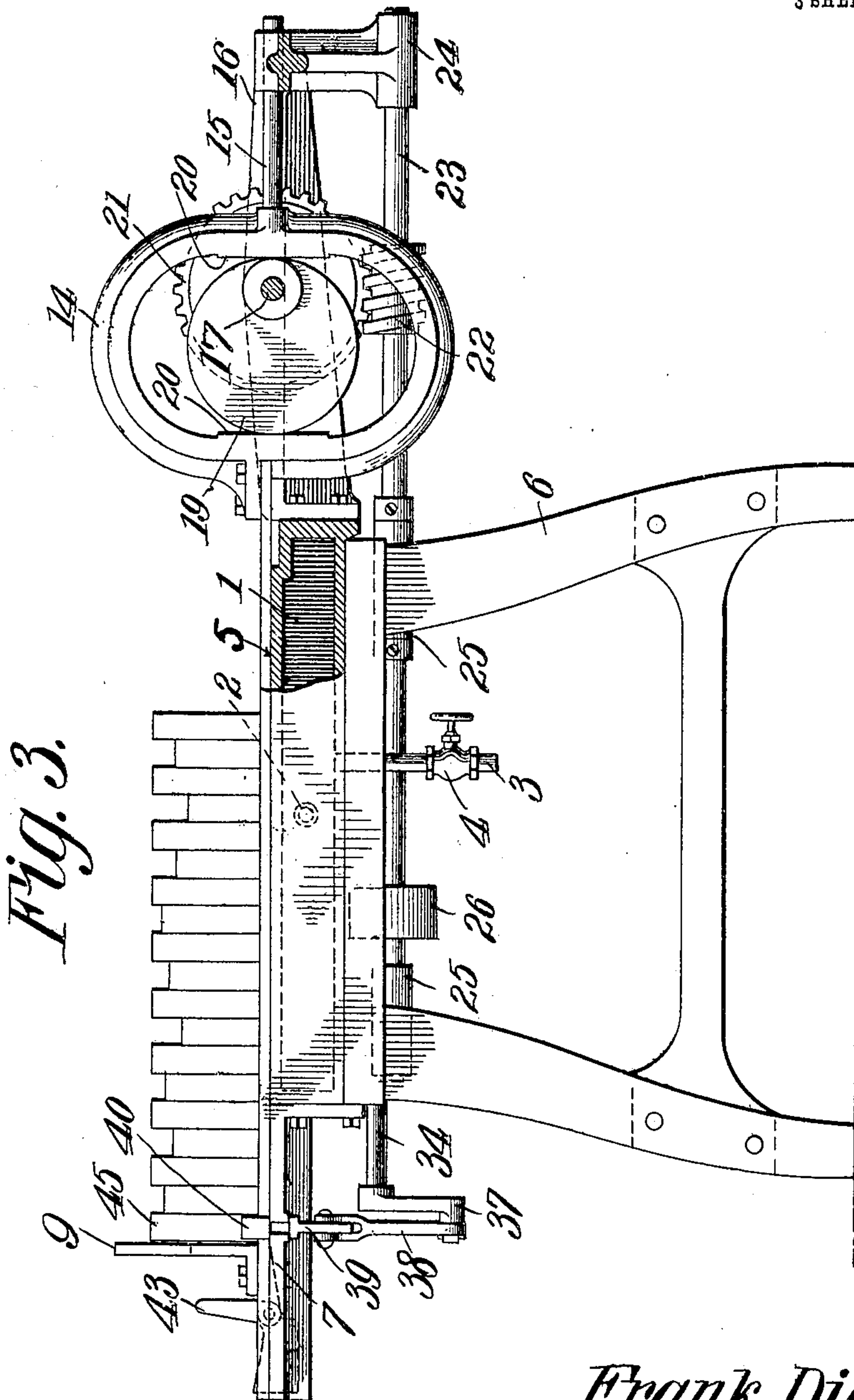


Fig. 3.

Frank Diehl,
Inventor.

Witnesses

E. J. H. H. H.
F. J. Chapman.

By

C. A. Snow & Co.
Attorneys

UNITED STATES PATENT OFFICE.

FRANK DIEHL, OF SHEBOYGAN FALLS, WISCONSIN.

MACHINE FOR PREPARING WOOD FOR GLUING.

No. 920,280.

Specification of Letters Patent.

Patented May 4, 1909.

Application filed May 7, 1908. Serial No. 431,460.

To all whom it may concern:

Be it known that I, FRANK DIEHL, a citizen of the United States, residing at Sheboygan Falls, in the county of Sheboygan and State of Wisconsin, have invented a new and useful Machine for Preparing Wood for Gluing, of which the following is a specification.

This invention has reference to improvements in machines for preparing wood for gluing, and its object is to provide a means whereby strips of wood to be glued together are first subjected to a pre-heating operation preparatory to the application of glue so that the glue when once set may be more adherent and hold more firmly than though the parts were not pre-heated.

The invention comprises a steam table for the reception of the strips to be heated with means for advancing the strips automatically across the table in the manner in which they are fed to the table, the feeding operation being caused by the sticks or strips as they are received upon the table.

In conjunction with the feeding table at the end thereof remote from the end initially receiving the strips, there is provided means for the application of glue to the strips as they are removed from the table after having traversed the latter and having had the edges to which the glue is to be applied heated to the requisite degree.

The invention will be best understood by a consideration of the following detail description taken in connection with the accompanying drawings forming part of this specification, in which drawings—

Figure 1 is a plan view of the machine. Fig. 2 is an elevation of the machine at that end receiving the sticks or strips to be glued, and Fig. 3 is an elevation of the machine, with parts in section, viewed at right angles to the showing of Fig. 2.

Referring to the drawings, there is shown a steam table 1 of general rectangular form having a steam inlet 2 and an outlet 3, which latter may be provided with a suitable valve 4. The table is hollow, as is customary, and the top of the table is provided with a number of parallel longitudinal grooves or depressions 5 the purpose of which will hereinafter appear. The table is supported at each end upon appropriate legs 6, and at one side the table is provided with a shelf or extension 7 in which is formed a number of

grooves 8 constituting a continuation of the grooves 5 before mentioned.

Carried by the shelf 7 is an angle strip 9 leading entirely across the same at right angles to the length of the grooves 8, and parallel to this angle strip 9 is another angle strip 10 ending close to one end of the table 7. The strips 9 and 10 are parallel one to the other and spaced apart a sufficient distance to permit a passage of strips coming from any suitable machine simply indicated at 11, which may be considered as a feed roller by means of which the strips are delivered from a planer or other suitable machine and are fed onto the table 7 through the guides 9 and 10.

Resting in the grooves 5 and 8 are three bars 12 so shaped as to be capable of longitudinal movement in these grooves and having their upper faces at or below the surface of the steam table and shelf 7. The bars 12 are joined together at one end by a head 13. In the structure shown in the drawings, there are three bars 12 consisting of an intermediate one and two outer bars, but of course a greater number of bars may be used, or under some circumstances two bars only will be sufficient.

Secured to each outer bar beyond the head 13 is an oval yoke 14, and beyond this yoke there extends a rod 15 having a sliding bearing in a frame 16 fast on the corresponding end of the table. Extending toward the frame 16 parallel to the corresponding end of the table is a shaft 17 journaled in suitable bearings 18 formed in the frame 16, and this shaft has secured thereon two cams 19, one for each yoke 14. The interior of the yokes 14 are formed with diametrically-opposite shoulders 20 with which the cams engage so as to cause these yokes and the bars 12 connected therewith, to have a reciprocatory movement when the shaft is rotated by the action of the cams 19 upon the shoulders 20.

The shaft 17 carries a worm wheel 21 in mesh with the worm screw 22 on a drive shaft 23 having a journal support 24 depending from the frame 16 and other journal supports 25 on the bottom of the table 1 or a support therefor carried by the legs 6. A pulley 26 on the shaft 23 may be provided for the application of power.

The worm wheel 21 is not normally fast upon the shaft 17 but may be rotated freely thereon, and in order that this worm wheel

may be connected to the shaft 17 there is provided a clutch 27 of any suitable construction, and one member of this clutch is capable of sliding on the shaft 17 under the control of a hub 28 also capable of sliding on the shaft 17 but constrained to rotate with the shaft by means of a spline 29. The hub 28 carries a disk 30, and on this disk near its periphery there is a projecting lug 31, which latter may be in the form of a wedge or tooth arranged, under circumstances which will hereinafter appear, to engage a fixed bracket 32. The tooth 31 is beveled on one edge, as best shown in Fig. 2. An adjustable collar 33 serves to limit the movement of the hub 28 away from the clutch member fast to the worm wheel 21.

Extending below the table is a rock-shaft 34 lying parallel to the bars 12. The shaft 34 terminates at one end in juxtaposition to the disk 30, and there is provided with a rock-arm 35, at the free end of which is formed a head or cam 36 arranged to engage the disk 30 on the face of the same opposite that carrying the lug 31. The other end of the rock-shaft 34 carries a rock-arm 37 connected by a link 38 to a sliding block 39 mounted in the shelf 7 in suitable guideways formed therein, and this block 39 is formed with a head 40 closely adjacent to or slightly in front of the face of the guide 9, so that a strip of wood passing across the shelf 7 between the guides 9 and 10 will ultimately come into contact with the head 40 and move the same in the guideways formed in the shelf 7 in such manner as to cause the shelf 34 to rock because of the link 38 connecting the block 39 to the arm 37. This movement of the rock-arm is resisted by a spring 41 connected at one end to the rock-arm 37 and at the other end to fixed lugs 42 on the under side of the shelf 7.

The bars 12 are of such length as to normally project beyond the guide 9 and there each bar 12 carries a finger 43 pivoted at its lower end to the bar and capable of moving freely in one direction about its pivot so as to be brought flat against the bar with its upper surface at or below the top surface of the bar, while in the other direction this finger is prevented from moving to a greater extent than the position at right angles to the bar. The guide 9 is formed with slots 44 for the passage of the fingers 43.

Let it be assumed that power is being constantly applied to the pulley 26 so as to rotate the drive shaft 23. This movement is participated in by the worm 22 and worm gear 21, the rest of the structure remaining quiescent. If, now, a strip 45 of wood be fed between the guides 9 and 10 across the shelf, it will ultimately come in contact with the head 40, and thus cause the rock-shaft 34 to be partially rotated about its axis. This will cause the rock-arm 35 to move in a

direction to bring the head 36 against the disk 30 and move the same longitudinally on the shaft 17 until the clutch 27 is rendered active. Under these conditions motion of the worm wheel 21 is imparted to the shaft 17 and the cams 19 are rotated, causing a movement of the bars 12 toward the right as viewed in Fig. 1. The fingers 43 are thereby carried through the slots 44 and into engagement with the strip on the shelf, and this strip is moved to the right, as viewed in Fig. 1, until out of coincidence with the head 40. This releases the block 39 to the action of the spring 41 and this causes the rotation of the shaft 34 in the opposite direction to an extent sufficient to bring the head 36 out of contact with the disk 30. The rotative movement of the shaft 17 continues until the tooth 31 is brought into engagement with the bracket 32, when the inclined face of the tooth riding along the bracket will force the disk 30 and the clutch member controlled thereby in a direction to separate the clutch members and so uncouple the shaft 17 from the worm gear 21, the extent of movement of the disk 30 and the clutch member controlled thereby being limited by the collar 33. The parts are so timed that this does not take place until the bars 12 have been returned to their initial position, shown in Fig. 1. On this return movement the fingers 43 will ride under another strip 45 which may in the meantime have been fed forward into position to engage the head 40. If the second strip has immediately followed the first strip, then of course the clutch remains in engagement since the head block 39 has already been pushed over to bring the cam head 36 into engagement with the head 30. If the strips 45 are fed continuously, then the action of the machine proceeds automatically and the steam table is filled with the strips 45, which latter are fed slowly step-by-step across the steam table. Thus the edges of the strips resting upon the steam table are heated to a degree commensurate with the temperature of the steam within the steam table.

Flanking the steam table at the end remote from the receiving end of the same are two glue vats 46 containing glue spreaders 47 of any appropriate type indicatively shown in Fig. 1, and these spreaders are operated by short shafts 48 driven by belt pulleys 49 receiving power from any suitable source. When the strips have reached a position coincident with the rotation of the glue vats, then the heated strips are moved laterally from the table so that their heated edges are brought into contact with the spreaders 47 and thus receive a thin coating of glue. Of course, as is customary in the operation of gluing, the supply of glue is kept at a suitably hot temperature. After the strips have been heated and the glue has been spread

upon their edges they are glued together in the ordinary manner, a description of which is unnecessary in this connection.

What is claimed is:—

5 1. In a machine of the class described, a table, a reciprocating means having an extent of travel less than the length of the table, means for guiding articles across the table in the direction transverse and in opera-
10 tive relation to the reciprocating means, and means adjacent to the reciprocating means at the end thereof remote from the point of introduction of the articles upon the table and actuated by said articles to cause the opera-
15 tion of said reciprocating means.

2. A machine for heating wood strips prior to gluing the same, comprising a table or support, means for heating the same, guides for directing the wood strips across the table in
20 one direction, a sliding member in the path of the strips entering by the guides, a clutch member under the control of said sliding member, and reciprocating members put into and out of action by the clutch and moving
25 in a direction at right angles to the movement of the strips entering the table by the guides for a distance less than the length of the table in the like direction to move all the strips over the table through the intermediary of the strip engaging the sliding member,
30 the extent of movement of the said reciprocating members being such as to carry the strips out of coincidence with the said sliding member but not out of the path of the next
35 succeeding strip entering the table by the guides when the said strip is under the control of the said reciprocating members.

3. A machine for applying glue to wood strips comprising a heating table, means for
40 feeding the strips over the table in a direction at right angles to the length of said strips, and means for applying glue to the heated edges of the strips as they are removed longitudinally from the table.

45 4. A machine for applying glue to wooden strips comprising a heating table, a reciprocating member carried thereby and adapted to move all the strips across the table in a direction at right angles to the length of the
50 strips on the successive insertion of the strips on the table adjacent said reciprocating member, and means located at the sides of the table at the ends remote from the reciprocating member for applying glue to the heated
55 edges of the strips as the said strips are removed from the table in the direction of their length.

5. In a machine of the character described, a heating table having longitudinal grooves in its upper surface, a shaft, cams thereon, 60 yokes on said cams, bars connected together and to the yokes and seated in the grooves in the table and pivoted fingers carried by the ends of the bars remote from the cams, said fingers being movable from a position of parallelism with the bars to a position at right angles thereto. 65

6. In a machine of the character described, a heating table having longitudinal grooves in its upper surface, a shaft, cams thereon, 70 yokes on said cams, bars connected together and to the yokes and seated in the grooves in the table, pivoted fingers carried by the ends of the bars remote from the cams, said fingers being movable from a position of parallelism 75 with the bars to a position at right angles thereto, a power member on the shaft, a clutch on said shaft, in operative relation to the power member, means for moving the clutch out of action at predetermined points 80 in the rotation of the shaft, a rock shaft, a head thereon adapted to engage the clutch and move the same into operative relation to the power member, a movable block in the path of an inserted strip on the table, connections between the block and the rock shaft, 85 and a spring tending to return the rock shaft and block to normal position.

7. In a machine for applying glue to wooden strips, a steam table, a reciprocating 90 carrier thereon, a guide for the wooden strips for directing the latter across the carrier, one-way fingers on said carrier active to move the strips in one direction only, cams engaging the reciprocating member for actuating the same, means for applying power to 95 the reciprocating member, a clutch between the cams and driving means, a sliding member in the path of the strips coming from between the guides, connections between the 100 sliding member and the clutch structure for causing the clutch to be coupled on the insertion of a strip, and means for uncoupling the clutch on the completion of one full reciprocatory movement of the reciprocating member. 105

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

FRANK DIEHL.

Witnesses:

H. E. THOMAS,
STEDMAN THOMAS.