J. A. GABEL.

JOINT.

APPLICATION FILED APR. 9, 1912.

1,110,621.

Patented Sept. 15, 1914.

2 SHEETS—SHEET 1.

Fig. 1.

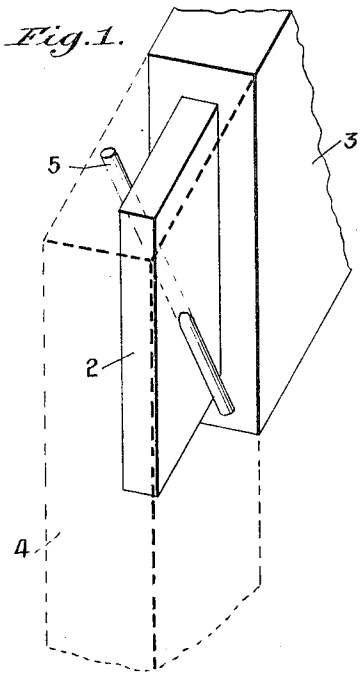


Fig. 3.

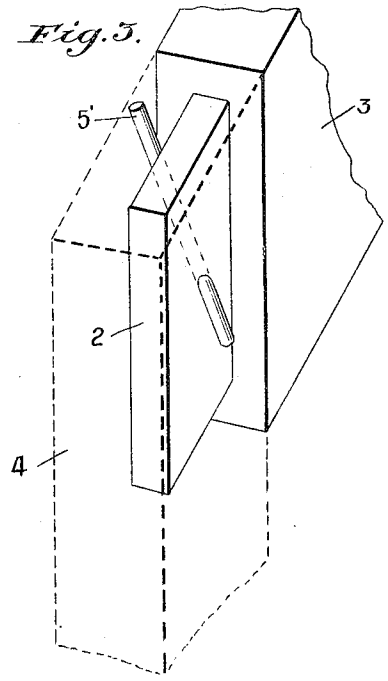


Fig. 2.

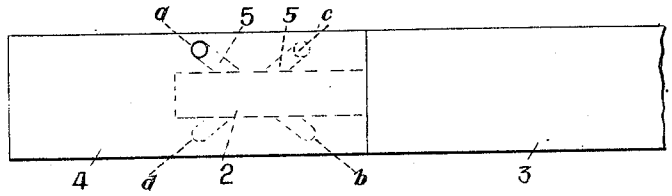
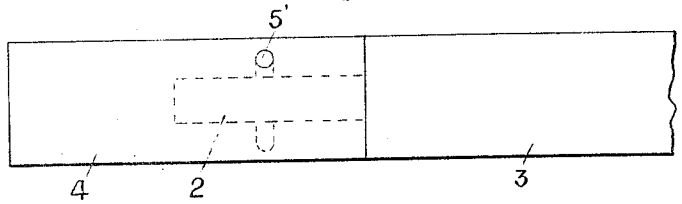


Fig. 4.



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2 SHEETS—SHEET 2.

Fig. 5.

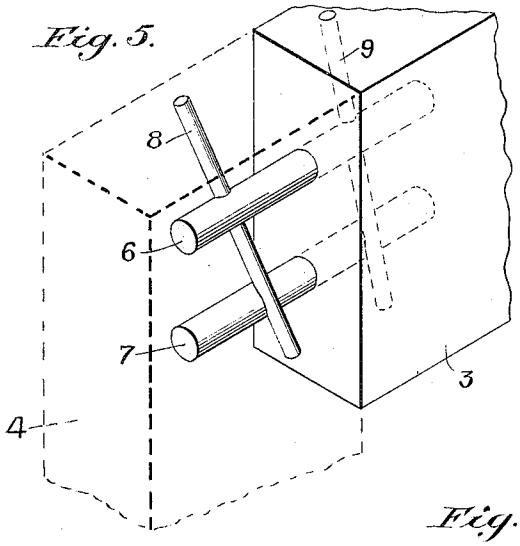


Fig. 7.

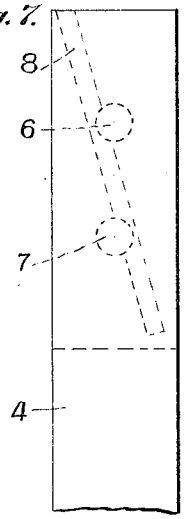


Fig. 6.

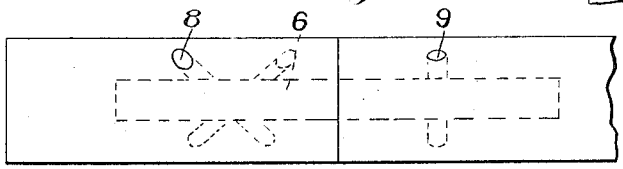


Fig. 10.

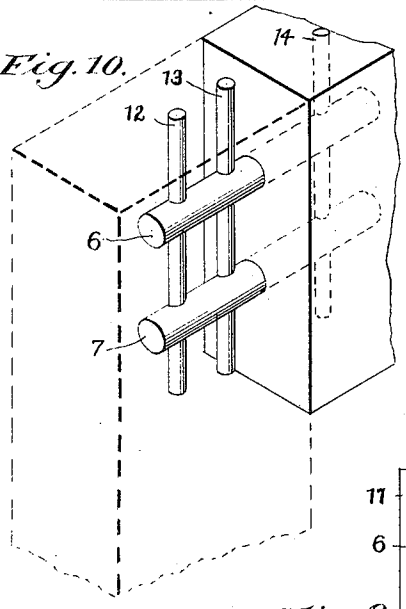


Fig. 8.

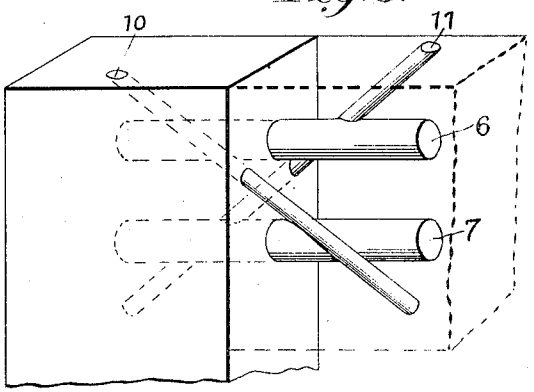
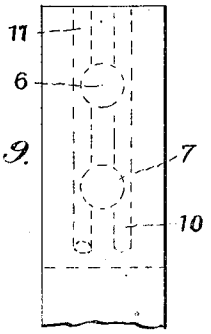


Fig. 9.



Witnesses:

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UNITED STATES PATENT OFFICE.

JOSEPH A. GABEL, OF CHEHALIS, WASHINGTON.

JOINT.

1,110,621. Specification of Letters Patent. Patented Sept. 15, 1914.

Application filed April 9, 1912. Serial No. 689,534.

To all whom it may concern:

Be it known that I, JOSEPH A. GABEL, a citizen of the United States, residing at Chehalis, in the county of Lewis and State of Washington, have invented certain new and useful Improvements in Joints, of which the following is a specification.

My invention relates to improvements in doors; and more particularly to the construction of door-corners, and has for its object to make a permanently tight joint between the stile and rail and by the same means to prevent splitting of such corners, this joint being invisible when the door is in place.

The improvements are shown in the accompanying drawings, in which—

Figure 1 is a perspective view of one form of joint; Fig. 2 is a plan view of Fig. 1 showing, however an additional oppositely inclined pin; Fig. 3 is a modified form of joint; Fig. 4 is a plan of Fig. 3; Fig. 5 is a perspective view of another modification; Fig. 6 is, except of an additional oppositely inclined pin, a plan view of Fig. 5. Fig. 7 is an end elevation of Fig. 5. Fig. 8 is a perspective view of still another modification; Fig. 9 is an end elevation of Fig. 8; and Fig. 10 is a perspective view of still another modification.

Referring to Fig. 1: a tenon 2, preferably a blind tenon integral with the rail 3, fits into a mortise in the stile 4. A fastening pin 5 extends diagonally through the tenon 2, and serves, not only to anchor the tenon so that the stile and rail cannot separate, but also to prevent the stile from splitting, or to hold the parts together even if splitting should occur. This pin 5 has a double inclination, as shown in Fig. 2, that is, it is inclined to both the vertical and horizontal planes, thus preventing splitting of the stile either across from face to face or from edge to edge. This pin may incline either from "*a*" to "*b*" or from "*c*" to "*d*", to accomplish this purpose. A similar construction is shown in Figs. 3 and 4, except that the pin 5′ is inclined transversely only.

In Fig. 5 is shown a construction in which dowel pins 6, 7 are secured in the stile and rail in the usual way. A pin 8 passes diagonally from the top of the stile through one edge of the dowel 6 and through the opposite edge of dowel 7. This pin 8 has a double inclination, see Fig. 6. A second pin 9 may be used in the rail, being inclined transversely. These pins 8, 9 may each have either a single or double inclination, and may incline from the joining edge of the stile outwardly, or the reverse, as indicated in Fig. 6.

In Fig. 8 is shown another arrangement in which pins 10 and 11 pass diagonally through both the stile and the rail, each pin engaging the same side of both dowel pins 6, 7.

Figs. 9 and 10 show vertical fastening pins 12, 13, 14 which pass directly through the dowel pins 6, 7.

I am aware that it has heretofore been proposed to pass a pin downward through a tenon, but in this particular construction, if a tenon is made thick enough not to be weakened by the passage through it of a pin of sufficient size, a comparatively thin layer of wood is left on each side of the tenon and the stile is weakened. By the use of dowel pins, in contradistinction to the use of a tenon, the dowels may be made of sufficient size to permit the vertical pins to pass through them while they do not themselves occupy so much space in the stile as to weaken it.

It will be noted that in all of the constructions shown, the upper ends of the pins are the only portions of the fastening devices which appear on the surface of the door. It is the practice to use the edge grain of the wood for stiles and rails, and the arrangement of the pins, such as 5, Figs. 1 and 8, Fig. 6, serves to lock these layers of grain together by crossing from side to side of the stile; while at the same time they offer sufficient resistance to the withdrawing of the tenon or dowels from the stile. The construction is obviously applicable whether the doors be solid or of veneer construction. It will further be noted that the inclined fastening pins, in those forms of the arrangement in which they engage the spaced dowel pins, pass through a substantial body of wood between the dowel pins and are themselves firmly anchored to oppose any withdrawal of the dowels and to resist any separation, due to splitting, of the portion of the stile through which these pins pass.

What I claim is:

1. A door comprising a stile and a rail having an interengaging connection, and a fastening pin having a double inclination extending downwardly into the stile from the top into engagement with and beyond

said connection, said pins being of sufficient length to extend substantially across the upper portion of the stile from front to back as well as across the transverse median vertical plane of the stile, whereby splitting of the stile is obviated.

2. A door comprising a stile and a rail, dowel pins spaced above each other and secured in the stile and rail, and a fastening pin extending downwardly into the stile from the top and engaging one of said dowels on one side and the other dowel on the opposite side, said pin being of sufficient length to extend substantially across the upper interior portion of the stile from front to back.

3. A door comprising a stile and a rail, dowel pins spaced above each other and secured in the stile and rail, and a fastening pin extending downwardly into the stile from the top and engaging each of said dowel pins, one on one side and the other on the opposite side, said pin being inclined to both the vertical and horizontal planes and of sufficient length to extend substantially across the transverse median vertical plane of the stile.

In testimony whereof I affix my signature in presence of two witnesses.

JOSEPH A. GABEL.

Witnesses:
WALLACE MCPHERSON,
U. E. HARMON.