J. P. WRIGHT.

DIE FOR SHAPING COMPOSITION PLATES.

APPLICATION FILED JAN. 31, 1908.

910,257. Patented Jan. 19, 1909.

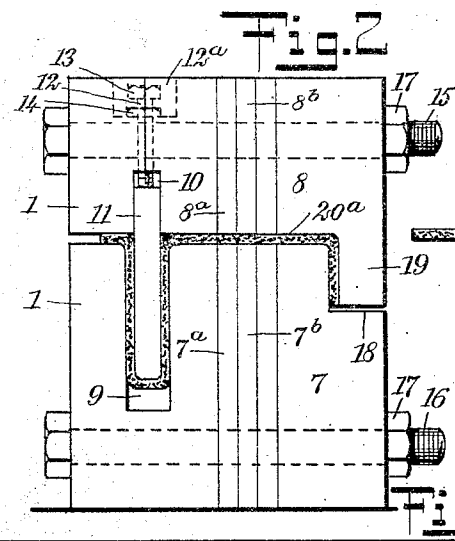


Fig. 2

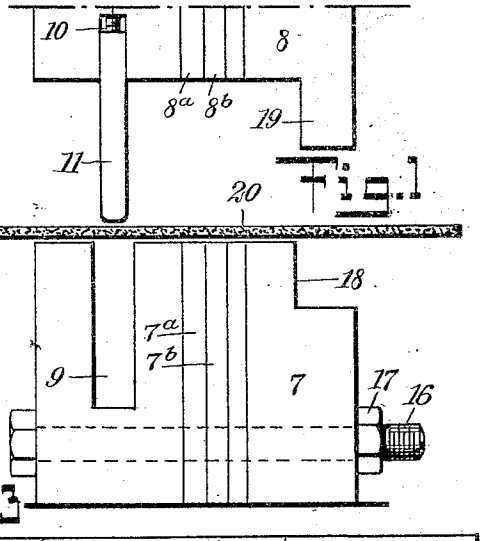
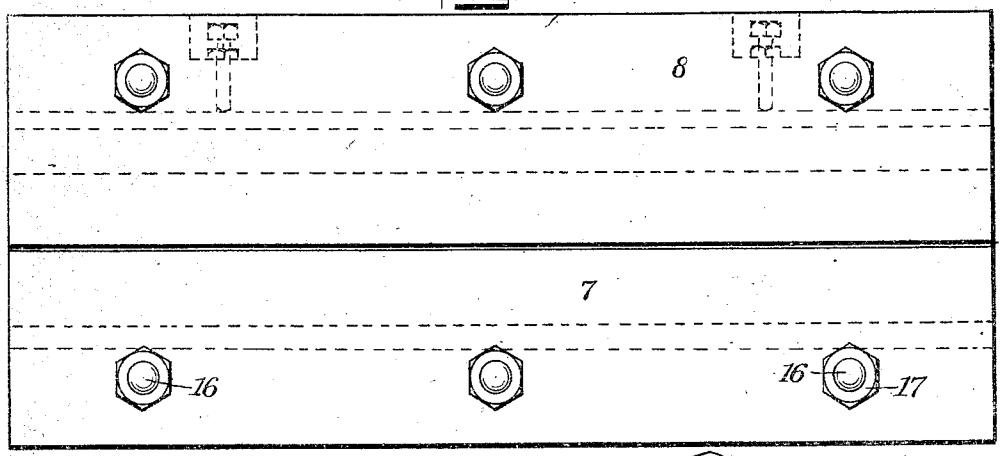


Fig. 1

Fig. 3



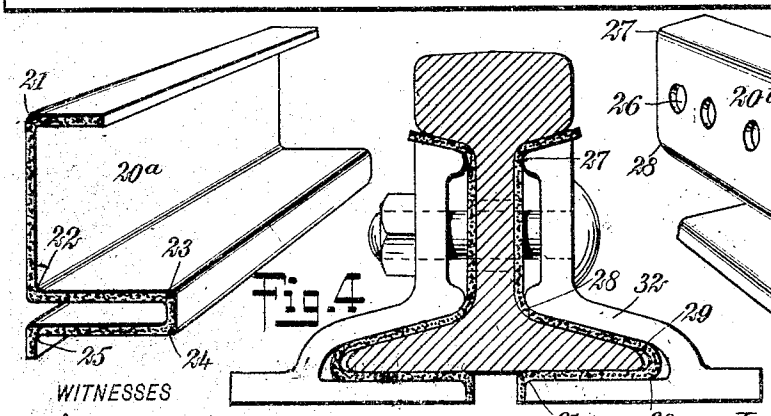


Fig. 4

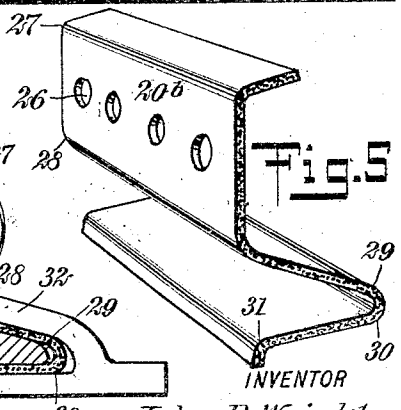


Fig. 5

Fig. 6

WITNESSES

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DIE FOR SHAPING COMPOSITION PLATES.

No. 910,257. Specification of Letters Patent. Patented Jan. 19, 1909.

Application filed January 31, 1903. Serial No. 143,506.

To all whom it may concern:

Be it known that I, JOHN P. WRIGHT, a citizen of the United States, and a resident of Newark, in the county of Newcastle and State of Delaware, have invented a new and improved Die for Shaping Composition Plates, of which the following is a full, clear, and exact description.

My invention relates to dies for shaping composition plates, and more particularly to such plates made of vulcanized fiber or allied substances, and to a method for shaping said plates.

In the construction of railway tracks it is frequently desirable to insulate the rails from the chairs and other track fixtures. To this end it is customary to provide plates of insulating material fitting the lower portion of the rail and fixtures disposed immediately adjacent thereto. Vulcanized fiber and various compositions analogous thereto are suitable as materials for the construction of such plates. I find, in practice, however, that in bending plates of vulcanized fiber and similar compositions, so as to form said plates to fit the rail, it is exceedingly difficult to attain in the finished article a proper conformity. The reason for this is found in the fact that plates of the composition in question can best be bent by subjecting them to the action of steam or heat and steam heat accompanied by pressure, and that when released from the mold the articles have a slight tendency to return to their original shape. Beginning, for instance, with a straight plate and bending the same in a die under proper conditions of heat, the finished article acts as if it had a slight tendency to straighten out, the plate as originally prepared having been flat.

What I seek to do in the present invention is to give the die such form as to distort the plate, thus giving the latter a shape which would be useless in practice, but which, owing to the natural tendency of the material to straighten out slightly, brings the finished article into the approximate form in which it is to be used. In other words, I mold the plate into an article which is purposely distorted in order that the natural tendency inherent in the plate to straighten out, may correct the distortion and leave the finished article as nearly as possible in its ideal shape. Of course, it is difficult in practice to confer upon the finished plate the exact form it should have, for the reason that in one plate the distortion is greater than in another. I find, however, that it is highly practicable to so form the plates that their shapes will be sufficiently near perfect to enable them to be used with great satisfaction.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a fragmentary elevation showing the two members of a die used for shaping a plate and also showing the flat plate of material ready to be clamped between the die members; Fig. 2 shows the die as closed and as having formed the plate; Fig. 3 is a side elevation of the die when closed; Fig. 4 is a perspective showing the shape of the plate while contained within the mold, and also showing its shape at the instant when it emerges from the mold and before it has time to undergo the desired distortion; Fig. 5 is a perspective showing the finished plate after it has undergone proper distortion; and Fig. 6 is a section through a rail accompanied by a pair of plates of the kind shown in Fig. 5 and secured thereto in position by the metal work of the track.

One of the die members is shown at 7 and the other at 8. Each die member 7, 8 is made of iron or other metal and is divided. Fillers 7^a, 7^b, 8^a, 8^b (see Fig. 2) of iron, having the form of slices the general conformity of which corresponds to the members 7, 8, are provided and are inserted within these members. The purpose of the fillers is to make the die members 7, 8 of varying thickness in order to adapt the mold for rails of different proportions. At 9 is a channel in the die member 7, while the die member 8 is provided with a smaller channel 10, and slidably mounted within the latter is a tongue 11. Pressure bolts 12 extend through the upper portion of the die member 8 and into the channel 10. These pressure bolts are provided with heads 13 whereby they may be turned, and are further provided with lock nuts 14 for holding them securely in predetermined positions. A countersink 12^a is provided for the purpost of admitting the heads 13 and nuts 14 into the body of the die member 8. The purpose of this arrangement is to enable the die member 8 to provide a flat surface so

that when the die as a whole is placed in a hydraulic press there will be no protruding members to interfere with uniformity in the pressure exerted upon the die. Stay bolts 15, 16 are provided for the purpose of holding together different portions of the die members, said die members being of composite structure. Locking nuts 17 are employed for holding these bolts rigidly in position. The lower die member 7 is provided with a recess 18, and the upper die member 8 is provided with a projection 19 mating this recess.

A sheet or material to be molded is shown at 20 and is originally flat, as indicated in Fig. 1. When this sheet of material is pressed within the die for a suitable length of time, it assumes the form of a partially finished article 20^a, as indicated in Figs. 2 and 4. It is now provided with a number of bends 21, 22, 23, 24 and 25. After being ejected from the mold, this finished article, obeying the natural tendency of the plate to straighten out slightly, assumes the form indicated at 20^b in Fig. 5. It is now provided with bolt holes 26 and is ready for use. The bends are now slightly more obtuse than before, as indicated at 27, 28, 29, 30 and 31.

It will be understood, of course, that before the die members 7, 8 are placed together, the fillers 7^a, 7^b, 8^a, 8^b are inserted or removed, as the case may be, in order that the die members may be of proper proportions. In various rails the web or so-called fish-plate is in some instances higher than in others. Such being the case, the portion 20^a of the member of vulcanized fiber should in some instances be higher than in others. This is accomplished, as above indicated, by inserting or removing a sufficient number of fillers, the dimensions of the die being thus altered at will. I also find it expedient to provide more than one tongue 11 and to have these tongues graduated in size and especially in depth, for the purpose of properly shaping the members of insulating material to be molded for rails having feet of different widths. I find that a single pair of die members may be used for making the insulating plates for rails of vastly different proportions. This feature is important because in most rails, as now used, the space between the head and foot of the rail varies widely in different weights and patterns of rails. In order to remove and replace the fillers, the bolts 16 are taken out and after the change is made are put back, the nuts 17 holding the fillers rigidly in position relatively to the rest of the die member.

The method above described may be employed in connection with quite a diversity of materials. Some of these may be softened by the application of heat, while others require the application of water, hot or cold, or steam, and still others may be softened without the aid of any of the particular means just suggested. In the case of fiber it is necessary to soften the plates before bending, which is done by immersion in hot or cold water, or by aid of steam. The tongue 11 having been adjusted and the die members placed together, and the entire die being placed in a hydraulic press, and pressure being applied, the plate is forced into exact conformity with the mold, as will be understood from Fig. 2. The finished plate, bent as indicated in Fig. 5, may now be fitted directly against the rail and held in position by the metal work 32, as indicated in Fig. 6. Of course, as in other plates of this kind, any slight irregularity in its form may be corrected within certain limits by the manner in which it is fitted against the rail and held in position by other parts.

I do not limit myself to any particular material to be used in making the articles of manufacture above described except that, as a prerequisite, the material shall have a slight tendency to undergo distortion from the shape in which it is left by the mold. Many insulating materials, including vulcanized fiber, vulcanite, hard rubber and various admixtures of materials used as substitutes for these substances, have the properties in question.

While the particular article of manufacture I show is a jointing plate, the principle of the invention may obviously be employed for making articles of other kinds.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. A die comprising members mating each other and adapted to receive between them a material to be molded, each of said members being composite and provided with removable fillers for varying one of its dimensions.

2. A die comprising a pair of die members mating each other and adapted to receive between them a material to be molded, each of said die members being composite and provided with a bolt extended through it, and further provided with fillers for varying one of its dimensions, said fillers being clamped by said bolt.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN P. WRIGHT.

Witnesses:
W. L. BONHAM,
E. M. GRIFFIN.