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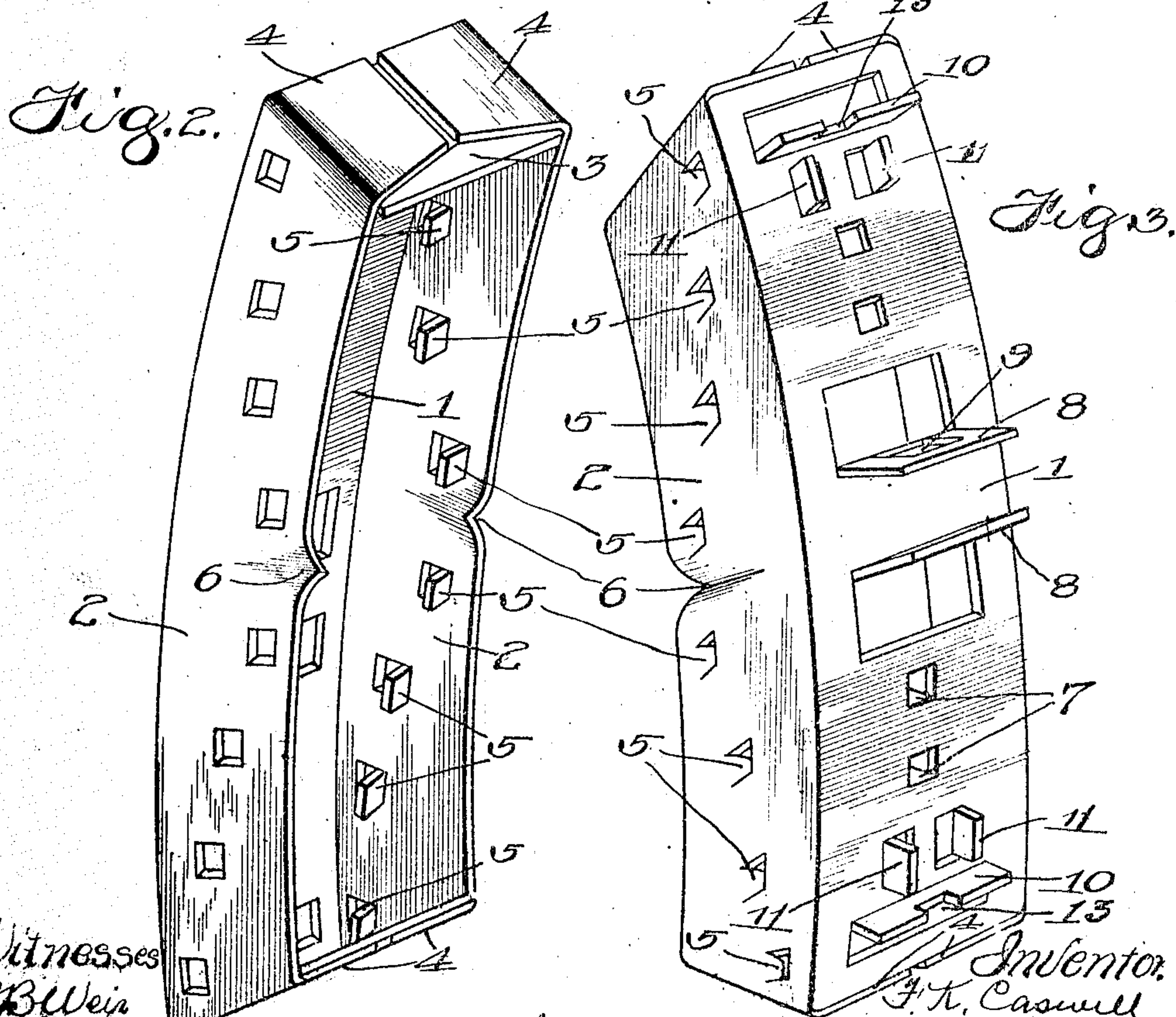
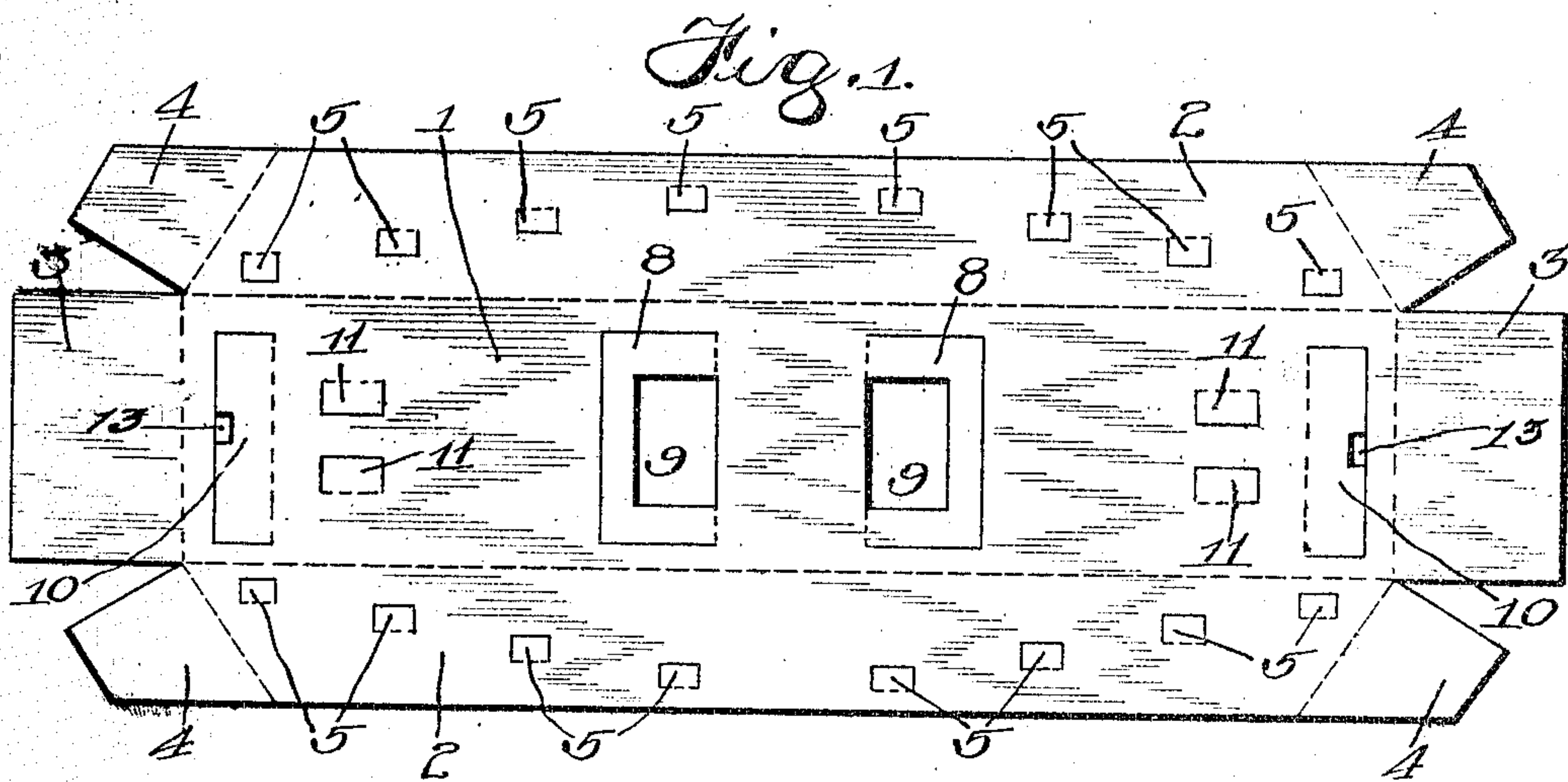
PATENTED JULY 16, 1907.

F. K. CASWELL.

BRAKE SHOE.

APPLICATION FILED JUNE 14, 1906

2 SHEETS—SHEET 1.



Witnesses  
J. B. Wein  
J. H. Nelson

Inventor:  
F. K. Caswell  
by Brown & Orley H. Brown's  
Attys



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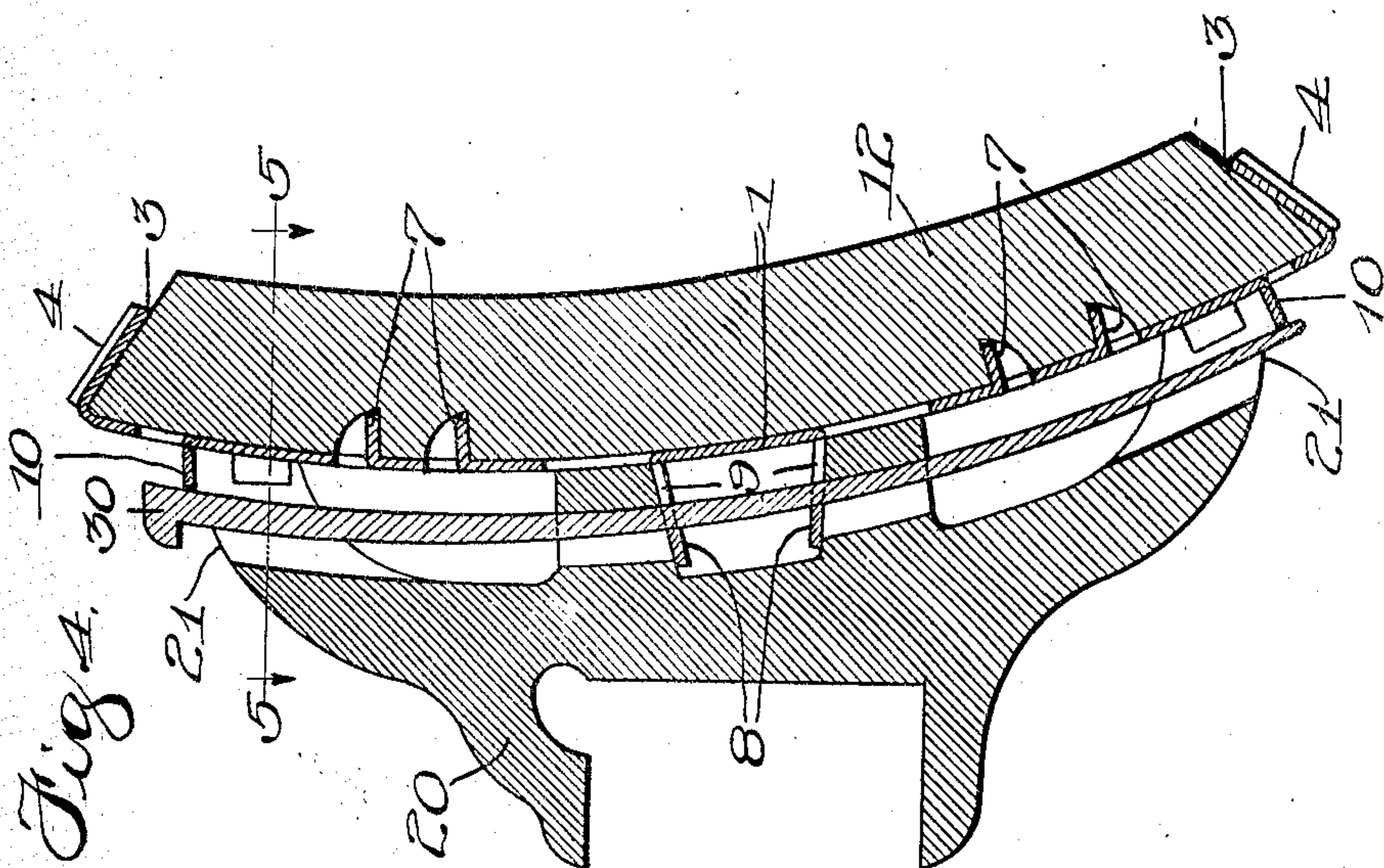
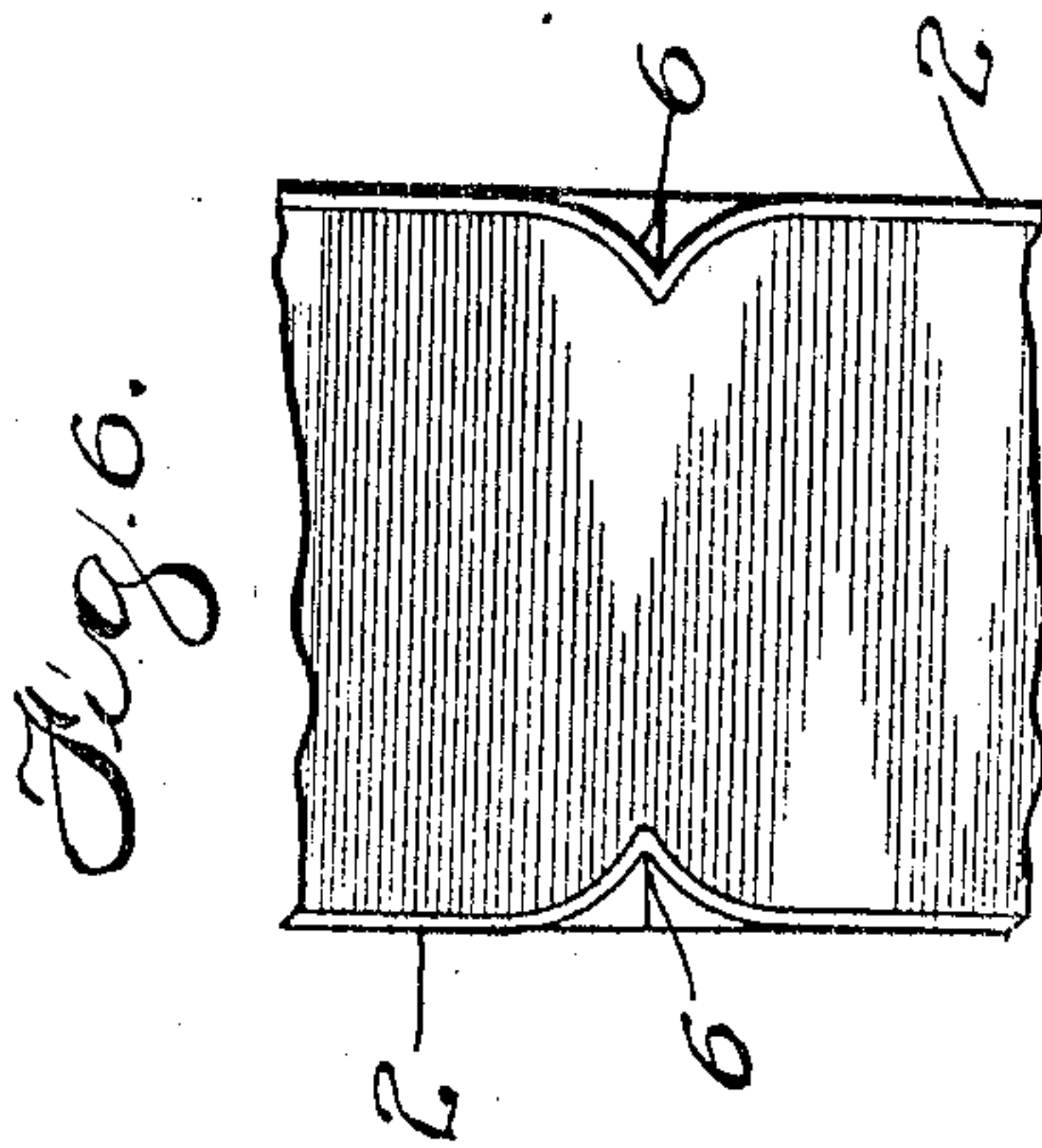
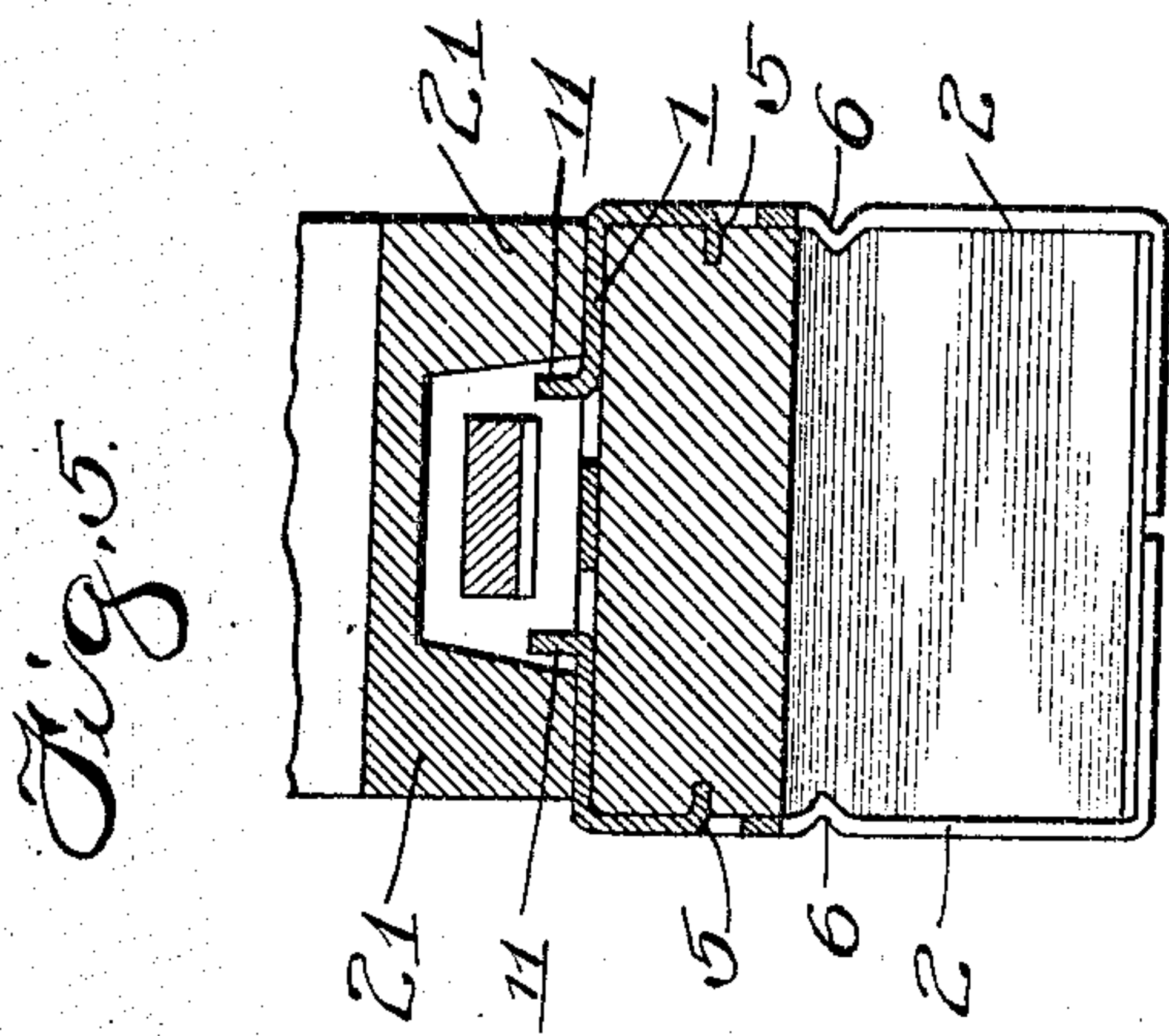
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# UNITED STATES PATENT OFFICE.

FREDERICK K. CASWELL, OF LOS ANGELES, CALIFORNIA, ASSIGNOR TO PAUL DICKINSON (INCORPORATED), OF CHICAGO, ILLINOIS, A CORPORATION OF WYOMING.

## BRAKE-SHOE.

No. 860,279.

Specification of Letters Patent.

Patented July 16, 1907.

Application filed June 14, 1906. Serial No. 321,650.

*To all whom it may concern:*

Be it known that I, FREDERICK K. CASWELL, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented certain new and useful Improvements in Brake-Shoes, of which the following is a full, clear, and exact specification.

My invention relates to improvements in brakes, particularly such as are employed on railway trains and the like, and has for its primary object to provide an improved form of brake-shoe.

To the attainment of these ends and the accomplishment of other new and useful objects as will appear, the invention consists in the features of novelty in the construction, combination and arrangement of the several parts, hereinafter more fully described and claimed and shown in the accompanying drawings, illustrating an exemplification of this invention, and in which:—

Figure 1 is a view of the blank from which the holder or shell of the shoe is formed. Figs. 2 and 3, show in perspective views, the front and back of completed holder or shell. Fig. 4 is a sectional side view of a brake embodying my invention. Fig. 5 is a sectional view on line 5—5 of Fig. 4. Fig. 6 is a partial front or face view taken midway between the ends of the holder or shell.

In practice it is found desirable to provide a brake-shoe body of material having greater frictional and wearing qualities than the ordinary cast metallic brake-shoe. I find several vegetable and mineral substances and compositions adapted to this purpose and to use the same it is necessary to provide a holder to retain the body in position, prevent breakage, and to serve as a means of fastening the shoe to the brake-block commonly known as the M. C. B. or Christie head. I am aware that cast metallic brake-shoe holders are not new, but my invention provides an improved brake-shoe incased in a holder struck up or formed of sheet metal, capable of being manufactured, if desired, by automatic machinery and combining lightness of materials with strength and securing economy in manufacture.

1 represents the back of the shell or holder of my brake-shoe with which is formed integrally side members 2 and end members 3. Auxiliary end members 4 are formed integrally with side members 2. Side members 2, end members 3, and auxiliary end members 4 are folded along broken lines as shown in Fig. 1. End members 3 are preferably folded so that their angle in relation to back 1 or to tangent to point midway between the ends of back 1 is less than 90° thus forming means for retaining the brake-shoe body 12, as shown in Fig. 4, within the holder. Side members 2 may also be folded to have an angle of less than 90° with back member to serve as retaining means for the brake-

shoe body although I preferably form them at about 55 right angles to back and provide a number of spikes or barbs 5 which are formed in sides 2 and punched inwardly into the material forming the brake-shoe body thus serving to lock the brake-shoe body in position and retain it. These barbs or spikes are shown at 60 varying distances from the back so as to be effective regardless of the manner in which the shoe body may become worn. Auxiliary end members 4 are preferably bent inwardly along broken lines as shown in Fig. 1 after end members 3 are formed into position. 65 In practice I form these auxiliary end members of sufficient length to approximately meet each other when folded over end members 3 as shown in Figs. 2 and 3. They may, however, be much shorter without seriously detracting from the strength of my holder or 70 shell in resisting end thrust from the brake-shoe body, although it is apparent by reference to Fig. 1 that they may be given the maximum length without loss of material in forming my blank from a strip of sheet metal of the combined width of back and side members. 75

Brake-shoes are commonly given sufficient curvature to enable the braking surface to correspond with the periphery of the wheel. My holder or shell may be given any desired degree of curvature and in order to give the curvature to the sides 2 it is necessary to 80 take care of the excess metal on the short side of the curve which I preferably do by shaping my forming and bending dies to allow the metal to fold inwardly as at 6 in Figs. 2, 3, 5 and 6. These inward folds enter corresponding indentations in the brake-shoe body 85 and serve also to retain the body in position in the holder. As a further means of retaining the brake-shoe body in the holder spikes or barbs similar to those shown in the sides may be punched inwardly from the back member 1 as at 7 in Fig. 4. 90

In Fig. 4 I show a section of my brake-shoe attached to the brake-block or head 20, by the removable retaining key or pin 30. To accomplish this I punch and fold outwardly from the back member the members 8 in both of which the rectangular holes 9 are 95 formed to permit the insertion of the key or pin 30 therein. To provide a bearing for the supporting members 21 of the head or brake-block I punch and fold outwardly from the back the members 10 and 11, the members 10 taking the end thrust and the mem- 100 bers 11 the side thrust. The construction is further strengthened by seating the key 30 in recesses 13 in members 10.

The absence of all welding or riveting processes in the construction of my brake-shoe holder or shell 105 makes it admirably adapted for manufacture from material hot or cold in automatic machines employing only the common forms of punching and forming dies.



I find that the construction I have shown is amply strong to resist the stress of the shoe body against the ends and by dispensing with riveting or welding I simplify the process of manufacture and very materially decrease the cost thereof.

The insertion of the brake-shoe body in my holder or shell may be accomplished in different ways depending chiefly upon the material used in the composition of the shoe. In using wood or other materials previously treated and formed the sides and ends of my holder may be formed around the shoe body using same in whole or in part as the die block, as is fully shown and described in my co-pending application for Letters Patent on process for making brake shoe, Serial No. 348,173, filed Dec. 17, 1906, after which the retaining spikes or barbs in sides and back may be punched inwardly. In the use of composite substances forming the shoe body the material may be forced into the completed holder in a plastic or semi-plastic condition and allowed to form and set under pressure or otherwise as desired.

In order that the invention might be fully understood the details of an embodiment thereof have been thus specifically described, but

What I claim is:—

1. In a brake-shoe the combination of a holder formed from sheet metal embodying a back member, side members and end members, said side members and end members being formed integrally with said back member, supports for said end members formed integrally on said side members and bent inwardly around the exterior of said end members, and a body therein.
2. A brake shoe shell formed from sheet metal embodying a back member, side members and end members formed integrally therewith and folded at an angle to said back member to form side and end walls, and reinforcing auxiliary end members integral with said side members and formed around the exterior of said end members.
3. As an article of manufacture for forming a shell or holder of a brake shoe, a sheet metal blank approximately rectangular in form and having the ends thereof each divided by two diametric slits or cuts forming three tongues or members at each end of the said blank and adapted to form when folded the end walls and the supports therefor in a brake shoe shell.
4. In a brake-shoe the combination of a shell embodying a back member, side members and end members forming side and end walls, said end members convergent with respect to each other and supported by auxiliary members integral with said side members, and a body or filling embraced by said shell.
5. In a brake-shoe the combination of a shell embodying a back member, convergent walls formed integrally therewith, said back member provided with integral means for attachment to brake-block or head, a body or filling embraced by said shell, and a barb or spike formed integrally from said shell and bent inwardly into said body or filling.
6. In a brake-shoe the combination of a holder or shell, embodying a back member, side members and end members formed integrally therewith and folded at an angle to said back member to form side and end walls, said end walls embodying reinforcing auxiliary end members extending inwardly from said side members, and a body substance.
7. In a brake shoe the combination of a holder or shell embodying a back member, side members and end members formed integrally therewith and folded to form side and end walls, said end walls embodying reinforcing auxiliary end members extending inwardly from said side members, means formed integrally with said back member and extending outwardly therefrom for attachment to brake-block or head, and a body substance.
8. In a brake-shoe the combination of a shell embodying a back member, side walls, end walls, and auxiliary supporting end members, means extending inwardly from said

back and walls to retain or lock a body substance therein and a body or filling embraced by said shell.

9. In a brake-shoe the combination of a shell embodying a back member, side walls, end walls, and auxiliary supporting end members means formed integrally with and extending inwardly from said back to retain or lock a body substance therein, and a body or filling embraced by said shell.

10. In a brake-shoe the combination of a shell embodying a back member, convergent walls comprising end members, side members and auxiliary end members integral with said side members, said walls and back member provided with means formed integrally therewith and extending inwardly therefrom to retain or lock a body substance therein and a body or filling embraced by said shell.

11. In a brake-shoe the combination of a shell embodying a back member, side members and end members folded to form walls, indentations or creases extending inwardly from said side members and a body or filling embraced by said shell.

12. In a brake-shoe the combination of a shell embodying a back member convergent walls and indentations or creases extending inwardly from said walls and a body or filling embraced by said shell.

13. In a brake-shoe the combination of a shell embodying a back member, side members and end members forming convergent walls, spikes or barbs extending inwardly from said walls, indentations or creases extending inwardly from said side members and a body or filling embraced by said shell.

14. In a brake-shoe the combination of a shell embodying a back member, end members and side members integral with said back member and folded to form side and end walls, said end walls embodying reinforcing auxiliary end members extending inwardly from said side members, means extending inwardly from said side members to retain a body or filling, and a body or filling embraced by said shell.

15. In a brake-shoe the combination of a shell embodying a back member, end members and side members integral with said back member and folded to form side and end walls, said end walls embodying reinforcing auxiliary end members extending inwardly from said side members, means extending inwardly from said side members to retain a body or filling, means for attachment to a brake-block or head, and a body filling embraced by said shell.

16. In a brake-shoe the combination of a shell formed of sheet metal embodying a back member, side members and end members forming walls, means for locking or retaining a body substance therein, means formed integral with said back member for attachment to brake-block or head embodying a member approximately midway between the ends of said back member and extending outwardly therefrom formed to receive a removable pin or key, members approximately near the ends of said back member formed to resist stress in the direction of both longitudinal and lateral axes of said shoe, and a body or filling embraced by said shell.

17. In a brake-shoe the combination of a shell formed of sheet metal embodying a back member, convergent walls, members formed integral with said back member cut and folded outwardly therefrom embodying supporting members near the middle portion thereof adapted to take a removable piece or key, and supporting members near the ends thereof, and a body or filling embraced by said shell.

18. As an article of manufacture for forming a shell or holder of a brake-shoe, a sheet metal blank approximately rectangular in form the ends thereof divided by V shaped slits or cuts forming end members and auxiliary supporting end members.

19. As an article of manufacture for forming a shell or holder of a brake-shoe, a sheet metal blank approximately rectangular in form the ends thereof divided by slits or cuts approximately parallel to the sides forming end members and auxiliary supporting end members and having the members 8, provided with the rectangular holes, cut on three sides for folding on the fourth sides, and the members 10 and 11 cut on three sides for folding on the fourth sides.

20. As an article of manufacture for forming a shell or



holder of a brake-shoe, a sheet metal blank approximately rectangular in form, the corners thereof cut away at an angle to sides and ends, the ends thereof divided by V shaped slits or cuts forming end members and auxiliary end members, the rectangular members 5, 8, 10 and 11 cut on three sides for folding on the fourth sides and the members 8 provided with rectangular holes 9.

21. As an article of manufacture for forming a shell or holder of a brake-shoe, a sheet metal blank approximately rectangular in form, the ends thereof divided by slits or cuts approximately parallel to the sides forming end members and auxiliary supporting end members and holes near the center of the blank adapted to receive a retaining key or pin when the material immediately surrounding the said holes is formed outwardly into position.

22. As an article of manufacture for forming a shell or holder of a brake-shoe, a sheet metal blank approximately rectangular in form, the corners thereof cut away at an angle to sides and ends, the ends thereof divided by slits or cuts approximately parallel to the sides forming end members and auxiliary supporting end members and holes near the center of the blank adapted to receive a retaining key or pin when the material immediately surrounding the said holes is formed outwardly into position.

23. As an article of manufacture a shell or holder of a brake-shoe formed from a blank, said blank having slits in its ends dividing the ends into main end members and reinforcing end members and side walls, the main end members being turned at an angle to the plane of the blank along a line of fold extending between the inner ends of its ends dividing the ends into main end members and reinforcing end members and side walls, the main end members being turned at an angle to the plane of the blank each on a line of fold extending from the inner end of the slit at one

end of the blank to the inner end of the diametric slit at the opposite end of the blank.

24. As an article of manufacture a shell or holder of a brake-shoe formed from a blank, said blank having slits in its ends dividing the ends into main end members and reinforcing end members and side walls, the main end members being turned at an angle to the plane of the blank along a line of fold extending between the inner ends of the slits, said reinforcing end members being turned at an angle to the side walls of the blank on lines of fold extending from the inner ends of the slits outwardly, and said walls being turned at an angle to the plane of the blank each on a line of fold extending from the inner end of the slit at one end of the blank to the inner end of the diametric slit at the opposite end of the blank.

25. In a brake-shoe, the combination of a sheet metal back member, means on one side thereof for attaching thereto a body member or filling, means on the reverse side thereof adapted to attach the same to a brake-block or head, said means embodying means approximately midway between the ends of said back member adapted to receive a locking key or pin, means near the ends of said back member and folded outwardly therefrom adapted to take side thrust and means between said last mentioned means and the ends of said back member adapted to take end thrust, and a recess on said last mentioned means adapted to furnish a seat for said locking key or pin and support it against lateral movement.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 12th day of June, A. D. 1906.

FREDERICK K. CASWELL.

Witnesses:

J. H. JOCHUM, Jr.,

A. L. SPRINKLE.