

(No Model.)

3 Sheets—Sheet 1.

C. H. EMERSON.
COASTING TOBOGGAN.

No. 406,892.

Patented July 16, 1889.

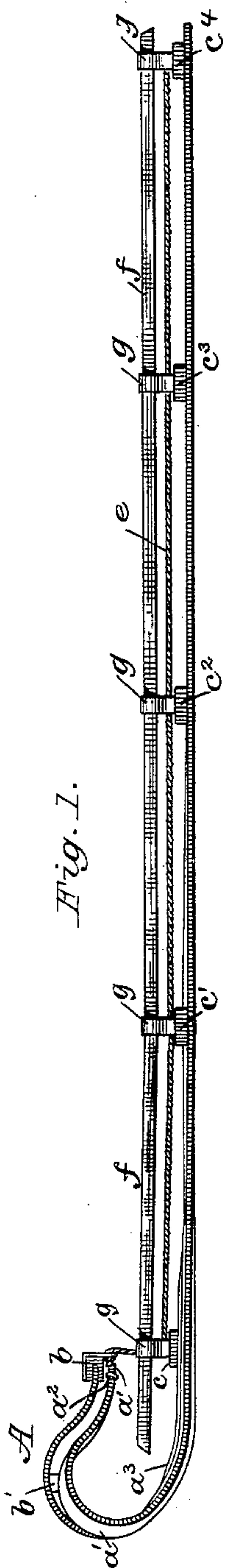


Fig. 1.

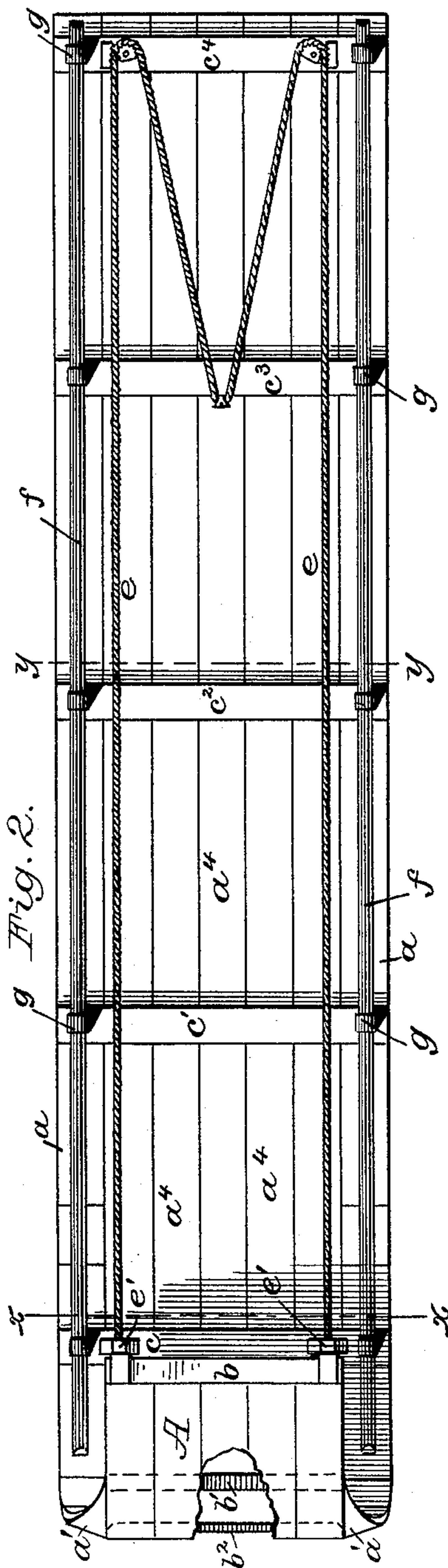


Fig. 2.

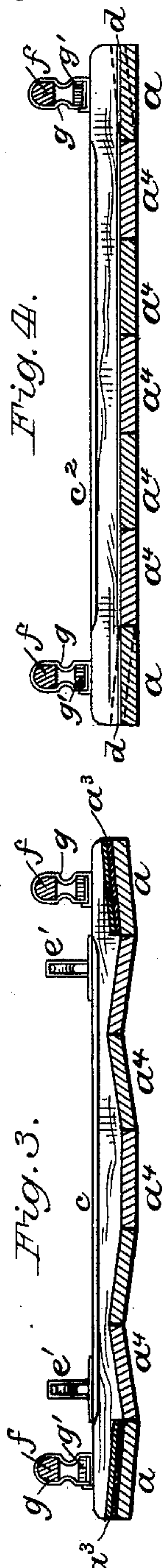


Fig. 3.

Fig. 4.

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(No Model.)

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Fig. 5.

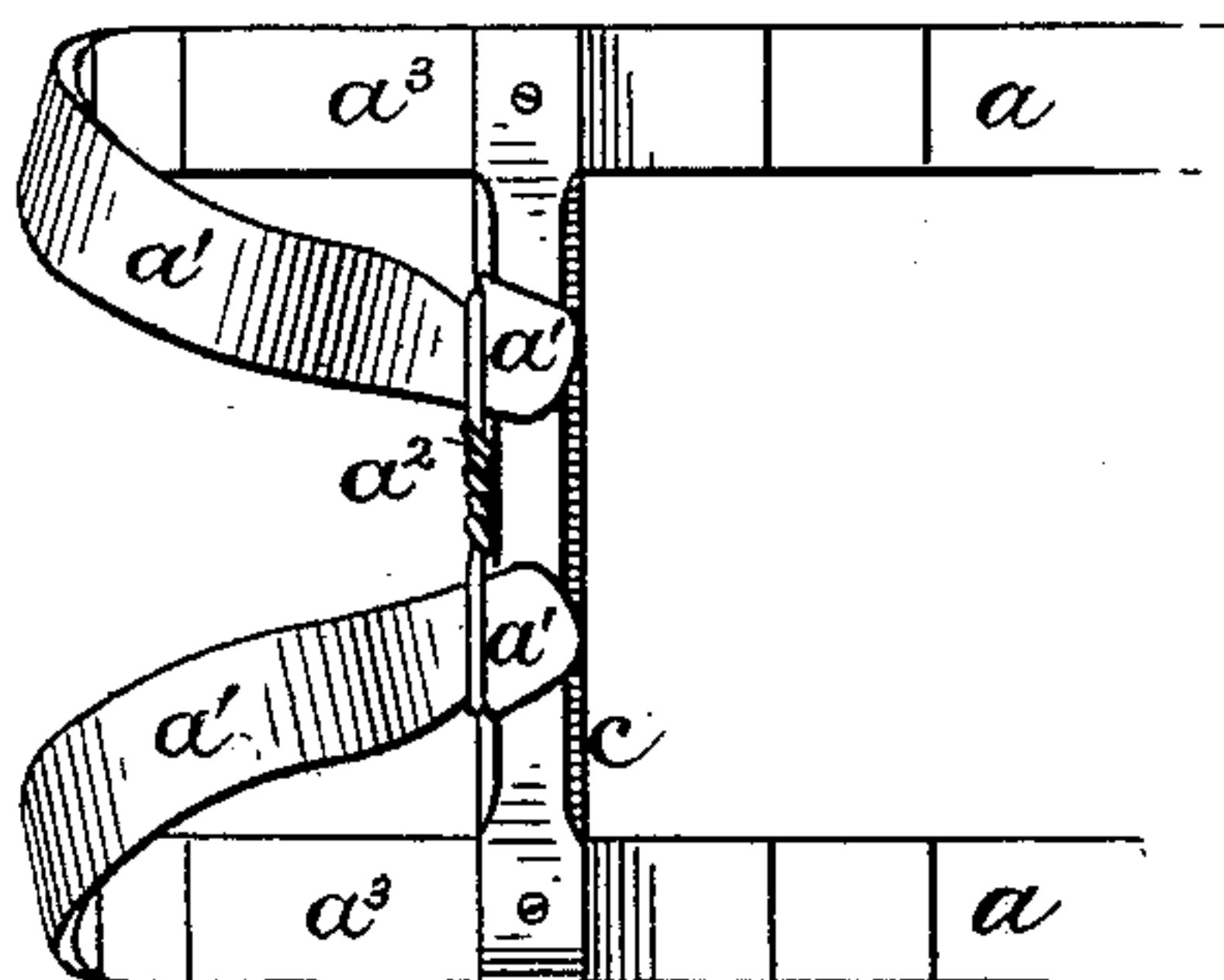


Fig. 6.

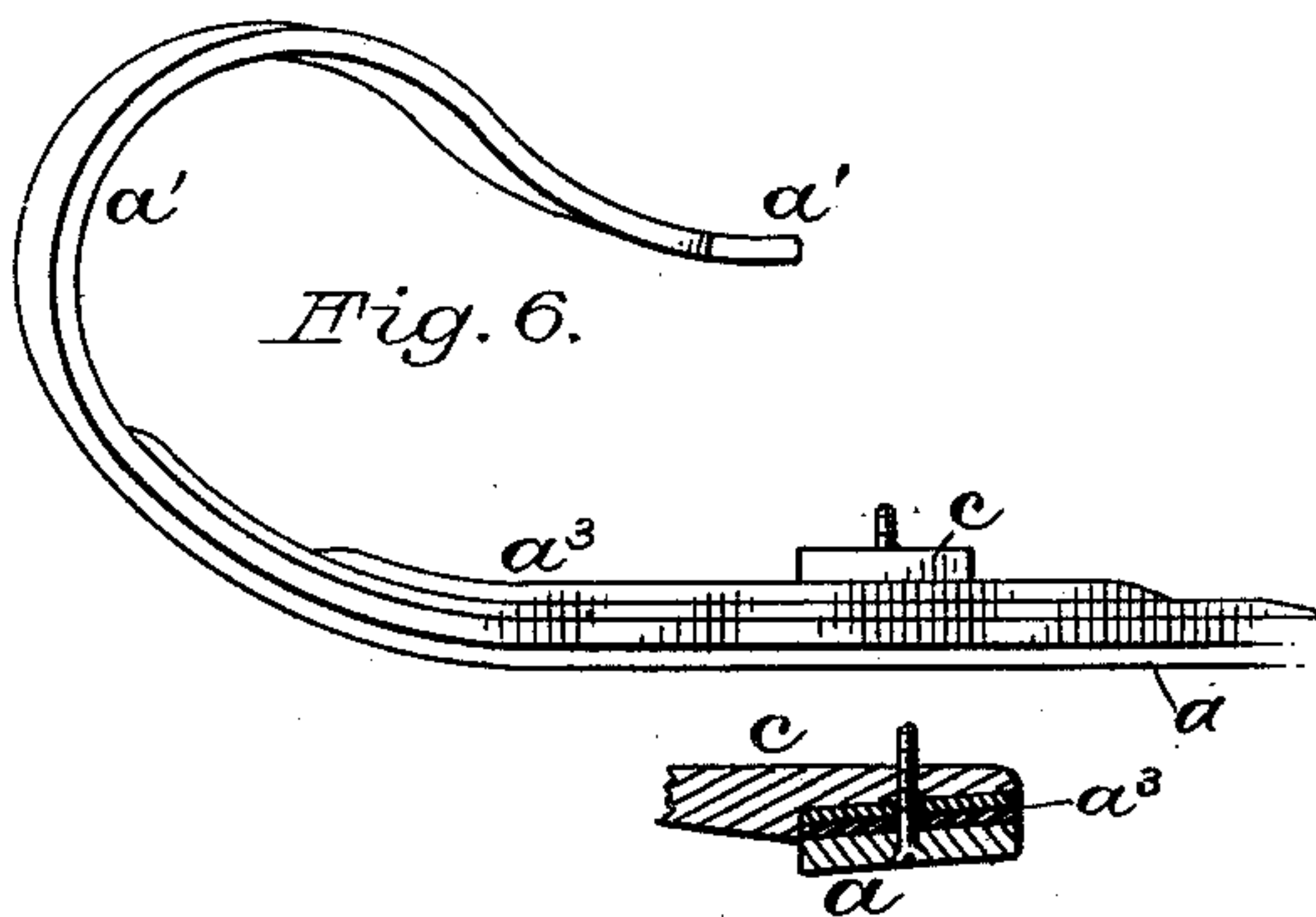


Fig. 7.

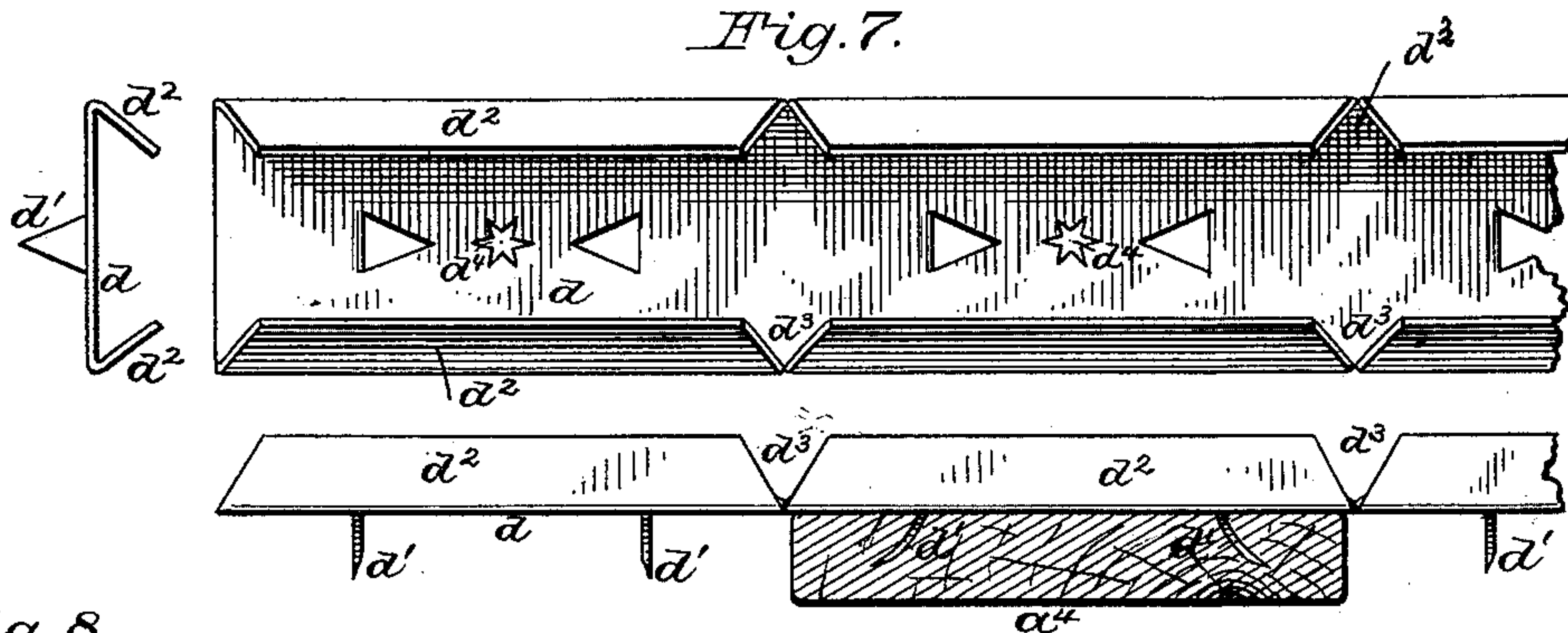


Fig. 8.

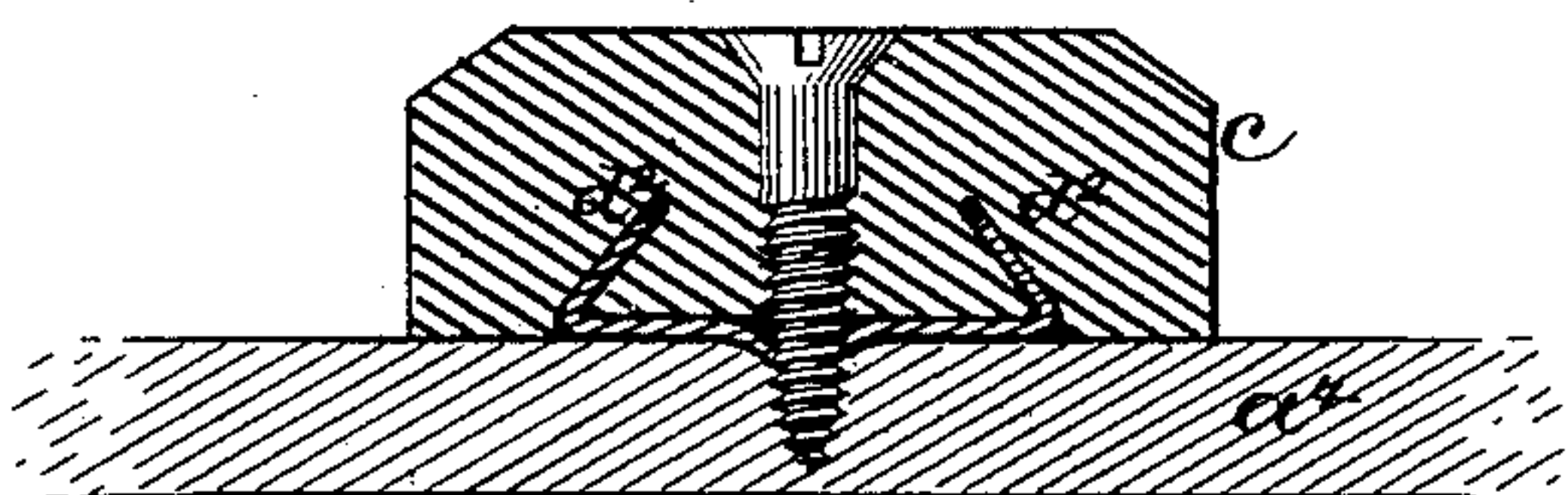
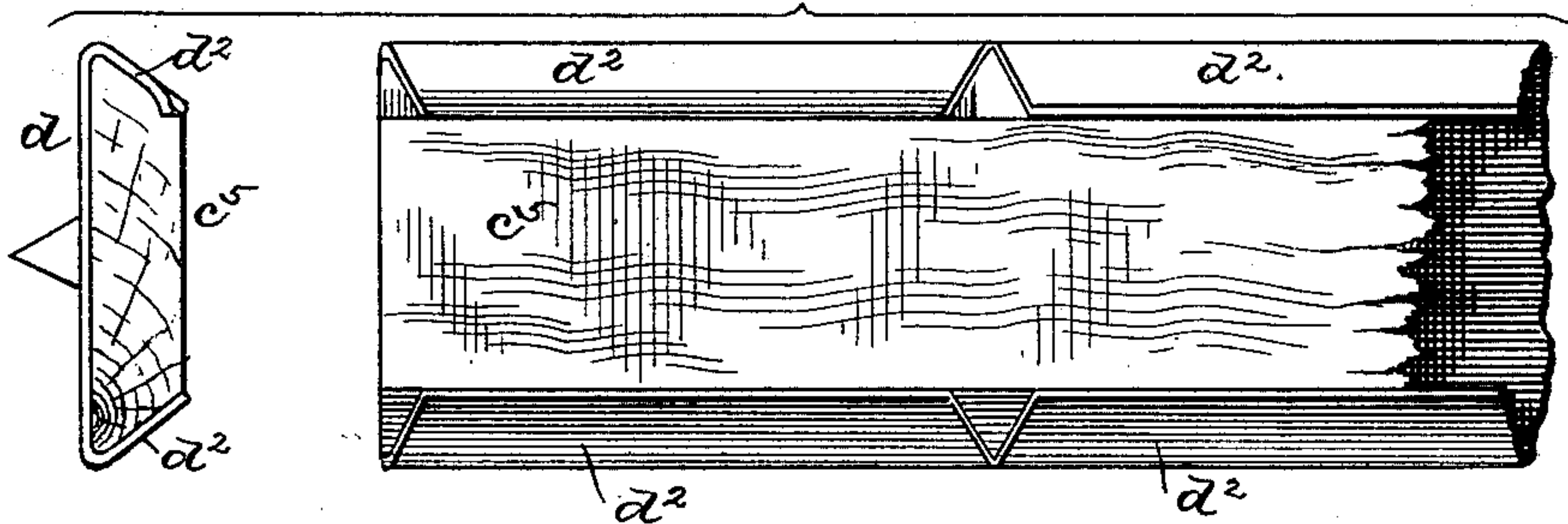


Fig. 9.



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Fig. 10.

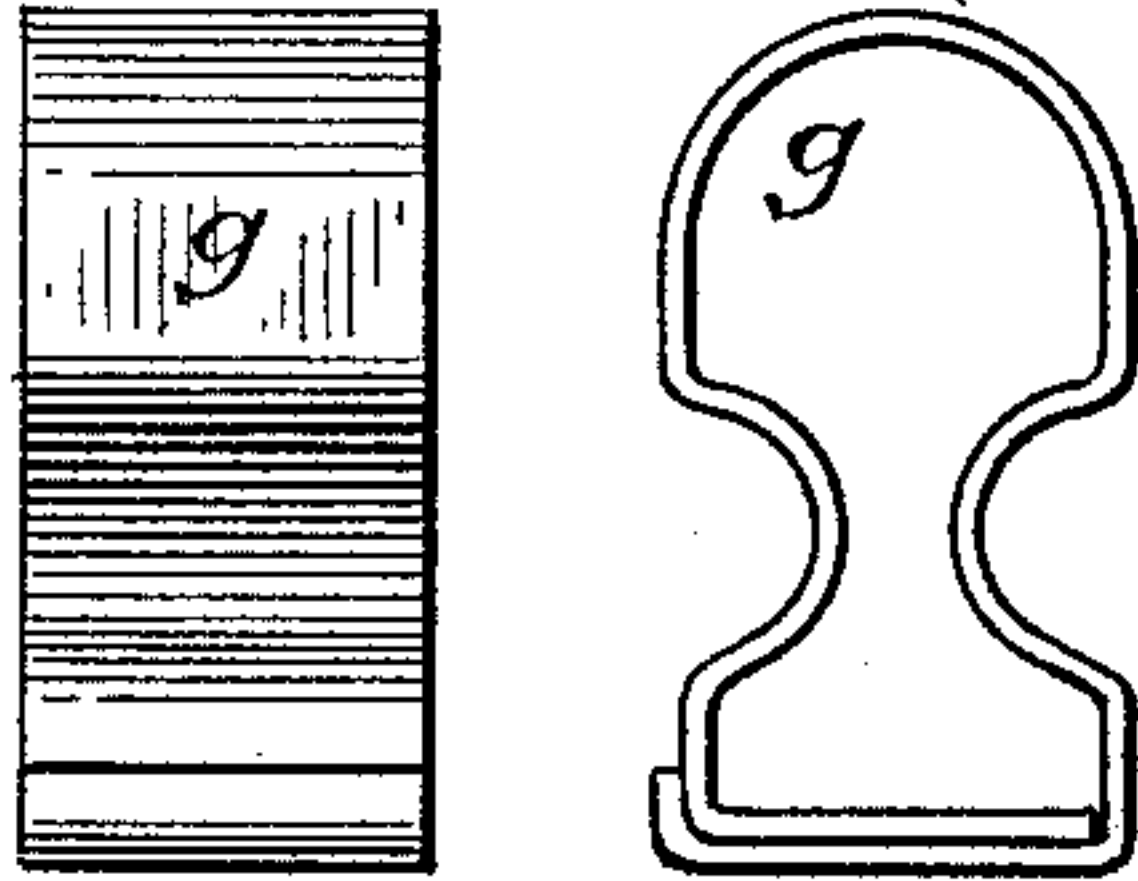


Fig. 11.

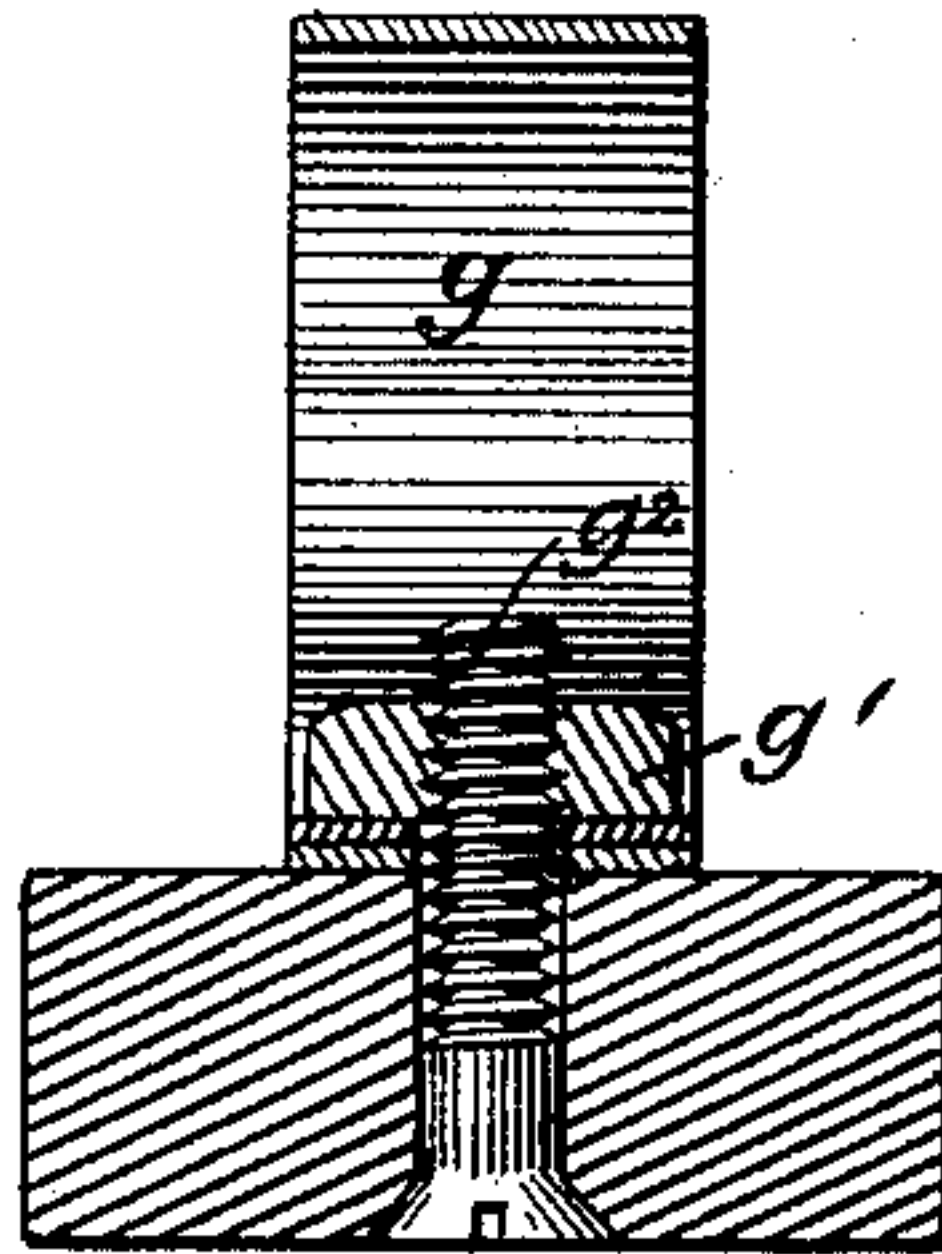


Fig. 12.

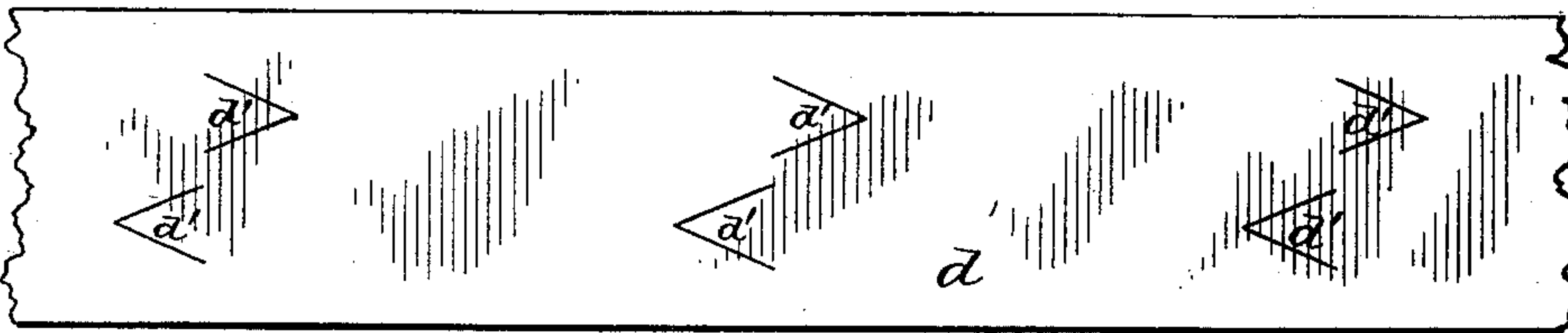


Fig. 13.

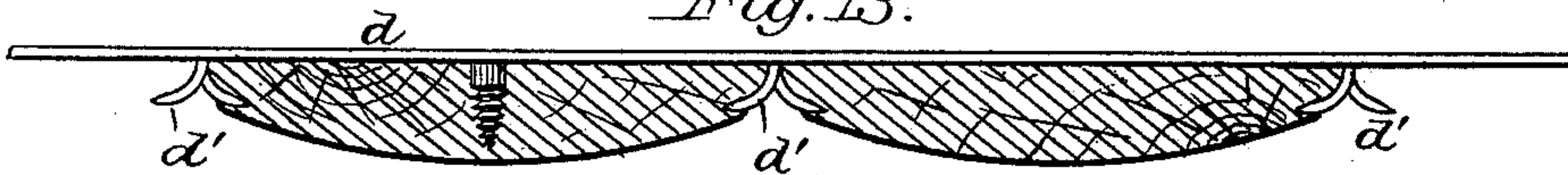


Fig. 14.

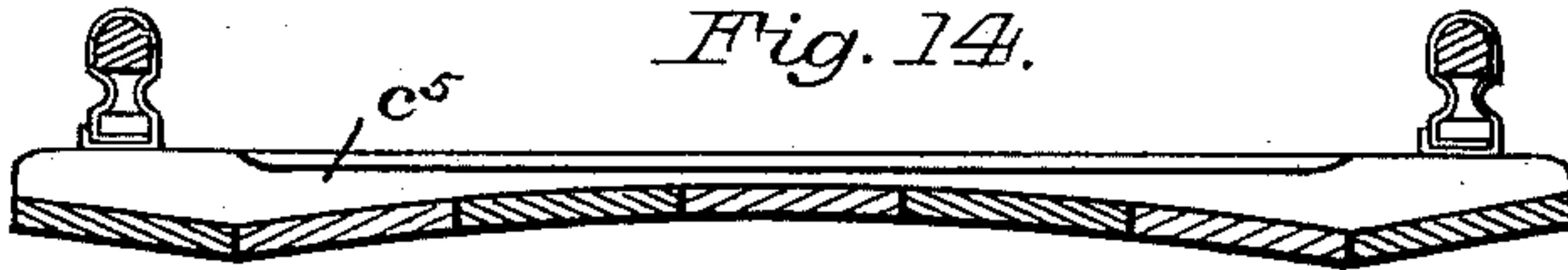


Fig. 16.

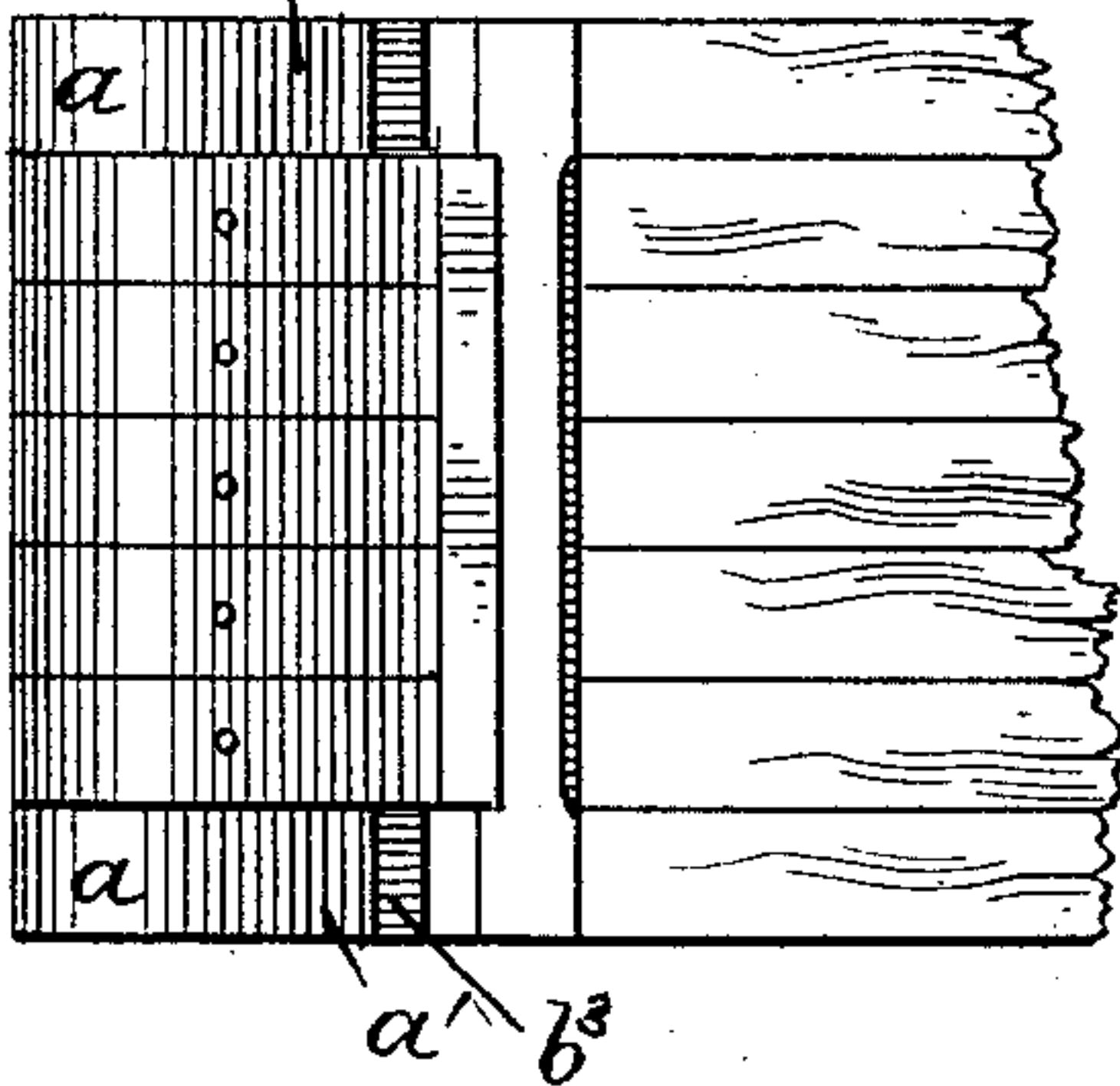


Fig. 15.

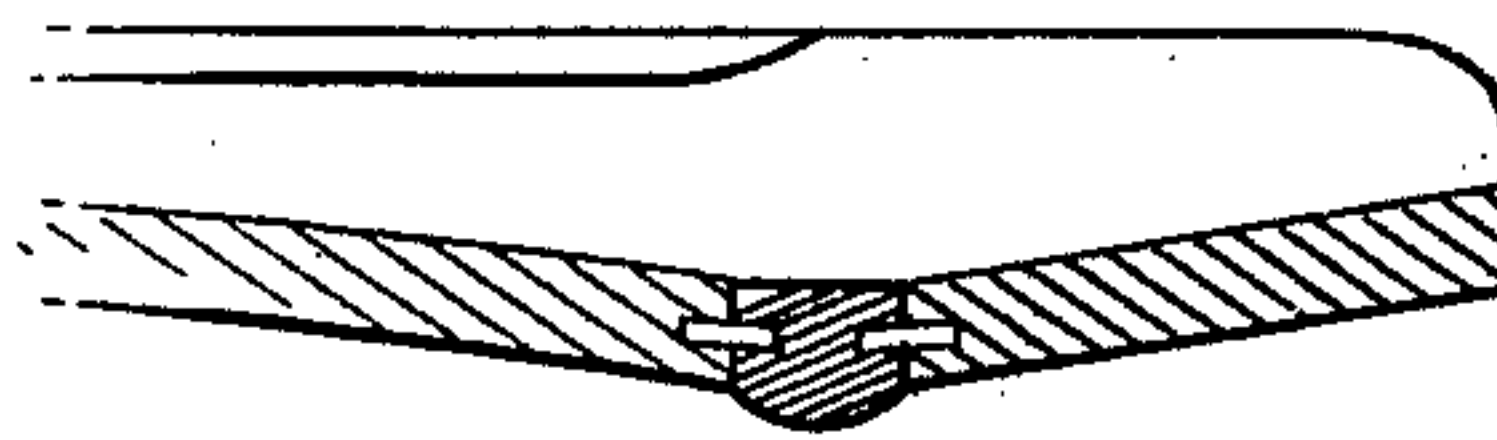
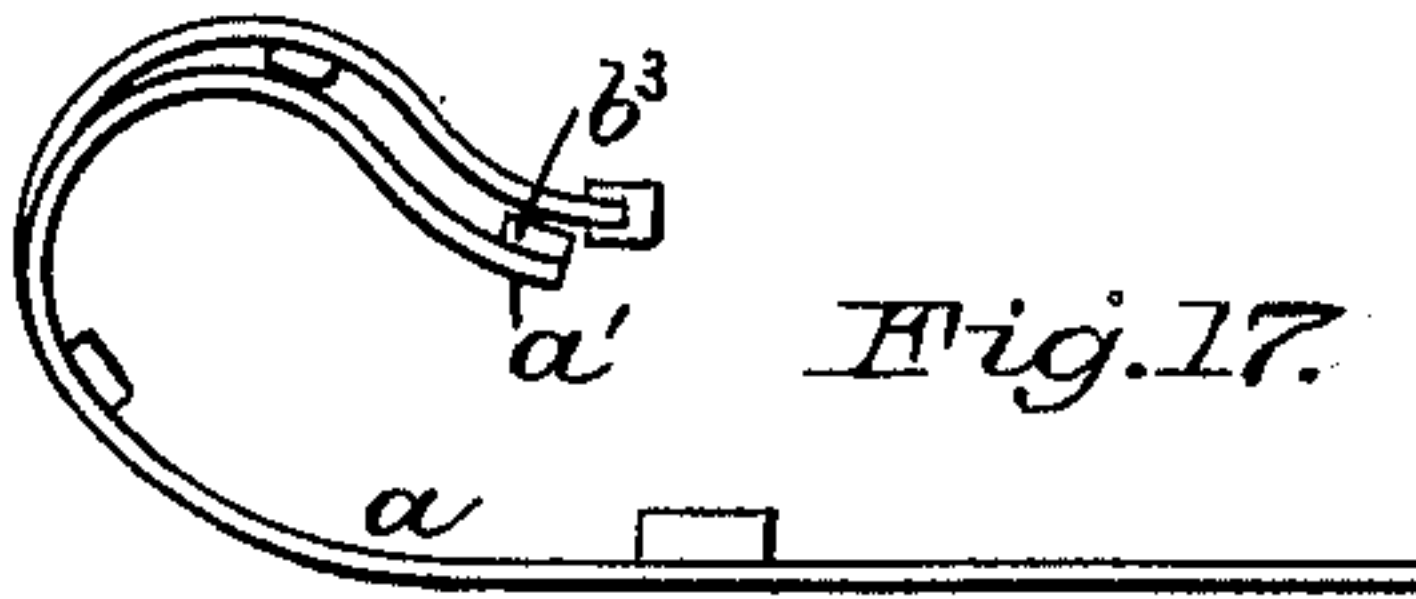


Fig. 17.



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UNITED STATES PATENT OFFICE.

CHARLES H. EMERSON, OF YONKERS, NEW YORK.

COASTING-TOBOGGAN.

SPECIFICATION forming part of Letters Patent No. 406,892, dated July 16, 1889.

Application filed January 20, 1887. Serial No. 224,888. (No model.)

To all whom it may concern:

Be it known that I, CHARLES H. EMERSON, of Yonkers, in the county of Westchester and State of New York, have invented certain Improvements in Coasting-Toboggans; and I do hereby declare that the following specification, taken in connection with the drawings furnished and forming a part of the same, is a clear, true, and complete description of my invention.

It is well known in the use of slat-bottomed toboggans that a great majority of breakages occur at the front bent ends of the side slats at either side of the hood, and certain features of my invention have for their object the reduction of the liability of such breakages to a minimum. To this end I have for the first time provided for the free resiliency of the bent ends of said side slats by not confining them to the cross-bars in the hoods, and, further, in coupling said curved ends together, so that on receiving such a blow or shock as would be liable to result in their injury if secured to hood cross-bars, as heretofore, they can yield instead of breaking. For obtaining the best results I also employ between the front cross-bar and each of the two side slats one or more re-enforcing leaves parallel with the slat and conforming to its curve or bend, so that heavy shocks borne by the said curved ends can be still more successfully resisted. Either of these two features, when separately employed, possesses practical value; but both should be used in first-class toboggans. In the manufacture of slotted toboggans it would involve a serious waste of stock to have the slats thicker beneath the front cross-bar than at other portions thereof, and by the use of my re-enforcing leaves for all of the slats a specially resilient but strong light hood can be afforded at low cost.

Another portion of my invention has for its object increased facility in steering; and this I accomplish by means of a peculiar front bearing-surface below the front cross-bar, the latter being for the first time longitudinally arched or convex on its under side, so that when the slats are applied thereto they afford a corresponding bearing-surface. This feature of construction enables the head of the toboggan to be readily swerved to and fro

and as readily maintained in a straight course. If all the cross-bars be thus made convex on their under sides, a very desirable toboggan will be produced, although for obtaining the best results the rear cross-bars should be straight.

Another feature of my invention consists in straining the hood by means of cords, which extend downward from the edge of the hood and rearward to suitable fastening devices on the rear cross-bar, thus increasing the resiliency of the toboggan, and also enabling said cords to be utilized as cushion-binders, and still further as handles, the usual hand-rails heretofore employed then serving to protect the hands against abrasive contact while on a slide. Cords have heretofore been used as handles, and have been extended from the hood to the front cross-bar, to which the cord was secured, and thence from cross-bar to cross-bar and secured to each. My straining-cords differ from said handle-cords in that they are adjustable straining-cords, and are under tension throughout their length, thus providing for a springing effect by the cords from the rear cross-bar to the hood.

Another feature of my invention consists in the combination, with a cross-bar and the bearing-slats, of an interposed flexible metal plate. In its best form said plate is provided with integral spurs, by means of which the several slats are united to said plate, and it is also provided with flanges, by means of which the slats and plate coupled together may be in turn united to a cross-bar.

Another feature of my invention consists in a novel hand-rail holder or standard composed of bent sheet metal and combined with a bolt and nut, by which it is not only maintained in proper form but securely fastened to a cross-bar.

After fully describing these and certain other minor improvements in connection with the drawings, the features deemed novel will be specified in the several clauses of claim hereunto annexed.

Referring to the drawings, Figures 1 and 2 illustrate in side and top views a toboggan embodying my present improvements. Fig. 3 illustrates the same in cross-section at line *x*, Fig. 2. Fig. 4 illustrates the same in cross-

section at line *y*, Fig. 2. Fig. 5, in top view, illustrates the front cross-bar and the front portions of the two side slats separately from the adjacent parts. Fig. 6, in two views, illustrates one end of the front cross-bar, a side slat, and its re-enforcing leaves. Fig. 7 illustrates in top, edge, and end views a metal locking-plate which is interposed between the cross-bar and the slats, as shown in Fig. 4, and it also shows a slat in cross-section coupled thereto. Fig. 8 is a cross-sectional view of said plate and a cross-bar thereon, and also a longitudinal section of an underlying bearing-slat, as united in a toboggan. Fig. 9, in top view and cross-section, illustrates said plate with a cross-bar of another form. Fig. 10, in side and edge views, illustrates one of my novel hand-rail standards or posts. Fig. 11 illustrates the same as applied to a cross-bar, both being shown in section. Figs. 12 and 13 illustrate a modification of the locking-plate of Fig. 7 applied to the edges of slats having rounded bearing-faces. Fig. 14, in cross-section, illustrates a toboggan having a cross-bar arched or concave on its under side. Fig. 15 illustrates a narrow bearing-slat interposed between an inclined side slat and the adjacent wide slat. Figs. 16 and 17, in top and side view, illustrate the front end of a toboggan in which the bent ends of the side slats are not extended beneath the hood, but are otherwise in accordance with my invention.

I will first describe the novel features in and adjacent to the hood A of the toboggan. The two side bearing-slats *a* at their front ends *a'* are bent inward toward each other, and are coupled together at their extreme ends by means of a separate light bar, or a thong or link *a*², beneath the upper central portion of the hood, and they are wholly disconnected from the usual hood cross-bars *b*, *b'*, and *b*², and hence on receiving a shock either bent end *a'* is free to yield, and by springing to usually escape breakage. For obtaining the best results the one or more novel re-enforcing leaves *a*³ are interposed between the front cross-bar *c* and the side slats. Said leaves may be made of thin spring metal or of hard springy wood, and of various lengths, after the manner of a leaf-spring, and they are set or bent at their front ends, so as to conform with the inner surfaces of the bent ends *a'* of the side slats.

The central bearing-slats *a*⁴ are, as heretofore, firmly secured to the hood cross-bars *b*, *b'*, and *b*², as clearly indicated. All of the bearing-slats are preferably of uniform thickness and flat-surfaced, although slats of different thicknesses and with convex bearing-surfaces can be employed without in any manner departing from my invention.

The cross-bars *c* and *c'* are novel in construction, in that on their under sides they are concave or arched at each side of their centers, so that when the bearing-slats *a*⁴ are secured thereto they present a crosswise bearing-surface corresponding to the under sur-

face of the cross-bars, as clearly indicated in Fig. 3. I prefer that the contours of the cross-bars *c* and *c'* at their under sides should differ slightly, the front bar *c* at its ends being slightly inclined upward, and the bar *c'* being straight or nearly so at its ends, thus providing for a gradual twist of the side slats.

The cross-bars *c*², *c*³, and *c*⁴ are, as shown in Fig. 4, straight on their under sides, and hence when the bearing-slats are secured thereto they present a flat transverse bearing-surface, thus affording a toboggan having its rear bearing-surface flat transversely and longitudinally and a front bearing-surface straight longitudinally in three lines and transversely curved at each side of the longitudinal center. The side slats *a* therefore lie flatly throughout the rear half of their bearing-surface, but slightly twisted at their front portions, and some of the central slats are also more or less twisted and under a torsional strain, all of which contributes greatly to the desired resiliency of the toboggan. This combination of straight and curved cross-bars, with slats which present corresponding bearing-surfaces, is specially desirable; but I have obtained highly satisfactory results by having all of the cross-bars curved, and hence I do not restrict myself to the preferred arrangement shown.

The union of the convex cross-bars to the bearing-slats can be variously accomplished without departure from my invention. I prefer, however, to use means which will not deface the bearing-surface of the two side slats and the middle slat, but the two slats at each side of the center can be secured by means of screws or bolts passing upward into the cross-bar without serious objection, because of the retired plane occupied by the lower faces of said slats, as clearly indicated in Fig. 3. The cross-bars *c*², *c*³, and *c*⁴ should, however, be united to the bearing-slats by means which will leave the bearing-faces of the slats as nearly intact as possible, and I have devised a novel means for coupling them, which is economical and effective and affords a high degree of resiliency. Between each of these cross-bars and the underlying bearing-slats I interpose a locking-plate *d*, of thin hard metal, provided with a series of integral puncturing-studs *d'*, having properly-beveled points, so that when arranged in two or more pairs for each slat and forced into the slats said studs will serve as securing devices by which said slats and plate are reliably connected. To secure a uniform and desirable behavior of the studs in entering the slats, the latter should first be properly stabbed with a similarly-pointed tool to a sufficient depth and in a proper direction. This mode of coupling the slats together is novel and of value, regardless of how the cross-bars may be applied and secured—as, for instance, by screws or bolts; but I further utilize said plate by providing thereon at each side or edge a flange or flanges *d*², bent inwardly at

an angle, so that a cross-bar provided on its under side with longitudinal grooves or having sides of a corresponding angle can be forced endwise over the plate, said flanges entering and occupying said grooves, as shown in Fig. 8, thereby securing a reliable but flexible union of said bar with said plate and slats. For obviating rigidity, said flanges are notched at intervals, as at d^3 , thus in substance making a series of short flanges. For confining a cross-bar against endwise movement, a single screw need only be used, or one may be employed over each side slat. For accommodating such a screw or screws, the plate d is provided with holes d^4 , and for obtaining the best results these holes should be slightly smaller than the screws, and provided with points or slits, as shown, so that when a screw has been forced home it will be securely locked against direct withdrawal, and its tendency to loosen by rotation reduced to a minimum. A very thin light ungrooved cross-bar c^5 may be used with this plate d , in which case one portion of the flange d^2 may be forced into a shallow recess in the bar, thus securing the latter against longitudinal movement, as illustrated in Fig. 9, or a screw or nail driven into the bar within either notch in the flange will serve the same purpose.

When the well-known curved-faced bearing-slats are employed, the stud d' need not be puncturing-studs, but, as illustrated in Figs. 12 and 13, said studs may engage with the edges of the slats, which are recessed to afford flush surfaces and to house the tips of the securing-studs. In this form each slat is well embraced by each pair of the studs d' , but without undue rigidity.

When screws are used, extending as heretofore downward through the cross-bars into the slats, there is a well-known tendency for the screws to loosen and withdraw because of their short length and the twisting strains to which the cross-bars and slats are subjected on a slide. With my flexible locking-plate provided with the flanges for engaging with the cross-bar and with holes for receiving screws for securing the slats satisfactory results will accrue, even without the slat-engaging stubs, because the screws will all be locked by the cross-bar, and the thin flexible plate being engaged by the screws only at their heads they can only be subjected to a minimum of displacing strain. So, also, if my locking-plate should have no cross-bar flanges d^2 but be provided with the slat-securing spurs applied in either of the forms shown, good results will accrue from its use, because then a very thin flexible cross-bar can be used, and said bar need only be secured in position, the slat-binding function being wholly performed by the locking-plate. It is also true that the use of a flexible-metal locking-plate without either the flanges or the slat-engaging spurs will afford fairly-desirable results, because if the slats are se-

cured thereto only by means of screws the latter will be practically freed from the liability of withdrawal and screws passing through the cross-bar into said plate when provided with the notched holes will also be firmly held against displacement.

The straining of the hood is accomplished by means of the cords e , which are attached to the outer hood cross-bar b , and thence pass downward through eyes e' , preferably provided with pulleys, and thence rearward parallel with the hand-rails f to the rear cross-bar c^4 , to which they may be secured by means of any suitable adjusting devices which will permit the cords to be conveniently drawn taut and secured under tension. A simple screw-eye will serve a good purpose, requiring only a slip-knot in the cord for fastening; but I show the well-known cam-shaped pulley with a serrated face and a serrated clamping-block, and the two cords are also here shown in one piece carried forward and hooked upon a pin in the edge of a cross-bar. The springiness of the hood and the well-strained cords add greatly to the resiliency of the toboggan. Said cords also serve as holders for a cushion, the latter being placed beneath them and thus held in place, and they also serve as handles, and being at the inner sides of the usual hand-rails f the latter in a measure protect the hands of the riders while on a slide.

The hand-rails f are provided with novel standards or posts g , which, instead of being composed of cast metal, involving considerable expense in finishing, are composed of a strip of sheet metal bent to form a loop conforming to the shape of the hand-rail, and also so bent as to develop a strong base and to embrace therein a nut g' , which is engaged by a bolt g^2 , which preferably extends upward through the cross-bar only, or it may also serve as a binder for the underlying slat. This combination of hand-rail, sheet-metal post, bolt, nut, and cross-bar affords a neat and attractive finish and great strength, with but little weight of metal and at low cost. The hand-rail here shown is flat on its under side, as disclosed in my application for Letters Patent filed December 13, 1886, Serial No. 221,434, and is specially adapted to use with such handles as were devised by me and disclosed in my said application; but it is obvious that the sheet-metal posts can be used with other forms of hand-rail with desirable results.

Referring now to that portion of my invention which includes the convex cross-bars, it is to be understood that I do not restrict myself to the double convexity already described, as the arched cross-bars illustrated in Fig. 14 can be employed with highly satisfactory results. The cross-bar c^5 is concave or arched centrally; but it has at each end a flat surface for the side slats. In this connection I will now specially refer to the novel feature involved in the inclined lower surfaces at the

ends of the cross-bars, or in having the side slats constructed and applied to the bars, so as to present outer surfaces approximately inclined, in connection with intermediate longitudinal and lateral bearing-surfaces, which enable the toboggan to have a firm general bearing on a slide, as illustrated in Figs. 3, 14, and 15, and also in Fig. 4, in connection with the inclined dotted lines on the cross-bar. On all slides the tracks are snow-banked more or less at each side, and the feature of construction last referred to greatly facilitates keeping a toboggan from riding the bank or plowing into it, whether controlled by inexperienced or experienced persons, and it also renders steering easy. If the toboggan crowds against a bank, the adjacent inclined side bearing-surface forces the toboggan toward the center of the slide and without any unduly destructive abrasion. If the bottom of the toboggan be convex laterally instead of concave, as shown, or instead of having the intermediate bearing-surfaces, the results sought will not accrue, because as one side of the toboggan rises in crowding upon a bank the other side drops or rocks, resulting either in overriding the bank or capsizing the toboggan, especially if moving at high speed.

As shown in Fig. 15, it is generally desirable to insert between the inclined side slat and the adjacent wide slat a narrow bearing-slat composed of fine hard wood, which can be conveniently secured to the two adjacent slats by means of dowel-pins. It is also to be understood that the re-enforcing leaves a^3 can be used successfully with side slats having bent ends which do not pass beneath the central portion of the hood, and also that such bent ends can be coupled together without their extending beneath the hood—as, for instance, as shown in Figs. 16 and 17, wherein the front ends a' are bent as in ordinary toboggans, but are disconnected from the hood cross-bars, and are coupled together by a tie-bar b^3 beneath the main portion of the hood, thus permitting either end a' to be freely bent under a shock or blow and enabling each to assist the other in resisting breakage.

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

1. In a coasting-toboggan, side slats bent at their front ends and disconnected from the cross-bars in the hood, substantially as described.

2. In a coasting-toboggan, side slats bent at their front ends, disconnected from the cross-bars in the hood and coupled together by ties or links beneath the central portion of the hood, substantially as described.

3. In a slat-bottomed coasting-toboggan, the combination, with the bent ends of the slats which form the hood, of the front cross-bar, and re-enforcing leaves interposed between

said cross-bar and the slats and extending forward within the hood, substantially as described.

4. In a slat-bottomed coasting-toboggan, the combination, with the slats, of cross-bars having concave under surfaces to which the slats are secured, substantially as described.

5. In a slat-bottomed toboggan, the combination, with the slats, of the cross-bars having concave under surfaces and the cross-bars having straight under surfaces, substantially as described.

6. In a slat-bottomed toboggan, the combination of cross-bars having upwardly-inclined under surfaces at their outer ends, side slats secured to said inclined surfaces and presenting an upwardly-inclined bearing-surface, and intermediate slats which afford a general lateral and longitudinal bearing-surface for the toboggan, substantially as described, and for the purposes specified.

7. In a slat-bottomed toboggan, the combination, with the hood, of adjustable straining and cushion-holding cords extending from the edge bar of said hood downward and thence to the rear cross-bar and adjustably secured thereto, substantially as described.

8. In a slat-bottomed toboggan, the combination, with the slats and a cross-bar, of a flexible plate interposed between said bar and the slats and united thereto, substantially as described.

9. In a slat-bottomed toboggan, the combination, with the bearing-slats and a cross-bar, of an interposed metal locking-plate provided with integral spurs for engaging with the slats and binding them together and to said plate, substantially as described.

10. In a slat-bottomed coasting-toboggan, the combination, with the slats and a cross-bar, of a flexible plate interposed between said bar and slats, secured to said slats, and provided with flanges which engage with and secure said cross-bar to said plate, substantially as described.

11. In a slat-bottomed coasting-toboggan, the combination, with the slats and a cross-bar, of a flexible plate interposed between said bar and the slats and provided with slat-securing spurs and also with flanges for engaging with and confining said cross-bar, substantially as described.

12. A toboggan hand-rail post composed of sheet metal bent to form a loop for receiving said rail, in combination with a cross-bar, a nut embraced within the base of said post, and a bolt for securing the post to said cross-bar, substantially as described.

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