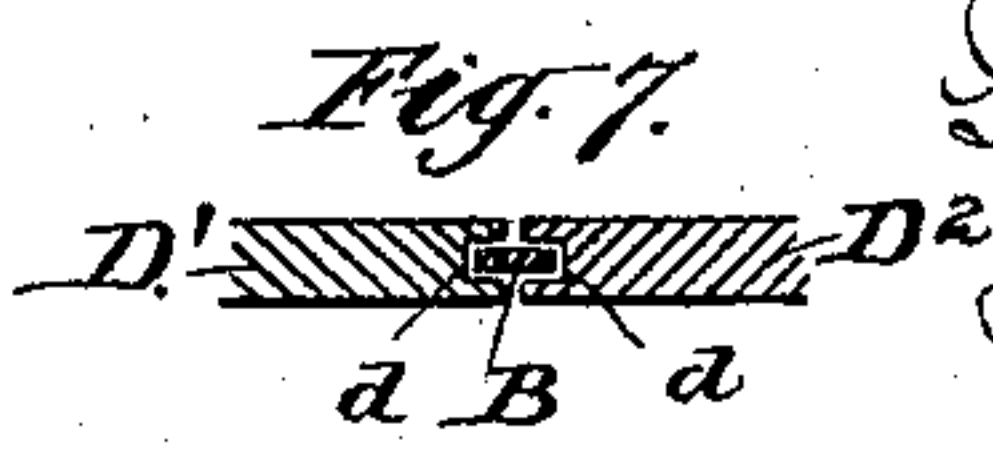
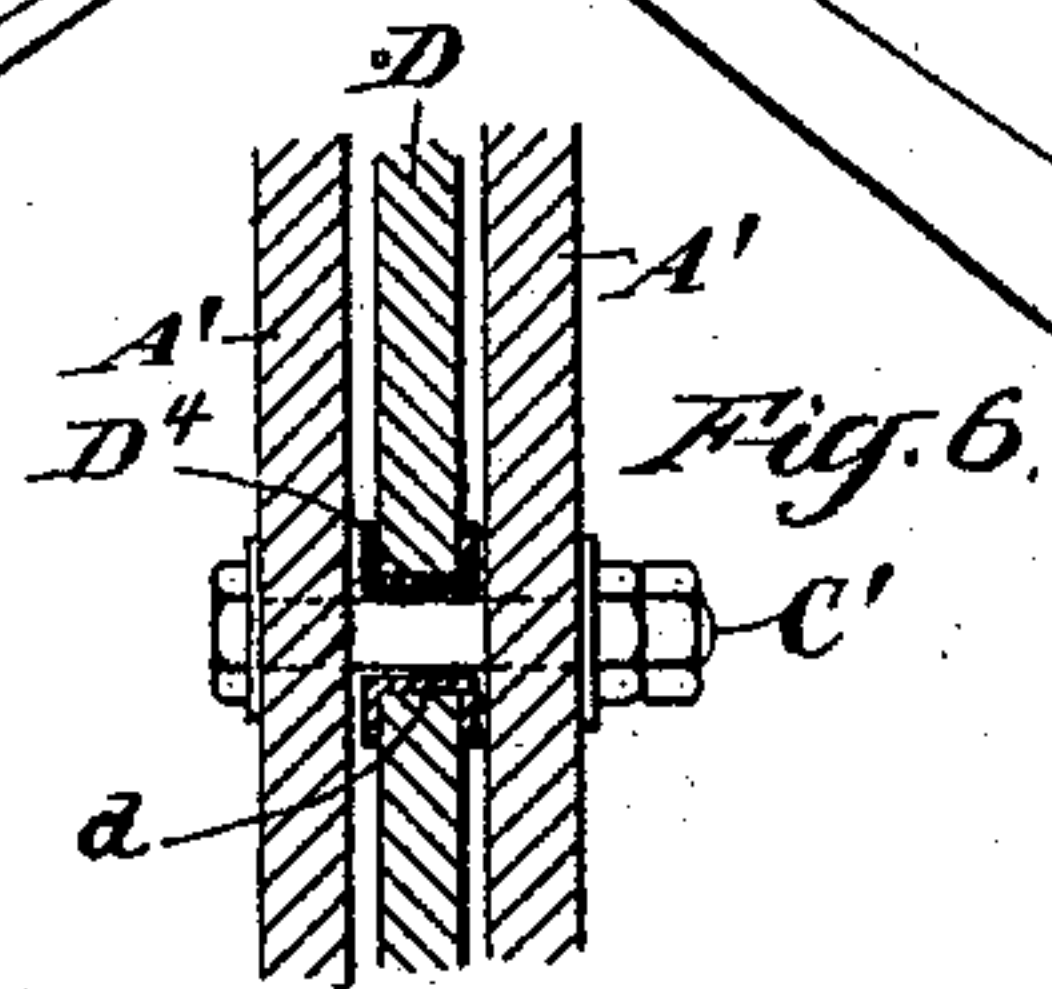
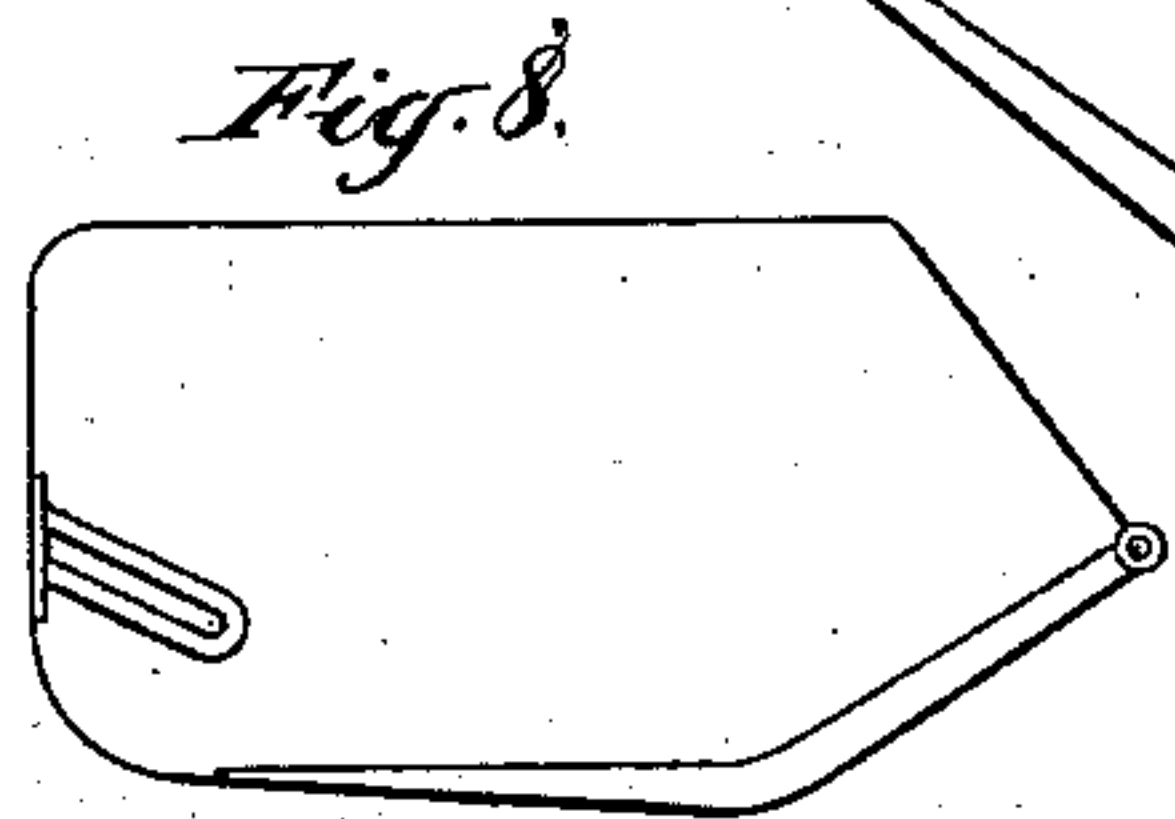
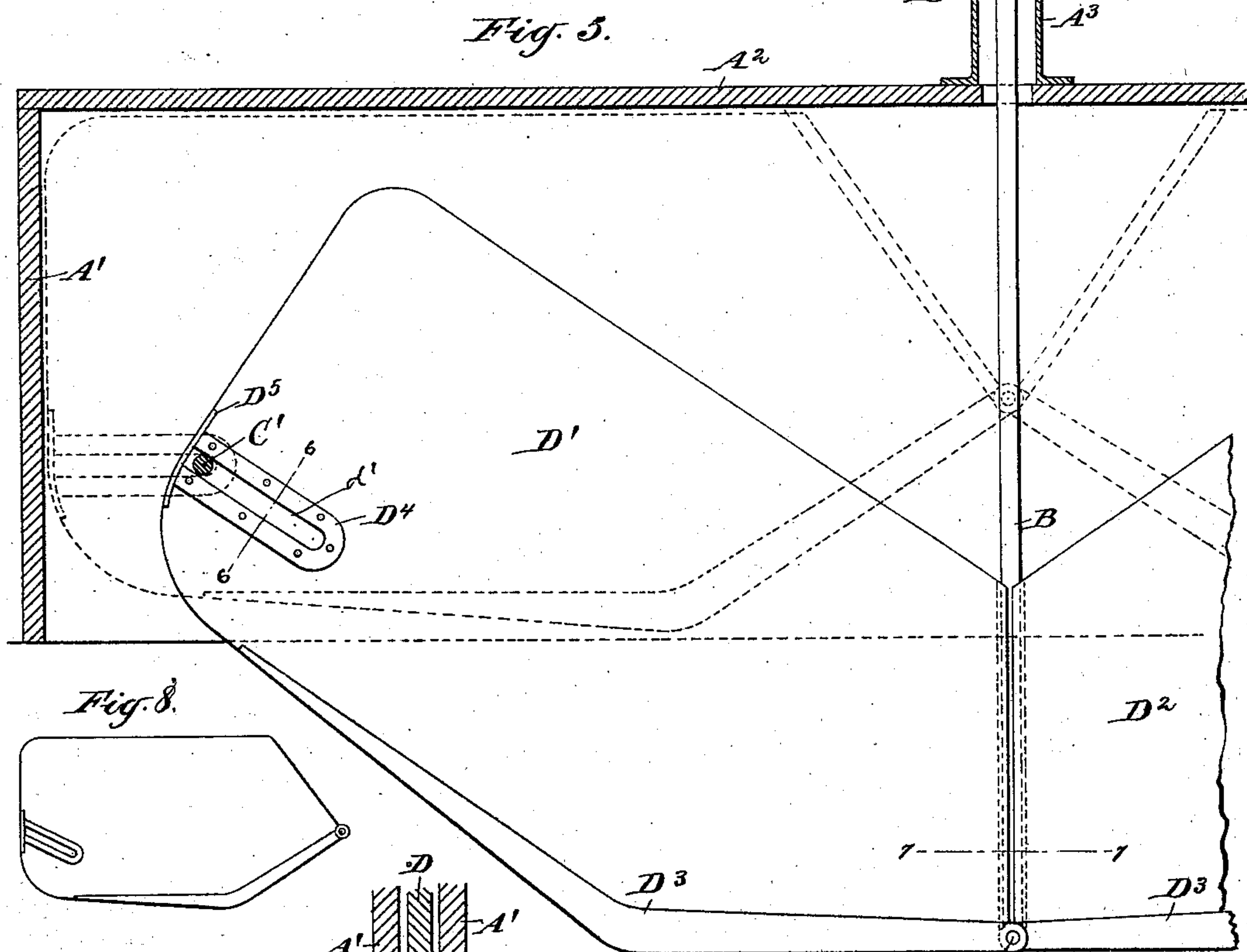
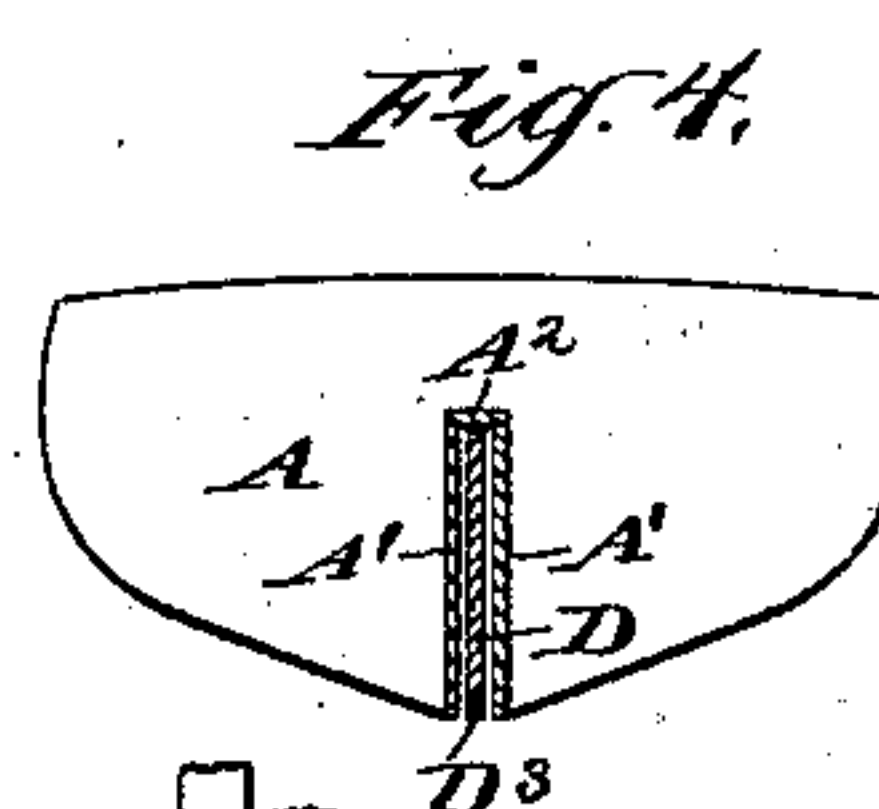
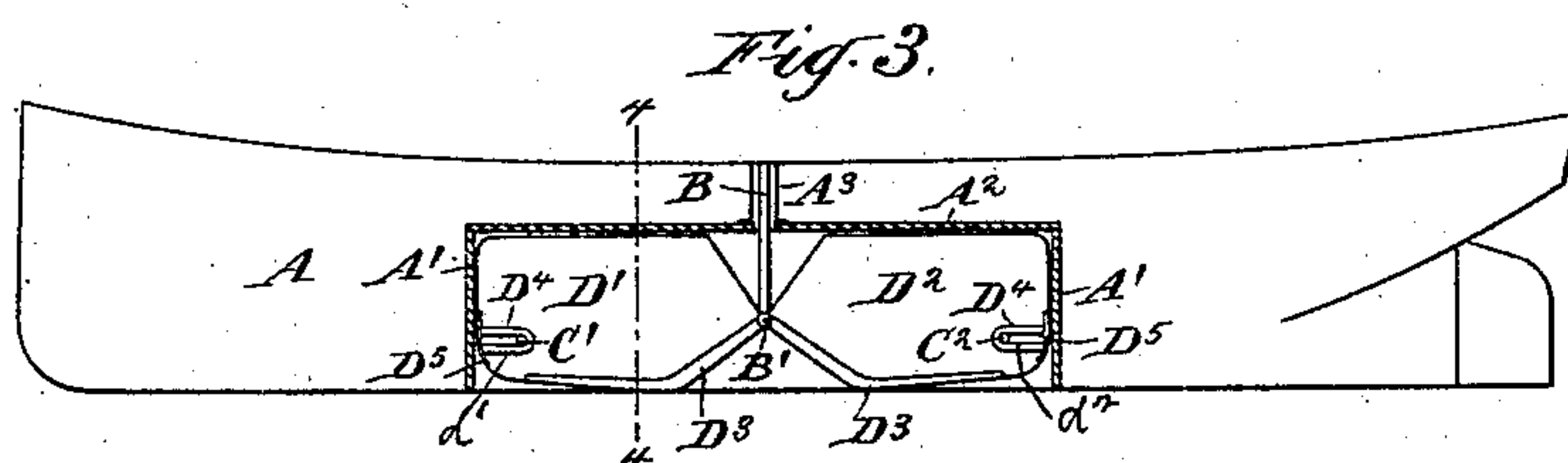
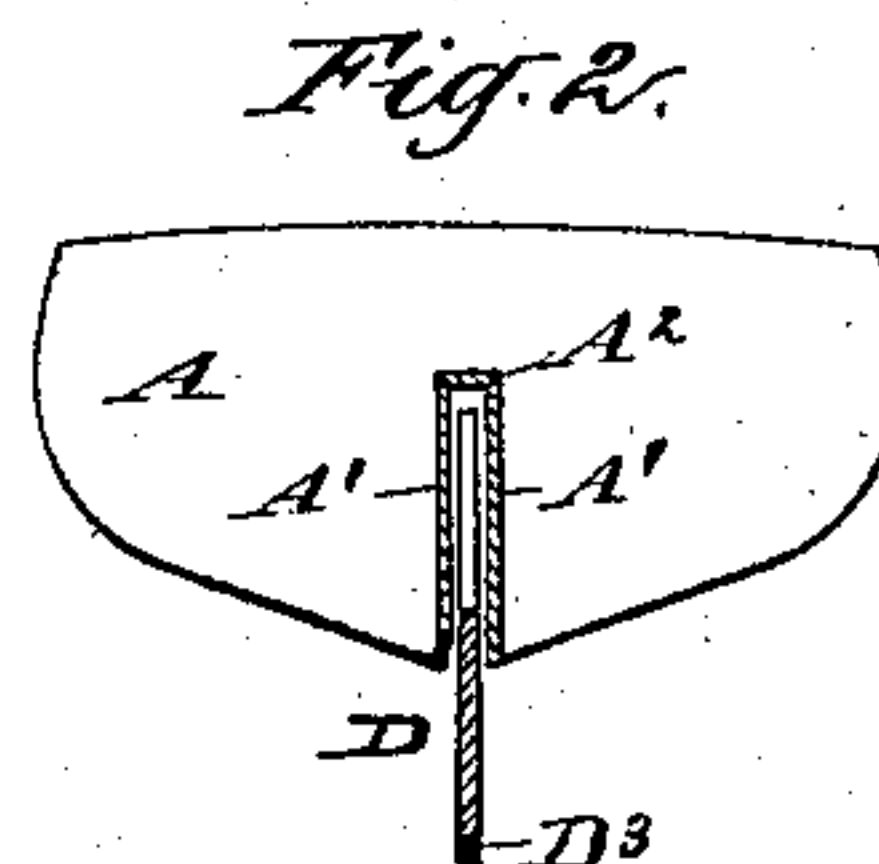
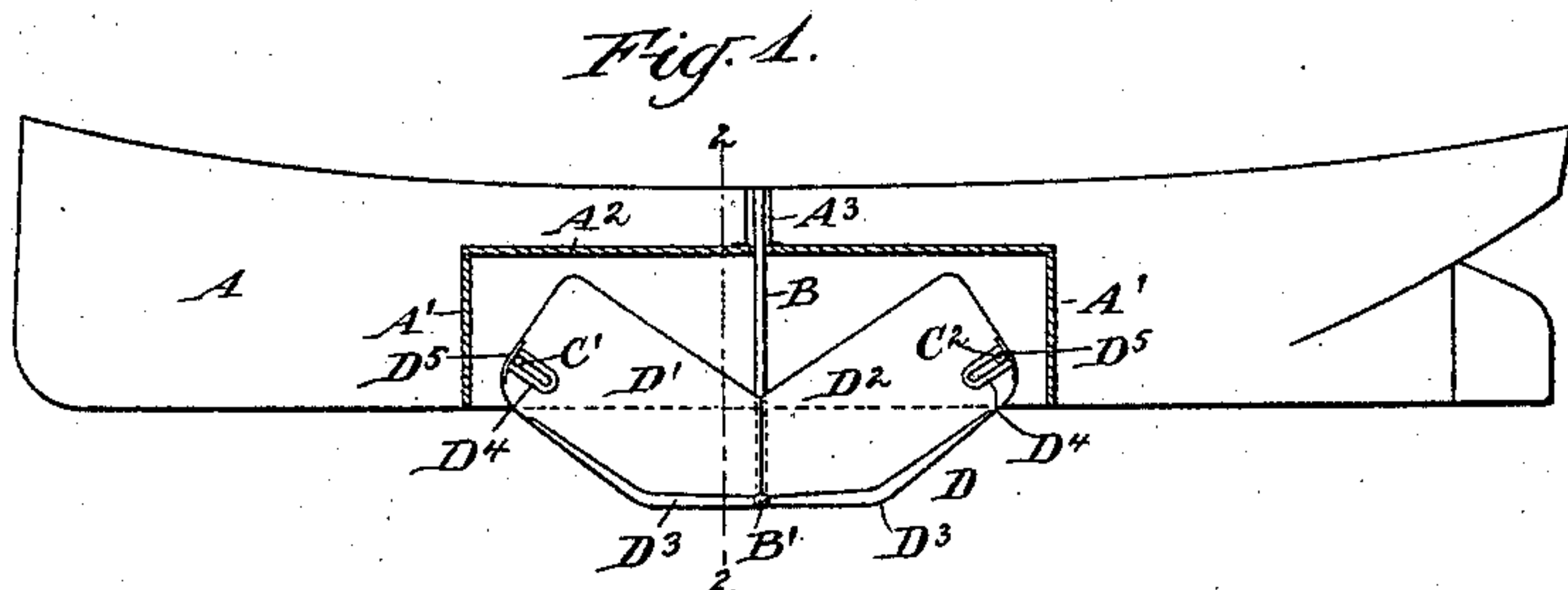


(No Model.)

S. E. SMITH.
CENTERBOARD VESSEL.

No. 577,079.

Patented Feb. 16, 1897.



Witnesses:
M. F. Boyle
J. B. Clautice

B' Inventor:
Samuel R. Smith
By
Thomas Drew Stetson
Attorney

UNITED STATES PATENT OFFICE.

SAMUEL E. SMITH, OF BABYLON, NEW YORK.

CENTERBOARD VESSEL.

SPECIFICATION forming part of Letters Patent No. 577,079, dated February 16, 1897.

Application filed December 26, 1895. Serial No. 573,249. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL E. SMITH, residing at Babylon, Suffolk county, in the State of New York, have invented a certain new and useful Improvement in Centerboard Vessels, of which the following is a specification.

The improvement relates to the centerboard and to the trunk or well in which it is inclosed. I obtain a great hold on the water with a moderate depth of centerboard.

My centerboard, which I term an "adjustable Finn centerboard," retains in great perfection the important quality that it will lift automatically on coming into shallow water. It is composed of two sections pivoted one forward and the other aft of the upright operating-rod. The abutting edge of each section is grooved, and when the centerboard is down the rod is received one-half in each and serves as a tongue to maintain their coincidence of plane.

The accompanying drawings form a part of this specification and represent what I consider the best means of carrying out the invention.

Figure 1 is a central longitudinal section with the centerboard down. Fig. 2 is a cross-section on the line 2 2 in Fig. 1. Fig. 3 is a section corresponding to Fig. 1 with the centerboard raised. Fig. 4 is a corresponding cross-section on the line 4 4 in Fig. 3. The remaining figures show portions of the invention on a larger scale. Fig. 5 is a longitudinal section. The full lines indicate the centerboard lowered for use. The dotted lines show it raised out of use. Fig. 6 is a section through a portion on the line 6 6 in Fig. 5. Fig. 7 is a section through a portion on the line 7 7 in Fig. 5. Fig. 8 is a side elevation of a portion showing a modification.

Similar letters of reference indicate like parts in all the figures where they appear.

A is the hull of the vessel, and A' the sides and ends of the trunk or extended well, which is open at the bottom and incloses the centerboard. A² is the top of the well, making it tight at all points except an aperture at the mid-length of the top. A³ is a tube which surrounds such aperture and extends upward.

B is a flat rod inclosed in the tube A³ and

adapted to play loosely up and down therein. It is formed with an eye B' at its lower end.

C' C² are transverse belts extending across the trunk or well in the positions represented and which perform important functions.

I will use the letter D to indicate the entire centerboard, using supernumerals to designate the several parts thereof. D' D² are the two sections. D³ D³ are shoes of metal, carried each on its respective section D' D². I provide metal reinforces D⁴ D⁴, which are flanged as shown and driven into slots d' d², respectively, formed in the outer ends of the sections D' D². They are secured by bolts. Each slot is closed by a strap D⁵, efficiently secured.

The rear edge of the forward section D' and the forward edge of the aft section B² are each deeply grooved up and down. When the centerboard is lowered, the edges of the flat rod B are received in these grooves d, the front edge of the rod being received in the groove in the rear edge of the front section B' and the rear edge of the rod being received in the front edge of the rear section B². Thus situated the rod serves as a tongue to insure that the two sections shall be kept in the same plane.

The form of each of the sections D' D² is an irregular pentagon, the upper and lower edges being parallel to each other, or nearly so, with rounded outer corners. The inner end of each section is angular, the lower portion adapted to serve as the bottom of the board when the latter is down, and the remaining portion adapted to match closely to the corresponding part of the opposite section.

When the centerboard is up, it fills the entire length of the interior of the trunk, the pivot-bolts C' C² being received in the inner ends of their respective slots d' d². When the rod B is lowered, both sections D' D² commence to be protruded through the bottom of the vessel, this movement shortening the centerboard and causing the slots d' d² to traverse on their respective bolts C' C², the forward section D' moving rearward and the rear section B² moving forward. The flat rod B is received in the grooves d in the adjacent ends of the sections, and when the board is fully lowered into the position shown in Figs.

1 and 2 the rod serves as an efficient dowel or tongue to hold the two parts D' D^2 reliably coinciding in position.

It will be seen that my centerboard presents
5 an unusually large area to resist a side movement of the vessel through the water while the front and rear are inclined. When the vessel runs into shoal water in the ordinary manner, the shoe at the bottom of the forward
10 section makes contact with the bottom and is lifted, and in lifting it raises the other part D^2 . In the rarer but sometimes occurring instances of running upon shoal water sternway the after section performs the same duty,
15 being raised itself, and thereby raising the forward section.

My centerboard is stronger and easier to handle than the ordinary construction. The portion presented to the water is in better
20 shape. In shallow water, where the centerboard can be lowered only part way, mine has a decided advantage, as two feet drop is equal to more than three feet of the old style of board. The reduced drop reduces the resistance. It
25 will act more quickly in case it touches the bottom. It is easier in a seaway and is less likely to spring or jam.

I proportion the parts so that the forward section extends an inch or two below the after
30 one. This aids to insure that in running aground the contact with the bottom will be first and strongest on the front section.

Modifications may be made without departing from the principle or sacrificing the ad-
35 vantages of the invention.

The trunk A' and also the sections D' D^2 of the centerboard may be of hard wood, as indicated in the drawings, but they may be of iron or other metal, if desired.

40 It will be understood that the drop of the board is governed by the distance from the bottom of the keel to the top of the interior of the trunk.

In an ordinary vessel of thirty tons or upward the trunk may be of a proper height to form a table on the top.

In a moderately-sharp yacht or other vessel having the amount of dead-rise usual in such forms it will not be necessary to bring
50 the trunk above the cabin-floor.

The slots d' and d^2 may be made wider and the reinforcing-castings correspondingly wider and a small roller put on each pin C to reduce the friction as the sections move longitudinally in being raised and lowered.
55

I have shown the upper and lower edges of the sections as substantially parallel and prefer such form, but this may be varied. I have shown the slots d' d^2 as parallel with the
60 upper and bottom edges. This may be widely varied.

Fig. 8 shows one of the sections with a slot materially inclined. With some proportions

of the parts such inclined arrangement of the slots and of the corresponding reinforcing
65 metal is of advantage by insuring that when the centerboard is lowered the slotted end of each section shall protrude through the bottom more than would otherwise result.

I claim as my invention—

70 1. In a sailing vessel a centerboard comprising a pair of oppositely-arranged and pivotally-connected sections D' D^2 each of corresponding pentagonal form and having at their meeting edges oppositely-disposed inclined faces and formed each with slots d' d^2 ,
75 so positioned and pitched as to form a sliding pivotal connection obliquely to the line of descent of the respective sections, and that are adapted to engage with pins C' C^2 arranged
80 and extending transversely through the inclosing well, the whole arranged and designed to effect the greatest amount of useful surface area in the drop, that can be inclosed in a well of a given size, substantially as de-
85 scribed.

2. In a sailing vessel a centerboard comprising two oppositely-arranged sections D' D^2 each of irregular pentagonal form in combination with each other and a well and means
90 for holding said sections in operative relation that consists of a pivotal connection at their meeting edges and a sliding pivotal connection located at the respective outer edges, at a point below the center substantially as de-
95 scribed.

3. In a sailing vessel, a centerboard comprising two oppositely-arranged sections D' D^2 , each of irregular pentagonal form, and equipped with a proper shoe D^3 , in combination with each other and with the well A' ,
100 and the operating-rod B , the adjacent edges of the sections being grooved as indicated by d , and receiving each a portion of the single rod B , so that the latter serves as a tongue
105 or dowel, all arranged to serve substantially as herein specified.

4. In a sailing vessel, a centerboard comprising two oppositely-arranged sections D' D^2 each equipped with a shoe D^3 and each
110 having a groove in its edge receiving a portion of the operating-rod whereby the said sections are supported laterally therein, in combination with each other and with a well A' , with its tight cover A^2 , and with the tube
115 A^3 loosely inclosing the operating-rod B , all arranged for joint operation, substantially as herein specified.

In testimony that I claim the invention above set forth I affix my signature in presence of two witnesses.

SAMUEL E. SMITH.

Witnesses:

J. B. CLANTICE,
M. F. BOYLE.