

July 21, 1931.

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1,815,708

CONSTRUCTIONAL TOY

Filed May 12, 1930

4 Sheets-Sheet 1

Fig. 1

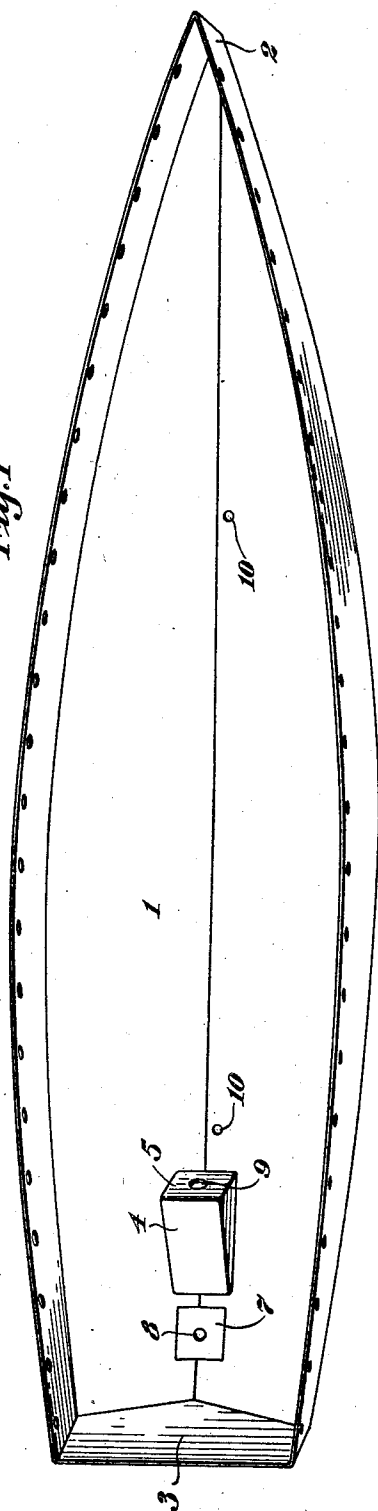
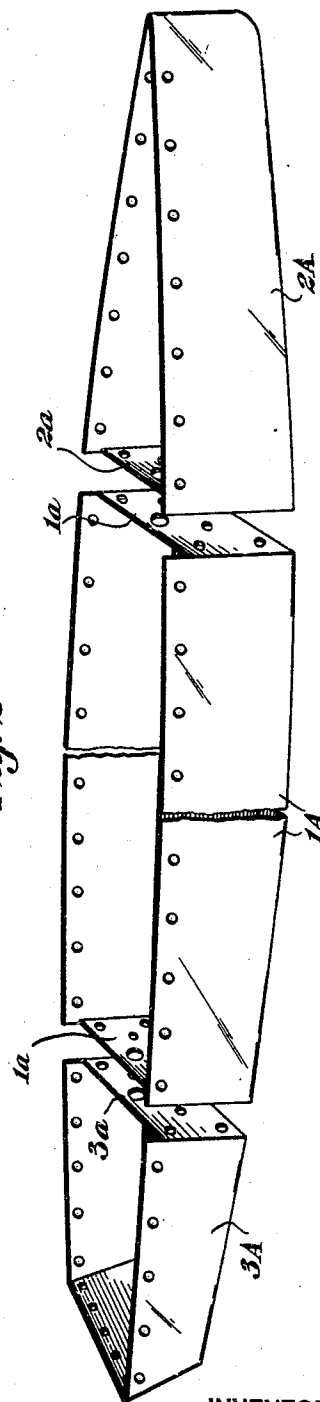


Fig. 2



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4 Sheets-Sheet 2

Fig. 3

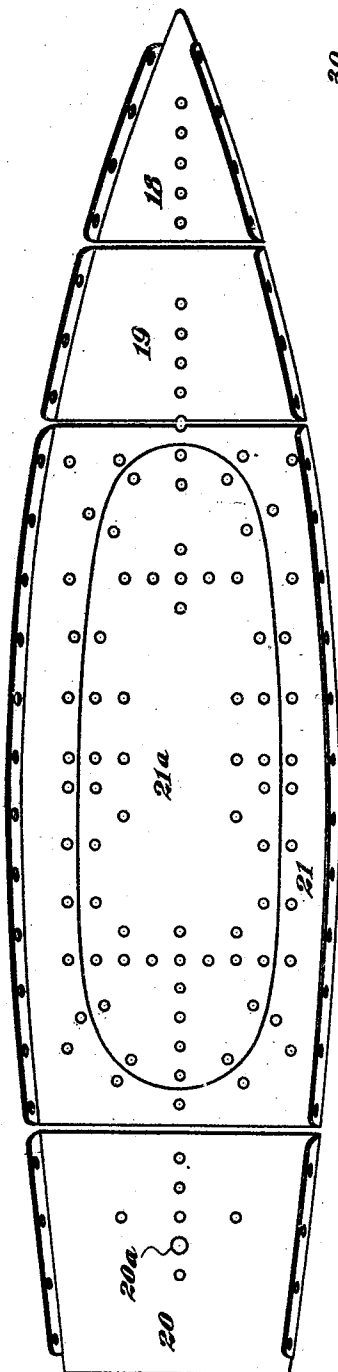
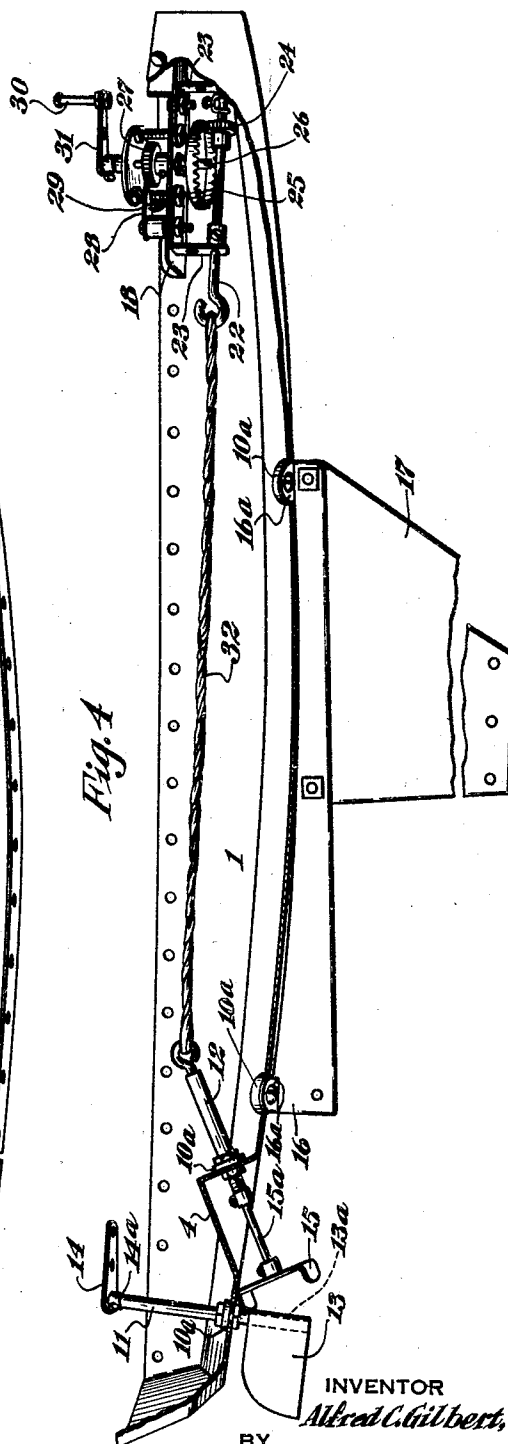


Fig. 4



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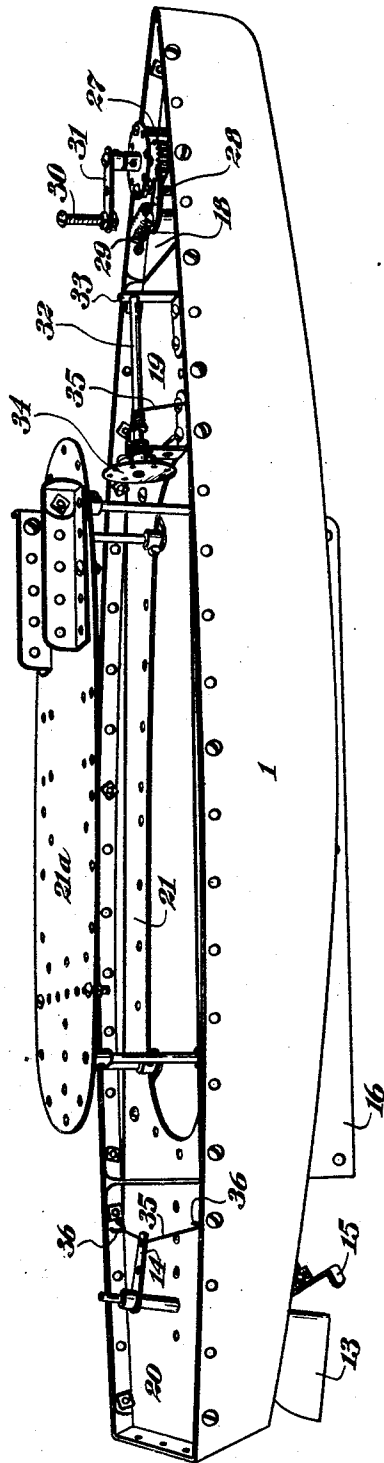
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4 Sheets-Sheet 3

Fig. 5



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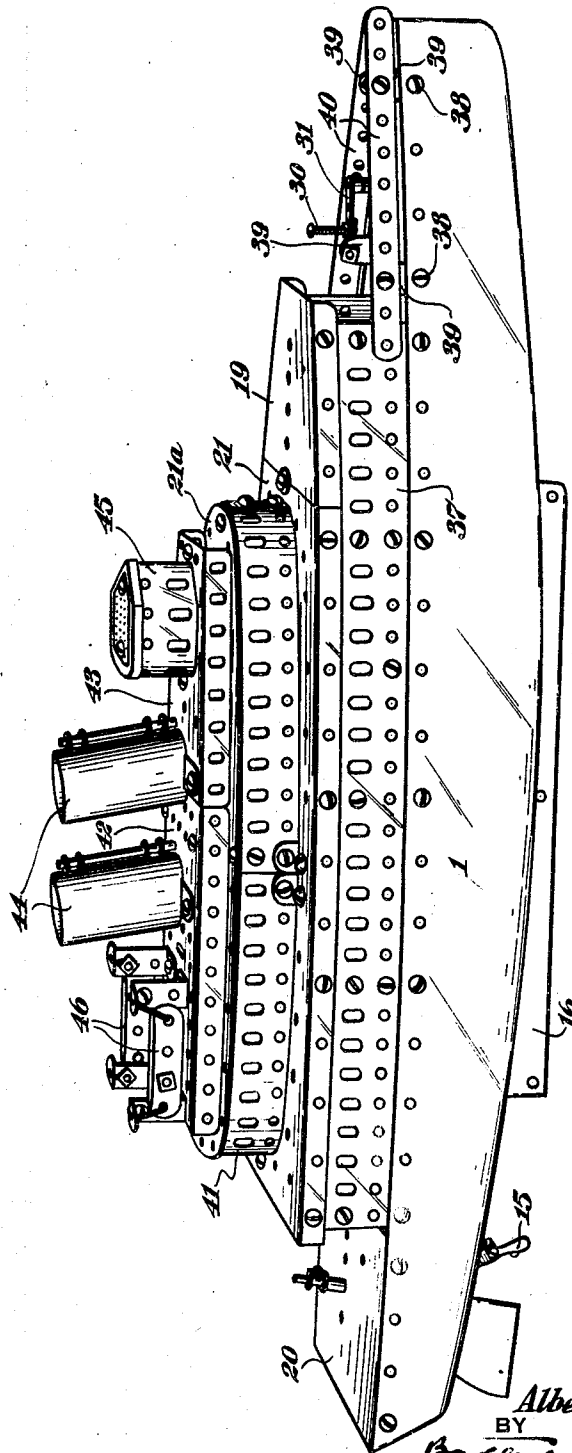
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4 Sheets-Sheet 4

Fig. 6



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CONSTRUCTIONAL TOY

Application filed May 12, 1930. Serial No. 451,590.

The present invention relates to mechanical elements adapted to be added to well known constructional toy outfits to make possible the building of boat models. Such outfits include a plurality of interchangeable separable parts or elements which can be fastened together, as by means of bolts and nuts, to form a great variety of toys and small engineering models, and the devices so built are readily disassembled into the component elements and the parts made usable again and again in different combinations to form entirely different models. By the inclusion in such an outfit of the relatively few new elements hereinafter described, the variety of models which may be constructed from the outfit is enlarged to include a great number of boat models, the construction of which has not heretofore been possible. Moreover, the toy boats constructed by means of the present invention are adapted to float and to be propelled under their own power.

In the specific embodiment of the invention herein described, the new elements comprise essentially a unitary or multiple section hull, a multiple part deck, a propeller, and auxiliary elements such as a rudder and one or more keels. The hull, keel and deck parts are each provided with perforations of dimensions that have become standard in the well known Meccano constructional toy outfits, which perforations are spaced to conform with the spacing of the perforations in the other elements of the outfit whereby the construction of the models from the various elements is simplified and a wide variety of combinations thereof is made possible.

For a better understanding of the invention reference is made to the accompanying drawings in which:

Fig. 1 is a view of one form of hull comprising a unitary structure;

Fig. 2 is a view of another form of hull comprising a multiple part structure;

Fig. 3 is a view of the multiple part deck;

Fig. 4 is a side view of the hull with the side broken away and showing the rudder, keel, the propeller in place, and one form of driving mechanism for the propeller; and

Figs. 5 and 6 are perspective views illus-

trating two of the many models which may be built.

Referring to the drawings, and more particularly to Figs. 1, 3 and 4, the hull may comprise a unitary structure 1 preferably of metal, with a pointed bow 2 and flat stern 3. Adjacent the stern 3, a portion of the bottom of the hull is raised to form an upwardly and forwardly projecting section 4 having a plane surface 5 inclined at an angle to the horizontal. To the rear of section 4 is a slightly raised portion of the bottom having a plane horizontal surface 7 through which, and through surface 5, are relatively large perforations 8 and 9, respectively. Along the bottom of the hull 1 are perforations 10 of standard size. Hollow shafts 11 and 12 threaded at their lower ends are fastened within the perforations 8 and 9 respectively by means of lock-nuts screwed over the threaded portion of the shafts and located on either side of the plane surfaces 7 and 5. A rod 13a, upon which is rigidly mounted a rudder 13, passes through the bore of shaft 11. A short perforated strip 14 serving as a tiller, is mounted at the upper end of rod 11 by means of a collar 14a. Passing through the bore of shaft 12 is a rod 15a bent to form a hook at its upper end and carrying a propeller 15 at its lower end.

A keel 16 provided with perforated lugs 16a is fastened to the hull by means of nuts screwed on bolts passing through the perforations in lugs 16a and through the perforations 10 in the bottom of the hull. To make the construction water tight, rubber gasket washers 10a are used as shown to prevent leakage about elements which pass through the bottom of the hull. If the boat model to be constructed is of the type which needs additional ballast to prevent capsizing, a ballast keel 17 is fastened to the keel 16 as shown in Fig. 3. Spaced perforations are provided along the lower part of the ballast keel so that additional ballast may be obtained by fastening any number of metal strips thereto.

Instead of the unitary hull above described, the hull may be made of separate sections 1A, 2A and 3A (Fig. 2) provided with perforated

end portions 1a, 2a and 3a respectively by means of which the sections may be fastened together. The unitary hull of Fig. 1 is preferred; but a multiple part hull of three or more sections, such as is shown in Fig. 2, has certain advantages thereover in that it lends itself to the construction of boats of various lengths and also to the construction of barges, scows, or the like. For example in Fig. 2 the hull is so constructed that the bow section 2A and stern section 3A may be joined to form one structure and the mid-section 1A used independently. Though not shown 3A could be replaced by 2A giving the structure a cruiser stern, similar to the bow. In Figs. 4, 5 and 6 for simplicity the unitary hull of Fig. 1 has been illustrated, but it will be understood that the hull of Fig. 2 could be employed as readily in the models illustrated in these figures. When the multiple section hull is employed, suitable gasket washers may be inserted between the end portions 1a and 2a and 1a and 3a when they are joined together by bolts passing through the perforations shown therein.

The multiple part deck (Fig. 3) comprises bow sections 18 and 19, a stern section 20 and a central section 21 from which is cut out an oval shaped piece 21a. The sides of bow, stern and central sections are each provided with flanges extending parallel to the sides of the hull and provided with perforations adapted to register with perforations along the upper sides of the hull. Each deck part is provided with a plurality of perforations spaced to conform with the standard and so distributed as to permit the other elements of the usual outfit to be combined with one or more deck sections in a variety of ways. In the stern deck section 20 one larger perforation 20a is provided for the passage therethrough of the shaft 11. Each deck section is symmetrical about the vertical plane passing through the tip of the bow and center of the stern. This permits any one of the sections to be attached to the hull either with the flanged side portions extending upwardly to make that deck lower than the top of the hull, or extending downwardly to make the surface of that section flush with the top of the hull. The multiple part invertible deck is of prime importance as it makes possible the construction of wholly different types of models. For example, if a row boat is desired, sections 18 and 20 only are used. If an open sport model motor boat is to be built all parts but 21a are used. If a tug boat or steamer is to be built sections 18 and 20 may be inverted, section 19 raised by adding standard strips between it and the hull, and sections 21 and 21a used at still higher levels. For example, in the motor boat shown in Fig. 5 section 21a is used as a canopy top, whereas in the excursion boat

shown in Fig. 6 this same section forms the roof of the cabins, while sections 21 and 19 are mounted at lower levels, and section 20 is inverted and fastened flush with the top of the hull.

In each model the same driving mechanism may be employed. An example of a readily constructed mechanism adapted to be made from standard parts is shown in Fig. 4. This mechanism includes a rod 22 horizontally and rotatably mounted in perforations in angle strips 23 fastened to the underside of section 18. Rod 22 had mounted thereon a gear 24 which meshes with a larger gear 25 mounted on a vertical shaft 26. Shaft 26 is rotatably mounted in a perforation in deck section 18 and carries above the level of the deck a ratchet wheel 27 with which a pawl 28 co-operates. Pawl 28 is rotatably mounted upon a screw fastened in another perforation of the deck and is held firmly in engagement with the teeth of the ratchet wheel 27 by means of a spring 29 fastened to a perforation in the flange of the deck. A handle 30 mounted on an arm 31 fastened to rod 26 serves as a crank for winding the mechanism. The end of rod 22 is bent to form a hook. To transmit motion from rod 22 to propeller shaft 15a, and to store the energy for driving the propeller during winding of the mechanism, a strong elastic band 32 is looped about the hooked ends of rods 15a and 22. Cranking the mechanism by means of handle 30 while preventing rotation of propeller 15 serves to twist the band 32 so that when the boat is placed in the water and the propeller released, the band 32, in untwisting itself, will rotate the propeller shaft and thereby propel the boat. The above simple form of driving mechanism has been found suitable for the type of models herein described, but any suitable, manually windable mechanism may be employed as, for example, a spring motor and such motor might give a greater range of travel of the boat. Where the driving mechanism of Fig. 4 is employed in the multiple section hull of Fig. 2, suitable perforations are provided in the end portions 1a, 2a and 3a for the passage therethrough of the elastic band 32.

In Fig. 5 is illustrated a motor boat model using comparatively few elements for its construction. The keel 16, propeller 15 and rudder 13 are mounted upon the hull as described in connection with Fig. 4. Deck section 18 is fastened to the hull with the flanged sides extending upwardly and a driving mechanism similar to that above described mounted thereon. Deck sections 19, 20 and 21 are likewise mounted with the flanged sides extending upwardly. A steering rod 32, rotatably mounted in angle strips 33 fastened to deck portion 19, has a wheel 34 mounted upon one end thereof to simulate a steering wheel. A string 35 wound about

the rod 32 and threaded through suitable hooks 36 fastened to the sides of the hull passes through a perforation in the tiller 14 to transmit motion thereto upon rotation of wheel 34.

In Fig. 6 a model of an excursion boat utilizing a relatively large number of elements is illustrated. In this model the deck section 20 is inverted so as to give a surface flush with the top of the hull, and sections 21 and 19 are raised to a higher level by the intermediary of strips 37 from the standard outfit. Deck section 18 is not visible in Fig. 6 but is fastened in place by bolts 38 to which are also fastened short perforated strips 39. Strips 39 serve to support strips 40 which extend parallel to and above the bow of the hull to simulate a guard rail and to conceal the winding mechanism, which mechanism may be similar to that described in connection with Fig. 4 and may be similarly mounted on deck 18.

Deck section 21a is fastened by means of a sufficient number of angle pieces to perforated strips 41 similar to strips 37 but bent to conform to the outline of deck 21a. Upon deck section 21a are mounted two flanged perforated plates 42 and 43, the former rectangular in shape and the latter tapering toward the bow. Plates 42 and 43 serve to carry funnels 44, turret 45 and life boats 46 constructed from short strips and angle pieces.

The models disclosed in Figs. 5 and 6 are but examples of the many different kinds of boats which may be constructed from the elements in a standard toy outfit when the new elements of the present invention are added thereto. Side-wheelers, tankers, airplane carriers, sailing boats, battle-ships, barges, scows, and many other models may also be constructed from such an enlarged outfit. The construction of this wide variety of models is due primarily to the provision of the multiple part deck and to the provision in the sides of the hull and in the flanges and plane surfaces of the deck sections of the plurality of perforations conforming in spacing and dimensions to the spacing and dimensions of the perforations in the standard elements of the usual outfit. In the deck sections, Fig. 3, it will be noted that where possible the spacing between adjacent perforations is made equal to or a multiple of the standard spacing. When such standard spacing is not feasible, as for example about the rounded end portions of section 21a, the perforations are so positioned that the spacing therebetween is along radii or chords which conform to the standard.

It is apparent that the stability of the model shown in Fig. 5 and that of Fig. 6, due to the difference in amount of super structure or variations in length of hull,

would be entirely different necessitating the provision of an auxiliary keel which may be shifted fore and aft, and to which weight may be added. This feature is exceedingly important for these toys are all workable and it is essential that when the same structure is used to serve as the hull for several models, which will have different centers of buoyancy and meta-centric heights, provision must be made to assure stability when afloat. The properly disposed perforations in the hull sections permit this to be done. For example, in Fig. 6 the weight would be secured interior of the hull, for were it added exterior the increase of hull resistance due to it being centered close to the hull would so retard the speed as to make the model practically unworkable. If the hull were sloop rigged, a keel similar to that shown in Fig. 4 would be added, the plate substituting for a center board and if necessary the proper weight distributed thereon. In like manner each model may be properly stabilized regardless of its contour.

The following is claimed:

1. A constructional toy boat comprising in combination a plurality of sections adapted to be connected together to form a watertight hull and provided with spaced perforations about the upper edges thereof, and a plurality of flanged deck sections equal in number to the number of hull sections and corresponding therewith said deck sections being provided with spaced perforations in the flanges thereof adapted to register with said perforations in the hull sections whereby the deck and hull sections may be connected together to form models of various lengths.

2. A constructional toy boat according to claim 1 wherein each of said hull sections is provided with an end wall and said sections are adapted to be connected together by bolts passing through registering perforations in said end walls.

3. A constructional toy boat comprising in combination, a hull, a multiple part deck consisting of flanged sections adapted to be positioned either side up to form a deck of variable elevations, symmetrically disposed perforations in the upper sides of said hull and in said deck sections and in the flanges thereof, all said perforations being spaced in accordance with a predetermined standard to permit said elements to be secured in positions to form more than one type of boat.

4. A constructional toy boat comprising in combination a hull, a multiple part invertible flanged deck, a hatch cut from one of said deck parts, means for positioning the hatch cover flush with the deck or at various higher levels, symmetrically disposed perforations in the upper sides of said hull, in said deck sections and in the flanges thereof, and

in said hatch cover, all said perforations being spaced in accordance with a predetermined standard to permit said elements to be secured in positions to form more than
5 one type of boat.

In testimony whereof, I have signed my name to this specification.

ALFRED C. GILBERT.

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