

No. 808,467.

PATENTED DEC. 26, 1905.

E. MOLLOY.  
METHOD OF CONSTRUCTING VESSELS.

APPLICATION FILED JUNE 5, 1903.

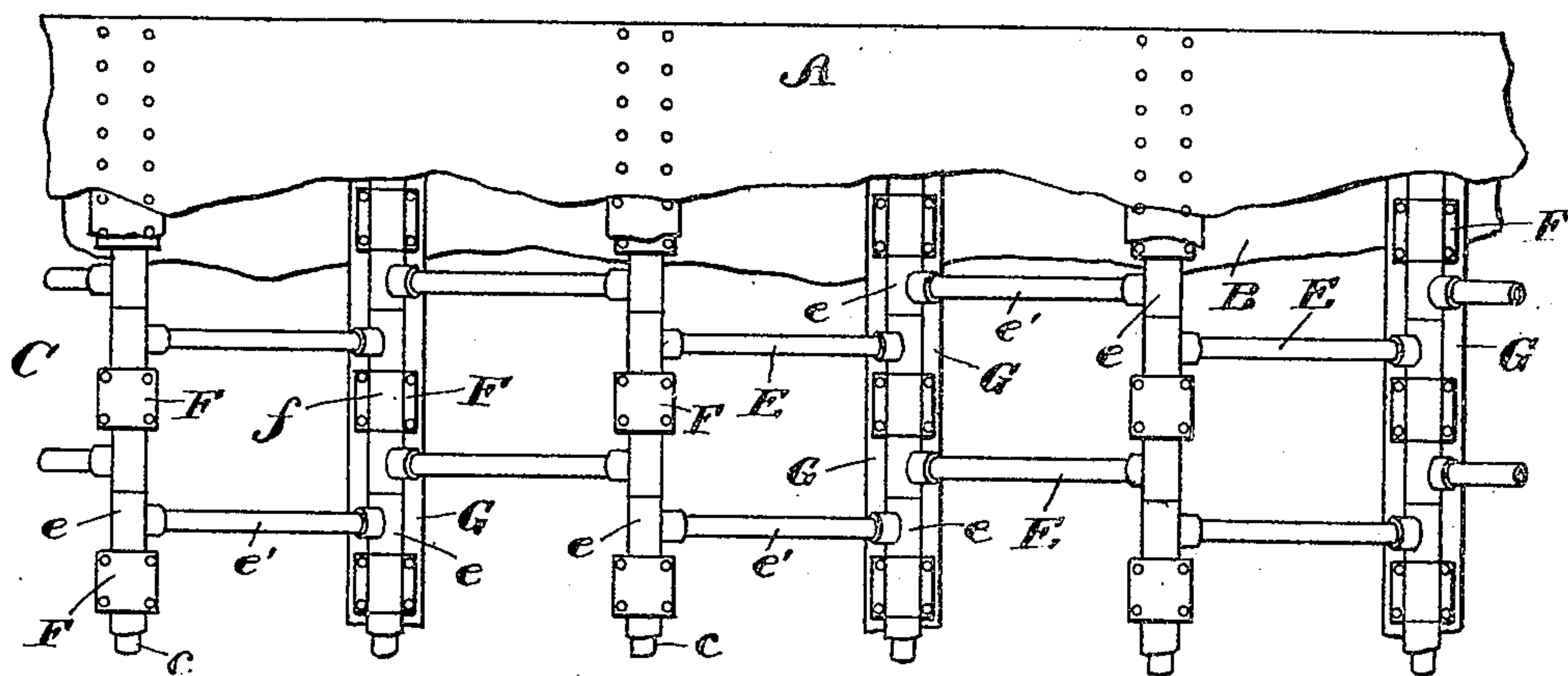


Fig. 1.

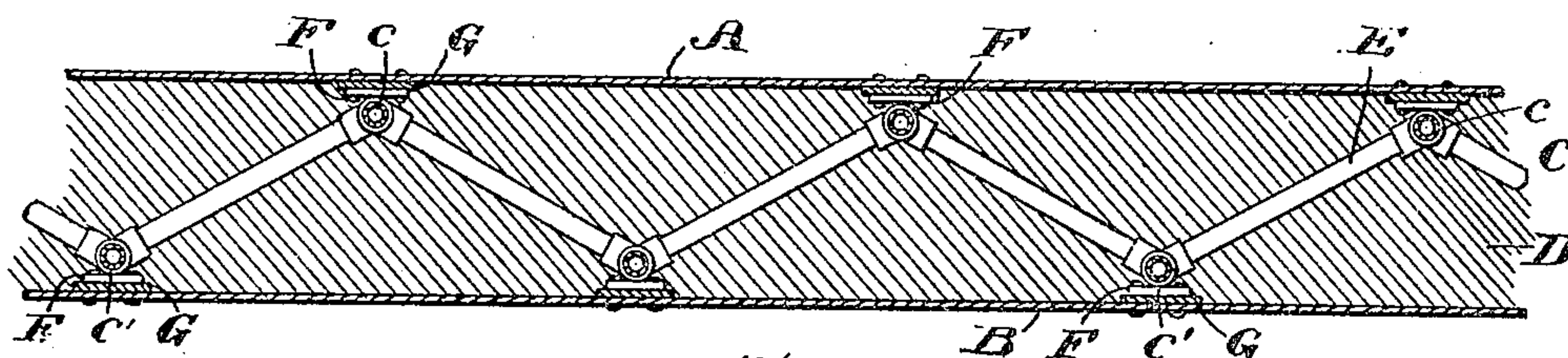


Fig. 2.

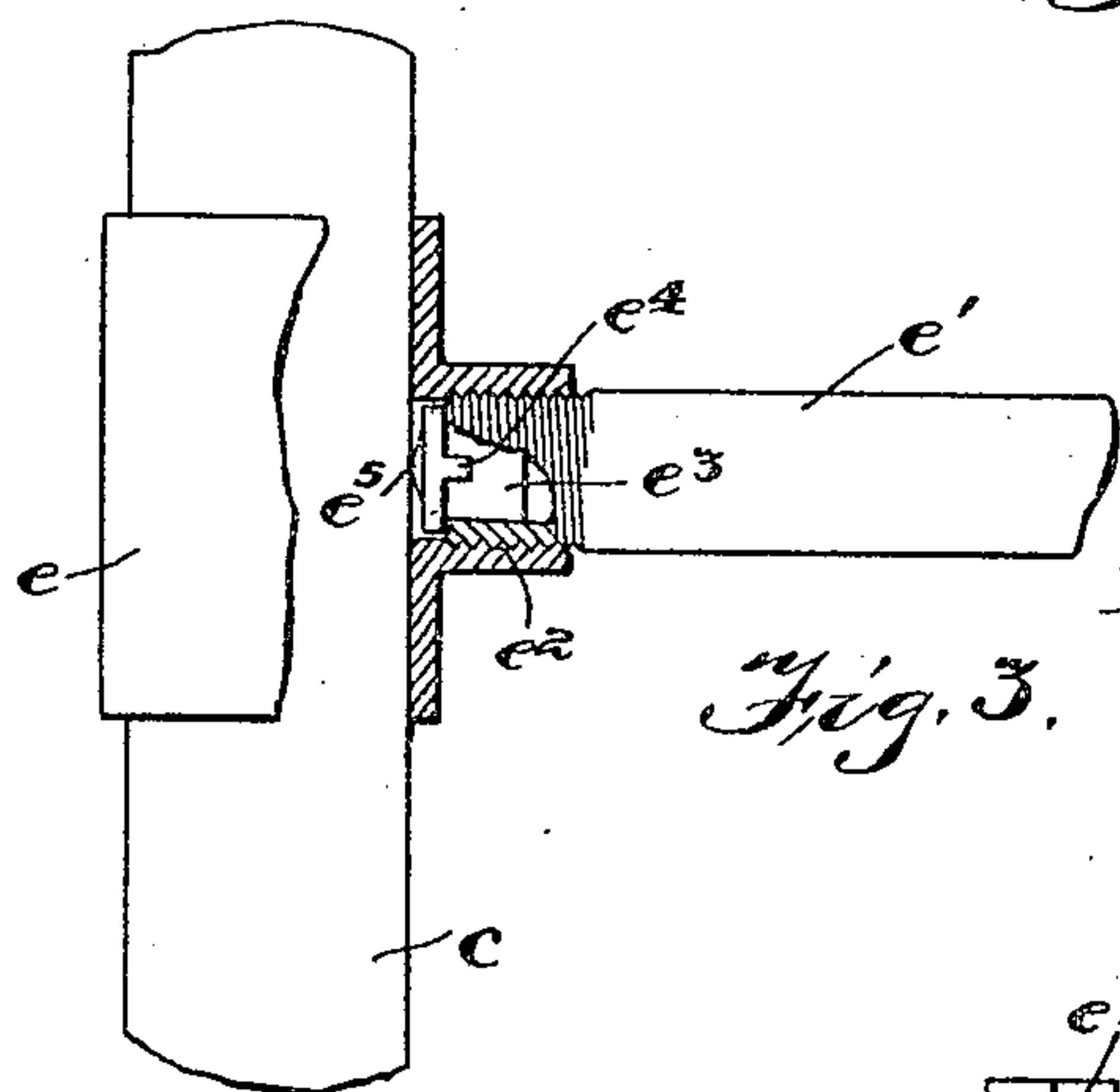


Fig. 3.

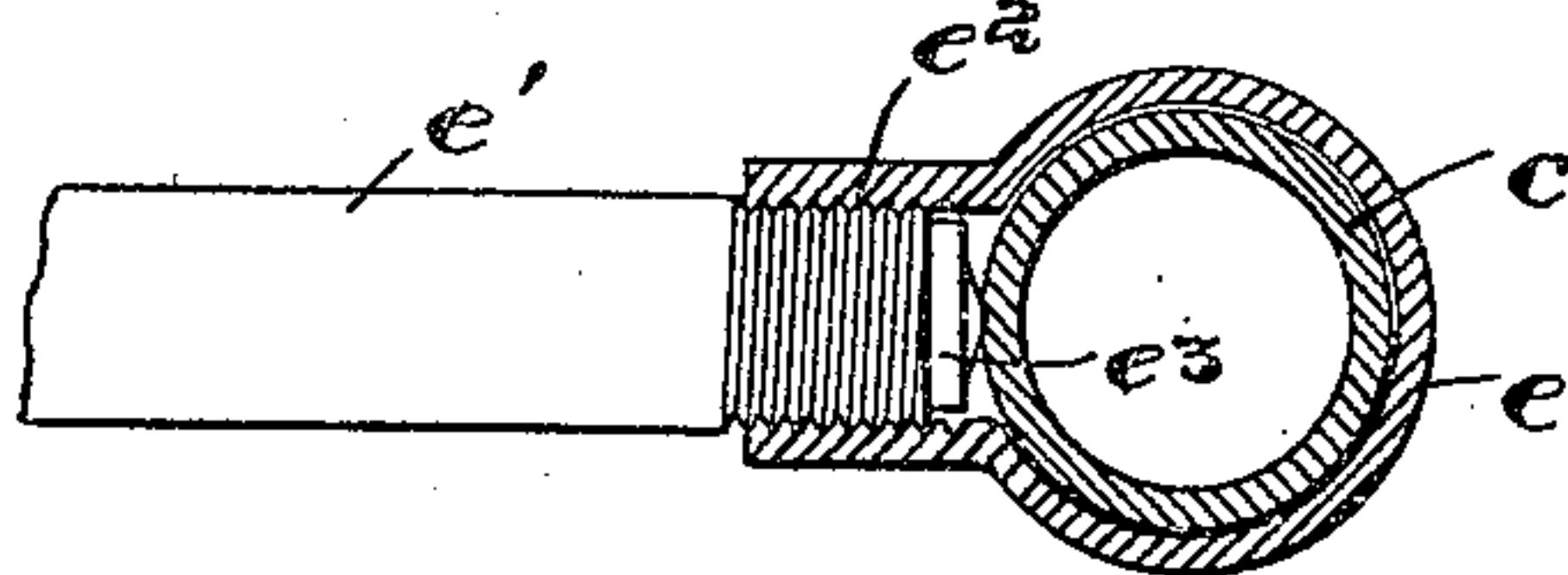


Fig. 4.

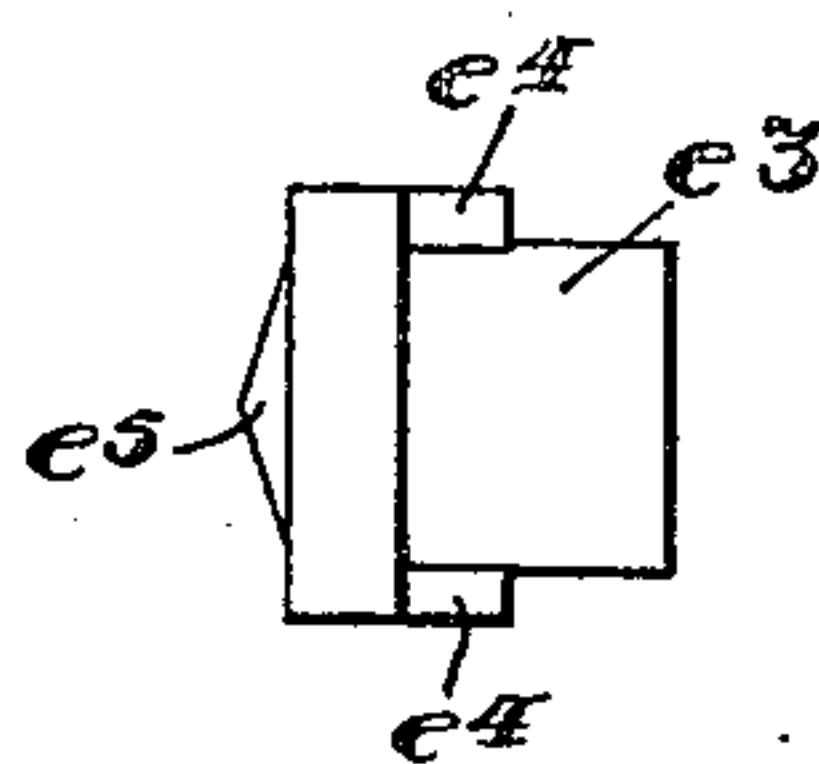


Fig. 5.

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# UNITED STATES PATENT OFFICE.

EDMOND MOLLOY, OF PHILADELPHIA, PENNSYLVANIA.

## METHOD OF CONSTRUCTING VESSELS.

No. 808,467.

Specification of Letters Patent.

Patented Dec. 26, 1905.

Application filed June 5, 1903. Serial No. 160,276.

*To all whom it may concern:*

Be it known that I, EDMOND MOLLOY, a citizen of the United States, and a resident of the city and county of Philadelphia, State of Pennsylvania, have invented certain new and useful Improvements in Constructing Vessels, of which the following is a specification.

In a prior application filed by me, Serial No. 114,262, filed July 3, 1902, I have claimed, broadly, a novel tubular structure, while in the present application I have shown and claimed the adaptation and utilization of said structure in constructing the sides of vessels. It will be obvious, however, that the structure employed by me in the construction of vessels may be used also in the construction of tanks, vats, freight-carrying receptacles, and for various other purposes.

One object of the invention is to produce a skeleton framework of novel construction, which is combined with appropriate sections of sheathing and with a suitable backing or filling material in such a way as to produce a simple, strong, and durable structure. The skeleton framework comprises a plurality of runners and sectional stems intermediate of said runners, each stem consisting, preferably, of couplings and adapted for adjustment so as to exert tension on the runners, and thereby produce a rigid skeleton structure. Said skeleton structure and the sheathing are adapted for attachment one to the other, and the spaces between the sheathing and the structure are occupied by the filling or backing material, so as to secure a solid, rigid, and fireproof structure.

The invention will be understood from the following detailed description, taken in connection with the accompanying drawings, wherein—

Figure 1 is an elevation of the portion of a side of a vessel, a part of the outside sheathing and the solid backing being broken away. Fig. 2 is a cross-sectional plan view through the side of a vessel, illustrating one form of the skeleton framework. Fig. 3 is an enlarged detailed view in elevation, partly in section, illustrating a portion of one of the runners or upright members, a coupling thereon, and a tie-piece threaded in said coupling. Fig. 4 is a sectional plan view of the device shown by Fig. 3; and Fig. 5 is a detail view, in side elevation, of one clamping-plug associated with the members of a sectional stem.

The salient feature of the invention disclosed and claimed in my prior application,

to which reference has been made, consists of upright members or runners extending through the couplings of sectional stems, the tie member of each sectional stem being provided with male threads adapted to be screwed into a pair of such couplings, the respective ends of each tie member being threaded right and left in order to be screwed into correspondingly-threaded portions of said couplings, whereby the rotation of the tie member in the proper direction causes it to be forced into contact with the upright members or runners. It will be noted that in the construction just described the runners, the couplings, and the tie members produce an integral rigid structure.

In the accompanying drawings I have illustrated a construction suitable for use as a vessel, or it may be used in the construction of tanks, vats, freight-carrying receptacles, and for various other purposes.

As shown, the invention consists of suitable sheathings A B, a skeletonized framework C between the sheathings, and a suitable filling or backing material D, which fills the spaces between the sheathings and in which the skeleton framework C is embedded. Each sheathing A or B is shown as consisting of metallic plates, which may be continuous or in sections, the inside and outside sheathings being substantially parallel one to the other.

The skeleton framework is preferably a tubular structure, and it consists, essentially, of upright members or runners  $c c'$  and sectional stems E, connecting the adjacent runners, said stems being preferably arranged in staggered order, as represented in Fig. 1. Each stem is shown as consisting of a pair of couplings  $e$  and a tie-piece  $e'$ , each coupling being preferably in the form of a T. The T's of each stem are adapted to be fitted on adjacent runners or upright members, and said T's have screw-threaded sockets  $e^2$ , the socket of one coupling of the pair being furnished with a right-hand thread, whereas the socket in the other coupling has a left-hand thread. The tie-piece  $e'$  of each sectional stem has right and left hand threads at its respective ends, and said threaded ends are screwed into the correspondingly-threaded sockets in the couplings of each pair, whereby the tie-piece is adapted to exert tension on the runners or upright members. It is evident that by turning the tie-piece in one direction the couplings of the pair will be drawn toward each other, and the end portion of the tie-piece is thus



adapted to engage with the runners or upright members, such engagement being secured by direct contact of the tie-piece with the runners or by interposing the plugs  $e^3$  between the end portions of the tie-piece and the faces of the runners. When I use these plugs  $e^3$ , they are fitted in the end portions of the tubular tie-piece, each plug being keyed to the tie-piece by suitable lugs  $e^4$ . Furthermore, each plug has a pointed working face  $e^5$ , adapted to bind directly against and to embed itself into the metal of the runner or member  $c$  or  $c'$ . The employment of the sectional stems constructed and adapted for use in the manner described provides for the binding of the several parts comprising the tubular skeletonized framework into a solid integral structure.

By reference to Figs. 1 and 2 of the drawings it will be seen that the runners or members  $c$   $c'$  are disposed next to the inner and outer sheathings A B, respectively, and the sectional stems E occupy diagonal positions between these sheathings. The stems between adjacent runners or members are, furthermore, staggered with relation to each other, and provision is made for uniting, connecting, or attaching the skeletonized framework to the respective sheathings. This connection or attachment is effected in the present instance by the employment of flanged fittings F, each having a sleeve  $f$ , adapted to be placed on one of the runners or upright members, while the flanged part or base of this fitting is adapted for attachment either directly to one of the sheathings or to a longitudinal plate G. In the drawings, I have shown a number of these plates G applied against and secured directly to each sheathing, and to each plate G is secured a plurality of the fittings F, whereby the runners or members of the skeletonized framework are secured in a substantial rigid way to the respective sheathings.

The space between the two sections of sheathing may be filled with cement or concrete, as indicated at D in Fig. 2, or, if desired, molten metal may be poured into such space, thereby securing a solid, rigid, and fireproof structure.

If it is desired to make use of the present invention in the construction of a round vat or tank, I may dispense with the sheathing B, the series of plates G attached to said sheathing, and the flanged fittings F, which are adapted for attachment to one of the sheathings; but it will be understood that the backing or filling material is employed in connection with the skeletonized frame and the outside sheathing in order to produce the tank or vat.

It will be apparent that my invention will enable the heavy rolled plates now ordinarily used in the construction of objects under consideration to be dispensed with, and their place supplied by comparatively thin plates, since the necessary rigidity, strength, and armor-

proof qualities are secured by the filling material.

It will be apparent that many changes and modifications may be made in the structure as described without departing from the principle or spirit of the invention or sacrificing any of the advantages thereof, and I reserve the right to make any and all of such changes.

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

1. In a structure of the class described, the combination of upright tubular members, couplings adapted to slide loosely thereon, tie members connecting the couplings and adapted to contact with the upright members, suitable plates or sheathing, and means for securing the sheathing to the couplings.

2. In a structure of the class described, the combination of upright tubular members, couplings thereon, tie members connecting the couplings and adapted to contact with the upright members, suitable plates or sheathing, means for securing the sheathing to the couplings, and a suitable backing for the sheathing.

3. In a structure of the class described, the combination of the upright members, tie members connecting the upright members and adapted to place lateral tension thereon, said tie members being out of alinement, suitable sections of sheathing attached to the skeleton framework thus produced, and suitable filling material between the sections of sheathing.

4. In a structure of the class described, the combination of the upright members, tie members adapted to contact therewith, said tie members being arranged in staggered relation, plates secured to the said upright members, and a solid filling material between the plates.

5. In a structure of the class described, sections of sheathing, a skeleton framework between said sheathing sections, means connecting said framework and the sheathing-sections, and a backing material in which the framework is embedded.

6. In a structure of the class described, the combination of adjacent sheathings, a tension skeleton framework connected thereto the members of which are adjustable, and filling material between the sheathings.

7. In a structure of the class described, the combination of adjacent sheathings, a tubular framework attached to the sheathings and adapted to exert tension thereon, and a filling material between the sheathings, said framework being embedded in the filling material.

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

EDMOND MOLLOY.

Witnesses:

PATRICK H. O'DEA,  
JAMES J. WHYTE.