H. E. FISHER.

WAVE MOTOR.

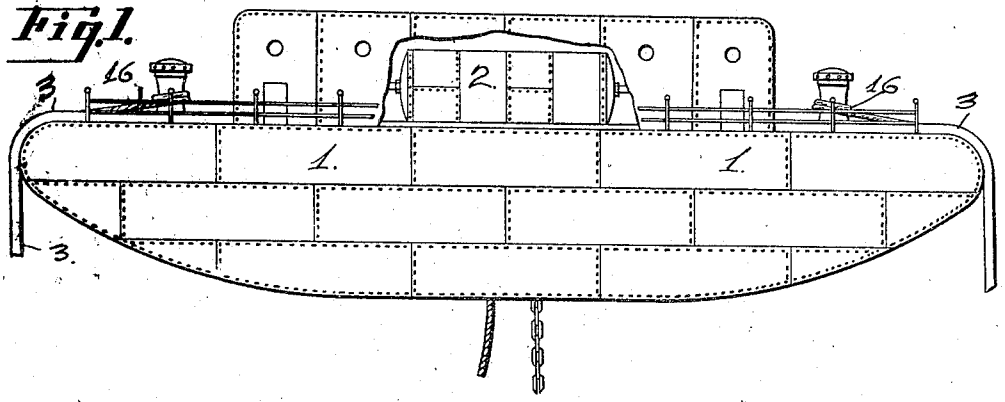
APPLICATION FILED FEB. 14, 1916.

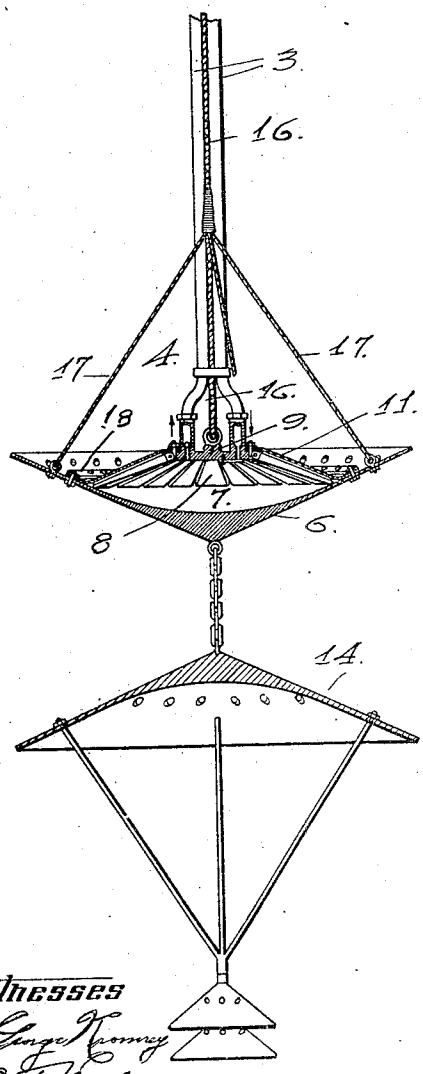
1,220,618.

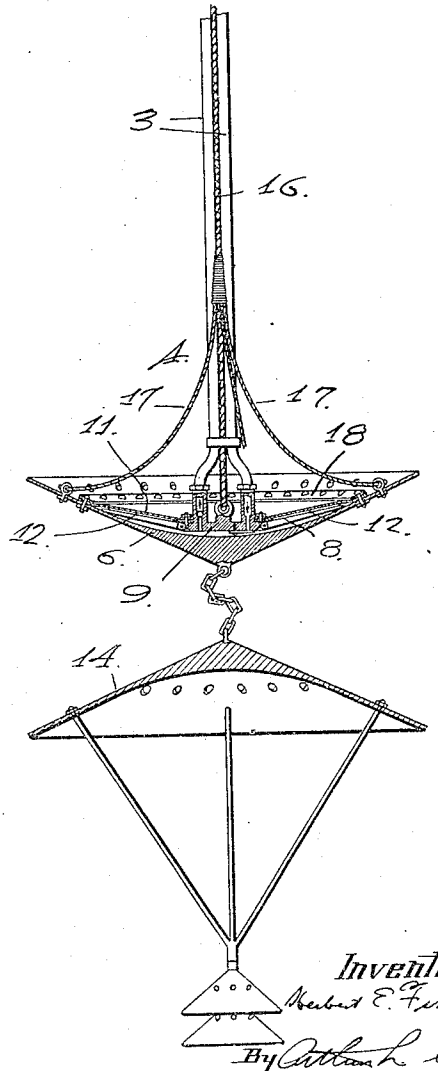
Patented Mar. 27, 1917.

2 SHEETS—SHEET 1.

Fig. 1.







Witnesses

Lynge Kromann

O. F. Mellin

Inventor

Herbert E. Fisher

By Arthur L. Lee

His Atty.

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WAVE MOTOR.

APPLICATION FILED FEB. 14, 1916.

1,220,618.

Patented Mar. 27, 1917.

2 SHEETS—SHEET 2.

Fig. 2.

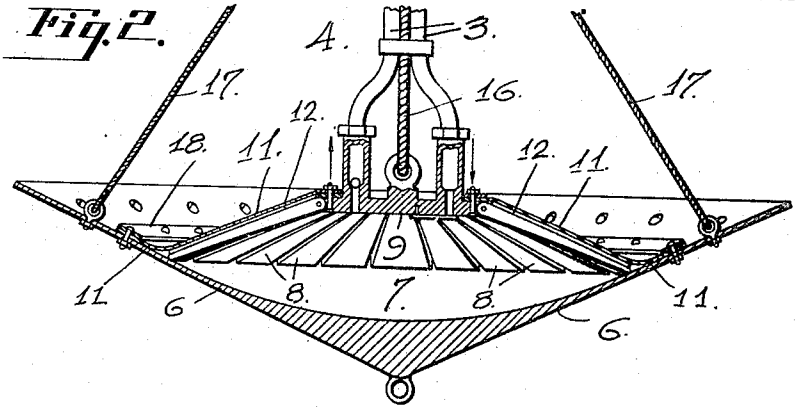


Fig. 3.

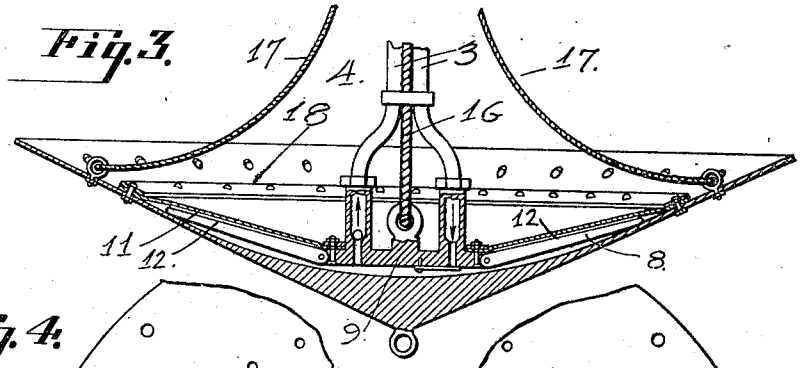
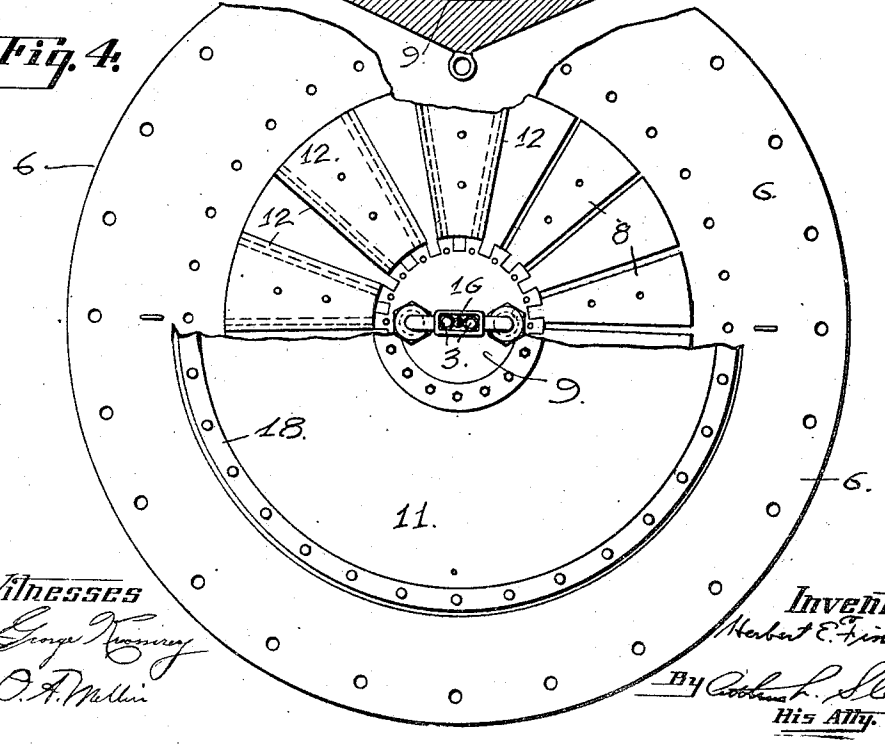


Fig. 4.



Witnesses

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His Atty.

UNITED STATES PATENT OFFICE.

HERBERT E. FISHER, OF SAN FRANCISCO, CALIFORNIA.

WAVE-MOTOR.

1,220,618. Specification of Letters Patent. Patented Mar. 27, 1917.

Application filed February 14, 1916. Serial No. 79,453.

To all whom it may concern:

Be it known that I, HERBERT E. FISHER, a citizen of the United States, residing in the city and county of San Francisco and State of California, have invented a new and useful Improvement in Wave-Motors, of which the following is a specification.

The main objects of this invention are to provide an improved support and reinforced diaphragm for the wave motor described in Patent No. 1,156,355, issued to me on the 12th day of October, 1915, reference to which is hereby made, in which the supporting cables are secured directly to said diaphragm; and the objects of the present invention are—

First, to provide an improved support adapted to relieve the diaphragm of the weight of the compressors; and

Second, to provide an improved diaphragm adapted to withstand a greater hydrostatic pressure.

I accomplish these several objects by means of the device disclosed in the drawings forming a part of the present specification wherein like characters of reference are used to designate similar parts throughout the said specification and drawings, and in which—

Figure 1 is a broken view partly in vertical section, disclosing the improved manner in which the collapsible members, shown in vertical section, are suspended from the float, one of said members being disclosed in an expanded and the other in a collapsed condition.

Fig. 2 is an enlarged sectional view of a collapsible member in an expanded position disclosing the improved reinforced construction of the diaphragm therefor, and

Fig. 3 is a similar view disclosing the member in a collapsed position.

Fig. 4 is a broken plan view of a collapsible member disclosing the overlapping edges of the improved diaphragm.

The following description relates to improvements in wave motors of the class fully described in the Patent No. 1,156,355 issued to me on the 12th day of October, 1915, reference to which is hereby made for a full and complete comprehension of the operation of the present invention, the purpose of which is to reinforce the diaphragm against the pressure of the surrounding water and also to relieve the same from the weight of the collapsible member.

In the present invention a suitable float 1 is provided with a compressed air receiver 2. Flexible connections 3 connect the receiver 2 with compressor chambers on the collapsible members 4 suspended from each end of the float 1.

Each collapsible member 4 consists mainly of a concaved plate 6 having a flexible diaphragm operatively connected thereto whereby an air compression chamber 7 is formed between said diaphragm and plate 6. The diaphragm is formed by means of radial plates 8 operatively secured at their inner ends to a central plate 9 outer ends thereof resting on the plates 6, and a flexible water-tight covering 11 of any suitable fabric, is secured over the plates 8. In order to prevent the pressure of surrounding water from forcing the fabric or covering 11 between the edges of the plates 8, I have provided each alternate plate 8 with a superimposed plate 12 the edges of which overlap each adjacent plate so that while the plates 8 and superimposed plates 12 are free to move relatively to each other by reason of said overlapping edges the fabric cannot become forced by means of the static pressure of surrounding water, between the edges of the plates 8. The outer ends of the plates 8 merely rest against the surface of the concaved plates 6 and are free to move as the plate 9 and diaphragm is lowered but are held in position by means of the fabric 11 which is securely held in position by means of suitable bands as shown at 18.

The collapsible members 4 have the retarding anchors 14 suspended therefrom as in my prior patent hereinbefore mentioned.

It is evident that in the case of my prior patent, where the supporting cables are secured directly to the diaphragm, the entire weight of the collapsible member and the retarding anchor 14 suspended therefrom, is borne by the said diaphragm which subjects said diaphragm to a greater strain after the same has reached its limit of expansion. In order to relieve the diaphragm of this extra strain after the air compression chamber 7 is fully expanded, I have provided the suspension cables 16 that are secured to the float 1 and to the central plates 9 of the diaphragms in order to expand the compression chamber 7 when that end of the float 1 to which that cable is attached is raised by the action of the waves and the cables 17 that are secured to the cables 16

at a proper distance above the plates 9 and also to the concaved plates 6. The length of the cables 17 is such that the weight of the plates 6 and retarding anchors 14 will be fully supported by said cables 17 when the plates 9 have reached the limit of their upward movement or when the compression chambers 7 are fully expanded.

In this manner the diaphragms are relieved of the excessive strain occasioned by the resistance of the collapsible members 4 and the retarding anchors 14 secured thereto during an upward movement of said members, after the compression chambers 7 have been fully expanded.

It is obvious from the foregoing that I have provided improved means for reinforcing the diaphragms against the pressure of the surrounding water and also improved means whereby the diaphragms have been relieved of the excessive strain when the compression chambers have been fully expanded.

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

The combination with a float having an air receiver thereon of a pair of hollow cone-shaped members; a flexible diaphragm consisting of radial members thereby forming a pressure chamber adapted to be normally compressed by the pressure of surrounding water; a covering of flexible fabric secured above the radial members; a second radial member interposed between the first mentioned members and the fabric and secured to every alternate radial member and overlapping each adjacent radial member thereby preventing pressure from forcing the fabric between the first mentioned members; suitable flexible connections between the air chambers and the air receiver on the float; and a suitable cable secured to each cone-shaped member and the diaphragm therefor and to each end of the float, and adapted to raise the diaphragm and thereby expand the compression chamber and to raise the cone-shaped member when said compression chamber is expanded, when that end of the float is raised by the action of waves.

In witness whereof I hereunto set my signature.

HERBERT E. FISHER.