MINE DISPOSAL HANDBOOK

PART IX

FRENCH UNDERWATER ORDNANCE

SEPTEMBER 1, 1945

CONFIDENTIAL

MINE DISPOSAL HANDBOOK

PART IX

FRENCH UNDERWATER ORDNANCE

CHAPTER I

FRENCH CONTACT MINES

SEPTEMBER 1, 1945

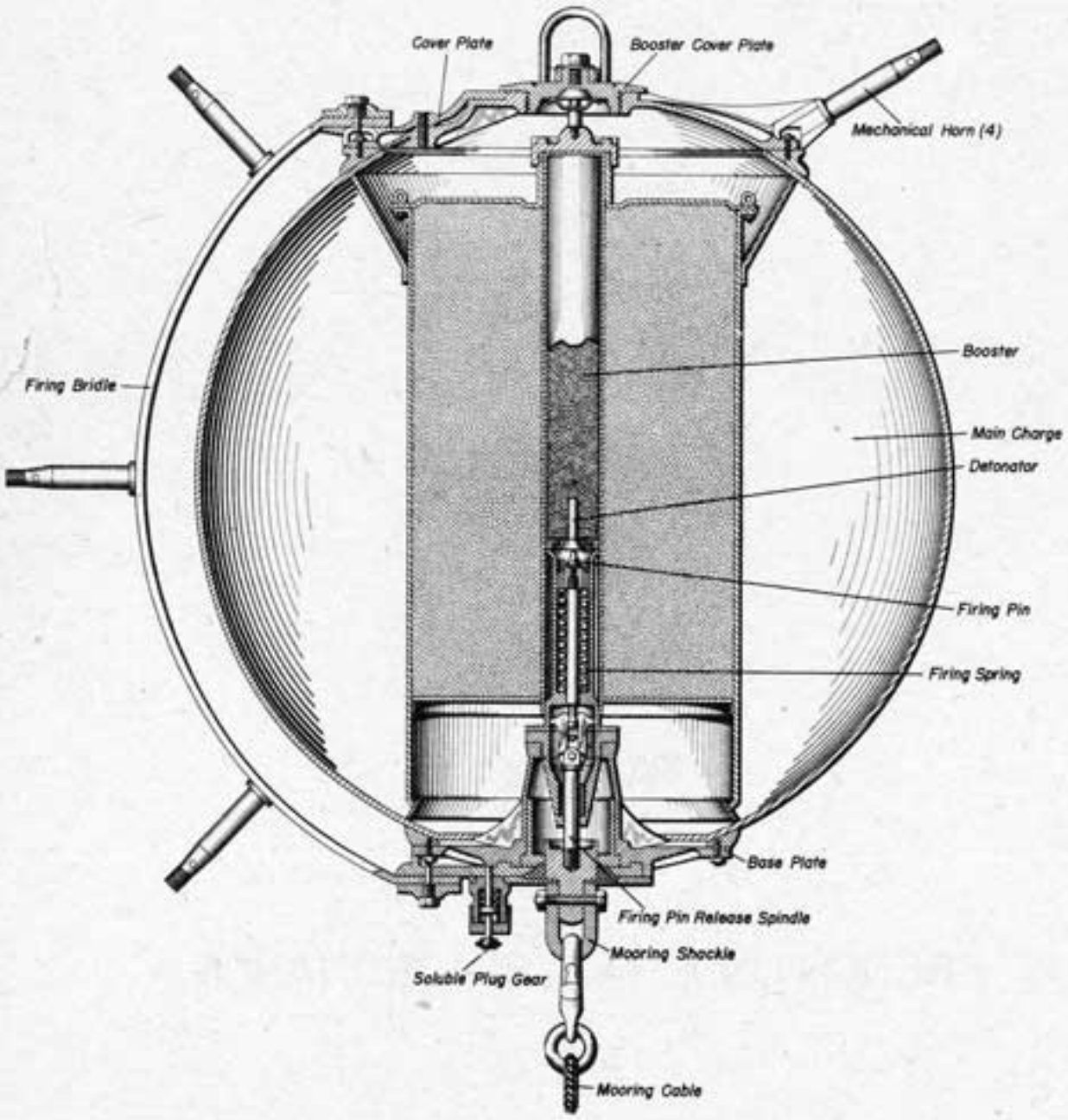


Fig. 1 - Breguet Mine (Bridle Type), Sectional View

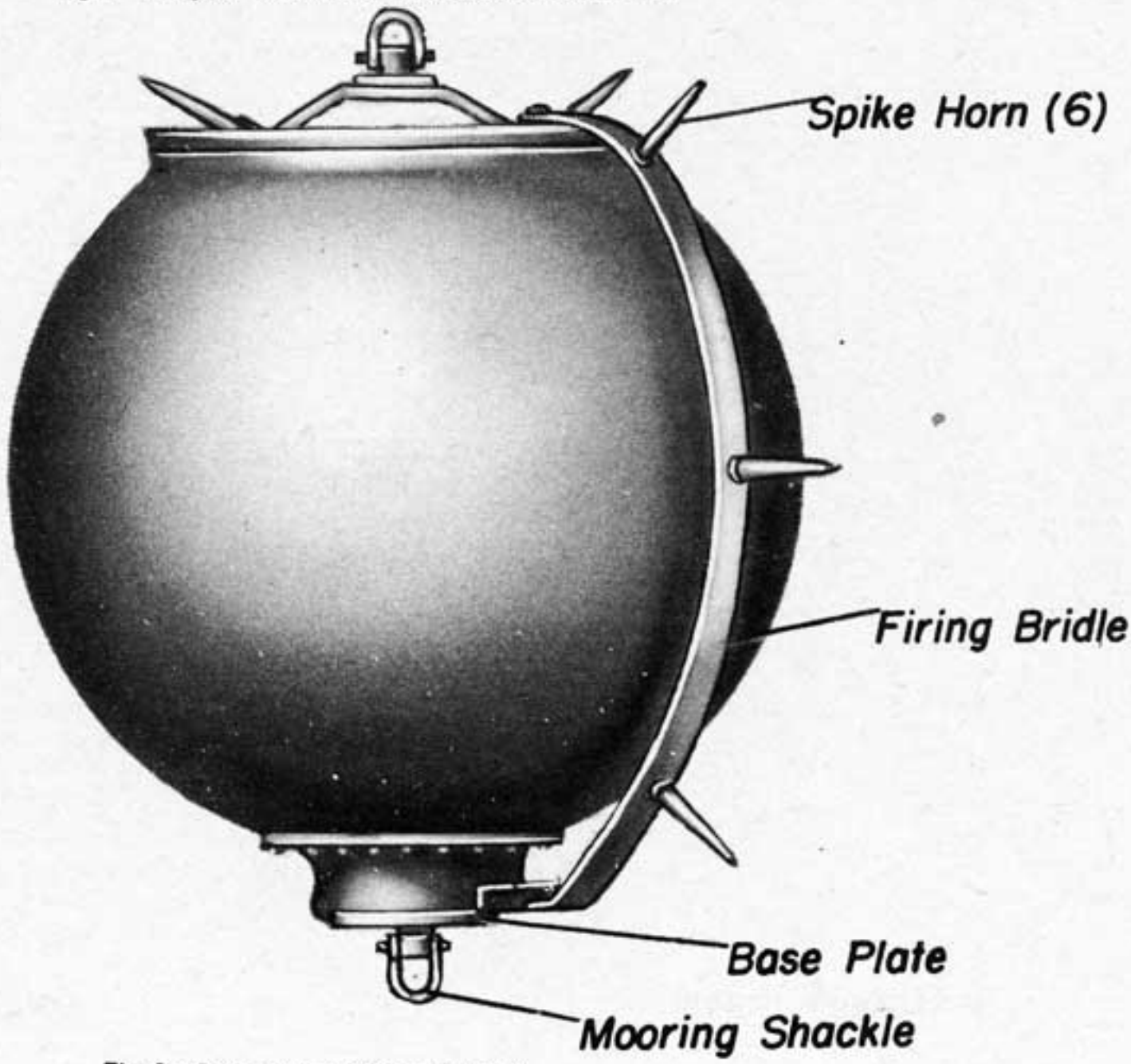


Fig. 2 - Breguet Mine (Bridle Type)

French Breguet (Bridle Type)

General

1. Moored, contact, mechanically-fired mine, laid by surface craft.
2. French designation, "B-1".
3. Defensive mine for use in maximum depth of water of 328 ft. against surface craft.

Description

1. Case

Shape	Spherical
Color	Black or galvanized metal
Material	Steel
Diameter	30"
Charge	130 lb. or 220 lb. TNT
Total weight in air	Unknown

2. External fittings

Firing bridle	Semi-circular, pivoted at centers of upper and lower hemispheres, respectively, fitted with six spike horns; restrained by a shear pin and a soluble plug, at the upper and lower ends, respectively.
Booster cover plate	In center of upper hemisphere; fitted with lifting eye.
Base plate	In center of lower hemisphere, secured by bolts, fitted with mooring and firing spindle.

Operation

1. Mine takes depth by plummet. Dissolution of a soluble plug leaves the firing bridle restrained only by the shear pin and the mine is armed.
2. Mine fires when the bridle is struck with sufficient force to cause rotation thereof. This aligns small arms on the mooring spindle with slots in the bridle and allows mooring tension to retract the spindle. Spindle retraction compresses a firing spring and releases a spring-loaded firing pin to impinge on the detonator.
3. No self-disarming devices are fitted.

Precautions

1. Take care not to rotate the bridle nor take any strain on the mooring and firing spindle.
2. Note that the detonator and booster are permanently married in the charge.

RMS

1. Unscrew the booster cover plate.
2. Remove the booster and detonator.
3. Dispose of detonator, booster, and charge.

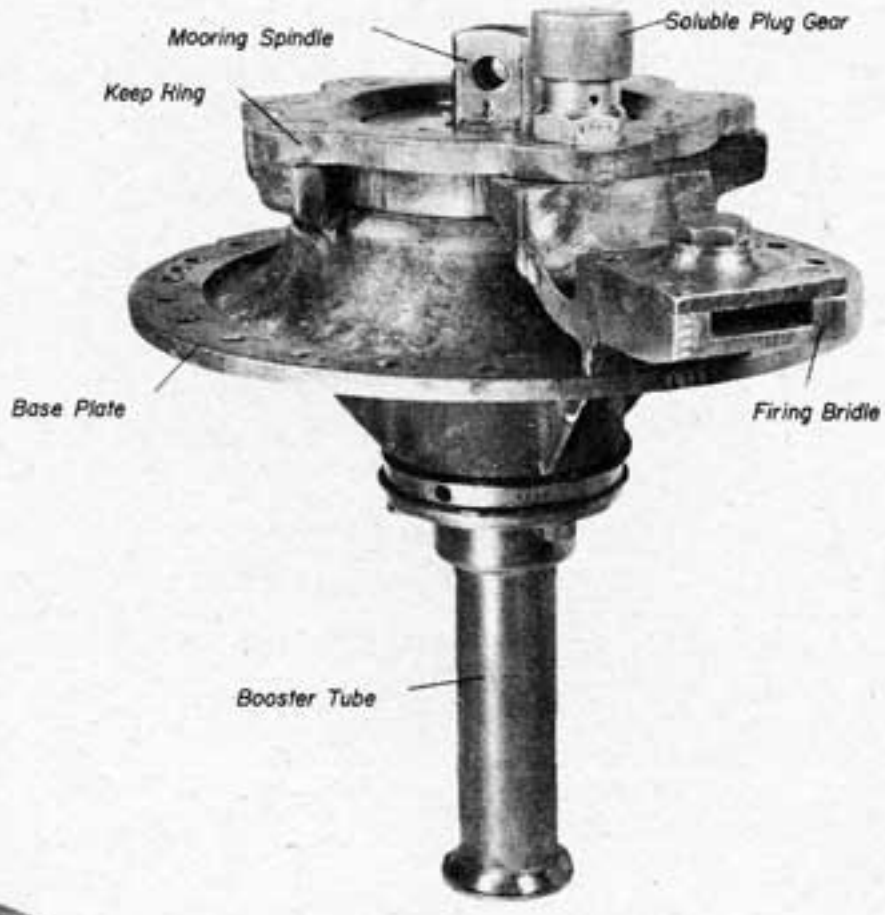


Fig. 3 - Breguet Mine (Bridle Type), Base Plate and Firing Mechanism Before Firing

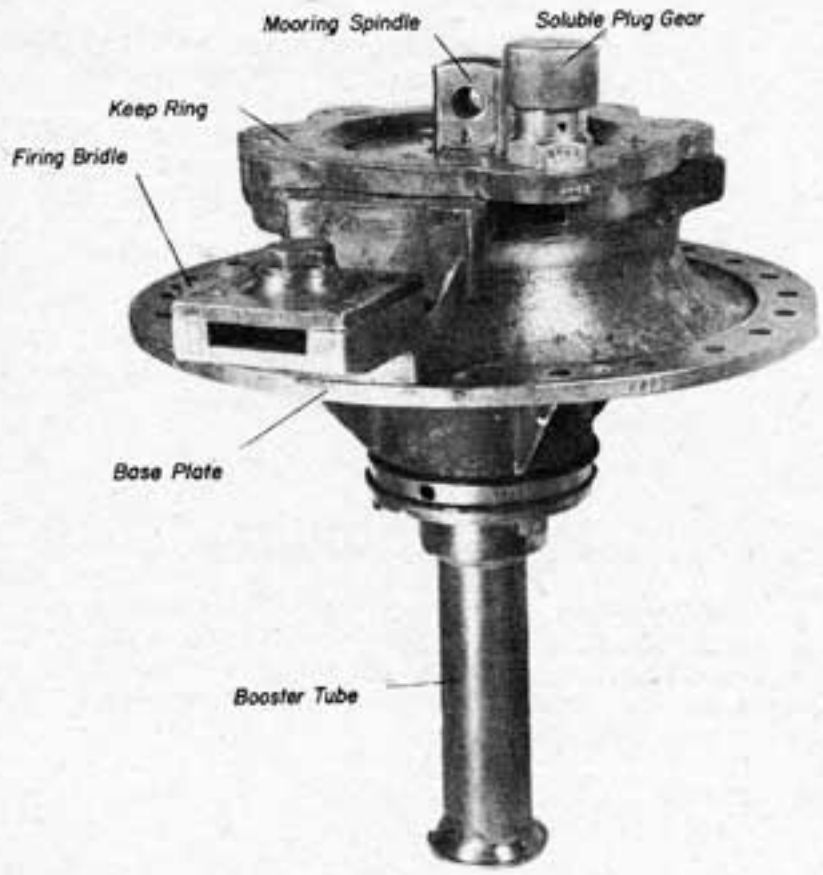


Fig. 4 - Breguet Mine (Bridle Type), Base Plate and Firing Mechanism Fired

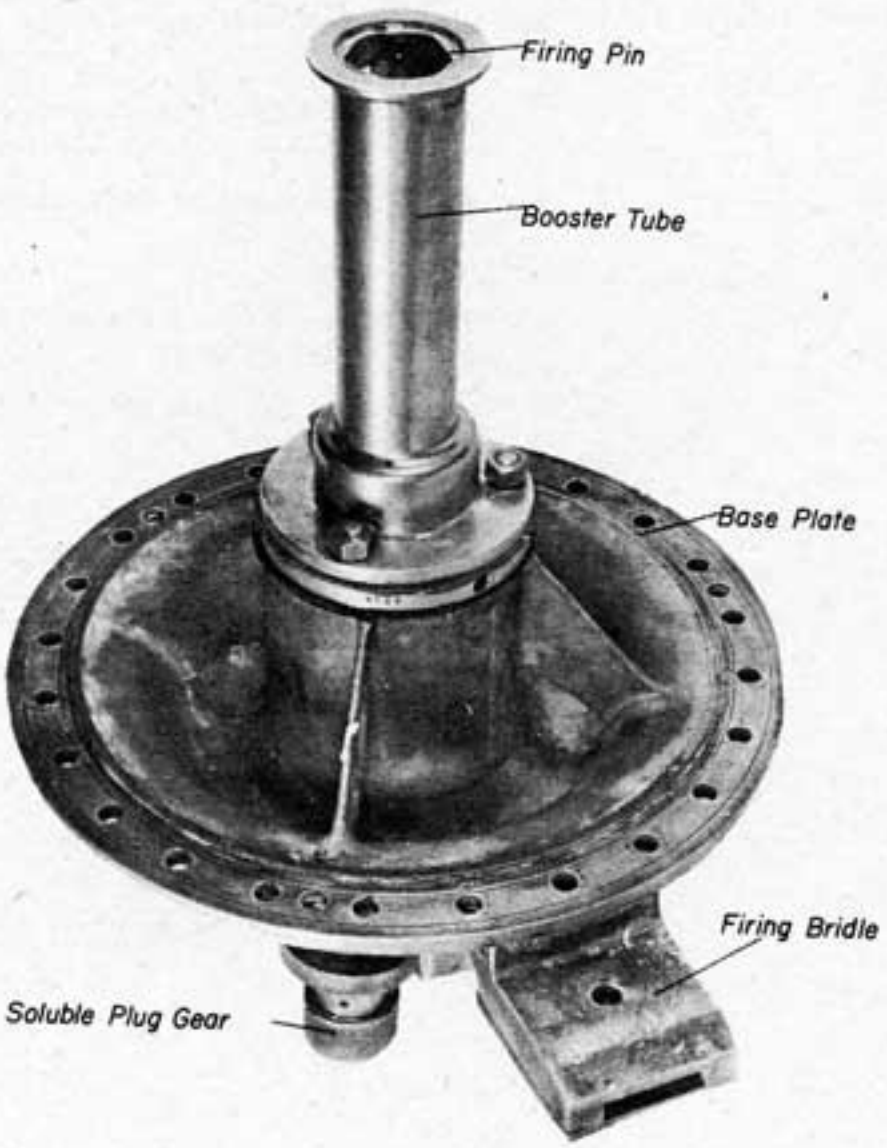


Fig. 5 - Breguet Mine (Bridle Type), Base Plate and Firing Mechanism, Interior View After Firing

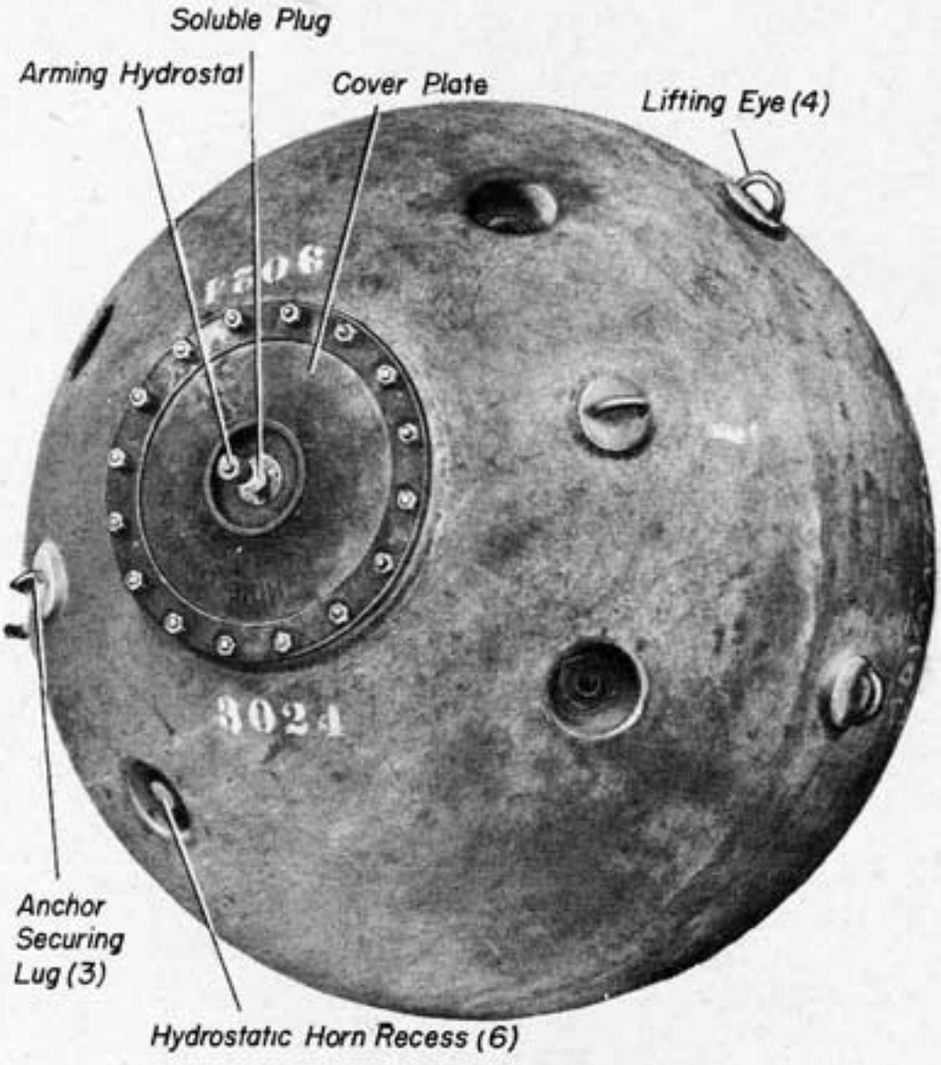


Fig. 6 - Breguet Mine (Shear Horn Type), Top View

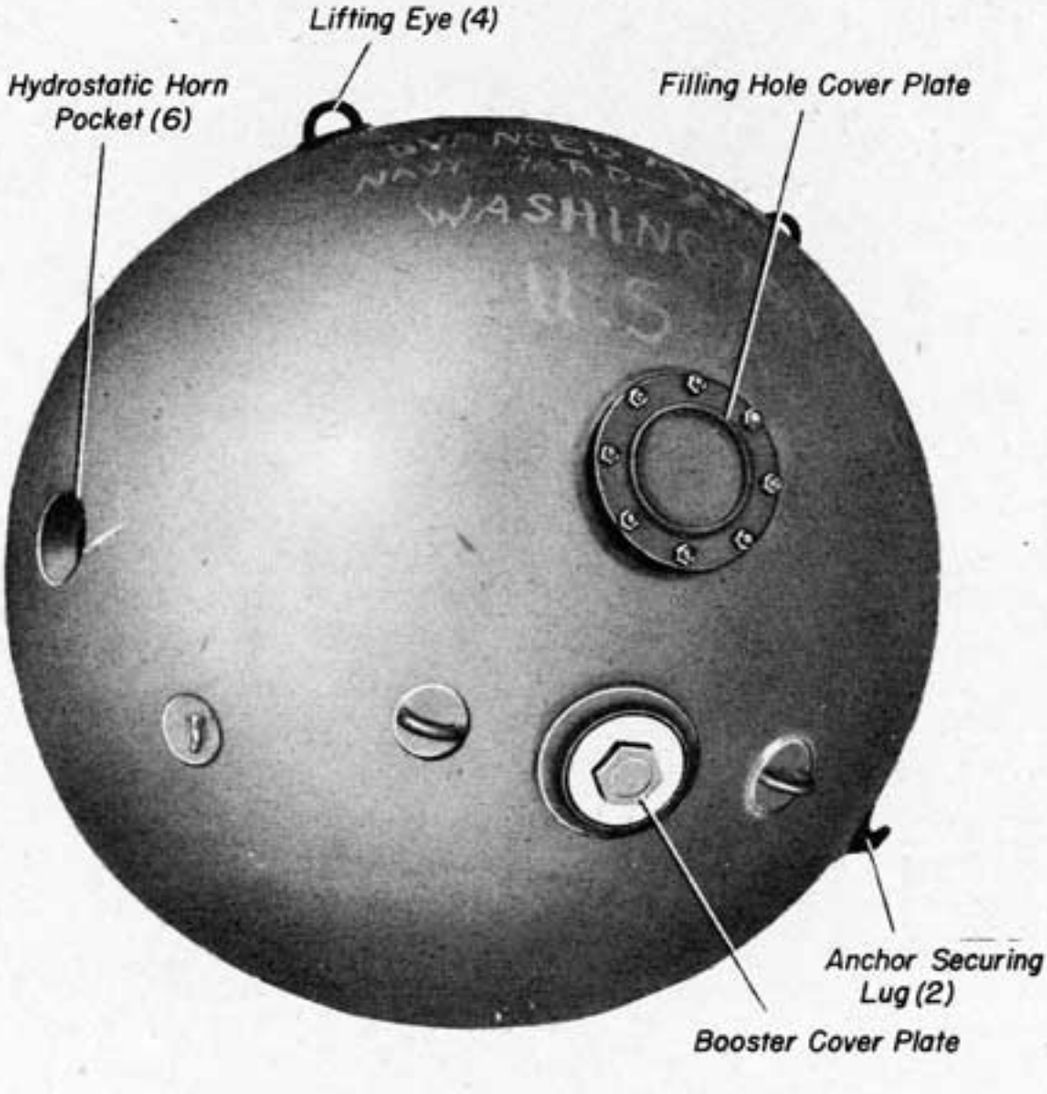


Fig. 7 - Breguet Mine (Shear Horn Type), Bottom View

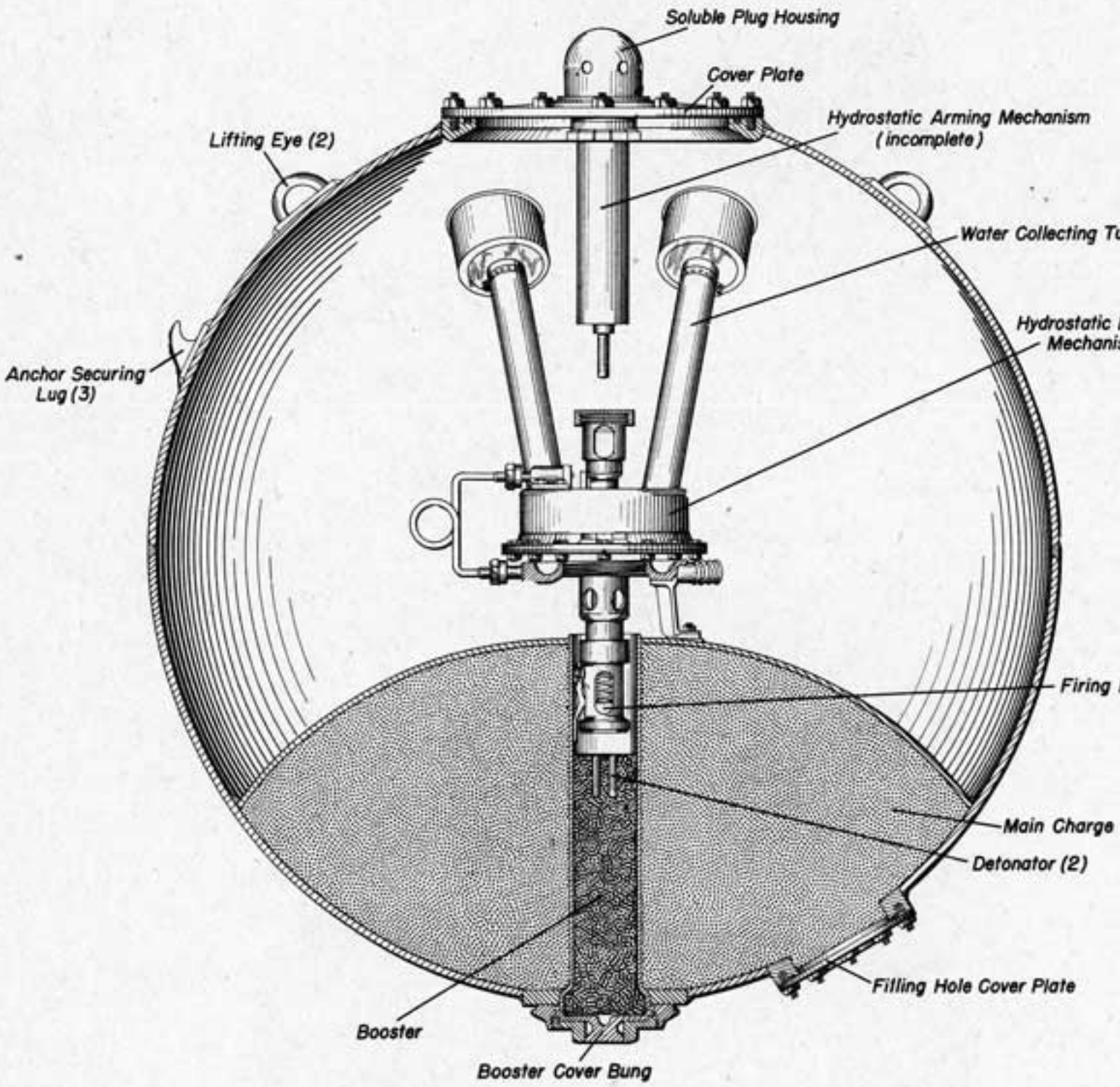


Fig. 8 - Breguet Mine (Shear Horn Type), Sectional View

French Breguet (Shear Horn Type)

General

1. Moored, contact, hydrostatically-fired mine, laid by surface craft.
2. French designation, "B4M".
3. Defensive mine for use in maximum depth of water of 990 feet against surface craft or submarines. Maximum depth of case when moored is 292 feet.

Description

1. Case

Shape	Spherical
Color	Black or galvanized
Material	Steel
Diameter	40"
Charge	176 lb. cast TNT
Total weight in air	451 lb.

2. External fittings

Horns	Six, spring-loaded, hinged type; four equally spaced about upper hemisphere, 12" from center; two on lower hemisphere, 21" from center.
Cover plate	10 3/4" diam., in center of upper hemisphere, secured by 16 bolts; fitted with an arming hydrostat.
Booster cover plate	3 1/2" diam., screwed into boss welded to center of lower hemisphere; fitted with hexagonal nut.
Filling hole cover plate	6" diam., on lower hemisphere, 9 1/2" from center, secured by 8 bolts welded to boss.
Mooring shackle securing eyes	Two, 180° apart, 6" from center of lower hemisphere.
Anchor securing lugs	Three; one on upper hemisphere, 17" from center; two on lower hemisphere, 14" from center.
Lifting eyes	Four on upper hemisphere, two 12" and two 21" from center.

Operation

1. Mine takes depth by plummet. Dissolution of a soluble plug allows the hydrostat to operate, arming the firing mechanism. Dissolution of another soluble plug causes the horn restraining ring to part, allowing the horns to spring out and lock in the extended position.
2. Mine fires when a horn is broken or sheared sufficiently to permit water to enter the firing ring. This operates the firing hydrostat which releases the spring-loaded firing pin to impinge on the detonator.
3. No self-disarming devices are fitted.

Precautions

1. Note that the detonator and booster are permanently married in the charge.

RMS

1. Unscrew the booster cover plate.
2. Remove the booster and detonator.
3. Dispose of detonator, booster, and charge.

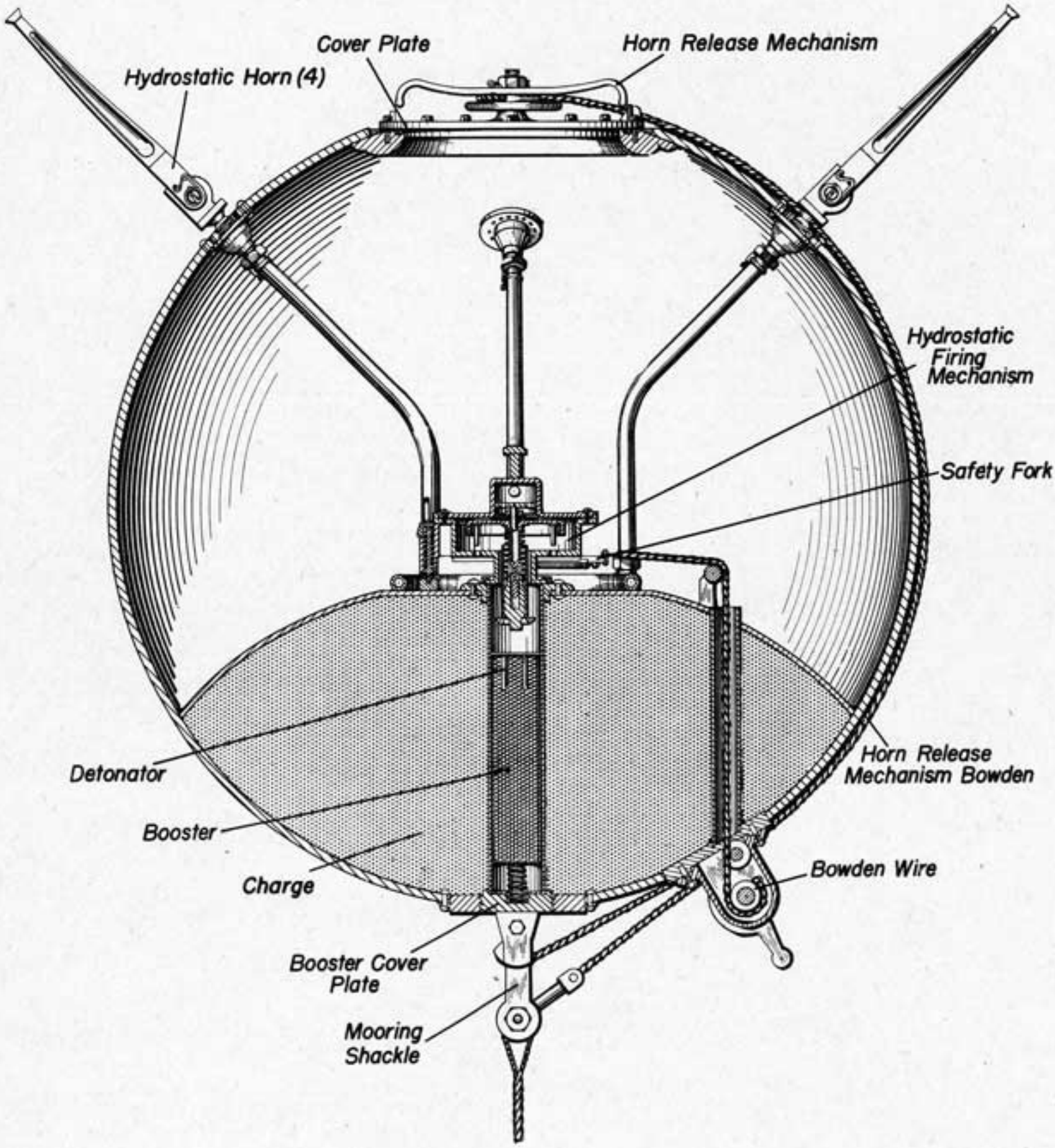


Fig. 9 - Sautter Harle Mine, Sectional View

French Sautter Harle

General

1. Moored, contact, hydrostatically fired mine, laid by submarine.
2. French designation, "HS4".
3. Offensive mine for use in maximum depth of water of 660 ft.

Description

1. Case

Shape	Spherical
Color	Black
Material	Steel
Diameter	40 1/2"
Charge	480 lb. Tolite
Total weight in air	433 lb.

2. External fittings

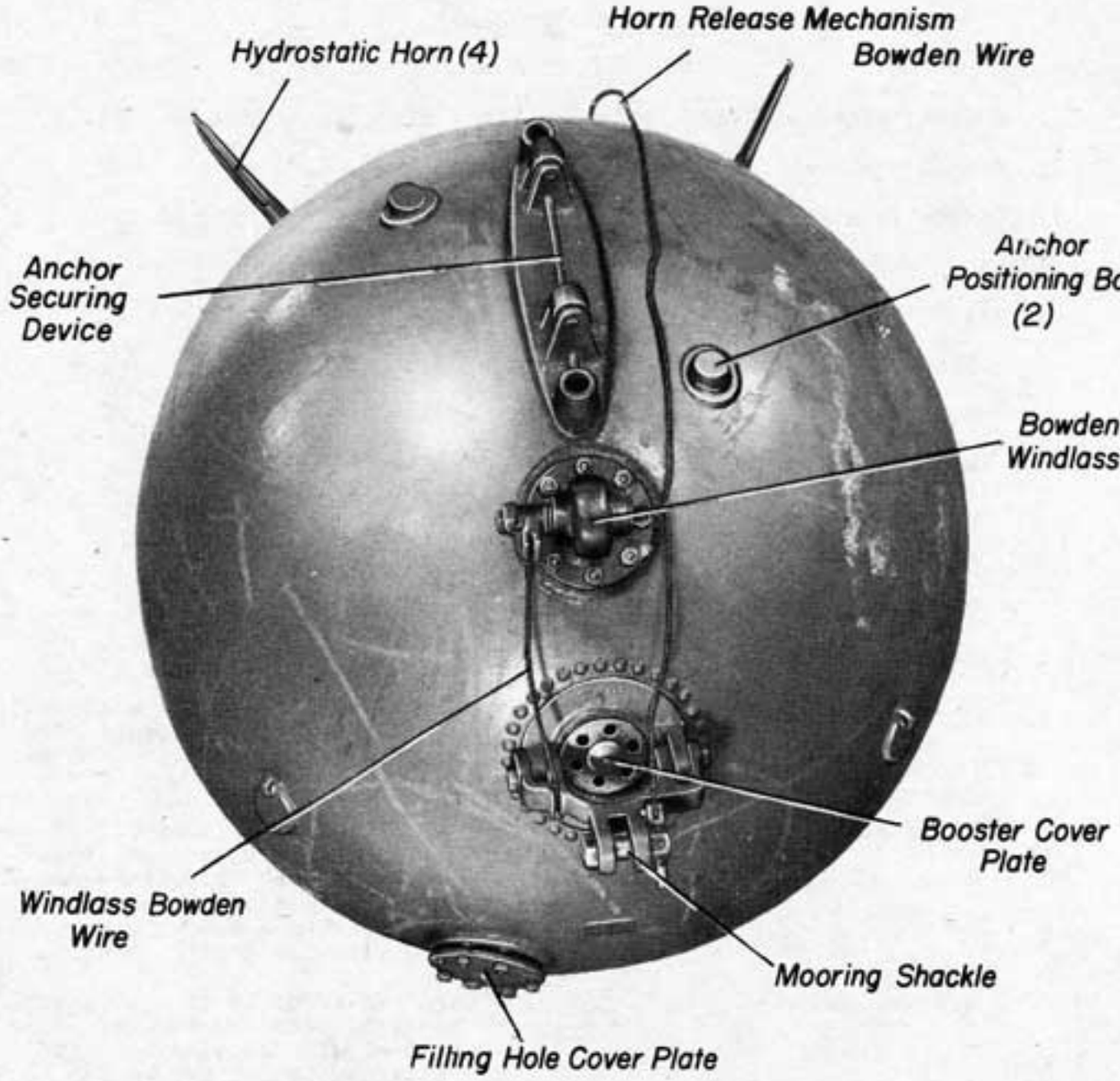
Horns	Four, spring-loaded, hinged type, 19" long, equally spaced about upper hemisphere, 17" from center.
Cover plate	12 1/2" diam., in center of upper hemisphere, secured by 12 bolts; fitted with cross-shaped horn release mechanism to which is attached a bowden wire leading from the mooring shackle.
Mooring shackle	In center of lower hemisphere, secured over the booster well; fitted with mooring bolt and attachments for two bowden wires.
Bowden windlass	On lower hemisphere, 12" from center, contained in a housing secured to case by 8 bolts.
Anchor securing device	Eliptical, 15" x 4", on lower hemisphere, 24" from center.
Anchor positioning bosses	Two, 1 1/2" diam., adjacent to anchor securing device.
Lifting eyes	Four; two on upper hemisphere, 17" from center; two on lower hemisphere, 29" from center.
Booster cover plate	3 1/2" diam., perforated, in center of lower hemisphere; fitted with hexagonal nut.
Anchor securing lugs	Four; two on upper hemisphere, 22" from center; two on lower hemisphere, 17" from center.
Filling hole cover plate	5" diam., on lower hemisphere, 16" from center.

Operation

1. Mine takes depth by the loose-bight hydrostat system. Mooring tension causes the mooring shackle to assume a position perpendicular to the axis of the case. This exerts tension on two bowden wires, performing the following:

   (a) The bowden wire leading from the shackle to the horn release mechanism rotates the mechanism, freeing the horns which spring out and lock in the extended position.

   (b) The bowden wire leading from the shackle to the windlass rotates the windlass, exerting tension on an interior bowden wire which removes a safety fork from and arms the firing mechanism.



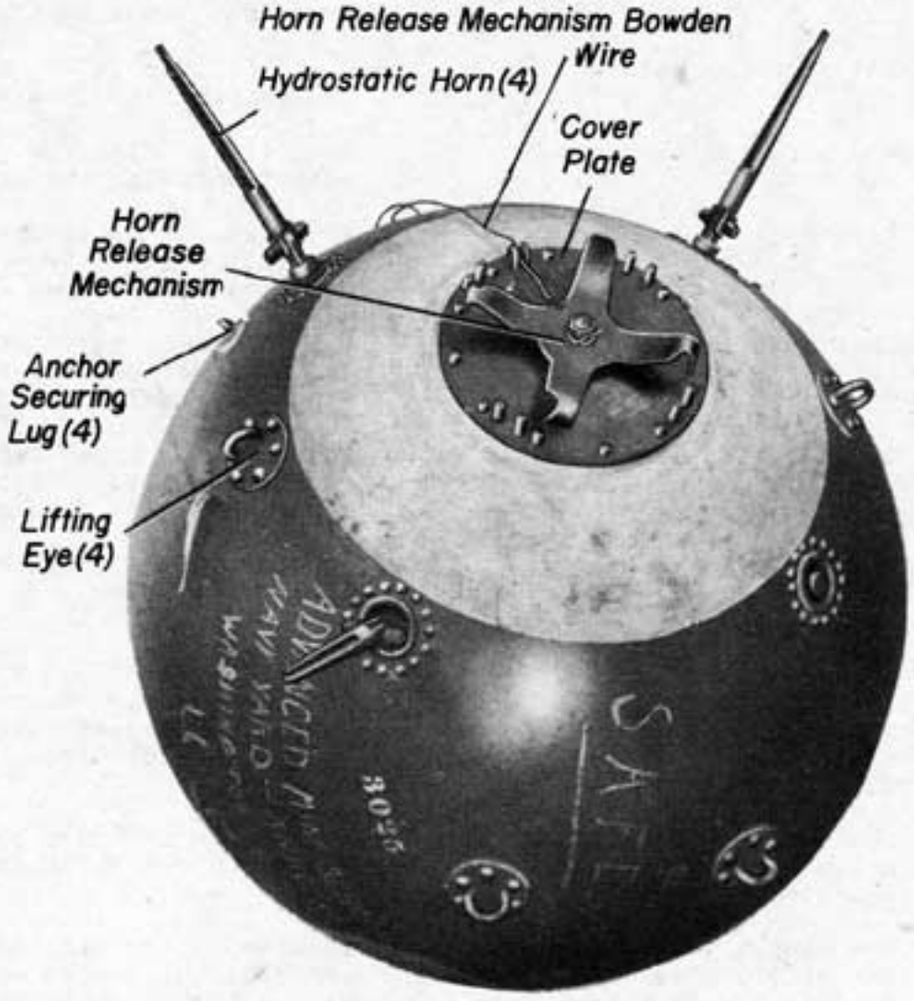


Fig. 11 - Sautter Harle Mine, Top View

(French Sautter Harle, Cont'd.)

2. Mine fires when a horn is broken or sheared sufficiently to permit water to enter the firing ring. This operates the firing hydrostat which releases the spring-loaded firing pin to impinge on the detonator.

3. The only self-disarming device is the safety fork which is designed to re-engage and lock the firing hydrostat upon release of mooring tension.

Precautions

1. Check the mooring shackle. Except in extreme emergency, do not attempt RMS unless the shackle is parallel to the bottom of the case.

2. Note that the detonator and booster are permanently married in the charge.

RMS

1. Unscrew the booster cover plate.

2. Remove the booster and detonator.

3. Dispose of detonator, booster, and charge.

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FRENCH UNDERWATER ORDNANCE

CHAPTER 2

FRENCH TORPEDOES

SEPTEMBER 1, 1945

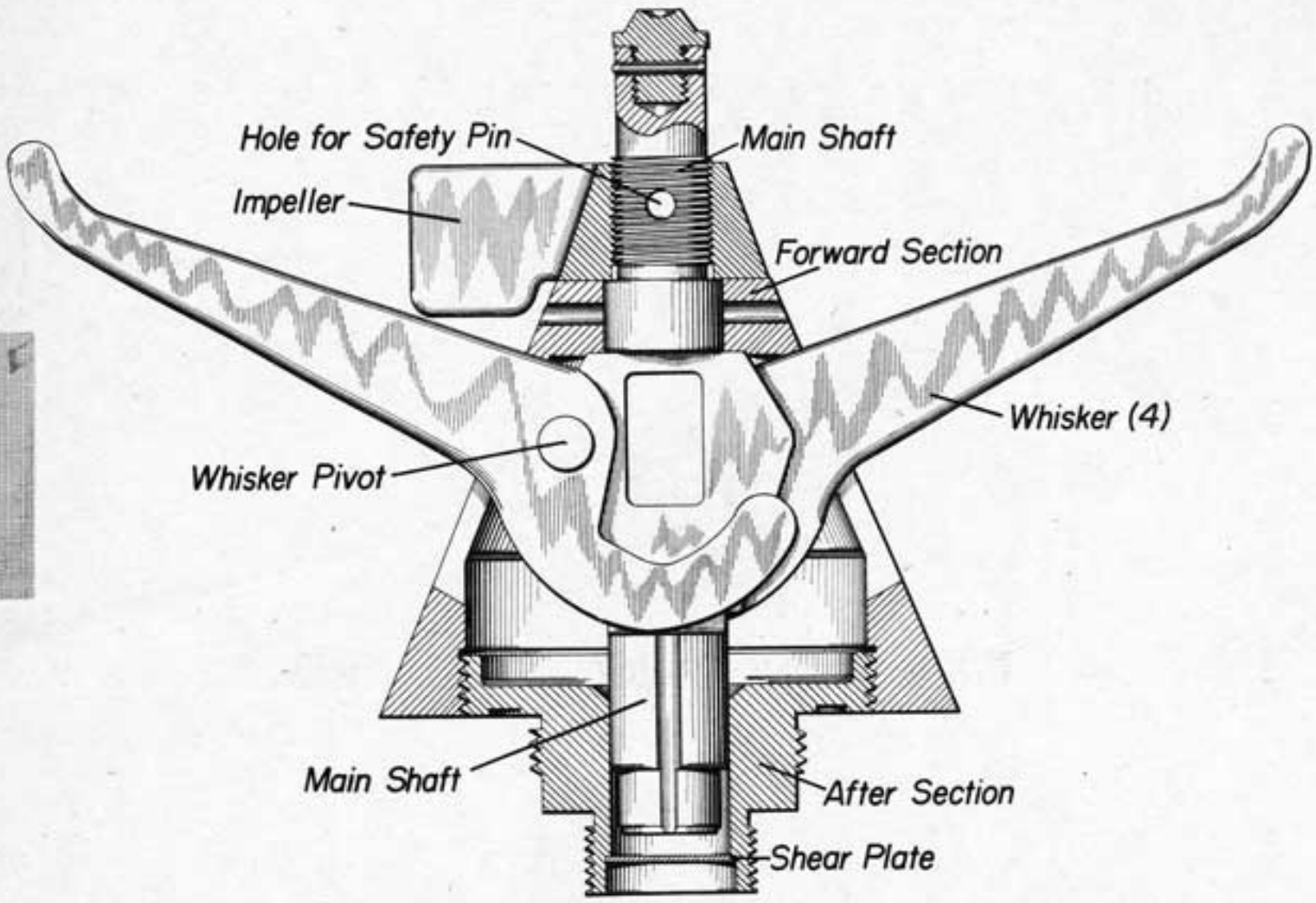

Fig. 1 - Impact Exploder, Sectional View

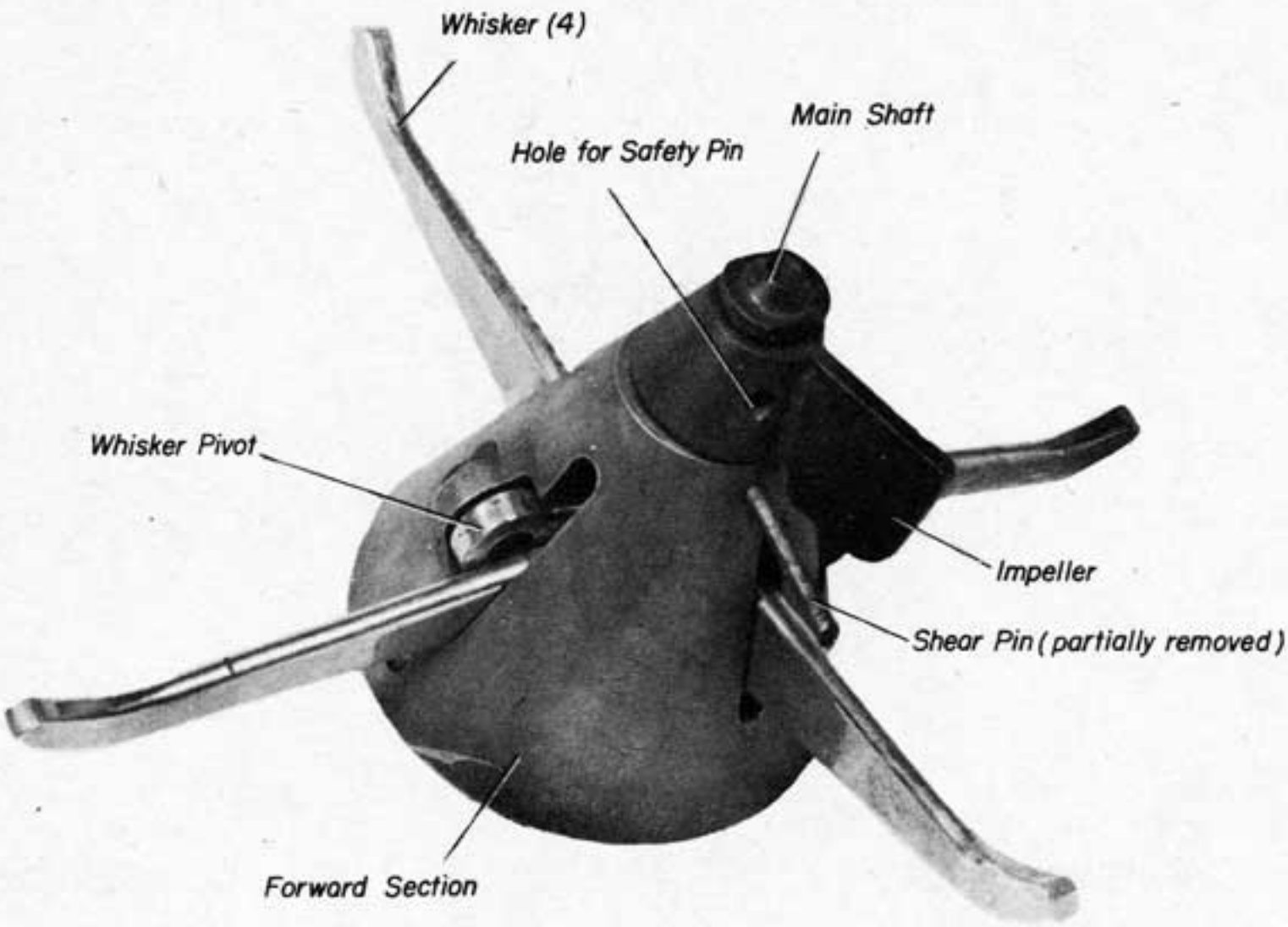

Fig. 2 - Impact Exploder

Impact Exploder

General

1. Impact-direct action type, fitted in nose pocket of warhead.

Description

1. External

   (a) The exploder is composed of the following main parts:

      (1) A forward section, 7 1/2" long and 5" in maximum diameter, which is shaped like a truncated cone and contains the arming and firing mechanisms. A single-bladed impeller is fitted to the end of a threaded shaft which protrudes 2 1/4" from the center of the nose. The impeller vane is 2" long and is prevented from rotating prior to launching by a safety pin. Four curved whiskers project 4 3/4" from slots in the side of the exploder body.

      (2) An after section which contains the detonator and booster. This section has not been recovered and no data are available as to its exact size and shape.

   (b) The two sections of the exploder are screwed together.

2. Internal

   (a) The main working parts of the exploder are as follows:

      (1) The main shaft which extends the length of the forward section. Its upper end is threaded to receive the arming impeller and is keyed to the exploder body by a large brass shear pin. Its mid-section is flattened to provide a pivot point for two of the whiskers. Its lower end forms a blunt firing pin with a shear plate serving both to restrain the shaft and separate it from the detonator.

      (2) The four whiskers, two of which are pivoted at the flattened mid-section of the main shaft. The other two are pivoted on the inside of the exploder body 180° around from their respective slots, and bear against the two whiskers which are pivoted on the main shafts.

3. Method of Mounting

   (a) The exploder is screwed into the warhead.

Operation

1. The safety pin is removed manually prior to launching the torpedo. When the torpedo is launched, water travel rotates the impeller, thereby unscrewing the impeller from the main shaft and arming the exploder.

2. The exploder fires when subjected to a blow of sufficient force, either on the main shaft or whiskers, to force the blunt end of the main shaft through the shear plate onto the detonator.

Precautions

1. Avoid all unnecessary contact with the whiskers or main shaft.

Rendering Safe Procedure

1. Wedge the whiskers so as to prevent any movement aft.

2. Unscrew the exploder from the warhead.

3. Unscrew the detonator and booster.

4. Dispose of detonator, booster, and charge.

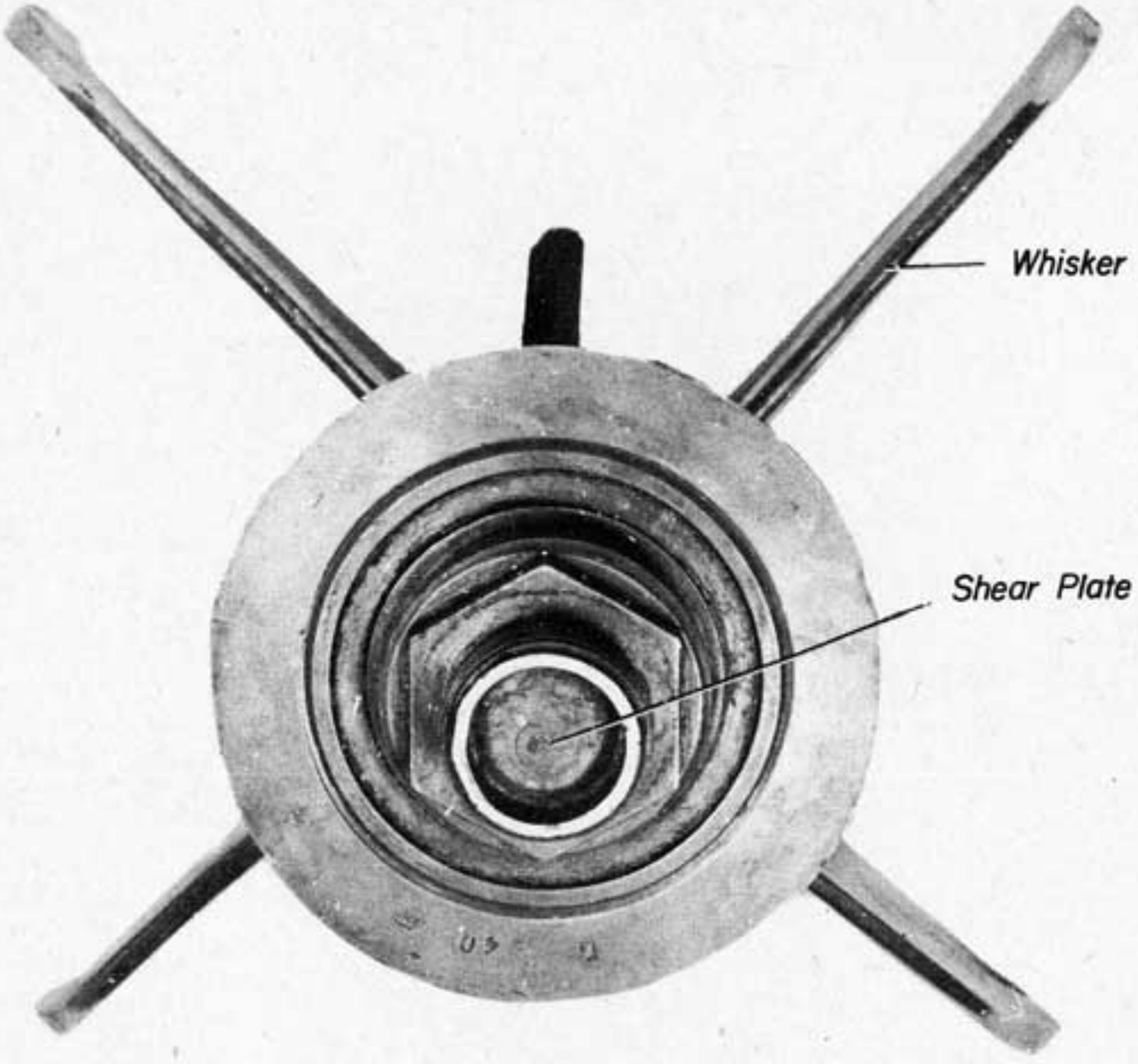

Fig. 3 - Impact Exploder, After End

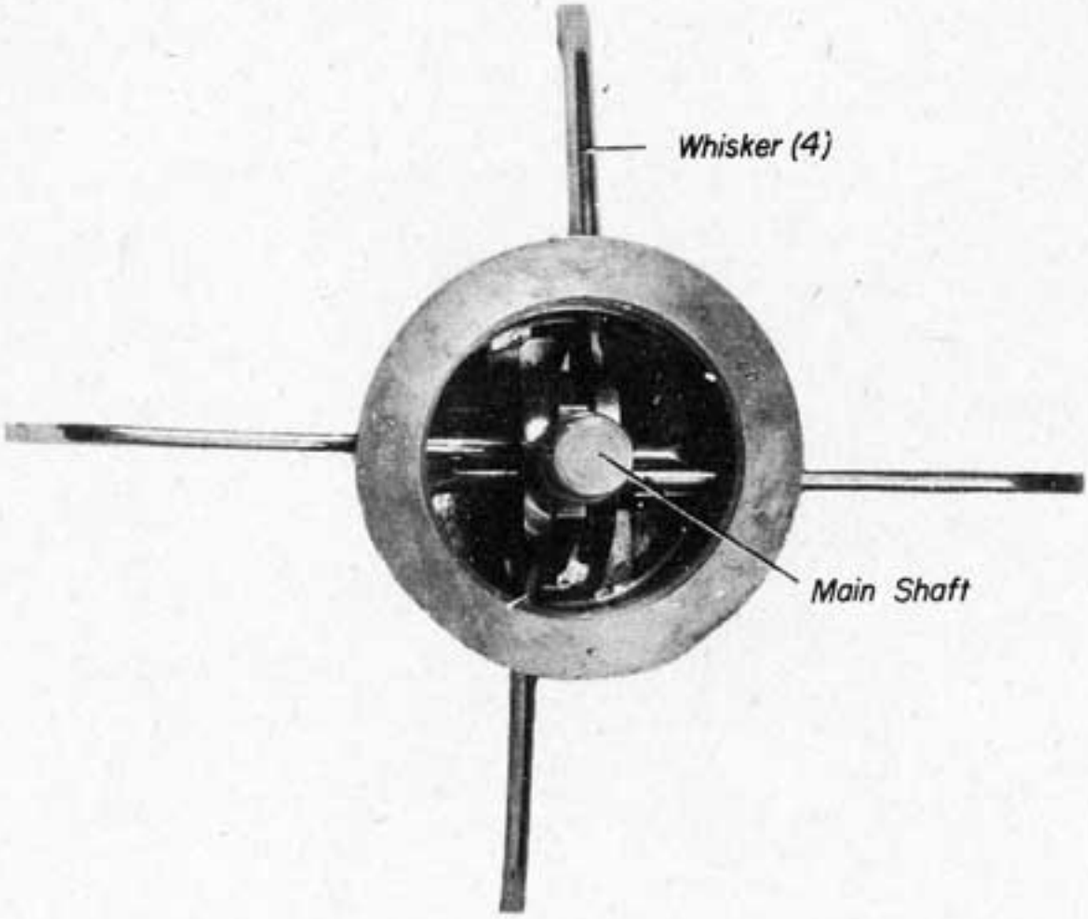

Fig. 4 - Impact Exploder, After Section Removed

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FRENCH UNDERWATER ORDNANCE

CHAPTER 3

FRENCH DEPTH CHARGES

SEPTEMBER 1, 1945

Fig. 1 - 100 Kg. Depth Charge, Top View

Fig. 2 - 100 Kg. Depth Charge, Bottom View

Fig. 3 - 200 Kg. Depth Charge, Top View

Fig. 4 - 200 Kg. Depth Charge, Bottom View

General

1. The French employ depth charges of three sizes, 200 kg., 100 kg., and 35 kg. All are made of steel with welded seams and are fitted with TNT charges. Surface launching is used.

2. Two standard-type hydrostatic pistols are employed, a 1923 model and a 1929 model. Depth settings are for 10, 25, or 50 meters. Nothing is known about either the boosters or booster extender mechanisms and no rendering safe procedures are known.

3. Table 1 incorporates all available information on the depth charge cases.

	200 Kg. Size	100 Kg. Size	35 Kg. Size
Shape	Cylindrical	Cylindrical	Cylindrical
Length	31 1/2"	31"	23 3/4"
Diameter	19 1/2"	14"	9 3/4"
Diam. filling hole	5 3/8"	5 3/8"	5 3/8"
No. of radial ribs on filling hole end case	8	6	6
No. of openings on end opposite filling hole	2 holes - 2 3/4"	2 holes 2 3/4"	4 holes 2 3/4"
Case weight	110 lb.	53 lb.	
Charge weight	440 lb. TNT	220 lb. TNT	77 lb. TNT

Table 1 - French Depth Charge Cases