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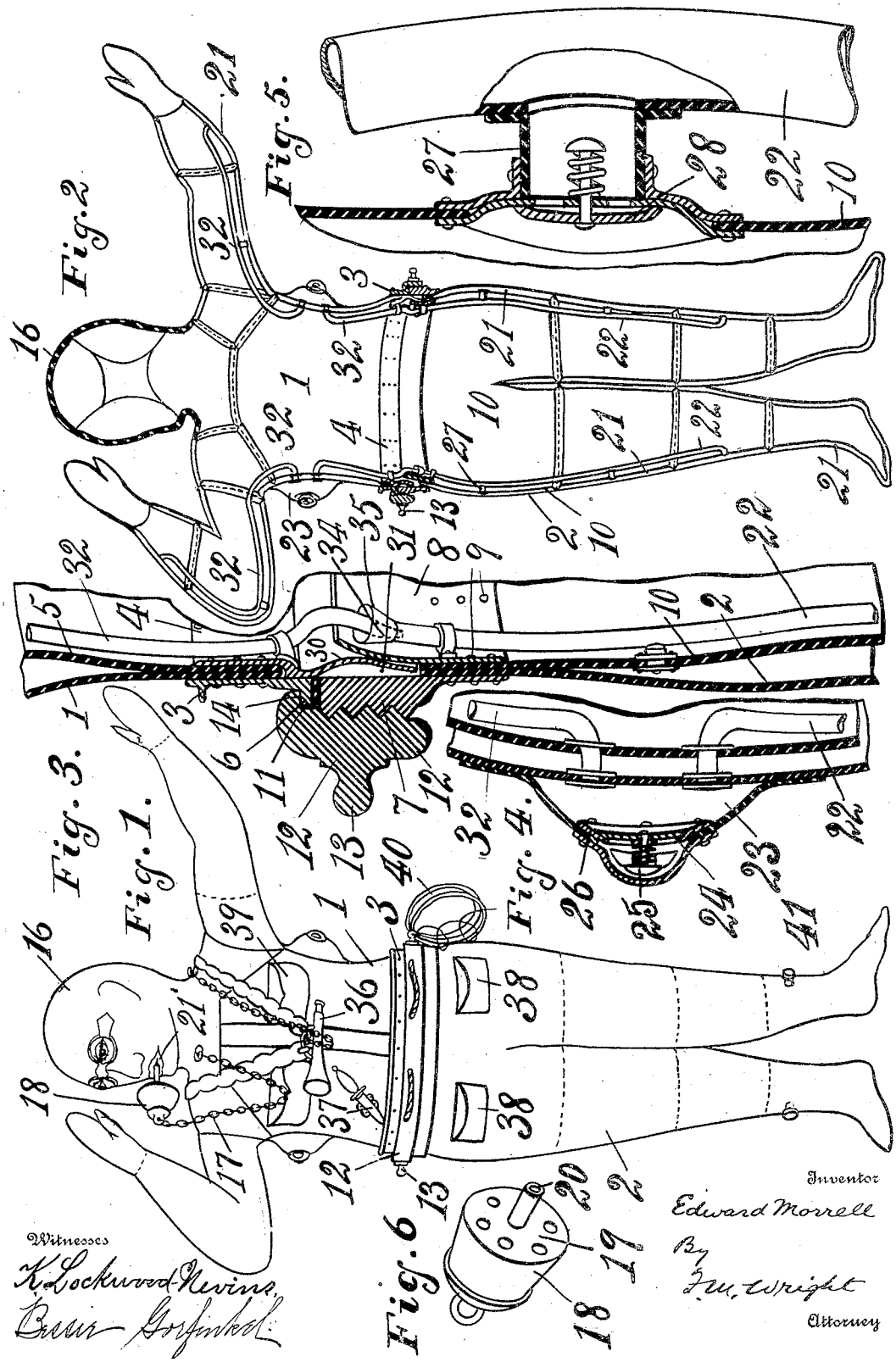
E. MORRELL.

PNEUMATIC LIFE SAVING SUIT.

APPLICATION FILED JUNE 14, 1904.



UNITED STATES PATENT OFFICE.

EDWARD MORRELL, OF SAN QUENTIN, CALIFORNIA.

PNEUMATIC LIFE-SAVING SUIT.

No. 836,524. Specification of Letters Patent. Patented Nov. 20, 1906.

Application filed June 14, 1904. Serial No. 212,577.

To all whom it may concern:

Be it known that I, EDWARD MORRELL, a citizen of the United States, residing at San Quentin, in the county of Marin and State of California, have invented certain new and useful Improvements in Pneumatic Life-Saving Suits, of which the following is a specification.

My invention relates to an improved pneumatic life-saving suit, the object of my invention being to provide a pneumatic suit adapted for saving life at sea.

My invention therefore resides in the novel construction, combination, and arrangement of parts for the above ends, hereinafter fully specified, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a front elevation of the device. Fig. 2 is a vertical section of the same. Fig. 3 is an enlarged vertical section of the upper portion of the pants part of the device, showing their mode of union. Fig. 4 is an enlarged detail sectional view of the pump or bellows for supplying air to the pneumatic compartments. Fig. 5 is a similar view of the check-valve for one of said compartments. Fig. 6 is a detail perspective view of the breathing tube or bulb.

Referring to the drawings, 1 represents the upper or shirt part of the device, and 2 the lower or pants part. Both of these are made of the best quality of india-rubber. They are connected for use in the following manner: A metallic shirt-waist band 3 is riveted to a metallic inner waistband 4, clamping therebetween the lower edge of the shirt part 1 of the device and of the lower lining or casing 5 of the pneumatic compartments of the shirt-waist portion. This upper shirt-waist band is circular and has a flange 6. 7 represents the lower or pants waistband, also made of metal, between which and the inner lower waistband 8 are clamped by rivets 9 the upper edges of the lower or pants portion 2 of the suit and the inner lining or sides 10 of the pneumatic compartments of the lower portion. This lower waistband 7 is threaded, as shown, and between the upper edge of said lower waistband and the flange 6 is a rubber washer 11. Around said threaded portion is a coupling-band 12, having handles 13, by which it can be turned, and having a shoulder 14, which bears down upon the flange 6, so that by turning the coupling-band on the threaded portion of the lower waistband said washer is clamped firmly between the upper and lower waistbands and the suit is made thoroughly tight. The method of connecting the two portions of the suit may, however, be varied without departing from the spirit of my invention.

16 is the helmet or head-piece of the suit, made of heavy rubber, about one-eighth of an inch thick or more, to secure protection from the force of the waves, wreckage, &c. It is fitted with two eyeglasses of suitable size. To facilitate breathing, there is attached to the suit, by a small chain 17, a bell-shaped air-bulb 18, about three inches in maximum diameter and three and one-half inches in maximum length. This bulb has a perforated back 19, to which is connected a stiff rubber tube 20, about three inches long, which when the bulb is in use fits into a metal screw-plate 21'. This air-bulb serves as a mouthpiece to the helmet when the wearer is floating in a heavy sea; but it may be unscrewed and left to dangle by the chain during a calm and when conveying food and water to the mouth. The base or perforated portion of the air-bulb 18 is adapted to cover that portion of the face around the screw-plate in order to deflect the water off when it splashes over upon it. The air-perforations are located on the inner side of the bulb and extend up from the base, about one and one-half inches preferably. The shank of the breathing-tube 20 is adapted to enter the screw-plate at the mouth and is nipple-shaped to be inserted between the lips. Should water enter, it would be ejected by simply blowing it out.

Each part of the suit is divided into separate and independent air-compartments, so that in the event of any puncture of any section of the suit the buoyancy of the suit will not be entirely destroyed. These compartments are shown at 21. The compartments are all connected separately with tubes 22, which may be either of metal or of rubber. Each tube opens at its supply end into a bellows or pump 23, (shown in detail in Fig. 4,) consisting of a bell-shaped piece of rubber at-

tached to the side of the suit underneath the arm and having a check-valve 24. The head 25 of this check-valve rests against a metal band 26, so that upon pressing down the arm against the side of the suit said check-valve is maintained closed while the air is forced into the tubes. Upon raising the arm the check-valve is unseated by the spring, admitting air to the bellows.

The pipe is connected by short pieces 27 with the inner linings or walls of the compartments, the end of which piece having therein a spring-actuated check-valve 28, which permits air to enter from the pipe, but prevents passage of air from the compartment into the pipe. It will readily be seen that by moving the arms in and out air can be pumped from the outside into the compartments to keep them well filled, so as to give buoyancy to the structure. Each compartment being separately attached to the pipe, the puncture of one compartment will not affect the rest.

The upper inner waistband 4 has an annular tongue 30, which when the parts of the suit are put together enters an annular groove 31, formed by the lower inner waistband, thus guiding the parts into position. The tubes which supply the compartments are also in two sections, one section 32 belonging to the upper or shirt part of the suit and the other section 22 to the lower or pants part of the suit. The upper sections have pointed ends 34, (shown in dotted lines in Fig. 3,) which fit within the funnel-shaped ends 35 of the lower portions, thereby making a tight fit when the parts are brought together.

36 represents a horn, which may be blown to attract attention, and 37 represents a knife for defence or other purposes

38 39 represent pouches to contain food-tablets or medicines.

40 is a rope secured upon the handle of the device.

The lowest compartments of all are adapted to contain drinking-water or ballast and are furnished with nozzles 41, to which may be attached a tube by means of which water can be sucked up when necessary. This rubber tube is contained in one of the pouches, which are both at the front and at the back, said pouches being adapted to hold other articles, such as a compass, matches, and stimulants.

While I have herein described the preferred form of my invention, it is to be understood that the invention is not limited to the precise details herein shown, but may be variously changed in form and structure without departing from the spirit thereof.

I claim—

1. In a pneumatic life-saving suit divided into two separate garments adapted to be fastened together, pumps or bellows located beneath the arms in position to be operated by the raising and lowering motion of the wearer's arms the pumps or bellows connected with the two separate garments of the suit.

2. A pneumatic life-saving suit divided into two separate garments adapted to be fastened together, pumps or bellows located beneath the arms in position to be operated by the latter and tubes leading from the pumps or bellows to the two garments.

3. A pneumatic life-saving suit composed of two garments adapted to be joined together air-tight, said garments comprising arms and legs, pumps or bellows located beneath the arms in position to be operated by the wearer's arms as they are raised and lowered and tubes extending from the pumps or bellows to the arms and legs of the garments.

4. A pneumatic life-saving suit divided into separate, independent air-compartments, so that in the event of any puncture of any compartments of the suit, the efficiency of the remainder of the suit will remain unimpaired, pumps or bellows located beneath the arms in position to be operated by the wearer's arms as they are raised and lowered, tubes extending from the pumps or bellows to the various compartments and check-valves which permit air to enter the compartments and prevent its return into the tubes.

5. An improved life-saving suit comprising two parts having pneumatic compartments, means for clamping the parts together, means for filling the pneumatic compartments with air, said means comprising an air-pump located beneath the arms in position to be operated by the wearer's arms as they are raised and lowered, a tube leading from said air-pump to said compartments and a check-valve for each compartment.

6. An improved life-saving suit having compartments, means for securing the same around the body, an air-pump located beneath the arms in position to be operated by the latter as they are raised and lowered, a tube leading from said air-pump to the compartments and a check-valve for each compartment.

7. An improved life-saving suit comprising two parts having pneumatic compartments, means for filling the pneumatic compartments with air, said means comprising air-pumps located under the arms in position to be operated by the wearer's arms as they are raised and lowered, and connections between said pumps and the compartments.

8. The combination with a helmet of a life-saving suit, having a screw-plate therein, of a removable bell-shaped air-bulb having a

perforated base and a nipple-tube adapted to be removably inserted in the screw-plate.

9. In a life-saving suit, the combination with a helmet having a screw-plate, of an air-bulb having a perforated back and provided with a tube adapted to fit and be removably secured in the metal screw-plate.

In witness whereof I have hereunto set my hand in the presence of two subscribing witnesses.

EDWARD MORRELL.

Witnesses:
A. K. MAGUIRE,
THOS. W. MORRIS.