

UNITED STATES PATENT OFFICE.

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DIVING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 244,062, dated July 12, 1881.

Application filed May 2, 1881. (Model.)

To all whom it may concern:

Be it known that I, ACHILLES KHOTINSKY, of the city, county, and State of New York, have invented a new and Improved Diving

5 Apparatus, which invention is fully set forth in the following specification, reference being had to the accompanying drawings, in which—
Figure 1 represents a transverse vertical section in the plane $x x$, Fig. 2. Fig. 2 is a
10 longitudinal vertical section in the plane $y y$, Fig. 1. Fig. 3 is a plan view, partly in section. Fig. 4 is a transverse section in the plane $z z$, Fig. 2.

Similar letters indicate corresponding parts.

15 This invention relates to an improvement in diving apparatus; and it consists in the combination of reservoirs (one or more) containing oxygen, diaphragm-chamber containing a diaphragm for regulating the outflow of oxygen,
20 tube for leading the oxygen into a mixing-bellows, bellows-chamber containing a mixing-bellows for receiving the exhaled air and the oxygen, purifier for freeing the air to be inhaled from its noxious qualities, and breathing-pipe provided with two branches, one for
25 leading the exhaled air into the mixing-bellows and the other for supplying pure air from the purifying-chamber to the diver, all combined and operating as will be hereinafter more fully set forth; also, in the combination,
30 in a diving apparatus, of reservoirs (one or more) containing oxygen, diaphragm-chamber containing a diaphragm for regulating the outflow of oxygen, tube for leading the oxygen
35 into a mixing-bellows, bellows-chamber containing mixing-bellows for receiving the exhaled air and oxygen, pressure-bellows for regulating the pressure in the mixing-bellows, purifier for freeing the air to be inhaled of its
40 noxious qualities, and a breathing-pipe provided with two branches, all combined and operating as will be hereinafter more fully set forth; also, in the combination, in a diving apparatus, of reservoirs (one or more)
45 containing oxygen, diaphragm-chamber containing a diaphragm for regulating the outflow of oxygen, tube for leading the oxygen to the mixing-bellows, bellows-chamber containing a mixing-bellows for receiving the exhaled
50 air and oxygen, pressure-bellows for regulating the pressure in the mixing-bellows, set-

screw for modifying the efficiency of said pressure-bellows, purifier for freeing the air to be inhaled of its noxious qualities, and a breathing-pipe provided with two branches, all combined and operating as will be hereinafter described; also, in the combination of a diving apparatus, constructed as set forth, with a secondary chamber for receiving and supplying oxygen to a lamp, as will be hereinafter described; also, in the combination, in a diving apparatus, of reservoirs (one or more) containing oxygen, diaphragm-chamber containing a diaphragm for regulating the outflow of oxygen, set-screw for modifying the efficiency of said diaphragm, tube for leading the oxygen into a mixing-bellows, bellows-chamber containing mixing-bellows for mixing the exhaled air and oxygen, pressure-bellows for regulating the pressure in the mixing-bellows, purifier for freeing the air to be inhaled of its noxious qualities, and a breathing-pipe provided with two branches, all combined and operating as will be hereinafter more fully set forth; also, in the method hereinafter described for supplying air fit for breathing by injecting into a suitable mixing-chamber a given quantity of nitrogen and of oxygen, inhaling this mixture, and blowing the exhalation back into said mixing-chamber, whence the nitrogen, having been freed from carbonic acid and other impurities, is again mixed with oxygen, again inhaled, and so on in succession.

In the drawings, the letter A designates a case of sheet metal or other suitable material. One part of this case is occupied by a bellows-chamber containing a mixing-bellows, B. Below this mixing-bellows is a purifying-chamber, C, which is partly filled with barium hydrate or other substance which readily absorbs carbonic acid.

D is a breathing-pipe, which is attached to the diver's mask, and through which the diver inhales and exhales. This pipe D is provided with two branches, $a b$, each of which is provided with a valve. In exhaling, the valve in the branch B is closed, and the exhaled air, consisting of nitrogen, carbonic acid, and aqueous vapor, passes out through the branch a into the space c surrounding the purifying-chamber C, and up into the bellows B. In inhaling, the valve in the branch a closes and