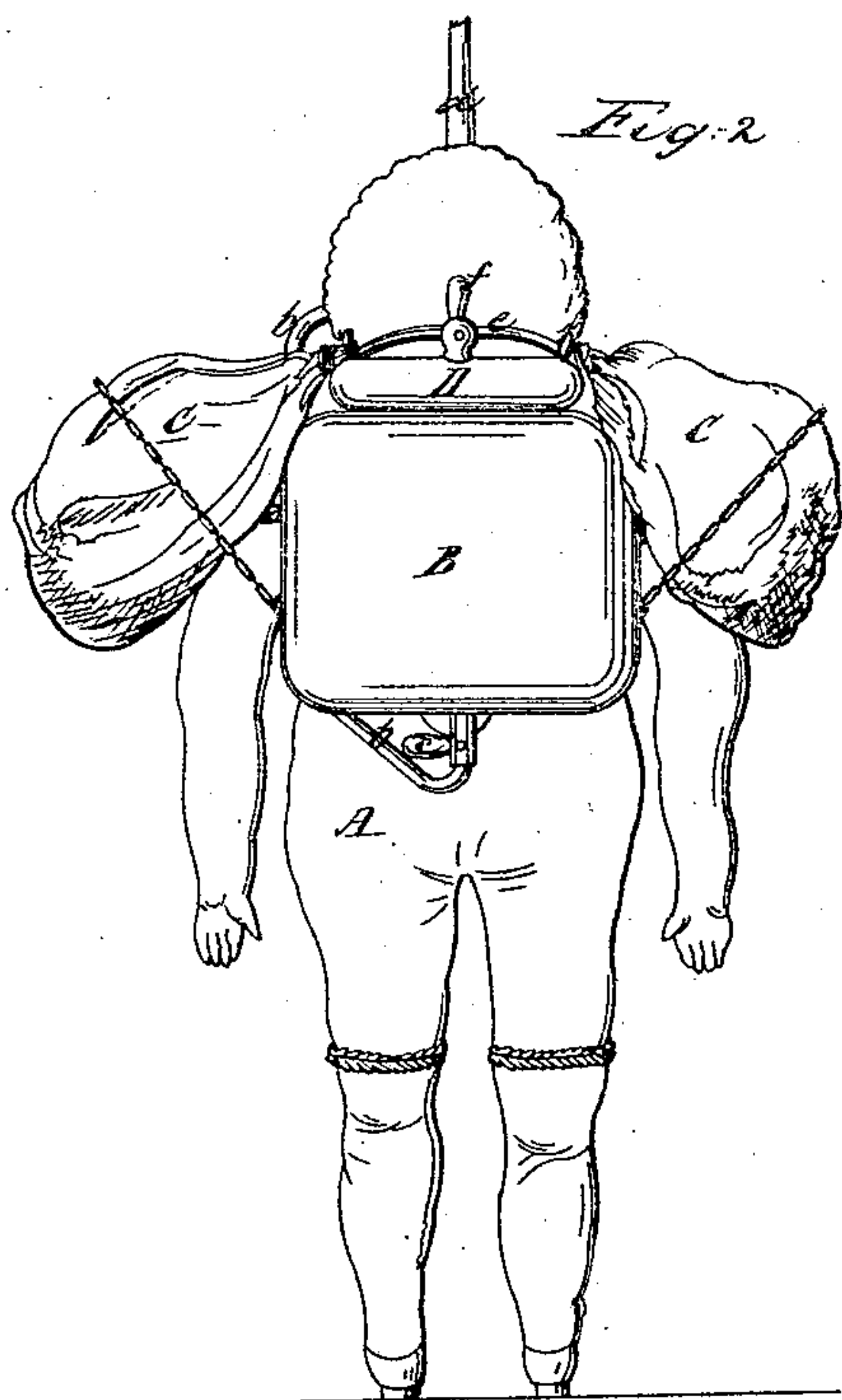
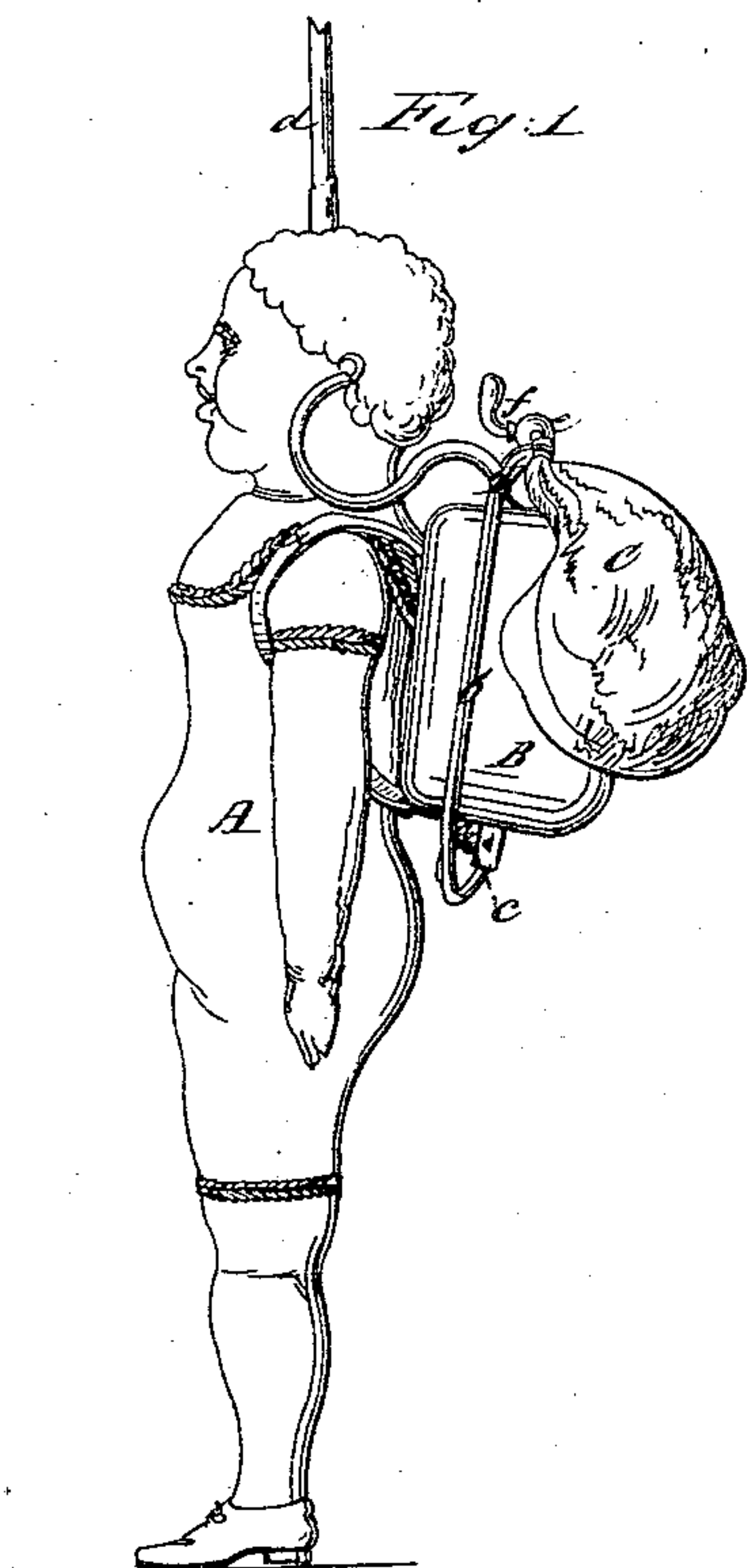


T. C. McKeen.

Diving Armor.

N^o 40,114.

Patented Sept. 29, 1863.



Witnesses
W. S. Partridge
Geo. Reed

Inventor
T. C. McKeen

UNITED STATES PATENT OFFICE.

T. CATO McKEEN, OF DUNKIRK, NEW YORK.

IMPROVED DIVING APPARATUS.

Specification forming part of Letters Patent No. 40,114, dated September 29, 1863.

To all whom it may concern:

Be it known that I, T. CATO McKEEN, of Dunkirk, in the county of Chautauqua and State of New York, have invented a new and Improved Diving Apparatus; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 represents a side elevation of my invention. Fig. 2 is a rear elevation of the same.

Similar letters of reference in both views indicate corresponding parts.

The object of this invention is to enable a diver to carry with him a sufficient supply of fresh air to last for several hours, and also buoys, which he can inflate at pleasure, so that he can rise to the surface whenever he thinks proper without the aid of other persons.

The invention consists in the application to the ordinary diving dress of a reservoir, which is capable to contain a sufficient quantity of compressed air to last the diver for several hours, and which is strapped to the shoulders or otherwise secured to the dress, communicating with the interior of the same by a pipe provided with a faucet in such a manner that the supply of air to the interior of the dress can be regulated at any moment, and the diver is free to move in any direction, carrying on his back the required supply of air.

The invention consists also in combining with the diving-dress and air-reservoir two (more or less) expansible buoys communicating with the interior of the reservoir by means of a pipe or pipes provided with a faucet in such a manner that by admitting air to the buoys the diver is enabled to rise to the surface whenever he may desire and without assistance.

To enable those skilled in the art to make and use my invention, I will proceed to describe it with reference to the drawings.

A represents an ordinary diving-dress, made, of india-rubber or other water-proof material, in the ordinary form. B is an air-reservoir, made, of sheet-copper or other suitable material, in the shape of a knapsack or in any other desirable form or shape, and provided with straps *a*, so that it can be secured to the back of the dress and carried conveniently by the diver, leaving both his hands and arms free

to work. This reservoir must be made sufficiently strong to hold a large quantity of air compressed to about one-sixtieth, or a still smaller fraction, of its original bulk, and it is provided with a pipe, *b*, which extends to the interior of the dress. A faucet, *c*, opens or closes the communication between the air-reservoir and the interior of the dress, and by opening the faucet gradually the diver is enabled to obtain a proper supply of air until the air-reservoir is exhausted or until he desires to rise to the surface. A small pipe, *d*, emanating from the top of the dress, carries off the foul air. By these means the diver is enabled to walk on the ground under water in whatever direction he thinks proper, and he has his hands perfectly free to work.

C C are bags or buoys, made of some flexible water-tight material, and attached to the top of the reservoir D, and they may be covered with cordage and confined to the bottom of the reservoir B. These bags communicate with the interior of a secondary reservoir, D, by a pipe, *e*, which is or can be closed or opened by a faucet, *f*. The secondary reservoir is secured to the top of the reservoir A, and has no connection with the interior of the same, being intended simply to inflate the buoys.

The operation is as follows: Before putting on the dress the air-reservoir is filled with air, compressed more or less, according to the capacity of the reservoir and the length of time it is desired to remain under water. If it is assumed that a grown person requires for his breath sixty cubic feet of atmospheric air of the ordinary pressure per hour, and if the capacity of the air-reservoir is equal to four cubic feet, the air must be compressed to about one-thirtieth of its original bulk to last two, and to about one-sixtieth of its original bulk to last four, hours, and the secondary reservoir has to be supplied with a sufficient quantity of compressed air to fill the buoys for the purpose of rising to the surface. After both reservoirs have been supplied with the requisite quantity of air, the faucets *c* and *f* being closed, the diver puts on the dress, and, by means of weights attached to or put into the legs of the dress, descends to the ground, when he opens the faucet *c* to supply him with the requisite amount of air for breathing. The reservoir B being strapped to his back

leaves him perfectly free to use his arms and hands to the best advantage. He can walk on the ground in either direction, and he is completely master of all his motions. During this time the buoys C C are compressed so that they exert none or very little upward strain on the divers. If the diver wishes to ascend, he opens the faucet *f*, the air rushes into the buoys, and, by inflating them, increases their buoyancy to such a degree that they rise to the surface, carrying up with them the whole apparatus and the diver.

It will thus be seen that by means of my apparatus a diver is enabled to descend to the bottom, move on the same wherever he chooses, and to ascend to the surface of the water without the assistance of any other person or persons, so that he has perfect control of all his motions, and that the danger of suffocation by an interruption or accident to the connections between the diver and the person

or persons above is avoided. The diver can thus work with much more safety than with an ordinary diving apparatus, and he can apply his whole energy to the work to be performed.

What I claim as new, and desire to secure by Letters Patent, is—

1. The employment of the independent air-knapsack B, constructed and operating substantially in the manner and for the purpose herein shown and described.

2. The arrangement of the expansible buoys C and secondary reservoir D, in combination with the air-reservoir B, and diving-dress A, constructed and operating substantially as and for the purpose described.

T. CATO McKEEN.

Witnesses:

M. S. PARTRIDGE,
GEO. W. REED.