

(No Model.)

3 Sheets—Sheet 1.

G. RUNGE & A. STUDE.

SAFETY HELMET.

No. 354,658.

Patented Dec. 21, 1886.

Fig. 1.



Witnesses:
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(No Model.)

3 Sheets—Sheet 2.

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Fig. 2.



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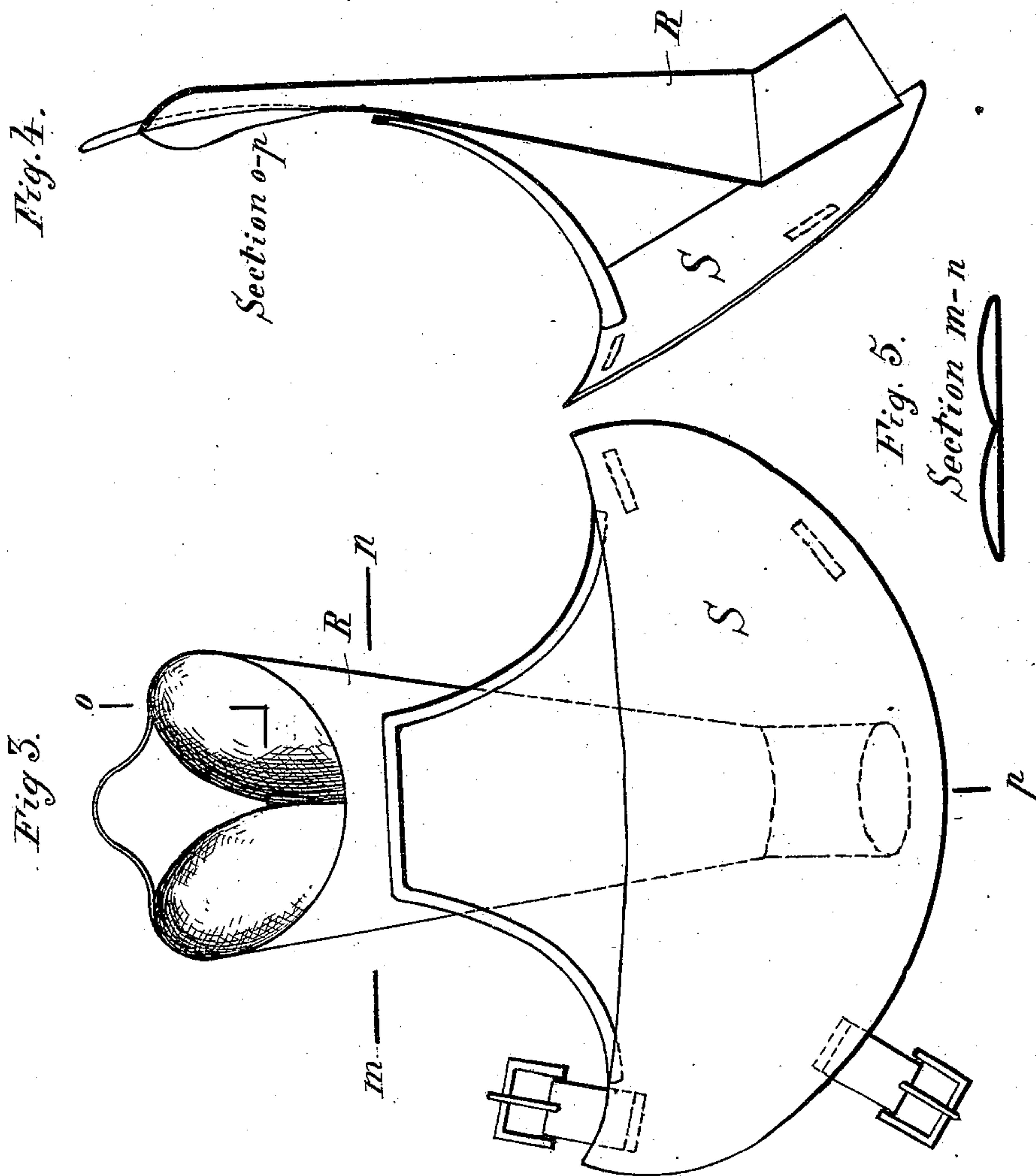
3 Sheets—Sheet 3.

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UNITED STATES PATENT OFFICE.

GUSTAV RUNGE AND ALEXANDER STUDE, OF BREMEN, GERMANY.

SAFETY-HELMET.

SPECIFICATION forming part of Letters Patent No. 354,658, dated December 21, 1886.

Application filed September 7, 1886. Serial No. 212,880. (No model.)

To all whom it may concern:

Be it known that we, GUSTAV RUNGE, a citizen of the free town of Bremen, and ALEXANDER STUDE, a subject of the King of Prussia, both residing at Bremen, German Empire, have invented new and useful Improvements in Safety-Helmets, of which the following is a specification.

The object of our invention is to provide a new and improved safety-helmet, which enables a person wearing the same to enter and work in a room or space filled with smoke or poisonous gases.

The invention consists in a helmet having a double lining and fitting closely on the head, but leaving the face or part of the same uncovered, and of means for forcing fresh air into the said double lining, so that the fresh air passes to the uncovered part of the face, whereby the smoke or poisonous gases are kept off.

The invention also consists of various parts and details and combinations of the same, as will be fully described hereinafter, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a perspective view of our improvement. Fig. 2 is a perspective view of a modified form of our improvement. Fig. 3 is a rear elevation of part of the same. Fig. 4 is a vertical section of the same on the line *o p* of Fig. 3; and Fig. 5 is a sectional plan view of the same on the line *m n* of Fig. 3.

A strong blowing-machine of any approved construction is used to supply the necessary quantity of fresh air, and is connected with the pipe *a*, preferably attached to the belt of the person, either at the rear, as shown in Fig. 1, or in front, as shown in Fig. 2. From the pipe *a* a number of smaller branch pipes, *a'*, lead to the helmet *A*, which fits tightly on the head of the person, but leaves part of the face uncovered, as shown in Fig. 1. The helmet *A* is provided with a lining so arranged as to form a space between the lining and the exterior of the helmet. In this space

the branch pipes *a'* discharge and the space opens in front into the rim *e* of the front opening, which leaves the face partly uncovered.

It will be seen that when a person provided with our helmet enters a room or space filled with smoke or poisonous gases, and the necessary amount of air is supplied by the blowing-machine, the person can remain and work in the said room without injury to his health. The air passes into the helmet and out through the rim *e* in front, whereby the person is supplied with fresh air to breathe, and the air escaping through the front opening forces the smoke or poisonous gases away from the face, as shown in Fig. 1.

The lining in the neighborhood of the mouth of the person is provided with apertures through which the air from the helmet can be supplied directly for breathing.

Instead of using the helmet as described, I may supply the air for breathing purposes by the device shown in Figs. 2, 3, 4, and 5. This device consists of a shield or breast-plate, *S*, fastened by means of straps to the neck of the person and carrying a pipe, *R*, which is connected at its lower end with the air-supply pipe *a* and is open at its upper end, which is so near to the mouth of the person that the current of air which is forced up through the pipe *a'* will serve for breathing purposes, and the part which escapes at the side holds the smoke or poisonous gases at a distance.

Having thus fully described our invention, we claim as new and desire to secure by Letters Patent—

1. A safety-helmet provided with an outer covering and an inner lining, having between the same an inner air-space extending from the rear to the front, and with an opening at the front about opposite the eyes of the wearer, said air-space having an outlet around the edges of said opening of the helmet, in combination with means for forcing air into said space, substantially as and for the purpose set forth.

2. A safety-helmet provided with an outer covering and an inner lining, having between the same an inner air-space extending from the

rear to the front, and with an opening at the front about opposite the eyes of the wearer, said air-space having an outlet around the edges of said opening of the helmet, in combination with a pipe and branch pipes connecting with the air-space of the helmet, substantially as and for the purpose set forth.

In testimony whereof we have signed our

names to this specification in the presence of two subscribing witnesses.

GUSTAV RUNGE.
ALEXANDER STUDE.

Witnesses.

JOHN U. SCHNABEL,
W. G. GERLACH.