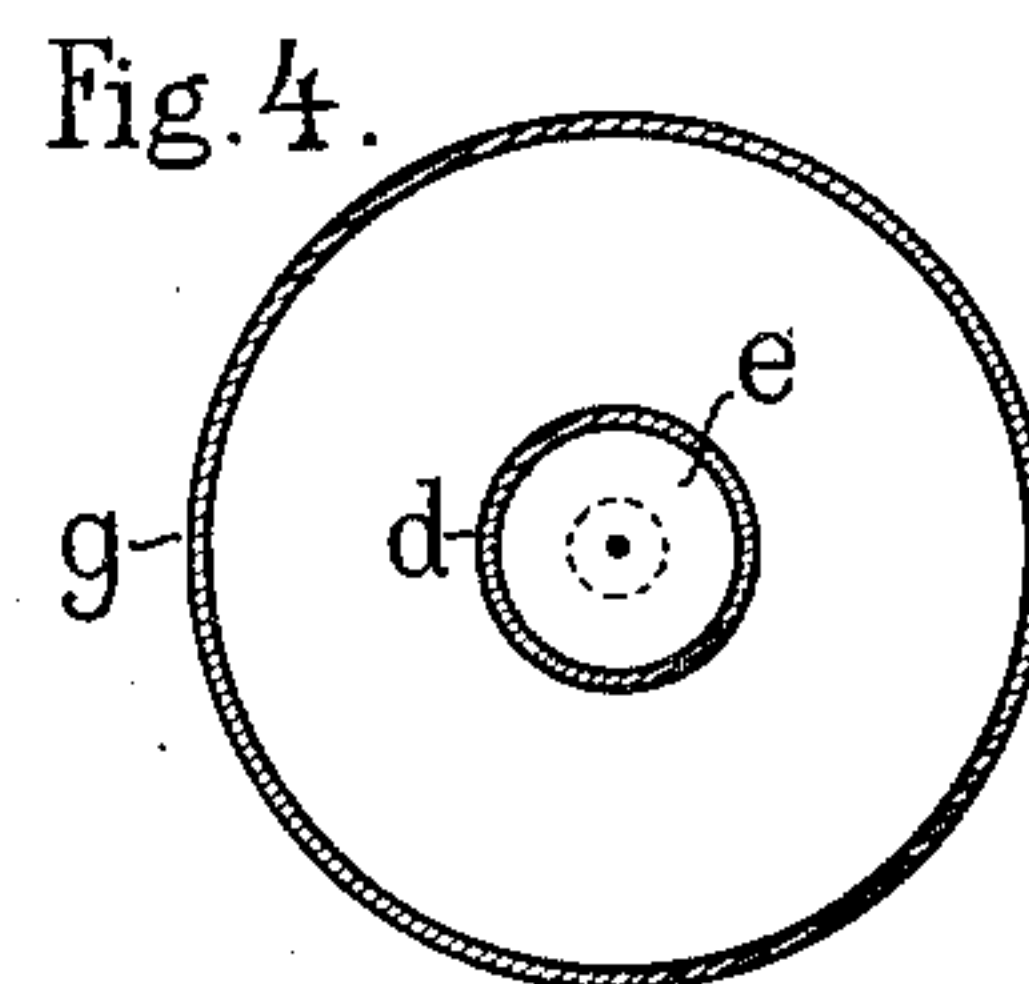
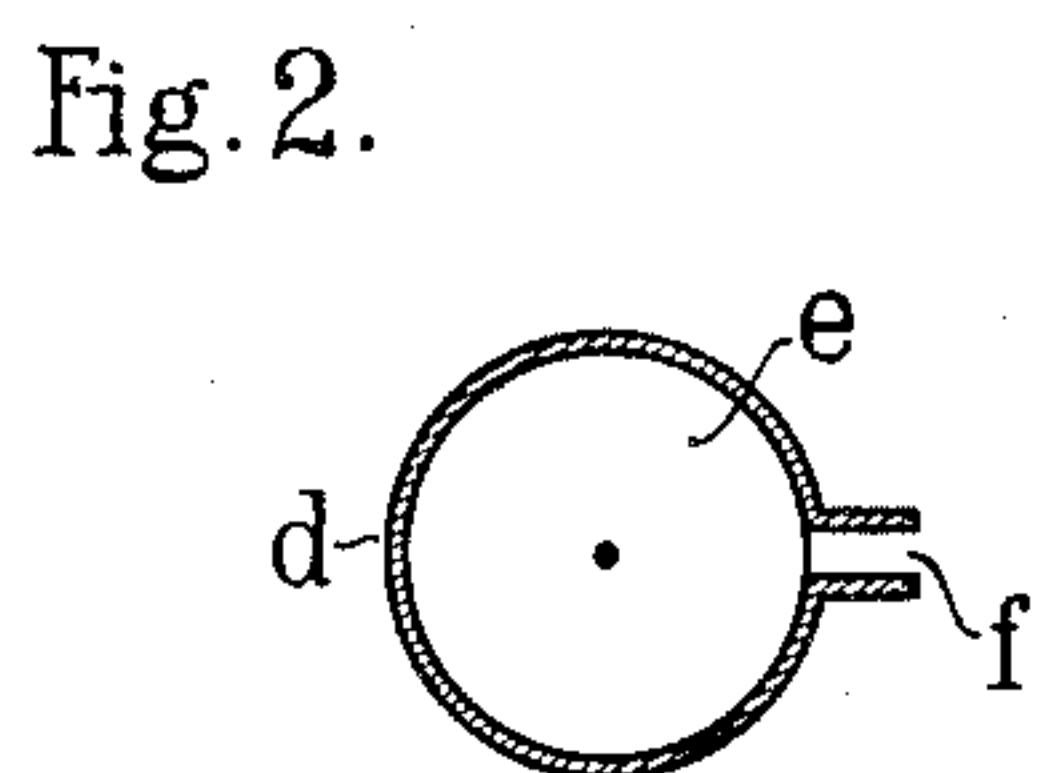
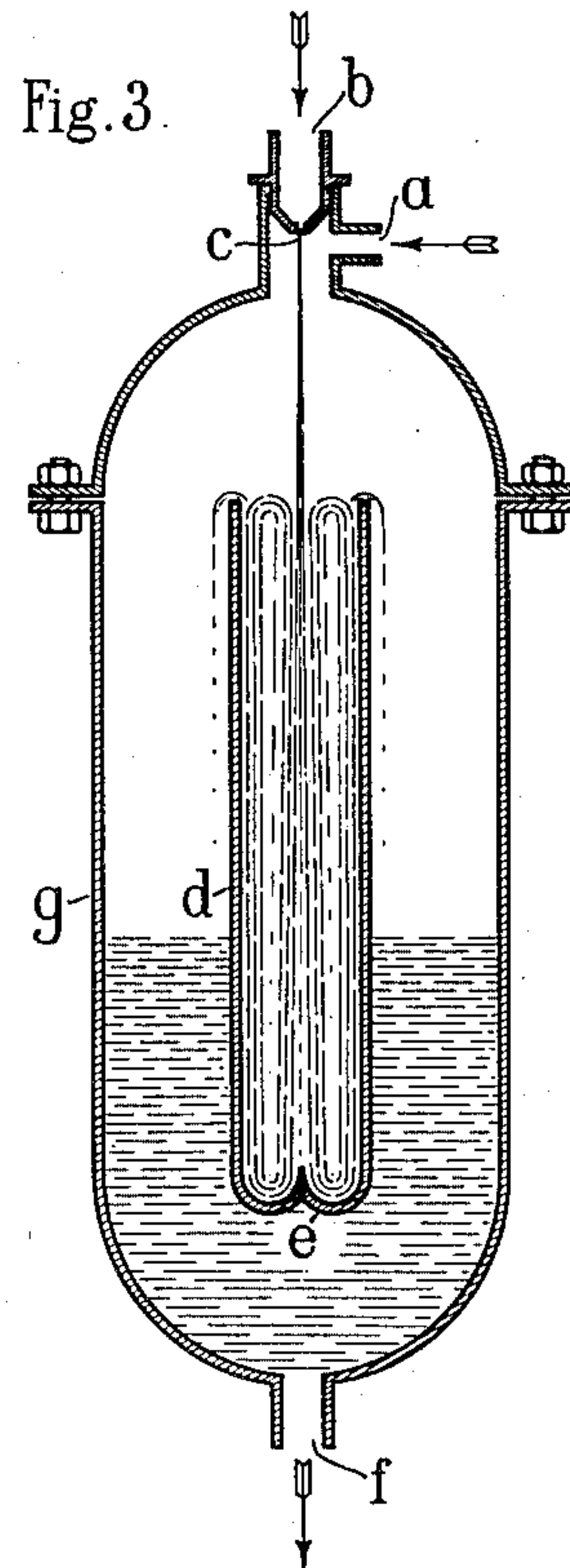
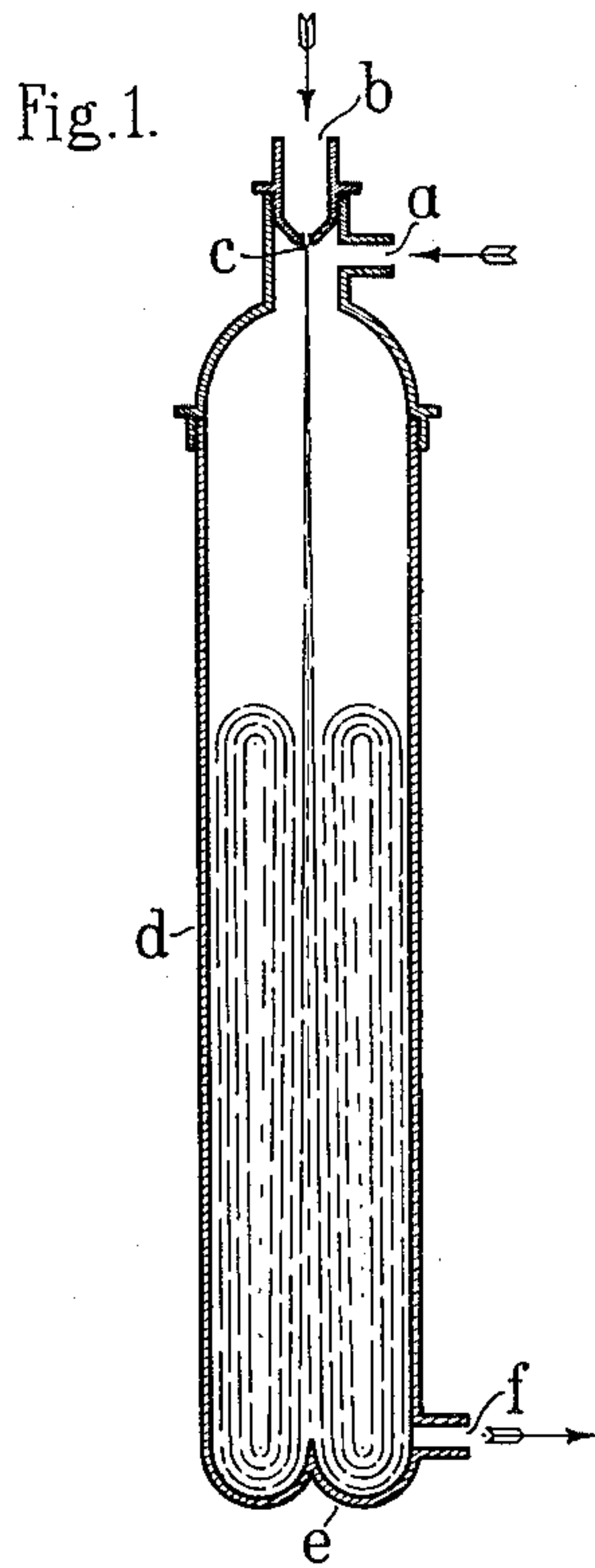


M. STÜHLER.
CARBONATING APPARATUS.
APPLICATION FILED NOV. 22, 1906.

998,428.

Patented July 18, 1911.



Witnesses:

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MARTIN STÜHLER, OF COLOGNE, GERMANY.

CARBONATING APPARATUS.

998,428.

Specification of Letters Patent.

Patented July 18, 1911.

Application filed November 22, 1906. Serial No. 344,631.

To all whom it may concern:

Be it known that I, MARTIN STÜHLER, subject of the German Emperor, residing at Cologne, Germany, have invented new and useful Improvements in Carbonating Apparatus, of which the following is a specification.

This invention relates to an apparatus for saturating water with carbonic acid for the production of carbonate water, and it relates to means whereby a jet of water is introduced into a chamber containing carbonic acid. In devices of this kind hitherto known, the particles of water were saturated with the gas before they reached the water chamber for the jet of water was divided within the gas chamber.

The object of this invention is to pass the water through the gas chamber so quickly that it takes up very little gas, but the gas is forced down into the column of water at the bottom of the chamber, or in other words, into the water chamber, so that the saturation of the water takes place in the water chamber.

The invention is illustrated in the accompanying drawings, in which:—

Figure 1 shows a sectional view of a vertical cylindrical mixing vessel; Fig. 2 is a cross section through the lower part of Fig. 1; Fig. 3 is a vertical section through a modified form of mixing vessel, and Fig. 4 is a section through Fig. 1 just above the bottom of the mixing vessel *d*.

All parts not strictly relating to the invention are omitted. In the specification only the arrangements and operations by which the mixture is effected are more particularly described, it being, of course, always assumed that the gas flows in through the inlet *a* at a suitable pressure, and the saturated liquid is withdrawn from the apparatus as required, continuously or otherwise, through the outlet *f*.

In its simplest form, Fig. 1, the apparatus consists of a high vertical cylindrical mixing vessel *d*, the lid or cover of which is provided with a conical downwardly directed nozzle *c*. Through this nozzle *c* the

liquid from the pipe *b* which is at a high pressure, is discharged as a jet into the mixing vessel *d*, and first combines with the gas taken up by it by reason of the conical spreading of the jet, forming a vigorously effervescing mixture consisting of innumerable bubbles. The higher this mixture rises, the less does the jet spread, and therefore the greater its power of penetration, so that the mixture, at any height of filling, is drawn down with great force in the center of the mixing cylinder, forming a funnel shaped vortex which also absorbs gas, and is then driven up at the walls after which it is again drawn into the vortex and into the uninterrupted circulation which is also considerably facilitated by the form of the bottom *e*, which is of conical shape.

In the form of construction shown in Fig. 3, the mixing vessel *d*, which discharges the saturated liquid by means of overflows, is arranged inside another vessel *g* which forms the storage receptacle. The effect of the apparatus is thereby increased and the working simplified.

What I claim as my invention and desire to secure by Letters Patent is:—

1. An apparatus for saturating liquids with gases comprising a cylindrical mixing vessel *d* having its bottom in the shape of an unwardly projecting cone, a downwardly directed nozzle arranged coaxially over the mixing vessel, and said vessel having an inlet for the gas at the top thereof.

2. An apparatus for saturating liquids with gas comprising a cylindrical mixing vessel having its bottom forming an upwardly projecting cone, a downwardly directed nozzle arranged coaxially over the mixing vessel, and a receptacle surrounding said mixing vessel.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

MARTIN STÜHLER.

Witnesses:

HELENE MIDDERKOFF,
LOUIS VANDORY.