

No. 713,812.

R. STÄNDER.  
STOVE.

Patented Nov. 18, 1902.

(Application filed May 12, 1902.)

(No Model.)

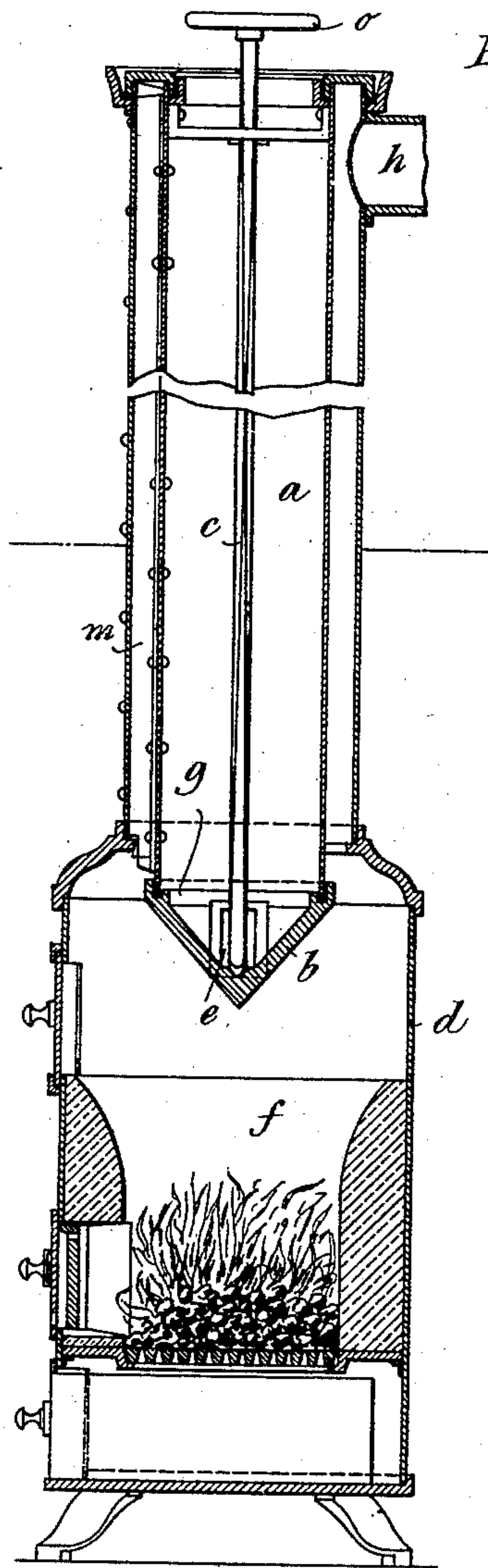


Fig. 1.

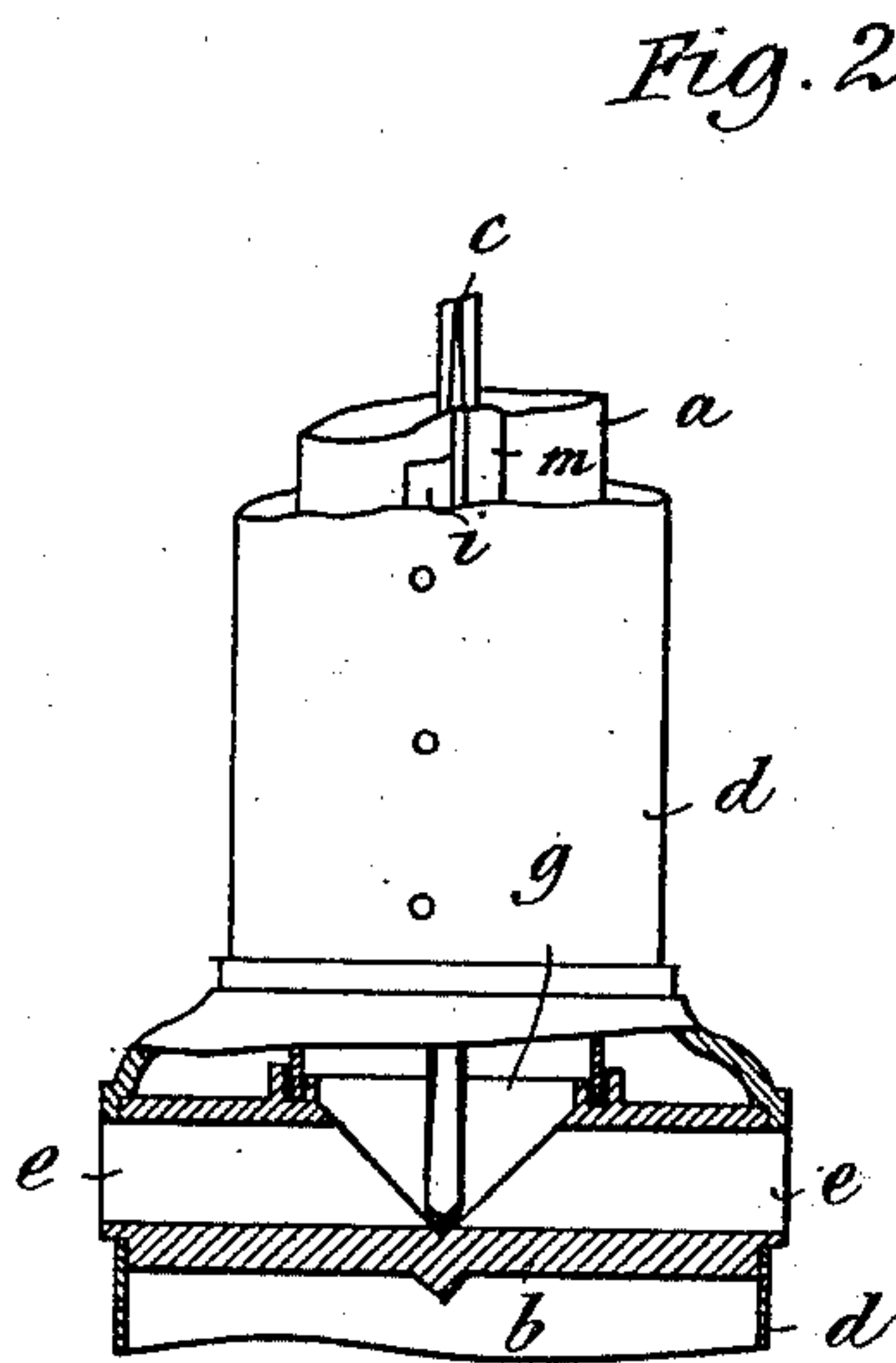


Fig. 2.

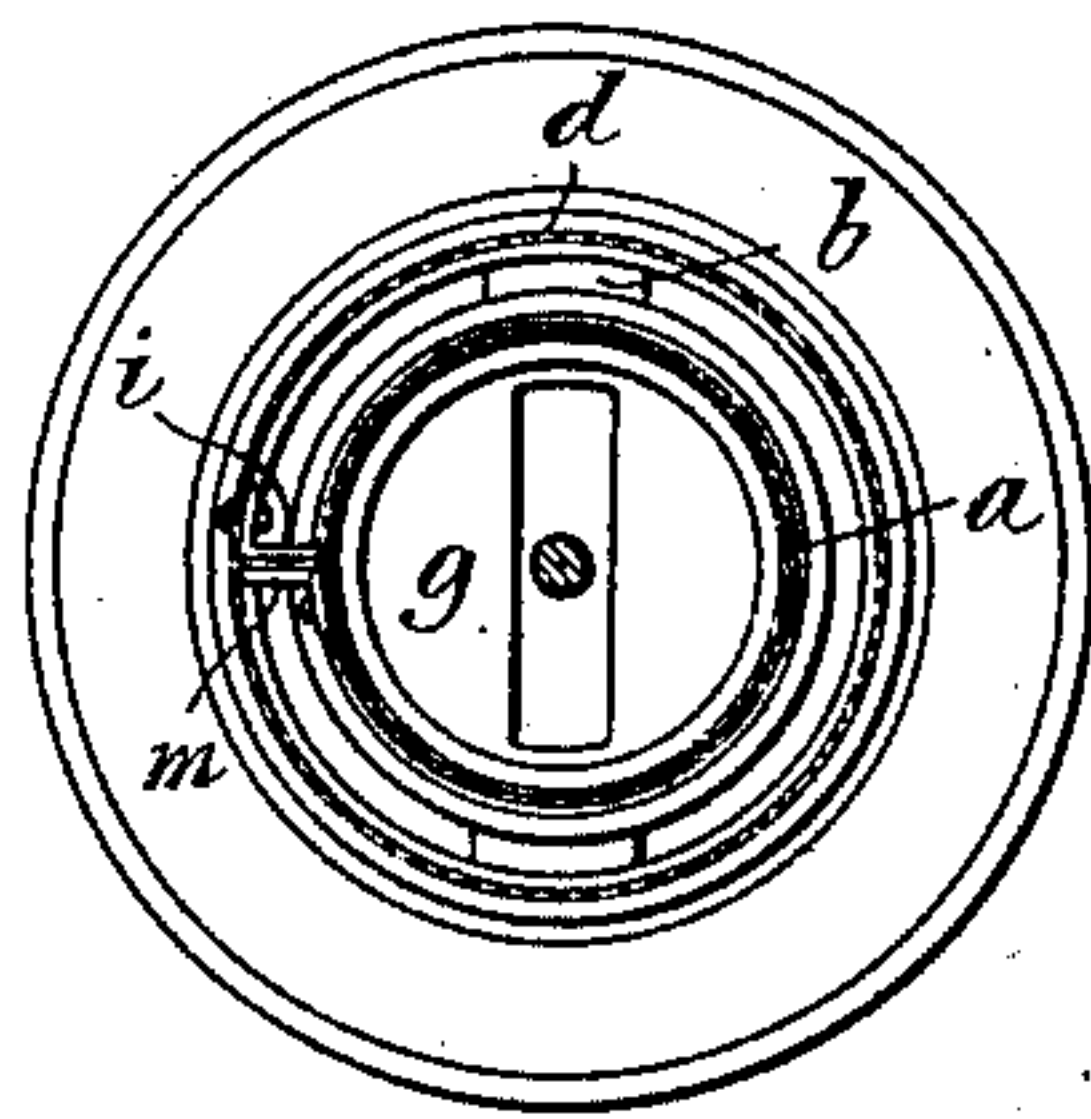


Fig. 3.

Witnesses

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# UNITED STATES PATENT OFFICE.

RICHARD STÄNDER, OF ESSEN-ON-THE-RUHR, GERMANY.

## STOVE.

SPECIFICATION forming part of Letters Patent No. 713,812, dated November 18, 1902.

Application filed May 12, 1902. Serial No. 107,053. (No model.)

*To all whom it may concern:*

Be it known that I, RICHARD STÄNDER, a subject of the King of Prussia, Emperor of Germany, residing at Essen-on-the-Ruhr, Rhenish Prussia, in the German Empire, have invented new and useful Improvements in Stoves, of which the following is a specification.

Circulating-stoves have already been designed, consisting of two concentric casings, one contained within the other, the inner one, being closed at its end, located above the fire-chamber and connected with the outside air by a cross-conduit, while the combustion gases enter the annular air-space left between the outer and the inner casings and so escape at the top to the chimney.

The object of the present invention is to perfect such stoves by providing a cleaning device whereby any soot, flying ashes, &c., which may settle on the walls of the casings can be removed and whereby thus the possibility is presented of approaching the inner casing relatively close to the outer casing, so that the annular space for the escape of the heating-gases is relatively smaller, the heating capacity of the stove, however, being very high.

The new stove is illustrated in the annexed drawings, in which—

Figure 1 is a vertical section of the complete apparatus; Fig. 2, an elevation of a central portion of the stove, partly in section, the apparatus being seen at right angles to Fig. 1. Fig. 3 is a cross-sectional view taken through the center of the casings.

*d* is the outer casing of the stove, containing the inner heating-cylinder *a*, the bottom of which rests in an annular groove formed on the conduit *b*, extending across the stove immediately above the fire-chamber. The upper end of the casing *a* communicates directly with the external air. The conduit *b* may take the form of a pipe, and preferably is constructed so as to present a prismatic cross-section, the base of the prism being directed upwardly. The two ends *e* of the conduit *b* are open to the chamber-air, so that the latter can enter into the conduit *b*, pass through the aperture *g* in its top wall, and so up through the heating-cylinder *a*.

The heating-gases ascending through the fire-chamber *f* first come in intimate contact

with the conduit *b*, the latter owing to its peculiar form readily dividing the heating-current, the gases then passing up through the annular space between the cylinders *a* *b*, whence they finally enter the chimney. It is obvious that in this manner a very large amount of heat is imparted to the inner and outer cylindrical casings by these ascending gases. The cold air, entering the conduit *b* through the openings *e*, will immediately be warmed by the intense heat which the fire in the chamber located immediately below imparts to the walls of the conduit. The air thus warmed will then pass through the opening *g* to the interior of the cylinder *a*. Here, again, owing to contact with the hot walls, it takes up an extremely large amount of further heat and finally escapes, intensely heated, through the upper aperture of the internal cylinder *a* into the apartment, the air in which, owing to the heat thus continuously imparted to it and also to the rapid circulation, in a short time is enabled to heat areas of much larger extent than otherwise.

For the purpose of increasing the action described by providing a large inner cylinder and in order to prevent narrowing of the annular space for the escape of the heating-gases between the cylinders *a* *b*—for instance, through the accumulation of soot and flying ashes—the stove is provided with a cleaning device. For this purpose one of the cylinders (in the particular example shown the inner cylinder *a*) is arranged to turn on its axis by securing it at convenient places to a central spindle *c*, the lower end of which has its support in the conduit *b*, the upper end being furnished with a handle, hand-wheel, or the like *o*. Longitudinal scrapers are also provided, one, *i*, being attached to the inside of the outer cylinder *b* and the other, *m*, to the outer wall of the inner cylinder *a*. On rotation of the latter these scrapers will clear the respective walls against which they operate from all accumulations—such as soot, coal-dust, ash, &c.—which will fall into the fire below and be there consumed or drop through the fire-bars into the ash-box.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A circulating-stove, comprising a verti-

cal outer casing for conducting the heating-gases to the chimney, an inner rotary casing, for conducting the circulating-chamber air, contained within said first casing, a conduit, 5 to which the air of the chamber has free access, extending across the stove immediately above the fire-chamber, and having an aperture communicating with said inner casing, and soot-scrapers secured to the outer wall 10 of the inner casing and to the inner wall of the outer casing, all substantially as and for the purposes set forth.

2. A circulating-stove, comprising a vertical outer casing for conducting the heating-gases to the chimney, an inner rotary casing, 15 for conducting the circulating-chamber air, contained within said first casing, a conduit, to which the air of the chamber has free ac-

cess, extending across the stove immediately above the fire-chamber, and having an aper- 20 ture above, surrounded by an annular groove adapted to receive the lower open end of the inner casing, a central spindle carrying said latter casing, supported by the said conduit and forming a means of rotating the inner 25 casing on its axis, and soot-scrapers secured to the outer wall of the inner casing and to the inner wall of the outer casing, all substantially as and for the purposes set forth.

In witness whereof I subscribe my signature in presence of two witnesses. 30

RICHARD STÄNDER.

Witnesses:

EMIL PAUL SCHULZ,  
PETER LIEBER.