

O. SCHMIDT.

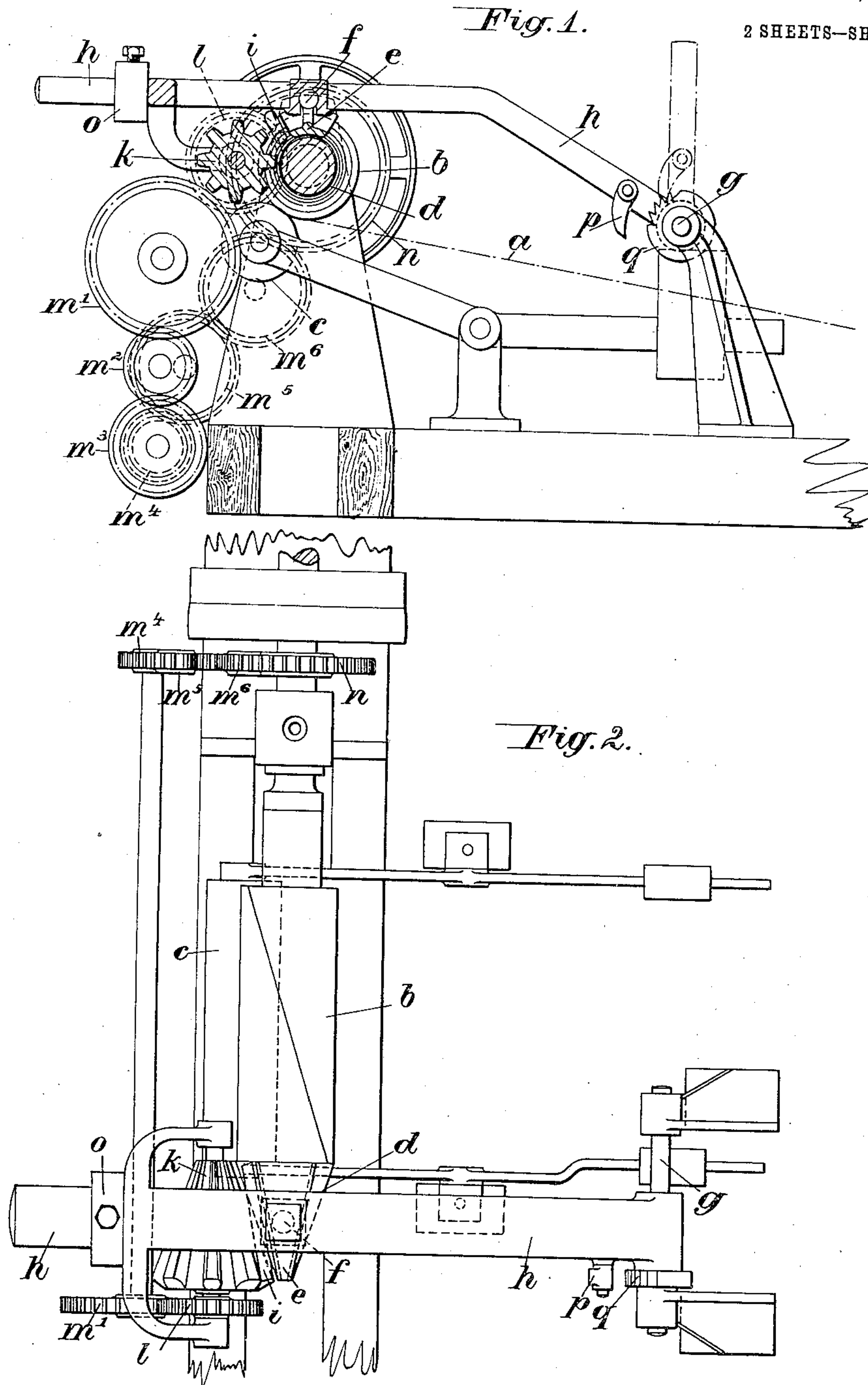
APPARATUS FOR THE MANUFACTURE OF HOLLOW PAPER ARTICLES.

APPLICATION FILED JUNE 24, 1907.

908,148.

Patented Dec. 29, 1908.

2 SHEETS—SHEET 1.



Witness:  
 Ger. Heinicke  
 F. Dittmar.

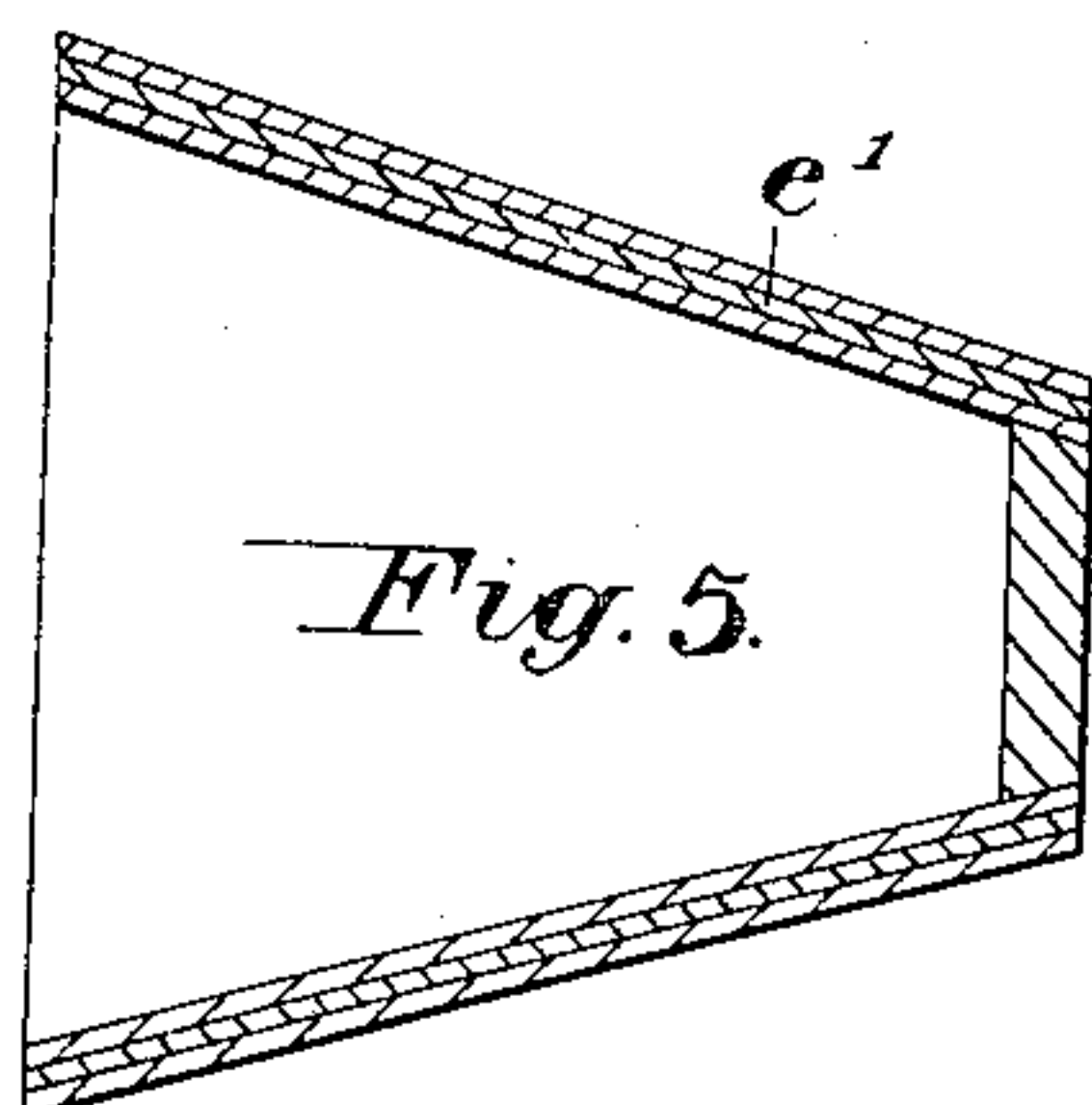
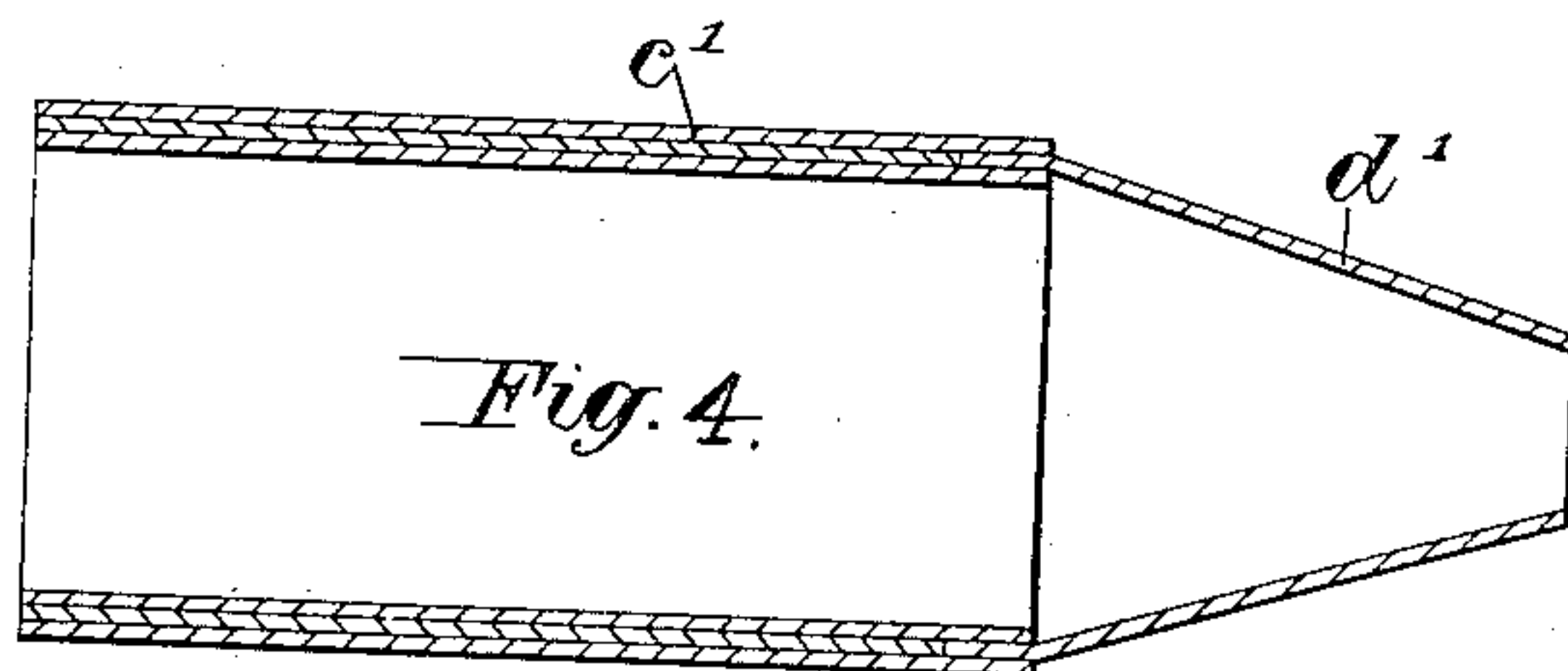
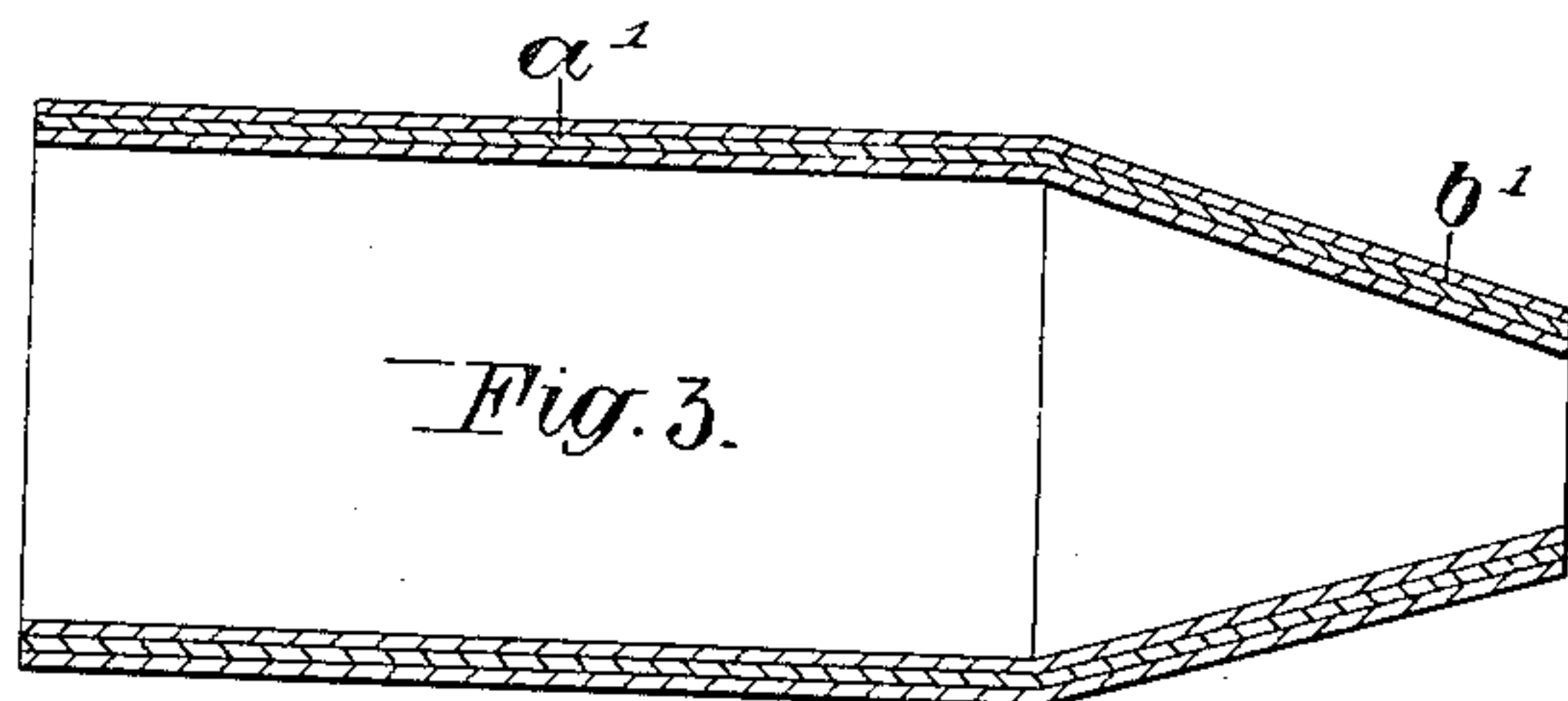
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2 SHEETS—SHEET 2.



Witnesses:  
Geo. Henricke  
G. Dünmar

Inventor:  
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# UNITED STATES PATENT OFFICE.

OSWALD SCHMIDT, OF BERLIN, GERMANY.

## APPARATUS FOR THE MANUFACTURE OF HOLLOW PAPER ARTICLES.

No. 908,148.

Specification of Letters Patent.

Patented Dec. 29, 1908.

Application filed June 24, 1907. Serial No. 380,608.

*To all whom it may concern:*

Be it known that I, OSWALD SCHMIDT, a subject of the Emperor of Germany, residing at Berlin, Germany, have invented certain new and useful Improvements in Apparatus for the Manufacture of Hollow Paper Articles, of which the following is a full, clear, and exact specification.

The present invention relates to a machine serving to make paper receptacles of cylindrical form or of conical form or both combined, cylindrical with a tapering end as will be hereinafter described.

An endless strip of paper is supplied and fed towards a cylindrical mandrel against which it is pressed by a suitable roller, and paste or glue is supplied by passing the paper strip in well known manner through a trough.

For the purpose of providing conical ends the mandrel has a conical extension against which the paper strip is folded by a special device while the paper is rolled upon the mandrel.

In the accompanying drawing, Figure 1 is a side elevation of the machine partly in section. Fig. 2 is a plan view of the same. Fig. 3 shows in longitudinal section a cylindrical article with a conical end. Fig. 4 is a similar view in section, illustrating how the cylindrical and conical part may be made separately to be connected subsequently. Fig. 5 shows in section a conical part separately.

A paper strip *a* is passed in the well known manner through a trough containing glue, or other adhesive substance (not shown) and is then rolled upon a mandrel *b* against which it is pressed by a roll *c*.

For producing the conical ends of the article, the mandrel *b* is provided with a prolongation *d*. This prolongation is made of metal and may be hollow or solid. It can be attached centrally to the mandrel *b* or in line with its axis in any convenient manner, for instance by a screw projecting from the mandrel *b* similar to the screw of the spindle of an ordinary lathe.

A segment *e* of suitable shape is pressed against the part *d* and said segment is suspended from a lever *h*, turning in bearings on a shaft *g*. This segment is connected to the lever preferably by means of a ball-joint *f* to turn in all directions and that it can act against the surface of the mandrel *d* in its entire length at the beginning of the rolling,

when the first paper-folds on the mandrel have a smaller diameter as well as towards the end of the operation when the folds have become thicker, and the article is larger in diameter.

In order to fold the paper strip which naturally projects in cylindrical shape beyond the projection *d* regularly and smoothly upon the conical part of the mandrel, a device is provided, which consists of a bevel wheel *k* and of a roll coacting therewith, *i*. The wheel *k* is journaled in a fork, integral with the lever *h* as shown in Fig. 2, and produces the folds by pressing the paper strips alternately upon its teeth and into the recesses between the teeth. The roll *i* is simply a cylindrical rod and may be journaled in regular bearings on the lever *h* (not shown) or may be lodged in a suitable cavity with springs pressing it against the surface of the mandrel *d*.

Motion is imparted to the wheel *k* by a gear wheel *l* and by suitable gear wheels *m*<sup>1</sup>, *m*<sup>2</sup>, *m*<sup>3</sup>, *m*<sup>4</sup>, *m*<sup>5</sup>, *m*<sup>6</sup> and gear wheels *n* on the main shaft. The roll *i* compresses and smooths the folds made by the wheel *k* in such a manner that the folds pass easily under the segment *e*. A weight *o* is arranged slidably on the free end of the lever arm *h* so that the pressure of the segment *e* can be regulated. A ratchet wheel *q* is rigidly secured upon the frame centrally to the fulcrum of the lever *h*, and a pawl *p* swinging on a lateral pin of said lever serves to engage the teeth of the ratchet wheel so that the lever can be raised into any elevated position wherein it will be retained by said pawl. It is evident that with the apparatus described purely cylindrical receptacles may be produced by using a strip of paper of a width equal to the length of the cylindrical mandrel *b*. Also the conical part may be produced separately as shown in Fig. 5 at *e'* by using a narrow strip of paper in width extending over the projection *d* alone. Such part when ready may be rolled into the end of a cylindrical receptacle by rolling the wider edge into the same while it is produced upon the mandrel *b* and this is indicated in Fig. 4 where the conical part *d'* is rolled into the cylindrical part *c'*.

When paper is used of the full width extending over both the mandrels *b* and *d*, an article can be produced as shown in Fig. 3 where the cylindrical part *a'* and the conical part *b'* are made integral.



Having thus described my invention, what I claim is:

1. Apparatus for the manufacture of hollow paper articles, composed of a revolving cylindrical mandrel *b*, of a conical extension *d* adapted to be secured at the free end face of the mandrel *b* and to be removed therefrom in combination with means to press the paper projecting beyond the conical mandrel *d* into regular folds against the mandrel and with means to smooth the folds by pressure.

2. Apparatus for the manufacture of hollow paper articles composed of a revolving cylindrical mandrel *b*, of a conical extension

*d* adapted to be secured at the free end face of the mandrel *b* and to be removed therefrom in combination with a bevel wheel *k* and a roller *i* coacting with the same to press the paper into folds and in combination with a weighted lever *h* and a segment secured thereto, a ball-joint *f* at or near a point above the mandrel *d* carrying said segment substantially as described and for the purpose set forth.

In testimony whereof I affix my signature.

OSWALD SCHMIDT.

In the presence of—

WOLDEMAR HAUPT,

HENRY HASPER.