

No. 874,136.

PATENTED DEC. 17, 1907.

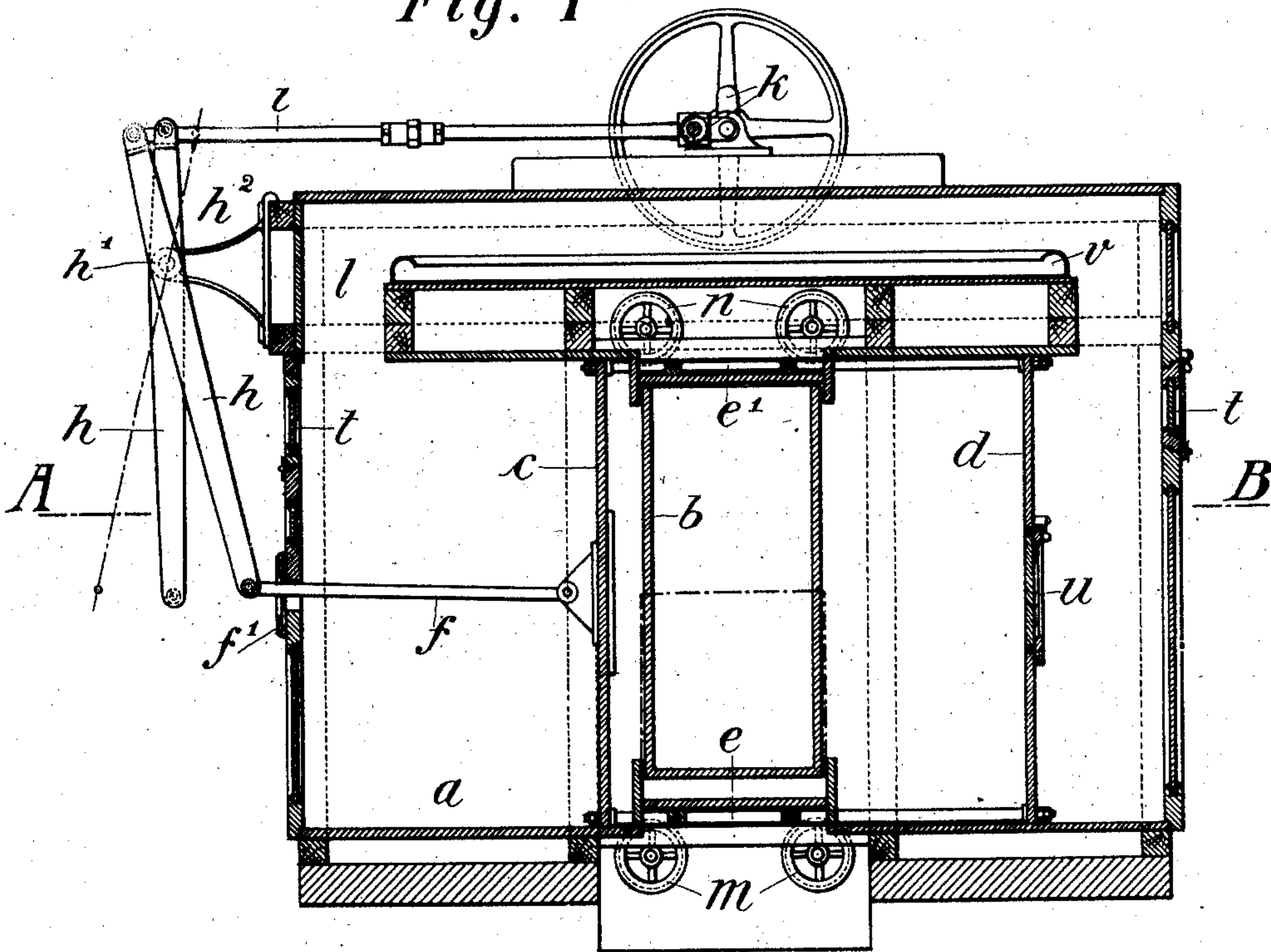
L. VON SÜSSKIND.

# APPARATUS FOR DRYING MACARONI AND OTHER SUBSTANCES.

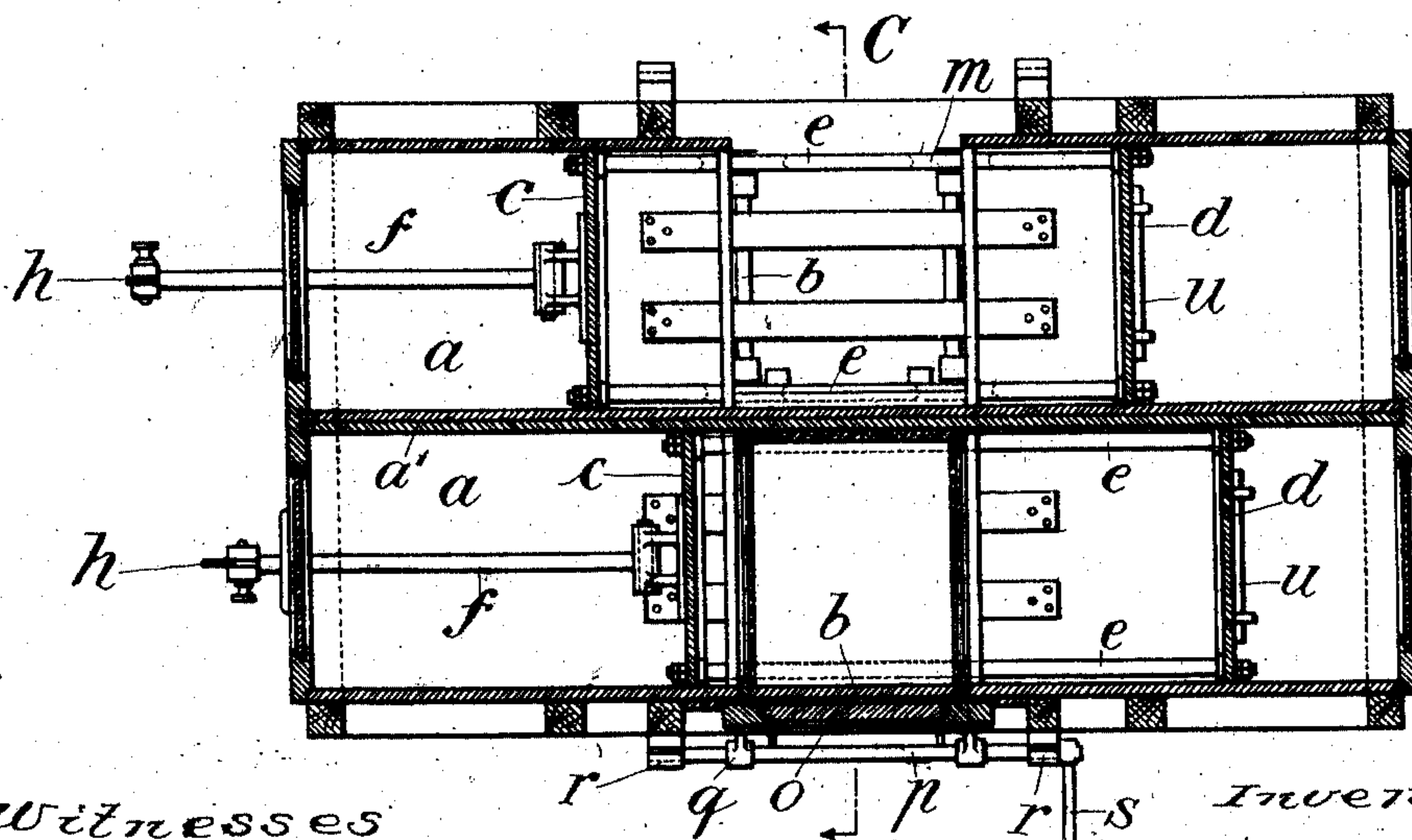
APPLICATION FILED JULY 13, 1907.

2 SHEETS—SHEET 1.

*Fig. 1*



*Fig. 2*



Witnesses

Alice H. Bennett  
W. W. Williams.

*Inventor*

D. Ludwig von Süsskind

By *M. J. Smith* Atty

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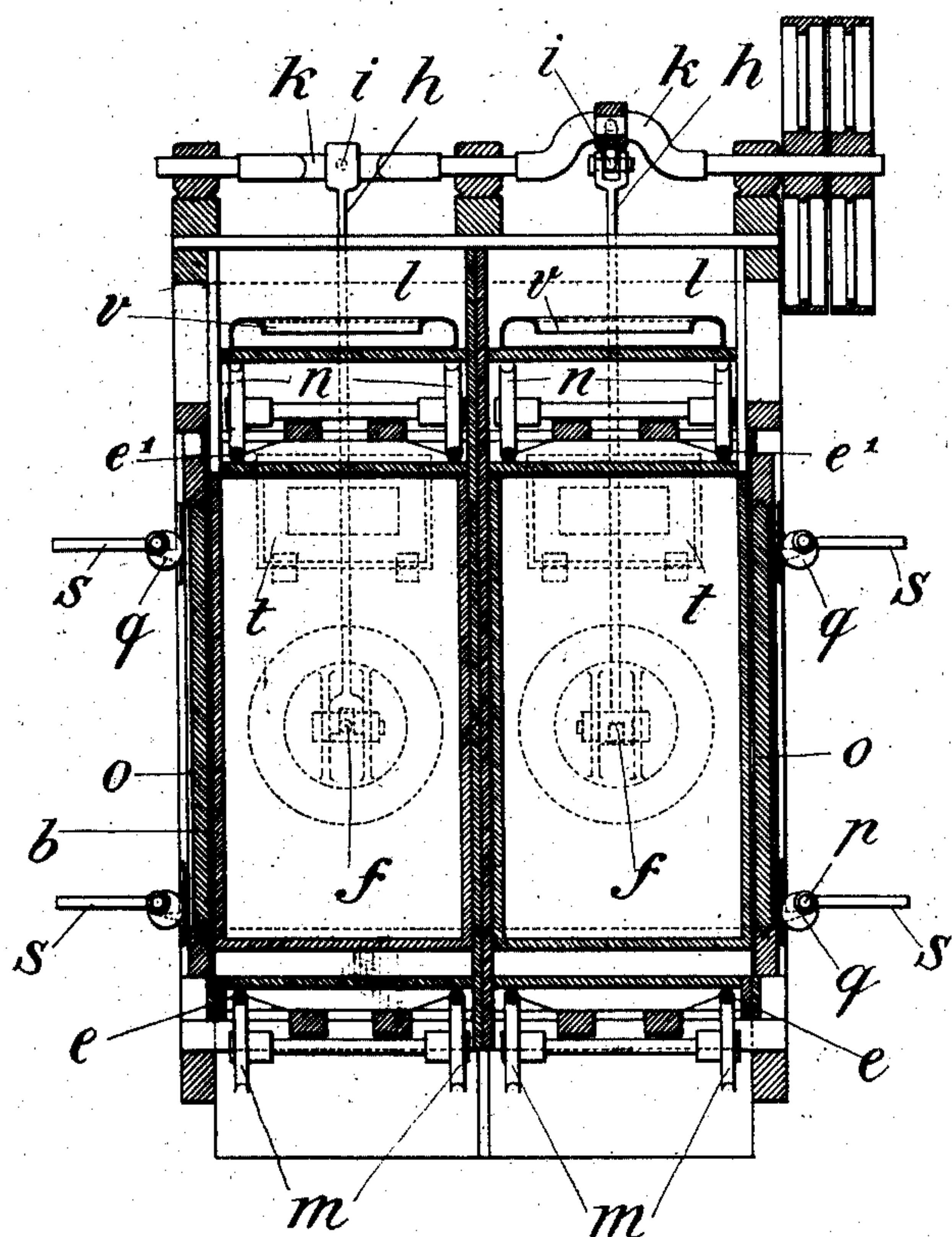
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APPARATUS FOR DRYING MACARONI AND OTHER SUBSTANCES.

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2 SHEETS—SHEET 2.

*Fig. 3.*



Witnesses  
*Alice H. Bennett.*  
*W. A. Williams*

Inventor  
*Ludwig von Süsskind*

By *M. J. Jure* atty



# UNITED STATES PATENT OFFICE.

LUDWIG VON SÜSSKIND, OF ST. GEORGEN, NEAR ST. GALLEN, SWITZERLAND.

## APPARATUS FOR DRYING MACARONI AND OTHER SUBSTANCES.

No. 874,136.

Specification of Letters Patent.

Patented Dec. 17, 1907.

Application filed July 13, 1907. Serial No. 383,661.

*To all whom it may concern:*

Be it known that I, LUDWIG VON SÜSSKIND, a citizen of Germany, residing in St. Georgen, near St. Gallen, in the canton of St. Gallen, Republic of Switzerland, have invented certain new and useful Improvements in Apparatus for Drying Macaroni and other Substances; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

This invention relates to drying apparatus in which the draft is caused in a drying chamber by the reciprocation of two pistons arranged at different sides of the material to be dried. As such apparatus are mostly constructed of wood it is obvious that the frictional surfaces are subjected to rapid wear and tear and leakages or losses of pressure frequently occur. The continual shrinking and swelling of the wood under the influence of the moist air causes loss of pressure and also jamming of the pistons and consequently a great expenditure of energy.

The above mentioned disadvantages are overcome according to the present invention by positively connecting the two pistons in the drying apparatus by means of rods and supporting them on carrying rollers by means of some of such rods.

The accompanying drawings illustrate one form of the invention.

Figure 1 is a sectional elevation, Fig. 2 a horizontal section on the line A—B Fig. 1 and Fig. 3 a section on the line C—D of Fig. 2.

*a* indicates in the drawing the box or casing which is divided into two drying chambers by a double partition *a*<sup>1</sup>.

*b* is the frame for receiving the goods and *c d* are the pistons arranged at either side of the frame, which pistons are positively connected with each other by means of rods *e, e*<sup>1</sup>. Both pistons rest at the bottom on slide rollers *m* by means of the rods *e* while they are guided at the top against similar rollers, *n* by means of rods, *e*<sup>1</sup>. The slide rollers *m*, as well as the rollers, *n*, are arranged in pairs on transverse shafts which are carried by suitable bearings on the box or casing, *a*, by means of supports.

Each piston, *c*, is connected, by means of a

rod *f*, guided in a slide, *f*<sup>1</sup> in the front wall of the casing to the end of the longer arm of a lever, *h*, having arms of unequal length. The end of the shorter arm of this lever, *h*, is connected to a crank, *k*, by means of a rod, *i*, the shaft of which crank is adapted to be driven by a belt or motor. The levers *h*, are arranged on the shaft, *h*<sup>1</sup>, which latter is mounted in brackets, *h*<sup>2</sup> carried by the casing, *a*. The chambers on the outer sides of the pistons communicate with each other by a passage *l*. In order to enable the frames to be charged and emptied, doors *o*, are arranged in the side walls of the box. Eccentrics *q* are mounted on shafts, *p*, to permit these doors to be kept in the closed position or to bring them into the same. The shafts, *p*, are carried by supports, *r*, fastened to the casing and may be rotated by a lever *s*, mounted on the shafts. The flaps, *t*, in the two front walls of the casing as well as the flap, *u*, arranged on the piston, *d*, permit of the renewal of the air in the box and between the pistons after the opening of these flaps. *v* are receptacles for the water in order to continually keep the humidity of the air at a certain degree.

When the crank shaft is rotating the pistons which are in the same chamber are simultaneously moved to and fro. With each stroke the air between the pistons, *c* and *d*, is driven through the goods arranged on the frame while the air displaced by the one piston on its outer side is conducted to the rear of the other piston through the passage, *l*, so that no appreciable difference in pressure occurs in the space inclosed by the two pistons and the spaces outside.

As already mentioned the weight of the pistons is taken by the rollers, *m*, so that therefore the usual considerable wear and tear on the bottom of the chamber and on the piston itself is avoided. Further the power required for displacing the piston is much less than if the pistons directly slide on the bottom of the chamber.

The described form of construction of the apparatus is meant for great outputs and owing to its great piston stroke permits of a great air pressure being attained. The employment of the lever, *h*, having arms of unequal length for the driving of the piston enables a comparatively large piston stroke to be obtained from a crank having a small throw whereby the space required by the apparatus is reduced to a minimum.



The arrangement of two small adjacent chambers instead of only one large chamber has the advantage that when the material to be dried is inserted it may be sooner subjected to the drying process so that consequently a sticking together of the material is less frequent.

What I claim is:

1. In drying apparatus comprising a casing means within the casing for receiving the material to be dried, a piston on each side of said means, and mechanism for reciprocating said pistons, the combination of rods positively connecting the pistons and rollers in contact with said rods for the purposes hereinbefore set forth.

2. In drying apparatus comprising a casing means within the casing for receiving the material to be dried and a piston on each side of said means, rods for positively connecting said pistons, rollers engaging with said rods, a rocking lever having one arm longer than the other, means for connecting one piston to the end of the longer arm, and means for rocking said lever, said means being connected to the end of the shorter arm, substantially as and for the purpose set forth.

3. In a drying apparatus, the combination with a casing inclosing a frame for receiving the material to be dried, a piston on each side of said means, means connecting the pistons, mechanism for operating the pistons, and a partition in the casing to provide a passage to connect the spaces outside the heads of the pistons.

4. In a drying apparatus, the combination with a casing formed with a piston receiving space connected near its ends by a passage, a drying frame in the space, a piston operating in the space on one side the drying frame, a second piston in said space and on the opposite side of said drying frame, means connecting the two pistons, and means operating the pistons, the air in the space adjacent one piston being forced by said piston through the passage into the space opposite the other piston.

5. In a drying apparatus, the combination with a casing having a frame to receive the material to be dried, a piston on each side the casing to force air through the frame as said pistons are operated, means connecting the pistons, means for operating the pistons, and means for supplying the space between the pistons with air.

6. In a drying apparatus, the combination with a casing formed with a passage a frame having perforated walls and located in the casing, a piston each side the frame, rods connecting the pistons, means for operating the pistons, a valve in one piston for admitting air into the space formed between the pistons, a valve for admitting air into the space in the casing outside the pistons, the air adjacent one piston being forced by the latter through the passage in the casing into the space opposite the other piston.

7. In a drying apparatus, the combination with a casing, a partition dividing the casing into two compartments formed with passages, a material receiving frame in each compartment, a pair of pistons in each compartment, each said frame being between the respective pair of pistons, rods connecting the pair of pistons in each compartment, the air adjacent a piston being displaced and forced through the passage adjacent its complementary piston, means for supplying the air to the compartments, a pair of pivoted levers disposed at an angle to each other, links connecting the pairs of pistons and the levers, a shaft having two cranks disposed out of alignment with each other, and rods connecting the levers and the cranks, whereby upon movement of the shaft the two sets of pistons will for a period be moving in opposite directions.

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

LUDWIG VON SÜSSKIND.

Witnesses:

HERMANN HUBER,  
A. LIEBERKNECHT.