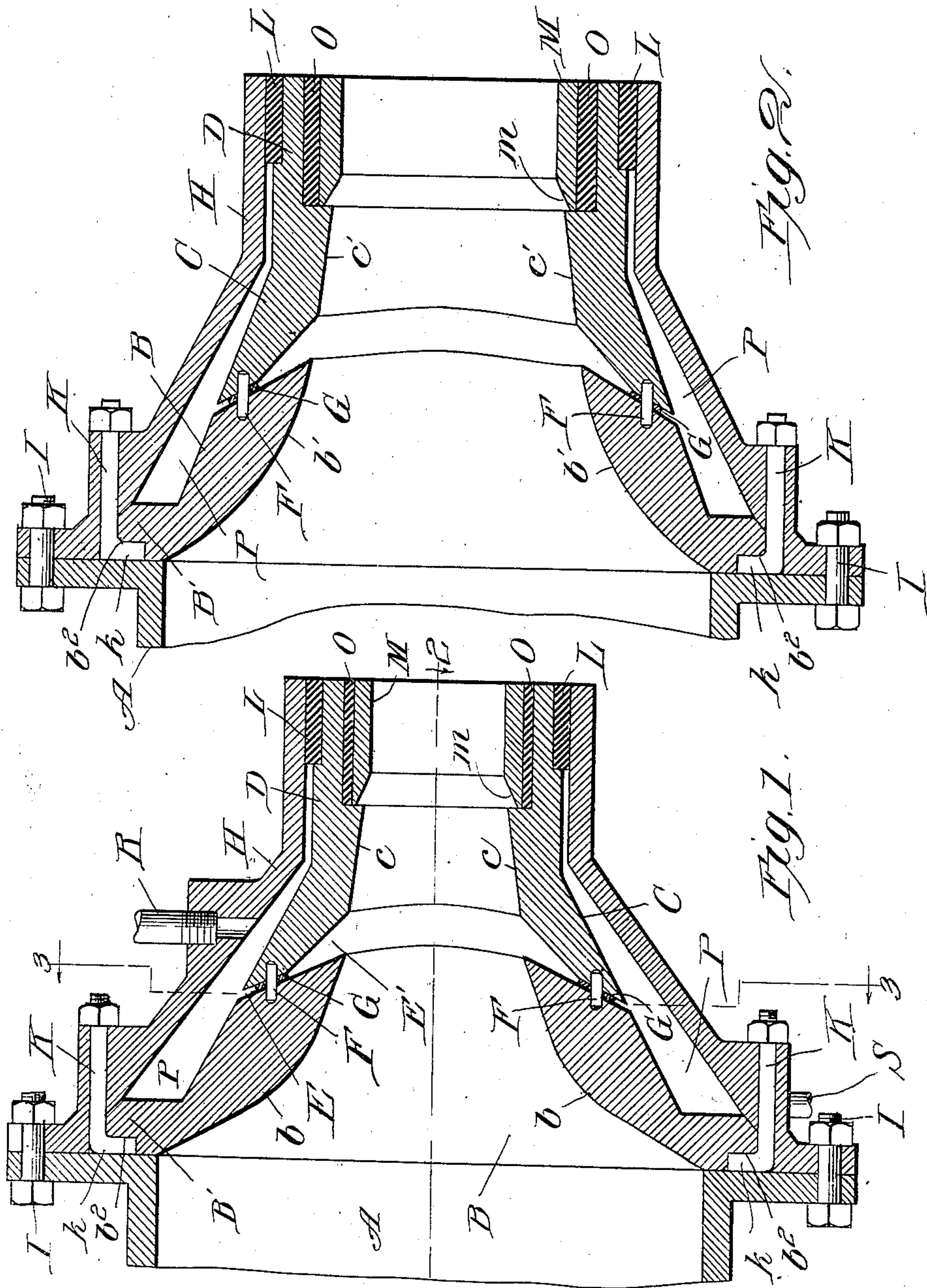


J. McLAUGHLIN.
BRICKMAKING MACHINE.
APPLICATION FILED APR. 1, 1910.

995,622.

Patented June 20, 1911.

2 SHEETS—SHEET 1.



Witnesses:
Harry S. Gailher
Ruby V. Brydges, by

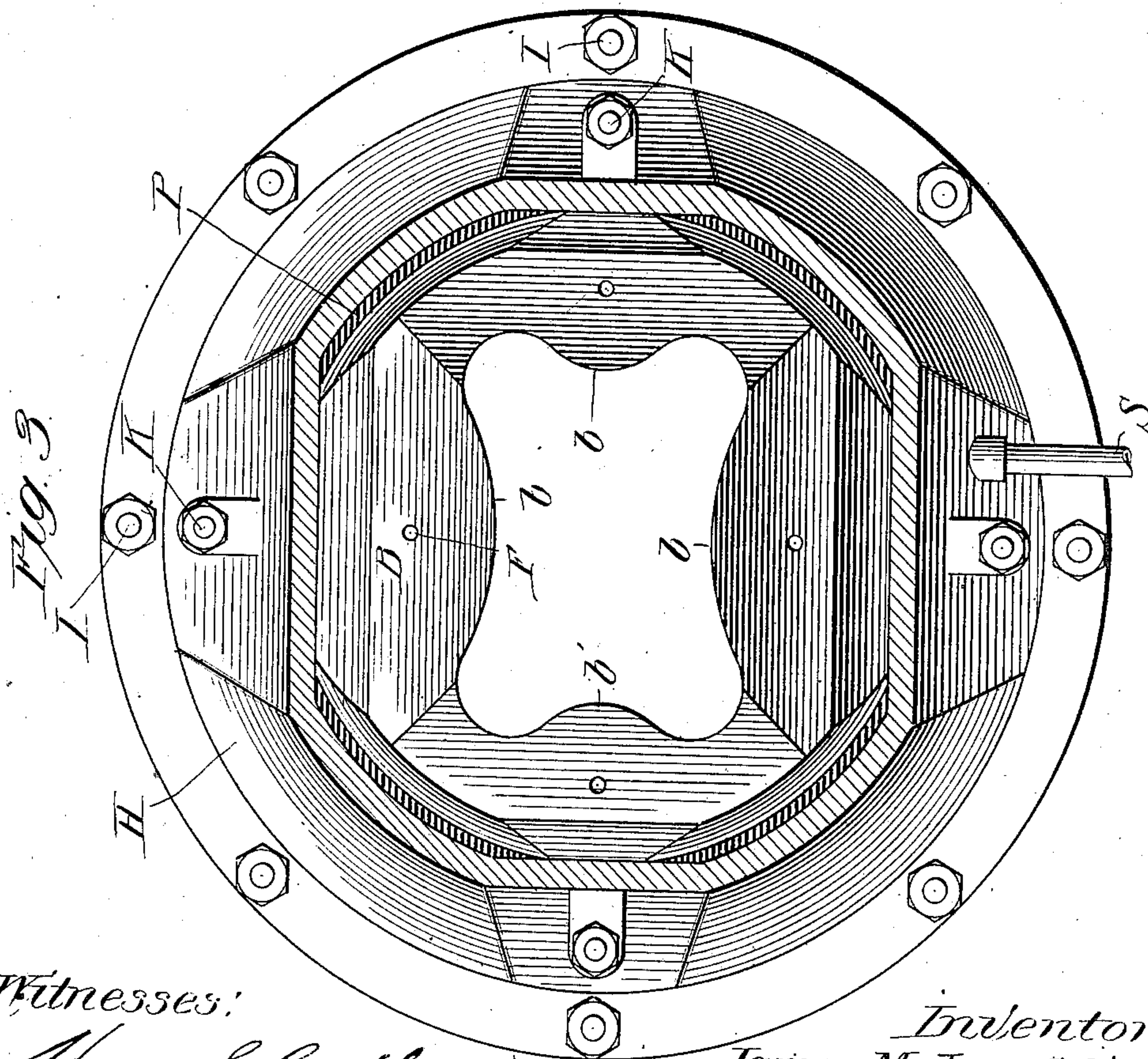
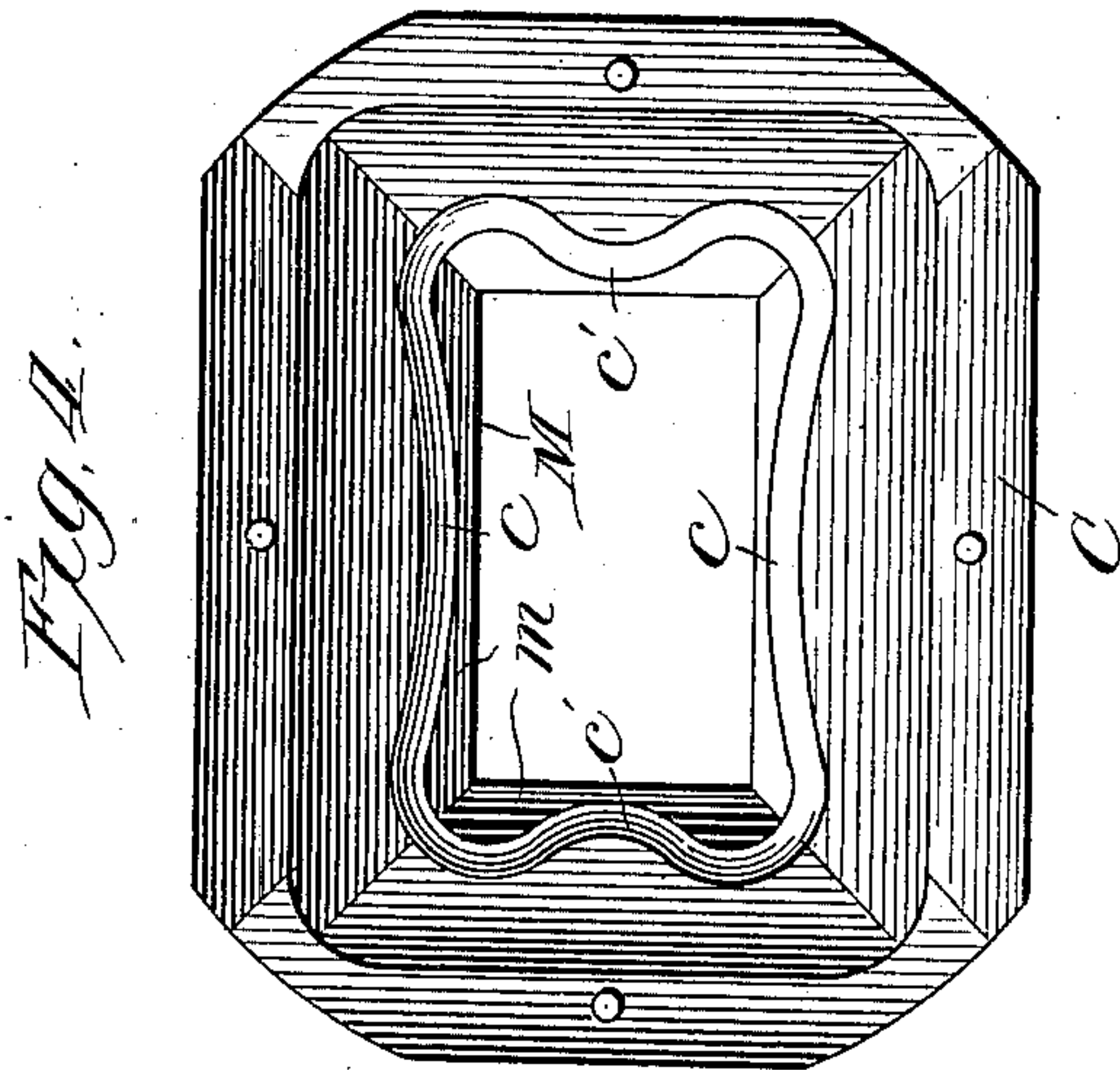
Inventor:
James McLaughlin
Chamberlin & Freudenreich
Attys

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Witnesses:

Harry S. Gaither
Ruby V. Bridges

Inventor:
James McLaughlin

by *Chamberlain & Freudenreich*
attys

UNITED STATES PATENT OFFICE.

JAMES McLAUGHLIN, OF RIVERDALE, ILLINOIS, ASSIGNOR OF ONE-HALF TO SAMUEL T. JACOBS, OF RIVERDALE, ILLINOIS.

BRICKMAKING-MACHINE.

995,622.

Specification of Letters Patent. Patented June 20, 1911.

Application filed April 1, 1910. Serial No. 552,763.

To all whom it may concern:

Be it known that I, JAMES McLAUGHLIN, a citizen of the United States, residing at Riverdale, county of Cook, State of Illinois, have invented a certain new and useful Improvement in Brickmaking-Machines, and declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention has for its object to provide means for expediting the manufacture of brick and for improving the quality of the same.

The various features of novelty whereby my invention is characterized will hereinafter be pointed out with particularity in the claims; but for a full understanding of my invention and of its object and advantages, reference may be had to the following detailed description taken in connection with the accompanying drawings, wherein:

Figure 1 is a section taken through the end of the clay-feeding cylinder, showing a brick-forming or molding device embodying a preferred form of my invention; Fig. 2 is a section taken on line 2—2 of Fig. 1; Fig. 3 is a section taken on line 3—3 of Fig. 1 looking toward the left; and Fig. 4 is a section taken on line 3—3 of Fig. 1 looking toward the right, the inclosing housing being omitted in this figure.

Referring to the drawings, A represents a clay-feeding cylinder of a brick-making machine of any suitable type into and through which the clay may be fed in any suitable manner.

For the sake of simplicity I have omitted the clay-feeding apparatus since my invention is not concerned with any particular arrangement for feeding the clay.

My invention has to do particularly with the means for molding and shaping the stream of clay into the desired cross-section of the brick. This is accomplished in machines of this type by means of a funnel-shaped member upon the end of the cylinder, which causes the oncoming clay to be reduced in size to a strip having the cross-section of the brick. I have found that when the mass of clay is forced through a simple funnel-shaped member, there is often insufficient cohesion of the clay so that after

the bricks are dried they crumble and fall apart.

One of the features of my invention consists in effecting a kneading action upon the clay so as to make the mass more tenacious and thereby obviate the tendency in the completed brick to crumble or disintegrate. I have found also that, in the machines now in use, there is considerable friction which not only makes it necessary to employ mechanism of great strength to force the clay through the mold but also retards the process and limits the capacity of the machines, and also makes the life of the molds very short.

The second feature of my invention has to do with the easing of the flow of clay through the mold so as to reduce the power required, increase the speed of operation, and lengthen the life of the mold.

Both of these features of my invention will be most readily understood from a detailed description of the means whereby desired results are accomplished, and, referring again to the drawings: B and C constitute a two-part funnel-shaped mold or forming device through which the stream of clay is forced; and D represents a nozzle upon the reduced end of the mold having a cross-section equal to the desired cross-section of the brick. The two members of the funnel-shaped mold are spaced apart so as to provide an annular passage surrounding the mold between the ends thereof. The adjacent ends of the two members of the mold are preferably so shaped that this annular passage is quite narrow adjacent the exterior of the mold as indicated at E and flares toward the interior of the mold so as to provide a comparatively wide mouth E'. Furthermore the parts are preferably so arranged that the mouth of the passage is nearer the small end of the mold than the outer portion of the passage. I provide suitable means for introducing steam through this annular passage as the clay is being fed so that the clay is progressively warmed and moistened as it passes the mouth of the steam passage. The combined influence of moisture and warmth serves to produce an antifriction characteristic in the clay so that it slides easily and smoothly through the mold, giving a greatly increased capacity to the machine without requiring any increase in the power. The steam also warms the parts of the mold so

that the advantage of moderate heat is obtained throughout the entire length of the mold.

The machine illustrated is adapted to form rectangular bricks and therefore the general shape of the mold in cross-section is rectangular. Upon each of the inner walls of the member B is a comparatively deep swell, as indicated at *b* and *b'*. The member C is provided with similar swells *c* and *c'* on its inner walls, the parts being so arranged that the swells in the two members aline with each other and form a series of gradually diminishing swells extending from one end of the mold toward the other. The purpose of these swells is to knead the clay as it is forced through the mold so as to work it into a compact tenacious mass before it enters the nozzle which gives it the final shape. I have found that by using a mold for these swells it is possible to obtain much firmer brick and brick in which the percentage of loss due to failure of the clay to hold together is reduced greatly below that in machines now in use.

It will of course be understood that the mechanical arrangement of the parts constituting the mold may be varied greatly for the purpose of producing the novel results which I attain. The construction which I have illustrated has been found to be satisfactory and I shall therefore describe it somewhat more in detail.

Although the steam inlet passage need not in all cases be formed by cutting the mold in two, I have found that this is a very convenient arrangement since it permits adjustment of the size of the passage to be made easily. In the arrangement shown the members B and C are connected together by dowel pins F which hold them together against lateral displacement but permit them to be readily detached from each other. The width of the passage E may conveniently be determined by threading washers G of the desired thickness upon the dowel pins and then bringing the members B and C together until the washers are clamped between them. By using more than one washer upon each dowel pin, or by using washers of different thicknesses, the width of the passage may be varied at will. The two parts of the mold may conveniently be held together by assembling them within a surrounding housing H which is bolted or otherwise fastened to the outlet end of the cylinder A; the fastening means illustrated consisting of bolts I. The member B may be provided with a flange B' which bears against the inside of the housing and is locked thereto by means of bolts K having L-shaped heads $\frac{1}{2}$ which lie within slots b^2 in the outer face of the flange. The member C may be locked in place in the housing in operative relation to the member B in

any suitable way as, for example, by pouring lead into the space between the exterior of the nozzle and the interior of the housing as indicated at L. The nozzle is preferably provided with a liner M which may conveniently be held in place by a lead binder O. The inner end of the liner is preferably made so as to flare laterally, as indicated at *m*, so as to provide a wide mouth for the reception of the incoming stream of clay. When the liner wears out it may readily be removed and replaced by another. In the same way when the mold wears out it may be readily removed from the housing and a new one substituted therefor.

The housing is made larger than the mold so as to provide an annular chamber P surrounding the mold and communicating with the annular passage through the mold. Steam may be admitted into the annular chamber P through a pipe R and it may be allowed to escape through a pipe S leading from the opposite side of the chamber. In this way the chamber becomes filled with steam which is not only free to flow through the annular passage into engagement with the clay, but also, by reason of being in contact with substantially the entire outer surface of the mold, warms the mold so that the mold itself aids the steam which comes in contact with the clay in bringing the clay to a state which causes it to flow easily through the mold.

While I have illustrated and described with particularity only a single form of my invention I do not desire to be limited to the specific details so illustrated and described; but intend covering all constructions and arrangements which fall within the terms employed in the definitions of my invention constituting the appended claims.

What I claim is:

1. In a brick-making machine, a funnel-shaped forming device adapted to mold a stream of plastic material into approximately the desired cross-section of a brick, a die in the outlet end of the forming device having the desired cross-section of the brick, there being deep swells extending longitudinally of the forming device along the interior walls thereof, said swells decreasing gradually in size from the larger end of the device to the smaller end, said device being separated into two parts along a transverse plane between the ends of the swells, spaces arranged between the two parts of said device to hold the same apart and form an annular passage between the same, a housing surrounding said device and secured thereto at its smaller end, and fastening means between the housing and the larger end of said device for drawing said device into the housing and the two parts thereof toward each other, and means for introducing steam into said housing.

2. In a brick-making machine, a funnel-shaped forming device having deep swells extending longitudinally along the inner walls thereof to knead a stream of plastic material as it passes through the device, said swells decreasing gradually in size from the larger end of the device toward the smaller end, said device having an annular passage through the walls thereof at a point between the ends of the swells, said passage being shaped so as to widen gradually from the exterior of the device toward the interior, the outer portion of the passage being nearer the large end of the device than the inner portion of the passage, a housing surrounding said device and cooperating therewith to form a closed chamber in communication with said passage, and means for introducing steam into said chamber.

3. In a brick-making machine, a funnel-shaped forming device having deep swells extending longitudinally along the inner

walls thereof to knead a stream of plastic material passing through the device, said device being separated into two parts along a transverse plane, spacers arranged between the two parts of said device to hold them apart and form an annular passage between the same, a housing surrounding and inclosing said device, means for securing said device to the housing, said device and said housing being shaped to form a closed chamber between the same and in communication with said passage, means for introducing steam into said chamber, and a detachable nozzle secured in the small end of said device.

In testimony whereof, I sign this specification in the presence of two witnesses.

JAMES McLAUGHLIN.

Witnesses:

WM. F. FREUDENREICH,
RUBY V. BRYDGES.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."
