

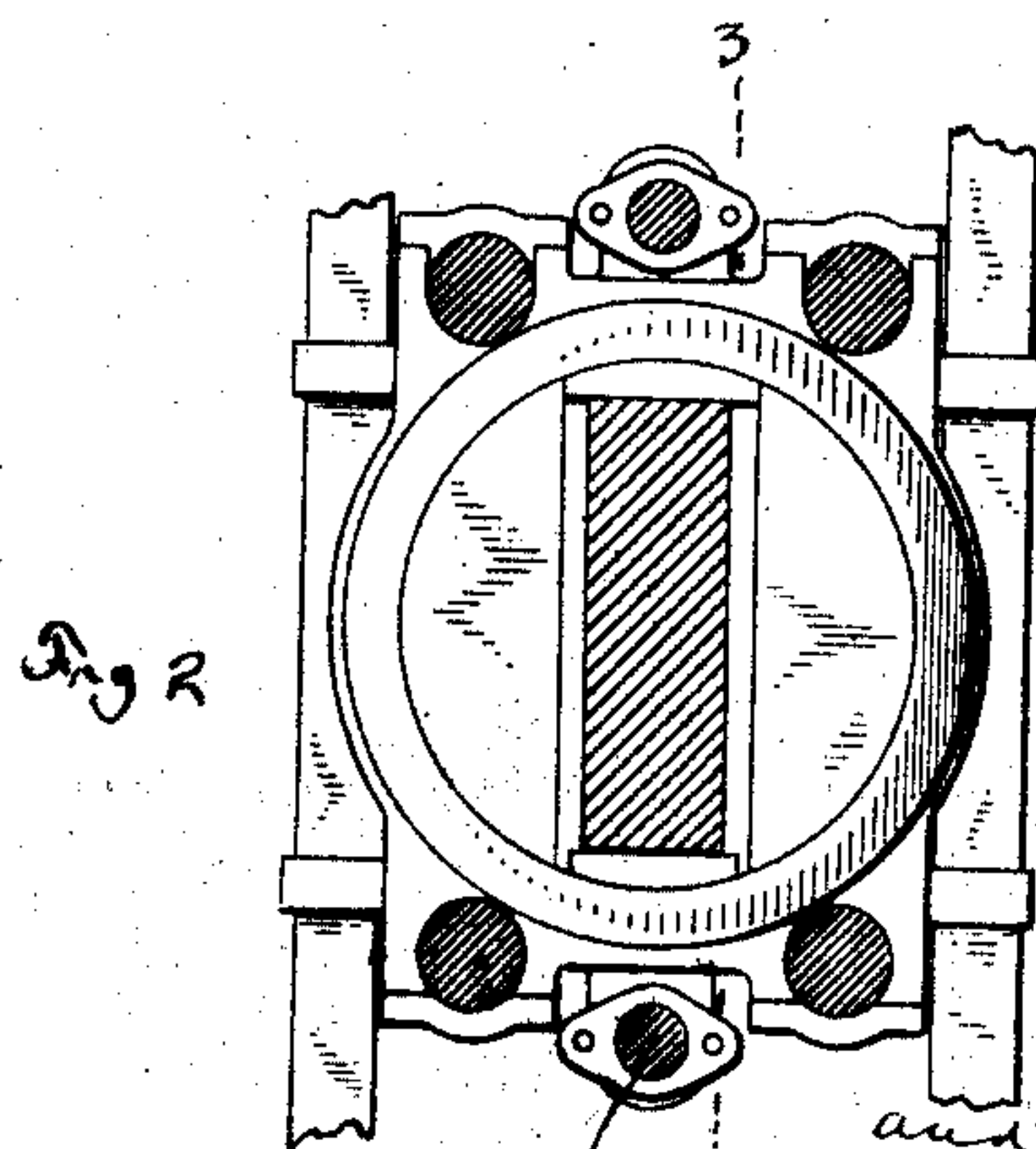
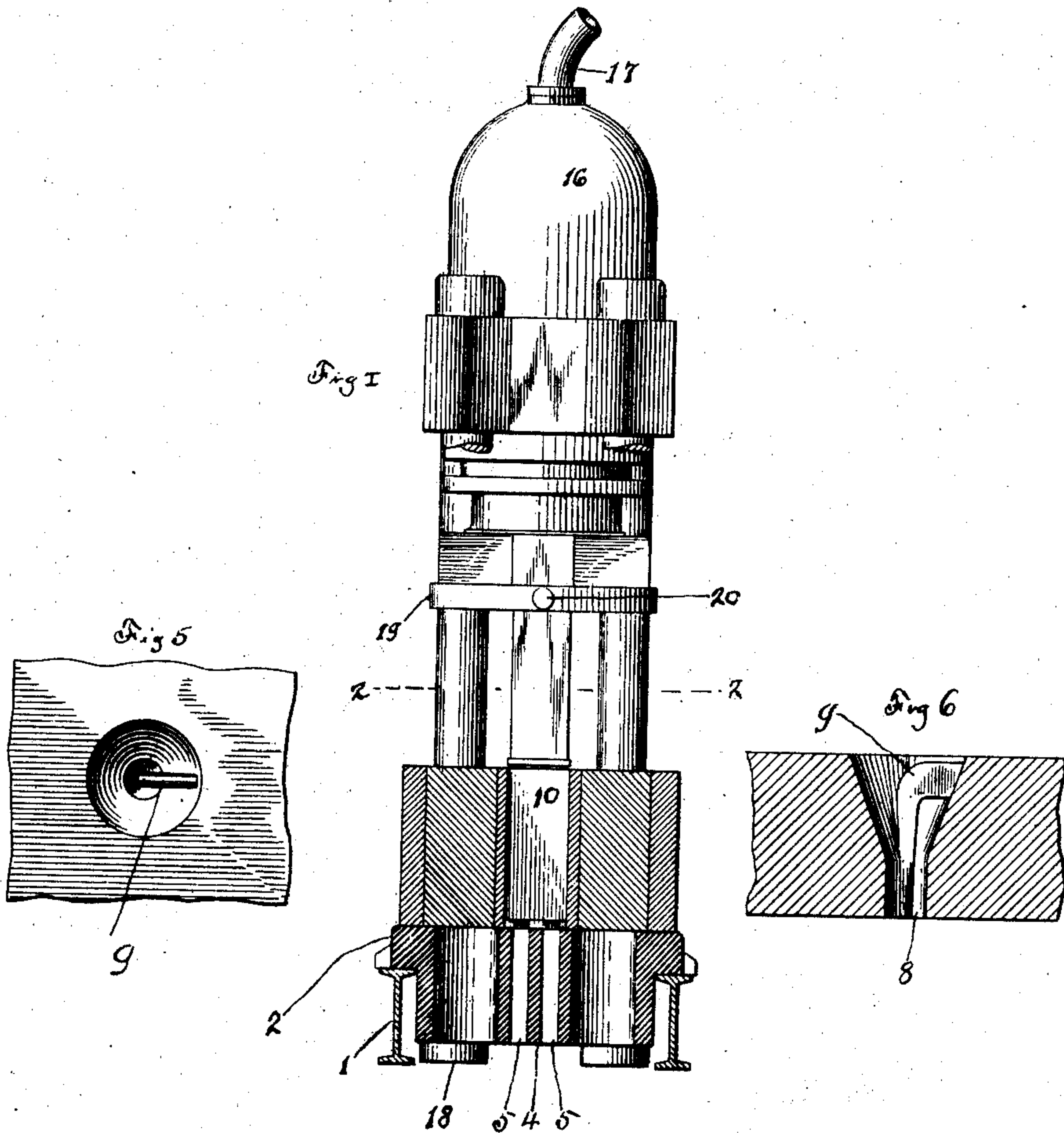
No. 854,375.

PATENTED MAY 21, 1907.

C. F. MUELLER, JR. & S. MUELLER.
PRESS FOR FORMING THICK FLUID SUBSTANCES.

APPLICATION FILED JAN. 13, 1905.

3 SHEETS—SHEET 1.



Witnesses
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H. Johnson

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By their Attorney
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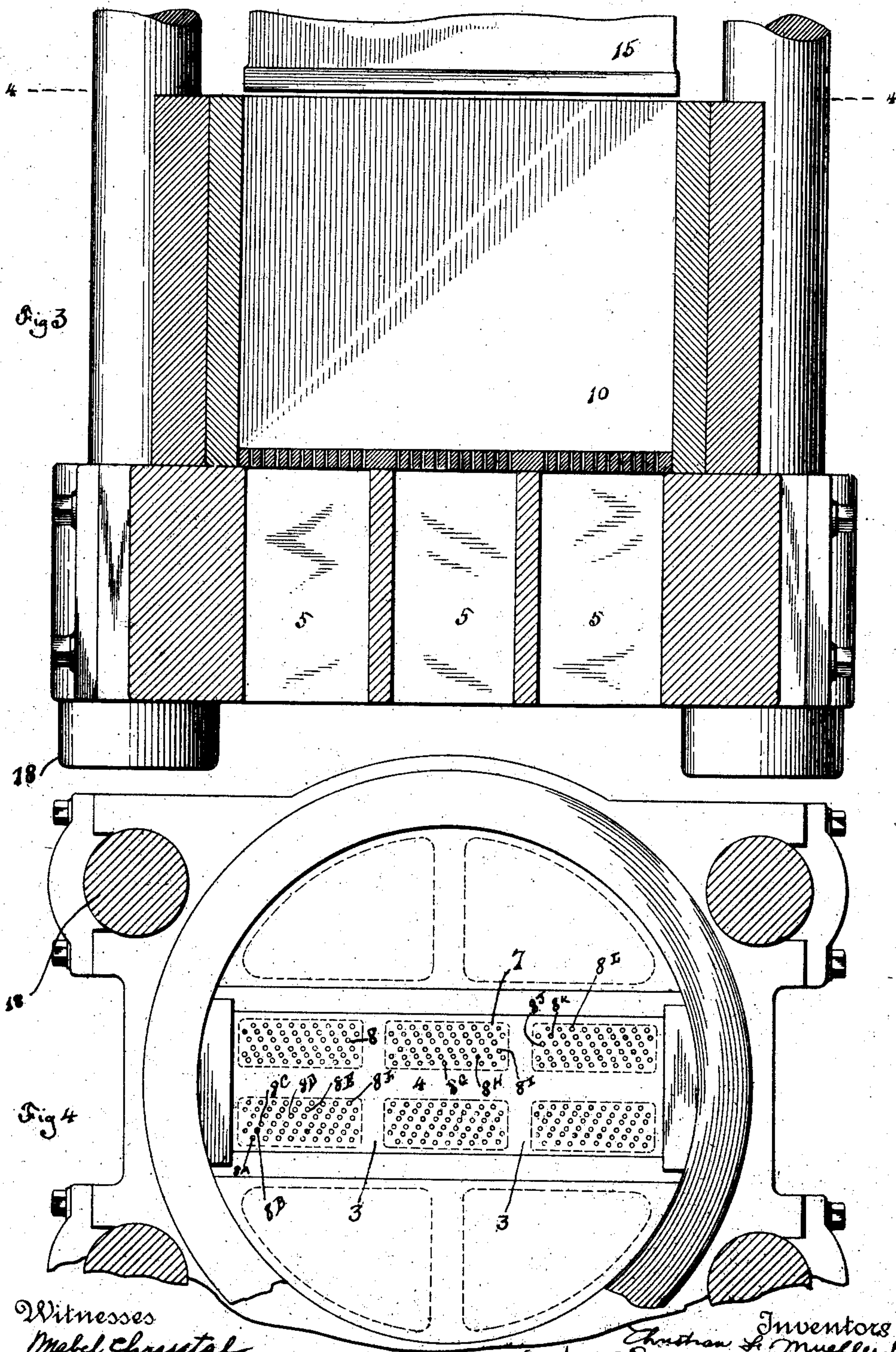
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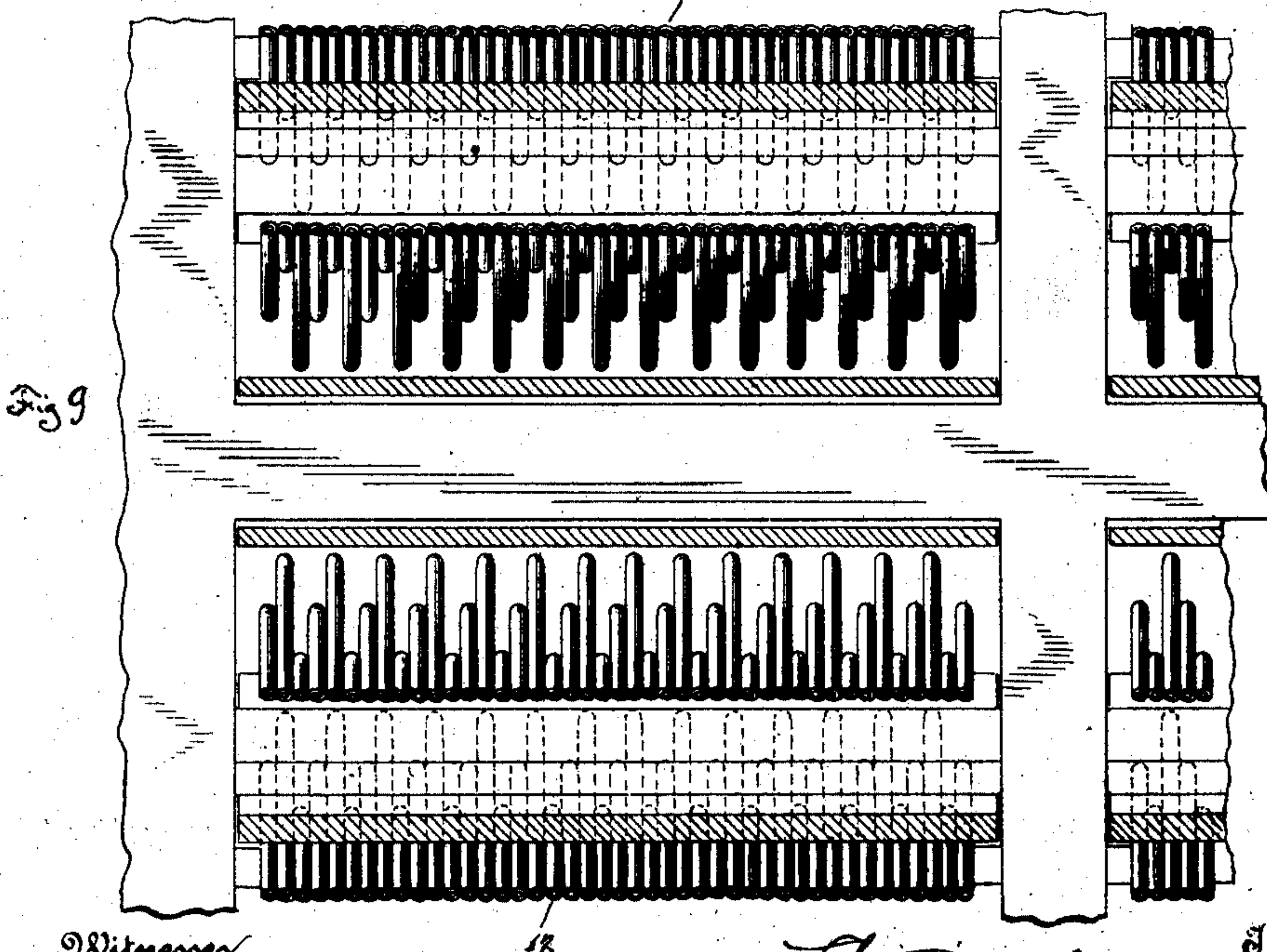
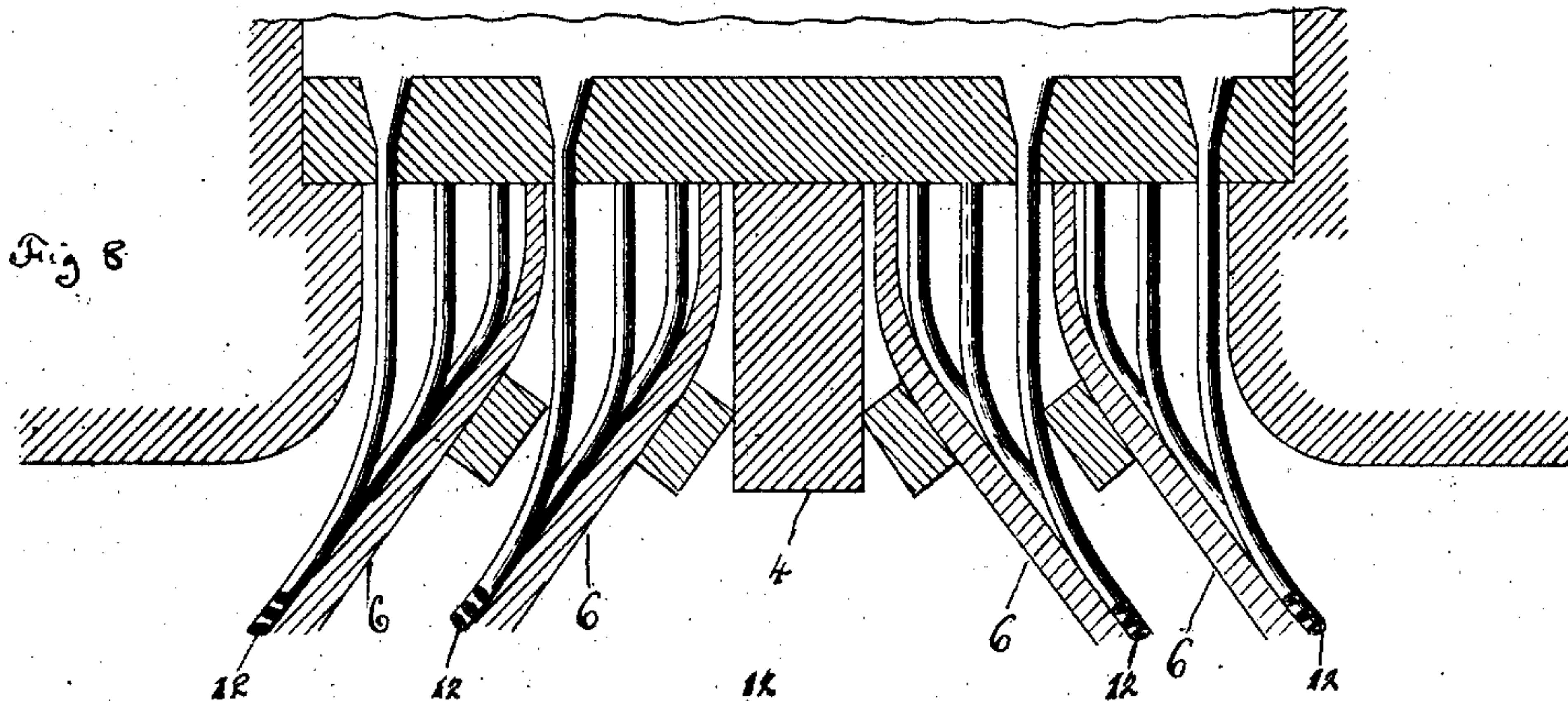
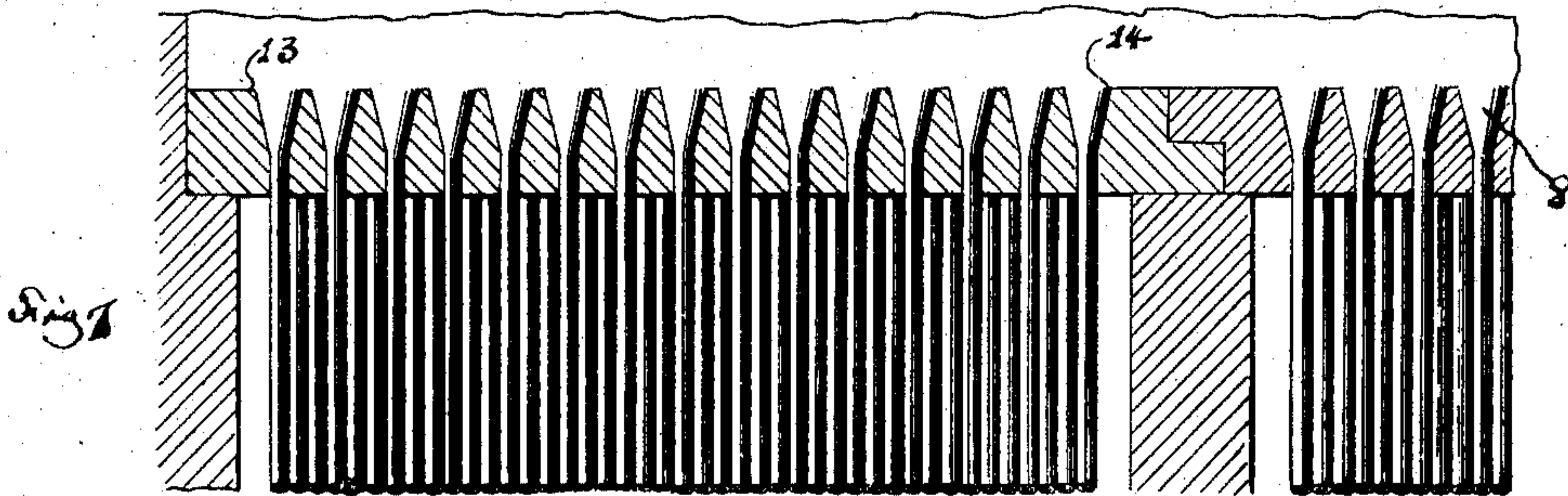
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

CHRISTIAN F. MUELLER, JR., AND SAMUEL MUELLER, OF JERSEY CITY,
NEW JERSEY.

PRESS FOR FORMING THICK FLUID SUBSTANCES.

No. 854,375.

Specification of Letters Patent.

Patented May 21, 1907.

Application filed January 13, 1905. Serial No. 240,880.

To all whom it may concern:

Be it known that we, CHRISTIAN FREDERICK MUELLER, Jr., and SAMUEL MUELLER, citizens of the United States, residing at Jersey City, in the county of Hudson, State of New Jersey, have invented certain new and useful Improvements in Presses for Forming Thick Fluid Substances, of which invention the following is a specification.

Our invention relates to a machine which can be operated through the medium of hydraulic pressure, or other suitable pressure, such as steam, hydraulic pressure being preferred, for the purpose of forming and shaping substances which, while they are in said machine, constitute a thick or pasty fluid, and which after the removal from the machine, form marketable products, such for instance as macaroni or spaghetti.

Our invention is directed not only to a desirable means or method for forming and shaping said articles, but it also comprehends and includes such means as will tend to cheapen the manufacture of said product, and at the same time produces a more uniform and satisfactory and marketable merchandise.

Our invention is also directed to a compactness and stability of construction, whereby not only the proper pressure can be maintained and handled with due efficiency, but also the resultant output of the machine will be comparatively large considering the size of the machine; our machine will also lend itself to quick and satisfactory handling.

In carrying our said invention into effect, we have produced a machine whereby, and in which, a plurality of rows of the finished product, in leaving the compressor, will so assemble themselves automatically as to fall in side by side and thereupon become a single and compact row; and this feature we have by our arrangement hereinafter described, quadrupled, so that the compactness hereinbefore rehearsed will be arrived at, not only by the agency of the plurality of rows automatically assembling themselves in a single row, but by a quadrupling of the same process, produce practically four machines in one, and thereby arrive at a point where the finished article can be produced with much greater economy than by any means, or process now known, or employed.

For the better understanding of our inven-

tion we will proceed to describe it in connection with the accompanying drawings which form a part of this specification.

In these drawings Figure 1, represents a view of our improved machine, partly in elevation and partly in vertical section. Fig. 2, is a horizontal section on the line 2—2, Fig. 1, looking from the upper part of the machine down. Fig. 3, is a vertical section on a larger scale on the line 3—3, Fig. 2. Fig. 4, is a horizontal section of the machine on the line 4—4, Fig. 3. Figs. 5 and 6 are detail views, showing a portion of the die and the core. Fig. 7, is a detail longitudinal section through a portion of the die plate; in this view the product is shown issuing from the die plate. Fig. 8, is a cross-section of the same parts. Fig. 9, is a plan view section looking up into the machine from beneath.

In these drawings 1 represents girders or other suitable means for supporting the press. 2 represents a table mounted on the said girders or upon other suitable supports. The table 2 is provided with two cross partitions 3—3 and a longitudinal partition 4 which sub-divides the central space in said table 2 into six receiving chambers or hoppers 5. These latter are again sub-divided by the sloping partitions 6 as shown in Fig. 8 of the drawings.

Each of the six chambers 5 are provided with perforate tops or covers 7 which form and constitute the mold or die plate or plates. These perforations are shown at 8. In Figs. 5 and 6 of the drawings the plates 7 are shown to an enlarged scale and here is indicated the exact construction of the perforations or tubes 8 which form and constitute the dies for shaping the plastic mass which passes therethrough.

The upper portions of the tubes or dies 8 are sloping, flaring upwardly as shown. This construction permits and compels the proper introduction of the fluid mass into the tubes. We also provide the cores or formers 9 suitably attached to, and supported on, the die plate and extending down into the tubes 8. The resultant product, that is, the articles produced on the machine are hollow; such as macaroni.

Above the die plates 7 is the chamber 10 into which the plastic material is introduced in bulk for the purpose of forming into the shaped articles aforesaid. This plastic ma-

terial or thick fluid substance, such as dough, is shown in Fig. 8 of the drawings partly in the chamber 10, partly in the forming dies and partly as formed and shaped articles 12 resting on the sloping partition 6. In Fig. 7, which represents a longitudinal vertical section of the same parts, the formed articles 12 are shown as assuming positions side by side in a compact and unbroken row. This uniformity and regularity of delivery and assembling are important and valuable features of our invention. These said features are directed toward economy of manufacture and operation by reason of compactness of construction. To further illustrate this phase of our invention we will here refer to Fig. 4 of the drawings. In this figure are shown six sets of forming dies properly and sufficiently separated each from the other and in each set are arranged six different rows of tubes or formers. Taking the forming plate in cross section as shown in Fig. 8 it will be seen that twelve deliveries of the finished article are visible, which twelve finished articles are divided into four sets with three articles in each set. Now by referring to Fig. 4 again, it will be seen that the perforations which constitute the forming tubes aforesaid are diagonally arranged one behind the other and that by taking three of these perforations or tubes the space occupied thereby will be approximately, when added together, the entire space of the plate within the limits of said three perforations or forming tubes and consequently the spaces of all these perforations, or forming tubes, adding them together from one side as far and including the third row, will be approximately the same as the entire length of the die plate; in other words the product which issues from any three rows upon the side of a die plate will while lying side by side in a single row occupy a space equal to the entire length of the said die plate. This is brought out in Fig. 7 of the drawings where the die plate extends from the point 13 to the point 14. The formed articles 12 are shown here in a compact row lying side by side and extending the entire length or distance and covering the entire space between the points 13 and 14 aforesaid. It will thus be seen that the product as it issues from the press as shown in cross section in Fig. 8 automatically assumes and forms itself into the compact and continuous row shown in Fig. 7. As there are four sub-divisions as shown in Fig. 8, so there will also be four compact rows issuing from the machine as shown in Fig. 7. By this operation and arrangement we secure the economy of space before referred to and a means also whereby the formed articles can be satisfactorily handled either automatically by introduction into another machine for subsequent manipulation or by hand or otherwise as may be desired. To

more particularly and again describe this phase of our invention we will refer to Fig. 4 of the drawings. This figure shows as before stated six compartments or dies, each having six rows of perforations or forming tubes. To more properly emphasize and describe the points involved herein, we will designate these rows separately as follows: The first row we will designate as 8—A; the second row as 8—B; the third row as 8—C; the members constituting these three rows lie, as will be seen, diagonally one behind the other and the combined space occupied by the perforations 8—A, 8—B, and 8—C, is equal to the entire space of the die plate beginning with the near edge of the perforations 8—A and ending with the far edge of the perforations 8—C; and it will be seen therefore that the issue or product of these three perforations as shown in 8—A, 8—B, and 8—C at the right hand of Fig. 8, will lie close to each other and without any intervening space between them. The entire space of the line of finished articles shown in Fig. 7 consists of a repetition of the series 8—A, 8—B, and 8—C. So also the product of the three rows 8—D, 8—E, and 8—F automatically arrange themselves as shown in the second compartment from the right in Fig. 8. The rows 8—G, 8—H, and I, arrange themselves in the third compartment from the right in Fig. 8, and the product of rows 8—J, 8—K, and 8—L arrange themselves as shown in the compartment at the left hand side of Fig. 8. The product of each of these four compartments of Fig. 8 produces four compact rows like the row shown in Fig. 7. In Fig. 9 we show an under side view of this machine and here the four rows are seen fully developed and illustrated.

At 15 we show a plunger entering the compressor chamber and adapted and arranged to move downwardly in said chamber and thrust the plastic material through the perforations and forming dies aforesaid. This plunger exactly fits the said chamber and drives the entire product through the dies aforesaid.

At 16 we show the hydraulic chamber into which the plunger extends in its upward movement and at 17 we show an entrance into said chamber for the introduction of the compressing liquid. These parts may be made in any suitable and customary manner.

At 18 we show bolts extending the length of the machine for holding the parts securely together. For withdrawing the plunger 15 out of the chamber and restoring it to its operative position as shown in Fig. 1 we provide any suitable means such as the cross heads 19 connected by a shaft 20 to the vertical pillars 21. These parts can be operated by hydraulic means, not shown, or by any other suitable means.

The unimportant details of our invention

can be varied at pleasure without departing from the spirit of our invention, which is substantially the production of a machine for forming and molding thick fluid substances, such as macaroni and spaghetti whereby in their withdrawal from the machine they assume automatically a plurality of compact rows of finished product, and whereby also, the economy in the construction of the machine as well as in its operation is demonstrated and maintained. These results may be arrived at by mechanical equivalents of the device such as we have shown and described, but we have here produced a preferred and satisfactory form of mechanism which effectually demonstrates the utility of our invention. In carrying our invention into effect also, the diagonal arrangement of perforations or forming dies upon the die plate can be increased and the length of the die plate can be extended without departing from the spirit of our invention so long as it substantially brings about the result which we have demonstrated herein to be new and useful and which we shall hereinafter claim. Similarly the parts can be decreased.

Having thus described our invention the following is what we claim as new therein and desire to secure by Letters Patent

1. In a machine for forming and shaping thick fluid substances, a die plate having diagonally arranged perforations and means arranged below the die plate for receiving the product therefrom and directing it into a straight line.

2. In a machine of the class described, a die plate having perforations arranged diag-

onally as shown in combination with sloping partitions to receive the product and direct it into a straight line.

3. In a machine for forming and shaping thick fluid substances, a die plate having perforations arranged diagonally across its face, a suitable compressor as shown, and means for receiving the product from the die plate and directing it into one or more compact straight rows.

4. In a machine for forming thick fluid substances, a die plate mounted in the machine substantially as shown and described, the perforations of the die plate being arranged diagonally in respect thereto and means upon one side of the machine for directing the product into a compact and perfectly straight row moving out and away from the machine in the direction of that side and similar means upon the other side as and for the purposes set forth.

5. In a machine for forming thick fluid substances, a die plate having double sets of diagonally arranged perforations, each double set adapted to produce two single straight and compact rows of finished product.

6. In a machine for making macaroni or spaghetti, consisting of a die plate having diagonally arranged perforations and means upon each side of the machine for producing two single straight rows of the finished product.

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