

No. 850,163.

PATENTED APR. 16, 1907.

M. M. KLINE.  
MACHINE FOR FORMING ARTIFICIAL FUEL BLOCKS.  
APPLICATION FILED JULY 30, 1906.

2 SHEETS—SHEET 1.

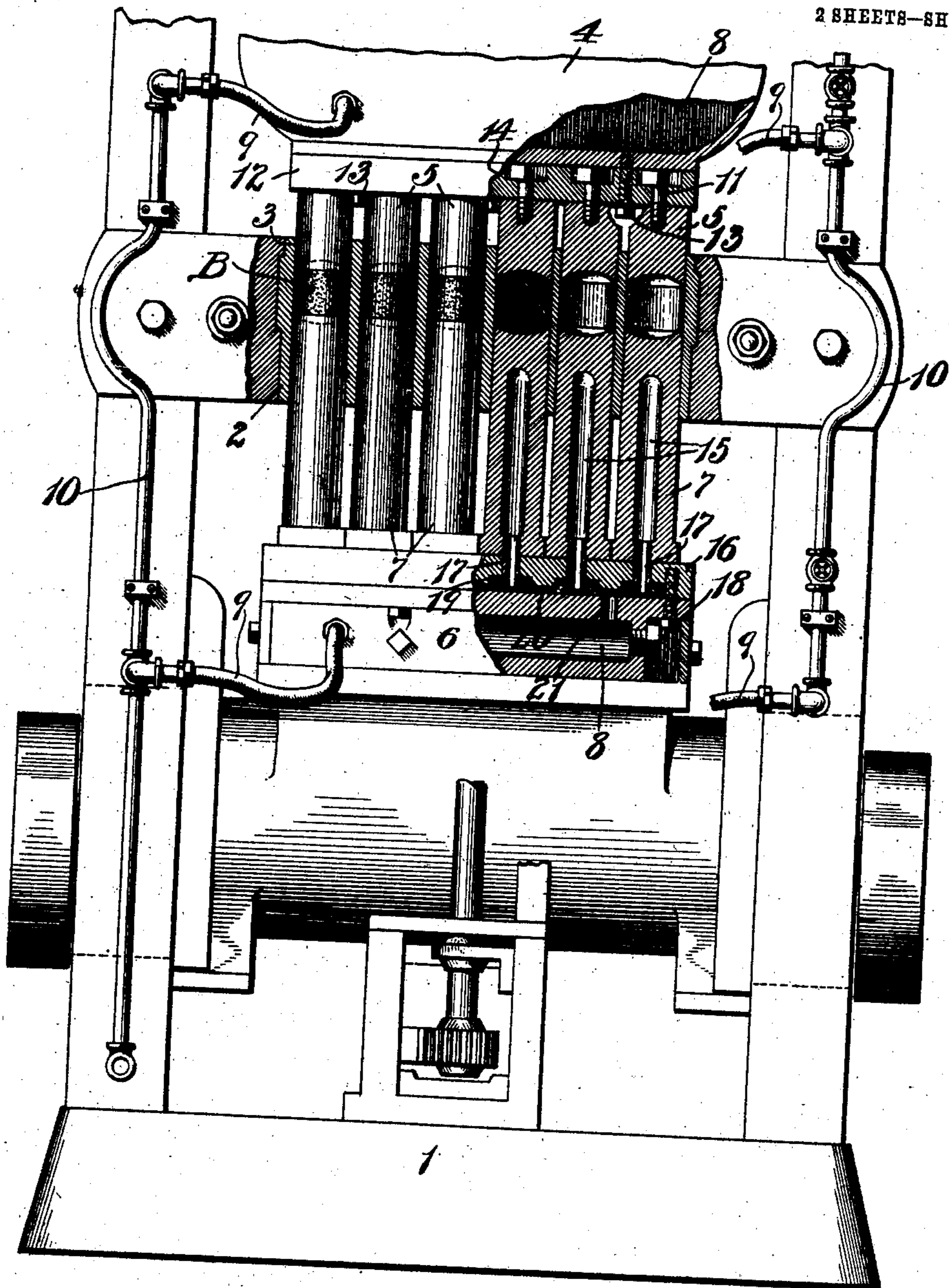


Fig. 1.

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2 SHEETS—SHEET 2.

Fig. 2.

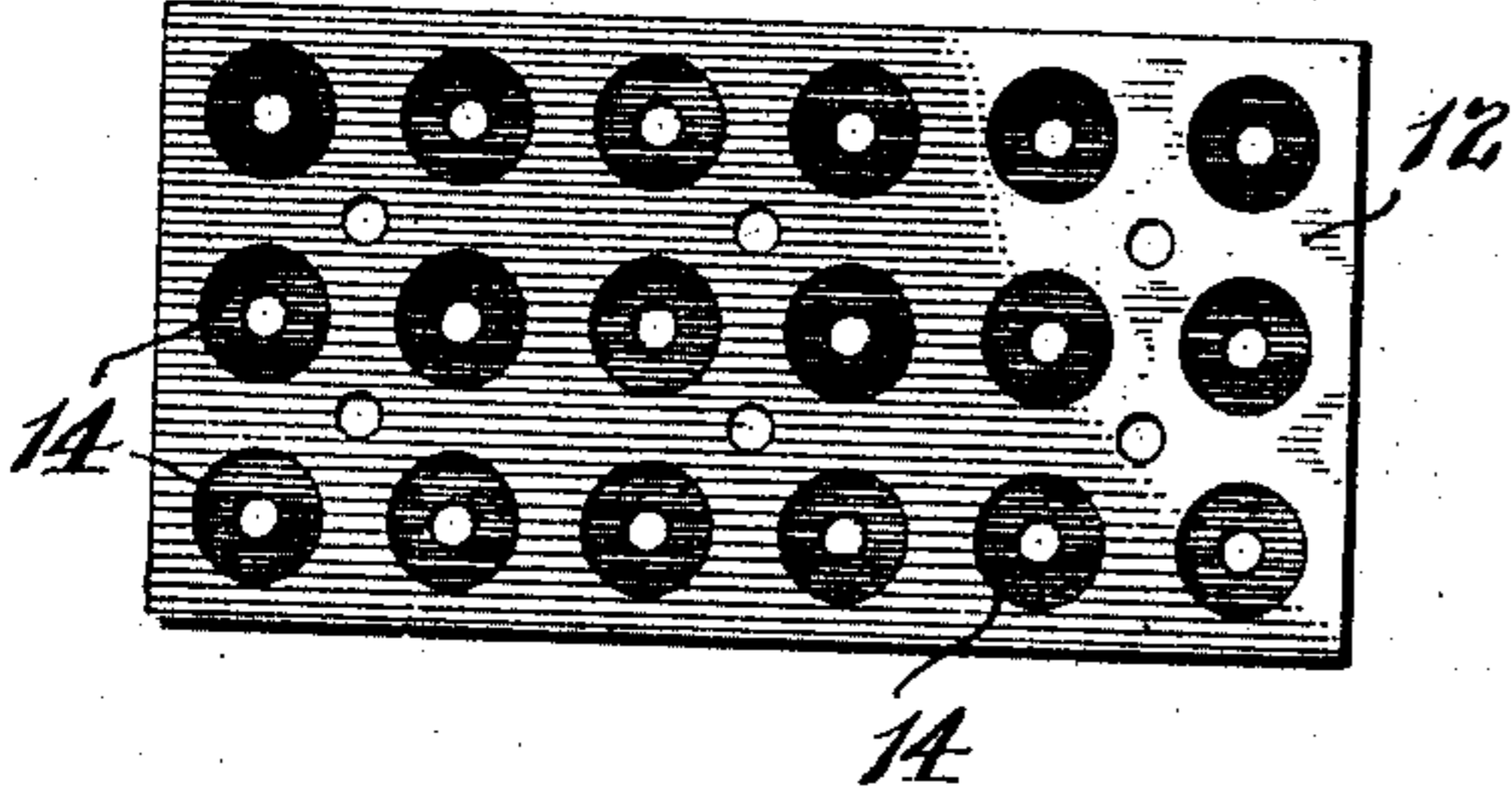


Fig. 3.

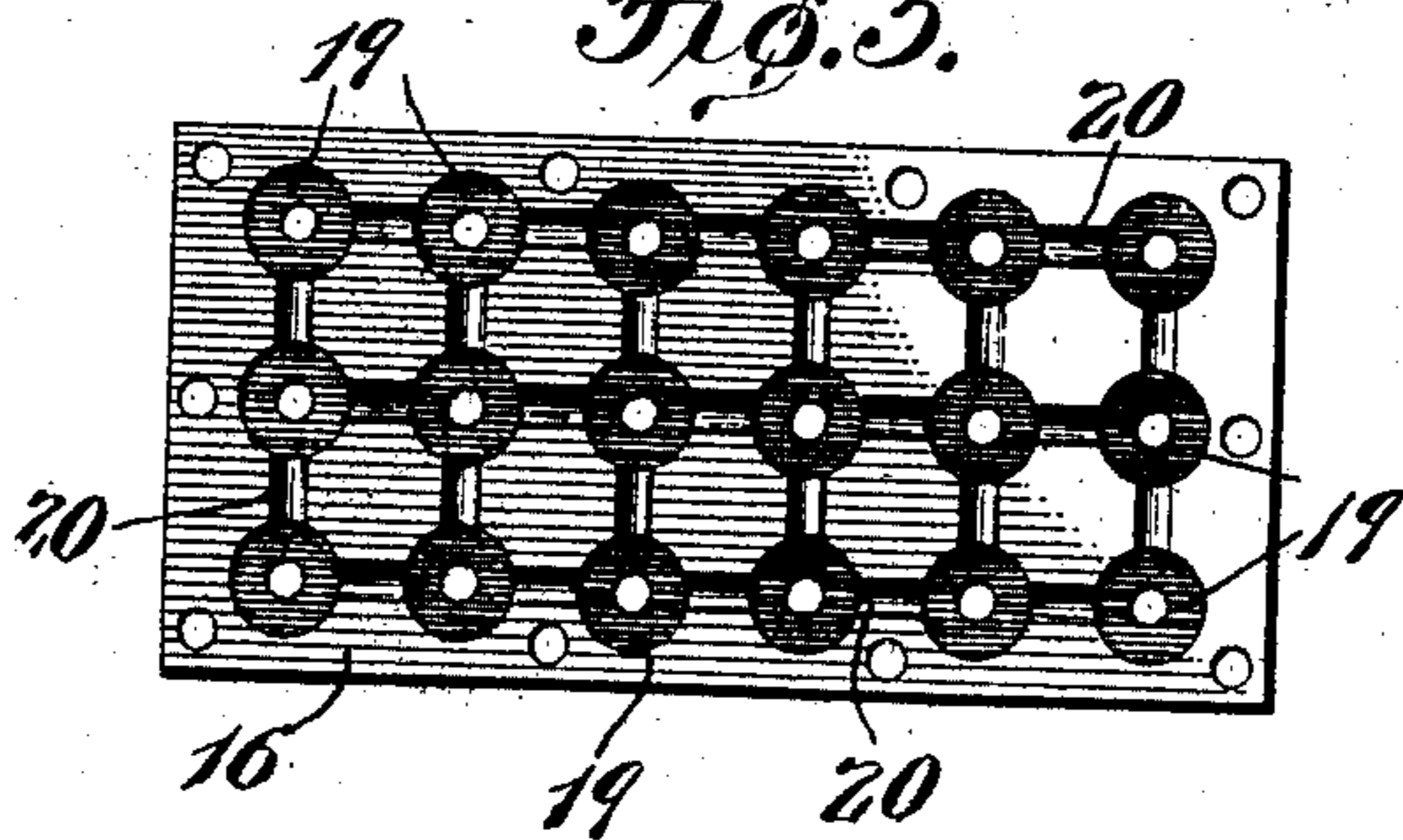


Fig. 4.

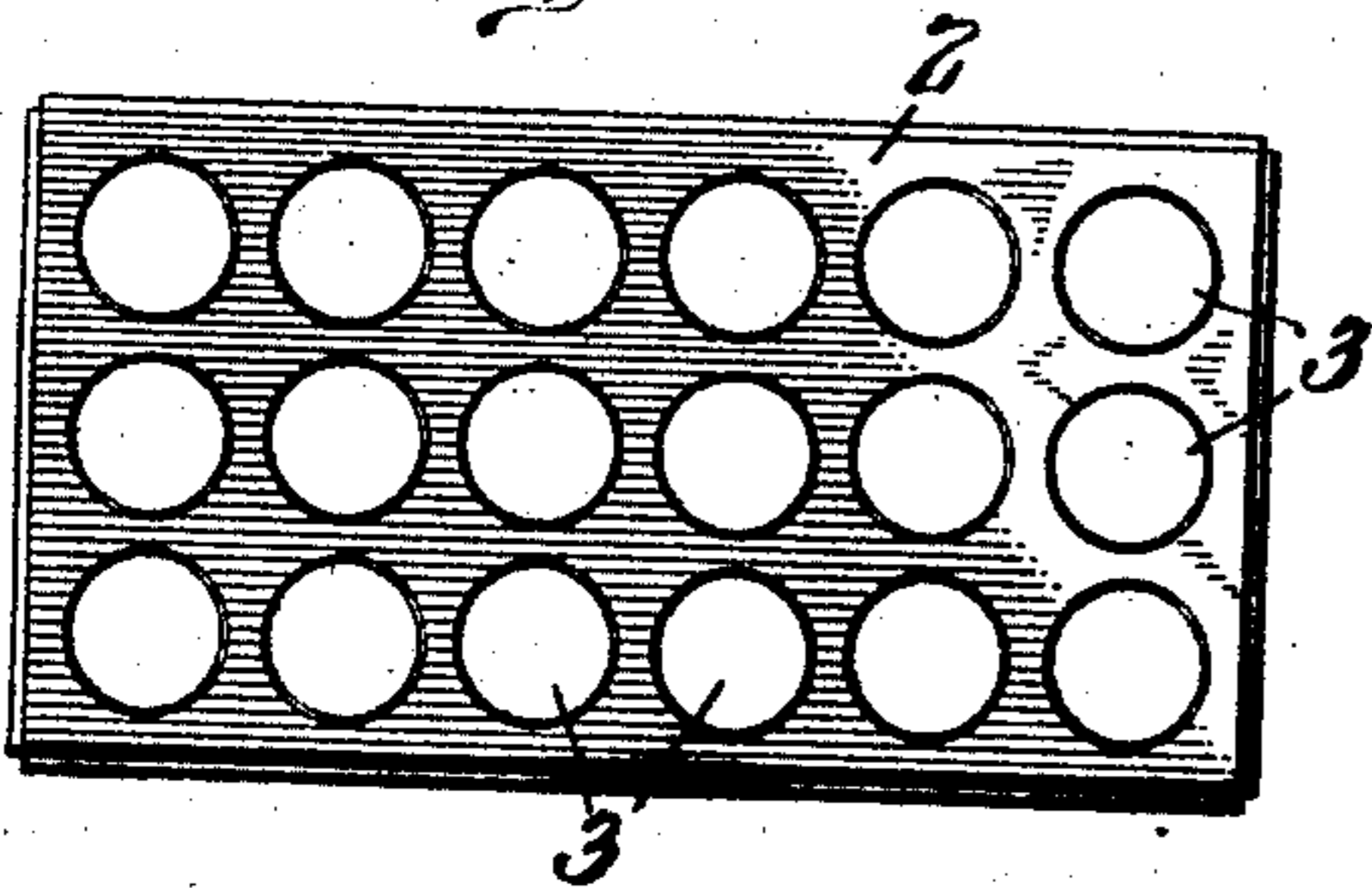


Fig. 5.

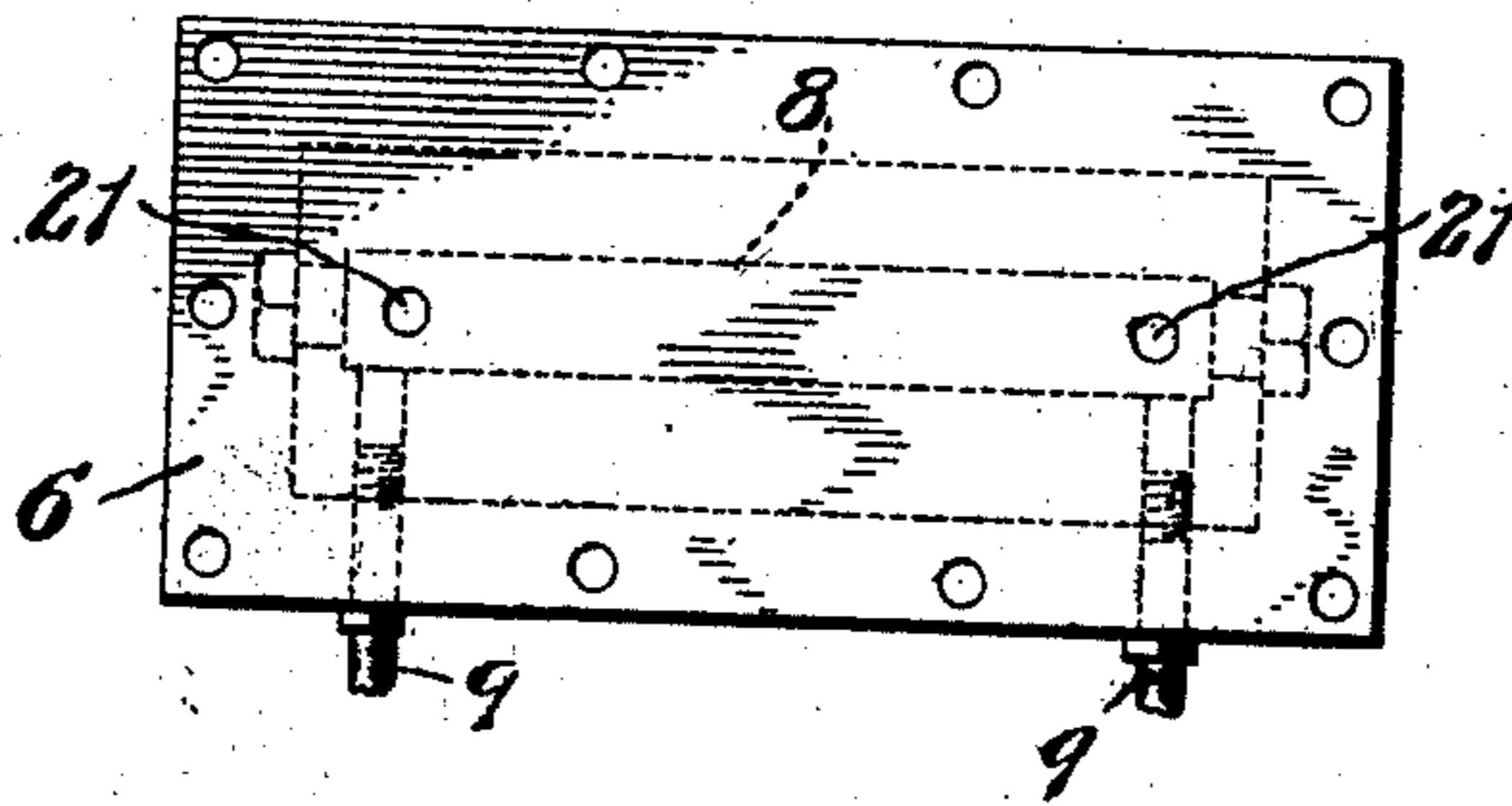
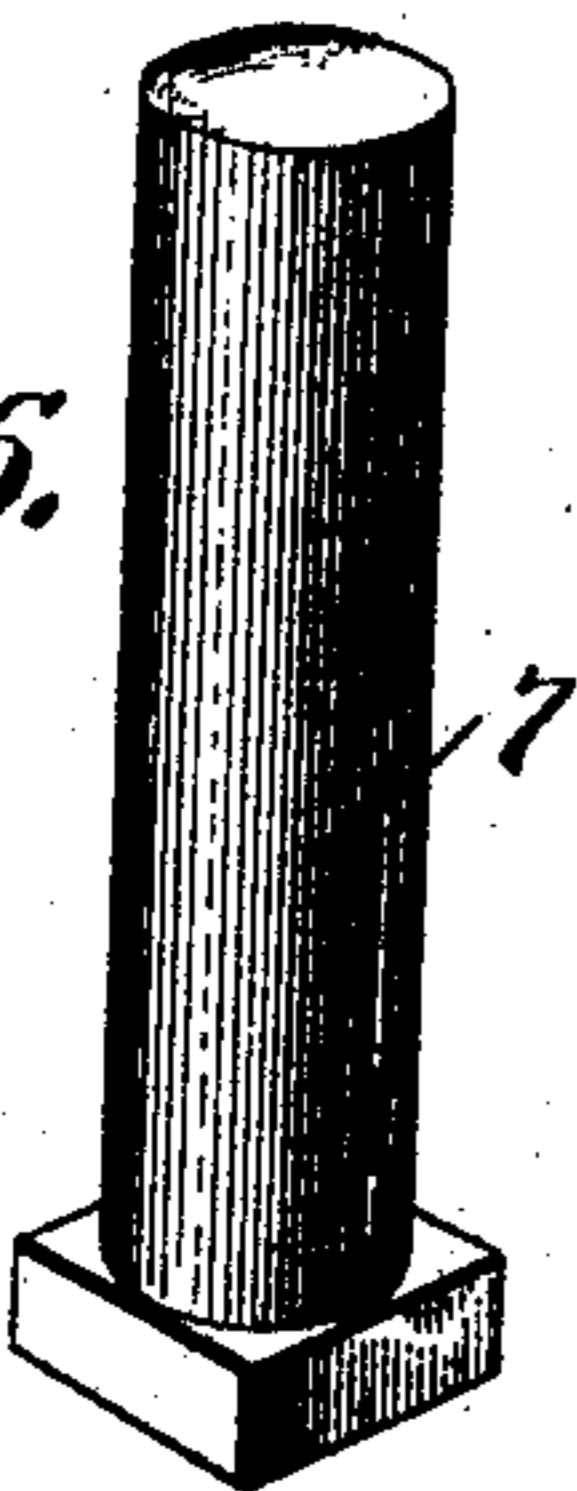


Fig. 6.



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# UNITED STATES PATENT OFFICE.

MICHAEL M. KLINE, OF ST. LOUIS, MISSOURI.

## MACHINE FOR FORMING ARTIFICIAL-FUEL BLOCKS.

No. 850,163.

Specification of Letters Patent.

Patented April 16, 1907.

Application filed July 30, 1906. Serial No. 328,361.

*To all whom it may concern:*

Be it known that I, MICHAEL M. KLINE, a citizen of the United States, residing at St. Louis, Missouri, have invented a certain new and useful Improvement in Machines for Forming Artificial-Fuel Blocks, of which the following is a full, clear, and exact description, 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, forming part of this specification, in which—

Figure 1 is a front elevation of a portion of a machine embodying the features of my invention. Fig. 2 is a top plan view of the plate which carries the upper dies. Fig. 3 is a plan view of the underneath side of the plate which carries the lower dies. Fig. 4 is a top plan view of the mold member. Fig. 5 is a top plan view of the lower-die-carrying member with the plate shown in Fig. 3 removed. Fig. 6 is a perspective view of one of the lower dies. Fig. 7 is a perspective view of one of the upper dies, and Fig. 8 is a view of the artificial-fuel block which my machine is designed to form.

This invention relates to compressing-machines, and has for its object to provide a machine of novel construction for forming artificial-fuel blocks.

Referring to the drawings which represent the preferred form of my invention, 1 designates the frame of the machine, and 2 designates a plate or member carried by the frame and provided with a plurality of openings 3 to receive the material from which the fuel-block is formed. A member 4 is arranged above the mold member 2 and carries a plurality of dies 5, which are adapted to project into the openings in the member 2. A member 6 is arranged beneath the mold member 2 and also carries a plurality of dies 7, which project into the openings in the member 2, suitable means being provided for actuating the upper and lower die carrying members to cause said dies to move toward and from each other to compress the material placed in the openings in the mold member.

The substance from which the fuel-blocks are formed consists principally of pulverized slack coal, and to attain the desired results in the finished product it is necessary that the dies which compress said material into completed form should be heated. To this end I have provided the upper and lower die

carrying members with chambers 8, which receive a heating fluid, so that heat will be imparted to the dies carried thereby. Preferably steam is used as the heating medium; but it will of course be understood that hot water could be substituted therefor or the dies could be electrically heated without departing from the spirit of my invention.

In the machine herein shown, which represents the preferred form of my invention, the steam is supplied to the die-carrying members by means of flexible tubes 9, leading from suitable supply-pipes 10 and entering the chambers 8. The upper dies 5, which are preferably solid and of cylindrical form, as shown in Fig. 7 of the drawings, are connected by headed taps 11 to a plate 12, which is connected to the upper-die-carrying member by screws 13, said plate 12 being provided with recesses 14 to receive the heads of the taps 11. The lower dies 7 are also of cylindrical form, as shown in Fig. 6, but are provided with longitudinal bores 15, as shown in Fig. 1, and are connected to a plate 16 by headed nipples 17. Said plate 16 is fastened by screws 18 to the lower-die-carrying member 6, and said plate is provided on its underneath face with recesses 19, which are connected with each other by conduits or grooves 20, formed in the underneath face of plate 16, thus forming passage-ways for the circulation of the heating fluid.

As shown in Figs. 1 and 5, the lower-die-carrying member 6 is provided with ports 21, leading from the steam-chamber 8 therein, and when the plate 16 is in operative position said ports register with some of the recesses 19 or grooves 20 in the underneath face of the plate 16, so that the steam in the chamber of the lower-die-carrying member can circulate through the plate 16, and thus pass up into the bores of the dies 7 to heat same, the heads of the nipples 17, which hold said dies in position, not being large enough to occupy all of the space of the recesses 19.

Preferably the upper and lower dies are provided with concave faces, as I desire to make the fuel-block B of the form shown in Fig. 8.

In operation the material from which the blocks are formed is placed in the openings in the mold-plate 2, the lower dies 7 normally projecting into said openings, and thus forming bottoms therefor. The upper and lower die carrying members are then moved

toward each other to bring the dies into the position shown in Fig. 1 to firmly compress the material, and thus produce an artificial-fuel block B of the form shown in Fig. 8, the block when finished being ejected from the molds after the dies have been separated, preferably by moving the lower dies upwardly until their ends extend approximately flush with the upper face of the mold-plate 2.

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

1. A machine for forming artificial-fuel blocks, comprising a die-carrying member provided with a chamber for receiving a heating fluid, means for supplying a heating fluid to said chamber, a plate connected to said die-carrying member and provided on its underneath face with conduits or passage-ways, ports leading from the chamber, in the die-carrying member to said conduits, dies mounted on the upper face of said plate and provided with central bores, and nipples for holding said dies in position and for establishing communication between the bores in said dies and the conduits in the plate; substantially as described.

2. A machine for forming artificial-fuel blocks, comprising a die-carrying member provided on its interior with a chamber for receiving a heating fluid, a flexible tube extending into said chamber for supplying a heating fluid thereto, a plate connected to said die-carrying member and provided on its underneath face with a plurality of circular recesses, and grooves connecting said recesses together to form passage-ways for the circulation of the heating fluid, ports leading from the chamber in the die-carrying member to points in said passage-way, dies carried by said plate and provided with central bores, and headed nipples for securing said dies to the plate, the heads of said nipples resting in the circular recesses in the plate and being of less dimensions than said recesses; substantially as described.

In testimony whereof I hereunto affix my signature, in the presence of two witnesses, this 20th day of July, 1906.

MICHAEL M. KLINE.

Witnesses:

WELLS L. CHURCH,  
CORA BADGER.