

H. W. LASH.
INGOT CASTING APPARATUS.
APPLICATION FILED SEPT. 22, 1902.

NO MODEL.

3 SHEETS—SHEET 1.

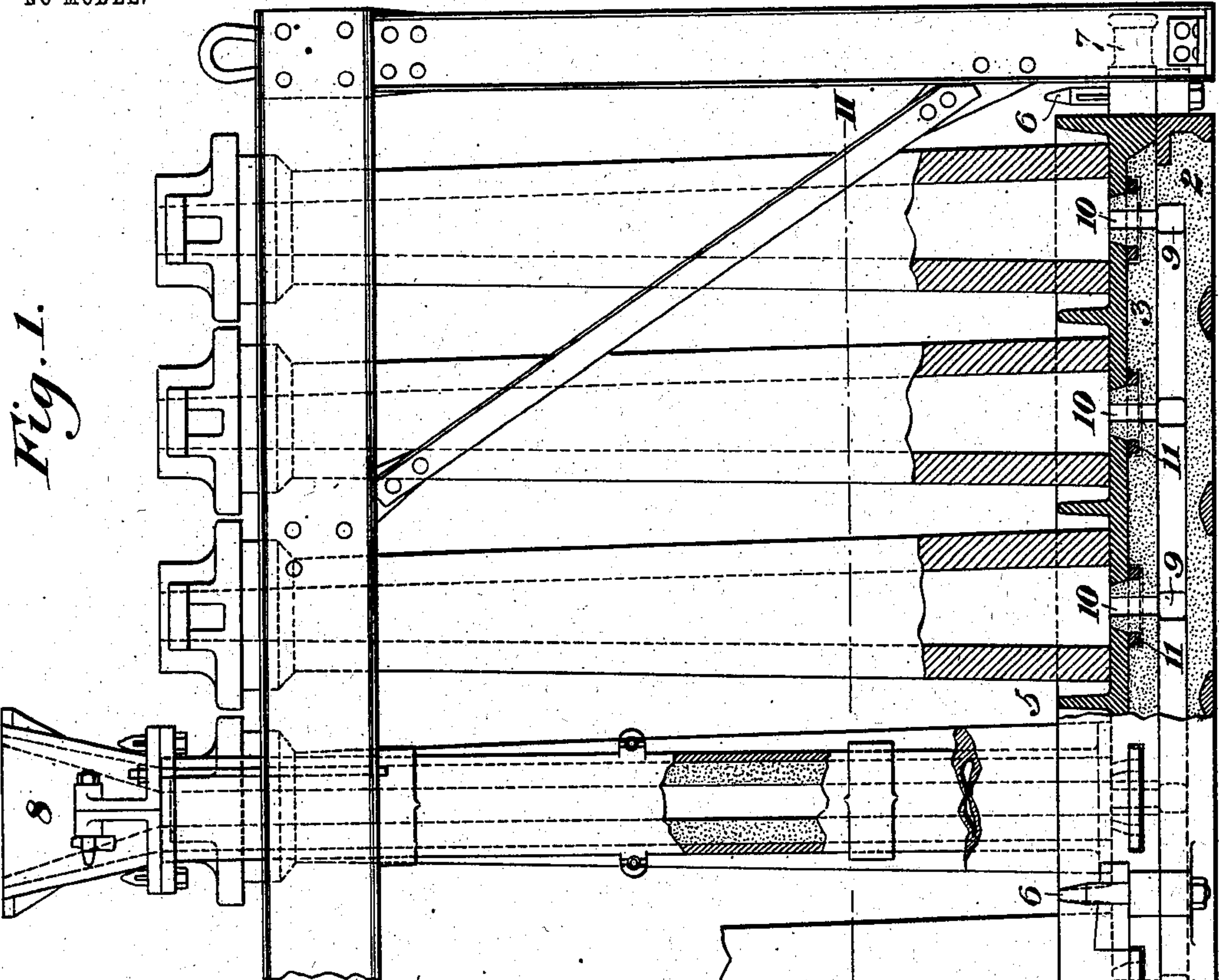
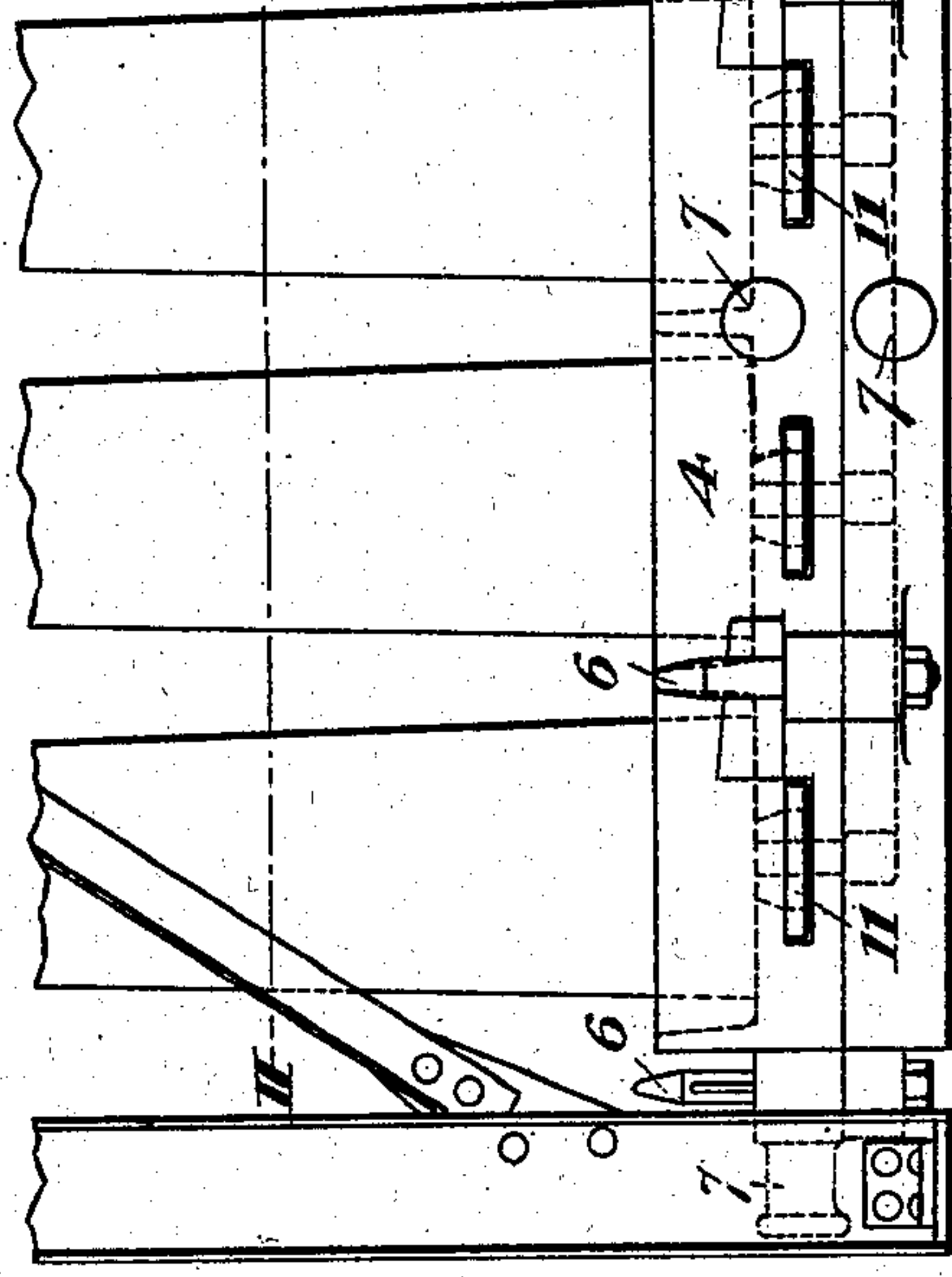
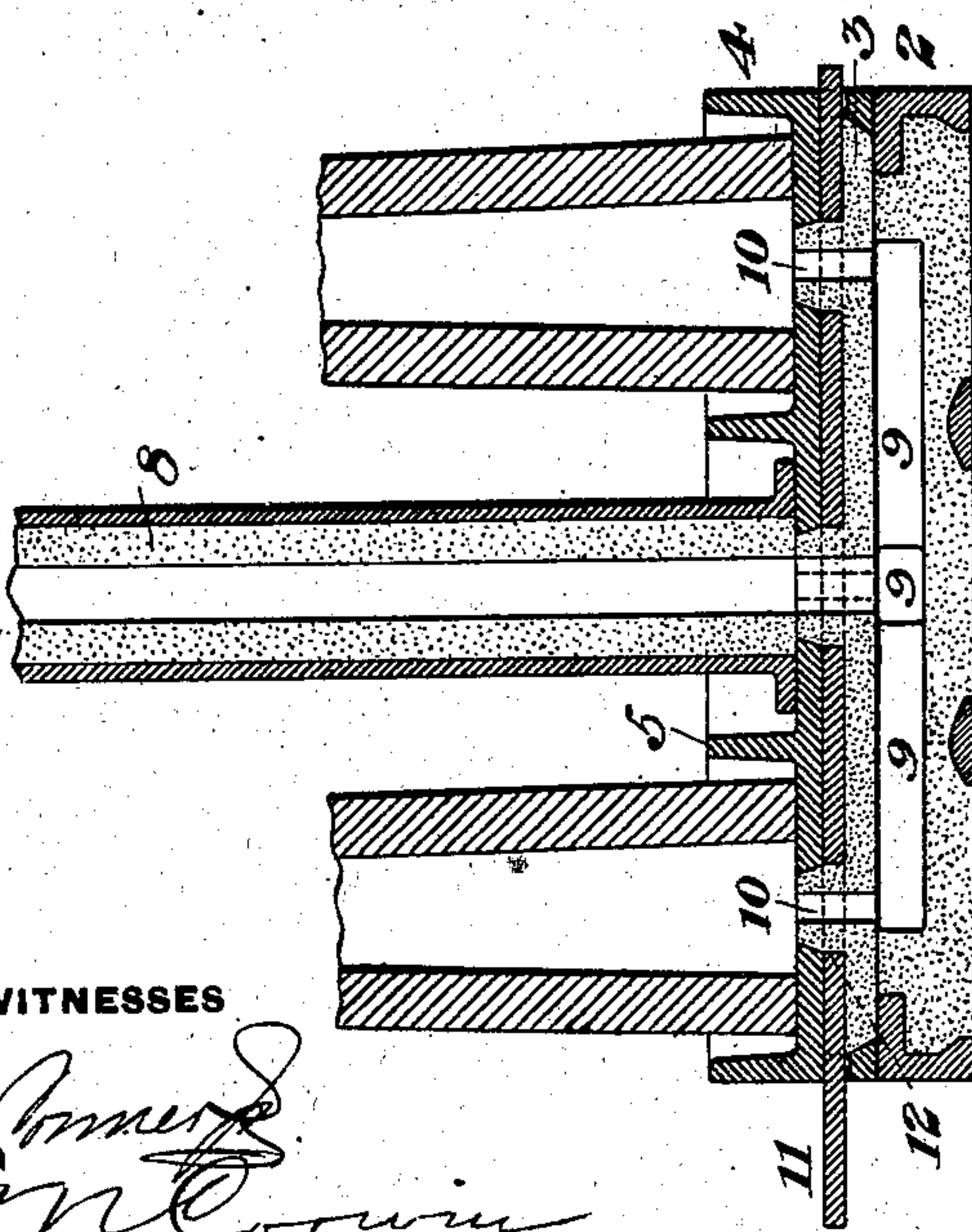


Fig. 3.



WITNESSES

L. A. Conner
J. M. Corwin

INVENTOR

H. W. Lash
by B. C. Lewis & Rymer
his attys.

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3 SHEETS—SHEET 2.

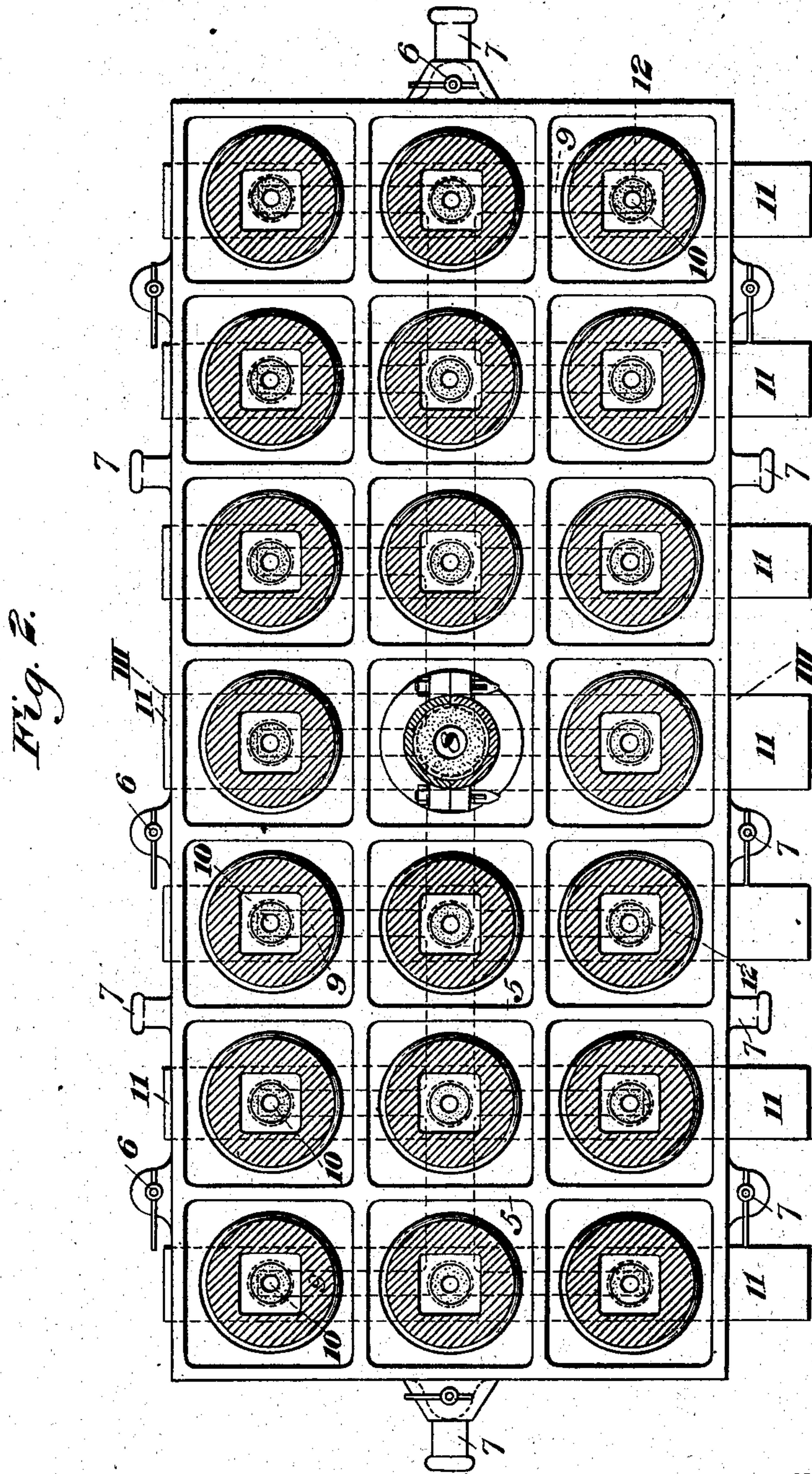


Fig. 2.

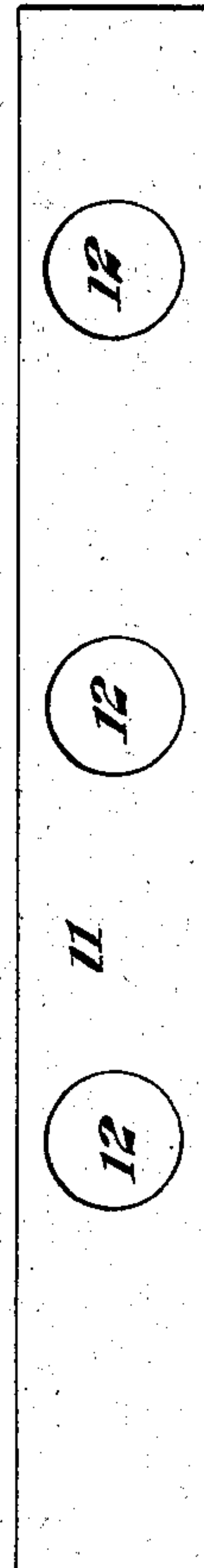


Fig. 4.

WITNESSES

L. A. Corwin
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INVENTOR

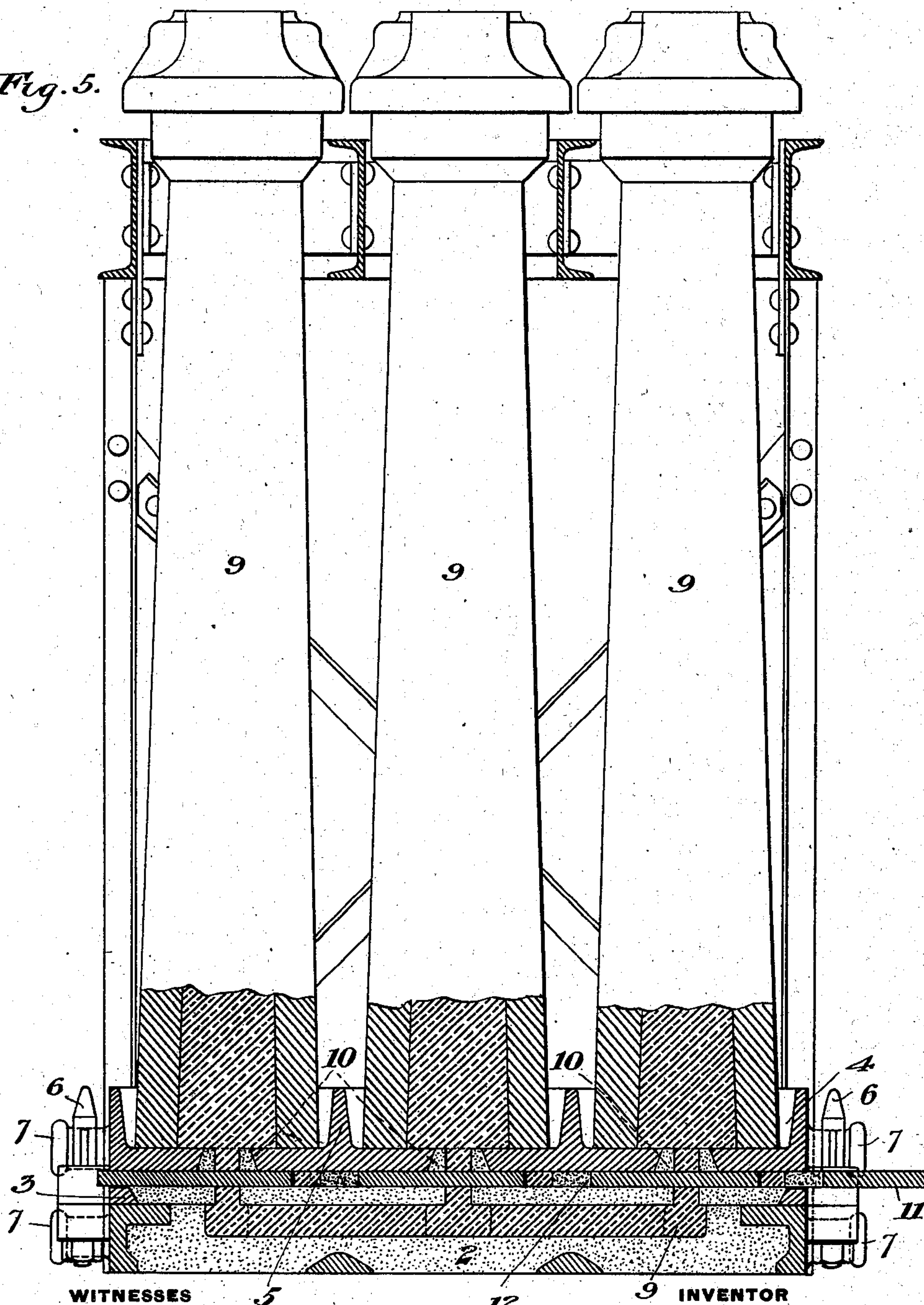
Horace W. Lash
by Ballou & Byrnes
his attys.

H. W. LASH.
INGOT CASTING APPARATUS.
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NO MODEL.

3 SHEETS—SHEET 3.

Fig. 5.



WITNESSES

INVENTOR

L. A. Sommers
J. M. Corum

Horace W. Lash
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UNITED STATES PATENT OFFICE.

HORACE W. LASH, OF CLEVELAND, OHIO.

INGOT-CASTING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 730,274, dated June 9, 1903.

Application filed September 22, 1902. Serial No. 124,286. (No model.)

To all whom it may concern:

Be it known that I, HORACE W. LASH, of Cleveland, Cuyahoga county, Ohio, have invented a new and useful Ingot-Casting Apparatus, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side elevation, partly in section, showing a group of small ingot-molds arranged for bottom casting and provided with my invention. Fig. 2 is a horizontal section on the line II II of Fig. 1. Fig. 3 is a vertical section on the line III III of Fig. 2. Fig. 4 is a plan view of one of the shear-bars, and Fig. 5 is a cross-section showing the shearing of the ingots.

The object of my invention is to provide means for separating ingots from the runners or sprues which are formed in bottom casting; and it consists in providing the bottom plate with shear-bars which are rammed in the sand immediately under the molds in line with the runners and adjacent to the bottom of the molds, so that when the ingots are cast and while the metal is still in a liquid or semiliquid condition the shear-bar can be moved so as to separate the runners from the ingots and render the ingots freely removable.

In the drawings I show a stool formed of three horizontally-divided portions. The lower portion or bottom plate 2 is preferably made in two halves bolted together for convenience in removing steel in case it is spilled over. The novel 3, forming the intermediate section, contains the base portion, of silica, sand, or other material, and the cope 4 is provided with the projecting guides 5, between which the ingot-molds are set. This cope is preferably provided with steady-pins, as in the ordinary flask, and is also provided with projecting lips on the under side to aid in lifting the sand when the cope is lifted to draw out the pattern. It is also fitted with clamps and key-bolts 6 to fasten the central runner down and prevent its being lifted by the pressure of gas or of the molten steel. Each of the three parts is preferably provided with oppositely-projecting trunnions 7 7 to allow handling and lifting by a crane in turning, drawing the pattern, &c. The fountain

8 may be of the ordinary form, having a molded lining, of refractory material. The molded runners are indicated at 9 and the upwardly-projecting gates or feed-openings at 10.

In molding the runners leading into the bottom of the mold I ram in the sand shear-bars 11 11, using, preferably, one shear-bar for each cross-line of molds. These shear-bars are shown in Fig. 4 and consist of metal bars having openings 12 therein adapted to register with the runner-openings of the molds and are so set that they can be moved longitudinally.

When the steel is poured into the central fountain, it passes through the runners and rises in and fills the molds, and the ingots and the runners then constitute one integral casting. It is very important that the ingots be easily detachable from the runners in order to render the operation of casting economical and practical. This I effect by the shear-bars, for when the casting is completed and while the metal is still in a liquid or semiliquid condition these shear-bars are moved forward either by the stroke of a sledge or ram or by a pushing force applied by suitable power. The bars then act as shears and cut off the runners which extend through the openings 12. The ingots are thus freed from the runners and can be removed easily from the molds.

Within the scope of my invention as defined in the claims the construction and arrangement of the molds and of the runners may be varied by those skilled in the art, since my invention relates, broadly, to the shearing-bars.

I claim—

1. Apparatus for casting ingots comprising a mold having a runner entering at the bottom, and a shear-bar under the mold in proximity to the runner, adapted to be moved to sever the runner; substantially as described.

2. Apparatus for casting ingots comprising a series of molds having sand-molded runners extending into the bottom of the molds for bottom casting, and a shear-bar rammed in the sand and adapted to be moved to sever the runners; substantially as described.

3. Apparatus for casting ingots, comprising a series of molded runners extending into the

bottom of the molds for bottom casting, and shear-bars rammed in the sand or other material and adapted to be moved to sever the runners, each shear-bar having a plurality of
5 shearing portions adapted to register with a corresponding number of molds; substantially as described.

4. Apparatus for casting ingots, comprising a mold having a runner entering at the bottom, and a shear-bar under the mold in proximity to the runner, adapted to be moved to

sever the runner, said shear-bar consisting of a metal bar with openings therein for surrounding the runners; substantially as described.

In testimony whereof I have hereunto set my hand.

HORACE W. LASH.

Witnesses:

H. D. SMITH,

J. C. CROMWELL.