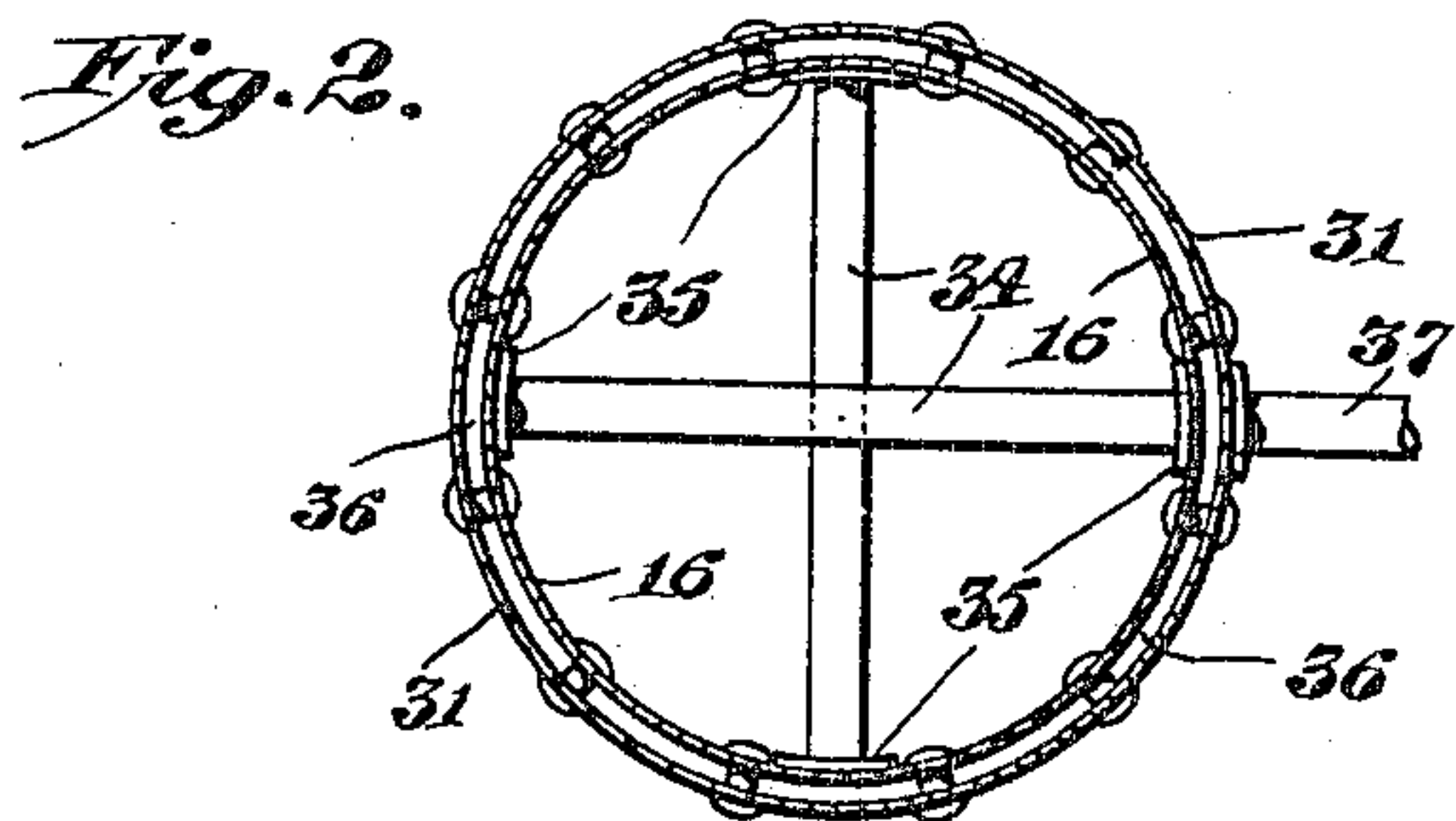
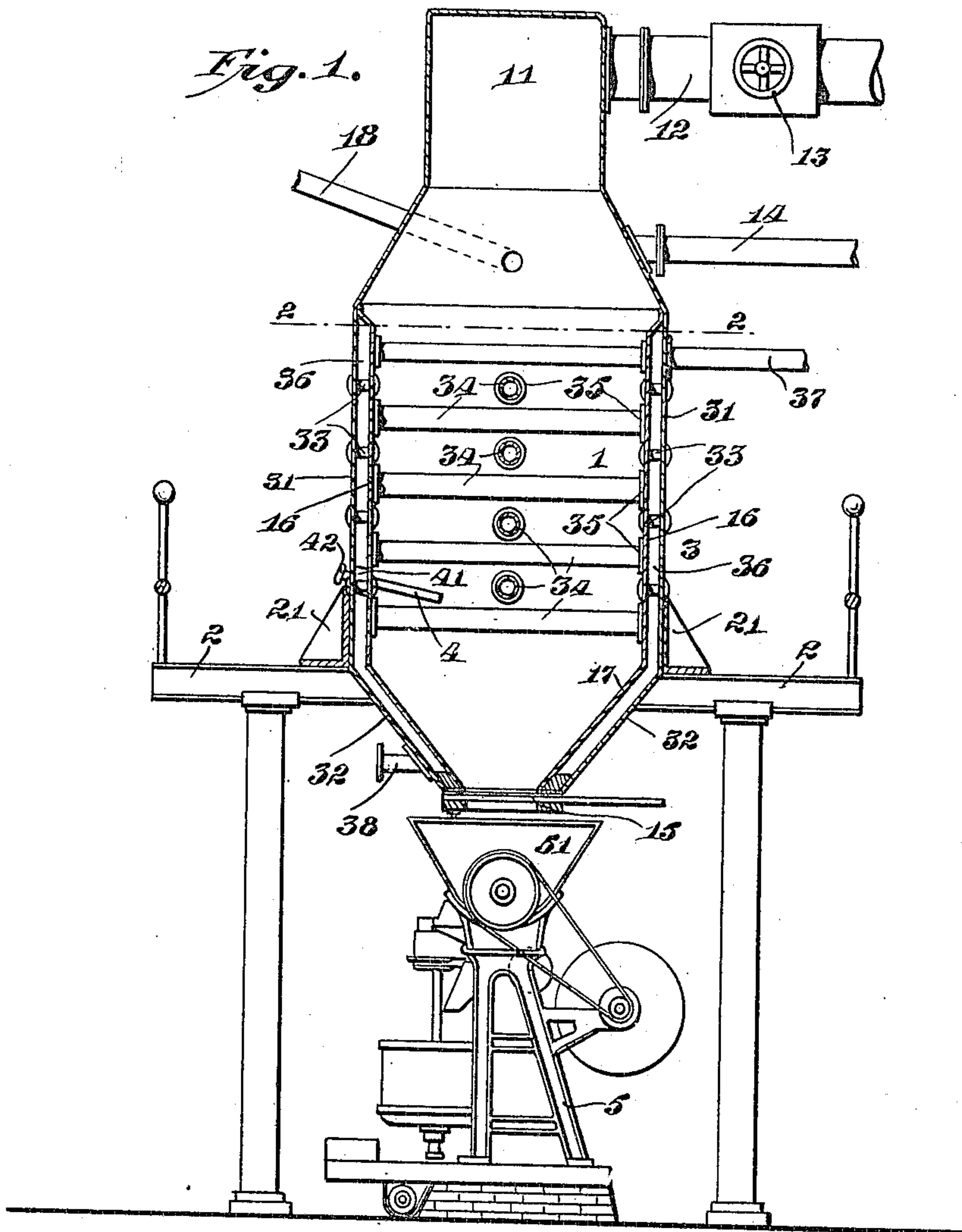


No. 831,556.

PATENTED SEPT. 25, 1906.

J. IRAZOQUI.
VACUUM PAN.

APPLICATION FILED AUG. 3, 1905.



Attest:

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UNITED STATES PATENT OFFICE.

JULIAN IRAZOQUI, OF CAIBARIEN, CUBA.

VACUUM-PAN.

No. 831,556.

Specification of Letters Patent.

Patented Sept. 25, 1906.

Application filed August 3, 1905. Serial No. 272,501.

To all whom it may concern:

Be it known that I, JULIAN IRAZOQUI, a subject of the King of Spain, and a resident of Caibarien, Santa Clara Province, Island of Cuba, have invented certain new and useful Improvements in Vacuum-Pans, of which the following is a specification.

My invention relates to sugar-making machinery, and particularly to the vacuum-pan used for boiling the syrup.

It provides improved means for heating the liquid in the pan and for discharging the masse-cuite therefrom.

It also consists in combinations of elements, which will be set forth in the claims.

In the drawings, Figure 1 represents, partly in elevation, partly in vertical section, so much of a sugar-making plant as is necessary to illustrate my invention. Fig. 2 is a section through the line 2 2, Fig. 1, of the vacuum-pan.

In the drawings, 1 designates a vacuum-pan which is essentially cylindrical in form and vertically disposed. It is provided with a dome 11, which is connected by a pipe 12 with, *e. g.*, the condenser in which the vapor from the liquid is received. In the pipe 12 is a valve 13, by which the pipe may be closed when desired. The pan 1 is supported on a platform 2 and is held in a vertical position by cradles 21. As usual, it is provided with a feed-tube 14 near its upper end and with a discharge-opening closed by a gate 15 at its lower end. The main portion 16 of its wall is cylindric, and it has a lower contracted wall 17 leading to the discharge-opening. Surrounding the walls 16 and 17 and preferably concentric therewith is a jacket-wall 3, consisting of a cylindric portion 31 and a lower inclined portion 32, the wall 31 being held in relative position to the wall 16 by the usual stay-bolts 33. Tubes 34 cross the syrup-chamber in the pan 1, having liquid and steam tight connections with the wall 16. The ends of the tubes 34 open into the annular steam or heating chamber 36 between the walls 16 and 31. Tubes 37 and 38 are provided near the upper and lower ends of the jacket-wall 31 for the admission and emission of steam or other heating fluid to the space 36 and to the tubes 34. It is obvious that the steam employed may be either live or exhaust steam, as desired. For convenience in testing a sampler-tube 4 is provided, which by means of a sleeve 41 makes

tight joints in the walls 16 and 31 and has its inner end open into the syrup-chamber in the pan 1. A closure 42 of any desired form is provided at the exterior end of the tube 4.

5 designates a centrifugal machine, which, as it may be of any desired form and forms *per se* no part of the present invention, I do not more fully describe. It is provided at its upper end with a receiver 51, located immediately below the discharge-opening of the pan 1. A tube 18 leads to the upper part of the pan 1 from a suitable reservoir of compressed air for a purpose to be hereinafter described.

The operation of the device is as follows: The sweet liquid or syrup being admitted through the tube 14 the air in the pan is partially exhausted, preferably through the pipe 12 in the usual manner. Steam is then admitted through the tube 37 to the jacket-space 36 and to the tubes 34, which are in communication with the jacket-space. Successive increments of syrup may be added, as desired, in the usual well-known manner. When the masse-cuite has reached the proper stage, the valve 13 in the pipe 12 is closed and compressed air admitted through the pipe 18. The gate 15 is then opened and the masse-cuite forced out into the receiver 51, both by gravity and by the air-pressure.

By providing the heating-tubes 34, through which the steam or other heating agent passes, the rapidity of the boiling operation is much accelerated. By placing these tubes in vertical planes one above the other, the planes being at approximately right angles with each other, a minimum resistance to the discharge of the masse-cuite is caused.

It is evident that mechanical changes may be made in my device without departing from the invention and that certain parts of the device may be used without others.

What I claim is—

1. A vacuum-pan comprising a central chamber, a jacket-wall surrounding said chamber and forming with the wall of said central chamber an outer chamber for a heating agent, and a plurality of horizontally-disposed tubes crossing said central chamber and communicating with said outer chamber, each of said tubes being disposed in a different horizontal plane from the others for substantially the purposes set forth.

2. A vacuum-pan comprising a vertically-disposed central chamber having a discharge-

opening at its lower end, a jacket-wall surrounding said chamber and forming with the wall of said central chamber an outer chamber for a heating agent, and a plurality of
5 horizontal tubes crossing said central chamber and communicating with said outer chamber, said tubes being disposed within said central chamber in two vertical planes, one of which is approximately at a right angle
10 with the other, for substantially the purposes set forth.

3. A vacuum-pan comprising a vertically-disposed central chamber having a discharge-opening at its lower end, a jacket-wall surrounding said chamber and forming with the
15 wall of said central chamber an outer chamber for a heating agent, a plurality of horizontal tubes crossing said central chamber and communicating with said outer chamber,
20 said tubes being disposed within said central chamber in two vertical planes, one of which is approximately at a right angle with the other, and means for the admission of com-

pressed air to said pan for forcing the masse-cuite through said discharge-opening, for sub- 25
stantially the purposes set forth.

4. A vacuum-pan comprising a central chamber and a jacket-wall surrounding said chamber and forming with the wall of said
central chamber an outer chamber for a heat- 30
ing agent, a plurality of tubes crossing said central chamber and communicating with said outer chamber, each of said tubes being disposed in a different horizontal plane from the others and a closed sampler-tube pass- 35
ing through the said outer chamber and having tight joints with the outer and inner walls thereof and opening into said central chamber, for substantially the purposes set forth.

In testimony whereof I have signed this 40
specification in the presence of two subscribing witnesses.

JULIAN IRAZOQUI.

Witnesses:

H. C. NEWCOMB,
JOAQUIN VARGOS.