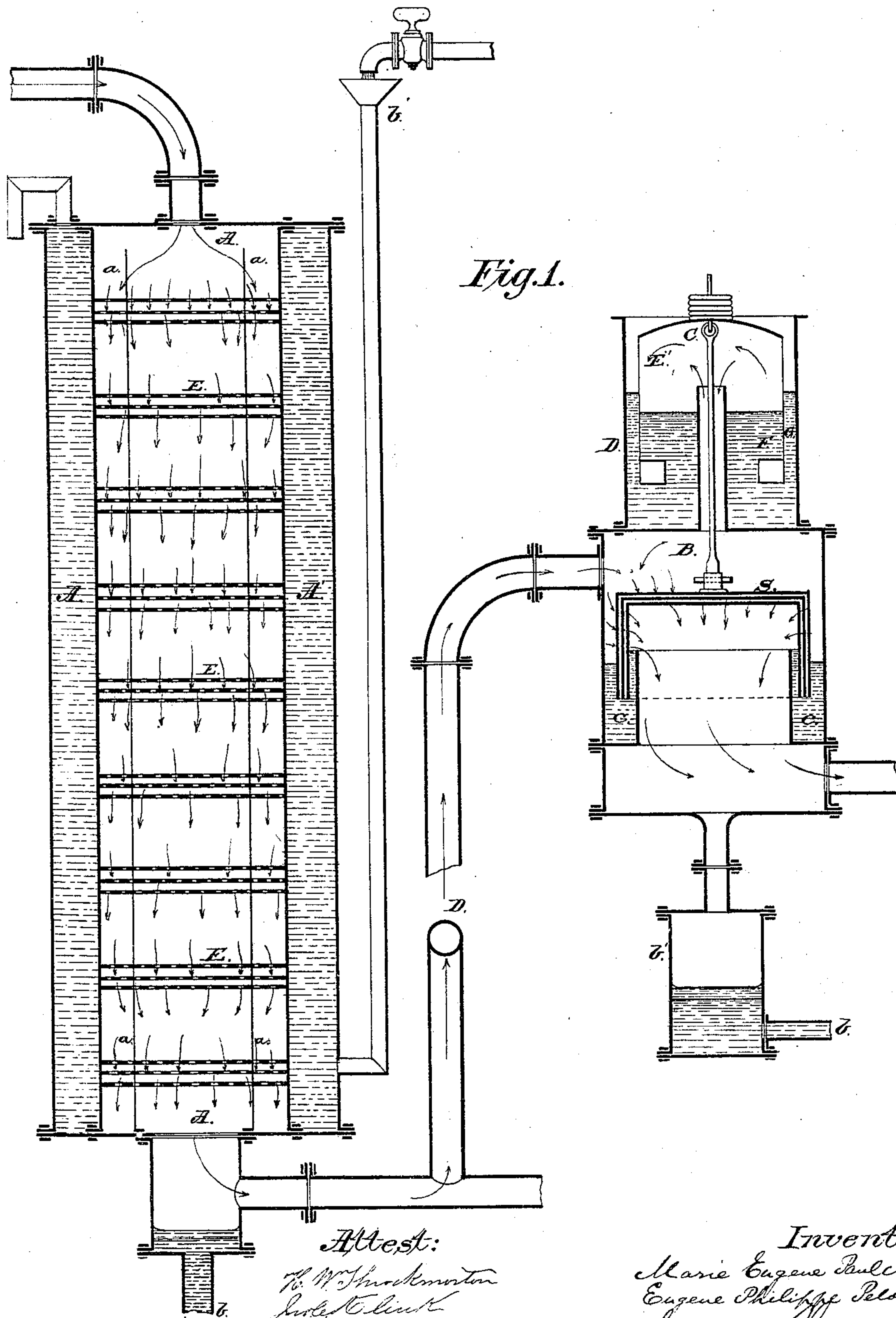


M. E. P. AUDOUIN & E. P. PELOUZE.
Gas Purifiers.

No. 151,263.

Patented May 26, 1874.



Attest:

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by *Wm. D. Briggs*

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Fig. 2.

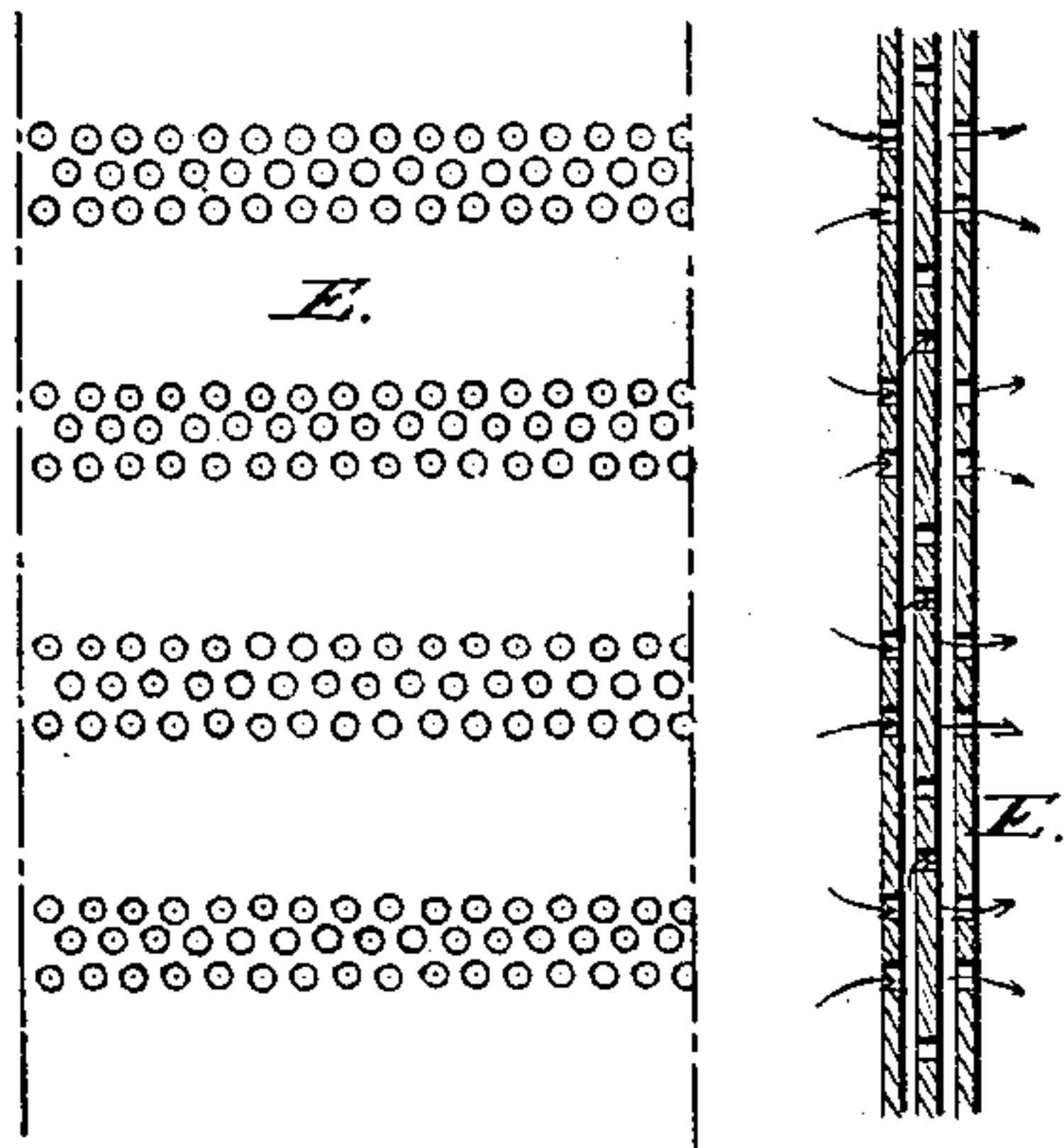


Fig. 3.

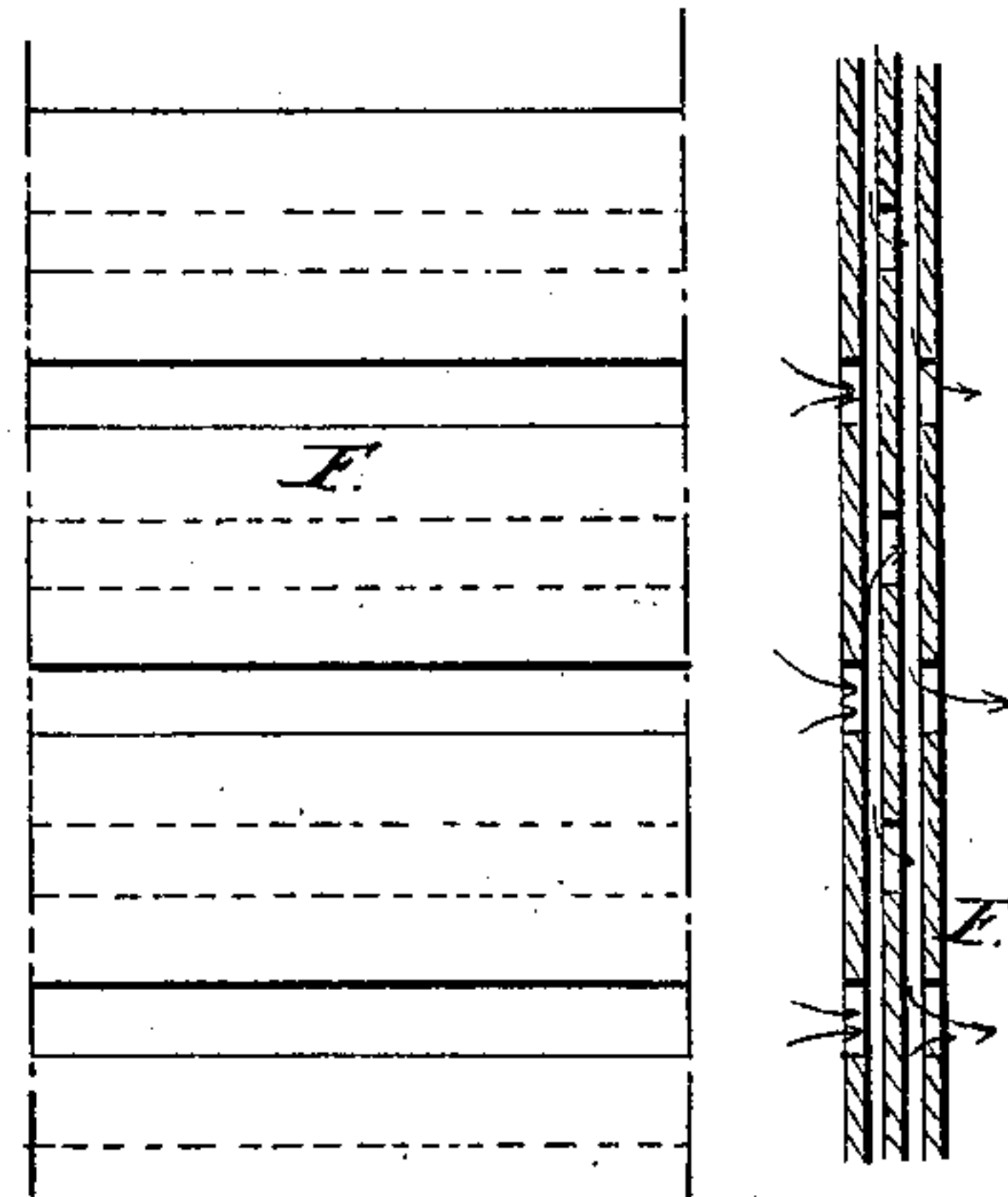
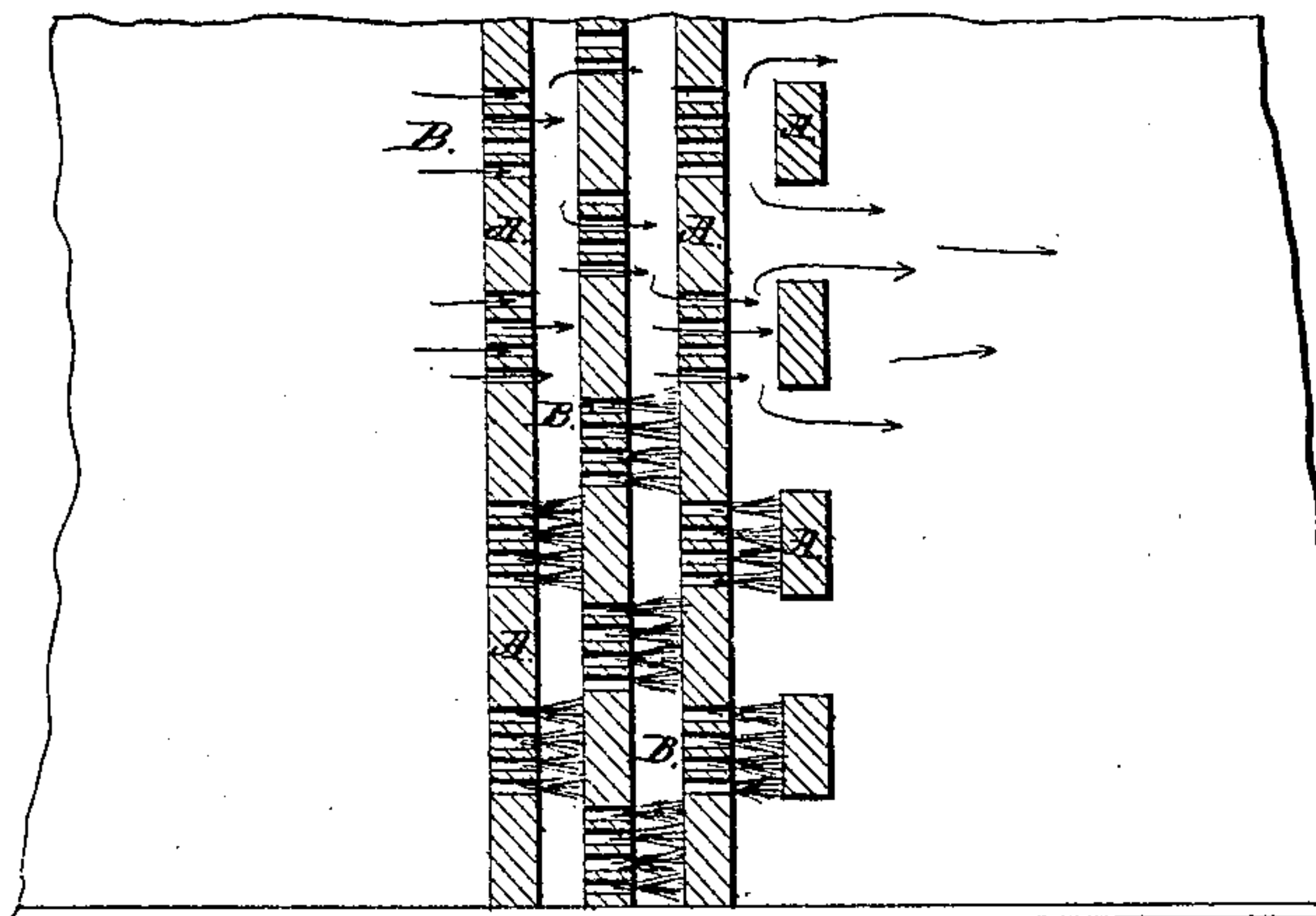


Fig. 4.



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UNITED STATES PATENT OFFICE.

MARIE EUGENE PAUL AUDOUIN AND EUGENE PHILIPPE PELOUZE, OF
PARIS, FRANCE.

IMPROVEMENT IN GAS-PURIFIERS.

Specification forming part of Letters Patent No. 151,263, dated May 26, 1874; application filed
February 27, 1873.

To all whom it may concern:

Be it known that we, MARIE EUGENE PAUL AUDOUIN and EUGENE PHILIPPE PELOUZE, of Paris, France, have invented a new and Improved Process and Apparatus for Condensing the Liquefiable Matters held in Suspension in Gases or Vapors; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to accompanying drawing forming a part of this specification.

Figure 1, sectional elevation of purifier and regulator; Fig. 2, plan and edge view of perforations in horizontal plates E; Fig. 3, similar view of slits substituted for perforations; Fig. 4, sectional view of perforations in plates E; Figs. 5 and 6, sectional elevation of purifier, having slits instead of perforations and tubes instead of one casement.

The object of this invention is to eliminate by a new and improved process the liquefiable matter held in suspension by gases and vapors. It relates to that class of gas-purifiers, wherein this is imperfectly accomplished by friction of the gaseous particles against the sides of a series of sinuous cases, corrugated compartments, and system of tubes with diaphragms, by means of which process the little corpuscles of tar and other impurities in suspension in the gas are made to impinge upon the surface of said devices and to adhere, leaving the gas partially purified. In all the devices heretofore patented this has been only imperfectly accomplished, by reason of the comparatively small amount of surface exposed to the impinging particles, and the sluggish passage of the gas through the machine, this being especially the case with the first and last portions of the gas manufactured, which moves so slowly as to pass through in a solid column instead of being dashed and distributed upon the surfaces prepared to receive it. This invention consists in an arrangement, by means of which a much greater surface is afforded to purify the gas, and the impinging force of the gaseous particles is made uniform and independent of the flow from the generator, so that the appa-

ratus will as effectively purify a small quantity of gas as it will when the gas is passing in large quantities.

In the drawings, Fig. 1, A A is a vertical casement, having inside supporting-rods *a a*, upon which are adjusted in groups, in a horizontal position, a series of plates, E, having a series of perforations of one-twentieth of an inch in diameter, E, Fig. 2, the perforations of one plate being directly the solid or imperforated part of the next, A B, Fig. 4, and the plates close enough together to cause the gas, in passing through the little holes, to strike against the opposing surface with some degree of force. Surrounding this casement is a body of water, A' A', that is being constantly renewed from a pipe, *b'*. This is to reduce the temperature of the gas and assist in the condensation of impurities. Below this casement is a tar-well, *b*, for the drippings, and leading out from the upper part of this tar-well is a pipe that conducts the partially-purified gas to another complementary purifier, which acts also as a regulator. This consists of a receiver, B, in which there is suspended in an annular body of water, *c c*, an inverted cup-shaped apparatus, *s s*, which consists of three layers of plates, arranged with alternating perforations and solid surfaces, as in Fig. 2. To the top of this is attached a rod, B C, which is fastened to the top of a gas-holder, D' E', suspended in a tank filled with water, F G, around the rod B C, there being a passage for the free access of gas from the receiver B to the holder D' E'. In the bottom of receiver is another tar-well, *b''*, and also another pipe, which conveys the purified gas to the large holder.

The mode of action of this apparatus is as follows, Fig. 1: The gas coming from the generator through the pipe enters the top of the casement, and passing downward through the perforations strikes against the opposing plate, moves laterally to the next set of perforations, passes through them and strikes the next plate, and so on through the entire series of plates. The holes being so numerous and small bring the volume of gas into a finely-

divided series of jets, which, by striking repeatedly against the opposing plates, sooner or later precipitate all of the impurities in suspension by condensation and liquefaction, it being partly effected by cold, and partly by the mechanical motion of the particles in suspension on their passage through the apparatus. The liquefied portions drip down, and are forced through the apertures into the tar-well below. The gas next passes up the pipe D into the receiver B through the perforations, with opposing plates in the inverted cup-shaped purifier s s, and out into the large holder completely purified.

This part of the apparatus acts as a regulator in this way: When a larger volume of gas is manufactured than usual, there is, of course, an increased pressure, and the gas, forcing its way from the receiver B, passes up beside the rod B C into the holder D' E', which it raises, elevating with it the rod B C, which lifts the apparatus s s out of the water, thereby causing it to present a greater number of perforations for the passage of the gas. When a smaller quantity of gas is manufactured than usual, the gas-holder D' E' settles in the water F G, and immerses some of the perforations of S S, confining thereby the escape of the gas to a fewer number of holes. By this means the passage of the gas is always of a uniform velocity through the holes, and, as the gas is supposed to move under a pressure equivalent to a water-pressure from four-fifths to one and one-fifth inch, the im-

pinging force of the gaseous particles upon the plate is always the same.

At the point D of the pipe that connects the two parts of the apparatus is a valve, by means of which the regulator may be detached from the main apparatus to be cleaned.

Figs. 5 and 6 represent the same apparatus as is shown in Fig. 1, except that the slits of Fig. 3 are substituted for the perforations of Fig. 2 in the horizontal plates, the plates being arranged in three smaller tubes, A A A, surrounded by water instead of one large casement. The action in this is the same as it is in other, there being a similar pipe for attaching the regulator.

What we claim is—

1. The arrangement of the plates E on rods a in casement A A, having perforations or slits, about one-twentieth of an inch in diameter, alternating with plain surfaces, in combination with the compartment for water A' A', and tar-well b, as and for the purpose specified.

2. The inverted cup-shaped purifying-regulator S S, the annular reservoir C C, rod B C, holder D' E', and water-tank F G, in combination with the tar-well b'', as and for the purpose specified.

MARIE EUGENE PAUL AUDOUIN.
EUGENE PHILIPPE PELOUZE.

Witnesses:

EMILE DUHAN,
ADOLPHE GUION.