No. 673,181. Patented Apr. 30, 1901.

H. THUILE.

LOCOMOTIVE BOILER.

(Application filed June 10, 1898.)

(No Model.)

Fig. 2.

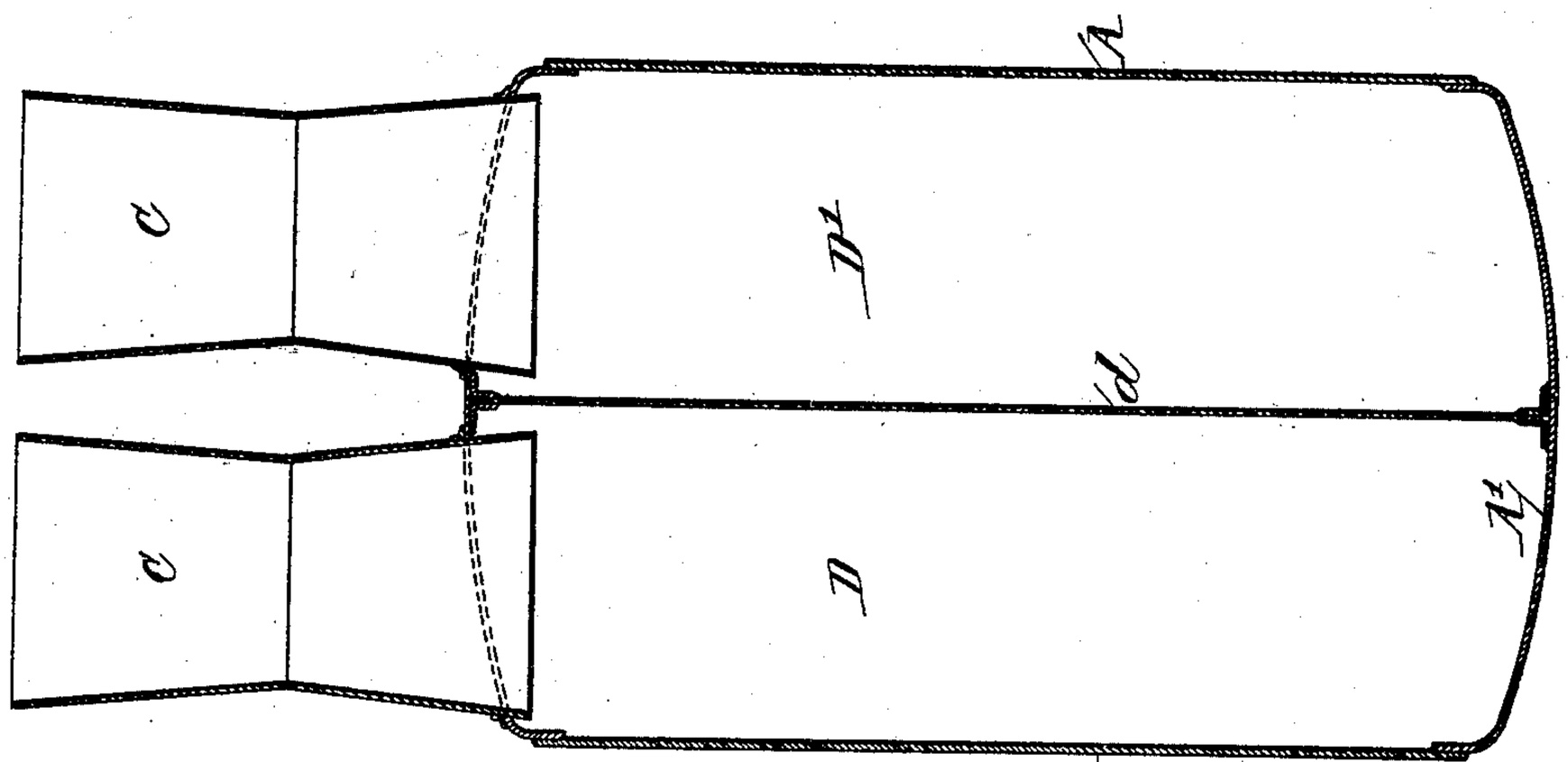


Fig. 3.

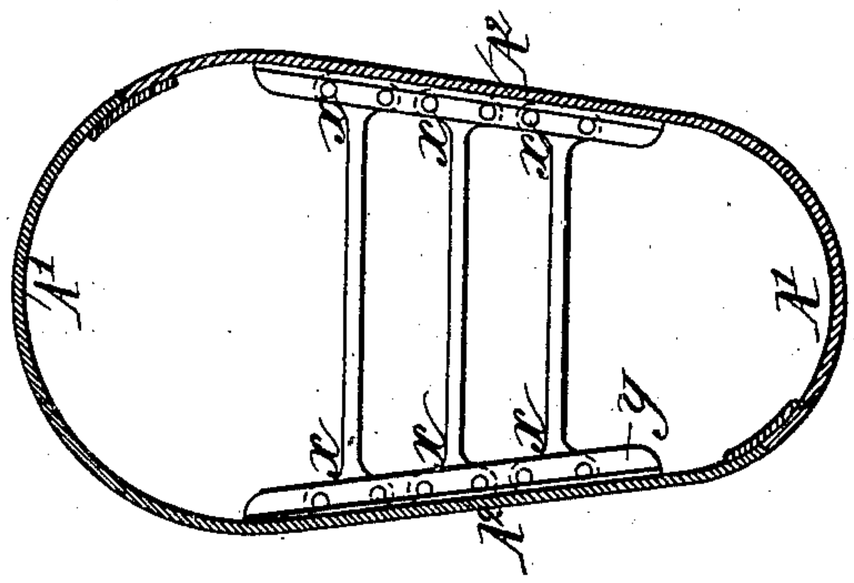
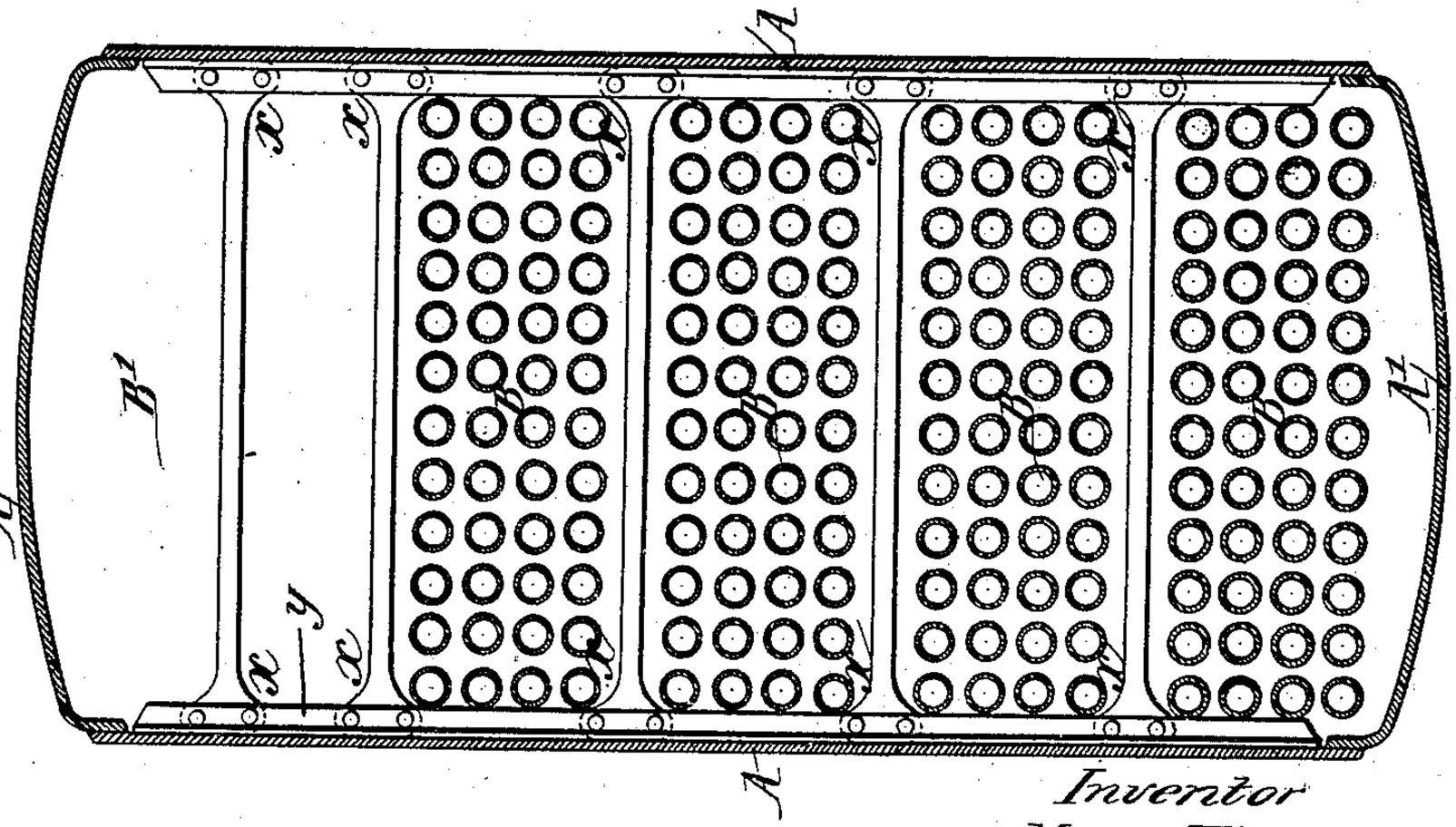


Fig. 1.



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UNITED STATES PATENT OFFICE.

HENRI THUILE, OF ALEXANDRIA, EGYPT.

LOCOMOTIVE-BOILER.

SPECIFICATION forming part of Letters Patent No. 673,181, dated April 30, 1901.

Application filed June 10, 1898. Serial No. 683,075. (No model.)

To all whom it may concern:

Be it known that I, HENRI THUILE, engineer, a citizen of the French Republic, and a resident of Alexandria, Egypt, have invented a certain new and useful Locomotive-Boiler, of which the following is a specification.

This invention relates to a type of boiler of great power for locomotives.

In express-locomotives as at present constructed the necessity of having wheels of large diameter, on the one hand to reduce the tangential velocity of the parts and on the other the necessity of situating the cylindrical body or portion between these wheels, if it be not desired to raise to an inordinate height the center of gravity of this body, do not allow a diameter very much more than 1.25 meters to be given to a cylindrical body or boiler. Under these conditions the surface of a tubular boiler is very limited, since experience has shown that it is unwise to exceed a certain length of tubes. The result is that the power of locomotives as now constructed cannot be increased in very great proportions. Now the necessities of connections and transport in modern life require the attaining of greater speeds while drawing heavier and heavier loads, which double result can only be obtained by means of a much more powerful motor. This system of boiler enables me to obtain a power much greater than that of cylindrical boilers under the most favorable circumstances hitherto known.

The annexed drawings represent on Figure 1 a boiler constructed according to my system and shown in vertical cross-section. Fig. 2 is another transverse and vertical section across the smoke-box. Fig. 3 shows in cross-section a type of boiler with upper and lower boiler-plates in the form of half-cylinders.

The body of the boiler is formed of two vertical side plates A A, about 1.10 meters apart, braced as may be found desirable—for instance, by the stays *x x x*. The lower and upper end plates A′ A′ are similarly formed of metal plates, dished or curved, and held in position by means of vertical cross-pieces or ribs, girders, or couplings *y*, similar to the types employed for the strengthening of the roofs of locomotive fire-boxes. Further, the whole may be supported and strengthened by angle-irons of H, T, or other suitable section. Such cross-pieces by themselves or combined with an exterior support enable this boiler to resist pressures of twenty kilograms per square centimeter and more.

This boiler is furnished up to a certain height with smoke-tubes B, which serve as supports, stays, or cross-pieces for the tubular plates. The upper portion B′ serves as a steam-chest. It is riveted to the locomotive's fire-box and extends through a smoke-box to two compartments D D′, joined or coupled together, Fig. 2, and separated by a vertical partition *d*, situated in the vertical plane Y Y passing through or along the longitudinal axis of the boiler.

In each of the compartments of the smoke-box terminates the exhaust-tube of one or more cylinders placed on the same side of the locomotive. The exhaust is effected or takes place at the base of a smoke-pipe C C, there being a separate one for each compartment.

On account of the necessity of placing in the width of the tubular boiler two conjoint smoke-pipes horizontal elliptical sections whose larger axes are parallel to the longitudinal axis of the boiler and whose smaller axes are in the same stright lines can be given to the smoke-pipes. A boiler so constructed affords considerable power, since, for example, a tubular boiler of 4.50 meters length, 1.10 meters width, and 2.25 meters height, in which "*Serve*" or internally-reeded tubes of 0.065 meter diameter occupy about two-thirds of that height, possesses a tubular area of three hundred and fifty square meters and contains nearly six cubic meters of water and two cubic meters of steam. Such a boiler is therefore especially suited to express-locomotives.

It must be understood that I do not limit myself to any degree of convexity of the upper and lower plates of the boiler. These may be flat or curved, more or less, so as to form either equal or unequal half-cylinders. The upper half-cylinder being larger than the lower half-cylinder, (see Fig. 3,) the whole thus forms an advantageous arrangement for increasing the vaporizing-surface. In this case the side plates A^2 A^2 deviate slightly from the vertical or taper somewhat, and it

becomes useless to strengthen by stays or supports the upper and lower half-cylinders.

Fig. 3 shows, by way of example, the general aspect in section of such a boiler in a case in which the upper and lower plates A′ A′ are in the shape of half-cylinders.

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

1. A boiler having an upwardly-convexed top, a downwardly-convexed bottom of smaller dimensions than the top, and downwardly-converging side walls connecting said curved top and bottom.

2. A boiler having a wide top, a comparatively narrow bottom, converging side walls connecting said top and bottom, upright ribs on the inner surfaces of said sides, and superposed horizontal braces of different lengths connecting the sides at the said ribs.

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

HENRI THUILE.

Witnesses:
SIOBANNI MONTESINI,
ANTOINE GAZHIBY.