No. 734,816. PATENTED JULY 28, 1903.

M. CASTELNAU.

STEAM ENGINE.

APPLICATION FILED OCT. 23, 1902.

NO MODEL. 2 SHEETS—SHEET 1.

FIG. 1

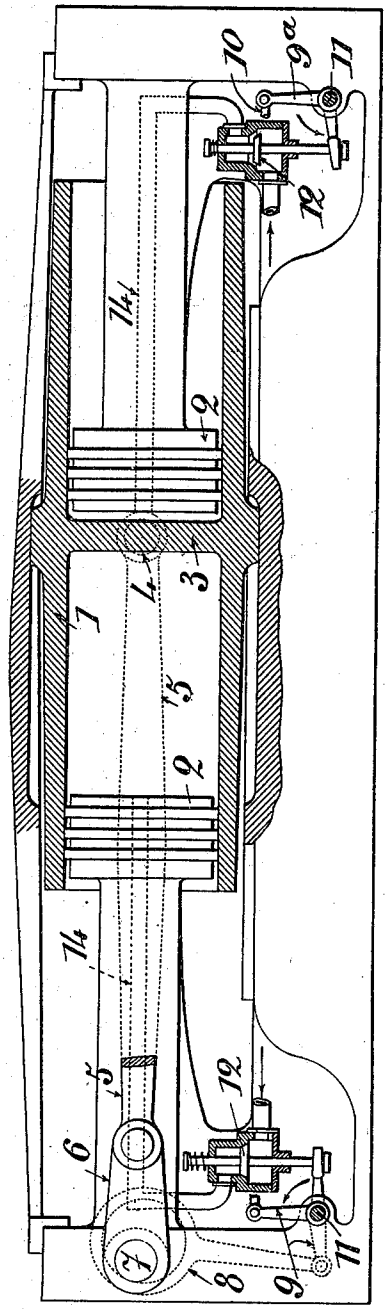
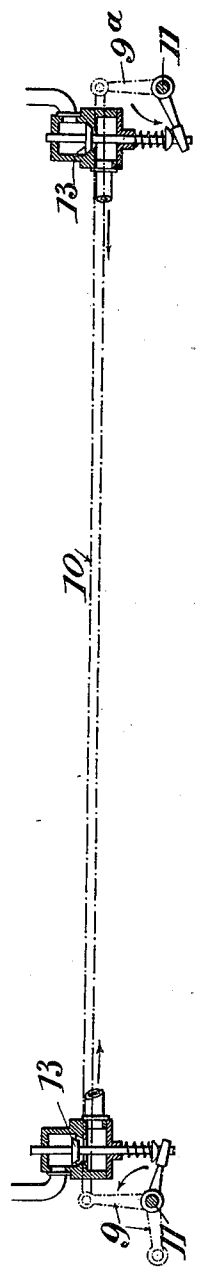


FIG. 2.



WITNESSES:

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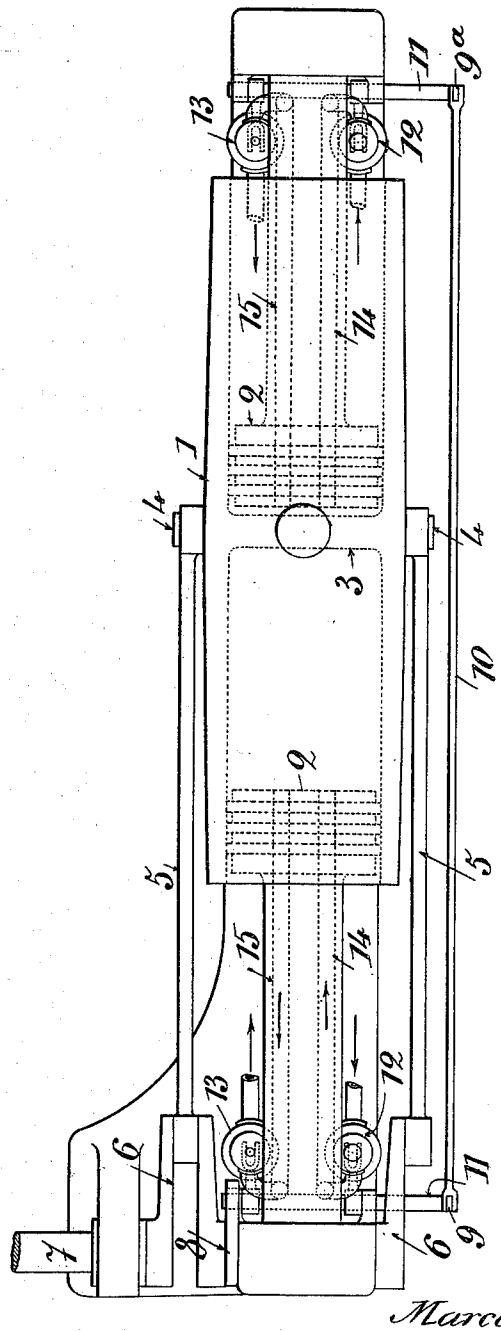
M. CASTELNAU.

STEAM ENGINE.

APPLICATION FILED OCT. 23, 1902.

NO MODEL. 2 SHEETS—SHEET 2.

FIG. 3.



WITNESSES:

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No. 734,816. Patented July 28, 1903.

UNITED STATES PATENT OFFICE.

MARCELLIN CASTELNAU, OF PARIS, FRANCE.

STEAM-ENGINE.

SPECIFICATION forming part of Letters Patent No. 734,816, dated July 28, 1903.

Application filed October 23, 1902. Serial No. 128,376. (No model.)

To all whom it may concern:

Be it known that I, MARCELLIN CASTELNAU, engineer, a citizen of the Republic of France, residing at 8 Rue Richepanse, Paris, in the Republic of France, have invented certain new and useful Improvements in High-Tension and High-Temperature Steam-Engines, of which the following is a specification.

Arts and manufactures have now at their disposal a type of instantaneous vaporization-boiler producing normally and without any risk steam at a pressure of over forty kilograms. The use of steam at such a pressure has hitherto been rendered impossible for several reasons, among which I may mention particularly the excessive wear of stuffing-boxes and the high temperature of the cylinder-wall injuring the lubrication.

The present invention has for its object to provide a steam-engine so arranged as to avoid the objections arising from the excessive temperature of the steam and to allow in practice the use of steam at a pressure of over forty kilograms. To obtain this result, the said machine is so arranged as to do away with the stuffing-boxes of piston-rods and to cool the cylinder internal wall by the direct contact of the exterior air. It comprises a cylinder, having a partition in the middle and open at both ends, slidably mounted on two pistons fixed to the main frame. Through the said pistons are provided ducts for the inlet and outlet of the steam, each duct exclusively serving for the inlet and outlet, so that during the high speeds of the engine the steam blasts do not strike one against the other in the ducts. The reciprocation of the cylinder relatively to the pistons takes place under the action of the steam distributed alternatively between the said pistons and the partition of the cylinder, the distribution being effected by means of any suitable distributing mechanism.

The accompanying drawings represent a diagram of one form of the invention.

Figure 1 is a vertical sectional view of an engine embodying my improvements, taken on the line of the cylinder-axle and in part following the line of the admission-valves. Fig. 2 is a partial vertical sectional view on the line of the exhaust-valve, and Fig. 3 is a plan view of the top of the engine.

The machine comprises a movable cylinder 1, slidable on two fixed pistons 2. The said cylinder is open at both ends and divided in its middle by a partition 3. Two wrist-pins 4, formed on the cylinder, are connected by rods 5 with the cranks 6 of the driving-shaft 7 to transform into a rotary movement the reciprocation of the cylinder. An eccentric 8, mounted on the driving-shaft 7, operates through the medium of the levers 9 9^a and the link 10 two rock-shafts 11, which actuate the valves 12 for the inlet and the valves 13 for the outlet of the steam. The latter passes into the cylinder through the channels 14 and out of the cylinder through the channels 15, provided in the fixed piston-rods. It will be seen that this arrangement allows of doing away with the stuffing-boxes of the piston-rods. At each travel the inner wall of the cylinder beyond the fixed piston comes in contact with the exterior air and is cooled thereby.

In order to insure an absolutely rectilinear movement of the cylinder 1, the interior of the main frame is provided with longitudinally-extending grooves adapted to receive and seat splines or projections formed on the exterior wall of the cylinder, the pistons being thereby relieved of considerable wear.

I claim—

1. An engine comprising a main frame having a groove therein, piston-rods mounted on said frame, pistons fixed on the rods, a cylinder sliding on said pistons, a spline on the cylinder fitting in the groove of the frame, means for introducing a motive charge to the cylinder, and means for exhausting the charge from said cylinder.

2. An engine comprising a main frame, piston-rods mounted on said frame, pistons fixed on said rods, a cylinder open at both ends and sliding on said pistons, a segmental packing for the pistons, inlet and outlet ducts for the motive charge formed in the pistons, and valve mechanism controlling the inlets and outlets.

3. An engine, comprising a main frame, pis-

ton-rods mounted on said frame, fixed pistons on said rods, a cylinder open at its ends and sliding on said pistons, and on each piston-rod two distinct steam-ducts, one exclusively serving for the inlet and the other for the outlet.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

MARCELLIN CASTELNAU.

Witnesses:
MAURICE ROUX,
EDWARD P. MACLEAN.