

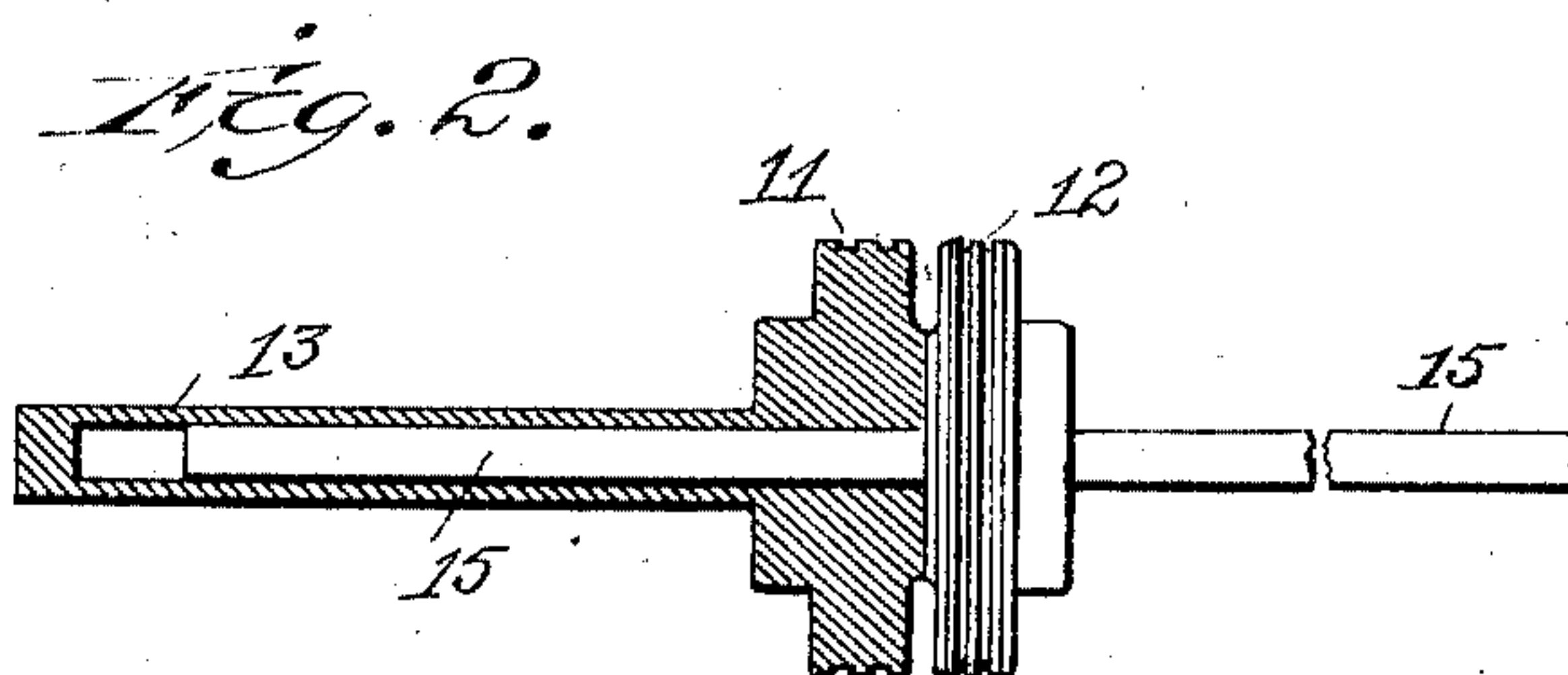
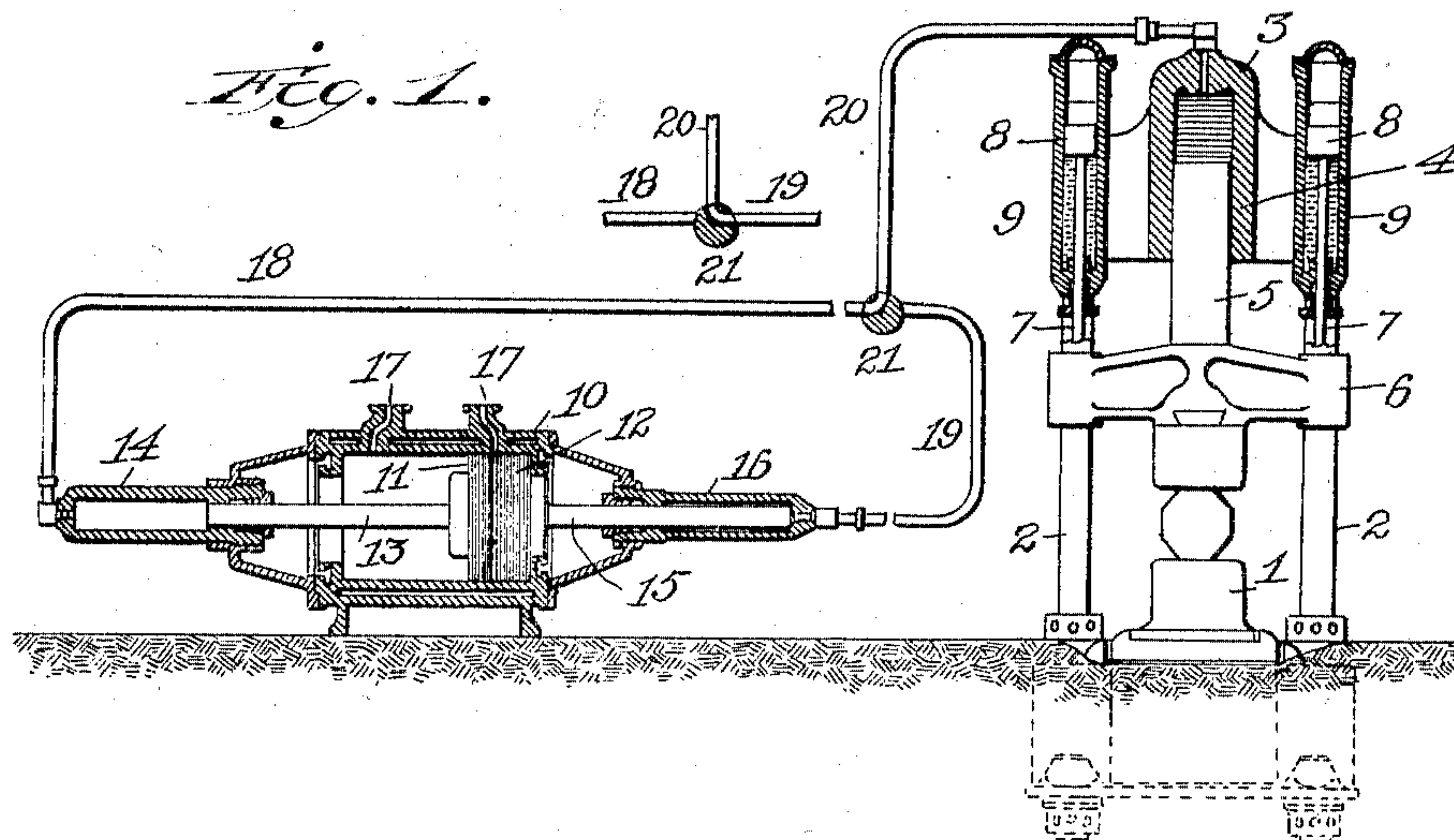
No. 777,008.

PATENTED DEC. 6, 1904.

A. DERIES & C. UMBACH.
MULTIPLIER FOR HYDRAULIC PRESSES.

APPLICATION FILED DEC. 21, 1903.

NO MODEL.



Witnesses

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ARMAND DERIES, OF LYONS, AND CHARLES UMBACH, OF L'HORME
PAR ST. JULIEN, FRANCE, ASSIGNORS TO LA SOCIÉTÉ NOUVELLE
DES ÉTABLISSEMENTS DE L'HORME ET DE LA BUIRE, OF LYONS,
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MULTIPLIER FOR HYDRAULIC PRESSES.

SPECIFICATION forming part of Letters Patent No. 777,008, dated December 6, 1904.

Application filed December 21, 1903. Serial No. 186,060. (No model.)

To all whom it may concern:

Be it known that we, ARMAND DERIES, re-
siding at Rue Victor Hugo, Lyons, and
CHARLES UMBACH, residing at l'Horme par St.
Julien, France, citizens of the Republic of
France, have invented a new and useful Im-
provement in or Relating to Multipliers for
Hydraulic Presses, which improvement is fully
set forth in the following specification.

This invention relates to improvements in
hydraulic presses which are provided with a
direct-acting steam-pressure multiplier. It
is customary to place the multiplier with its
axis vertical, in which case the fluid-pressure
on the piston of the multiplier is supplement-
ed by the weight of the piston and plunger if
the piston moves downward under such pres-
sure and lessened to a similar degree if it
moves upward under such pressure. At the
same time the lifting-pistons attached to the
cross-head of the press have to lift also the
weight of the multiplier-piston in the former
arrangement, but are relieved of that weight
in the latter case. Our improvements con-
template arranging the multiplier-cylinder
with its axis horizontal, so that these effects
are obviated. We also provide the multiplier
with two pistons and support their rods in a
novel manner, as hereinafter set forth, and
particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is
an elevation of a hydraulic press equipped
with our improved multiplier. Fig. 2 is a
longitudinal section of the pistons and rods.

The hydraulic press comprises an anvil 1,
adjacent to which are columns 2, supporting
a fixed yoke 3, on which is mounted the large
high-pressure cylinder 4. The main plunger
5 in said cylinder is connected to the cross-
head 6, which carries the press-head and slides
on the columns. It is also connected by two
rods 7 to the pistons 8 of the raising-cylinders
9, which may be operated by hydraulic, pneu-
matic, or steam pressure.

The steam-multiplier comprises a cylinder

10, which is open at each end and contains two
pistons 11 12. The former has a tubular rod
13, which passes freely through one end of
the cylinder 10 and has a closed end to act as
a plunger in a cylinder 14, supported with its
axis in line with that of the cylinder 10. The
piston 12 has a rod 15 of smaller cross-section
than the rod 13. It projects on both sides of
the piston 12. One portion of it passes through
the adjacent open end of the cylinder 10 and
forms a plunger acting in a cylinder 16 in line
with the cylinder 10. The other portion of
the rod 15 slides in the tubular rod 13, which
thus forms a guide for it. A slight shoulder
on one or both of the pistons causes a narrow
space to be left between them when they meet,
as shown in Fig. 2. The cylinder 10 has two
admission-ports 17 opening into it near each
end at the point where this space comes when
the two pistons are at the extremes of their
stroke. It follows that only one piston will
move when steam is admitted, the other serv-
ing as an abutment or head for the cylinder
10. As the two plungers 13 15 are of differ-
ent diameters, the pressure delivered by them
will differ considerably, so that the press can
utilize the higher pressure for forging opera-
tions and the lower pressure for shaping ar-
mor-plates and the like. Both cylinders 14
16 are connected by pipes 18 19 to a common
delivery-pipe 20, which leads to the cylinder
4 of the press. A two-way cock 21 enables
either one of the pressure-cylinders to be used
at will.

Having thus described our invention, what
we claim is—

1. A steam-pressure multiplier for hy-
draulic presses, comprising a cylinder open
at each end and containing two pistons, one
of which has a tubular rod on one side only
passing through one end of the cylinder and
forming a plunger, the other having a rod of
smaller diameter projecting on both sides of
the piston, on one side passing through the
other end of the cylinder and forming a plun-

ger and on the other side entering and sliding in the tubular rod of the other piston, and cylinders in which these plungers act.

2. A steam-pressure multiplier for hydraulic presses, comprising a cylinder open at each end and containing two pistons, one of which has a tubular rod on one side only passing through one end of the cylinder and forming a plunger, the other having a rod of smaller diameter projecting on both sides of the piston, on one side passing through the other end of the cylinder and forming a plunger and on the other side entering and sliding

in the tubular rod of the other piston, cylinders in which these plungers act, and a common delivery-pipe connected with said cylinders by a three-way valve. 15

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

ARMAND DERIES.
CHARLES UMBACH.

Witnesses:

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MARIN VACHON.