

No. 701,536.

Patented June 3, 1902.

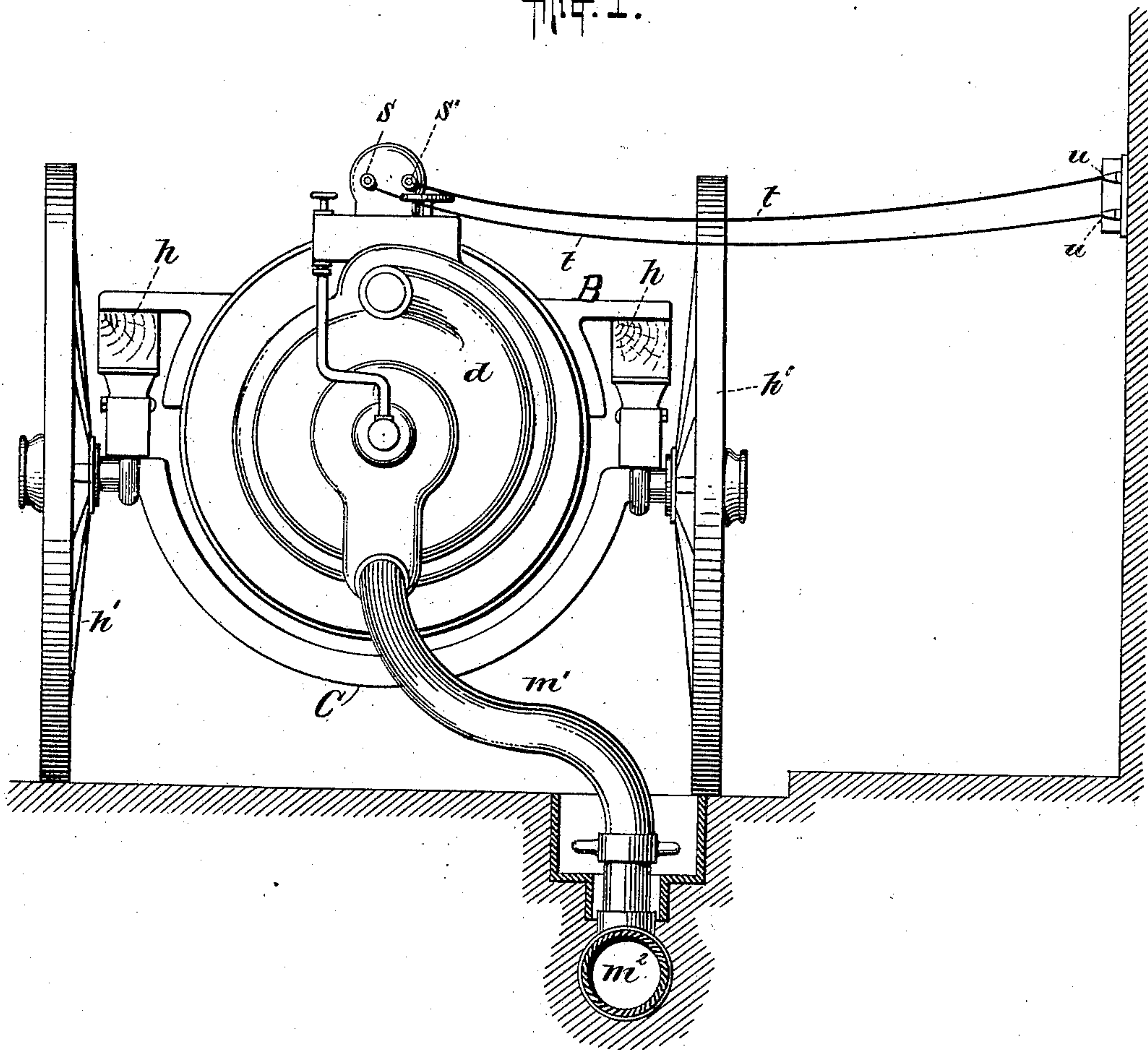
S. BRUNAU.
ELECTRIC PUMPING ENGINE.

(Application filed Oct. 9, 1901.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.



WITNESSES:

Gustav Dietrich
John Kehlmeier

INVENTOR

Sven Brunau

BY *Lars Bengtson*
his ATTORNEY

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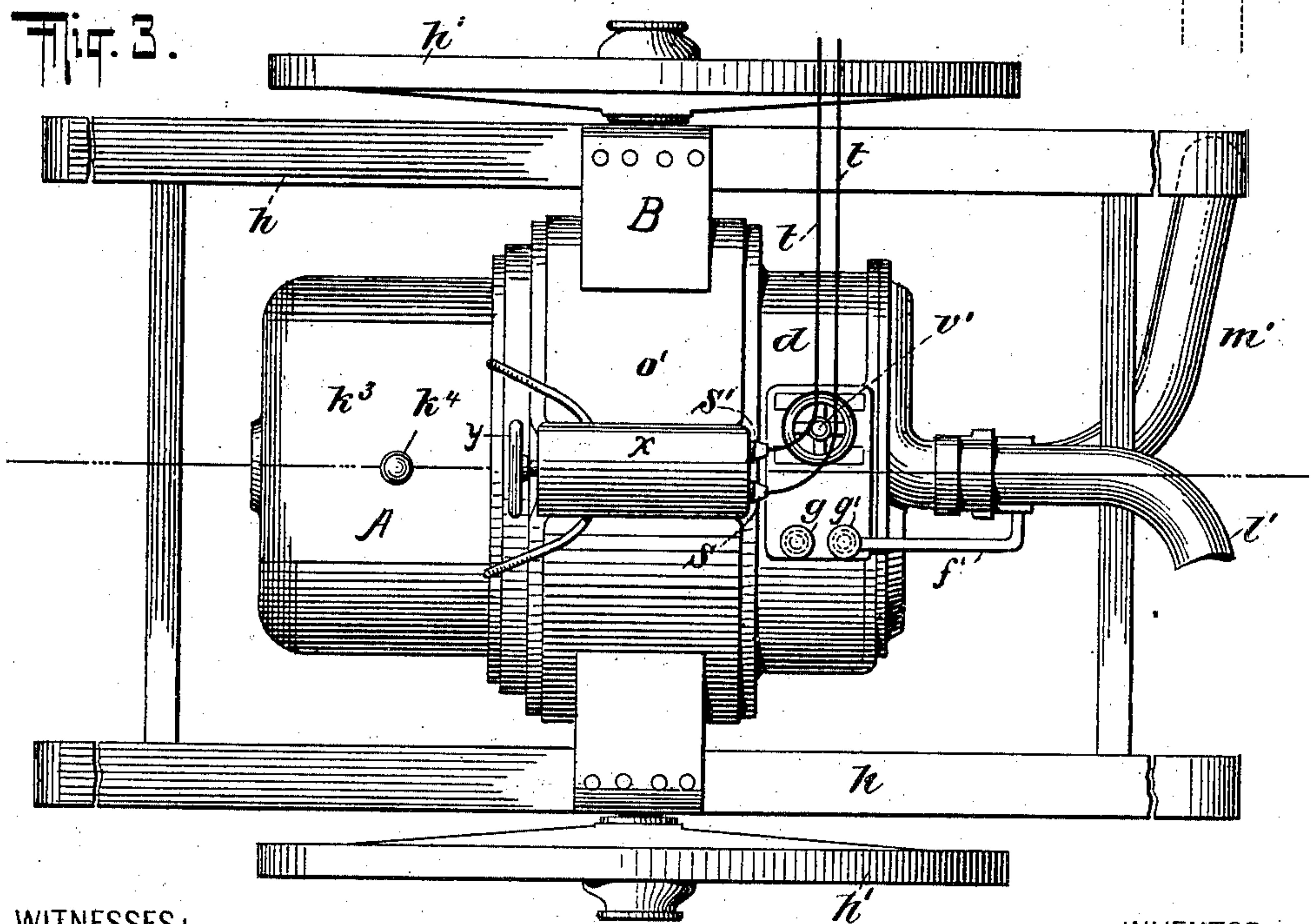
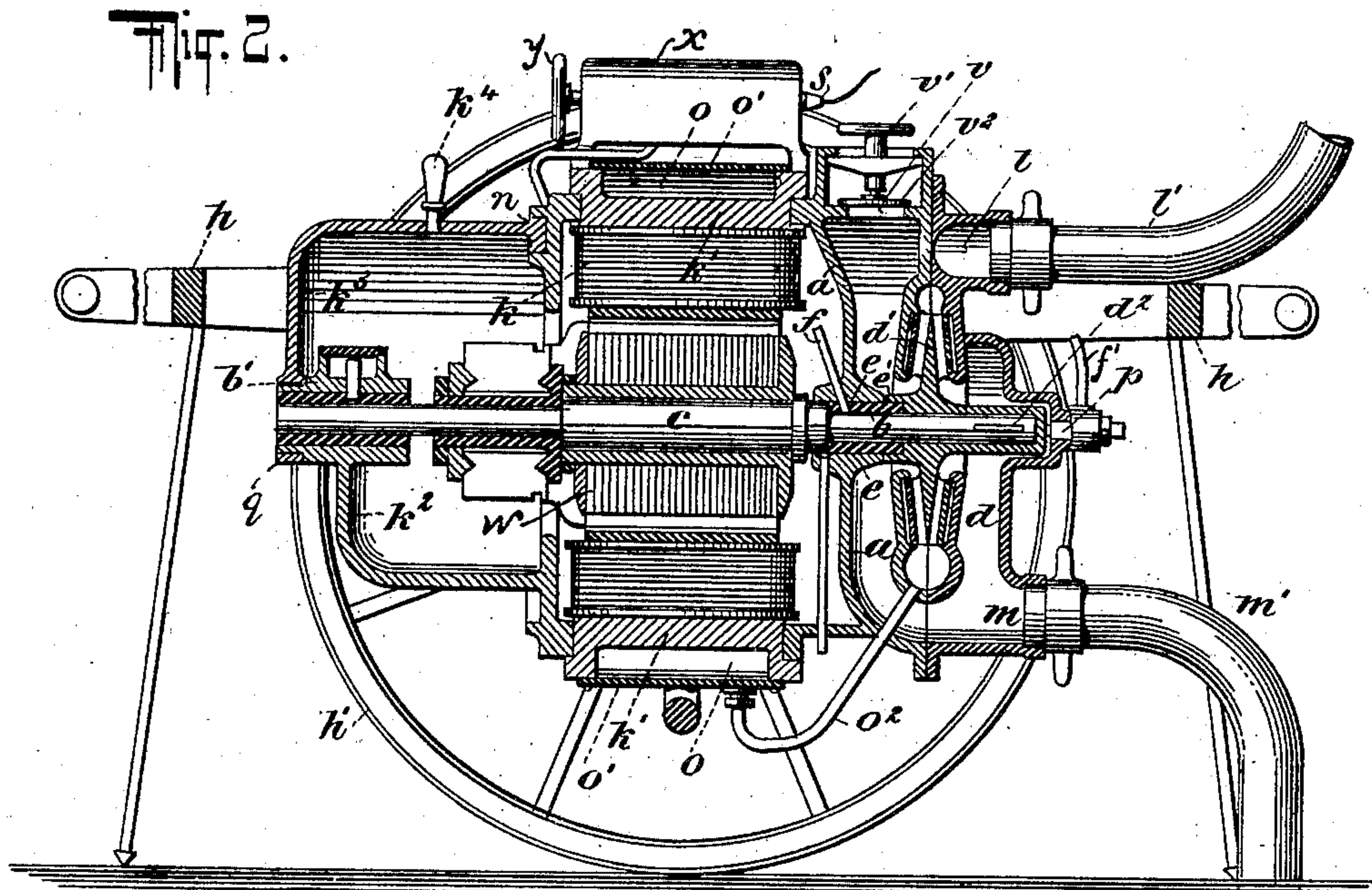
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2 Sheets—Sheet 2.



WITNESSES:

Gustav Dietrich
John Kellenbeck

INVENTOR

Sven Brunau

BY

Carl Benjamin
his ATTORNEY

UNITED STATES PATENT OFFICE.

SVEN BRUNAU, OF KÖPING, SWEDEN, ASSIGNOR TO DE LAVAL STEAM
TURBINE COMPANY, A CORPORATION OF NEW JERSEY.

ELECTRIC PUMPING-ENGINE.

SPECIFICATION forming part of Letters Patent No. 701,536, dated June 3, 1902.

Application filed October 9, 1901. Serial No. 78,093. (No model.)

To all whom it may concern:

Be it known that I, SVEN BRUNAU, of Köping, Sweden, have invented a new and useful Improvement in Electric Pumping-Engines, of which the following is a specification.

The object of my invention is to provide a portable electric pumping-engine especially adapted for the extinguishment of fires, having an electric motor and a rotary pump so constructed, arranged, and combined with a suitable vehicle that the entire apparatus may be readily drawn to the scene of conflagration and there instantly connected, the pump to whatever source of liquid-supply may be available and the motor to the electric-lighting mains or other source of electric current.

My invention consists in the construction of the apparatus so that all working parts are hermetically inclosed in a metal drum or cylinder having on its exterior the liquid and electric connections; in the division of said cylinder into two compartments, one of which contains the pump and the other the electric motor, so that no leakage from the pump-compartment can pass to that of the motor; in the arrangement of the openings in said compartments so as to permit of ready inspection of and easy access to the motor and its bearings or the introduction of liquid to the pump for use as priming; in the means for regulating from the exterior of the inclosing chamber the tightness of the joint where the rotary shaft passes through the partition between said two compartments, and in the various instrumentalities and combinations more particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a rear elevation, Fig. 2 is a longitudinal section, and Fig. 3 is a plan view, of my improved electric fire-engine.

Similar letters of reference indicate like parts.

The apparatus is carried on a rectangular frame *h*, which is supported on wheels *h'*. All of the mechanism is included within casings, as will hereinafter be described, so that externally the device is in the form of a closed cylinder or drum *A*, provided with projecting side brackets *B*, Figs. 1 and 2, which brackets are bolted to the upper sides of the longitudinal bars of the frame *h*. The axle *C* is

downwardly curved at its middle portion to extend below the cylindrical casing, so that said cylinder lies between the wheels and a portion of it extends below the line joining the wheel-centers. The cylinder is composed of the pump-casing *a*, provided with the head *d* and secured in any suitable way to one side of the ring *k'*, which is integral with the pole-pieces of the field-magnet coils *k* of the electric motor. On the other side of ring *k'* is secured a casing or head *k²*, which carries the bearing *b'* for the shaft *c* of the said motor. The upper portion *k³* of the casing *k²* is loose and is provided with a ring *q*, encircling the bearing *b'*, and also a flanged edge *n* entering a groove in the casing *k²*. Said portion *k³* has a handle *k⁴*, by means of which it may be rotated around the bearing *b'*, so as to expose the interior of casing *k²*, and thus allow of access to the bearings therein. The shaft *c* carries the motor-armature *w*, which is secured to it in any suitable way in proper relation to the field-magnets, and also a centrifugal pump-wheel *d'*, which is disposed within the casing *a*. The hub of said wheel incloses the end of shaft *c* and is provided with a longitudinal slot *d²*, through which passes the key whereby said hub is secured to said shaft. The slot is made long enough to permit some lateral movement of the hub on the shaft. Hence by means of the set-screw *p*, which passes through a projection on the head *d*, the inner face of said hub may be forced against the corresponding face of a sleeve *e*, formed integrally with casing *d*, through which sleeve said shaft *c* passes. In this way a tight joint between wheel-hub and casing is obtained, which joint may be packed by the introduction of a washer *e'* between the faces of hub and sleeve. The sleeve *e* is made large enough to receive an inner sleeve *b*, which at one end bears against a collar formed on shaft *c* and at the other end enters a recess in the face of the wheel-hub. At the upper part of the casing *a* are arranged two oil-cups *g g'*. The oil-cup *g* connects by pipe *f* to sleeve *b*, and so lubricates the shaft *c* at said point. The oil-cup *g'* connects by pipe *f'* to the projection on the head *d*, which receives the adjusting-screw *p*.

In the head *d* are formed suitable tubular

projections for the attachment of the suction and delivery pipes. The suction-pipe is shown at m' and is attached by any suitable coupling to the projection m . The delivery-pipe is shown at l' and is attached in like manner to the projection l . In order to fill the casing a and suction-pipe with water on starting the pump, an opening v is provided at the upper portion of casing a , which opening is closed by the loose plate v^2 . Said plate is tightly secured in place by the tightening-screw and plate v' .

The motor-terminal sconnect with any suitable form of circuit-breaker arranged in the box x above the motor and operated by means of the hand-wheel y . On the exterior of said box are binding-screws $s s'$, to which are connected the wires t , by which the circuit is conveyed to the motor from the junction-box u , Fig. 1. The suction-hose m' is connected by any suitable coupling to the street fire-main m^2 .

In order to cool the electric motor, I provide surrounding the ring k' a circumferential recess o , which is closed by the circular plate o' . Said recess communicates by the pipe o^2 with the pressure-chamber of the pump, so that it is thus kept filled with water.

While my invention is an electric pumping-engine suitable to many uses, I especially design it for employment as a fire-engine, and especially in villages or other small settlements where there is no water-supply under pressure, but where there is already established an electric-lighting plant. The electric mains necessarily go to every house of the settlement, no matter how far distant it may be from others. Every house also necessarily has some source of water-supply—as, for example, a well, driven or otherwise. All that would be required, then, in order to make my engine at once available for the protection of the house would be the establishment thereof of a place of electric connection, $u u$, Fig. 1, for the motor-conductors $t t$ and a suction connection with the well. The persons in charge of the engine on bringing it to the premises would have simply to make these connections—the work of a moment—and the engine could at once deliver the stream. So, also, the engine could be utilized for the irrigation of crops, lawns, &c., the drainage of ponds and pools, and a variety of other purposes.

In cities having regular water and electric supply my engine may not only be used for fire purposes, but for the flushing of streets and sewers—a class of work which now falls upon the steam fire apparatus, but which could be much more conveniently and cheaply done by an auxiliary electric pumping-engine taking its current directly from the street electric mains.

I claim—

1. The combination in an electric pumping-engine of a vehicle, an inclosing drum or cylinder supported on said vehicle and divided into two compartments, an electric motor disposed in one compartment and a rotary pump actuated thereby in the other compartment, and on the exterior of said cylinder means for connecting suction and delivery pipes to said pump-compartment and means for connecting a source of electric current to said motor.

2. The combination in an electric pumping-engine of a vehicle, an inclosing drum or cylinder supported on said vehicle and divided into two hermetically-closed compartments, each provided with an opening for allowing access to its interior and with means for closing said openings, an electric motor disposed in one compartment and a rotary pump actuated thereby in the other compartment, and on the exterior of said cylinder means for connecting suction and delivery pipes to said pump-compartment and means for connecting a source of electric current to said motor.

3. The combination in an electric pumping-engine of an inclosing cylinder or drum divided into two compartments, an electric motor in one of said compartments, a rotary pump in the other compartment, a shaft extending through both compartments and carrying the armature of said motor and the wheel of said pump, means for connecting said motor and said pump respectively to sources of electric current and liquid supply, and means exterior to said drum for regulating the tightness of the joint between said shaft and the partition dividing said compartments.

SVEN BRUNAU.

Witnesses:

WALDEMAR BORNAU,
TE. RIDDERSTOLPE.