

(No Model.)

J. KELLER.
HYDRAULIC BRAKE MECHANISM.

No. 520,001.

Patented May 15, 1894.

Fig. 2.

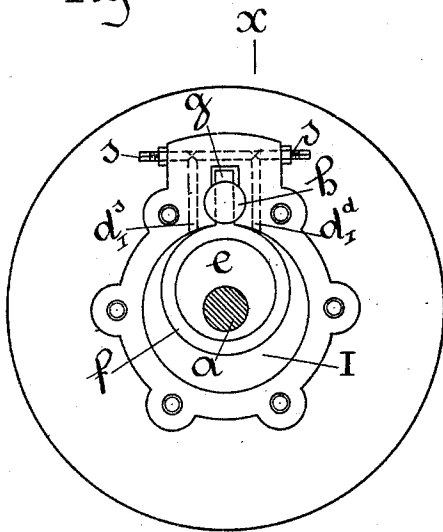


Fig. 1.

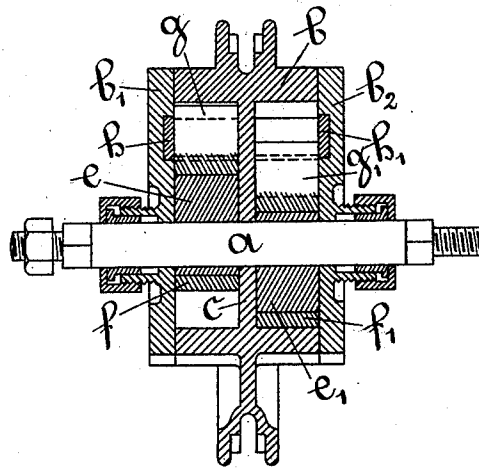


Fig. 3.

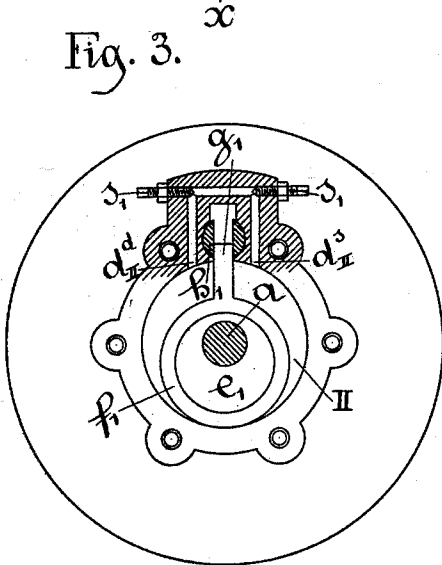
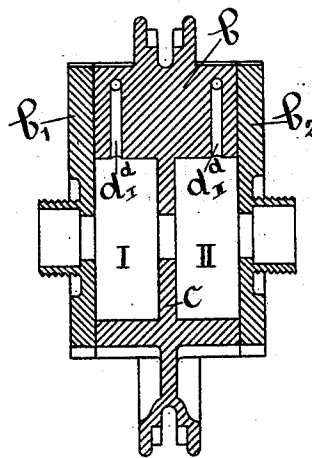


Fig. 4.



Witnesses.
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UNITED STATES PATENT OFFICE.

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HYDRAULIC BRAKE MECHANISM.

SPECIFICATION forming part of Letters Patent No. 520,001, dated May 15, 1894.

Application filed August 22, 1893. Serial No. 483,773. (No model.)

To all whom it may concern:

Be it known that I, JACOB KELLER, a citizen of the Republic of Switzerland, residing at Basle, canton of Basle Town, Switzerland, have invented certain new and useful Improvements in Hydraulic Brake Mechanism; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention for improvements in hydraulic brake mechanism has for its object to provide a mechanism adapted to regulate the speed of a shaft or pulley or to stop its motion by opposing a hydraulic resistance to its motion; and consists essentially of a small rotary pump arranged in and forming part of the object to be braked and whose suction and delivery ports are connected by a passage whose area is adjustable. The pump and passages are filled with a liquid such as glycerine. It will readily be seen that as the pump rotates with the object to be braked it will cause a flow of liquid through the adjustable passages first in one direction and then in the opposite and that the resistance to motion will vary with the area of the passage.

In the accompanying sheet of illustrative drawings which shows the brake mechanism applied to a chain hoisting pulley, Figure 1 is a longitudinal section of the brake mechanism constructed according to this invention, and Fig. 2 is a left side elevation and Fig. 3 a right side elevation partly in section, the covers being removed, of the same and Fig. 4 is a longitudinal section on the line $x-x$, Fig. 2, of the chain pulley and covers.

The hollow chain pulley b , provided with end covers b^1 b^2 , is mounted loosely and axially on the shaft a . An eccentric e fixed on the shaft a and provided with a strap f and rod g is arranged in a cylinder I formed axially within the pulley b in such manner that as the pulley b rotates on the shaft a the point of contact of the eccentric strap f and inner surface of the cylinder I gradually passes round the inner circumference of the cylinder I. The eccentric strap and rod extends the full width of the cylinder I and the

rod g is guided in a slot in a trunnion h working in bearings parallel to the shaft a . On the rotation of the pulley b , the eccentric and strap form a kind of rotary piston for the cylinder I and the rod forms an abutment dividing the suction from the delivery, the whole forming a rotary pump, there is a suction to the rear of the point of contact of the strap and inner wall of the cylinder and a pressure to the fore. The suction and pressure spaces are always in communication with one another by the passages d^1 , d^2 in which are the pointed screws s_1 s_2 for adjusting the area of the passages at these points. The chamber and passages are filled with a liquid such as glycerine.

It will be seen that on rotating the pulley there will be a flow of liquid through the passages d^1 , d^2 first in one direction and then in the reverse and that the resistance to this flow and consequently to the motion of the pulley is graduated by means of the screws s .

In order to avoid dead points and to render the working of the mechanism more smooth the pulley is divided into two cylinders I II by a central cross partition c the eccentric e with its strap f and rod g working in one cylinder and a corresponding eccentric e_1 with its strap f_1 and rod g_1 working in the chamber II and being fixed to the shaft a opposite, that is at one hundred and eighty degrees to the eccentric e . The cylinder e' is provided with passages d^3 , d^4 and with pointed screws s_1 s_2 corresponding to the passages d^1 , d^2 and pointed screws s respectively.

The eccentrics straps and rods extending the full width of the cylinders I or II and the rods g g_1 are guided in slots in the trunnions h working in recesses in the covers b_1 b_2 and partition c . The diameter of the cylinders I and II as will be seen from the above description is equal to the diameter of an eccentric strap together with double the eccentricity of the eccentric.

In order to prevent the escape of liquid the covers b_1 b_2 are fitted with stuffing boxes as clearly shown.

The whole apparatus occupies a very small space and can replace the usual nave of a pulley or drum.

Instead of fixing the shaft a the pulley b

may be fixed in which case the apparatus will serve as brake for the shaft *a* or will regulate the speed of a wheel fixed on the shaft *a*.

What I claim, and desire to secure by Letters Patent, is—

1. A brake mechanism consisting of a shaft, of a cylinder mounted loosely and axially on the shaft, of an eccentric fixed on the shaft within the cylinder and extending the full length of the cylinder, of an eccentric strap working on the eccentric and also extending the length of the cylinder and adapted to make contact with the inner wall of the cylinder, of an eccentric rod secured to the strap and working in a recess in the cylinder walls and also extending the full length of the cylinder of a trunnion mounted in the recess and in which the eccentric rod slides, and of a means for adjusting the area of a passage connecting the cylinder immediately on either side of the said recess, the whole substantially as set forth.

2. A brake mechanism consisting of a shaft,

of two cylinders mounted loosely and axially on the shaft, of two eccentrics fixed on the shaft within the cylinder opposite to one another and extending the full length of the cylinders, of eccentric straps working on the eccentrics and also extending the lengths of the cylinders and adapted to make contact with the inner walls of the cylinders, of eccentric rods secured to the straps and working in recesses in the cylinder walls and also extending the full lengths of the cylinders of trunnions mounted in recesses in which the eccentric rods slide, and of means for adjusting the areas of passages connecting each cylinder immediately on either side of the said recesses, the whole substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

JACOB KELLER.

Witnesses:

GEORGE GIFFORD,
C. BURCKHARD.