

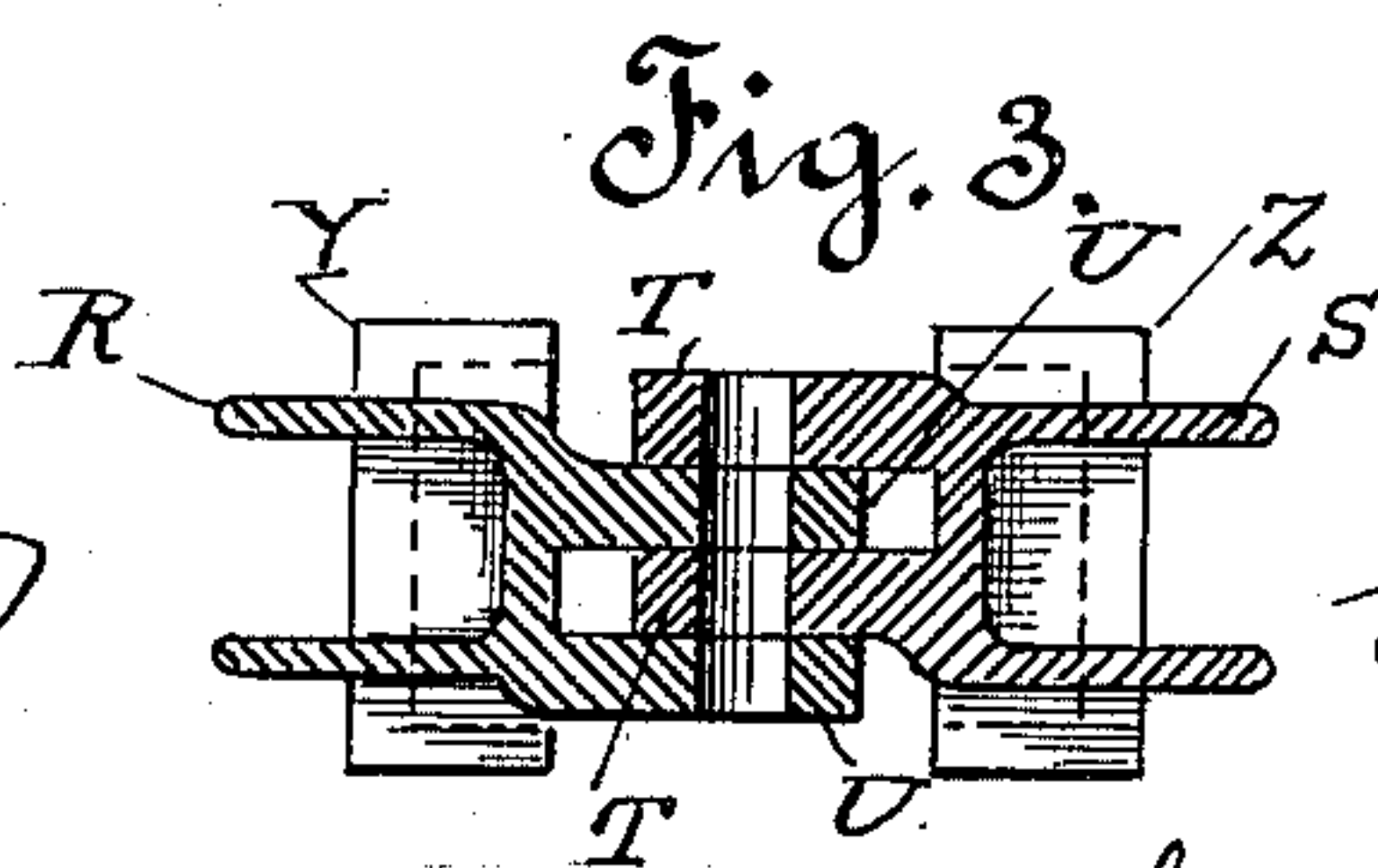
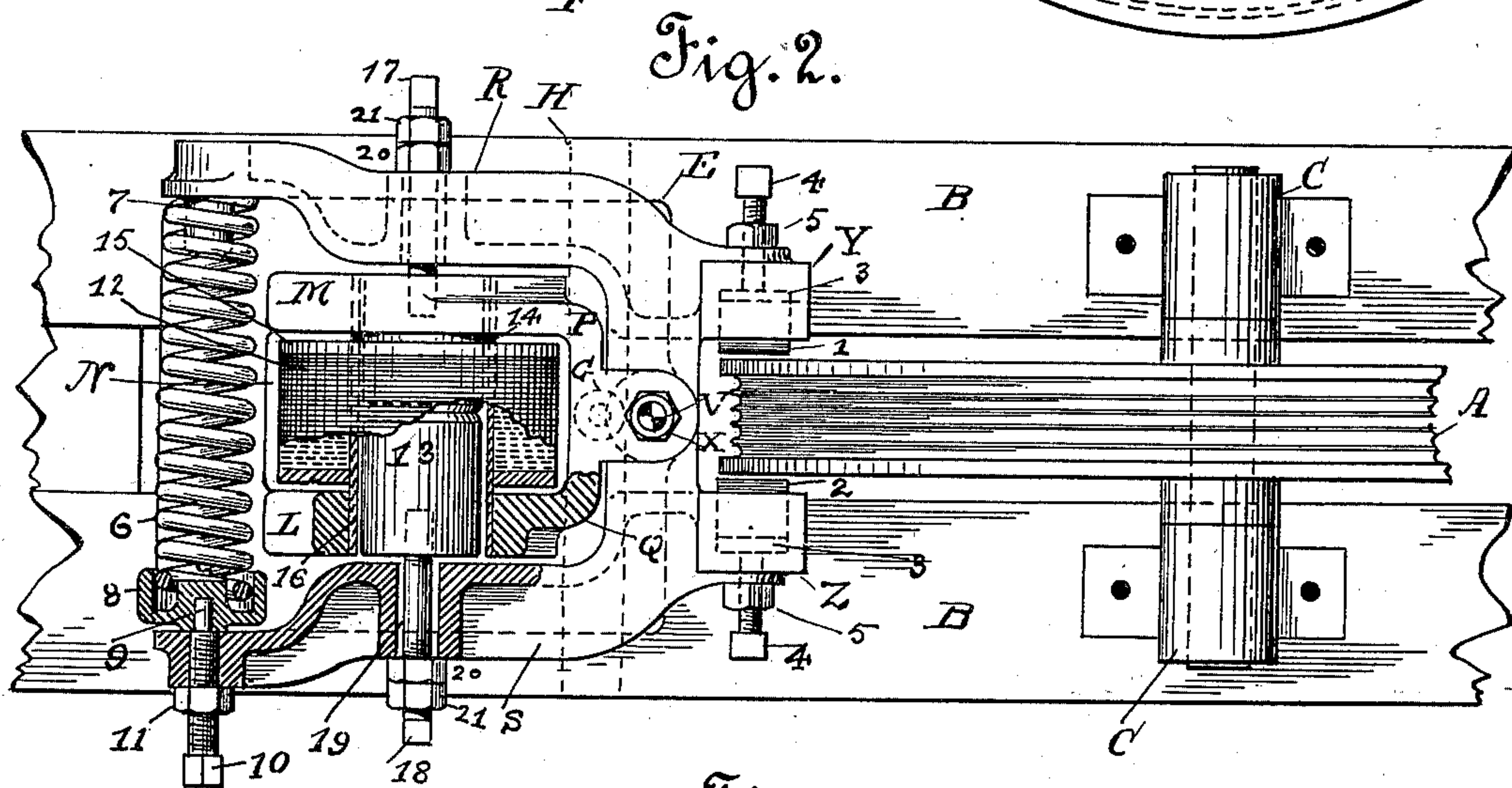
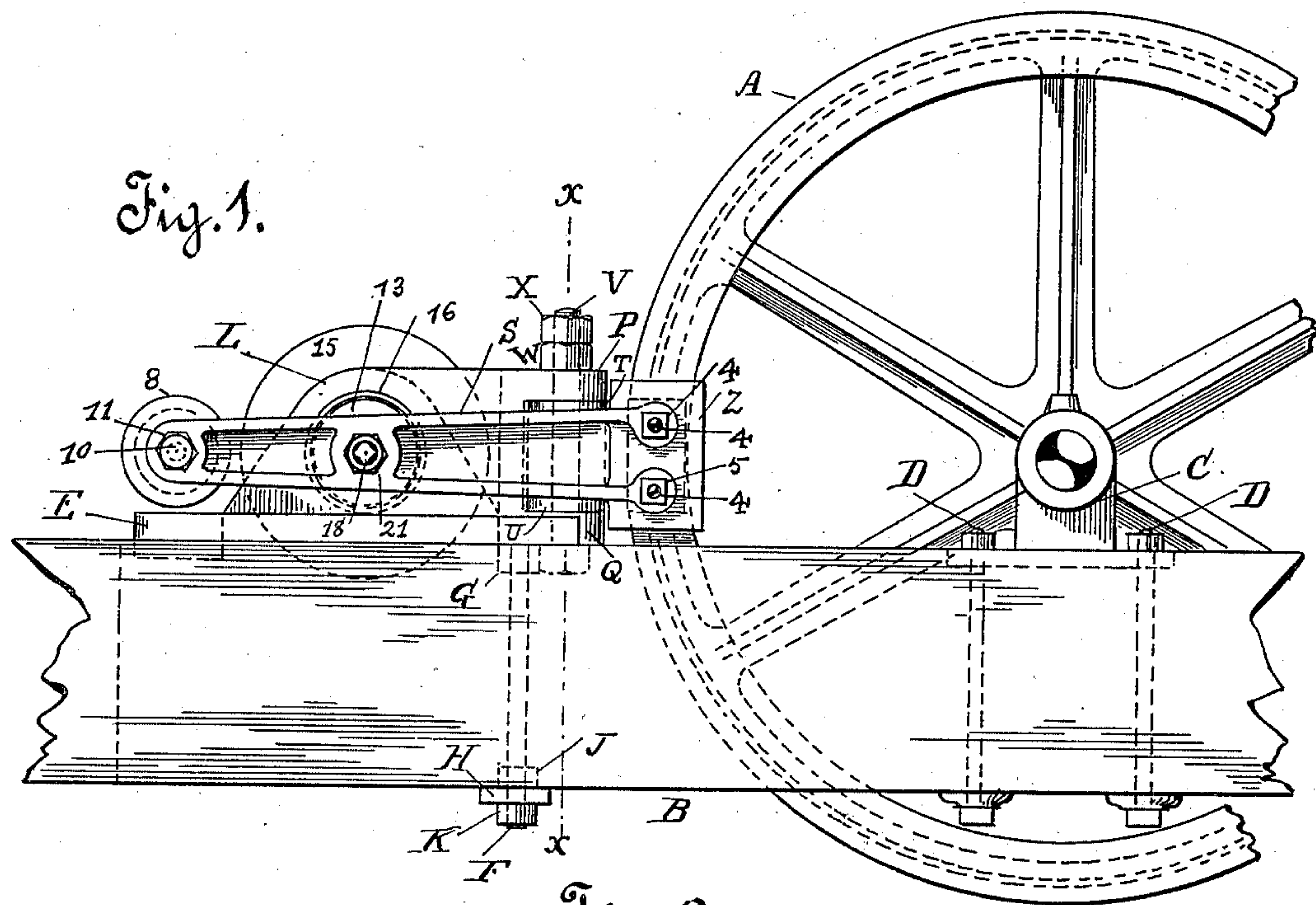
No. 671,164.

Patented Apr. 2, 1901.

**E. M. FRASER.
BRAKE.**

(Application filed July 17, 1899.)

(No Model.)



Witnesses.

Lehrer
John Grosek

Inventor.

Ethelbert M. Fraser

by A. H. Ste Marie
att'y

UNITED STATES PATENT OFFICE.

ETHELBERT M. FRASER, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR,
BY MESNE ASSIGNMENTS, TO THE OTIS ELEVATOR COMPANY, OF
NEW JERSEY.

BRAKE.

SPECIFICATION forming part of Letters Patent No. 671,164, dated April 2, 1901.

Application filed July 17, 1899. Serial No. 724,189. (No model.)

To all whom it may concern:

Be it known that I, ETHELBERT M. FRASER, of the city and county of San Francisco, State of California, have invented certain new and useful Improvements in Brakes, of which the following is a specification.

This invention relates to electrically-controlled brakes.

The object of the invention is to provide a brake that is simple, effective, smooth-working, and noiseless.

The drawings hereto annexed represent the invention applied to a cable-sheave of the kind usually employed in elevator-work, for which it was originally designed.

In the said drawings, Figure 1 is a side elevation; Fig. 2, a top view, and Fig. 3 a cross-section on the line $x x$ of Fig. 1 looking to the right toward the brake-shoes.

A represents a partly-broken sheave or grooved pulley that forms part of the operating mechanism of an elevator and is adapted to receive the hoisting-cables for the elevator-car. (Not shown.)

B is a frame comprising parallel timbers on which said sheave A is mounted and between which it revolves, and C C are the sheave-bearings, which are placed on the upper surface of said timbers and are secured to them by bolts D.

The brake is also located upon the frame B in the same horizontal plane with the central part of the sheave A and the sheave-bearings C. It is made and applied as follows:

A centrally-apertured plate E is countersunk into the upper surface of the parallel timbers of said frame and is held in position thereon by a bolt F, screwed into a boss G on the under side of said plate, near its right edge, and passing through the center of a bar H, placed across the under surface of said timbers and caught between nuts J K on the lower end of said bolt. This plate has uprights L M formed integral with it on opposite sides of its central opening N, and upper and lower lugs P Q projecting forwardly from the same—that is to say, toward the sheave A. The uprights L M are partly surrounded by a pair of brake-arms or brake-levers R S, which are respectively provided

near their forward ends with inwardly-projecting lugs TT UU, that cross or lap over one another between the forwardly-projecting lugs P Q of said uprights. A steel pin or bolt V is passed upward through all of said lugs and forms a pivot for said brake-levers. This pin or bolt is held up by a nut W and check-nut X, screwed on its upper end. On the forward or shorter ends of the pivoted levers R S are formed boxes Y Z, which face opposite sides of the rim of sheave A and in which are fitted the brake-shoes 1 and 2. These shoes are preferably made of lignum-vitæ or rosewood. They are adjusted with relation to the sheave's rim and pushed toward it as they wear out each by means of a plate 3, placed in the bottom of each one of the boxes Y Z and pressed against the back of the shoe therein by a set-screw 4. The set-screw 4 for each plate 3 passes through the bottom of the box to which it belongs and the lever thereof and is provided in each instance with a lock-nut 5. The brake-shoes 1 and 2 are carried against the rim of sheave A and normally held in contact therewith by the forward ends of the pivoted levers R S owing to the power exerted on them by a strong spiral spring 6, which is set between the other or longer ends of said levers. (See Fig. 2.) One end of said spring 6 is placed over a boss 7 forward on the inner side of the long end of lever R, and the other end of said spring is inserted in a cup 8, located on the inner side of the long end of lever S and held loosely on a diminished and unthreaded portion 9 of a set-screw 10, running inwardly through said lever S, as shown in said Fig. 2. The set-screw 10 has a lock-nut 11. The tension of spring 6, it will be observed, forces the longer ends of levers R and S outward, and consequently drives inward the shorter ends of said levers, with the shoes carried thereby, upon the rim of sheave A, as aforesaid, thus operating to retard or arrest the motion of said sheave.

The above-described brake is withdrawn electrically from the sheave A, to allow said sheave to revolve, by means of a solenoid 12, having two cores 13 14, each adapted to draw in the long end of one of the levers R S, and thereby to compress the spring 6, that is set

between said levers. The cores of said solenoid 12 are wound upon a spool 15, which is carried by a tube 16, having bearings in the uprights L M of plate E and lying above and crosswise of the aperture N in said plate. Thus arranged the solenoid 12 will project a little below the plate E through the aperture therein and will be properly centered with relation to the brake-arms R S and sheave A. The cores 13 14 are arranged to meet end to end in the center of solenoid 12, within the tube 16, when said solenoid is energized and are respectively attached to studs 17 18, running outwardly through holes 19, provided in the sides of the levers R S. The studs 17 and 18 are each screwed into the outer end of the core 13 or 14, to which they respectively belong, within the levers R S and have each a nut 20 and check-nut 21 bearing on the outside of said levers. These nuts are set so as to draw in the longer ends of the levers R S to the extent desired to compress the spring 6 and take the brake-shoes 1 and 2 off the sheave A, when the cores 13 and 14 meet, upon the solenoid 12 being energized. The hole 19 in the side of each brake-lever is made rather large, as shown in Fig. 2, in order that the stud running through the same may not bind when said brake-levers are oscillated. The solenoid 12, it will be understood, is placed in a suitable circuit and has the proper electrical connections.

Having described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. A brake device consisting of a foundation-plate adapted for application to the apparatus with which the brake is to be used, two levers pivoted to said plate, the short arms separated to receive a brake-wheel between them, a spring between the longer arms of the levers to force them apart to apply the brake, and a motor device arranged between the long arms of the levers and adapted to overcome the force of the spring, substantially as set forth.

2. The combination of a plate, clamping-levers pivoted thereto, a spring between the long arms of said levers to force the same apart, uprights on the plate between the long arms of the levers, and a motor device supported by said uprights and connected to op-

erate the levers against the action of the spring, substantially as set forth.

3. The combination with a pulley, of a brake device arranged opposite the periphery of the pulley and provided with clamping-levers receiving the rim of the pulley between their inner ends, a spring acting on both levers between the outer ends to force the same apart, and a motor device for operating the levers against the power of the spring, substantially as set forth.

4. The combination, in a brake, of levers, shoes, means for keeping said shoes applied normally through said levers, a solenoid with two cores acting oppositely to said shoe-operating means, and suitable electrical connections, substantially as described.

5. The combination of a frame, a sheave, wheel, or pulley having its bearings on parallel timbers of said frame and arranged to revolve between the same, an apertured plate also placed on said parallel timbers, a pair of spring-pressed levers pivoted to said plate and having shoes adapted to rub against opposite sides of the rim of said sheave, wheel, or pulley, and a solenoid mounted between the longer arms of said lever within the aperture of the plate and working oppositely to the lever-spring, substantially as described.

6. The combination of a frame, a sheave, wheel, or pulley mounted thereon, a plate fastened to said frame in line with the rim of said sheave, wheel, or pulley, levers pivoted to said plate and having adjustable shoes adapted to clutch said rim of the sheave, wheel, or pulley, a spring set between the longer arms of said levers operating to keep the shoes thereof applied normally, and a solenoid mounted in uprights of the plate and also located between said longer arms of the levers, said solenoid having two cores with studs attached to said longer arms of the levers and adapted to pull on the same so as to withdraw the shoes from the rim of the sheave, wheel, or pulley, substantially as described.

In testimony whereof I hereunto set my hand in the presence of two witnesses.

ETHELBERT M. FRASER. [L. S.]

Witnesses:

L. C. FRASER,
A. H. STE. MARIE.