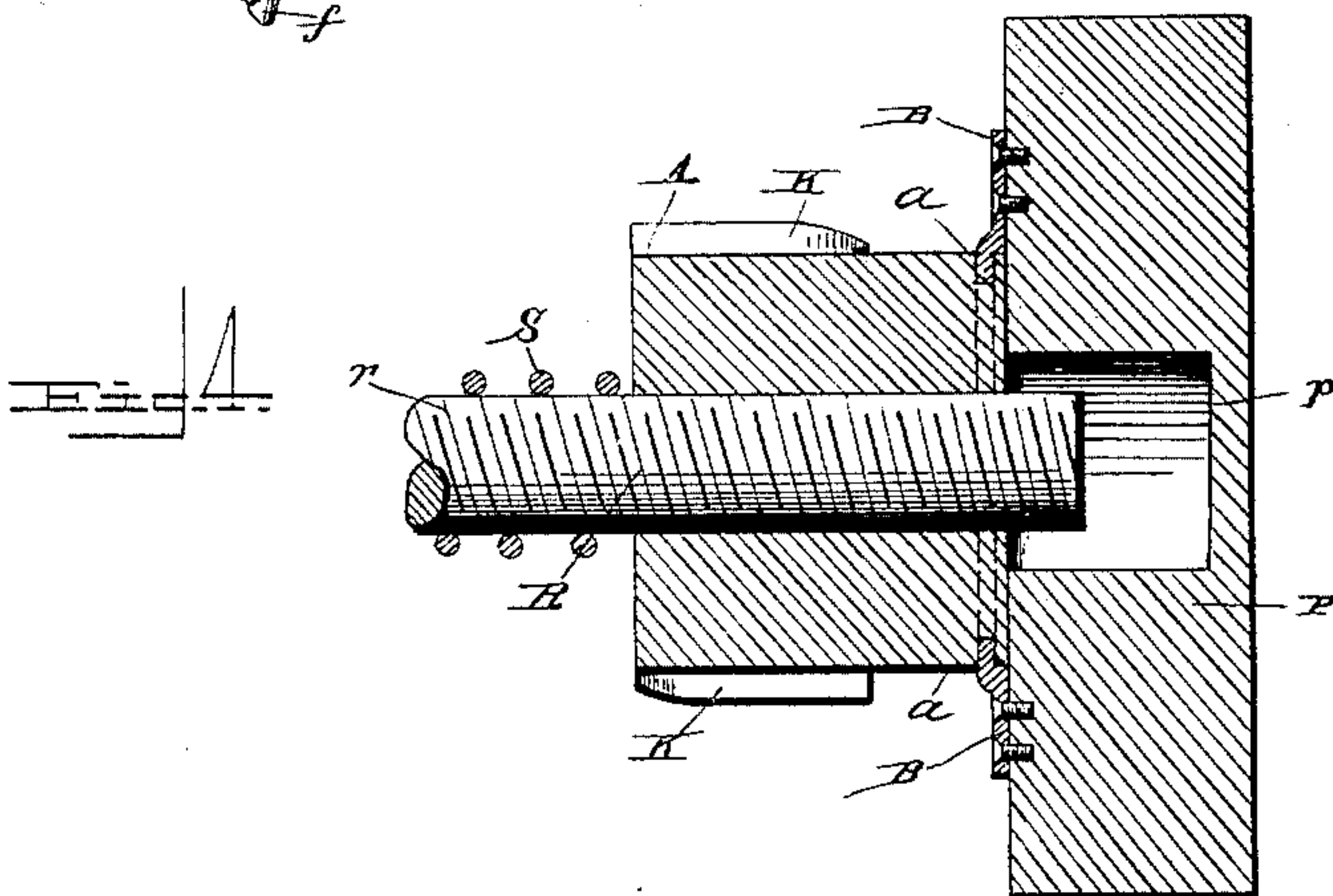
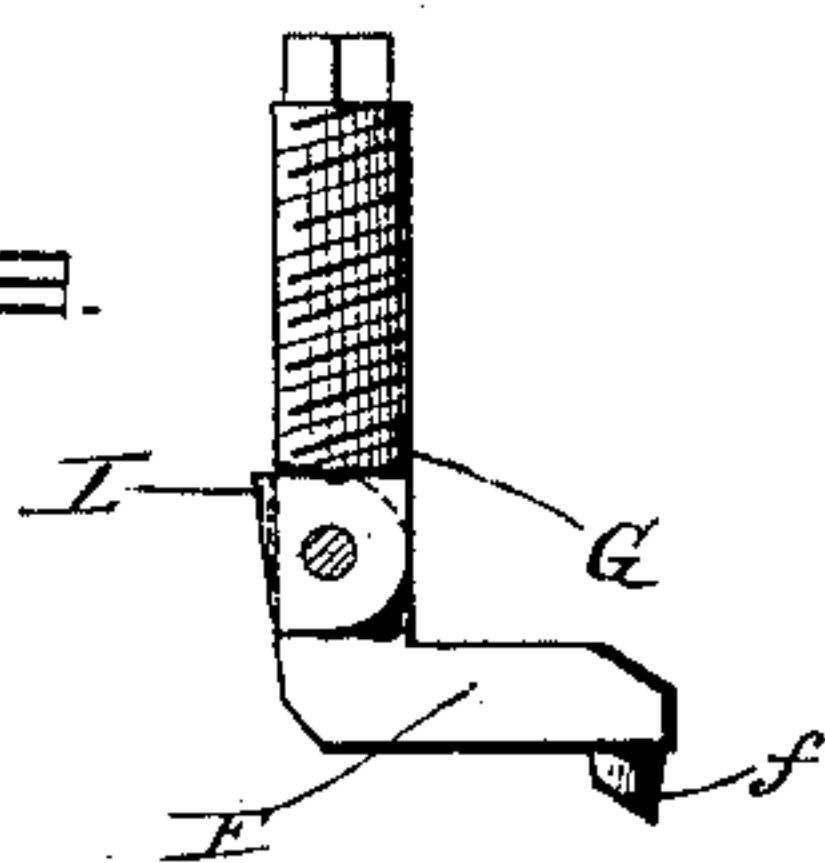
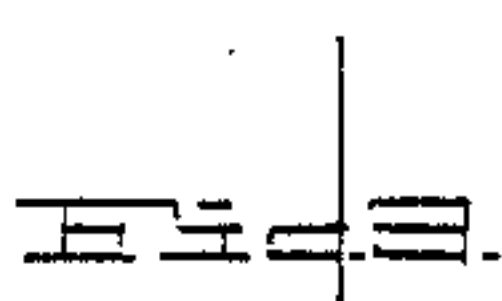
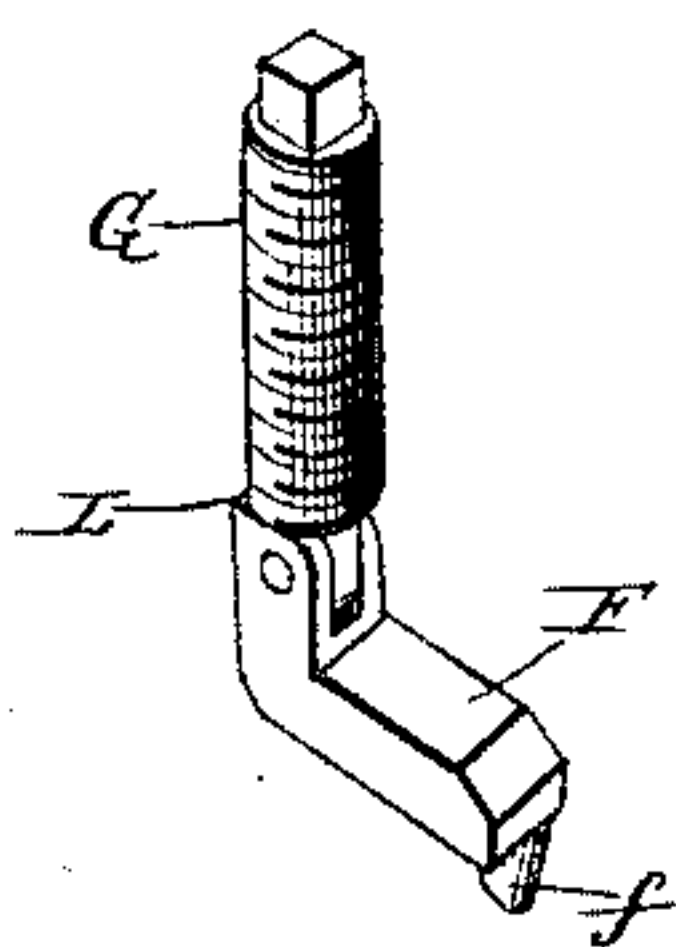
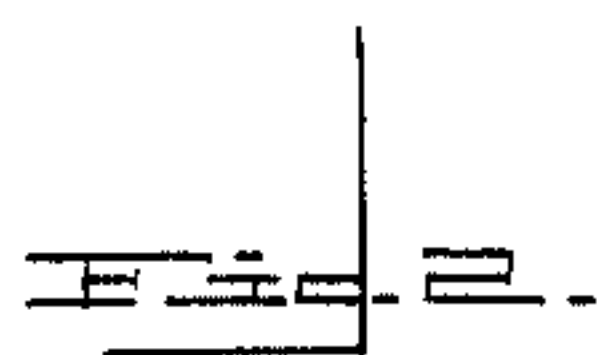
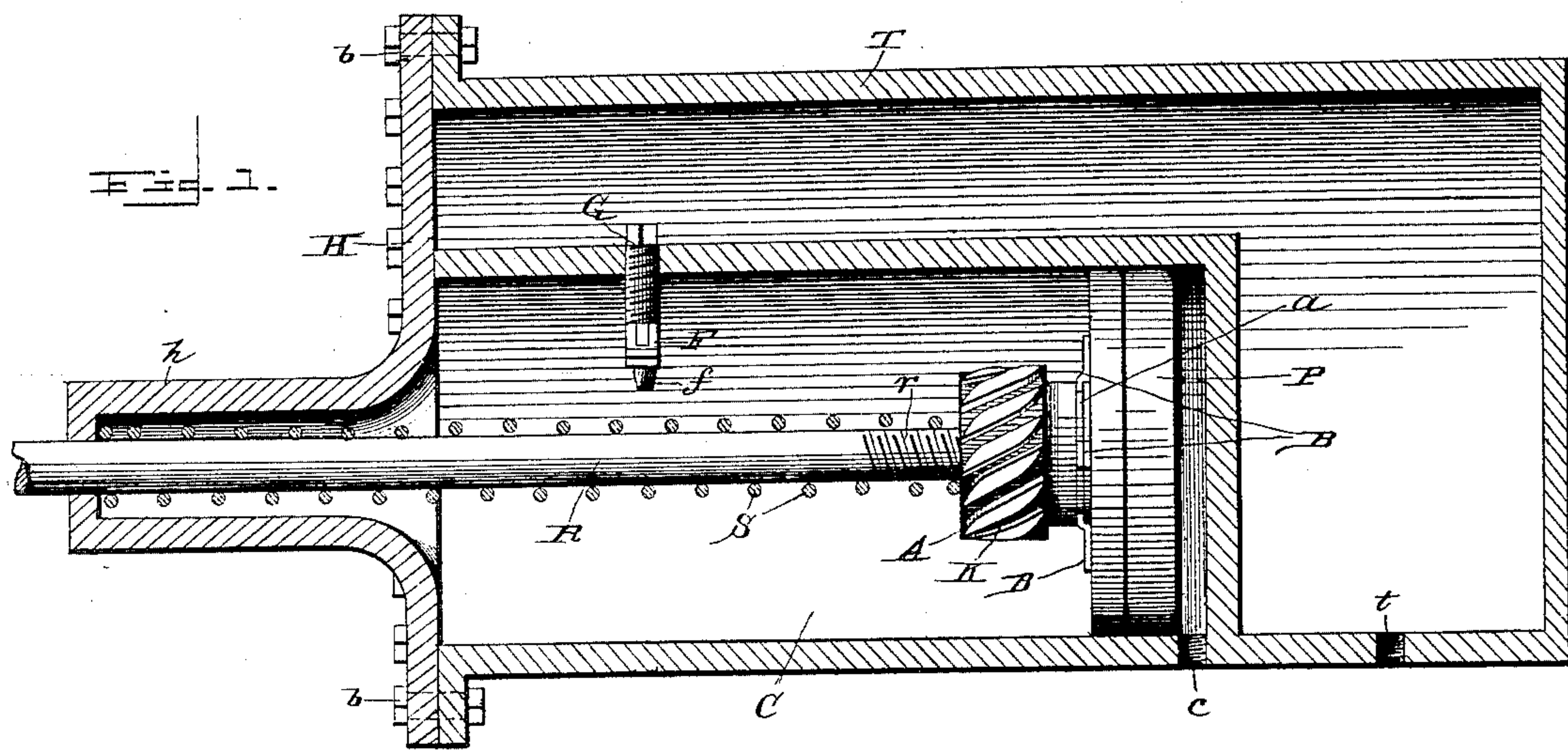


(No Model.)

E. F. ROBERTS.
AIR BRAKE.

No. 433,040.

Patented July 29, 1890.



WITNESSES

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UNITED STATES PATENT OFFICE.

EDWARD F. ROBERTS, OF ROCHESTER, NEW YORK, ASSIGNOR TO THE
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AIR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 433,040, dated July 29, 1890.

Application filed April 2, 1890. Serial No. 346,279. (No model.)

To all whom it may concern:

Be it known that I, EDWARD F. ROBERTS, a citizen of Great Britain, residing at Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Air-Brakes; 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.

My invention consists in the improved automatic take-up device for air-brakes herein-after to be more particularly described and claimed.

In the drawings, Figure 1 is a longitudinal section of a compressed-air tank and cylinder used in ordinary air-brake gear, with a side view of the take-up device. Fig. 2 is a detail of the pivoted dog. Fig. 3 is a sectional view of the same. Fig. 4 is a view in section of the take-up device.

In the operation of air-brakes and other forms of power-brakes it is found that the wear of the brake-shoes and the brake-tackle, together with the gradual bending of the latter under the severe strains to which it is submitted, renders it necessary that some take-up device should be introduced, in order that said variations may be corrected and the brake applied with as great power after they have taken place as when the whole apparatus is new. To accomplish this and to construct a take-up device which shall be simple in construction and automatic in operation, I have designed the following apparatus, in which—

T represents a tank containing compressed air, supplied in the usual way through the nipple *t*, and suitable connections to the train-pipe, controlled by valves. (Not shown.)

C is the power-cylinder for the brake, which in the construction illustrated is cast integrally with the air-tank.

H is the cylinder-head, held in place by the bolts *b b*, as shown, and having the projection *h*, which serves as a guide for the piston-rod R, which is connected to the ordinary brake-gear and operates the same in the well-known manner, being guided by the piston P and moving in the cylinder C.

The piston-rod R is capable of revolution in the piston-head P, and in the preferred form of construction shown is screwed into the helically-grooved piece A, which bears against the piston-head. This piece A is held to the piston-head and at the same time permitted to revolve by means of the dogs B, which are fastened to the said piston-head and mesh into the circumferential groove *a* on the piece A.

S is a spiral spring, which retracts the piston-rod and lets off the brake when the air which has been introduced behind the piston-head through any suitable connection *c* is permitted to escape by the operation of suitable valves. (Not shown.)

The piece A has on its surface the helical grooves K, as shown. Into these grooves the projection *f* on the pivoted dog F drops when the piston is at the left-hand limit of its travel, looking at Fig. 1. This dog F is pivoted in a plug G, screwed into the cylinder C or otherwise attached thereto, and is prevented from dropping down too far by means of the extension-lip L. (Shown in Fig. 3.) The piece A is internally threaded and mounted upon the threaded portion *r* of the piston-rod, all as shown, the recess *p* in the piston-head P permitting considerable play to the piston-rod R as the piece A is revolved in one direction or the other.

The method of operation of my improved device is the following: When the brake-gear is in its normal condition, the left-hand limit of the travel of the piston will be such that the projection *f* of the dog F will slide into that particular helical groove in the piece A with which it happens to mesh, but will not be carried over and into the next groove. Consequently the reciprocation of the piston as the brakes are set and let off will not operate the take-up mechanism; but when, through the wearing of the brake-shoes or other portions of the gear, or through the bending of the same under repeated strains, the piston P travels so far to the left that the dog F drops over into the next groove it will engage the vertical face of the same, and on the retraction of the piston by the spring S will cause the piece A to make a fraction of

a revolution, thereby setting out the piston-rod through the operation of the screw-thread *r* and taking up a portion of the wear; and thus set, the gear will continue to operate in the manner above described until further wear causes the dog to drop into the next groove and give the take-up device another fraction of a revolution.

The advantages of this invention are evident from the above explanation of its operation, and from the fact that it is simple, self-contained, and not liable to get out of order.

It is of course evident that some variations might be made in the method of connecting the piston-rod to the piston and the revolving piece A to both without departing from the spirit of my invention, so long as the revolution of said piece A operates to extend the piston-rod R and take up the wear in the manner above described.

Having therefore described my invention, what I claim as new, and desire to protect by Letters Patent, is—

1. A take-up device for power-brakes, which

consists in the combination of the cylinder, the piston, the threaded piston-rod, the threaded and helically-grooved revolving piece mounted on said piston-rod, and the pivoted dog which engages said helical grooves during a portion of the piston travel, substantially as described.

2. A take-up device for power-brakes, which consists in the combination of the cylinder, the piston, the threaded piston-rod, the threaded and helically-grooved revolving piece mounted on said piston-rod, and the pivoted dog which engages said helical grooves during a portion of the piston travel, together with the dogs on the piston which gear into a circumferential groove in the revolving piece, substantially as described.

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

EDWARD F. ROBERTS.

Witnesses:

W. MARTIN JONES,
WILLIAM E. DAVIS.