

(No Model.)

J. F. BYERS.
PNEUMATIC CLUTCH.

No. 517,679.

Patented Apr. 3, 1894.

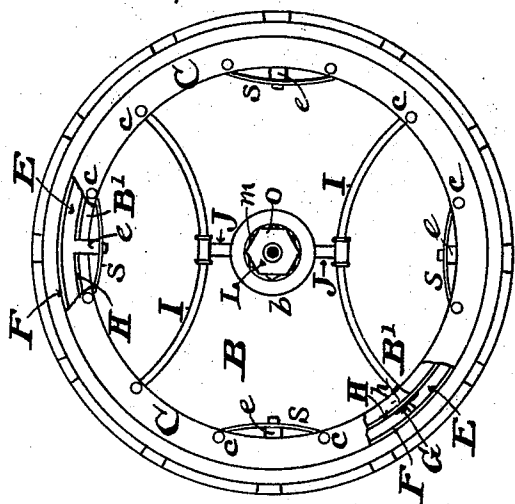


Fig. 3.

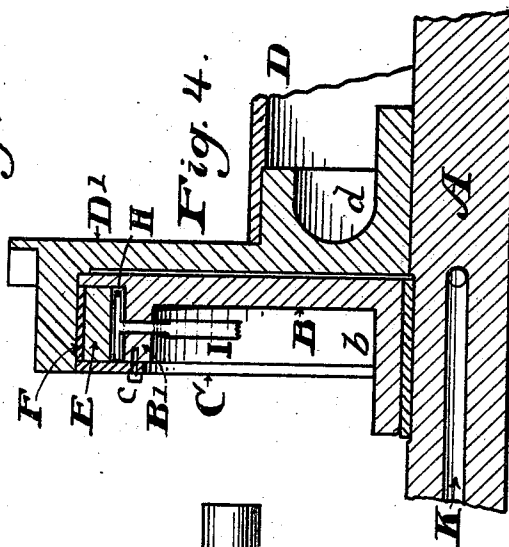


Fig. 4.

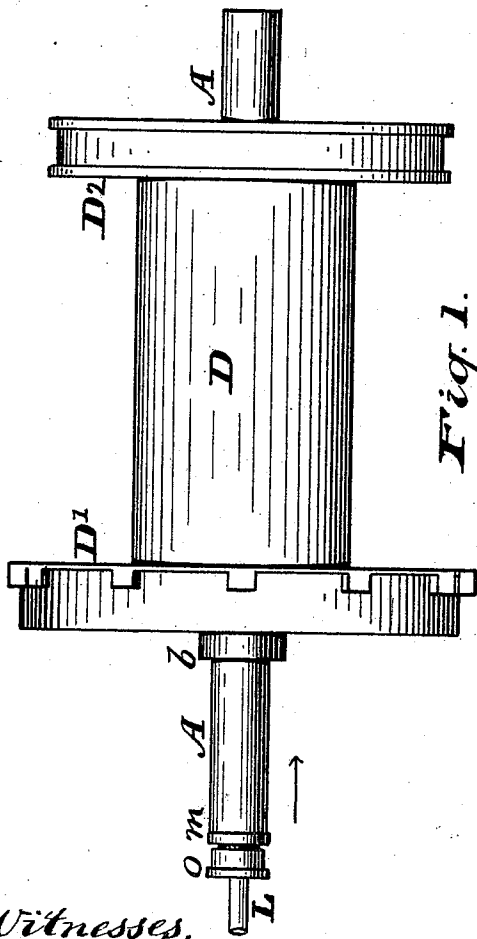


Fig. 1.

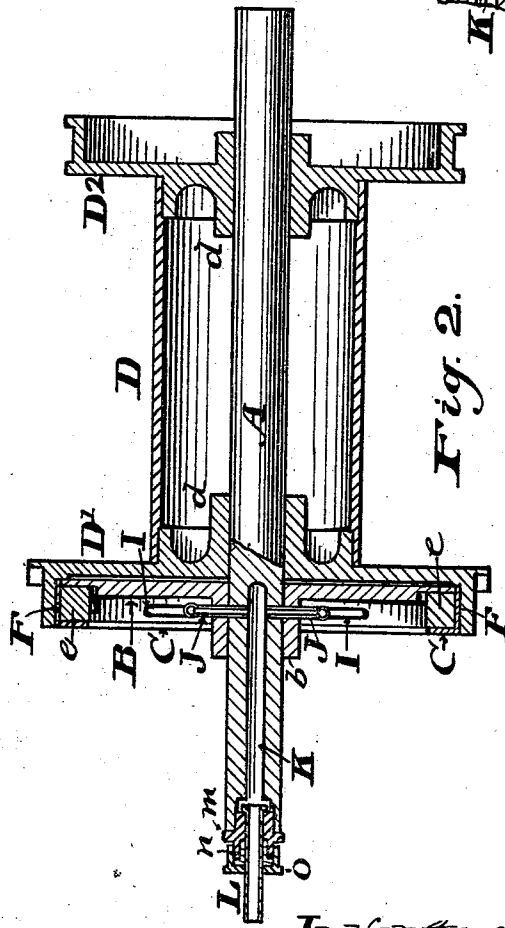


Fig. 2.

Witnesses,

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Inventor,

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By Geo. W. Tibbitts, Atty.

UNITED STATES PATENT OFFICE.

JOHN F. BYERS, OF RAVENNA, OHIO, ASSIGNOR TO THE JOHN F. BYERS
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PNEUMATIC CLUTCH.

SPECIFICATION forming part of Letters Patent No. 517,679, dated April 3, 1894.

Application filed January 2, 1894. Serial No. 495,298. (No model.)

To all whom it may concern:

Be it known that I, JOHN F. BYERS, a citizen of the United States, and a resident of Ravenna, in the county of Portage and State of Ohio, have invented certain new and useful Improvements in Pneumatic Clutches, of which the following is a specification.

This invention relates to clutches, and has for its object to provide for the employment of steam, compressed air, or any suitable fluid, under pressure, for setting the clutch, and the invention consists in the new constructions and combinations substantially as hereinafter described and pointed out in the claims.

In the accompanying drawings:—Figure 1 is a side elevation of a drum and shaft having my new clutch mechanism embodied therein. Fig. 2 is a longitudinal section of the same. Fig. 3 is a face view of the clutch mechanism, partly in section, as seen in the direction of the arrow on Fig. 1. Fig. 4 is an enlarged sectional view of a part of the drum head and the driving disk, showing the shoe for setting said disk against the annular rim on the drum head.

Like reference letters indicate like parts throughout the several views.

A is a shaft. D is a drum loosely placed on said shaft, and consists of heads D', and D² provided with hubs *d d* for mounting the drum upon the shaft. The body of the drum may consist of a cylinder secured to the larger portions of said hubs, but the drum may be constructed in any well known manner. The particular construction of the drum does not form any part of my invention but is represented to show adaptation of my new clutch to same. The heads are both provided with wide annular rims, or flanges.

B is a disk having a hub *b* and is keyed fast to the shaft A for turning with the same. It sets close up to the web of drum head D' but does not quite touch it. The disk B has an annular rim or flange B' a short distance from its periphery forming an annular rabbet in which is provided the mechanism for binding said disk B to the drum head when required for rotating the drum.

C is a ring plate secured to the disk B by

means of screws, *c c*, to the rim of said disk, this closes the front of the rabbet, and forms it into an annular chamber to contain the said binding mechanism.

E are segmental shoes fitted to bear against the inside surface of the rim on the head D', between the shoes and said rim a band of leather or other suitable material F is provided, by which increased friction may be obtained. Over the space between the ends of said shoes where they come together in the rim are placed thin pieces of steel, or other suitable material, G, Fig. 3, for the purpose of covering the aperture, the pieces of steel being fastened to one of the shoes to keep it in place. Each of said shoes is provided with lugs *e* midway between their ends, which project through slots in the rim of disk B to which are attached springs S S, which serve to withdraw the shoes when pressure upon them is relinquished.

H is a pressure chamber between the rim B and the shoes E and is provided with flexible sacks or other packing material to prevent leakage at the joints, having nipples *h* to which are connected pipes or tubes I connecting them with branch pipes J extending outward from the shaft through the hub *b*.

K is a bore in the shaft A into which the branch pipes J lead. L is a pipe fixed on the end of the shaft held by a sleeve *m* screwed into the end of the shaft, and bearing against the head on said pipe L.

N is a stuffing box in the end of sleeve *m* held in by a screw cap O on the end of the sleeve. The purpose of pipe L is for making connection with source of power as compressed air or other fluid, under pressure, as a means for applying pressure upon the shoes E for setting the clutch.

The working of this mechanism is as follows:—The fluid pressure being admitted to the bore in the shaft passes through the pipes and tubes J I, into the sacks or tubes H which being flexible are expanded, and thus pressing on the shoes E forces them against the rim of the head D, and binds the disk B firmly to the head, thereby causing the drum to rotate with the driving disk B. Shutting off the fluid pressure and allowing the fluid to

escape from the sacks, the springs *s* will withdraw the shoes and thereby release the drum.

Having described my invention, I claim—

1. In a pneumatic clutch the combination
5 of a flanged disk *D'*, loosely mounted on shaft *A*, and disk *B* keyed fast upon said shaft, in close proximity to said disk *D*, shoes *E* placed in an annular rabbet of disk *B*, ring plate *C* attached to disk *B*, confining the shoes in said
10 rabbet, a pressure chamber *H* between the rim and the shoes, provided with flexible sacks, pipes or tubes *J* *I*, connecting said sacks or chamber with the bore *K* in the shaft *A*, and means for applying fluid pressure to said
15 sacks, for expanding the same for forcing the shoes against the rim of disk *D'*, substantially as and for the purpose set forth.

2. In a pneumatic clutch, the combination of shaft *A*, driving disk *B* permanently mounted on said shaft, drum *D* loosely mounted on
20 said shaft, segmental shoes *E* between the flange *B'* on disk *B* and outer flange of disk *D'*, band *F* between the shoes and said outer flange, metal strips *G* closing the apertures between the ends of said shoes, flexible sacks
25 *H* between said shoes and the flange *B'*, retracting springs *s* attached to lugs *e* on said shoes, pipes *I* and *J* connecting the sacks *H* with the bore *K* in the shaft *A* substantially as described.

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Witnesses:

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