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F. KALISCH.

AUTOMATIC AIR BRAKE APPARATUS FOR AUTOMOBILES.

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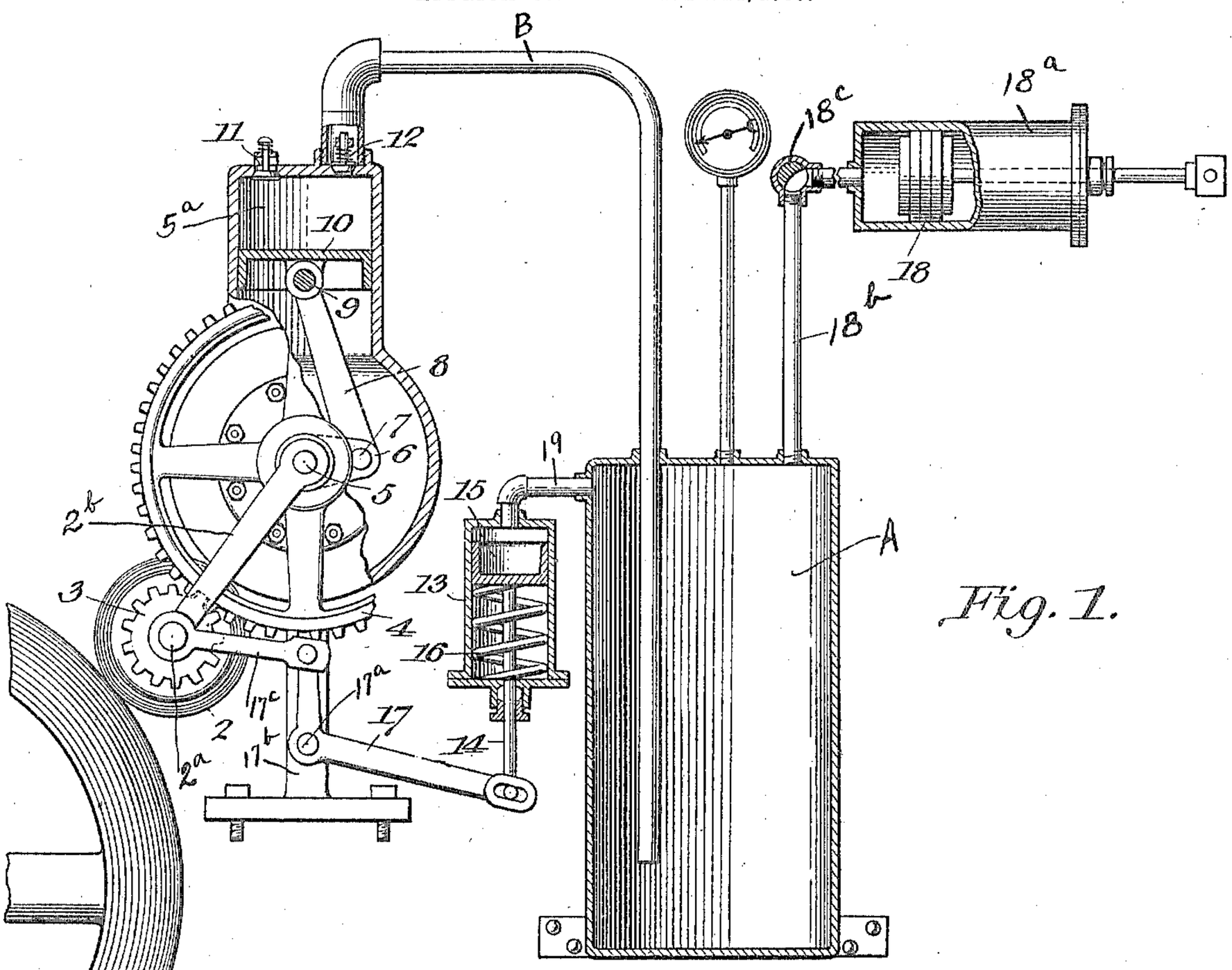

Fig. 1.

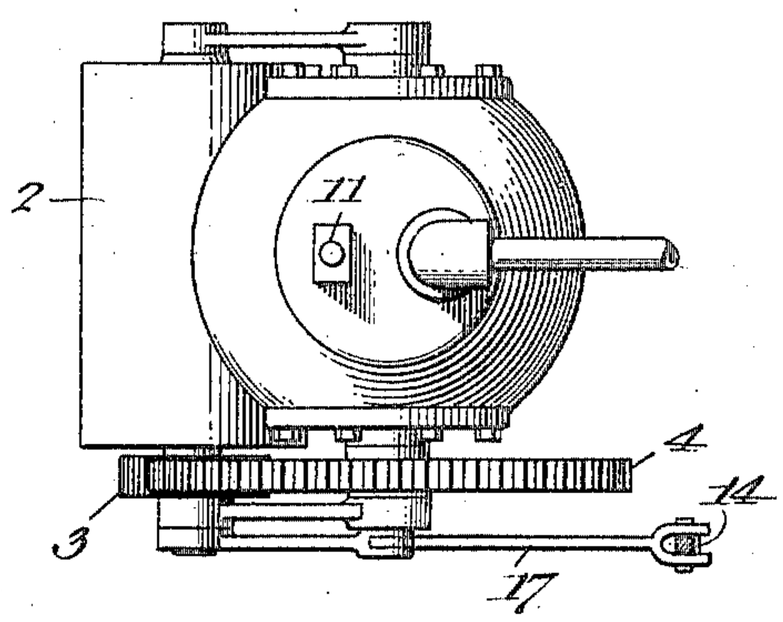

Fig. 2.

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AUTOMATIC AIR-BRAKE APPARATUS FOR AUTOMOBILES.

No. 811,507. Specification of Letters Patent. Patented Jan. 30, 1906.

Application filed March 24, 1905. Serial No. 251,903.

To all whom it may concern:

Be it known that I, FREDERICK KALISCH, a citizen of the United States, residing at St. Louis, State of Missouri, have invented certain new and useful Improvements in Automatic Air-Brake Apparatus for Automobiles, of which the following is a specification containing a full, clear, and exact description, reference being had to the accompanying drawings.

My invention relates to an "automatic air-brake apparatus for automobiles;" and the objects of my invention are, first, to utilize the rotation of the power-wheel of the automobile-engine for driving an air-pump to pump up air-pressure in a storage-tank and from thence to be delivered to the air-brake cylinder, as desired; second, to provide means whereby the air-pump is automatically thrown out of operation when the air-pressure reaches a certain degree in the storage-tank; third, to provide means whereby the air-pump is set in motion when the pressure drops below a certain degree in the storage-tank.

To the above purposes my invention consists in certain novel features of construction and arrangement of parts, which will be hereinafter more clearly set forth, pointed out in my claims, and illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of my complete apparatus, partly in section and showing a portion of the power-wheel of an automobile-engine. Fig. 2 is a top plan view of the air-pump and its contiguous parts.

Referring by characters to the accompanying drawings, 1 indicates a portion of the automobile-engine power or fly wheel, with the periphery of which is adapted to contact the periphery of a friction-pulley 2. The ends of the shaft 2^a of this friction-pulley are journaled in the lower ends of a pair of arms 2^b, the upper ends of which are journaled on a shaft 5, that is transversely arranged in the lower portion of an air-pump cylinder 5^a.

Located upon the shaft 2^a at one end of the friction-pulley 2 is a pinion 3, that meshes with the gear-wheel 4, fixed upon the shaft 5, adjacent one end thereof. Fixed upon the shaft 5 within the air-pump cylinder 5^a is a crank 6, to the outer end of which is connected, by means of a crank-pin 7, the lower end of a link 8. The upper end of this link 8 is connected, by means of a pin 9, to a piston 10, that reciprocates in the correspondingly-formed upper end of the air-pump cylinder 5^a. Located in the top of this air-pump cylinder 5^a is an inlet-valve 11 of the usual form, and also located in the top is an outlet-valve 12.

Suitably located adjacent the cylinder 5^a is a storage-tank A, and leading thereto from the outlet-valve 12 is the pipe B.

Located adjacent the air-pump cylinder 5^a is a pressure-regulating cylinder 13, through the lower end of which operates a piston-rod 14, having fixed on its upper end a piston 15. An expansive coil-spring 16 is located in the lower portion of this cylinder 13 beneath the piston 15.

A bell-crank 17 is suitably fulcrumed at 17^a to a bracket 17^b, and the upper end of the short arm of this bell-crank is pivotally connected to one end of a link 17^c, the outer end of which is loosely journaled upon the end of the shaft 2^a. The outer end of the horizontal arm of this bell-crank 17 is loosely connected to the lower end of the piston-rod 14.

A short tubular connection 19 leads from the upper end of the cylinder 13 to the storage-tank A.

A piston 18 operates in an ordinary air-brake cylinder 18^a, and a tubular connection 18^b leads from the storage-tank to the end of the cylinder 18^a in front of said piston 18, there being a suitable valve 18^c located in this tubular connection. The piston-rod of the piston 18 is suitably connected to the mechanical brake of the automobile.

The coil-spring 16 is gaged or of such strength as to resist pressure of a predetermined degree, so that when the pressure in the storage-tank rises above this predetermined degree the piston 15 will be forced downwardly, overcoming the resistance offered by the spring 16.

The operation of my improved apparatus is as follows: As the fly-wheel 1 is operated by the automobile-engine the rotary motion thereof is imparted to the friction-pulley 2, and as a result the pinion 3 is driven, in turn driving the gear-wheel 4. Thus the shaft 5 is rotated, and the crank 6 on said shaft by means of the link 8 reciprocates the piston 10 in the upper portion of the air-pump cylinder. The downstroke of said piston draws air in through the inlet-valve 11, and the upstroke of said piston forces the indrawn air through the outlet-valve, through the pipe B into the

storage-tank A. As long as there is normal pressure within this tank A said pressure can be utilized to apply the automobile-brakes by allowing the compressed air to discharge through the tubular connection 18[b] into the brake-cylinder 18[a] by properly manipulating the valve 18[c]. Should the continued operation of the air-pump create abnormal pressure in the storage-tank A, said abnormal pressure will overcome the resistance of the spring 16, force the piston 15 downwardly, and by so doing actuate the bell-crank 17, moving the upper end of the vertical arm thereof laterally, and by means of the connecting-link 17[c] the friction-pulley 2 is drawn out of peripheral engagement with the fly-wheel 1. Thus the air-pump is automatically thrown out of operation until the pressure in the storage-tank A lowers to a sufficient degree to allow the piston 15 to move upwardly by the action of the spring 16, and thus reverse the movements of the parts just described and return the friction-pulley 2 into engagement with the fly-wheel 1.

Thus it will be seen how I have constructed a simple apparatus wherein pressure is pumped into a storage-tank by utilizing the motion of the fly-wheel of the automobile-engine and which apparatus is automatically governed by the degree of pressure in said storage-tank.

My improved apparatus is simple in construction and operation, can readily be applied to all automobiles having a fly or power wheel, and provides means whereby the automobile-brake can be actuated by the application of compressed air.

I claim—

1. The combination with the engine of an automobile of a friction-pulley riding on the fly-wheel of the engine, an air-pump operated by the rotation of the friction-pulley, a storage-tank, a brake-cylinder, tubular connections from the storage-tank to the air-pump and to the brake-cylinder, and means whereby the pressure within the storage-tank is utilized to automatically move the friction-pulley into and out of engagement with the fly-wheel of the engine; substantially as specified.

2. In an apparatus of the class described, a friction-pulley mounted so as to move into engagement with the fly-wheel of an engine, an air-brake pump, driving mechanism from the friction-pulley to the air-pump, a storage-tank, a brake-cylinder, tubular connections from the air-pump to the tank and from the tank to the brake-cylinder, a small cylinder connected to the storage-tank, a spring-actuating piston actuating therein, and suitable connections from the piston to the friction-pulley for moving the same into and from frictional engagement with the fly-wheel of the engine; substantially as specified.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, at St. Louis, Missouri, this 18th day of March, 1905.

FRED. KALISCH.

Witnesses:
HERMAN J. KREMBS,
GEO. D. KLUEGEL.