

No. 617,978.

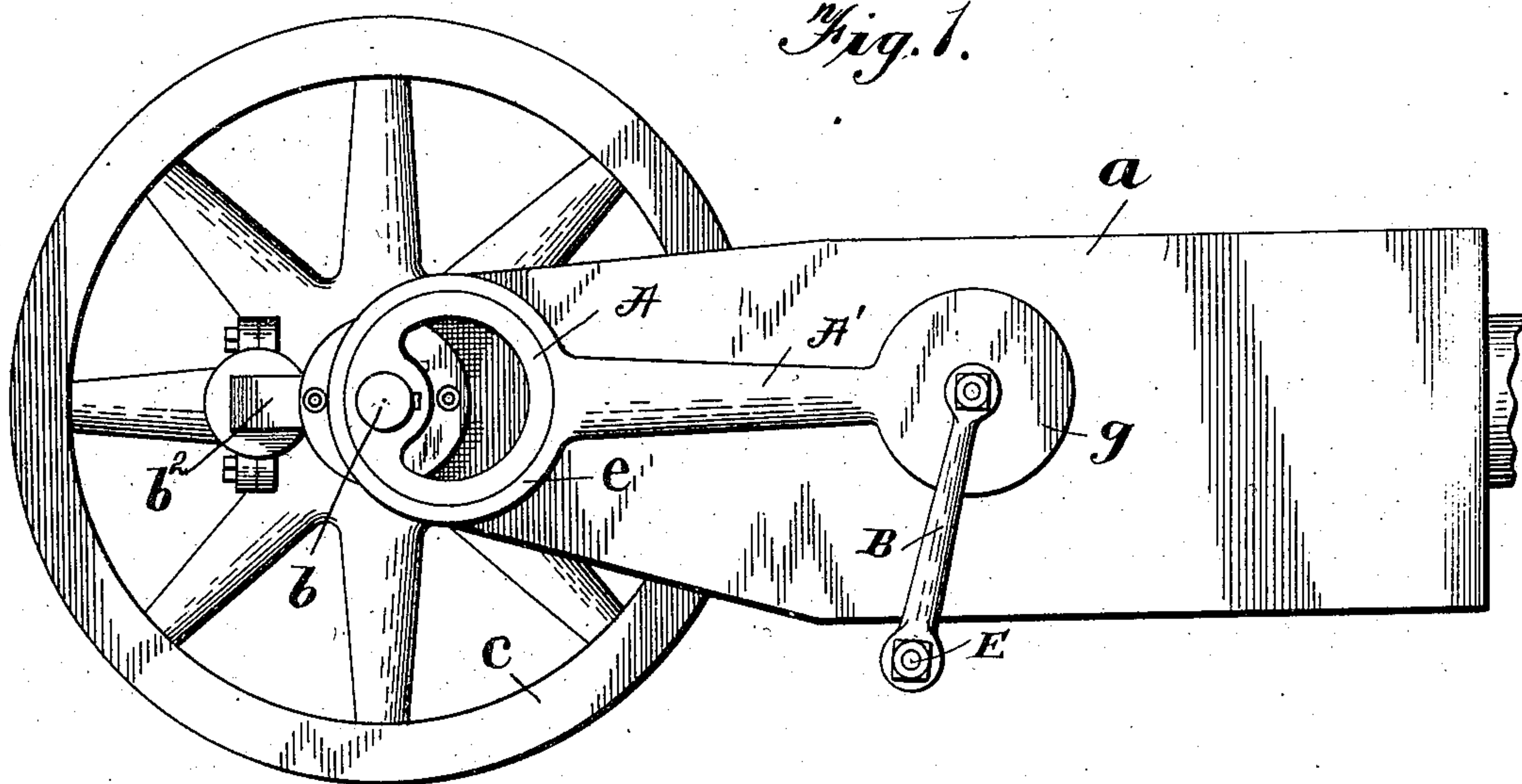
Patented Jan. 17, 1899.

A. WINTON.  
EXPLOSIVE ENGINE.

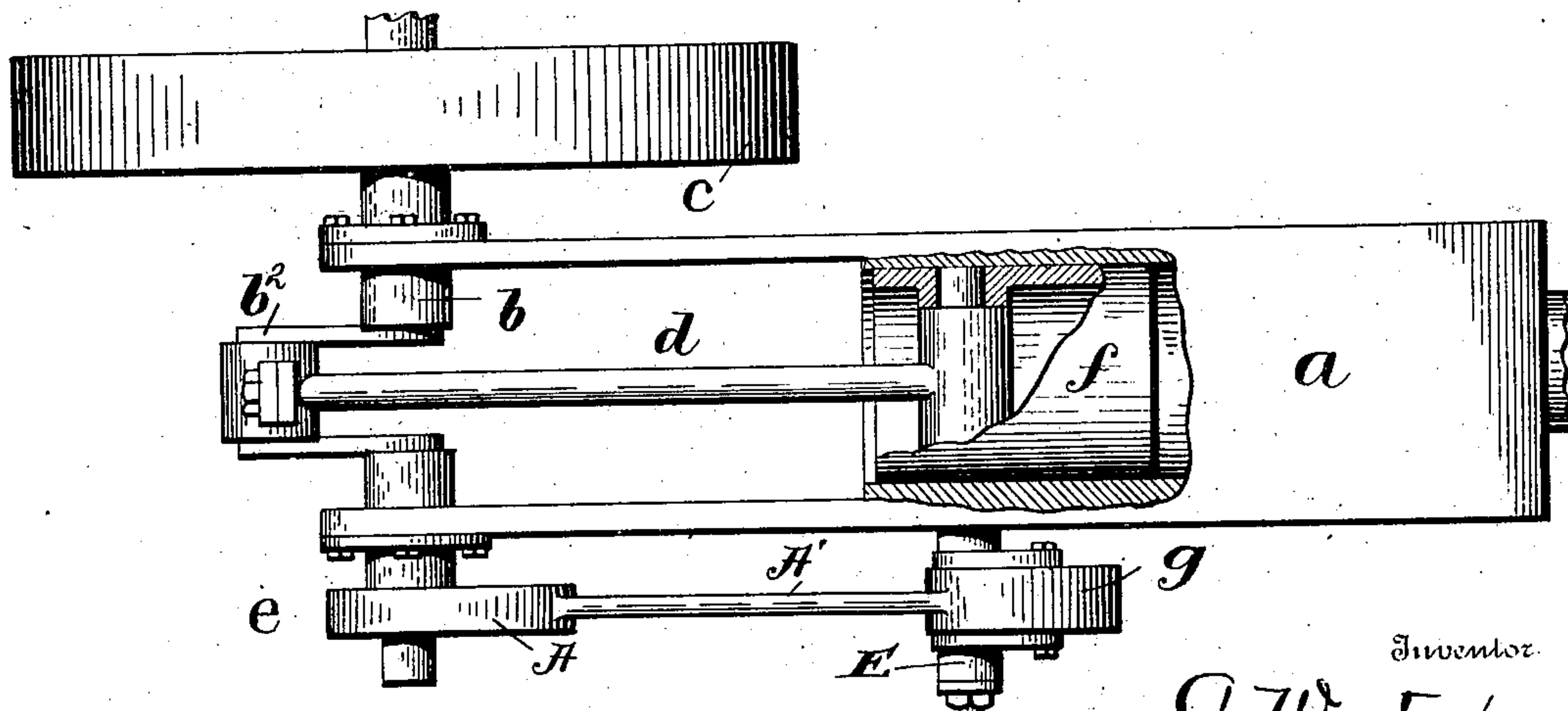
(Application filed Jan. 20, 1898.)

(No Model.)

*Fig. 1.*



*Fig. 2.*



Witnesses

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# UNITED STATES PATENT OFFICE.

ALEXANDER WINTON, OF CLEVELAND, OHIO.

## EXPLOSIVE-ENGINE.

SPECIFICATION forming part of Letters Patent No. 617,978, dated January 17, 1899.

Application filed January 20, 1898. Serial No. 867,284. (No model.)

*To all whom it may concern:*

Be it known that I, ALEXANDER WINTON, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Explosive-Engines; 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 relates to improvements in explosive-engines, and pertains to that class of engines in which gasolene is used as the means of generating an explosive compound. The object of my invention is to provide in a single-cylinder engine a means for counterbalancing the momentum of the piston and its pitman, which overcomes all vibration, making a smooth-running engine, with considerably less wear upon the parts than where a single-piston engine is not provided with means for balancing its piston and pitman, and especially is this true in respect to explosive-engines which are very rapid in their movements, as will be readily understood by those skilled in the art.

My present invention is especially intended for and peculiarly adapted to be used as a propelling means for motor-vehicles, in which it is very desirable to have a smooth-running engine with as little vibration as possible.

In the accompanying drawings, Figure 1 is a side elevation of an engine embodying my invention. Fig. 2 is a top plan view of a part of the engine, showing my invention.

In the accompanying drawings *a*, indicates the cylinder of an explosive-engine; *b*, the drive-shaft thereof; *c*, a balance-weight; *b*<sup>2</sup>, the drive-shaft crank; *d*, the pitman, and *f* the piston.

In explosive-engines where the impulse given to the operative parts is sudden and rapid, and especially when used in connection with a motor-vehicle, there is considerable jar and vibration, owing to the momentum of the piston and its pitman. To overcome this vibration, I provide a balancing mechanism, consisting of an eccentric *A*, keyed to the drive-shaft. An eccentric-strap *e* surrounds this eccentric, the eccentric-strap being of the usual form. An eccentric rod or pitman *A'* has one end connected with the eccentric-strap

and carries at its opposite end a balancing-weight *g*. This balancing-weight is supported by a rock-arm *B*, the opposite end of the rock-arm being supported by a shaft or spindle *E*. The eccentric *A* is positioned upon the drive-shaft exactly opposite the crank *b*<sup>2</sup>, as clearly illustrated in the drawings. When an explosion occurs and the piston is driven, the eccentric reciprocates the balance-weight *g* back and forth in a straight or substantially a straight line and in opposite directions to the reciprocation of the piston and its pitman, and owing to this opposite movement of the balancing-weight and its momentum it balances the momentum of the piston and the pitman. By means of a balancing device of this character I am able to produce a rapidly-running single-cylinder explosive-engine in which the usual vibration is practically avoided. While I show and prefer to use an eccentric for this weight, it will be readily understood that a crank may be substituted therefor, though the eccentric is much preferred.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. An engine comprising a drive-shaft, having a crank, a piston connected with the crank, a balancing-weight, the drive-shaft provided with an eccentric positioned thereon in opposition to said crank, and a connection between the weight and the eccentric whereby the piston and the weight move in opposition.

2. An engine comprising a reciprocating piston, a drive-shaft and a crank, an eccentric-rod having an eccentric-strap at one end and a balancing-weight at its other end, the eccentric being positioned upon the drive-shaft in opposition to the crank for the purpose described.

3. An engine comprising a reciprocating piston, a drive-shaft, a crank, an eccentric-rod having an eccentric-strap at one end and a balancing-weight at the other end, and a vertically-disposed rock-arm having one end pivoted and its opposite end pivotally connected with and supporting the said weight for the purpose described.

4. An engine comprising a reciprocating piston, a drive-shaft connected with the piston, a vertically-disposed rod pivoted at one end



and carrying a weight at its opposite end, and a connection between the piston and the weighted free end of the rod, substantially as described.

- 5 5. An engine comprising a reciprocating piston, a drive-shaft, having a crank, an eccentric upon the shaft positioned in opposition to the crank, a vertically-disposed rod pivoted at one end, a weight carried by the  
10 free end of the rod, and an eccentric rod or pitman having one end provided with an eccentric-strap encircling the eccentric of the drive-shaft, and its opposite end connected  
15 substantially as described.

6. An engine comprising a reciprocating

piston, a vertically-disposed rod pivoted at one end and extending in a direction across the line of travel of the piston, a weight supported by the free end of the rod practically  
20 in a horizontal line with the piston, and a connection between the weight and the piston to move the weight in the opposite direction to the movement of the piston, substantially  
25 as described.

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

ALEXANDER WINTON.

Witnesses:

GEO. H. BROWN,  
THOS. HENDERSON.