

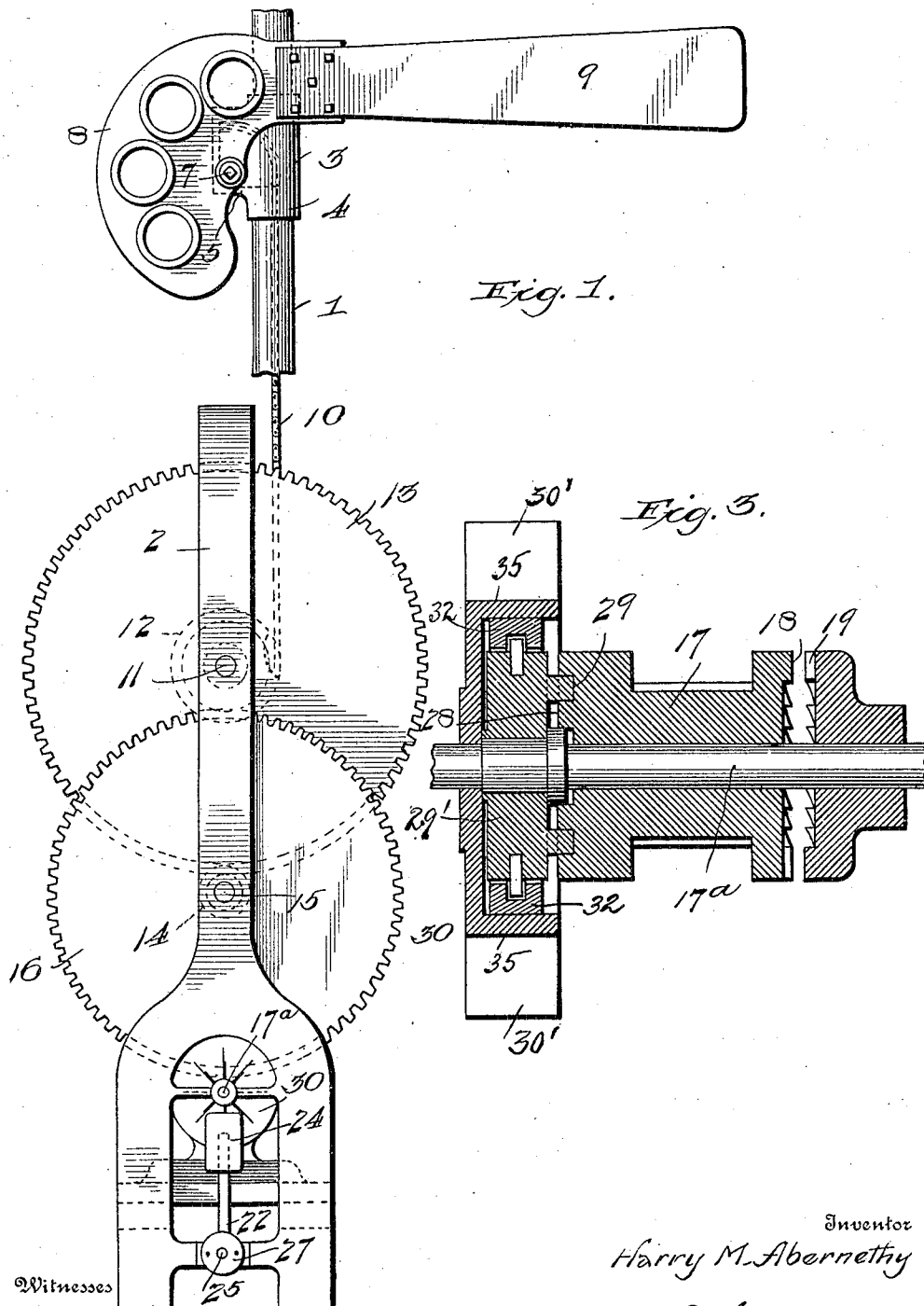
No. 852,094.

PATENTED APR. 30, 1907.

H. M. ABERNETHY.  
RAILWAY SEMAPHORE SIGNAL.

APPLICATION FILED DEC. 7, 1905.

2 SHEETS—SHEET 1.



Witnesses  
G. L. Moschauer  
James F. Crown

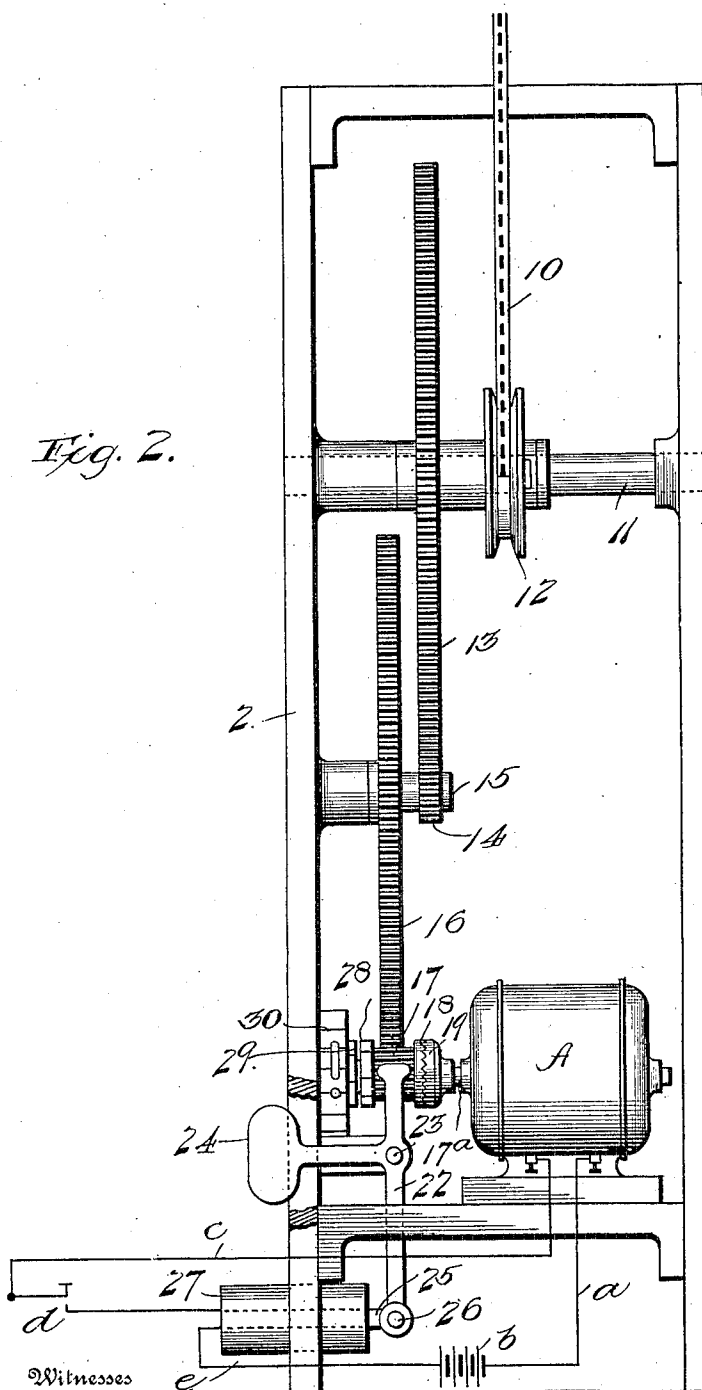
Inventor  
Harry M. Abernethy  
By James L. Skidmore  
his Attorney

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Inventor

Harry M. Abernethy

Witnesses

*P. L. Kockame*  
*James F. Crown*

By *James L. Skidmore*  
his Attorney

# UNITED STATES PATENT OFFICE.

HARRY M. ABERNETHY, OF CLEVELAND, OHIO, ASSIGNOR TO THE AMERICAN RAILWAY SIGNAL COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

## RAILWAY SEMAPHORE-SIGNAL.

No. 852,094.

Specification of Letters Patent.

Patented April 30, 1907.

Application filed December 7, 1905. Serial No. 290,742.

*To all whom it may concern:*

Be it known that I, HARRY M. ABERNETHY, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented new and useful Improvements in Railway Semaphore-Signals, of which the following is a specification.

This invention relates to semaphore signals, and one of the principal objects of the same is to provide simple, reliable, and efficient means for retarding the motion of the spectacle case and blade as they are brought to a stop to indicate the various signals.

Another object is to provide automatic mechanically operated means for retarding the motion and preventing the jar of the blade and spectacle case as they come to a stop to indicate danger.

Still another object is to provide an air brake or cushioning device for the purpose of preventing the jar of the blade and spectacle case.

These and other objects are attained by means of the construction illustrated in the accompanying drawings, in which—

Figure 1 is a side view of a semaphore signal embodying my invention; Fig. 2 is a front elevation of the brake mechanism and its operative parts; and Fig. 3 is a detail sectional view of the brake shaft, the brake, and the shiftable clutch devices.

Referring to the drawings for a more particular description of my invention, the numeral 1 denotes a hollow metal post or mast for supporting the operative parts of the semaphore, and 2 is a casing which may be used for containing the brake mechanism. This casing may be entirely or partially closed to the outside atmosphere.

At the upper end of the post 1 a hollow casting 3 is secured by means of tubular extensions 4, fitted to the post and firmly connected thereto. The casting 3 has a laterally extended hollow portion 5, within which a grooved quadrant sheave is mounted upon a squared part of a shaft 7, said shaft being journaled in the two walls of the hollow portion 5, the end of said shaft projecting beyond one of said walls being squared for the engagement of the spectacle case 8. The semaphore blade 9 is secured to the upper projecting end of the spectacle case casting, and the weight of the spectacle case is suffi-

cient to overcome the weight of the blade, and hence the tendency of the blade to come to a horizontal or danger position is constant under all conditions.

A cable or chain 10 is connected to the quadrant sheave 6, and extends down within the post 1 to the brake mechanism. Journaled in the casing or frame 2 is a shaft 11, and secured to said shaft is a grooved pulley 12, to which the lower end of the chain 10 is connected. Mounted at the side of the pulley 12, on said shaft 11, is a large gear wheel 13, which is arranged to mesh with a small pinion 14 on a stub shaft 15, projecting from the inner wall of the frame 2. Formed on or secured to the hub of the pinion 14, is a gear wheel 18, which meshes with a clutch pinion 17 mounted to slide upon and rotate with a shaft 17<sup>a</sup> extending laterally from one of the walls of the casing and frame 2. Upon one end of the pinion 17 is a toothed clutch disk 18 adapted to be engaged with a similar disk 19 on the motor shaft 17<sup>a</sup>. The clutch pinion 17 is shifted by the three armed lever 22, the upper end of which is enlarged to engage the inner faces of said pinion 17, as shown in Fig. 2.

The lever 22 is pivoted at 23 to a fixed portion of the frame 2 and upon the horizontal arm of the lever a weight 24 is formed which normally holds the clutch disks 18 and 19 separated. Upon the depending arm of the lever 22 a solenoid core 25 is pivoted at 26, said core extending into a solenoid 27.

Formed on the end of the clutch pinion 17 opposite the disk 18 is a friction face 28, designed to engage the oppositely disposed friction face 29, formed on the brake wheel 29' the latter being located within the hollow hub or casing of the fan or blower 30. This fan or blower may be of any suitable size and construction to accomplish the required purpose, but as shown in Fig. 3 of the drawings it will be seen that said fan or blower 30 is loosely supported on the shaft 17<sup>a</sup> and provided with a flange 35, and to said flange is suitably secured a series of fan blades or vanes 30'. The inner surface of the flange 35 is adapted to be engaged by the brake shoes 32 when they are thrown outward by the centrifugal force exerted by the rapid rotation imparted to the brake wheel, which is also carried by the shaft 17<sup>a</sup> whereby the

brake wheel, the fan and fan blades are caused to revolve together.

The semaphore blade may be stopped at the safety position by any suitable means.

5 From the motor A the conductor wire *a* extends through the battery *b* to the solenoid 27, while the conductor *c* extends from the motor to a key or switch *d* located in an operator's office or tower. From the key *d* 10 the circuit is completed by conductor *e* connected to the solenoid.

The operation of my invention may be described as follows:—The normal position of the spectacle case and blade is at the danger 15 point, owing to the weight of the spectacle case 8, and should any defect exist in the connections which would render them inoperative, the blade and spectacle case would come to the danger position by gravity. 20 When the key *d* is operated to complete the circuit and to start the motor, the solenoid 27 is energized and the core 25 is drawn into the solenoid, thus moving the upper end of the lever 22 and shifting the clutch pinion 17 25 to engage the clutch disks 18, 19, and to pull the chain 10 downward and to move the arm 9 downward to the safety position. When the solenoid 27 is demagnetized by the operation of the key *d*, the weight 24 shifts the lever 22 30 to move the clutch pinion 17, in reverse direction, thus engaging the friction faces 28, 29, and permitting the spectacle case to drop by gravity to move the blade 9 to a horizontal position. The weight of the spectacle 35 case then draws the chain 10 upward and rotates the fan 30, which regulates the movement of said blade and case in a manner to prevent the sudden jar when said parts come to a stop. Said fan also serves to remove the dead air from the casing, should 40 the parts be inclosed.

Various changes may be made in the general details of construction without departing from the spirit and scope of my invention.

45 I do not claim herein the combination of a friction brake and fan for preventing the blade from coming to a sudden stop, this subject-matter being claimed in a separate application filed of even date herewith, and 50 bearing Serial No. 290,741.

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

1. In a semaphore signal, the combination 55 of a spectacle case and blade pivotally connected to a suitable support, and adapted to

move to the danger position by gravity, means for moving said case and blade to other signal positions, and a revolving fan operated by the weight of the spectacle case 60 for preventing the blade and case from coming to a sudden stop at the danger position.

2. In a semaphore signal, a spectacle case and blade pivoted to a suitable support, and means to change the positions of said case 65 and blade to give signals, in combination with rotatable pneumatic means automatically operated by the downward movement of said blade and case.

3. In a semaphore signal, a spectacle case 70 and blade pivoted to a support, and means to operate said case and blade, in combination with a brake mechanism and a revolving fan automatically set in operation by the downward movement of said case and blade. 75

4. A railway semaphore signal, comprising a spectacle case and blade, a support for said case and blade, means for shifting said case and blade to give the required signals, a revolving fan or blower automatically set in 80 motion by the downward movement of said case and blade, and electrical means for starting and stopping said fan or blower.

5. A railway signal, comprising a spectacle case and blade pivoted to a suitable support, 85 electrical means for moving said case and blade to a position to indicate safety, means whereby the case and blade will assume a danger position automatically after each operation from the safety position, and a fan 90 operated by the movements of the case and blade.

6. A railway signal, comprising a weighted spectacle case, a blade secured thereto, said case being pivoted to a suitable support, 95 means for moving said case and blade to a position to indicate safety, means whereby the case and blade will assume a danger position automatically after each operation from the safety position, and a fan operated 100 by the weight of the case and blade.

7. In a semaphore signal, a pivoted spectacle case and blade, in combination with a brake mechanism for governing the movements of the case and blade, a revolving fan, 105 a motor, a clutch, and electrical connections for controlling the clutch, substantially as described.

HARRY M. ABERNETHY.

In presence of—

H. D. ABERNETHY,  
JOHN H. POWELL.