No. 759,835. PATENTED MAY 10, 1904.

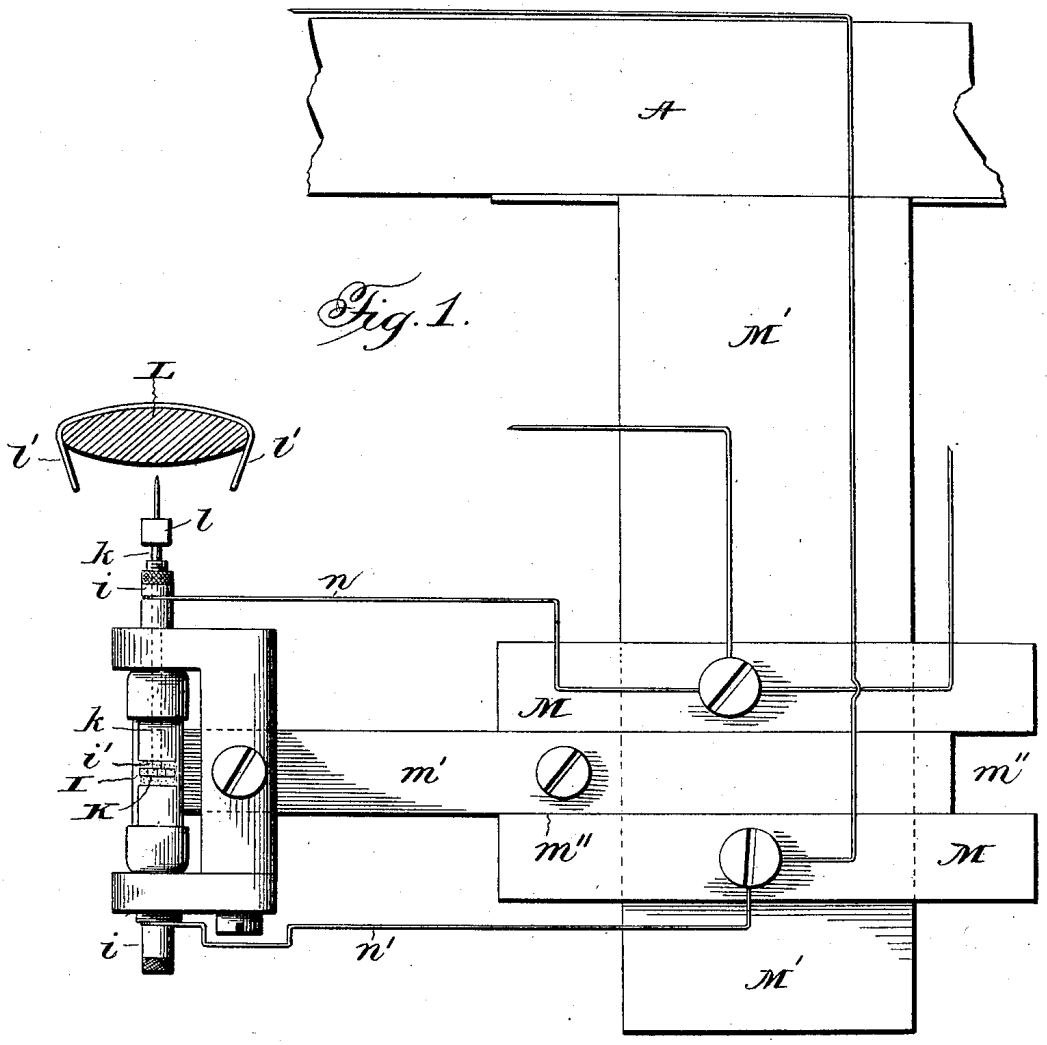
A. H. STEWART.

COHERER.

APPLICATION FILED OCT. 20, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.



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NO MODEL. 2 SHEETS—SHEET 2.

Fig. 2.

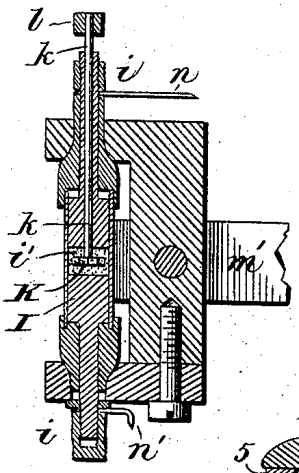


Fig. 3.

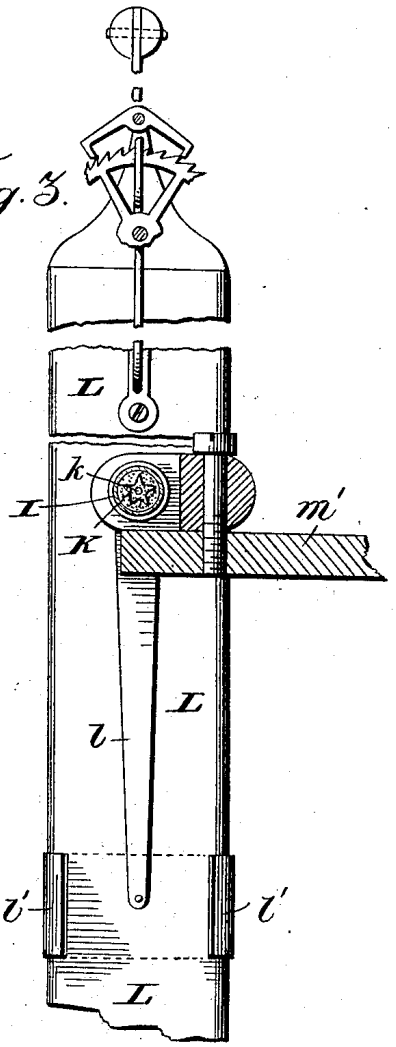


Fig. 4.

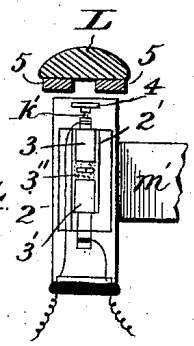


Fig. 6.

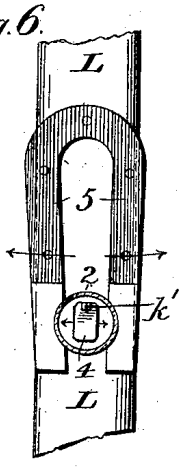


Fig. 5.

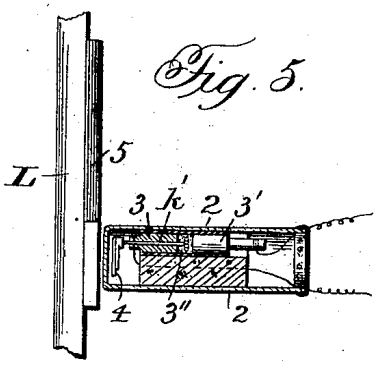
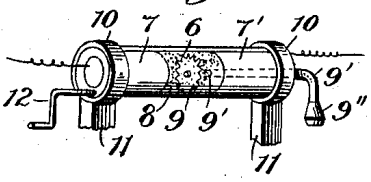


Fig. 7.



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No. 759,835. Patented May 10, 1904.

UNITED STATES PATENT OFFICE.

AUSTIN H. STEWART, OF NASHVILLE, TENNESSEE.

COHERER.

SPECIFICATION forming part of Letters Patent No. 759,835, dated May 10, 1904.

Original application filed June 18, 1903, Serial No. 162,113. Divided and this application filed October 20, 1903. Serial No. 177,755.
(No model.)

To all whom it may concern:

Be it known that I, AUSTIN HARMON STEWART, a citizen of the United States, residing at Nashville, in the county of Davidson and State of Tennessee, have invented certain new and useful Improvements in Coherers, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to improvements in coherers, and has for a primary object the provision of novel means for agitating and decohering the particles thereof, as have heretofore been disclosed in my companion patent application, Serial No. 162,113, filed June 18, 1903, of which case the present is a division.

The detailed description hereinafter when read in connection with the accompanying drawings, forming part hereof, and wherein convenient embodiments of the invention are illustrated, will facilitate the impartation of a clear and full understanding of the underlying principles of the invention and the many novel details of structural parts and combinations of elements incident to a perfected construction for carrying the invention into practical effect. It is to be expressly understood, however, that although certain disclosures are made herein it is in no sense the intention to be limited to any specific features of construction, but rather that their equivalents may be resorted to except in so far as any such features may be specifically included in the hereto appended claims.

In the drawings, Figure 1 is a plan view of a coherer and its immediately-associated parts. Fig. 2 is a longitudinal horizontal section of said coherer and its support. Fig. 3 is a transverse sectional view on the line 9 9 of Fig. 2 looking in the direction of the arrow to show particularly the star-wheel agitator for decohering the particles of the coherer. Fig. 4 is a top plan view of a slightly-modified form of coherer, adjacent parts being shown in section. Fig. 5 is a longitudinal vertical section of the same, associated parts being shown in edge elevation. Fig. 6 is a transverse section of Fig. 4 looking in the direction of the arrow, and Fig. 7 is a perspective view of a still further form of the coherer.

Referring more specifically to the drawings, wherein the coherers are shown as operatively associated with the pendulum of a clock, like reference characters refer to corresponding parts in the several views.

A designates the back board or plate of the clock to which the operating parts are affixed, it being unnecessary to herein refer to or illustrate the clockworks other than its pendulum, the latter being represented at L.

In the coherer shown in Figs. 1, 2, and 3, I designates a tube, conveniently of glass, and *i* designates the terminals suitably inserted into and secured at the ends of the tube, while *i'* represents the metallic granulated or powdered substance intermediate said terminals, such substance ordinarily consisting of proper proportions of nickel and silver filings. While the coherer is under the influence of Hertzian waves this metallic substance coheres as usual, and to partially decohere the same it has heretofore been suggested to tap, shake, or turn over the tube which contains the particles; but as compared with such methods that designed for the present purposes—*i. e.*, means operating on the interior of the tube for agitating and separating the particles—is a decided improvement.

Passing longitudinally through one of the terminals *i* and rotatable therein is a shaft *k*, carrying at its inner end a star-wheel agitator K, both said shaft and agitator being formed of ivory or other non-conductive material. The star-wheel or other agitator for the same may be of different shapes, is arranged within the space between the terminals *i*, together with the metallic powder or substance, and is operated through the medium of a crank *l*, rigidly fastened to the outer end of the shaft *k* and arranged to be oscillated by the pendulum-stem L as the latter vibrates from right to left in the performance of its regular function, an adjustable clip *l'* embracing said stem and projecting at its ends slightly forwardly therefrom, so as to alternately engage and swing the crank *l* in the direction of movement of the pendulum. To secure the best results, the crank *l* should be initially centered between the ends of the clip *l'*, Fig.

1, and to this end the coherer is adjustab relative to the pendulum, the adjustment being afforded by a U-shaped bracket carrying the coherer, the bracket being in turn secured to a bar m', slidable laterally relative to the pendulum in a groove or guideway m'' of a block M, supported upon a bracket M', secured to the backboard or plate A. A wire n leads from one of the terminals i of the coherer, while a similar wire n' leads from the opposite end thereof.

In Figs. 4, 5, and 6 the modified form of coherer shown comprises a sealed glass shell 2, constituting a casing, an inner glass tube 2', and the terminals 3 and 3', fitted to and projecting into said tube, the metallic powder 3'' being interposed therebetween. Suspended from the outer end of the shaft k' is a depending magnetized metallic plate 4, which is so related to a magnet 5, carried by the pendulum-stem L, that as said stem oscillates the plate being constantly attracted thereby will follow the back-and-forth movement of the magnet, thereby imparting the desired movement to the star-wheel.

In the other form of the coherer (illustrated in Fig. 7) the characteristic feature resides in the fact that the tube is rotatable relative to the agitator rather than vice versa, as in the preceding embodiments. In this figure 6 is the glass tube; 7 7', the terminals therein; 8, the metallic powder; 9, the star-wheel agitator, and 9' the operating-shaft thereof. The tube is loosely mounted in rings 10, secured to the supporting-standards 11, and projecting outwardly from one end of said tube is a crank 12, arranged to project between the ends of the clip l', carried by the pendulum-stem L, in the same manner that the crank l projects between said ends of the clips in Fig. 1. The result of this present construction is that as the pendulum vibrates the crank will rotate the tube 6 in the rings 10, and to effect the agitation of the metallic particles, which of course shift slightly with the tube, the star-wheel is held practically stationary by a depending weight 9'' at the outer end of its shaft 9', the constant tendency of said weight being to maintain its center of gravity.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is—

1. In a coherer of the character described comprising the tube, terminals, and metallic substance, an agitator within the tube, and a shaft for operating said agitator.

2. In a coherer of the character described comprising the tube, terminals, and metallic substance, an agitator within the tube engaging the metallic substance therein, and a shaft for operating the said agitator.

3. In a coherer of the character described comprising the tube, terminals, and metallic substance, an agitator within the tube, and a crank-shaft for operating said agitator.

4. In a coherer of the character described comprising the tube, terminals, and metallic substance, an agitator within the tube engaging the metallic substance therein, and a crank-shaft for operating said agitator.

5. In a coherer of the character described comprising the tube, terminals, and metallic substance, an agitator within the tube, and means independent of the terminals for operating the agitator.

6. In a coherer of the character described comprising the tube, terminals, and metallic substance, an agitator within the tube engaging the metallic substance therein, and means independent of the terminals for operating the agitator.

7. In a coherer of the character described comprising the tube, terminals, and metallic substance, an agitator within the tube, and a crank-shaft for operating said agitator, in combination with a vibratory device for actuating said crank-shaft.

8. In a coherer of the character described comprising the tube, terminals, and metallic substance, an agitator within the tube engaging the metallic substance therein, and a crank-shaft for operating said agitator, in combination with a vibratory device for actuating said crank-shaft.

9. In a coherer of the character described comprising the tube, terminals, and metallic substance, an agitator within the tube, and a crank-shaft for operating said agitator, in combination with means for actuating said crank-shaft.

10. In a coherer of the character described comprisir[illegible] the tube, terminals, and metallic substance, an agitator within the tube engaging the metallic substance therein, and a crank-shaft for operating said agitator, in combination with means for actuating said crank-shaft.

11. In a coherer of the character described comprising the tube, terminals, and metallic substance, an agitator within the tube, and a crank-shaft for operating said agitator, in combination with a clock-pendulum operatively associated with the crank-shaft for operating the same.

12. In a coherer of the character described comprising the tube, terminals, and metallic substance, an agitator within the tube engaging the metallic substance therein, and a crank-shaft for operating said agitator, in combination with a clock-pendulum operatively associated with the crank-shaft for operating the same.

13. In a coherer of the character described comprising the tube, terminals, and metallic substance, a star-wheel agitator within the tube and engaging the metallic substance therein.

14. In a coherer of the character described comprising the tube, terminals, and metallic substance, a star-wheel agitator within the

tube engaging the metallic substance therein, and means for moving the one relative to the other.

15. In a coherer of the character described comprising the tube, terminals, and metallic substance, a star-wheel agitator within the tube, and means for moving the one relative to the other.

16. In a coherer of the character described comprising the tube, terminals, and metallic substance, an agitator within the tube, a shaft therefor, and means for moving the shaft or tube relative to each other.

17. In a coherer of the character described comprising the tube, terminals, and metallic substance, an agitator within the tube engaging the metallic substance therein, a shaft therefor, and means for moving the shaft or tube relative to each other.

18. In a coherer of the character described comprising the tube, terminals, and metallic substance, an agitator within the tube, and means connected to the agitator and operable independently of the terminals for operating the agitator.

19. In a coherer of the character described comprising the tube, terminals, and metallic substance, an agitator within the tube engaging the metallic substance therein, and means connected to the agitator and operable independently of the terminals for operating the agitator.

20. In a coherer of the character described comprising the tube, terminals, and metallic substance, an agitator within the tube, and a crank whereby the one may be shifted relative to the other.

21. In a coherer of the character described comprising the tube, terminals, and metallic substance, a star-wheel agitator within the tube, and a crank whereby one may be shifted relative to the other.

22. In a coherer of the character described comprising the tube, terminals, and metallic substance, an agitator within the tube engaging the metallic substance therein, and a crank whereby the one may be shifted relative to the other.

23. In a coherer of the character described comprising the tube, terminals, and metallic substance, a star-wheel agitator within the tube and engaging the metallic substance therein, and a crank whereby the one may be shifted relative to the other.

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

AUSTIN H. STEWART.

Witnesses:

VERNER M. JONES,

J. V. CROCKETT.