

No. 788,199.

PATENTED APR. 25, 1905.

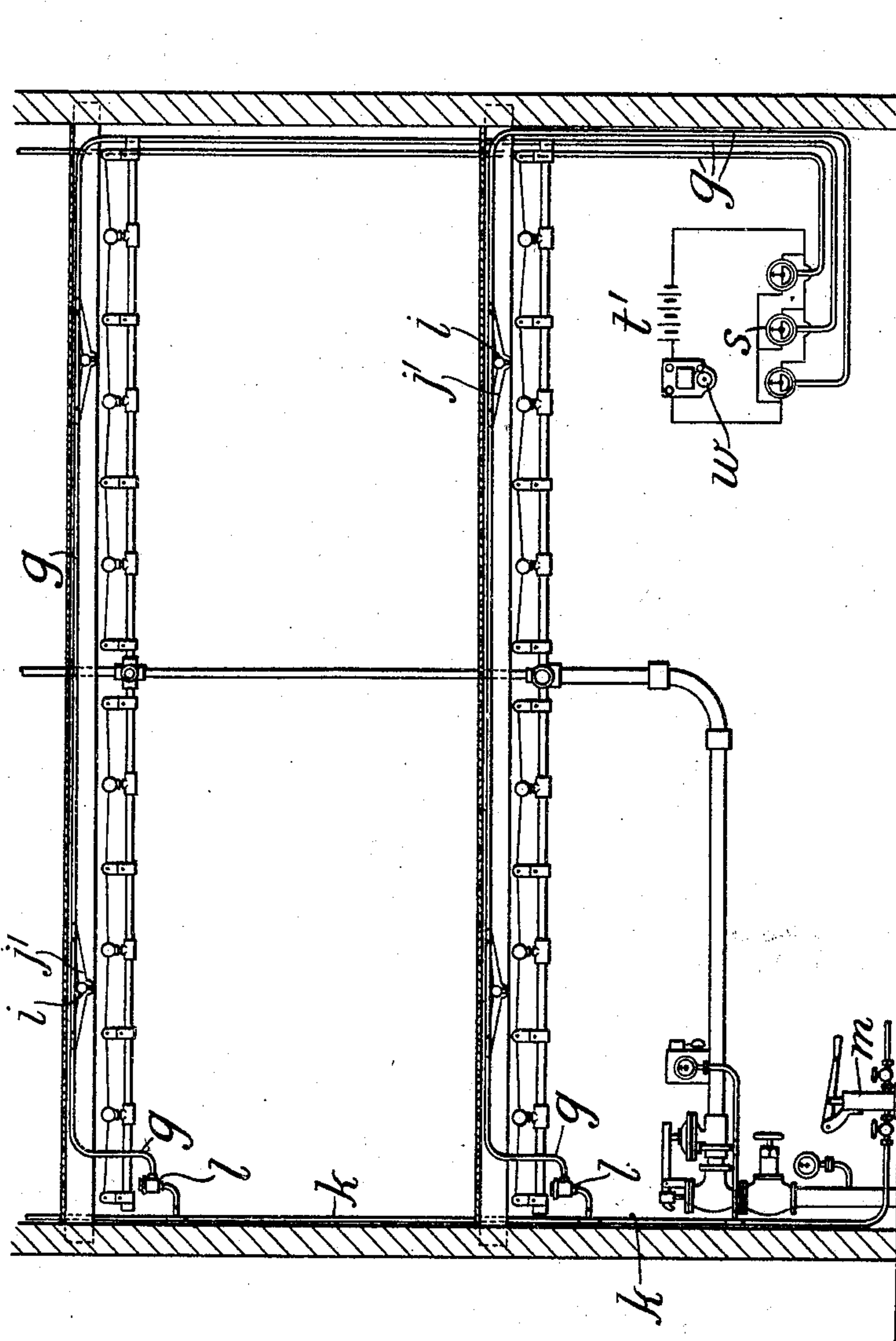
J. FIDDES & J. F. WATT.

FIRE ALARM.

APPLICATION FILED JAN. 23, 1905.

3 SHEETS—SHEET 1.

Fig. 1.



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3 SHEETS—SHEET 2.

Fig. 2.

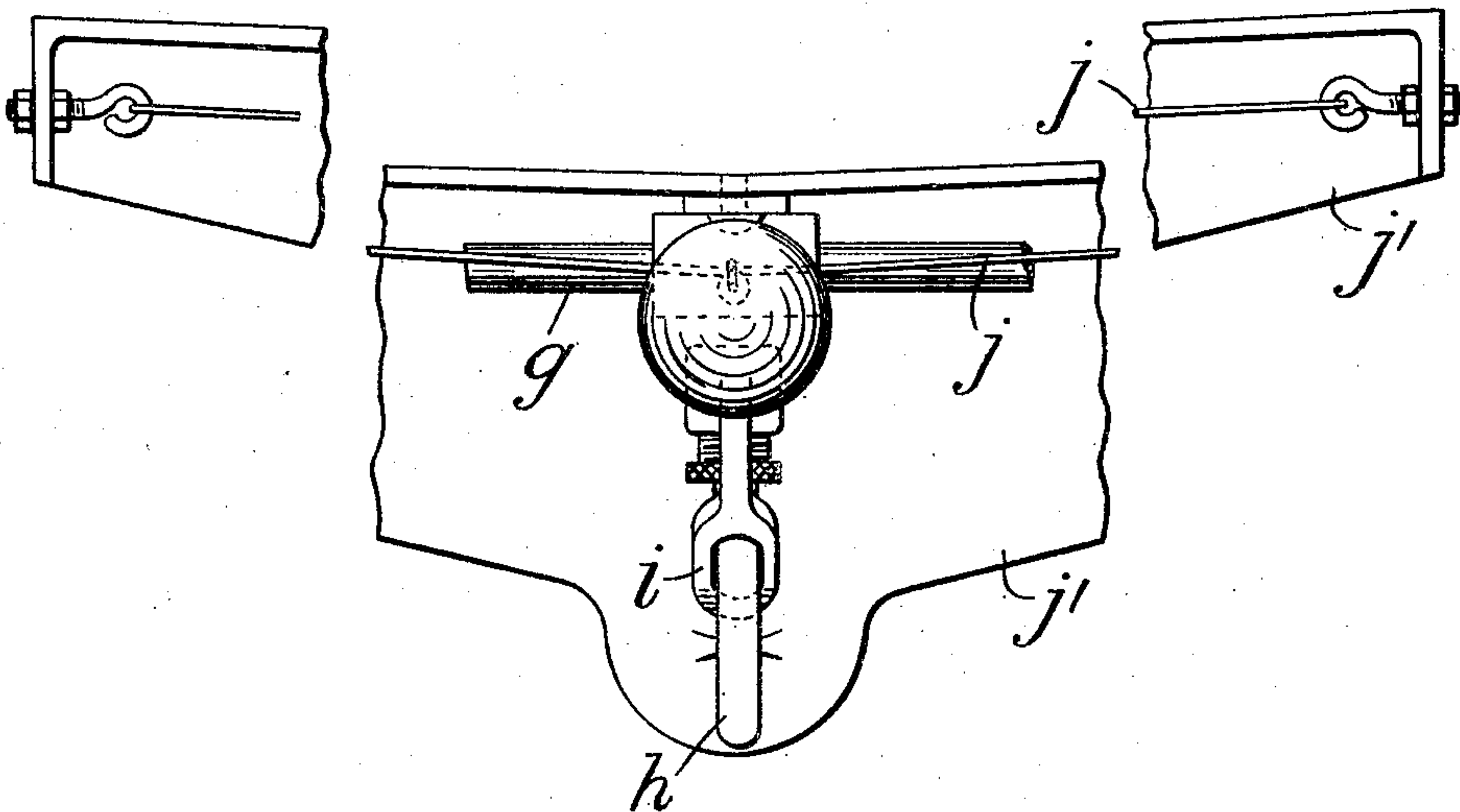
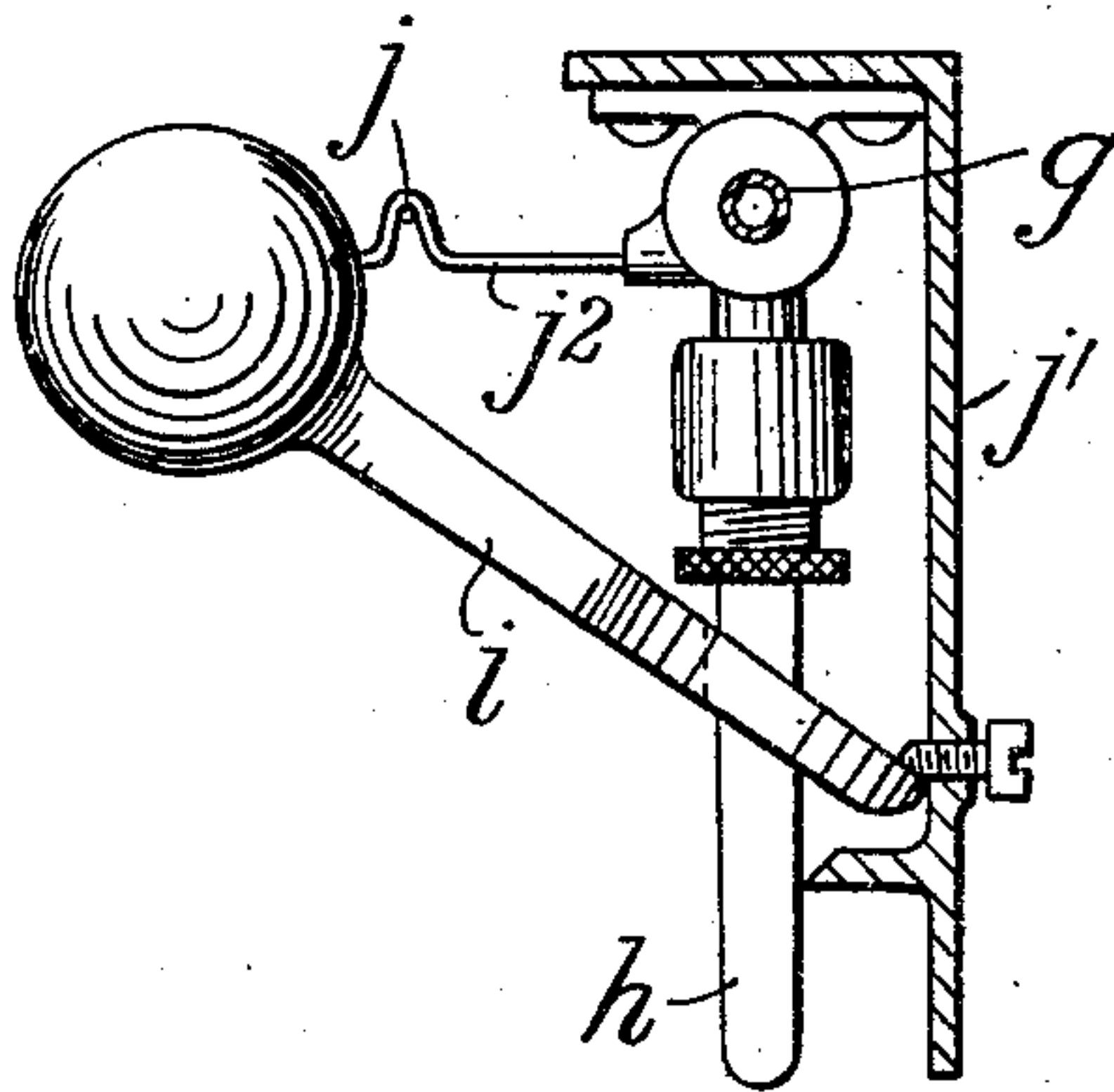


Fig. 3.



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3 SHEETS—SHEET 3.

Fig. 4.

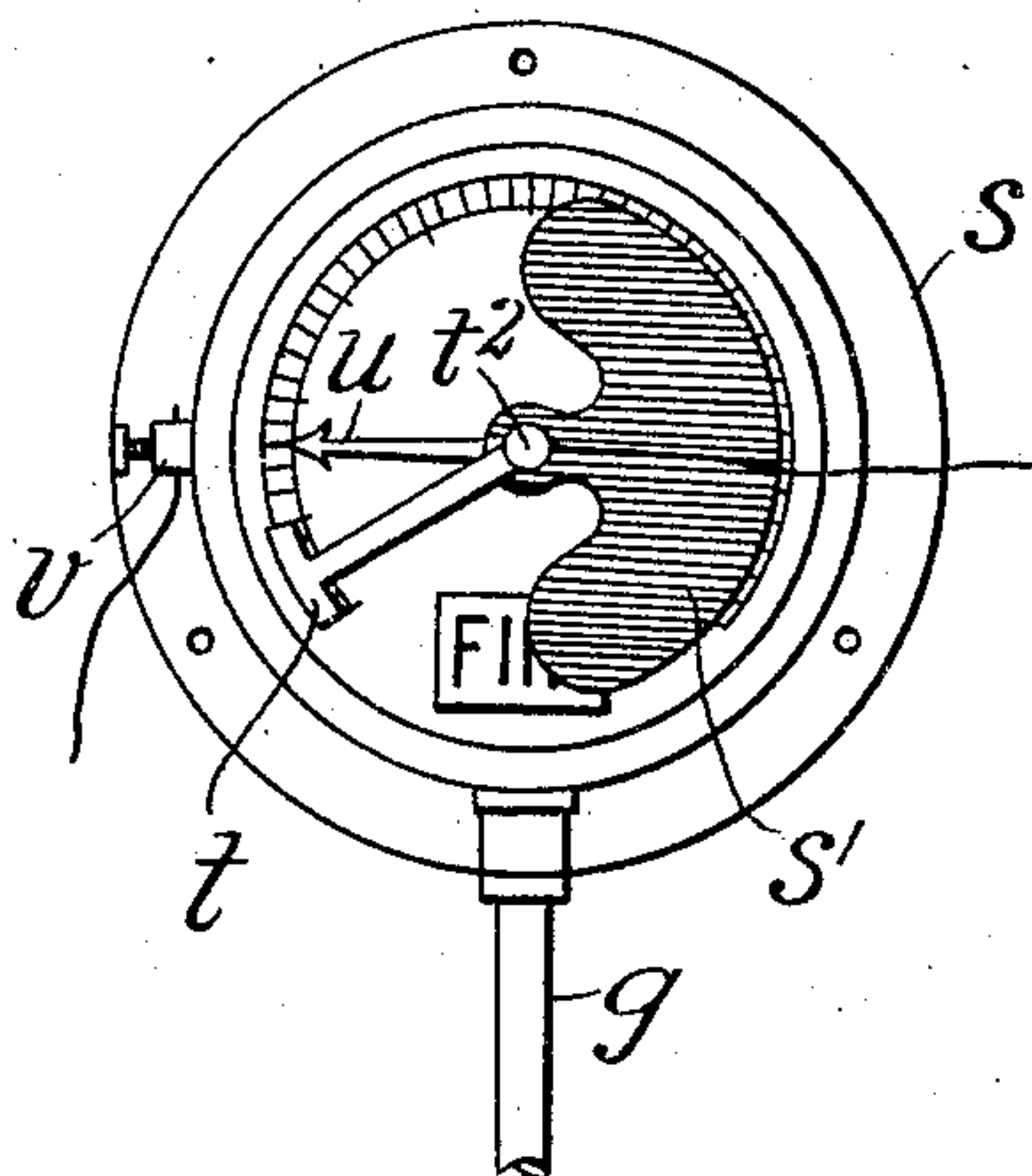
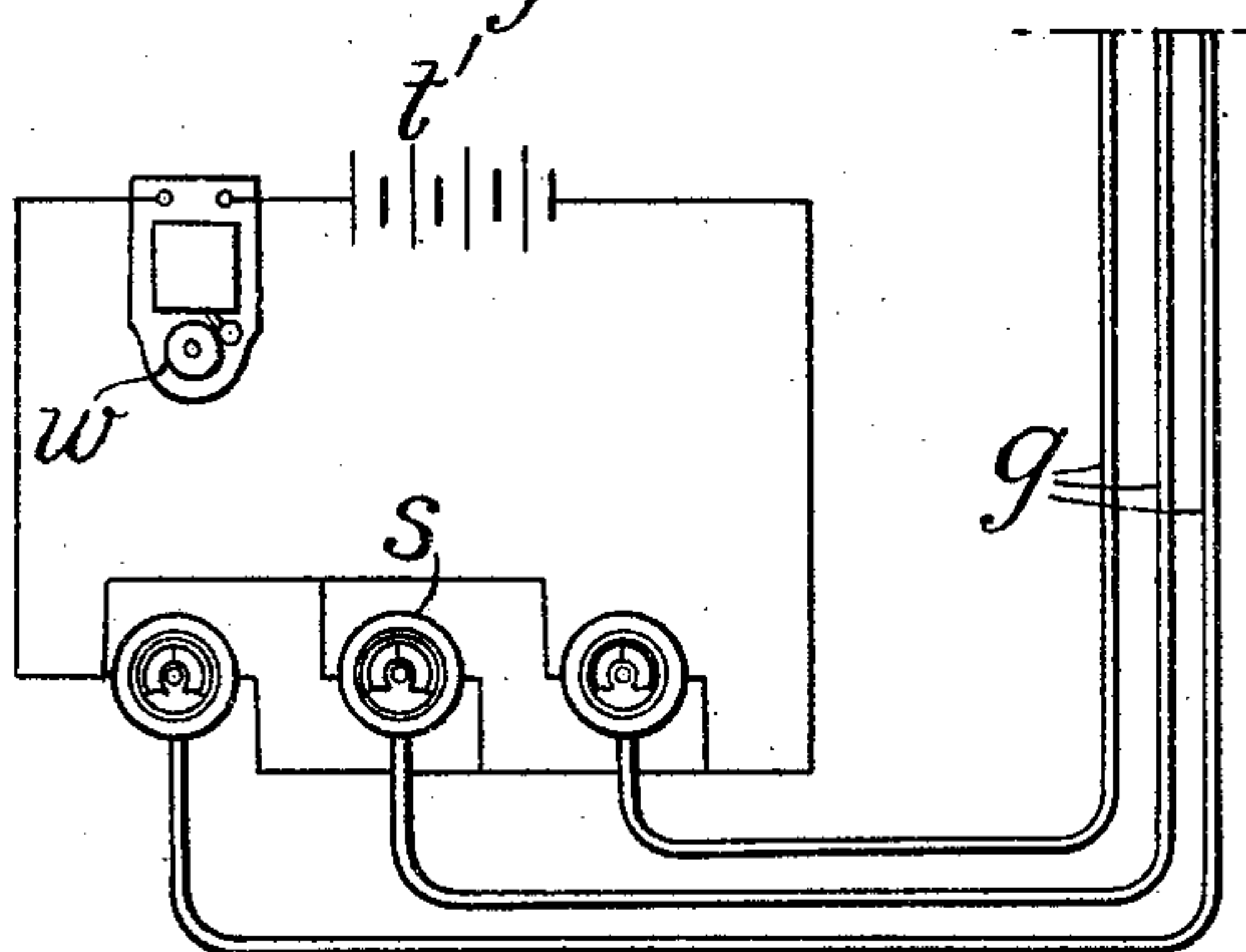


Fig. 5.



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UNITED STATES PATENT OFFICE.

JAMES FIDDES AND JOHN FORDYCE WATT, OF ABERDEEN, SCOTLAND.

FIRE-ALARM.

SPECIFICATION forming part of Letters Patent No. 788,199, dated April 25, 1905.

Application filed January 23, 1905. Serial No. 242,344.

To all whom it may concern:

Be it known that we, JAMES FIDDES and JOHN FORDYCE WATT, subjects of the King of the United Kingdom of Great Britain and Ireland, and residents of Aberdeen, in the county of Aberdeen, Scotland, have invented certain new and useful Improvements in Fire-Alarms, of which the following is a specification.

This invention relates to an alarm system for indicating and locating the outbreak of fire in a building or part of a building; and it comprises compressed-air tubing with frangible outlets which are automatically broken on the occurrence of fire to permit escape of compressed air, whereby an indicator is operated to close an alarm-bell circuit.

In the accompanying drawings, which illustrate the invention, Figure 1 is a part sectional elevation, more or less diagrammatic, of an automatic fire-alarm installation disposed in rooms on different floors of a building. Figs. 2 and 3 are respectively side elevation and end view showing the automatic means for breaking a frangible outlet. Fig. 4 is a detail view showing the combined visual indicator and pressure-gage, and Fig. 5 shows diagrammatically a set of such indicators connected to the respective air-tubes with an electrical circuit that is automatically closed when the pressure falls in any one of the air-tubes.

In Fig. 1 the alarm-system is shown combined with a fire-extinguishing system which is more fully described in the specification of our copending application for patent, Serial No. 242,343. As set forth in said application, alongside each branch water-pipe is led a seamless brass or other metal tube *g*, filled with compressed air. Corresponding to each set of sprinkler discharge-boxes on the water-pipe is provided a frangible outlet in the air-tubing, said frangible outlet preferably taking the form, as shown in Figs. 2 and 3, of a closed glass tube or hollow dome or bulb *h*, which closes an opening in the tubing. Surrounding said dome *h* is a slotted lever supported by means of a pin *j*² from a wire *j*, stretched between the ends of a bent metal plate *j*¹, the expansion of said wire and consequent tilting of the pin *j*² acting to release said lever *i* so as to fracture said dome, and thus permit escape of compressed air from

the tubing *g*. The tubes *g* are each connected to a common air-duct *k*, a back-pressure valve *l* being fitted to the tube *g* for each floor of the building, so as to prevent escape of air from any tube in a part of the building not affected by fire. All the tubes are filled with compressed air by means of an air-pump *m* or the like. Each of said tubes *g* extends from the main duct *k* to a combined pressure-gage and signal device. (Shown more fully in Figs. 4 and 5.) On each dial of each gage *s* is printed in red upper-case letters the word "Fire," and keyed on the stem of the index-pointer *u* and turning therewith is a black shutter or covering-shield *s*¹, which when the pressure falls within the air-tube *g* moves sufficiently far round to uncover the word "Fire." There being one indicator for each floor or part of a building, it is thus at once seen where the fire has arisen.

A hammer-shaped contact-piece *t*, connected through a terminal *t*² on the outer face of the glass to one pole of a battery *t*¹, is mounted on the inner face of the gage-glass, insulated from the metal-work, and radially disposed in such position that on the pointer *u* being turned, owing to undue fall of pressure in the tube *g*, a spring at the end of said pointer bearing against said contact-piece closes an electrical circuit, passing through a terminal *v* on the gage *s* to the other pole of the battery *t*¹ and through bell connections to sound the alarm *w*, which may be located either without or within the building. While it is preferred to combine in one instrument the pressure-gage, visual signal, and electrical alarm, the visual signal may be used alone or with an alarm without the pressure-gage.

The alarm system herein described may be adapted in connection with the sprinkler apparatus described in our copending application Serial No. 242,343; but obviously it may be used alone or combined with any other form of sprinkler system.

Having now described our invention, what we claim, and desire to secure by Letters Patent of the United States, is—

1. In an automatic fire-alarm system, in combination, a main air-duct, means for supplying said air-duct with compressed air, branch air-tubes connected to said air-duct,

back-pressure valves fitted in said branch air-tubes, indicators connected to said air-tubes, a frangible outlet in each tube, automatic means for fracturing said frangible outlets on abnormal rise of temperature to permit escape of air from said tube, and an electrical bell-circuit closed on actuation of any of said indicators, substantially as described.

2. In an automatic fire-alarm system, in combination, tubing filled with compressed air, a frangible outlet in said tubing, a stretched wire, means actuated on expansion of said wire to fracture said frangible outlet to permit escape of air, and an alarm actuated on reduction of pressure in said tubing, substantially as described.

3. In an automatic fire-alarm system, in combination, air-tubing filled with compressed air, a frangible outlet in said tubing, a taut metallic wire, a weight maintaining said wire under tension and on its release due to expansion of said wire destroying said frangible outlet, and an alarm actuated on reduction of pressure in said tubing.

4. In an automatic fire-alarm system, in combination, air-tubing filled with compressed air, a frangible outlet in said tubing, a metallic wire, a weight, a catch supporting said weight from said wire and adapted to release said weight on expansion of said wire to destroy said frangible outlet, and an alarm actuated on reduction of pressure in said tubing.

5. In an automatic fire-alarm system, in combination, air-tubing filled with compressed air, a frangible outlet in said tubing, a metallic wire, adjustable supports for said wire, a weight, a catch supporting said weight from said wire and adapted to release said weight on undue rise of temperature to fracture said connection and an alarm actuated on reduction of pressure in said tubing.

6. In an automatic fire-alarm system, in combination, air-tubing filled with compressed air, a frangible outlet in said tubing, a metallic wire, a weighted lever, a pin supporting said lever from said wire and adapted on expansion of said wire to release said lever so as to fracture said outlet, and an alarm actuated on reduction of pressure in the tubing.

7. In an automatic fire-alarm system, in combination, air-tubing filled with compressed air with an opening for escape of air, a glass tube closed at one end and normally preventing escape of air, a stretched wire, a weight supported by said wire but released on expansion of said wire to fracture said closed tube, and an alarm actuated on reduction of pressure in said tubing.

8. In an automatic fire-alarm system, in combination, air-tubing filled with compressed air with an opening for escape of air, a glass tube closed at one end normally preventing escape of air, a stretched metal wire, a jointless weighted lever having a slot embracing said closed tube, said lever being supported

by said wire but released on expansion of said wire to break said closed tube, and an alarm actuated on reduction of air-pressure in the tubing.

9. In an automatic fire-alarm system, in combination, air-tubing filled with compressed air with an opening for escape of air, a glass tube closed at one end normally preventing escape of air, a stretched wire, a weighted lever supported by said wire and having a slot embracing said closed tube, a pin supporting said lever from said wire and adapted to release said lever on undue expansion of said wire, and an alarm actuated on reduction of pressure in said tubing.

10. In an automatic fire-alarm system, in combination, a plurality of air-tubes filled with compressed air, a frangible outlet in each tube, stretched wires, means adapted on undue expansion of said wire to fracture said frangible outlets and a gage connected to each tube and comprising a marked dial and a pivoted shutter turned on undue fall of pressure in said tube to uncover a mark on the dial.

11. In an automatic fire-alarm system, in combination, a plurality of air-tubes filled with compressed air, a frangible outlet in each tube, stretched wires, weights supported from said wires but released on undue expansion of said wires to fracture said outlets and a gage connected to each tube comprising a marked dial and a shutter turned on undue fall of pressure in said tube to uncover a mark on said dial.

12. In an automatic fire-alarm system, in combination, a plurality of tubes filled with compressed air, a frangible outlet in each tube, stretched wires, weighted levers and catches supporting said levers from said wires but releasing said levers on undue expansion of said wires to fracture said outlets and an indicator connected to each tube comprising a marked dial and a shutter turned on fall of pressure in said tube to uncover a mark on said dial.

13. In an automatic fire-alarm system, in combination, a plurality of air-tubes filled with compressed air, a frangible outlet in each tube, stretched wires, weighted levers and catches supporting said levers from said wires, but releasing said levers on undue expansion of said wires to fracture said outlets, an electrical bell-circuit and a gage connected to each tube comprising a marked dial, a pivoted shutter and a pointer serving on its turning movement due to fall of pressure in the tube to close said circuit.

14. In an automatic fire-alarm system, in combination, an air-duct, branch air-tubes, back-pressure valves in said tubes, an air-pump, frangible outlets in said tubes, stretched wires, devices released on expansion of said wires to fracture said outlets and an alarm operated on escape of air from said air-tubes.

15. The improved automatic fire-alarm system, comprising, in combination, an air-duct,

branch air-tubes, back-pressure valves in said tubes, frangible outlets in each tube, stretched wires, weighted levers, catches supporting said levers from said wires but releasing the levers
5 on undue expansion of said wires to fracture said outlets, an electrical bell-circuit and a combined gage and indicator device connected to each tube and operated on fall of pressure in said tube to close said circuit.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

JAMES FIDDES.

JOHN FORDYCE WATT.

Witnesses:

WALLACE FAIRWEATHER,
W. HOWIESON.