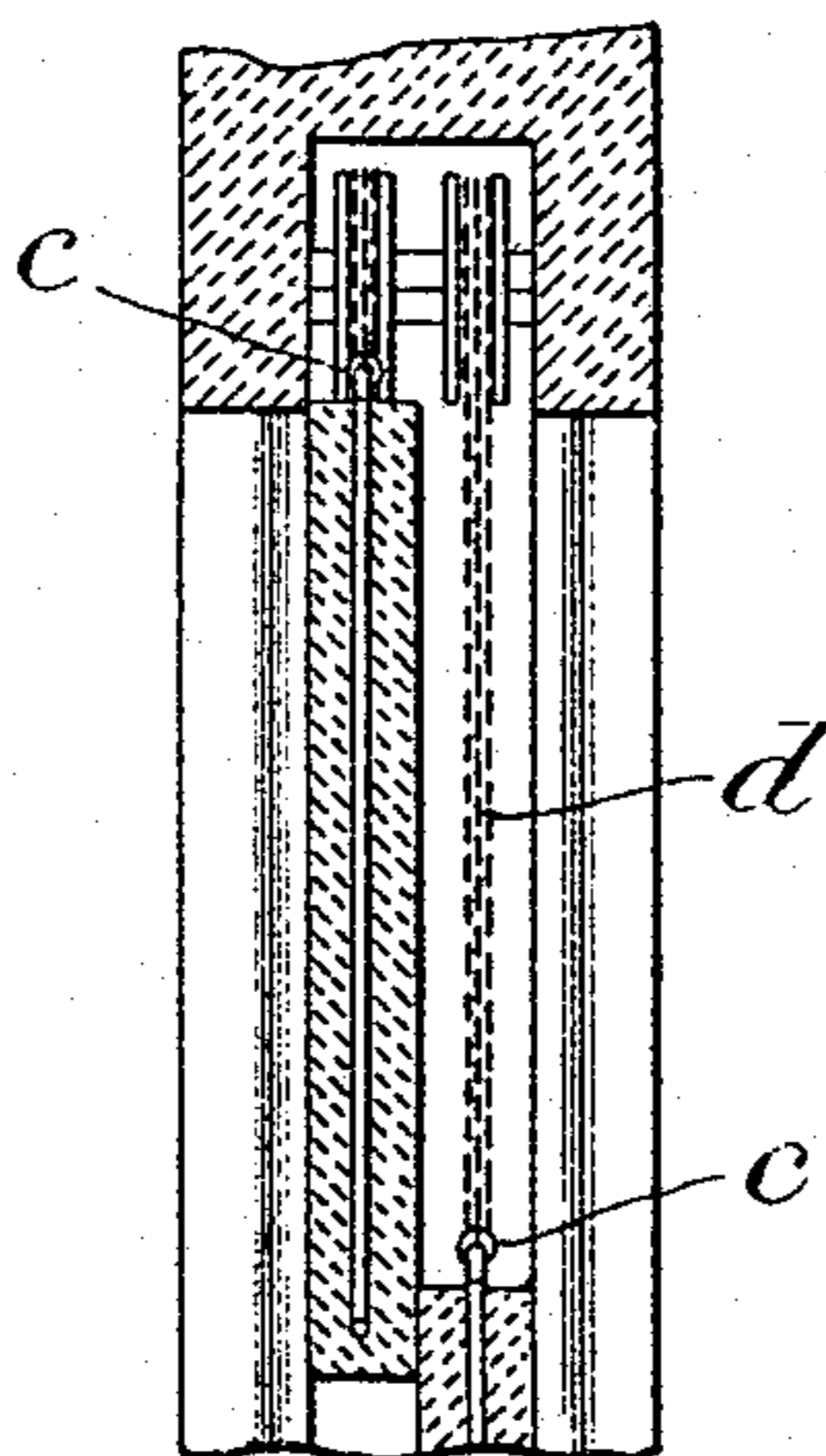
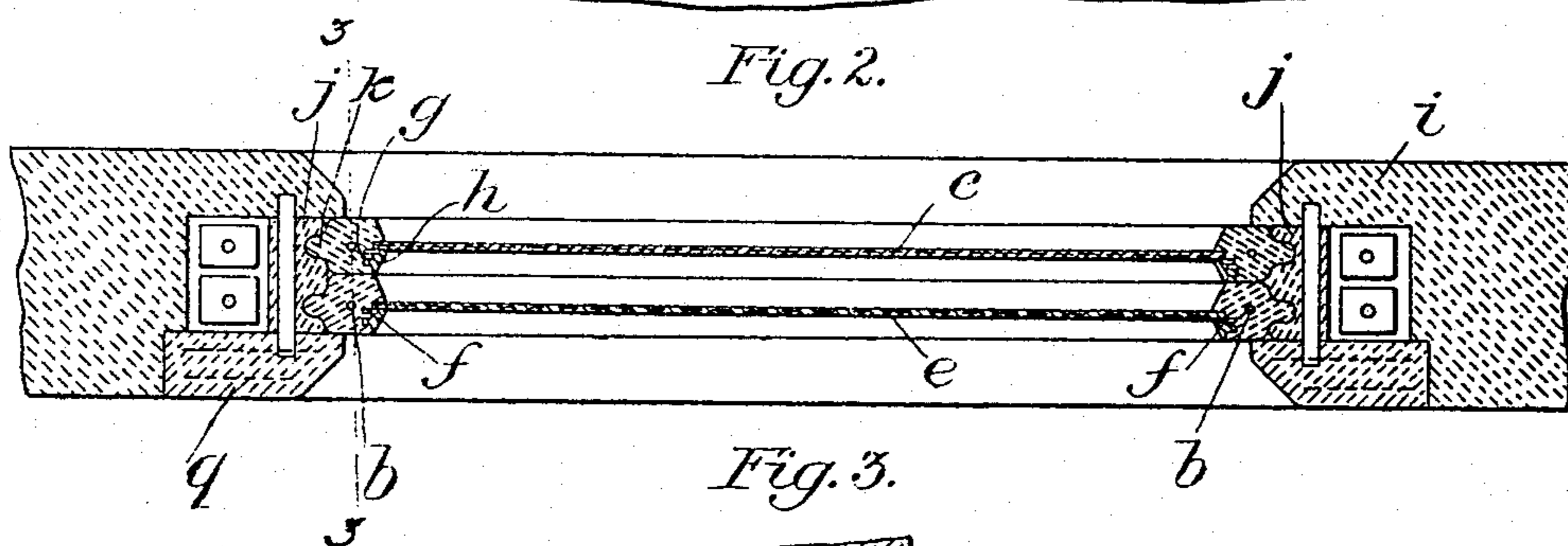
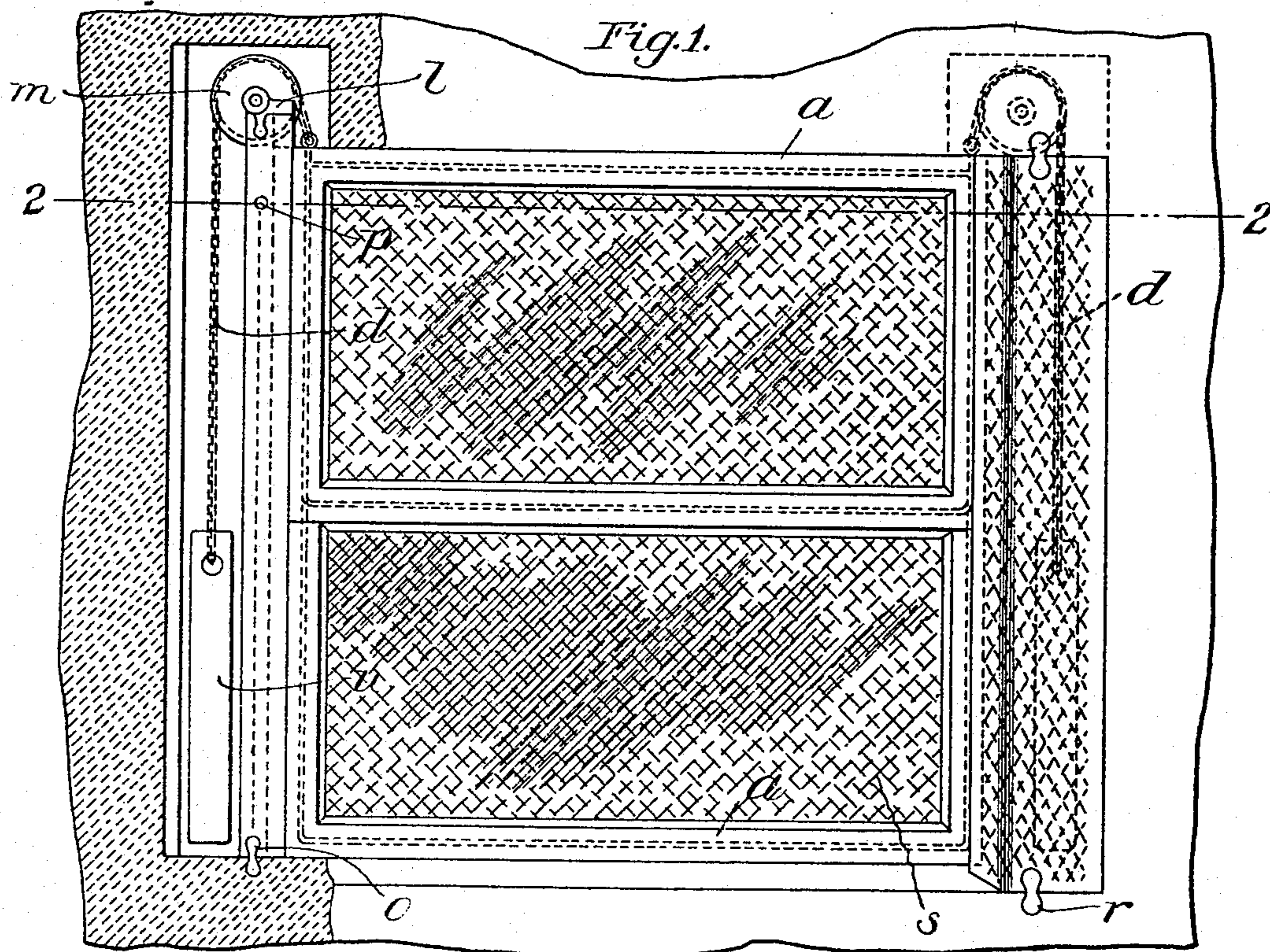


No. 835,241.

PATENTED NOV. 6, 1906.

F. B. GILBRETH.
CONCRETE WINDOW CONSTRUCTION.

APPLICATION FILED MAY 9, 1905.



Witnesses:
Horace A. Crossman
Ernest S. Emery.

Inventor:
Frank B. Gilbreth
by Emory Booth Cornell
Attys

2068
x 2353
1256
1539
1059
x 1575

UNITED STATES PATENT OFFICE.

FRANK B. GILBRETH, OF NEW YORK, N. Y.

CONCRETE WINDOW CONSTRUCTION.

No. 835,241.

Specification of Letters Patent.

Patented Nov. 6, 1906.

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To all whom it may concern:

Be it known that I, FRANK B. GILBRETH, a citizen of the United States, residing at New York, in the borough of Manhattan, county and State of New York, have invented an Improvement in Concrete Window Construction, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

My invention consists in improvements in building construction, and particularly in providing a window construction largely or wholly of concrete, thereby extending the possibilities of fireproof concrete construction and eliminating all or a large part of the combustible woodwork heretofore employed in connection with window construction even on buildings otherwise constructed wholly of concrete.

My invention will be best understood by reference to the following specification, taken in connection with the accompanying illustration of one specific embodiment thereof, while its scope will be pointed out in the appended claims.

In the drawings, Figure 1 is an elevation, partially in section, showing one embodiment of my invention in the form of an ordinary vertically-slidable window-sash. Fig. 2 is a section on the line 2 2 in Fig. 1, and Fig. 3 is a section on the line 3 3, Fig. 2.

In the drawings I have shown my invention as embodied in upper and lower sashes *a a* of the conventional rectangular single-panel type. In the illustrated embodiment of my invention each sash is formed of molded concrete or the like, any suitable metallic reinforcement, if desired, such as indicated at *b*, being molded into each member of the sash when formed to give increased strength and rigidity thereto. The vertical members of this reinforcement may and preferably do project above each sash at the sides thereof to present the exteriorly-exposed fastening-eyes *c*, to which may be attached the weight-holding chains *d*, thereby connecting the sash-weights directly with the interiorly-molded reinforcement of the sash.

The glass-receiving portion of the sash is formed to receive the appropriately-dimensioned pane *e*, there being formed, however,

in the body of the sash a suitable crevice *f* or series of crevices to receive the usual glaziers' points which are employed for temporarily holding glass in position before cementing the same in place.

Instead of the putty usually employed for holding the glass in place I may and preferably do make use of concrete for this purpose, and in order that the same may have firm adherence when applied I form one or more locking-grooves *g* in the body of the sash, so that the concrete (shown at *h*) may enter into the said grooves when applied for retaining the pane in position.

If the building to which my invention is applied is constructed of concrete, the sill and lintel for the window may be molded out of the material of the building itself. In the drawings I have shown the window-jamb formed each of a separate and removable piece of concrete *j*. These are designed to guide the sashes as the latter are slid vertically up or down and for this purpose are provided with suitable vertically-arranged grooves adapted to receive and fit the projecting vertical ribs *k*, formed on the sides of each sash. These ribs, as well as all parts of the concrete construction, are molded with rounded edges to avoid the chipping or fracture of the material. Each jamb-piece carries at its upper end molded therein a pair of metal journals *l*, and on these are journaled the weight-rollers *m*, over which pass the weight-chains *d*, carrying the weights *u*, the latter being suspended in a molded space formed between the jamb-pieces and the material of the building.

The jamb-pieces may be fitted and retained in position in any desired manner—as, for example, at the lower end by the wedge or key piece *o*, which is forced into an appropriately-molded opening, partly in the concrete of the building and partly in the concrete of the jamb, and at its upper end by the dowel-pin *p*. The wedge *o* and the dowel-pin *p*, if desired, may be made to fit somewhat loosely, so that the jamb after being placed in position may be adjusted somewhat to suitably fit the window-sash and then fixed in its adjusted position, either removably so, or by cementing, or in any other desired manner.

After the jamb has been placed in position it may be covered by the retaining member *q*, also of concrete, partially overlying the lower sash and acting, therefore, in conjunction with the jambs and a corresponding overlying portion of the building itself at the front of the window to serve as the window-frame. The retaining member *q* may be fitted into position by means of concrete wedges or keys *r* and when adjusted to a fit may be cemented or otherwise fastened in place.

If desired, the glass may be strengthened for fireproofing or any other desired purpose by the interiorly-molded reinforcement shown at *S*.

While I have herein shown one specific embodiment of my invention for illustrative purposes, it is to be understood that it is not limited to the details shown, but that many modifications may be made in the described embodiment thereof without departing from the spirit of my invention.

I claim—

1. In a building construction the combination with a molded concrete window-sash, of a reinforcement therefor molded within the same, but presenting an exteriorly-exposed attached member.
2. In a building construction the combination with a molded interiorly-reinforced concrete window-sash, of molded concrete window-jambs therefor.
3. In a building construction the combination with a molded reinforced concrete window-sash, of a molded concrete window-frame therefor.
4. In a concrete building having a window-opening, a molded concrete window-sash fitting the concrete formation of said window-opening.
5. In a concrete building having a window-opening, a sliding molded concrete window-sash fitting the concrete formation of said opening.
6. In a building construction the combination with a molded concrete window-sash, of a removable molded reinforced concrete jamb fitted thereto.
7. In a building construction the combination with a molded concrete window-sash of a removable molded concrete jamb and a molded concrete retaining member for said jamb.
8. In a building construction the combination with a concrete wall having a window-opening therein, of a concrete window-sash therefor.
9. In a building construction the combination with a concrete wall having a window-opening therein, of a slidably-mounted concrete window-sash therefor.
10. In a building construction the combination

with a molded wall, having a molded opening therein, of a concrete window-sash fitting the said opening and weights for said sash movable in a molded recess in said wall.

11. In a building construction a concrete wall having a molded window-opening therein and provided with a weight-receiving recess also molded in the wall.

12. In a building construction a molded interiorly-reinforced concrete window-sash.

13. In a building construction a concrete wall having a window-opening therein and having a pulley-recess molded in said opening.

14. A molded concrete window-sash having rounded guiding-ribs molded in the concrete edges thereof.

15. A molded concrete window-sash having molded rounded concrete edges.

16. In a building construction a window having a molded concrete sash and a reinforced pane.

17. In a building construction a window having a reinforced concrete sash and a reinforced pane.

18. In a building construction a concrete window-sash provided with one or more retaining-recesses for the glazier's points molded into the concrete material of the sash.

19. In a building construction a concrete window-sash provided with a pane and a cement-retaining recess adjacent the edges of the pane molded into the concrete of the window-sash sides.

20. In a building construction a concrete window-sash having molded therein a recess to retain the glass-holding cement.

21. In a building construction a molded concrete window-sash having a cemented window-pane.

22. In a building construction a molded concrete window-sash having a cemented window-pane and a locking-recess molded into the sash to retain the cement.

23. In a building construction a concrete wall having a molded window-opening with beveled edges and a concrete window-sash for said opening said sash having also beveled or rounded edges.

24. In a building construction the combination with a concrete wall having a window-opening therein, of a concrete window-sash and weight-supporting pulleys having journals molded into the concrete of the wall.

25. A building construction comprising a monolithic concrete window-sash having lateral interiorly-reinforced frame members provided with beveled edges and concrete jambs for the sash, there being provided between the jambs and the adjacent frame members rounded grooves and cooperating ribs for guiding the sash vertically.

26. A monolithic concrete window-sash
having a molded shoulder to receive the
pane, said shoulder presenting an outwardly-
beveled face and one or more locking-recesses
5 molded into the body of the concrete on the
opposite side of the pane to lock the glass-
retaining cement.

In testimony whereof I have signed my
name to this specification in the presence of
two subscribing witnesses.

FRANK B. GILBRETH.

Witnesses:

L. M. GILBRETH,
FREDERICK L. EMERY.