

A. CLARK.  
COLLAPSIBLE GATE.  
APPLICATION FILED MAR. 16, 1904.

3 SHEETS—SHEET 1.

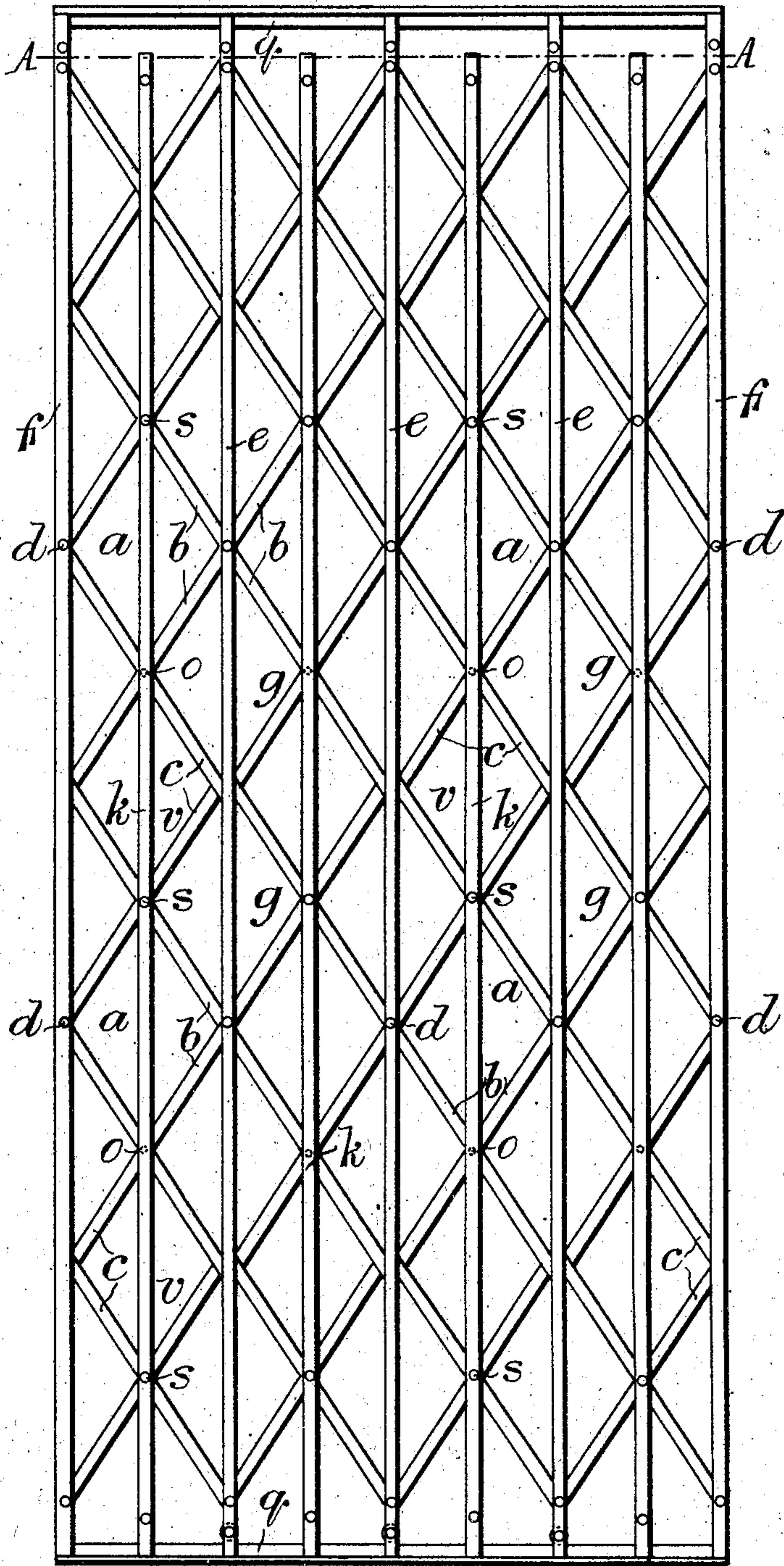


Fig. 1.

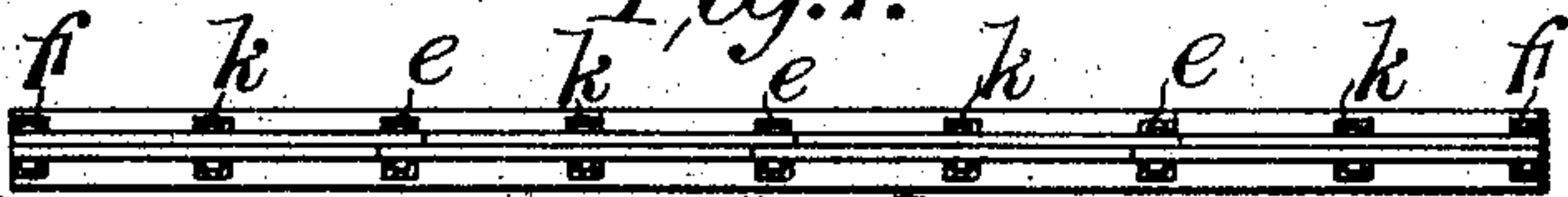


Fig. 2.

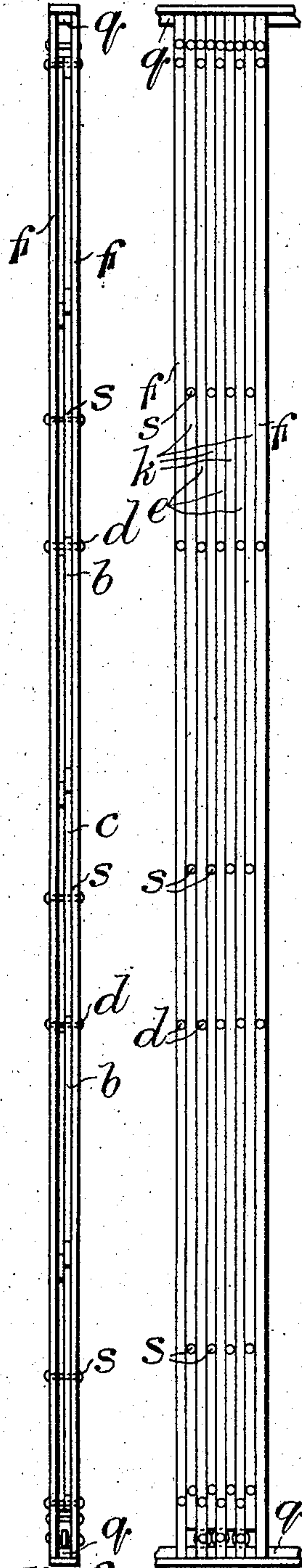


Fig. 3.

Fig. 4.

Witnesses,  
Howard D. Orr.  
H. J. Piley.

Inventor,  
Alfred Clark,  
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3 SHEETS—SHEET 2.

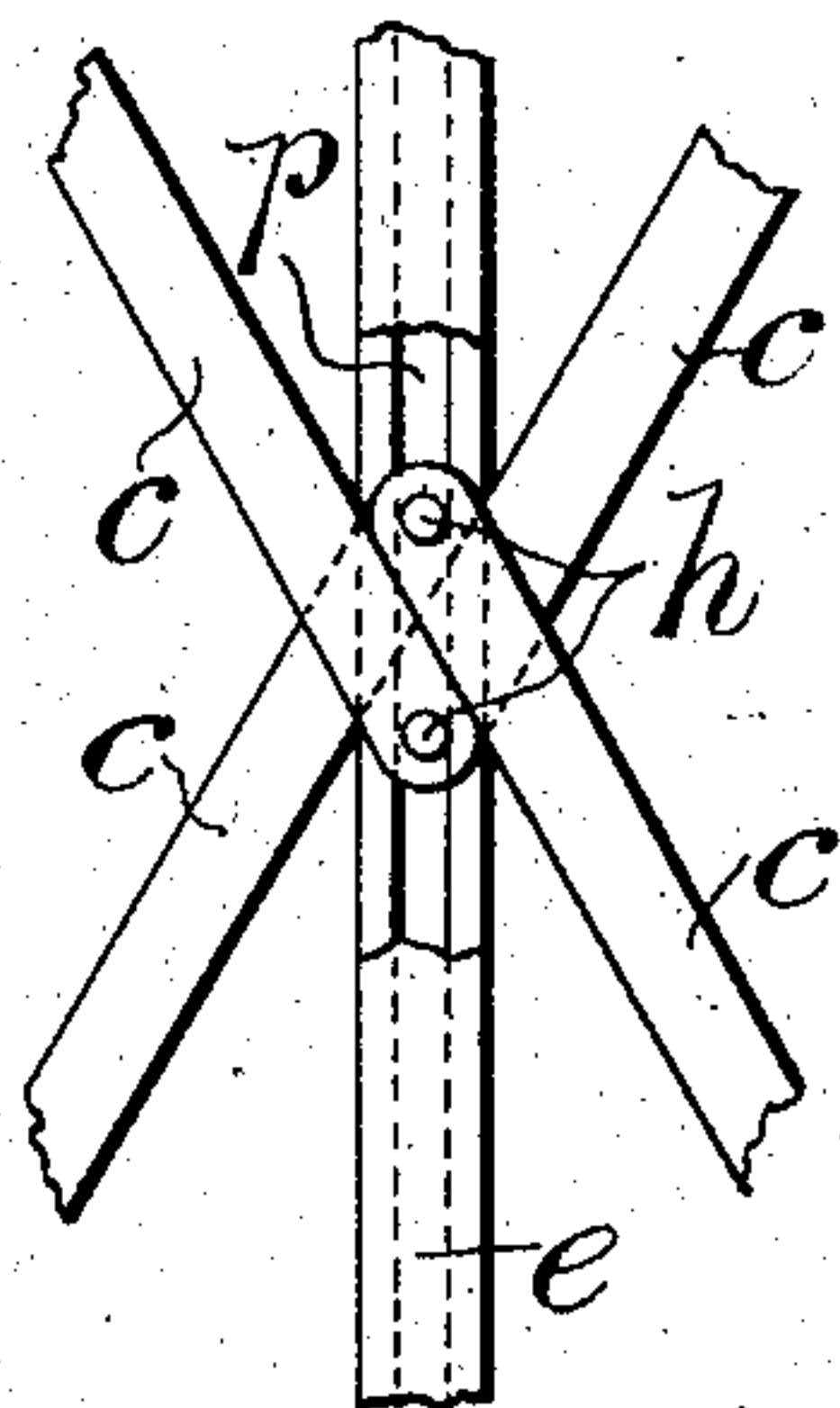
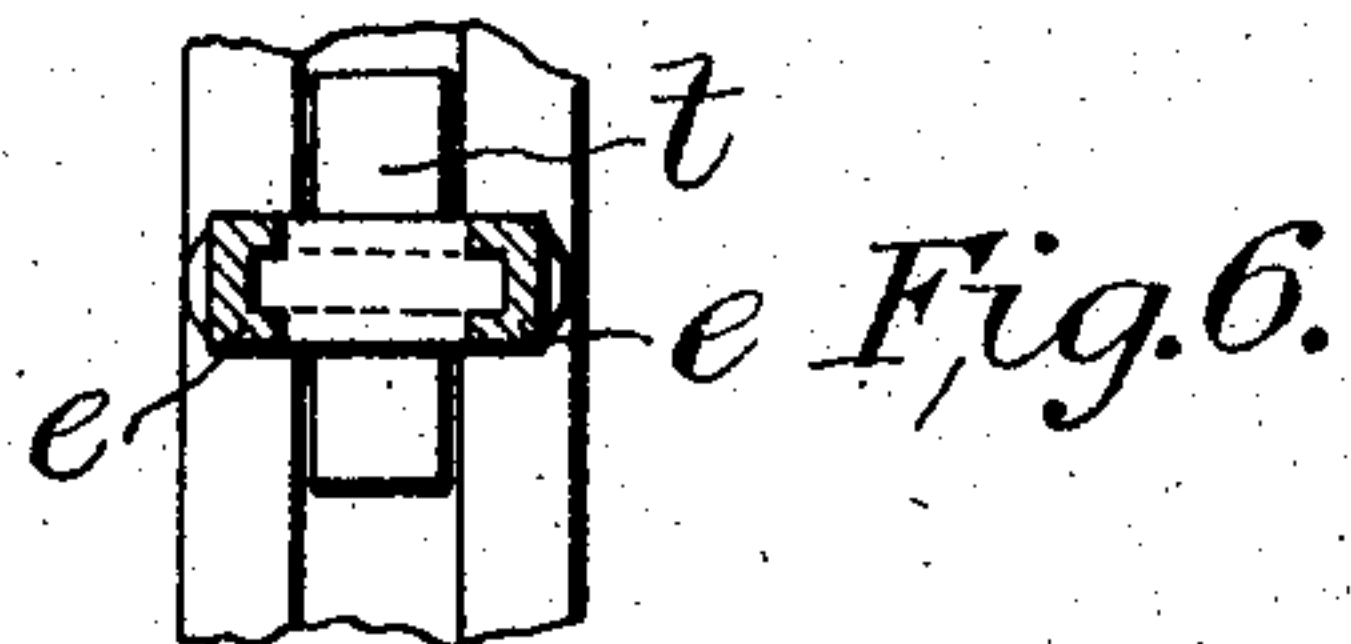
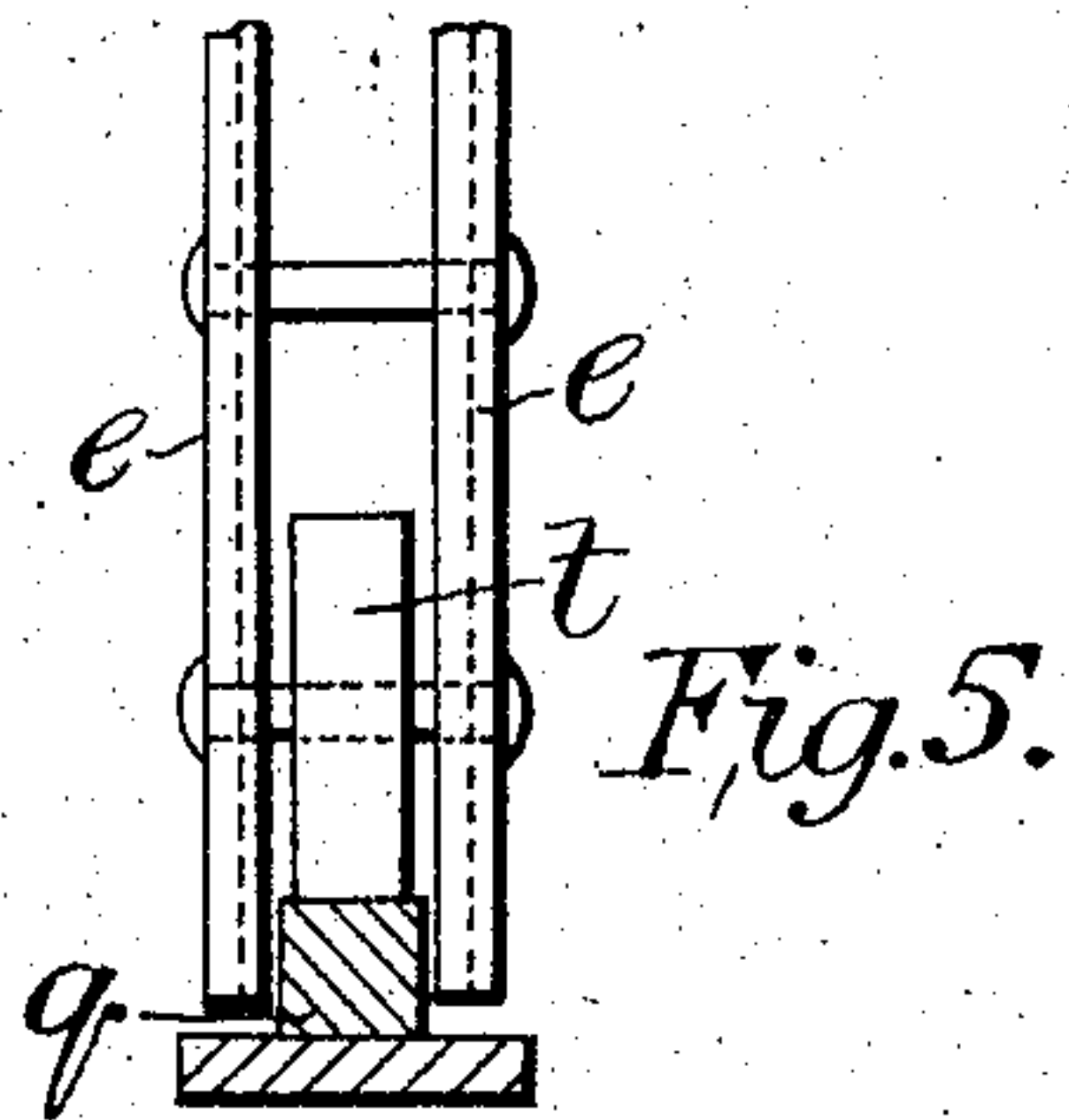


Fig. 7.

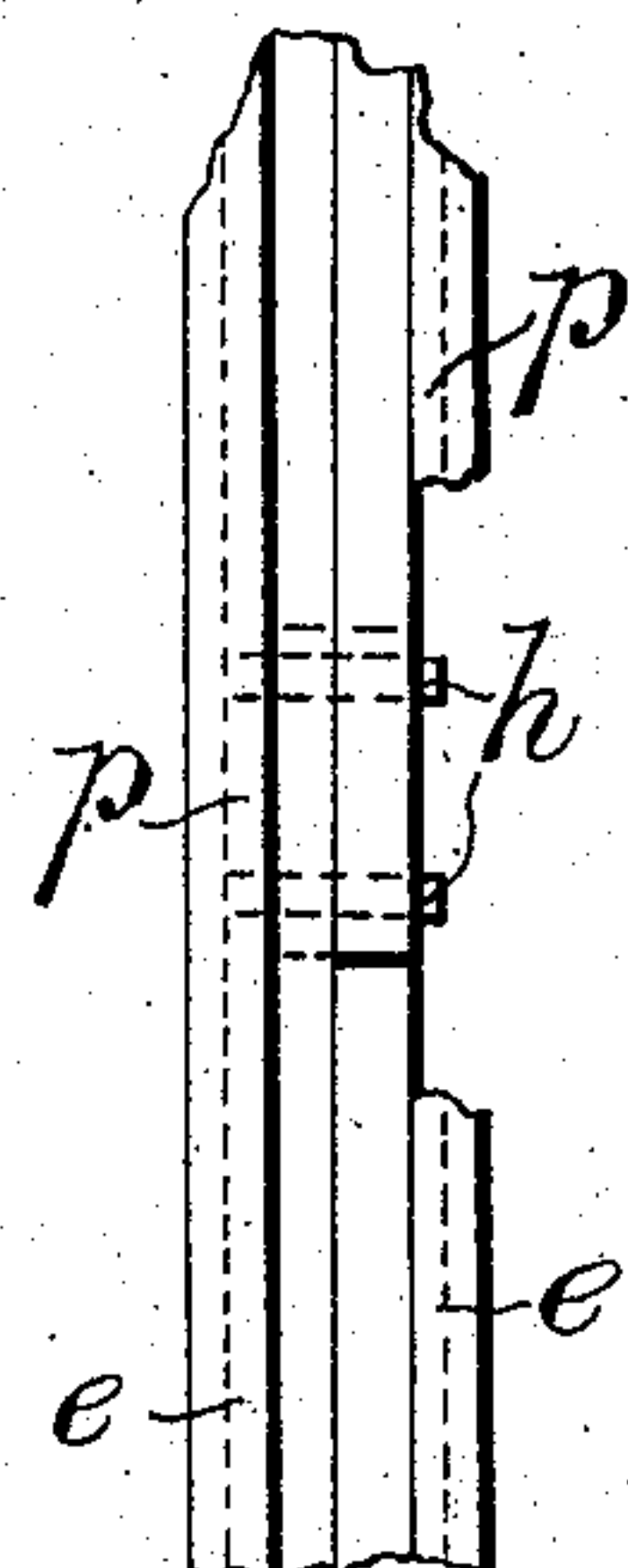


Fig. 8.

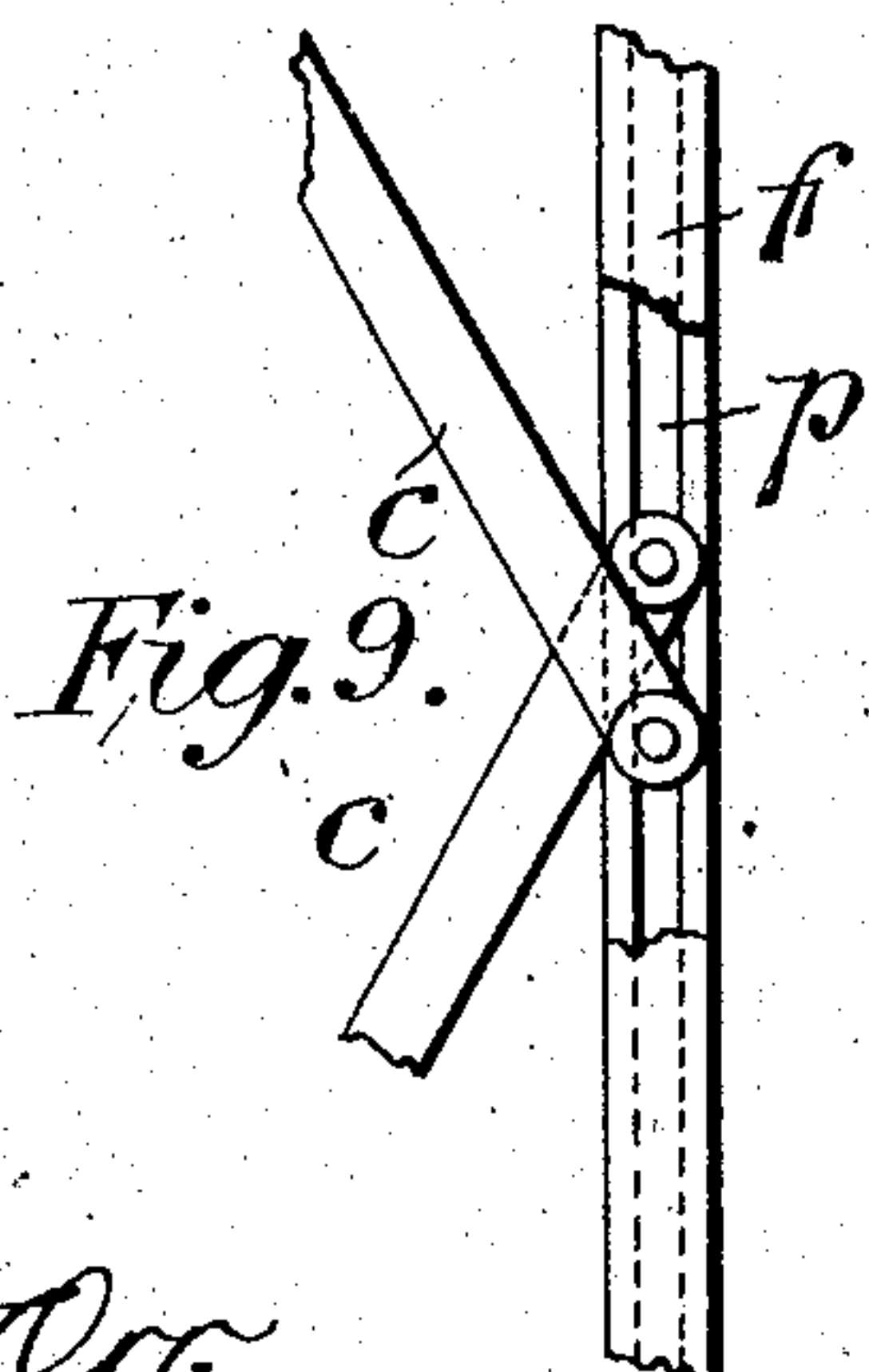


Fig. 9.

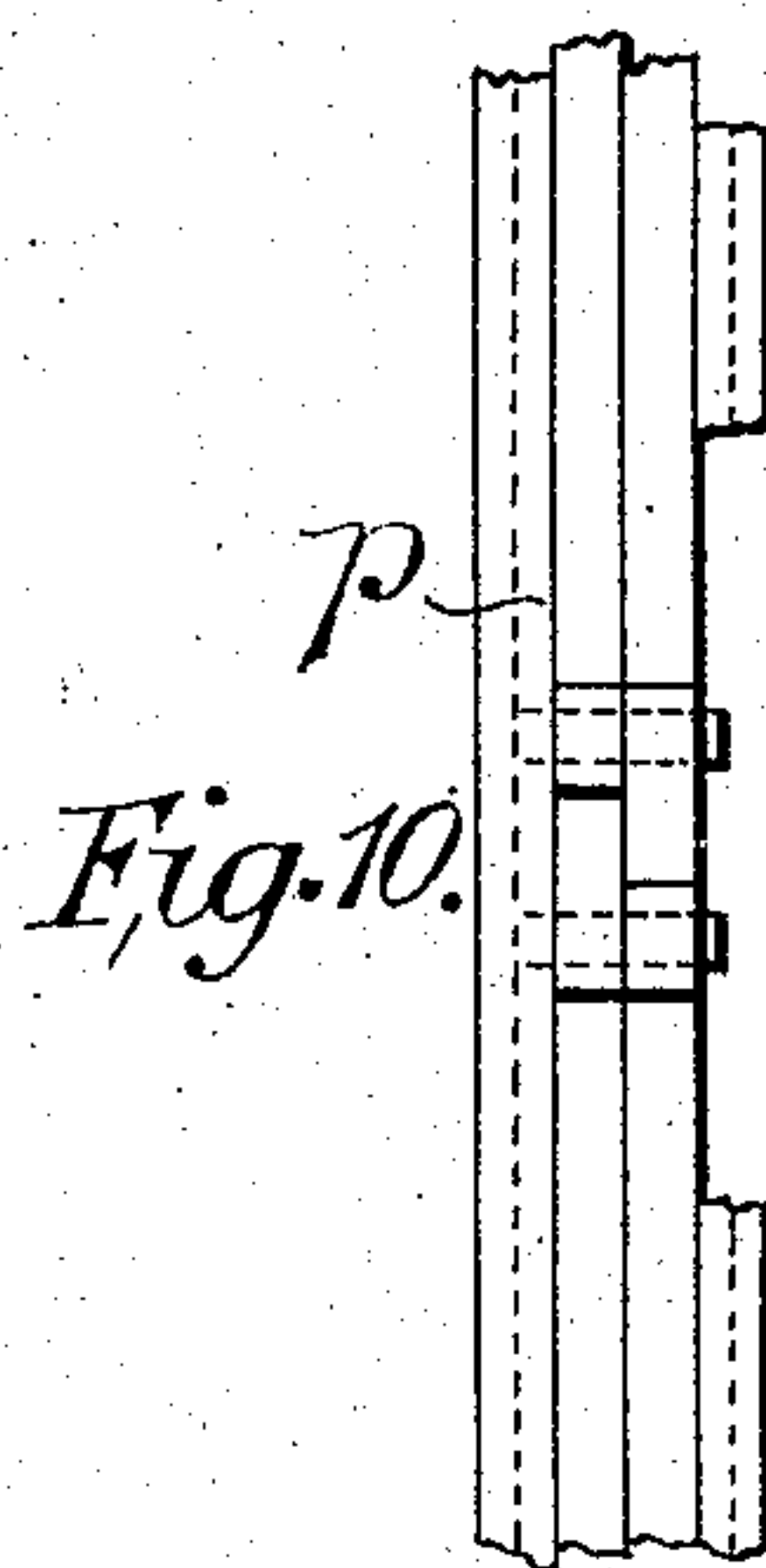


Fig. 10.

Witnesses,  
Howard D. Orr.  
St. J. Riley.

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Alfred Clark,  
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No. 786,951.

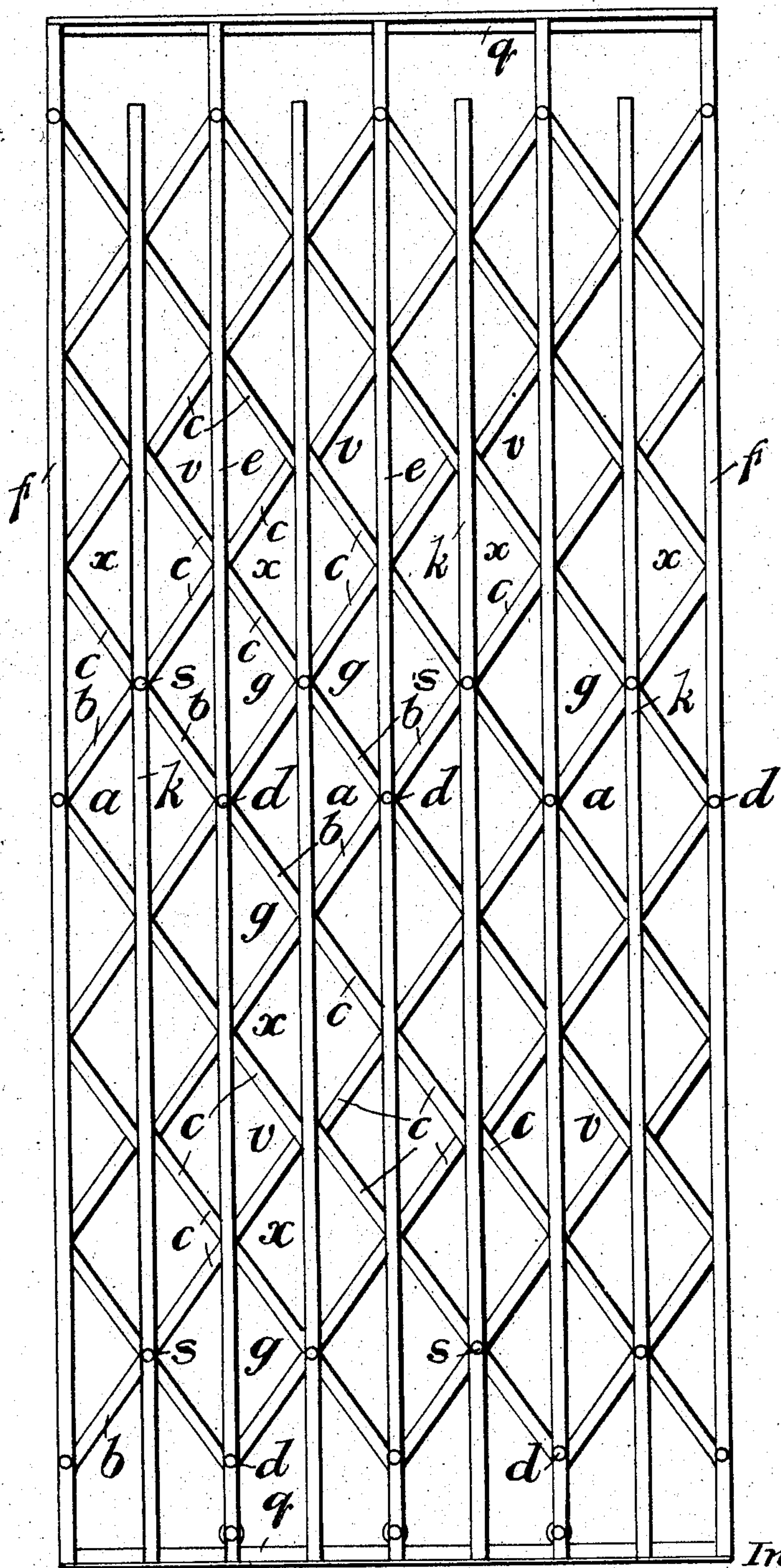
PATENTED APR. 11, 1905.

A. CLARK.

COLLAPSIBLE GATE.

APPLICATION FILED MAR. 16, 1904.

3 SHEETS—SHEET 3.



Witnesses.

Howard D. Orr.

J. F. Riley.

Fig. 11.

Inventor;  
Alfred Clark,

by  
E. J. Figgers.  
Att'y.



# UNITED STATES PATENT OFFICE.

ALFRED CLARK, OF LONDON, ENGLAND.

## COLLAPSIBLE GATE.

SPECIFICATION forming part of Letters Patent No. 786,951, dated April 11, 1905.

Application filed March 16, 1904. Serial No. 198,490.

*To all whom it may concern:*

Be it known that I, ALFRED CLARK, a subject of the King of Great Britain and Ireland, residing at 33 Ryde Vale road, Balham, London, S. W., England, have invented certain new and useful Improvements in and Relating to Collapsible Gates and the Like, (for which I have made application for Letters Patent in Great Britain, No. 28,146, bearing date December 22, 1903,) of which the following is a specification.

My invention relates to folding or collapsible gates, shutters, window-guards, and the like, and has for its object to provide for the more complete filling up of the spaces in the lattice-work which form when the gate or the like is extended, while not substantially increasing the width of the structure when collapsed.

My invention consists in constructing a collapsible gate or the like from lazy-tongs links having rigid extensions which overlap, so that the apices of every adjacent set lie within one another, and intermediate upright bars or pickets which have a traverse during the extension and collapsing of the structure at right angles to the direction in which the structure extends, so that the spaces which exist when the gate is opened can be reduced.

Referring now to the accompanying drawings, Figure 1 is a front elevation of a collapsible gate constructed according to my invention, the gate being shown extended. Fig. 2 is a sectional plan of the same on the line A A of Fig. 1. Fig. 3 is an end elevation of the gate. Fig. 4 is a front elevation showing the gate collapsed. Figs. 5 and 6 are enlarged sectional elevation and plan of the vertical bars and rails hereinafter referred to. Figs. 7 and 8 are part sectional front and edge elevations of the interlaced corners of the device. Figs. 9 and 10 are part sectional front and side elevations of the end of the overlapping extensions guided in the outside bars. Fig. 11 is a front elevation of a modified form of the invention.

In carrying out the invention according to one construction as applied to a collapsible lattice-gate I construct the lattice-work of the

gate of lazy-tongs (see Figs. 1 to 10) formed from overlapping flat bars *b*, interlaced so as to inclose practically equal parallelogram spaces *a* and *g*. The bars *b* are pivoted at their centers *d* to the vertical pickets *e* and at the points *s* midway in their upper halves to the vertical grooved or channeled bars *k*, which are capable of being traversed horizontally and vertically to accommodate for the curved path of the pin *s* about the point *d*. At a point *o* midway in their lower halves the bars are provided with pins, which slide freely in the grooves of the channeled bars *k*. The extremities of the bars *b* move freely in the grooves of the vertical channeled pickets *e*, (except those bars *b* which meet the end pickets *f* and are thereby shortened to one-half the length of the other bars *b*.) The pickets *e* are provided with rollers *t* at their lower ends. These rollers run on rails *q*, as shown in Figs. 5 and 6, and thus the longitudinal motion of the gate during expanding and collapsing is facilitated. The upper ends of the pickets *e* may be guided by a similar rail *q*, interposed between the channels and without the assistance of a roller.

In Figs. 5 and 6 the construction of the vertical channeled bars is shown. The channels are placed with their grooves facing each other and are secured together by rivets and spacing-pieces, as will be readily understood.

A detail of the form of connection employed at the extremities of the bars is shown in Figs. 7 and 8. The letter *c* represents the extensions of the lazy-tongs links—that is to say, the parts of the bars *b* lying outside the points *o* and *s*. It will be seen that the bars *b* between the points *s* and *o* form the links of an ordinary lazy-tongs, while the parts *c* lying outside the points *s* and *o* are really extensions. The extensions *c* of two pairs of oppositely-converging bars are jointed, so that in the expanded position the joint of one pair of converging extensions lies nested within the apex of the oppositely-converging pair, as shown in Fig. 7. When the gate is collapsed, these joints move away from each other and are guided in this motion by the pins *h* working in the grooves *p*.



A detail of the sliding end connections in the bars  $f$  is shown in Figs. 9 and 10. It will be seen that the construction is similar to that illustrated in Figs. 7 and 8, with the exception  
 5 that there are not two pairs of oppositely-converging sides, but only one of the members of each pair.

In the construction described it will be seen that the bars  $b$  cross three vertical bars and  
 10 have their ends touching two others. This construction may be modified, however, without departing from my invention. For instance, as shown in Fig. 11, I may arrange each complete bar of the lazy-tongs with its  
 15 extensions to cross five bars—*i. e.*, three bars  $e$  and two bars  $k$ —and to have its ends touching and guided in two other bars  $k$ , the arrangement of the lattice-work being similar to that hereinbefore described. In this case,  
 20 however, the extensions of the bars  $b$  are made twice the length of those in the first-described form. Extra sets of parallelograms  $xx$  are inclosed by the extensions, and the overlapping ends of the extensions which form the inter-  
 25 lacing corners are guided in the bars  $k$  instead of the bars  $e$ , as in the first-described form. The general structure of the gate is, however, the same, and the areas of the parallelograms are practically equal to one another. In all  
 30 cases the upright bars may be made of channels within which the guide-pins travel, or they may be made flat and be provided with slots, or any suitable combination of flat and channel bars may be used.

35 A peculiar feature of my new construction of gates is that the lattice-work of the gate is always completely interlaced—that is, the spaces or parallelograms inclosed by the various lazy-tong bars and extensions, except  
 40 at the edge of the gate, are of substantially the same size as each other.

The same construction as above described may be applied to shutters, window-guards,

and the like, as will be readily understood without further description and illustration. 45

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

1. A lazy-tongs structure for a collapsible gate or the like, comprising pickets arranged  
 50 at right-angles to the direction of collapse of the gate, a lattice-work of lazy-tongs, bars and extensions, the ends of the extensions overlapping and forming corners, which interlace  
 55 and in the expanded position of the gate are nested within the adjacent corners of the corresponding extensions, substantially as described.

2. A lazy-tongs structure for a collapsible gate or the like, comprising a lattice-work of  
 60 lazy-tongs, bars and extensions forming parallelogram spaces of substantially the same size, the extensions having overlapping ends forming corners which interlace and in the  
 65 expanded position of the gate are nested within corresponding corners of the adjacent extensions, and parallel bars to which the lower  
 tongs are pivoted, substantially as described.

3. A lazy-tongs structure for a collapsible gate or the like, comprising vertical pickets,  
 70 a lattice-work of lazy-tongs, extensions pivoted to the vertical pickets throughout the entire length of the same, the ends of the extensions being overlapped and forming corners,  
 75 which interlace and in the expanded position of the gate are nested within corresponding corners of the adjacent extensions, and parallel bars interposed between the  
 pickets and being shorter than the same, substantially as described. 80

In witness whereof I have hereunto set my hand in presence of two witnesses.

ALFRED CLARK.

Witnesses:

ALBERT E. PARKER,  
 CHAS. E. HOPKINS.