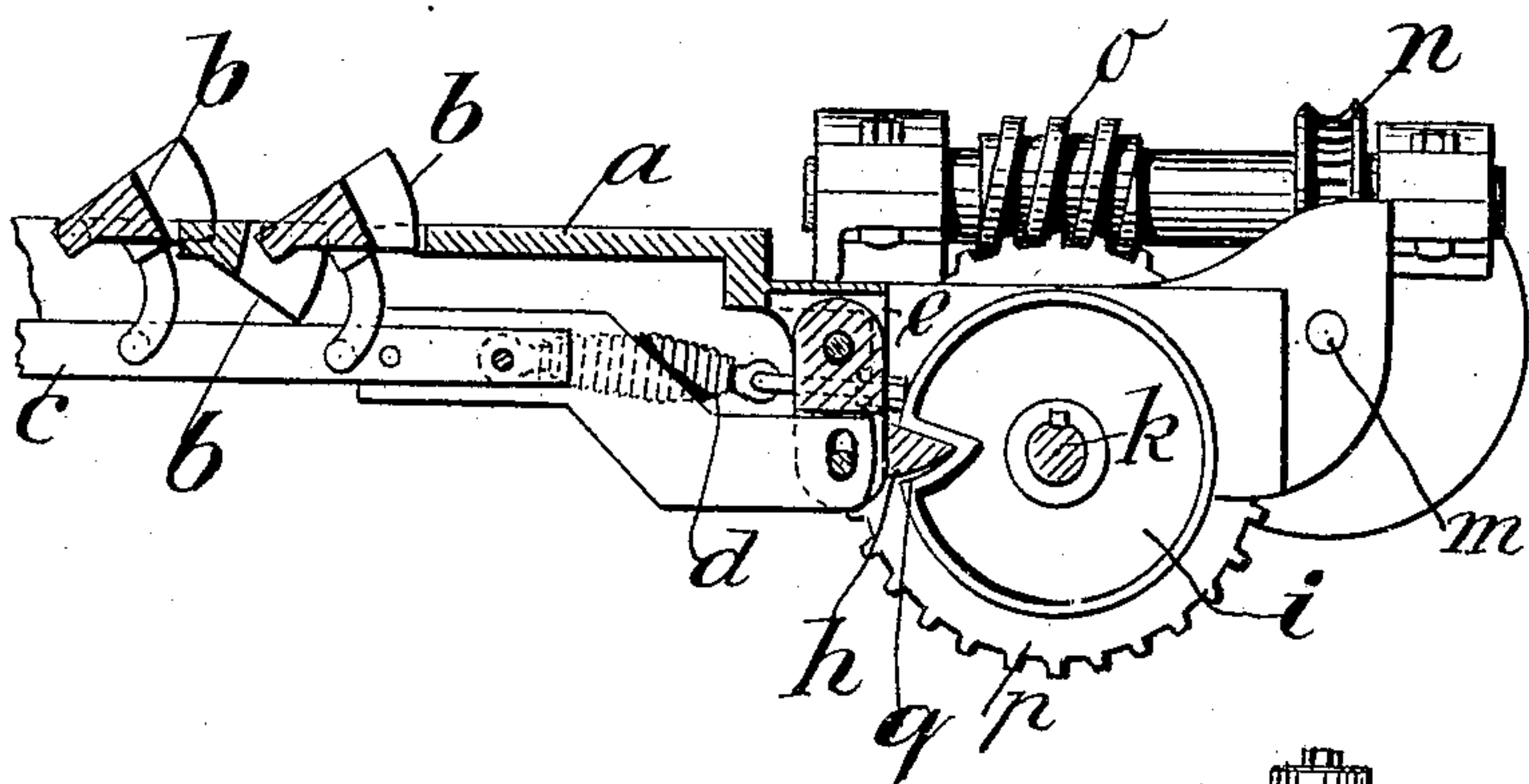


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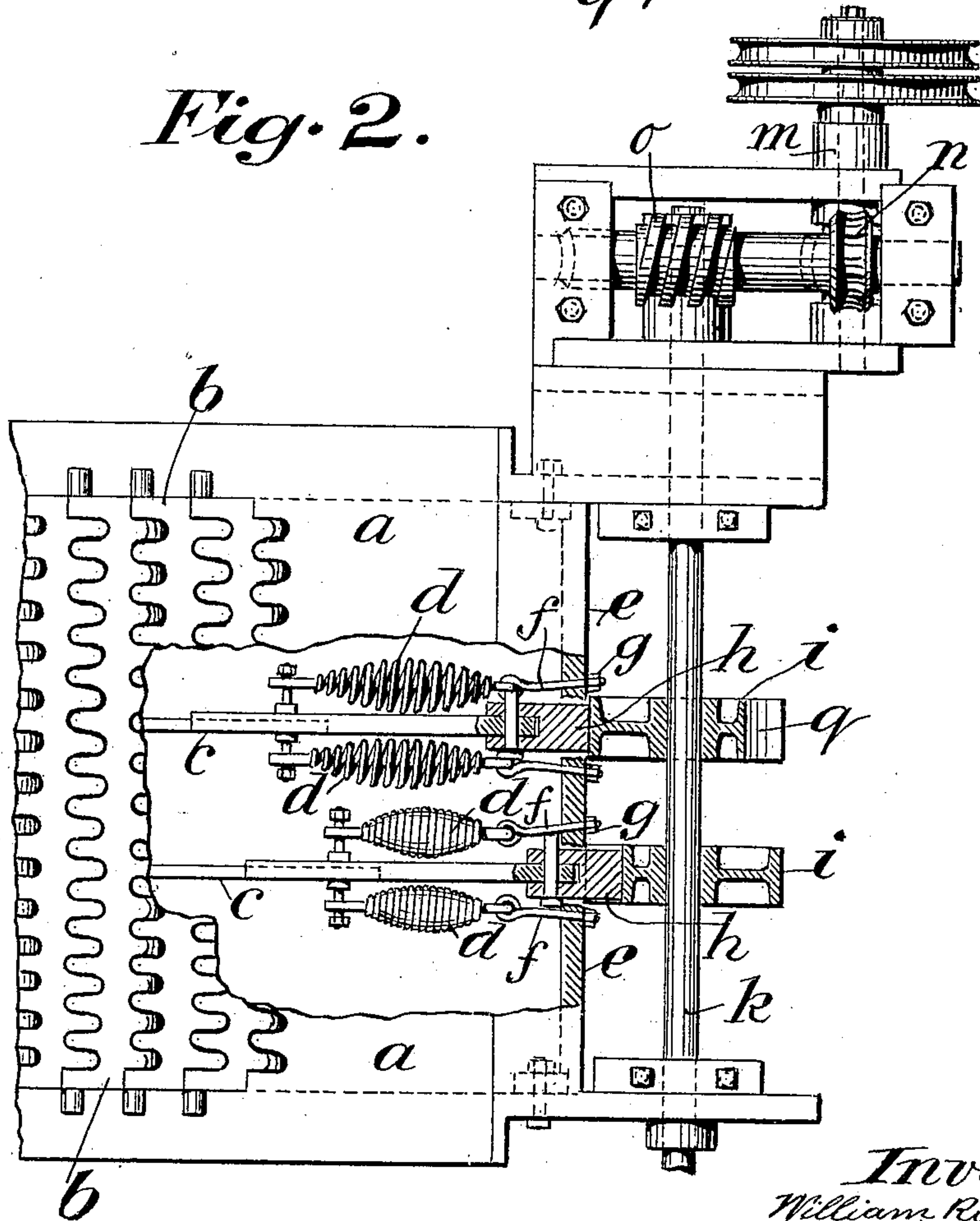
920,640.

Patented May 4, 1909.  
2 SHEETS—SHEET 1.

*Fig. 1.*



*Fig. 2.*



*Witnesses.*  
*Alfred Bosshardt.*  
*Stanley Bramall.*

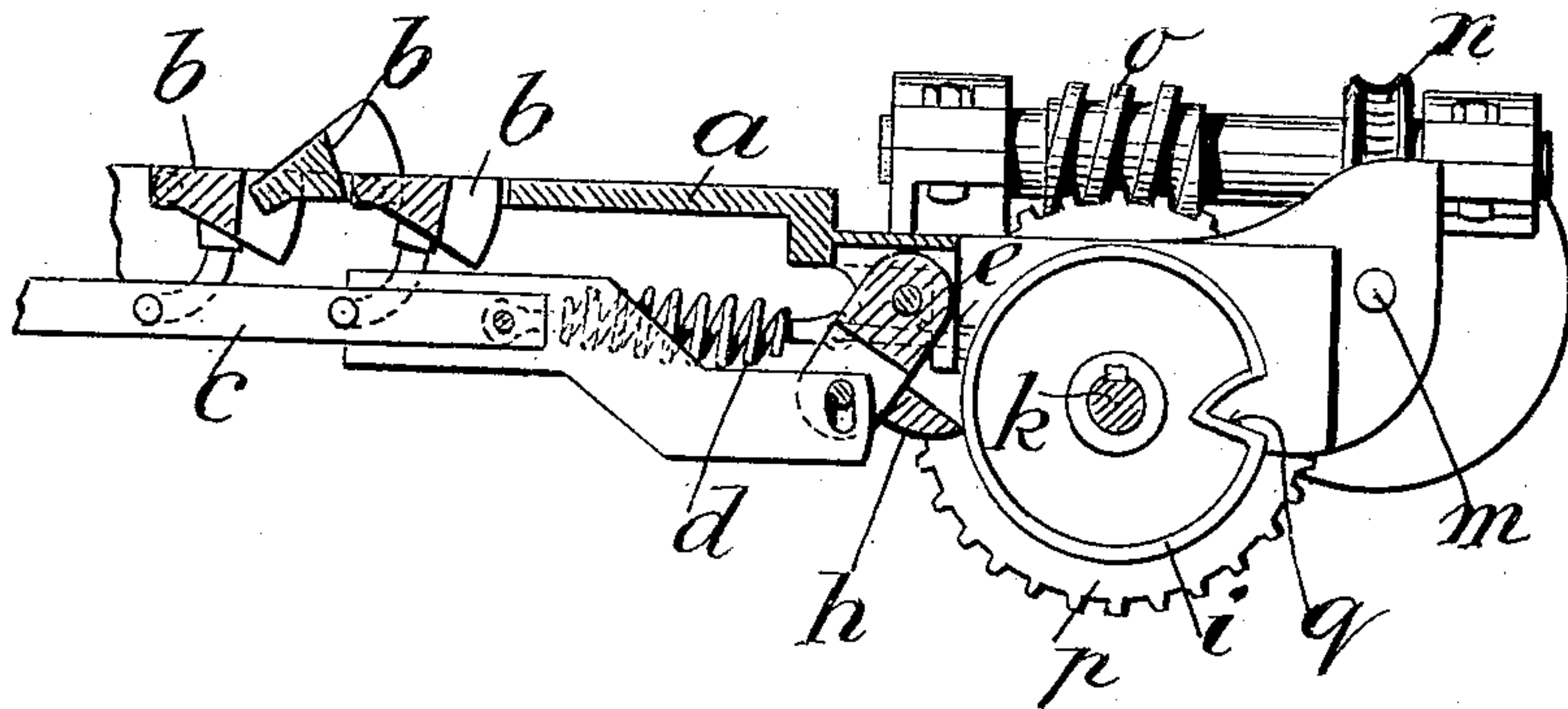
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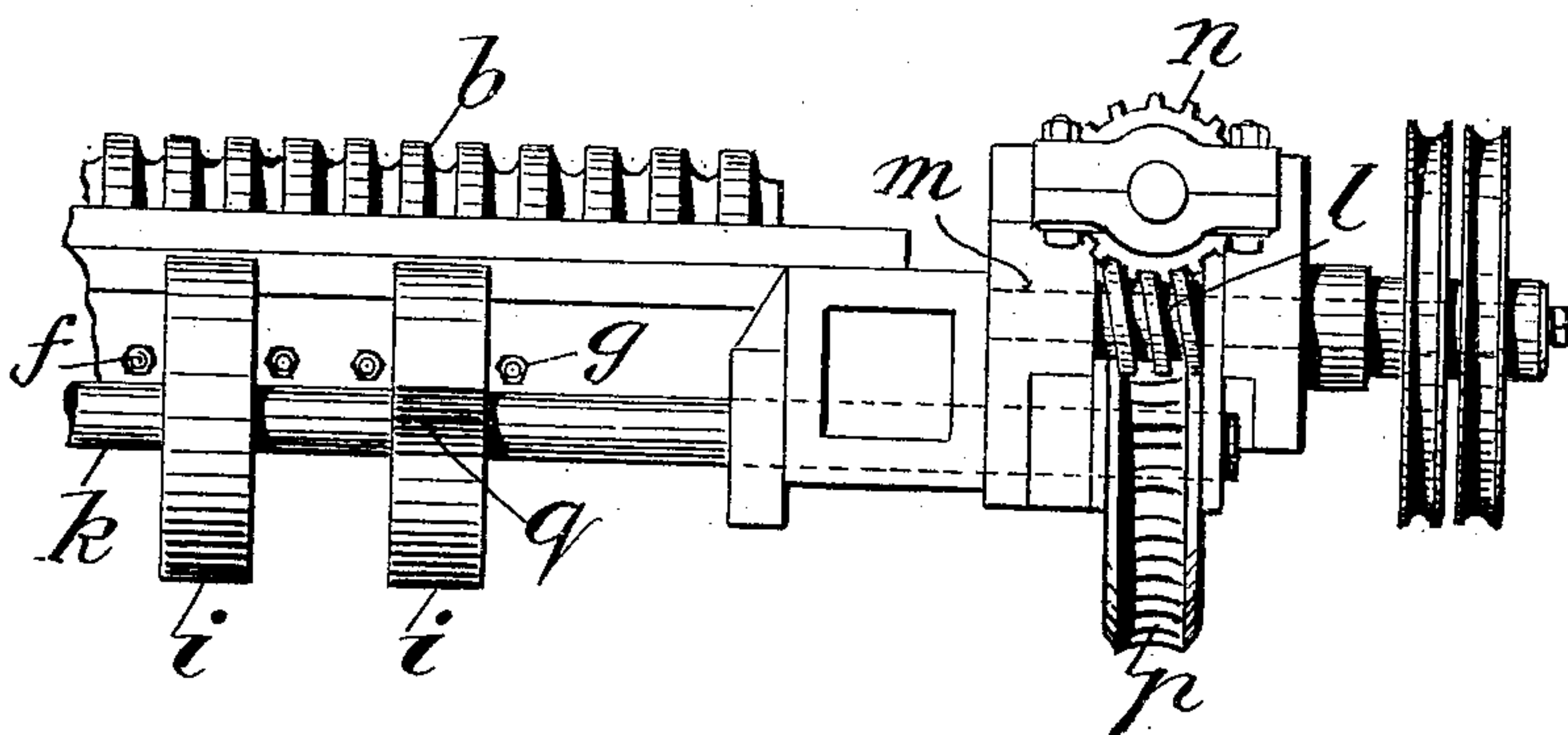
920,640.

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 2 SHEETS—SHEET 2.

*Fig. 3.*



*Fig. 4.*



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*Per F. Brosshardt,*  
*Attorney.*



# UNITED STATES PATENT OFFICE.

WILLIAM ROBERT PEAT, THOMAS PEAT, JR., PERCY PEAT, AND HARRY ASHWORTH PEAT,  
OF FARNWORTH, NEAR BOLTON, ENGLAND.

## MECHANISM FOR TILTING FIRE-BARS.

No. 920,640.

Specification of Letters Patent.

Patented May 4, 1909.

Application filed December 31, 1907. Serial No. 408,837.

*To all whom it may concern:*

Be it known that we, WILLIAM ROBERT PEAT, THOMAS PEAT, JR., PERCY PEAT, and HARRY ASHWORTH PEAT, subjects of Great Britain, residing at Farnworth, near Bolton, in the county of Lancaster, Kingdom of Great Britain, have invented new and useful Improvements in Mechanism for Tilting Fire-Bars, of which the following is a specification.

Our invention relates to that type of fire bars for boilers and other furnaces which are arranged transversely with respect to the furnace and adapted to tilt and more especially to such for which British Patent No. 15482 of 1885 was granted to John Settle, and the object of our present invention is to provide improved means for quickly tilting and returning the said bars at predetermined regular intervals and thus insure a regular propulsion and better combustion of the fuel. We attain these objects by the means illustrated in the accompanying two sheets of drawings, in which—

Figures 1 and 3 are sectional side elevations, Fig. 2 a plan partly in section, and Fig. 4 a front view of Figs. 1 and 3 respectively of fire bars provided with our improved tilting mechanism.

Similar letters refer to similar parts throughout the several views.

In carrying out our invention and referring to the figures generally, *a* is the dead plate, *b* are a plurality of sets of tilting fire bars, the fire bars of one set being arranged alternately with respect of those of the other set, *c* a plurality of rods, one connecting the bars of each set to actuate the same.

According to our invention we connect each of the longitudinal rods *c* by means of springs *d* located on each side thereof to a part *e* depending from the front of the dead plate *a*. One end of the said springs is pivoted to the side of the rods *c* and the other to bolts *f* passing through the said depending part and having a nut *g* or other means whereby the tension of the said springs can be varied at will.

By the aid of a downwardly bent arm the front end of each of the rods *c* is pivoted to a lever catch *h* loosely depending from the front part of the plate *a*. Each of these lever catches is adapted to operate in conjunction with a recessed cam *i* secured upon a shaft *k* suitably mounted in front of the said catches

and having a slow rotary motion imparted, by a double worm wheel gear comprising a worm *l* secured upon the driving shaft *m* in gear with a worm wheel *n* actuating a worm *o* in gear with a worm wheel *p* secured upon the shaft *k*. The cams *i* which are equal in number with the rods *c* are so secured upon the shaft *k* that during the tilting of one set of bars the other set remains down, by arranging their recesses *q* diametrically opposite each other, as shown in Figs. 1 and 3.

While the fire bars are down, the lever catch *h* rides upon the concentric part of the periphery of the cam *i* and the respective springs *d* are extended, see Fig. 3. As soon as the recess *q* in the said cam meets its lever catch *h*, the springs *d* withdraw the bar rod *c* causing the said lever catch to shoot into the cam recess and the fire bars to be suddenly and energetically lifted, see Fig. 1, after which they will be lowered again immediately by the said cam forcing the said lever catch out of its recess.

By varying the tension of the springs *d* by means of the nuts *g* the fire bars can be caused to tilt more or less and thus the speed at which the fuel is propelled may be regulated at will.

The feed of the fuel is positive and uniform, no large clinkers can form while small ones are delivered into a pit usually provided between the same and the fire bridge at the back of the bars and the fire thus remains constantly bright and clear.

We claim:

1. In a grate, a plurality of sets of tilting fire bars, the fire bars of one set being arranged alternately with respect to those of the other set, a plurality of rods, one connecting the bars of each set to actuate the same, a stationary part in front of the said rods, lever catches loosely depending from the said part and pivotally connected to the said rods, springs at the side of the said rods connecting each rod to the said stationary part, a rotating shaft in front of the said catches, and cams rigidly mounted upon the said shaft, the said catches contacting with the periphery of the said cams to extend the said springs, and each cam periphery having a recess, the recess in one cam being diametrically opposite the recess in the adjacent cam into which cams the said catches enter to permit the said springs to withdraw the bar rods and thereby actuate the sets of



fire bars alternately, all combined substantially as and for the purpose set forth.

2. In a grate, a plurality of sets of tilting fire bars, the fire bars of one set being arranged alternately with respect to those of the other set, a plurality of rods, one connecting the bars of each set to actuate the same, a stationary part in front of the said rods, lever catches loosely depending from the said part and pivotally connected to the said rods, springs at the side of the said rods connecting each rod to the said catches, and cams rigidly mounted upon the said shaft, the said catches contacting with the periphery of the said cams to extend the said springs, and each cam periphery having a recess the recess in one cam being diametrically opposite the recess in the adjacent cam into which cams the said catches enter to permit the said springs to withdraw the bar rods and thereby actuate the sets of fire bars alternately, and means in connection with the said springs for varying the tension thereof, substantially as and for the purpose set forth.

3. In a grate, a plurality of sets of tilting fire bars, the fire bars of one set being arranged alternately with respect to those of the other set, a plurality of rods, one connecting the bars of each set to actuate the same, a stationary part in front of the said rods, lever catches loosely depending from

the said part and pivotally connected to the said rods, springs at the side of the said rods connecting each rod to the said catches, and cams rigidly mounted upon the said shaft, the said catches contacting with the periphery of the said cams to extend the said springs, and each cam periphery having a recess the recess in one cam being diametrically opposite the recess in the adjacent cam into which cams the said catches enter to permit the said springs to withdraw the bar rods and thereby actuate the sets of fire bars alternately, and means for rotating the said cam shaft, comprising a worm wheel secured on the cam shaft, a driving shaft and a worm secured thereon, an intermediate shaft and a worm and a worm wheel thereon rotating together and respectively in gear with the worm wheel on the said cam shaft and the worm on the said driving shaft, all combined substantially as and for the purpose set forth.

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

WILLIAM ROBERT PEAT.

THOMAS PEAT, JUNIOR.

PERCY PEAT.

HARRY ASHWORTH PEAT.

Witnesses:

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