

(No Model.)

2 Sheets—Sheet 1..

I. KLING.
CAR COUPLING.

No. 396,878.

Patented Jan. 29, 1889.

Fig 1

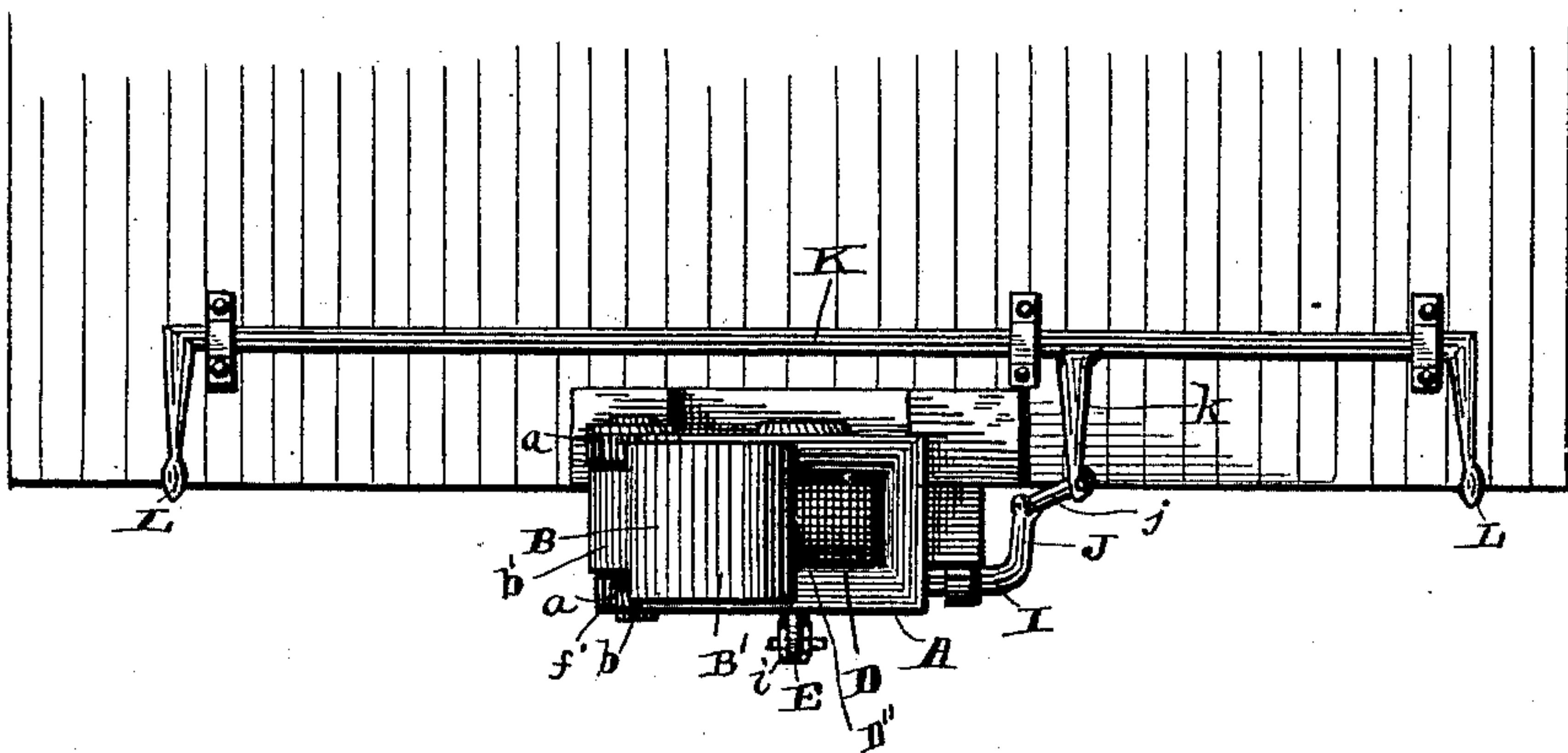
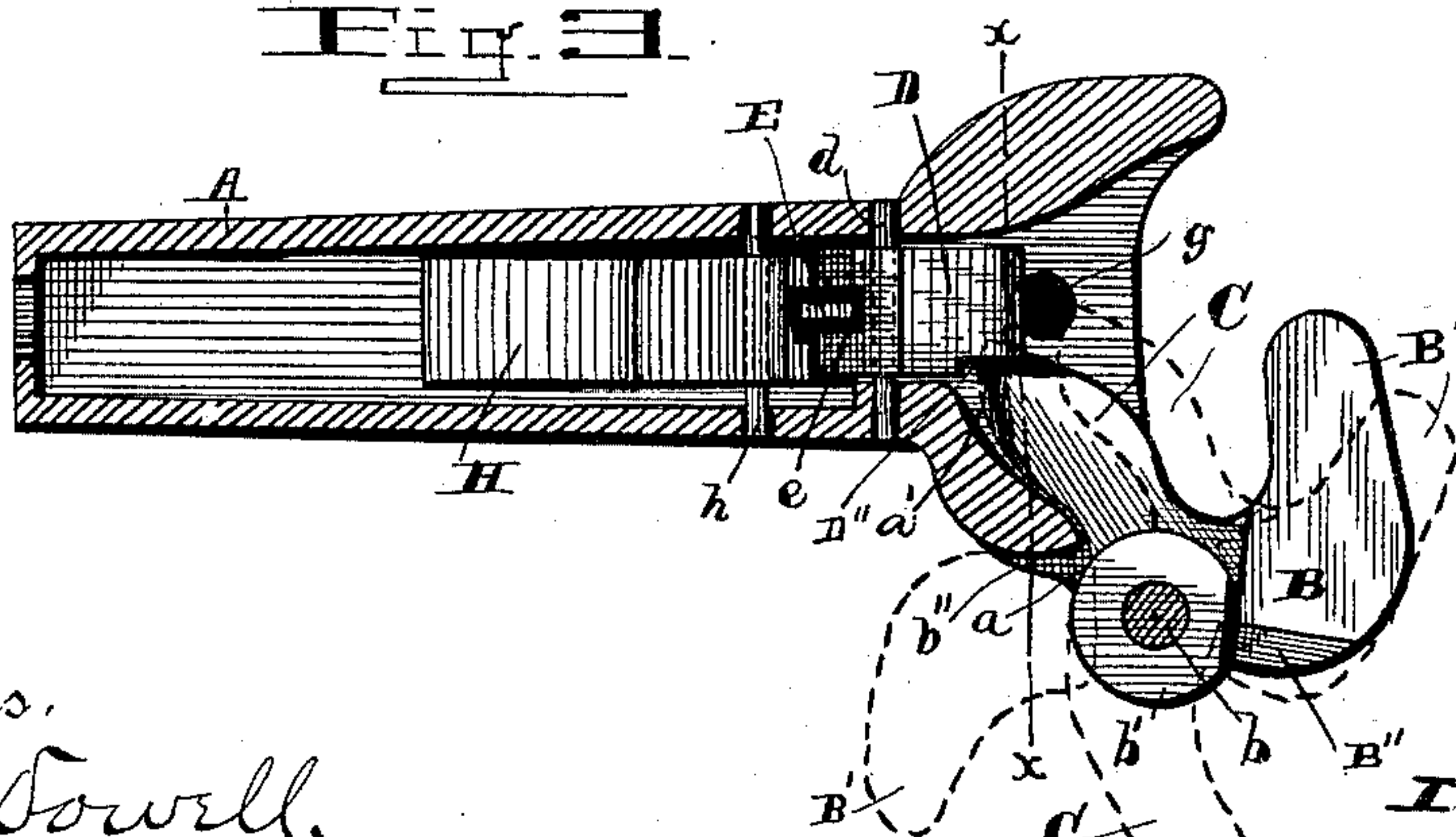
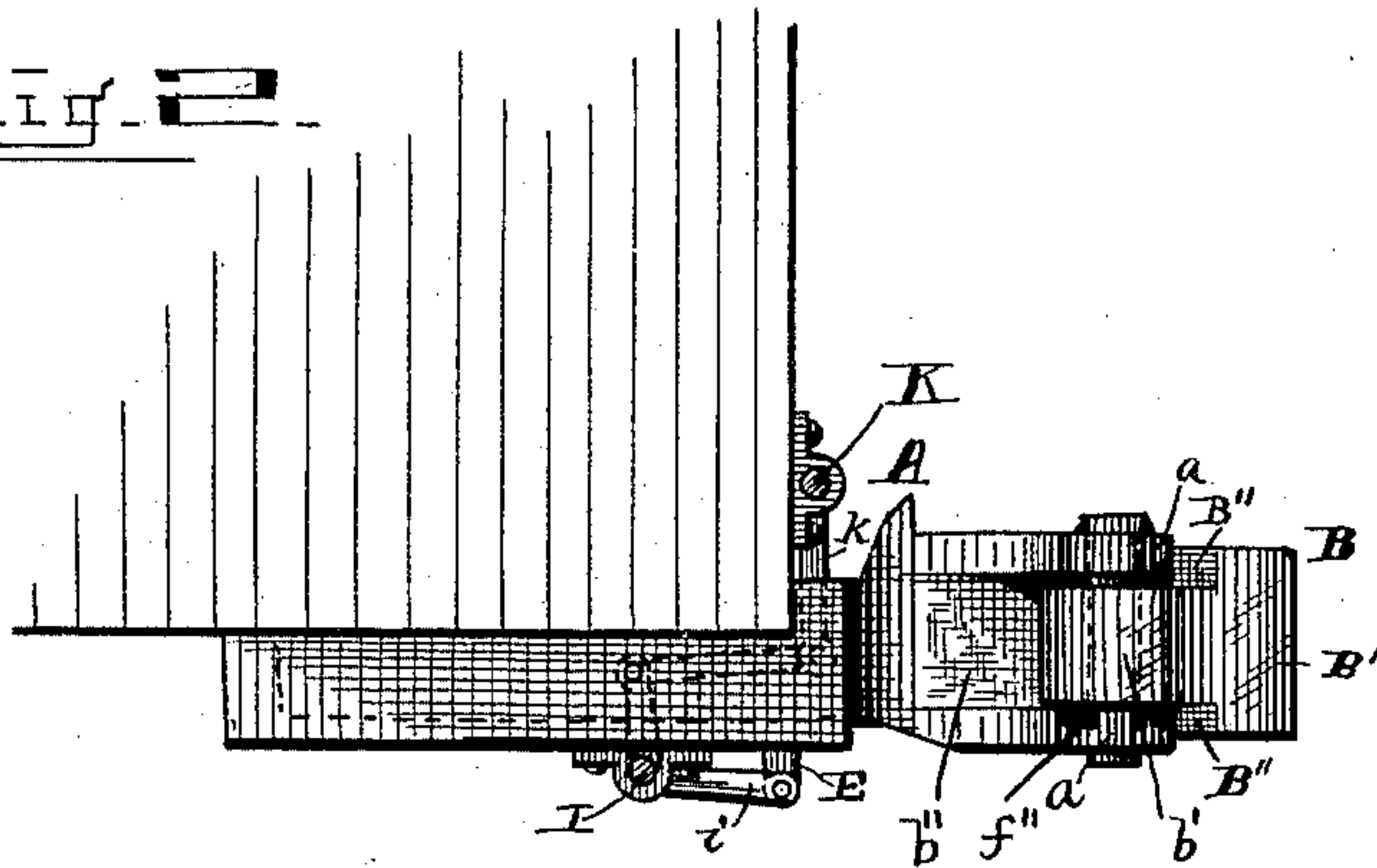


Fig 2.



Witnesses.

A. E. Sowell.
O. W. Sewell

Inventor,

Isaac King,

By his Attorney *Alexander*

(No Model.)

2 Sheets—Sheet 2.

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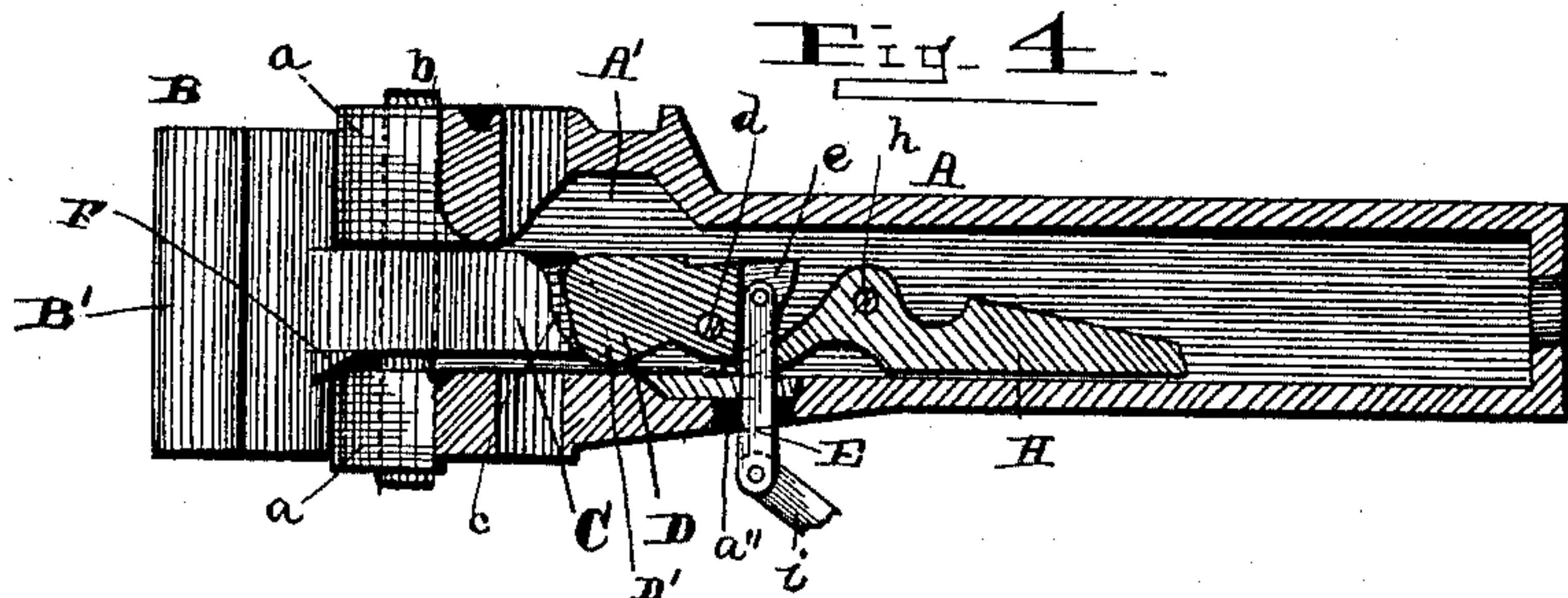


Fig. 6

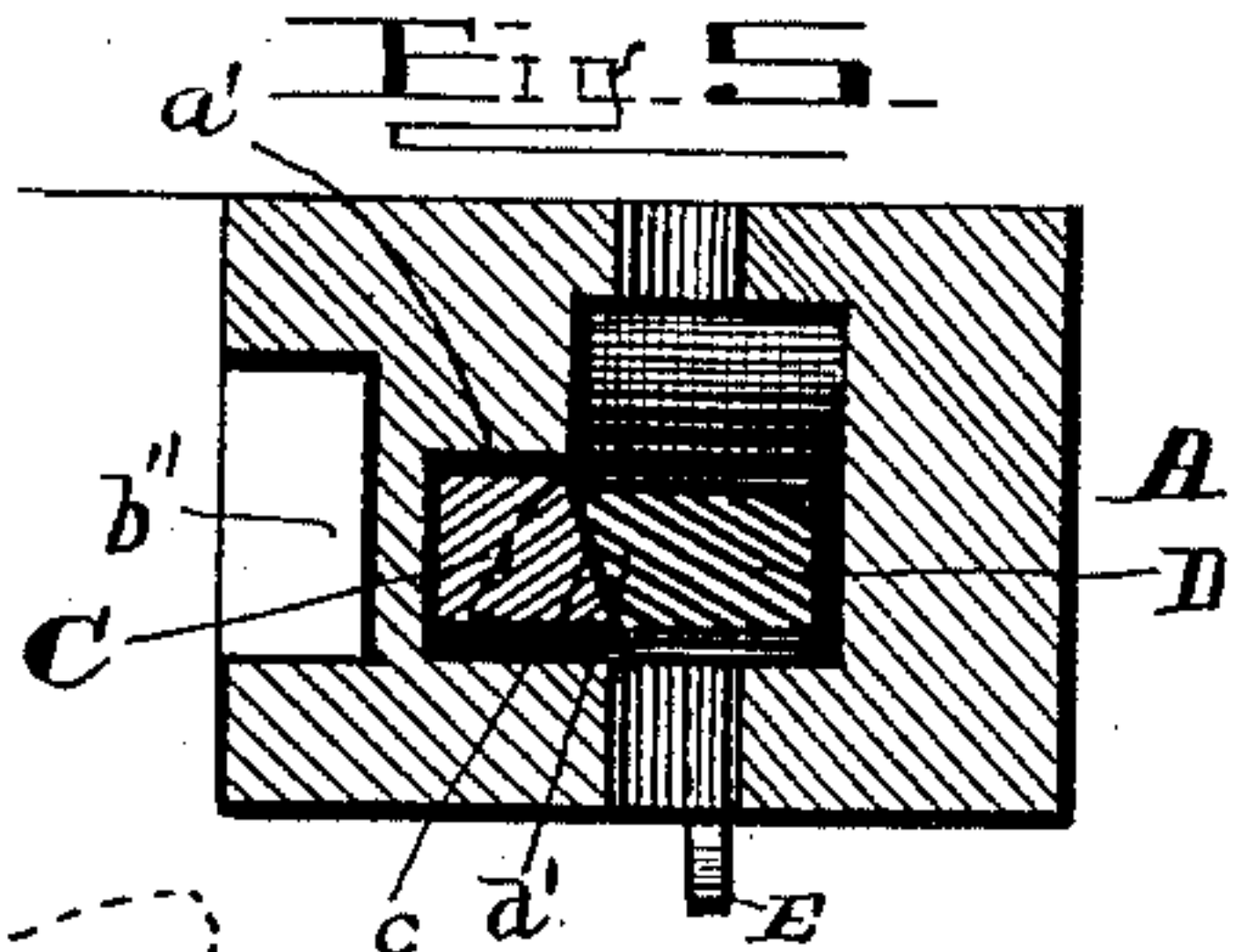
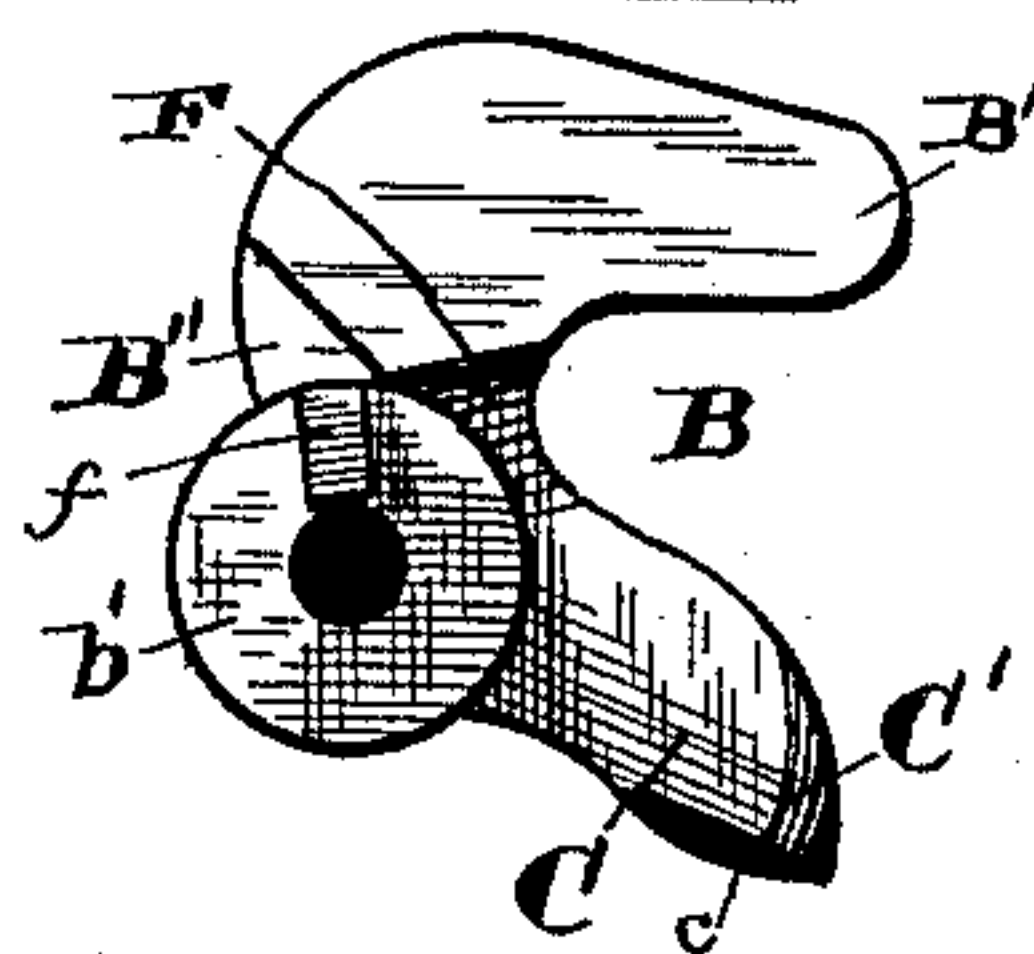


Fig. 7

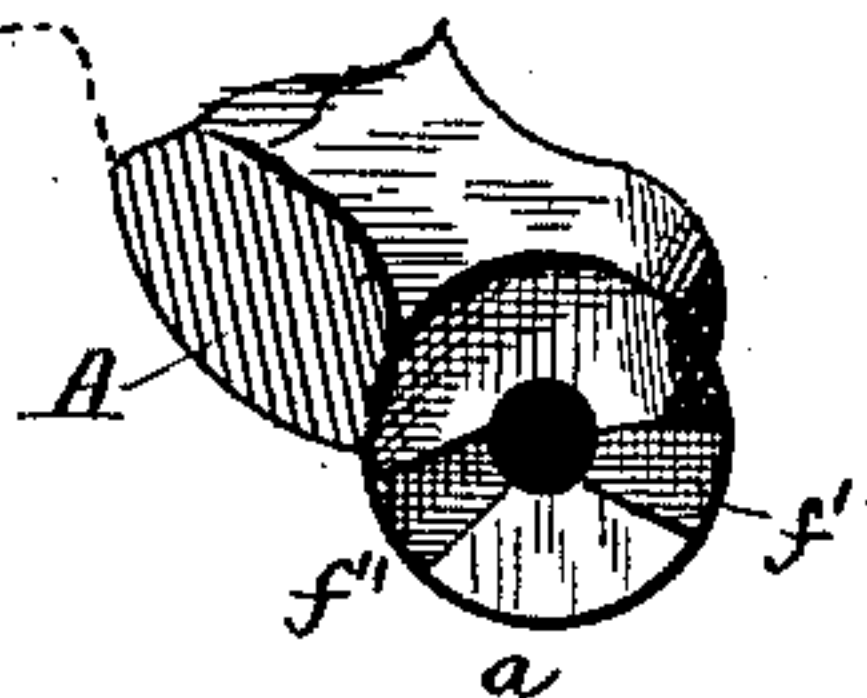


Fig. 8

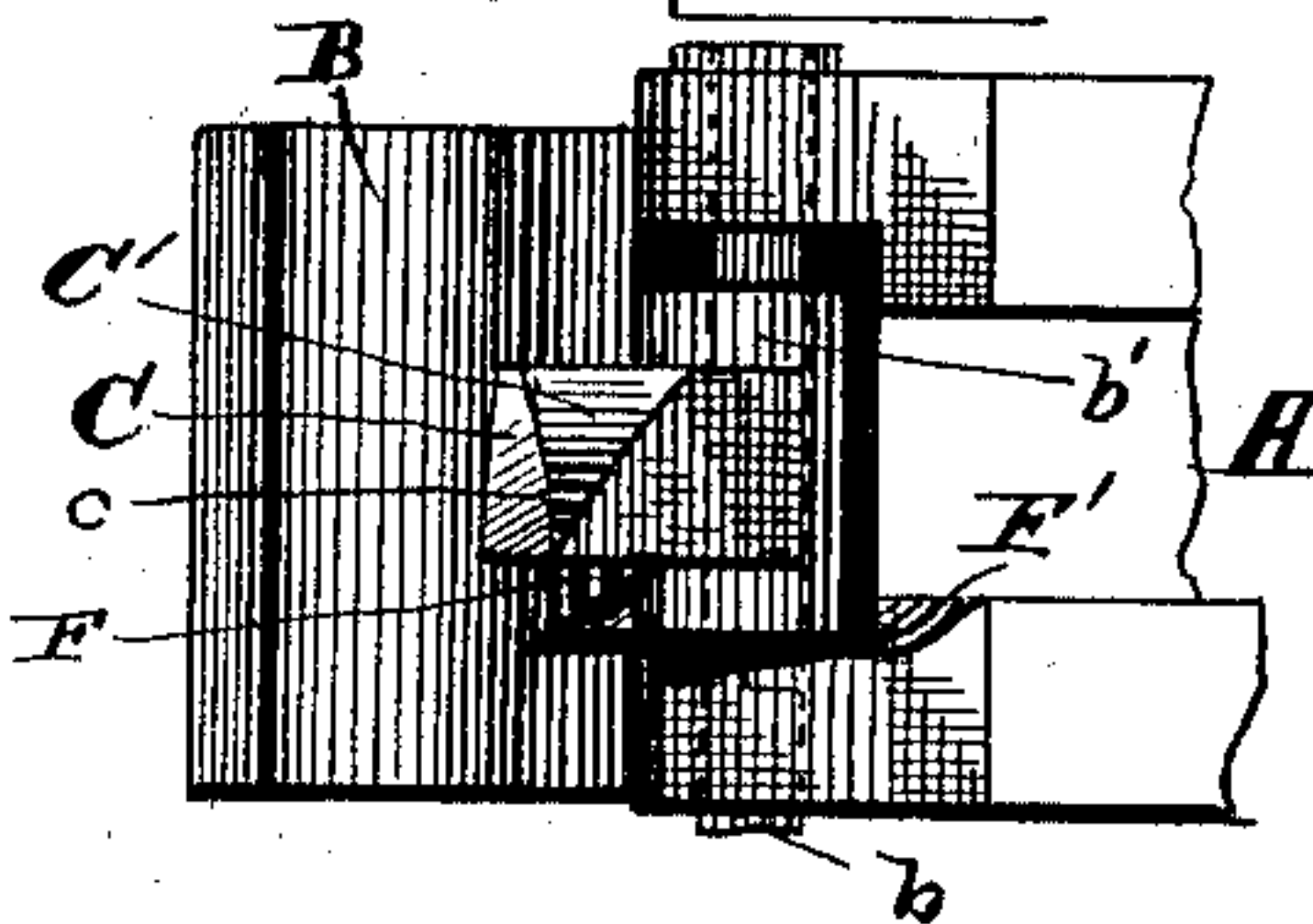
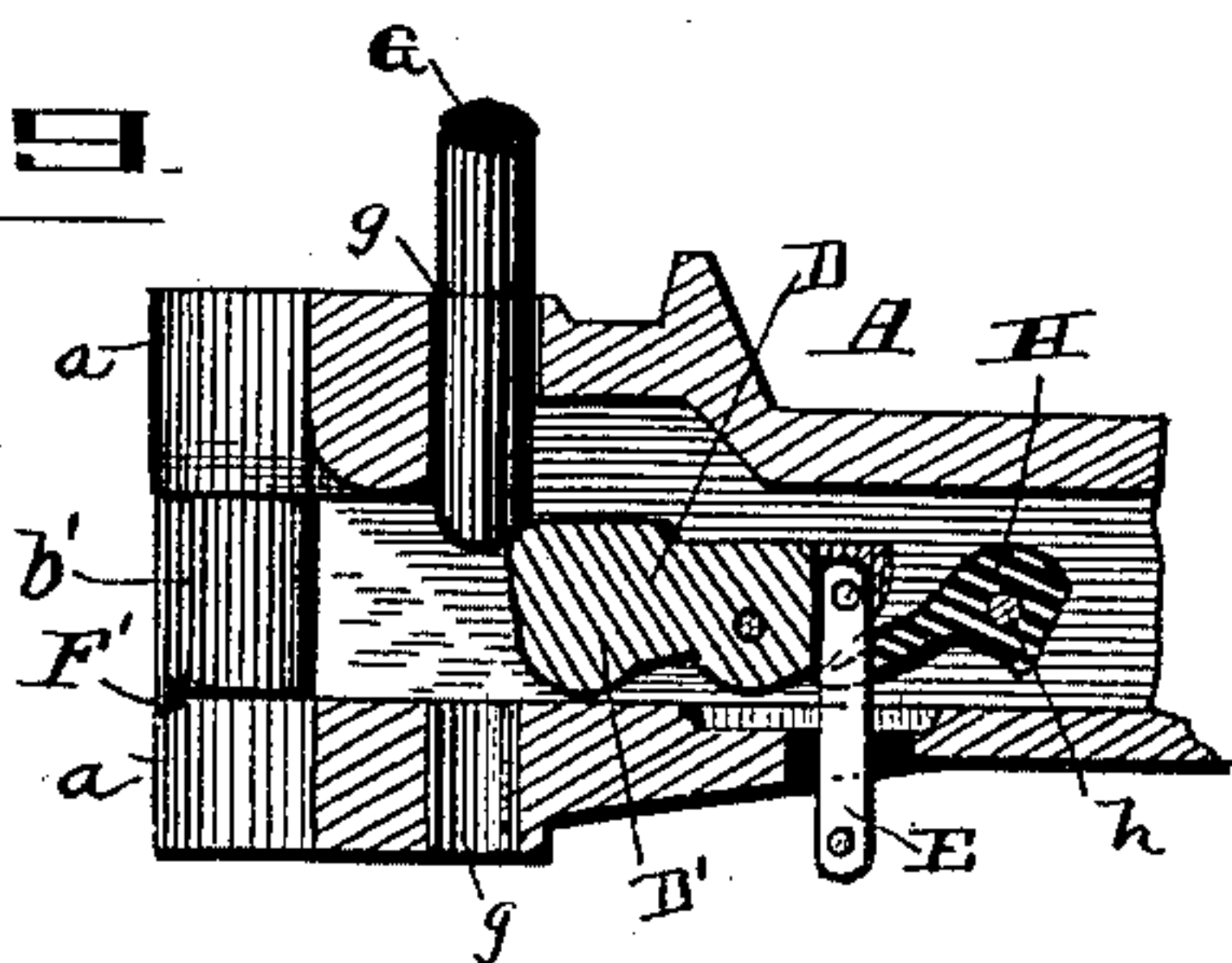


Fig. 9



Witnesses,

A. E. Towell
Chas W Seville

Inventor.

Isaac Kling

By his Attorney J. H. Alexander

UNITED STATES PATENT OFFICE.

ISAAC KLING, OF LOUISVILLE, KENTUCKY.

CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 396,878, dated January 29, 1889.

Application filed August 1, 1888. Serial No. 281,688. (No model.)

To all whom it may concern:

Be it known that I, ISAAC KLING, of Louisville, in the county of Jefferson and State of Kentucky, have invented certain new and useful Improvements in Car-Couplings; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification, in which—

Figure 1 is an end view of a car having my improved coupling applied. Fig. 2 is a side view in detail of Fig. 1. Fig. 3 is a horizontal transverse sectional view of the coupler, showing the coupling-hook locked in full lines and in its different positions by dotted lines. Fig. 4 is a central vertical section through the coupler looking toward the hook, which is locked. Fig. 5 is a cross-section on line *x x*, Fig. 3. Fig. 6 is a bottom plan view of the hook. Fig. 7 is a detail view of the draw-bar, showing the lower bearing of the hook. Fig. 8 is a detail side view of the hook and hinge. Fig. 9 is a detail view in section, showing the parts arranged to couple with a link-and-pin device.

The present invention is an improved automatic car-coupler, and its objects are to provide a self-acting coupler of the twin-jaw type, but which is also adapted to automatically operate as a link-and-pin coupler; and it consists in the hereinafter-described novel and useful combination and construction of the pivoted hook, the draw-bar, and the locking devices, and in a novel arrangement of levers and links whereby the couplings may be disengaged.

In the drawings annexed, A designates the draw-bar, which is of general ordinary construction, as shown, having an offset portion at one side, in which are formed perforated lugs *a a*, for receiving the vertical hinge-bolt *b* of the hook B. This hook has an enlarged curved locking part, *B'*, and a shank, *b'*, which lies between lugs *a a*, that are properly recessed on their inner faces to receive the shank. Bolt *b* passes through said shank, so that the hook swings horizontally thereon between ears *a a*. The upper and lower faces of part *B'* are cut away, as shown at *B'' B''*, adjoining shank *b'*. A slot or recess, *b''*, is formed in the side of the

draw-bar, in rear of and between ears *a a*, into which the reduced portion of the hook enters when the latter is swung sufficiently backward.

C is the locking-arm of hook B, which projects inward from shank *b'*, and is adapted to enter the mouth of the draw-bar, the latter being properly recessed at *a'* to accommodate the arm when the link is closed.

D is a locking-tumbler placed centrally in the throat of the draw-bar and is of general rectangular shape. It is pivoted at rear on a horizontal rod, *d*, passing through the side walls of the draw-bar, so that its front end will fall by gravity to the bottom of the draw-bar when released. The front face of the tumbler is rounded, as shown, on its upper and lower edges, and it has a swell, *D'*, on its bottom near its front end, which not only serves to increase its gravitation, but also to impinge or press upon the link when inserted thereunder. In order to allow this tumbler to properly oscillate, the upper wall of the draw-bar is chambered at *A'* above the tumbler, so that it can be tilted upward when necessary. To the rear end of the tumbler is attached a depending link, E, which is pivoted in a slot, *e*, of the tumbler behind the pivot *d* thereof, the link depending through a slot, *a''*, in the lower side of the draw-bar. By depressing link E the tumbler is tilted and its front end elevated. When hook B is closed, its arm C swings inward, engaging tumbler D, and in order to make it pass readily thereunder the end of the arm is rounded; as at *C'*, so that it will engage the rounded face of the tumbler and lift the latter sufficiently to permit the arm to pass to the side of the tumbler. The corner *D''* of the tumbler is inclined and rounded to facilitate the movement of the arm thereunder. The side of the block next arm C, when the latter is closed, has an upwardly-beveled shoulder, *d'*, formed on it, and the adjoining face *c* of arm C is reduced diagonally, and this reduced portion is inclined from bottom to top, the bottom being wider than the top to engage with the oppositely-inclined shoulder of the tumbler D.

At the junction of arm C with the shank and part B is formed an inclined depending guide-lug, and on the lower face of shank *b*, to one side of this incline, is a short depend-

ing lug, *f*. In the upper face of the lower-most lug *a* are formed two notches, *f'* *f''*, the latter near the rear end of the lug and wall of the draw-head, and the former in the front face thereof. The depending guide lug or incline *F*, when the hook is turned inward, engages a rounded corner, *F'*, formed on the front edge of the bottom of the draw-bar near the lower lug *a*, and causes the hook to rise simultaneously with the engagement of the arm and tumbler, and when the arm is locked by the tumbler the hook is upheld by and supported upon this incline *F*, which bears upon the front edge of the draw-bar floor, and if the tumbler be raised by depressing link *E* the hook is released and its weight causes it to ride down on incline *F*, and in doing this it is swung open. As it turns outwardly in its descent, the lug *f* is brought into position to engage notch *f'*, which limits the outward swing of the hook, and it is thus retained in the proper position for recoupling with a similar opposite hook on another draw-bar, as is evident. This position the hook always assumes automatically when its arm *C* is released from tumbler *D*. When it is desired to couple the draw-bar to a link-and-pin coupling, the hook *F*, after swinging open, as described, is lifted on its hinge-bolt until lug *f* disengages notch *f'* and turned backward until the lug drops into notch *f''*, when the hook and its arm will be out of the way of the link and will be retained in such position until it again turns forward.

The engaging-faces of the arm *C* and tumbler *D* being oppositely beveled or inclined, as described, it will be observed by reference to the drawings that when the arm is locked the tumbler acts as a wedge to bind the arm tightly against the side of the draw-bar and thus absolutely prevent any lost motion or free play of the arm between the tumbler and side of the draw-head, thus insuring the positive locking of the hook and effectually preventing jerking or jarring of the latter on its hinge.

The draw-head is provided with ordinary pin-openings, *g g*, in its top and bottom, and the front edge of tumbler *D* when down projects slightly over the lower opening, so that when the coupling-pin *G* is inserted in the upper opening it will be upheld by the tumbler. Then when a link is thrust into the draw-head it will slip under the rounded edge of the tumbler, raise the latter, and release the pin, which drops into place, and the link is thus automatically coupled.

The inner end of the link would be pressed upon by the swell on the bottom of the tumbler, and the link could be held thereby in a proper position to engage another link-coupler draw-head. The link-coupling feature is fully described in my patent, No. 370,343, of September 20, 1887, in which is shown a tumbler similar to *D* and a weight-lever for said tumbler, hereinafter referred to.

To increase the bite of the tumbler and insure its quick gravitation, I employ a pivoted lever-block, *H*, which is inserted in the throat of the draw-bar in rear of tumbler *D*, and is pivoted near its front end on a transverse horizontal rod, *h*, as shown. The front end of block *H* is curved under the rear end of the tumbler and is slotted to accommodate link *E*. When the front end of tumbler *D* is elevated, it causes the elevation of the rear end of block *H*, which may be weighted, and when the tumbler is released the gravital force of block *H* is transferred direct to the tumbler, so that the latter has a very powerful leverage exerted on it and is insured against any accidental tilting by jarring, and there is no danger of an accidental release of the hook-arm.

To effect the release of the coupling from the side of the car, I employ the devices shown in Figs. 1 and 2. These consist of a horizontal rod, *I*, journaled in suitable bearings transversely of and below the draw-bar, and having a forwardly-extending arm, *i*, pivotally connected to the depending link *E*, as shown. *J* is an upstanding arm on one end of rod *I* at the side of the draw-bar, which is pivotally connected by a link, *j*, with a depending arm, *k*, of a horizontal rod, *K*, journaled transversely of the car above the draw-bar and having depending handles *L L* at its ends. By properly oscillating rod *K* its connections cause the oscillation of rod *I*, and the latter causes the depression of link *E* and consequent lifting of the front end of the tumbler and release of the hook.

It will be observed that there are no openings in the upper face of the draw-bar excepting the link-pin openings, which might be omitted, and these openings are in front of the tumbler and block. Consequently the latter are effectually protected from the weather, and there is no danger of their becoming clogged by dirt or snow and ice sifting therein, as is the case where the couplings are exposed to the weather and there are openings in the draw-bar above the locking devices.

Having described my invention, I claim—

1. The combination of the draw-bar and the adjustable horizontally-swinging hook thereon with the pivoted oscillating locking-tumbler pivoted in the draw-bar and the depending link for oscillating the same, substantially as set forth.

2. The combination of the draw-bar and swinging hook hinged thereto, and having a locking bevel-faced arm, with a tumbler pivoted in the draw-bar, having a beveled shoulder engaging said arm when locked, and the depending link pivotally connected to said tumbler, substantially as described.

3. In a car-coupler, the combination of the draw-bar, having pin-openings and a slot, *a''*, in its bottom, with the oscillating tumbler *D*, pivoted on a rod, *d*, in rear of the pin-openings and having a rounded front face, and

the link E, pivotally connected with the rear end of tumbler D and depending through the slot *a''*, substantially as described.

4. The combination of the draw-bar, the oscillating tumbler D therein, and the devices for operating said tumbler with the swinging hook B, having a shank, *b'*, pivoted between lugs *a* of the draw-bar, and also a locking-arm, C, provided with an inclined guide, F, formed on the lower face of the arm at the junction of the arm and shank, substantially as and for the purpose described.

5. The combination of the draw-bar having pairs of hinge-lugs, the lower one having notches *f' f''* in its upper surface, with a swinging hook hinged between said lugs, and having an incline, F, at the junction of its arm and shank, adapted to lift the hook when the latter is locked and to cause it to swing open when released, and also having a depending lug adapted to engage the notch *f'* when the hook is partially opened, or to engage notch *f''* when the hook is thrown back out of engaging position, substantially as and for the purpose described.

6. The combination of the draw-bar and the swinging hook pivoted thereon, having a bevel-faced locking-arm, with a tumbler having an oppositely-beveled shoulder engaging said arm when the hook is locked and a lever-block engaging said tumbler, substantially as set forth.

7. In a coupling, the combination of the draw-bar having hinge-lugs, the lower one of which has notches in its upper surface, and a swinging hook hinged to said lugs and having an incline, F, at the junction of its arm and shank, and a stop-lug adapted to engage said notches, and also having a bevel-faced locking-arm, with a bevel-shouldered oscillating locking-tumbler engaging said arm, and the link-connections for oscillating said tumbler, substantially as set forth.

8. The combination of the draw-bar, its swinging hook, and the oscillating tumbler engaging the same with a depending link pivotally connected to said tumbler and the crank-rods and connections for depressing said link, substantially as set forth.

9. The combination of the draw-bar and the automatically-swinging hook pivoted

thereto, having a bevel-faced locking-arm, with the tumbler pivoted in said draw-bar, having a rounded front edge and a bevel shoulder engaging said arm, the pivoted lever-block engaging said tumbler, and the depending link for operating the same, substantially as described.

10. The combination of the draw-bar, the swinging hook pivoted thereto, having an incline, F, and a rounded and bevel-faced locking-arm, with a slotted tumbler pivoted in the draw-bar having a rounded front face and a beveled shoulder for engaging the arm, the depending link passing through a slot in the floor of the draw-bar and pivoted in the slot of the tumbler, and the slotted lever-block engaging the tumbler, substantially as specified.

11. The combination of the draw-bar, its swinging hook, the oscillating tumbler for locking the same, and the depending link connected to said tumbler with the cranked rod below the draw-bar connected to said link and the cranked rod above the draw-bar connected to and operating the lower rod, substantially as set forth.

12. In a car-coupling, the combination of the draw-bar having hinge-lugs at one side, one of which is notched, as described, and the horizontally-swinging block hinged to said lugs and having an incline, F, and a lug, *f*, substantially as described, and a locking-arm having a rounded and beveled end, with an oscillating locking-tumbler pivoted in the draw-bar beneath a chamber in the upper wall thereof, and having a rounded front end and an inclined side shoulder for engaging and locking the arm of the hook, a depending link passing through an opening in the bottom of the draw-bar and pivotally connected to said tumbler, and a pivoted lever-block engaging said tumbler, all substantially as specified.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

ISAAC KLING.

Witnesses:

SCHUYLER DURYEE,
T. H. ALEXANDER.