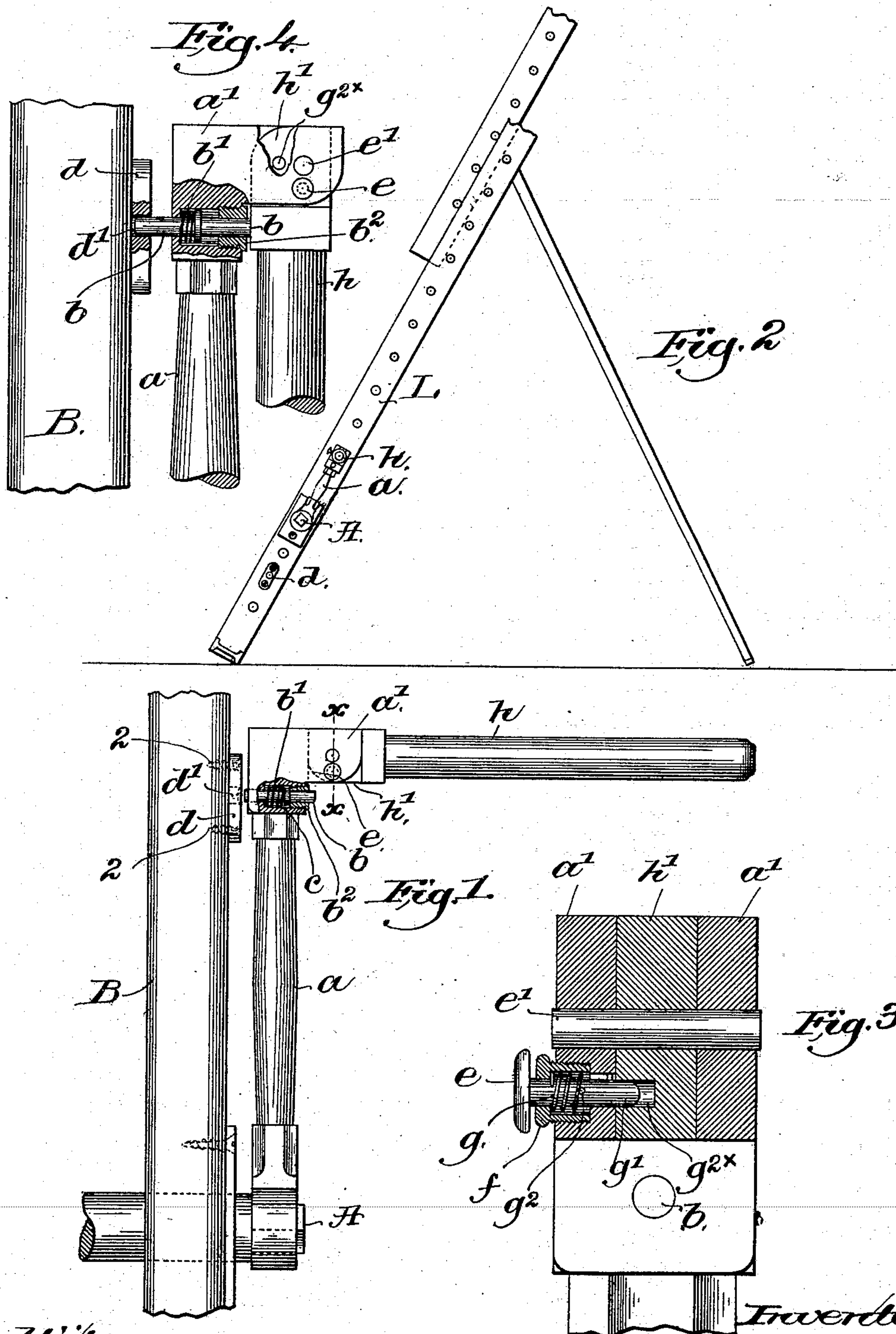


(No Model.)

D. F. LATIN.
LOCKING DEVICE FOR FOLDING CRANKS.

No. 503,747.

Patented Aug. 22, 1893.



Witnesses.

Louis N. Howell
Emma J. Bennett

Inventor:

David F. Latin,
by Crosby Oregon
Utis.

UNITED STATES PATENT OFFICE.

DAVID F. LATIN, OF CLINTON, MASSACHUSETTS.

LOCKING DEVICE FOR FOLDING CRANKS.

SPECIFICATION forming part of Letters Patent No. 503,747, dated August 22, 1893.

Application filed November 25, 1892. Serial No. 453,029. (No model.)

To all whom it may concern:

Be it known that I, DAVID F. LATIN, of Clinton, county of Worcester, State of Massachusetts, have invented an Improvement in Folding Cranks, of which the following description, in connection with the accompanying drawings, is a specification, like letters and figures on the drawings representing like parts.

10 In the construction of folding cranks where the handle is pivoted to the crank arm and is adapted to be moved outwardly therefrom to a position at right-angles thereto, it is desirable in some instances to have the handle automatically locked in its extended position so
15 that a quick pull will throw the same into place, and it is also desirable, if a lock is used to prevent rotation of the crank when not in use, to provide means for releasing said lock
20 when the handle is extended and the crank is thereby made operative.

This invention has for its object the production of a folding crank the handle of which is pivoted to a crank arm so as to be turned
25 in upon or adjacent to the same when not in use, the folding of the handle removing the the same out of the way, the crank having devices for automatically locking the handle in extended position and devices for holding
30 the crank arm in fixed position when not in use, the latter devices being actuated by or through the pivoted handle.

In accordance therewith, my invention consists in the combination in a folding crank,
35 having a crank arm and means to lock the same from rotation in either direction, of a handle pivoted to said arm and controlling by its pivotal movement said locking means, substantially as will be described. Also in a
40 folding crank, a crank arm having a longitudinally movable locking pin, combined with a crank handle pivoted to said arm, a spring controlled bolt to automatically engage and hold the handle extended, said handle being
45 adapted when closed to co-operate with and force the locking pin into engagement with a suitable catch, and means to withdraw the bolt from the handle, substantially as will be described.

Other features of my invention will be hereinafter described and particularly pointed out in the claims.

Figure 1 represents a side elevation of my improved crank, partially broken out, the handle being shown as extended. Fig. 2 in
55 side elevation shows a portion of an extensible ladder with my invention applied thereto. Fig. 3, on an enlarged scale is a section taken on the line x, x , Fig. 1. Fig. 4 is a detail showing the handle closed and the crank arm
60 locked from rotation.

I have herein shown the crank arm a as secured to the squared or polygonal end of the winding shaft A of any hoisting device, the same being supported in bearings or standards B , only one of which is shown in Fig. 1, the outer end of the crank arm being provided with projections or ears a' , between which is pivoted at e' the reduced portion h' of a
65 suitable handle h . A headed bolt e having a rounded inner end g' , see Fig. 3, is held in a recess in one of said ears a' by a preferably threaded bushing f , and a suitable spring g , held as shown in Fig. 3 between the outer end
70 of the bushing and a pin or projection g^2 on the bolt, tends to force the rounded end of the bolt inward. The reduced portion h' of the handle is provided with a transverse recess g^{2x} , see Fig. 3, which is adapted to be entered by the said bolt when the recess is
80 brought in line therewith as the handle h is rotated upon its pivot e' into the position shown in Fig. 1, so that the handle is automatically locked in said extended position by the engagement of the bolt with the recess. 85

When it is desired to fold the crank the head of the bolt e is grasped and the bolt drawn outwardly against the action of the spring, removing it from the recess g^{2x} , whereupon the handle h is free to be moved upon
90 its pivot and brought into the position shown in Fig. 4. So long as the crank is folded the bolt e rests upon the side of the portion h^4 , but the instant the handle is turned in to the position at right angles to the crank the bolt
95 slips into place in the recess and automatically locks the handle. Tension of the spring may be regulated by rotation of the bushing f .

When the crank is folded it is desirable to provide a locking device for the same, which will prevent rotation of the crank arm, and I have herein shown one convenient form of locking device, the same consisting of a pin *b* extended through the crank arm, the latter being hollowed out at *c* to receive a spring *b'* resting against a suitable enlargement on the pin, the pin being retained in place by suitable bushing *b²*, herein shown as threaded. The ends of the pin *b* project beyond the arm *a*, the outer end being adapted to enter a recess *d'*, see dotted lines Fig. 1, in a plate *d* secured to the shaft support *B* by suitable screws 2. The opposite end of said pin projects into the path of movement of and is engaged by a part of the handle when the latter is folded, see Fig. 4, forcing the pin *b* outwardly against the pressure of spring *b'* and into engagement with the recess *d'* of the catch or plate *d*. When the handle is unfolded or drawn out, the pin *b* is withdrawn from engagement with the catch through the action of the spring *b'* and the crank is free to be rotated.

In Fig. 2 I have shown my invention as applied to an extensible ladder, the shaft *A* being rigidly attached to the winding drum, and I have secured to the ladder side *L* two catches *d*, one above and one below the shaft, so that the crank may be held in its lower or upper position, as desired and most convenient.

From the foregoing it will be seen that the folded crank, herein described, is of such construction that when not in use it may be locked from rotation, the locking device being operated by the act of closing or folding the handle *h* and released by the unfolding of said handle, the latter being provided with a device for automatically locking it in position when fully extended.

I do not wish to restrict myself to the precise construction or arrangement of parts as herein shown, as the same may be somewhat varied and their relative arrangement altered

without departing from the scope of my invention.

I claim—

1. In a folding crank, a crank arm, and means to lock the same from rotation in either direction, combined with a handle pivoted to said arm and controlling by its pivotal movement said locking means, substantially as described.

2. In a folding crank, a crank arm having a longitudinally movable locking pin, combined with a crank handle pivoted to said arm, a spring controlled bolt to automatically engage and hold the handle extended, said handle being adapted when closed to cooperate with and force the locking pin into engagement with a suitable catch, and means to withdraw the bolt from the handle, substantially as described.

3. In hoisting mechanism for extensible ladders, the combination with a crank arm, a normally retracted locking pin carried thereby, and a fixed catch, of a pivoted handle adapted to force said pin into engagement with the catch to prevent rotation of the arm, substantially as described.

4. In hoisting mechanism for extensible ladders, the combination with a crank arm, a spring-controlled bolt carried thereby and having its inner end normally in position to enter a recess in a handle, and a locking pin for and carried by the crank arm, of a handle pivoted to the crank arm and provided with a transverse bolt-receiving recess, folding of the handle upon the arm operating said locking pin to prevent rotation of said arm in either direction, substantially as described.

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

DAVID F. LATIN.

Witnesses:

ISAAC J. FLAGG,
JOHN HILL.