(No Model.)

C. C. & I. Z. ALEXANDER.

SWING.

No. 482,217. Patented Sept. 6, 1892.

Fig. 1.

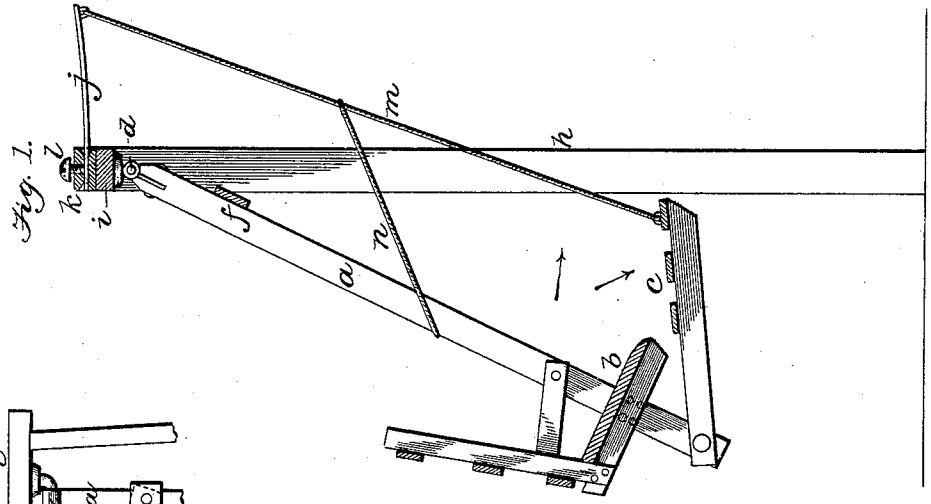


Fig. 4.

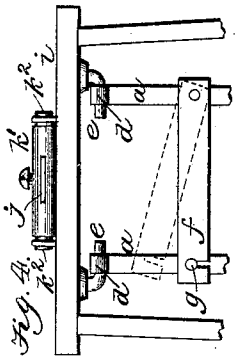


Fig. 2.

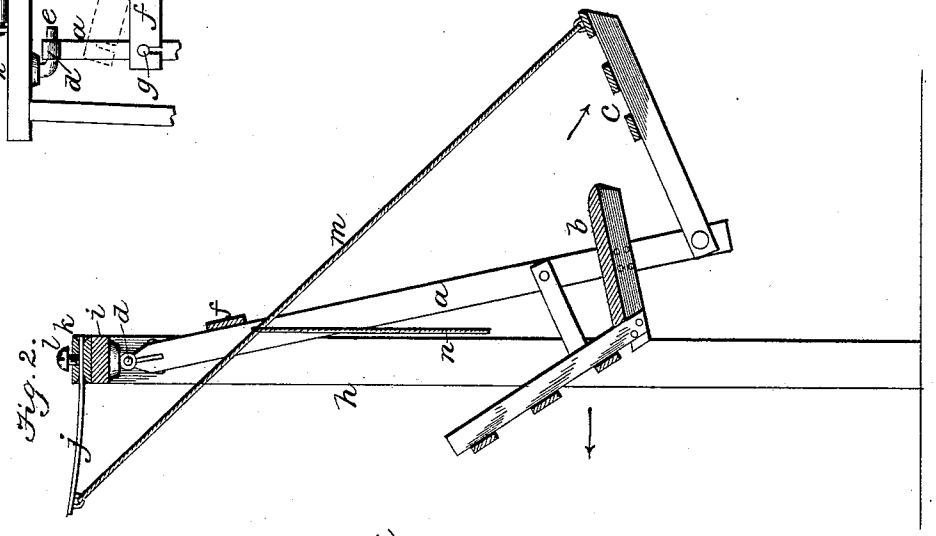
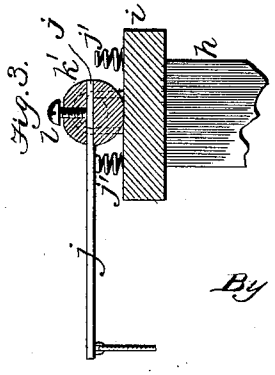


Fig. 3.



Witnesses
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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

CORNELIUS CLARK ALEXANDER AND ISAAC ZOOK ALEXANDER, OF HARTFORD CITY, INDIANA; SAID ISAAC ZOOK ALEXANDER ASSIGNOR TO WILLIAM J. ALEXANDER, OF SAME PLACE.

SWING.

SPECIFICATION forming part of Letters Patent No. 482,217, dated September 6, 1892.

Application filed February 4, 1892. Serial No. 420,340. (No model.)

To all whom it may concern:

Be it known that we, CORNELIUS CLARK ALEXANDER and ISAAC ZOOK ALEXANDER, citizens of the United States, residing at Hartford City, in the county of Blackford and State of Indiana, have invented a new and useful Improvement in Swings, of which the following is a specification.

Our improvement in exercising-swings is directed to a provision for giving exercise to the limbs and chest and for keeping the swing in motion. This provision consists in the combination of a swing having a pivoted foot-rest with a spring-arm having a fixed relation to the swing-support and a cord connecting the foot-rest and the spring, whereby the action of the limbs gives a pulling force directly on the spring-arm. In this combination the pressing or pushing force of the limbs and the pulling force of the arms may be simultaneously effected to give pleasant exercise to the body and to the chest, and the force so applied will put and keep the swing in motion and control the speed of such motion, as may be desired, without the slightest jar or jerking effect and with the advantage of a perfectly easy starting action.

The accompanying drawings illustrate our improved swing, Figure 1 being a vertical section showing the foot-rest connected with a spring-arm standing frontward of the swing-suspending bars. Fig. 2 is a similar view showing the spring-arm standing rearward of the suspending-bars. Fig. 3 is a detail section showing a modification of the spring-arm, and Fig. 4 is a detail view showing a latch device for the suspending-bars to facilitate putting up and taking down the swing.

In the drawings, *a a* are the suspension-bars, and *b* the seat having, preferably, a rigid back. *c* is the foot-rest pivoted to the bars below the seat. The bars are suspended by eyes *d* to suitable brackets *e*, which will permit the eyed bars to be slipped on and off; and as a means of securing and bracing the bars to the brackets and allow them to be easily removed we provide a latch *f*, pivoted to one of the bars and engaging the pin *g* on the other bar, as seen in Fig. 4, so that by disengaging the latch the suspension-bars can be taken off their brackets. A suitable standard-frame *h* may be used and the brackets fastened in the connecting top bar *i* of the standards. In this top bar the spring-arm *j* is secured in any suitable way, preferably in a slotted piece *k*, secured on the standard-frame bar, so that the springs extends horizontally in front of said bar, or may be reversed to extend in the rear of the bar, as seen in Fig. 2. To reverse the position of the spring from the front to the rear, or vice versa, it may be slid in the slot of its holding-piece and clamped by a screw *l*. The arm may be a spring-plate, as shown in Figs. 1 and 2, or a rigid arm sustained by a coiled spring *j'*, fixed on the standard-frame bar, as seen in Fig. 3, on each side of the slotted piece to sustain the arm whether set to stand to the front or to the rear of the swing. The bar *k* has a transverse slot or mortise, into which the arm *j* is fitted and clamped, as in Fig. 4, and when the spring-arm *j* is used, as in Figs. 1 and 2, said bar *k* is nailed or screwed flat on the top bar *i*; but when a rigid arm is used, as in Fig. 3, the bar *k* is secured by journal-pins j^2 in bearings or eyes on said top bar *i* to allow said bar to rock with the movements of its rigid arm resting on the spring *j*, fastened to said top bar beneath said rigid arm. The free end of the spring-arm is connected to the free end of the foot-rest by a cord *m*, so that the function of the spring-arm constantly tends to maintain the cord taut and holds the foot-rest in proper relation to the seat. We make the spring-arm about sixteen inches long and provide for reversing its position, as stated, so that the swing can be operated by exerting the pressing or pushing force on the foot-rest when the swing is going forward or when it is moving backward. When the spring-arm is set to the front, as in Fig. 1, the occupant exerts a pushing force on the foot-rest when going forward; but when the spring-arm is set to the rear, as in Fig. 2, the occupant exerts a pushing force on the foot-rest when moving backward. When the spring-arm is set forward, the swing will move through a greater distance; but when the spring-arm stands in the rear less force is required to start and keep the swing in motion and it is

better suited for children. The co-operative action of the pivoted foot-rest and its connected spring-arm gives a yielding, pushing, or pressing action to the foot-rest that will start and keep the swing moving much easier and better than could be obtained if the foot-rest was connected to a rigid arm; but primarily it is the yielding or downward moving capacity of the foot-rest under pressure applied by the limbs of the occupant which aids by pulling down the spring *j* to move and to accelerate the movement of the swing and that gives a gentle exertion to the body. Supplementing the foot action of the occupant we provide for bringing the arms into action by means of a branch cord *n*, connected to the treadle-cord within reach of the occupant, to give the advantage of a pulling action and exercise to the chest, while increasing the swinging force, the limbs and the arms acting with separate forces upon the spring-arm, so that the one reinforces the other to give the required ease in obtaining and continuing the desired motion.

Referring to the function of the foot-rest, spring-arm, and their flexible connection, it will be seen that in the forward position of the spring-arm and when the swing is in its backward position, the spring-arm having been depressed by the pressure exerted by the occupant upon the foot-rest, the spring in assuming its normal position will exert a pulling force upward upon the swing to move it forward and assist in maintaining the movement of the swing under a comparatively easy labor of the occupant. In the rearward position of the spring-arm its action will be the same when the swing is in its forward position. It is also important to notice that the action of the spring arm is directly upon the free end of the foot-rest and that the movement of the connected parts is in unison, and hence causes the resilient force of the spring-arm to so act upon the foot-rest to pull upon it against the pressure of the occupant. Moreover, the pivoted foot-rest, the overhead spring-arm, and a flexible connection therefor gives the advantage of bringing into action a pulling force exerted by the arms of the occupant by the provision of a branch cord on said flexible connection, whereby the occupant may use both his legs and his arms to keep the swing in motion and either separately or together. In reversing the spring-arm it will be understood that its cord is detached, the spring-arm set to stand to the front or to the rear, as stated, and the cord connected to its end, and that when so connected the foot-rest and the spring-arm are movable together as a means of operating the swing.

We claim as our improvement—

1. In a swing, the combination, with the suspending-bars and the foot-rest pivoted thereto, of an overhead spring-arm having a fixed relation to the swing and a flexible connection with the free end of the foot-rest, for the purpose stated.

2. In a swing, the combination, with the suspending-bars and a pivoted foot-rest, of an overhead spring-arm, a clamp-holder therefor, whereby said arm may be secured in fixed position to the front or to the rear of the swing, and a flexible connection for said spring-arm and the foot-rest, for the purpose stated.

3. In a swing, the combination, with the fixed pintle-brackets *e e* and the seat-suspending bars having eyes *d d* for engaging said pintle-brackets, of a latch-bar *f*, pivoted at one end to one of said suspension-bars and standing across and engaging the other of said suspension-bars, whereby to secure said suspension-bars and permit their removal from said pintle-brackets, substantially as described.

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

CORNELIUS CLARK ALEXANDER.
ISAAC ZOOK ALEXANDER.

In presence of—
WILLIAM N. KEMP,
W. H. SPENCE.