(No Model.) 4 Sheets—Sheet 1.

J. GOULD, Jr.

SAFETY LEVER FOR CLUTCHES.

No. 373,455. Patented Nov. 22, 1887.

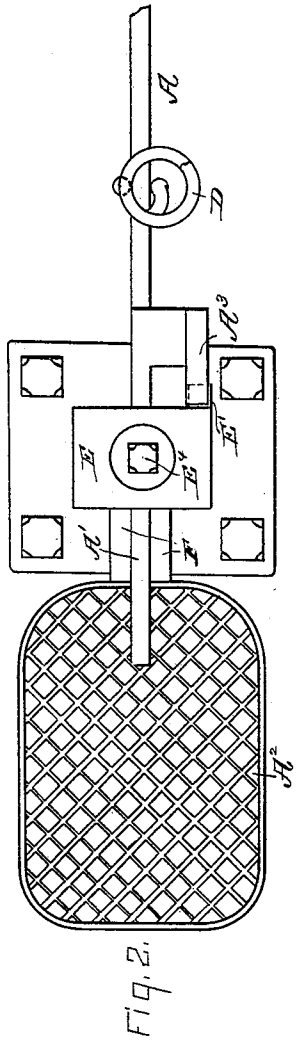

Fig. 2.

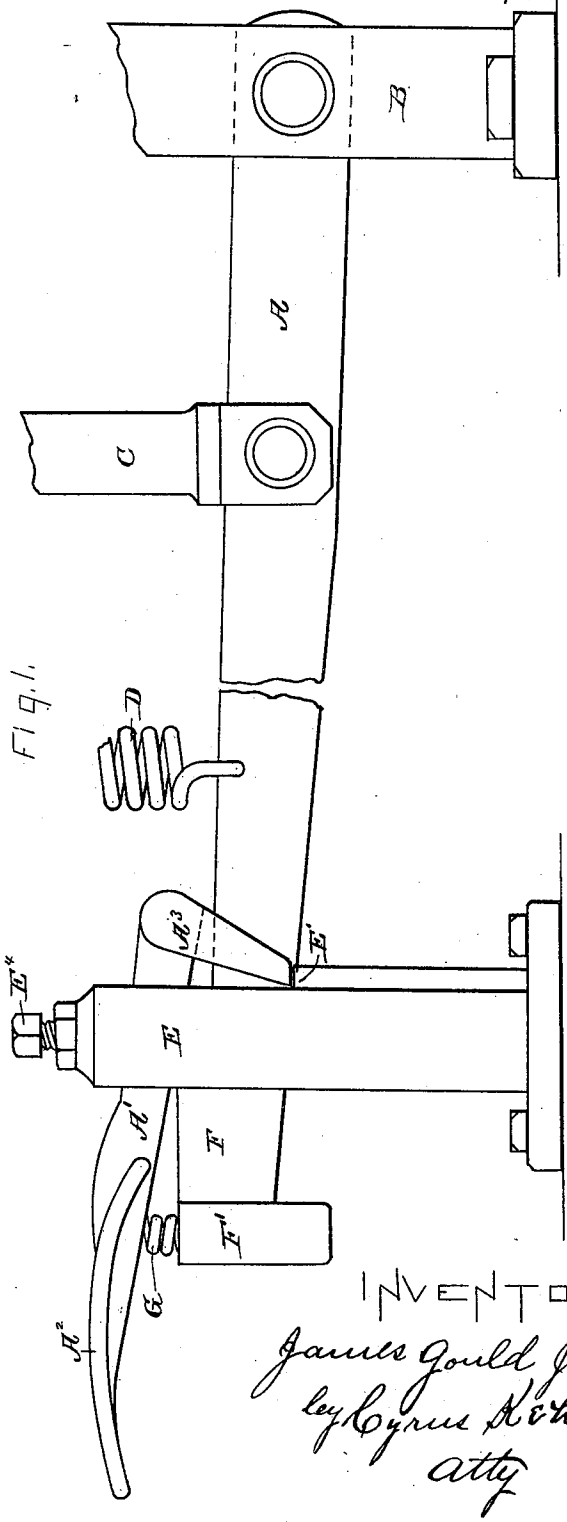

Fig. 1.

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(No Model.)

4 Sheets—Sheet 2.

J. GOULD, Jr.

SAFETY LEVER FOR CLUTCHES.

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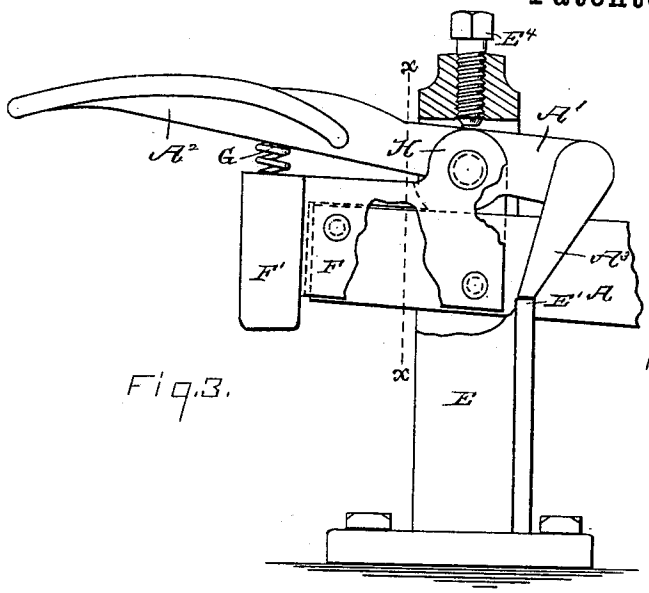

Fig. 3.

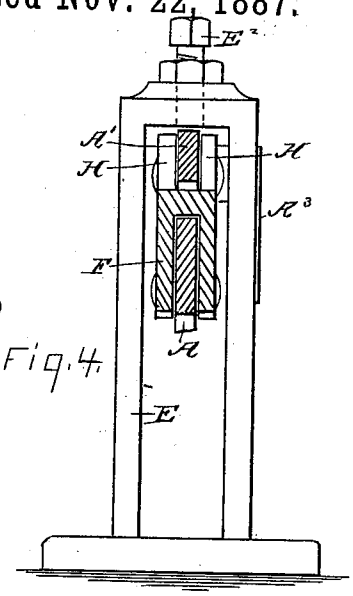

Fig. 4.

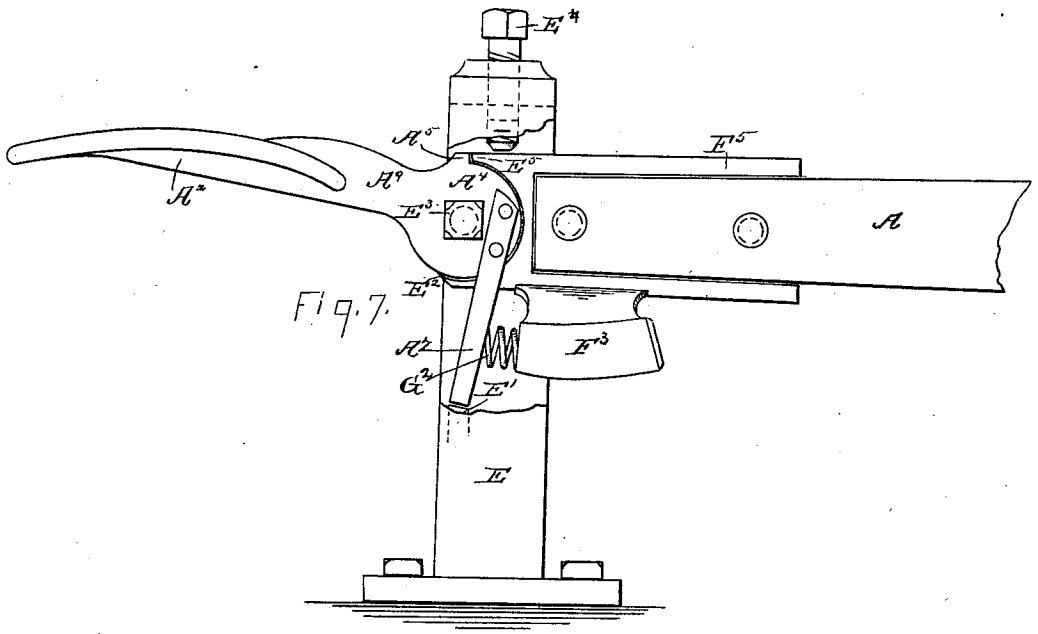

Fig. 7.

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(No Model.) 4 Sheets—Sheet 3.

J. GOULD, Jr.

SAFETY LEVER FOR CLUTCHES.

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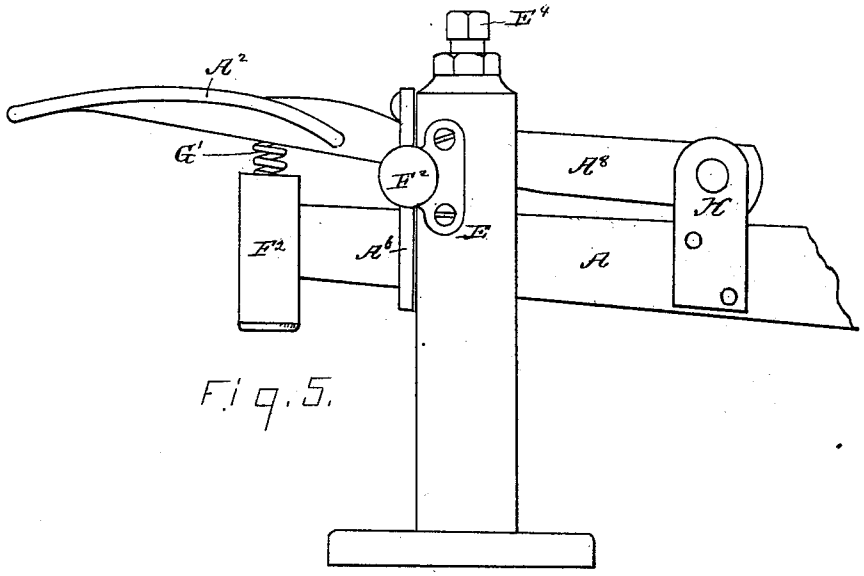

Fig. 5.

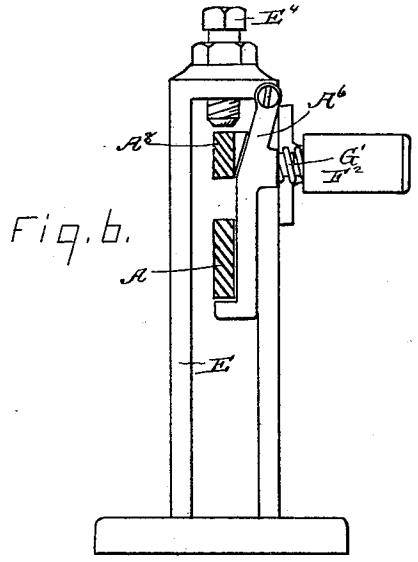

Fig. 6.

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(No Model.)

4 Sheets—Sheet 4.

J. GOULD, Jr.

SAFETY LEVER FOR CLUTCHES.

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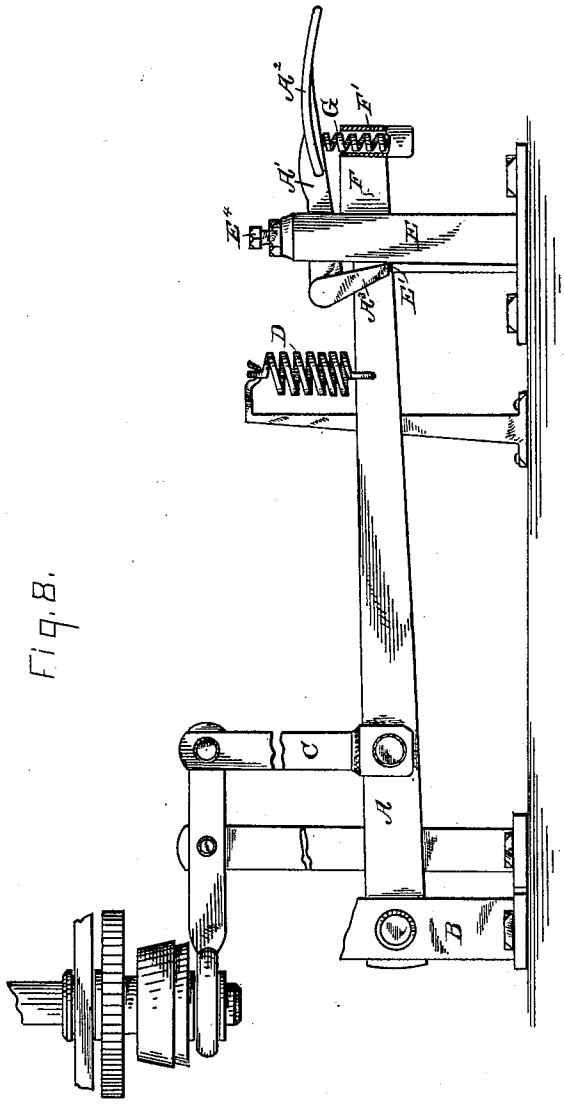

Fig. 8.

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UNITED STATES PATENT OFFICE.

JAMES GOULD, JR., OF MAYWOOD, ILLINOIS.

SAFETY-LEVER FOR CLUTCHES.

SPECIFICATION forming part of Letters Patent No. 373,455, dated November 22, 1887.

Application filed December 16, 1886. Serial No. 221,711. (No model.)

To all whom it may concern:

Be it known that I, JAMES GOULD, Jr., a citizen of the United States, residing at Maywood, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Safety-Levers for Clutches and other Devices; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

This invention relates to levers used to throw machinery into and out of motion, and has special reference to means for preventing the accidental movement of such levers. The object in preventing such accidental movement is to avoid unexpected action of the machinery, whereby it does injury to itself, to the materials upon which it is to operate, and to the operators and attendants.

In machines for stamping, pressing, cutting, and sawing it is of great importance that such premature movements do not take place. As results of such premature movements, valuable machines are frequently damaged, work is ruined, and operatives are maimed or killed. In most cases such premature movements are due to the action of some unexpected force upon the engaging-lever or some of its connections, whereby said lever is made to operate the clutch or other device which sets the machinery into motion. Where such lever is in a horizontal position, it is particularly exposed to the causes which thus move it. Tools or materials may fall upon it or strike it, or an operative may accidentally strike it or step upon it.

The object of this invention is to provide means for locking said levers and their connections against movement in response to all forces excepting the designed pressure of the hand or foot.

In the accompanying drawings, Figure 1 is a broken side elevation of a lever embodying my improvements. Fig. 2 is a plan of a portion of the same. Fig. 3 is a detail side view. Fig. 4 is an end elevation with a section in line *x x* of Fig. 3. Fig. 5 shows a side elevation of a modified form of my device. Fig. 6 is an end elevation of the same with a section in line *y y* of Fig. 5. Fig. 7 is a side elevation illustrating another form in which my device may be constructed. Fig. 8 is a side elevation.

Referring to said drawings, A is the ordinary horizontal lever, hinged at its right end to any suitable support, B, and being coupled near said end to the lower end of an upright bar, C, which latter is connected with a clutch or other device whose office it is to set the machinery into motion.

D is a torsion-spring connected by its lower end with the lever A and by its upper end with some suitable fixed support. Said spring serves to hold the lever A in its raised position. Heretofore the left end of said lever has been unconnected with any support, so that any weight or pressure bearing down upon any part of said lever would cause it to move downwardly and set the machinery in motion. Operatives occasionally set machinery in motion by accidentally stepping upon or otherwise pressing said lever, or by letting tools or work fall upon it. Accidents have even occurred by careless attendants grasping the bar C and pulling upon it.

The drawings show my improvement applied to such free end of the lever and holding said end against all forces excepting pressure upon the foot-plate. The end of the lever A is made to extend into and a short distance through a vertical fixed slotted post, E. Over the end of said lever is fixed, by riveting or otherwise, a channeled block, F, bearing at its outer end the vertical upwardly-opening barrel F′. In said barrel rests a coiled spring, G. At the inner end of said block are two parallel longitudinal upwardly-extending ears, H. Lying between said ears H and journaled to the latter is the secondary lever A′, having at its outer end the foot-piece A^2 and at its inner end the downwardly-extending dog A^3. The lower side of the foot-piece A^2 lies upon the spring G, and the outer end of the lever A′ is kept raised by said spring G. The lower end or point of the dog A^3 rests upon a shoulder, E′, at one side of the post E. Through the upper end of the post E a vertical set-screw, E^4, passes and rests upon the upper side of the secondary lever A′, or upon one of the ears H, and serves to fix the height to which the levers A and A′ may be drawn by the spring D.

Referring to Figs. 1 and 3, the lever A, carrying with it the lever A′, will be seen raised to its highest limit. The secondary lever A′ will also be seen tilted to its farthest limit upon its bearing in the ears H, the foot-piece A^2 being raised to its highest limit. It will also be seen that while the secondary lever is in this position the lever A cannot move downwardly in response to pressure exerted upon it. The dog A^3, resting upon the shoulder E′, firmly locks the lever A against downward movement. Accidental stepping or otherwise pressing upon said lever A, or the accidental falling of tools or work upon said lever, or the accidental or careless drawing down on the bar C, cannot cause the lever A to yield and set the machinery in motion. When, however, the operator is ready for the action of the machinery, he presses his foot upon the foot-piece A^2 and causes the secondary lever A′ to tilt upon its bearing and throw the lower end of the dog A^3 away from the post E and out of engagement with the shoulder E′, whereupon the continued pressure of the foot causes both levers to descend. On again raising the foot the springs D and G raise both levers to the position shown in Figs. 1 and 3.

It will be readily seen that the principle upon which I have constructed my improvement may be embodied in numerous modifications of the devices which I have shown. The most important feature of my invention may be said to consist in an engaging-lever provided at its outer end with a locking device which may be released only by pressure of the foot or hand. Such a locking device may be formed by the use of variously-formed tilting secondary levers A′ and dogs A^3.

Figs. 5 and 6 illustrate a simple modification. The secondary lever A^8 is journaled upon the lever A in the manner shown in Fig. 3, excepting that the bearing is placed at a short distance to the right of the post E, and a dog or hook, A^6, engages the lower edge of the lever A and is hinged by its upper end to the post E in such manner as to be allowed to swing transversely to the lever A and release the latter. The upper portion of said dog is inclined toward the lever A^8. Said inclined portion is met by a correspondingly-inclined cam on the adjacent side of the lever A^8. Pressure upon the foot-piece causes said cam to descend and throw the dog outwardly and out of engagement with the lever A. A spring, G′, seated within a horizontal barrel, F^2, and pressing upon said dog, causes the latter to return when the pressure of the foot has been removed. Fig. 7 shows still another modification. Here the block F^5 is applied flatwise to the side of the lever A and extends a short distance beyond the free end of the latter, where a vertical depressed face, E^2, receives the vertical compressed circular end A^4 of the lever A^9, and said circular end is held in said depression by means of a bolt, E^3, upon which it may rotate. From the outer face of the compressed end A^4 a dog, A^7, extends downwardly and rests upon a shoulder, E′, as described, of Fig. 3. Pressing the foot upon the foot-piece A^2 causes a partial rotation upon the bolt E^3 and throws the dog A^7 inwardly out of engagement with the shoulder E′. A coiled spring, G^2, within the horizontal barrel F^3, supported from the block F^5, presses against said dog and causes a backward rotation of the latter and the lever A^9. A lug, A^5, on the lever A^9 meets a shoulder, E^5, on the block F^5 and limits the upward movement of the lever A^9.

It is to be understood that the lever A herein described may be set in other positions and operated by the hand, the outer end of the secondary lever A′ being made of proper form to be grasped by the hand. In such case the form, position, and support of the post E must of course be modified to conform to the new condition.

My improvement may without difficulty be applied to machines already constructed, as well as to new ones.

I claim as my invention—

1. The combination, with a suitably-supported lever for throwing machinery into motion, of a spring to move said lever in one direction, a secondary lever having combined with it a spring to tilt it in the same direction, and a part having a support which is fixed with reference to said first-named lever and arranged to engage and lock the latter against movement in the direction opposite the direction in which said lever is moved by said spring until the secondary lever is moved in the direction in which said first-mentioned lever is to be moved, substantially as shown and described.

2. The combination, with a suitably-supported lever for throwing machinery into motion, of a spring to move said lever in one direction, means for limiting the movement caused by such spring, a secondary lever having combined with it a spring to tilt it in the same direction, and a part having a support which is fixed with reference to said first-named lever and arranged to engage and lock the latter against movement in the direction opposite the direction in which said lever is moved by said spring until the secondary lever is moved in the direction in which said first-mentioned lever is to be moved, substantially as shown and described.

3. The combination, with the lever A, of a spring, D, secondary lever A′, spring G, and suitable locking devices controlled by said secondary lever, all arranged and operating substantially as shown and described.

4. The combination of the lever A, spring D, secondary lever A′, spring G, dog A^3, and post E, having a shoulder, E′, substantially as shown and described.

5. The combination of the lever A, spring D, secondary lever A′, spring G, dog A^3, post E, having a shoulder, E′, and screw E^4, substantially as shown and described.

6. The combination of the lever A, spring

D, secondary lever A′, spring G, barrel F′, dog A^3, and post E, having a shoulder, E′, substantially as shown and described.

7. The combination of the lever A, spring D, secondary lever A′, spring G, barrel F′, block F, dog A^3, and post E, having a shoulder, E′, substantially as shown and described.

8. The combination of the lever A, spring D, secondary lever A′, spring G, barrel F′, block F, dog A^3, and post E, having a shoulder, E′, and screw E^4, substantially as shown and described.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES GOULD, JR.

Witnesses:
L. VERNON FERRIS,
ANNA M. FERRIS.