

Oct. 30, 1923.

1,472,325

A. CLAYDEN

SLING OR GRIP FOR SACK LIFTING AND OTHER PURPOSES

Filed Oct. 25, 1920 3 Sheets-Sheet 1

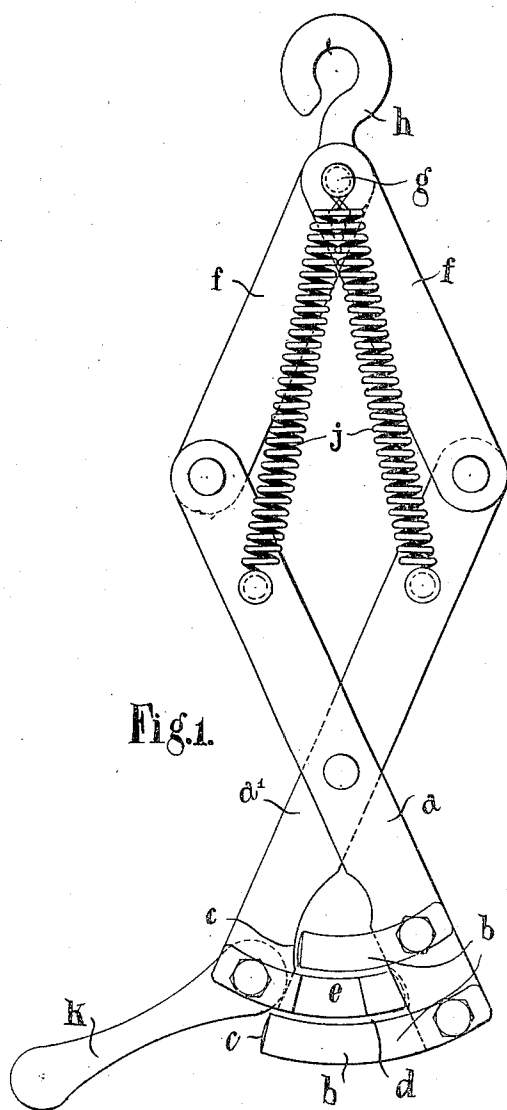


Fig. 1.

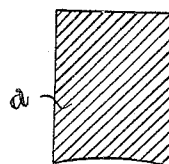


Fig. 4.

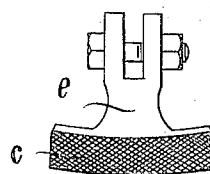


Fig. 5.

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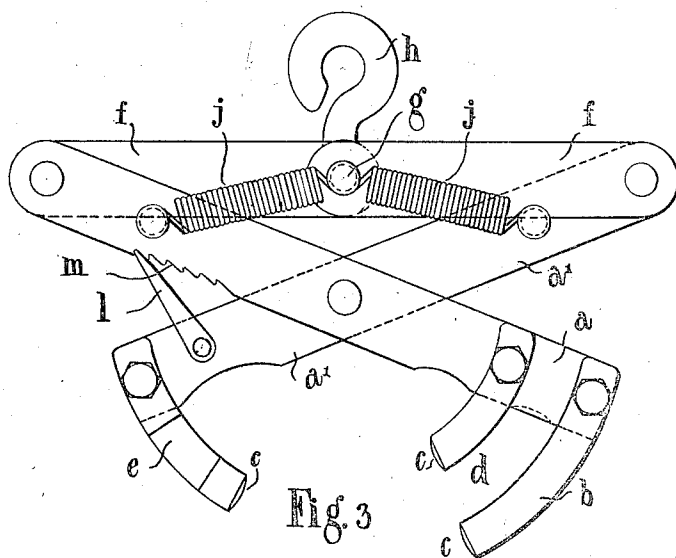
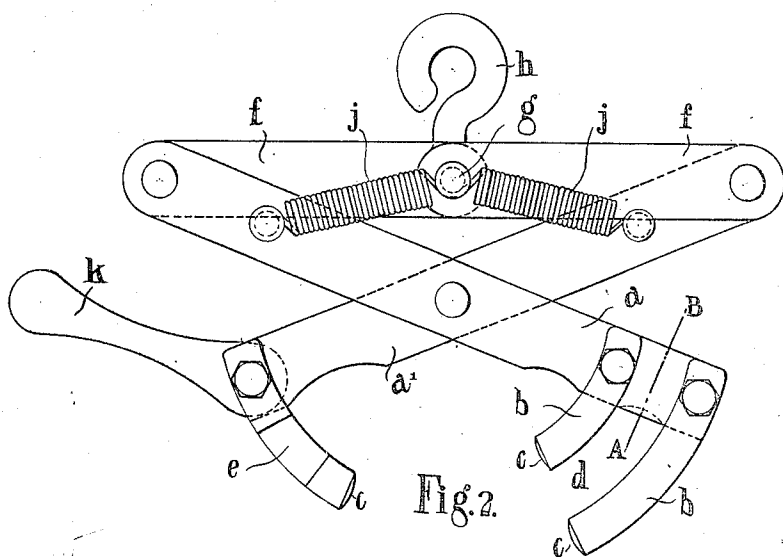
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3 Sheets-Sheet 2



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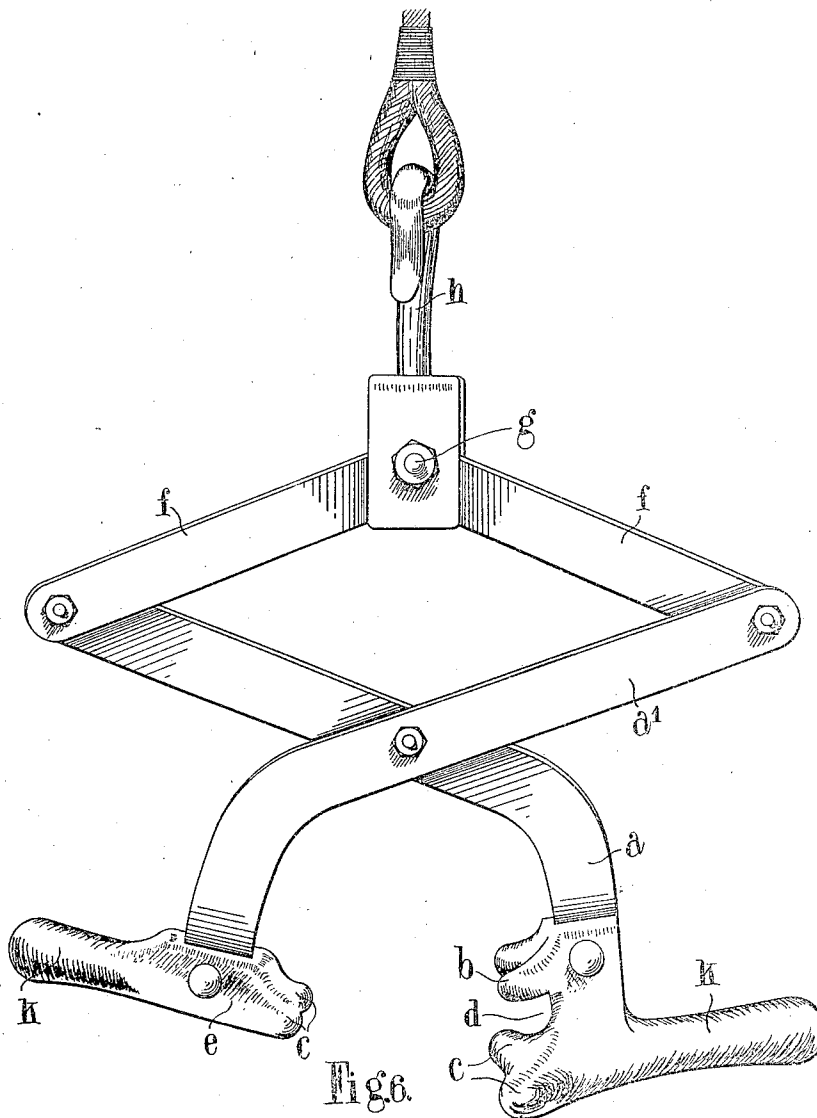
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SLING OR GRIP FOR SACK LIFTING AND OTHER PURPOSES

Filed Oct. 25, 1920

3 Sheets-Sheet 3



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## UNITED STATES PATENT OFFICE.

ARTHUR CLAYDEN, OF RICHMOND, ENGLAND.

SLING OR GRIP FOR SACK LIFTING AND OTHER PURPOSES.

Application filed October 25, 1920. Serial No. 419,438.

*To all whom it may concern:*

Be it known that I, ARTHUR CLAYDEN, a subject of the King of Great Britain and Ireland, and residing at 1 Red Lion Street, Richmond, in the county of Surrey, Eng-  
land, have invented certain new and useful Improved Slings or Grips for Sack Lifting and Other Purposes, of which the following is a specification.

This invention relates to means used in combination with hoisting mechanism for lifting or hoisting of filled sacks, bales or other heavy goods on which a flexible means or member is provided to which the gripping jaws or clamps of the lifting or hoisting means can be attached or detached readily, and which means are known as "slings or grips."

The primary object of the present invention is to provide an improved sling or grip which is principally intended for sack lifting, and for use with the apparatus embodied in my British specification No. 135,880 but it is to be understood the invention is to be used wherever its functions are applicable. A further object is to provide the sling or grip with jaws or clamps capable of obtaining an interlocking action upon the material of the bag mouth or other flexible means.

According to this invention the improved sling or grip comprises pivoted levers, of straight, bowed, curved or other suitable contour having at their lower ends demountable jaws or clamps provided with plain or with serrated, chased, or roughened gripping surfaces to increase the hold or grip of the jaws or clamps which may be straight, or curved inside to have a better hold around the bag mouth or other material gripped. On one of the said levers below the jaw or clamp thereon is a further jaw, which with the other jaw or clamp forms a space or cavity into which the jaw or clamp of the other lever passes, when in closed or gripping position to form an interlock and thereby a more positive grip.

At or towards the upper ends of the levers is a toggle joint to which and to a central axis links are attached, and to this central axis a swivel or hook suspension device is attached by which the sling or grip can be attached to a ring or like device fastened on or forming part of the lifting rope. All the joints are free and spiral

springs may be positioned preferably between the lower and upper ends of the levers or at other convenient points to form a retraction device by which the levers are relaxed to open the jaws. The jaws are closed when in position on the bag mouth by the lifting of the filled sack, or the like, and the closure may be assisted by a small hand lever, handle, or other suitable device at one or both sides, preparatory to the lifting action.

On the lifting of the load the toggle action of the link-work operates the levers to close the jaws fully and get a positive grip upon the load; this action also puts the springs when used into a state of tension ready for use in opening the jaws as soon as the pull of the load is relieved and it is desired to detach the grip from the load.

The toggle system employed to close the jaws gives increased power to the grip.

The accompanying drawings illustrate embodiments of the present invention:

Figure 1 is an elevation showing the improved grip or sling in closed position (as when the lifting is on) and with hand lever or handle at one side only for controlling the interlocking jaw.

Figure 2 is an elevation showing the grip or sling opened.

Figure 3 is an elevation similar to Figure 2, but without hand lever or handle, a catch and release device being provided by which the jaws are normally held open, and automatically released as soon as a pull is exerted through the swivel hook and the load commences to lift.

Figure 4 is a section of lever on the line A B, showing curved surface.

Figure 5 is a section of interlocking jaw with chased surface, and

Figure 6 is an elevation of a construction of grip or sling without springs.

In carrying the invention into effect it is preferred to employ pivoted levers *a* and *a'* of substantially straight contour having at their lower ends demountably secured thereto jaws or clamps *b* and *c* respectively provided with gripping surfaces *e* which, as shown, are cured and chased or roughened, but such may be plain.

A plurality of jaws or clamps *b* are provided on one of the levers and these form a space or cavity *d* to receive the flexible material of the bag mouth after tying, and

a further jaw or clamp *e* is carried on the lever *a*<sup>1</sup> to form an interlock, when in closed or gripping position between the jaws or clamps *b*, and thereby a more positive grip upon the bag or load.

*f* are the links attached by toggle joint to the upper ends of the levers *a* and *a*<sup>1</sup> and to a central axis *g*, upon which is a swivel or hook suspension device *h* which may be of snap form, forming the attachment means to the lifting rope.

*j* are spiral springs positioned as shown, and preferably between the lower and upper ends of the levers *a* and *a*<sup>1</sup> to form a retraction device by which the levers may be relaxed.

*k* is a hand lever or handle at one side only for moving the interlocking jaw lever into position before the pull is exerted by the lifting rope.

The catch and release device comprises a pawl *l* preferably on the interlocking jaw lever, engaging with teeth *m* on the other lever to hold the grip or sling open. On the lifting rope exerting its pull when the interlocking jaw lever is moved to release the pawl *l*, the springs *f* and the lifting action cause the jaws or clamps to exert through the toggle joint a positive grip upon the bag or load.

Having now described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. A toggle-joint-operated grip comprising in combination a lever system composed of main lever members intermediately connected crosswise at a common axis, a pivot pin forming the said common axis, pivot pins connecting the upper ends of said lever members with the lower ends of link members, a pivot pin forming a common axis to which the upper ends of the link members and the lower end of a suspension device are connected, a cavity jaw carried on the free end of one main lever and a jaw carried on the free end of the other lever adapted to interlock with the cavity jaw when gripping.

2. A toggle-joint-operated grip having in combination main levers oscillating crosswise, a common axis pivot pin, upon which the said main levers oscillate, arranged intermediately of their length, a cavity jaw on the free end of one main lever and a jaw on the free end of the other lever ar-

ranged to give a gripping interlock, pivot pins connecting the main levers at their upper ends to link members, a common axis pivot pin for connecting the upper ends of the link members and the lower end of a hook suspension device, a plurality of spiral springs both anchored at one end to the pivot pin of the suspension device and a spring anchoring stud to which the lower ends of the springs are secured provided upon such main levers.

3. A toggle-joint-operated grip having in combination main levers jointly oscillatory about a pivot pin arranged intermediately of their length, link members and pivot pins connecting the lower ends of said link members to the upper ends of the main levers, a common axis pivot pin connecting the upper ends of the link members and the lower end of a suspension device, a demountable cavity jaw attached to the free end of one main lever and a demountable jaw attached to the free end of the other main lever arranged to obtain a gripping interlock when closed, means for rendering the said jaws attachable and demountable from the main levers and means attached to the said demountable jaws, whereby they can be manually pulled apart and placed in position for gripping the goods.

4. A toggle-joint-operated grip having in combination oscillatory main levers, link members, pivot pins connecting the link members to the said main levers, a pivot pin connecting the upper ends of the link members and the lower end of a suspension device, a demountable cavity jaw attached to the free end of one main lever and a demountable jaw attached to the free end of the other main lever to form a gripping interlock when closed, means for rendering the said jaws attachable and demountable from the main levers, means attached to the said jaws whereby they can be opened out preparatory for gripping the goods, and a releasable catch device pivoted at one end on one main lever and at its free end engaging the other main lever to hold the levers apart and the jaws open to receive the material to be gripped, after which the catch is released.

In testimony whereof I have signed my name to this specification.

ARTHUR CLAYDEN.