Dec. 22, 1959 G. FAUGIER 2,918,136

RAISING AND LOWERING APPARATUS

Filed Dec. 13, 1955

Fig. 1

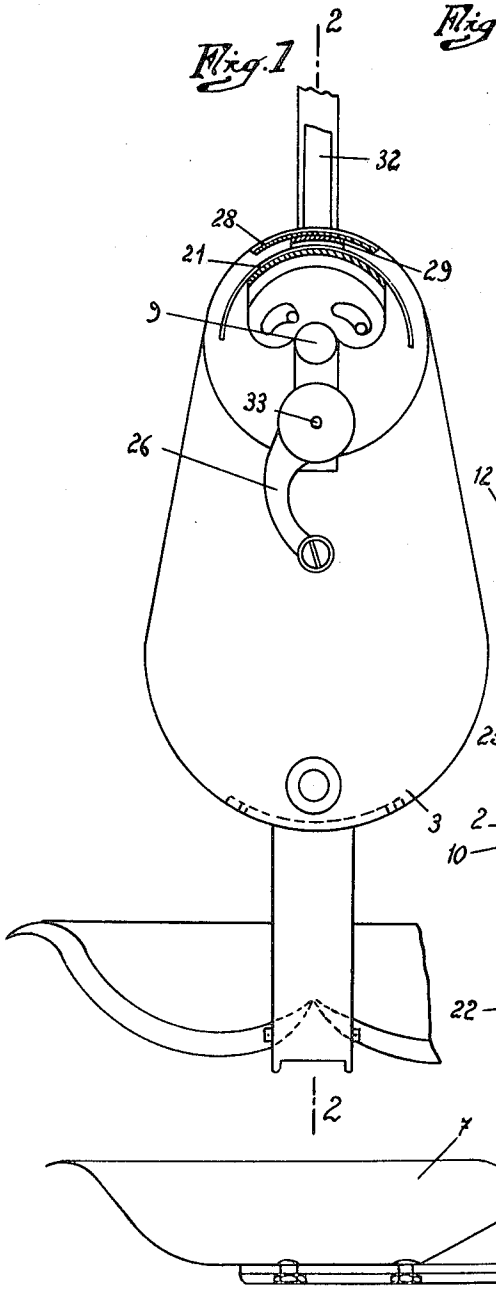
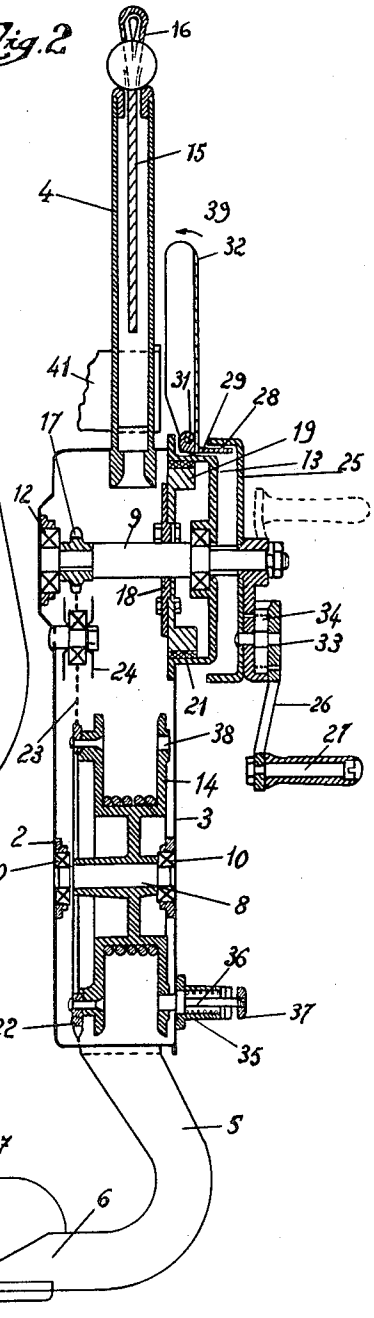


Fig. 2



INVENTOR:
GABRIEL FAUGIER

BY
Richardson, David and Nordon
ATTORNEYS.

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RAISING AND LOWERING APPARATUS

Gabriel Faugier, Bron, France, assignor to Societe d'Etudes et de Construction d'Appareils de Securite J.R.G., Bron (Rhone) France, a company of France

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2 Claims. (Cl. 182—142)

My invention has for its object a raising and lowering apparatus applicable to various cases such, for instance, as the carrying of pipe-layers and zinc-workers executing some work on the front of a building and generally speaking, of any workman who has to be lowered from the roof and then after raised intermittently to a more or less considerable extent in accordance with the requirements of the work they are entrusted with.

My improved apparatus associates within the same casing suspended to a stationary point through a cable, rope or the like elongated member and provided with a winch on which the latter is wound and unwound, and automatic braking system acting during the unwinding of said cable or the like member off the winch with a view to slowing down the lowering movement, a positive braking system which allows the operator seated on a seat carried by the casing to brake to a more considerable extent or to stop at any moment the lowering movement of said casing, and a crank provided with a handle and controlling the winding of the cable or the like round the winch with a view to raising the casing.

I have illustrated by way of example in accompanying drawings a preferred embodiment of my improved apparatus without said embodiment being by any means to be considered as binding. In said drawings:

Figs. 1 and 2 are respectively a front elevational view of said embodiment and a cross-section thereof through line 2—2 of Fig. 1, the crank being shown in solid lines in its operative position providing for the raising of the apparatus. In said drawings:

2 designates a casing, 3 the cover closing the front surface of said casing, 4 a tube forming an extension of said casing above its upper end, 5 a support rigid with the lower end of the casing and to which is pivotally secured at 6 a seat 7.

Inside the casing 3 are arranged two parallel horizontal spindles 8 and 9 revolubly carried inside the corresponding bearings 10 and 12. Whereas the two bearings 10 are carried respectively by the casing 2 and by its cover 3, the two bearings 12 are carried respectively by the casing 2 and by the brake-drum 13 rigid with the upper section of the casing 2 to the front thereof.

To the spindle 8 is keyed a pulley 14 round which is wound a cable 15 extending through the tube 4 and ending with an eye 16 through which said cable may be fitted to a stationary support, so that the casing is thus suspended to the latter.

To the spindle 9 are keyed a pinion 17 and a plate 18 carrying the small centrifugal weights 19 of a brake of the type disclosed in the French Patent 1,080,365 filed on July 6, 1955, in the name of Société d'Etudes et de Construction d'Appareils de Sécurité J.R.G. The small weights 19 which carry friction linings 21 are housed inside the above mentioned stationary drum 13 against the periphery of which they are urged to provide for automatic braking. This braking is obtained as soon as the pulley 14 round which the cable 15 is wound unwinds at a predetermined speed; said pulley carries as a matter of

fact on one of its flanges a toothed wheel 22 which is coaxially rigid therewith and is operatively connected with the pinion 17 on the spindle 9 through a chain 23 passing over a tensioning device 24.

The spindle 9 extends as illustrated in Fig. 2 to the front of the stationary brake-drum 13 and it carries a second brake-drum 25 which is keyed to said spindle and is rigid with a crank 26 terminating with a handle 27. This drum 25 cooperates with the friction lining 28 carried by a lever 29 which is pivotally secured to a pivot 31 rigid with the casing 2 and extends beyond the latter to form the lever handle 32.

It should be remarked that the crank 26 carrying the handle 27 is collapsible so as to be harmless and not to risk wounding the operator when the apparatus is released and sinks, while the cable unwinds. To this end, the crank 26 is pivotally secured to the drum 25 round the pin 33 and connected with the latter through a helical spring 34 operating against torsional stresses so that during non operative periods the crank returns automatically into the position illustrated in interrupted lines in Fig. 2.

It should also be noticed that the cover 3 of the casing carries a sleeve 35 extending laterally and through which may pass a projection 36 which is controlled by the knob 37 at its outer end while its inner end extends through a perforation in the cover 3 of the casing and into one of the perforations 38 formed along the periphery the corresponding flange of the pulley 14.

The manner of operating and using the raising and lowering apparatus described is as follows: the operator begins engaging the eye 16 terminating the cable 15 to a stationary point above the point of operation. He takes in his hands the tube 4 and the brake handle 32 so as to exert on the latter a traction in the direction of the arrow 39 illustrated in Fig. 2 which leads to a holding fast of the winch as a consequence of the braking of the drum 25 through the lining 28.

The apparatus being thus held fast, the operator sits down on the seat 7 and tightens his belt 41 round the tube 4.

The apparatus and the operator being thus ready for work, said operator releases the brake handle 32 so that the apparatus may be lowered for any purposes, at a comparatively low sinking speed as provided by the automatic braking through the jaws constituted by the weights 19 which are urged centrifugally against the drum 13. This sinking speed may in no case reach a dangerous value and it is always held under control and be reduced if required through a positive operation of the outer hand-operated braking lever 32.

The operator may thus be lowered either at the predetermined limit speed of say about 2 meters per second or else at a speed purposely reduced by himself, until he reaches the point at which he is to work. He then stops the lowering movement of the apparatus through action on the outer brake lever 32. To allow himself to work without having to hold the lever 32 fast in its braking position, the operator engages then the projection 36 sliding with reference to the cover of the casing into the perforation 38 facing it on the pulley 14. He may then release the brake lever 32 since the apparatus is now held fast as the pulley 14 is held against rotation by the projection or stud 36. The operator who has then his hands free may henceforward work comfortably seated on his seat 7.

When his work is at an end or he has to move in a vertical plane, he grasps in one hand the handle 27 of the crank 26, urges it slightly in the direction corresponding to a rising of the apparatus and releases the projection or stud 36 with reference to the perforation

38 in the pulley 14. The apparatus being released again, this allows the operator to rise by continuing the rotation of the crank 26 through action on the handle 27 or else to continue sinking by releasing said handle.

It should be remarked that:

The rising movement is performed easily by reason of the speed reduction provided by the pinion 17 and the wheel 22;

The apparatus allows the operator not only to rise, but also to sink at a speed which is always under control;

In the case of a failure of the apparatus, the operator who can no longer control the sinking movement of the apparatus will be lowered down to ground level at a moderate speed which is never dangerous by reason of the automatic braking system constituted by the jaws or weights 19 and associated drum 13.

Obviously my invention is by no means limited to the sole embodiment of said rising and lowering apparatus which has been disclosed hereinabove by way of exemplification and it covers all the modifications thereof falling within the scope of the accompanying claims.

What I claim is:

1. A rope-suspended support for carrying a workman at an adjustable height alongside a wall to which the rope is secured, comprising a casing including a seat for the workman, a pulley revolubly carried inside said casing round a horizontal axis and round which the rope is adapted to be wound and unwound, a speed reducing gear including a control member within reach of the seated workman for rotating the pulley in the rope-winding direction, releasable means rigidly securing the pulley to the casing in any of a number of predetermined angular positions corresponding to different levels occupied by the seat on the casing with reference to the wall, a further control member within reach of the workman on the seat for operation of said releasable means, automatic centrifugally controlled braking means limiting the speed of unwinding of the rope off the pulley and further braking means independent of said automatic braking means and including control means within reach of the workman on the seat and independent of both above-mentioned control members.

2. A rope-suspended support for carrying a workman at an adjustable height alongside a wall to which the rope is secured, comprising a casing including a seat for the workman, a pulley revolubly carried inside said casing round a horizontal axis and round which the rope is adapted to be wound and unwound, a speed-reducing gear including a control member within reach of the seated workman for rotating the pulley in the rope-winding direction, a flange coaxially rigid with the pulley and provided with a plurality of perforations distributed along a circle coaxial with the pulley, a projection slidingly engaging the casing in a direction parallel with the spindle and lying within reach of the seated workman to be shifted into and out of the perforations registering with it to hold the pulley against rotation, automatic centrifugally controlled braking means limiting the speed of unwinding of the rope off the pulley and further braking means independent of said automatic braking means and including control means lying within reach of the workman on the seat and independent of the above-mentioned control member and projection.

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UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 2,918,136 December 22, 1959

Gabriel Faugier

It is hereby certified that error appears in the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

In the heading to the printed specification, between lines 6 and 7, insert -- Claims priority, application France January 6, 1955 --.

Signed and sealed this 7th day of June 1960.

(SEAL)

Attest:

KARL H. AXLINE

Attesting Officer

ROBERT C. WATSON

Commissioner of Patents