

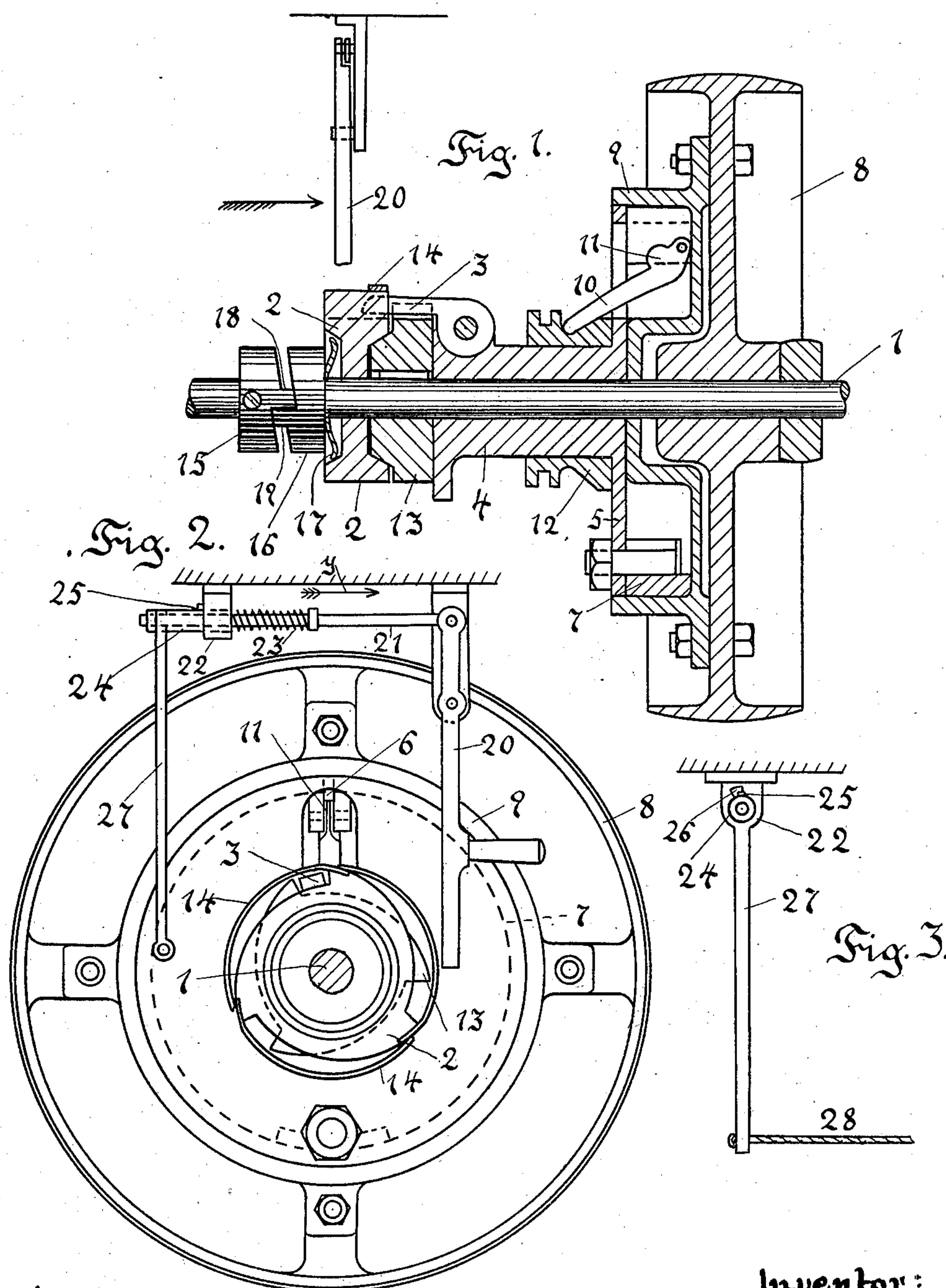
No. 746,535.

PATENTED DEC. 8, 1903.

J. T. LINDQVIST.  
AUTOMATIC SAFETY UNCOUPLING DEVICE.

APPLICATION FILED MAY 15, 1902.

NO MODEL.



Witnesses:

Ewald Selmar  
John Lindqvist.

Inventor:  
John T. Lindqvist  
by O. O. O. O.  
his att'y



# UNITED STATES PATENT OFFICE.

JOHN TITUS LINDQVIST, OF STOCKHOLM, SWEDEN.

## AUTOMATIC SAFETY UNCOUPLING DEVICE.

SPECIFICATION forming part of Letters Patent No. 746,535, dated December 8, 1903.

Application filed May 15, 1902. Serial No. 107,417. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN TITUS LINDQVIST, a subject of the King of Sweden and Norway, and a resident of Stockholm, Sweden, have  
 5 invented new and useful Improvements in Automatic Safety Uncoupling Devices, of which the following is a specification, reference being had to the drawings accompanying and forming a part hereof.

10 This invention relates to improvements in automatic safety uncoupling devices for pulleys, shafts, or the like, and especially to safety uncoupling devices of that class in which a  
 15 cord, rod, or the like hung along the shaft or part thereof to be uncoupled is connected to the uncoupling mechanism in such a manner that the said cord or the like by being stretched or touched will operate the said  
 20 uncoupling mechanism so as to immediately uncouple the shaft or pulley connected thereto in order to, in case of accident, prevent injury to a workman caught by the said rotating shaft. The said cord or the like is arranged at the side of the shaft to be uncoupled and preferably somewhat below the  
 25 same, so that a workman caught by the said shaft will immediately strike the said cord and cause the same to uncouple the shaft.

30 The invention consists in the combination, construction, and arrangement of parts hereinafter described and claimed.

In the accompanying drawings I have illustrated a suitable way of carrying out my invention.

35 Figure 1 shows a longitudinal section of an uncoupling and braking device constructed in accordance with the present invention; Fig. 2, an end view of the same seen in the direction shown by the arrow in Fig. 1, and  
 40 Fig. 3 a detail.

45 The uncoupling mechanism, which may be of well-known construction, is shown as consisting principally of two ratchet-wheels 2 and 13, of which the one, 2, is loosely mounted on the shaft 1, while the other, 13, is rigidly  
 50 fixed to said shaft, and a pawl 3, engaging with said ratchet-wheels and pivotally connected to a sleeve 4 or the like, which is connected in suitable manner either to the driving-shaft or, as illustrated in the drawings, to the driving-pulley 8. The said ratchet-wheels

2 and 13 are provided with frictional surfaces adapted to engage with each other, as shown in Fig. 1, so that the ratchet-wheel 2 will normally be driven by the ratchet-wheel 13. The  
 55 uncoupling device shown further comprises a two-armed lever 20, adapted to stop the said ratchet-wheel 2 by being brought into engagement with the teeth of the same, whereby the said ratchet-wheel 2, the teeth of which run in  
 60 opposite direction to those of said ratchet-wheel 13, will disengage the pawl 3. The said two-armed lever 20 is operated in well-known manner by a rod 21, supported by a bracket 22 and provided with a spring 23, which tends to  
 65 shift the said rod in the direction shown by the arrow *y*, Fig. 2. The said rod 21 is further provided with a loosely-mounted sleeve 24, which by means of a projection 25, bearing normally against the said bracket 22, prevents the rod 21  
 70 from being shifted in its longitudinal direction. When the sleeve 24 is turned to a certain extent, the said projection 25 will be brought opposite a notch 26, Fig. 3, in said bracket 22, whereby the said spring will immediately shift the rod 21 in the direction  
 75 shown by the arrow *y*. To the said sleeve 24 is rigidly connected a lever 27, turnable in a plane parallel to the shaft 1. To the outer end of said lever 27 is attached in well-known  
 80 manner the one end of a cord 28, the other end of which may be attached to a fixed point or to another uncoupling device of the construction described. In order to prevent the  
 85 pawl 3 from reengaging the said ratchet-wheels 2 and 13, the teeth of the ratchet-wheel 2 are provided with spring-plates 14, fixed to the tops of said teeth, each spring-plate 14 extending somewhat over the next tooth, so that the said pawl after having been disengaged  
 90 from said ratchet-wheels will slide on the outside of said spring-plates 14. The said sleeve 4, supporting the pawl 3, is provided with a flange 5, to which is fixed a ring 7, cut open in well-known manner at 6 and adapted to  
 95 engage with the inside of a rim 9, rigidly fixed to the pulley 8, which is loosely mounted on said shaft 1. The arrangement for widening the said ring 7 consists in well-known manner of an arm 10, pivotally connected to the  
 100 said rim 9 and provided with a wedge-shaped part 11, adapted to enter between the ends



of said ring 7 when the arm 10 is turned outward. The outer end of the arm 10 bears against a conical part of a sleeve 12, mounted on the said sleeve 4 so as to turn with the same and to be shifted in the longitudinal direction of the shaft 1. As shown in Fig. 1, the arm 10 is pressed outward when the said sleeve 12 is moved to the left, thereby coupling together in well-known manner the latter and the said pulley 8.

On the shaft 1 are further provided two crown ratchet-wheels 15 and 16, the teeth of which engage with each other. The said crown ratchet-wheel 15 is rigidly fixed to the shaft 1, while the crown ratchet-wheel 16 is loosely mounted on the same and is provided with a spring 17, bearing against the outer side of said ratchet-wheel 2, so as to press the latter against the said ratchet-wheel 13. In order to limit the turning of said crown ratchet-wheels 15 and 16 in relation to each other, the teeth of the same are at their tops provided with projections 18 and 19, respectively.

Assuming that the pulley 8 is coupled to the shaft 1 by means of the friction-coupling 5 9 10 and that the pawl 3 engages the ratchet-wheels 2 and 13, the working of the arrangements above described is as follows: If the cord 28 be touched or stretched, so as to turn the lever 27, so that the projection 25 of the sleeve 24 is brought opposite the notch 26, the rod 21 will be pushed to the right by the spring 23, so that the two-armed lever 20 will immediately be brought into engagement with the ratchet-wheel 2, so as to stop the said ratchet-wheel 2, which normally partakes in the movement of the shaft 1 on account of friction. When the ratchet-wheel 2 is stopped, it will bring the pawl 3 out of engagement with the ratchet-wheel 13, whereby the shaft 1 will be uncoupled from the pulley 8. The shaft will, however, on account of its inertia continue its movement, whereby a braking action will be exerted upon the crown ratchet-wheel 16 by the friction between the spring 17 and the ratchet-wheel 2, this resulting therein that the crown ratchet-wheel 16 is forced against the ratchet-wheel 2 by means of the crown ratchet-wheel 15, whereby the friction between the ratchet-wheels 2 and 13 will be increased, so as to brake the shaft 1.

The object of the friction-coupling device 5 9 10 is only to enable the pulley 8 of being uncoupled from the shaft 1 without use of the automatic safety uncoupling device above described.

It is obvious that my present invention is not limited to the constructional form illustrated in the drawings. Thus, for instance, the arrangement for stopping the ratchet-wheel 2 may be performed in any suitable manner. The friction-coupling device 5 9 10 may be left out, if desired, and the pawl or pawls be fixed directly to the pulley, respectively, to the driving-shaft, and so on.

Having now described my invention and

in what manner the same is to be performed, what I claim as new, and desire to secure by Letters Patent, is—

1. In automatic safety uncoupling devices, the combination of, a driving member, a driven shaft, a ratchet-wheel rigidly fixed to the said driven shaft, a pawl engaging with said ratchet-wheel and connected in suitable manner to the said driving member, another ratchet-wheel loosely mounted on the said driven shaft and adapted to disengage the said pawl from the first-mentioned ratchet-wheel when stopped, means for preventing the return of the said pawl from reengaging the first-mentioned ratchet-wheel, means for stopping the last-mentioned ratchet-wheel in case of accident, a crown ratchet-wheel bearing against the last-mentioned ratchet-wheel, and another crown ratchet-wheel engaging with the first-mentioned crown ratchet-wheel, substantially as and for the purpose set forth.

2. In automatic safety uncoupling devices, the combination of, a driving member, a driven shaft, a ratchet-wheel rigidly fixed to the said driven shaft, a pawl engaging with said ratchet-wheel and connected in suitable manner to the driving member, another ratchet-wheel loosely mounted on the said driven shaft and adapted to disengage the said pawl from the first-mentioned ratchet-wheel when stopped, means for stopping the last-mentioned ratchet-wheel in case of accident, spring-plates fixed to the teeth of the last-mentioned ratchet-wheel, a crown ratchet-wheel bearing against the last-mentioned ratchet-wheel, and another crown ratchet-wheel engaging with the first-mentioned crown ratchet-wheel, substantially as and for the purpose set forth.

3. In automatic safety uncoupling devices, the combination of, a driving member, a driven shaft, a ratchet-wheel rigidly fixed to the said driven shaft, a pawl engaging with the said ratchet-wheel and connected in suitable manner to the driving member, another ratchet-wheel loosely mounted on the said driven shaft and adapted to disengage the said pawl from the first-mentioned ratchet-wheel when stopped, means for preventing the return of the said pawl from reengaging the first-mentioned ratchet-wheel, means for stopping the last-mentioned ratchet-wheel in case of accident, a crown ratchet-wheel, a spring on said ratchet-wheel bearing against the last-mentioned ratchet-wheel, and another crown ratchet-wheel engaging with the first-mentioned crown ratchet-wheel, substantially as and for the purpose set forth.

4. In automatic safety uncoupling devices the combination of, a driving member, a driven shaft, a ratchet-wheel rigidly fixed to the said driven shaft, a pawl engaging with said ratchet-wheel and connected in suitable manner to the driving member, another ratchet-wheel loosely mounted on the said driven shaft and adapted to disengage the said pawl from the first-mentioned ratchet-wheel when



stopped, means for stopping the last-mentioned ratchet-wheel in case of accident, spring-plates fixed to the teeth of the last-mentioned ratchet-wheel, a crown ratchet-wheel, a spring on said crown ratchet-wheel bearing against the last-mentioned ratchet-wheel, and another crown ratchet-wheel engaging with the first-mentioned crown ratchet-wheel, substantially as and for the purpose set forth.

5. In automatic safety uncoupling devices the combination of, a driving member, a driven shaft, a ratchet-wheel rigidly fixed to the said driven shaft, a pawl engaging with said ratchet-wheel, a sleeve loosely mounted on the said driven shaft and supporting the said pawl, a friction-coupling between said sleeve and the driving member, another ratchet-wheel loosely mounted on the said driven shaft and adapted to disengage the said pawl from the first-mentioned ratchet-wheel when stopped, means for preventing the return of the said pawl from reengaging the first-mentioned ratchet-wheel, means for stopping the last-mentioned ratchet-wheel in case of accident, a crown ratchet-wheel bearing against the last-mentioned ratchet-wheel, and another crown ratchet-wheel engaging with the first-mentioned crown ratchet-wheel, substantially as and for the purpose set forth.

6. In automatic safety uncoupling devices the combination of, a driving member, a driven shaft, a ratchet-wheel rigidly fixed to the said driven shaft, a pawl engaging with said

ratchet-wheel, a sleeve loosely mounted on the said driven shaft and supporting the said pawl, a flange on said sleeve, a friction-ring supported by the said flange and cut open at one point, a rim fixed to the driving member and adapted to be engaged by the said friction-ring, a sleeve slidable on the first-mentioned sleeve, an arm pivotally connected to said rim and bearing at its outer end against the last-mentioned sleeve, another ratchet-wheel loosely mounted on the said driven shaft and adapted to disengage the said pawl from the first-mentioned ratchet-wheel when stopped, spring-plates fixed to the teeth of the last-mentioned ratchet-wheel, a two-armed lever adapted to engage and stop the last-mentioned ratchet-wheel, a spring-actuated rod pivotally connected to said two-armed lever, a sleeve loosely mounted on said rod, a lever rigidly fixed to said sleeve, a cord fixed to said lever, a crown ratchet-wheel, a spring on said crown ratchet-wheel bearing against the last-mentioned ratchet-wheel, and another crown ratchet-wheel engaging with the first-mentioned crown ratchet-wheel, substantially as and for the purpose set forth.

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

JOHN TITUS LINDQVIST.

Witnesses:

EVALD DELMAR,  
JOHN DELMAR.