May 10, 1932. M. H. DAMERELL 1,858,074

OVERLOAD RELEASE

Filed April 10, 1930

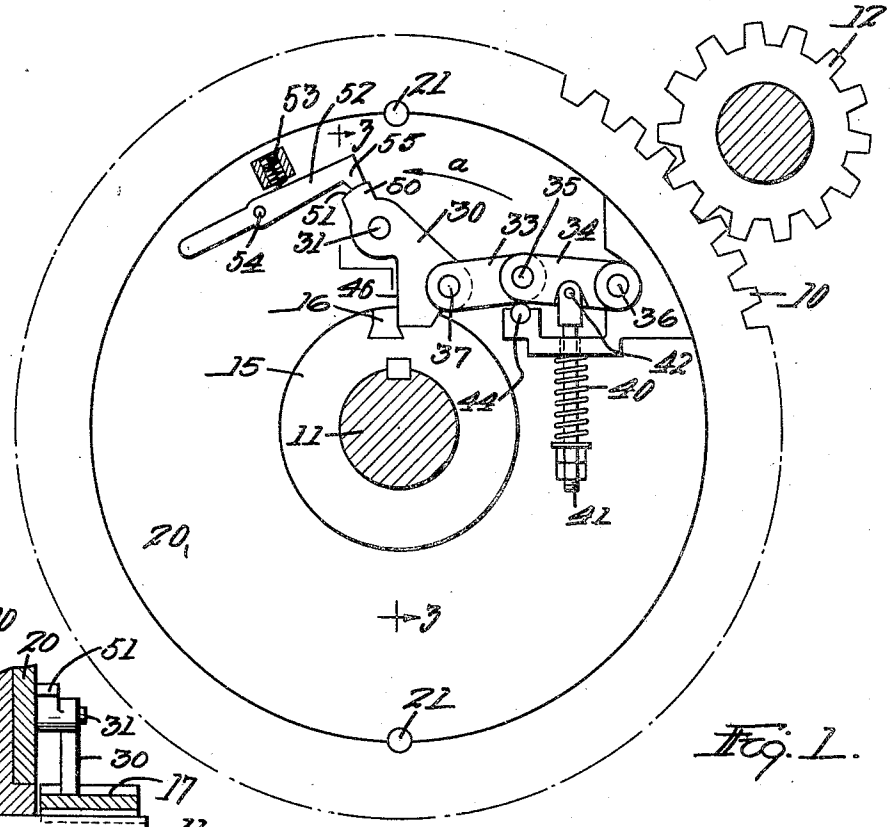

Fig. 1.

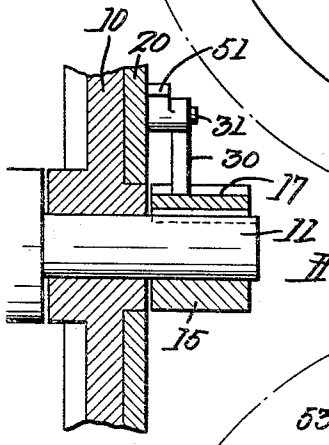

Fig. 3.

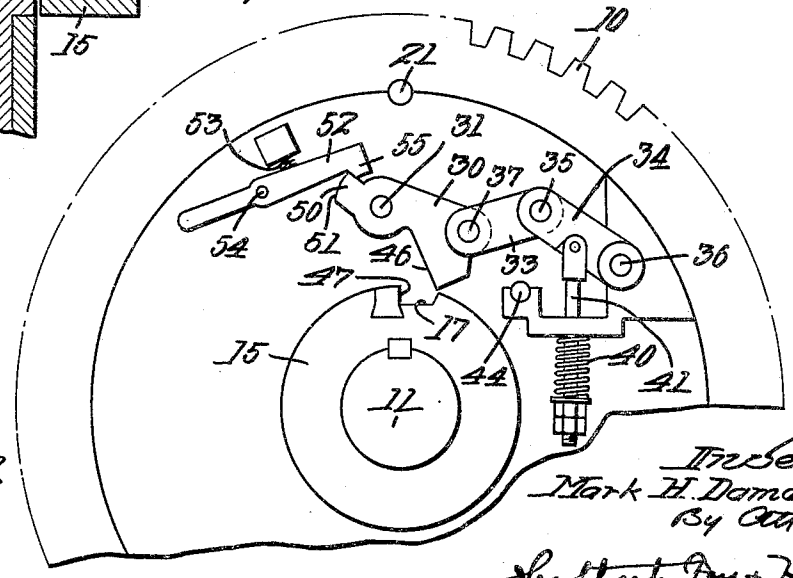

Fig. 2.

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UNITED STATES PATENT OFFICE

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OVERLOAD RELEASE

Application filed April 10, 1930. Serial No. 443,201.

This invention relates to a device for disconnecting the power or drive in a machine tool or other mechanism when the movement of certain parts is obstructed.

It is the object of my invention to provide an improved construction of give-way device adapted to yield under excessive driving pressure and so designed that it will remain definitely out of action until reset by the operator.

A further object of my invention is to provide a give-way device in which the parts when disconnected move to a clearance position with respect to each other, so that no further contact can occur until the parts are manually reset.

My invention further relates to arrangements and combinations of parts which will be hereinafter described and more particularly pointed out in the appended claims.

A preferred form of the invention is shown in the drawings, in which

Fig. 1 is a side elevation of my improved give-way device with the parts in operative relation;

Fig. 2 is a similar view showing the parts disconnected, and

Fig. 3 is a detail sectional view, taken along the line 3—3 in Fig. 1.

Referring to the drawings, I have shown my improved give-way device as used to connect a driving gear 10 to a driven shaft 11. The gear 10 is continuously rotated in the direction of the arrow *a* in Fig. 1 by a pinion 12 driven from any suitable source of power.

The driven shaft 11 is provided with a collar 15 keyed thereto and having a hardened steel contact member 16 firmly secured in an axially extended dovetailed slot in said collar. The collar 15 is recessed adjacent the contact member 16, as indicated at 17 in Fig. 2.

A disc 20 is mounted at one side of the gear or driving member 10 and is held from relative rotation by locking pins 21. A connector 30 is pivotally mounted on a stud 31 secured in the disc 20.

A pair of toggle members 33 and 34 are pivotally connected together at 35 and the toggle member 34 is pivotally mounted on a stud 36 in the disc 20. The toggle member 33 is pivotally connected at 37 to the connector 30.

A spring 40 is mounted on a pull rod or plunger 41, the upper end of which is pivoted at 42 to the toggle member 34. A stop 44 underlies the toggle members and prevents the toggle members from moving to or beyond the dead center. The connector 30 is so proportioned and located that the outer end of the connector will fit into the recess 17 of the collar 15 when the toggle members are straightened and drawn against the stop 44 by the spring 40.

The connector 30 is provided with an engaging face 46 adapted to contact with a corresponding face 47 (Fig. 2) of the contact member 16. The connector 30 is also provided with an upwardly extending arm 50 having a segmental outer face 51 against which the end of a latch 52 is normally seated by the action of a coil spring 53.

The latch 52 is pivoted at 54 to the disc 20 and is provided with a projecting cam portion 55 adapted to engage a side face of the connector extension 50 when the connector is moved to inoperative position, as indicated in Fig. 2.

Having described the construction of my improved give-way device, the operation thereof is as follows:

During normal operation, the parts are positioned as indicated in Fig. 1, with the toggle members 33 and 34 straightened nearly to the dead center and with the face 46 of the connector 30 engaging the face 47 of the contact member 16. Under these conditions, the latch 52 engages the end surface 51 of the connector 30 and is inoperative. The toggle members strongly resist swinging movement of the connector 30, so that the connector is effective to drive the shaft 11 against any normal resistance.

If rotation of the shaft 11 is obstructed to an abnormal extent, the toggle members will yield upwardly, as indicated in Fig. 2, compressing the spring 40 and moving the connector to such a position that the cam portion 55 of the latch 52 will engage the extension 50 of the connector 30. The engag-

ing faces of the latch and the connector are so disposed that the latch will have a cam action on the connector, producing enough additional swinging movement of the connector so that the connector is moved to a clearance position with respect to the face 47 of the contact member 16.

The spring 53 is of sufficient strength to produce this final clearance movement and to hold the parts in clearance position. The gear or driving member 10 is then free to rotate without dragging the connector 30 over the contact member 16 until such time as the obstruction is removed and the latch is manually released by the operator.

While I have described my invention as applied to rotating members, it is not limited to such use.

Having thus described my invention and the advantages thereof, I do not wish to be limited to the details herein disclosed, otherwise than as set forth in the claims, but what I claim is:—

1. An overload release comprising a driving member, a driven member movable thereby, a connector movably mounted on said driving member, means effective to hold said connector in operative position during normal operation of the driven member but permitting said connector to yield and to be moved to inoperative position under abnormal strain, and a spring-actuated latch effective to retain said connector in inoperative position after such yielding movement and to exert a cam action on said connector to give said connector a slight independent movement to clearance position.

2. An overload release comprising a driving member, a driven member movable thereby, a connector movably mounted on said driving member, a spring-actuated toggle effective to hold said connector in operative position during normal operation of the driven member but permitting said connector to yield and to be moved to inoperative position under abnormal strain, and a spring actuated latch engaging and retaining said connector in inoperative position after such yielding movement, said latch having a cam action effective to give said connector a slight independent movement to clearance position.

3. An overload release comprising a driving member, a driven member movable therewith, a connector movably mounted on said driving member, a pair of toggle members pivoted at one end of the toggle to said driving member and at the other end to said connector, a spring effective to move said toggle members toward a position of alignment, thereby advancing said connector to operative position, means to prevent said spring from moving said toggle members to or beyond dead center, said spring yielding to permit said connector to move to inoperative position under abnormal strain, and a latch effective by a cam action to complete the movement of said connector to a clearance position and to retain said connector in such inoperative clearance position after such yielding movement thereof.

In testimony whereof I have hereunto affixed my signature.

MARK H. DAMERELL.