

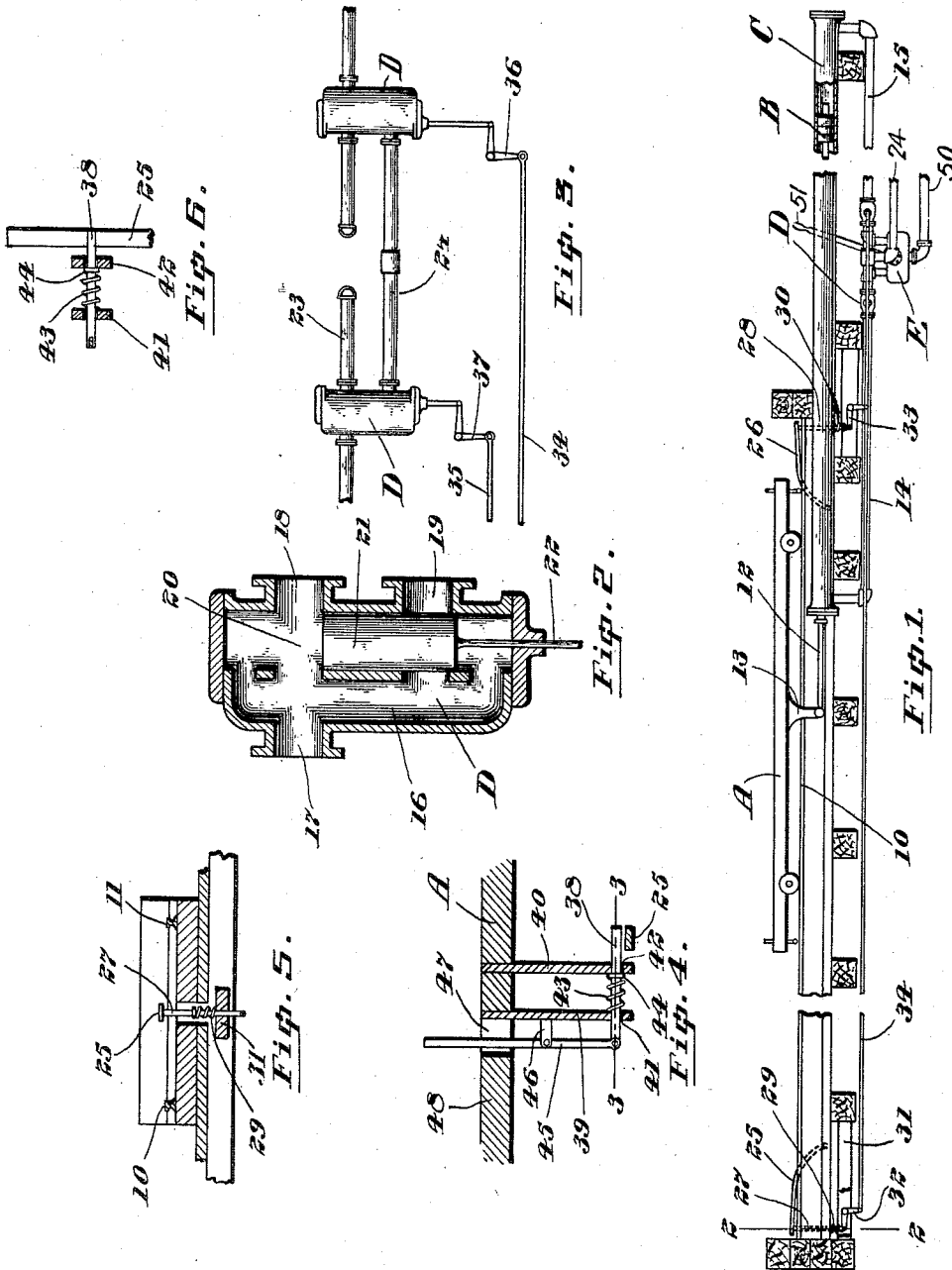
R. N. MURPHY.

MEANS FOR AUTOMATICALLY REVERSING RECIPROCATIVE CARRIAGES AND THE LIKE.

APPLICATION FILED MAR. 16, 1909. RENEWED MAY 3, 1911.

995,080.

Patented June 13, 1911.



WITNESSES,

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UNITED STATES PATENT OFFICE.

ROBERT NICHOLAS MURPHY, OF BUCKINGHAM, QUEBEC, CANADA.

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995,080.

Specification of Letters Patent. Patented June 13, 1911.

Application filed March 16, 1909, Serial No. 483,808. Renewed May 3, 1911. Serial No. 624,808.

To all whom it may concern:

Be it known that I, ROBERT NICHOLAS MURPHY, of the town of Buckingham, in the Province of Quebec, Canada, have invented certain new and useful Improvements in Means for Automatically Reversing Reciprocative Carriages and the Like, of which the following is a specification.

My invention relates to improvements in means for automatically reversing reciprocative carriages, and the like, and the objects of my invention are to provide a safeguard against excessive movement of reciprocative, fluid-operated carriages, whereby the fluid pressure will be automatically reversed in case control of the carriage is lost, or in case an excessive movement takes place through any cause.

The invention may be applied to saw carriages to avoid the difficulty of runaway carriages which frequently causes great damage and even loss of life. It may, however, with equal readiness be applied to various forms of lifts, hoists or other reciprocating elements.

The invention is described in detail, in the accompanying specifications and drawings.

In the drawings, Figure 1 is a sectional elevation of the invention as applied to a saw carriage. Fig. 2 is an enlarged longitudinal section through the controlling valve. Fig. 3 is a plan view showing the connection between the valves and the fluid conducting pipes for the pressure cylinder. Fig. 4 is an enlarged vertical section through the tappet member on the reciprocative carriage. Fig. 5 is a section on the line 2—2, Fig. 1. Fig. 6 is a section on the line 3—3, Fig. 4.

In the drawings, like letters of reference indicate corresponding parts in each figure.

Referring to the drawings, A represents a saw carriage of any form usually employed in saw mills, and reciprocating on tracks 10 and 11, the reciprocation being effected through the medium of a piston B reciprocating within a fluid pressure cylinder C and being connected to the carriage by means of a suitable piston rod 12 engaging a projection 13 on the underside of the carriage.

14 and 15 represent the supply pipes for the operating fluid which is usually steam, the said pipes being connected at one end to the interior of opposite ends of the cylinder

and being each connected at the opposite end to one of my improved controlling valves D two separate valves being provided for each cylinder and controlling the opposite ends of the same. This valve may be of a variety of forms and that shown herein is for the sake of illustration only. In the form illustrated, this valve consists of a casing 16 having three ports 17, 18 and 19 therein, the ports 17 and 18 being in alinement with each other. Slidable within a guideway 20 in this casing, is a piston 21 adapted to close either the port 18 or 19, the said piston being actuated by a piston rod 22 extending through the side of the casing. The port 18 is connected to a suitable supply of working fluid by means of the conducting pipes 23 while the port 19 is connected to and exhausted through a conducting pipe 24.

The conducting pipes 23 preferably lead to a large, manually-operated controlling valve E, such as usually employed to effect proper reciprocation of the carriage, and in general my improved controlling valve D will only be called into operation, when, through neglect or accident, the valve E is not actuated. In Fig. 3, which shows a plan view of my improved valves in operation, the exhaust ports 18 of the valves D are connected together by the pipe 24, to which pipe 24, an exhaust pipe is connected. A pipe 23 is supplied in each valve to conduct the fluid from the ports 17 and 18 to the controlling valve E. The valve E may be actuated by a suitable controlling handle 51 and steam may be supplied thereto through a pipe 50.

The normal position of the piston 21 will be in the position shown in Fig. 2, in which position the steam or other motive fluid may pass freely through the ports 17 and 18, and as these ports are in alinement with each other, there will be no diminution of the pressure of steam, nor any difficulty in the steam flowing through. When, however, the piston 21 is actuated to close the port 18, it will be seen that the pressure is at once cut off from the end of the cylinder controlled by the valve D and the port 19 is opened, which permits the fluid already in the end of the cylinder, to exhaust through said port.

The reciprocation of the piston 21 in the case of an excess of movement of the carriage is automatically effected by the fol-

lowing mechanism. Adjacent to each end of the tracks 10 and 11, curved tiltable members 25 and 26 are provided having their upper surfaces at a slight inclination to the horizontal and having their upper ends resting on vertically movable rods 27 and 28 which rods are normally held in uppermost position by means of springs 29 and 30, which are attached to the rods and about a suitable support 31, through which the rod extends. The lower ends of the rods are connected to bell crank levers 32 and 33 suitably pivoted to the underframing of the tracks. The opposite arms on the bell crank levers are connected to connecting rods 34 and 35, which connecting rods lead to other bell cranks 36 and 37, suitably pivoted and which have their opposite arms connected to the piston rods 22. In this way, when the rods 27 and 28 are depressed, the piston rods 22 are actuated through the intermediate bell cranks to effect closure of the port 18 and opening of the port 19. The depression of these rods is effected through the medium of a tappet pin 38 carried by the carriage. It is desirable that this tappet pin should be removable in order that if it is desired to run the carriage to the extremity of the track, it may be done without actuating the automatic apparatus. To effect this, the tappet pin is slidably supported between standards 39 and 40 and extending through apertures 41 and 42 in said standards being normally held in outermost position by means of a compression spring 43 abutting a collar 44 on the tappet pin and the standard 39. To effect withdrawal of the tappet pin, a lever 45 is provided fulcrumed to a projection 46 on the standard 39, the upper end of the lever extending through an aperture 47 in the floor 48 of the carriage, whereby it may be conveniently operated by the foot or hand of the attendant on the carriage. In this way, when it is desired to run to the end of the stroke, the tappet pin may be withdrawn, and the controlling apparatus will not be actuated. Under ordinary circumstances, however, whenever the carriage exceeds its normal stroke, the controlling valve D belonging to the particular end at which the carriage is, will be actuated to cut off the motive fluid and exceed the end of the cylinder. This will effect immediate stoppage of the carriage and it is further to be noted that my invention does not cause the carriage to reciprocate back in the opposite direction, but stops the carriage completely by the exhaust of the steam.

As many changes could be made in the

above construction and many apparently widely-different embodiments of my invention, within the scope of the claims could be made, without departing from the spirit or scope thereof, it is intended that all matter contained in these specifications and drawings shall be interpreted as illustrative and not in a limiting sense.

What I claim as my invention is:—

1. The combination with a reciprocative member adapted to reciprocate within certain limits a piston operatively connected to the same and a fluid cylinder for the piston of manually operated means for controlling the admission of working fluid to the cylinder, horizontal spring held tappet pins on said reciprocative member, a vertical lever supported on said reciprocative member, a spring held trap adapted to be compressed by said tappet pins when the reciprocative member is moving in excess of said limits, said trap being adapted to operate means for reversing the pressure of working fluid on the pistons.

2. The combination with a reciprocative member adapted to reciprocate within certain limits a piston operatively connected to the same and a fluid cylinder for the piston of manually operated means for controlling the admission of working fluid to the cylinder, horizontal spring held tappet pins on said reciprocative member, a spring held trap adapted to be compressed by said tappet pins when reciprocative member is moving in excess of said limits, said trap being adapted to operate means for cutting off the supply of working fluid to the cylinder.

3. The combination with a reciprocative member adapted to reciprocate within certain limits a piston operatively connected to the same and a fluid cylinder for the piston of manually operated means for controlling the admission of working fluid to the cylinder, a horizontal spring held tappet pin on said reciprocative member, a vertical lever supported on said reciprocative member for moving the tappet pin out of position a spring held trap adapted to be compressed by said tappet pin when the reciprocative member is moving in excess of said limits said trip being adapted to operate means for cutting off the supply of working fluid to the cylinder.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

ROBERT NICHOLAS MURPHY.

Witnesses:

RUSSEL S. SMART,
WM. A. WYMAN.