

W. B. SIGEL.
 FLUID CHECK FOR LIFTING TRUCKS.
 APPLICATION FILED OCT. 4, 1917.

1,401,111.

Patented Dec. 20, 1921.

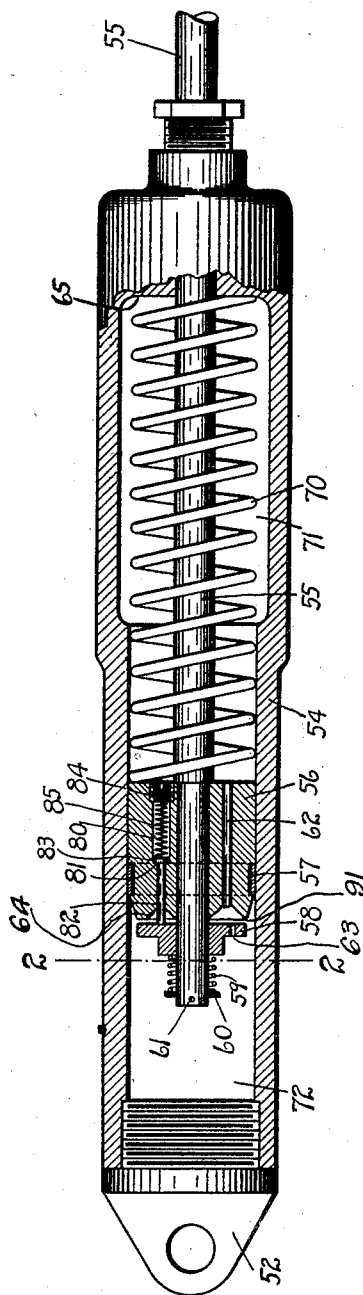


Fig. 1

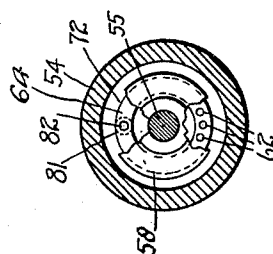


Fig. 2

Inventor
 William B. Sigel
 by John W. Trehe-
 Attorney

UNITED STATES PATENT OFFICE.

WILLIAM B. SIGEL, OF AMELIA, OHIO, ASSIGNOR, BY MESNE ASSIGNMENTS TO THE
STUEBING TRUCK CO., OF CINCINNATI, OHIO, A CORPORATION OF OHIO.

FLUID CHECK FOR LIFTING-TRUCKS.

1,401,111.

Specification of Letters Patent. Patented Dec. 20, 1921.

Application filed October 4, 1917. Serial No. 194,808.

To all whom it may concern:

Be it known that I, WILLIAM B. SIGEL, a citizen of the United States, residing at Amelia, in the county of Clermont and State of Ohio, have invented certain new and useful Improvements in Fluid Checks for Lifting-Trucks, of which the following is a specification.

My invention relates to fluid check mechanism for lifting trucks of the type disclosed in the patent to W. Stuebing, Jr., No. 1,279,481, dated September 17, 1918. This mechanism is adapted to check and govern the downward movement of the lifting platform of such trucks, keeping the same from falling suddenly or with a thud, and the invention relates more particularly to means included in said check mechanism to facilitate lowering of the elevating platform into normal position when it is empty and unloaded or when loaded.

The lifting platform, when raised, is usually locked in position, so that the load can be moved to any point, and when it is desired to lower the loaded lifting platform, the locking parts are released and the fluid check will allow the load to gradually fall with the platform, to normal position.

When the lifting platform is not loaded or empty and is in an elevated position, and it is desired to lower the same, it is first unlocked from its elevated position and a spring used in connection with my check mechanism which is stressed when the lifting platform is elevated, acts to pull down said empty platform.

The salient feature of my invention consists in providing means in connection with the fluid check mechanism just above set forth, which functions when the elevated or lifting platform is in a raised position and empty, to cause the platform to fall at a maximum speed, that is, reach its lowest or normal position quickly, to save time and prepare quickly for reuse; but if the elevated or lifting platform is up and loaded this means will, upon the platform being released, cause the same to descend slowly and uniformly and at a minimum speed so as not to jar any of the parts.

In the accompanying drawing forming part of this specification:

Figure 1, is a longitudinal sectional view of the fluid check cylinder with certain parts in elevation;

Fig. 2, is a section on line 2—2 of Fig. 1, part of the valve mechanism being broken away.

In the drawing, 52 designates the rear end of the check, which is adapted to be secured to a stationary portion of a lifting truck. The rear end 52 of the check is attached to a cylinder 54 through one end of which passes the piston rod 55. On the piston rod, at its rear, is attached a piston or piston head 56. This piston carries a washer or piston packing ring 57.

At one end of the piston is placed a disk valve 58, held against the piston by spring 59, which spring is held in place by a washer 60 held by pin 61. Through the piston extends passage ways 62, in the present instance three. Through the valve 58 is placed a by-pass or bleed passage-way 63, through which oil can pass into an annular recess 64 in the piston into the space 71 in the cylinder in front of the piston, when the loaded or unloaded elevating platform is lowered.

The piston rod 55 is to be attached to the lifting or elevating platform of a truck.

Around the piston rod 55 and between the piston 56 and the part or head 65 is placed a coiling spring 70.

Assuming that the rear end 52 is connected to a stationary portion of a lifting truck and the piston rod 55 is connected to the elevating platform of the truck, it will be apparent that when the elevating platform, with the load, is elevated, the piston rod will move outwardly and cause the piston 56 to compress the spring 70.

When the elevating platform has reached its highest point it is locked or held elevated so that the load can be carried to any point. When this elevating platform is released the stress on the spring 70 is broken and the spring relaxes and pulls down the elevating platform or gives it an initial impetus on its downward journey.

During this elevating operation of the lifting platform, the fluid or oil in space 71 is forced through the elongated passages 62 in piston 56 into space 72, in the rear of the piston the force lifting valve 58 off its seat or away from the face of the piston, until the elevating platform has been locked or held in elevated position. At this time the spring 59 tends to force the disk valve 58 forwardly against the face of the piston 56.

As soon as the elevating platform is released, the oil in the space 72 in rear of the piston which has passed there during the lifting operation, will slowly run or seep through by-pass 63 into the annular recess 64 in the piston, and from the annular recess through the passages 62 into the space 71 forward of the piston 56. This operation continues until the oil has passed into said space 71 forward of the piston 56. At this time the lifting platform is in lowered position again. The check device and mechanism just set forth is now in use and is disclosed in said patent to W. Stuebing, Jr., and the lowering of the elevating platform whether loaded or unloaded is accomplished in approximately the same amount of time. I will now specifically set forth my improvements on the check above described.

In the piston 56, I provide a chamber 80 which is of greater width at its forward end than at its rear end, and this chamber is provided intermediate its ends with a shoulder 81. A pin 82 fits in the narrow part of said chamber 80 and its head 83 rests against said shoulder 81 in the wide part. In the wide part of said chamber 80, I arrange a headless screw 84 and between this screw and the head 83 of the pin 82 is arranged a coiled spring 85.

It will be understood that when the lifting platform is in its lowest position the piston and its parts are in the rear end 72 of the cylinder 54 and the fluid is in the forward end of the cylinder; when, and during the operation of raising the elevating platform, the fluid or liquid is forced through the holes 62 against valve 58, said disk valve 58 is forced against spring 59 thus forming a passage 91 between the face of the piston 56 and said disk valve 58, to allow the fluid to pass to the rear of the piston.

When the elevating platform has been raised to its highest position the fluid is in the rear end 72 of the cylinder and the platform is locked in raised position.

In my improvement the valve disk 58 through agency of pin 82 and spring 85 is held in a position to allow the liquid to pass through piston 56 into the forward end 71 of chamber 54 when the platform is lowering and when the pressure of the fluid against disk valve 58 is normal or not strong enough to overcome the spring 85 and force the pin 82 flush with the face of the piston. This will allow the elevating platform, if empty, to come down very rapidly and at the same time automatically. When the pressure of the fluid in the rear 72 of the cylinder is, however, great enough to overcome the spring 85, and this is the case when the platform is loaded, the valve disk 58 is forced against the face of the piston 56 closing the direct passage of the

liquid from the chamber 72 through the disk 58 and causing the liquid to pass through the by-pass 63 and recess 64. Consequently the platform and its load will fall very slowly.

What I claim as new and my invention and desire to secure by Letters Patent is:

1. A fluid check device for lifting trucks comprising a cylinder adapted to be connected at one end to a fixed part of a truck, a piston in said cylinder, a rod carried by said piston and extending through the other end of the cylinder for connection with a movable part of the truck, said piston having longitudinal openings therein, a tensioned valve on said rod arranged adjacent the piston openings, one of said openings being enlarged adjacent the inner end of the piston, a pin within the smaller bore of the last named opening and carrying a head extending into the large end of the opening, a coil spring within the large end of the opening and normally engaging the head of the pin to project the pin from the forward end of the piston for engagement with the tensioned valve to space the valve from the piston openings, and a closure plug for the inner end of the enlarged opening engaged by one end of said spring, the tensioned valve being operable under pressure to permit movement thereof to close the piston openings.

2. A fluid check device including a cylinder, a piston rod slidably mounted in said cylinder, a piston mounted on said rod within the cylinder and provided with a fluid passage-way to permit fluid to pass from one side of the piston to the other, a disk valve of less diameter than the piston slidably mounted on the piston rod and adapted to seat against one end of the piston, said valve being provided with a by-pass to permit fluid to enter the fluid passage-way in the piston when the valve is seated against the piston, said piston being provided with a chamber, a pin mounted in said chamber and engaging said valve, and a spring arranged in the chamber and engaging the pin for normally forcing the same against the valve to hold the valve away from the end of the piston, whereby fluid may pass freely from the cylinder directly into the end of the passage-way in the piston which is closed by the seating of the valve against the end of the piston.

3. A fluid check device including a cylinder designed to contain a checking fluid, a piston rod slidably mounted in one end of said cylinder, a piston mounted on said rod within the cylinder, a coil spring surrounding the rod and arranged between the piston and the end of the cylinder through which the rod passes for normally forcing said piston away from the end of the cylinder through which the rod passes, a fluid pas-

sage-way provided in the piston and extending from one of its ends to its other end to permit fluid in the cylinder to pass from one side of the piston to the other side of the same, a disk valve of less diameter than the piston slidably mounted on said piston rod and designed when seated against one end of the piston to prevent the direct entry of fluid from the cylinder into the end of the passage-way which is arranged adjacent to said valve, a coil spring arranged on the piston rod for forcing said valve toward the piston, said piston being provided at one of its ends with an annular recess which communicates with said passage-way, a by-pass arranged in the valve

for introducing fluid into said annular recess when the valve abuts against one end of the piston, and a spring pressed pin slidably mounted in the piston and having one of its ends engaging said piston for normally holding the valve away from this piston to permit fluid in the cylinder to pass between the valve and piston direct into said fluid passage-way.

In testimony whereof I affix my signature in the presence of two witnesses.

WILLIAM B. SIGEL.

Witnesses:

JOHN W. STREHLI,
H. E. CARSTENS.