

J. J. GROGAN & O. E. JOHNSON.

LOOM SHUTTLE CHECK.

APPLICATION FILED JAN. 10, 1910.

985,585.

Patented Feb. 28, 1911.

Fig. 1.

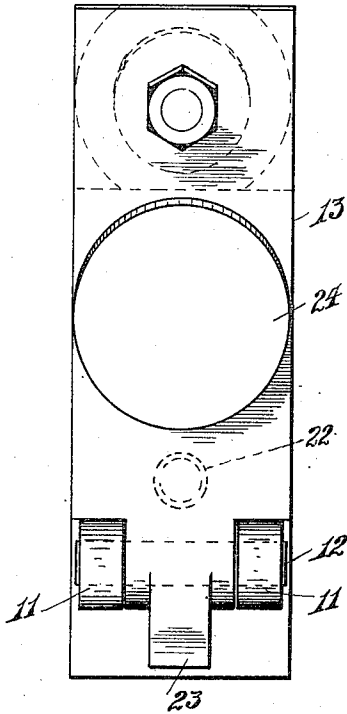


Fig. 2.

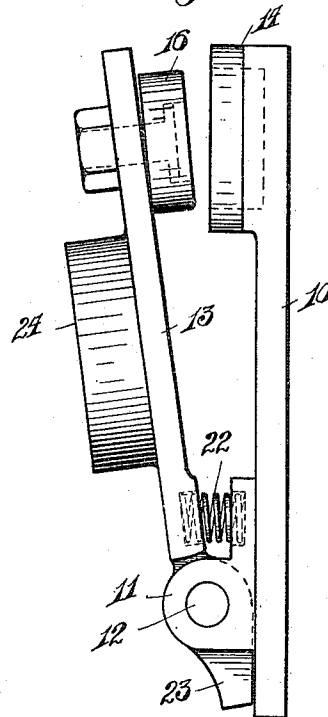


Fig. 3.

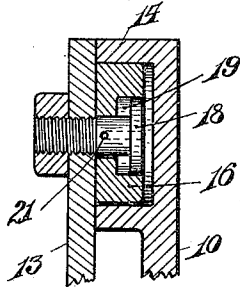


Fig. 5.

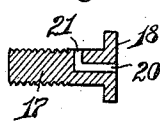
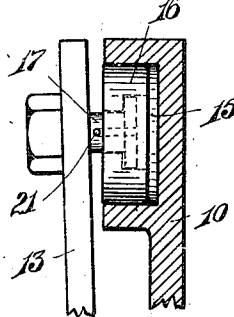


Fig. 7.



Witnesses:

G. M. Cole.

L. H. Nahlen.

James J. Grogan.
Oliver E. Johnson.
Inventors.

By George J. Oltsch.
Attorney.

UNITED STATES PATENT OFFICE.

JAMES J. GROGAN AND OLIVER E. JOHNSON, OF SOUTH BEND, INDIANA.

LOOM SHUTTLE-CHECK.

985,585.

Specification of Letters Patent. Patented Feb. 28, 1911.

Application filed January 10, 1910. Serial No. 537,111.

To all whom it may concern:

Be it known that we, JAMES J. GROGAN and OLIVER E. JOHNSON, citizens of the United States, residing at South Bend, in the county of St. Joseph and State of Indiana, have invented certain new and useful Improvements in Loom Shuttle-Checks, of which the following is a specification.

Our invention relates to improvements in loom shuttle checks, and has for its object to improve the construction and increase the efficiency and utility of the means ordinarily employed upon looms to check the flight of the shuttle and properly position same in the shuttle box.

A further object resides in the provision of means in a shuttle check whereby an air cushion will result upon impact of the shuttle, and air automatically admitted into the cushioning chamber upon the return stroke of the element which receives the impact, so that the operation of the check will be quick and positive.

With these and other objects, the invention consists in certain novel features of construction as hereinafter described and specifically pointed out in the claims.

In the drawings employed for illustrating the embodiment of the invention:—Figure 1 is a front elevation of the shuttle check. Fig. 2 is a side elevation of the same. Fig. 3 is a central vertical section through the upper portions of the check. Fig. 4 is a view of the upper portion of check, partly in section. Fig. 5 is a sectional longitudinal view of the piston mounting.

Referring now more particularly to the accompanying drawing, the reference character 10 indicates the base plate which may be secured to a loom in the proper position for the check to perform its functions, and any suitable fastening means may be employed for the purpose. The base or attaching plate is provided near one end thereof with a pair of spaced ears 11, having central alining bores to receive a pivot pin 12, passed through a corresponding bore in the lower end of a swinging arm 13, and hingedly connecting said arm with the base plate. The base plate 10 is provided at its upper end with an integral head 14, having a cylindrical bore or cylinder 15, adapted to receive a piston 16, carried by the swinging arm. The piston 16 is mounted upon a spindle 17, having a head 18 fitting into a socket or re-

cess 19 in the piston. The socket or recess 19 is of sufficient depth to allow the piston to have play and shift back and forth upon the shaft, as plainly shown in Figs. 3 and 4, the object of which will be presently explained. The spindle is also provided with a central bore or air duct 20 and a lateral duct 21 intersecting the same, the function of which is to admit air to the cylinder, when the piston is in the act of being withdrawn therefrom. The piston, owing to the arc of a circle described by it upon operation of the swinging arm, is loosely mounted to have lateral play upon its shaft, so as to properly register with the cylinder opening, and compresses the air therein, and forms an air cushion to resist the impact of the shuttle as it strikes against the swinging arm and bring the same to a rest. The piston upon meeting with air resistance as it enters the cylinder, is forced against the swinging arm, and over the opening of the air duct 21, thus shutting off escape of air from the cylinder while the piston is entering the same, the piston thereby serving as a valve. As the fitting between the piston and cylinder cannot be sufficiently perfect to prevent escape of air from the cylinder, the air cushion is formed only momentarily and rapidly falls to atmospheric pressure. In order, therefore, to overcome the formation of a partial vacuum as the piston is withdrawn by the action of the spring 22, and thus retard its action, air is admitted to the cylinder through the air ducts 20 and 21, by the spindle being shifted relative to the piston due to the rapid reaction of the swinging arm, and opening the air duct 21, as shown in Fig. 4. It is also obvious that the withdrawal of the piston will create a partial vacuum in the cylinder which will retard the withdrawal of piston until its spindle is shifted sufficiently under the action of the spring to expose the air duct opening.

A spring 22, of spiral formation is interposed between the base plate and the swinging arm, with its ends disposed in sockets in said members, to prevent displacement thereof, the action of the spring tending to normally hold the piston out of engagement with the cylinder, the arm being limited in its outward movement by the tail piece 23, contacting with the base plate.

The swinging arm is provided with an integral contact head 24, which may be of any

preferred form, and is adapted to receive the impact of the picker as the rapidly traveling shuttle strikes the picker and drives same against said head, forcing the piston into the cylinder and compressing the air therein, which serves as a cushion, and brings the picker and shuttle to a stop. The reaction of the swinging arm, under the influence of the spring, throws the shuttle back into its box cell in the customary manner.

Having thus described the nature of the invention, what is claimed is:—

1. In a device of the class described, a mounting adapted to be attached to a loom and provided with an open-end cylinder, a movable member, a piston mounted on said movable member and adapted to enter said cylinder to form an air cushion, and means operating to normally hold the piston out of engagement with the cylinder.

2. In a device of the class described, a mounting adapted to be attached to a loom and provided with an open-end cylinder, a swinging arm pivotally connected to said mounting, a piston mounted on said arm and adapted to enter said cylinder, and means operating to normally hold the piston out of engagement with the cylinder.

3. A device of the class described comprising an open-end cylinder, a piston adapted to enter but normally held out of engagement with said cylinder, means controlled by the piston admitting air into and preventing escape of air from the cylinder,

and means for normally holding the piston out of engagement with the cylinder.

4. A device of the class described comprising a cylinder, a piston operating in connection with said cylinder, a mounting for the piston provided with an air duct, said piston automatically controlling the ingress and egress of air through said duct, and means operating to return the piston to its normal position.

5. In a device of the class described, a mounting adapted to be attached to a loom and provided with an open-end cylinder, a movable member, a spindle carried by said movable member provided with an air duct, a piston slidably mounted upon the spindle and controlling the ingress and egress of air through said duct, and means operating to return the piston to its normal position when not under pressure.

6. A device of the class described comprising an open-end cylinder, a piston, means controlled by the piston for regulating the ingress and egress of air to and from the cylinder, and yielding means for normally holding the piston in spaced relation with the cylinder.

In testimony whereof we affix our signatures, in presence of two witnesses.

JAMES J. GROGAN.
OLIVER E. JOHNSON.

Witnesses:

L. D. WAHLEN,
G. M. COLE.