No. 708,095. Patented Sept. 2, 1902.

C. A. THORNTON & C. W. WHITTEMORE.

SAFETY DEVICE FOR STAMPS, DROP HAMMERS, OR THE LIKE.

(Application filed Apr. 26, 1902.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

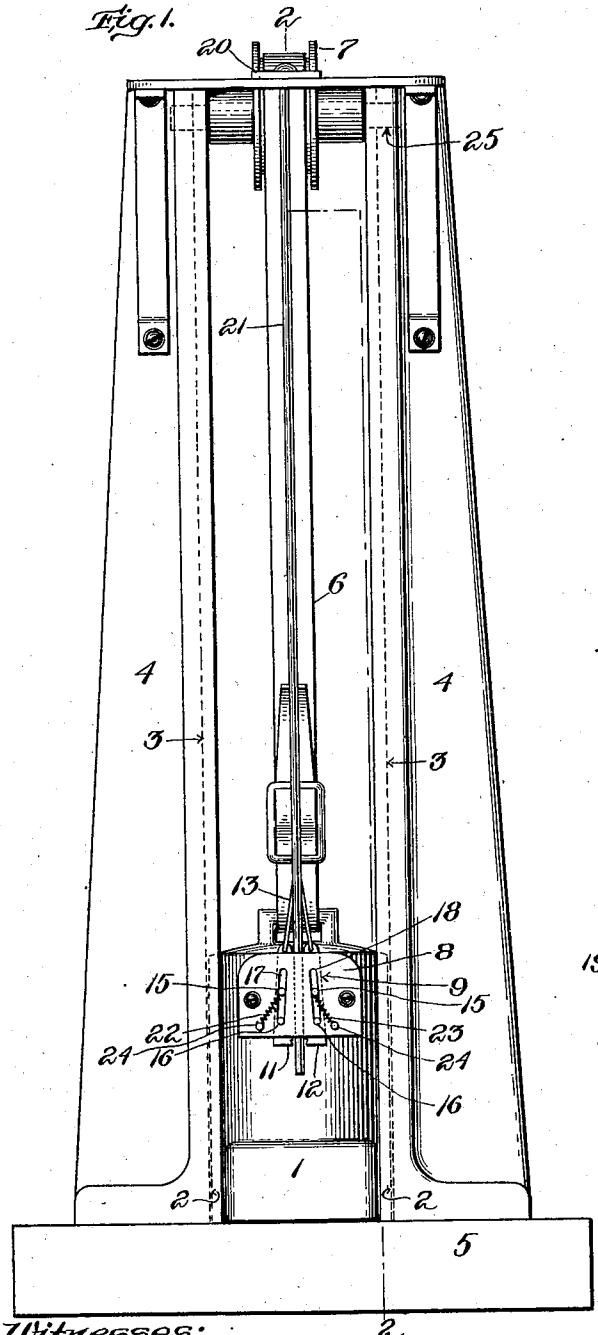
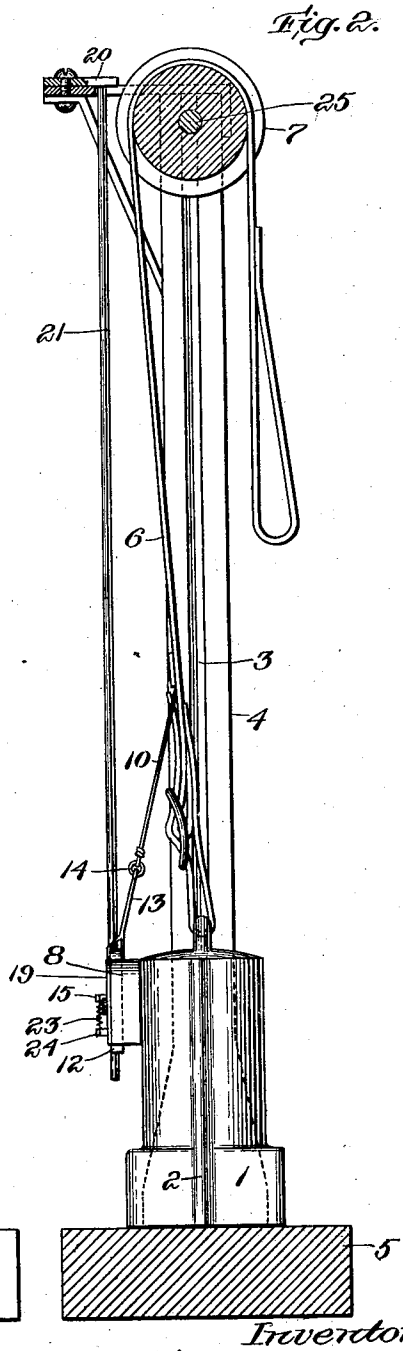


Fig. 2.



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Fig. 4.

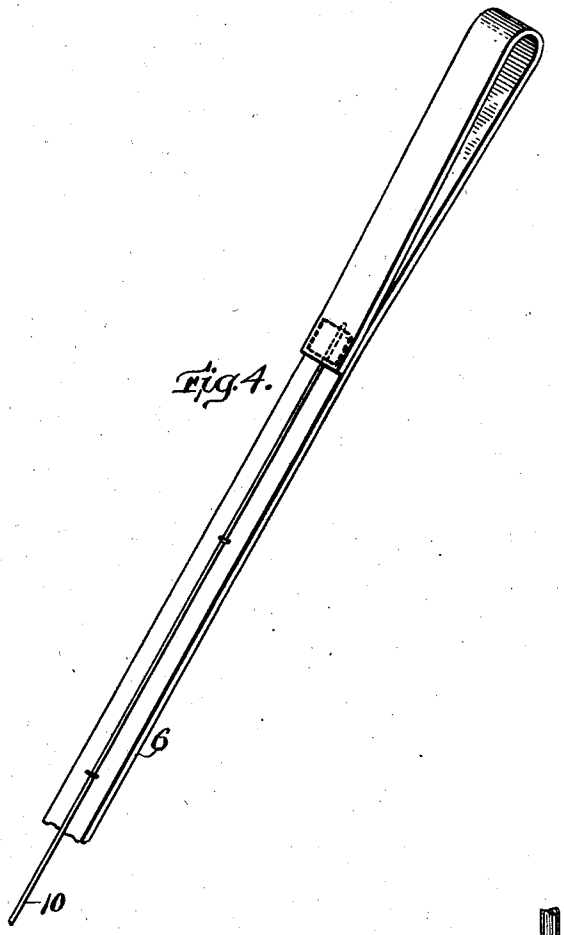
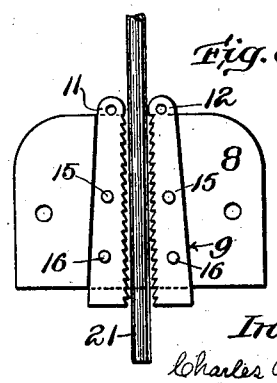


Fig. 3.



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UNITED STATES PATENT OFFICE.

CHARLES A. THORNTON AND CHARLES W. WHITTEMORE, OF NORTH ATTLEBORO, MASSACHUSETTS.

SAFETY DEVICE FOR STAMPS, DROP-HAMMERS, OR THE LIKE.

SPECIFICATION forming part of Letters Patent No. 708,095, dated September 2, 1902.

Application filed April 26, 1902. Serial No. 104,795. (No model.)

To all whom it may concern:

Be it known that we, CHARLES A. THORNTON and CHARLES W. WHITTEMORE, of North Attleboro, in the county of Bristol and State of Massachusetts, have invented certain new and useful Improvements in Safety Devices for Stamps, Drop-Hammers, Elevators, or the Like, of which the following is a specification.

In many factories, such as jewelry-factories and others in which articles are stamped out of metal, the hammer is raised by a strap, one end of which is attached to the hammer, the strap then passing over a pulley at the top of the frame and being operated at the other end by hand or treadle or other means. When the hammer is in proper position, the operator at will relaxes the hold upon the strap at the operating end and allows the hammer to drop suddenly, the strap rendering over the pulley. Sometimes the strap or buckle becomes weakened after use and breaks either while the hammer is being raised or after it is raised and before the operator is ready for it to descend, and thereby serious injuries often result.

The object of this invention is to provide a safety device whereby if the strap breaks or in any way becomes disconnected or stretched, so as to fall prematurely, the hammer will be checked almost instantly in its fall.

The invention will now be fully described, reference being had to the accompanying drawings, and the novel features will be particularly pointed out at the close of the specification.

In the drawings, Figure 1 is a rear elevation of a machine embodying the invention. Fig. 2 is a section on line 2 2, Fig. 1. Fig. 3 is a detail view of the wedge, hereinafter described. Fig. 4 is a detail view of the hammer-operating strap, showing also the wedge-operating cord which is fastened thereto.

The hammer 1 is formed with fins 2, which move in guideways 3 in the standards 4, rising from the bed 5. Secured to the hammer is a strap or line 6, which passes up over a pulley 7, mounted on a shaft 25, suitably supported. The strap 6 may be manipulated by the hand of the operator to raise the hammer and released to drop the hammer when ready, or it may be controlled by a treadle or in any other suitable way. The parts thus far described are in common use.

The safety device, which forms the subject of this invention, will now be described.

Secured to the rear side of the hammer 1 is a block 8, having a wedge-shaped slot 9, with the narrower end at the top. Secured at one end to the strap 6, at or near the operating end of the strap, is a cord, wire, or other flexible line 10, extending lengthwise of the strap and connected at its other end with the two wedge-shaped jaws 11 12. Preferably this connection is made by a wire or cord 13, of strong flexible material, which passes through a ring or loop 14 on the end of the wire 10, the jaws being secured to the opposite ends of said cord 13, or the jaws could be secured to independent branches of the wire 10; but a more uniform pull is given to the jaws when the proper time occurs for their use if they are secured to opposite ends of the same cord, as described. These jaws 11 12 fit loosely in the slot 9, the slot being wider than the combined width of the two jaws. Each jaw has projecting from the outer face thereof guide-pins 15 16, which extend through the guide-slots 17 18 in the face-plate 19, which is secured to the outer face of the block 8. These guide-slots 17 18 incline toward each other upwardly, so that if the jaws are moved upward the guides will cause them to draw toward each other. Springs 22 23, having one end secured to the pins 15, which project from the jaws, and the other ends secured to the studs 24, which project from the plate 19, normally hold the jaws in their lowermost position. Secured to a bracket 20 or other suitable support is a wire or steel rod 21, which extends downward through the slot 9 in the block 8 and between the wedge-jaws 11 12. When the wedges or jaws are in their lowermost position, the space between them is sufficient so that when the hammer 1 rises and falls the block 8 will slide freely on the rod 21 without interfering with the operation of the hammer. When the jaws are raised, they are drawn sufficiently close together to grip the rod 21 between them, and thereby may be made to entirely prevent the

sliding of the hammer. In operation the wire or line 10 is sufficiently slack to cause the strain from the weight of the hammer to be borne by the strap. If by chance the strap should break at any time when the hammer is in an elevated position, either rising or at the top of its ascent, or when descending, the pull will then come on the line 10, and as soon as the hammer falls sufficiently to take up the slack in the line 10, which will be very slight, the block 8, being carried by the hammer, will descend faster than the jaws 11 12 and the jaws will be drawn upward relatively to the block 8, so that the jaws will grip the rod 21 and the friction will immediately stop the descent of the hammer. In order to make the wedges or jaws bite more securely, they are preferably formed with ratchet-teeth and are made of harder steel than the rod 21. On account of the inclined ways the stronger the pull on the jaws the harder will they bite the wood. If desired to have the hammer merely retarded in its descent instead of entirely stopped, the parts can be adjusted so that the friction will be sufficient only for that purpose.

While the invention has been described especially as applied to a stamp, it is not intended to limit the claims to such use. It may be applied to pile-drivers or any kind of a drop-hammer or to an elevator.

One especial advantage of the invention is that the safety device does not act directly on the slideways of the hammer.

Instead of having the block 8 made separate from the hammer and screwed thereto it might be cast integral with the hammer. The word "strap" as applied to the flexible connection for raising the hammer is intended to include a rope, chain, or any other form of flexible connection.

What we claim is—

1. In combination with a drop, a flexible strap by which said drop is raised, and a safety device to check accidental descent of said drop, said safety device comprising movable jaws attached to the drop, a fixed rod, a safety-line which connects said jaws with the operating end of the lifting-strap and which temporarily receives the strain of the drop when the main strap is broken or otherwise disconnected at a point intermediate of its operating end and its connection with the drop, the strain upon the safety-line actuating the jaws to grip the said fixed rod, substantially as described.

2. In combination with a drop, a flexible line by which said drop is raised, and a safety device comprising a wedge-shaped way on said drop, slidable jaws mounted to move in said way, a fixed rod which passes between said jaws, and a flexible connection between said jaws and the operating end of said lifting-line, which if said lifting-line breaks or is otherwise disconnected at an intermediate point will receive the strain from the drop and move the said jaws to grip the said rod and stop the descent of the drop, substantially as described.

3. In combination with a drop, a lifting-strap one end of which is secured to said drop, and a safety device comprising slidable jaws attached to said drop, a fixed rod which passes between said jaws, springs which normally prevent the jaws from gripping said rod, and a connection between said jaws and said lifting-strap which will receive the strain of the weight of the drop if the said strap is broken or otherwise disconnected at an intermediate point between its operating end and connection with the drop, and thereby set the jaws into engagement with the said fixed rod, substantially as described.

4. In combination with a drop-hammer, a strap attached thereto and a support over which said strap passes whereby said hammers may be raised by the strap, and a safety device comprising a way of inverted-wedge shape on the hammer, movable jaws in said way, a plate covering said jaws, guide-slots in said plate inclined toward each other upwardly, guide-pins which project from said jaws through said guide-slots, a fixed rod passing between said jaws, and a flexible safety-line which connects said jaws with said lifting-strap at the operating end thereof and receives the strain of the hammer if the lifting-strap is broken or otherwise disconnected at any point between the hammer and the point where the safety-line is connected with the said strap and will cause the jaws to grip the said fixed rod and stop the descent of the hammer, substantially as described.

5. In combination with a drop, a flexible strap or line one end of which is secured to said drop, and a pulley mounted above the said drop over which said strap runs whereby said drop may be raised and dropped, and a safety device to stop the descent of said drop if said strap or line breaks, said safety device comprising a slotted way of inverted-wedge shape on said drop, movable wedge-shaped jaws in said slot, a fixed rod which passes down between said jaws, a face-plate covering said jaws and slotted ways having guide-slots inclining upwardly toward each other, guide-pins on said jaws which extend into said guide-slots whereby movement of said jaws upwardly relative to the slots will cause the jaws to grip said rod, and a connection between said jaws and said strap or line, whereby if said strap or line breaks at an intermediate point between the drop and the point where said connection is attached to said strap the jaws will be caused to grip said rod and stop the descent of the drop, substantially as described.

6. In combination with a drop-hammer, a strap by which said hammer is raised and lowered, and a safety device to prevent accidental falling of the hammer, said safety device comprising a pair of gripping-jaws carried by the hammer, a fixed rod adapted to be engaged by said jaws, a flexible connection between

said jaws and said strap whereby if the said strap is broken or otherwise disconnected at a point between the connection with the hammer and its operating end the hammer will then pull upon said flexible connection with the jaws and cause them to grip said rod and check the descent of the hammer, substantially as described.

In testimony whereof we have affixed our signatures in presence of two witnesses.

CHARLES A. THORNTON.
CHARLES W. WHITTEMORE.

Witnesses:
FRED B. BYRAM,
JAMES AUSTIN.