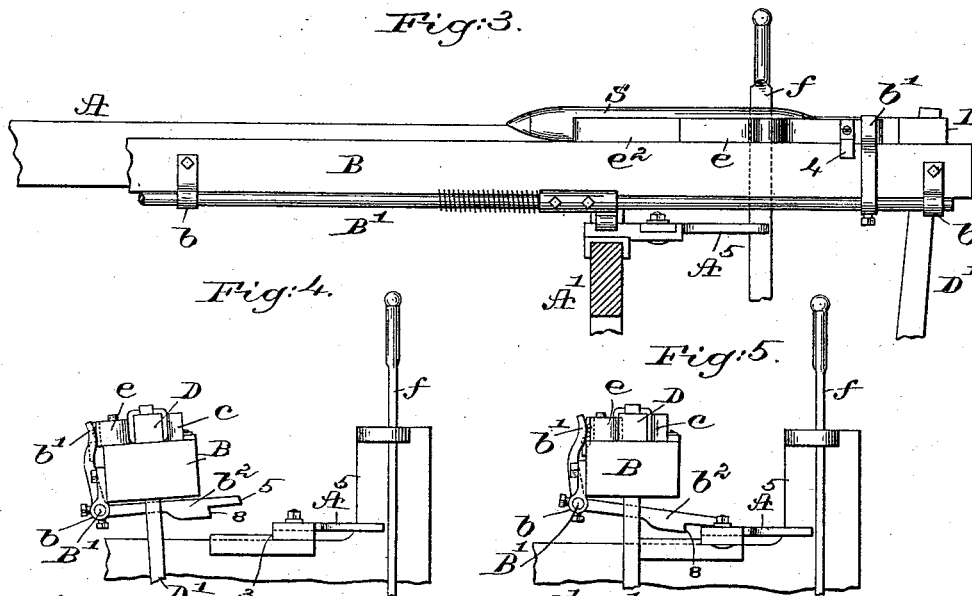
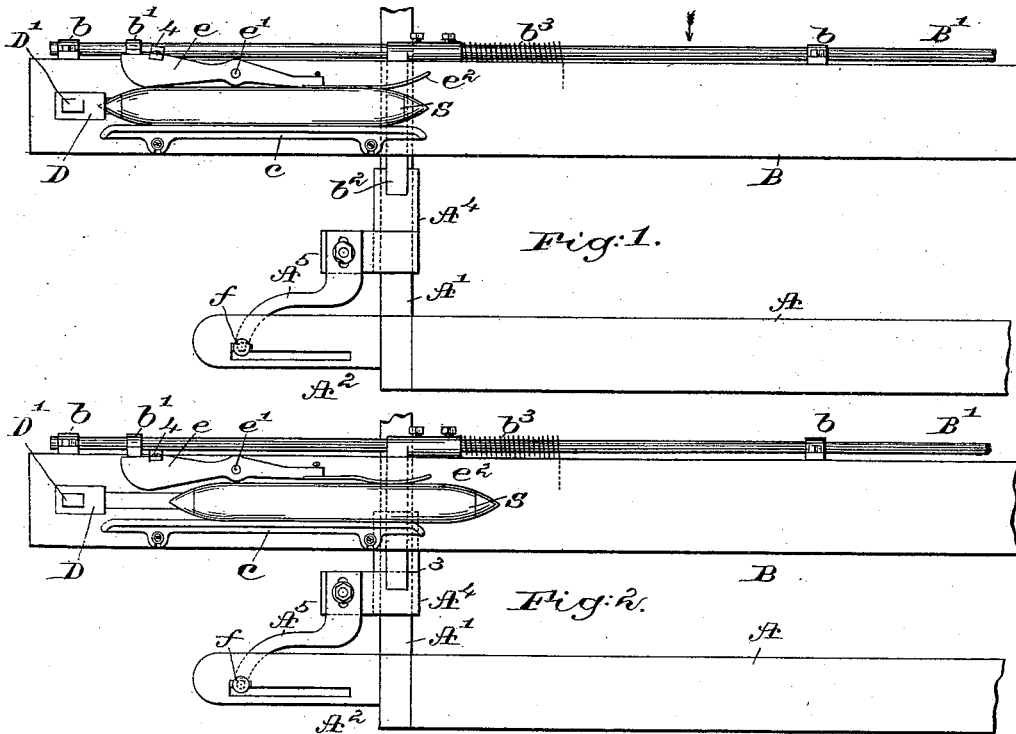


(No Model.)

W. F. DRAPER.  
LOOM.

No. 491,044.

Patented Jan. 31, 1893.



Witnesses.  
Edward F. Allen.  
Louis N. Howell

Inventor:  
William F. Draper  
by Crosby & Gregory  
attys.

# UNITED STATES PATENT OFFICE.

WILLIAM F. DRAPER, OF HOPEDALE, MASSACHUSETTS, ASSIGNOR TO GEORGE DRAPER & SONS, OF SAME PLACE.

## LOOM.

SPECIFICATION forming part of Letters Patent No. 491,044, dated January 31, 1893.

Application filed October 8, 1892. Serial No. 448,205. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM F. DRAPER, of Hopedale, county of Worcester, State of Massachusetts, have invented an Improvement in Looms, of which the following description, in connection with the accompanying drawings, is a specification, like letters and figures on the drawings representing like parts.

In looms as ordinarily constructed the lay is provided with a binder acted upon at its end nearest the reed by a finger located near the outer end of the shuttle-box and extended from a protector-rod provided with a dagger, which dagger, when the shuttle fails to be properly boxed, strikes a member of a stop motion device and releases the ordinary shipper handle from its usual holding-plate or notch and effects the stopping of the loom.

In practice, especially in high speed looms, it frequently happens that the shuttle rebounds partially out of the box so that the picker does not exert the customary blow to impel the shuttle properly across from one to the other box, and the shuttle is not properly thrown. In my effort to overcome this difficulty I have devised means whereby the binder will act through the protector-rod to stop the loom not only when the shuttle fails to be properly boxed as heretofore done, but also should the shuttle rebound and be out of its proper position when the picker is to act.

To accomplish my purpose I have provided the dagger on the protector-rod with two projections and have located the binder-finger near the outer end of the shuttle-box and have so shaped or constructed the binder that it presents a freely movable part near the outer end of the shuttle-box opposite said binder finger. In accordance with my invention the binder is acted upon by the shuttle when properly in the box and is pressed out against said finger to turn the protector-rod and dagger so as not to stop the loom, and in case the shuttle is absent from the box when it should be there then the binder is not pressed out and the dagger drops and the loom is stopped, but in addition to these two functions which are common in looms I have by reason of the second shoulder, and the peculiar novel location of the binder-finger and a freely movable part of the binder at the outer

end of the shuttle-box provided for the further novel purpose of stopping the loom whenever the shuttle has rebounded in the shuttle-box and fails to be in the proper position in the box as the picker approaches the shuttle to throw it through the shed.

Figure 1 of the drawings is a partial plan of alay with its shuttle-box, binder, protector-rod, and co-operating parts sufficient to enable my invention to be understood. Fig. 2, is a similar view, but with the shuttle in a different position, the shuttle being illustrated as having rebounded. Fig. 3, is a view of the parts shown in Fig. 1, looking at that figure in the direction of the arrow upon it, or from the rear side of the lay. Fig. 4, is a left-hand side elevation of the parts shown in Fig. 1; and Fig. 5, a like elevation of the parts shown in Fig. 2.

In the drawings A represents part of the breast beam of the loom; A' part of one of the side or end frames thereof; A<sup>2</sup> the notched shipper handle plate; A<sup>4</sup> a slide mounted on the loom side and provided with a finger A<sup>5</sup>, said slide and finger constituting what I shall herein denominate as the stop motion devices, said parts being common to United States Patent No. 454,810, wherein is illustrated more fully the operation of the stop motion device.

B is the lay, provided at its rear side with suitable bearings, as b, to receive the protector-rod B'. This protector-rod has a binder finger b' one for each shuttle-box, and each binder is located on the said protector-rod so as to stand near the outer end of the shuttle-box; and it also has attached to it a dagger b<sup>2</sup>, which, when the finger b' is not pushed back by the action of the binder upon it, drops and strikes the shoulder 3 of the stop motion device, said protector-rod having applied to it a spring as b<sup>3</sup> which normally acts to depress the free end of the dagger and to keep the binder finger b' pressed toward the binder.

The front side e of the shuttle box as shown has a stationary plate attached thereto by screws in usual manner.

D represents the picker carried by any suitable picker stick D'.

The binder e shown, is so shaped and mounted, as at c', to present a freely mov-

able part thereof near the outer end of the shuttle-box and opposite the binder-finger, said binder, in the form in which I have herein illustrated my invention, being, near the inner end of the shuttle-box, provided with a spring  $e^2$  against which the incoming shuttle S strikes as it enters the shuttle-box, the contact of the shuttle with the said spring moving the binder sufficiently to cause a toe or projection 4 thereof to contact with the rear side of the lay, but as soon as the shuttle, in its further travel, fully enters the shuttle-box it acts against the binder  $e$  in the outer end of the shuttle-box, as represented in Fig. 1, and moves said binder sufficiently to cause it to strike the binder finger  $b'$ , turn the protector shaft and elevate the dagger as represented in Fig. 4, so that as the lay moves forward to beat up the filling laid by the shuttle at its last crossing the said finger will not strike and move the stop mechanism. Should, however, the shuttle not enter the box at all, the outer end of the binder will not be moved outwardly against the binder-finger, the protector-rod will not be turned, and the shoulder 5 of the dagger will meet the shoulder 3 of the stop motion devices, push the said device forward against the shipper-handle  $f$  then held in the usual notch in the plate  $A^2$ , and engaging said shipper-handle will permit the latter in usual manner through usual and suitable connections to shift the driving belt of the loom from the fast to the loose pulley, or will otherwise effect the stopping of the loom in ordinary manner. Now, in case the shuttle should rebound into the position shown in Fig. 2, in an ordinary loom with the ordinary binder, the dagger would be held up so that it would not strike the stop motion devices and the shuttle would be caught in the warps and result in a "smash," but in this my invention, when the shuttle is in the position Fig. 2, the outer end of the binder at the outer end of the shuttle-box is not held out against the binder-finger and the dagger is dropped as in Fig. 5, and notwithstanding the ordinary shoulder 5 has passed too far forward to catch

the stop motion device, the second shoulder 8 will catch the stop motion device and push it forward to effect the stopping of the loom. 50

Prior to my invention I am not aware that a loom has ever been provided with devices including a dagger having two shoulders, one back of the other, to operate at different times during the forward movement of the lay toward the breast-beam, so that in addition to effecting the stopping of the loom when the shuttle is wholly absent from the shuttle-box, it will also stop the loom in case the shuttle shall have rebounded in the shuttle-box far enough to be in improper position as the picker is about to act to throw the shuttle. 55 60

My invention is not limited to the particular form of stop motion device shown, as indeed I may use any other usual or well known devices between the dagger and the shipper-handle. 65

Having described my invention, what I claim as new and desire to secure by Letters Patent, is;— 70

In a loom the following instrumentalities, viz:—a lay provided with a shuttle-box; a protector-rod having a binder finger located near the outer end of the shuttle-box; a binder having a free end in the outer end of the shuttle-box and interposed between said finger and the shuttle when properly lodged in the shuttle-box, and a stop-motion device, combined with a dagger connected with the said protector-rod and having two acting shoulders, one to operate with the stop-motion device to stop the loom in case the shuttle fails to come into the box, the other shoulder acting to stop the loom in case the shuttle rebounds and is thus put out of proper position in the shuttle-box as the picker is about to act, substantially as described. 75 80 85

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM F. DRAPER.

Witnesses:

S. F. SMITH,  
O. H. LANE.