(No Model.) 3 Sheets—Sheet 1.

C. A. LITTLEFIELD.

SHUTTLE CHECK FOR LOOMS.

No. 395,841. Patented Jan. 8, 1889.

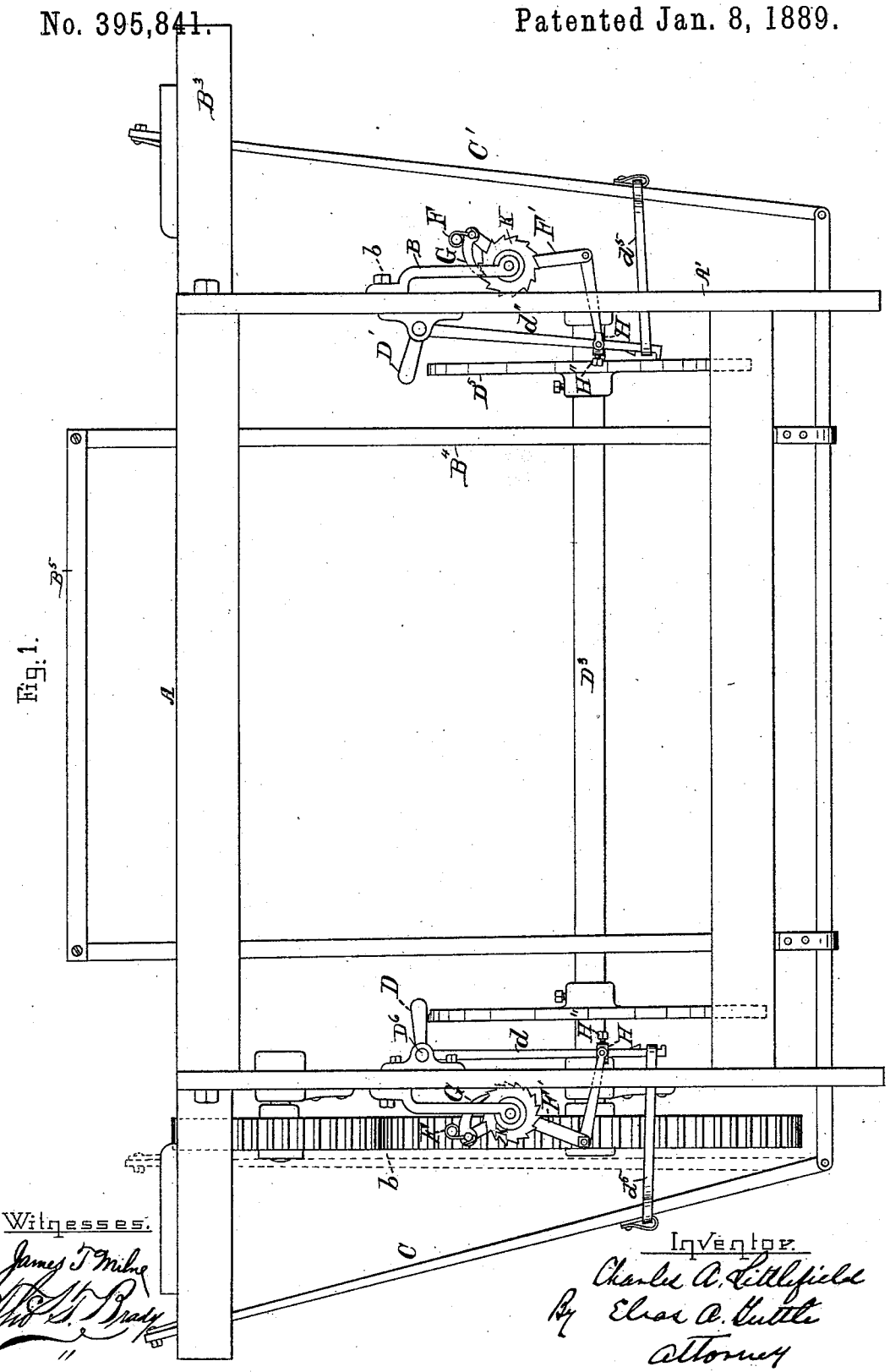


Fig. 1.

Witnesses.
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W. E. Brady

Inventor.
Charles A. Littlefield
By Elias A. Cutler
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N. PETERS. Photo-Lithographer, Washington, D. C.

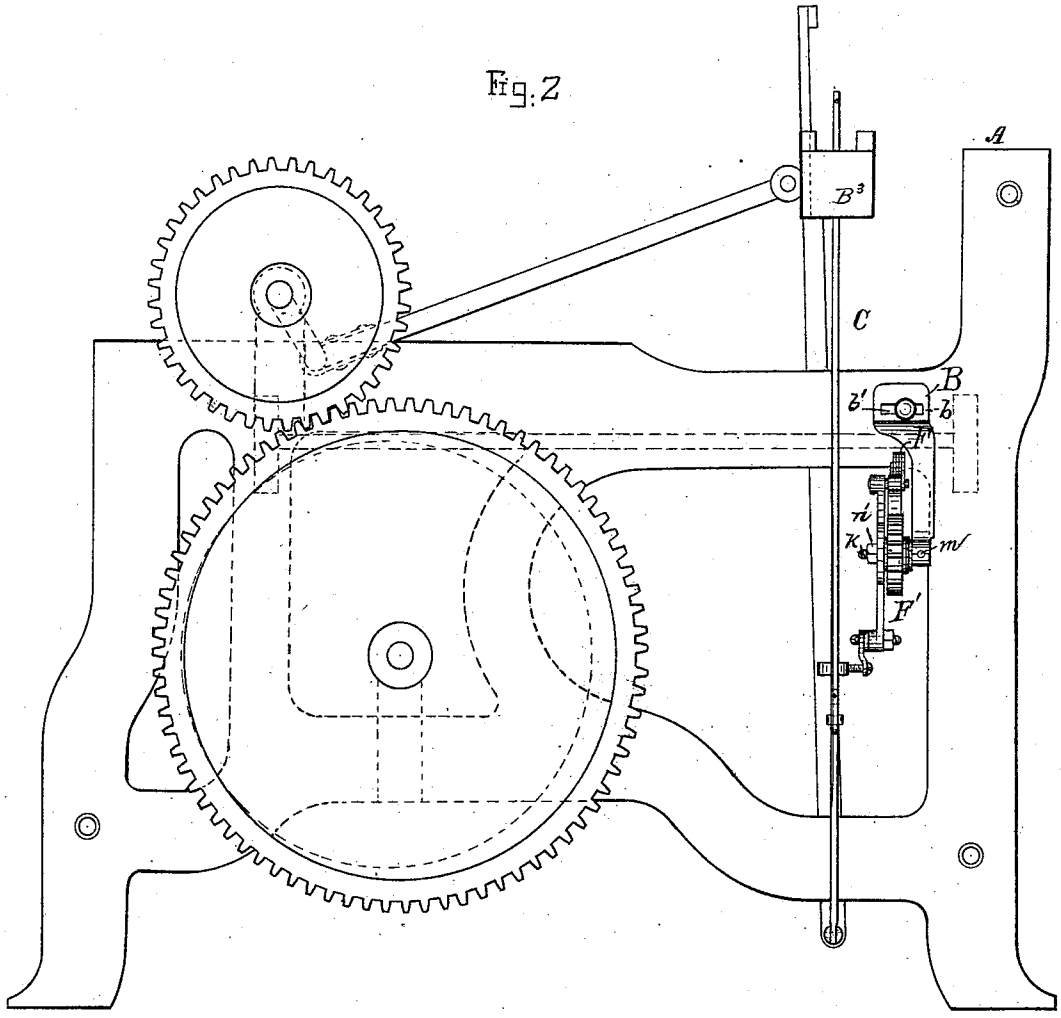
(No Model.) 3 Sheets—Sheet 2.

C. A. LITTLEFIELD.

SHUTTLE CHECK FOR LOOMS.

No. 395,841. Patented Jan. 8, 1889.

Fig. 2



Witnesses.
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(No Model.) 3 Sheets—Sheet 3.

C. A. LITTLEFIELD.

SHUTTLE CHECK FOR LOOMS.

No. 395,841. Patented Jan. 8, 1889.

Fig. 3.

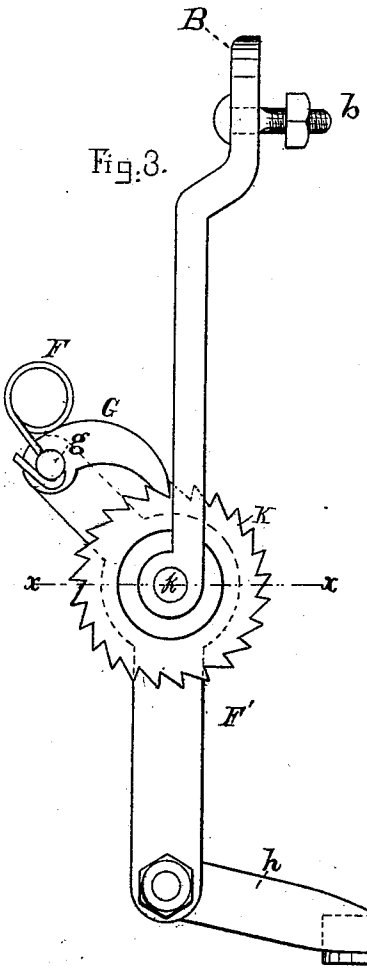


Fig. 4.

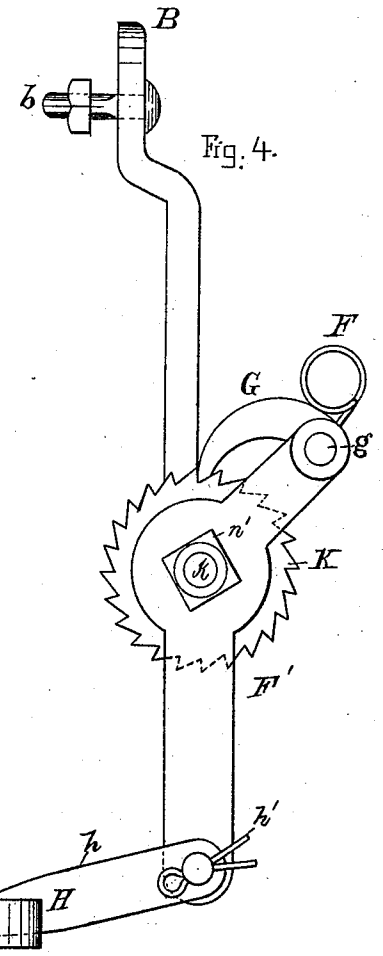
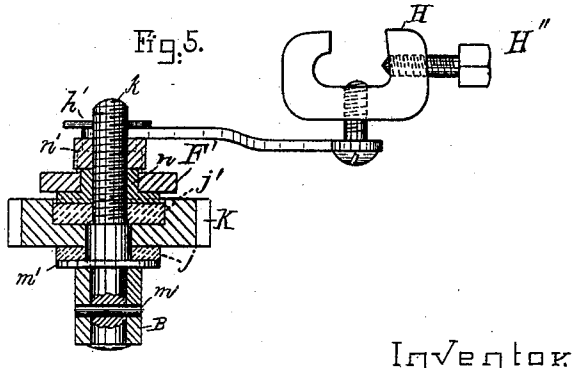


Fig. 5.



Witnesses.

James F. Miles

Wm. C. Brady

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UNITED STATES PATENT OFFICE.

CHARLES A. LITTLEFIELD, OF FALL RIVER, ASSIGNOR OF ONE-HALF TO ELIAS A. TUTTLE AND JAMES T. MILNE, OF BRISTOL COUNTY, MASSACHUSETTS.

SHUTTLE-CHECK FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 395,841, dated January 8, 1889.

Application filed October 29, 1887. Serial No. 253,707. (No model.)

To all whom it may concern:

Be it known that I, CHARLES A. LITTLEFIELD, a citizen of the United States, residing at Fall River, in the county of Bristol and State of Massachusetts, have invented certain new and useful Improvements in Shuttle-Checks for Looms; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

It is well known to those skilled in the art of weaving that great difficulty is encountered when using soft filling in retaining or holding it upon the spindle of the shuttle when the loom is run at a high rate of speed, the reason being that a sudden stopping of the shuttle in its flight from box to box causes the filling to throw or fly from the spindle. It is furthermore well known that the greatest power consumed by a loom is at its picking-point, or the point when the shuttle is thrown from the box.

The object of my invention is to absorb the blow of the shuttle when entering the box, thereby preventing the breaking and stripping of the cop, and to enable the loom to run with a practically open box, the only spring necessary being such as is now used to control the dagger or protecting-rod, thereby lessening the amount of force actually required for the propulsion of the shuttle.

I have illustrated my invention by the accompanying drawings, in which—

Figure 1, Sheet 1, is a front view of a loom-frame with my invention attached thereto. Fig. 2, Sheet 2, is an end view of a loom-frame with my invention placed thereon. Fig. 3, Sheet 3, is a face view of my improved shuttle-check. Fig. 4, Sheet 3, is a rear view of the same. Fig. 5 is a cross-section on line $x\,x$ of Fig. 3, partly in elevation.

In the several views like letters refer to similar parts throughout the drawings.

In the said drawings, A designates the loom-frame; A′ A′, the sides thereof; B^3, the lay-beam; B^4, the lay-swords; B^5, the lay-cap; D^3, the cam-shaft; D^5, the picking-cams or tappets thereon; D D′, the picking-bowls; D^6 D^6, the picking rock-shafts; d' d', depending arms on the said shafts; C C′, the picker-sticks, and d^5 d^5 the picking-straps, all of which parts are or may be constructed and operated in the usual manner.

In practice I shall, when necessary, employ a spring or springs to assist in moving the picker-sticks C C′ toward the outer extremities of the shuttle-boxes, as shown and described in my application for Letters Patent for improvement in parallel foot-motion shuttle-check and power-saver, filed November 1, 1887, Serial No. 253,954.

At each side of the loom I apply to the side frame, A′, a stock, B, secured to the said side frame with capacity for adjustment toward and from the front of the loom by means of a bolt, *b*, passing through a slot in the said stock, as clearly shown in Fig. 2 of the drawings. Through the lower end of the stock B passes a stud, *k*, fastened in place by a pin, *m*, extending through both stock and stud. Upon the stud, next the side of the stock B, is a metal washer, *m′*, in contact with which is a washer, *j*, of cloth, leather, or other suitable friction-creating material.

Between the washer *j* and a second one of similar character is placed upon the stud *k* a ratchet-wheel, K, which preferably is dished or recessed on one side, as shown, to receive within the recess the washer *j′* on that side; or it may be dished or recessed on both sides to receive both the washers *j j′*. A nut, *n*, turned on the threaded end of the bolt *k*, serves to compress together the washers and ratchet-wheel K. Upon a reduced or turned-down portion of the nut *n* is mounted to turn a lever, F′, carrying a pawl, G, pivoted on a stud, *g*, carried by the said lever and held pressed into engagement with the teeth of the wheel K by means of a spring, F.

The lower end of the lever F′ has connected to it by a link, *h*, a collar, H, preferably made open on one side, as shown in Fig. 5, to adapt it for ready application to the arms *d d′* of the rock-shaft D^6. The said collar is applied to the said arm at a proper and convenient distance from the shaft D^6 and clamped thereon by the screw H″.

The proportions and connections of the various parts are to be such in practice that

during each inward movement of the arm *d* or *d'* and picker-stick C or C' the pawl G will move backward over the wheel K a distance more than one tooth, but not quite far enough to pass and engage with the end of the following tooth.

In practice I have found it most convenient to cause the pawl G during the inward movement of the arm and the picker-stick to move backward over the wheel K a distance equal approximately to one and three-fourths tooth. In operation, after the throw of the shuttle, the picker-stick will be arrested in its movement toward the outward extremity of the shuttle-box by the engagement of the pawl with a tooth of the ratchet-wheel, and will be held thereby at a short distance from the end of the box. After the shuttle has entered the box at the end of its flight from the box on the opposite side of the loom, it will strike against the picker and carry the latter and the upper end of the picker-stick outward with it. The retardation of the rotation of the ratchet-wheel occasioned by the friction-creating devices, however, will cause the stick to resist the advance of the shuttle, and thus bring the latter to a state of rest without undue shock. By the means described I arrest the outward movement of the picker-stick before the latter has entirely reached the outer limit of such movement and hold it in a yielding manner, so as to cause it to receive the shuttle in its flight across the loom from the box on the opposite side and gradually check and destroy its movement. This enables me to dispense with the great pressure ordinarily applied to the sides of the shuttle to check its momentum as its enters the shuttle-box and prevents the stripping of the cop frequently occasioned by the sudden arrest of the shuttle at the end of its flight across the loom.

The reduction in the pressure applied to the shuttle in the box enables the shuttle to be thrown with a much less expenditure of power, and renders unnecessary the employment of the relief mechanism heretofore devised and employed for the purpose of removing the pressure of the usual swell or binder from the shuttle just prior to effecting the pick.

I do not herein claim, broadly, the combination, with the picker-stick and a wheel and devices for frictionally retarding the rotation of said wheel, of a pawl connected with the said picker-stick and adapted to engage with the wheel in the outward movement of the picker-stick, the picker-stick being thereby stopped in the outward movement and held at a slight distance from the extreme end of the said movement and in position to receive the shuttle and check it in its flight from the opposite box, since such combination forms the subject of claims in my other application hereinbefore mentioned.

The shuttle-motion which I have illustrated in the accompanying drawings is a common form in very extensive use. I have shown the same merely for the sake of convenience. It is to be understood that in place of being applied to the arms *d d'* the collars H may be applied to any equivalent arms or levers forming part of any other usual or suitable shuttle-motion, due care being exercised to properly adjust the connections so as to secure the proper operation of the checking devices.

The general character of the shuttle-motion in connection with which the checking devices are employed is immaterial so long as the shuttle-motion is provided with the arms *d d'* or their equivalent. Upon the stud *k*, outside the nut *n*, is turned a nut, *n'*, the same serving not only as a check-nut for the nut *n*, but as a means of holding the lever F' in place upon the reduced portion of the nut *n*.

Having described my invention and the best means with which I am acquainted for reducing the same to practice, I claim as of my invention and desire to secure by Letters Patent—

1. The combination, with a vibrating arm or lever of a shuttle-motion and the picker-stick connected thereto, of the lever F', connected to the said vibrating arm or lever, the pawl G, the wheel K, and devices for frictionally retarding the rotation of the said wheel, the combination being constructed and operating substantially as described, and serving to arrest the picker-stick in its outward movement before it reaches the extreme of the said movement and hold it there in position to arrest the flight of the shuttle.

2. The combination, with a vibrating arm or lever of a shuttle-motion and the picker-stick connected thereto, of the lever F', the link *h*, the collar H, means for adjustably securing said collar upon the said arm or lever of the shuttle-motion, the pawl G, the wheel K, and devices for frictionally retarding the rotation of the said wheel, the combination being constructed and operating substantially as described, and serving to arrest the picker-stick in its outward movement before it reaches the extreme of the said movement and hold it there in position to arrest the flight of the shuttle.

3. The combination, with a vibratory arm or lever of a shuttle-motion and the picker-stick connected thereto, of the collar H, the set-screw H'', the link *h*, the lever F', the pawl G, the wheel K, and devices for frictionally retarding the rotation of the said wheel, the combination being constructed and operating substantially as described, and serving to arrest the picker-stick in its outward movement before it reaches the extreme of the said movement and hold it there in position to arrest the flight of the shuttle.

4. The combination, with the wheel K and devices for frictionally retarding the rotation of the said wheel, of the pawl G, the lever F', the link *h*, the collar H, and means for clamp-

ing the said collar in place upon a vibrating arm or lever of a shuttle-motion, all being as and for the purposes set forth.

5. The combination, with the stock B and stud *k*, of the washer *m'*, the friction-washers *j j'*, the wheel K, the nut *n*, having a reduced exterior portion, as described, the check-nut *n'*, the lever F', mounted upon the reduced portion of nut *n* and held in place laterally by the nut *n'*, and the pawl G, all substantially as described.

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

CHARLES A. LITTLEFIELD.

Witnesses:
L. W. HOWES,
LOUISE E. RAMSEYER.