

W. B. MONK.
 WARP STOP MECHANISM FOR LOOMS.
 APPLICATION FILED FEB. 5, 1910.

1,061,553.

Patented May 13, 1913.

4 SHEETS-SHEET 1.

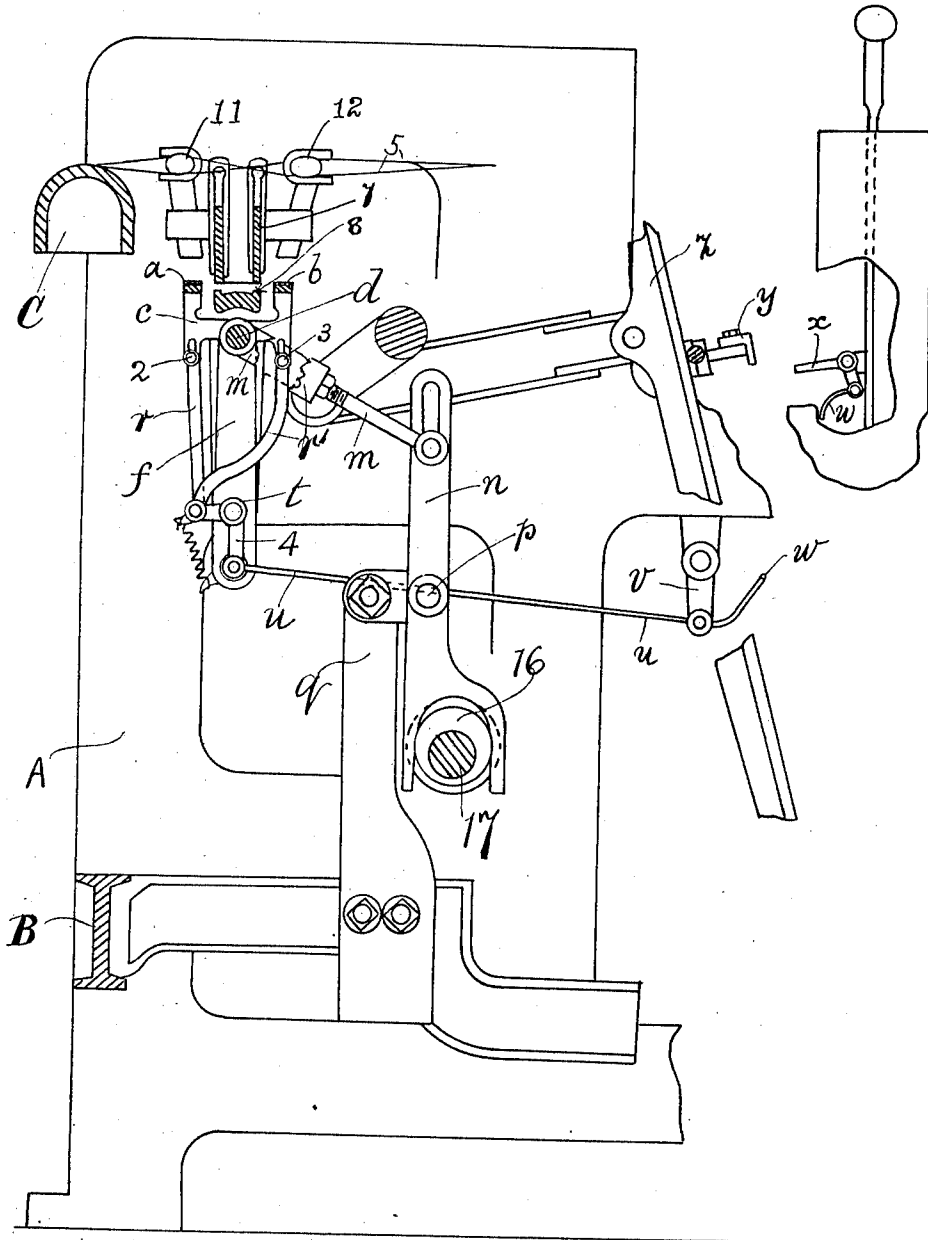


Fig. 1

Witnesses
 F. A. Paulston
 E. B. Balthasar

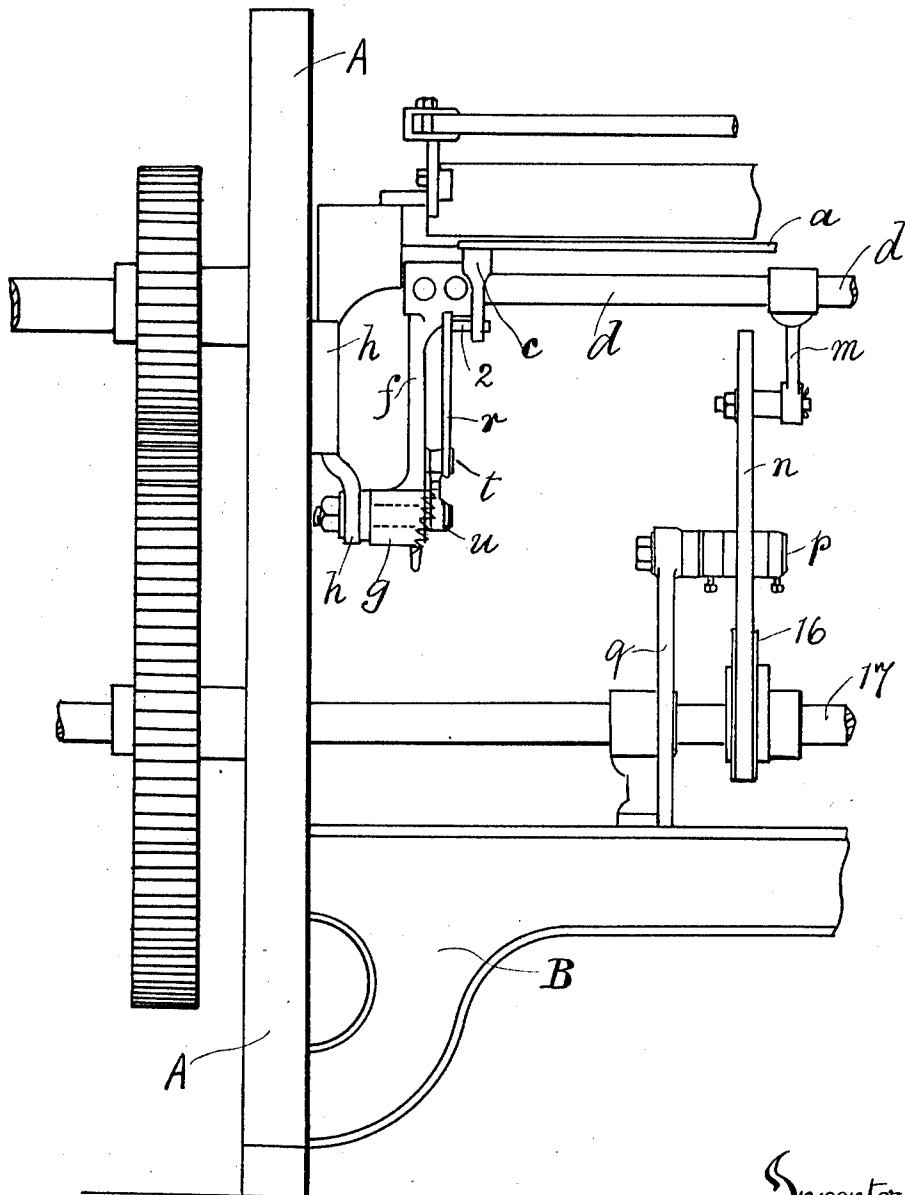
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4 SHEETS-SHEET 2.



Witnesses
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 E. B. Batcher

Fig. 2

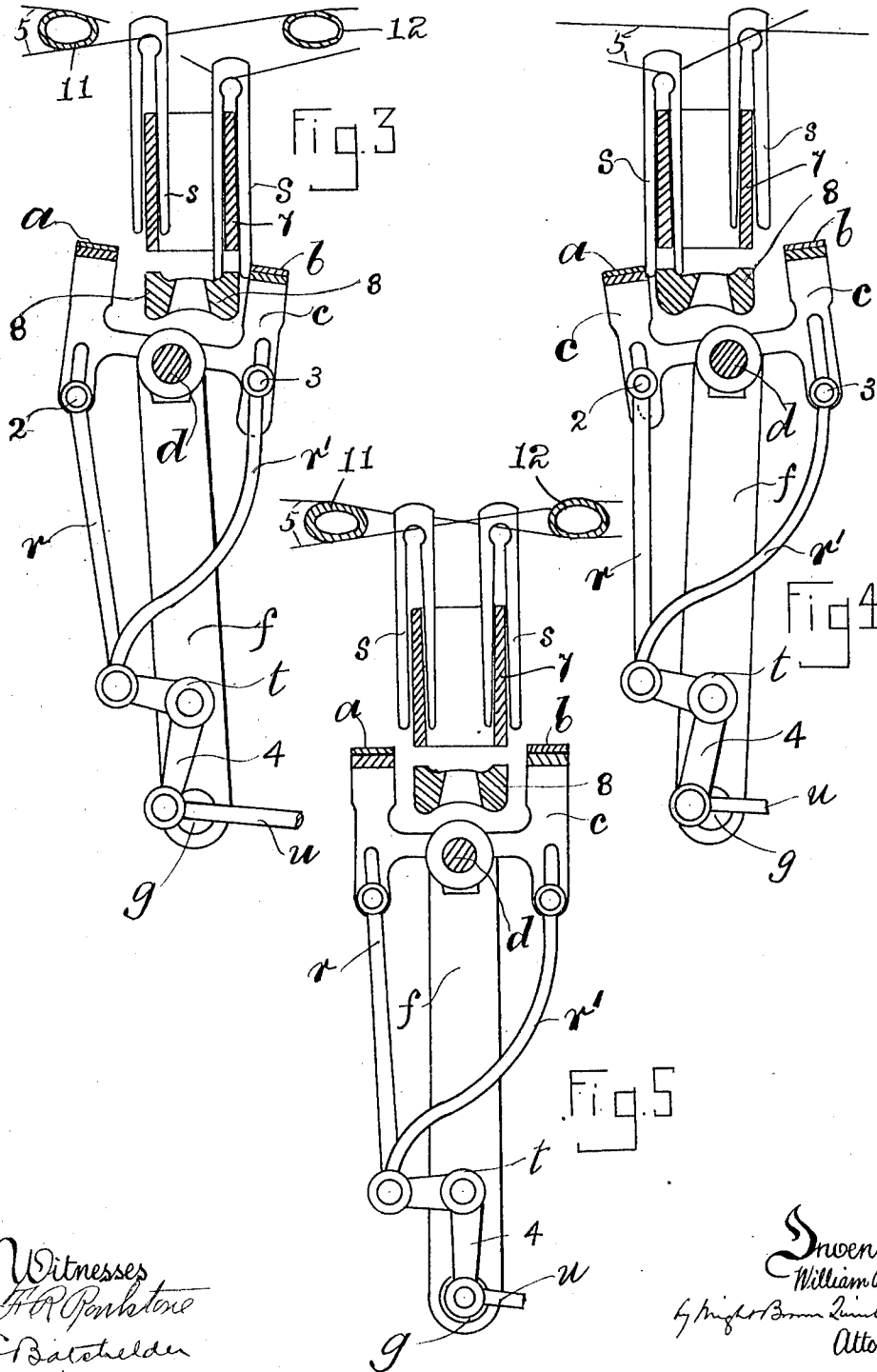
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4 SHEETS—SHEET 3.



Witnesses
H. R. Penhstone
E. Batchelder

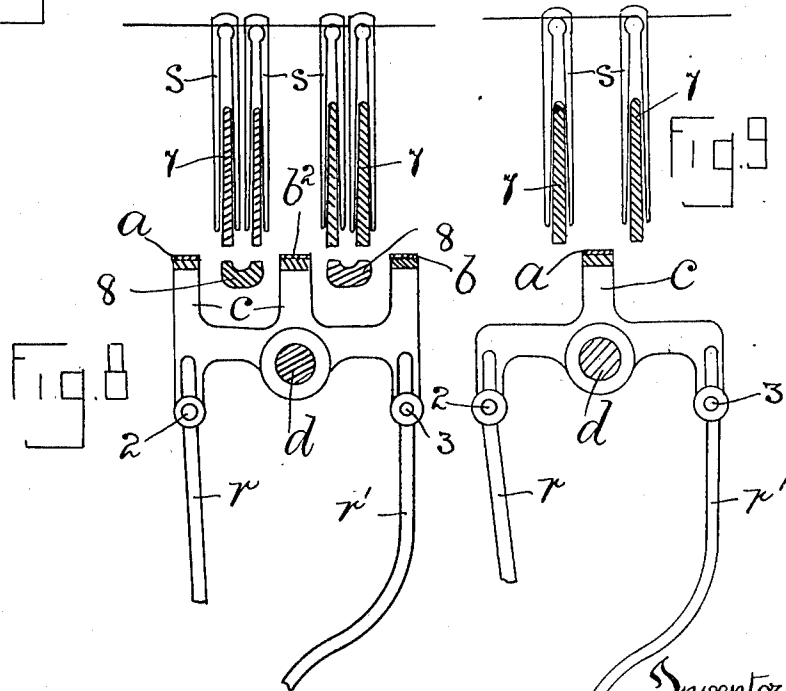
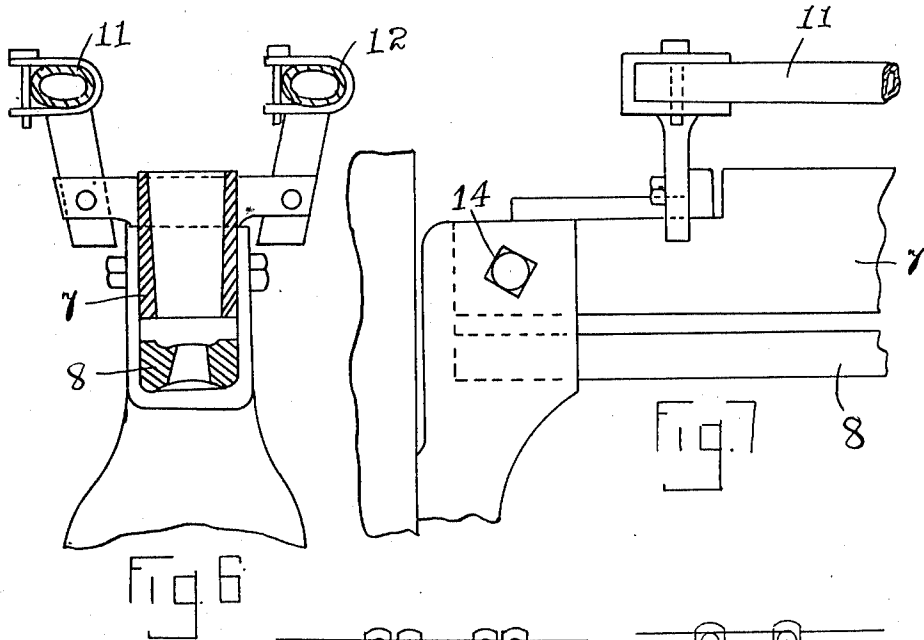
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4 SHEETS—SHEET 4.



Witnesses
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UNITED STATES PATENT OFFICE.

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WARP STOP MECHANISM FOR LOOMS.

1,061,553.

Specification of Letters Patent.

Patented May 13, 1913.

Application filed February 5, 1910. Serial No. 542,246.

To all whom it may concern:

Be it known that I, WILLIAM BICKERSTAFFE MONK, a subject of the King of Great Britain, and resident of 41 Spencer street, 5 Keighley, in the county of York, England, have invented certain new and useful Improvements in Warp Stop Mechanism for Looms, of which the following description, together with the accompanying sheets of drawings, is a specification.

My invention relates to the type or class of warp stop mechanism wherein on the breakage, failure or undue slackening of any of the warp threads, the detector previously supported by such warp thread is allowed to descend into the path of motion of a reciprocating bar, and the object of my present invention is the construction, mounting and arrangement of said bar so that it may more readily than heretofore be deflected from its usual paths of motion without putting excessive strain upon any detector that may impede it.

In carrying my invention into effect I make use of the devices illustrated in the accompanying sheets of drawings wherein:—

Figure 1 is a sectional end elevation of sufficient of a loom to show the application thereto of my improved parts. Fig. 2 is a back view illustrating certain of the parts shown by Fig. 1. Figs. 3, 4 and 5 are sectional end elevations showing my improved operating parts in detail. Fig. 3 shows them as actuated when one of the detectors in one of the series has descended, while Fig. 4 shows same devices in altered positions, as when any detector in the other series has descended, while Fig. 5 shows the parts as when all the warp threads are intact. Figs. 6 and 7 are sectional end and back views illustrating certain parts of my improved devices in detail. Fig. 8 is a similar view to Figs. 3, 4 and 5 but illustrates my devices as arranged in connection with four series or rows of detectors. Fig. 9 shows a modification hereinafter described. Figs. 3 to 9 inclusive are drawn to an enlarged scale.

A indicates the end frame of the loom and B the low cross rails of said loom while C indicates the back bearer, all of which are well understood.

The detectors *s*, the lease rods 11 and 12 and the guiding bars 7 are arranged in well known manner and to attain the object of my invention in connection with these de-

vices I mount the reciprocating feeler bars *a*, *b*, upon pivotal brackets *c* said brackets *c* being arranged to oscillate freely upon the shaft *d* which is fixed to the outer ends of levers *f*, pivoted at *g* on the bearings *h*, 60 which are fixed upon the end frame A, said levers *f* and bearings *h* in the several views being shown on only one side of the loom although similar parts are mounted on the opposite side of the loom to support the 65 other ends of the several parts extending across the loom as will be understood.

It is to be noted that I do not limit myself to the specific means illustrated for causing the shaft *d* to oscillate as described. 70 Upon the shaft *d* is mounted a connecting rod *m* which couples it to the lever *n* and said lever *n* is pivoted at *p* to bearings *q* fixed upon the framework of the loom, while said lever *n* is actuated by the eccentric 16 75 carried by the shaft 17 so that said shaft *d* is thus positively moved in both directions.

The fixing of the feeler bars *a*, *b*, upon the swiveling brackets *c* is such that said brackets *c* may have connecting rods *r* and 80 *r'* (the connecting pins 2 and 3 of which take loosely through slots in said bracket *c*) so that as said brackets *c* and their shaft *d* are oscillated by the lever arm *f*, should a detector, (as *s*, shown by Fig. 3) fall or descend into the path of motion of either of the bars (as the bar *b* in said figure) then the motion of the shaft *d* to the left will bring said bar into contact with the lower end of the said detector *s*, causing said 90 bracket *c* to tilt (or oscillate about the axis of the shaft *d*) and by actuating the pivotal pin 2 (at which time the pin 3 is permitted to move freely in the slot in the bracket *c*) to raise the rod *r* and so move the bell-crank 95 lever *t*, as to raise one of its arms and move the other arm 4 into the position shown by said Fig. 3, thus causing said lever *t* to actuate the rod *u* which by being connected to the lever *v* actuates the rod *w* (also connected to the same lever *v*) in order to raise the 100 bunter *x* (pivotally mounted on the belt shifting handle 20) into the path of motion of the finger *y*, carried by the lay-sword *z*, the striking of the former by the latter having the effect of bringing about the stoppage of the loom in manner well known.

The motion of the shaft *d* in the opposite direction to that above described brings the bar *a* into contact with any detectors *s* that 110

might have descended into its path of motion (as is shown by Fig. 4) in which case the bracket *c* is caused to tilt in the opposite direction and thus raise the pin 3 and by rod *r*¹ move the lever *t* also into the same position as that shown by Fig. 3, and with the same results of effecting the stoppage of the loom.

During the oscillations of the shaft *d* should none of the detectors *s* fall into the path of motion of the bars *a* and *b*, the rod *u* remains at rest. The detectors *s* are made to straddle and be supported by the warp threads 5 as well as to extend over cross supporting bars 7 which guide them in their descent in manner well understood. However, in accordance with my invention in addition to these guiding bars 7 I fix cross bars 8 in such positions relatively with said bars 7 that on the detectors descending their lower ends will reach into contact with the upper edges of said bars 8 as shown by Figs. 3 and 4, and on the bars *a* and *b* being oscillated to contact with said descended detectors *s* their tilting or deflecting movements as above described have the effect of moving the bar *a* or the bar *b* in such a vertical direction as to bring it opposite the solid fixed cross bar 8 (as is the bar *b* shown by Fig. 3 and the bar *a* by Fig. 4) consequently the whole pressure of said bar *b* is withstood by this fixed bar 8 with the result that twisting and damaging of the detectors *s* by such pressure of the bars *a* and *b* is avoided, since I find that the weight of the several parts alone is sufficient to maintain the lever *t* and its several other parts in their normal positions as shown by Fig. 5, although if necessary, a light spring 10 may be employed as shown by Figs. 1 and 2, for retracting the several parts into their said normal positions, thus devices are brought into action to bring about the stoppage of the loom without in any way putting more strain upon the detectors *s* than is necessary to simply impede the bar *a* or *b* in its normal path of motion (while allowing the shaft *d* to continue) in order to deflect the parts as described.

When my improved devices are used in connection with narrow looms I find that the bar 8 need not be used and when this is the case I preferably form the brackets *c* as shown by Fig. 9.

The devices constructed and arranged as hereinbefore described enables me to mount the lease rods 11 and 12, the detectors *s* and the cross bars 7 in simple bearings *h* from which all of said parts may be easily detached by simply releasing or unscrewing a screw as 14, so that on the finishing of one warp I can lift all these parts out of the loom together with the healds and reed and take them to the usual apparatus for twisting fresh warps on them, thus avoid-

ing the re-application of the detectors *s* to the subsequent warp when put into the loom.

It will be observed that in the foregoing description, reference has been had only to two sets or series of detectors *s* but it is obvious as is illustrated by Fig. 8 that a larger number of such series may be employed as the fineness of the warp may necessitate. According to the arrangement shown by Fig. 8 four rows are employed and the central bar *b*² is made to act at either the advancing or receding of the shaft *d*.

Such being the nature and object of my invention what I claim is:—

1. In warp stop mechanism for looms, detectors to be supported by the warp threads, cross-bars for guiding said detectors vertically, a pivotal bearing movable backward and forward below said cross bars, means for moving said bearing, angular brackets extending in opposite directions from said bearing and pivotally mounted thereon, two feeler bars carried by said brackets on opposite sides of a vertical plane extending through said bearing and adapted to be raised and lowered as the brackets swing on their pivotal bearing, a lever, connecting rods for transmitting motion from the said brackets to said lever, means for effecting the stoppage of the loom by the movement of said lever, and a rigid cross bar adapted to support the detectors against pressure of the feeler bars.

2. In warp stop mechanism for looms, detectors, cross-bars for guiding and supporting said detectors, reciprocating feeler-bars, swiveling bearings upon which said feeler-bars are fixed, lever arms upon which said bearings are pivotally mounted to swivel, said bearings extending laterally from their pivots, eccentric and lever devices for transmitting motion to said lever arms, connecting rods for transmitting motion from the swiveling bearings to levers and parts for actuating the belt shifting mechanism of the loom substantially as herein specified.

3. In warp stop mechanism for looms, detectors, guide-bars for said detectors, feeler-bars for contacting with said detectors swiveling bearings for carrying or supporting said feeler-bars, said bearings being formed with slots to receive connecting pins, connecting rods carrying said connecting pins, a bell-crank lever to which said connecting rods are attached, a rod connecting said lever to other levers and a bunter, said bunter and means whereby the motions of same may be transmitted to the belt shifting mechanism of the loom substantially as set forth.

4. In warp stop mechanism for looms, two series of detectors, a feeler-bar arranged to contact with one series when moving in

one direction, and with the other series
when moving in the other direction, swiv-
eled brackets supporting said feeler-bar,
said brackets having lateral arms provided
5 with vertical slots, connecting-rods having
pins passing through said slots, a bell-crank
lever connected with the other ends of said
connecting rods, and means whereby said

bell-crank lever may actuate the belt shift-
ing mechanism of the loom.

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

WILLIAM BICKERSTAFFE MONK.

Witnesses:

THOS. WHITAKER,
JOHN WHITEHEAD.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."
