J. & H. WRIGHT.

WARP STOP MECHANISM FOR LOOMS.

APPLICATION FILED APR. 6, 1909.

978,345.

Patented Dec. 13, 1910.

2 SHEETS—SHEET 1.

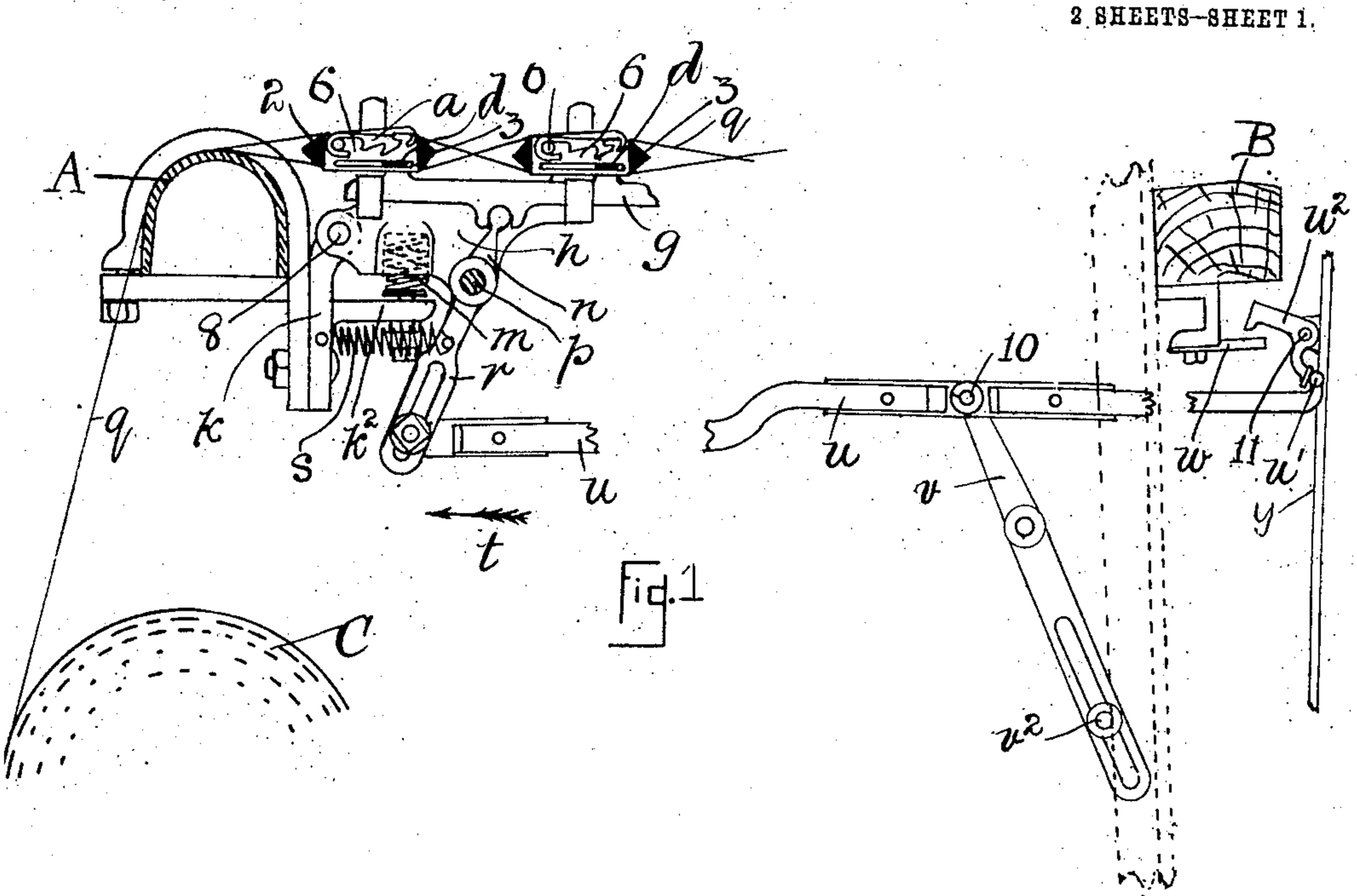

Fig. 1

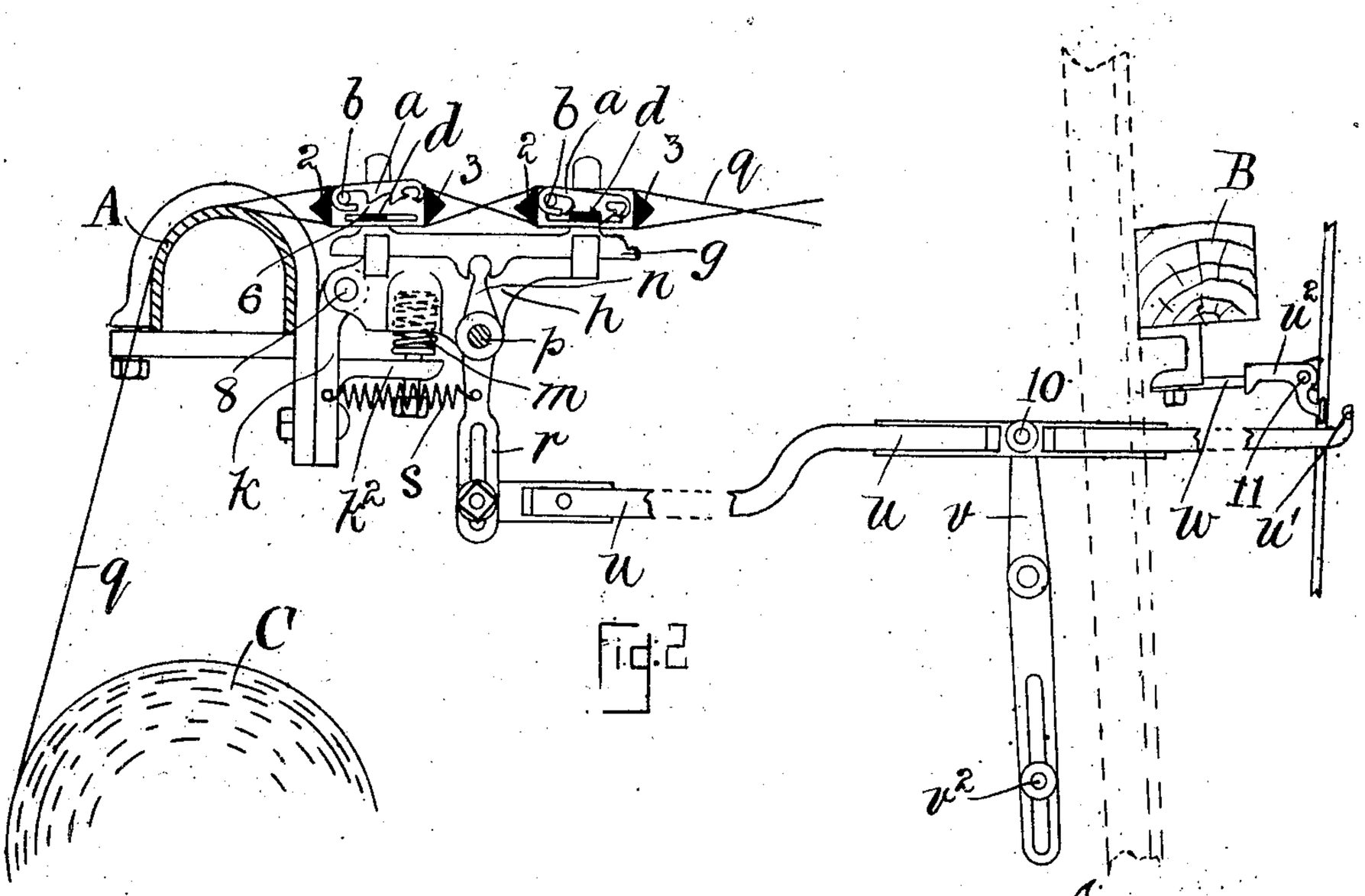

Fig. 2

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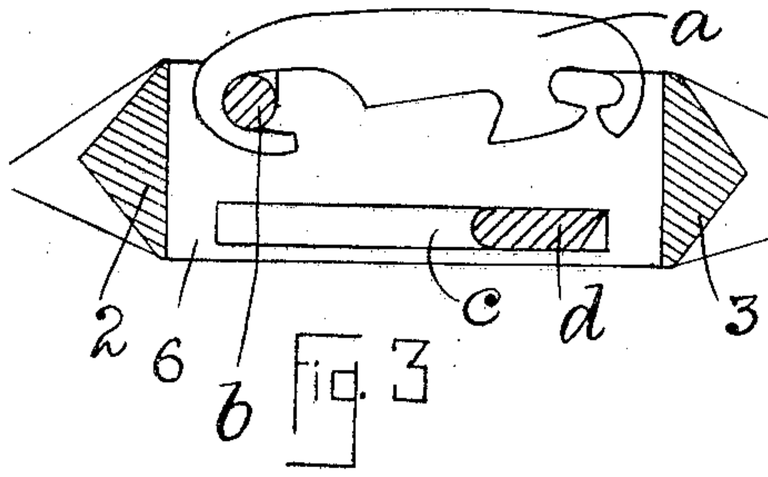

Fig. 3

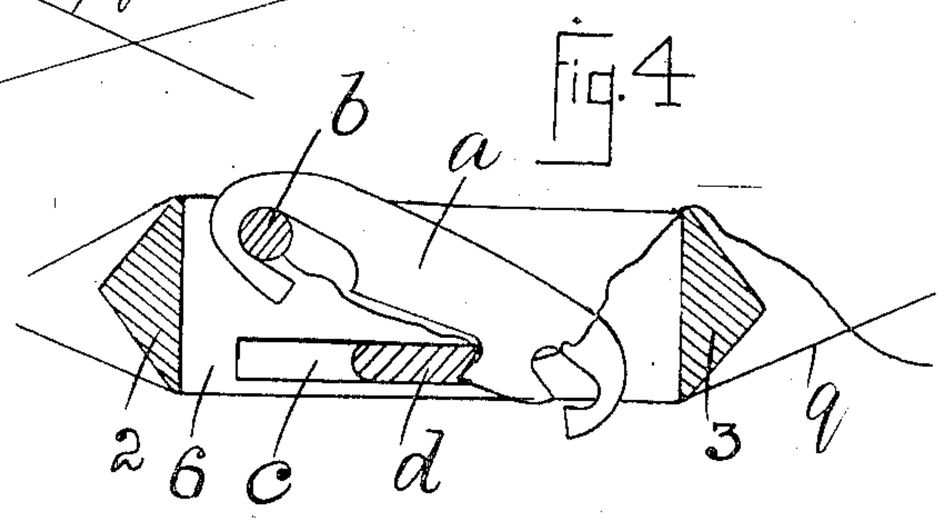

Fig. 4

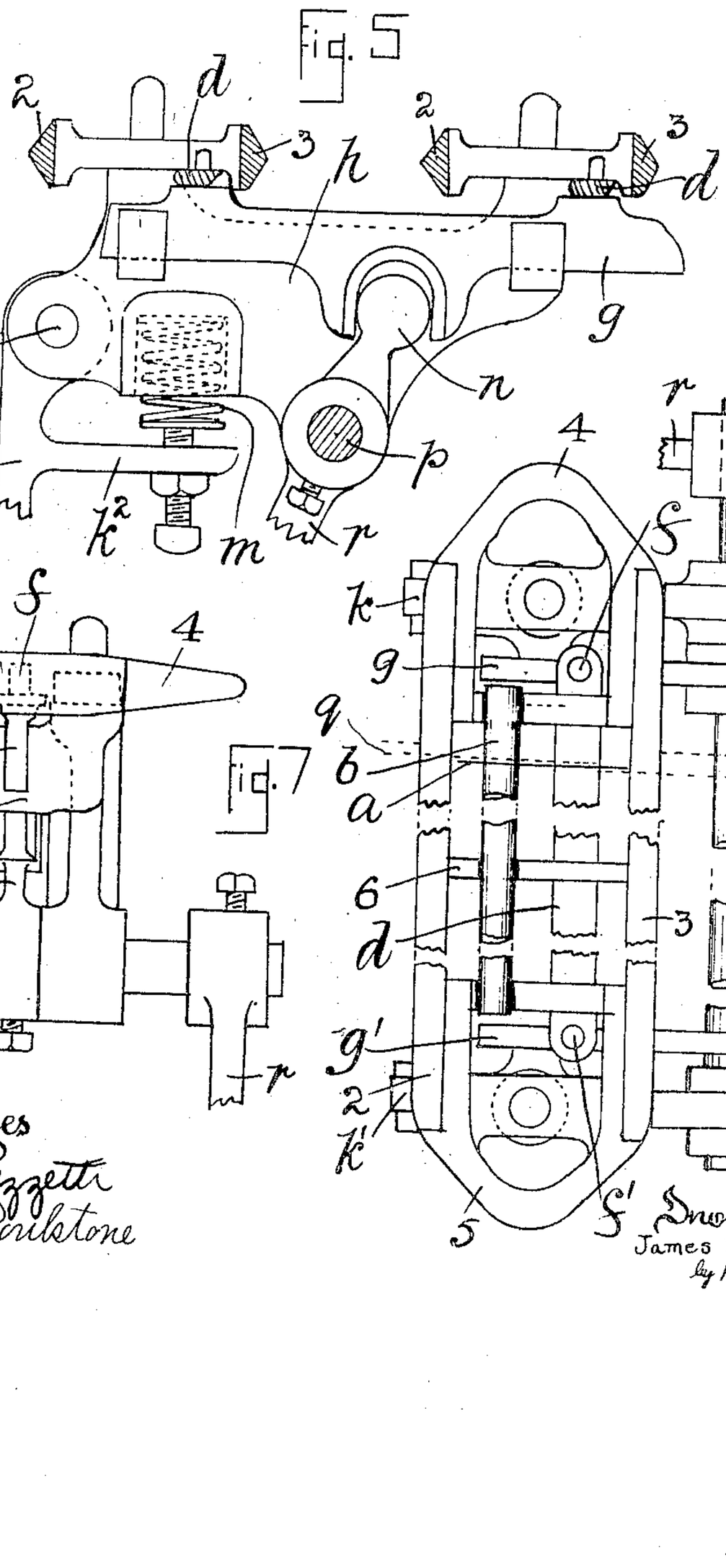

Fig. 5

Fig. 7

Fig. 6

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UNITED STATES PATENT OFFICE.

JAMES WRIGHT AND HEBDEN WRIGHT, OF INGROW, NEAR KEIGHLEY, ENGLAND.

WARP STOP MECHANISM FOR LOOMS.

978,345. Specification of Letters Patent. **Patented Dec. 13, 1910.**

Application filed April 6, 1909. Serial No. 488,325.

To all whom it may concern:

Be it known that we, JAMES WRIGHT and HEBDEN WRIGHT, subjects of the King of Great Britain, residing at The Whins, Ingrow, near 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.

Our invention relates to warp stop mechanism for looms, and particularly to that type wherein the detectors are situated between the healds and the back rail of said looms, or in proximity to the lease rods, or the positions in which said lease rods are mounted, and our said invention consists in an improved method of mounting or supporting the detectors and the parts in connection with which they operate so that simple and efficient warp stop mechanism is produced and at less cost than those heretofore made use of. This object we attain by the employment of devices hereinafter described and as illustrated by the accompanying sheets of drawings, wherein:—

Figure 1 is a sectional end elevation of the back-rail and slayboard of a loom, showing the application of our improved devices thereto. The other framework is omitted for the sake of clearness while the positions of the several parts are as when the weft is being beaten up, with all the threads of the warp intact. Fig. 2 is a similar view to Fig. 1 but shows the parts in position when the shot of weft is being nearly beaten up and when one of the warp threads is broken. Fig. 3 is an end elevation of certain parts shown by Figs. 1 and 2 with the detector in position as shown by Fig. 1. Fig. 4 is also an end elevation of certain parts shown by Figs. 1 and 2, with the detector in position as shown by Fig. 2. Figs. 3 and 4 are drawn approximately full size. Fig. 5 is a sectional end elevation similar to Fig. 3 but shows parts behind these which are shown in Figs. 1 and 2, and is drawn to an enlarged scale as compared with Figs. 1 and 2. Fig. 6 is a plan of the parts shown by Fig. 5 but shows only two warp threads, one taking over one lease rod and the other over the other lease rod. Fig. 7 is a front elevation of the parts shown by Fig. 5.

Similar letters and figures of reference indicate similar parts throughout the several views.

A indicates the back-rail, B the slayboard, and C the warp-beam of the loom. The warp in passing from the beam C is conducted over the back-rail A forward past the slayboard B in a manner well understood, and we make use of detectors *a* which are situated in proximity to the back rail A. These detectors *a* are pivoted at one end on rods *b* which are supported within framework formed by the longitudinal ribs 2 and 3, end pieces 4 and 5, and cross pieces 6 the free ends of the detectors being supported by the warp threads. The cross pieces 6 have slots *c* formed in them to receive a bar *d* which extends lengthwise the frame formed by the ribs 2 and 3 and end pieces 4 and 5. These bars *d* are caused to reciprocate or move backward and forward by having openings in their outer ends to take over pins *f*, *f'* secured to the sliding pieces *g*, *g'*. These sliding pieces *g*, *g'* are mounted to slide in notches formed in the bearings *h*, and said bearings *h*, are pivoted at 8 to brackets *k*, *k'* fixed upon back-rail A. The bearings *h*, are sustained or supported by springs *m*, taking between them and extensions k^2 on the brackets *k*, *k'*. By thus resiliently supporting the bearings *h*, the detectors *a* and the framework carrying them are allowed to be moved by the pull of the warp threads without putting too great a strain thereon.

The sliding pieces *g*, *g'* are actuated by lever arms *n*, fixed upon the shaft *p* which extends across the loom beneath the warp threads *q*. This shaft *p* is carried by the bearings *h*, through openings in which it passes so that by having another lever *r* secured to it oscillatory motion may be transmitted to said shaft *p* as said lever *r* is reciprocated. To this lever *r* is attached a spring *s* which always tends to move it in the direction indicated by the arrow *t*, while also connected to said lever *r* is a rod *u* which reaches from it to be connected at 10 to the lever *v* pivoted to the loom frame in any suitable manner (not shown). The extending end *u'* of the rod *u* reaches beyond said lever *v* so that the projections thereon may, when moved, as hereinafter described, tilt the catch u^2 upon its pivot 11, by which action it is moved out of the path of motion of the bunter *w* fixed to the slayboard B

when said slayboard B is advancing into the position shown by Fig. 1.

Motion is transmitted to the lever r in the direction opposite to that indicated by the arrow t by means of the lay-sword, shown in broken lines Figs. 1 and 2, contacting with the projecting pin v^2 secured or fixed upon the lower arm of the lever v and extending into the path of motion of said lay-sword.

It will be observed that we have two sets of detectors a, and two reciprocating bars d mounted within their respective framework, which is of the character hereinbefore described, and these two sets are so situated as to act in each case as lease rods, that is to say one set of the framework acts as one lease rod and the other set acts as the other lease rod, and the sheet of warp threads is divided into two portions, the threads of one portion passing over one set of framework and under the next set, while the other warp threads pass under the former and over the latter thus the threads of warp are divided into two series which are arranged to receive their respective detectors a as shown by the several figures, with the result that overcrowding of said detectors is in well known manner relieved. It is quite evident that provided we wanted to further relieve said warp threads from overcrowding we might sub-divide them so that another set of framework might be employed to receive detectors for actuating in conjunction with the additional division of the warp threads passed over it.

The actions of the foregoing parts are as follows: As the slayboard moves backward and forward in well known manner and for well known purposes its laysword contacts in one direction with the pin v^2 of the lever v so that said lever pulls the rod u to actuate the lever r and this moves the shaft p which by the lever n causes the sliding pieces q, q' to take the bars d to the left Fig. 5. On the return of said slayboard the spring s will reverse the motion of the lever r and therefore that of the bars d, and will, (while the detectors are supported by the intact or unbroken warp threads) continue to move under the pull of the spring s to the extent of their slots in the framework 2 and 3, and at this time the rod u will have been brought with its projections u' to tilt the catch u^2 into the position shown by Fig. 1, so that the bunter w may move beneath same and allow the loom to proceed in its motion. Provided however that one or other of the warp threads q is broken then its respective detector a will descend and lay hold of its bar d to prevent same being moved by the recoil of the spring s so that such bar d will be arrested in the position shown by Figs. 2 and 4, at which time the lever r and consequently its rod u with its projection u' will be arrested before such projection u' has reached the catch u^2, therefore such catch u^2 remains in the path of motion of the bunter w and on its advancing action will be forced or moved by said bunter to carry the handle y (which actuates the belt-shifter or other stop motion mechanism of the loom) thus to bring about the stoppage of the loom.

Such being the nature and object of our said invention, what we claim is:—

1. An improved warp stop mechanism comprising a frame provided with longitudinal parts extended between the sheets of warp threads, a rod extended longitudinally of said frame, a plurality of detectors each having one end engaging said rod, the other end of each detector being supported by the warp threads, bearing members carried by said frame, sliding members mounted in said bearing members, means for reciprocating said sliding members, a bar removably supported by said sliding members below said detectors, and means controlled by said bar for arresting the operation of the loom.

2. An improved warp stop mechanism comprising a frame provided with longitudinal parts extended between the sheets of warp threads, a rod extended longitudinally of said frame, a plurality of detectors each having one end engaging said rod, the other end of each detector being supported by the warp threads, pivoted bearing members for said frame, means for resiliently supporting the free ends of said bearing members, sliding-members mounted in said bearing members, means for reciprocating said sliding members, a bar removably supported by said sliding members below said detectors, and means controlled by said bar for arresting the operation of the loom.

3. An improved warp stop mechanism comprising a frame provided with longitudinal parts extended between the sheets of warp threads, means for pivotally supporting the frame outside of the sheets of said warp threads, a plurality of detectors each having one end mounted in said frame, the other end of each detector being normally supported by the warp threads, a bar mounted to reciprocate in said frame below said detectors and arranged to engage the latter upon the breaking of a warp thread, and means controlled by said bar for arresting the operation of the loom.

4. An improved warp stop mechanism comprising a frame provided with longitudinal parts extended between the sheets of warp threads, pivotally mounted bearing members for supporting the frame outside of the sheets of warp threads, resilient supports for said bearing members, a plurality of detectors each having one end mounted in said frame, the other end of each detector being normally supported by the warp

threads, a bar mounted to reciprocate in said frame below said detectors and arranged to engage the latter upon the breaking of a warp thread, and means controlled by said bar for arresting the operation of the loom.

5. An improved stop mechanism comprising a frame provided with longitudinal parts extended between the sheets of warp threads, yielding supports for said frame outside of the sheets of warp threads, a plurality of detectors mounted in said frame and normally supported by the warp threads, a bar mounted to reciprocate in said frame below said detectors and arranged to engage the latter upon breaking of a warp thread, and means controlled by said bar for arresting the operation of the loom.

6. In warp stop mechanism, a detector, framework and like devices for supporting said detector, said framework passing between the sheets of warp, hinged supports for said framework, springs for sustaining said hinged supports so that the warp threads are relieved of the weight of the parts passing between them, sliding devices mounted on said hinged supports, means whereby said sliding devices are actuated. and means whereby the arresting of said sliding devices brings about the stoppage of the loom, substantially as set forth.

7. An improved warp stop mechanism comprising a frame provided with longitudinal parts extended between the sheets of warp threads, a rod extended longitudinally of said frame, a plurality of detectors each having one end engaging said rod, the other end of each detector being supported by the warp threads, bearing members carried by said frame, sliding members mounted in said bearing members, a rock shaft provided with means for reciprocating said sliding members, a power controlling mechanism, a catch controlling the same, means connected with said rock shaft for actuating said catch, and a bunter mounted on a movable part of the loom and coöperating with said catch.

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

JAMES WRIGHT.
HEBDEN WRIGHT.

Witnesses:
RD. B. NICHOLLS,
JOHN WHITEHEAD.