

(No Model.)

W. BECK & H. GRAICHEN.  
STOPPING MECHANISM FOR LOOMS.

No. 414,854.

Patented Nov. 12, 1889.

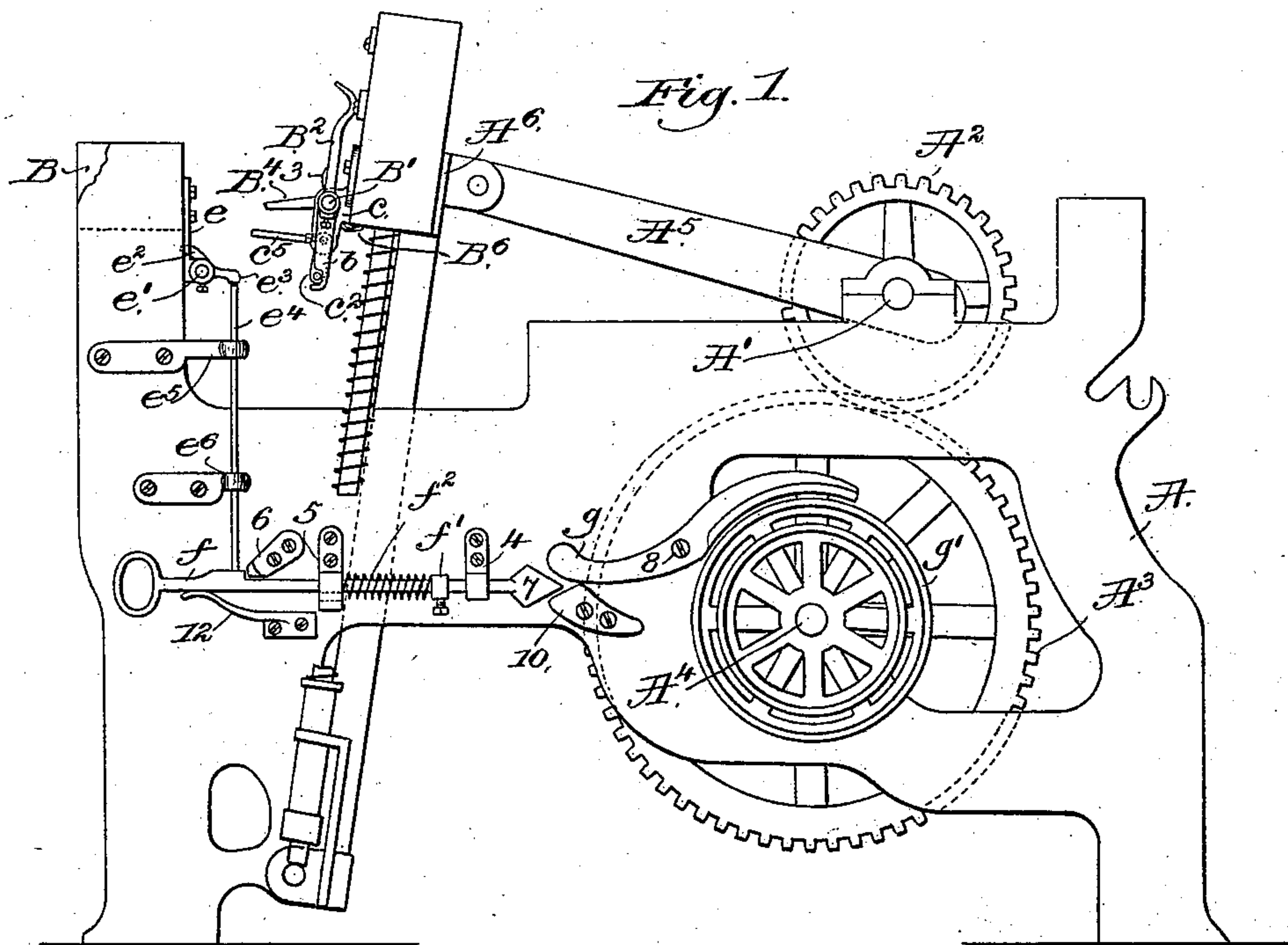


Fig. 3.

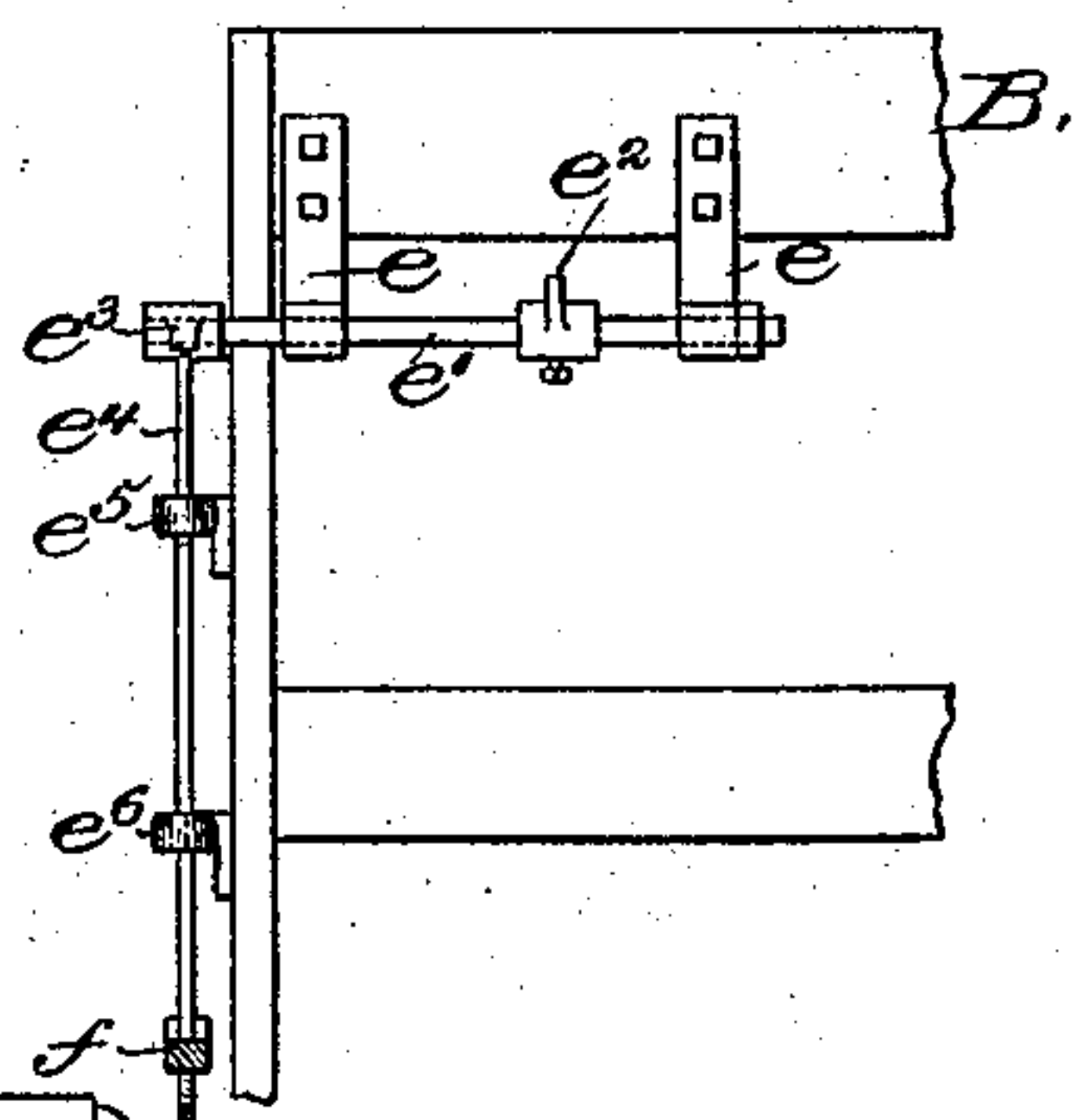
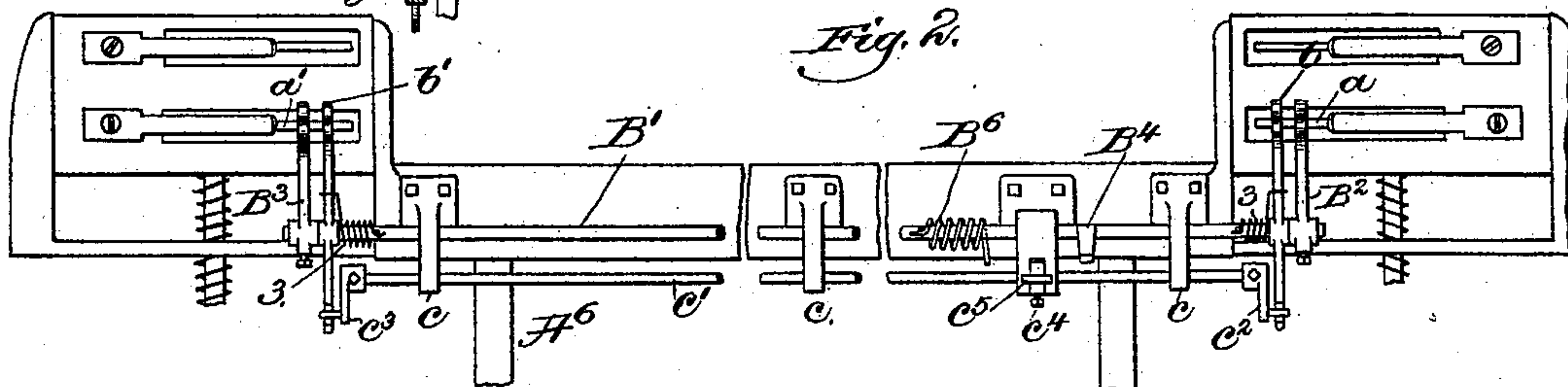


Fig. 4.



Fig. 2.



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# UNITED STATES PATENT OFFICE.

WILLIAM BECK AND HERMAN GRAICHEN, OF LAWRENCE, MASSACHUSETTS.

## STOPPING MECHANISM FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 414,854, dated November 12, 1889.

Application filed August 23, 1889. Serial No. 321,696. (No model.)

*To all whom it may concern:*

Be it known that we, WILLIAM BECK and HERMAN GRAICHEN, of Lawrence, county of Essex, State of Massachusetts, have invented an Improvement in Stopping Mechanism for Looms, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention has for its object to provide a loom with mechanism whereby in case the shuttle remains in the box from which it should be driven, or in case a shuttle-box containing a shuttle is brought into line with the lever of the race at the time a shuttle is to be driven from the opposite box, the loom will be stopped automatically, a brake being applied to a pulley on one of the shafts of the loom.

Figure 1 in side elevation represents a sufficient portion of a loom to enable this invention to be understood. Fig. 2 is a partial elevation of the side of the lay nearest the breast-beam; Fig. 3, a detail showing part of the inner side of the breast-beam and part of one side of the loom-frame to show the rock-shaft and connecting-pin. Fig. 4 is a detail in plan view showing the end of the catch for turning the said rock-shaft, and Fig. 5 a detail of arm *b*.

The loom-frame *A*, of usual or suitable shape, has suitable bearings for the crank-shaft *A'*, having attached to it a gear *A*<sup>2</sup>, which engages a gear *A*<sup>3</sup>, fast on the usual cam or cross shaft *A*<sup>4</sup>.

The parts so far referred to, as well as the connecting-rod *A*<sup>5</sup>, the lay *A*<sup>6</sup>, the shuttle-binders *a a'*, the breast-beam *B*, the protecting-rod *B'*, having fingers *B*<sup>2</sup> *B*<sup>3</sup>, the dagger *B*<sup>4</sup>, and the spring *B*<sup>6</sup> on the rod *B'*, to normally keep the fingers pressed against the shuttle-box binders, are and may be all as usual.

The shuttle-boxes at the opposite ends of the lay may be of any usual construction common to change shuttle-box looms, and the said boxes may be raised and lowered by any usual mechanism.

In accordance with our invention we apply to the usual protecting-rod *B'*, near its fingers, the like arms *b b'*, one of the said arms being shown in Fig. 5, the said arms, each notched,

as at 2, being mounted loosely upon the protecting-rod and acted upon each by a like spring, as 3, which normally acts to keep the upper ends of the arms *b b'* against the binders of the shuttle-boxes opposite them. Parallel to the protecting-rod *B'* we have mounted, in suitable bearings *c c*, a rock-shaft *c'*, having at its opposite ends cranks *c*<sup>2</sup> *c*<sup>3</sup>, the pins of which enter the notches 2 of the arms *b b'*. The rock-shaft *c'* has a catch *c*<sup>5</sup>, shown as of loop shape, which is attached to the rod *c'* by a set-screw *c*<sup>4</sup>. The breast-beam has at its inner side bearings *e*, which support the brake-releasing rock-shaft *e'*, having a collar provided with a stud *e*<sup>2</sup> and at its end an arm *e*<sup>3</sup>.

The shaft *A*<sup>4</sup> has a brake-wheel *g'*, adapted to be acted upon by a brake *g*, pivoted at 8, when it is desired to stop the machine suddenly.

The bearings 4 and 5 receive the brake-actuator *f*, herein shown as a notched slide-rod having a wedge-like end 7, the said rod having a collar *f'*, which is acted upon by a spring *f*<sup>2</sup>, the opposite end of the said spring resting against the bearing 5. The stop 6, secured to the loom side, serves to hold the notched rod, as in Fig. 1, when the loom is in proper working position, the spring 12 normally keeping the notch of the rod on the said stop. The connecting-pin *e*<sup>4</sup>, shown as employed in this present embodiment of our invention as interposed between the arm *e*<sup>3</sup> and the brake-actuator, is held loosely in the bearings *e*<sup>5</sup> *e*<sup>6</sup>.

Whenever either shuttle-box opposite the level of the raceway of the lay contains a shuttle, it throws the binder outwardly, and the latter, acting on one or the other of the fingers *B*<sup>2</sup> or *B*<sup>3</sup>, turns the protecting-shaft and lowers the usual dagger, so that the latter will not act to knock off the usual shipper-lever handle. (Not shown, because common to most, if not all, power-looms.) A shuttle in one box at one end of the lay, in pushing out the binder of that one shuttle-box, will also push out the upper end of the arm *b* or *b'*, which rests against it, and turn the lower notched end 2 of the said arm back away from and so as to release the crank-arm *c*<sup>2</sup> or *c*<sup>3</sup> engaged by it; but the movement of one only of the said arms will not release both cranks of the rod *c'*, and



consequently the said rod will not be turned and the catch  $c^5$  will not be turned but; if it should happen that a shuttle should get into each of the two boxes at the level of the race  
5 of the lay, then the upper ends of both of the arms  $b b'$  will be pushed out by the two binders and the arms  $c^2 c^3$  will be released, letting the rock-shaft  $c'$  turn and the catch  $c^5$  hook over the projection  $e^2$  when the lay is  
10 forward, and as the lay starts back the catch will turn the rock-shaft  $e'$ , and through the connecting-pin  $e^4$  disengage the brake-actuator  $f$  from the stop 6, permitting the spring  $f^2$  to act and force the brake-actuator for-  
15 ward, so that its cam or wedge-shaped end 7 acts against the shoulder 10 and the end of the brake, causing the latter to be turned to hold the brake-pulley.

In practice the slide bar  $f$  will be provided  
20 with a suitable incline, so that when it starts forward the said incline will act against the usual shipper-handle. (Not shown, but which will in practice be secured to the loom side and be held in a notched plate of usual con-  
25 struction at the level of the breast-beam, but at one end thereof.)

We claim—

1. The lay, shuttle-boxes at each end thereof having binders, and the rod or shaft  $c'$ ,

having cranks and a catch, combined with 30 two loosely-mounted independent arms  $b b'$ , normally held against the said binders, the said parts being combined substantially as described, whereby, when and only when  
35 both arms are thrown out by the two binders, the rod is permitted to turn, substantially as described.

2. The shaft, a brake-pulley thereon, a brake-lever, a brake-actuator, means to move the said brake-actuator to turn the brake-le- 40 ver, the rock-shaft  $e'$ , having a projection  $e^2$ , means between the said rock-shaft and the said brake-actuator to release the latter from its holding-catch and the lay, combined with the shuttle-boxes having binders, the rod or 45 shaft  $c'$ , having cranks  $c^2 c^3$  and catch  $c^5$ , and the loosely-supported independent arms  $b b'$ , to engage the said cranks and actuated by the said binders, substantially as described.

In testimony whereof we have signed our 50 names to this specification in the presence of two subscribing witnesses.

WILLIAM BECK.  
HERMAN GRAICHEN.

Witnesses:

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