

J. BULLOUGH, Dec'd.  
J. A. WARE, Adm'r.

Stopping-Mechanism for Looms.

No. 159,985.

Patented Feb. 16, 1875.

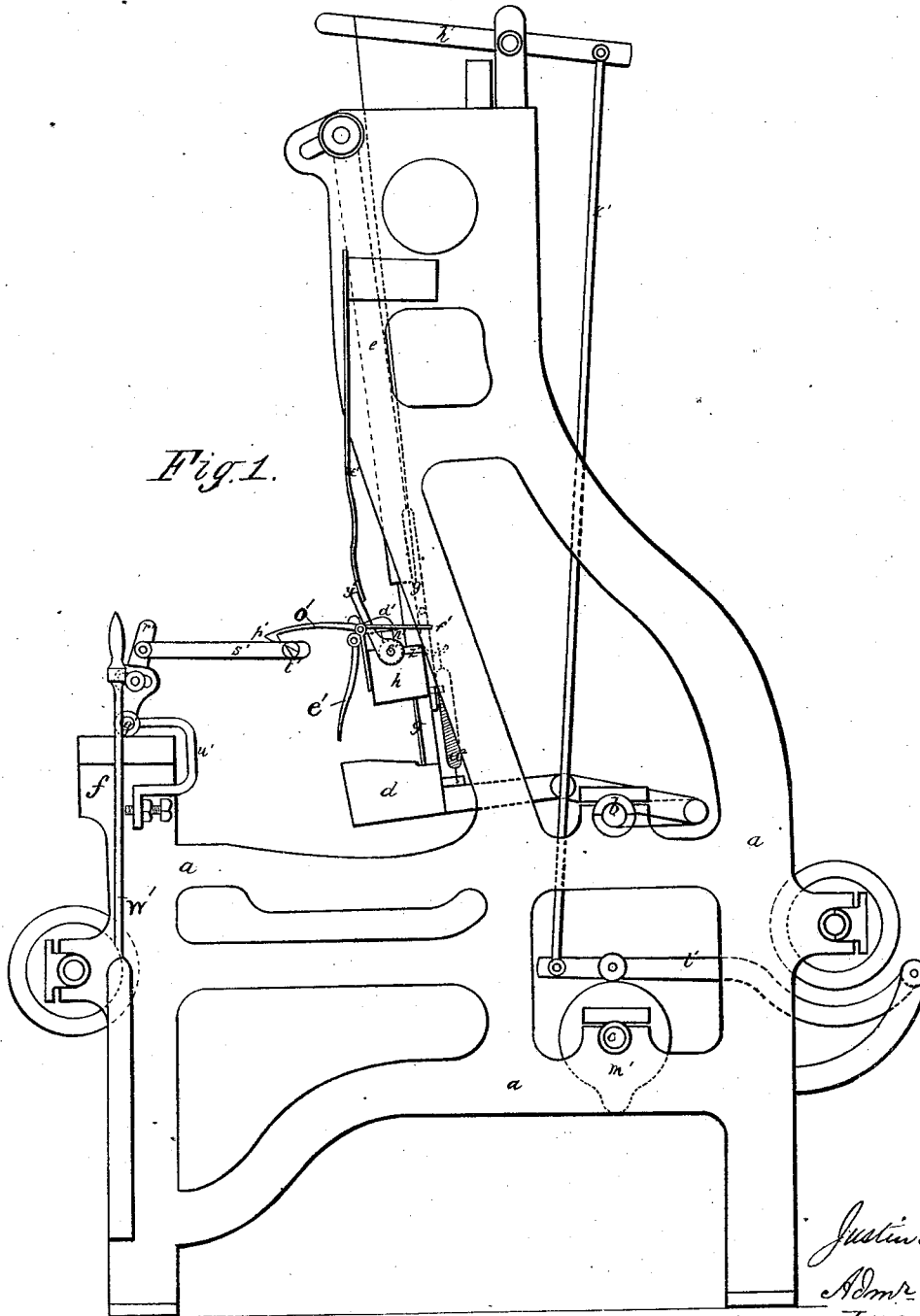


Fig. 1.

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Fig. 2.

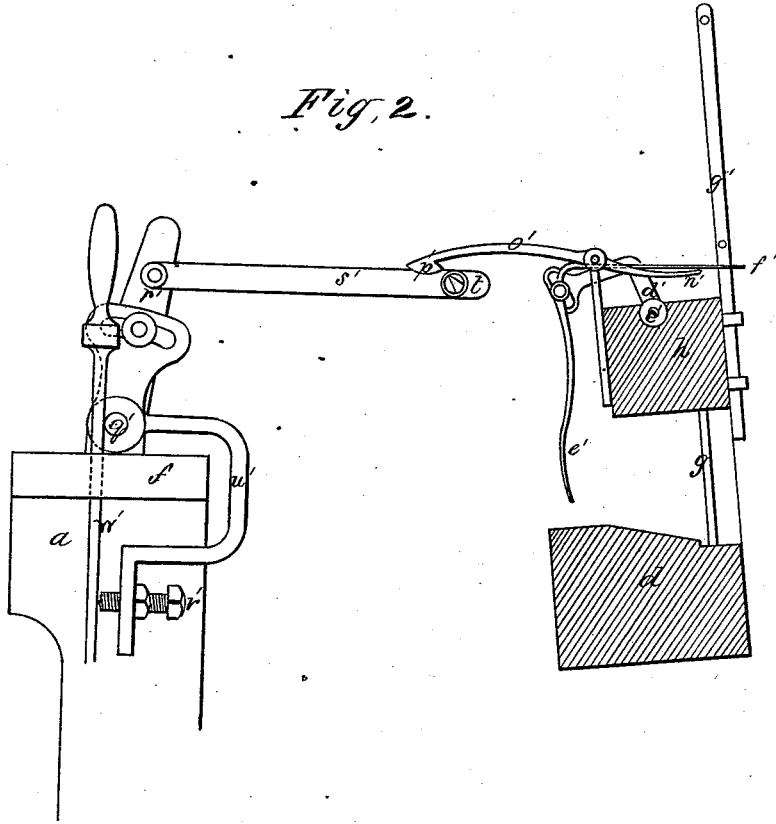
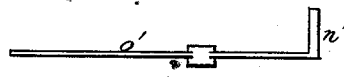


Fig. 3.



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# UNITED STATES PATENT OFFICE.

JUSTIN A. WARE, OF WORCESTER, MASSACHUSETTS, ADMINISTRATOR OF  
JAMES BULLOUGH, DECEASED; SAID ADMINISTRATOR ASSIGNOR TO  
GEORGE CROMPTON, OF SAME PLACE.

## IMPROVEMENT IN STOPPING MECHANISMS FOR LOOMS.

Specification forming part of Letters Patent No. **159,985**, dated February 16, 1875; application filed  
January 11, 1875.

### CASE C.

*To all whom it may concern:*

Be it known that JAMES BULLOUGH, deceased, late of Baxenden, near Accrington, in the county of Lancaster, England, did invent Improvements in Looms for Weaving, of which the following is a specification:

This invention consists in an improved weft-stopping motion for stopping the loom when a weft-thread breaks or is absent.

On the reed cap is placed a shaft extending from one end to the other, and fixed to the shaft near each selvage is a bracket carrying a fork or prong at the front, and an arm at the back. The fork is employed for coming in contact with the weft, and the back arm for acting on the back arm of another lever, adapted to actuate the shipping mechanism. The said brackets, with their forks or prongs, are worked one way by a lever on the shaft coming in contact with a spring-bar fixed to the frame-work of the loom, and in the other way by a spring and lever, or by a lever and weight. When the lay is moving back the fork or prong on one side or the other feels for the weft, and if there is a breakage or absence there is no action upon it, and the lever actuates an arm held to a lever connected with the stopping apparatus, and stops the loom; but if there is weft, the fork or prong is moved back by it, and causes the arm connected to the fork or prong to raise the front end of the lever above the arm in connection with the stopping apparatus, and thus prevents the stoppage of the loom.

These devices are applied to one or both sides of the warp at any suitable distance from the center, according to the width of the fabric, and worked at every other pick by rods and levers acted upon by tappets on the tappet-shaft of the loom, but when placed in the center of the warp it is worked at every pick by a tappet on the crank-shaft, or a double tappet on the tappet-shaft, and when there is a breakage or absence of weft the stopping apparatus is put in action when the lay is going back, and stops the loom at or about the back center.

This invention will be clearly understood by the following particular description thereof, reference being had to the figures on the accompanying two sheets of drawings and to the letters of reference marked thereon.

In the figures, *a* represents, in whole or in part, the end frame of the loom; *b*, the crank-shaft; *c*, the tappet-shaft; *d*, the lay or bat-ten; *e*, the lay-swords; *f*, the breast-beam; *g*, the reed, and *h* the reed-cap. There is placed on the reed-cap *h* a shaft, *c'*, extending from end to end, and fixed to the shaft near each selvage is a bracket, *d'*, carrying a two-armed lever formed at the front as a fork or prong, *e'*, for coming in contact with the weft, and at the back as an arm, *f'*, which can be acted upon at the required time by a pin on the rod *g'*, worked by the lever *h'*, rod *k'*, lever *l'*, and single tappet *m'* on the tappet-shaft *c*. At the side of each fork or prong *e'* there is another two-armed lever, *n' o'*, the back arm *n'* of which is in contact with the arm *f'*, and the front arm *o'* is formed with a hook, *p'*, the said front arm being heavier than the back arm, so that it may fall by its own gravity, and the back arm has a projection sidewise, as shown in Figure 3. On the breast-beam *f* there are bearings, in which works a shaft, *q'*, extending from end to end, and carrying two levers, *r'*, having rigid arms *s'*, to which are fixed catches *t* in line with the hooks *p'*, and to the shaft is also fixed another lever, *u'*, having, if desired, an adjustable screw in contact with the stopping or setting-on rod *w'*.

When the lay is moving from the front to the back center the shuttle is being thrown across, and the hook *p'*, opposite to the side from which the pick is given, is raised out of reach of its corresponding catch *t* by the depression of the back arms *f'* and *n'* on that side, by means of the rod *g' k'*, levers *h' l'*, and tappet *m'*, in order to prevent the stoppage of the loom when the weft is in such a position that the fork or prong could not find it. On the side from which the pick is given the fork or prong *e'* feels for the weft, and if the weft is broken or absent, there is no action either

on the fork or on the two-armed lever  $n' o'$ , and, therefore, the hook  $p'$  seizes its corresponding catch  $t'$ , and pulls the arm  $s'$  and lever  $r'$ , so as to slightly turn the shaft  $q'$  and lever  $w'$ , and shift the stopping or setting-on rod  $w'$  out of its detent, and stop the loom at or about the back center; but if there is weft, the fork or prong  $e'$  is moved back, and the arm  $f'$  depressed, and, as this arm is in contact with the back arm  $n'$ , the arm  $o'$  rises and places the hook  $p'$  out of the way of the catch  $t'$ , and no stoppage of the loom takes place. At the time of beating up the weft it is necessary that both forks or prongs  $e'$  should be out of the warp above the edge of the cloth, and in the warp before the shuttle passes across the race-board of the lay. For this purpose there is fastened to one of the end frames of the loom the spring-bar  $x'$ , and fixed on the shaft  $c'$  on the reed-cap a lever having two arms,  $y' z'$ , and connecting the arm  $z'$  to the spring  $a^2$ .

When the lay is moving from the back to the front center, the weft motions are not called into action, and, therefore, the forks or prongs are raised out of the warp by the spring pulling down the arm  $z'$ , and turning the shaft  $c'$  and brackets  $d'$ ; but when the lay is moving back from the front to the back, and just before the shuttle is thrown across, the arm  $y'$  comes in contact with the spring-bar  $x'$ , by which it is turned so as to allow the brackets to fall down and place the forks or prongs in the warp or shed.

In the foregoing arrangement of improved

weft-stopping motion, when there is a breakage or absence of weft, the stopping or setting-on rod is shifted out of its detent as the lay is going back, thereby enabling the loom to be stopped at or near the back center; but for causing it to be stopped with certainty, there is employed at one end of the loom a catch and catch-wheel and parts connected with them, and placed at the other end of the loom is a reaction-brake.

The stopping mechanism acts, through a suitable brake, to stop the loom at or about the back center and when the shed is opened, and substantially as shown in another application heretofore filed by me in the United States Patent Office, and designated as Case B.

I claim as the invention of the said JAMES BULLOUGH—

1. The combination, with the movable bracket  $d'$ , of a pivoted fork or prong, which is raised or lowered to meet the weft and prevent the stopping of the loom, substantially as described.

2. The combination, with a pivoted weft fork or prong arranged upon the lay and operated by the weft, of a lever, also on the lay, operated by the weft fork, and adapted to engage and actuate the shipping mechanism when the weft is absent or broken, substantially as described.

JUSTIN A. WARE,

*Administrator of James Bullough, deceased.*

Witnesses:

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