(No Model.) 2 Sheets—Sheet 1.

E. ASHWORTH.

STOPPING MECHANISM FOR CARDING ENGINES.

No. 480,987. Patented Aug. 16, 1892.

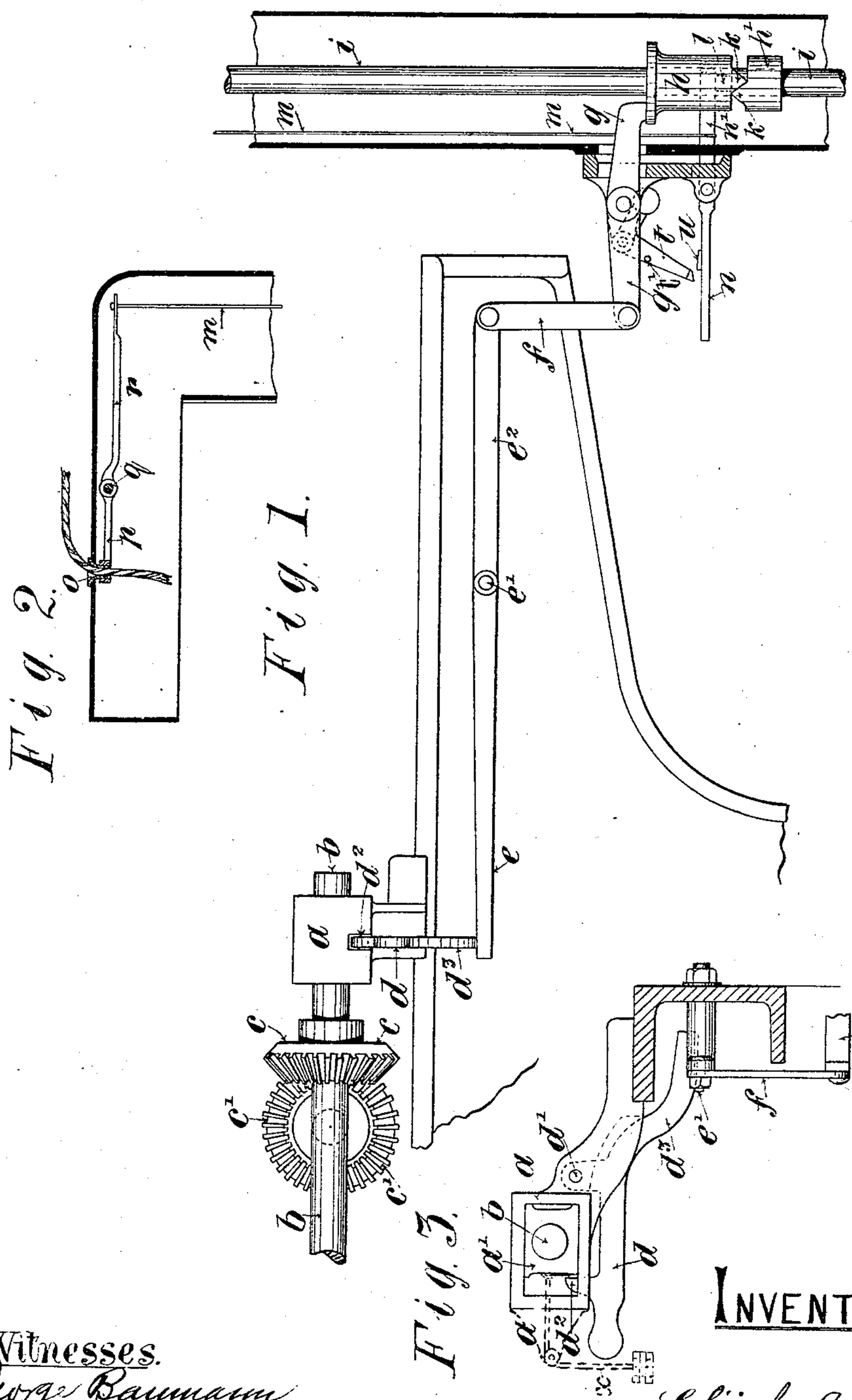

Fig. 1.

Fig. 2.

Fig. 3.

Witnesses.
George Baumann
John Revell

INVENTOR.
Elijah Ashworth.
By his Attys Howson and Howson.

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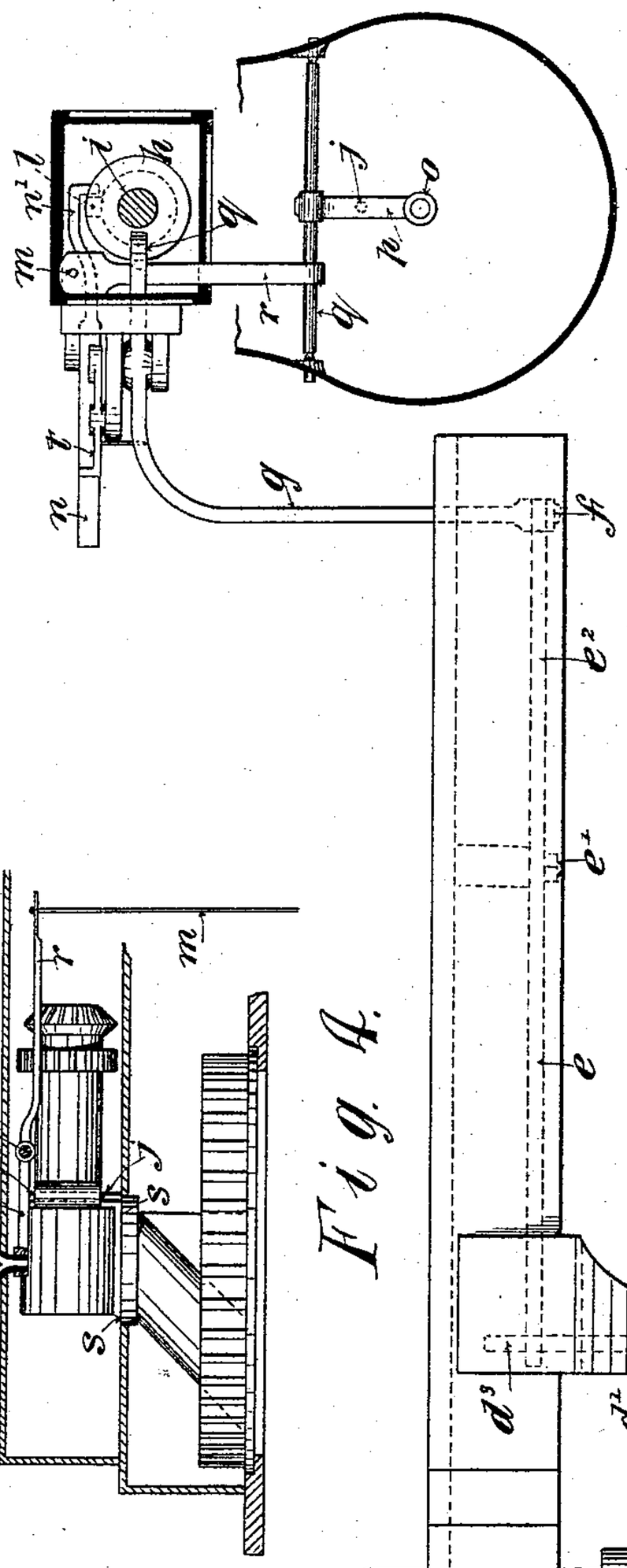

Fig. 4.

Fig. 5.

Witnesses
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John Revell

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UNITED STATES PATENT OFFICE.

ELIJAH ASHWORTH, OF MANCHESTER, ENGLAND.

STOPPING MECHANISM FOR CARDING-ENGINES.

SPECIFICATION forming part of Letters Patent No. 480,987, dated August 16, 1892.

Application filed September 2, 1891. Serial No. 404,508. (No model.) Patented in England August 17, 1889, No. 12,988.

To all whom it may concern:

Be it known that I, ELIJAH ASHWORTH, engineer, of the firm of Ashworth Brothers, of the Moss Brook Works, Collyhurst, Manchester, in the county of Lancaster, England, have invented certain new and useful Improvements in Stopping Mechanism for Carding-Engines, (for which I have obtained Letters Patent in Great Britain, No. 12,988, dated August 17, 1889,) of which the following is a specification.

My invention relates to the means for arresting the movements of certain parts of the carding-engine on the breakage of the sliver, such means being also adapted to prevent overfilling of the can. Previously to my invention carding-engines have been provided with motions which have stopped the revolution of the doffer when the sliver has become broken; but I consider this method to be defective, for the reason, principally, that as the motion of the main cylinder has continued after the doffer has ceased to revolve the doffer has become clogged or overcharged with fibers at the point of contact with the main cylinder. To remedy this defect and its attendant consequences, I employ means for arresting the feed on the occurrence of a breakage of the sliver, the revolution of the doffer continuing. I employ levers which are sustained out of action by the intact sliver or by parts acted upon by the sliver, but are permitted to act when the sliver breaks, and on such occurrence act upon parts which unlock or release one of the side shaft-bearings, so that it can be moved to carry the bevel-pinion out of gear and so stop the revolution of the feed-rollers. For this purpose and to prevent overfilling of the can, I prefer to use a modification of the stop mechanism for which British Letters Patent No. 2,252, of the year 1876, were granted to Joseph Dean; but for the purposes of my invention I employ part of such mechanism to act upon other parts which release the side shaft-bearing, as aforesaid.

The manner in which I propose to carry my invention into effect is indicated in the accompanying drawings.

Figure 1 represents a side elevation of part of the doffer end of a carding-engine. Fig. 2 represents a vertical section of the upper part of the coiler-head. Fig. 3 is a view of the side shaft-bearing and releasing motion. Fig. 4 is a plan view, partly in horizontal section, of the coiler and connected parts. Fig. 5 is a sectional view of the coiler-head.

In order to distinguish the parts which I have adopted or modified from the aforesaid stop mechanism of Joseph Dean, I have marked such parts with the letters of reference which corresponding parts bear in the British specification of his invention.

In Figs. 2 and 5, *o* is the trumpet-guide, which is carried by the lever *p*, which is fixed upon the cross-shaft *q*, and *r* is a second lever fixed upon the same shaft and connected with the upper end of a wire *m*. The lower end of this wire appears in Fig. 1, wherein it will be seen that the wire is attached to one arm *n'* of a lever. This arm of the lever tends to drop, but is sustained in the indicated position by the wire. The outer end of the said arm is hooked or bent at right angles, this hooked end just clearing a projection *l*, which is formed upon the yielding member *h* of a clutch which is mounted upon the vertical shaft *i* of the coiler. The other member *h'* of the said clutch is fixed to the shaft, and both members have driving-teeth or projections *k k* which have inclined faces. The part *h* is driven by the part *h'* so long as the resistance to the revolving of the part *h* is small, but when there is a greatly-increased resistance the part *h* yields in an upward direction. Such increased resistance arises from the falling of the arm *n'* of the lever, whereby the hooked end of the said arm is brought into position to catch the projection *l*, and whereby to arrest the revolution of the part *h* of the clutch. When the part *h* yields upward, as aforesaid, it acts upon a lever *g* and rocks it upon its axis. The said lever in its movement presses upon a finger *t'* upon a loaded detent-lever *t* and turns the latter into position to engage with a stop *u* upon the lever *n n'*, which is then held in position to just clear the projection *l*, so as to permit the engine to work until the sliver can be brought through the trumpet-guide. The slightly-increased lowering of the trumpet-guide, caused by the passage of the sliver, has the effect of raising the arm *n'* a little higher, whereby the stop *u* is withdrawn from the end of the

catch-lever *t*, which then moves away from the stop *u*, as in Fig. 1, and thereafter the arm *n'* is sustained solely by the trumpet-guide, acting through the lever *r* and the wire *m*. These parts as so far described with reference to drawings I do not claim as new.

In Fig. 1, *a* is the bearing-bracket, in which is mounted the bearing-block *a'*, which carries one end of the side shaft *b*. Fig. 3 is a side view of the said bracket and bearing-block, the side shaft appearing in cross-section. The bearing-block *a'* is fitted to slide in a recess in the bracket, so as to move the driven bevel-wheel *c* out of gear with its driver *c'*, as is usual in some cases. When the wheel *c* is thus disengaged, the revolution of the side shaft ceases, and as this shaft gives motion to the feed-rollers the feed also ceases. There is a tendency for the wheel *c* to be pushed out of gear; but, if considered to be desirable, I should apply a spring or load—as indicated, for instance, by the dotted lines *x*, Fig. 3—which would tend to slide the bearing-block in the direction which would disengage the bevel-wheels. This tendency is resisted by a detent-lever *d*, which locks the bearing-block in position, as seen in Fig. 3. The said lever is mounted upon a fulcrum at *d'* and is formed with a projection d^2, which prevents the sliding movement of the bearing-block. It will be seen that if the end of the arm d^3 be lifted the projection d^2 will be drawn downward out of the way of the bearing-block. The said end d^3 rests upon one arm *e* of a lever, which is mounted upon a fulcrum at *e'*. The end of the other arm e^2 of the lever is connected by a link *f* with one arm of the lever *g*. The effect of this arrangement is that when the part *h* rises the arm e^2 is drawn down by the lever *g*, and the other arm *e*, by lifting the end d^3 of the detent-lever, effects the release of the bearing-block, so that the side shaft and the feed-rollers are stopped. It will be seen that this stoppage will follow a breakage of the sliver for the reason that when the sliver ceases to pass through the trumpet-guide *o* such guide will rise, whereby the arm *n'* will be lowered and the revolution of the part *h* of the clutch will be arrested, the rising of such part resulting in the stoppage of the side shaft in manner as aforesaid. As hereinbefore mentioned, the apparatus acts to stop the side shaft on the can becoming full. The arrangement of the parts which act when the can is full is illustrated by Fig. 5. A pin *j* is fitted to slide up and down in a bearing bored in a swell upon the casting, in which the bearing for one of the drawing-in rollers is formed. The lower end of this pin rests upon the upper edge of the coiler *s* and the upper end is in contact with the lever *p*, which appears in Figs. 2 and 4. When the can becomes so full as that the contents lift the coiler *s*, the pin *j* is pushed upward, and, by lifting the lever *p*, effects the stoppage of the side shaft. A similar arrangement was mentioned in the aforesaid specification of Joseph Dean, but did not appear in the drawings attached to such specification; but in my case the feed ceases when the stop-motion is brought into action through the complete filling of the can. I may in some cases construct the apparatus without this provision for the stoppage of the side shaft when the can becomes full.

What I claim as my invention is—

1. The combination of the side shaft *b* of a carding-engine having a laterally-movable bearing and provided with a bevel-pinion *c* and a driving bevel-pinion therefor, with a locking-detent *d* for the laterally-movable bearing, and mechanism, substantially as described, whereby the said bearing is released automatically to allow the said side shaft to move laterally, substantially as set forth.

2. The side shaft *b* of a carding-engine having a laterally-movable bearing for one end of the said shaft, and bevel-gears *c c'*, in combination with a detent *d* for the laterally-movable bearing, the lever *e* to act upon the detent, a pivoted lever *g*, having a link *f*, connecting it with the said lever *e*, and mechanism, substantially as described, to act upon the lever *g* to automatically free the detent, all substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ELIJAH ASHWORTH.

Witnesses:

EDWARD K. DUTTON,

RICHARD W. IBBERSON.