(No Model.) 3 Sheets—Sheet 1.

J. F. GEB.

AUTOMATIC COMBINED ALARM AND STOP MECHANISM FOR CARDING MACHINES.

No. 581,548. Patented Apr. 27, 1897.

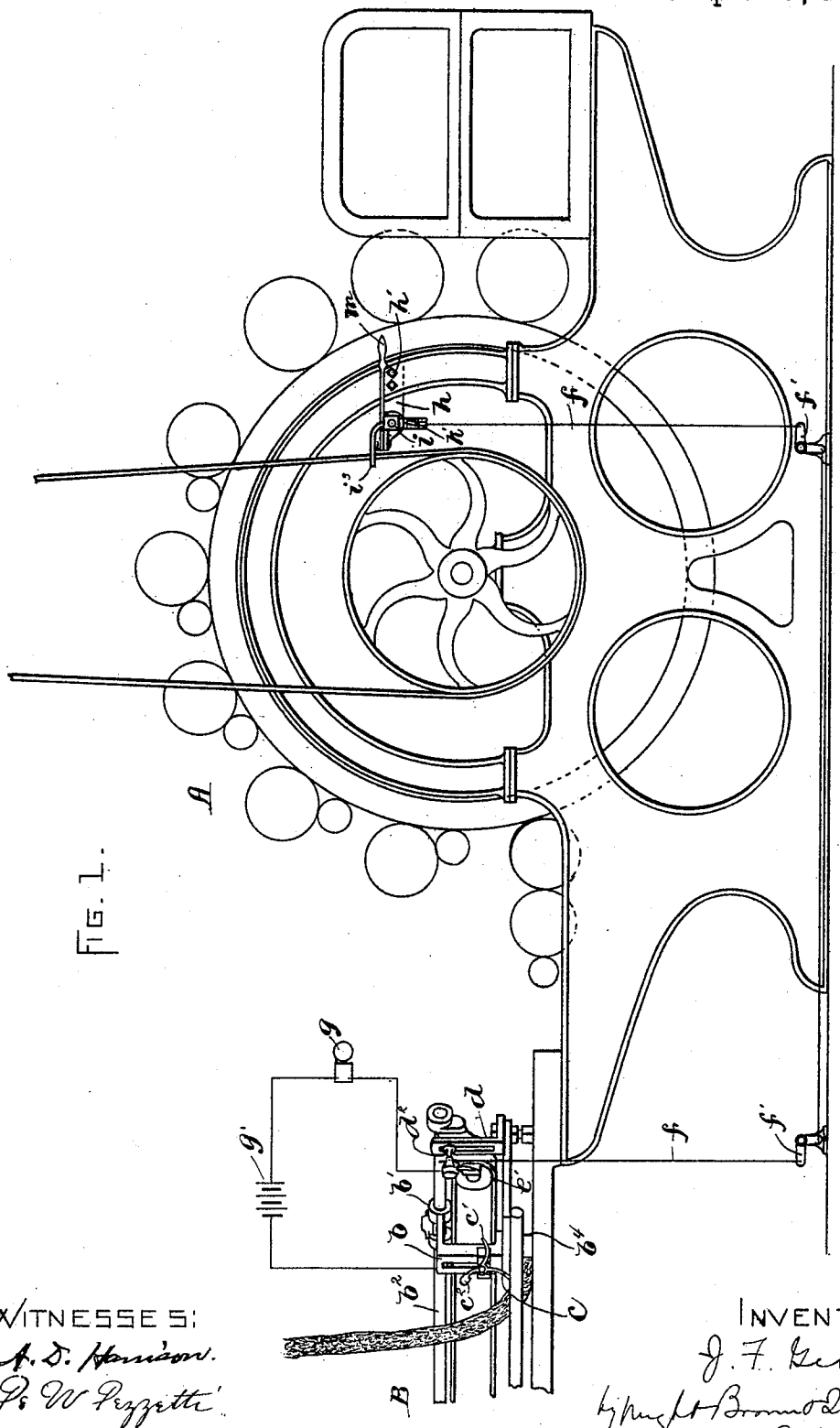


FIG. 1.

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.) 3 Sheets—Sheet 2.

J. F. GEB.

AUTOMATIC COMBINED ALARM AND STOP MECHANISM FOR CARDING MACHINES.

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FIG. 2

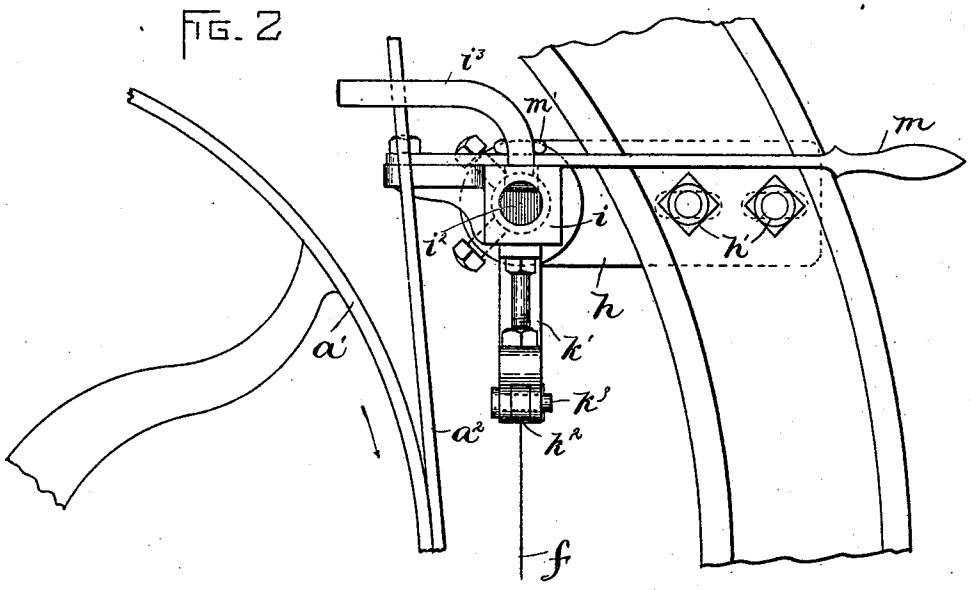


FIG. 3.

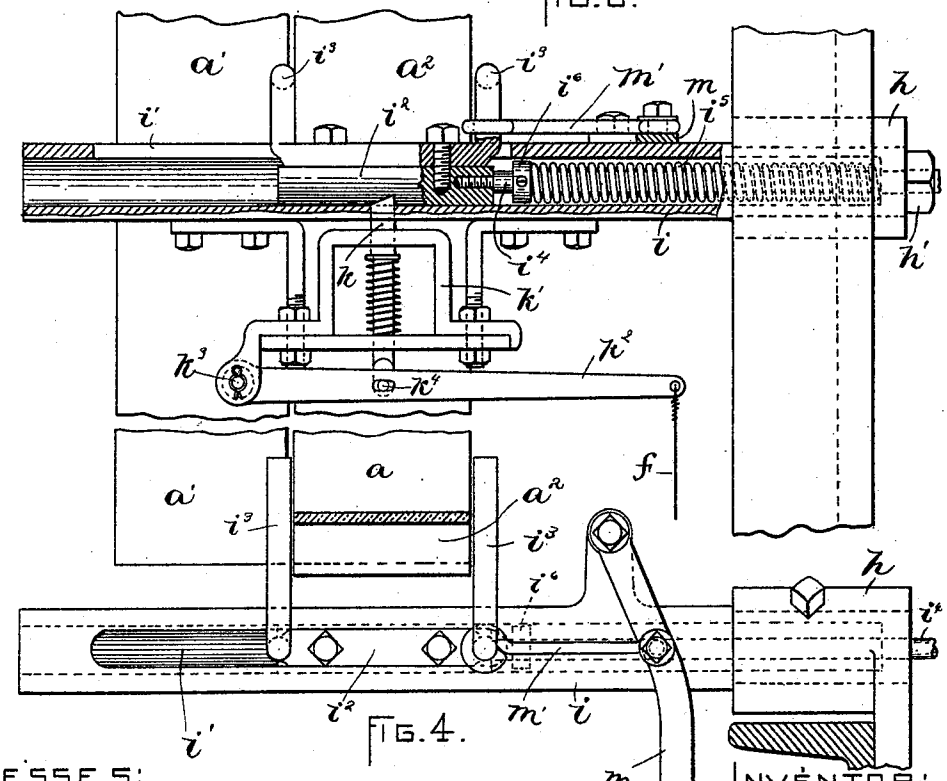


FIG. 4.

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(No Model.) 3 Sheets—Sheet 3.

J. F. GEB.

AUTOMATIC COMBINED ALARM AND STOP MECHANISM FOR CARDING MACHINES.

No. 581,548. Patented Apr. 27, 1897.

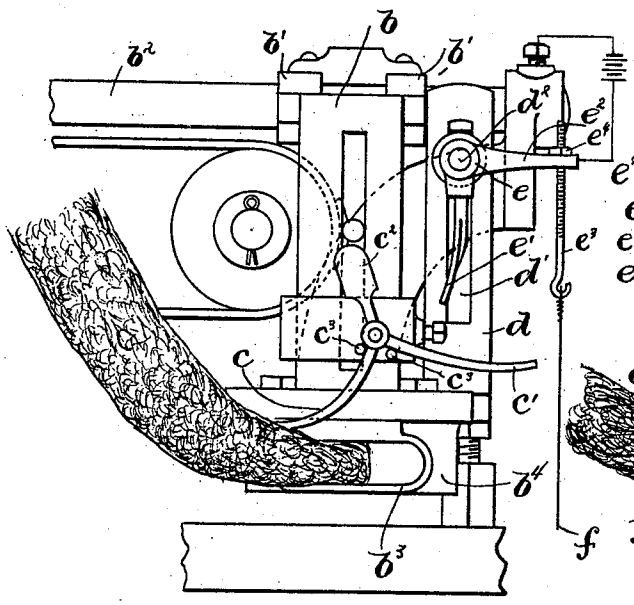


FIG. 5

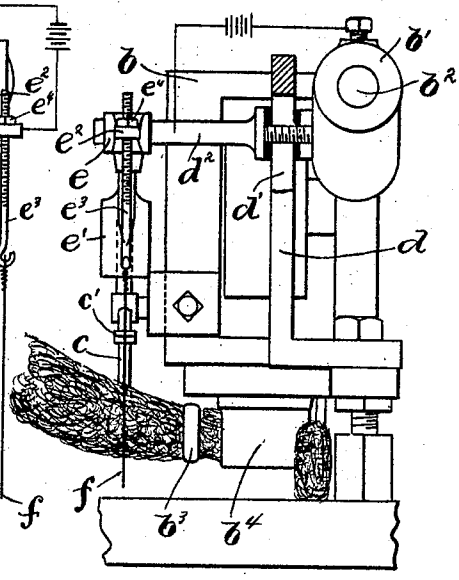


FIG. 6.

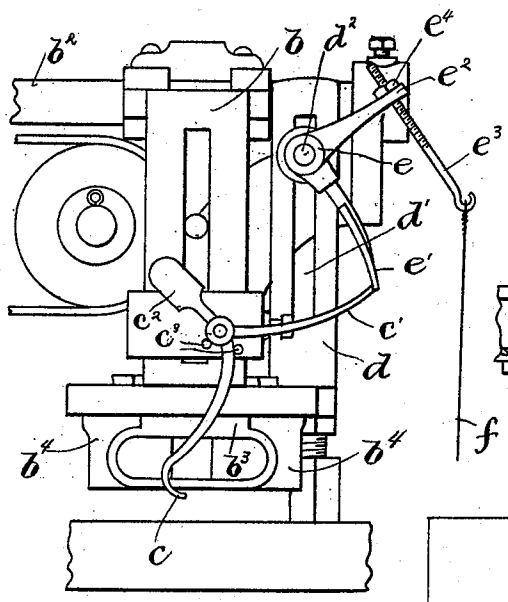


FIG. 7.

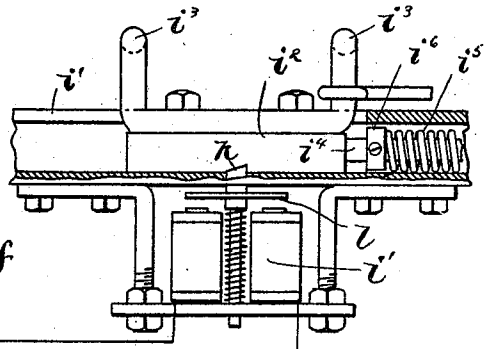
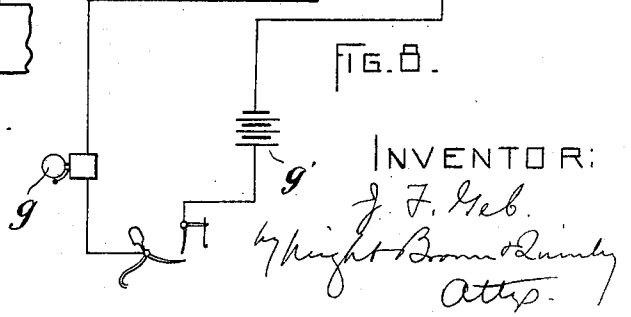


FIG. 8.



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UNITED STATES PATENT OFFICE.

JACOB F. GEB, OF FRANKLIN, MASSACHUSETTS, ASSIGNOR TO THE GEB ATTACHMENT COMPANY, OF SAME PLACE.

AUTOMATIC COMBINED ALARM AND STOP MECHANISM FOR CARDING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 581,548, dated April 27, 1897.

Application filed May 9, 1896. Serial No. 590,824. (No model.)

To all whom it may concern:

Be it known that I, JACOB F. GEB, of Franklin, in the county of Norfolk and State of Massachusetts, have invented certain new and useful Improvements in an Automatic Combined Alarm and Stop Mechanism for Carding-Machines, of which the following is a specification.

This invention relates to card-feeding mechanism of the type known as the "Apperly feeder" for carding-machines, and has for its object to provide means whereby, in case of the breakage of the sliver, the carding-machine will be automatically stopped when the reciprocating traveler of the said feeder reaches the end of its guideways; and a further object of the invention is to combine with the stop mechanism an alarm that will give notice at once of the breakage of the sliver. The construction of an alarm or stop mechanism so as to act at the moment of the breakage of the sliver, whatever may be the position of the traveler, involves the employment of some device or element extending the full length of the path of the traveler, and this tends to complicate the parts to a degree that is avoided by my present invention. Since the feeder supplies several lengths of sliver in advance of its being taken up by the carding-machine, it is sufficient that the alarm operates at the end of the movement of the traveler, provided the carding-machine is automatically stopped at the same time and does not depend upon the attention of the operative being called to it by the alarm.

My present invention consists in the construction and combination of parts, substantially as hereinafter described and claimed.

In the accompanying drawings, Figure 1 represents a side elevation of a carding-machine and a portion of an Apperly feeder, the same having my improvements attached. Fig. 2 represents an enlarged detail side elevation of the belt-shipper mechanism. Fig. 3 represents an elevation from the right of Fig. 2, the tubular guide and hand-lever being in section. Fig. 4 represents a plan view of the parts shown in Fig. 3. Fig. 5 represents a detail front elevation of a portion of the feeder having my improvements, the traveler being at the end of its reciprocation and the sliver unbroken. Fig. 6 represents a side elevation from the right of Fig. 5, the bracket for supporting the tripper device being shown in section to illustrate the insulation of the stud. Fig. 7 represents a view similar to Fig. 5, but with the parts in the position they occupy when the sliver is broken. Fig. 8 is a detail view illustrating a modification hereinafter described.

Similar reference-characters indicate the same parts throughout the several views.

The carding-machine (indicated at A in Fig. 1) requires no specific description in detail, and the same is true of the Apperly feeder, (indicated at B.) It is sufficient to state that the main shaft of the carding-machine is provided with fast and loose pulleys a a', (indicated in Figs. 2, 3, and 4,) and that in the feeder there is the usual traveler b, provided with sockets b' b', movable upon a fixed guide-rod b^2, a sliver-guide b^3, and rolls b^4 b^4, arranged to move along another guide-rod. (Not shown.)

Pivoted to the traveler is a forked lever, one of the arms c of which is hook-shaped and engages the side of the sliver, passing through the guide b^3, the other arm c' extending in a substantially horizontal direction. (See Fig. 5.) The forked lever is pivoted to swing laterally or in a plane parallel with the path of movement of the traveler, whereby the arm c' is adapted to impart a strong endwise thrust against the arm e' of the lever e, presently described. A weight c^2 serves to hold the lever normally in the position shown in Fig. 5 and to turn the lever to the position indicated in Fig. 7 if the sliver breaks. The limits of movement of the lever are determined by one or more stop-pins c^3, projecting from the traveler.

A bracket d is secured to the frame of the feeder at one end and is provided with a vertical slot d', in which is secured the stem of a stud d^2, insulating-blocks d^3 being interposed between the bracket and a collar of said stem on one side and a nut on the other side. On the outer end of the stud is pivoted a bell-crank lever e, the lower arm being widened, as at e', and the horizontal arm e^2

having a hook e^3 adjustably secured therein, as by means of the nut e^4. To the said hook is secured one end of a wire f, by means of which a belt-shipper is operated, as will be presently described. In order that this wire may take a course where it will be out of the way, it is indicated as in three sections connected to opposite ends of two bell-crank levers f' in a well-known manner and as shown in Fig. 1.

An electric alarm-bell is indicated at g, said alarm being included in the circuit of a battery or other source of electrical energy, (indicated at g'.) One of the wires of the circuit leads to the stud d^2, which is entirely insulated from the rest of the mechanism when the machine is working normally, and the other wire leads to some part of the frame of the machine. To complete the circuit, it is only necessary that some part of the machine shall make contact with the stud d^2 or some part connected therewith. This takes place when the sliver breaks, and the weight c^2 causes the arm c' to swing from the position shown in Fig. 5 to the position shown in Fig. 7 and come in contact with the arm e', pivoted to said stud. As above stated, this will occur at the end of the reciprocation of the traveler, and it will thus ring the alarm, owing to the connections above described. At the same time the movement of the lever e, caused by the positive thrust imparted by the arm c', carried by the traveler, exerts a strong pull on the wire, the extreme end of which is connected to a latch adapted to control the position of the belt-shipper, which will now be described.

A bracket h (see Figs. 1 to 4) is secured to the frame of the machine, as by bolts h', and supports a tubular guide i, slotted at i' and containing a slide i^2, having arms i^3 projecting out through the slot and engaging the edges of the belt a^2. To one end of the slide is secured a rod or stem i^4, which extends out through the end of the guide, a spring i^5 being compressed between the end of the guide and a collar i^6 and said spring being capable of moving the slide to shift the belt from the fast pulley a to the loose pulley a' when permitted to do so. The slide i^2 is provided with a shoulder or notch which receives the end of a spring bolt or latch k, the said latch being supported by a suitable bracket or frame k', attached to the guide i and operating through a suitable opening in the latter. A lever k^2, fulcrumed at k^3, is connected to the outer end of the spring-latch at k^4, and to the outer end of this lever k^2 is secured the extreme end of the wire f.

When the arm c' engages the arm e', as above described, due to the breakage of the sliver, the positive pull on the wire f causes the latch k to be withdrawn from engagement with the slide i^2, and the latter is immediately forced by the spring i^5 to cause the arms i^3 to shift the belt onto the loose pulley, and thus stop the carding-machine.

The belt-shipper may be applied to any desired portion of the frame of the machine, or elsewhere, to accommodate a belt running from an overhead shaft or pulley or one which runs from a shaft or pulley below, and the wire connections f may be readily altered to suit the change in location of the belt-shipper.

It is to be understood that the length of the arm c' is such that it makes its first contact with the arm e' shortly before the traveler reaches the extreme limit of its movement in that direction and operates the alarm at the first contact. During the short remaining distance of movement of the traveler the power of the mechanism which moves the traveler acts, through the connections described, to withdraw the latch from the spring-operated belt-shipper. The certainty of action of this construction renders it a preferable one, but it is to be understood that I am not restricted to the mechanical connection between the arm e' and the spring-latch k. For instance, in Fig. 8 I show the latch as provided with a plate l, forming the armature for an electromagnet l'. With this construction the wire f becomes simply part of an electrical circuit, including said electromagnet and any suitable source of electrical energy. With this construction when the arm c' makes contact with the arm e' it will instantly and simultaneously operate both the electric alarm and the releasing-latch of the belt-shipper.

In order to operate the belt-shipper by hand, a lever m is pivoted to an arm projecting from the tubular guide and connected by means of a link m' with one of the arms i^3 of the belt-shipper. This lever is employed to move the slide in opposition to the spring i^5 when it is desired to start the carding-machine.

I claim—

1. The combination with a carding-machine and a feed mechanism therefor, which includes a reciprocating traveler, a weighted arm pivotally connected with the traveler, and arranged to be held in one position by a sliver passing through the traveler, a movable arm located at the end of the frame of the feeding mechanism and insulated therefrom, and adapted to be operated by the said weighted arm when a breakage in the sliver occurs, an electrical alarm, the circuit of which is adapted to be closed by the contact of the said movable arm and weighted arm, a belt-shipper for the carding-machine, and connections between the said movable arm and belt-shipper whereby the latter is operated by the former after the alarm is sounded.

2. The combination with a carding-machine having a belt-shipper, of the feeder provided with a traveler, the forked lever pivoted to the traveler so as to oscillate in a plane parallel with the path of movement of said traveler and having the arm c' extending in the direction of said path of movement, the bell-crank lever e pivoted to the frame of the feeder, and

the wire *f* connecting said bell-crank lever with the belt-shipper, substantially as described.

3. The combination with a carding-machine having a spring-actuated belt-shipper, of the feeder provided with a traveler, the forked lever pivoted to the traveler so as to oscillate in a plane parallel with the path of movement of said traveler and having the arm *c'* extending in the direction of said path of movement, the bell-crank lever *e* pivoted to the frame of the feeder, the spring-latch *k* for normally holding the belt-shipper in position for the operation of the carding-machine, and the wire *f* connecting said bell-crank lever *e* with the spring-latch *k*, substantially as described.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 6th day of May, A. D. 1896.

JACOB F. GEB.

Witnesses:
PALMER A. WOODWARD,
WILLIAM A. WYCKOFF.