(No Model.) 4 Sheets—Sheet 1.

A. H. MORTON.

SAFETY STOPPING MECHANISM FOR LAP MACHINES.

No. 518,007. Patented Apr. 10, 1894.

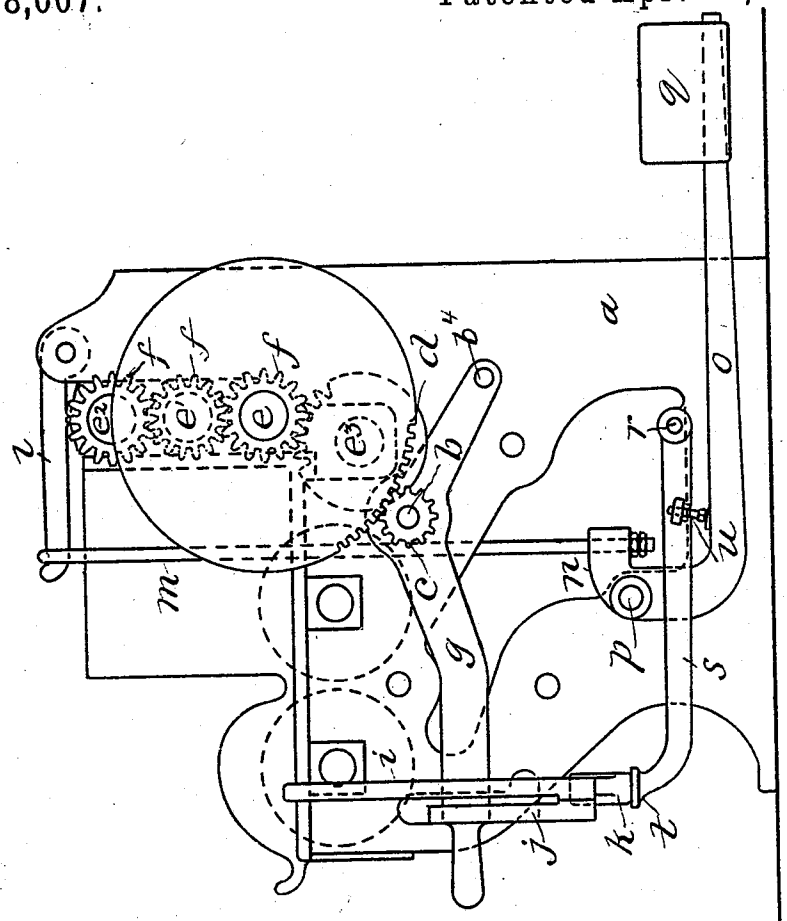


FIG. 1.

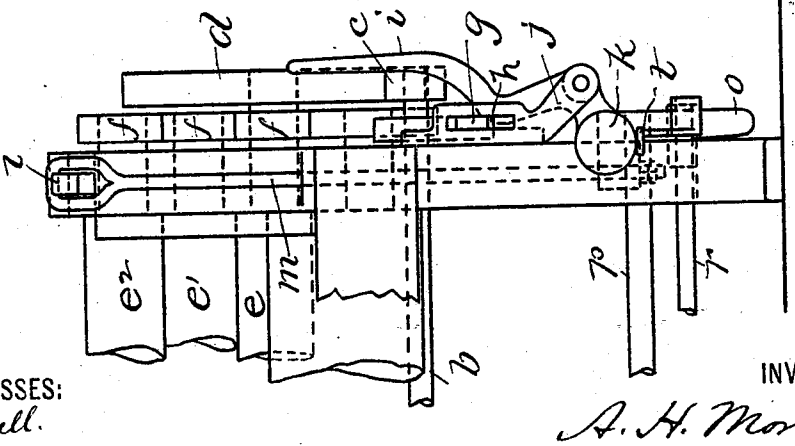


FIG. 2.

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A. H. MORTON.

SAFETY STOPPING MECHANISM FOR LAP MACHINES.

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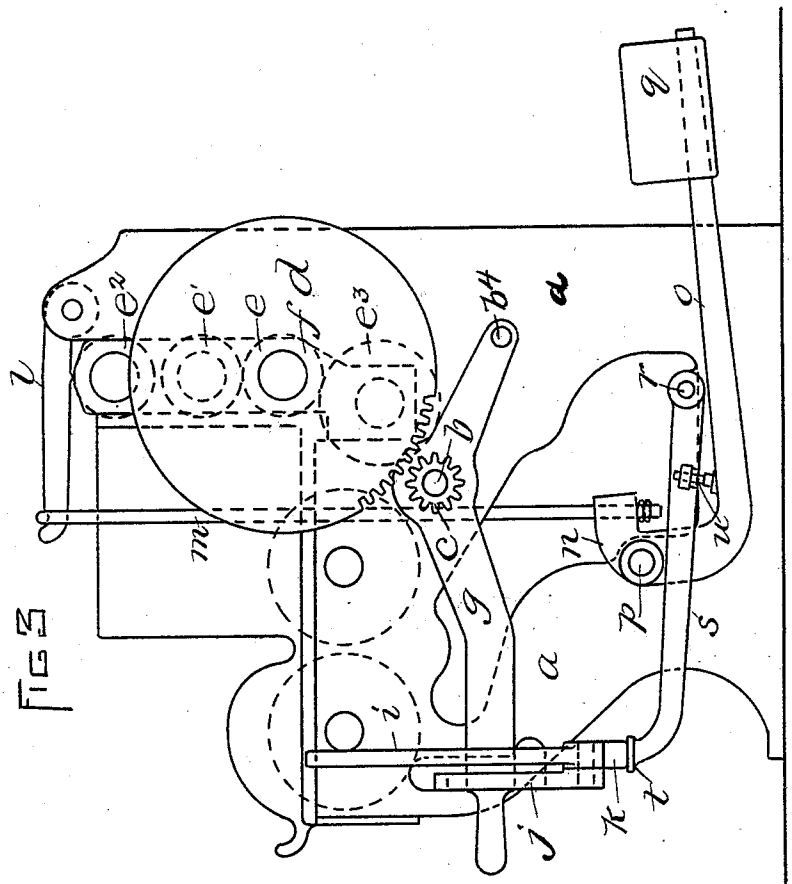


FIG. 3.

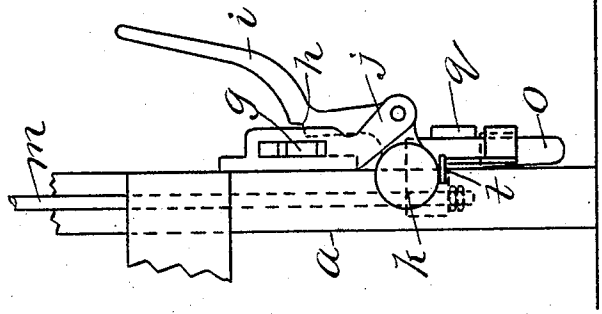


FIG. 4.

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(No Model.) 4 Sheets—Sheet 3.

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SAFETY STOPPING MECHANISM FOR LAP MACHINES.

No. 518,007 Patented Apr. 10, 1894.

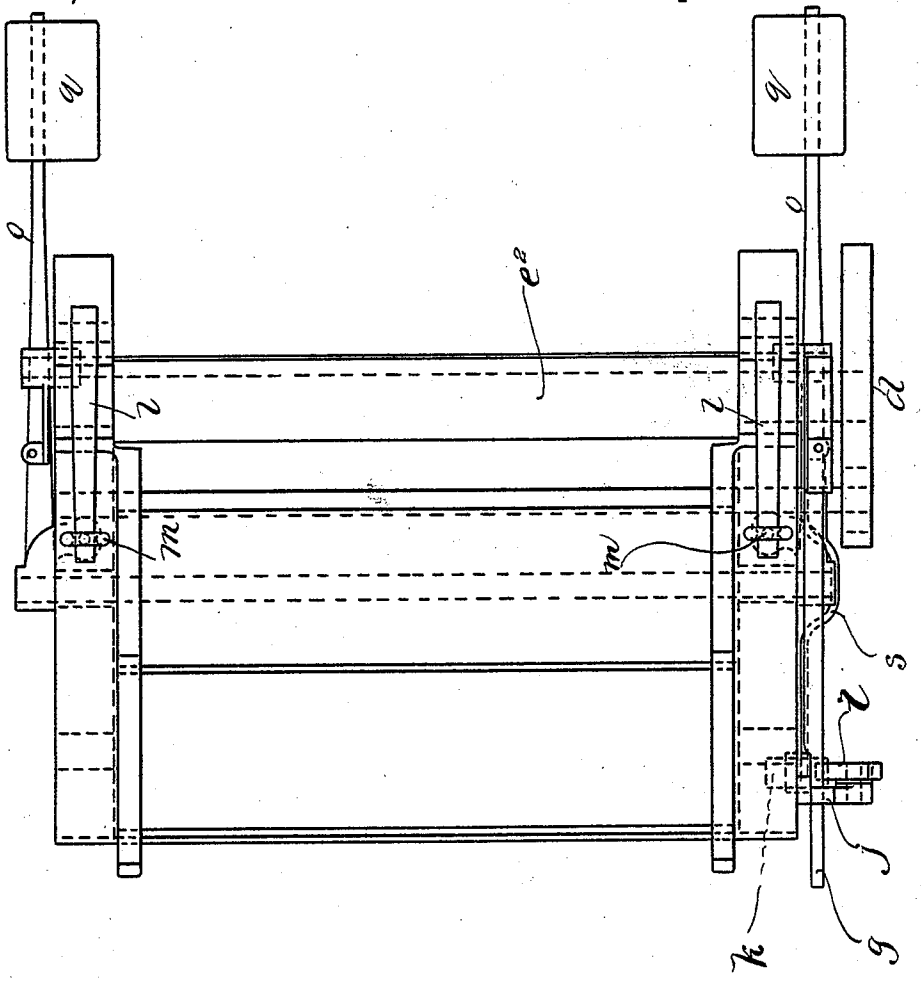


FIG. 5.

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(No Model.) 4 Sheets—Sheet 4.

A. H. MORTON.

SAFETY STOPPING MECHANISM FOR LAP MACHINES.

No. 518,007. Patented Apr. 10, 1894.

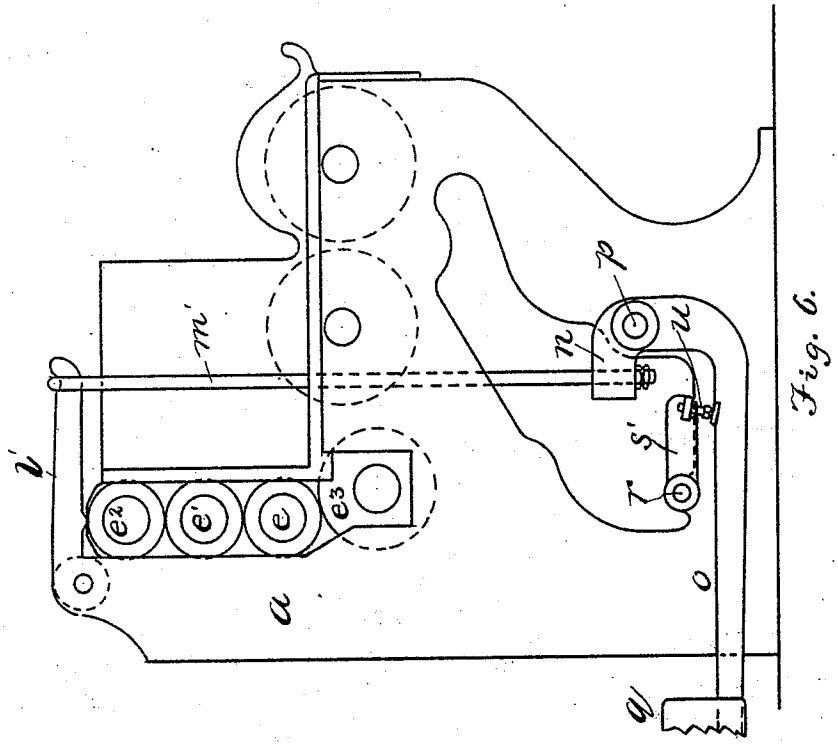


Fig. 6.

WITNESSES:
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Artimas Harmon

INVENTOR
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BY
Wright, Brown & Quinby,
ATTORNEYS.

THE NATIONAL LITHOGRAPHING COMPANY,
WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

ALBERT HAYES MORTON, OF LOWELL, MASSACHUSETTS, ASSIGNOR TO THE KITSON MACHINE COMPANY, OF SAME PLACE.

SAFETY STOPPING MECHANISM FOR LAP-MACHINES.

SPECIFICATION forming part of Letters Patent No. 518,007, dated April 10, 1894.

Application filed April 10, 1893. Serial No. 469,702. (No model.)

To all whom it may concern:

Be it known that I, ALBERT HAYES MORTON, of Lowell, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Safety Stopping Mechanism for Lap-Machines, of which the following is a specification.

This invention has relation to mechanism for knocking off the locking or latching means whereby the machine is kept in operative condition, and releasing such means so as to render the machine inoperative when circumstances require the same to be done.

It is the object of the invention to provide such improvements in the usual knocking-off devices of lapping machines as will adapt the same to serve as a safety stopping means, in case the fiber from any cause adheres to a roll and winds on or "laps-up" on the roll, or in case a hard or bulky foreign substance is met with in the material fed to the rolls, which would occasion breakage or other serious damage if the operation of the rolls were not stopped.

It is also the object of the invention to provide a safety stopping mechanism which will be effective and certain in its operation, irrespective of the point along the length of the rolls at which the cause originates.

To these ends the invention consists of the improvements hereinafter described in detail and pointed out in the appended claim.

Reference is to be had to the annexed drawings and the letters marked thereon forming a part of this specification, the same letters designating the same parts or features as the case may be, wherever they occur.

Of the drawings—Figure 1, is a side view of so much of a lapper as is necessary to show in order to explain the invention, showing the parts in operative position. Fig. 2, is an end view of the right hand side of the parts shown in Fig. 1. Fig. 3, is a view similar to Fig. 1, showing the mechanism in "knocked-off" position, and the machine rendered inoperative. Fig. 4, is an end view of the right-hand side of the parts shown in Fig. 3. Fig. 5, is a top plan view of the parts shown in Fig. 1. Fig. 6 is a view of the side opposite to that shown in Figs. 1 and 3.

In the drawings a designates the frame of the machine.

b is the driving shaft upon which is affixed the gear c which is adapted to be brought into mesh with and drive the large gear d fast on the shaft of the calendering roll e. The shaft of the roll e is provided with a gear f which drives similar gears connected with the shafts of the rolls e' e^2 e^3.

The driving shaft b is supported in suitable bearings in the lever g which is fulcrumed at its inner end at b^4, upon the frame and is adapted at its outer end to be raised and supported in raised position upon a ledge or offset h formed upon the "musket" lever i fulcrumed upon a bracket j. The lower arm of the lever i is weighted, as at k, so that the upper arm may be normally forced inward, and the outer end of the lever g be maintained in raised position, as is shown in Figs. 1 and 2.

l l' designate levers pivoted at their inner ends upon the frame, adapted to bear upon the ends of the uppermost calendering roll e^2, and connected at their outer ends with the upper ends of rods m m'. The said rods are connected at their lower ends with the short arms n of levers o fulcrumed at p on the frame, and provided on their long arms with weights q.

By the means just described the calendering rolls are made to press upon the lap, which, in the operation of the machine, passes between them.

r is a shaft supported in suitable bearings in the frame, and upon the ends of which are keyed or otherwise secured the inner ends of the levers s s', the outer end of one of said levers being provided with an upturned end or part t, reaching beneath the weight k on the musket lever i. The levers s s' are provided with adjustable fulcrum screws u which rest upon suitable bearings on the long arm o of the lever fulcrumed at p.

It will be noted that when the lever g is in raised position and supported on the ledge or offset n of the lever i, the driving gear c will be engaged with and drive the gear d, and the calender rolls will be operated, but when the lever g is knocked off from its sup-

port on the lever *i* the driving gear *c* will be disengaged from the gear *d* and the calendering rolls will consequently be stopped. These means, as operated by hand are common in existing machines, as they are also old when operated automatically at predetermined intervals as when the machine is organized to be stopped after a certain length of lap has been calendered and wound on the lap-roll. In the use of lap machines, however, it frequently happens that foreign substances such as pieces of nails and other pieces of iron, pieces of wood, &c., are conveyed with the fiber to the rolls and enter the bite or partially enter the bite of the same, and if the operation of the rolls were not stopped at such times serious breakage would occur. It also sometimes happens that the surface of the calendering rolls becomes sticky or rough by the adhesion thereto of foreign substance in the cotton and from other causes, such as the operator spitting on the rolls to make the cotton catch in the bite in starting the lap through. These things cause the fiber to adhere to the rolls and wind round the same, occasioning what is commonly termed "lapping up" on the rolls, which necessitates their stoppage as in the case where hard foreign substances are encountered, as before described, in order to avoid breakage and wastage.

It is to meet emergencies of the character mentioned, and to avoid the mishaps that would follow thereon, if the operation of the machine were not arrested, that has occasioned the provision of my invention.

By my improvements the usual knock-off described is rendered a safety stopping-mechanism and is operated automatically to stop the machine the instant the rolls or any one of them is raised above normal position, since such abnormal raising of a roll will raise the lever *l* and the long arm *o* of the lever fulcrumed at *p* through the medium of the rod *m* operating upon the short arm *n* of the said lever. When the weighted arm *o* is raised, it will raise the lever *s* and the upturned part on the outer end thereof so as to lift the weight *k*, rock the lever *i* upon its fulcrum, and knock off the lever *g*, disengaging the driving gear *c* from the gear *d*, stopping the rolls instantly.

It sometimes happens that a hard foreign substance is encountered in the fiber or that a bunch or lap occurs at only one end of the rolls, in which case the end only at which the occurrence takes place will be raised, while the opposite end will be down in normal position. It is therefore, necessary to a perfect automatic safety knocking off mechanism that the latter should be operated irrespective of where the lap or difficulty occurs along the length of the rolls, and to effect this I have provided the machine with levers *s s'* one on each side thereof connected by a shaft *r*. The lever *s'* on the opposite side of the machine from that viewed in Figs. 1 and 3, is not provided with an extension reaching under the weight *k* of the lever *i* but it is so constructed and arranged as to be raised by the raising of the lever *o* on its corresponding side, and as the lever *s'* like the lever *s* is keyed upon the shaft *r*, the latter will be rocked in its bearings so as to raise the outer end of the lever *s*, knock off the lever *g* and stop the machine. Thus it will be seen that it makes no difference at which end of the rolls the emergency arises, or whether it occurs at the center of their length, since the lever *s* will in any case be operated.

I have not attempted to show or describe the means for forming the lap, nor the means for winding the same on the lapping roll, since these means have nothing to do with my invention, and are well understood by those skilled in the art of constructing and operating lap machines.

The terms "knock-off" and "knocking-off mechanism" are employed herein in the sense in which the same are generally used by textile-manufacturing artisans. In the present case the knocking-off mechanism embraces the musket lever, the lever *g*, and the pinion *c*, on the driving shaft *b* (carried by the said lever *g*) adapted to be moved by the musket lever into and out of engagement with the gear *d*. This knocking-off mechanism is not, however, new, *per se*, and may be varied without departing from the nature or spirit of my invention.

Having thus explained the nature of the invention and described a way of constructing and using the same, though without attempting to set forth all of the forms in which it may be made or all of the modes of its use, it is declared that what is claimed is—

A lapping machine comprising in its construction a knocking-off mechanism, calendering rolls, levers arranged to bear upon the said rolls at both ends thereof, weighted levers on both sides of the machine connected with the first-mentioned levers, a rod journaled in the machine, levers secured to said rod and adapted to be actuated by the said weighted levers, one of the levers attached to the rod being extended to the knocking-off mechanism to actuate the same, as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 29th day of March, A. D. 1893.

ALBERT HAYES MORTON.

Witnesses:
SAMUEL B. WYMAN,
JAMES D. WILSON.