G. F. ROBERTS.

ROVING CLAMP FOR SPINNING MACHINES.

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1,088,036. Patented Feb. 24, 1914.

Fig. 1.

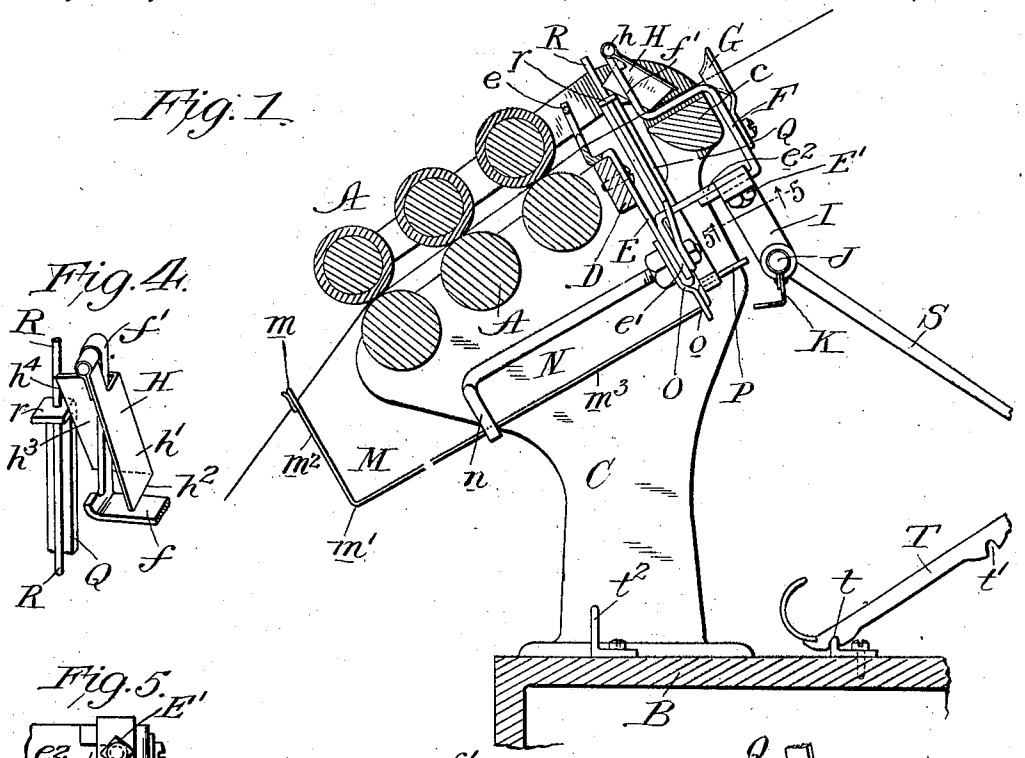

Fig. 4.

Fig. 5.

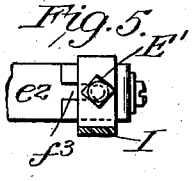

Fig. 2.

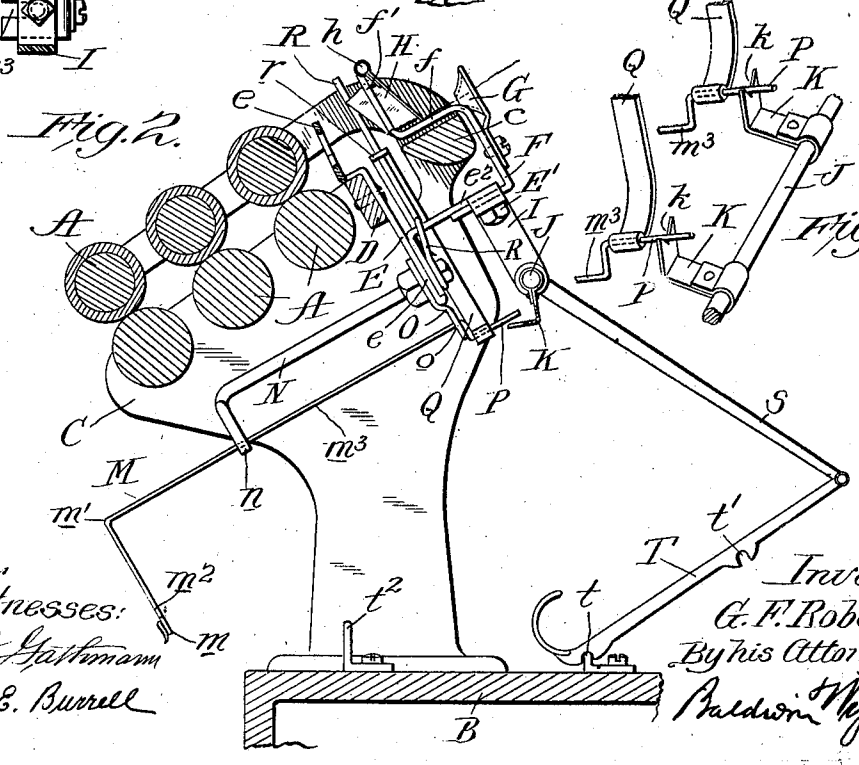

Fig. 3.

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UNITED STATES PATENT OFFICE.

GUS F. ROBERTS, OF FRIES, VIRGINIA.

ROVING-CLAMP FOR SPINNING-MACHINES.

1,088,036. Specification of Letters Patent. Patented Feb. 24, 1914.

Application filed April 8, 1913. Serial No. 759,638.

To all whom it may concern:

Be it known that I, GUS F. ROBERTS, a citizen of the United States, residing in Fries, in the county of Grayson and State of Virginia, have invented certain new and useful Improvements in Roving-Clamps for Spinning-Machines, of which the following is a specification.

My invention relates to the devices employed in spinning machines for effecting a second breakage of the roving at the receiving side of the drawing rolls whenever the thread has been broken or become slack on the delivery side thereof. As is well understood, such devices are employed for the purpose of preventing the waste of roving or damage to the rolls when the threads break between the rolls and spindles which normally receive them. In such mechanism the roving usually passes through trumpet guides carried by a reciprocating traverse bar to the drawing rolls and then to guides formed on the ends of wires which are so connected with the devices for breaking the thread at the rear side of the drawing rolls that normally while the machine is in operation said clamps or breaking devices are inoperative, but the arrangement is such that when a thread breaks on the delivery side of the rolls, the guide wire, which is normally held elevated by the thread, will drop and cause the clamp or thread-breaking device to operate to break the roving at the receiving side of the drawing rolls and thus stop the feed of roving through the rolls and prevent the piling up of threads or the entanglement thereof with the mechanism. According to my invention I have provided novel devices of this character which are supported entirely by the traverse bar of the machine and which are simple and inexpensive in construction, very sensitive in operation and which, when a thread breaks, causes the roving to be clamped on the receiving side of the rolls and to be broken off in such manner that only a very short length of loose roving is carried through the rolls. In connection with such clamping devices I employ devices also supported on the traverse bar by means of which the clamps on the spinning frame may all be held up or out of engagement with the roving when the machine is being doffed. The construction of the mechanism and the manner in which it operates will be hereinafter more fully described.

In the accompanying drawings, Figure 1 shows a vertical section of a portion of a spinning frame with my improvements applied, the parts being in the position which they occupy when the roving is being fed through the drawing rolls and the thread is being properly passed to the spindles. Fig. 2 is a similar view showing the position of the parts when the thread is broken in front of the rolls and the roving in rear of the rolls is clamped. Fig. 3 is a detail view in perspective of the devices employed for holding a series of clamps in an elevated position when the machine is being doffed. Fig. 4 is a detail view in perspective of the clamping device for the roving. Fig. 5 is a detail view in bottom plan illustrating the devices for adjusting the clamp-carrying and trumpet-carrying frame.

The drawings show my improvements applied to drawing rolls of usual construction. These rolls A are supported on a roll beam B by standards C of usual form. The traverse bar D which is operated in the usual way, is arranged in rear of the drawing rolls and to this bar in rear of each set of rolls is secured a frame E provided at its upper end with a guide e, while its lower end is bent or doubled at e' and carried upwardly and then rearwardly to form a supporting arm e^2 for the frame F which carries the trumpet guide G and the clamp H. This trumpet guide is of usual construction, but I locate it in rear of the clamping device instead of between the clamping device and the rolls as in some other machines. Some of the arms e^2 also support hangers or brackets I in which is mounted a horizontally arranged shaft J carrying lifting devices K hereinafter referred to. This shaft J extends from one end of the frame to the other and lifting devices K are employed in connection with each set of rolls and clamping devices.

The clamping device H is pivoted at h to the upper end of the frame F which, as will be noted, extends forwardly from its rear portion above the frame bar c and then upwardly at f', the pivot h being located at the upper end of part f'. The forwardly extending part f of the frame F coöperates with the clamp H to clamp the roving. This clamping device H is preferably of the form shown, being substantially L-shaped in cross-section, having a part h' with an edge h^2 which is adapted to come close to the

part f of the frame F and it has a part h^3 provided with an inclined edge h^4, the direction of said incline being from its upper front portion downwardly and rearwardly. As indicated in Fig. 5, the frame F is adjustably secured to the arm e^2 of the frame E by a bolt E′ which engages the arm e^2 and extends through a slotted portion f^3 of the frame F disposed below the arm e^2. By such devices the clamping device H may be adjusted forwardly and rearwardly to a limited extent.

M indicates a device similar to what is ordinarily called in this art a drop wire, feeler or clamp-operating device. This drop wire or device is preferably made of wire and is adapted at its front end to engage the thread as it comes from the drawing rolls. For this purpose it may be provided with an eye m through which the thread passes. The wire, it will be observed, is bent at m' to form the front portion m^2 of the device on the upper end of which the eye m is located. The device also has a rearwardly extending portion m^3 which extends through supports or bearings, one of which is provided by the downwardly extending arm n of a rod N secured to the frame E and the other support o for the device M is formed by a hanger O attached to the frame E. The rear end of the wire is formed with a crank-arm P which carries a clamp-lifting rod Q provided at its upper end with an arm r adapted to engage the inclined edge h^4 of the clamp H. The clamp-lifting rod is guided near its upper end by a rod R attached to the frame E and extending through a perforation in the laterally extending arm r of the rod Q. The bearings n and o sustain the entire weight of the drop wire which latter merely touches or makes contact with the thread without exerting any strain or placing any weight thereon, the device being nicely balanced for this purpose and is prevented from moving to the right or to the left by the thread in the normal operation of the machine, but should the thread break the drop wire can move sidewise and thus turn the crank P and operate the clamp.

In Fig. 1 the mechanism is shown in its normal position where the roving passes freely through the trumpet guide and beneath the clamp to the drawing rolls and thence to the spindle. As long as the drop wire M is held by the thread in the position shown in Fig. 1, the clamp H is inoperative, but if the thread breaks between the drawing rolls and the spindle, the drop wire M will drop to the right or to the left to the position shown in Fig. 2, said wire turning in its bearings and thus turning the crank P and causing the lifting device Q to move out of engagement with the clamp H which latter then, by its own gravity, drops and clamps the roving between its edge h^2 and the part f of the frame F. The clamp H is so hung that when its edge h^2 reaches the part f of the frame, it can swing no farther or cannot assume a vertical position so that the drawing rolls acting upon the roving will cause the latter to be broken at or in advance of the clamp. It will thus be seen that the clamping device may be made comparatively light, no weight being required in order to make it efficient because the forward movement of the roving beneath the clamp tends to draw the clamp tightly against the frame at f. By merely turning the drop wire M from the position shown in Fig. 2 to that shown in Fig. 1 the clamp may be lifted.

To piece or splice the broken thread after the roving is released the end thereof is passed through the guide e and into the bite of the drawing rolls which move it forward. At this time the drop wire M and the clamp H are in the position shown in Fig. 2 and remain in this position until the piecing or splicing is completed. After this the attendant picks up the drop wire and puts the pieced thread through the eye m and in so doing the drop wire is turned about its axis and the crank P is raised, causing the clamp lifted Q to rise and engage the inclined edge h^4 of the clamp, thus lifting said clamp out of contact with the frame f or the roving thereon. When this is done, the roving assumes its position on the top of the frame and under the edge h^2 of the clamp.

When the machine is to be doffed, or when it is desired to hold all the clamps out of action, it may be done by means of clamp-holding devices K carried by the rod J. This rod is operated by an arm S attached to the rod J and provided with an operating lever T. Figs. 1 and 2 show the normal position of the holding devices, the operating lever T being held by a catch t. By lifting the lever out of engagement with the catch t and moving it forward and causing the notch t' to engage the catch t^2, the clamps H may all be held in an elevated position or lifted throughout the series and may be held in such position until the machine is again started, when the lever T may be moved rearwardly and engaged at t as shown in Figs. 1 and 2. It will be observed that the holding devices are provided with notches k having inclined walls which facilitate in engaging the crank arms.

By means of the devices shown in Fig. 5, the relative position of the clamping device H and the clamp lifting device Q may be varied so as to cause said lifting device to engage the inclined edge h^4 sooner or later, as may be required.

One of the important features of my invention is the arrangement of the drop wire

in such manner that it does not exert any strain on the thread but is merely held in an upright position by the thread until the latter breaks when the device will fall in the manner before described. This is accomplished by so supporting the drop wire that it turns about an axis transverse to the axes of the drawing rolls, the entire weight of the drop wire being sustained in its bearings. In this way no weight or strain is placed on the thread and when the thread breaks or becomes abnormally loose the eye *m* of the drop wire moves to the right or to the left of the plane of the thread in a plane parallel with the axes of the drawing rolls and the wire so turns in its bearings as to lower the crank P and thus permit the clamp H to drop and engage the roving.

I claim as my invention:

1. The combination with the drawing rolls of a spinning machine, of a clamp for the roving in rear of the rolls, a drop wire having a thread engaging end in front of the rolls which is so balanced as to merely make lateral contact with the thread without exerting a vertical strain thereon, bearings in which the drop wire is mounted to move about an axis transverse to the axes of the drawing rolls, and connection between the drop wire and the clamp whereby the latter is normally held out of engaging position with the roving but which allows the clamp to engage the roving when the thread issuing from the rolls breaks.

2. The combination with the drawing rolls of a spinning machine, of a clamp for the roving in rear of the rolls, a drop wire having a thread-engaging end in front of the rolls which is so balanced as to merely make lateral contact with the thread without exerting a vertical strain thereon, bearings in which the drop wire is mounted to automatically move when the thread breaks either to the right or to the left of the plane of the thread about an axis transverse to the axes of the drawing rolls, and connections between the drop wire and the clamp whereby the latter is normally held out of engagement with the roving but which allows the clamp to engage the roving when the thread issuing from the rolls breaks.

3. The combination with the drawing rolls of a spinning machine, of a freely pivoted clamp for the roving in rear of the rolls, a drop wire having a crank arm at its rear end and a thread-engaging end in front of the rolls which is so balanced as to merely make lateral contact with the thread without exerting a vertical strain thereon, bearings in which the drop wire is mounted to move either to the right or to the left of the plane of the thread about an axis transverse to the axes of the rolls, and a vertically moving rod pivotally connected at its lower end with the crank arm and having an upper portion on which the clamp normally rests but which separates from the clamp when the thread breaks and allows the clamp to drop.

4. A roving clamp, comprising a clamp-supporting frame, a clamp mounted thereon, a drop wire having a thread-engaging portion in front of the drawing rolls and provided at its rear end with a crank arm, a clamp-lifting rod normally engaging the clamp and pivotally connected with the crank arm, and a clamp-holder comprising a shaft, means for turning it and an arm projecting from the shaft having a notch with beveled edges adapted to engage the crank arm of the drop wire, for the purposes specified.

In testimony whereof, I have hereunto subscribed my name.

GUS F. ROBERTS.

Witnesses:

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M. E. BURRELL.