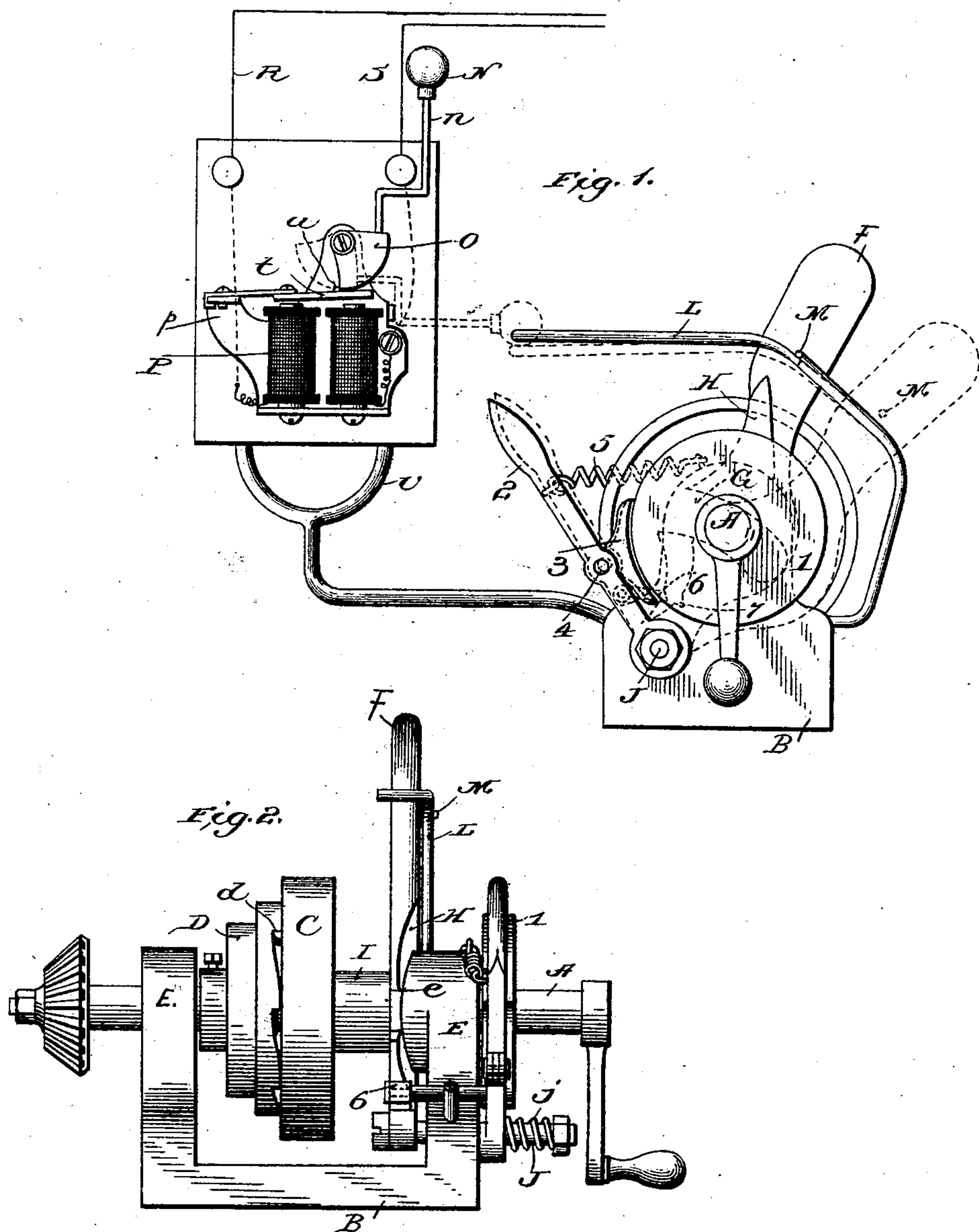


(No Model.)

G. J. MANDERFIELD.  
STOP MOTION FOR KNITTING MACHINES.

No. 512,310.

Patented Jan. 9, 1894.



witnesses:

Harry D. Parker.  
Vinton Coombs

George James Manderfield  
Inventor.

By Harvey L. Shomo  
Att'y.



# UNITED STATES PATENT OFFICE.

GEORGE JAMES MANDERFIELD, OF ROYERSFORD, PENNSYLVANIA, ASSIGNOR  
OF ONE-HALF TO J. M. LEWIN, SAMUEL LEWIN, U. S. G. FINKBINER, AND  
A. R. SAYLOR, OF SAME PLACE.

## STOP-MOTION FOR KNITTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 512,310, dated January 9, 1894.

Application filed March 21, 1893. Serial No. 467,061. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE JAMES MANDERFIELD, a citizen of the United States, residing at Royersford, in the county of Montgomery and State of Pennsylvania, have invented certain new and useful Improvements in Stop-Motions for Knitting-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to stop mechanism for knitting and other machines, and is in the nature of an improvement on the machine for which Letters Patent were granted to me on the 26th day of July, 1892, No. 479,763. In said patent I showed and described a clutch adapted to be automatically thrown out of action upon the breaking or running out of the yarn or thread, or the knotting of the same, by closing an electric circuit controlling said clutch.

The present invention relates to improved brake mechanism adapted to be used in connection with the clutch mechanism shown in said patent and operating to automatically and instantly stop the driving shaft the moment the clutch is thrown out of operation.

To this end my invention consists in the novel construction and arrangement of parts hereinafter fully described and afterward definitely pointed out in the claims, due reference being had to the accompanying drawings forming a part of this specification, wherein—

Figure 1 is an end elevation of the clutch and means for operating the same. Fig. 2 is a front elevation of the clutch.

Referring to the drawings, Figs. 1 and 2 illustrate the clutch mechanism shown, described and claimed in my said Letters Patent No. 479,763. Said mechanism consists of a shaft A mounted in a suitable frame B, upon which is loosely mounted a driving belt pulley C, which is constantly driven by a belt from any suitable source of power. Fixed upon the shaft is the wheel D, having notches *d* in its side face, said notches being preferably formed in an annular rim, as shown.

Loosely journaled upon the shaft adjacent

to the wheel D is the constantly-driven belt-pulley C. This pulley not only turns freely upon the shaft, but slides lengthwise thereon, so as to be engaged with and disengaged from the fixed notched wheel D by mechanism presently to be described. The pulley C is provided on its face adjacent to the fixed wheel with one or a series of pins or teeth *d* to engage the notches of the wheel D. The shaft is journaled in uprising arms E of the small frame B. Pivoted at one end to this frame below the shaft is a clutching-lever F. This lever extends up beyond the shaft and has a weighted end conveniently shaped to form a hand-hold, by which the lever is operated. At about midway of its length this lever is cut away or recessed, as shown at G, so as to straddle the shaft, and above and below this cut-away portion the lever is provided with the cam-surfaces H on one side, the opposite side being plain and flat and serving as a bearing-face for the end of the hub I of the belt-pulley C. The arm E of the frame nearest the lever is provided with an oppositely-shaped cam-surface *e*. In order to provide for the lateral movement of the lever in the direction of the length of the shaft when it is thrust up into engagement with the cam-surface *e*, it is pivoted at its lower end on a loose pin J, set in the frame and having a stiff spring *j* tending to hold the arm against the side of the frame, as will be understood from Figs. 1 and 2 of the drawings. Encircling the shaft between the adjacent faces of the fast and loose wheels D, C, and conveniently housed in a recess in the latter is a spring tending to force and hold the wheels apart. When the lever F is in the position indicated by the dotted lines in Fig. 1, the wheels are held apart by the spring and the loose wheel runs freely on the shaft without operating the machine. When the clutch-lever is pushed up into the position shown in full lines in Fig. 1, the cam-surfaces H and *e* cooperate to thrust the lever laterally along the shaft, pushing on the end of the hub I and causing the pulley C to be clutched to the fixed wheel D. To hold the parts in their clutched position, a spring L of any convenient form is secured to the frame in the path



of a pin M projecting from the side of the lever, a notch being cut in the spring, into which the pin takes when the lever reaches its locked position.

5 I will now describe the mechanism for tripping the catch and allowing the lever to fall. N denotes a weight on the upper end of a short rod *n* fixed in a block *o*, pivoted as shown, the parts being so arranged that the  
10 rod moves in the path of the spring L, the end of which is preferably bent to insure the engagement therewith of the weight. The letter P denotes an electro-magnet mounted on any suitable frame, such as *p* to which  
15 also the block O is pivoted. The wires R and S are connected to the opposite end coils of the magnet, as clearly shown in Fig. 1 of the drawings, so that the magnet is included in the circuit heretofore explained. A spring-  
20 armature *t* is fixed so that when the magnet is energized it will be drawn down out of the path of the pivot-block of the weight-arm *n* and allow the latter to fall. The armature is preferably provided with a stud  
25 *u*, to engage the pivot-block; but it may be otherwise constructed to effect the same result. The frame *p* is supported in any suitable manner and located in any convenient position, it only being necessary that it shall  
30 be so arranged that the weight N will strike the spring L when the weight-arm is allowed to fall. I have herein shown the frame as supported by an arm or bracket V from the frame B, carrying the driving and clutching  
35 devices.

In the device as above described the momentum of the shaft is not instantly arrested upon the clutch being thrown out of operation, and it is the object of the present in-  
40 vention to produce such result which I accomplish in the manner and by means of the mechanism which I will now proceed to describe. Upon the shaft A, is rigidly secured a wheel or pulley 1 in proximity to the clutch-  
45 ing-lever F, and upon the pin J, upon which is journaled said clutching lever, is also journaled a brake lever 2, which has pivoted thereto, about midway its length, a brake shoe 3, by means of a pivot pin 4, said brake  
50 shoe having its face provided with a bearing surface of leather or equivalent material. To the free end of the brake lever 2 is secured one end of a spiral spring 5, the other end of which is secured to an arm E of the frame.  
55 To the brake lever 2 is pivoted a pawl 6, the free end of which is adapted to be engaged by the clutching-lever F in the manner and for the purpose presently to be described.

The operation of the device will be readily  
60 understood. So long as the yarn is running smoothly and uninterruptedly the clutch will operate to actuate the knitting machine, the parts being in the position shown in full lines in Fig. 1; but, upon the yarn breaking or be-  
65 coming knotted, or running out, the magnet

will be energized, thus allowing the weighted arm *n* to fall and strike the spring catch L. This releases the clutching-lever F and permits the same to drop, when its spring in-  
70 stantly forces the pulleys C and D apart to stop the machine. After this has been effected, however, the momentum of the shaft is apt to prevent the immediate and instant stoppage of rotation of the shaft, but this is accomplished by means of the brake shoe  
75 3, for, as the clutch-lever F is lowered to release the pulleys C and D, the pawl 6 is released and the spring 5 draws the brake shoe 3 forcibly against the periphery of the pulley 1 and instantly brings the shaft to a state of  
80 rest. When the clutching lever F is pushed up to start the machine a notch 7 on said lever engages the free end of the pawl 6 and forces the brake shoe away from the face of the pulley 1.  
85

Having thus described my invention, what I claim is—

1. The combination of a shaft, a fixed wheel thereon, a driving wheel loose upon the shaft and adapted to engage said fixed wheel, a cam  
90 projection on the bearing for the shaft, a cam-shaped lever working between the bearing and the hub of the loose wheel, a pulley on the shaft, a pivoted lever carrying a brake shoe adapted to bear against said pulley, and  
95 a spring for forcing said shoe against the pulley upon the release of the cam-shaped lever to stop the machine, substantially as described.

2. The combination of a shaft, a fixed wheel  
100 thereon, a driving wheel loose upon the shaft and adapted to engage said fixed wheel, a cam projection on the bearing for the shaft, a cam shaped lever working between the bearing and the hub of the loose wheel, a pulley on  
105 the shaft, a pivoted brake lever carrying a shoe adapted to bear against said pulley, a spring for forcing said shoe against the pulley and a pawl carried by the brake lever and engaging the cam-shaped lever, substantially  
110 as described.

3. The combination of a shaft, a fixed wheel thereon, a driving wheel loose upon the shaft and adapted to engage said fixed wheel, a cam  
115 projection on the bearing for the shaft, a cam shaped lever working between the bearing and the hub of the loose wheel, a pulley on the shaft, a pivoted brake lever, a brake shoe pivoted to said lever, a coiled spring secured at one end to said brake lever and at its other  
120 end to the frame and acting to force the shoe against the pulley, and a pawl pivoted to the brake lever and engaging a notch on the cam shaped lever, substantially as described.

In testimony whereof I affix my signature in  
125 presence of two witnesses.

GEORGE JAMES MANDERFIELD.

Witnesses:

AMBROSE COX,  
DAVID SPRINGER.