

(No Model.)

3 Sheets—Sheet 1.

F. WILCOMB.  
STOP MOTION FOR KNITTING MACHINES.

No. 463,562.

Patented Nov. 17, 1891.

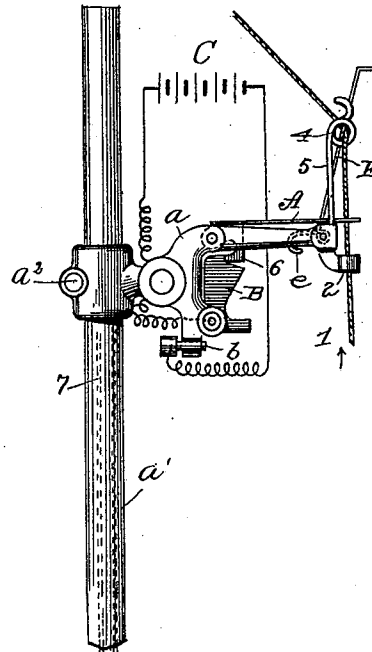
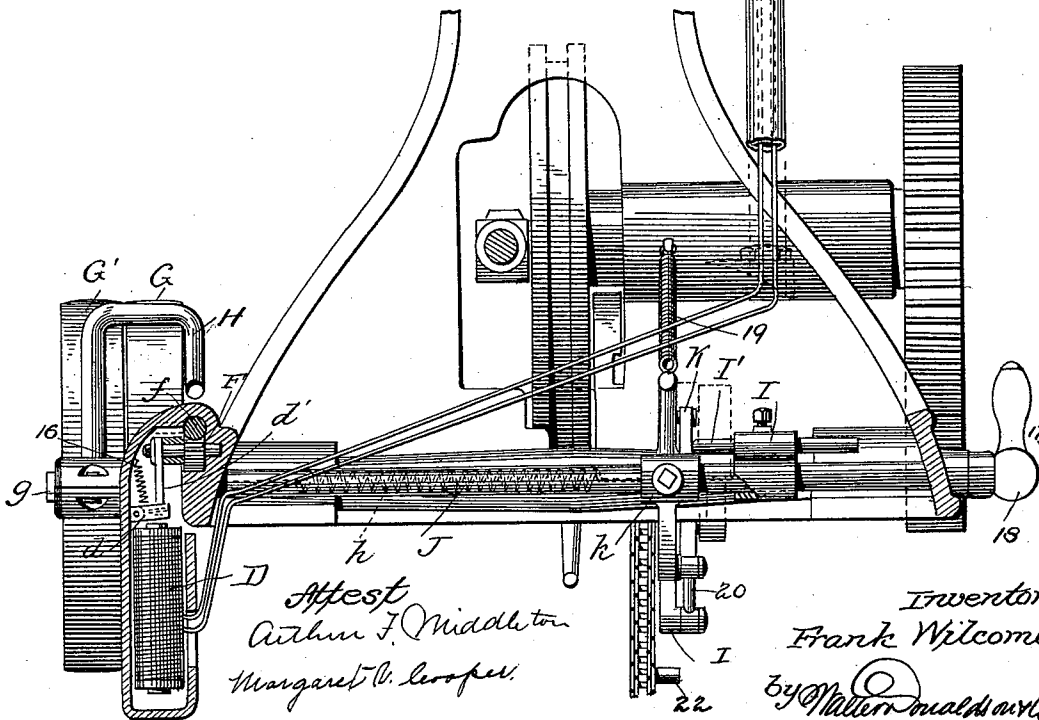


Fig. 1.



Attest  
 Arthur F. Middleton  
 Margaret C. Cooper.

Inventor  
 Frank Wilcomb  
 by *Walter M. Aldrich*  
 ATTYS.

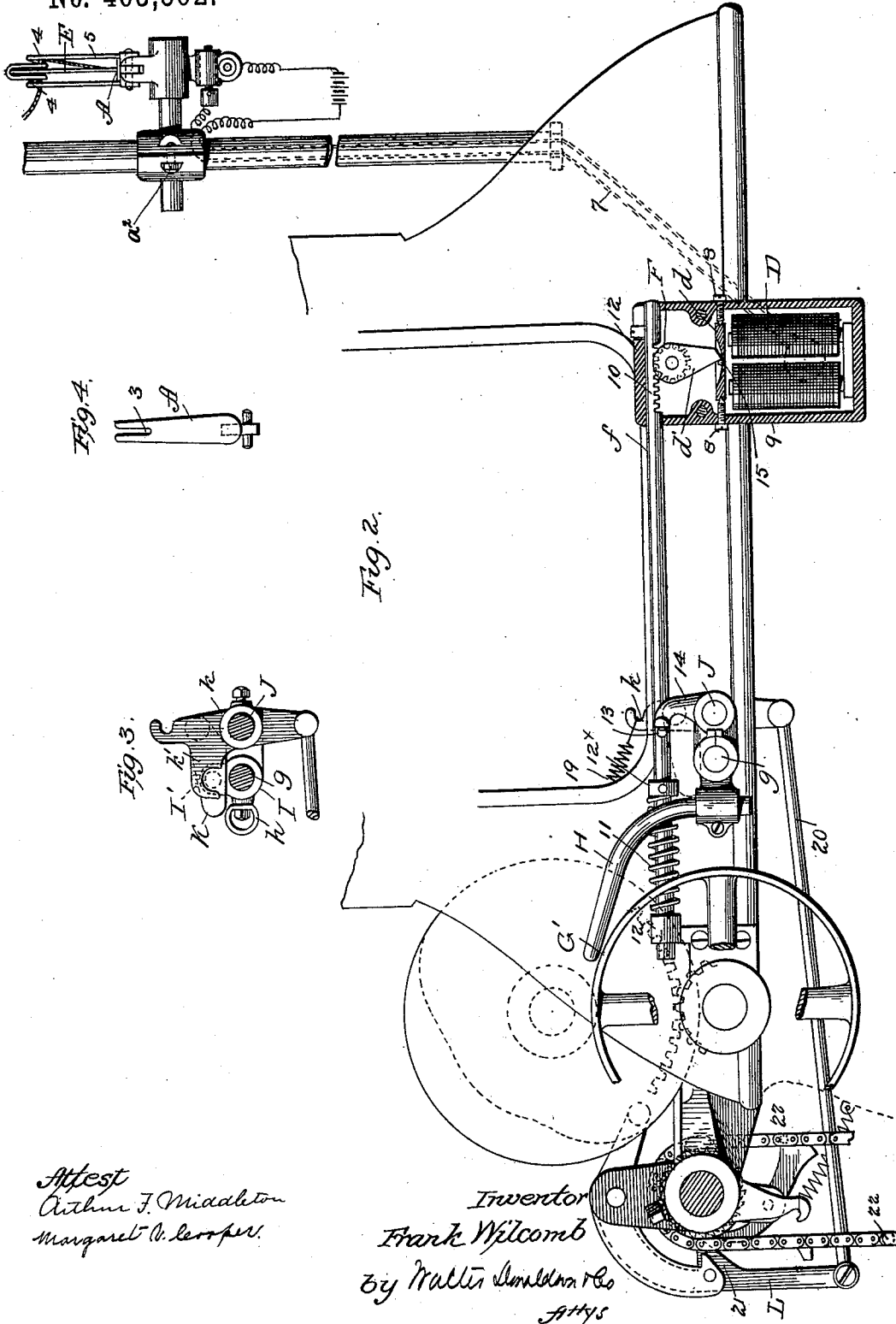
(No Model.)

3 Sheets—Sheet 2.

# F. WILCOMB. STOP MOTION FOR KNITTING MACHINES.

No. 463,562.

Patented Nov. 17, 1891.



Attest  
Arthur F. Middleton  
Margaret B. Leeper.

Inventor  
Frank Wilcomb  
By Walter Donaldson & Co  
Attys

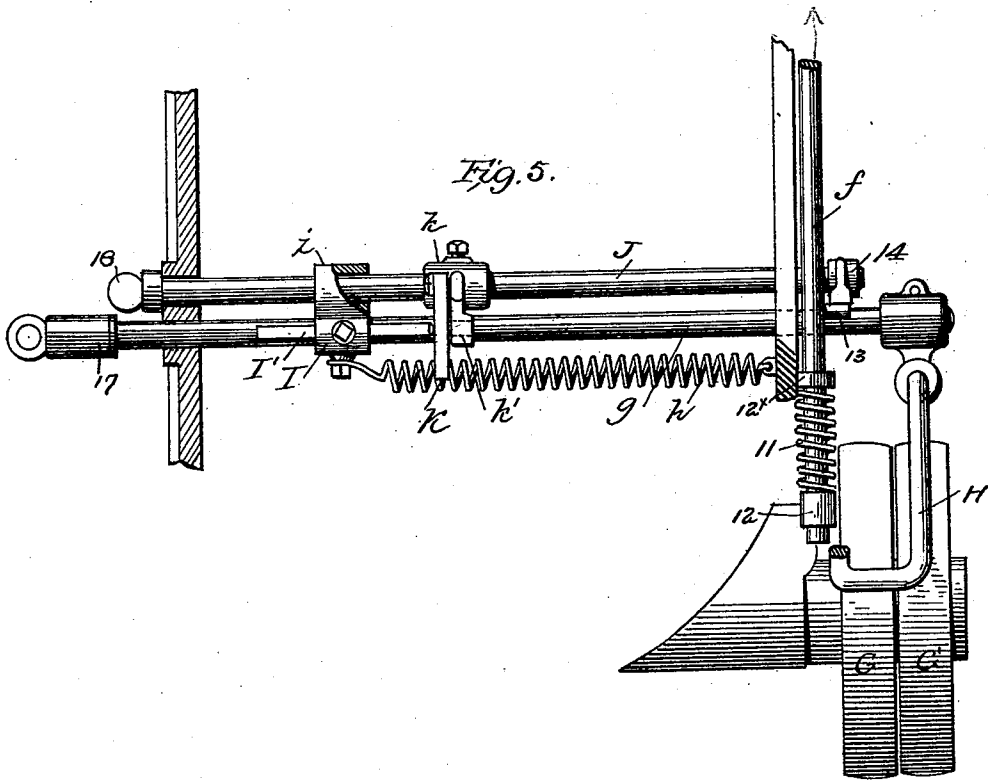
(No Model.)

3 Sheets—Sheet 3.

F. WILCOMB.  
STOP MOTION FOR KNITTING MACHINES.

No. 463,562.

Patented Nov. 17, 1891.



Attest  
Arthur F. Macauley  
Margaret V. Cooper.

Inventor  
Frank Wilcomb  
by *Arthur Macauley*  
Attys

# UNITED STATES PATENT OFFICE.

FRANK WILCOMB, OF PROVIDENCE, ASSIGNOR TO WM. H. HASKELL, OF PAWTUCKET, RHODE ISLAND.

## STOP-MOTION FOR KNITTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 463,562, dated November 17, 1891.

Application filed June 24, 1891. Serial No. 397,365. (No model.)

*To all whom it may concern:*

Be it known that I, FRANK WILCOMB, a citizen of the United States, residing at Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Stop-Motions for Knitting-Machines; and I do 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, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention includes devices for stopping the machine automatically when a knot or foreign body occurs in the yarn or when the yarn breaks or runs out, and it further includes devices in connection with a pattern-chain to stop the machine automatically when the fabric is completed. A movable detector-plate is employed by me, which is operated either when a knot occurs in the yarn or when the yarn runs out, and this plate, when moved, releases a circuit-closing lever, which causes certain electrical connections and operating devices to be energized for operating the belt-shifter.

In the drawings, Figure 1 is an end elevation of a part of a knitting-machine frame with the detector devices and the stop mechanism in place, some of the parts being in section. Fig. 2 is a side elevation of the same. Fig. 3 is a view of a detail. Fig. 4 is a plan of the detector-plate. Fig. 5 is a plan of a portion of the mechanism.

In the drawings the detector-plate is shown at A, pivoted to a bracket *a*, adjustably supported from a standard *a'* on the main frame, to which it is clamped in any position desired by the screw *a<sup>2</sup>*. (Shown in Fig. 2.) The yarn 1 passes through a guide-eye 2 on the bracket, and then through a slot 3 in the plate, from whence it passes through the eyes 4 at the upper ends of the wires 5, and from here it goes to the needles through any suitable take-up mechanism. (Not shown.)

The detector-plate has a projection 6, which engages a circuit-closing lever B and holds the same normally up to keep the circuit

broken. When, however, a knot occurs too large to pass through the slot in the detector-plate A, said plate is lifted, withdrawing the projection 6 from the lever B, which then falls, making contact with a screw *b*, electrically connected with the battery C, and closing the circuit. This circuit is completed by the wire 7, leading from the battery to the electro-magnets D, and the return-wire from the magnets leading to the lever B. Suitable insulation is placed about the screw *b* and the pivot of the lever B. When the magnets are thus energized, they draw upon the armature *d*, pivoted by pointed screws 8 to the casing 9, and cause the operation of the belt-shifting mechanism through devices, as will be hereinafter described. The same action of the detector-plate A and the lever B takes place when the thread fails, and this is effected by a light gravity-lever E, pivoted at the front end of the bracket *a* and extending between the wires 5 to rest upon the thread which crosses between the eyes 4. When the thread breaks or is exhausted, the lever E is no longer supported, and it therefore falls, causing its short arm *e* to bear on the under side of the plate A and thus lift the same, with the effect before described. When the armature *d* is depressed by the closing of the circuit, it releases a holding-lever *d'*, which is rigidly fixed to the shaft of a pinion F, engaging the teeth 10 of a bar *f*, and this bar is then free to slide under the action of the spring 11 in order to trip the belt-shifter. The tripper-bar slides in bearings 12, and its spring 11 presses against a collar 12<sup>x</sup> thereon.

The fast and loose pulleys are marked G and G', respectively, and the belt-shifter is shown at H. It is carried by a shipper-rod *g*, extending transversely of the machine. This rod is under tension of a spring *h*, which is connected to a block I, fixed thereon, and having a guiding extension *i*, which loosely embraces and slides upon a shaft J. The block carries a pin I', which, when the machine is running, bears upon a trip-stop K, pivoted to a bracket *k*, fixed to the shaft J; but when the shaft is rocked, so as to elevate the stop K above the pin I', the shipper-rod is moved by its spring *h* to shift the belt from the fast

pulley G, and this rocking of the shaft is secured by the tripper-bar *f*, which, when released, as before explained, causes a pin 13 thereon to bear upon and move the arm 14 on the shaft J. The shaft is returned to normal position by a handle 18, and when so turned the tripper-bar *f* is moved back by the arm 14, and through the teeth and pinion the holding-lever *d'* is turned until it is caught by the pin 15 of the armature, thus resetting the parts for a new action. The armature is held normally up by a spring 16. The tripper K is free to move upward on its pivot, and when the shaft returns to normal position the trip K bears upon the top of the pin I, and then when the shipper-rod is pulled by the handle 17 to shift the belt back to the fast pulley the trip-stop K simply drops in front of the pin and holds the shipper-rod until the machine is to be stopped again. The bracket *k* has an arm *k'* alongside the trip K, which sustains the lateral thrust of the pin I' and relieves the pivot of the trip of all strain.

For operating the shipping mechanism by hand it is simply necessary to turn the handle 18 to lift the stop K from in front of the pin I. This action does not affect the automatic mechanism heretofore described, the arm 14 on the shaft being free to move to the right, as in Fig. 2, for the hand operation. When operated by hand, the shaft is returned to normal position by a spring 19, connected to the bracket *k*, it being unnecessary in this instance to overcome the force of the tripper-rod spring 11, as is the case when the electrical devices have been operated.

In order to stop the machine when the fabric is completed, a connection 20 is used between the bracket *k* and a lever L, Fig. 2. This lever has a projection 21 in line with a stud 22 on a pattern-chain, and when said stud acts upon the lever it causes the shaft to be rocked through the connections described, thus releasing the shipper-rod.

The pattern-chain may be operated from the main shaft in any suitable way.

I claim as my invention—

1. In a stop-motion for knitting-machines, the combination of a detector-plate arranged to be operated by a knot on the yarn and a lever to operate said plate when the yarn fails, substantially as described.

2. In a stop-motion for knitting-machines, the combination of a detector-plate, a circuit-closing lever engaged thereby, and the elec-

trical and mechanical connections to the shipper devices, substantially as described.

3. In a stop-motion, the combination of a knot-detector plate, a lever arranged to operate the same when the yarn fails, the circuit-closing lever held by the detector-plate, and the electrical and mechanical connections to the shipper devices, substantially as described.

4. In a stop-motion, the combination of the slotted knot-detector plate, the wires having the eyes *4*, and the intermediate lever arranged to bear upon the thread extending between the eyes and having its short arm beneath the detector-plate, substantially as described.

5. In combination, the detector mechanism, the armature and magnets, the electrical connections, the tripper-bar, the operating means therefor, the holding-lever between the bar and armature, the spring-pressed shipper-rod, and the movable trip-stop in operative connection with the tripper-bar, substantially as described.

6. In combination, the detector mechanism, the armature and magnets, the electrical connections, the tripper-bar, the movable trip-stop in operative connection with the tripper-bar, the shipper-rod held by the trip-stop, the holding-lever arranged to engage the armature, and the pinion-engaging teeth on the tripper-bar, substantially as described.

7. In combination, the shipper-rod with operating means, the trip-stop for holding the same in operating position, the shaft carrying said trip-stop, the tripper-bar arranged to move said shaft, and the detector mechanism with connections to the tripper-bar, substantially as described.

8. In combination, the shipper-rod extending across the machine and carrying a stop I, the shaft carrying a bracket having a trip-stop, the tripper-bar for operating the shaft to lift the trip-stop from engagement with the stop I, and the means for operating the tripper-bar, substantially as described.

9. In combination, the shipper-rod and shaft extending across the machine-frame, the bracket carried by the shaft, having a trip-stop to engage a stop on the shipper-rod, the pattern mechanism, and a connection therefrom to the shaft, substantially as described.

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

FRANK WILCOMB.

Witnesses:

DAVID J. WHITE,  
GEORGE AMBORN, Jr.