

(No Model.)

A. J. HART.

THREAD CONTROLLED STOP MECHANISM FOR SEWING MACHINES.

No. 409,963.

Patented Aug. 27, 1889.

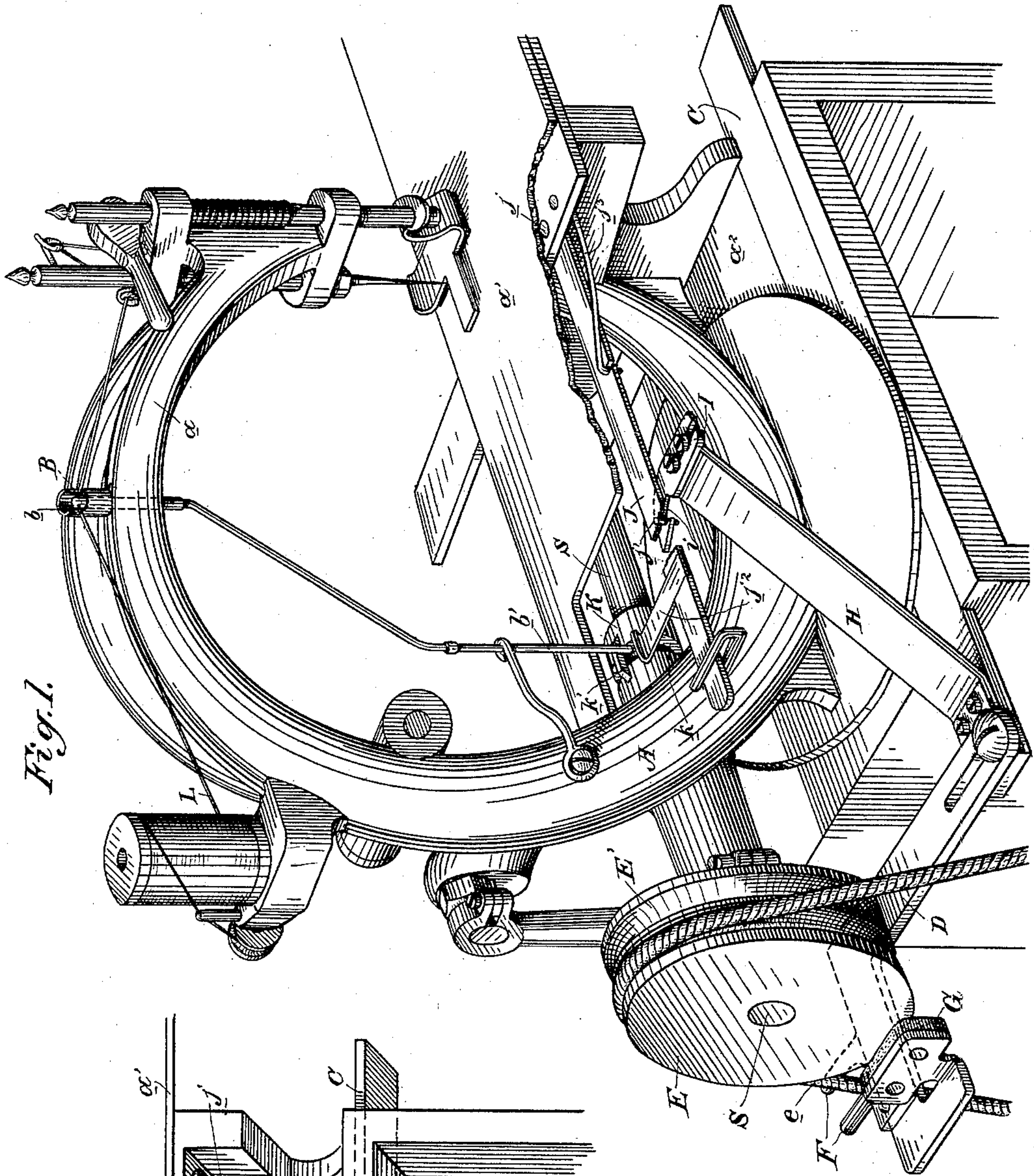


Fig. 1.

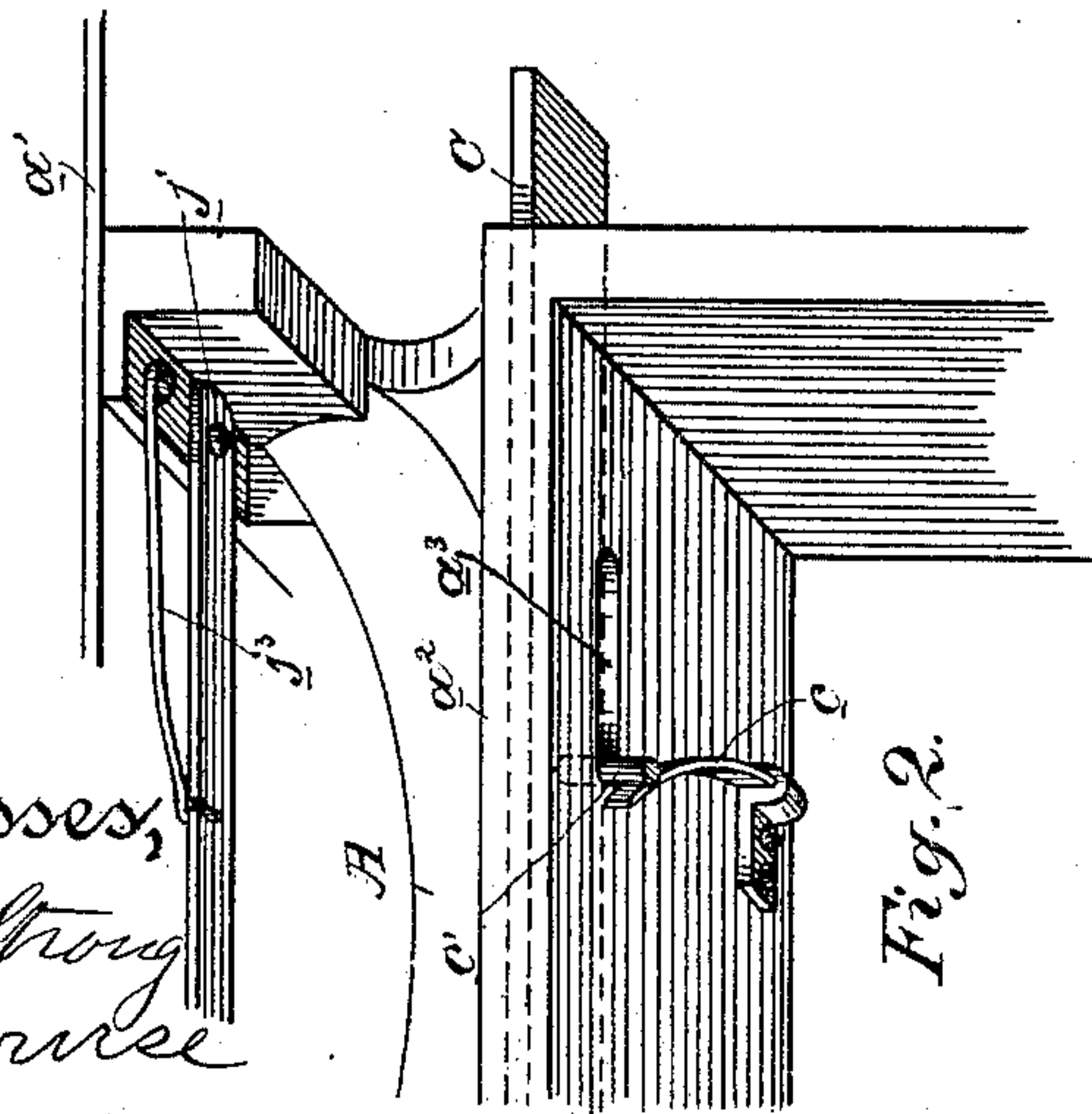


Fig. 2.

Witnesses,
Geo. H. Strong
J. H. Nurse

Inventor
A. J. Hart
By Derrig & Co.
attys

UNITED STATES PATENT OFFICE.

ALBERT J. HART, OF SAN FRANCISCO, CALIFORNIA.

THREAD-CONTROLLED STOP MECHANISM FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 409,963, dated August 27, 1889.

Application filed November 22, 1888. Serial No. 291,594. (No model.)

To all whom it may concern:

Be it known that I, ALBERT J. HART, of the city and county of San Francisco, and State of California, have invented an Improvement in Automatic Stops for Sewing-Machines; and I hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to the class of sewing-machines, and especially to mechanisms in connection therewith for stopping the motion of the machine, and dependent for their operation upon the breaking of the thread, whereby the result is automatically effected.

My invention consists in a movable trip-rod held in one position normally by the thread when taut, and allowed to drop when the thread is broken; a belt-shifting arm directing the power-belt and adapted to throw it from a fast to a loose pulley; a spring-controlled sliding bar carrying the belt-shifting arm, and a locking-lever for holding the sliding bar in position when the machine is in operation, said lever being released by the trip-rod when dropped upon the breaking of the thread; and my invention further consists in connection with the belt-shifting arm of a brake attachment adapted to come into frictional contact with the fast pulley, whereby it checks its momentum instantly, all of which, together with details of construction and arrangement, I shall hereinafter fully describe.

The object of my invention is to provide a simple and effective mechanism for automatically stopping the motion of the sewing-machine upon the breaking of the thread.

Referring to the accompanying drawings, &c., Figure 1 is a perspective view of a sewing-machine, showing the application of my automatic stop. Fig. 2 is a perspective view of a detail, looking up under supporting-plate a^2 and goods-plate a' .

A is the frame of a sewing-machine, having the fixed arm a and the goods-plate a' . In the top of the fixed arm is usually a fixed eye, through which the thread passes to the needle-carrier. The eye is here represented by B, but instead of being fixed it is made movable up and down, being seated in a bearing b , through which the body of the eye passes freely and down through the fixed arm a . Its

lower end is connected or formed with a downwardly-extending trip-rod b' .

In the supporting-plate a^2 of the machine is seated and adapted to slide a bar C, which is controlled by a spring c under the plate, which spring, acting against a downwardly-projecting stud c' on the bar, holds said bar normally backward. The stud c' passes through an elongated slot a^3 in the plate a^2 of the machine, and serves as a stop to limit the motion of the sliding bar. One end of this bar C has connected or formed with it a piece D, which passes along the side of the machine, and is then bent out at right angles, passing under the fast and loose pulleys E and E' on the machine-shaft S. Secured to this piece D is the shifting-arm F, which embraces the driving-belt e of the machine. The end of the piece D is provided with a brake-block G, extending upwardly and adapted to come in contact with the side of the fixed pulley E.

Secured to the sliding bar C, near its end, is an upwardly and backwardly extending arm H, the upper end of which has secured to it the horizontal forwardly-extending catch-bar I, having a beveled hooked head i .

Pivoted under the goods-plate a' of the machine at the point j is a locking-lever J, which is provided with a downwardly-extending pin or stud j' , extending into the path of the head of the catch-bar I. The lever J has also an arm j^2 , which extends forwardly and lies close to the trip-rod b' of the eye B.

Upon the power-shaft S of the machine is a collar or flange K, in which is made a circumferential groove k , which at one portion is traversed by a cross-bar k' , which forms a cam. The lower end of the trip-rod b' normally lies directly above the groove k in the collar K. A spring j^3 acts on the locking-lever J and holds it inwardly, so that its stud or pin j' remains in engagement with the head i of the catch-bar I.

The operation of the mechanism is as follows: While the thread L is unbroken and is therefore taut, it holds the trip-rod b' up by passing through the eye B at its top. The driving-belt e is then on the fast pulley E. The sliding bar C is pushed over against the power of its spring, and is held in that posi-

tion by the engagement of the catch-bar I with the stud or pin j' of the locking-lever J, and in this position the shifting-arm F is forced far enough over to guide and hold the driving-belt on the fast pulley E, while the brake-block G is held away from the side of said pulley. Now, when the thread breaks, thereby relieving the vertically-movable eye B, through which it passes, the trip-rod b' drops down, so that its end falls into the circumferential groove k of the collar K on the driving-shaft S. The cross-cam k' of said groove immediately comes in contact with the end of the trip-rod b' , thereby forcing it back into contact with the arm j^2 of the locking-lever J. This contact forces the locking-lever to turn on its pivot, and thereby to remove its pin or stud j' from engagement with the hooked head i of the catch-bar I, and the catch-bar being thus relieved the spring of the sliding bar C at once throws said bar back, carrying with it the bent piece D, connected with its end. This movement causes the shifting-arm F to engage the driving-belt e and by its movement to throw said belt over onto the loose pulley E' on the driving-shaft, and at the same time the brake-block G, coming in contact with the side of the fast pulley E, thereby instantly checks its momentum and stops the machine. When the thread is again connected and taut, so as to hold rod b' up, the sliding bar C is pushed forward again to shift the belt to the fast pulley and remove the brake-block therefrom, and said bar is held in this position by the locking-lever J.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. An automatic stop for sewing-machines, consisting of the combination of a horizontally-moving shifter-arm for transferring the driving-belt from a fast to a loose pulley of the machine, a movable gravity-eye through which the thread passes, whereby said eye is supported while the thread is taut and drops when the thread breaks, and connecting mechanism between said eye and the belt-shifter arm, whereby the latter is operated to transfer the belt to the loose pulley when the former is dropped by the breaking of the thread, said mechanism comprising a spring-controlled horizontally-moving bar and a spring-controlled locking-lever engaged thereby, substantially as described.

2. An automatic stop for sewing-machines, consisting of the combination of a shifter-arm for transferring the driving-belt from a fast to a loose pulley of the machine, and a brake-block adapted to be thrown into frictional contact with the fast pulley for checking its momentum when the belt is transferred, a gravity-eye through which the thread passes to support it when the thread is taut and to drop it when the thread breaks, and connecting mechanism between said eye

and the belt-shifter arm and brake, said mechanism comprising a sliding bar connected with the shifter-arm, and a spring-controlled locking-bar engaged by said sliding bar and gravity-eye, whereby, when the thread breaks and the eye drops by gravity, the shifter-arm is operated to throw the belt onto the loose pulley, and the brake is thrown into frictional contact with the fast pulley, substantially as described.

3. In a stop mechanism for sewing-machines, the shifting-arm embracing the belt and adapted to throw it from a fast to a loose pulley of the machine, and a vertically-movable gravity-eye through which the thread passes, thereby supporting it, said eye having a downwardly-extending trip-rod, in combination with a spring-controlled sliding bar C, with which the shifting-arm is connected, a pivoted spring-controlled locking-lever engaging the sliding bar for holding the same in one position to cause the shifting-arm to direct the belt onto the fast pulley, and a cam on the power-shaft of the machine acting on the trip-rod when dropped by the breaking of the thread to force said rod into contact with and trip the locking-lever, substantially as described.

4. In a stop mechanism for sewing-machines, the shifting-arm embracing the driving-belt and adapted to transfer it from a fast to a loose pulley of the machine, and a vertically-movable gravity-eye through which the thread passes, whereby it is supported when the thread is taut and allowed to drop when the thread is broken, said eye having a downwardly-extending trip-rod b' , in combination with the spring-actuated sliding bar C, carrying the shifting-arm, the catch-bar carried by the sliding bar C, the pivoted spring-controlled locking-lever J, having a pin or stud engaging the catch-bar, and an inwardly-extending arm j^2 , and the grooved collar on the drive-shaft of the machine, into which the end of the trip-rod b' drops when the thread is broken, and the cross-cam k' of said collar for forcing the trip-rod against the arm j^2 to trip the locking-lever and release the sliding bar, substantially as described.

5. In a stop mechanism for sewing-machines, a shifting-arm engaging the driving-belt for transferring it from a fast to a loose pulley of the machine, and a brake-block G, adapted to come in contact with the fast pulley when the belt is transferred, in combination with a vertically-movable gravity-eye through which the thread passes, whereby said eye is supported when the thread is taut and is dropped when the thread is broken, the trip-rod b' of said eye, the rotating cam k' on the driving-shaft of the machine, adapted to come in contact with the end of the trip-rod and to force it over, the spring-controlled sliding bar C, carrying shifting-

arm and the brake, the catch-bar I, carried
by said sliding bar, the pivoted spring-con-
trolled locking-lever J, having a pin or stud
engaging the catch-bar, and the arm j^2 , with
5 which the end of the trip-rod b' is adapted to
come in contact, whereby the locking-lever is
tripped to release the sliding bar C, substan-
tially as described.

In witness whereof I have hereunto set my
hand.

ALBERT J. HART.

Witnesses:

JAS. TOBIN,
J. H. BLOOD.