

No. 638,182.

Patented Nov. 28, 1899.

F. T. LEILICH.
STOP MECHANISM.

(Application filed Mar. 11, 1899.)

(No Model.)

Fig. 1.

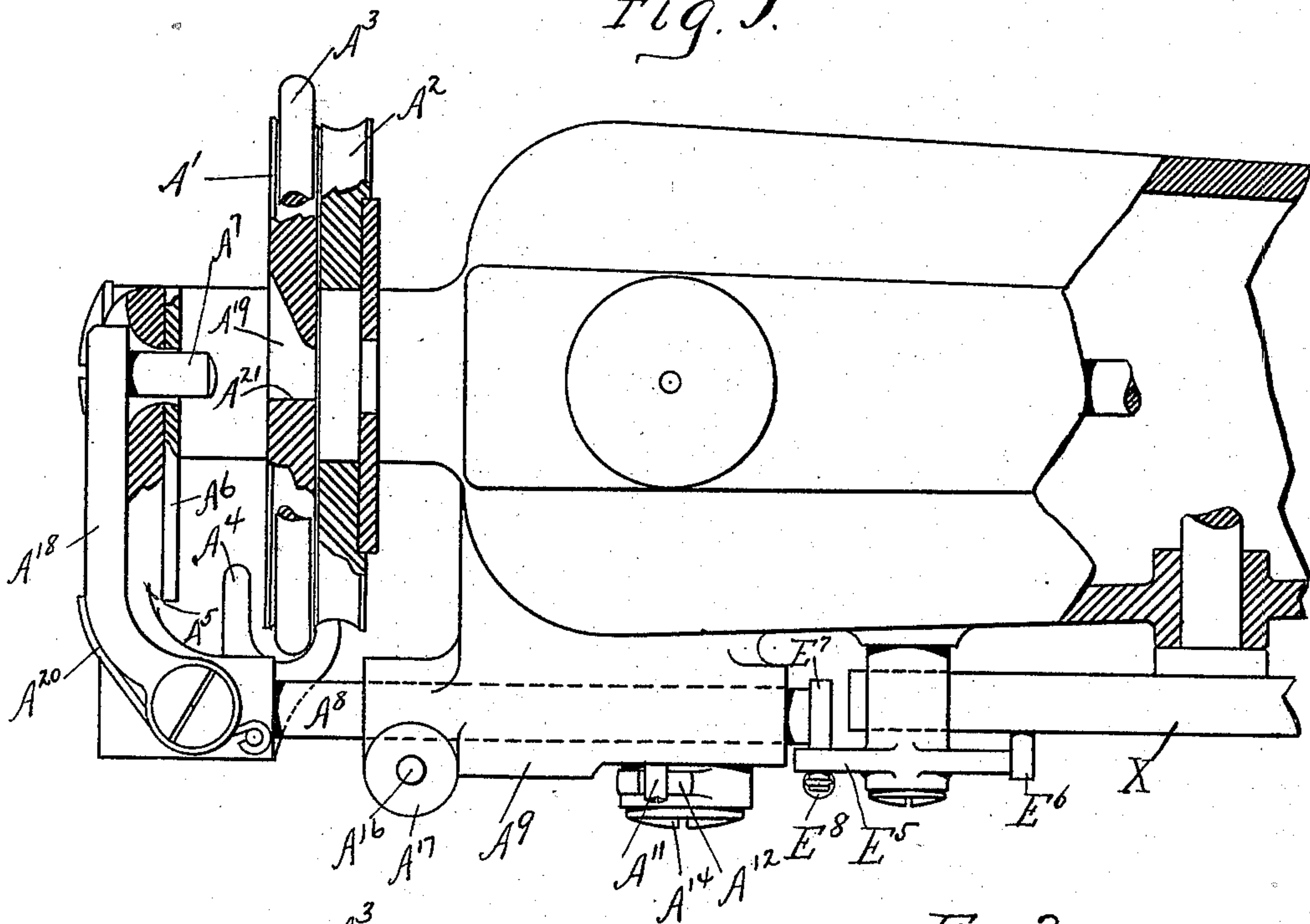
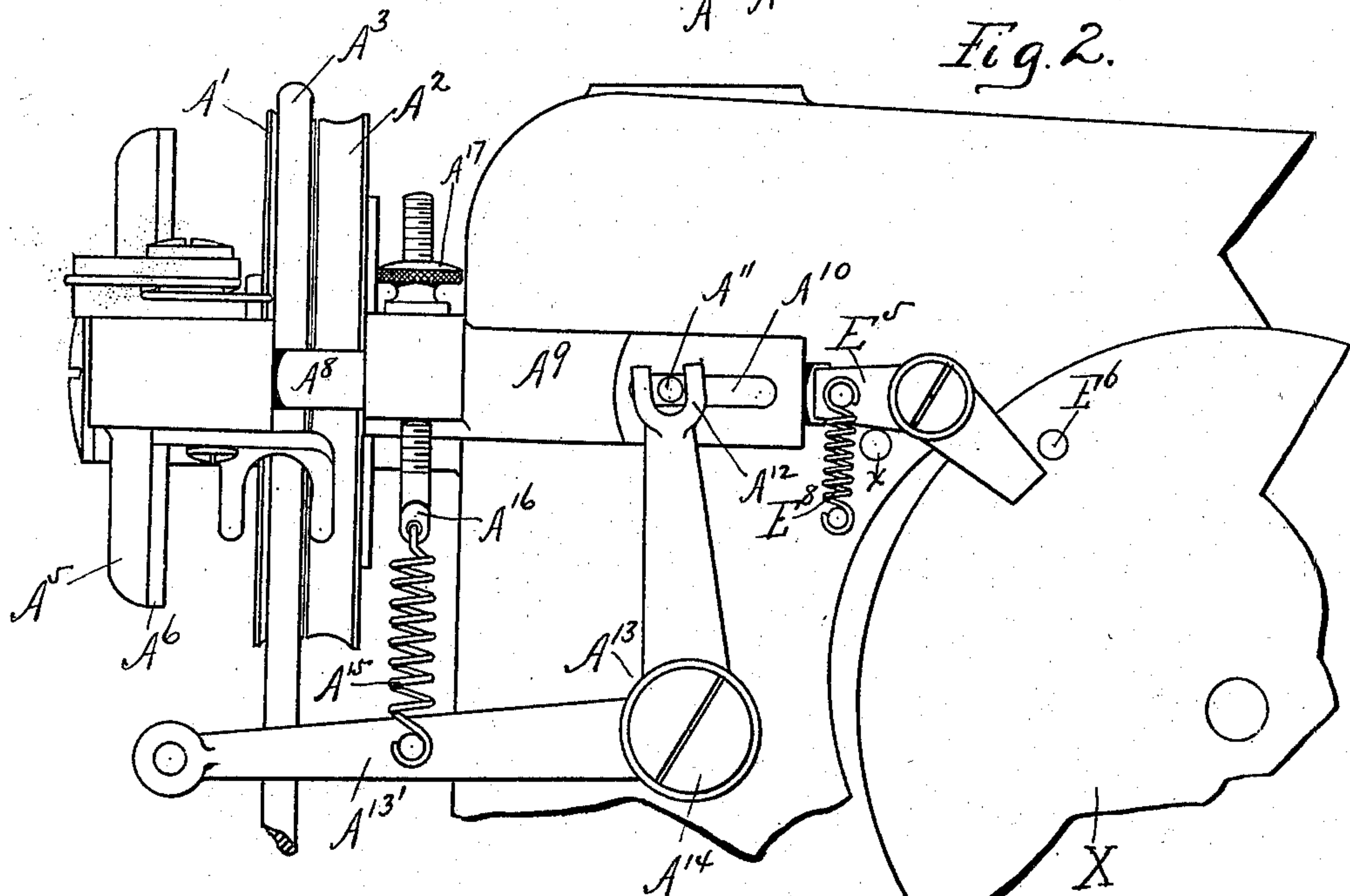


Fig. 2.



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UNITED STATES PATENT OFFICE.

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STOP MECHANISM.

SPECIFICATION forming part of Letters Patent No. 638,182, dated November 28, 1899.

Original application filed February 17, 1898, Serial No. 670,679. Divided and this application filed March 11, 1899. Serial No. 708,714. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS T. LEILICH, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented certain new and useful Improvements in Stop Mechanisms; and I do hereby declare the following to be a full, clear, and exact description of said invention, such as will enable others skilled in the art to which it most nearly appertains to make, use, and practice the same.

My invention relates to improvements in stop mechanisms for machinery, my object being to provide a structure by which the moving parts are stopped quickly, but without shock.

To this end, and also to improve generally upon devices of the nature indicated, my invention consists in the various matters hereinafter described and claimed.

The present device (although in no wise limited to such use) is particularly applicable to sewing-machines and in the accompanying drawings is illustrated as so applied.

In the drawings, Figure 1 is a top plan view of a portion of a sewing-machine with my present invention applied, and Fig. 2 is a side elevation of the same.

Passing now to a detail description, the driving mechanism is provided with the fixed and loose pulleys A' A², and over the pulleys is carried the driving-belt A³, which is controlled by the shifting yoke A⁴. The yoke A⁴ is extended from the brake-shoe A⁵. The brake-shoe A⁵ is adapted to fit over the hub of the fixed pulley and rear extension of the driving-shaft and is provided with a friction-surface A⁶, abutting the face of the fixed pulley. This friction-surface in the present construction is formed of leather. Any other non-metallic material better adapted to the purpose could be used without altering the spirit of the invention. The object of the friction-surface is to strike upon the pulley and by the friction partly arrest the pulley and the driving-shaft upon which it is fixed before it is engaged by the pin A⁷.

The brake-shoe is provided with the guide-rod A⁸, which is set in an extension A⁹, set out from the head of the machine. The extension is provided with an elongated slot A¹⁰,

through which is extended the pin A¹¹ set out from the side of the guide-rod A⁸. Engaging the pin A¹¹ by means of a yoke A¹² is the bell-crank A¹³. This bell-crank A¹³ is pivotally mounted upon the frame of the machine at A¹⁴. It is provided with a long arm A^{13'}, to which is attached one end of the spiral spring A¹⁵, while the free end of said long arm is adapted to be connected to a suitable mechanism for depressing it. The upper end of the spring A¹⁵ is attached to a hook A¹⁶, which is extended through a perpendicular perforation in the bracket A⁹. The hook A¹⁶ is provided with a threaded shank or body which is engaged by the set-nut A¹⁷. It is by means of the set-nut A¹⁷ and the threaded shank of the hook A¹⁶ that the tension of the spring A¹⁵ is varied. By means of this arrangement the normal position of the stopping mechanism is that the spring A¹⁵ raises the long arm of the lever A¹³ and throws the yoke-arm of the same, carrying the pin A¹¹ and the rod A¹⁰, forward, and the latter being rigidly attached to the brake-shoe sets the surface A⁶ against the surface of the pulley A' with a pressure dependent upon the strength of the spring A¹⁵.

As before stated, the shifting yoke controlling the belt A³ is attached to the brake-shoe, and as the shoe is drawn against the fixed pulley A' the belt is moved from it to the loose pulley A².

While the brake-shoe would eventually stop the operation of the mechanism, it would not do so accurately enough to serve its purpose in certain classes of machines, as in sewing-machines. It is to arrest the action of the driving mechanism definitively at a certain point that I have provided the pin A⁷, which is held in the end of the arm A¹⁸, pivotally mounted on the frame of the brake-shoe. The pin is extended through the perforation provided for it in the brake-shoe A⁵. The socket A¹⁹ is formed in the fixed pulley A', in which it is designed the pin A⁷ will fall. To make the entrance of the pin striking the socket more certain, the same is provided with an inclined surface formed in the face of the pulley A', leading into the socket. The arm A¹⁸ is held against the back of the shoe A⁵ by means of a spring A²⁰. In its operation the shoe A⁵ is set against the pulley A', and the

end of the pin A⁷ strikes upon the surface of the pulley in advance of the socket A¹⁹ and in the path of the same. The friction-surface A⁶ of the brake considerably retards the motion of the pulley and driving-shaft before the socket A¹⁹ advances to the pin A⁷. In doing so the pin runs down the incline and when opposite the socket enters the same by reason of the pressure put upon the arm by the spiral spring A²⁰, said pin thus engaging the shoulder A²¹. Thus is the driving mechanism rapidly and accurately arrested in an ascertained and desired position. By reason of the arrangement, however, by which the driving mechanism is partially and gradually arrested by a friction-brake before being finally stopped by the positive and rigid engaging member I have avoided unnecessary shocks or jars to the driving mechanism.

In certain classes of machines (as in button-sewing machines) it is desirable to cause the stop mechanism to act automatically and at predetermined intervals, and a machine of this type is here illustrated. Upon a disk X, suitably geared to the driving-shaft, is a pin E⁶. The office of said pin is to trip a trigger E⁵, interposed between the controlling mechanism—i. e., the disk and its pin—and the stopping mechanism. The trigger E⁵ is pivotally mounted upon the frame of the machine and is provided, as shown, with two arms extending upon each side of the pivotal center. One arm rests within the path of the pin E⁶ upon the disk and is moved by said pin when the disk is rotated. The other arm carries a pin E⁷, which rests in the path of the end of the rod A⁸ of the stopping mechanism, said pin being normally held in this position against a suitable stop α by means of the spring E⁸. Normally the parts are, as illustrated, with the stop mechanism, held out of operative position. When, however, the disk X, through its pin E⁶, trips the trigger E⁵, the stop mechanism acts and the machine is thrown out of action, to remain so until the operator depresses the long arm A^{13'} of the bell-crank lever A¹³, thus positively throwing the stop mechanism into inoperative position and permitting the trigger E⁵ to return to normal position, and thus hold the stop mechanism out of action.

My present application is a division of my pending application filed February 17, 1898, Serial No. 670,679.

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

1. The combination in a mechanism of the nature indicated of a driving mechanism having a fixed driving-pulley provided with a shoulder; a stopping mechanism having a non-metallic friction-faced shoe adapted to be

set against the said pulley; a movable arm to engage the said shoulder subsequent to the setting of the said shoe to definitively arrest the said pulley and driving mechanism; a spring adapted to set the said shoe and arm against the said pulley; a device to hold the said shoe and arm away from the said pulley during the operation of the driving mechanism; and suitable connections between the said driving mechanism and said device to release the latter automatically to permit the said spring to set the said shoe and arm, substantially as described.

2. The combination in a mechanism of the nature indicated of a driving mechanism having a fixed pulley, the face of said pulley being provided with a shoulder; a brake-shoe having a non-metallic face mounted in guides perpendicular to the face of the driving-pulley and adapted to be set against the said pulley; a stopping-arm to engage the said shoulder subsequent to the setting of the said shoe to definitively arrest the said pulley; a spring adapted to move the said shoe and arm against the said pulley; a device to prevent the said spring from setting the said shoe and stop-arm; and suitable connecting mechanism between the driving mechanism and the said device to release the latter automatically at a predetermined time in the operation of the driving mechanism to permit the spring to set the shoe and arm, substantially as described.

3. The combination in a mechanism of the nature indicated of a driving mechanism having a fixed driving-pulley provided with a recess formed in its face; a brake-shoe with a non-metallic friction-face adapted to be set against the said pulley and mounted in guides perpendicular to the face of the driving-pulley; a spring-actuated arm mounted upon the said shoe and adapted to strike on the face of the said pulley with the said shoe to engage the said recess subsequent to the setting of the said shoe; a guide-rod connected to the said shoe and mounted in the said guides and extending into the path of a setting device; a spring adapted to draw the said shoe and guide-rod toward the said setting device and said pulley; and a connecting mechanism between the said setting device and the driving mechanism to release the said guide-rod at a predetermined time in the operation of the driving mechanism, substantially as described.

In testimony whereof I have hereunto set my hand this 2d day of March, 1899.

FRANCIS T. LEILICH.

Witnesses:

E. F. MURDOCK,
BALDWIN VALE.