

(No Model.)

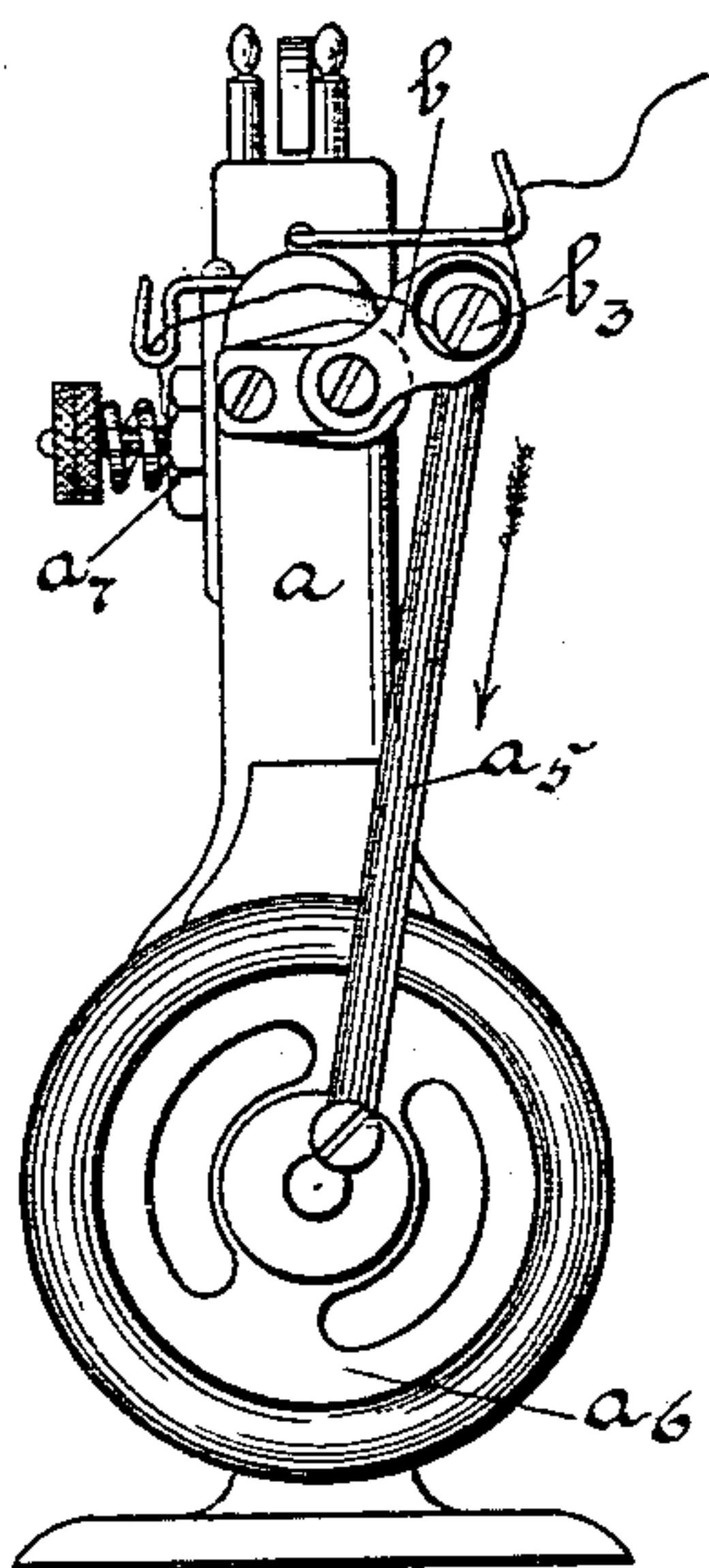
J. H. TROWBRIDGE.

THREAD PULL-OFF DEVICE FOR SEWING MACHINES.

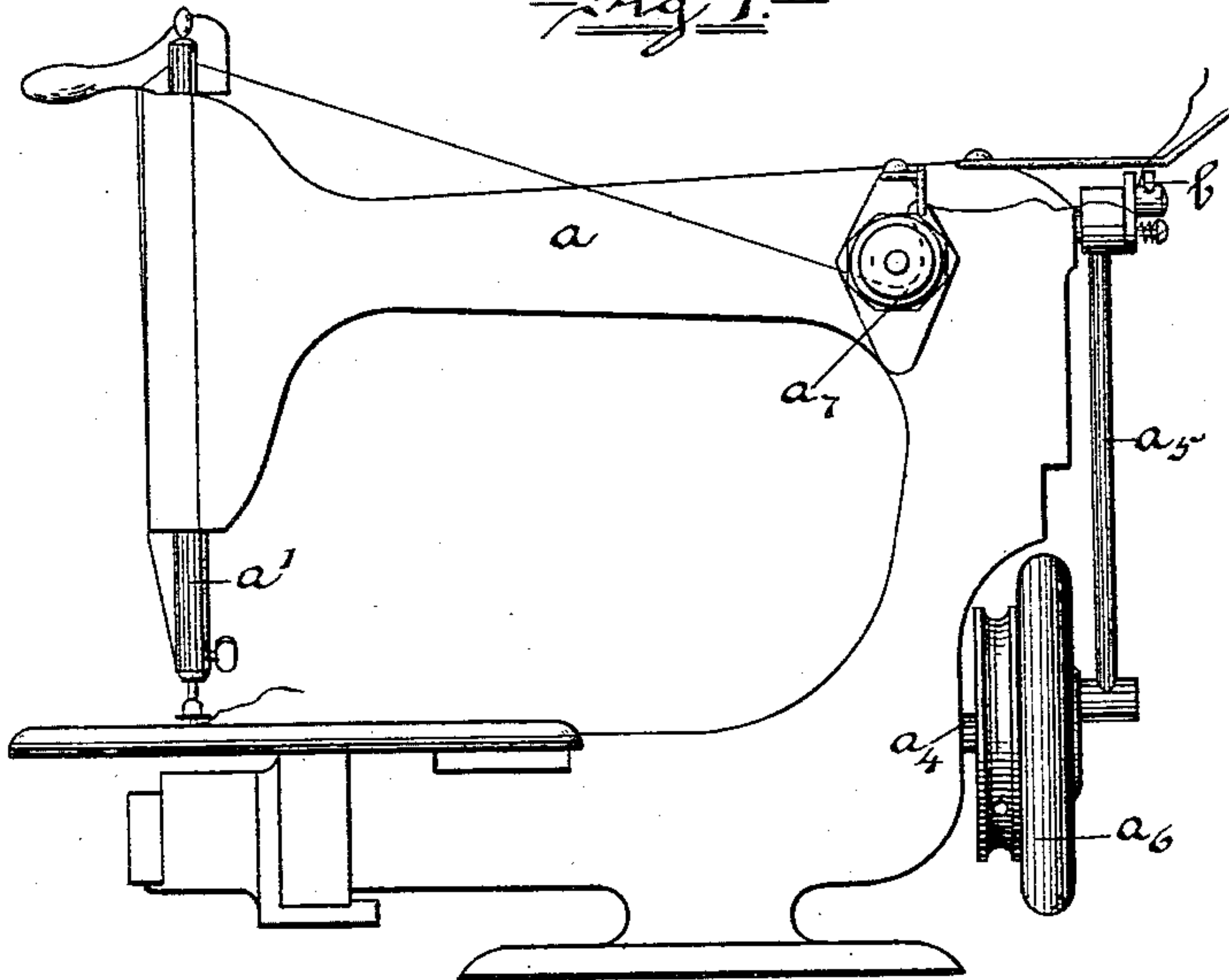
No. 557,730.

Patented Apr. 7, 1896.

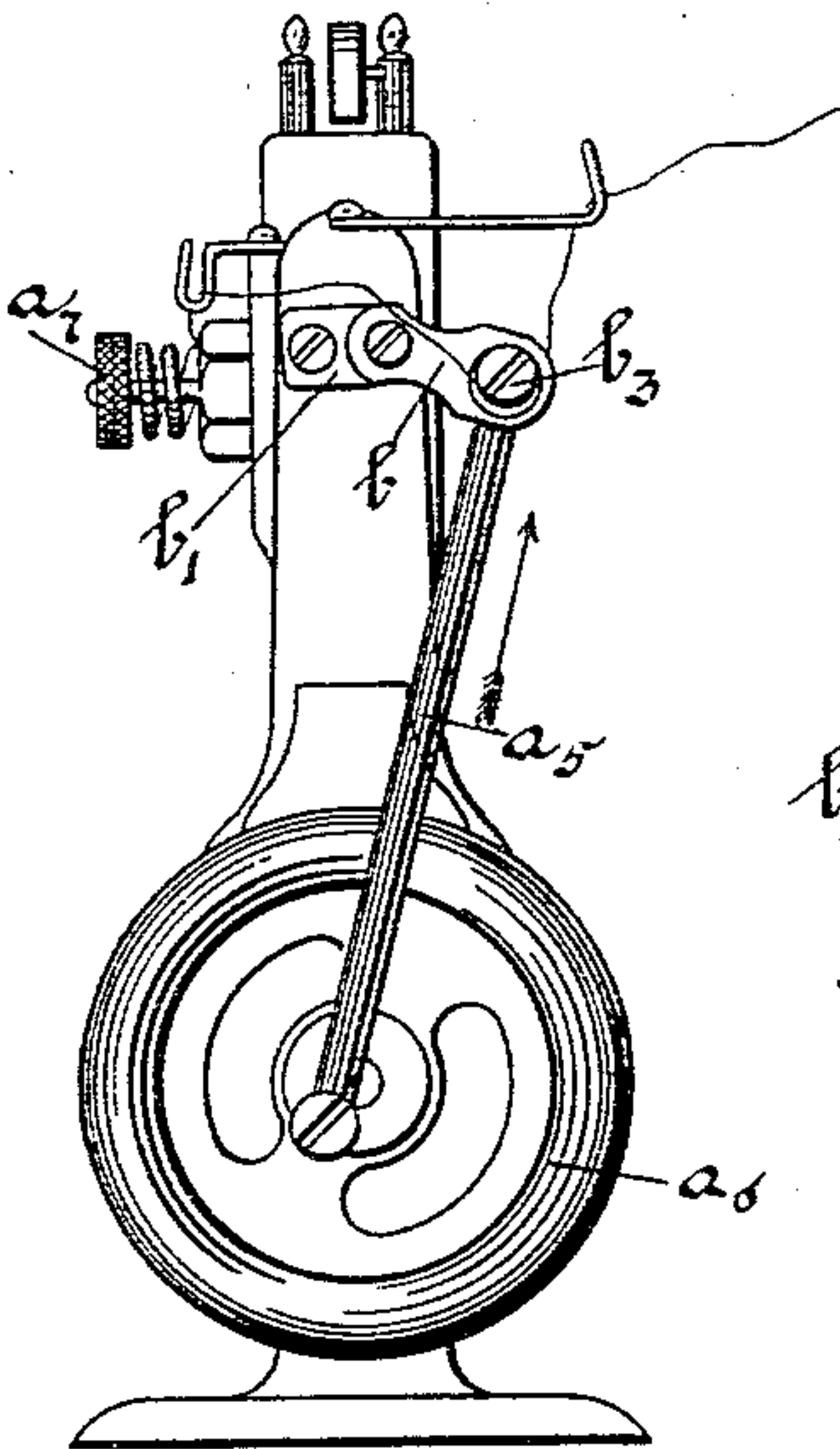
*Fig 2.*



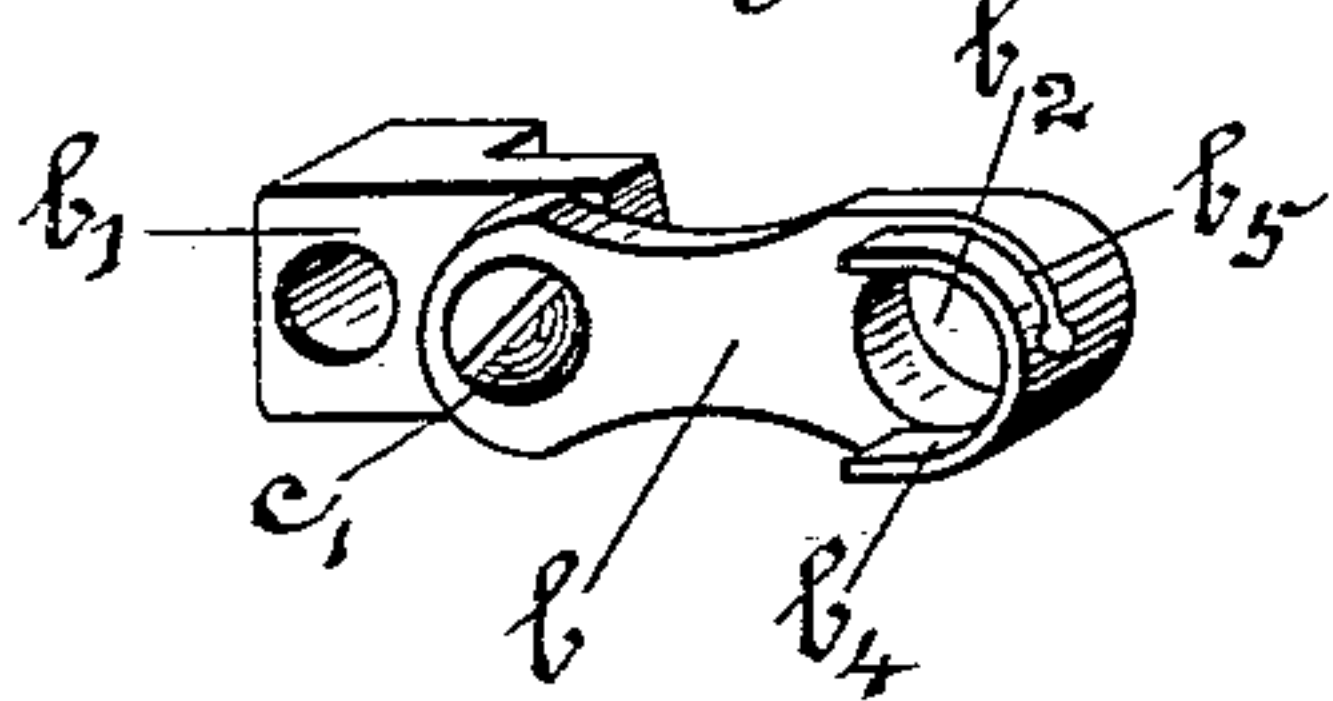
*Fig 1.*



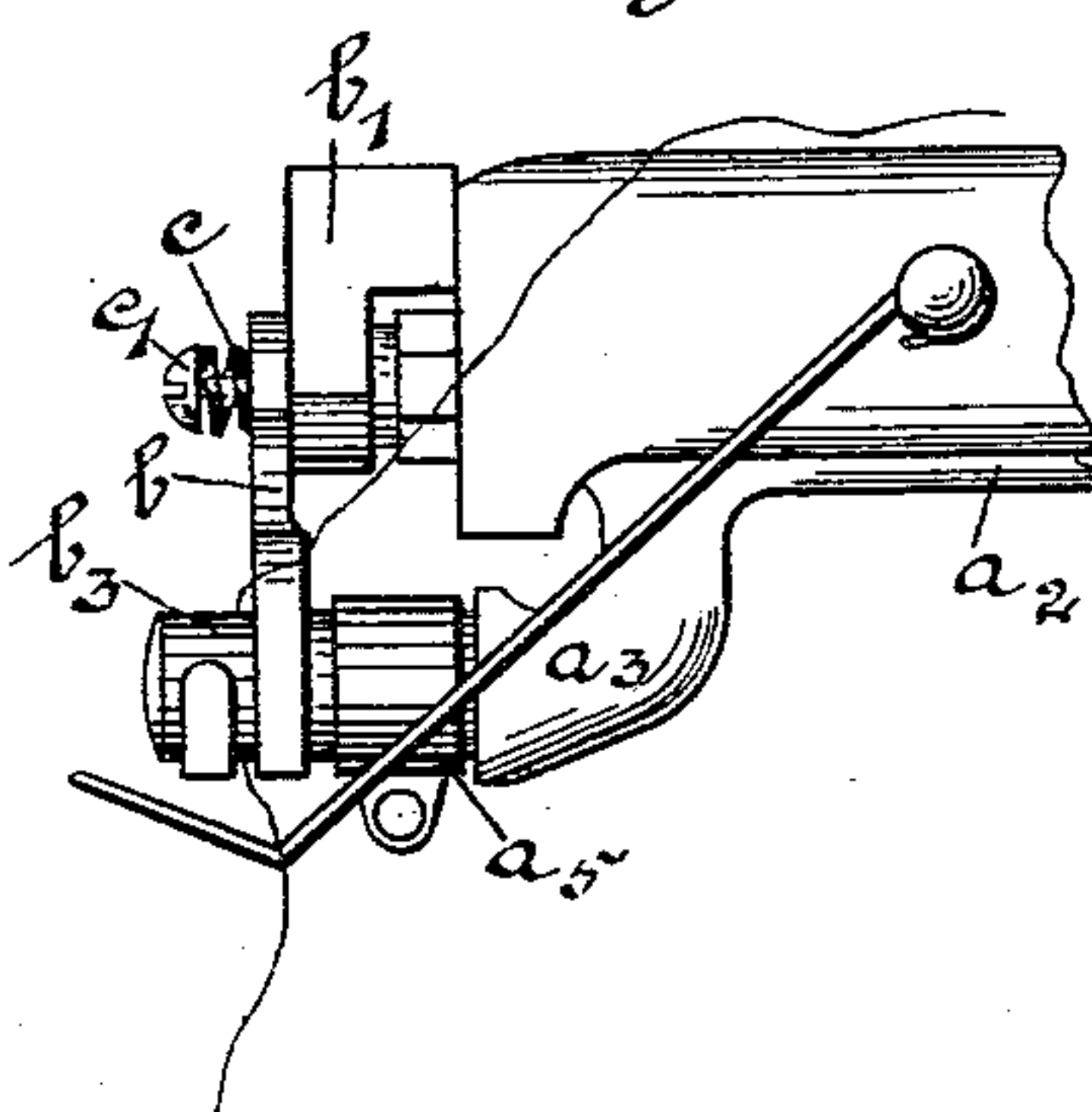
*Fig 3.*



*Fig 5.*



*Fig 4.*



*Witnesses*

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*Aug M. Prescott*



# UNITED STATES PATENT OFFICE.

JOHN H. TROWBRIDGE, OF NEWARK, NEW JERSEY.

## THREAD-PULL-OFF DEVICE FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 557,730, dated April 7, 1896.

Application filed November 23, 1895. Serial No. 569,919. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN H. TROWBRIDGE, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Thread-Pull-Off Devices for Sewing-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, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

My invention has for its object to provide a device or means for automatically drawing or taking the thread from the spool or other thread supply as it is required during the operation of sewing in a manner whereby the thread is always loose or slack at a point between such spool and the tension device in order to relieve all undue strain or tension on the thread except such as is produced by the tension, and thus secure an absolutely accurate and uniform tension on the thread to insure perfect stitching. This object I secure by means of the construction and combination of parts hereinafter set forth in detail, and pointed out in the claim.

Referring to the accompanying drawings, Figure 1 represents a side elevation of a machine embodying my invention. Figs. 2 and 3 represent end views of the same, showing my improved thread-controller at the beginning of its down and upstrokes, respectively. Fig. 4 represents a plan view of a portion of the end of the machine-arm and the thread-controller. Fig. 5 represents an enlarged detail view of one of the parts of the thread-controller.

To explain in detail, *a* represents the arm of the machine; *a'*, the needle-bar; *a<sup>2</sup>*, the upper driving-shaft, provided with the arm *a<sup>3</sup>*; *a<sup>4</sup>*, the lower driving-shaft; *a<sup>5</sup>*, the rod connecting said lower shaft with the arm of the upper shaft; *a<sup>6</sup>*, the pulley-wheel on said lower shaft, and *a<sup>7</sup>* the tension device.

The above parts are of usual construction and not of my present invention.

According to my invention, I provide a device or arm *b*, (shown in detail in Fig. 5,) which is pivoted at one end upon a supporting-block *b'*, which is adapted to be secured upon the

arm of the machine at a point adjacent to the arm of the upper driving-shaft, and at its opposite end the said arm is provided with an opening *b<sup>2</sup>* therein, which is adapted to receive an end or extension *b<sup>3</sup>* of the said arm, as clearly shown in Figs. 2, 3, and 4, said opening being of somewhat greater diameter than that of the connecting rocker-arm in order to allow more or less loose play between the same for the purpose to be hereinafter set forth. This free end of the arm *b* is provided with a laterally-projecting flange or extension *b<sup>4</sup>*, which partially embraces the arm *b<sup>3</sup>* and is adapted to engage with the latter at certain intervals to impinge and draw the thread which is guided between said parts from the spool through a thread-slit *b<sup>5</sup>* in the flange *b<sup>4</sup>*, as clearly shown in the drawings.

A friction-spring *c*, which is supported in the instance shown upon the shank of an adjusting-screw *c'*, acts upon or against the arm *b* with sufficient pressure to hold it from movement except as it is moved by the arm *b<sup>3</sup>*, in order that the engaging end of the latter at the beginning of its downstroke may contact with the flange *b<sup>4</sup>*, as clearly shown in Fig. 2, and impinge the thread to draw the same from the spool and feed or supply it to the tension. The thread is thus drawn from the spool at the proper time as it is being taken up in the goods. At the upward stroke of the arm *b<sup>3</sup>* it engages with the upper side of the opening in the arm *b*, as shown in Fig. 3, and releases the thread to allow it to pass freely between the parts during their upward movement. By means of this described construction and arrangement of parts the thread is drawn from the spool at each downward stroke of the arm *b<sup>3</sup>* in sufficient quantities to insure a continued slackness of the same at a point between the spool and the tension device in order that the tension on the thread may be absolutely regulated by said tension device.

The degree of pressure between the thread-engaging surfaces of the arm *b<sup>3</sup>* and the arm *b* may be regulated to cause the same to impinge the thread with more or less force, as may be required to draw the thread, by adjusting the tension of the friction-spring *c* upon said arm *b* by means of its supporting-screw, as will be readily understood.

Having thus described and illustrated my

invention as applied to sewing-machines of this class, it will be obvious that the same may be otherwise arranged and modified without departing from the spirit of my invention, for

5 What I then claim, and desire to secure by Letters Patent of the United States, is—

10 In a sewing-machine of the character set forth, an arm pivoted on a block, having interposed between the pivot-head and said arm a spring or any elastic material so that the arm and the block may not bind too tightly, said arm furnished with a hole, a pin loosely fitting said hole and projecting from and form-

ing part of the arm of the upper driving-shaft, said arm also having a laterally-projecting 15 flange with a slit through which thread passes, in combination with the connecting-rod and the vibrating arm of the upper driving-shaft, for the purposes as set forth.

In testimony that I claim the foregoing I 20 have hereunto set my hand this 16th day of November, 1895.

JOHN H. TROWBRIDGE.

Witnesses:

AXEL BEEKEN,

AUGUST M. TRESCHOW.