

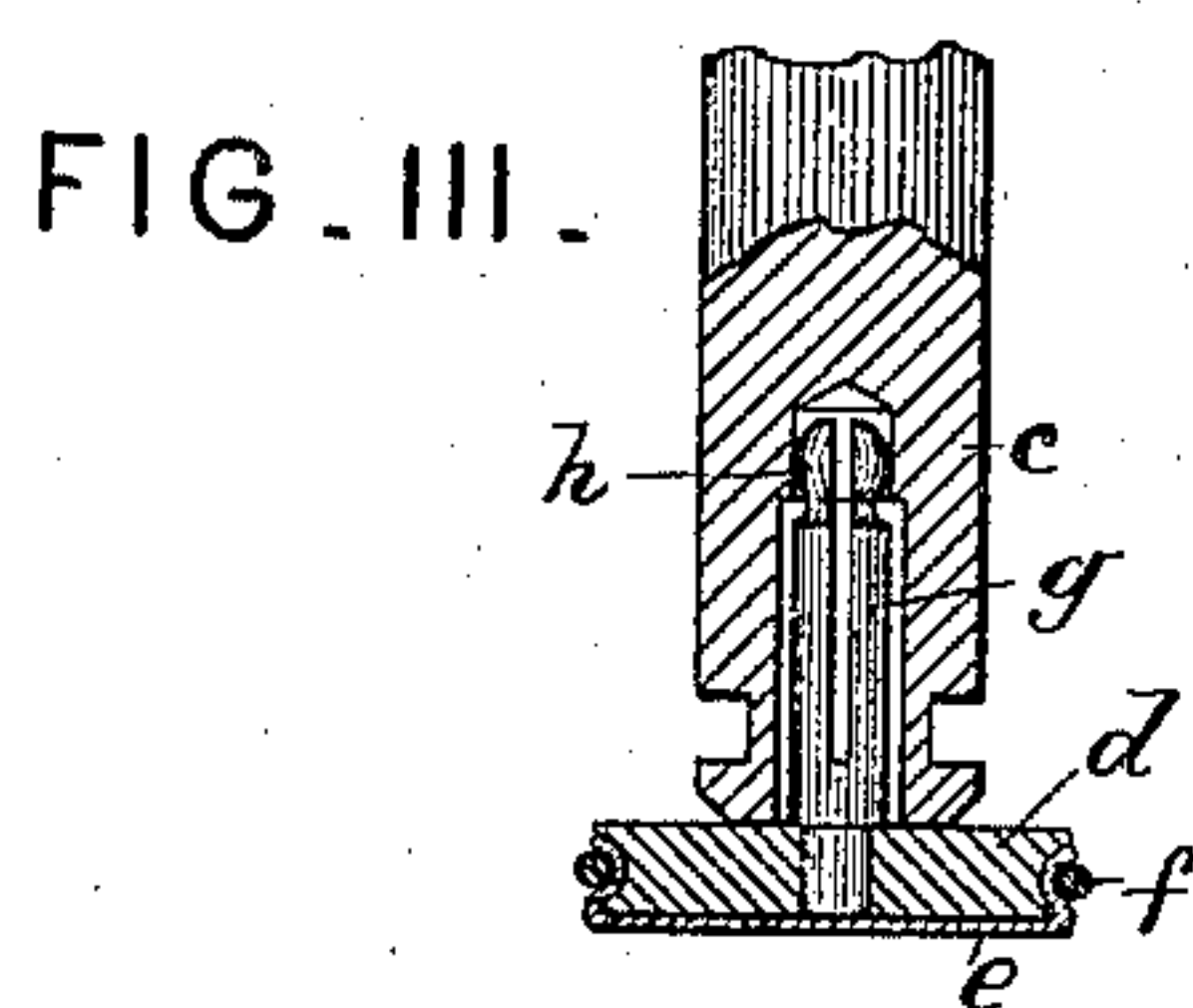
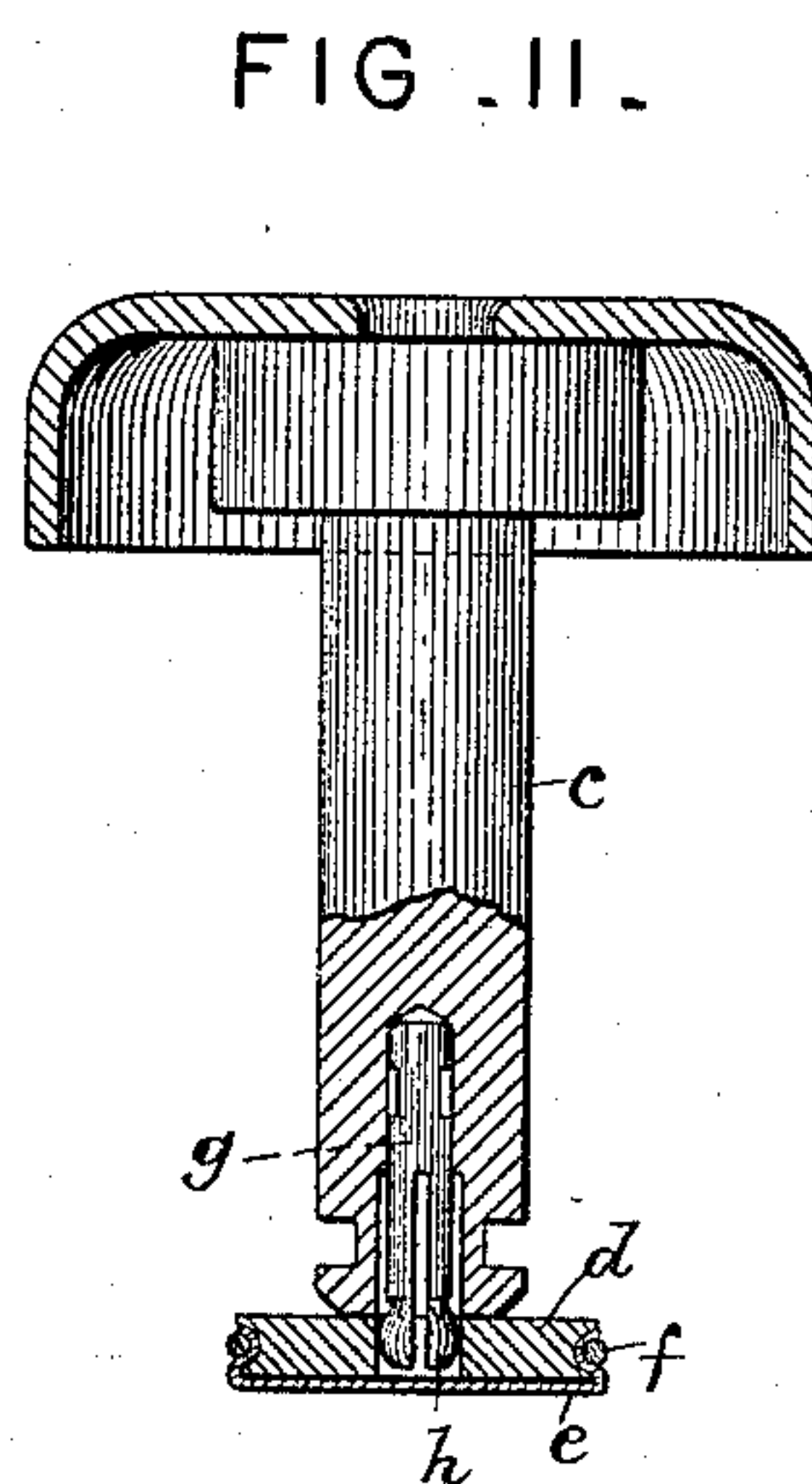
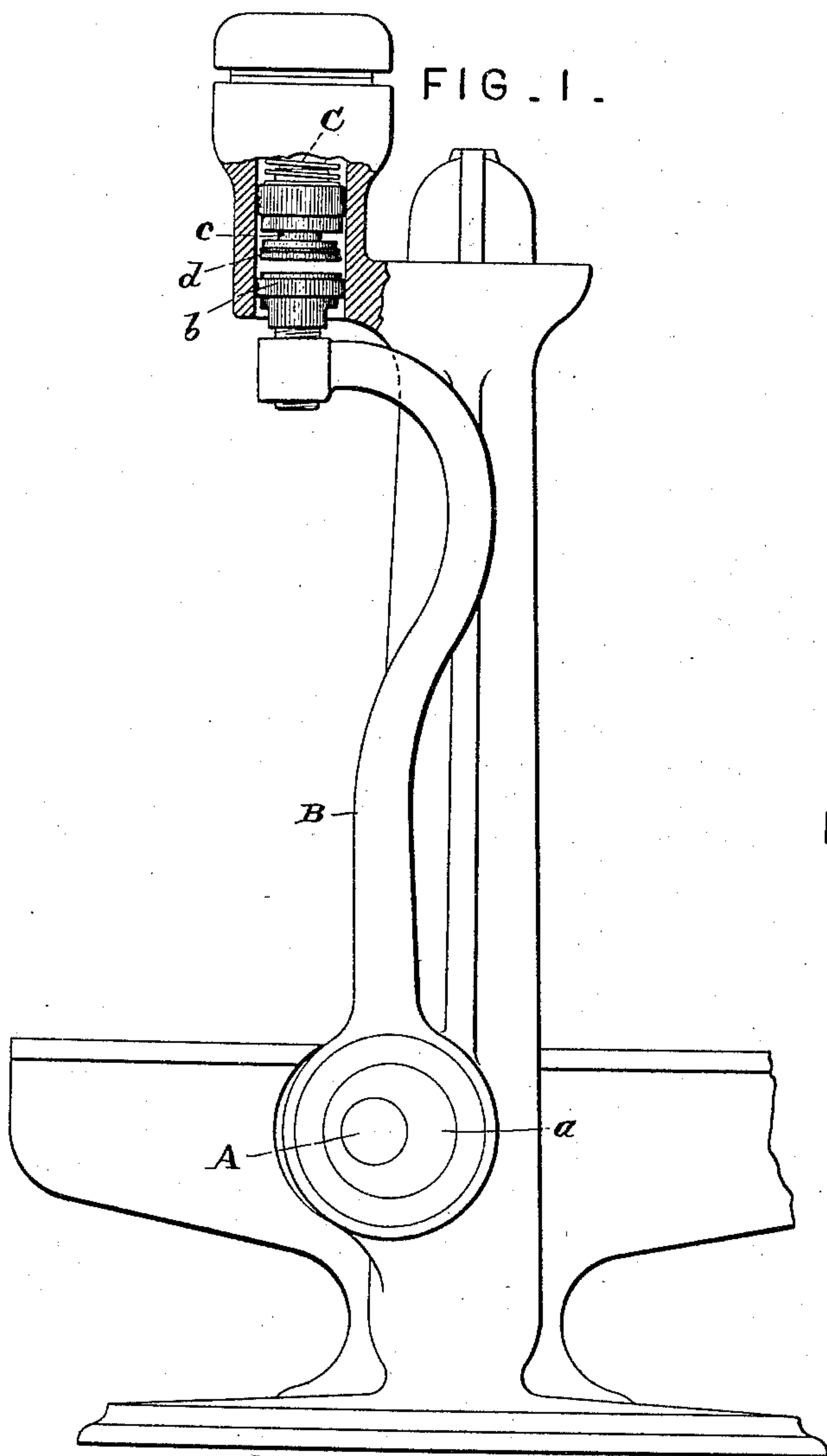
(No Model.)

J. S. GORTON.

AUTOMATIC TENSION APPARATUS FOR SEWING MACHINES.

No. 397,640.

Patented Feb. 12, 1889.



Attest:
Geo. T. Smallwood.
Philips & Harris

Inventor:
James S. Gorton by
J. F. Pollock
his attorney.

UNITED STATES PATENT OFFICE.

JAMES S. GORTON, OF NEW YORK, N. Y., ASSIGNOR TO THE WILLCOX & GIBBS SEWING MACHINE COMPANY, OF SAME PLACE.

AUTOMATIC TENSION APPARATUS FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 397,640, dated February 12, 1889.

Application filed November 20, 1888. Serial No. 291,326. (No model.)

To all whom it may concern:

Be it known that I, JAMES S. GORTON, of New York city, in the county and State of New York, have invented a new and useful
5 Improvement in Automatic Tension Apparatus, which improvement is fully set forth in the following specification.

This invention has reference to automatic tension apparatus, and particularly to the
10 automatic tension in common use upon the Willcox & Gibbs single-thread chain-stitch machines.

In tension apparatus of this character the tension-stud is raised intermittently by the
15 action of a flat-headed screw in the end of a connection-rod reciprocated by an eccentric on the main shaft. To prevent the noise that would result from the rapid strokes of this screw against the end of the tension-stud, a
20 washer having one surface covered with cloth has been interposed between these two surfaces. This washer, which is termed the "thrust-washer," is made to fit closely in the hole of the frame in which the tension-stud
25 works, and the friction of its cloth-covered edge against the sides of the hole has been relied upon to keep it from falling away from the stud when the tension-rod descended. It has been found that by constant use the cloth
30 edge becomes worn and the friction is insufficient to keep the washer from falling away from the end of the tension-stud. When this occurs the rise of the tension-rod causes the metallic face of the washer to strike against
35 the tension-stud, thus producing the noise designed to be prevented by the use of the washer.

According to the present invention this objection is avoided by suspending the thrust-
40 washer from the tension-stud by means of a friction-spring connection, which will prevent the washer's falling away from the stud, while at the same time allowing it freedom for slight oscillation on the end of said stud,
45 which is made necessary by the movement of the tension-rod around the shaft under the action of the eccentric. This friction-spring connection may be effected by means of a pin having a split ball end, and the pin may be
50 attached rigidly to the tension-stud and have

its ball end sprung into a hole in the washer, or be attached to the latter and have its split ball end expand in a hole in the tension-stud.

In the accompanying drawings, Figure I is a rear end elevation, partly in section; Fig. II, 55 an enlarged sectional view of the tension-stud and thrust-washer, and Fig. III a similar view illustrating another way of carrying the invention into effect.

The tension apparatus illustrated in the 60 drawings is in general construction and mode of operation such as described in Letters Patent of Willcox and Carlton, No. 116,521, issued June 27, 1871.

A represents the main shaft; *a*, the tension- 65 eccentric; B, the tension-rod; *b*, the flat-headed screw for actuating the tension-stud *c*; C, the spring for returning the tension-stud, and *d* the thrust-washer.

The thrust-washer *d* is covered on its lower 70 face by a piece, *e*, of cloth or sound-deadening material, held in place by a binding-wire, *f*, which lies in the grooved edge of the washer. The washer is held in position against the lower end of tension-stud *c* by means of the 75 split-ball-ended friction-pin *g*. As shown in Fig. II, pin *g* is inserted and held securely in a hole in stud *c*, the hole being slightly enlarged at its lower portion to permit the expansion of the ball end, *h*, of the pin, which 80 is sprung into the hole bored centrally in the thrust-washer *d*. The pressure of the split ends *h* against the sides of this hole is sufficient to hold the washer in place against the end of the stud, while allowing it the slight 85 oscillation required.

As shown in Fig. III, the pin *g* is riveted firmly to the thrust-washer, and its split ball end *h* is inserted in a hole bored in the tension-stud, holding the washer up by frictional 90 contact with the sides of the hole. This hole is enlarged at its lower portion, as shown, leaving a space around the pin sufficiently large to permit the slight oscillation required.

Another advantage attending this improve- 95 ment is that it eliminates the friction of the thrust-washer against the sides of the hole in which it works, so that the force of spring C, which retracts the tension-stud and clamps the thread is not in any degree spent in over- 100

coming such friction. Fig. 1 shows the thrust-washer made slightly smaller in diameter than the hole in the frame, so that it does not touch the sides thereof.

5 Modifications may obviously be made in the details of construction without departing from the spirit of the invention.

I claim as my invention or discovery—

10 1. In a tension apparatus, the combination, with the tension-stud and tension-rod for actuating the same, of the thrust-washer interposed between the two and suspended from the tension-stud by a frictional spring-connection, substantially as described.

15 2. The combination, with the tension-stud and tension-rod for actuating the same, of the

thrust-washer suspended from the tension-stud by a spring friction-pin, substantially as described.

3. The combination, with the tension-stud 20 and actuating tension-rod, of the thrust-washer suspended from the former by a ball-ended split friction-pin, having its split ball end expanded in a hole in said washer, substantially as described. 25

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

J. S. GORTON.

Witnesses:

J. PARMLY,
E. A. RACE.