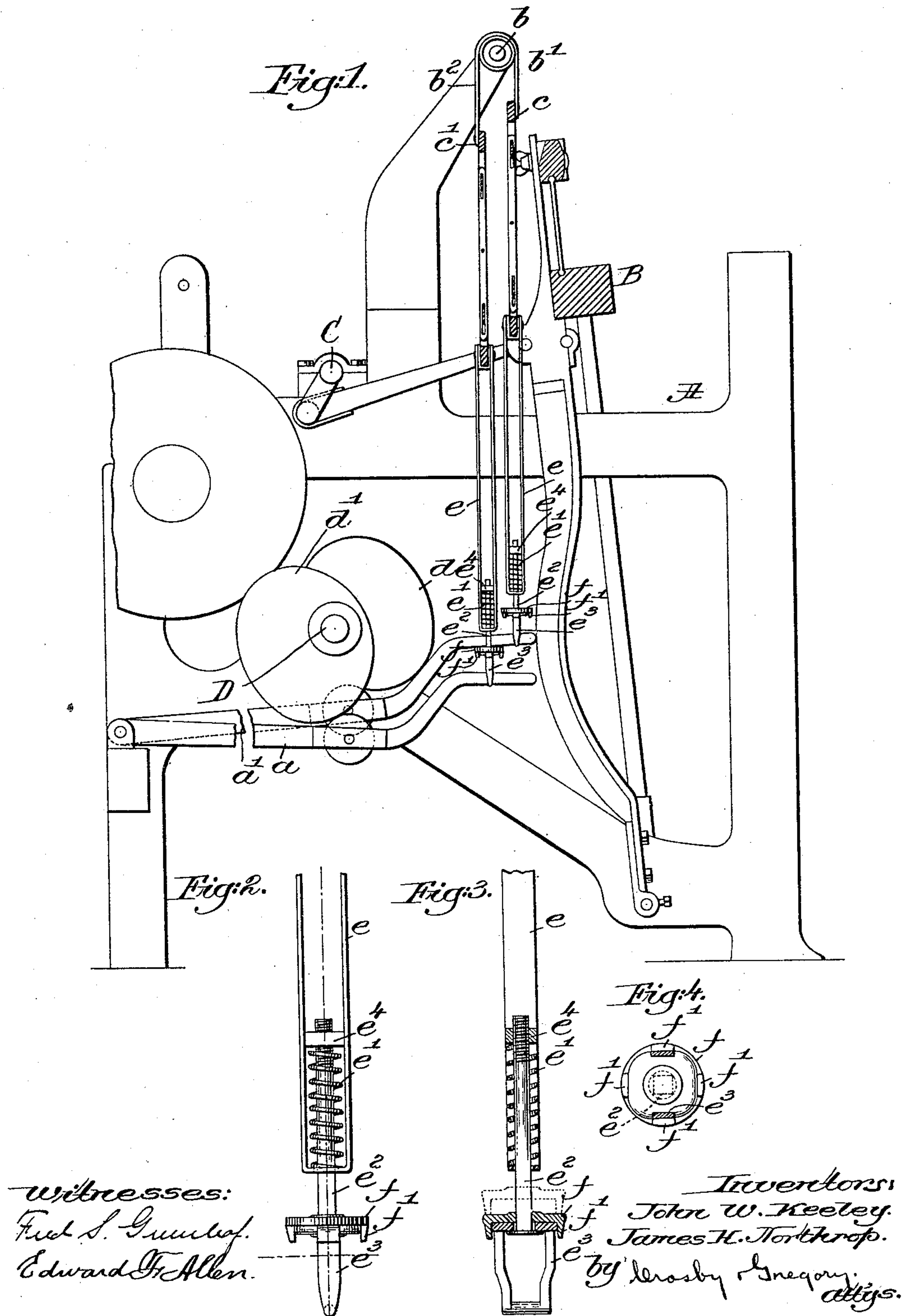


(No Model)

J. W. KEELEY & J. H. NORTHROP.
HARNESS CONNECTION FOR LOOMS.

No. 585,105.

Patented June 22, 1897.



UNITED STATES PATENT OFFICE.

JOHN W. KEELEY AND JAMES H. NORTHROP, OF HOPEDALE, MASSACHUSETTS, ASSIGNORS TO THE NORTHROP LOOM COMPANY, OF SAME PLACE AND SACO, MAINE.

HARNESS CONNECTION FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 585,105, dated June 22, 1897.

Application filed November 20, 1896. Serial No. 612,794. (No model.)

To all whom it may concern:

Be it known that we, JOHN W. KEELEY and JAMES H. NORTHROP, of Hopedale, in the county of Worcester and State of Massachusetts, have invented an Improvement in Harness Connections for Looms, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

In ordinary looms for weaving plain cloth with two or more harnesses, and in which the harness-frames are actuated by treadles struck by cams, the treadles are commonly connected with the harness-frames by flexible straps, and in use, owing to the wear of the parts, these straps become slack and the harness-frames are not held at tension, and when the loom stops the backlash, due to the slackness of tension or lack of firm holding of the harness-frames, results in making thin places in the cloth. The straps commonly used are difficult to get at, and with the buckle commonly used they cannot be adjusted to exactly the proper point, and frequently the straps are adjusted so that they are too tight, which, besides creating undue wear of the parts, adds materially to the power required to run the loom. The looseness of the usual harness not only occurs through the stretch of the straps, but also from the impracticability of making a connection between one harness-cam through the heddle, straps, roll above the harness, and back again through harness and heddle to another cam, one heddle being longer than the other and the roll at the top being longer for one harness than the other, at the same time maintaining the bearing of both heddles against both cams all the way around. If every part were made with absolute correctness of design, this might be accomplished, but such correctness is impossible in ordinary mechanical work. In our studies to overcome this objectionable connection between the usual treadles and the harness-frames we have produced a novel connection, it containing two parts connected by a spring, the spring acting normally to keep the treadle always up to and against its actuating-cam, so that there is no backlash or slip, and the harness-frames

are moved uniformly and with the least amount of objectionable strain.

Figure 1 in section shows a sufficient portion of an ordinary loom with our improvements added to enable our invention to be understood, and Figs. 2 to 4 are details to be referred to.

The loom-frame A, its lay B, crank-shaft C, cam-shaft D, having the shed-forming cams $d d'$, the treadles $a a'$, having rolls acted on by said cams, the top roll b , supporting the top cording $b' b^2$, attached to the harness-frames $c c'$, are and may be all as usual.

Each lower bar of the harness-frames, as shown in this our present embodiment of our invention, has connected to it a metallic loop or connection e , which supports a suitable spring e' , and a rod e^2 , having loosely hung on its head at its lower end an eye e^3 to fit over the free end of the treadle, is passed upwardly through this spring and has applied to it a nut e^4 , so that said two-part connection may yield to any endwise strain and yet keep the treadle always against the actuating-cam.

The nut e^4 , as herein shown, is restrained from rotation in the loop e , but the stress of the spring may be readily adjusted to the required amount by rotating the bolt in the loop and in the eye. To do this, we have applied to a squared part of the bolt an adjusting device f , having a series of lugs f' , which embrace the flattened sides of the head of said eye and keep it from rotating when the loom is in use. To adjust the spring, it is only necessary to lift the device f far enough to remove its lugs f' from the head of the eye and turn the device f and rotate the bolt, it moving in the nut e^4 and adjusting the stress of the spring. When adjusted to the desired tension, the device f will be dropped.

By the use of a harness connection such as described the levers may be always kept firmly against their actuating-cams and no loss of motion is permitted, the spring obviating any difficulty due to wear of parts.

We believe ourselves to be the first to employ a two-part spring-held connection between the treadle and the harness-frame, and hence our invention is not in all cases limited

to the exact device shown, for it will be obvious that many changes in construction might be devised which would accomplish the same result, but which would not require
5 invention.

We have shown the harness-frames as provided with sheet-metal heddles, such as employed in United States Patent No. 536,969, and with such heddles which add to the weight
10 of the harness-frames our invention has great and peculiar benefit.

Having described our invention, what we claim as new, and desire to secure by Letters Patent, is—

15 The harness-frame, the two-part connection composed of a loop, a bolt, an eye mounted

loosely on said bolt, and a spring combined with an adjusting device mounted loosely on said bolt and coöperating with and holding the said eye and bolt against rotation one on 20 the other, but permitting the bolt to be rotated when it is desired to adjust the stress of said spring, substantially as described.

In testimony whereof we have signed our names to this specification in the presence of 25 two subscribing witnesses.

JOHN W. KEELEY.

JAMES H. NORTHROP.

Witnesses:

C. N. NICHOLS,

GEO. OTIS DRAPER.