

No. 729,190.

PATENTED MAY 26, 1903.

C. I. KNOX.
HARNESS RETRACTOR FOR LOOMS.

APPLICATION FILED DEC. 5, 1902.

NO MODEL.

2 SHEETS—SHEET 1.

Fig. 1.

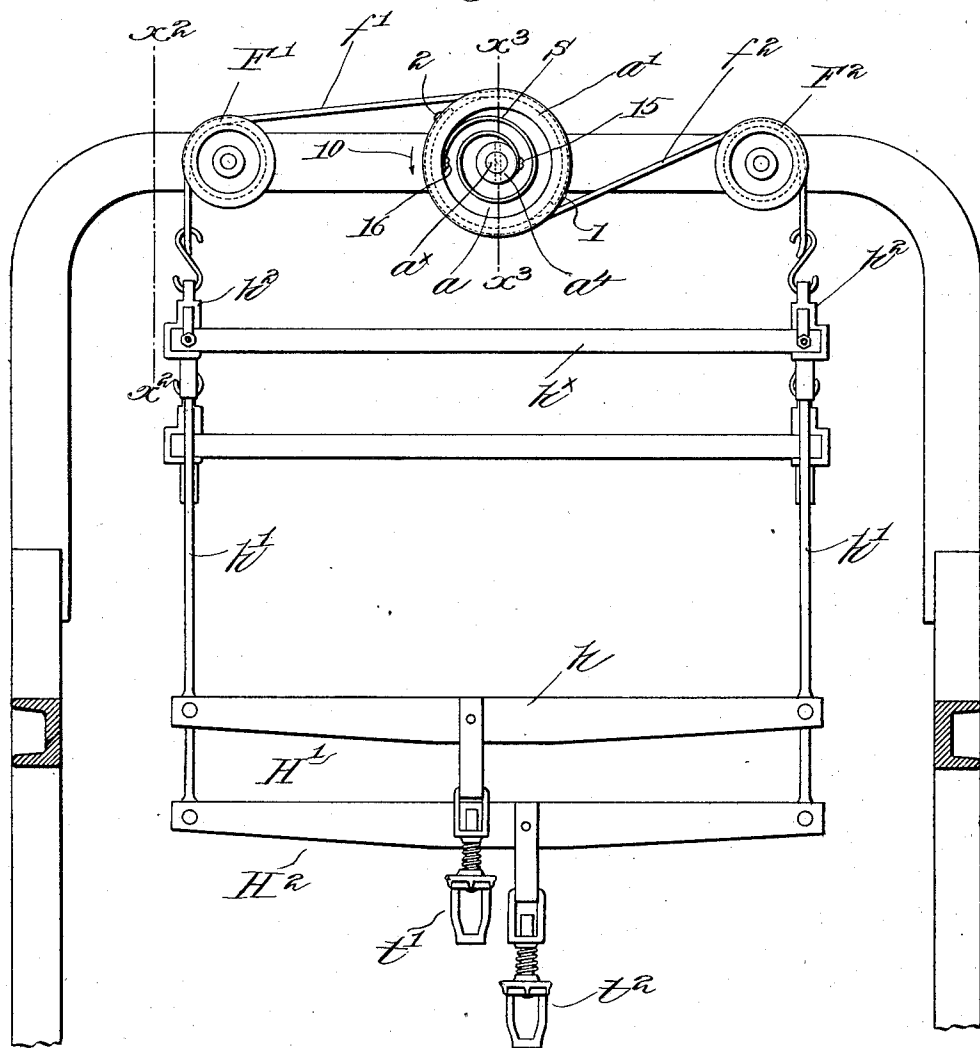
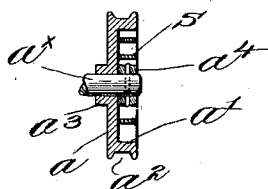


Fig. 2.



Witnesses:
W. C. Lumsford
E. F. Allen.

Inventor:
Clarence I. Knox.
By Crosby Ferguson,
Att'y.

No. 729,190.

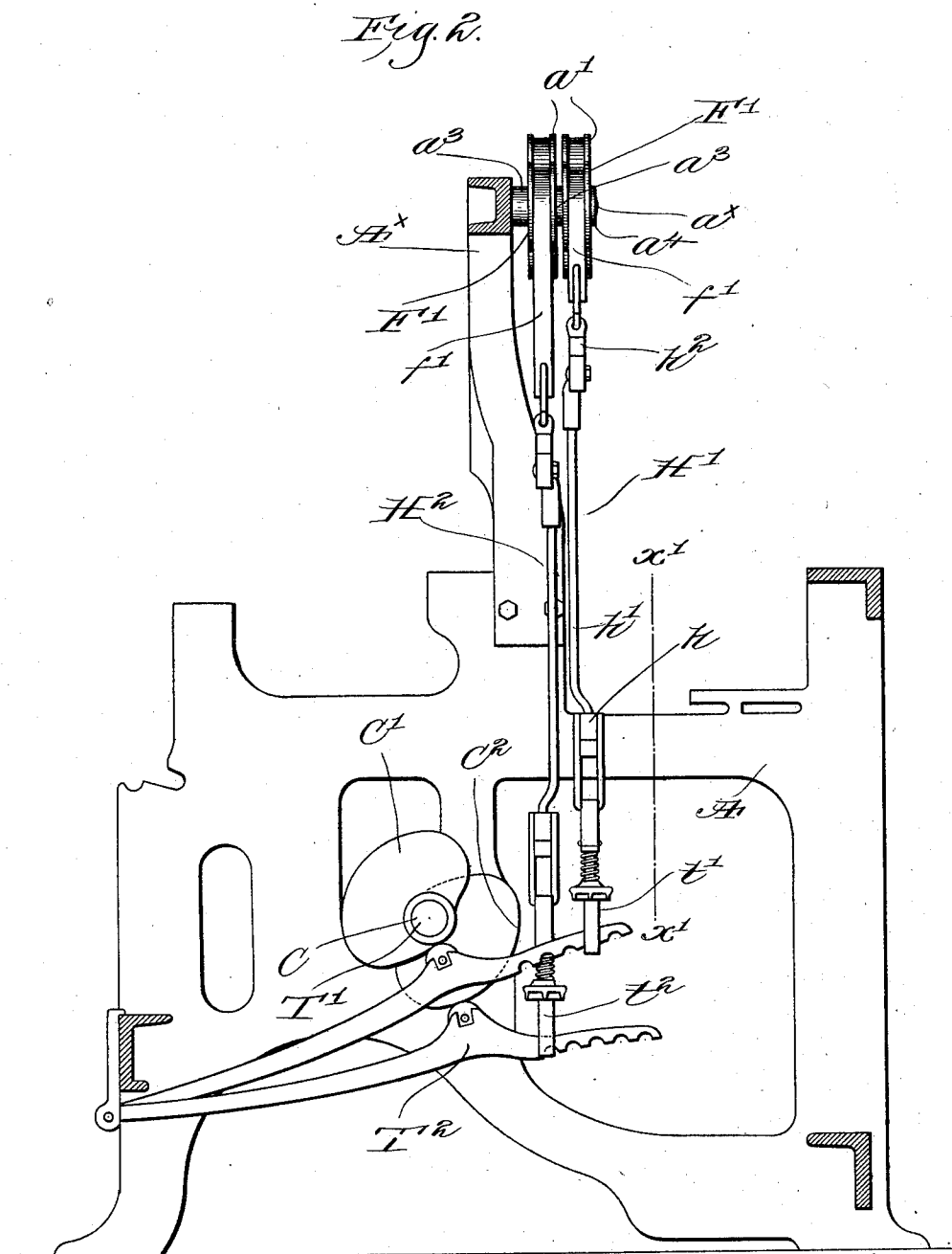
PATENTED MAY 26, 1903.

C. I. KNOX.
HARNESS RETRACTOR FOR LOOMS.

APPLICATION FILED DEC. 5, 1902.

NO MODEL.

2 SHEETS—SHEET 2.



Witnesses:
W. C. Linsford
E. F. Allen.

Inventor
Clarence I. Knox.
by *Leahy Gregory*
attys.

UNITED STATES PATENT OFFICE.

CLARENCE I. KNOX, OF HOPEDALE, MASSACHUSETTS, ASSIGNOR TO DRAPER COMPANY, OF PORTLAND, MAINE.

HARNESS-RETRACTOR FOR LOOMS.

SPECIFICATION forming part of Letters Patent No. 729,190, dated May 26, 1903.

Application filed December 5, 1902. Serial No. 133,946. (No model.)

To all whom it may concern:

Be it known that I, CLARENCE I. KNOX, a citizen of the United States, and a resident of Hopedale, county of Worcester, State of Massachusetts, have invented an Improvement in Harness-Retractors for Looms, of which the following description, in connection with the accompanying drawings, is a specification, like letters and numerals on the drawings representing like parts.

This invention relates more particularly to shedding mechanism for looms, and specifically to that type of such mechanism wherein the harness-frames are moved positively in one direction and spring-actuated in the other direction.

My invention has for its object the production of novel spring operating mechanism for effecting movement of the harness-frames in one direction, the opposite movement being effected positively in any suitable manner.

The shedding mechanism to be described may be used in connection with two or more harness-frames, as the movement of each is effected independently of the others.

Figure 1 is a front elevation of the shedding mechanism of a loom embodying one form of my invention, back of the line $x'x'$, Fig. 2, the harness cams and treadles being omitted. Fig. 2 is a transverse sectional view on the line x^2x^2 , Fig. 1, looking toward the right; and Fig. 3 is a sectional detail on the line x^3x^3 , Fig. 1.

The loom-frame A, overhead arch A^x , the cam-shaft C, harness-cams $C' C^2$ thereon, the cooperating treadles $T' T^2$, connected, respectively, with the stirrups $t' t^2$ of the harness-frames, two of the latter being herein shown, may be and are substantially of well-known or usual construction.

I have herein shown two harness-frames; but it is to be understood that three or more may be used in connection with my invention.

The front and back harnesses are indicated as a whole in Figs. 1 and 2 by H' and H^2 , respectively, each frame consisting, essentially, of a bottom cross-bar h , top cross-bar h^x , and upright sides h , connecting them, the type of harness-frame herein shown being adapted for steel harness, such as shown in United

States Patent No. 536,969, the detector-heddles being supported on the top cross-bar h^x .

I have herein shown the harness-frames as constructed and arranged to be depressed by means of the harness-cams $C' C^2$, Fig. 2, in well-known manner.

In accordance with my present invention the arch sustains a horizontal stud a^x , located above the harness-frames at the center of the arch and projecting forwardly therefrom, and on said stud or pin is mounted a plurality of spring-operated rotatable actuators, one for each harness-frame. Each actuator is made as a circular disk a , having an overhanging annular flange a' , externally grooved, as at a^2 , Figs. 2 and 3, the disk having a hub a^3 , to be supported rotatably on the stud a^x , the actuator being substantially an externally-grooved drum or sheave. These drums are mounted upon the stud, one in front of the other, above their respective harness-frames, as shown in Fig. 2, and flexible bands, straps, or other connections $f' f^2$ are wound from opposite directions about the grooved periphery of each drum and secured thereto, as at 1 and 2, Fig. 1. The connections are led over suitable rotatable guide-sheaves $F' F^2$ on the arch at opposite sides of the actuators or drums, the free ends of the connections passing thence down to the heads h^2 of the harness-frames, to which they are attached. When the drum is rotated in the direction of arrow 10, Fig. 1, the connections $f' f^2$ will be unwound, and the harness-frame attached thereto will be lowered, opposite rotation of the drum winding up the connections and lifting the harness-frame. A collar a^4 is secured to the stud a^x within each drum in front of the disk a thereof, and by a suitable set-screw 15, Fig. 1, one end of a coiled spring S is fixed to the collar, the spring, of the flat or clock-spring type, being coiled about the collar and having its other end secured at 16 to the inner circumference of the flange a' . The collars and the hubs of the drums maintain the latter in proper position on the stud, as will be manifest, and the springs are so coiled that when the drums are rotated in the direction of arrow 10, Fig. 1, the said springs will be set or wound up.

From the foregoing description and the

drawings the operation will be manifest. When each harness-frame is depressed positively by its cam, the drum of said frame will be rotated with the arrow 10 and its spring 5 will be wound, storing up its power, and as the cam is rotated to release the down-pull on the harness-frame the spring S of its drum will expand, turning the drum oppositely to the arrow 10, and thereby winding upon its 10 periphery the connections f' f^2 , lifting the harness-frame.

Each harness-frame is independent in its movement, so that any number may be used, the various combinations of movements being 15 governed by the setting of the harness-cams.

The construction is simple, strong, and effective, the parts are few in number, and the springs are protected or housed by the drums.

Any stretch of the flexible connections is 20 taken up by the springs, and the opposite winding of each pair of connections effects an even and uniform movement of the attached harness-frame.

Having described my invention, what I 25 claim as new, and wish to secure by Letters Patent, is—

1. In a loom, a harness-frame, a rotatable spring-operated actuator mounted on the loom-frame above the harness-frame, flexible 30 connections wound upon the actuator from opposite sides and attached to the upper corners of the harness-frame, to lift it, and means to depress the harness-frame positively and thereby set the actuator.

35 2. In a loom, a harness-frame, a rotatable drum, a guide-sheave at each side thereof, flexible connections between the drum and the harness-frame and passing over the sheaves, a spring to rotate the drum in one 40 direction and move the harness-frame, and

means to move the latter positively in the opposite direction and wind the spring, the flexible connections being attached to the upper corners of the harness-frame and wound from opposite sides around the drum and secured 45 thereto at their ends.

3. In a loom, the arch, a reciprocating harness-frame, a drum rotatably mounted centrally above it upon the arch, like flexible 50 connections between the drum and the upper corners of the harness-frame, said connections being wound upon the drum from opposite sides thereof, a spring to rotate the drum by expansion and thereby lift the harness-frame, and means to depress the latter positively and compress the spring by reverse 55 rotation of the drum.

4. In a loom, the arch, a harness-frame, a drum rotatably mounted above it upon the arch, a concentric coiled spring fixed at one 60 end and at its other end attached to the inner circumference of the drum, a guide-sheave on the arch at each side of the drum, transmitting connections between the sides of the harness-frame and drum passing over said 65 sheaves and wound about the drum from opposite sides, and means to depress the harness-frame positively, each depression of the harness-frame acting through the two connections to rotate the drum and wind the 70 spring, expansion of the latter rotating the latter oppositely to lift the harness-frame.

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

CLARENCE I. KNOX.

Witnesses:

GEORGE OTIS DRAPER,
ERNEST W. WOOD.