(No Model.) 3 Sheets—Sheet 1.

W. WEAVER.

LOOM FOR WEAVING TERRY FABRICS.

No. 355,736. Patented Jan. 11, 1887.

Fig 1.

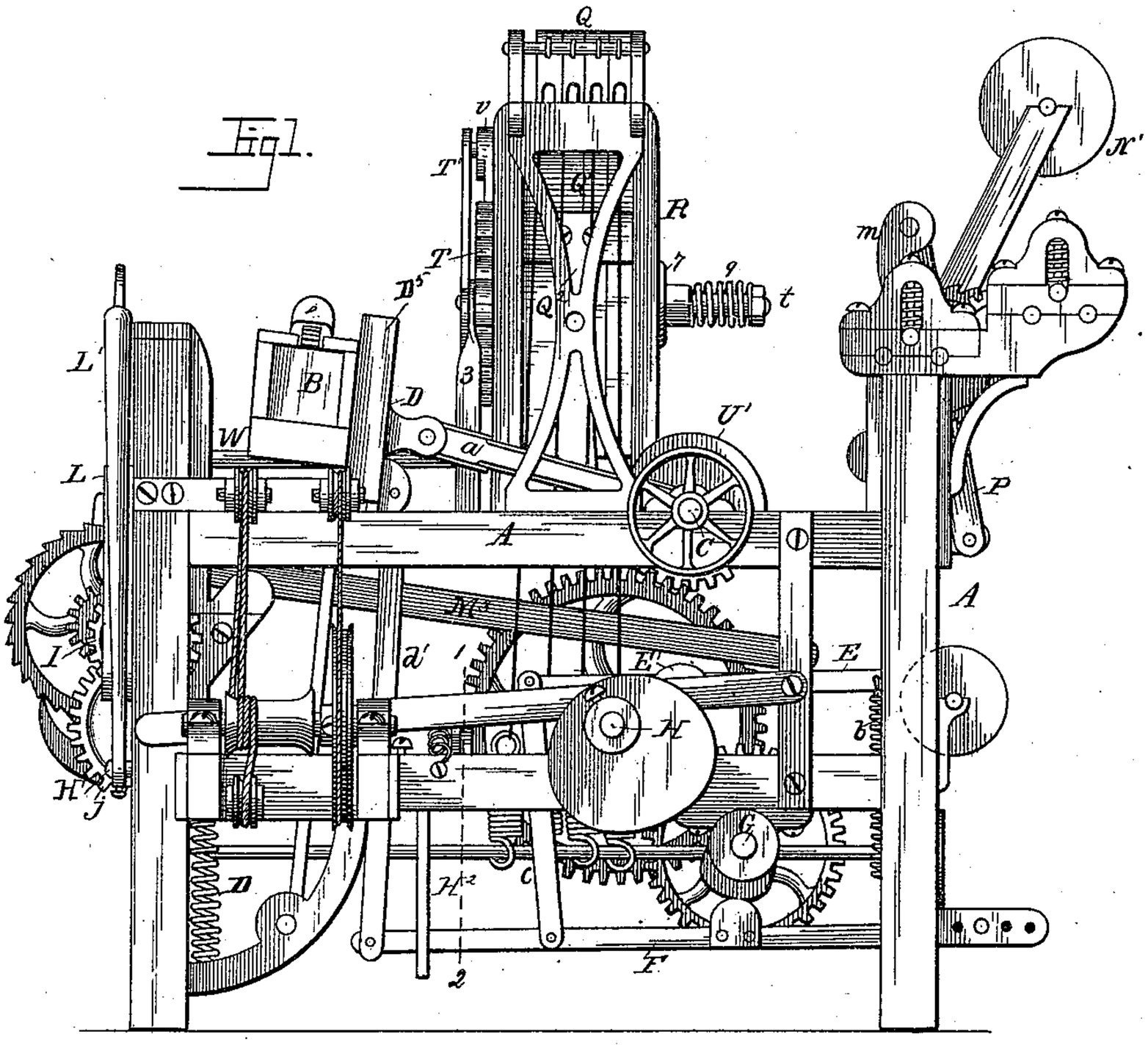


Fig 6.

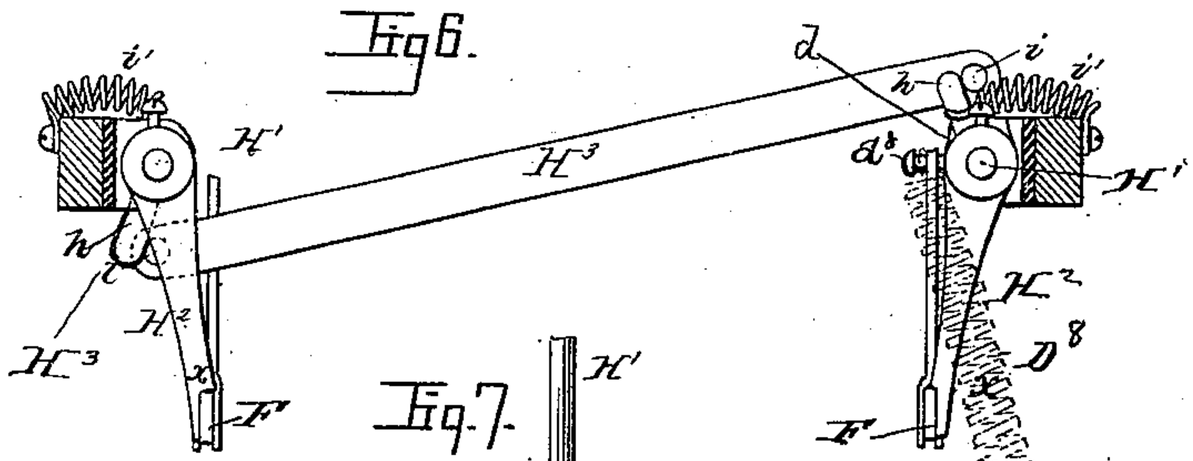
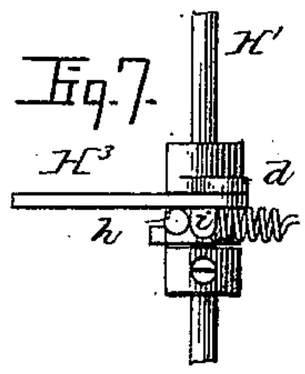


Fig 7.



Witnesses:
John L. Hinkel
Wm F. Fayers.

Wm Weaver
Inventor:
By his attorneys
Foster & Freeman

N. PETERS, Photo-Lithographer, Washington, D. C.

(No Model.) 3 Sheets—Sheet 2.

W. WEAVER.

LOOM FOR WEAVING TERRY FABRICS.

No. 355,736. Patented Jan. 11, 1887.

Fig 2.

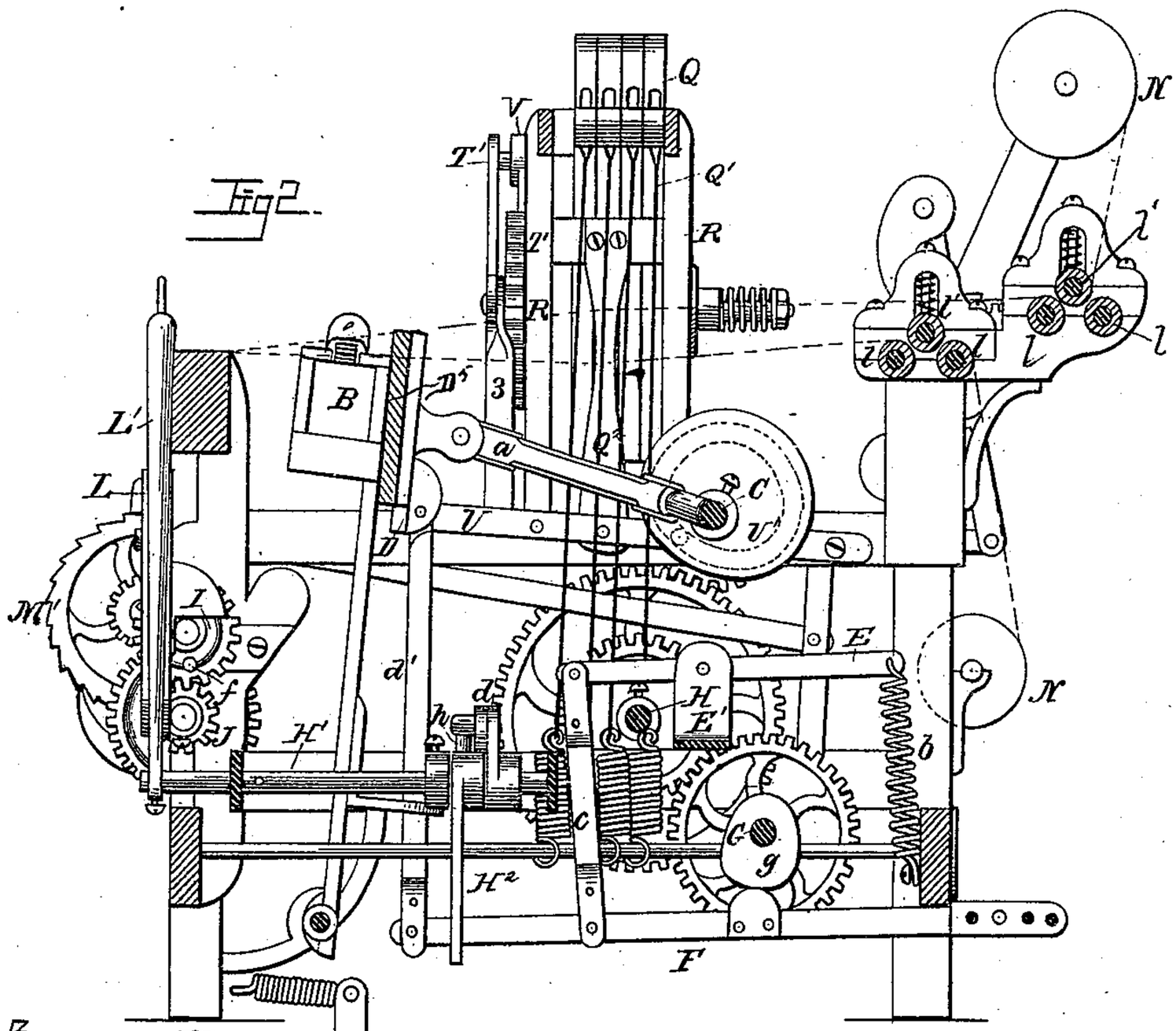
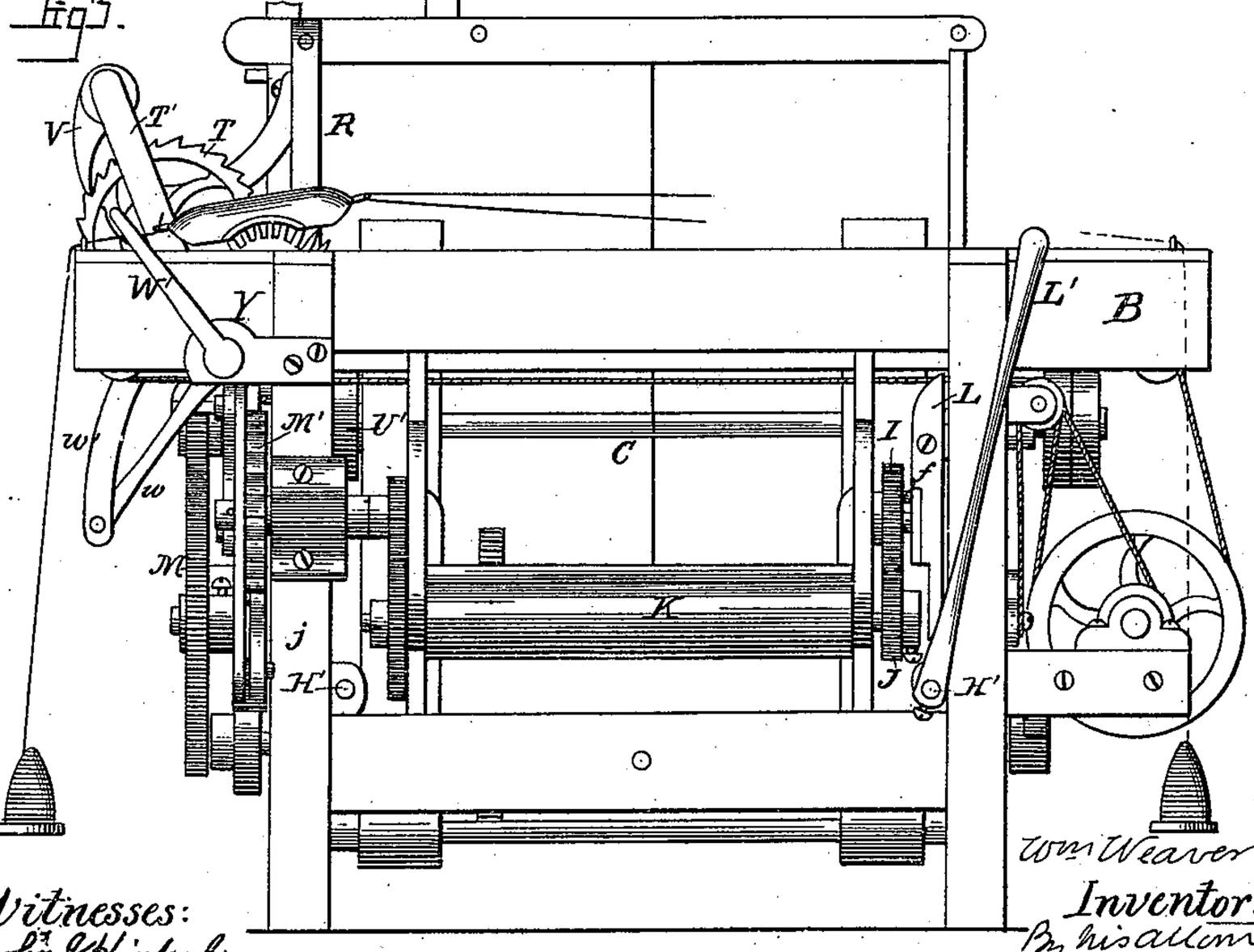


Fig 3.



Witnesses:
John F. Hinkel
Wm F. Fayers.

Wm Weaver
Inventor:
By his attorneys
Foster & Freeman

N. PETERS. Photo-Lithographer, Washington, D. C.

(No Model.) 3 Sheets—Sheet 3.

W. WEAVER.

LOOM FOR WEAVING TERRY FABRICS.

No. 355,736. Patented Jan. 11, 1887.

Fig. 4.

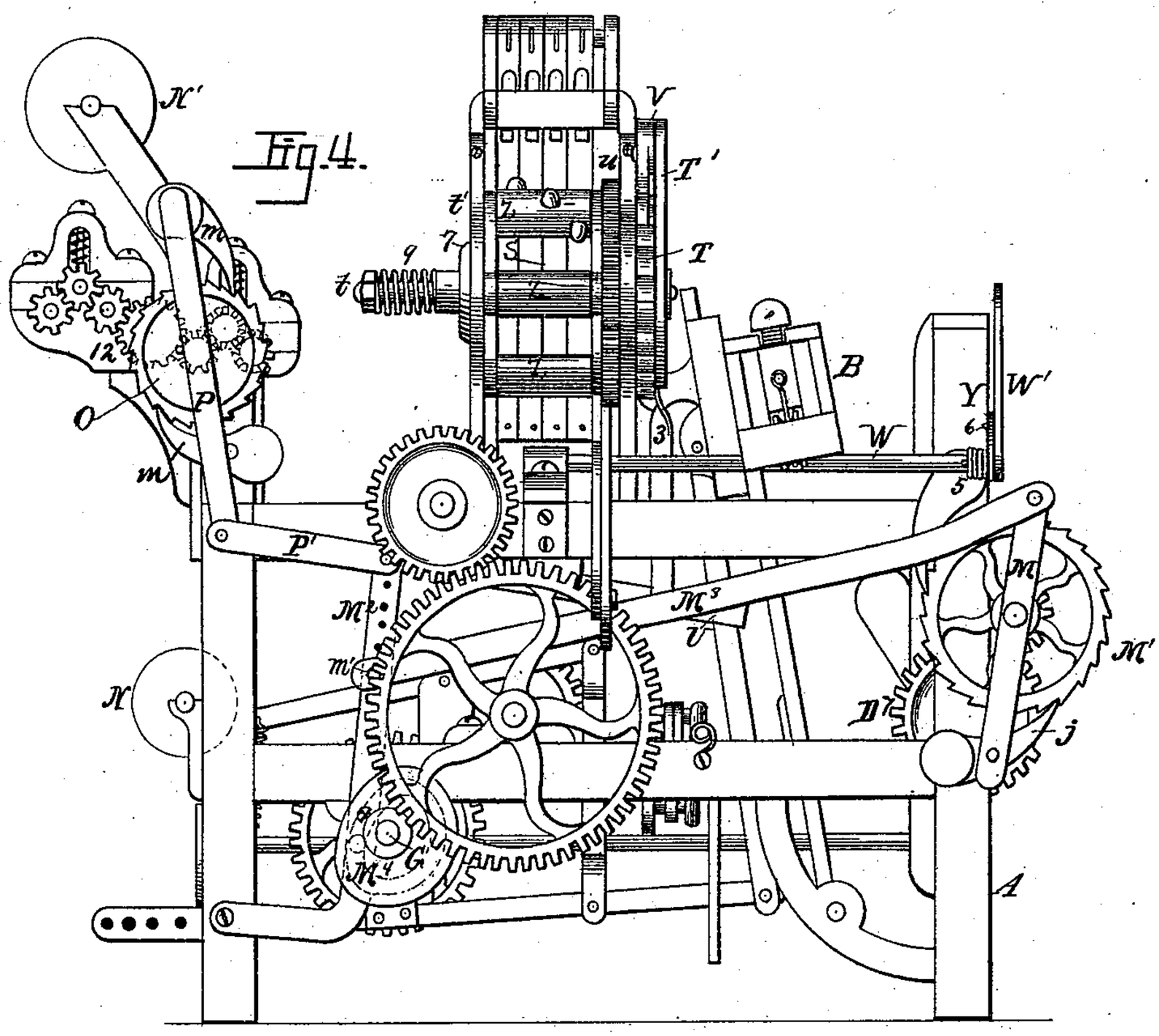
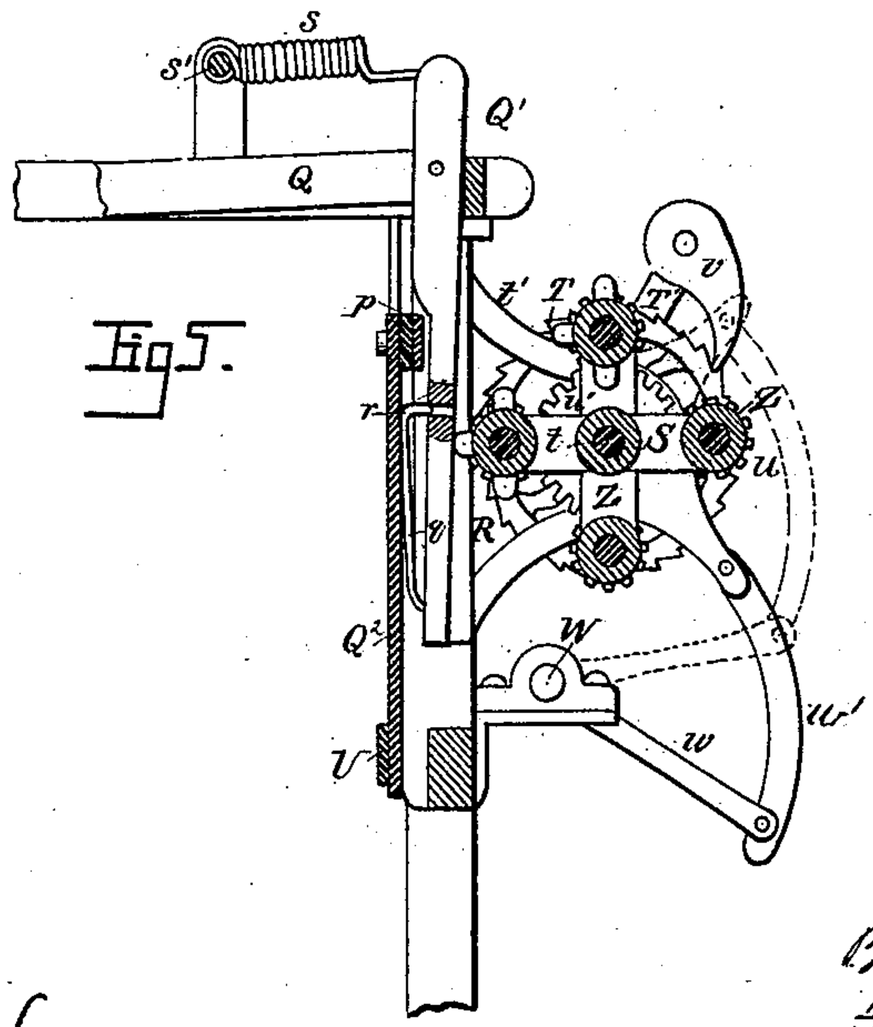


Fig. 5.



Witnesses:
John S. Hinkel
Wm. J. Sayers.

Wm. Weaver
Inventor:
By his attorneys
Foster & Freeman

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

WILLIAM WEAVER, OF GREENWICH, ASSIGNOR OF ONE-HALF TO A. G. STORY, OF LITTLE FALLS, NEW YORK.

LOOM FOR WEAVING TERRY FABRICS.

SPECIFICATION forming part of Letters Patent No. 355,736, dated January 11, 1887.

Application filed April 22, 1884. Serial No. 128,861. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM WEAVER, a citizen of the United States, residing at Greenwich, in the county of Washington and State of New York, have invented certain new and useful Improvements in Looms for Weaving Terry Fabrics, of which the following is a specification.

My invention relates to looms, and more especially to that class of looms adapted to weaving terry fabrics; and my invention consists in means, fully described hereinafter, for varying the throw of the lathe automatically, as required in making the loops of terry fabrics and for regulating the movements of the heddles.

In the accompanying drawings, Figure 1 is a side elevation of a terry-loom embodying my improvements. Fig. 2 is a longitudinal sectional elevation thereof. Fig. 3 is a front elevation thereof. Fig. 4 is a side elevation on the side the opposite of that shown in Fig. 1. Fig. 5 is a detached sectional view illustrating the pattern mechanism for regulating the position of the heddles. Fig. 6 is a transverse section on the line 1 2, Fig. 1. Fig. 7 is a plan of part of Fig. 6.

The frame A of the loom is constructed to support the parts hereinafter described, the lathe B is pivoted, and the shuttle is driven along the race in any suitable manner, the loom shown in the drawings being especially adapted for the operation of shuttles in the mode set forth in the application filed by me April 16, 1884.

In the construction shown the loom is intended especially to operate as a terry-loom, and I employ devices which operate automatically to vary the beat of the lathe. For this purpose the arms or pitmen *a*, connected to the crank-shaft C, which vibrates the lathe, are jointed at their forward ends to slides D, adapted to guides D^5 at the back of the lathe, the throwing up of the slides preventing the complete beating up of the lathe, which, however, results when the slides are lowered. The upward movement of the slides is caused by springs *b* acting upon levers E, pivoted to the standards E′, and connected by rods *c* to the levers F, pivoted at their rear ends to the frame, and connected by rods *d′* to the slides D. The downward movement of the slides is effected by means of a wiper, *g*, upon a shaft, G, geared to the shaft H.

To prevent the constant reciprocation of the slides, resulting from the continuous rotation of the shaft G, I combine with the levers F detents, which serve to hold said levers in their lowest position, and which detents are under the control of automatically-operating appliances—as pattern wheels or chains, start and stop motions, &c.

As shown, each detent consists of an arm, H^2, having a lower shoulder, *x*, and hung to a shaft, H′, turning in bearings on the side bars of the frame, the two shafts being connected so that the arms will be simultaneously thrown inward or outward by means of the cross-bar H^3, jointed to ears *d*, fastened to the shafts H′, as shown in Figs. 6 and 7.

The automatic rocking of the shafts H′, to throw the arms H^2 away from the levers F, is effected by a spring, D^8, secured to the frame of the machine, and to a pin, d^8, projecting from a shaft, H′, and the reverse movement of the shafts H′, to bring the arms H^2 into the paths of the levers F F, is effected by a pattern-wheel, I, meshing with a pinion, J, on the end of the shaft of the take-up roller or drum K, the said pattern-wheel being provided with one or more lugs, *f*, arranged to strike a hanging-lever, L, which bears at the lower end against an arm or hand-lever, L′, upon one of the shafts H′.

By varying the relative diameters of the gears I J each revolution of the take-up roller will cause more or less than one revolution of the gear I, and by providing the latter with a series of openings pins *f* may be inserted therein at proper intervals. By these means the detent-arms H^2 may be thrown in and out at any desired intervals, and the levers F and slides D, connected thereto, will be correspondingly caught and released, so as to secure any desired variation in the beats.

As the arms H^2 might be thrown inward while the levers F are in their upward positions, the parts of the loom might be injured by the descent of the levers if the arms were connected positively to the shafts H′. To prevent this I provide for a yielding of the arms H^2 should pressure be brought against them

from the inside. Thus the arms H² may be hung loosely to the shafts H′, and may be provided with pins *h*, held in contact with lugs *i* on the arms *d* by means of springs *i′*, so that normally the rocking of the shafts H′ will vibrate the arms; but the latter may swing independently upon the shafts should the levers F be brought downward against them.

The take-up beam is operated from a vibrating lever, M, carrying a pawl, *j*, which engages with the teeth of the ratchet M′ on a shaft carrying a pinion gearing with the wheel D′ on the take-up beam, as shown, the lever M being vibrated from a lever, M², to which it is connected by a rod, M³, the lever M² being pivoted at its lower end and vibrated by means of a cam, M⁴, on the shaft G, which cam has a groove at its inner face receiving a pin on the lever M², as shown in dotted lines, Fig. 4.

There are two let-off motions, which consist each of two lower rollers, *l l*, upon which an upper roller, *l′*, is caused to bear by spring-pressure, the three rollers being geared to turn together, and a large cog-wheel, *l²*, connecting the two motions, and the warps from the two beams N N′ pass therefrom to the different rollers, as shown. A ratchet-wheel, O, is secured to the shaft of one of the rollers, and is operated by a vibrating lever, P, hung upon the journal of the ratchet and carrying a pawl, *m*, which engages with the teeth of the ratchet, and the lever P is connected to the lever M² by a connecting-rod, P′.

It will be seen that the let-off motion and the take-up motion are connected and operated by the same lever M², whereby unison may be secured; but any variation is obtainable by varying the connection of the rod M³ with the lever M². This may be done by providing the lever M² with a series of openings, permitting the connecting-pin *m′* to be connected at different points.

The heddle-motion consists of the usual harness-supporting levers, Q, and bars Q′, suspended at the outer ends thereto, guided in the frame R, and each depressed when thrown inward by a reciprocating carrier, Q², the cross-bar *p* of which upon its downward motion engages with the shoulders of said bars. These shoulders are formed by spring-rods *q*, attached at the lower ends to the inner sides of the bars, and bent outward and then inward to form the shoulders *r*, so that on the upward movement of the bar *p* the spring-rods will yield and permit the bar to pass, and will then swing outward, so that the bar may make contact with the shoulders on its descent.

The lower ends of the bars Q′ are thrown outward by means of springs *s*, connecting the upper ends of the bars with a cross-bar, *s′*, on the frame, so that the carrier Q² only makes its contact with and carries down such bars as are thrown inward by the pattern-motion.

The pattern-motion in the present instance consists of a series of cylinders, Z, provided with lugs and carried by a frame, S, turning upon or with a shaft, *t*, having its bearings in brackets *t′*, the revolution of the said frame bringing either cylinder to operate upon the bars as may be desired, the cylinders each carrying a pinion, *u*, which gears with a central pinion, *u′*, the revolution of which will turn all the cylinders while the frame occupies a stationary position.

The driving-pinion *u′* is connected to be turned by a ratchet-wheel, T, moved with a step-by-step motion by the vibration of a lever, T′, carrying a pawl, V, which engages with the teeth of the ratchet, and this lever is connected by a rod, 3, to and reciprocated by a lever, U, to which a vibrating motion is imparted by a cam, U′, on the crank-shaft C. The lever U is connected directly to the carrier Q², which is thus elevated at the time the upward movement of the lever U brings the pawl V forward upon the ratchet and rotates the cylinders, so that the latter are adjusted before the downward movement of the lever U and of the cross bar *p*.

The frame S may be turned to bring either cylinder opposite the bars Q′, the gear-connections insuring the operation of all.

The means shown for rocking the frame consist of a shaft, W, and hand-lever W′, and connecting-arms *w w′*. The shaft W has a slight longitudinal motion in a plate, Y, and is pressed rearward by a spring, 5, so as to normally keep a lug, 6, on the lever W′ in a hole in the plate, thus holding the frame S in any position to which it is set, but permitting adjustment on pulling on the shaft by means of the lever W′. A collar, 7, turns with but slides on the shaft *t* of the frame S, and is pressed by a spring, 9, against the bracket *t′*, to create sufficient friction to prevent the jolting of the frame S out of place and hold it when the lever T′ is moved.

By means of the adjustable frame carrying a series of driven toothed cylinders the simple part revolution of the frame will enable the operator to at once make a total change in the character of the fabric produced by the loom.

I am aware that it is not new to use vertically-moving and other slides connected with the pitmen of terry-looms to vary the throw of the lathe, nor to combine with such slides an operating-lever and a detent; but my invention is distinguished from such constructions in the use of an automatic device for throwing the detents out of action at predetermined intervals, such detents having heretofore been operated by hand.

I claim—

1. The combination of the crank-shaft, lathe, and slides upon the lathe, pitmen connecting the crank-shaft and slides, and levers connected to and operating said slides, lever-operating devices, detents whereby said levers are held in one position, and automatic detent-operating devices, substantially as described.

2. The combination, with the pitmen, crank-shaft, and lathe, connections between the pit-

men and lathe, and levers, and devices, substantially as described, controlling the position of the pitman-connections between the shaft and lathe, and automatic lever-operating devices, of detents and detent-operating devices, substantially as described.

3. The combination of the lathe, levers, pitmen, connections between the levers and pitmen, and a pattern-wheel and spring, and connecting devices, substantially as described, between the pattern-wheel and levers, all substantially as set forth.

4. The combination of the pitmen, crank-shaft, and lathe with the levers controlling the position of the pitman-connections between the shaft and lathe, detents, take-up beam, lever and beam operating devices, gears I J, one carrying a pin or pins, and connections operated by said pin and to control the position of the detent, substantially as described.

5. The combination of the pitmen, crank-shaft, lathe, shafts H′ H′, take-up beam, and pinion with the levers F, controlling the position of the pitman-connections between the shaft and lathe, lever and take-up beam operating devices, vibrating arms H^2 upon the shafts H′, a toothed wheel, I, gearing with the pinion on the take-up-beam shaft and carrying one or more pins, *f*, and connections between the arms H^2 and the pin, constructed to be acted on by the pin to throw inward the arms, substantially as described.

6. The combination of the lever F, shaft H′, arm H^2, hung to shaft H′, lever L, lever L′, take-up beam, toothed wheel J on the shaft thereof, and gear I, carrying one or more pins, *f*, substantially as described.

7. The combination, with the revolving frame S, geared cylinders provided with lugs, ratchet T, lever T′, carrying a pawl engaging with said ratchet, and the bar *p*, of a lever connected to operate both the bar and the lever T′, substantially as described.

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

WM. WEAVER.

Witnesses:
L. C. YOUNG,
C. E. FOSTER.