

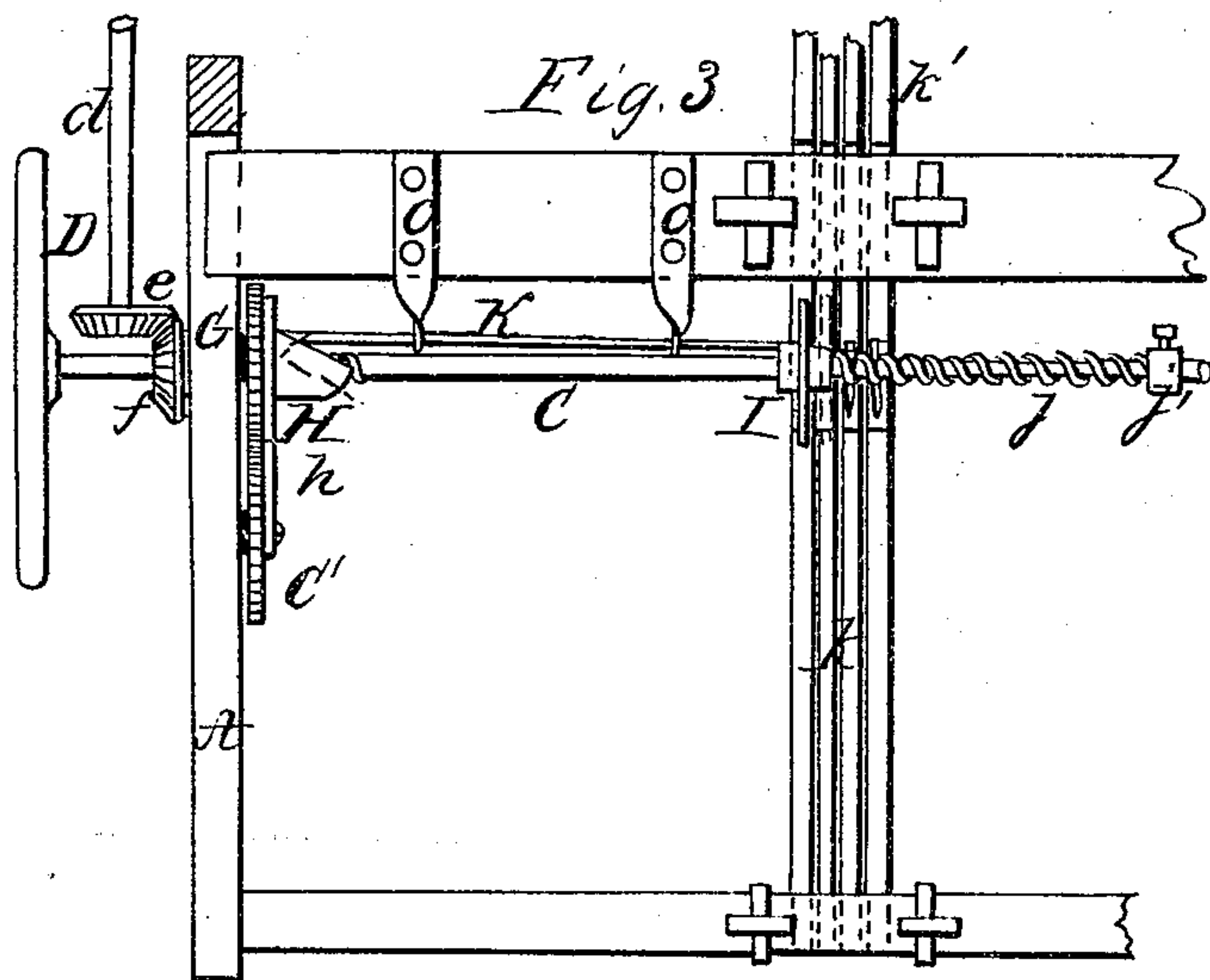


*J. L. Branson.* *Sheet 2-2 Sheets.*

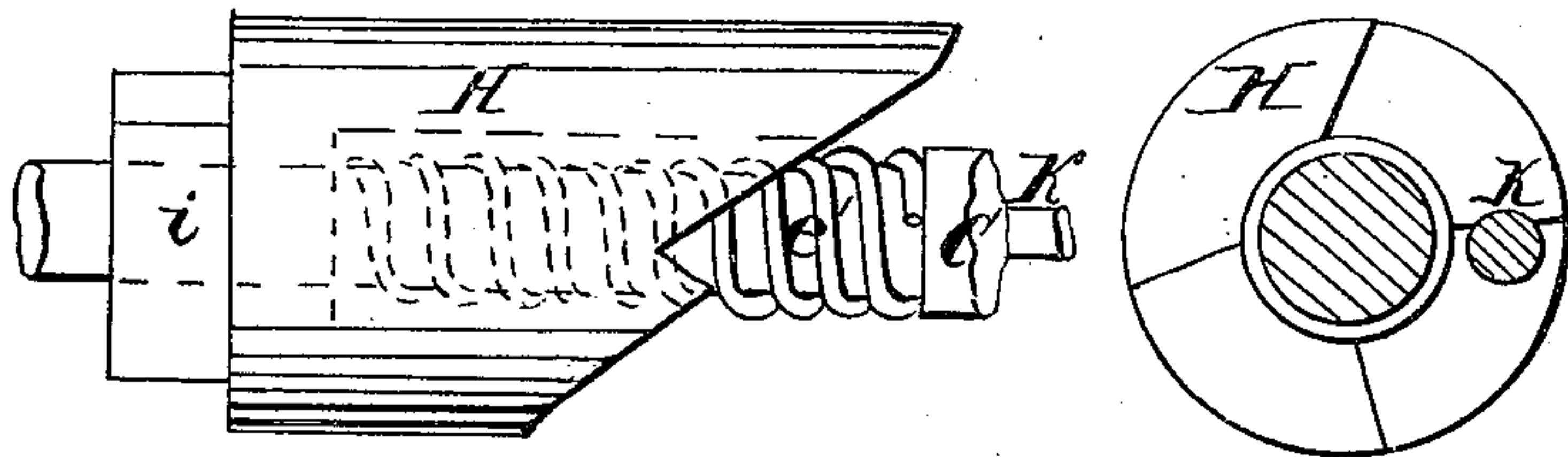
*Hand Loom.*

*N<sup>o</sup> 53,398.*

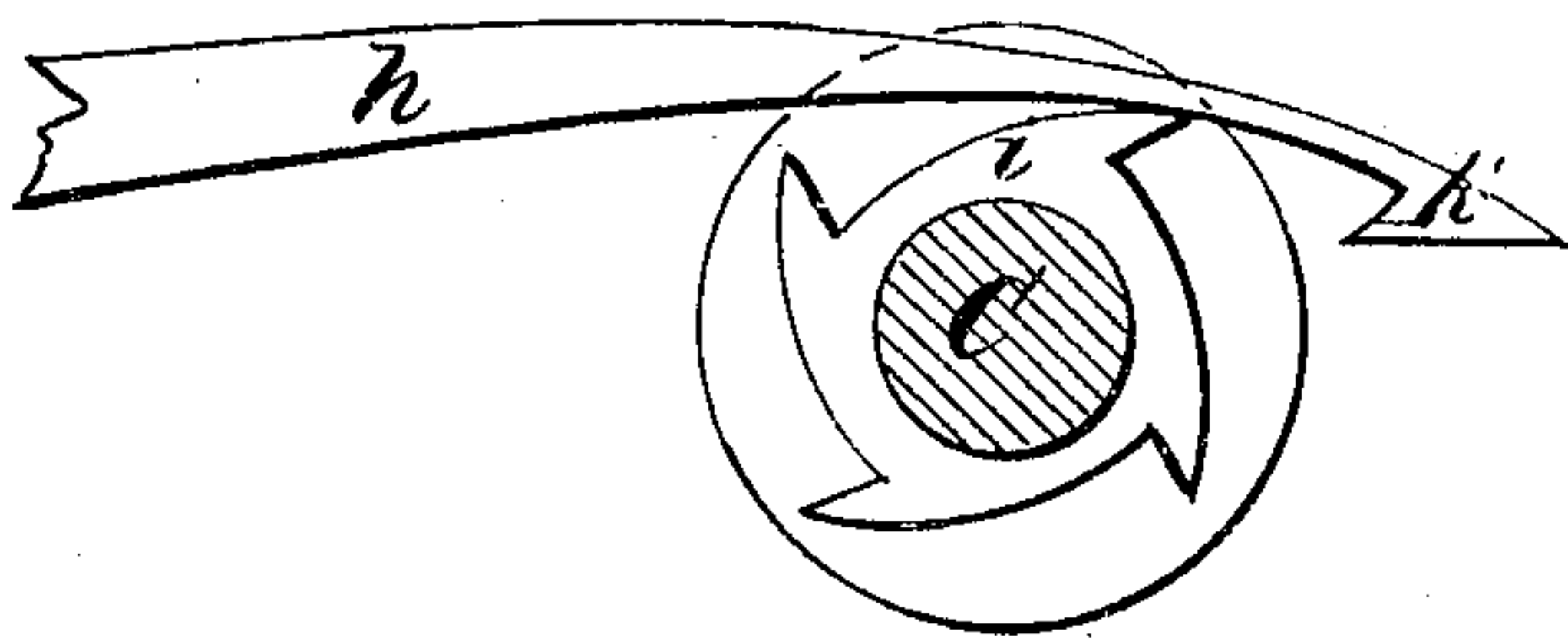
*Patented Mar 27, 1866.*



*Fig. 4*



*Fig. 5.*



*Witnesses,*

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*Inventor,*

*James L Branson*



# UNITED STATES PATENT OFFICE.

JAMES L. BRANSON, OF CINCINNATI, OHIO.

## IMPROVEMENT IN HAND-LOOMS.

Specification forming part of Letters Patent No. 53,398, dated March 27, 1866.

*To all whom it may concern:*

Be it known that I, JAMES L. BRANSON, of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Looms; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification, and to the letters of reference marked thereon, like letters indicating like parts wherever they occur.

To enable others skilled in the art to construct and use the invention, I will proceed to describe it.

Figure 1 is a perspective view of my improved loom complete. Fig. 2 is a longitudinal vertical section; Fig. 3, a plan view of a portion of the same, showing the devices for operating the treadles; Fig. 4, an enlarged view of the scroll-cam used for moving the cam that operates the treadles from one to another of the treadles; and Fig. 5, a side view of the ratchet and pawl for operating the scroll-cam.

Like letters indicate like parts wherever they occur.

The nature of my invention consists in a novel arrangement of devices for operating the treadles, whereby the warp shall be held open for a much longer time than is usual in similar looms; and, second, in a novel arrangement of the gearing for operating the loom, whereby the person operating it shall be enabled, while giving motion to it, to stand in a position fronting the loom, and be thereby enabled to overlook the work at all times.

In looms for weaving woolen fabrics, or those composed partially of wool, it is desirable to have the "shed" kept open for as long a time as possible at each passage of the shuttle, for these reasons: First, because, if it be thus held open while the thread of filling is being driven up by the batten, it will obviously require much less power to drive or beat up the thread than it would if the shed were to close upon it before it is thus beaten up; second, because if the shed closes upon the filling before it is beaten up the fibers and inequalities upon the threads composing the warp and filling are much more likely to become entangled, and thus break the threads of the warp or the filling, or both; third, because by having the filling beaten up before the

shed closes upon it the filling is drawn more tightly at the edges of the cloth, thereby forming a more even and compact selvage. In looms of this character, which are to be operated by the person attending it, and whose business it is to see that the weaving is properly done, and to mend broken threads, &c., it is highly important—in fact necessary—that the operating mechanism should be so arranged that the attendant shall be enabled to stand in such a position as to overlook the work. To accomplish these two results is the object of my invention.

A represents the frame, provided with a batten or beater, F, arranged in the usual manner, the harness B being supported from the vertical frame *a*, as shown in Figs. 1 and 2.

In rear of the harness a shaft, C, is mounted transversely of the main frame, having a balance-wheel, D, secured to each end outside of the main frame A, connecting-rods E being attached at one end to said wheels D and at their opposite ends to the batten F, thus giving to it the necessary reciprocating motion.

G represents a pinion, secured permanently to the shaft C and revolving with it, said pinion G gearing into and transmitting motion to a similar pinion, C', turning loosely upon a stud or bolt secured to the main frame.

H represents a sleeve mounted loosely upon the shaft C, a ratchet-wheel, *i*, being secured rigidly to one end of said sleeve H, as shown in Fig. 4. The opposite end of sleeve H has formed upon it four successive inclines, each being offset from the preceding one, and forming a shoulder or notch at the top of each of the three first inclines—two of the inclines, with the notch between them, being clearly shown in Fig. 4—thus forming on the end of sleeve H four scroll-cams, the sleeve being cut away from the extreme point of the last cam back to a point even with the base of the first.

A pawl, *h*, is pivoted to the side of pinion C', and arranged to engage with the teeth of the ratchet-wheel *i*, as shown in Figs. 1, 2, and 5, the wheel *i* having four teeth to correspond with the number of cams on sleeve H, and both corresponding with the number of treadles used, it being obvious that these parts may be increased in number to any desired extent.

It will thus be seen that at each revolution of the wheels G and C' the pawl, engaging



with ratchet-wheel *i*, will give to sleeve H a quarter revolution, a spiral spring, *e'*, pressing against the sleeve H, and serving to prevent it from turning farther than is desired.

I represents a cam mounted on the shaft C, directly over the treadles *k*, this cam I being prevented from turning on the shaft by a feather, but left free to move to and fro thereon. The cam I is made in the form of a circle, with a small portion cut out on one side only, as shown in Fig. 1, and also in red in Fig. 2.

A spiral spring, *j*, is coiled around shaft C and secured by an adjustable collar, *j'*, as shown in Fig. 3, by which the cam I is pressed toward the sleeve H.

Between the cam I and the sleeve H a sliding rod, K, is held by the supports *o*, one end of said rod K resting against the cam I and the opposite end resting against the face of the cams on the end of sleeve H.

It will thus be seen that as the sleeve H is caused to rotate by the pawl *h* engaging with the teeth of the ratchet-wheel *i* the cams on the end of sleeve H will be successively brought against the end of rod K, thus shoving the rod, and with it the cam I, toward the opposite end of shaft C, the cams on the end of sleeve H being so proportioned as to move the cam I successively from one to another of the treadles *k*.

Upon the upper surface of each treadle *k*, directly under the cam I, is located a projection, *m*, against which the cam I strikes as it revolves, thereby depressing the treadle, the recess in the face of cam I being of such a size as to permit the cam, when the recess is turned so as to be opposite the projection *m*, to be shoved past *m* without touching it.

As the recess forms but a small portion of the circumference of the cam, it follows that the treadle on which the cam I is pressing will be held down during nearly the entire revolution of the cam, and it is by this means that I am enabled to hold the shed or warp open for so great a length of time, thus permitting the filling to be driven up with less expenditure of power, and without the liability of breaking either the warp or filling, as so frequently happens where the shed or warp closes upon the filling so long before it is beaten up.

In order to transmit motion to the loom and enable the operator to stand at the side of the

loom, I secure a bevel-wheel, *f*, to the shaft C, as shown in Fig. 3, this wheel *f* gearing into a similar wheel, *e*, secured to a shaft, *d*, running parallel with the side of the frame A, and having another beveled wheel, *b'*, secured to its opposite end at the front corner of the machine.

On the front side of frame A, and parallel therewith, is mounted another shaft, *n*, upon which is another beveled wheel, *b*, gearing into wheel *b'*, and on the outer end of this shaft *n* is a crank, *c*, by which the attendant operates the loom, as shown clearly in Fig. 2. By these means the attendant, while applying her force and the weight of her body in the natural and most effective manner for operating the loom, at the same time is enabled to overlook the work and instantly detect any broken thread or other mishap that may occur.

The operation of the machine will be readily understood by any one familiar with looms, and need not, therefore, be further described.

Having thus fully described my invention, what I claim is—

1. The combination of sleeve H, provided with the inclines or cams on its end, ratchet-wheel *i*, pinion G, and wheel C', provided with the pawl *h*, arranged to operate as and for the purpose set forth.

2. The sleeve H, provided with the cams on its end, as described, in combination with the sliding rod K and cam I, arranged to operate substantially as herein shown and described.

3. The cam I, constructed as shown and described, and arranged to move laterally on the shaft C, in combination with the treadles *k*, whereby one cam is made to operate all the treadles, and also to keep the treadle depressed during nearly the entire revolution of the cam, as and for the purpose set forth.

4. The combination and arrangement of shaft *n*, provided with the crank *c* and wheel *b*, with shaft *d*, provided with the wheels *b'* and *e*, when arranged to operate in connection with wheel *f* on the shaft C, as shown and described, for the purpose of enabling the attendant to stand facing her work.

JAMES L. BRANSON.

Attest:

WM. DOEGEN,  
L. HOMANN,