2 Sheets—Sheet 1.

S. HUFFMAN.

Sewing Machine.

No. 28,371. Patented May 22, 1860.

Fig. 1.

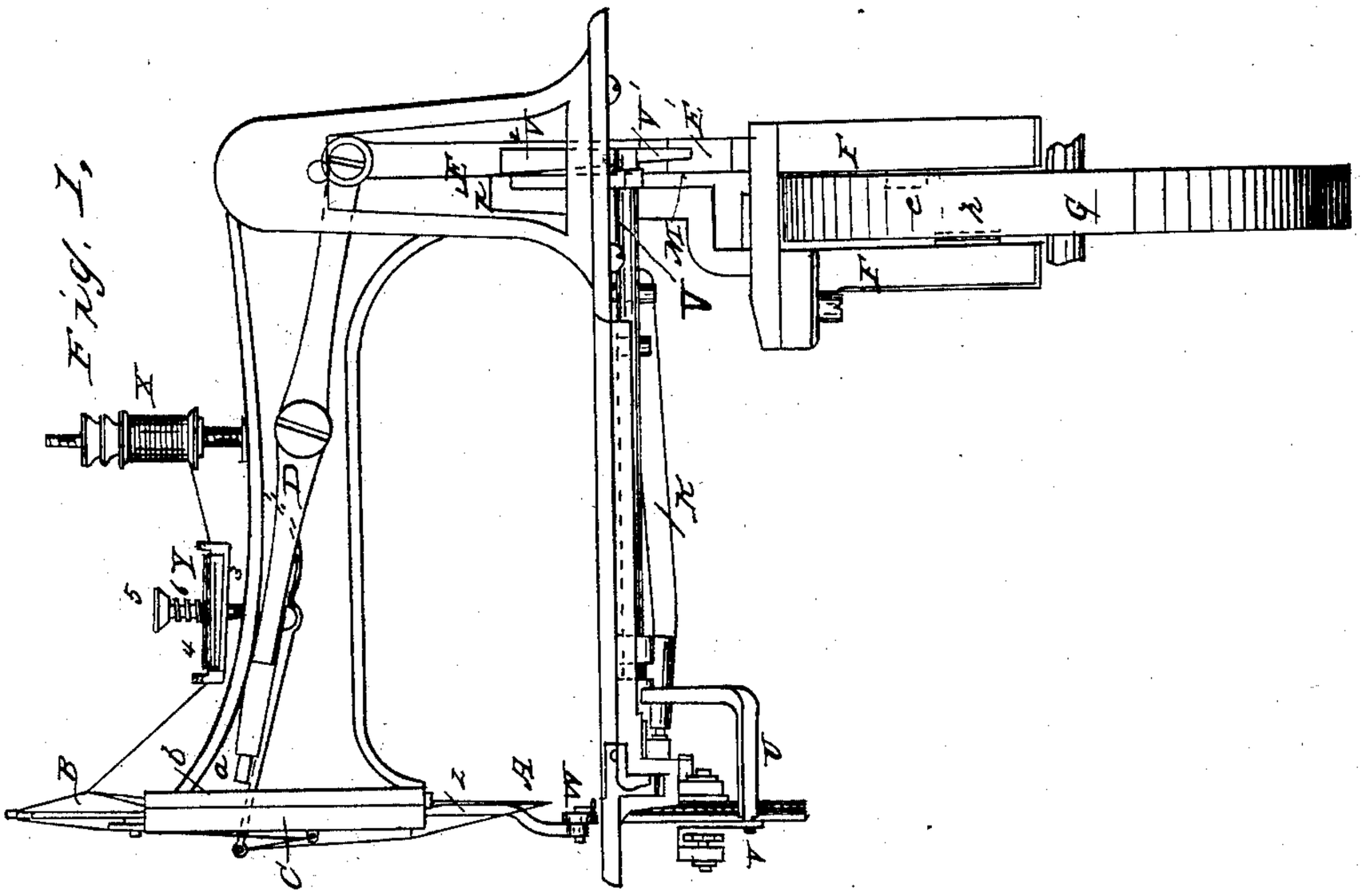
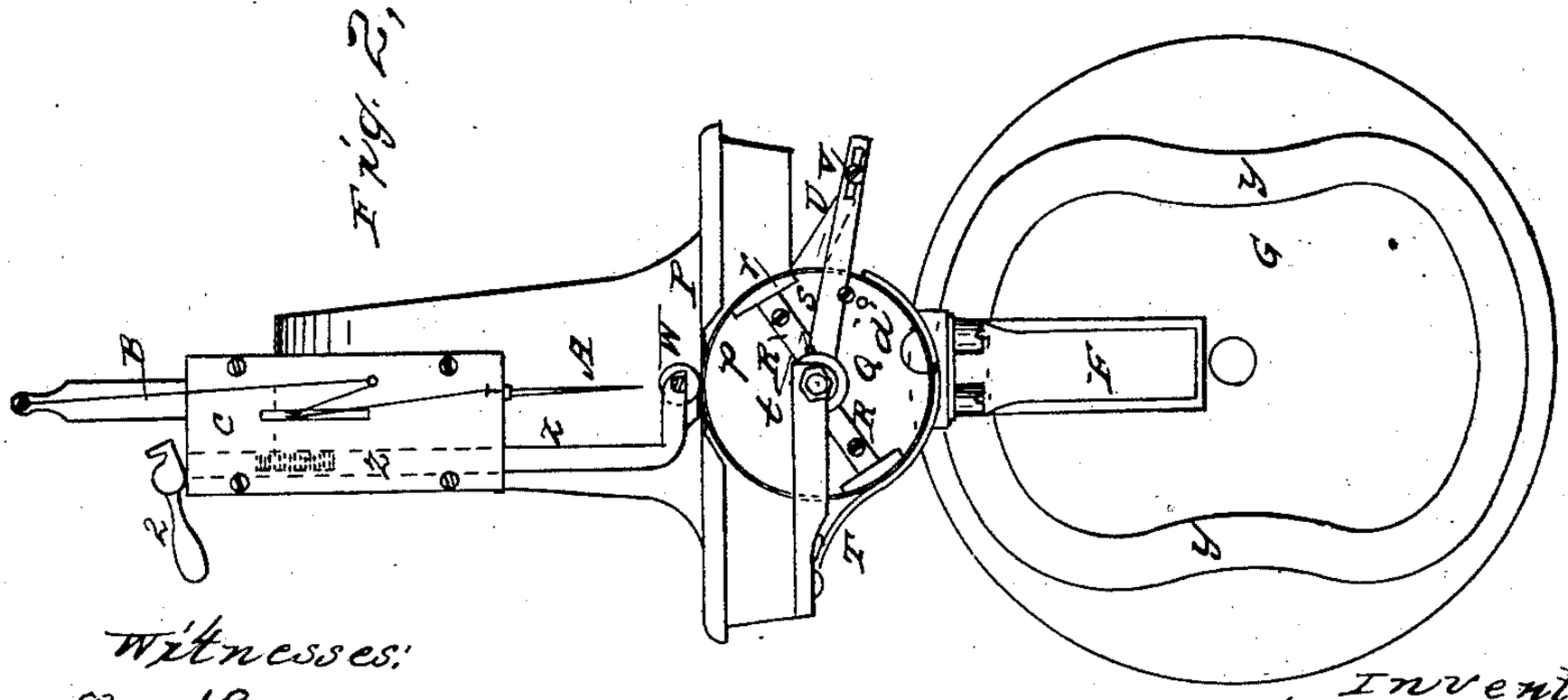


Fig. 2.



Witnesses:
Chas Everett
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2 Sheets—Sheet 2.

S. HUFFMAN.

Sewing Machine.

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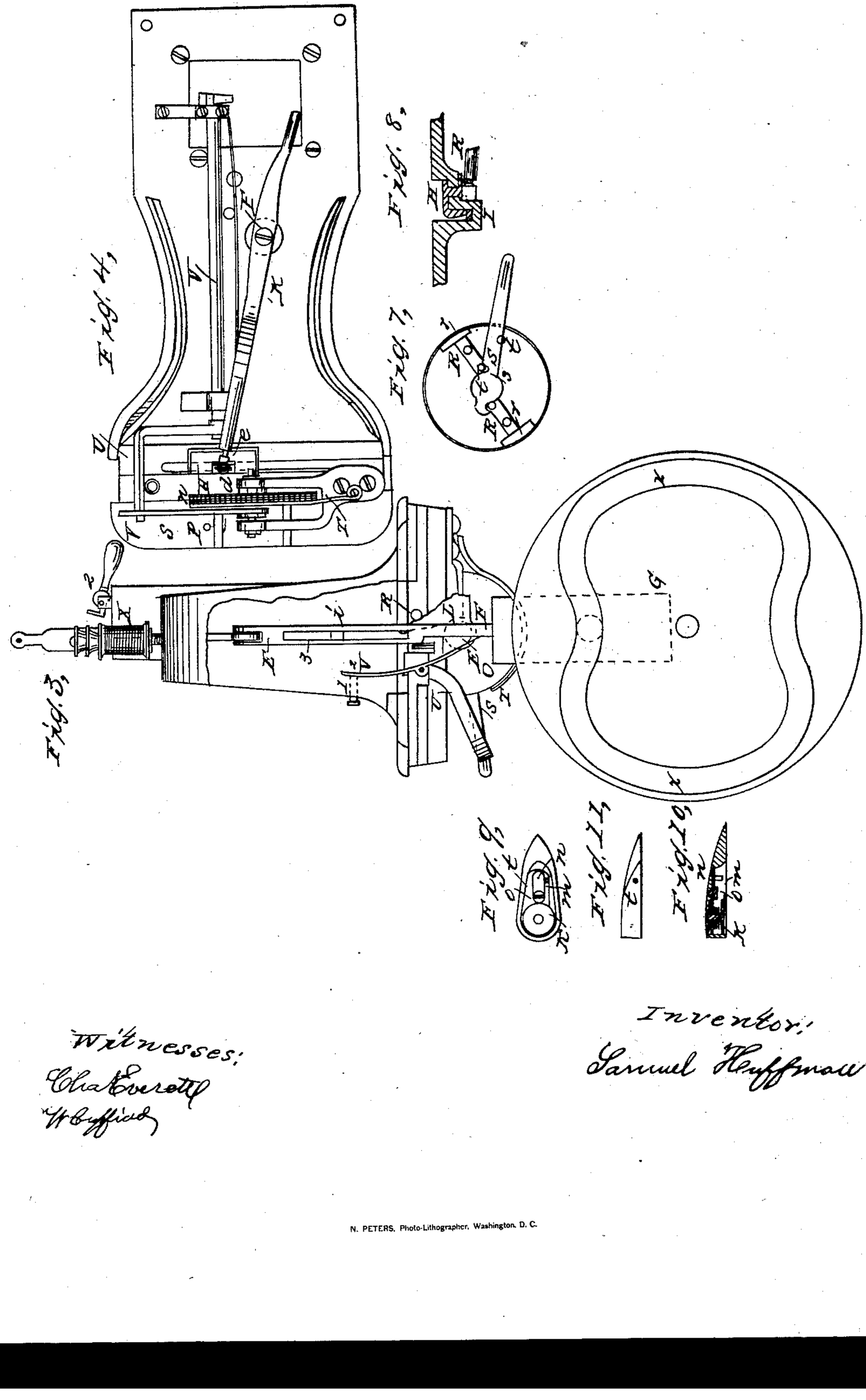

Witnesses:
Chas Everett
W Byfield

Inventor:
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UNITED STATES PATENT OFFICE.

SAMUEL HUFFMAN, OF RICHMOND, VIRGINIA.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. **28,371**, dated May 22, 1860.

To all whom it may concern:

Be it known that I, SAMUEL HUFFMAN, of Richmond, in the county of Henrico and State of Virginia, have invented certain new and useful Improvements in Sewing-Machines; 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, in which—

Figure 1 represents a side elevation of a sewing-machine with one of the side plates removed; Fig. 2, the front view of the same; Fig. 3, the rear view; Fig. 4, a bottom view of the bed-plate; Fig. 5, a view of a shuttle; Fig. 6, a longitudinal section of Fig. 5; Fig. 7, a detail of a feed apparatus; Fig. 8, a transverse section of the shuttle-carrier and shuttle-race; Fig. 9, a top view of the improved shuttle: Fig. 10, a longitudinal section of the same; Fig. 11, a side elevation of the same.

The machine represented in the drawings belongs to that class of double-thread sewing-machines in which a vertical reciprocating needle and a horizontal reciprocating shuttle are used, and as the general construction of such machines is well-known I will now, in proceeding to describe in detail my present improvements, omit the description of such parts as are not essential to the full understanding of my invention.

A is the needle, the carrier B of which is made to play in vertical guides formed in the frame C. A suitable reciprocating motion is communicated to this needle-carrier by means of the lever D, into the hollow tubular end of which fits a short arm, *a*, connected by means of a universal joint, *b*, with the needle-carrier B. To this lever the desired rocking motion is imparted by means of the connecting-rod E, which is mounted in a vertical groove or guideway formed for that purpose in the lower frame F, which supports the cam G. Said connecting-rod being provided at its lower end with a short arm or pin, *c*, made to engage in a continuous curved groove, *x*, formed for that purpose on the surface of the revolving disk or cam G, to which motion is to be imparted by means of a treadle (not represented in the drawings) or in any other convenient manner.

The curved continuous groove *x* is so shaped that during one revolution of the cam the connecting-rod should be caused to slide up and down twice, so that a vertical reciprocating motion will be imparted twice to the needle for each revolution of the cam.

In order to prevent too much friction in the groove *x*, a friction-roller is placed over the pin *c* of the connecting-rod.

H is the shuttle-carrier, which is mounted in a shuttle-race, I, in such manner as to slide freely in a horizontal transverse direction.

To the under side of the shuttle-carrier H is connected by means of a universal joint, *d*, an arm, *e*, which is made to fit into a hollow tubular end, *g*, of the lever *k*, having its fulcrum arranged at *f* on the under side of the machine. To this lever *k* a rocking motion is imparted by means of the sliding curved inclined plane L, so arranged as to act upon the projecting arm of the lever *k*. This curved inclined plane L is secured to a beam, M, which is kept in its proper vertical position by its lower end being made to pass in the vertical guideway or groove formed in the lower frame, F, directly opposite the groove which receives the connecting-rod E. This beam is provided at its lower end with a pin, *h*, armed with a friction-roller, which is made to engage in a curved continuous groove, *y*, formed on the other side of the revolving cam.

In order to prevent any vibration of the beam M during the operation of the machine, it is provided at its upper end with an arm, *i*, made to engage in a vertical slot or groove, *z*, formed in the connecting-rod E.

The shuttle N, as shown in Figs. 9, 10, and 11, is made of one piece of metal hollowed out on its inner side, so shaped as to present a point at its front end, from whence it gradually enlarges until it forms a suitable receptacle for the bobbin K, and for the reception of which a still deeper circular depression, *w*, is formed at the rear extremity. On the upper side of the shuttle, at a point near the front end of the shuttle, is formed a hole, *t*, for the passage through it of the thread from the bobbin K. Opposite this hole a pin, *m*, is so arranged in the depression of the shuttle that the thread which is made to pass around this pin shall extend in a tangential direction at right angles to the vertical plane through the axis of the bobbin. The small spring *n*, secured by means of a screw, *o*, serves the purpose of keeping down the thread, which might other-

wise override the pin *m*. By this arrangement, during the reciprocating motion of the shuttle, the direction of the thread will constantly remain the same in relation to the bobbin—that is to say, at right angles to the vertical plane through its axis—whereby the working is rendered much more even and regular than in machines in which, during the operation, the thread changes its direction in relation to the bobbin, and induces thereby constant inequalities of strain and tension.

The feeding mechanism consists of a wheel, O, mounted beneath the table of the machine in such manner that its upper edge should project into a slot formed for that purpose in the table P. The broad rim *p* of this wheel, a portion of which is corrugated or otherwise roughened, as shown in Figs. 1 and 4, incloses a loose disk, Q, into which suitable ruts are made for the reception of two arms, R, which are provided at their outer ends with a broad base, *r*.

The lever S, to which a rocking motion is imparted from the driving mechanism in a manner hereinafter to be more fully described, serves the purpose of operating the feeding mechanism. It is provided with notches *s*, so made as to engage with the pins *t*, projecting at the ends of the arms R, whereby, as the lever rocks, the arms R will be forced outward against the rim of the wheel O, so as to cause the latter to perform a partial revolution, together with the loose disk Q; but during the backward motion of the lever S, there being no pressure exerted upon the arms R, the feed-wheel O will remain stationary, while the disk Q is caused to revolve backward to its former position by the pin *t* being made to engage with the arm of the lever.

In order to prevent any casual retrograde motion of the feed-wheel O, a spring, T, is arranged to press sufficiently strong against a portion of its rim.

The curved arm U, with which the lever is connected by means of the bolt *v*, passing through a slot formed at the end of the said lever, extends from a rocking shaft, V, arranged beneath the table of the machine, and provided at its other end with an arm, V′, which is actuated by an inclined plane, E′, formed for that purpose at the side of the connecting-rod E.

For the purpose of regulating the feed motion, the rocking shaft is provided with another arm, V^2, opposite which a set-screw, 1, is arranged in such a manner that by adjusting it the amount of play of the arm V^2 and the rocking shaft V, to which it is secured, may be diminished as desired.

Immediately over the feed-wheel O a roller, W, is mounted in suitable bearings formed at the lower end of the spring-pressure beam Z, arranged in suitable guideways in the frame C. The handle 2 serves the purpose of lifting the spring-pressure beam Z whenever it is desired to raise its roller W from the feed-wheel O.

Y is the tension. It consists of a longitudinal bed-plate, over which is placed a similarly-shaped upper plate or cover, 4, the pressure of which upon the bed may be regulated by compressing by means of the screw 5 the spring 6, which is coiled around the upper end of the standard 7, which supports the bed-plate. By this arrangement the thread, which, passing from the bobbin K, enters through a slit formed for its reception at the projecting ends of the bed-plate, and leaves the tension at its other end through a similar aperture, being exposed to an equal extension on a large surface, will be capable of withstanding a great amount of tension with diminished liability of breaking.

The bottom of the race I contains a slip of metal, *i*, the thickness of which regulates the depth of the race. This can be changed for a larger or smaller one, thus rendering the race adjustable to suit shuttles of different sizes or needles of varying length.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The reciprocating shuttle N, when so constructed that its bobbin shall revolve upon an axis perpendicular to the plane of its motion, and when one side is closed, in combination with an adjustable yielding pressure upon the thread after it has passed from the bobbin, as herein specified.

2. Making the shuttle-race adjustable in its depth, substantially in the manner and for the purpose set forth.

In testimony whereof I have hereunto signed my name.

SAMUEL HUFFMAN.

In presence of—
CHAS. EVERETT,
LEWIS E. NEWTON.