2 Sheets--Sheet 1.

A. WARTH.

Mechanical Movements.

No. 151,457. Patented May 26, 1874.

Fig: 1.

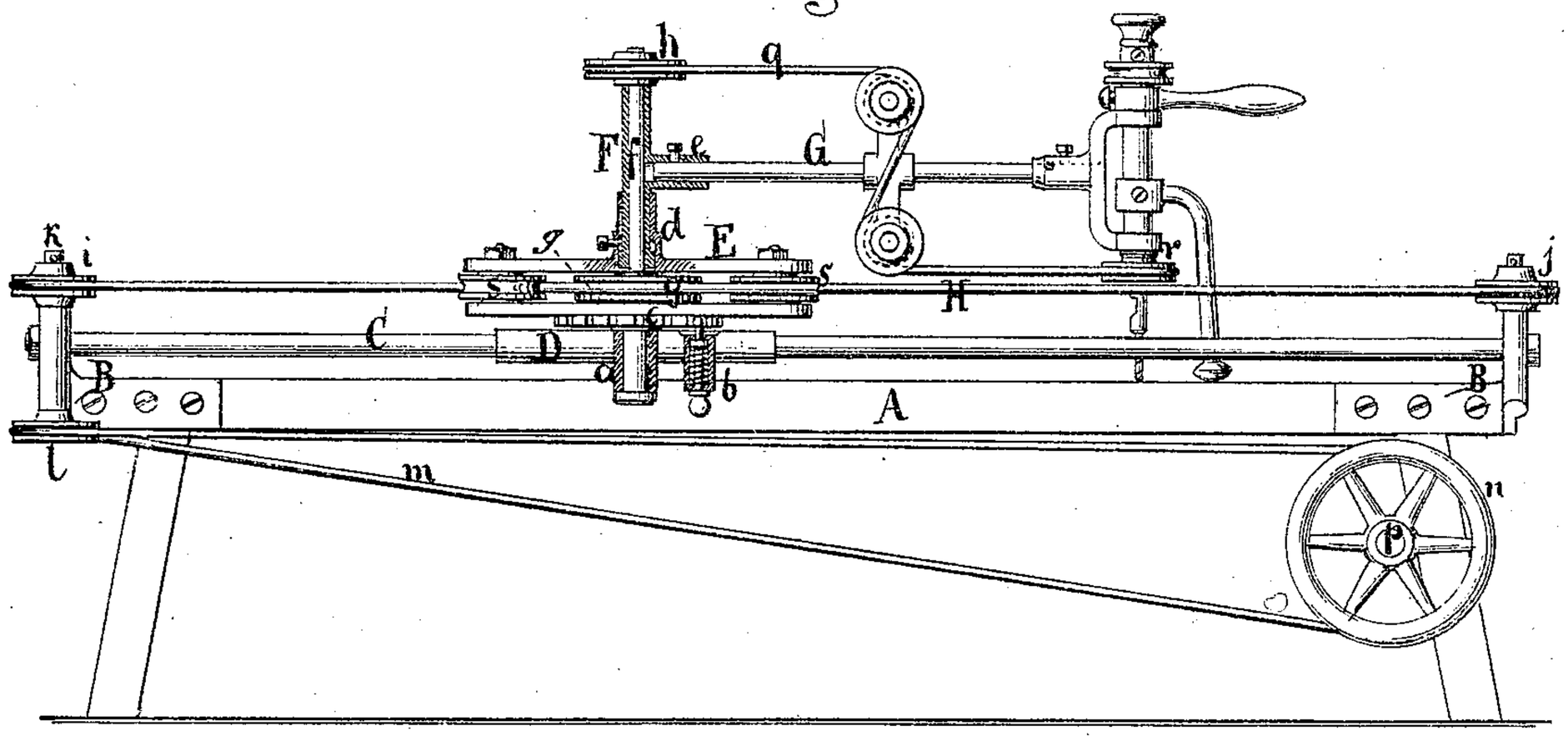


Fig: 2.

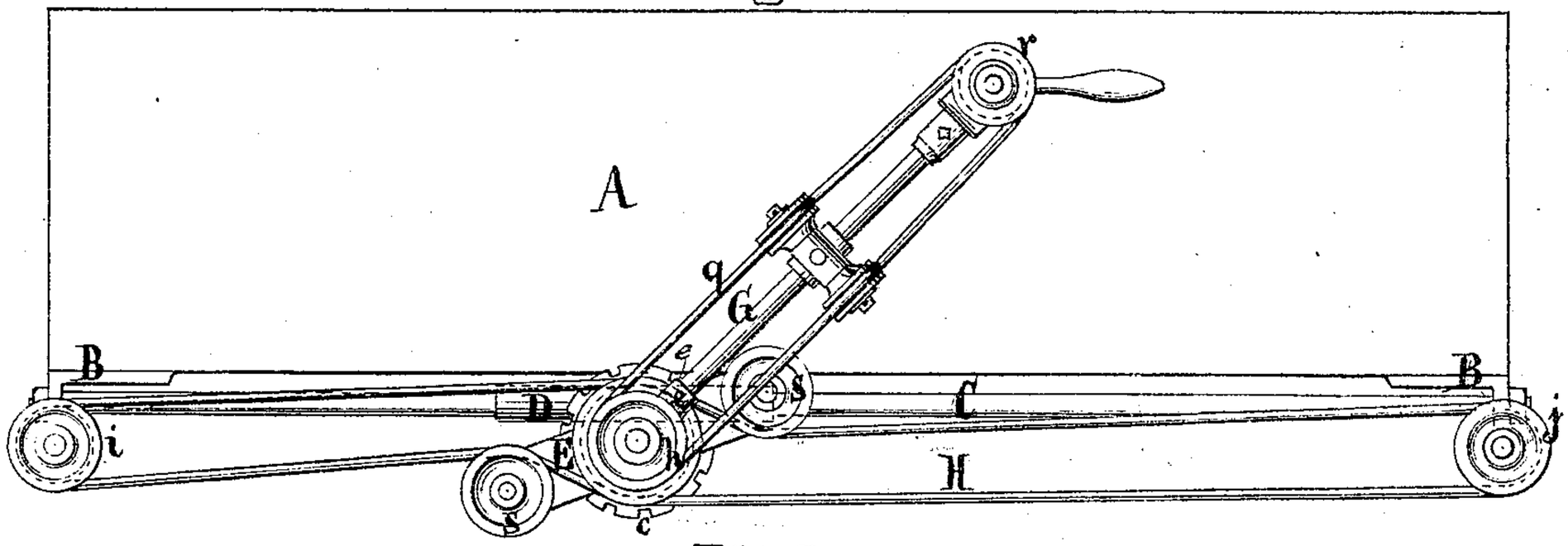
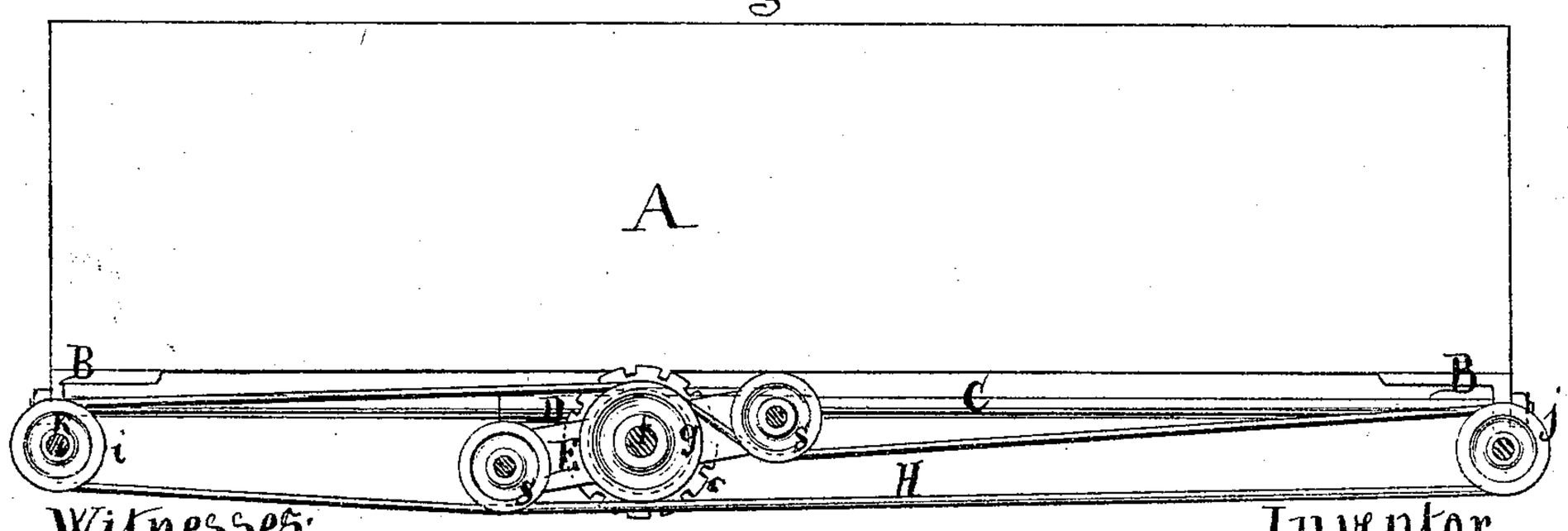


Fig: 3.



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2 Sheets--Sheet 2.

A. WARTH.

Mechanical Movements.

No. 151,457. Patented May 26, 1874.

Fig: 4.

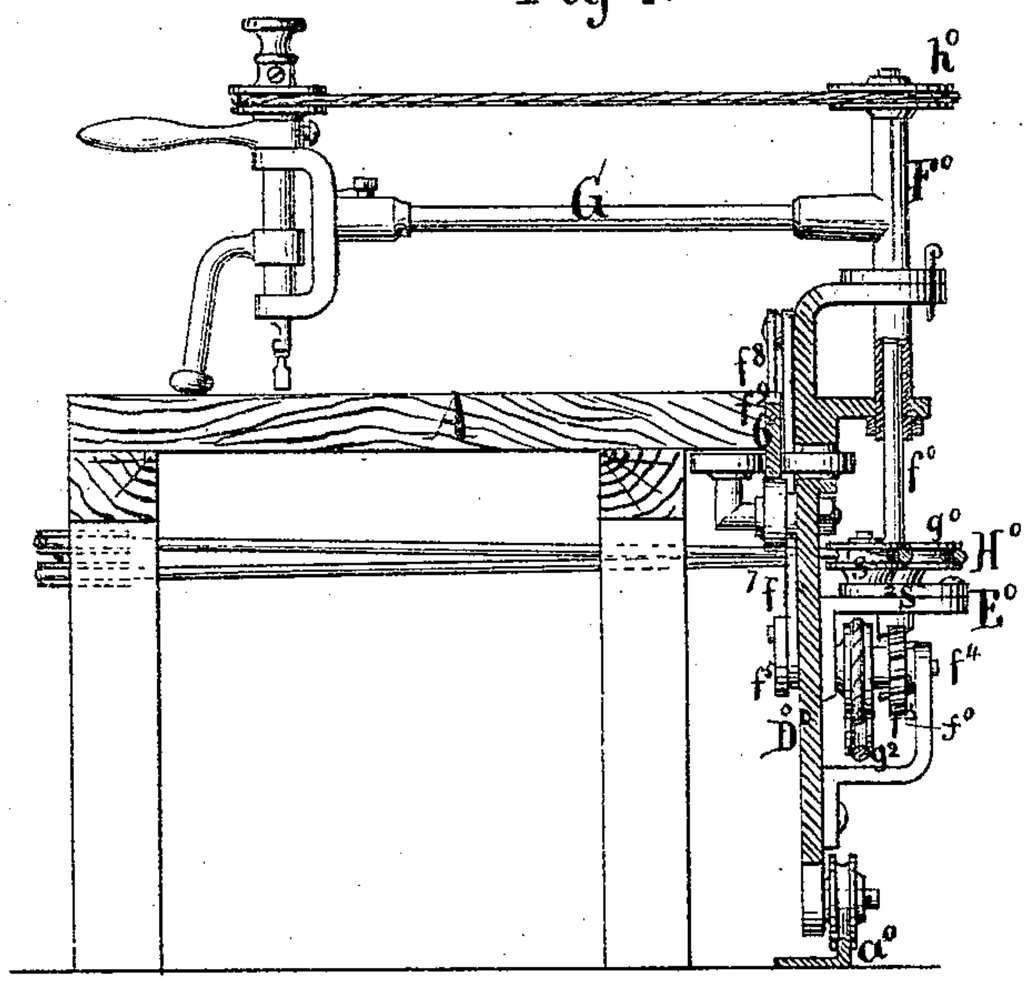


Fig: 6.

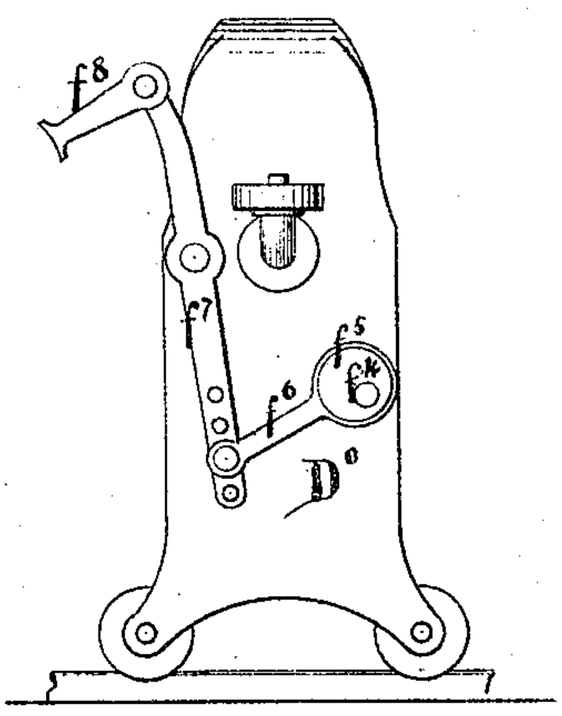
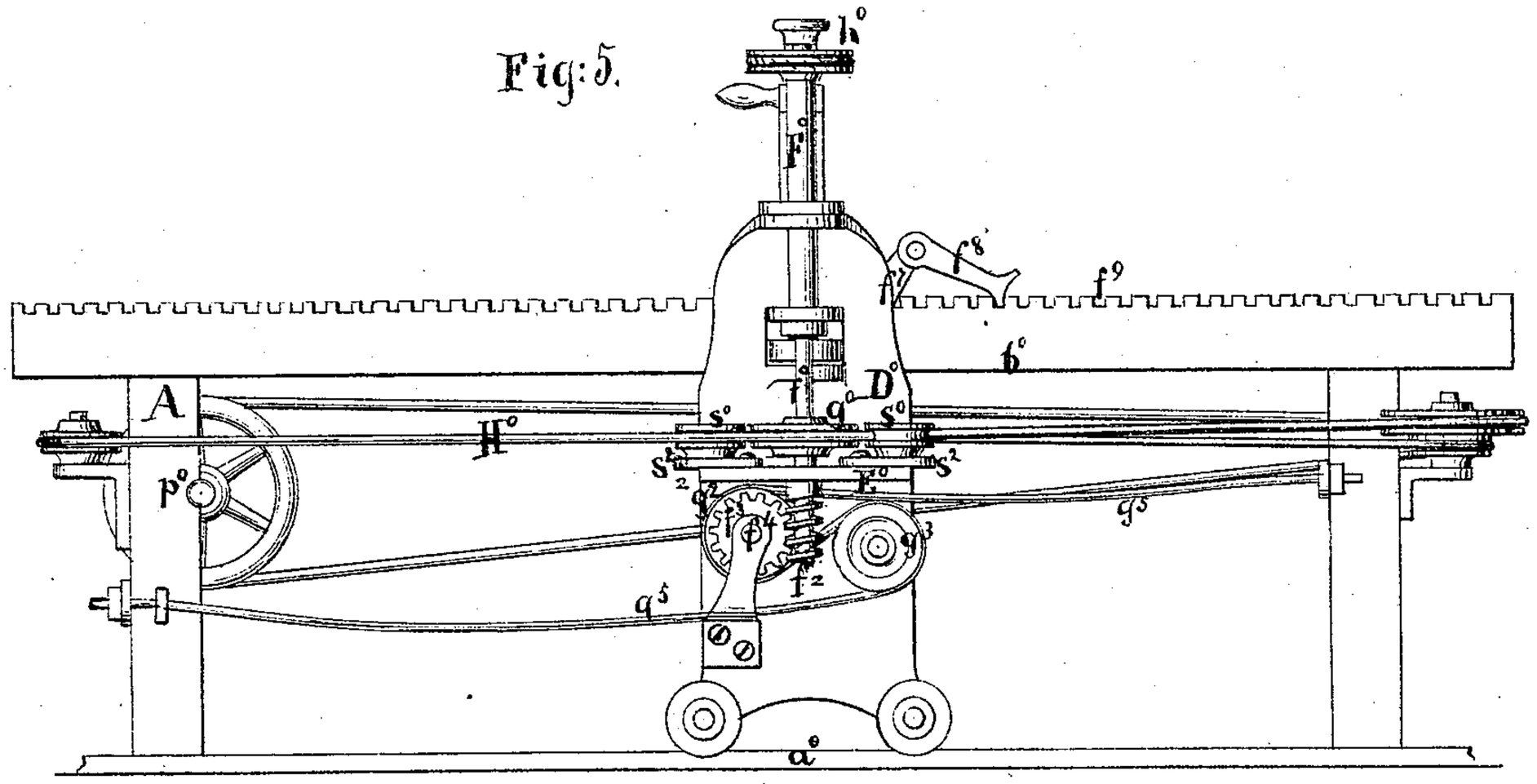


Fig: 5.



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UNITED STATES PATENT OFFICE.

ALBIN WARTH, OF STAPLETON, NEW YORK.

IMPROVEMENT IN MECHANICAL MOVEMENTS.

Specification forming part of Letters Patent No. 151,457, dated May 26, 1874; application filed April 22, 1874.

To all whom it may concern:

Be it known that I, ALBIN WARTH, of Stapleton, in the county of Richmond and State of New York, have invented a new and Improved Mechanical Movement; and I do hereby declare the following to be a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompany drawing, forming part of this specification, in which drawing—

Figure 1 represents a sectional side view of this invention. Fig. 2 is a plan or top view of the same. Fig. 3 is a similar view of the same when the driving mechanism is set different from the previous figures. Fig. 4 is a transverse section of a modification of the same. Fig. 5 is an elevation of one side of the same. Fig. 6 is a partial elevation of the opposite side.

Similar letters indicate corresponding parts.

This invention consists in a carriage which is acted on by a belt that receives a continuous motion from some source, said carriage being provided with a head containing a tubular swivel-standard and a shaft, from which motion is transmitted to a working machine secured to the swivel-standard, in such a manner that said working machine can be moved or be allowed to move the whole length of the traveling belt without interrupting its motion, while said working machine can be swung at the same time in any desired direction, and thereby the operation of such working machine is materially facilitated. The motion of the carriage may be continuous or intermittent, and its motion may be produced by hand or by the action of the mechanism itself.

In the drawing, the letter A designates a table, to which are secured brackets B, which support the guide-rail C of the carriage D. This carriage may be constructed in the form of a simple tube, which slides freely on the rail C, or it may be furnished with friction-rollers, bearing on the guide-rail so as to facilitate its motion; or it may be constructed in the manner shown in Figs. 4, 5, and 6, as will be hereinafter more fully described. On this carriage is secured a head, E, which turns on a tubular foot or pivot, *a*, and is arrested in the required position by a spring-catch, *b*, which is fitted in a suitable socket secured to said carriage, and which engages with a notched disk, *c*, that is firmly secured to the head E. From said head extends a tubular standard, F, which swivels freely in a socket, *d*, formed on the head for its reception. From the side of this swivel-standard projects a socket, *e*, for the reception of an arm or rod, G, which supports the working machine, as will be presently more fully described, and through said swivel-standard extends a solid shaft, *f*, on which are mounted two pulleys, *g h*. The pulley *g* is situated inside of or close to the head E, in the plane or line of a belt, H, which is stretched over two pulleys, *i j*, secured to the table A. One of the pulleys is mounted on a shaft, *k*, which carries a second pulley, *l*, that connects, by a belt, *m*, with a pulley, *n*, mounted on the driving-shaft *p*. If motion is imparted to said driving-shaft, the belt H receives a continuous motion, and if the pulley *g* in the head E is brought in contact with this traveling belt the shaft *f* receives a continuous revolving motion, while the carriage D can be moved the whole extent of said belt without stopping the motion of the shaft *f*. The working machine attached to the swivel-standard F may be, for instance, a drill, and motion is transmitted to this drill by a belt, *q*, running from the pulley *h* on shaft *f* to pulley *r* on the driving-shaft of the drill. By means of the traveling belt and the carriage D, the drill can be moved over the whole surface of the table A, and it can be turned in either direction, by means of the swivel-standard, without throwing it out of gear with the traveling belt. I am, therefore, enabled to drill holes in a heavy piece of metal at many different places without being compelled to move the work. In the same manner a mortising-machine may be secured to the swivel-standard, and mortises can be produced in heavy pieces of timber at various places without moving the timber. In order to insure the action of the traveling belt H on the pulley *g*, I have mounted in the head E two other pulleys, *s s*, on either side of the pulley *g*. If the traveling belt is carried through between the pulleys *s g s*, as shown in Fig. 2, the shaft *f* is turned round without fail, and, at the same time, the carriage can be moved on its guide-

rail C without destroying the connection between the traveling belt and the shaft *f*. By turning the head **E** on its foot *a* the tension of the belt H on the pulleys *s g s* can be increased or decreased to suit circumstances. If the traveling belt, strained to a proper tension, is carried over the pulleys *s g s*, in the manner shown in Fig. 3, it serves to carry the carriage D along on the guide-rail C without imparting motion to the shaft *f;* but when the carriage D is retained in a stationary position, the shaft *f* is turned, and the motion of the traveling belt is transmitted to the working machine. By this arrangement I am enabled to move the carriage D, together with the working machine, along the table A by the action of the traveling belt, and when I desire to impart motion to the drill, or other tool secured in the working machine, all I have to do is to retain the carriage in a stationary position. Instead of arranging the carriage D on a single guide-rail, as shown in Figs. 1, 2, and 3, I have also placed the same on the side of the table, as shown in Figs. 4, 5, and 6. In these figures, the letter A represents the table, and D^0 is the carriage, which runs between two rails, a^0 b^0, one of which is secured to the floor, and the other to the edge of the table. From the side of this carriage projects the head E^0, which forms the bearing for the shaft f^0, that extends up through the tubular standard F^0, which swivels in suitable brackets secured to the carriage D^0. On the shaft f^0 are mounted pulleys g^0 h^0, and the head E^0 carries the pulleys s^0 s^0, the supporting-plates s^2 s^2 of which are adjustable for the purpose of regulating the tension of the traveling belt H^0. This belt receives motion from the driving-shaft p^0 in any suitable manner, and, as the same is carried through between the pulleys s^0 g^0 s^0 in the manner previously described, it imparts motion to the shaft f^0 or to the carriage D^0. On the lower end of the shaft f^0 I have secured an endless screw, f^2, which meshes in a worm-wheel, f^3, mounted on a shaft, f^4, that extends through the carriage D^0, and carries on its inner end an eccentric, f^5, which connects by a strap, f^6, Fig. 6, with a lever, f^7, to the upper end of which is secured a pawl, f^8. This pawl can be thrown in gear with a rack, f^9, secured to the edge of the table, and if the traveling belt H^0 is so adjusted on the pulleys s^0 g^0 s^0 that it imparts motion to the shaft f^0, the lever f^7 receives an oscillating motion, and by the action of the pawl f^8 and rack f^9 a step by-step motion is imparted to the carriage. On the shaft f^4 is also mounted a pulley, g^2, and another pulley, g^3, is secured on a stud fastened in the carriage. Round these two pulleys may be extended a belt, g^5, the ends of which are firmly secured to the legs of the table, and as the pulley g^2 receives a slow motion the carriage D^0 is caused to travel along automatically on the side of the table, keeping the pulley g^0 of the shaft f^0 constantly in gear with the traveling belt. While the belt g^5 is used the pawl f^8 must be thrown out of gear with the rack f^9. The swivel-standard F or F^0 can be secured in position by a set-screw or pin, so that the arm G, which carries the working machine, becomes rigidly connected to the head E or E^0.

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

1. A carriage which is acted on by a traveling belt, H, said carriage being provided with a head containing a tubular swivel-standard and a shaft, from which motion is transmitted to a drill or mechanism adapted to be connected with said swivel-standard, substantially in the manner herein shown and described.

2. The combination of a traveling belt, H, carriage D, a head, **E**, and a shaft, *f*, for operating a drill or other mechanism, substantially in the manner set forth.

3. The tension-disk *c* and spring-catch *b*, in combination with the head E, containing pulleys *s s g*, and with the shaft *f*, carriage D, and traveling belt H, substantially as shown and described.

4. The pawl f^8 and rack f^9, in combination with the carriage D^0, head E^0, and traveling belt H^0, substantially as set forth.

5. The stationary belt g^5, in combination with the carriage D^0, head E^0, and traveling belt H^0, substantially as described.

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Witnesses:

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