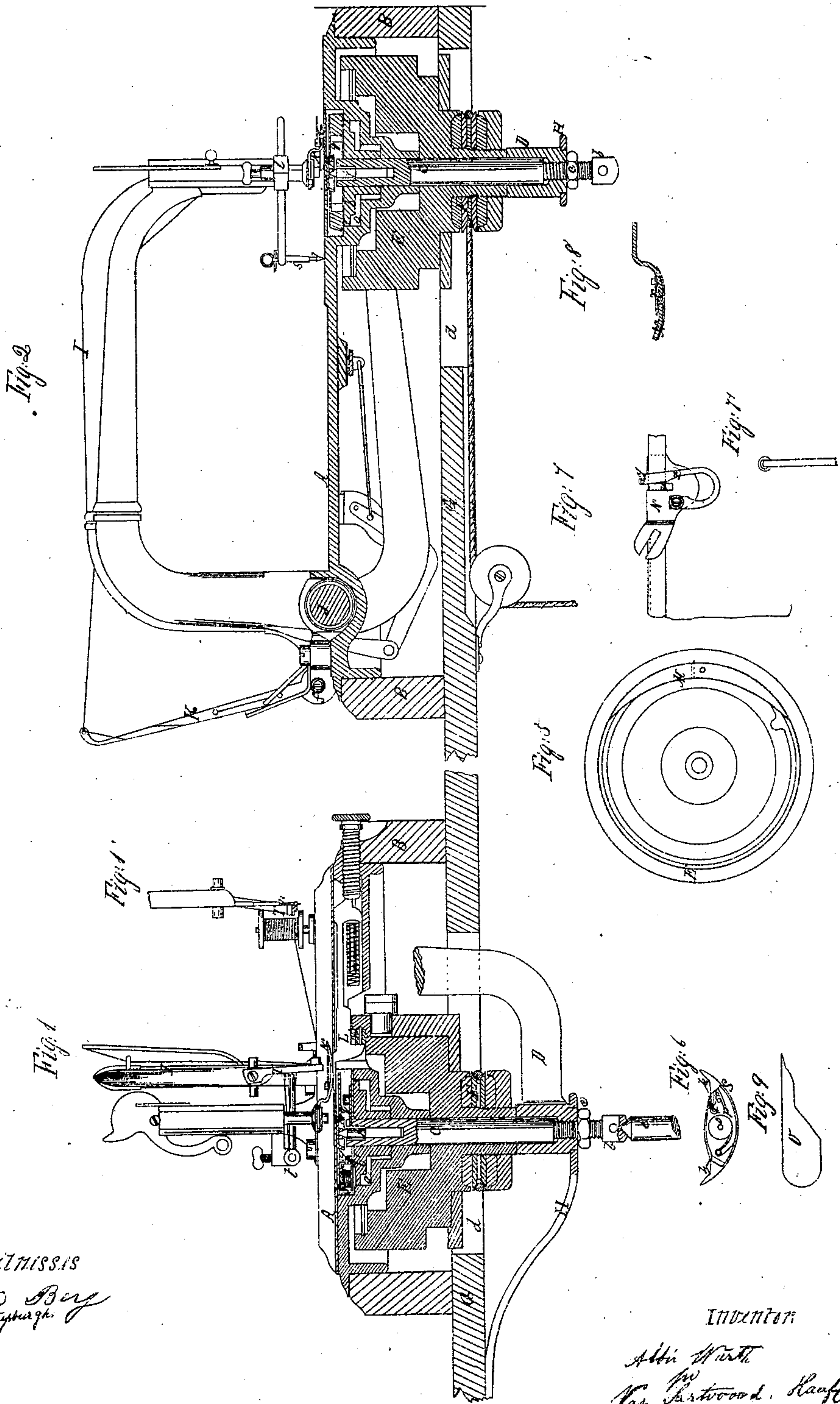


A. Warth. Sewing-Machine.

N^o 73064

Patented Jan. 7, 1868.



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Fig. 4

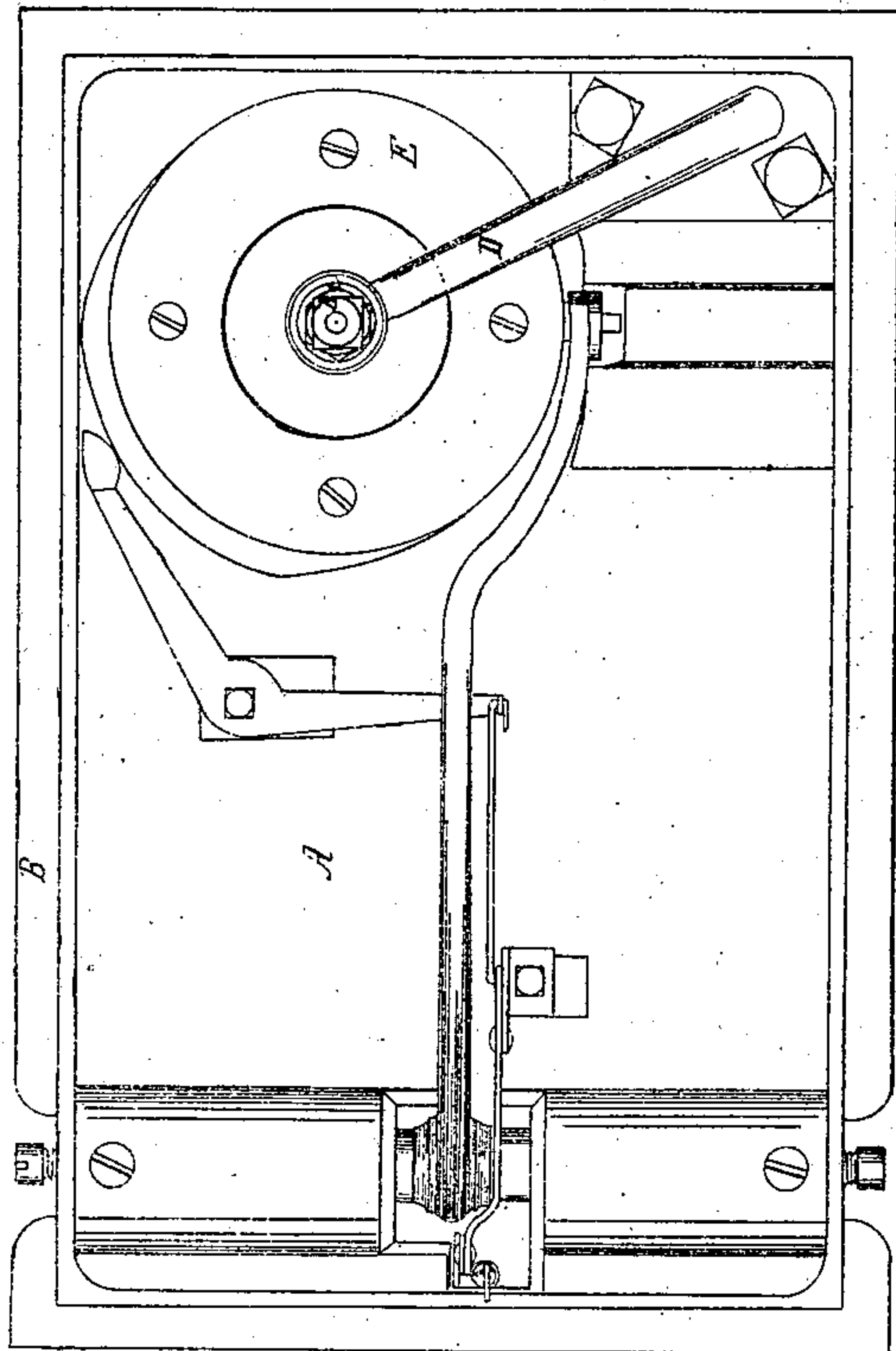


Fig. 11

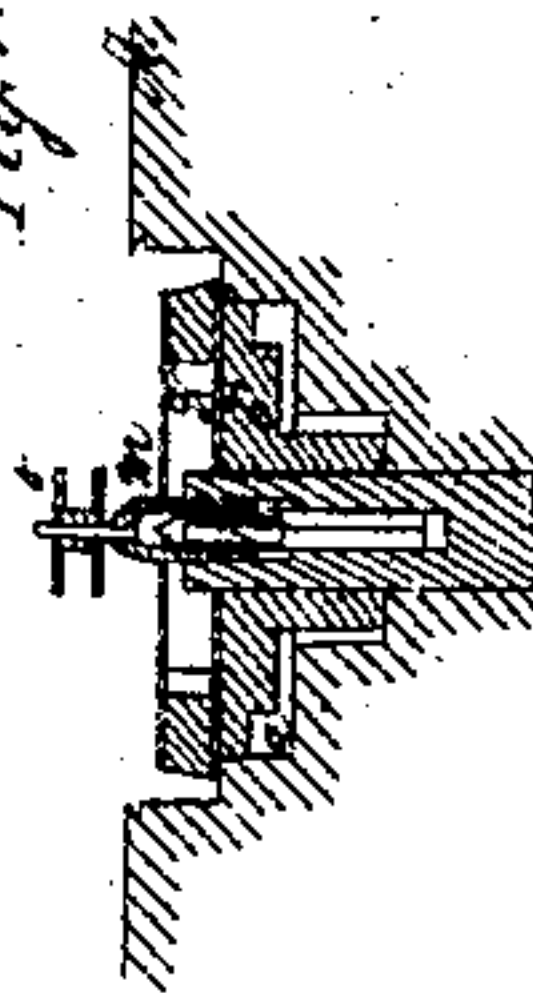


Fig. 10

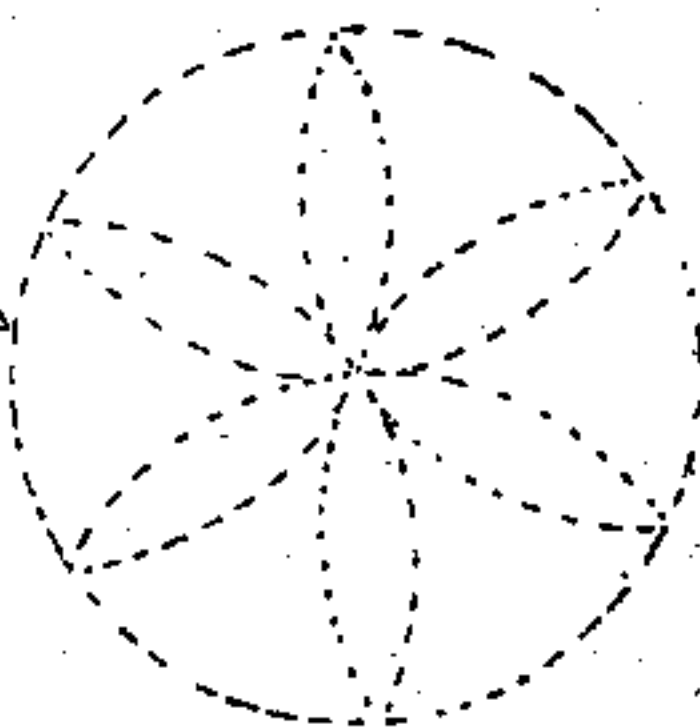


Fig. 12

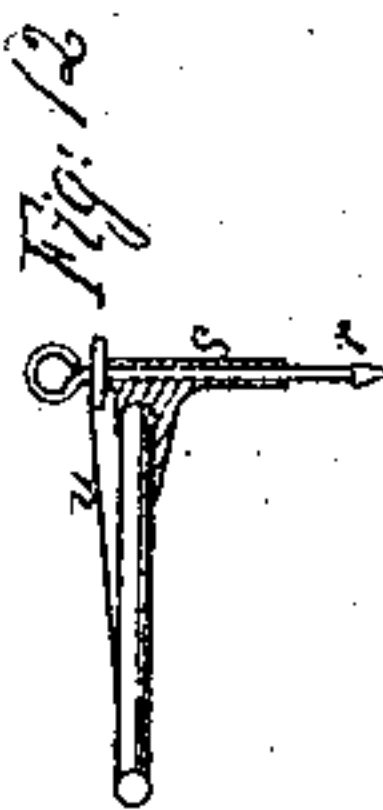
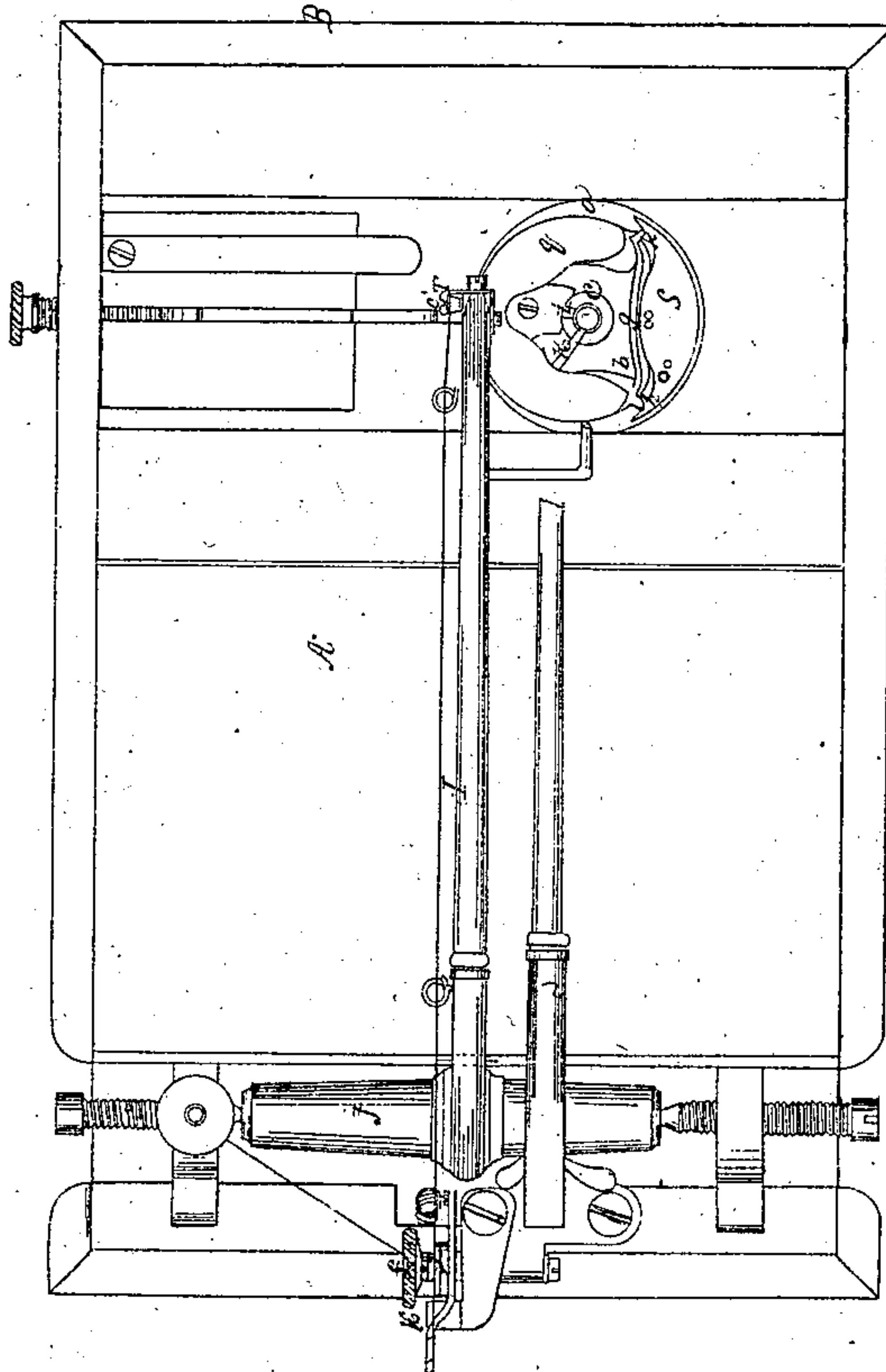


Fig. 3



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Letters Patent No. 73,064, dated January 7, 1868.

IMPROVEMENT IN SEWING-MACHINES.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, ALBIN WARTH, of Stapleton, in the county of Richmond, and in the State of New York, have invented a new and useful Improvement in Sewing-Machines; and I do hereby declare that the following is 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 accompanying drawing, forming part of this specification, in which drawing—

Figure 1 represents a transverse vertical section of this invention.

Figure 2 is a longitudinal vertical section of the same.

Figure 3 is a plan or top view of the same.

Figure 4 is an inverted plan of the same.

The remaining figures are details, which will be referred to as the description progresses.

Similar letters indicate corresponding parts.

This invention relates to a sewing-mechanism, which is secured to its supporting-table by means of a swivel-shaft situated under the throat-piece, in such a manner that it can be readily turned on the table in either direction, to suit the convenience of the operator. The revolving motion of the sewing-mechanism takes place round the cam-shaft, and this shaft is supported by a screw with a centre-point at one and a cavity or hollow centre at the opposite end, said hollow centre being intended to fit on a standard rising from the frame that supports the table of the sewing-machine, in such a manner that in turning the sewing-mechanism the friction on the surface of the table is reduced, and the operation of turning the sewing-mechanism can be effected with ease and facility.

The pulley which imparts motion to the sewing-mechanism is mounted on the cam-shaft round which the sewing-mechanism turns, so that the driving-belt does not interfere with the operation of turning the sewing-mechanism on its table. A double-pointed shuttle is used in combination with a cam that imparts a positive motion to the take-up, said cam being so formed that it produces the required motion of the take-up in whatever direction the sewing-machine is worked.

The double-pointed shuttle is provided with radiating shoulders, so that the pressure of the shuttle-driver will have no tendency to force the shuttle out against the inner circumference of the shuttle-race, and said shoulders are chamfered off so that the discharge of the loop of the needle-thread from the shuttle is facilitated. The shuttle-thread is retained by an elastic centre, which consists of a cap placed loosely on a yielding centre-point in such a manner that the upper surface of said cap is free to adjust itself to the inner surface of the top of the shuttle-race, and the requisite strain on the shuttle-thread is insured. When the cap is removed, a short split tube can be inserted over the yielding centre-point, said tube being provided with a stem of such a size that it fits the bobbin or spool in the shuttle, and a simple and convenient device for winding the required thread on said spool is obtained. The shuttle rests on a disk, which is mounted on the driving-shaft, and revolves with the same, so that no friction is created on the bottom of the shuttle-race; and from said disk rises a bench to a level with the upper surface of the shuttle, in such a manner that the shuttle-thread and the loop, after having passed over the shuttle, are prevented from dropping down in front of the point of the shuttle. For the purpose of sewing curved or circular seams, a centre-point of peculiar construction is employed, and in combination with this adjustable stationary centre-point, a movable centre-point rising from the feed-bar is used, so that the fabric to be sewed is free to turn round the stationary centre-point without wrinkling. The presser-foot is provided with a recess or slot and with an adjustable spring for braiding.

The cam which imparts motion to the feed-bar is adjustable, so that it can be readily set to correspond to the direction in which the machine is made to work. To the needle-arm is hinged a needle-threader, which, when turned down, serves to adjust the needle in the proper position, and facilitates the operation of threading said needle.

A represents the cloth-plate of my sewing-mechanism, which is made of cast iron or any other suitable material, and is supported by the bed B. In the cloth-plate is a circular recess, *a*, through which rises the shaft C, and on the upper end of this shaft is fitted the disk *b'*, which serves to support the shuttle S. The lower end of the shaft C has its bearing in an arm, D, which is rigidly attached to the under surface of the cloth-

plate, and said shaft is adjustable up and down by a screw, *b*, which screws in the arm D, as shown in figs. 1 and 2, and which is locked in the required position by a lock-nut, *c*. On the shaft C are mounted the cam E and the driving-pulley F, and the bed B is supported by the table G, which is perforated with an aperture, *d*, to admit the arm D and the shaft C with its cam and pulley. To the under surface of the table is secured an arm, H, which embraces the lower end of the arm D, so that the bed B, together with the entire sewing-mechanism, can be swivelled on the table G in either direction. The head of the screw *b* is countersunk to admit the pointed end of standard *e*, (shown in red outlines in fig. 1,) which rises from the frame supporting the table G, and which is intended to be adjustable, so that by its action the table is relieved from the main portion of the weight of the sewing-mechanism, and said mechanism can be swivelled on the table with comparatively little friction. The belt which imparts motion to the shaft C extends round the pulley F, so that the same does not interfere with the swivel motion of the sewing-mechanism.

The cam E produces the oscillating motion of the needle-arm I, which has its fulcrum on the rock-shaft J, and said cam is so shaped that it will produce the required motion of the needle-arm in whatever direction the shaft C is turned, and the machine, when used with the double-pointed shuttle, will make a good stitch when worked in either direction. This object is effected by forming the cam so that it forms two loops for each revolution, either one or the other loop being used, according to the direction in which the double-pointed shuttle moves.

K is the take-up, which oscillates on the screw or pivot *f*, motion being imparted to it by the cam E, which is so shaped that it produces the requisite motion of the take-up in whatever direction the shaft C may be revolved. The advantage of the independent take-up has been fully described in one of my previous applications for a patent, and I do not therefore repeat it here.

The shuttle S, which rests on the disk *b'*, is carried round in the recess *a* of the cloth-plate by the action of the shuttle-driver *g*, which is provided with two noses to bear on the shoulders *h* of the shuttle. These shoulders are made to coincide with radii drawn from the centre of the shuttle-race or recess *a*, so that the action of the shuttle-driver does not produce an outward pressure on the shuttle, and consequently the friction of said shuttle on the circumference of the shuttle-race is not increased from that source. The shoulders *h* are chamfered off from both sides toward the middle, so that the loop of the needle-thread readily passes over them, and the discharge of the needle-thread is also facilitated by the radial position of said shoulders, since by giving such a position to said shoulders the thread is prevented being wedged in between the shuttle-driver and the shuttle.

The disk *b'* is placed loosely on the upper end of the shaft C, being compelled to revolve with the same by a key or projection, *i*, which drops into a groove on the shaft, as shown in fig. 3, and the shaft is bored out to receive the yielding centre *j*, which is supported by the spring *k*, (see fig. 3.) This centre terminates in a sharp point, on which is placed the cap *k'*, so that the upper surface of the cap is free to accommodate itself to the inner surface of the cover of the shuttle-race, and consequently said cap is capable of retaining the shuttle-thread with a uniform tension, thereby preventing the shuttle from catching in its own thread. At the same time the centre-point is free to revolve in the cap with very little friction if the cap should remain stationary by its action on the thread or on the cover of the shuttle-race. The upper portion of the socket of the yielding centre is bored out somewhat larger than the body of the centre, so that a split tube, *m*, can be placed over it, and in order to compel this split tube to revolve with the shaft C, the shank of the yielding centre is made square to fit in a correspondingly square part of the socket. The split tube is provided with a stem to fit the central hole in the bobbin or spool *o* of the shuttle, so that the same can be readily placed thereon for winding the thread.

During the operation of winding, the cover of the shuttle-race and the cap *K'* have to be removed, (see Figure 11.) The tension of the shuttle-thread is regulated in the shuttle by two open pins, *p p'*, one of which is provided with a hook, so as to prevent the thread from slipping off or coming in contact with the spool, the space in the shuttle being necessarily crowded, and the position of the pins being such that the thread is liable to slip off. A bench, *q*, which rises from the disk *b'* to a level with the upper surface of the shuttle, or nearly so, and which fills up that portion of said disk not occupied by the shuttle and shuttle-driver, serves to support the shuttle-thread and the loop of the needle-thread, after the same has passed over the shuttle, and prevents the same from dropping down in front of the shuttle, and thereby a correct operation of this portion of the sewing-mechanism is insured.

In sewing circular or curved seams, such as shown in Figure 10, I use a centre-point, *r*, a detached sectional view of which is shown in Figure 12. It consists of an angular arm, which is adjustable in a socket, *t*, on the side of the arm that supports the presser-foot, and said arm is provided at its loose end with a tubular socket to receive the point *r*. This point is depressed by the action of a spring, *u*, and it is provided with a handle, so that it can be conveniently raised against the action of said spring. By this arrangement I am enabled to raise the point out of contact with the fabric to be sewed, whenever it may be required, without disturbing the position of the angular arm in its socket, *t*. While sewing curved seams, I use a movable centre, *v*, which projects from the feed-bar L. If an ordinary rough-surface feed is used, the material to be sewed is not free to turn round the centre-point *r*, and it is liable to become wrinkled; but by using a feed-bar, with a single point, the material can turn freely round the centre-point *r*, and smooth and even seams are produced. The motion of the feed-bar is produced by a cam, M, which is secured to the inner surface of the main cam E, and which is plainly shown in fig. 5. This cam is adjustable on the cam E by a screw or catch, so that it can be readily moved a sufficient distance, and secured in the proper position to correspond to the direction in which the machine is turned. In order to obtain a correct feed, it must begin to act when the needle leaves the fabric, and fall back as soon as the needle begins to enter said fabric; and if the cam M should be made stationary, it could be set

to produce the required feed as the machine revolves in one direction, but it would not work correctly if the machine should be reversed. But, since one of the main advantages of the double-pointed shuttle consists in that it allows of producing a stitch in whatever direction the machine is turned, it is indispensable to have the cam M adjustable, so that it can be set to correspond to the direction in which the machine is turned. The presser-foot N of my sewing-machine is provided with a recess, *w*, to admit the braid, and with a spring, *x*, which is screwed down on the top of said presser-foot, and which is provided with an oblique edge bearing on the presser-foot near the edge of the recess *w*. By said oblique edge the outer edge of the braid is kept in close contact with the guide-hook or lip *y*, that projects down from the spring over the edge of the presser-foot, (see Figure 7.) By this arrangement I am enabled to sew a braid close to the edge of the material to which said braid is to be secured, and after one edge of the braid has thus been secured, it can be readily turned over and secured at its other edge, as indicated in fig. 7. When the braid is not to be used, and in sewing circular or curved seams, the recess *w* is filled up by inserting a suitable slide or filling-piece. The needle *n* is secured in the needle-arm in the usual manner, and to the side of the needle-arm is hinged the needle-threader T. This needle-threader is provided with a notch, *c'*, (see fig. 3,) and when it is turned down to the position shown in figs. 1 and 1*, said notch drops over the needle, and retains the threader in the proper position in relation to the needle. After the thread has been introduced, the needle-threader is turned up out of the way. This hinged needle-threader is subjected to the action of a spring, *s'*, which retains the same when turned up, and also when turned down, and which keeps the same, when turned down, in close contact with the needle, so that the thread can be readily introduced. Said needle-threader also serves to adjust the needle in the proper position, and this operation is effected by the aid of a pointed piece of sheet steel, O, (see Figure 9.) When the needle-threader is down, the pointer O is introduced into the same, and the needle is moved up and down until the point of said pointer passes through its eye, the edge of said pointed piece being held down close to the bottom of the needle-threader. After the needle has once been set, the needle-threader, when turned down, will, without fail, come in the required position to guide the thread to the needle-eye.

It is obvious that this needle-threader is applicable to sewing-machines of any desired construction.

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

1. The arm D and brace H, in combination with each other and with the shaft C, table A, and platform G, substantially as and for the purpose described.
2. The independent take-up K and cam E, in combination with the double-pointed shuttle S, constructed and operating substantially as and for the purpose set forth.
3. Making the shoulders *h* of the double-pointed shuttle S radiating from the centre of the shuttle-race, substantially as and for the purpose described.
4. The arrangement of the winding-attachment *m*, in combination with the elastic centre *j*, substantially as and for the purpose set forth.
5. The cap *h'*, in combination with the elastic centre *j*, and with the shuttle-race, constructed and operating substantially as and for the purpose described.
6. The hooked pin *p'*, in combination with the pin *p* in the shuttle, substantially as and for the purpose set forth.
7. The movable centre *v*, in combination with the adjustable centre-point *r*, constructed and operating substantially as and for the purpose set forth.
8. The adjustable cam M on the main cam E, combined and operating in connection with the feed-bar L, substantially as and for the purpose set forth.
9. The recess *w* in the presser-foot, in combination with the adjustable spring *x*, constructed as described, which keeps the braid up against the shoulder *y*, substantially as and for the purpose set forth.

ALBIN WARTH.

Witnesses:

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G. BERG.