(No Model.)

2 Sheets—Sheet 1.

E. S. REED.

MOTOR FOR MACHINES.

No. 484,238. Patented Oct. 11, 1892.

Fig. 1.

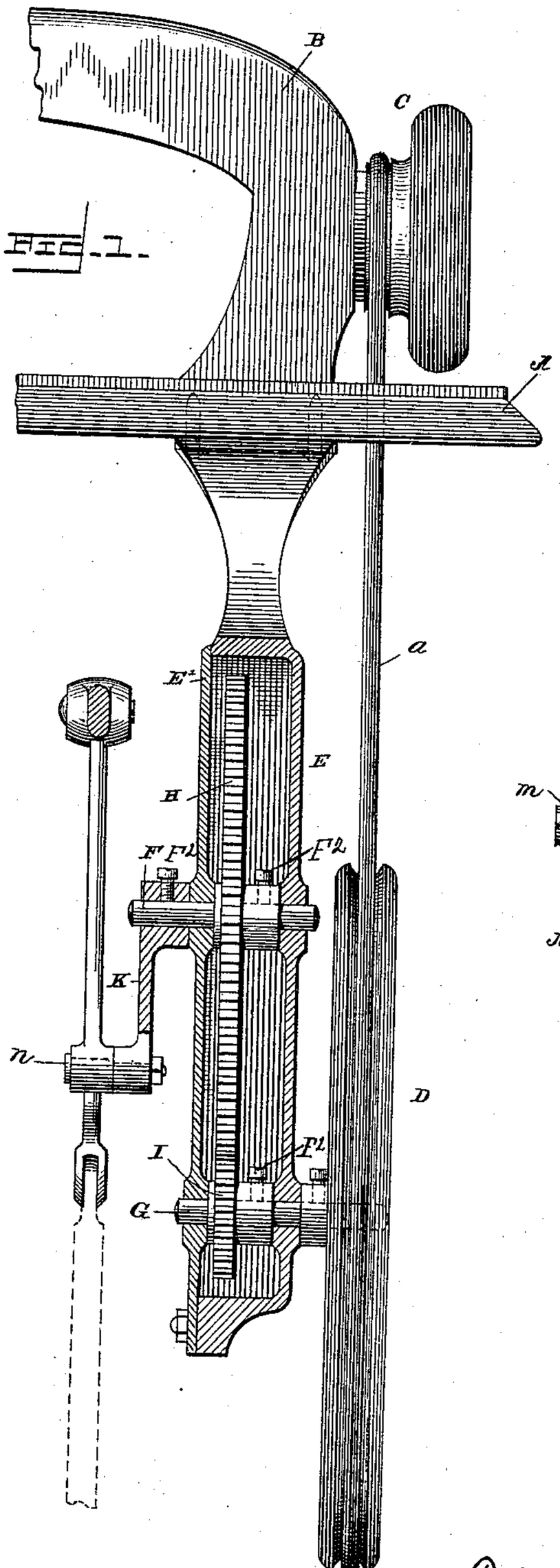


Fig. 4.

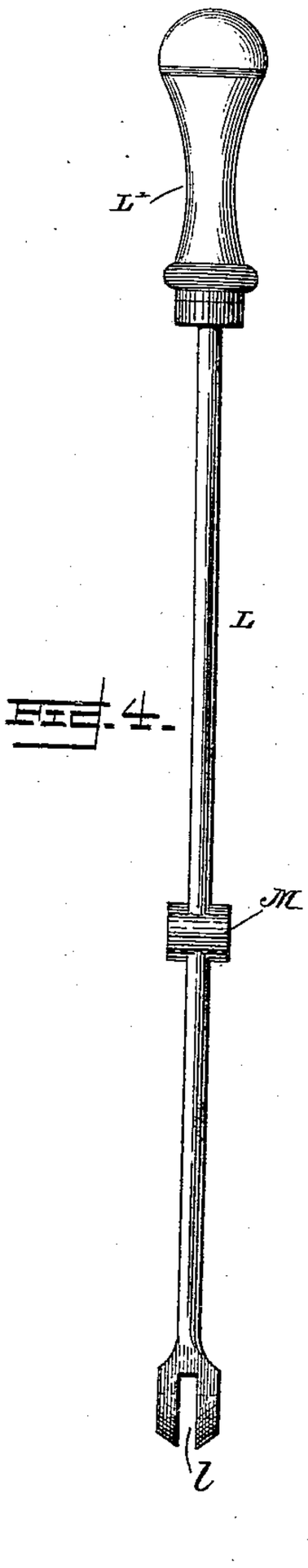
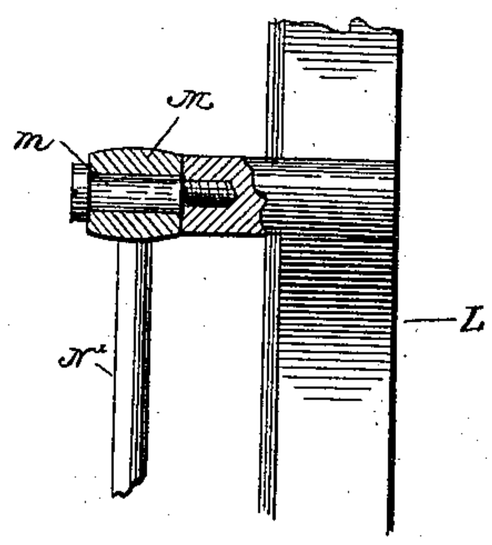


Fig. 5.



Witnesses

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Inventor

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per Fred. G. Baker.

Attorney

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.) 2 Sheets—Sheet 2.

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FIG. 2.

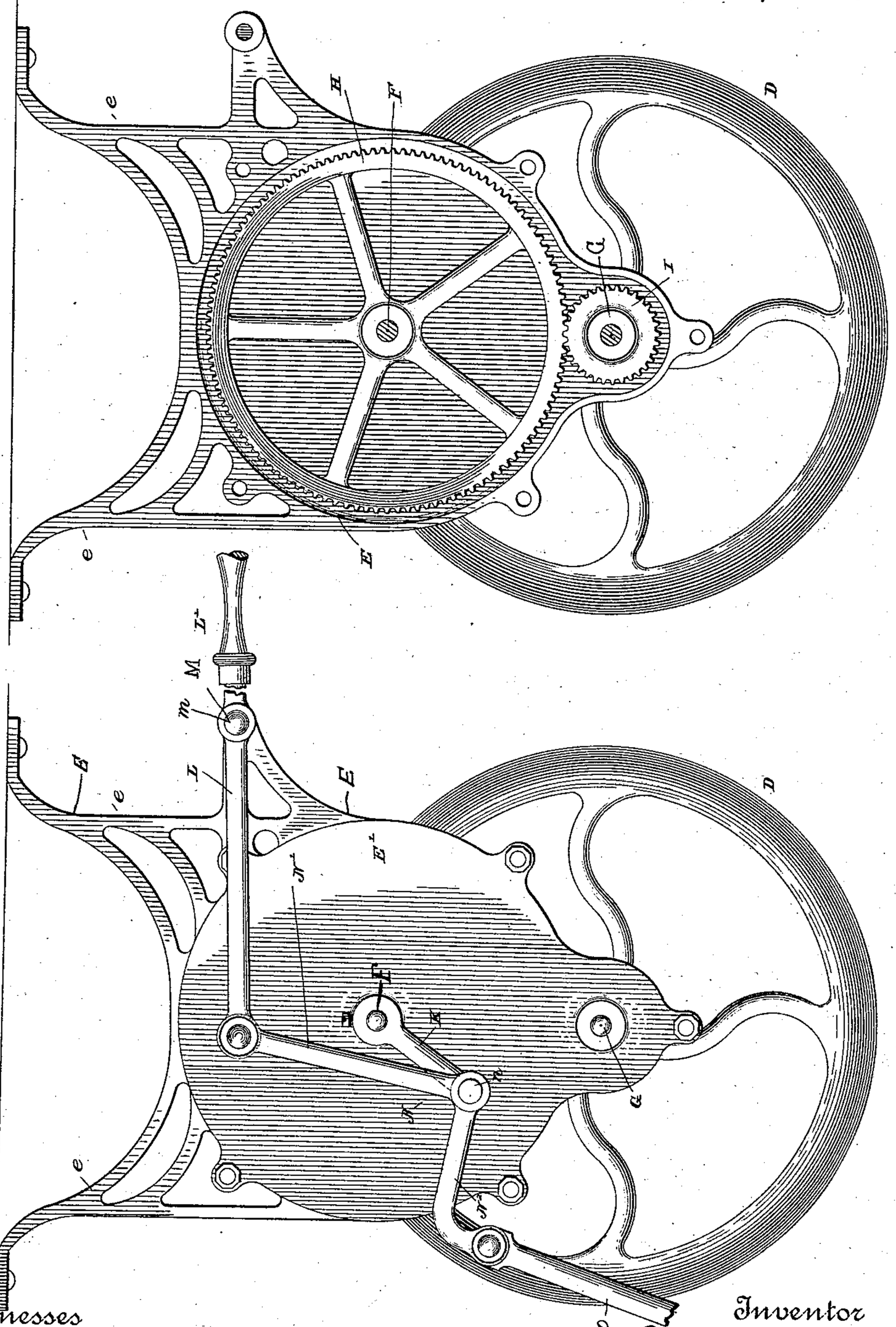

FIG. 1.

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UNITED STATES PATENT OFFICE.

ELI S. REED, OF CHATTANOOGA, TENNESSEE.

MOTOR FOR MACHINES.

SPECIFICATION forming part of Letters Patent No. 484,238, dated October 11, 1892.

Application filed February 6, 1892. Serial No. 420,550. (No model.)

To all whom it may concern:

Be it known that I, ELI S. REED, a citizen of the United States, residing at Chattanooga, in the county of Hamilton and State of Tennessee, have invented certain new and useful Improvements in Motors for Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to an improvement in motors for operating sewing-machines and other various kinds of light machinery, the object of the invention being to provide means whereby a machine may be operated with the expenditure of but very little physical labor and whereby a high speed or very efficient action may be attained with a comparatively-insignificant exercise of power.

The fundamental purpose of the invention is to devise a sewing-machine attachment which will permit the user of such a machine to operate the same with great facility, ease, and convenience; but it will be evident that the mechanism which I have invented may be applied to other kinds of machinery besides sewing-machines.

The invention consists, therefore, essentially, in the construction, arrangement, and combination of the several parts and in numerous details and modifications thereof, substantially as will be hereinafter described, and then more fully pointed out in the claim.

In the annexed drawings, illustrating my invention, Figure 1 is a vertical sectional end elevation of my improved machine-motor shown as arranged in operative position in connection with the table of a sewing-machine. Fig. 2 is a side elevation of the motor. Fig. 3 is a side elevation with the outer casing, cover, and the leverage removed, so as to expose to view the multiplying-gearing within the casing. Fig. 4 is a detail view of the operating-handle. Fig. 5 is a detail section showing the fulcrum-point of the operating-lever.

Similar letters of reference designate corresponding parts throughout all the different figures of the drawings.

A designates the table of a sewing or other machine, on which the frame B of said machine is mounted, C being the drive-wheel of the machine. Of course it will be readily understood that the parts A, B, and C are shown by way of example merely, and simply to illustrate the mode of applying my motor for practical action.

The motor may be used with any kind of a machine to which it is adapted.

Below the table A is located the motor-casing E, having the arms *e*, which are firmly secured to table A, so that the casing E may be held rigidly in a vertical position. Casing E is provided with the cover E′. It will be evident that this casing may vary greatly in its size, form, and arrangement. In the example shown it is of small width and placed vertically, being designed to contain only a couple of gears and to provide bearings for the shafts of said gears. It may, however, be modified, when desired, to fit it to serve with such rearrangement of the mechanical details of the invention as may be found to be in harmony with the scope and spirit of the same.

Journaled centrally in the casing E is a horizontal shaft F. This carries, securely mounted thereon, a large gear-wheel H. In the lower portion of the casing E is journaled another shaft G, carrying thereon a pinion or small gear I, which intermeshes with the gear-wheel H. The shafts F and G may be provided with suitable collars having set-screws F^2, as shown, so as to hold the gears in proper position upon the said shafts and in proper alignment with each other. On the shaft G, outside of the casing E, is a large band-wheel D. Around the band-wheel D, as also around the drive-pulley C of the machine, passes the belt *a*, whereby power is communicated from the motor to the machine. I reserve the liberty of varying the exact construction and arrangement of the shafts and gearing which I have described. The idea, of course, is to have a large gear and a small pinion, so that thereby the speed of the driven machine may be greatly increased. Of course the pinion I will revolve a great number of times at every revolution of the gear-wheel H. Hence by running the gear-wheel H at a moderate speed a high speed may be given to the drive-pulley C of the machine. One end of the shaft F projects through the casing-cover E′ of the casing E on the side opposite to where the belt-wheel D is located. To this projecting end of the shaft F is secured a crank-arm K.

L designates a lever, which has the function of being the operating-lever for driving the machine. It has at one end a suitable handle L′ and at the other end a slot *l*. At a suitable point in its length—say about two-thirds of the distance from the handle end to the other end—the operating-lever L is provided with a bearing M, consisting simply of an enlargement bored at right angles to the main direction of the lever, the bore being of suitable size to permit a screw *m* to pass therethrough, which screw acts as a journal, being smooth and provided with an outer head, while its inner end, which is screw-threaded, enters the main frame, of which the arms *e* form a part, so that thereby the screw device is held rigidly and firmly in a horizontal position, providing a fulcrum on which the operating-lever vibrates vertically, its sweep of oscillation being as long as may be desired, in order to give it a free and easy movement under the action of the hand of the operator for the purpose of driving the machine to which the motor is attached.

In Fig. 5 I have represented in detail the fulcrum-pin *m* and have shown the way of mounting the lever L thereon.

N designates a bell-crank or double lever, composed of the two arms N′ and N², at the junction of which is a journal-bearing, through which passes a journal-pin, which likewise passes through a bearing in the end of the crank-arm K, so that the double lever N is thereby pivotally connected to the end of the arm K. The end of the arm N′ is pivotally connected to the end of the operating-lever L; also, it will be observed that a link O, which connects with any ordinary pedal mechanism belonging to a sewing or other machines of similar character, has its upper end pivotally connected to the end of the arm N². Thus it will be seen that the operation of the actuating-lever L will drive the gearing, or the movement of the pedal mechanism and link O will similarly actuate the gearing. Either way of driving the motor may be employed at pleasure and alternately and separately or in conjunction.

The arrangement of the herein-described motor having the multiplying-gearing and easily actuated by manual or pedal vibration will be found to be a valuable adjunct in the easy operation of any kind of light machine to which it can be practically applied. When it is used in a sewing-machine, for instance, the user can drive the machine at a very high rate of speed by simply depressing and lifting by an alternating vibratory movement the operating-lever, and it will be found that the peculiar mode of fulcruming said lever and of connecting the inner end thereof with the shaft of the large gear will permit the manual operation of the lever to be accomplished with the expenditure of but a trifling amount of power, although the resulting effect of the action of the multiplying-gearing upon the driven machine will be very large and the work done thereby consequently very efficient. It is to be observed that the important feature of combination in the case is the peculiarly-fulcrumed lever, the multiplying-gearing, and the intervening leverage between the inner end of the operating-lever and the shaft of the large gear. As has already been said, the actuation of the gearing can be accomplished by foot-power as well as by hand-power, and when desired both modes of operation may be conjointly employed.

Numerous details in the construction of the various mechanical parts may obviously be changed without departing from the spirit of the invention.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

In a motor for machines, the combination, with a driven machine having pulley C, of the horizontal shaft F, the gear-wheel H, mounted thereon, the horizontal shaft G, the pinion I thereon intermeshing with the gear-wheel H, the band-wheel D, a belt *a*, passing around wheel D and pulley C, a crank-arm K on the end of shaft F, a lever L, having at one end a suitable handle, said lever being the operating-lever for the machine and being fulcrumed at a suitable point, so as to vibrate vertically, a bell-crank lever composed of the arms N′ and N², said crank-lever being pivotally connected to the end of crank K and the end of arm N′ being pivotally connected to the end of lever L, and link O, pivotally connected to arm N² and to a treadle mechanism, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

ELI S. REED.

Witnesses:
THOS. C. LATIMORE,
FRANK SPARLOCK.