

D. W. MOTT.  
Hand and Foot Motor.

No. 229,739.

Patented July 6, 1880.

Fig 2.

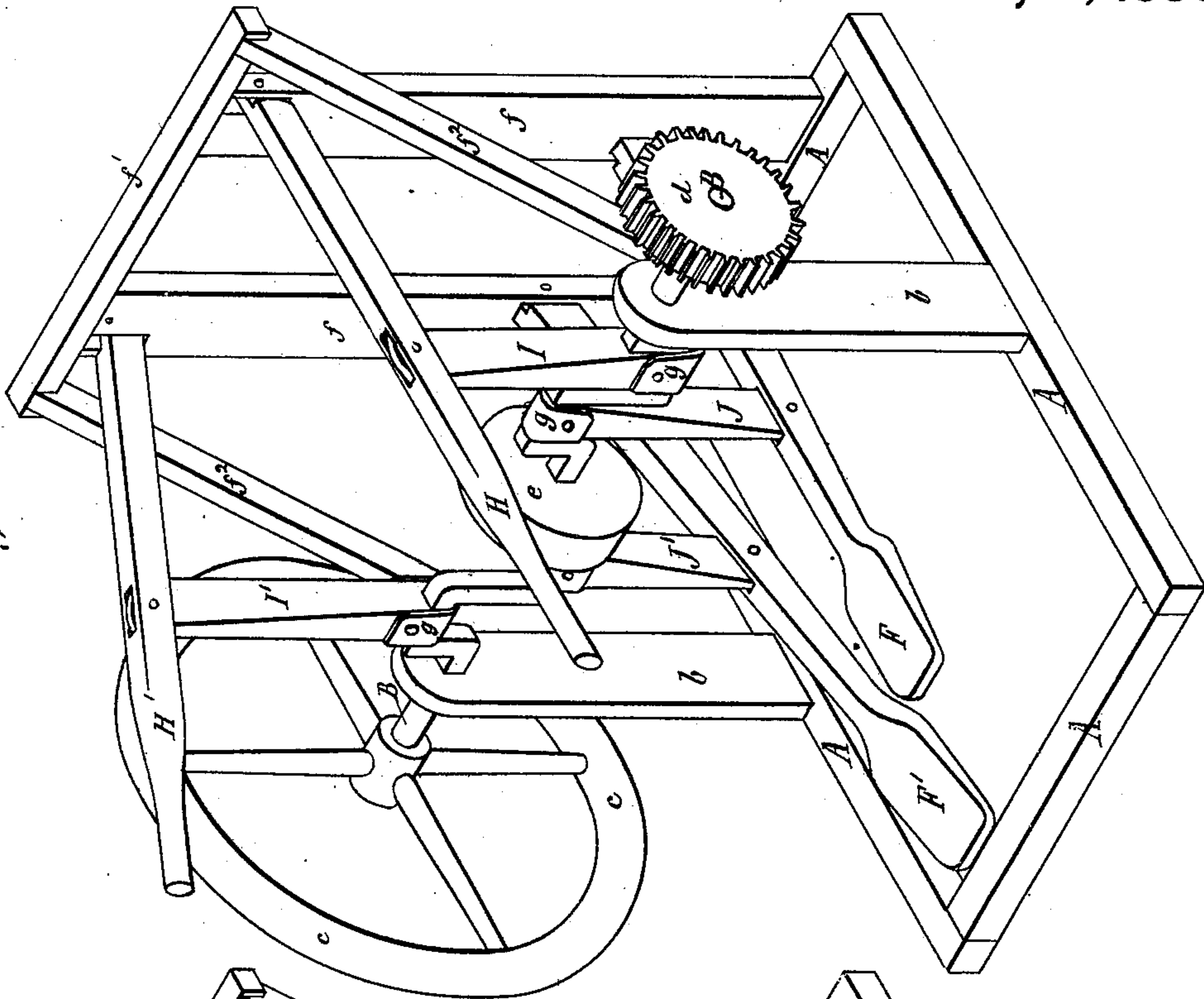
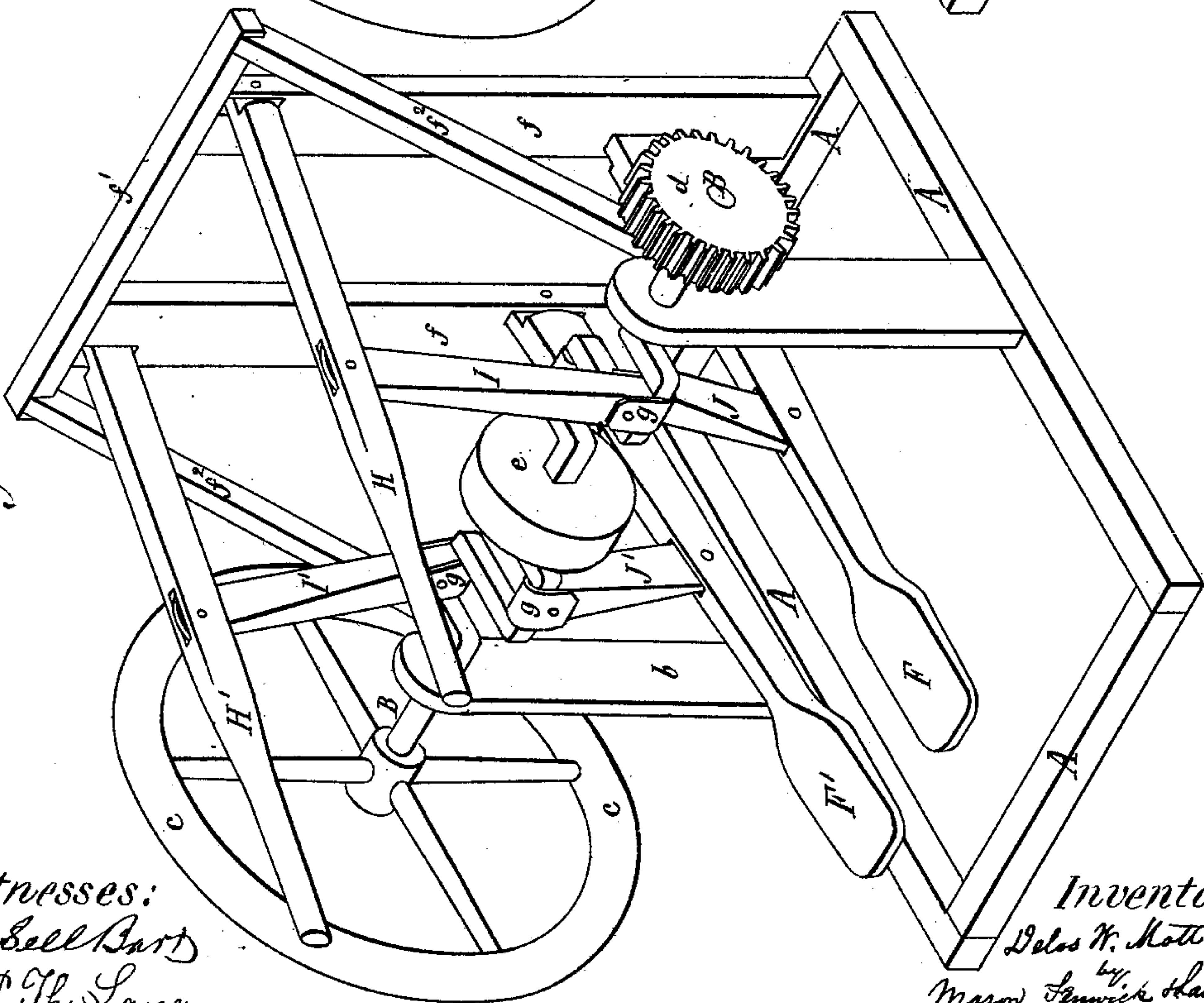


Fig 1.



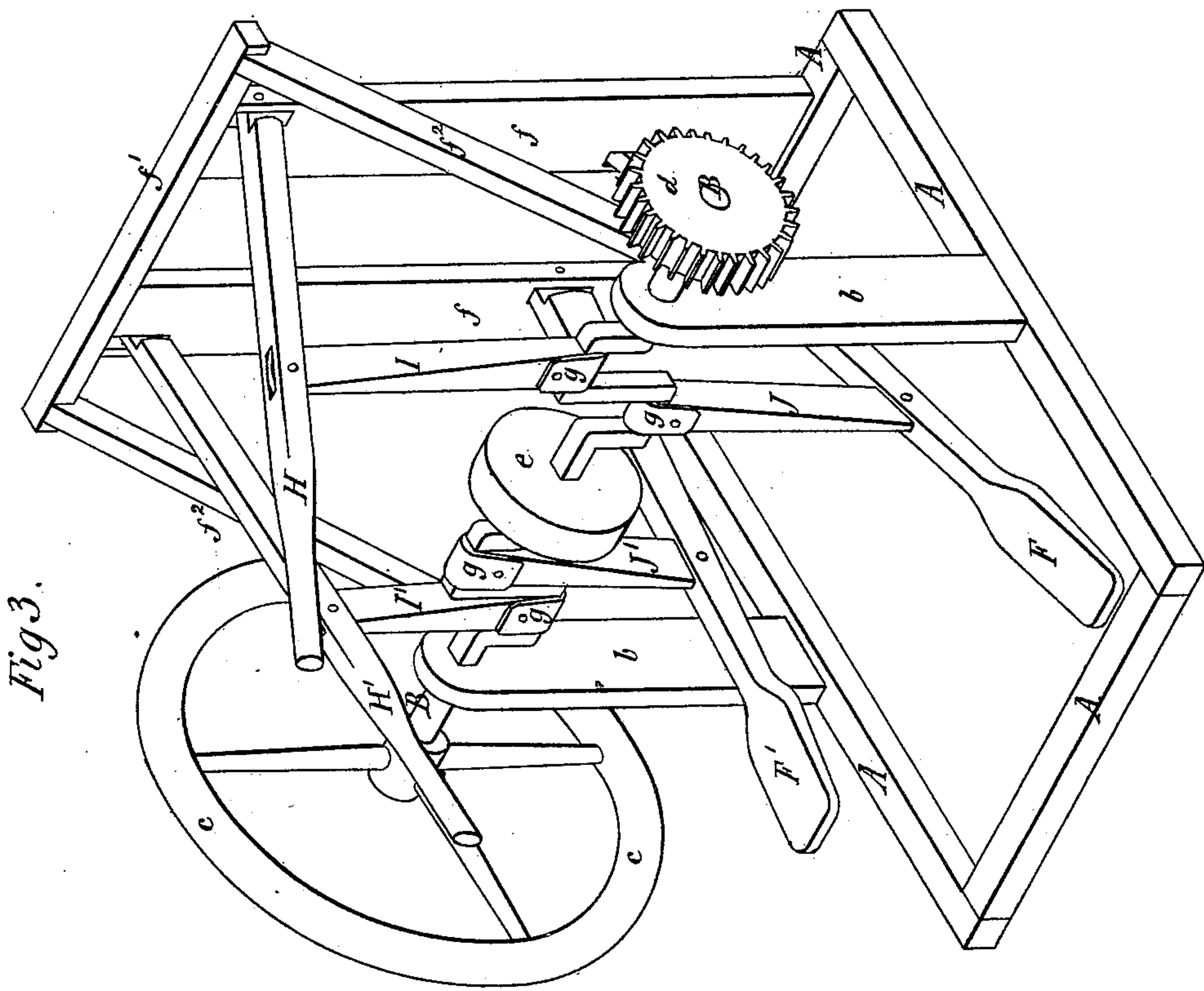
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# UNITED STATES PATENT OFFICE.

DELOS W. MOTT, OF HAMPTON, IOWA.

## HAND AND FOOT MOTOR.

SPECIFICATION forming part of Letters Patent No. 229,739, dated July 6, 1880.

Application filed January 14, 1880.

*To all whom it may concern:*

Be it known that I, DELOS W. MOTT, a citizen of the United States, residing at Hampton, in the county of Franklin and State of Iowa, have invented a new and useful Hand and Foot Motor, of which the following is a specification.

My invention relates to that class of motors wherein the hands and the feet of the operator are employed for imparting power to operate machinery.

I attain the object of my invention through the instrumentality of the mechanism illustrated in the accompanying drawings, in which—

Figures 1, 2, and 3 are perspective views of my improved motor.

In the several figures, A indicates a rectangular foundation-frame of the machine, provided with central upright supports, *b b*, in which a crank-shaft, B, has its bearings, as shown, and having a balance-wheel, *c*, upon one of its ends, while at its opposite end it is provided with a gear-wheel, *d*, and at its center with a belt-drum, *e*, as represented. The frame A, at its rear portion, is also provided with standards, as at *f f*, connected by a cross-tie, *f'*, at their top, from which tie brace-bars, as at *f''*, extend downwardly and fixedly engage with the upright supports *b b*, as shown.

H H' are hand-levers, which have their rear ends pivotally connected to the standards *f f*, as indicated in the figures, and F F' are foot-levers, the rear ends of which are in like manner connected with said standards.

I I' are suitable connecting-bars, to connect the hand-levers to the crank-shaft B, the upper ends of said bars being pivotally connected to the respective hand-levers H H', as shown, while their lower ends are loosely confined by a metal strap, *g*, to the wrist of a crank on the crank-shaft B, as represented.

J J' are connecting-bars, respectively connected at their upper ends by loosely-fitting straps *g* to the wrist of a crank on the crank-shaft B, and at their lower ends are pivotally connected to their respective foot-levers F F', as represented in the figures.

The crank-shaft B, it will be seen, is provided with four cranks, all in the same plane, two on each side of the center of the length of

the crank-shaft, at which center the band-drum *e* is applied, and that the cranks to which the bars I I' J J' are severally applied extend outwardly in opposite directions to each other from the central axis of the crank-shaft B, so that when the crank-shaft B is in the position shown in Fig. 3 the right foot-lever F will be at its lowest depression, while the right-hand lever H will be at its limit of upward throw, and the same relations of the left-hand foot-lever F' and the left-hand hand-lever H' are brought about when the crank-shaft B, in the operation of the machine, is made to assume the position shown in Fig. 2.

We will suppose, by way of illustration of the operation of the motor, that the machine on the start has its several parts in the position shown in Fig. 1, and that a man is standing with his right foot upon the lever F, his left foot upon the lever F', and with his right hand grasping the lever H and his left hand grasping the lever H'. The operator now throws his whole weight upon his right foot, at the same time lifting with all his might with his right hand. This act depresses the right-hand foot-lever F to its lowest depression, while at the same time the right-hand hand-lever H is drawn up to its greatest elevation, thereby producing a partial revolution of the crank-shaft B. The momentum imparted to the balance-wheel *c* causes the crank-shaft B to pass its "dead-center" during such partial revolution, whereupon the operator now throws his whole weight upon his left foot, which lightly rests upon the foot-lever during the partial revolution just named, at the same time lifting with all his might upon the left-hand hand-lever H', thereby forcing apart the foot-lever F' and hand-lever H' into the positions shown in Fig. 2, thereby mostly completing a revolution of the crank-shaft. This done, and the momentum of the balance-wheel having caused the crank-shaft to pass the dead-center of its mostly-completed revolution, the operator now again throws his weight upon the lever F, which then is in the position shown in Fig. 2, and also draws up with all his might upon the hand-lever H, which then is in the position shown in Fig. 2, whereupon said foot and hand levers are forced apart until they respectively again occupy their positions, as



shown in Fig. 3, thereby completing somewhat more than one entire revolution of the crank-shaft B, and so on, in this manner, the weight of the operator and the strength of the operator are conjointly and simultaneously utilized as a power for operating various kinds of machinery, which may be connected to the motor either by gearing the same with the cog-wheel *d* or by a band around the drum *e*.

10 It will also be seen by reference to Figs. 2 and 3 that the combination of the operative parts of the motor is such that when one hand-lever and one foot-lever are forced apart to their limit the opposite hand and foot levers  
15 are caused to assume their nearest proximity; that said hand and foot levers are forced apart in the line of vertical planes which correspond with the limbs of a person operating the machine, and thus that the combination of said  
20 levers is such as will afford the greatest facility for the exertion of the power of the operator, both as to his weight and strength.

The power of the operator may be transmitted from the balance-wheel *c* by means of a round band running in a U-groove cut in the periphery of said wheel, and the balance-wheel may also have proper appliances attached to it in order to operate a churn and other like machines.

I claim—

The combination of the crank-shaft B, bars I I', bars J J', foot-levers F F', and hand-levers H H', whereby the motor can be utilized to simultaneously force the hand and foot levers apart in opposite vertical directions to give rotation to the crank-shaft, substantially  
35 as described.

DELOS W. MOTT.

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