

(No Model.)

2 Sheets—Sheet 1.

A. MITCHELL.

COMBINED MECHANICAL POWER.

No. 310,070.

Patented Dec. 30, 1884.

Fig. 1.

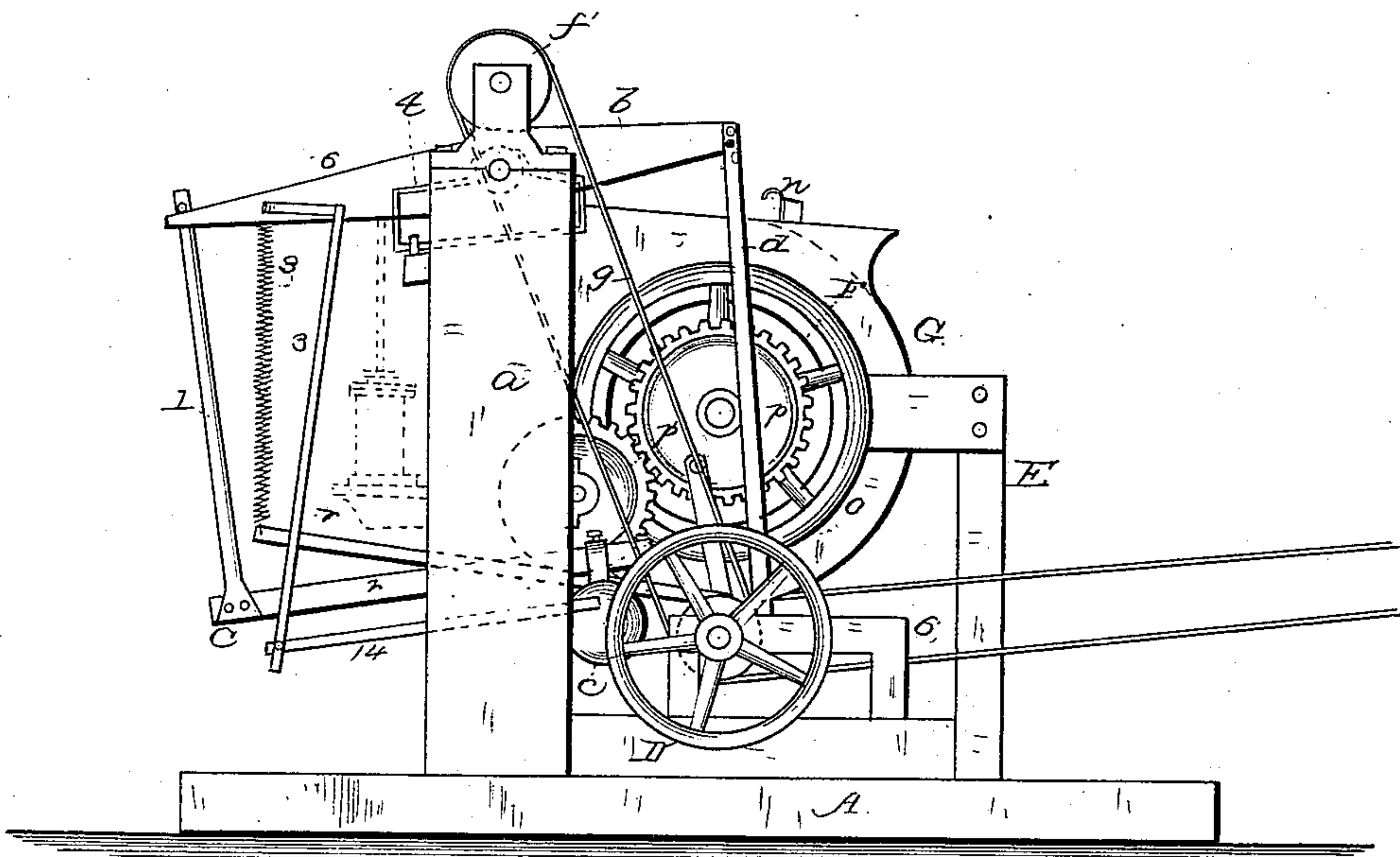
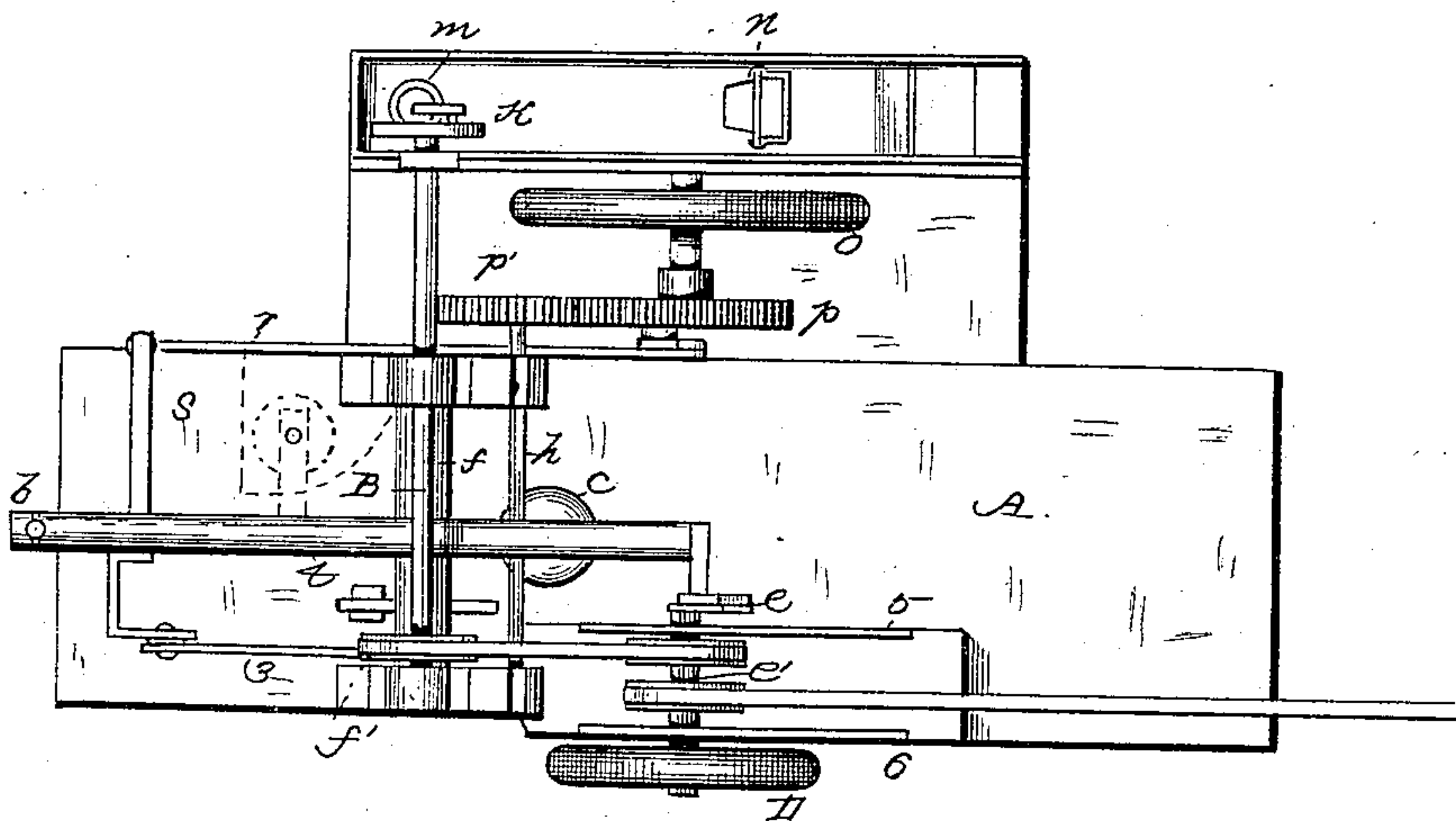


Fig. 2.



WITNESSES:

J. W. Reynolds
Edward E. Ellis

INVENTOR

Andrew Mitchell
BY
O. E. Ouff
ATTORNEY

(No Model.)

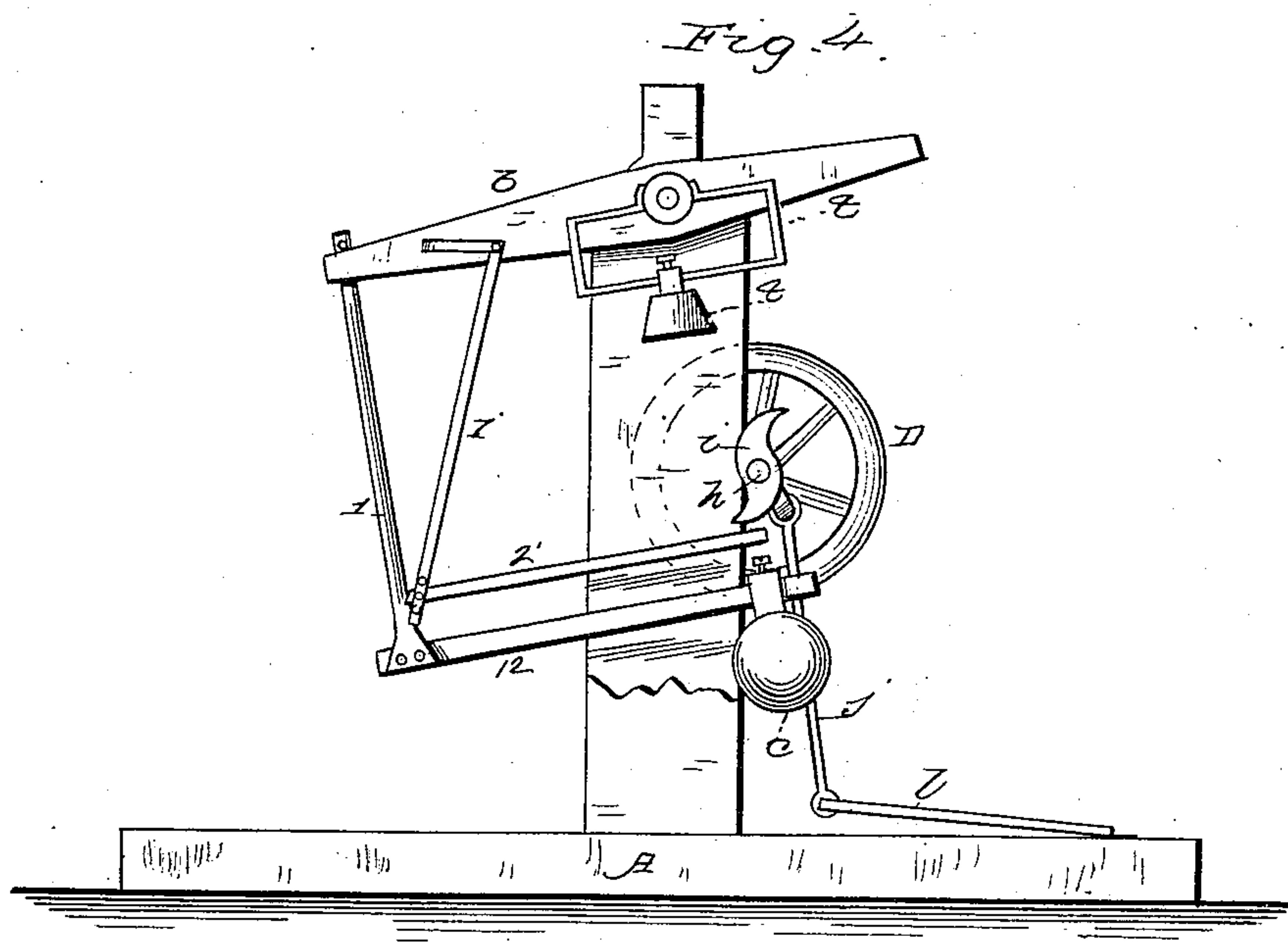
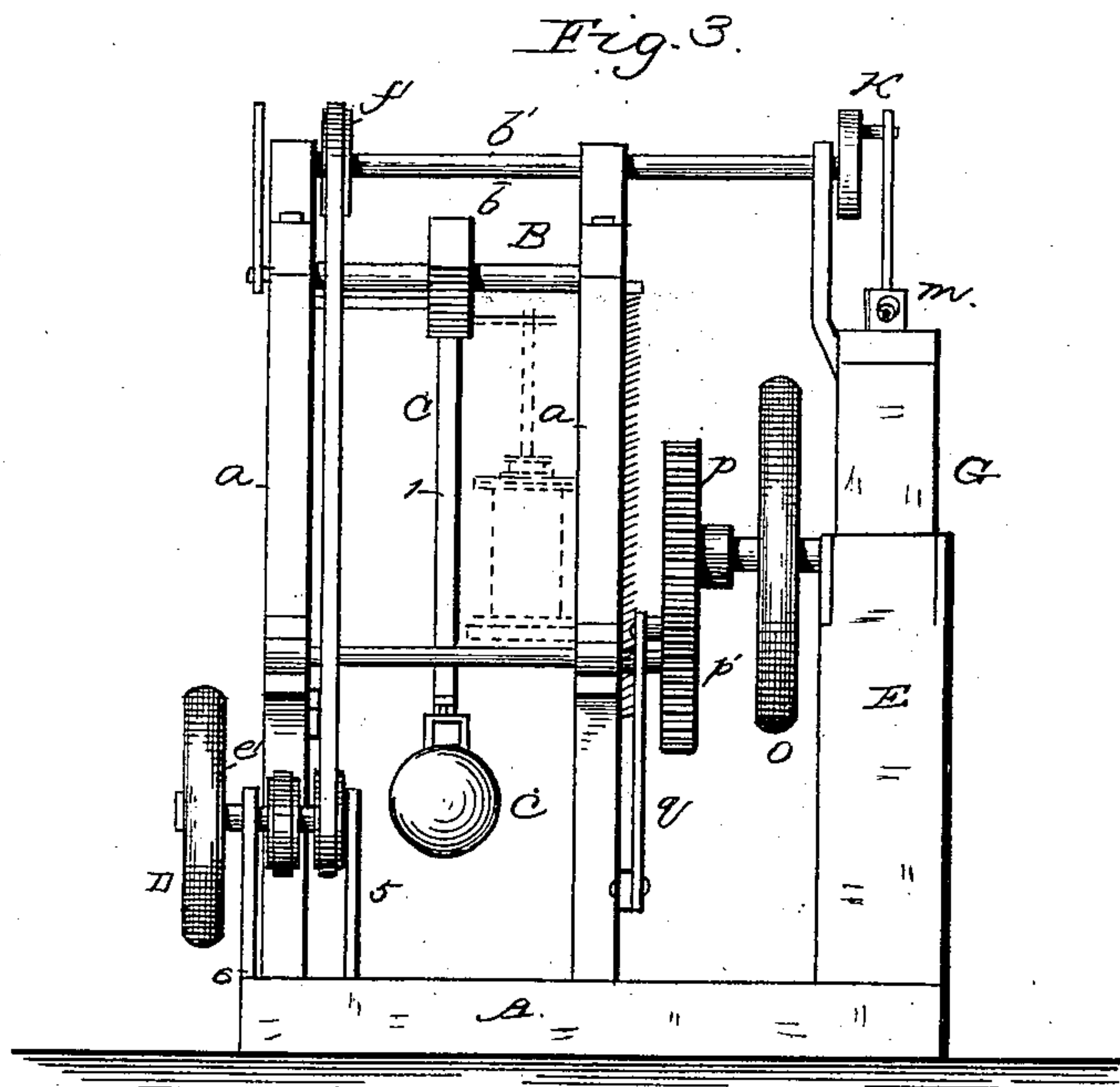
2 Sheets—Sheet 2.

A. MITCHELL.

COMBINED MECHANICAL POWER.

No. 310,070.

Patented Dec. 30, 1884.



WITNESSES:

J. W. Reynolds
Edward C. Ellis

INVENTOR

Andrew Mitchell

BY

O. E. Duff

ATTORNEY

UNITED STATES PATENT OFFICE.

ANDREW MITCHELL, OF PHILADELPHIA, PENNSYLVANIA.

COMBINED MECHANICAL POWER.

SPECIFICATION forming part of Letters Patent No. 310,070, dated December 30, 1884.

Application filed July 14, 1884. (No model.)

To all whom it may concern:

Be it known that I, ANDREW MITCHELL, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Combined Mechanical Powers; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification.

This invention relates to that class of mechanism known as "compound mechanical powers," and has for its object to combine in one structure devices that will operate both light and heavy classes of machinery, according to the nature of the motive power employed, said devices adapted by their construction to be operated either by hydraulic, steam, hand, or foot power, according to the quantity of work to be accomplished.

The invention consists, substantially, in the devices as constructed, and in the particular combinations of parts, to be hereinafter distinctly described, and pointed out in the claims.

Referring to the annexed drawings, forming a part of this specification, Figure 1 represents a vertical side elevation of my complete apparatus, and Fig. 2 a top plan view thereof. Fig. 3 represents a vertical front elevation, and Fig. 4 is a view in detail with some of the parts removed, representing the structure as when operated by treadle or foot-power mechanism.

Reference being had to the several parts by the letters, A represents the base upon which the entire structure is built or erected. Mounted upon this base, opposite to each other, are two standards, *a a*, in which is journaled, at near the top, a rock-shaft, B. Affixed to said rock-shaft is a beam, *b*, whose point of connection thereto is to one side of of its center of length, as shown. Attached to the end of the longer arm of the beam is a frame, C, constituted by the parts 1 and 2. At the end of the part 2 thereof is attached a weight, *e*, for giving increased momentum to the apparatus when operated. Secured to the longer arm of the rocking beam *b* is a supple-

mental frame composed of the parts 3 and 4. Suspended to the shorter arm of the beam is a connecting-rod, *d*, whose lower end is loosely connected with a crank, *e*, on the shaft *e'* of a fly-wheel, D, mounted in a suitable frame, 5 and 6, on the base A. This shaft carries two belt-pulleys thereon between the frame 5 6, as shown. Journaled in suitable bearings therefor at the top of the standards *a a* is a shaft, *f*, carrying belt-pulley *f'*. A belt, *g*, connects this pulley *f'* with one of the pulleys on the shaft of the fly-wheel D, as shown.

In Fig. 4 is illustrated the apparatus as when constructed to be operated by foot-power mechanism, the fly-wheel in this instance being at the outer end of a shaft *h*, which is journaled about the middle of the height of the standards. Turning with this shaft is a cam, *i*, which comes in successive contact with the end of the portion 4 of the supplemental frame suspended to the longer arm of the beam. A pitman, *j*, connects the shaft *h* with a foot-treadle, *l*. This supplemental frame is adjustable in a slot, 6, in the beam, as shown, by which the length of stroke desired can be regulated. It is also adjustable at the point where the two parts 3 4 are united.

E E represent two additional standards on the base, by which is supported in cross-pieces thereon a hydraulic motor, F. This motor revolves in a suitable casing or shell, G, into which water is continually supplied.

In the top of the shell or casing I have represented a pump, *m*, which may be connected to a suitable supply, and the machine itself act in supplying a continuous feed to the wheel F. The shell is formed with a channel in its top, into which the water flows, and a gate, *n*, controls the amount furnished to the interior for operating the wheel. The stem of the pump-piston is connected to a pulley or eccentric, K, on the shaft *f*.

On the shaft of the wheel F is a power-wheel, *o*, and a cog-wheel, *p*. This latter meshes with a similar wheel, *p'*, on the end of the shaft *h*. A rod, *q*, is pivotally connected to the outer radial face of cog *p*, and is also pivotally connected to another rod, *r*, which in turn is connected to a spring, *s*, suspended from a small arm, *s'*, projecting outwardly from the beam *b*. Instead, however,

of employing the spring, a rod may be used; but I prefer the spring in order to get a more easy action. Said spring may be of any desired form.

5 In Figs. 1, 2, and 3, I have shown, in dotted lines, an engine cylinder and piston, to indicate how steam may be employed to operate the apparatus. The connection is made by securing the end of the piston-rod to a small
10 arm attached to the side of the beam.

Secured to the rock-shaft B is a rectangular frame, *t*, carrying an adjustable weight, *t'*. This weight is for counterbalancing the beam in the application of the apparatus to operate
15 certain classes of devices—as, for instance, hobby-horses. The weight *t'*, by proper adjustment, can be made to counterbalance the beam without necessitating more weight on the end of the portion 2, to which *c* is suspended.

20 The several parts being disposed as above, the following is the operation, to wit: When hydraulic power is used, a supply of water or other fluid is fed to the wheel F, which imparts motion to the cog-train, and from thence
25 through the connections *q r s* to the beam *b*. The rock-shaft is thus caused to rock in its bearings, the weight *c* adding momentum to the stroke. The connection of the beam with the shaft of the fly-wheel causes such shaft and
30 its pulleys to revolve. One of these pulleys is connected by a belt, *u*, to a pulley on the upper shaft, *f*, this being the means of operating the latter to revolve, while the other pulley thereon is connected by a belt with a
35 sewing-machine or other device to be operated. The fly-wheel serves to equalize the movement of the several parts. When foot-power is employed, the beam *b* is disconnected from the cog-train, and the pitman *j* properly connected
40 to the shaft *h*. When steam is used as a motor, the piston-rod of the engine-cylinder is connected to the beam, as above described.

It will be apparent that in dispensing with the wheel F, a hand-crank may be connected
45 to the power-wheel *o*, and the apparatus thus operated by hand-power.

Having described my invention, what I claim is—

1. In a mechanical power, the combination of the rock-shaft mounted in the standards, 50 the beam *b*, secured to the rock-shaft, the frame 1 2, and weight *c*, with the connecting-rod *d*, shaft *e*, and fly-wheel, said shaft *e'* carrying belt-pulleys *f*, all substantially as and for the purpose described.

2. In a mechanical power, the combination, 55 with the beam and weight *c*, of the frame and its counterbalance-weight *t'*, substantially as described.

3. In a mechanical power, the combination, 60 with the beam *b*, frame 1 2, and weight *c*, of the adjustable supplemental frame 1' 2', shaft *h*, pitman *j*, and foot-lever, said shaft *h* carrying the cam *i* and fly-wheel, all substantially as and for the purpose described.

4. In a mechanical power, the combination, 65 with the beam *b*, frame 1 2, and weight, of the connection *q r s*, shaft *h*, carrying at its outer end a cog-wheel, cog *p*, meshing with the latter and having attached to its outer radial face 70 the rod *q*, and the hydraulic wheel F, all substantially as described.

5. In a mechanical power, the combination of the shafts *e'* and *f*, each carrying a pulley connected by a belt-eccentric, *k*, secured on said 75 shaft *f*, and a pump located on the casing G, to which the eccentric is connected, the wheel F, cog-train, and the connections between the cogs and beam, by which the latter is operated, all substantially as described.

6. The combination, with the wheel F, of the casing G, having a channel in its top, and provided with the gate *n*, substantially as de- 80 scribed.

7. The combination, with the beam *b* and its 85 several attachments, and the shaft *e'*, bearing pulleys, whereby the same are operated, substantially as described.

In testimony that I claim the foregoing as my own I affix my signature in presence of two 90 witnesses.

ANDREW MITCHELL.

Witnesses:

EDWARD E. ELLIS,
O. E. DUFFY.