

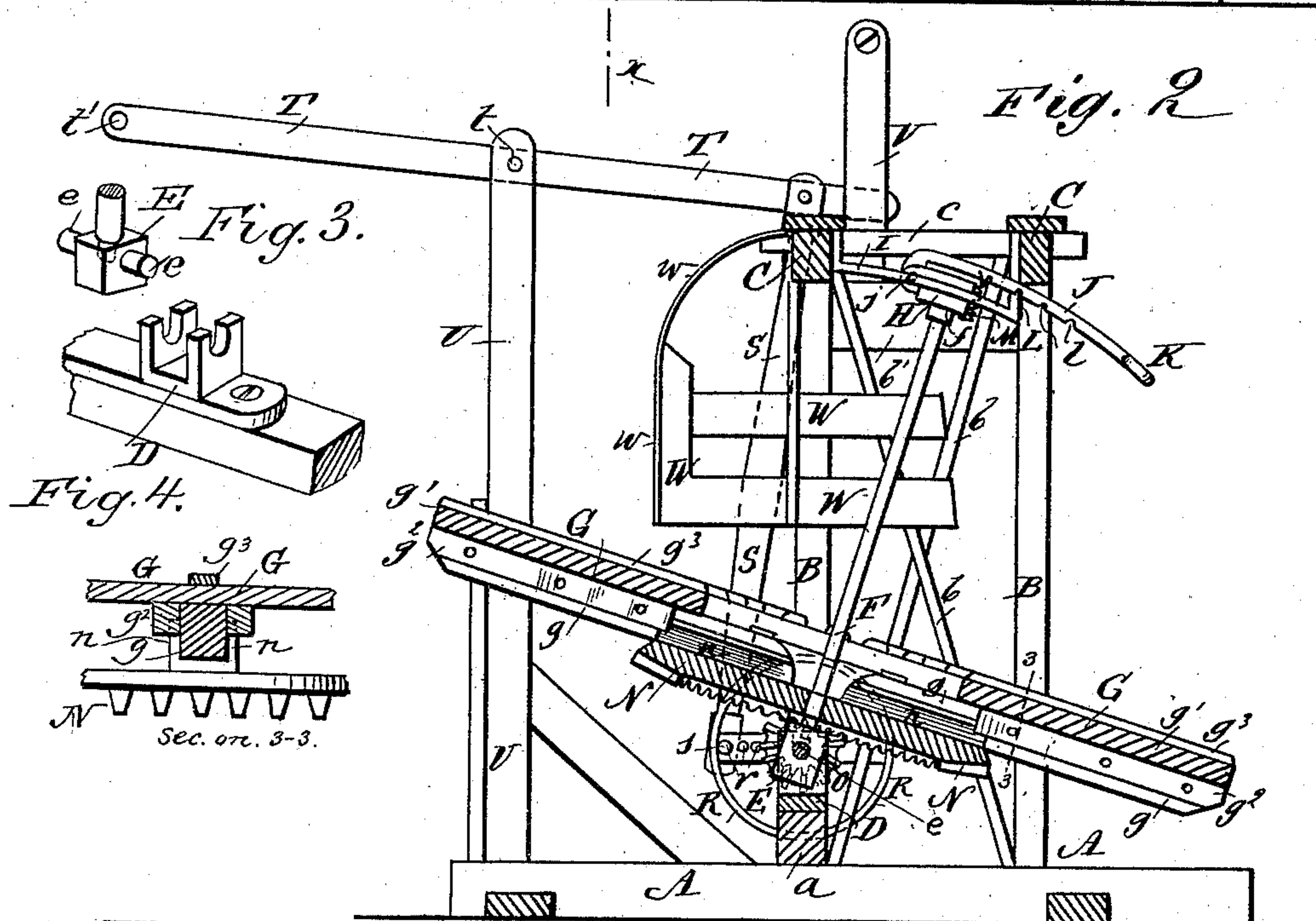
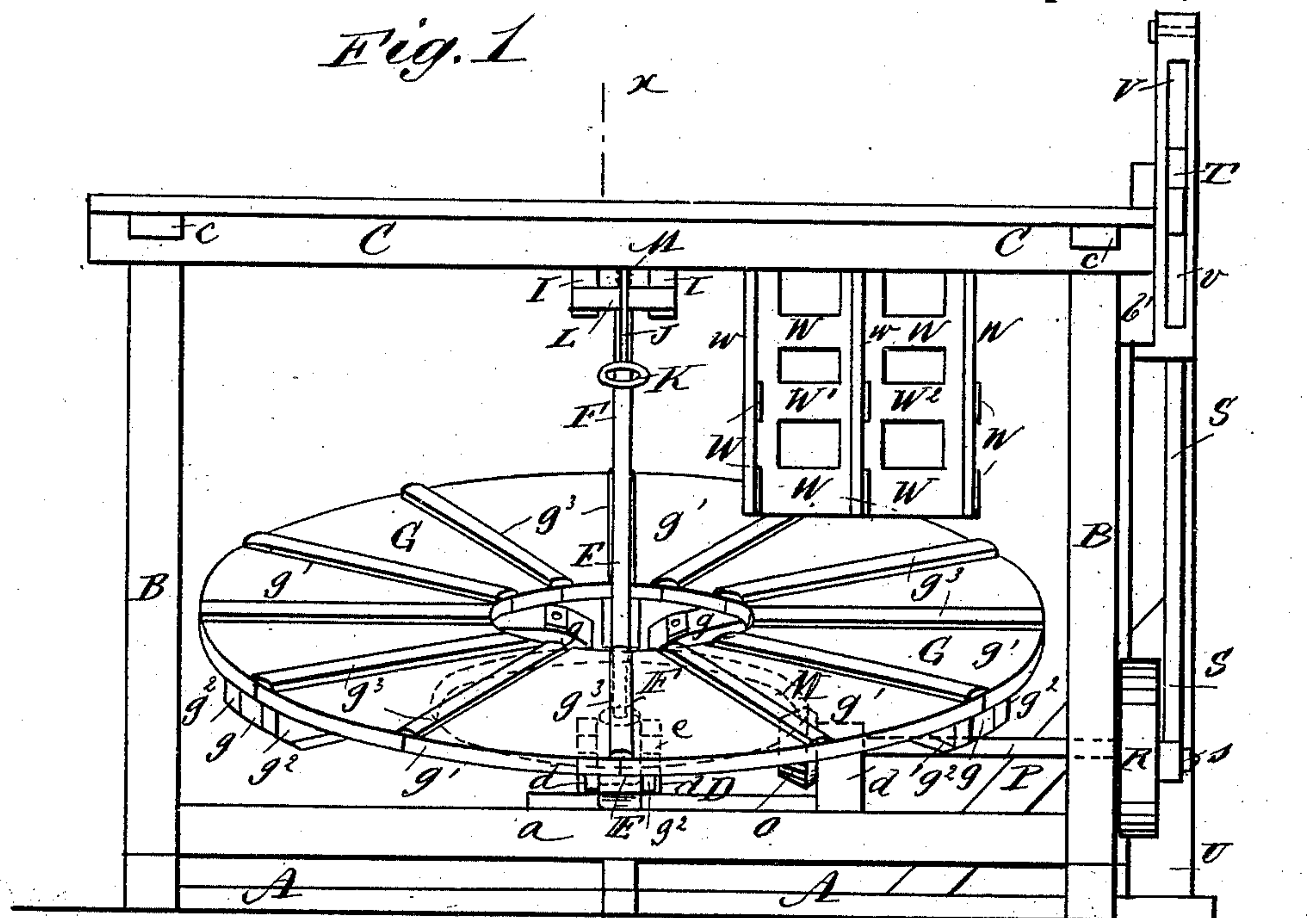
..(No Model.)

E. B. STUDEBAKER.

# ANIMAL POWER.

No. 370,569.

Patented Sept. 27, 1887.



WITNESSES:

C. Neveu

C. Sedgwick

**INVENTOR:**

E. B. Studebaker

BY

Mum Co

ATTORNEYS.



# UNITED STATES PATENT OFFICE.

ELI B. STUDEBAKER, OF FREDONIA, KANSAS.

## ANIMAL-POWER.

SPECIFICATION forming part of Letters Patent No. 370,569, dated September 27, 1887.

Application filed November 29, 1886. Serial No. 220,153. (No model.)

*To all whom it may concern:*

Be it known that I, ELI B. STUDEBAKER, of Fredonia, in the county of Wilson and State of Kansas, have invented a new and Improved Animal-Power, of which the following is a full, clear, and exact description.

My invention relates to animal-powers of that class known as "tread-mill powers," and has for its object to provide a simple, inexpensive, and durable tread-machine of this character which may readily be adjusted to accommodate the strength of the animals working it and the desired power and speed of the machinery to be driven by it.

The invention consists in certain novel features of construction and combinations of parts of the animal-power, all as hereinafter fully described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a front elevation of my improved animal-power; and Fig. 2 is a vertical sectional elevation of the power, taken on the line *x x*, Fig. 1. Figs. 3 and 4 are enlarged detail views of the same.

To opposite ends of the sill-frame A of the power opposite pairs of posts B B are fixed, and these posts are stayed by diagonal braces *b b*, and are tied together by a head-piece, *b'*. The two opposite end pairs of posts B B, which constitute substantial end frames or standards, are connected by front and rear overhead beams or timbers C C, which are preferably tied together by cross-bars *c c*.

To a beam, *a*, of the sill-frame there is fixed a metal bed-plate, D, which has a pair of lugs, *d d*, to and between which is pivoted on a strong pin, *e*, the step-block E, in which the lower end of the shaft F of the tread-wheel G is journaled. The upper end of the wheel-shaft F is journaled in a metal head-block, H, which is fitted to slide upon curved guide-plates I I, fixed to the frame-timbers C C.

A latch, J, pivoted at *j* to the head-block H, extends forward over said head-block and between the guides I I, and is provided with a handle, K, at its outer end, and by manipulating the latch by this handle the head-block H may be shifted along the guides I I to give

any desired bodily incline to the tread-wheel G as the shaft swings on its foot-pivot *e*. The latch has a series of notches, *l*, in its lower edge, and either one of these notches may be caused to engage a plate, L, fixed to the guides I I, for locking the head-block H, shaft F, and tread-wheel G in any required adjustment, and a spring, M, fixed at opposite ends to the block H and latch J, respectively, prevents the jar of the machine disengaging the latch from the latch-plate L.

At its inner side the tread-wheel G is provided with a large bevel gear-wheel, N, to which the shaft F is fixed, and the wheel N meshes with a bevel-pinion, O, which is fixed to a horizontal shaft, P, which is journaled at one end in a block, *d'*, on the bed-plate D and at its other end in boxes fixed to the right-hand frame-post B. A driving-wheel, R, fixed to the shaft, P, is provided with a series of holes, *r*, into any one of which a wrist pin or bolt, *s*, of a pitman or connecting-rod, S, may be passed. The upper end of the pitman S is pivotally connected to one end of a rocking lever, T, which is pivoted at *t* to a post, U, set upon and braced to the sill-frame A of the machine. The outer end of the lever has a hole, *t'*, allowing connection to it of the dasher of a churn or other reciprocating part of a machine to be operated by the power; or, if preferred, the shaft P may be extended beyond the frame to allow connection to it of belt-pulleys, to impart power through them in a well-known manner. The end of the lever T next the pitman S passes into a slot, *u*, of a post, V, fixed to the frame as a guide to the lever.

To suitably-curved rods *w*, fixed to the head-timbers C of the power, are attached a series of metal plates, or it may be boards, W, in a manner to form two stalls, *w' w''*, above the tread-wheel to accommodate the animals, which rotate the tread-wheel by walking on it.

The tread-wheel is peculiarly constructed in section to facilitate its transportation, and as follows: The metal gear-wheel N forms the center of the tread-wheel, and to the top of the gear N, and preferably between flanges *n*, cast on wheels, there are bolted the inner ends of heavy spokes *g*, and the face or tread of the wheel comprises a series of segmental sections, *g'*, which meet edgewise and have heavy cleats



$g^2$  bolted to them near the edges, so as to stand at each side of the spokes  $g$ , to which said cleats are bolted, and over the joints between the segmental sections  $g'$  are secured cleats  $g^3$ , which cover and protect the joints and give a foothold to the animals operating the wheel, and as many foothold-cleats as may be necessary will be fixed to the sections  $g'$ , between the joint-cleats  $g^3$ , as the size of the wheel and the animals working it may require.

It will be noticed that the pivot  $e$  of the foot-block  $E$  of the driving-shaft  $F$  is in alignment with the shaft  $P$ ; hence the adjustment of the wheel  $G$  to incline it more or less will not disconnect the gearing  $N O$ , and a collar,  $f$ , fixed to the shaft  $F$ , prevents upward movement of the shaft  $F$  and the tread-wheel  $G$  as security against disconnection of the gearing.

It is obvious that the tread-wheel  $G$ , whether at rest or in motion, may be adjusted by operating the lever  $J$  to any required incline to accommodate the weight of the animals working it and the power required, and one animal may be worked in the inner stall,  $w'$ , when a quick speed and light power is needed, and one animal may be worked in the outer stall,  $w^2$ , when a slower speed and greater power are desired, and by adjusting the wrist-pin  $s$  of the pitman  $S$  in different holes  $r$  of the wheel  $R$  the speed of reciprocation of the lever  $T$  may be regulated, at will, to give a shorter or longer stroke, as may be required to operate a machine connected to the lever.

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

1. An animal-power constructed with a supporting-frame, a shaft journaled at its lower end in a pivoted step-block journaled at its upper end in a head-block fitted adjustably in guides, and a tread-wheel fixed to said shaft and adjustable bodily therewith, substantially as described, for the purposes set forth.

2. An animal-power constructed with a supporting-frame, a shaft journaled at its lower end in a pivoted step-block journaled at its upper end in a head-block fitted adjustably in guides, a tread-wheel fixed to said shaft and adjustable bodily therewith, a bevel gear-wheel fixed to the tread-wheel, and a horizontal shaft carrying a bevel-pinion meshing with the tread-wheel gear and set in alignment with

the pivot of the shaft step-block, substantially as described, for the purposes set forth.

3. The combination, in an animal-power, of a frame,  $A B C$ , a pivoted step-block,  $E$ , a shaft,  $F$ , stepped in block  $E$ , guides  $I$ , fixed to the frame, a head-block,  $H$ , fitted adjustably in said guides and in which block the shaft  $F$  is journaled, and a tread-wheel,  $G$ , fixed to the shaft  $F$ , substantially as shown and described.

4. The combination, in an animal-power, of a frame,  $A B C$ , a pivoted step-block,  $E$ , a shaft,  $F$ , stepped in block  $E$ , guides  $I$ , fixed to the frame, a head-block,  $H$ , fitted adjustably to said guides and in which block the shaft  $F$  is journaled, a tread-wheel,  $G$ , fixed to the shaft  $F$ , a gear-wheel,  $N$ , on the wheel  $G$ , a horizontal shaft,  $P$ , journaled in the frame, and a pinion,  $O$ , thereon meshing with the gear-wheel  $N$ , substantially as shown and described.

5. In an animal-power, the combination, with a supporting-frame, a pivoted step-block,  $E$ , a shaft,  $F$ , a tread-wheel,  $G$ , on the shaft, guides  $I$ , and a head-block,  $H$ , fitted adjustably in said guides and in which block the shaft  $F$  is journaled, of a latch,  $J$ , connected to the block  $H$  and adapted for adjustment and locking of said block, substantially as shown and described.

6. In an animal-power, the combination of a supporting-frame,  $A B C$ , a pivoted step-block,  $E$ , a shaft,  $F$ , journaled in said block, guides  $I$  on the frame, a head-block,  $H$ , fitted adjustably to said guides and in which block the shaft  $F$  is journaled, a tread-wheel,  $G$ , on shaft  $F$ , a gear-wheel,  $N$ , on wheel  $G$ , a shaft,  $P$ , a pitman,  $S$ , connected to wheel  $R$ , and a rock-lever,  $T$ , connected to pitman  $S$ , substantially as described, for the purposes set forth.

7. In an animal-power, the tread-wheel  $G$ , constructed with a central gear-wheel,  $N$ , spokes  $g$ , and tread-sections  $g'$ , having cleats  $g^2$ , substantially as shown and described.

8. In an animal-power, the tread-wheel  $G$ , constructed with a central gear-wheel,  $N$ , spokes  $g$ , tread-sections  $g'$ , having cleats  $g^2$ , and foothold-cleats  $g^3$ , fixed to the face of the wheel, substantially as shown and described.

ELI B. STUDEBAKER.

Witnesses:

C. J. BUTRIE,  
J. W. HYLER.