

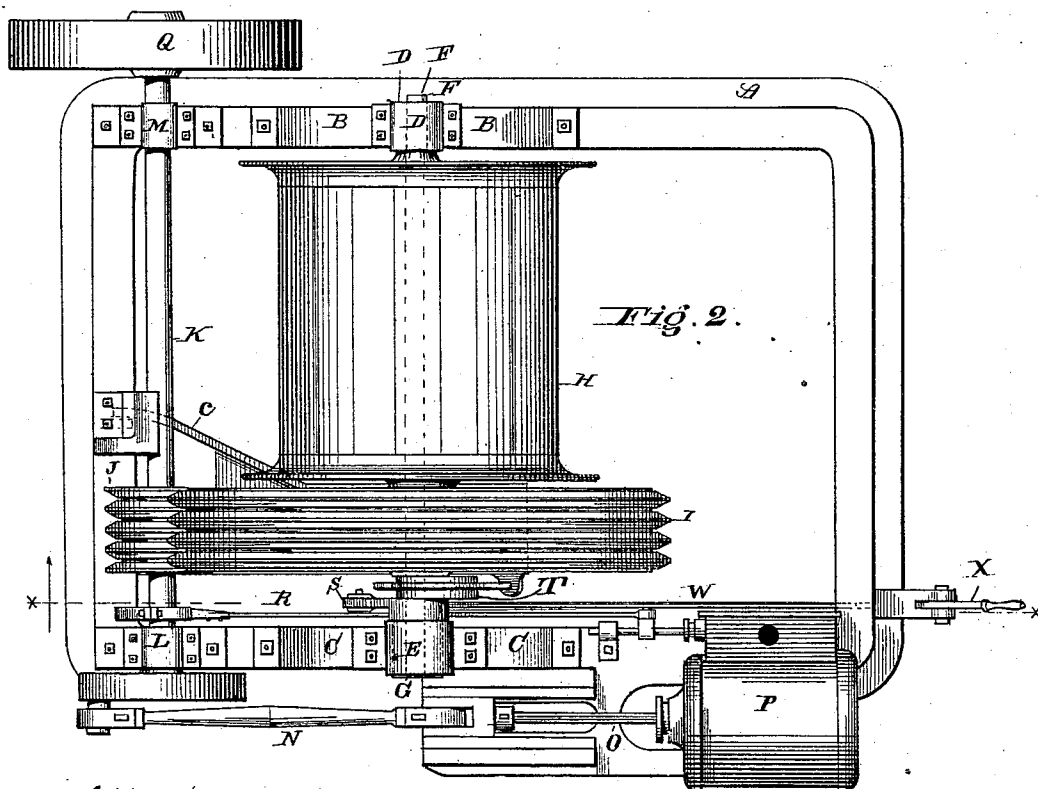
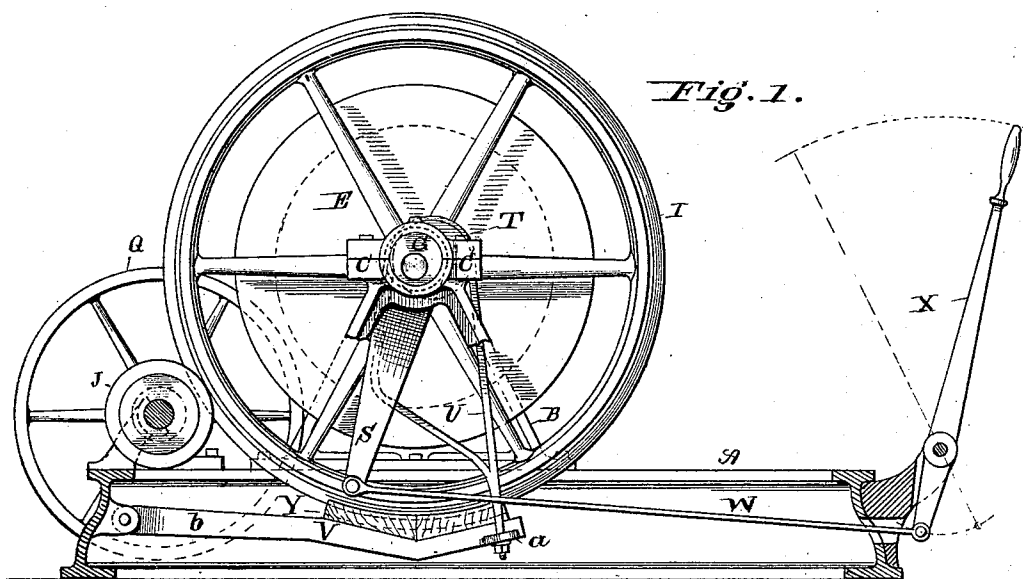
(No Model.)

3 Sheets—Sheet 1.

F. M. DAVIS.
HOISTING MACHINE.

No. 251,100.

Patented Dec. 20, 1881.



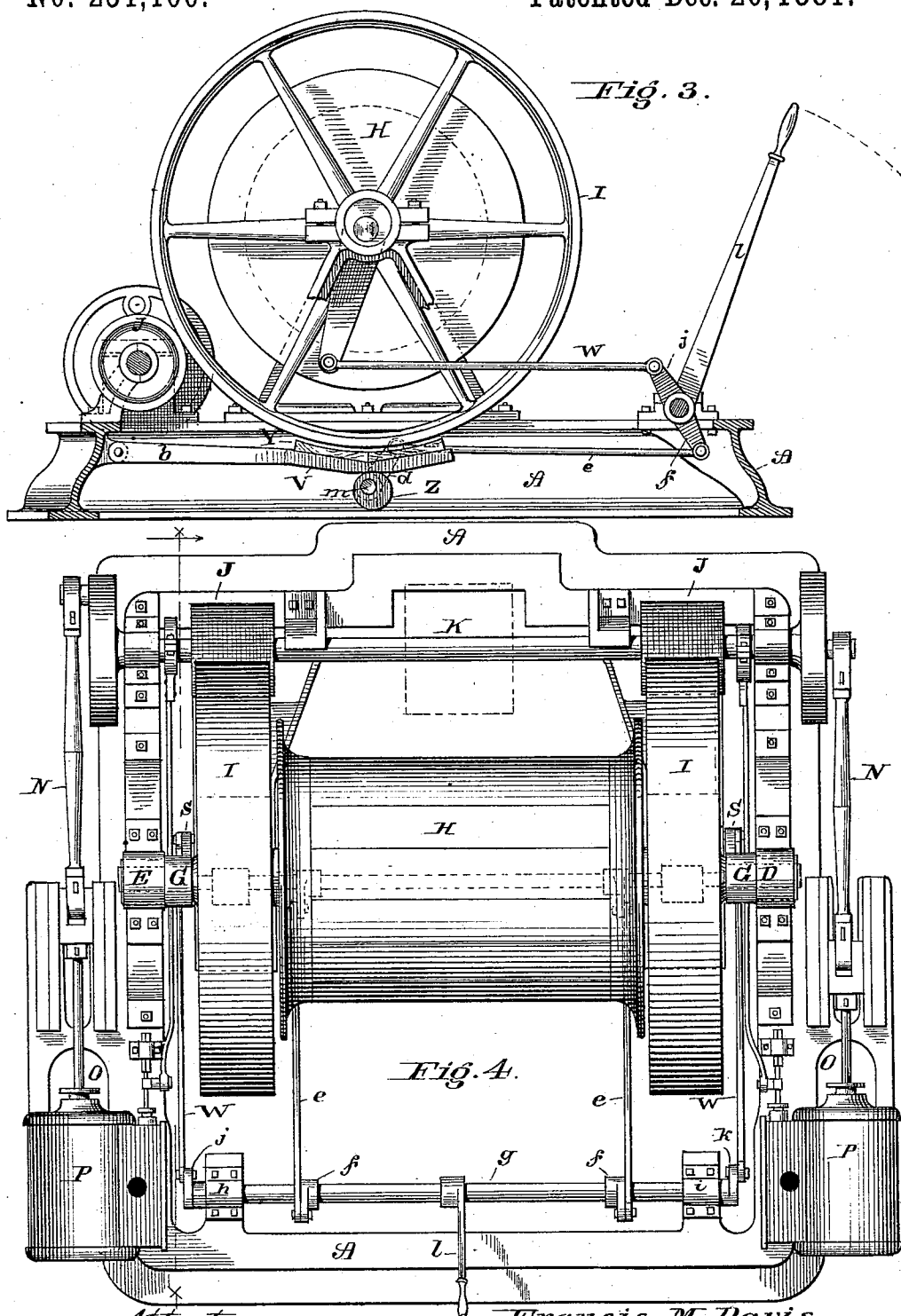
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3 Sheets—Sheet 3.

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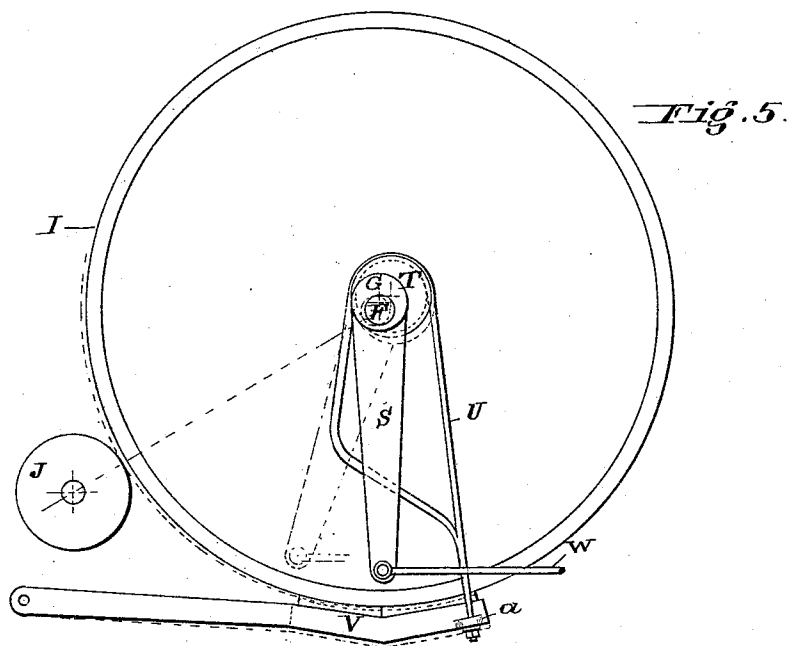


Fig. 6.

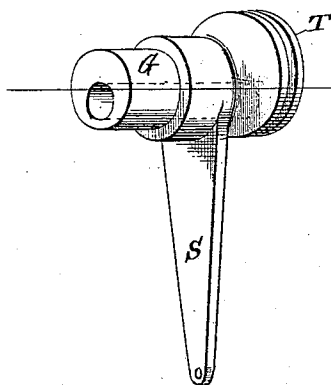


Fig. 7.

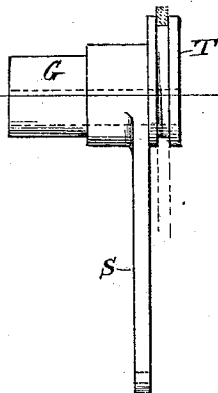


Fig. 8.

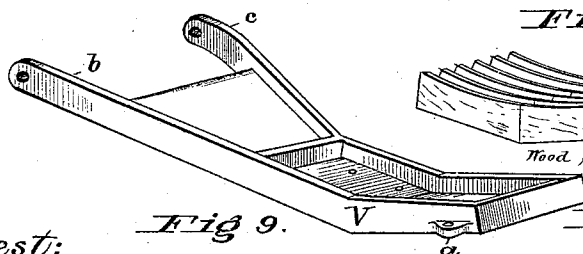
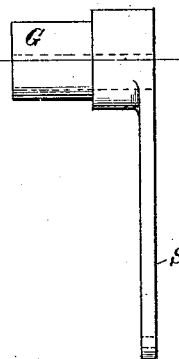
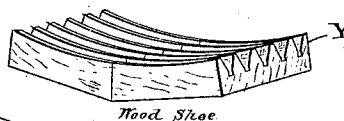


Fig. 10.



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Fig. 9.

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UNITED STATES PATENT OFFICE.

FRANCIS M. DAVIS, OF DENVER, COLORADO.

HOISTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 251,100, dated December 20, 1881.

Application filed September 27, 1881. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS M. DAVIS, a citizen of the United States of America, residing at Denver, in the county of Arapahoe and State of Colorado, have invented certain new and useful Improvements in Hoisting-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, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification, and in which—

Figure 1 is a vertical longitudinal section upon the line *x x* of Fig. 2, showing grooved friction-wheels. Fig. 2 is a plan view, showing a single set of grooved friction-wheels. Fig. 3 is a vertical longitudinal section upon the line *y y* of Fig. 4, showing plain-surfaced friction-wheels. Fig. 4 is a plan view, showing two sets, one on each side, of plain-surfaced friction-wheels. Fig. 5 is an enlarged side elevation of the friction-wheels and brake device. Fig. 6 is an enlarged perspective of the eccentric sleeve and lever with the brake-eccentric attached. Fig. 7 is an enlarged side view of the eccentric sleeve and lever with the brake-eccentric attached and brake-strap shown in dotted lines. Fig. 8 is an enlarged side view of the main bearing and crank. Fig. 9 is a perspective top view of the casing for the brake-shoe. Fig. 10 is a perspective of the wooden brake-shoe.

My invention relates to hoisting-machines for use in mines and other places where large quantities of heavy material are required to be elevated from one plane to another, and has for its object the discontinuance of the motive power and the application of the brake by one and the same movement, and the release of the brake and the application of the motive power in a like manner; and it consists in the construction and arrangement of parts, as will be hereinafter more fully set forth.

In order to enable others skilled in the art to make and construct the same, I will now proceed to describe my invention.

In the drawings accompanying and forming a part of this specification, A represents a frame provided with standards B and C, supporting journal-bearings D and E, that receive the end

of the shaft F, and the eccentric-sleeve G, that envelops the end of the shaft F. A drum, H, is mounted upon the shaft F, for receiving the necessary rope or chain used in hoisting, and adjacent to it a grooved friction-wheel, I, is mounted, revolving freely upon the shaft, and is secured to the drum, so as to give it motion when power is received from the grooved frictional pinion J, that is carried by the driving-shaft K.

The driving-shaft K is seated in bearings L and M on the frame, and receives motion by means of the connecting-rod N, piston-rod O, and cylinder P, and carries a balance-wheel, Q, and an eccentric-strap and eccentric-rod, R.

The eccentric-sleeve G, while it rests in the bearing E and has a free revolution, forms a bearing for the end of the shaft F, that passes through on one side of the center, and has an arm or crank, S, attached to or cast as a part of it, that is used to turn the eccentric-sleeve, thus changing the center of the shaft F, thereby moving the friction-wheel I to or from the frictional pinion J. When the form of construction shown in Figs. 1 and 2 of the drawings is used the eccentric-sleeve G is provided with a grooved eccentric, T, just inside of the lever, as shown in Figs. 5, 6, and 7 of the drawings, for receiving and operating the brake-strap U, that connects at its lower end with the lug *a* of the shoe-frame V; and the arm S has a rod, W, extending from its lower end to a lever, X, which, in turn, is pivoted to the frame A, and by which the arm S is operated to throw the wheel to or from the pinion, and at the same time loosen or tighten the shoe against the face of the wheel.

The shoe-frame V is provided with two arms, *b* and *c*, extending back and hinged to lugs on the frame A. The body of this shoe-frame is formed to receive and hold a wooden shoe, Y, that conforms to the curvature and face of the wheel, against which it is pressed to create friction and check the movement of the wheel.

When the form of construction shown in Figs. 3 and 4 of the drawings is used the eccentric T and brake-strap U are dispensed with, and the sleeve, with its arm, is set up against the hub of the wheel, and the shoe-frame is set upon eccentric rollers or collars Z, that are carried by a shaft, *m*, extending across and resting in bearings on the frame A. The

arms *d* of the shaft *m* are connected by rods *e* to downwardly-projecting arms or cranks *f*, keyed to a shaft, *g*, that extends across the frame, and is seated in bearings *h* and *i*.

- 5 The shaft *g* is provided at its ends with upwardly-projecting arms or cranks *j* and *k*, that are connected to the ends of the rods *W*, and is also provided with a lever, *l*, keyed to its center. When the parts are in the position
10 shown in Fig. 3 of the drawings the movement of the lever *l* in the direction indicated by the dotted line will draw the arm *S* toward the lever, and thereby turn the eccentric-sleeve and move the center of the shaft *F* and the
15 wheel away from the pinion. The same movement of the lever *l* pushes the arm *d* and turns the shaft of the eccentric-roller *Z*, thereby raising the brake-shoe against the wheel and checking its speed. The movement of the lever
20 back again releases the brake and throws the wheel against the pinion.

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

1. The combination of the shaft *F*, sleeve *G*,
25 arm *S*, eccentric *T*, strap *U*, and brake-shoe, substantially as and for the purpose set forth.

2. The combination of the lever *X*, rod *W*, arm *S*, eccentric-sleeve *G*, shaft *F*, wheel *I*, and frame *A* with the eccentric *T*, strap *U*, and brake frame and shoe, whereby both the
30 brake and the wheel are moved at one and the same movement of the lever, substantially as set forth.

3. The combination of the lever *l*, shaft *g*, arms *f f*, rods *e e*, arms *d d*, shaft *m*, eccentric rollers *Z Z*, and brake frame and shoe, substantially as shown and described. 35

4. The combination of the lever *l*, shaft *g*, arms *f f*, rods *e e*, arms *d d*, shaft *m*, eccentric rollers *Z Z*, and brake frame and shoe with
40 arms *j k*, rods *W W*, arms *S S*, eccentric sleeves *G G*, shaft *F*, wheel *I*, and frame *A*, substantially as shown and described.

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

FRANCIS M. DAVIS.

Witnesses:

M. A. ROGERS,
JOHN P. BROCKWAY.