(No Model.) 2 Sheets—Sheet 1.

G. MITCHELL.

ELEVATOR.

No. 272,970. Patented Feb. 27, 1883.

Fig. 2.

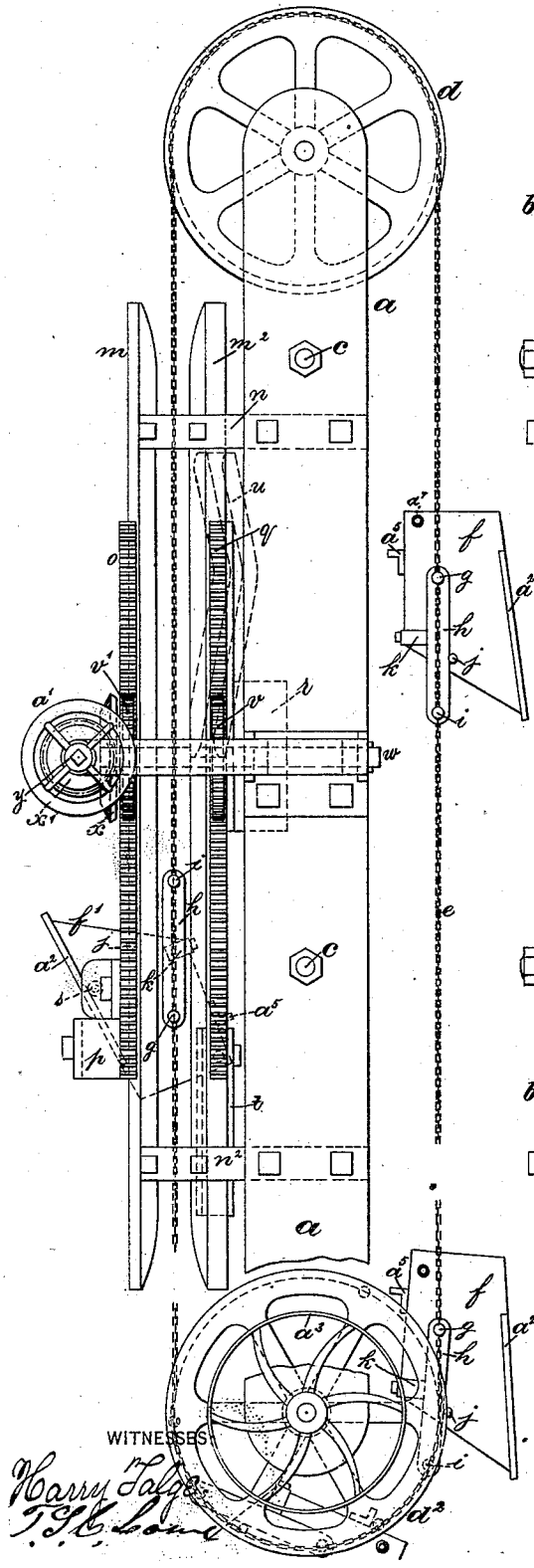
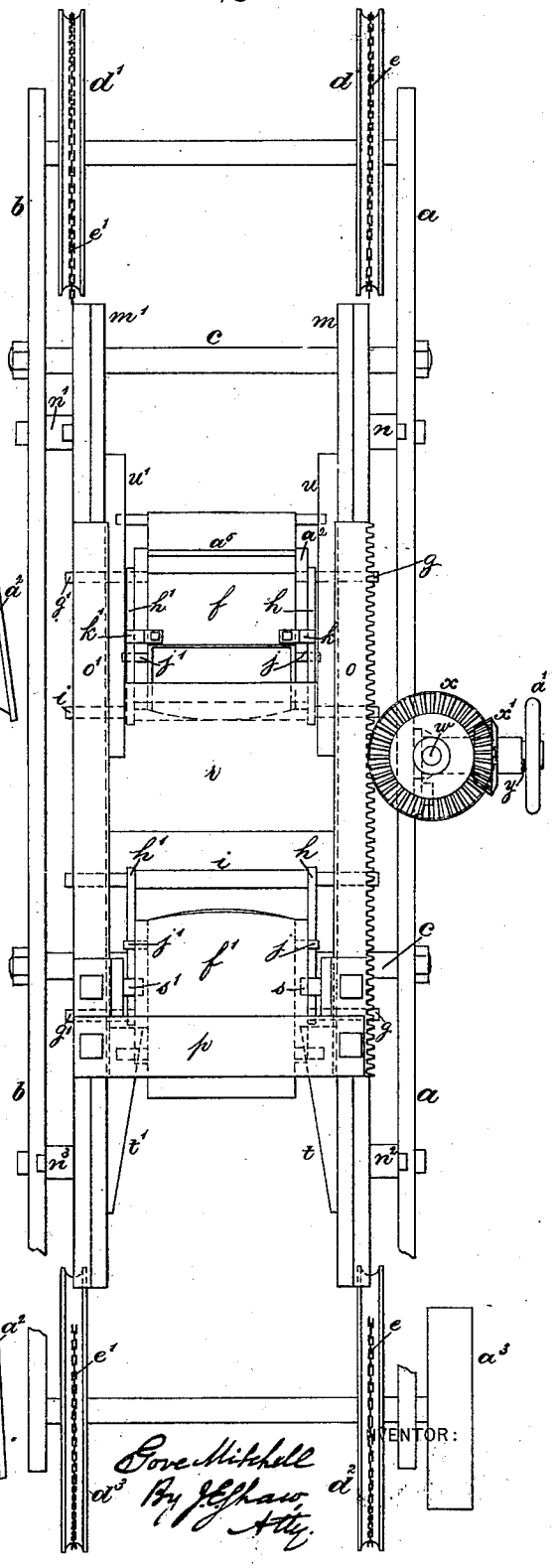


Fig. 1.



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(No Model.)

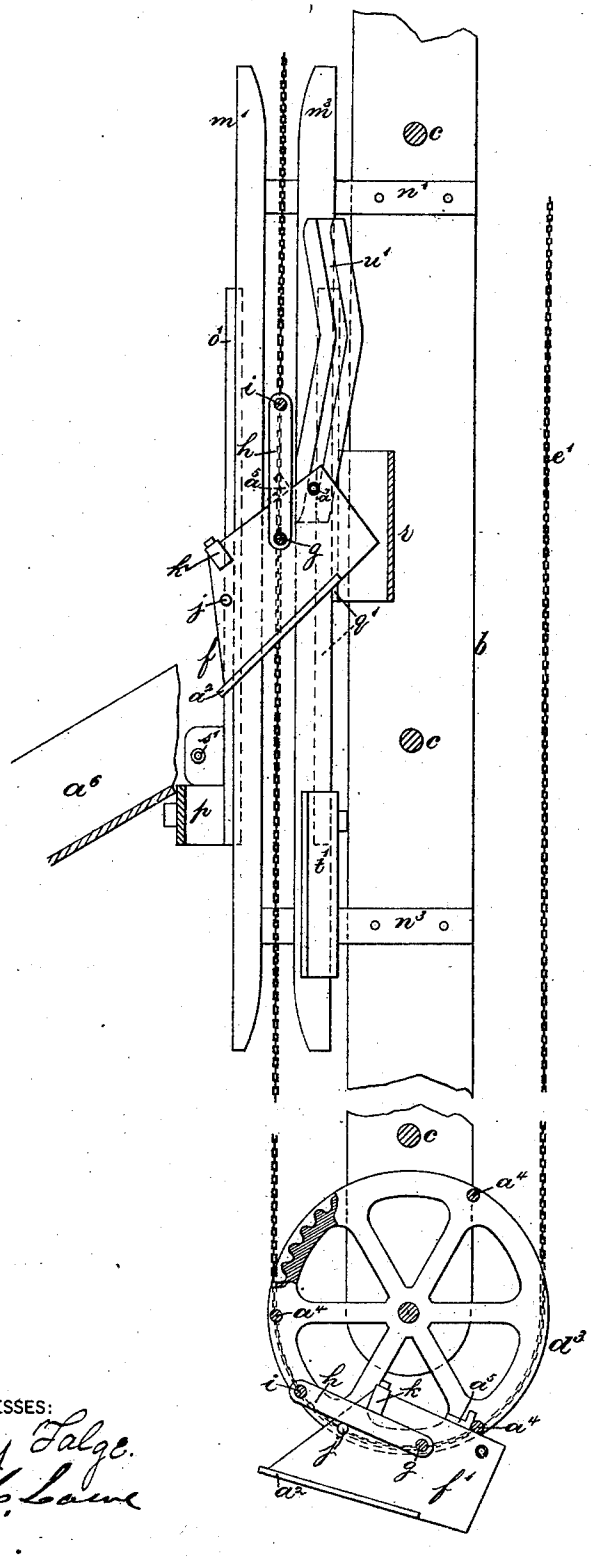
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Fig. 3.



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UNITED STATES PATENT OFFICE.

GOVE MITCHELL, OF LANGHORNE, PENNSYLVANIA.

ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 272,970, dated February 27, 1883.

Application filed January 2, 1883. (No model.)

To all whom it may concern:

Be it known that I, GOVE MITCHELL, a citizen of the United States, residing in Langhorne, Bucks county, Pennsylvania, have invented a new and useful Improvement in Elevators, of which the following is a specification.

My invention relates to elevators for raising grain, coal, &c., also to dredging and excavating machines, and, in general terms, to all elevators which consist of wheels supporting and giving motion to endless chains or wire ropes carrying buckets.

So far as I am aware, elevator-buckets have hitherto always been attached to the outside of the endless chains or other carriers employed, and have discharged their contents at the top only of the elevators—a method of construction which necessitated the driving of the carrier at a high rate of speed in order that the contents of the buckets should be discharged with impetus enough to carry them into or onto the depository provided.

My invention consists of apparatus for causing the buckets to dump their contents at any required height; also, in an arrangement of the buckets by suspending them between two opposing endless chains or wire ropes by means of flexibly-connected bails, which allow the buckets to be inverted and their contents discharged as the buckets ascend.

In the annexed drawings, Figure 1 is a front view, and Fig. 2 a side view, of the complete elevator. Fig. 3 is a sectional elevation of the inner face of the off side *b* of the elevator.

The main frame is composed of two similar upright beams, *a* and *b*, firmly united by cross-braces *c*.

d d' d² d³ are sprocket wheels, which may be of the ordinary construction indicated in Fig. 3, although I prefer to use the segmental wheels patented to me July 5, 1870, in Patent No. 104,980.

e and *e'* are endless chains or wire ropes.

f and *f'* are the buckets. They are provided with bails consisting of the short shafts *g* and *g'*, which project from their sides, the arms *h* and *h'*, and the shaft *i*. These shafts have bearings in the chains or wire ropes *e* and *e'*.

j and *j'* are pins or stops projecting from the sides of the buckets. The arms *h* and *h'* abut against these pins, and the springs *k k'* serve to confine the arms of the bail between themselves and the stops *j j'* when the buckets are in an upright position, as the bucket *f'* is shown in Fig. 1.

m m' m² m³ are L-shaped bars, bolted or otherwise secured to the parts *a* and *b* of the main frame by projecting beams *n n' n² n³*. The bars *m m' m² m³* constitute the ways upon which slide two adjustable carriages—viz., an outer carriage, consisting of the two L-shaped plates *o* and *o'*, rigidly united by the cross-bar *p*, and an inner carriage, consisting of the two L-shaped plates *q* and *q'*, rigidly united by the cross-bar *r*.

s and *s'* are dumping-pins attached to said outer carriage, as shown in Fig 1.

t and *t'* (see Fig. 1) are inclined-plane flanges attached to said inner carriage.

u and *u'* are zigzag guides, also attached to said inner carriage.

v and *v'* are spur-wheels fixed on the shaft *w*, which has bearings on the main frame, as shown.

x and *x'* are bevel-gears, the former being fixed on the shaft *w* and the latter on a shaft, *y*.

a' is a hand-wheel for operating the gears.

The plates *o* and *q* are cogged on their exterior edges, as shown in Fig. 1, forming racks into which the spur-wheels *v* and *v'* mesh. Two similar flanges, one of them, *a²*, being shown, are formed on the opposite sides of the buckets.

a³ is a pulley by which power is applied to the apparatus.

Cross-rods (indicated at *a⁴*, Fig. 3) extend from one to the other of the lower pair of sprocket-wheels. These rods are separated by equal peripheral spaces, which correspond with the spaces intervening between the points of suspension of the buckets.

a⁵ is a flange extending across the exterior of the inside of the buckets.

The drawings show but three buckets; but it is to be understood that buckets are attached to the chains or ropes, with intervals of space between them equal to the peripheral distances between the cross-rods *a⁴* of the lower pair of sprocket-wheels.

Preparatory to operating the elevator the adjustable carriages, with their inclined planes *t t'*, dumping-pins *s s'*, and zigzag guides *u u'*,

are, by the action of the spur-wheels v v' and bevel-gears x x', (moved by the hand-wheel a',) raised or lowered to the height at which it is desired to have the buckets dump their contents. As the buckets pass around between the lower pair of sprocket-wheels the cross-rods a^4 of these wheels abut against the flanges or projections a^5 (see Fig. 3) of the respective buckets, and thus prevent any slipping of the endless chains. As the buckets rise the springs k and k', affixed to their opposite sides, come in contact with the inclined planes t t', which press them in, and as the respective bails are released from the influence of these springs the flanges a^2 of the buckets are caught by the dumping-pins s s' and held until, by the upward movement of the bucket, it is inverted and its contents dumped onto the chute a^6, Fig. 3. As the flanges a^2 are released from the dumping-pins the bucket-pins a^7 enter the zigzag guides u and u', as shown in Fig. 3, causing the buckets to right themselves.

The suspension of the buckets between the endless chains by means of flexibly-connected bails having bearings in said chains, as set forth, is necessary to enable the buckets to be freely inverted and righted by the above-described action of the other parts as the buckets are carried up by the chains.

The adjustable carriages may be held in position at the required elevation by thumb-screws or equivalent means.

The above-described adjustable carriages, divested of their inclined planes, dumping-points, and zigzag guides, may be employed in connection with the vertical ways upon which they slide, and the endless chains or wire ropes, when other modes of effecting the discharge of the buckets at variable heights are used—as, for instance, when the buckets are made each with a hinged side through which they can discharge their contents without being inverted.

I claim—

1. In elevators, the adjustable carriages bearing inclined planes, dumping-pins, and zigzag guides, a bucket having flanges a^2, pins a^7, and a flexible bail, with its confining-stops and springs, in combination with endless chains or wire ropes, in the manner and for the purpose substantially as set forth.

2. The adjustable carriages, consisting of plates o o', united, as by cross-bar p, and the plates q q', united, as by a cross-bar, r, in combination with upright ways on which said carriages slide and the endless chains or wire ropes, substantially as and for the purpose set forth.

GOVE MITCHELL.

Witnesses:
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