

(No Model.)

J. M. DODGE.

CHAIN WHEEL.

No. 358,258.

Patented Feb. 22, 1887.

FIG. 1.

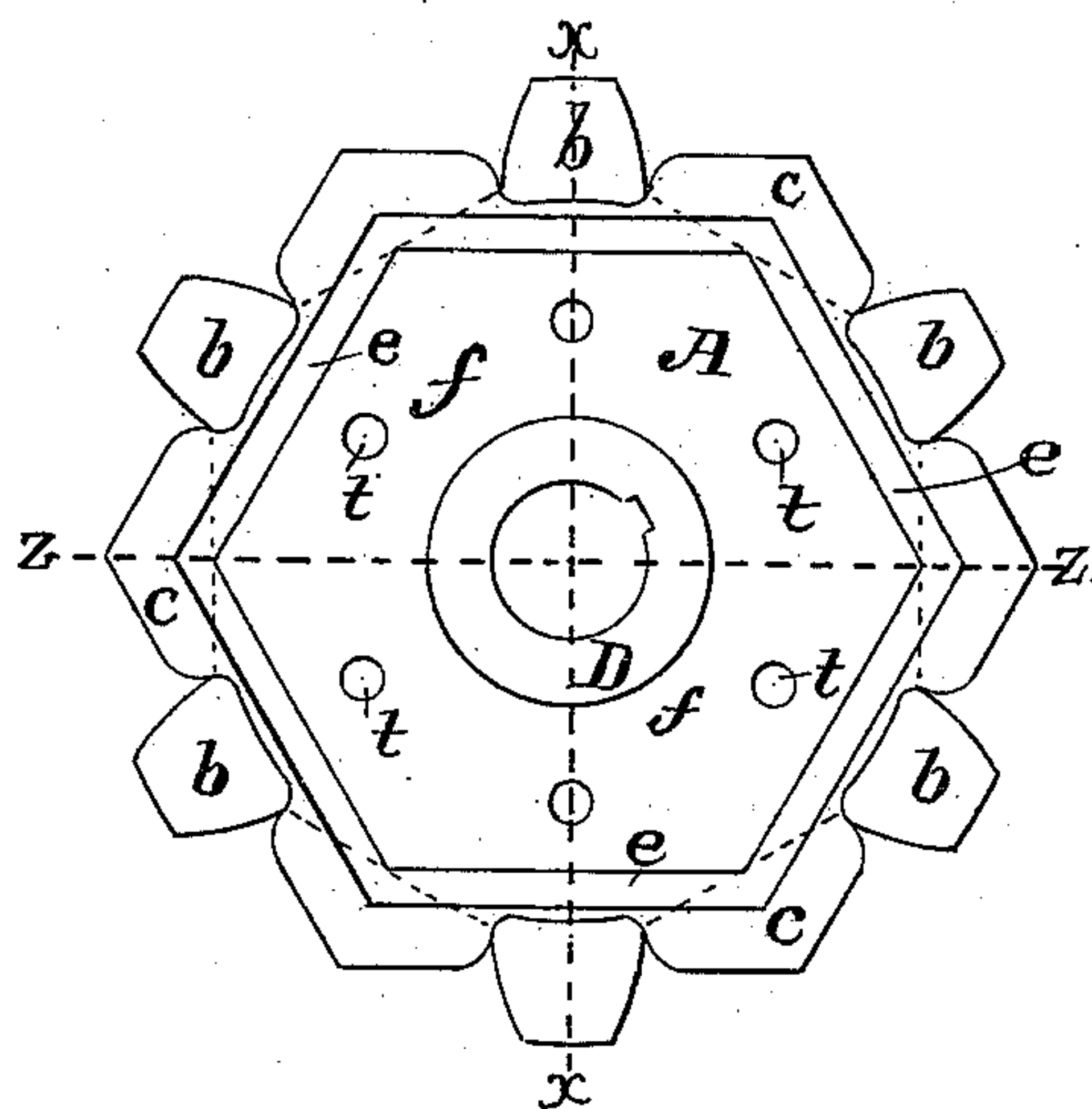


FIG. 2.

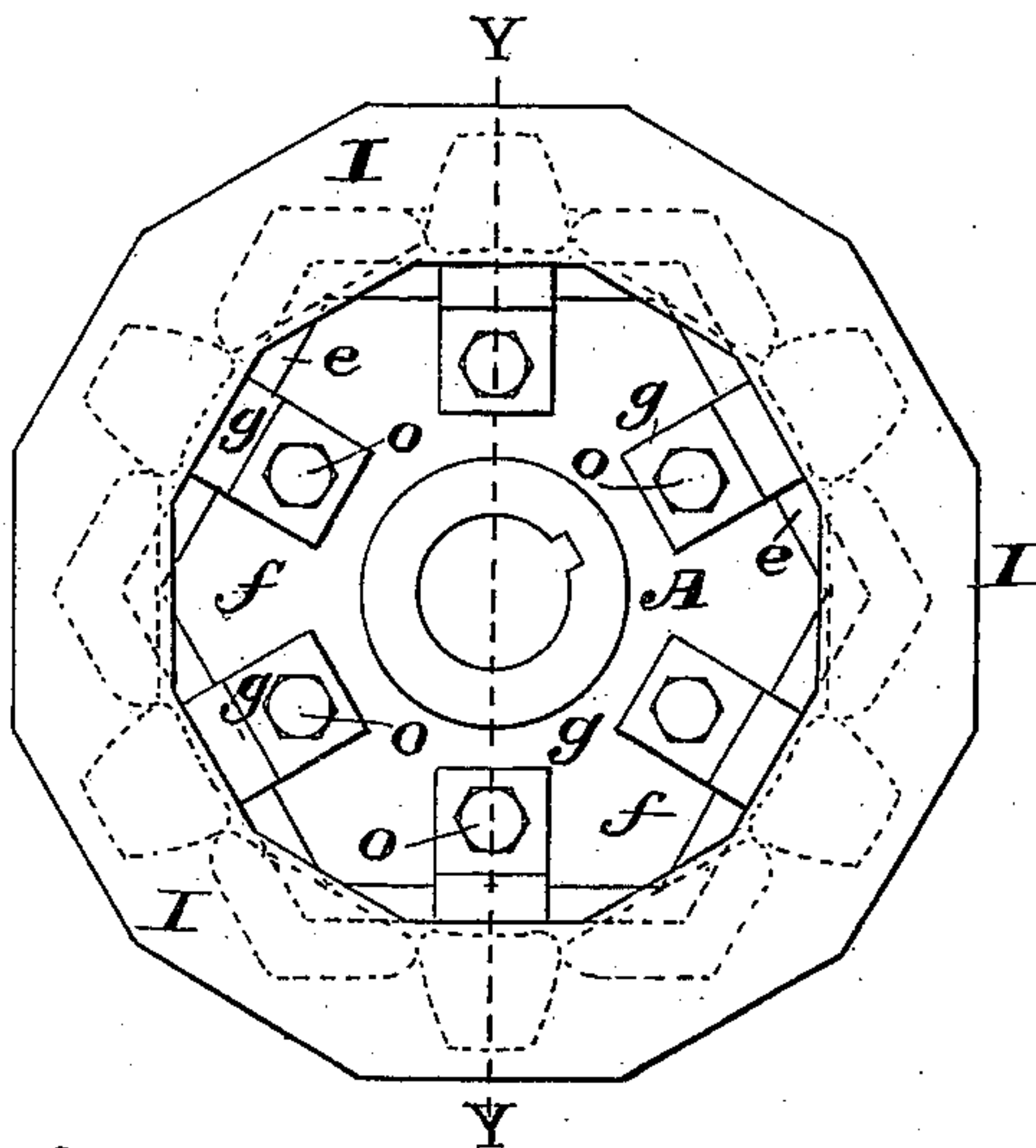


FIG. 6.

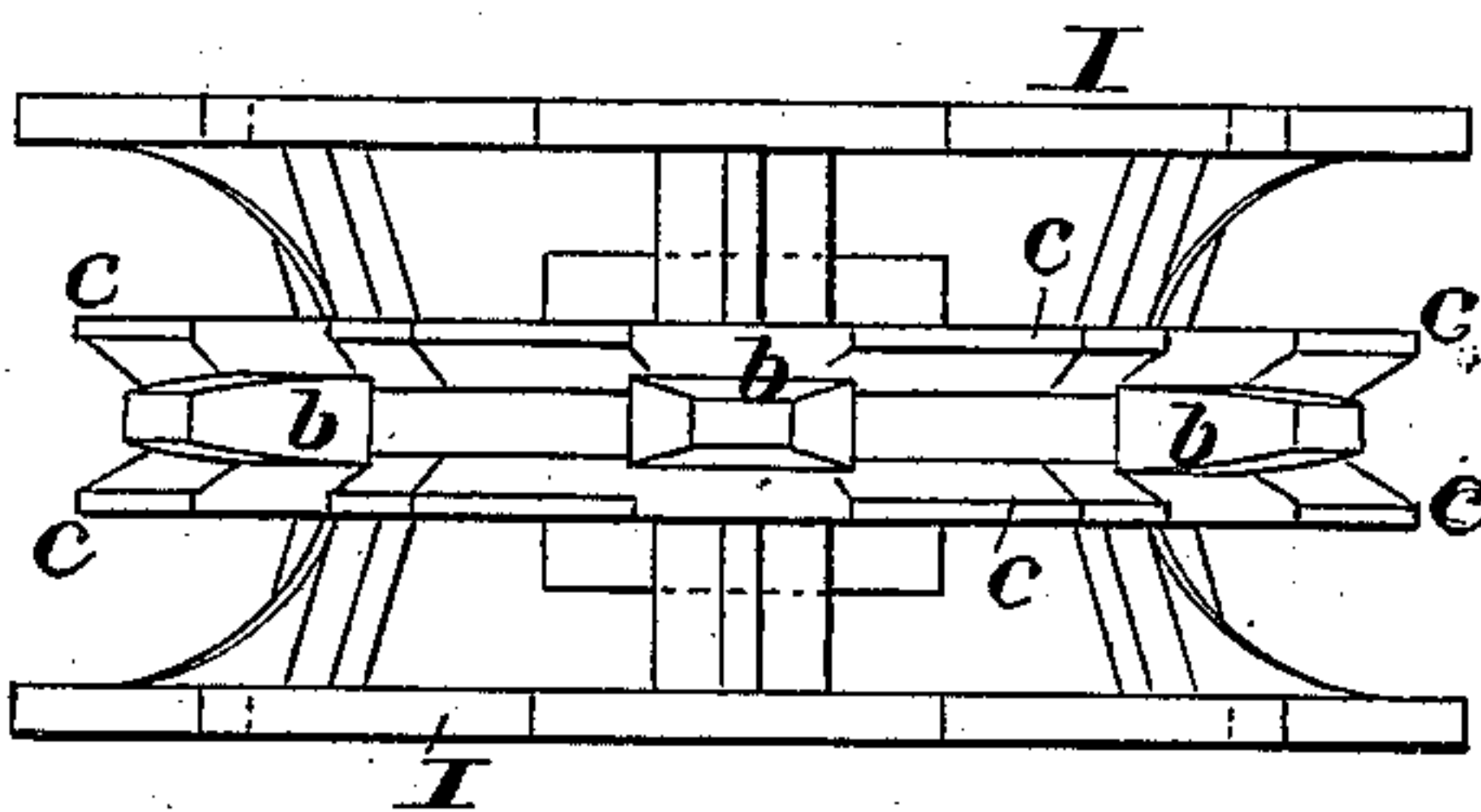


FIG. 3.

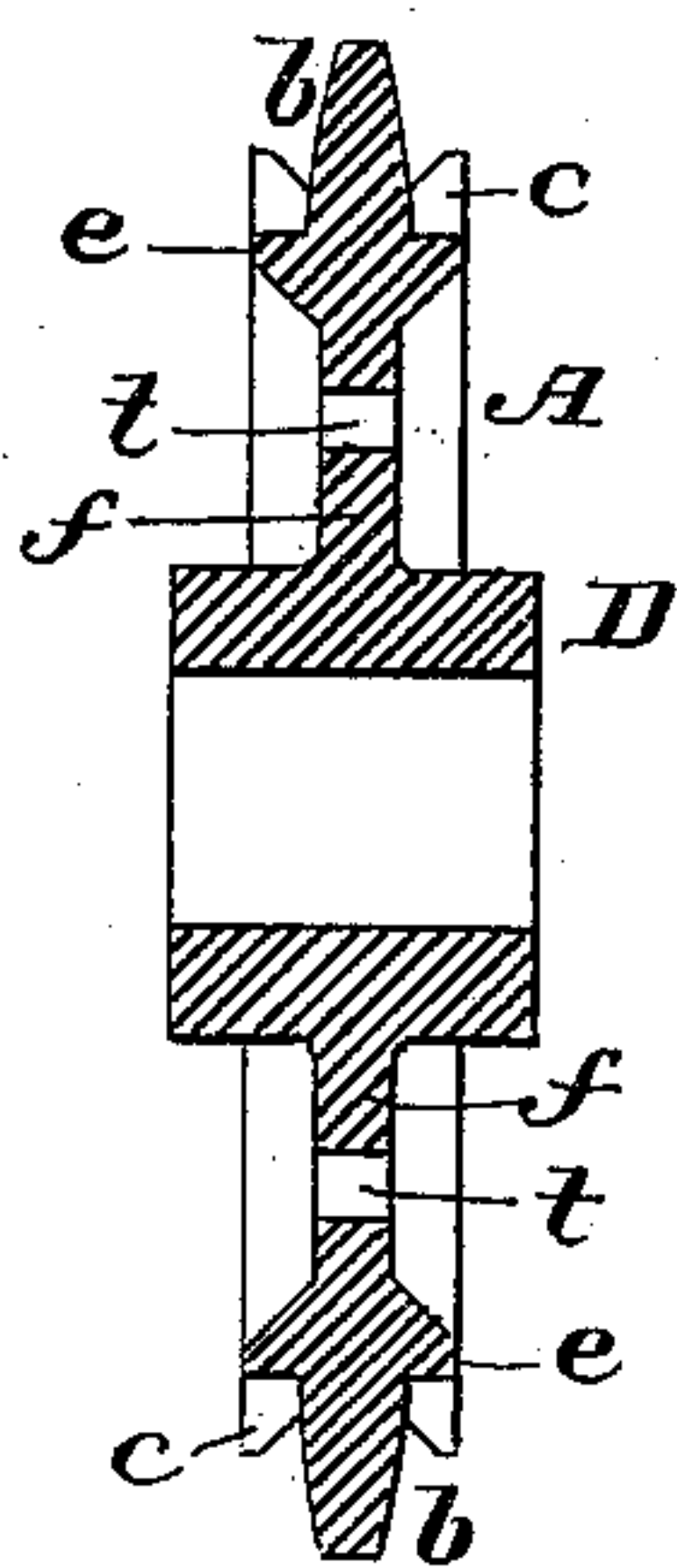


FIG. 4.

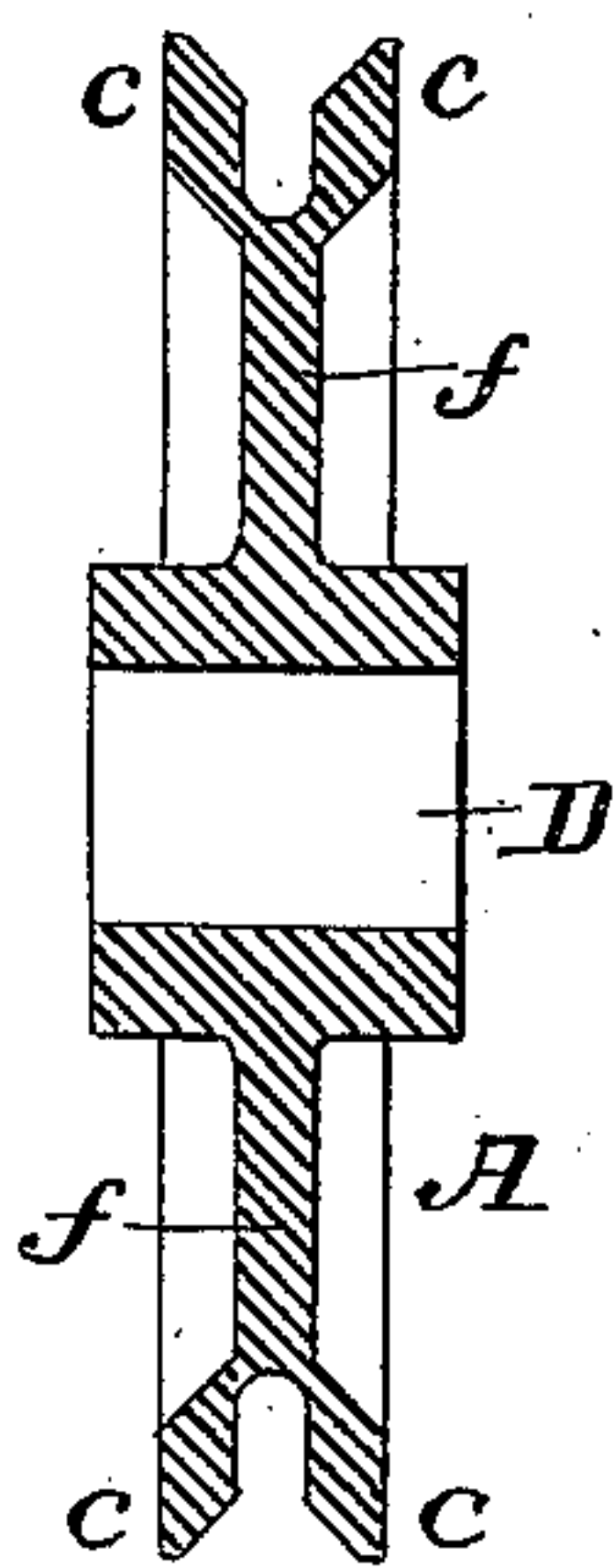
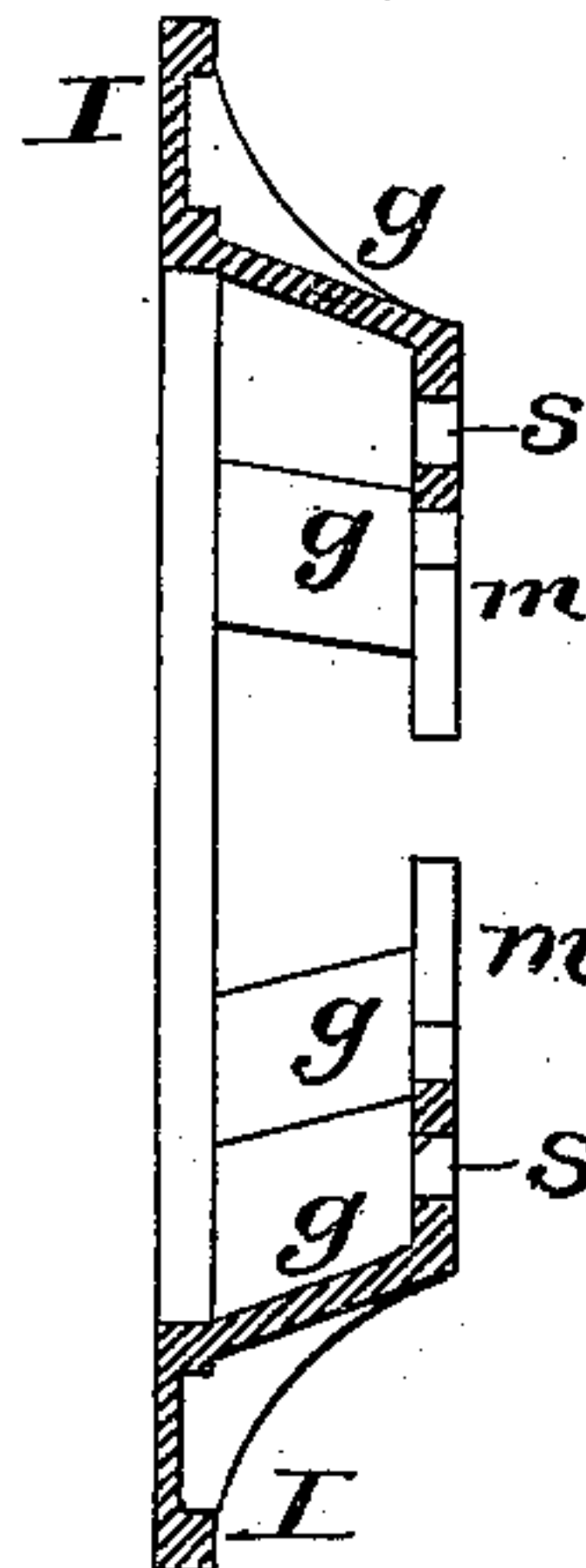


FIG. 5.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

JAMES M. DODGE, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THE  
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## CHAIN-WHEEL.

SPECIFICATION forming part of Letters Patent No. 358,258, dated February 22, 1887.

Application filed October 18, 1886. Serial No. 216,547. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES M. DODGE, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in Chain-Wheels; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification.

My invention relates to chain-wheels or sprocket-wheels such as are usually located within or employed in connection with the boot of an elevator and over which passes the run of drive-chain carrying the buckets or other devices used in such elevator or conveying apparatuses.

Previous to my invention a serious cause of derangement or breakage, or both, in the parts of such elevator contrivance has resulted from the twisting or lateral strain to which the buckets or carrying devices are frequently subjected while passing into and through the elevator-boot and the material contained therein, the tendency of such strain on the buckets often operating to either break the chain or bucket or to derange or break the connections between the buckets or carrying devices and the chain. I propose to overcome this well-known and serious difficulty by providing some means for affording a support to the bottoms of the buckets (or to the brackets by means of which the buckets are secured to the drive-chain) in such manner that any tendency to twist or turn from one side or the other in the buckets while passing through the elevator-boot and the material therein shall be practically overcome and the buckets caused to travel always in the proper relationship to the chain and its attachments, no matter even if the material in the boot, during the operation of filling the buckets, tends to crowd the buckets sidewise or twist them relatively to the chain by which they are carried.

To this main end and object my invention may be said to consist, essentially, in the combination, with the ordinary or any chain-wheel or sprocket-wheel over which the drive-chain that carries the buckets travels, of skeleton wheel-like devices or polygonal rims arranged on either side of the chain-wheel proper,

(and at proper distances from the periphery of the chain-wheel,) said rim-like devices being either secured to or constituting a part of the wheel with which the drive-chain coacts, and being adapted to come into contact with and support the bottoms (or those portions which are attached to the chain) of the buckets or carrying devices and support or hold them in place laterally against any tendency to turn or twist sidewise on or with the chain which carries them, all as will be hereinafter more fully explained, and as will be most particularly pointed out in the claims of this specification.

To enable those skilled in the art to which my invention relates to understand and practice the same, I will now proceed to more fully describe my improvement, referring by letters to the accompanying drawings, in which I have illustrated my invention carried out in that form which is the best now known to me, and in which I have so far successfully practiced it.

In the drawings, Figure 1 is a side view of a chain-wheel or link-belt pulley adapted for use in connection with the boot of an elevator and made according to an improved plan or construction of my own, which constitutes the subject-matter of a separate application by me. Fig. 2 is a similar view of said wheel, but with a pair of "spiders," (as I choose to designate them,) or polygonal rim-like devices, or skeleton wheels arranged on either side of and securely bolted to the sprocket-wheel shown at Fig. 1. Fig. 3 is a cross sectional view of the chain-wheel seen at Fig. 1, taken at the line  $xx$  of the last-mentioned figure. Fig. 4 is a similar cross-section of said wheel, but taken at the line  $zz$  of Fig. 1. Fig. 5 is a cross section taken at the line  $yy$  of Fig. 2, but showing only one of the spiders or polygonal rim-like devices. Fig. 6 is an edge view of the wheel and its rim-like devices, such as shown in side view at Fig. 2.

In the several figures the same part will be found designated by same letter of reference.

As before mentioned, the chain-wheel proper, which I have elected to show my improvement applied to, is made according to the novel or improved construction which forms the sub-



ject-matter of another application by me, and is of a form of structure in which the periphery of the wheel is formed or provided with alternately-arranged single teeth or sprockets, which engage with the central openings of certain links of a cable-chain, and duplex teeth which straddle and confine laterally between them certain other links of such cable-chain.

In the drawings, those teeth of the wheel A that are lettered *b* are what I have designated as the "single" teeth, while those marked *c* are the "duplex" or "straddling" teeth.

A reference to Figs. 1, 3, and 4 will make clear the general construction of the chain-wheel proper, and for any more specific explanations of its form and mode of operation a reference may be had to the other pending application above referred to.

The wheel A is made, as usual, with a suitable hub, D, which is designed to be keyed onto the shaft of the elevator, and in the case shown said wheel has the hub D connected with the polygonal rim *e* by means of a web-like or plate-like portion, *f*.

I I are two rim-like devices or spiders, the peripheries of which are made polygonal, as shown, and have as many sides as there are teeth (of both species) in the periphery of the wheel proper, A, the polygonal peripheries of said spiders or rim-like devices I being formed or provided with inwardly-projecting arms *g*, which connect with or are preferably formed integrally with a plate-like portion, *m*, by means of which latter the spider is bolted or otherwise secured to the wheel proper, A.

I have shown as a means of securement bolts *o*, (see Fig. 2,) which pass through holes *s* in the part *m* of the spider, and thence through holes *t*, (see Figs. 1 and 3,) made in the web-like or body portion *f* of the wheel proper, and suitable nuts applied to the threaded ends of said bolts; but any means for securely fastening the spiders I to the chain-wheel proper, A, may of course be employed.

An observation of Figs. 2 and 6 will give a correct and clear idea of the relative arrangement of the two spiders and the chain-wheel proper, A, when these parts are securely fastened together to constitute my improved conveying or elevator chain-wheel device, and from an observation of these figures and what has already been stated it will be understood that in the use of such wheel device the bottoms, or those sides which are fastened to the carrier-chain of the elevator-buckets, will lie or travel while running around the chain-wheel in close proximity to the polygonally-shaped peripheries of the spiders I I, so that whenever any bucket or the slat or other device by means of which it may be attached to the drive chain shall be moved or strained laterally in any direction the polygonal peripheries of one or both of the spiders I will

serve to support and maintain such strain or twisted bucket or carrying device in its proper position or relationship to the chain-wheel proper, A, and the chain passing over the periphery of said wheel, thus preventing any wrenching of the bucket from its fastenings to the chain, and any undue strain on or breakage of either the chain or the carrying-buckets themselves.

Of course the relative diameters of the spiders I to that of the chain-wheel proper, A, may be regulated or varied in the judgment of the manufacturer or constructor to suit the size and character of chain-wheel and the form, size, and arrangement of the buckets or other carrying devices, and the attachment devices by which said buckets are coupled to the elevator or conveyer chain.

Of course the number of sides to the wheel proper and to the spiders is not material, though it is essential to have twice as many sides to the spiders I as there are to the rim of the wheel proper, A; or, in other words, it is indispensable to have twice as many facets to the polygonal peripheries of the spiders I as there are buckets running over said spiders, in order that the bottoms of the buckets may clear the peripheries of the spiders in making the turn around the chain-wheel contrivance, (while passing into and through the boot of the elevator.)

Although I have shown the polygonal spiders I as combined with the peculiar form or construction of chain-wheel proper, A, made the subject of said other application, such spiders or rim-like devices for properly holding in place against any torsion or strain of the chain, the carrying-buckets may of course be combined with chain-wheels proper of some other construction, and in lieu of having spiders or devices I made separately and bolted to the chain-wheel proper, as shown and described, the bucket-supporting rims or spiders I may of course be formed integrally with the chain-carrying portion of the wheel device, if found expedient by the constructor or manufacturer.

What I claim as new, and desire to secure by Letters Patent, is—

In combination with a chain-wheel, A, adapted for use in connection with the usual bucketed chain of an elevator, the polygonally-shaped spiders I, arranged one on each side of said chain-wheel and having twice as many sides or facets as the wheel A, the whole constructed and operating as specified, for the purpose set forth.

In witness whereof I have hereunto set my hand this 5th day of August, 1886.

JAMES M. DODGE.

In presence of—

EDWARD H. BURR,  
D. S. GARWOOD.