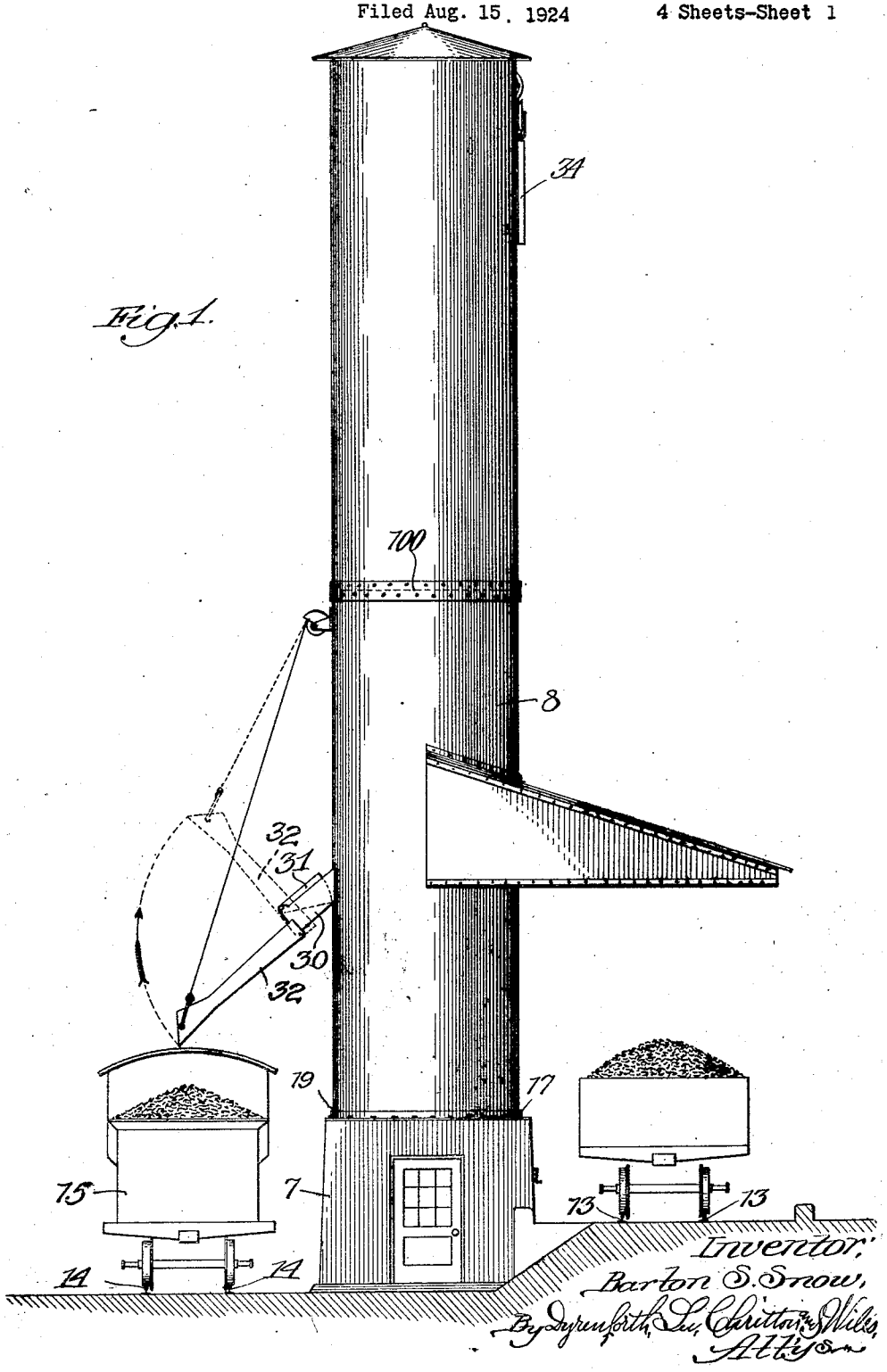
June 30, 1925. 1,544,280

B. S. SNOW

MATERIAL ELEVATING AND STORAGE APPARATUS

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Fig. 1.



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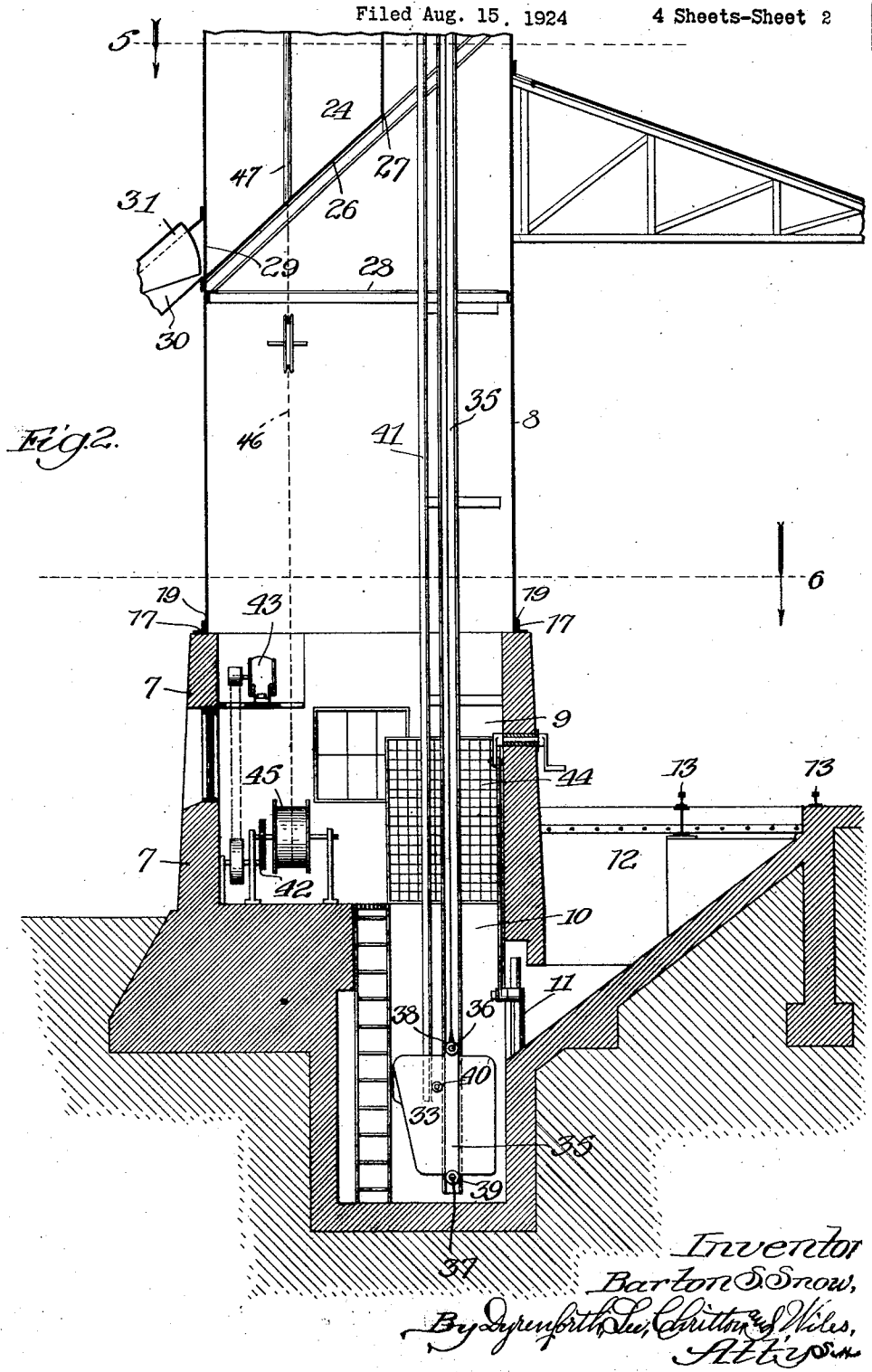


Fig. 2.

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MATERIAL ELEVATING AND STORAGE APPARATUS

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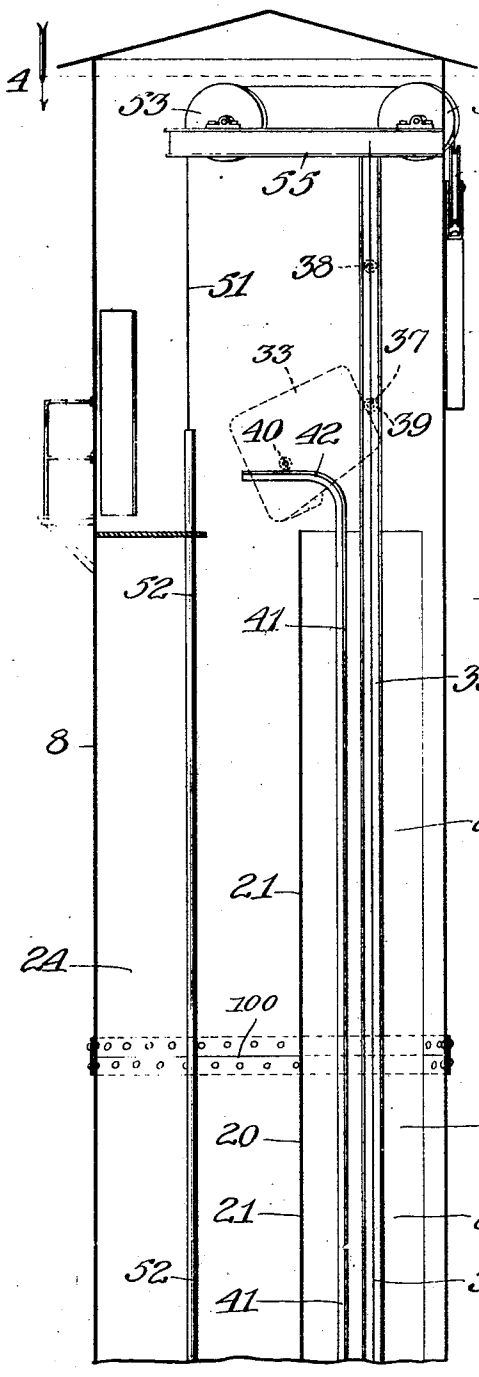


Fig. 3.

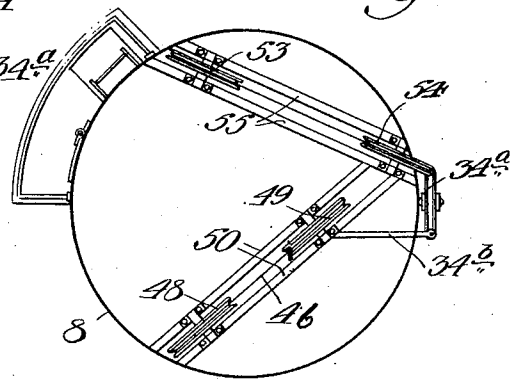


Fig. 4.

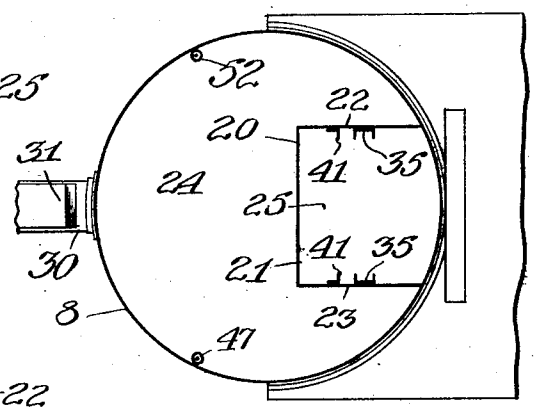


Fig. 5.

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MATERIAL ELEVATING AND STORAGE APPARATUS

Filed Aug. 15, 1924 4 Sheets-Sheet 4

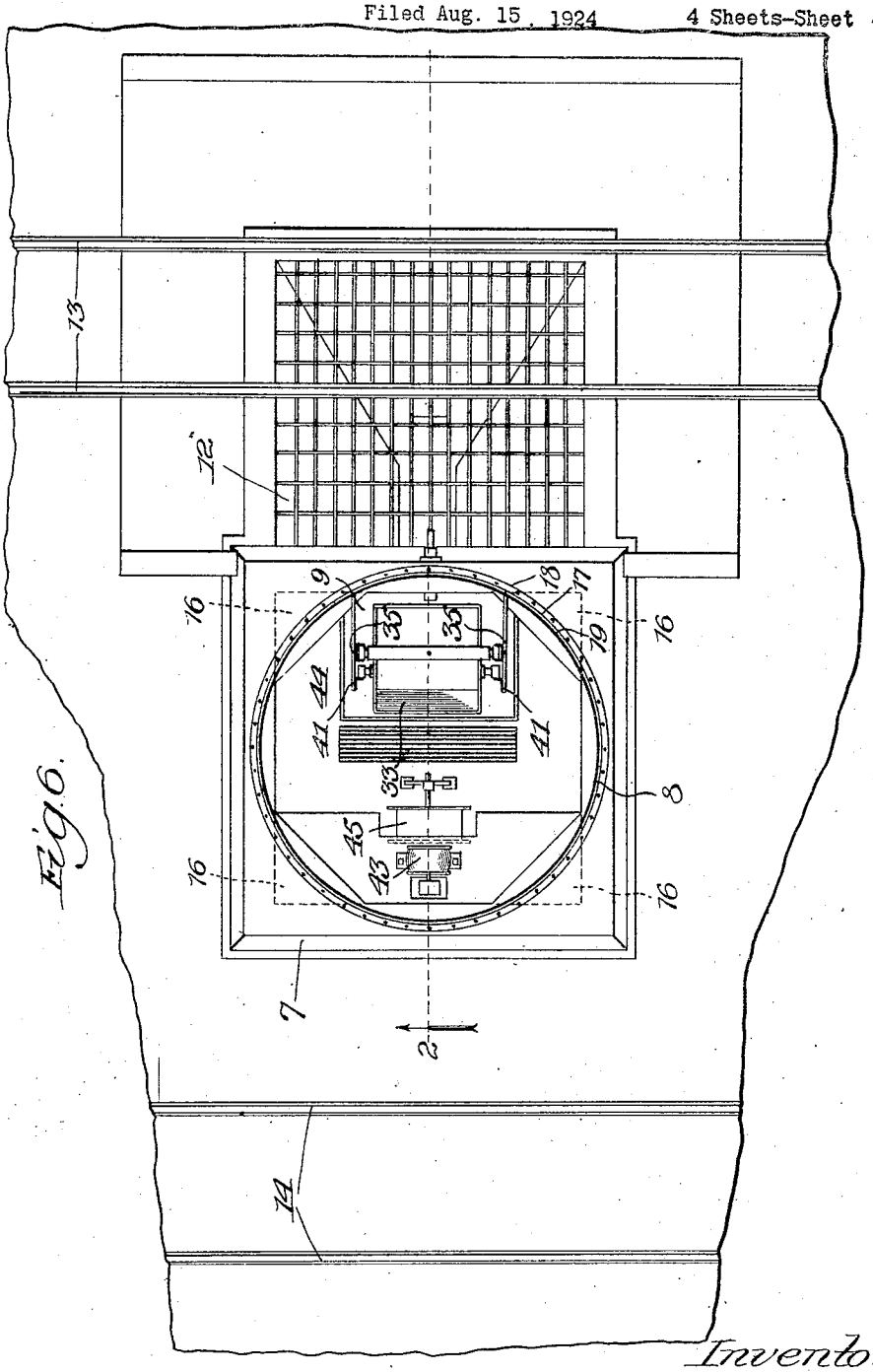


Fig. 6.

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UNITED STATES PATENT OFFICE.

BARTON S. SNOW, OF CHICAGO, ILLINOIS, ASSIGNOR TO T. W. SNOW CONSTRUCTION CO., OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

MATERIAL ELEVATING AND STORAGE APPARATUS.

Application filed August 15, 1924. Serial No. 732,234.

To all whom it may concern:

Be it known that I, BARTON S. SNOW, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Material Elevating and Storage Apparatus, of which the following is a specification.

My invention relates generally to apparatus for receiving and storing material and involving an elevated storage compartment and means for elevating the material into said compartment, such apparatus being commonly used at coaling stations for locomotive tenders for which use I have more particularly devised my invention, but not to the exclusion of other uses.

As coaling stations have hitherto been constructed, it is impossible, due to the limitations of space afforded at the locations of such installations, to provide an apparatus of this character of relatively small capacity as for example fifty tons, at a materially less cost than equipment for relatively larger capacity, as for example one hundred tons.

At many locations railway coaling stations of relatively small capacity, as for example 50 tons, are ample to satisfy the requirements, and it is thus highly desirable that a coaling station of such relatively small capacity be capable of production at much less cost than that of a relatively large coaling station.

One of my objects is to provide a construction of apparatus of the character stated which may be constructed at relatively low cost, and be highly efficient in performing the function for which it is provided, and to provide such a structure, the major parts of which may be assembled in the factory at which it is manufactured, for economical and quick installation at the place of use.

Referring to the accompanying drawings: Figure 1 is a view in side elevation of a locomotive coaling station embodying my invention. Figure 2 is a view in vertical sectional elevation of the lower portion of the apparatus, this view being taken at the line 2 on Fig. 6 and viewed in the direction of the arrow. Figure 3 is a similar view of the upper portion of the apparatus. Figure 4 is a section taken at the line 4 on Fig. 3 and viewed in the direction of the arrow. Figure 5 is a section taken at the line 5 on Fig. 2 and viewed in the direction of the arrow; and Figure 6, a section taken at the line 6 on Fig. 2 and viewed in the direction of the arrow.

The structure shown is generally in the form of an upright housing comprising a sub-structure 7 and a relatively attenuated shell-like upright structure 8 surmounting the sub-structure. The sub-structure 7 may be, and preferably is, formed of concrete and is so shaped as to present an upwardly-opening compartment 9 in which the power mechanism hereinafter referred to for actuating the elevating element, is located, the compartment 9 opening at its lower end into a shaft 10 forming a bucket-pit an opening 11 in the side wall of which communicates with a hopper 12 across the upper end of which railway tracks represented at 13 and upon which the cars carrying the material to be delivered to the apparatus, extend, the tracks 13 being shown as slightly elevated above the level of the main track, represented at 14 and on which the tender, represented at 15, to be charged with material from the apparatus, is located, the particular arrangement being such that the coaling station is located between the supply and delivery tracks 13 and 14, respectively.

As shown, and by preference, the sub-housing 7 is of rectangular shape in plan section and the internal shape thereof is the same, except at the upper portion thereof where the corners of the compartment 9 are provided with fillets 16 causing the upper wall of the compartment 9 to be of octagonal shape in plan as shown in Fig. 6

The super-structure 8 is formed of a metal shell, shown as of cylindrical form, this shell being mounted on the sub-structure 7 in substantial vertical alignment therewith and held in position thereon by a flange-ring 17 bolted at its flange 18 to the wall of the structure 7 and at its flange 19 to the lower edge portion of the shell 8. The space within the shell 8 intermediate its upper and lower ends, is divided by a partition, represented at 20 and shown as of U-shape in cross section and affording the walls 21, 22 and 23, into two compartments 24 and 25, the compartment 25 being open at its upper and lower ends and align-

ing with the shaft 10, and forming a portion of the bucket-way in which the hoisting bucket hereinafter referred to travels.

The compartment 24 which is provided for receiving the elevated material and holding it in storage, subject to withdrawal therefrom, as for example to fill a tender on the track 14, is open at its top. The bottom of the storage compartment 24 and which inclines downwardly toward the side of the shell 8 adjacent the track 14, is represented at 26 and is shown as supported on a frame work formed of inclined girders 27 and a suitably supported flange-ring 28, the side of the shell 8 adjacent the lower end of the floor 24 containing an outlet 29 communicating with a chute 30 provided with a gate valve 31, this chute being shown as equipped with a pivotally supported movable chute-section 32 for directing the material discharging from the storage chamber 24 to the desired point of discharge, as for example, the tender on the track 14.

The material elevating mechanism, hereinbefore referred to, may be of any suitable construction, that shown involving a single bucket, represented at 33 and counterweighted by the counterweight 34. The bucket is guided in its up and down movements by vertical guideways 35 which extend upwardly through the shaft 10, the housing 9 and the shell 8, these guides being located in the compartment 25, to a point closely adjacent the top of the superstructure, these guides being secured in position in any suitable way, as for example, at the portions thereof passing through the compartment 25, to the side walls 22 and 23 thereof, as shown. The bucket 33 of the construction shown is carried by a frame-work formed of side bars one of which is represented at 35 and upper and lower cross bars 36 and 37, the bucket being located within the space defined by these elements and pivotally supported on the cross-bar 37 to permit the bucket to rock from the position shown in Fig. 2 to the position shown in Fig. 3, the bucket being so positioned as to cause it to tend to swing, unless restrained, to the position shown in Fig. 3, when filled. The frame-work referred to is provided with upper and lower rollers 38 and 39 which extend into, and are guided by, the guides 35. The bucket 33 is caused to travel throughout the greater portion of its path in the upright position shown in Fig. 2, by engagement of rollers 40 thereon with guide rails 41 arranged parallel with the guides 35 and having the outturned end portions 42 which serve to permit the bucket, when it nears the upper end of its travel, to turn to the dumping position shown in Fig. 3 in which position it discharges the material elevated thereby into the storage compartment 34, the bucket being automatically righted in the lowering thereof from the position shown in Fig. 3.

The mechanism for raising and lowering the bucket comprises any suitable hoisting mechanism represented generally at 42 and which is shown as driven by belted connection with a motor represented at 43, the mechanism just referred to being located, in the particular arrangement shown, within the compartment 9 in the sub-structure 7, to one side of the path traversed by the bucket, the bucket-way at the lower portion of the compartment 9 being partitioned off by the grating represented at 44. The hoisting mechanism 42 comprises a drum 45, as is common in hoisting mechanism for operating buckets, upon which the hoisting cable, between its ends is wound as is customary in practice, one end of the cable and which is represented at 46 passing upwardly from the drum through a tube 47 located within the compartment 24, thence passing over a pair of pulleys 48 and 49 journaled on a cross girder 50 mounted in the upper end of the shell 8, and thence downwardly to the frame on which the bucket 33 is pivoted, to the upper end of which frame the cable is connected substantially midway between the sides of the frame. The other end of the cable, represented at 51, extends upwardly through a sleeve 52 in the storage compartment 24 and thence passes over pulleys 53 and 54 mounted on a girder 55 in the upper part of the housing 8. The cable end 51 thence passes downwardly beneath a pulley 34^a journaled on the upper end of the counterweight 34, the extremity of this free end of the cable being connected with a bracket arm 34^b carried by the cross girder 50.

It will be understood from the foregoing description that by constructing apparatus of the character above described, in accordance with my invention, an apparatus of relatively low cost, as compared with apparatus of much larger capacity, as for example of twice the capacity, it being possible to provide the structure in comparatively compact form, with the mechanism for operating the bucket disposed below the shell within the housing structure in which the material-storage compartment is located and in which the elevating element operates and thus within the confines of the downwardly extended cylinder or other geometrical figure of the shell.

Furthermore, especially where the apparatus is of relatively small capacity, as stated, the entire upper structure thereof and comprising the shell 8 and the parts contained therein, may be fabricated at the factory in two sections joined at 100 and each of substantially one-half of the height of the housing 8 and the two sections assembled together and mounted on the sub-

structure 7 at the place where the apparatus is to be installed.

While I have illustrated and described a particular embodiment of my invention, I do not wish to be understood as intending to limit it thereto, as the same may be variously modified and altered without departing from the spirit of my invention.

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

1. Material-elevating apparatus comprising a housing-structure formed of a relatively attenuated sub-structure adapted for erection in a restricted space between two tracks and a superposed upwardly extending shell anchored to said sub-structure, said shell containing an upwardly-extending material-storage compartment and an upwardly-extending bucket-way, a hoisting element operating in said bucket-way for delivering the material to said storage compartment, and means for operating said hoisting element located below said shell and within the confines of said housing structure and within the confines of the extended geometrical figure of the shell.

2. Material-elevating apparatus comprising a housing structure formed of a hollow sub-structure having a relatively attenuated enclosure adapted for erection in a restricted space between a pair of tracks and to extend above said tracks and a superposed upwardly-extending shell on said enclosure, said shell containing an upwardly-extending material-storage compartment and an upwardly-extending bucket-way communicating at its lower end with the interior of said sub-structure, a hoisting element operating in said bucket-way and in said sub-structure for delivering material into said storage compartment, and means located below said shell within the confines of said enclosure and within the confines of the extended geometrical figure of the shell for operating said hoisting element.

3. Material-elevating apparatus comprising an upwardly-extending housing-structure containing an upwardly-extending material storage compartment and an upwardly-extending bucket-way, a hoisting element operating in said bucket-way for delivering the material to said storage compartment, and means for operating said hoisting element located within said housing and below said storage compartment and within the confines of the extended geometrical figure of the shell.

4. Material-elevating apparatus comprising a sub-structure of substantially integral wall formation having a relatively attenuated upstanding enclosure adapted for erection in the restricted space between a pair of tracks, said enclosure extending a distance above the tracks, an upwardly extending attenuated shell on said enclosure and substantially forming a continuation of the side wall of the latter, said shell having a storage compartment therein, said sub-structure and shell having an upwardly extending bucket-way leading from the sub-structure to said compartment, a hoisting element operating in said bucket-way, and means to operate said hoisting element, said hoisting element and means being within the confines of said enclosure.

BARTON S. SNOW.