

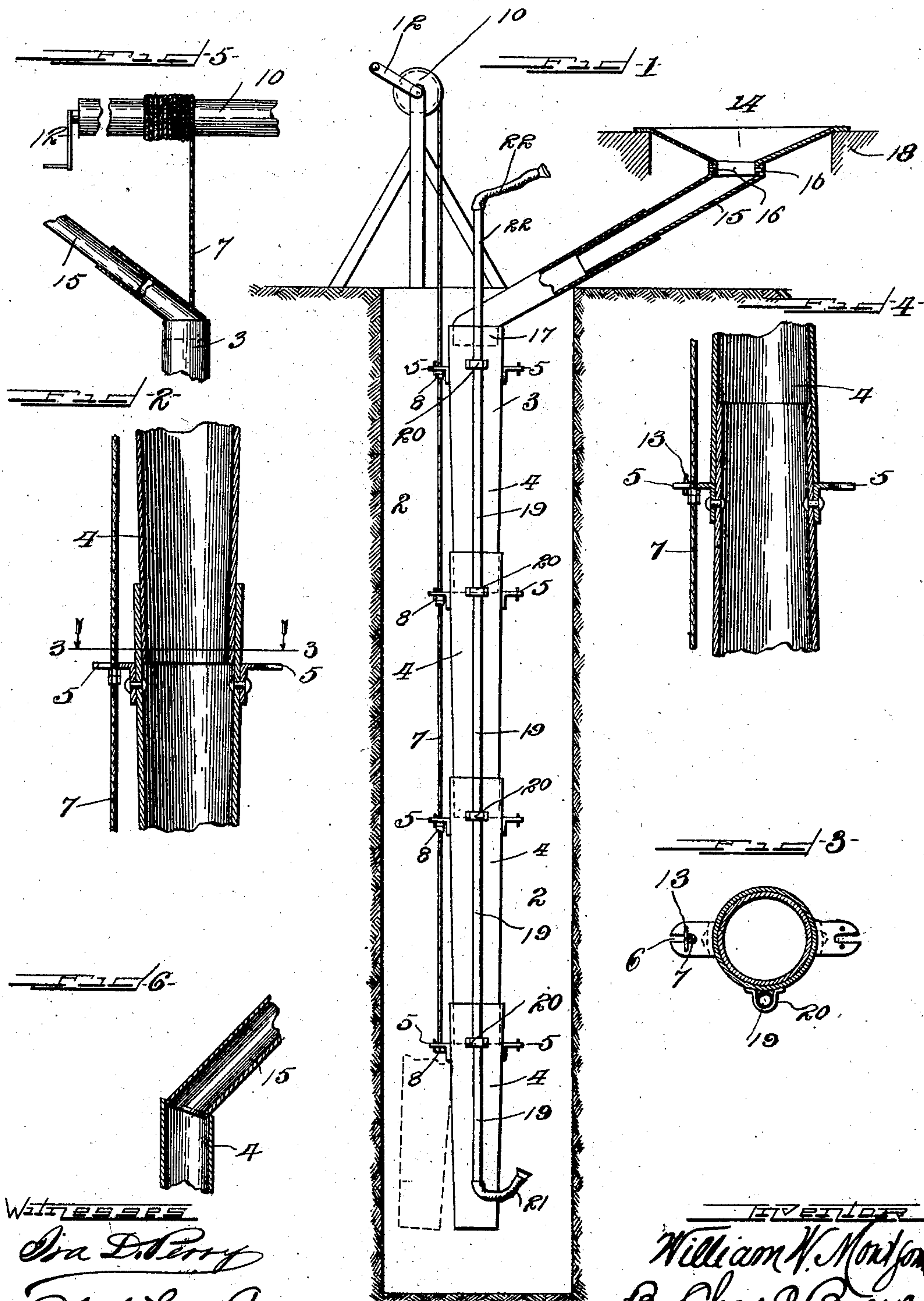
No. 702,372.

Patented June 10, 1902.

W. W. MONTGOMERY.  
CONDUCTOR FOR CONCRETE.

(Application filed May 27, 1901.)

(No Model.)



Witnesses  
Ora D. Perry  
Robert Lewis Ames.

WITNESSES  
William W. Montgomery  
By Chas. C. Buckley.  
Att'y



# UNITED STATES PATENT OFFICE.

WILLIAM W. MONTGOMERY, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF TO THOMAS H. MONTGOMERY, OF CHICAGO, ILLINOIS.

## CONDUCTOR FOR CONCRETE.

SPECIFICATION forming part of Letters Patent No. 702,372, dated June 10, 1902.

Application filed May 27, 1901. Serial No. 62,024. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM W. MONTGOMERY, a citizen of the United States of America, and a resident of Chicago, Cook county, Illinois, have invented a certain new and useful Improvement in Conductors or Conveyers for Concrete, Cement, and the Like, of which the following is a specification.

My invention relates to apparatus for conveying concrete, cement, mortar, and like material to the bottom of excavations, caissons, pits, and other similar inaccessible places. It has been customary heretofore to lower such materials by means of buckets and windlasses or by other hand devices; but such methods are slow, laborious, and expensive, besides being otherwise unsatisfactory.

It is the object of my invention to provide a means or apparatus for overcoming the above-stated objections and to accomplish the results sought in a simple, inexpensive, and efficient manner.

In carrying out my invention I provide a conveyer or conductor consisting of a pipe, tube, or spout composed of a plurality of similar sections adapted to be supported by a cable, wire, rope, chain, or like means from a hoisting apparatus, as a windlass, at the surface of the ground and to reach from the surface to the bottom of the pit, caisson, or excavation. Means, such as a funnel, is provided for the topmost section to enable the cement or other material to be readily poured, shoveled, or otherwise directed into the spout or conveyer. The sections enable the conveyer to be used at any depth, to be readily lowered or raised, and to not be unwieldy in storing or in moving from place to place. Being suspended from above, the pipe or conveyer may be easily swung about in any direction to direct the cement or other matter to any desired point in the pit or excavation, this being more readily accomplished by a workman at the bottom. It often becomes desirable or necessary in such work to communicate between the bottom of the caisson or pit and the surface of the ground, and more or less inconvenient methods have been adopted for the purpose; but in my invention I propose to arrange for this by attaching sections of a speaking-tube to the sections of the

conveyer, so that when the tube is built up a speaking-tube from the bottom to the top is also completed, through which conversation may readily be held whenever desired.

The invention further comprises the novel construction, parts, and combinations of parts hereinafter described, and further pointed out in the appended claims, reference being had to the accompanying drawings, forming a part hereof, in which the same reference characters designate like parts throughout the several views, and in which—

Figure 1 is a side elevation of the invention, showing it reaching to the bottom of an excavation. Fig. 2 is an enlarged longitudinal sectional view through one of the joints of the sections. Fig. 3 is a cross-sectional view on the line 3 3 of Fig. 2. Fig. 4 is a view similar to Fig. 2 of a modification. Fig. 5 is a view of a modified funnel, spouts, and arrangement. Fig. 6 is another modification of the spout and sections.

In the figures the numbers 2 designate a pit or excavation of some sort extending some distance below the surface of the ground. It may not have the regular outlines shown, as the drawings are only intended to represent diagrammatically a deep hole in the earth, at the bottom of which it is desired to use concrete, cement, or like material. The invention may be used in any similar relation, as in the construction of bridge or other foundations built under water with or without caissons, or wherever it is desired to lower such material from one elevation to another.

The conveyer 3 comprises the individual sections 4, which are preferably made of heavy sheet-iron of sufficient thickness to withstand the particular work required of it and are slightly larger at the top than at the bottom, so that the lower end of one section will fit within the upper end of the next lower section, and so on, the overlapping portions being uniform or the same at each joint and sufficient to constitute a good connection. Each section is provided, preferably near its upper end, with lugs or ears 5, riveted or otherwise secured to said sections and similarly located on each section, the said ears or lugs being slotted, as at 6 in Fig. 3, for the reception of the supporting-cable 7, which



is provided with enlargements 8, such as stop-bolts, beneath each lug or ear 5, so as to prevent it from slipping through the slots of the ears or lugs 5. The cable extends to the surface of the ground through the said slots of the lugs on each and all of the sections of the conductor or conveyer and is wound upon the windlass 10, journaled in suitable bearings or supports 11 on each side of the opening of the excavation 2 and is adapted to be rotated by a crank 12 or other desirable means to raise and lower the said conveyer or conductor to the desired extent. The cables may be retained in the slots 6 by any suitable latch device, as the staple 13, adapted to be inserted through the apertures provided therefor in the ears or lugs 5, so that the cable 7 will not escape from the slots 6. It will thus be noticed that the entire weight of the conductor 3, as well as that of each section 4, is carried upon the cable 7 and that the sections are also laterally supported by the cable through the medium of the ears 5.

In order to conveniently pour the concrete or like material into the top of the conductor or conveyer 3, a hopper or funnel 14 is provided and is connected with the top of the tube 3 by means of the spout 15. The hopper 14 is preferably square in outline for ease in constructing a platform or runway about or along one side of it, upon which runway or platform the material can be wheeled and dumped into the hopper 14. The spout 15 is capable of a slight rotation about the collar or neck of the hopper by means of the rivet-and-slot connection between them to allow for the sidewise travel of the conveyer 3 as the cable unwinds from or is wound upon the windlass. The lower end 17 of the spout is preferably given a downward bend to cause it at all times to stay in the top of the conductor 3 and to permit such sidewise movement. The said spout is preferably telescopic, as shown in Fig. 1, to permit its necessary elongation and contraction during such movement of the conductor 3.

In the modification of Fig. 5, where the spout 15 is in a vertical plane parallel to a similar plane through the windlass, only the means for lengthening and shortening the spout need be provided, since the rotation of the parts is eliminated. Either arrangement could be adopted. Again, as in Fig. 6, the upper ends of the sections could be cut on a slant, so that a larger spout 15 and one without the downward curve 17 could be employed.

In lowering the device into the excavation the cable is first attached in the ear 5 of the lowest or first section, which is lowered a slight distance, and the next section placed in position, with its lower end on top of the other section and with the cables 7 in slots 6 of its ears or lugs 5, which sections are then lowered and another section added, and so on until the bottom of the pit, excavation, or caisson is reached. The funnel or hopper 14, which, as stated, is suitably supported by a

framework, (indicated at 18,) is connected by means of the spout 15 with the top of the last section of the tube or conveyer, all the joints and connections of the hopper with the conveyer being sufficiently loose and free to permit such connection in an easy and convenient manner. The concrete may now be thrown or poured into the hopper 14, and will run down the spout 15 into the conveyer 3. As the whole tube 3 is suspended from a single cable, its lower end may be swung about as desired, as indicated in dotted lines in Fig. 1, to direct the falling matter to any desired point to distribute evenly or as preferred. The device may be raised to any extent as the excavation fills, or when it is desired to entirely remove it from the pit, the spout 15 being first withdrawn and the sections 4 being removed as the tube is raised. The windlass is of course provided with means to sustain the tube at any elevation. In the modification in Fig. 4 the sections appear in the reverse direction, the upper end of the lower section being inserted in the end of the section above. In this case the upper sections could rest directly upon ears or lugs 5 of the next lower section. The double set of ears 5 may not be necessary, but are provided for convenience in case the other ears give out or it becomes necessary to suspend the tube from the other side.

In order to communicate between the lower end of the pipe and the upper end, I provide each section 4 of the conveyer 3 with corresponding sections 19 of a speaking-tube, which may be secured to the sections 4 by strips 20 or in any other desired manner. When the sections 4 are placed together, the sections 19 of the speaking-tube will be joined together and form a continuous tube from the top to the bottom of the pipe. The lower section 4 of the conveyer may have this tube provided with an extension 21, which may be flexible, as indicated, or otherwise in order that it may be conveniently spoken into. The branch 21 may extend from any portion of the section near the top, bottom, or midway therebetween or may be taken off from the tube of the section above, according to the positions most convenient. The upper end of the tube may also be fitted with an extension 22, similar to the one at its lower end, only longer, and which likewise may be flexible and used at any desired angle. This extension will preferably be removable, so that it may be inserted in the upper end of the tube of the last conveyer-section. It will also be understood that these extensions 21 and 22 are mere matters of convenience and may not be used at all, simply the open ends of said tubes 14 being depended upon for conversational purposes.

While the exact dimensions are not of the essence of my invention, I have found that sections about four feet long, seven and one-half inches in diameter at the bottom, and enough larger at the top to make a good tele-



scoping connection with the next section are convenient of manipulation and efficient for the purpose of conveying cement or concrete to the bottom of deep excavations. The hopper may be three feet square, and all the parts should be located, proportioned, and arranged to readily and conveniently accomplish the purposes intended.

So far as some features of my invention are concerned, the special form and arrangement of hopper and spout is immaterial, for any kind that will accomplish the work may be used. Two cables, one on each side, may be employed, if necessary or preferred; but one is more satisfactory, as easily allowing the lower end of the conveyer to be swung about in any desired direction. The rope or cable may, if preferred and so far as some of my claims are concerned, have stop bolts or pins or other enlargements below the ear or lug of the lowest section only; but in this case the entire weight of the pipe will be borne by such lug or section, and the others would only derive lateral support from the cable. I prefer, however, the construction shown and described. Wherever the term "cable" is used in the claims it is intended as a generic word to cover any like means, as a wire, rope, chain, &c.

The iron of which the sections of the conveyer are made may be galvanized to guard against rust.

It will be observed that an important feature lies in so connecting the sections of the conveyer that they may be detached independently, whereby the conveyer may be lengthened or shortened by attaching additional sections or removing one or more of the attached sections. By this arrangement the sections may all be made of the same size and of a minimum diameter. It will be noted also that the joints between the sections are closed tight and that they are rigid—i. e., non-flexible—so that in moving the conveyer about in the excavation the entire conveyer moves bodily. The rigid but detachable joints between the joints are most conveniently formed by tapering the sections, so that the smaller end of each will partially telescope into the larger end of the adjacent section and make a rigid close joint therewith; but it is obvious that any other means for making a detachable joint may be resorted to without departing from the invention.

Although I have described the invention with particular reference to the details of construction, I would have it understood that it is not to be limited thereto, as various changes, alterations, modifications, and substitutions may be made therein and still come within its purview; but

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

1. In an apparatus of the class set forth, the combination of a conveyer consisting of a series of hollow cylindrical sections tele-

scoped partially into each other at their adjacent ends and having rigid, close joints at each of said telescopic connections, a supporting-cable detachably attached to each of said sections, means for raising and lowering said supporting-cable and the attached conveyer, and means detachably connected to the topmost section for introducing the material to be conveyed into said topmost section, whereby the conveyer may be swung about at its lower end without pivotal or telescopic action at the joints and may be extended by the addition of sections to or shortened by the removal of sections from the upper end of the conveyer.

2. In an apparatus of the class described, the combination of a conveyer consisting of a series of hollow cylindrical sections having the same diameter and tapered to telescope partially into each other at their adjoining ends, these joints being rigid but detachable, a supporting-cable attached to the lowermost section of the conveyer and adapted thereby to support the entire conveyer, means for detachably connecting the remaining sections to the cable, whereby said sections may be removed one by one from the upper end of the conveyer as the conveyer is bodily raised, means for bodily raising and lowering the conveyer, and a hopper having a spout detachably connected to the topmost section of the conveyer, for the purposes set forth.

3. In an apparatus of the class set forth, the combination of a conveyer consisting of a series of hollow cylindrical sections detachably connected together and having closed rigid joints at their adjoining ends, a supporting-cable and means for connecting it to the lowermost section and detachably to the remaining sections, means for raising and lowering said cable and the attached sections, and means detachably connected to the topmost sections for depositing the material to be conveyed thereinto, for the purposes set forth.

4. In a device of the class described, the combination with a conveyer composed of separate sections, with telescoping joints, a slotted ear on each section, a cable passing through the slots of all the ears, a latch on each ear to confine the cable in the slot, means such as an enlargement of the cable beneath the several ears to prevent the same from drawing through said ears, and a windlass upon which the cable may be wound to raise and lower the conveyer.

5. In a device of the class described, the combination, with a conveyer composed of separately-detachable sections rigidly connected together and having their ends telescoped into each other to make a tight joint and enable the conveyer to be shifted bodily laterally and vertically, means for raising and lowering the conveyer, and means for depositing the material to be conveyed into the upper end of the conveyer.



6. In a device of the class described, the combination with a conveyer composed of independently detachable and attachable sections, a spout fitting into the top of the upper  
5 section, a hopper connected with the other end of the spout, a cable supporting said conveyer, a windlass or drum about which the said cable is wound to hoist or lower the conveyer, and means to permit said spout to fit  
10 within the said top section of the conveyer in the different positions of the conveyer determined by the wrapping of the cable upon, or its unwrapping from, the said windlass or drum.

15 7. In a device of the class described, the combination with a conveyer composed of independently-detachable partially-telescoped sections, a spout fitting into the top section, a hopper connected with the other end of the  
20 spout, a cable supporting said conveyer, a drum about which the said cable is wound to hoist or lower the conveyer, said spout being made extensible by telescoping sections and provided with a rotatable connection with  
25 the hopper.

8. In combination with a series of depending supporting-sections detachably connected together, means for raising and lowering said sections and supporting them, of sections of a speaking-tube secured respectively to the sec- 30  
tions of said support and adapted to register and connect when said supporting-sections are put together, as and for the purposes set forth.

9. In a device of the class described, the 35  
combination with conveyer-sections having slotted lugs or ears, speaking-tube sections secured to said conveyer-sections in similar relation to the said lugs or ears, a cable passing through said lugs or ears to support the 40  
conveyer-sections, the said tube-sections registering with each other when the conveyer is so built up.

Signed by me at Chicago, Cook county, Illinois, this 25th day of May, 1901.

WILLIAM W. MONTGOMERY.

Witnesses:

MARY MCFATRICH,

THOMAS H. MONTGOMERY.