J. H. & D. H. MAGDIEL.

CONVEYER.

APPLICATION FILED NOV. 2, 1908.

917,331.

Patented Apr. 6, 1909.

3 SHEETS—SHEET 1.

Fig. 1.

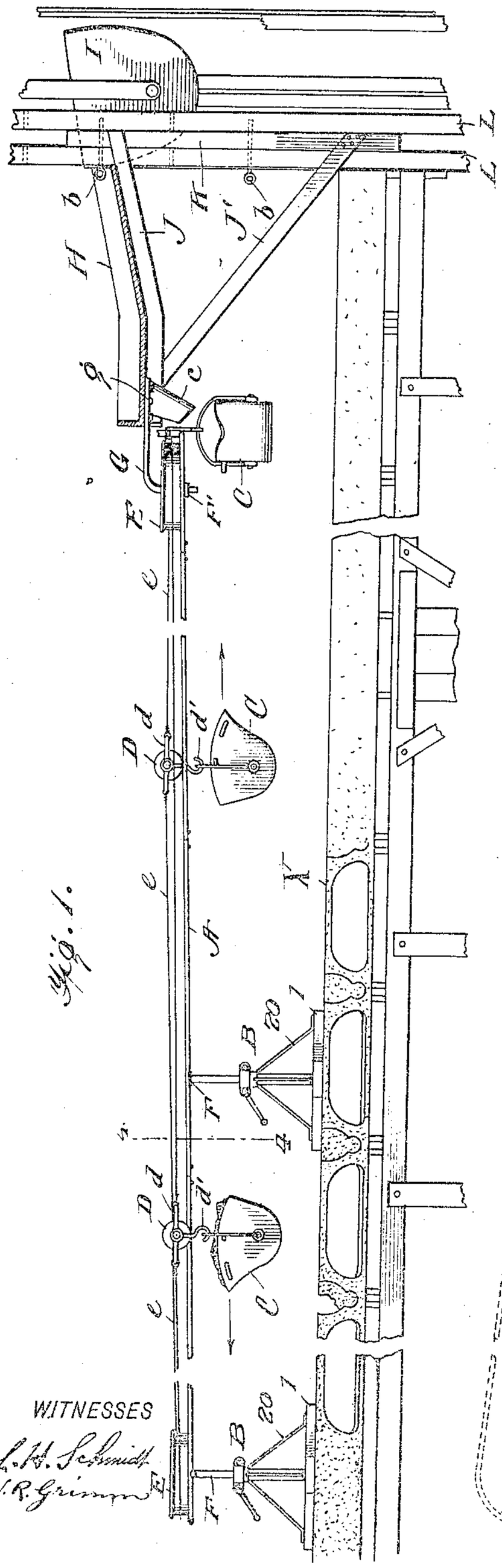

Fig. 2.

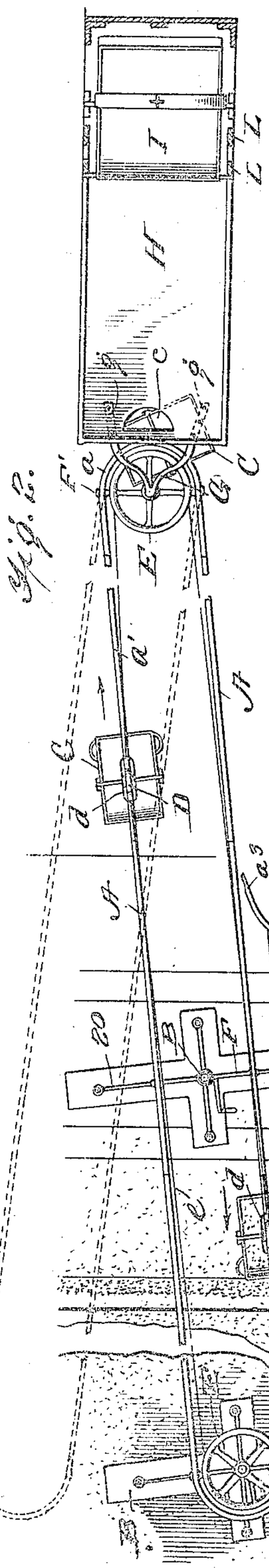

Fig. 3.

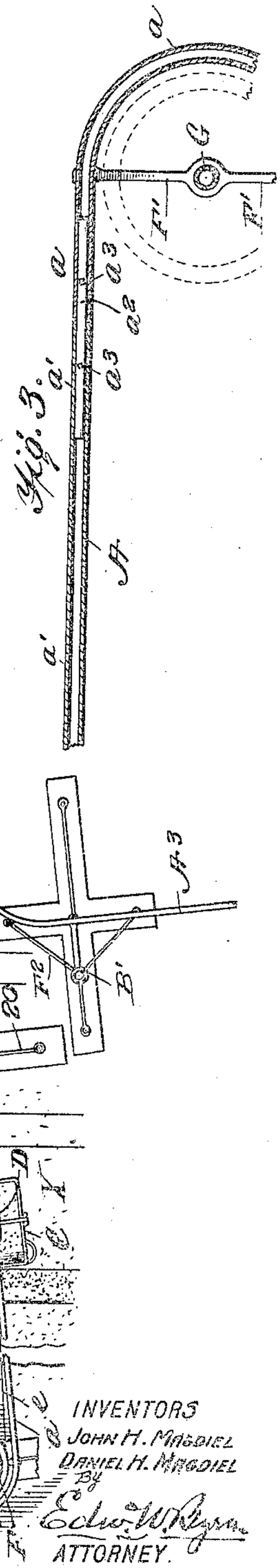

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Fig. 11.

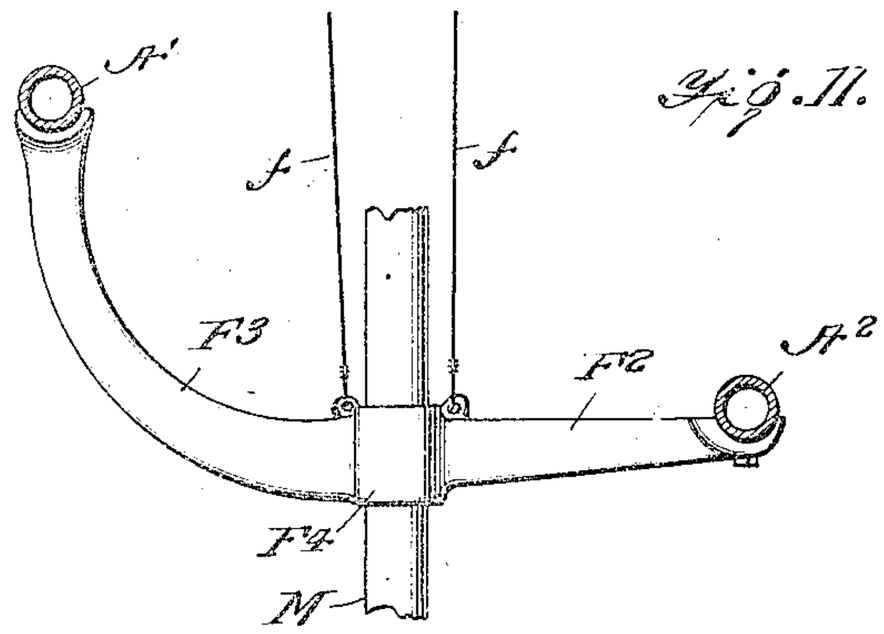

Fig. 4.

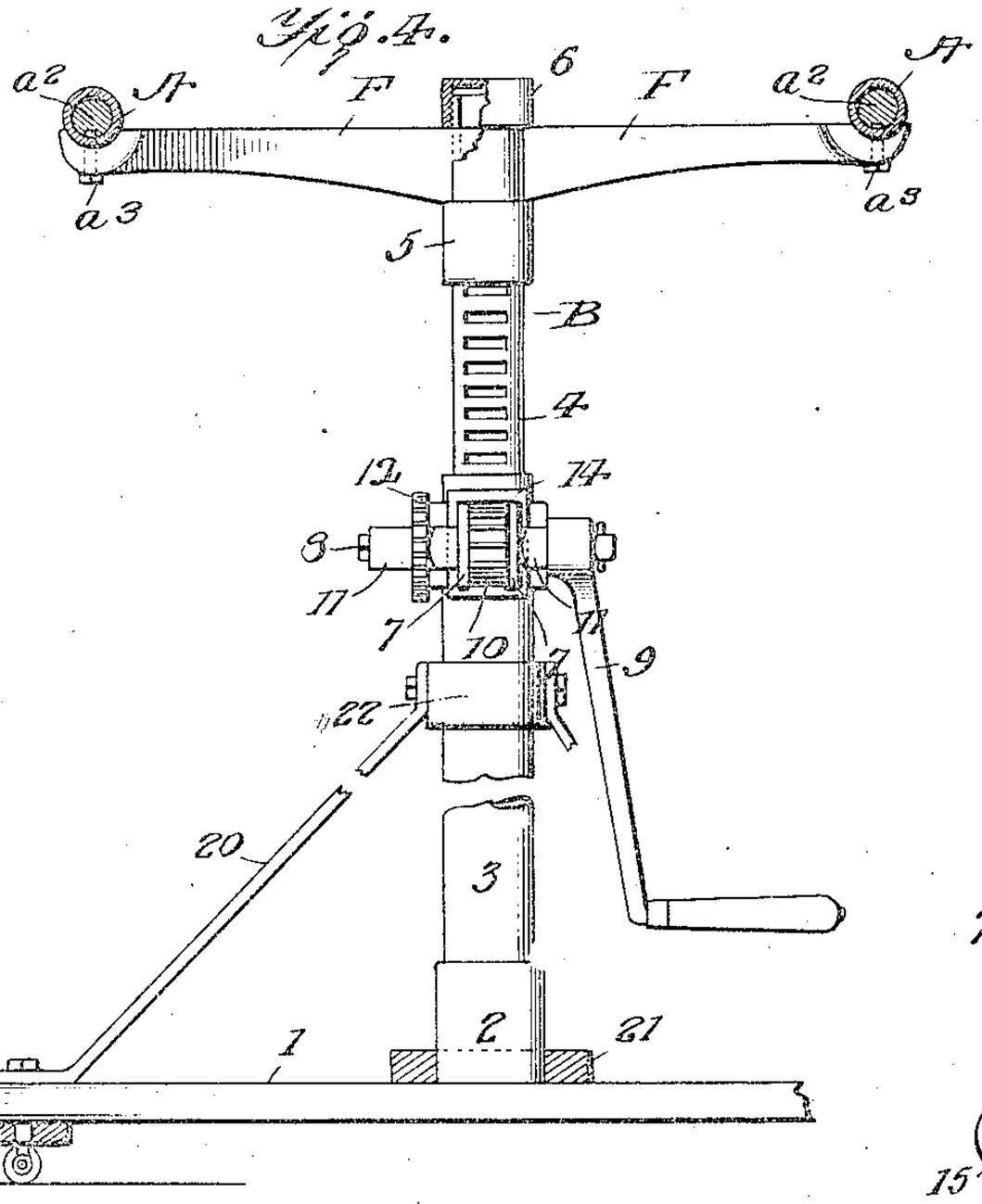

Fig. 5.

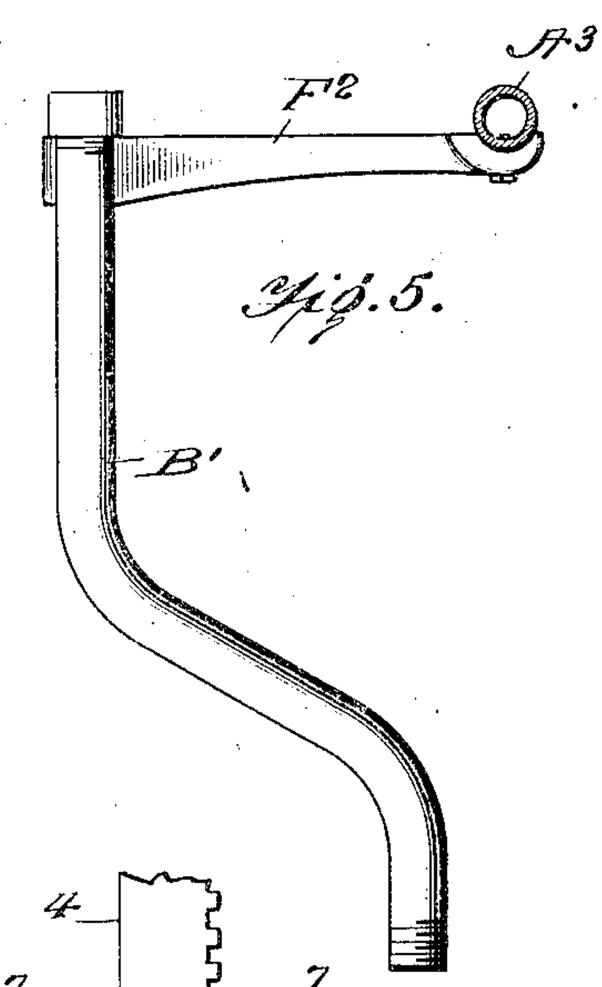

Fig. 6.

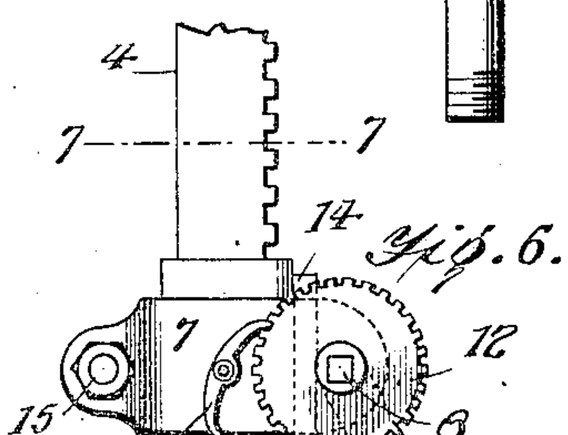

Fig. 8.

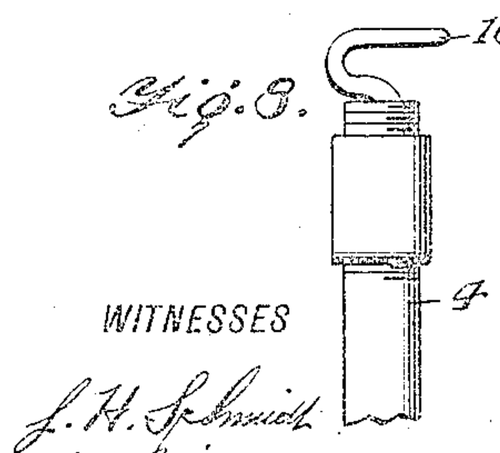

Fig. 7.

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3 SHEETS—SHEET 3.

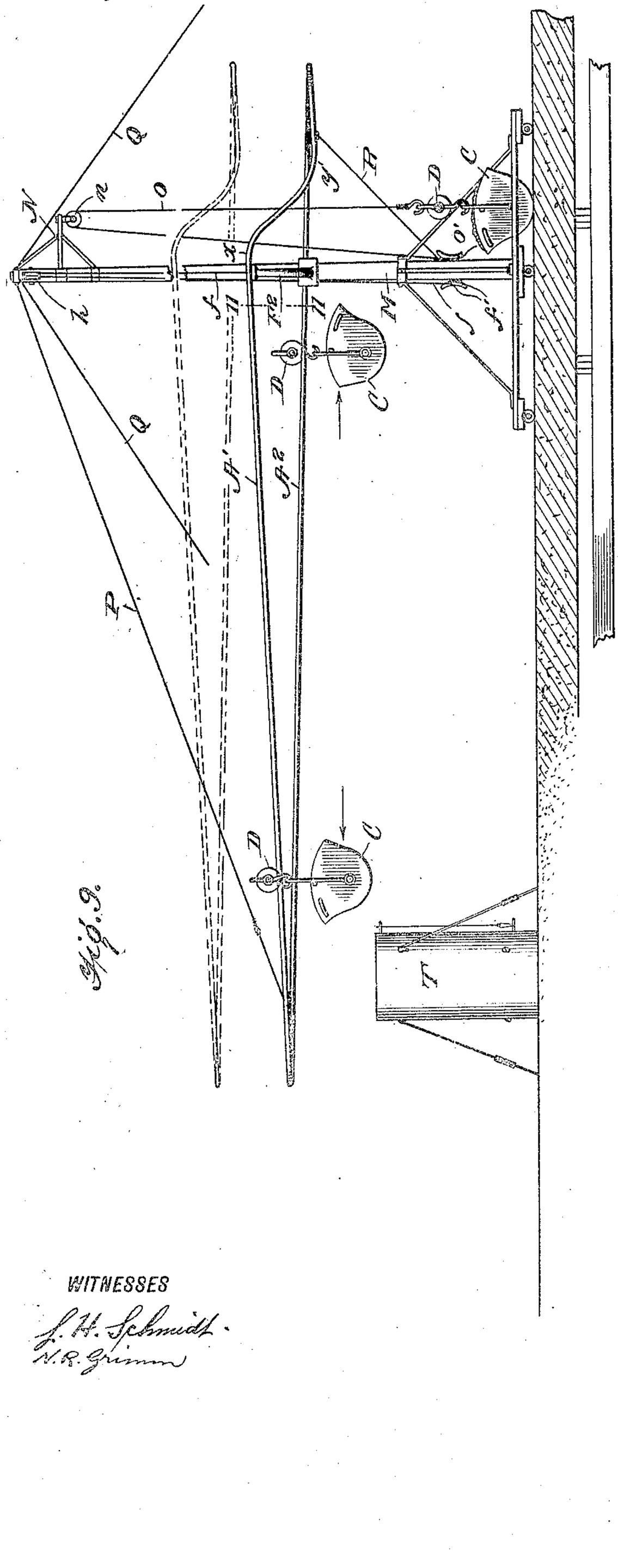

Fig. 9.

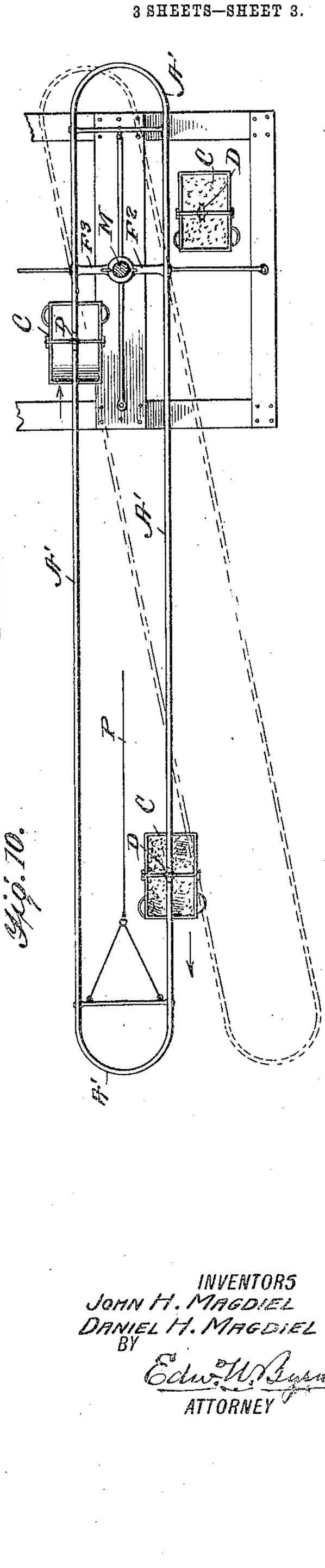

Fig. 10.

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UNITED STATES PATENT OFFICE.

JOHN H. MAGDIEL AND DANIEL H. MAGDIEL, OF SALT LAKE CITY, UTAH, ASSIGNORS OF ONE-THIRD TO NEPHI L. MORRIS, OF SALT LAKE CITY, UTAH.

CONVEYER.

No. 917,331 Specification of Letters Patent. Patented April 6, 1909.

Application filed November 2, 1908. Serial No. 460,740

To all whom it may concern:

Be it known that we, JOHN H. MAGDIEL, a subject of the King of Norway, and DANIEL H. MAGDIEL, a subject of the Crown of Great Britain, both residing at Salt Lake City, in the county of Salt Lake and State of Utah, have invented certain new and useful Improvements in Conveyers, of which the following is a specification.

Our invention relates to conveyers of that form in which an endless track is provided for sustaining buckets by means of trolley wheels and in which the buckets are made to travel on said track by means of gravity.

Our invention has for its object to provide a conveyer of this class in which building material, such as concrete employed in the construction of concrete buildings, may be conveniently and economically transported to any part of the building at a minimum of labor, time and expense and with the least damaging strains and accidental contingencies of injury to floors, beams, girders, walls and columns already built, or in process of building.

Our invention consists in the novel construction and arrangement of parts whereby material is not only made to transport itself by its own gravity, but the conveyer is simply and easily adjusted to the growing height of walls or columns or is laterally adjustable to new areas of work in a horizontal ~~plane~~, as will be hereinafter more fully described with reference to the drawing in which—

Figure 1 is a side elevation partly in section, Fig. 2 is a top plan view, Fig. 3 is an enlarged sectional detail showing the special construction of the endless track, Fig. 4 is an enlarged vertical transverse section on line 4—4 of Fig. 1 showing one of the supports for the endless track, Fig. 5 is a similar view of a modification of such support for a branch track, Fig. 6 is an enlarged side view of the vertically adjusting devices for the track support, Fig. 7 is a section of the same on line 7—7 of Fig. 6, Fig. 8 is a detail of a modification, Fig. 9 is a side elevation and Fig. 10 a top plan view of a modification of the invention and Fig. 11 is an enlarged sectional detail taken on line 11—11 of Fig. 9.

In the drawing Figs. 1 and 2, X represents a floor of concrete construction and A is an endless track made vertically and horizontally adjustable. This track is supported at one end upon a special connection with the elevator or hoist frame L L and at one or more points along its length is supported upon movable stands B arranged upon the floor and made movable thereon and having a special construction for the purposes of our invention, as will be more fully described hereafter.

The endless track A is made of iron pipe in sections consisting of a U-shaped piece at each end and straight pieces between joining the U-shaped ends. In Fig. 3 is shown the means for joining these sections of track, in which *a a* represents part of one of the U-shaped ends and a^1 one of the straight intervening sections. These sections are all joined together in alinement and a firm connection between them is made by splice rods a^2 of wood or metal, made two or three feet long and tightly fitted into the interior bore of the two abutting sections of track and secured there by means of set screws a^3 a^3 from the underneath side, as seen in Fig. 4. The track as composed of these sections is made long enough to take the materials from the hoist to the various points of deposit and is in the form of parallel sides running continuously into each other at the U-shaped ends. At one end—the left hand in Figs. 1 and 2—the track is supported upon horizontal supporting arms F, see Fig. 4, mounted upon the top of the adjustable stands B of which there are any suitable number according to the length of the track, which, it will be understood, can be extended to be as long or as short as desired. At the other end—the right hand in Figs. 1 and 2—the track is supported upon arms F^1, see Fig. 3, which are formed in the middle with a collar embracing a hanger shaft G, which forms a vertical axis about which the whole track may be swung horizontally, as shown by dotted lines in Fig. 2, it being understood that the stands B are shifted to correspond to this adjustment. The hanger shaft G at its upper end is bent at right angles, Fig. 1, and fashioned into two branches *g*, *g*, Fig. 2, which are bolted to the bottom of a receiving platform H for the concrete. This branched connection of the hanger shaft makes a

strongly and simply braced connection and support for the hanger shaft. Journaled on the hanger shaft above the supporting arms is a cable guide pulley E. A similar guide pulley E is arranged on a vertical axis at the other end of the track and around these pulleys extends an endless cable *e* in which, along its length, is interposed any desired number of trolley wheels D connected by bails *d* on each side to the cable. To the axis of each trolley is hung a hook d^1 from which is slung the bail of the conveyer buckets C. The U-shaped portions of the endless track pass around the cable pulleys E sufficiently close to the same to allow the trolley wheels D to follow the turn of the track while still attached to the cable *e*, as will be more fully explained hereafter.

The platform H has raised edges to hold the concrete dumped thereon as carried up by the elevator bucket I and near the outer end has through its bottom a delivery hole provided with a spout *c* through which concrete is discharged into each subjacent bucket C as they successively pass under the same. The platform H has an inclined bottom and is mounted on the inclined bracket bars J, J^1, which are connected to the vertically adjustable slide bars K movable in guideways between the elevator posts L, L. These posts are provided with a series of holes and the slide bars K are also provided with holes adapted to register with those in the posts L, and pins or bolts *b b* are provided to pass through these holes to sustain the platform and permit it to be raised or lowered to correspond with the level at which the track rail is to be operated.

The supporting stands B are best shown in Figs. 4, 6 and 7 and they consist of a base 1 mounted on caster rollers so as to be easily shifted about. On this base are bolted inclined braces 20 connected to a collar 22 embracing a hollow post 3 having a sleeve 2 at its lower end stepped in a seat in a cross bar 21. Within the hollow post 3 slides telescopically, a standard or bar 4. This is made preferably as a pipe with tooth notches cut in its side, or it may have a rack bar secured to it, as shown at 4^a Fig. 6. Around the upper part of the hollow post 3 are secured by a bolt 15 two semi-circular clasps 7, 7, whose ends are extended and perforated to form bearings for a short horizontal shaft 8 having a rigidly attached toothed wheel 12. Spacing sleeves 11 are arranged between the crank hub and clasp 7 and between the other clasp 7 and the wheel 12, and also between the wheel 12 and a pin in shaft 8. On the shaft 8 is a rigidly attached pinion 10 engaging with the notches of the bar 4. A rectangular link 14 embraces the two ends of clasps 7, 7, between the shaft 8 and bar 4 to hold these ends of the clasps together. A double acting pawl 13 engages with the teeth of detent wheel 12, to hold the bar 4 to its adjustment. At the upper end of bar 4 is attached a sleeve 5 and the hollow bar has above this point a vertical slot in its end in which is dropped the track supporting arms F and the top of the slotted bar is screw threaded to receive a screw cap 6 which, when turned down, locks the arms F between it and the subjacent sleeve 5 to make a strong and tight connection which prevents any tilting of the arms from a greater weight on one of the tracks A. In the outer ends of arms F are formed seats to hold the track A. By turning the crank 9 it will be seen that the track is conveniently and quickly raised or lowered to give it any elevation, or any inclination desired.

The device just described operates with a lifting thrust when used with track A. Its construction, however, is designed to enable the bars 3 and 4 to act with a tension, as when it is desired to pull two parts together in any building construction. For this purpose the parts 3 and 4 are taken out of the seat 21, sleeve 2 and collar 22, and the arm F at the top is taken off. At the top and bottom of bars 3 and 4 is then screwed a hook as shown at 16 in Fig. 8. Now by reversing the pawl 13 and turning the crank in the opposite direction it will be seen that the two extremities of bar 4 and post 3 are pulled toward each other and held as against this tension strain.

Referring now again to Figs. 1 and 2, it will be seen that the track A is adjusted at an incline, falling from the platform H toward the outer end of the track, and as the buckets C receive the concrete they will pass down laden on one side and, after being dumped at the outer end, will move up empty on the opposite side of the track to receive a fresh supply, the gravity of the laden buckets carrying them down and, by virtue of the continuous or endless cable connection *e*, cause the empty buckets to return on the ascending grade. This avoids the necessity of any motor mechanism for the buckets and cable. The inclination may be made as much or as little as the case may require. In building walls, footings, or columns which progress upwardly, the platform H and stands B are adjusted vertically to suit the elevation while for distributing the concrete over the horizontal expanse of the floor, beams, girders or foundations, the entire endless track is swung horizontally about the hanger shaft G, as a center, as indicated in dotted lines in Fig. 2. Sometimes it is desirable to carry off one or more bucket loads laterally from the main track. For this purpose a switch track A^3, Fig. 2, is mounted on a separate stand B^1 and has a curved tongue or switch end a^3 which is adjusted up to the main track A and rested upon the same, so that by simply uncoup-

ling the bail *d* of any bucket D from the cable and reuniting the cable ends, any laden bucket may be switched off and carried laterally to any desired point. In this case the adjustable stand takes, for a single rail, the bent form shown in Fig. 5 and the supporting track arm F^2 projects upon one side of the track rail only.

For building high structures, such as columns and the like, we provide the modified form of the device shown in Figs. 10 and 11. In this case T represents a column mold. A mast M is erected upon a movable platform and is stayed by guy cables Q. The endless pipe track is shown at A^1 A^2. The part A^1 descends from the point *x* to the outer or dumping end. The other part A^2 descends from the outer end back to the mast, the two sections of the track running one into the other between the points *x* and *y*. Two arms F^2 F^3, Fig. 11, sustain the two levels of track sections, one arm F^3 being bent to a greater elevation. Both arms are joined to a central sleeve F^4 which surrounds the mast M and vertically adjusting cables *f f* extend from these arms to pulleys *h* at the top of the mast, as seen in Fig. 9, and then descend to and are secured by a cleat f^1. By this means the track A^1 A^2 is adjusted vertically to the increasing elevation of a column as shown in dotted lines and yet it may be swung horizontally about its vertical axis, as shown in dotted lines in Fig. 10, to carry the material to any number of columns distributed through the building. The outer end of the track is maintained by a guy cable P extending to the top of the mast and a second cable R extends from the other end of the track to the lower portion of the mast, where it is secured by a cleat. To raise the materials no elevator is required, but a laterally projecting and braced arm N carries a pulley *n* and a rope O is made to lift the bucket C until its trolley wheel D can be adjusted to the high end of track section A. These buckets are not connected by any endless cable, but move individually.

In both forms of our invention it will be seen that a continuous or endless track is provided which is vertically adjustable and which is also horizontally adjustable about a vertical axis contained within the circumference of the endless track. These two elements of adjustability have a correlated value in providing for all conditions of distribution of material in a building in process of construction. The connection of the inner end of the track to the vertically adjustable chute platform, which receives the material from the elevator buckets, provides for the progressive growth of the building upwardly, while the horizontal swing of the outer end of the track about this vertical axis provides for the distribution of the material in a horizontal plane about the building, and all in a simple and practical manner.

We claim—

1. A conveyer comprising an endless track having near one end a vertical axis located within the circumference of the track means for raising and lowering this end of the track, means for adjusting the other end of the track horizontally and carriers supported on the track, and arranged to pass around the vertical axis.

2. A conveyer comprising an endless track having near one end a vertical axis located within the circumference of the track said track being arranged to swing horizontally about said vertical axial support and carriers supported on the track, and arranged to pass around the vertical axis, said track being extended with parallel sides and curved ends.

3. A conveyer comprising an endless track having a vertical axial support located within the same and nearer one end than it is to the other said track being arranged to swing horizontally about said vertical axial support.

4. A conveyer comprising an endless track having a vertical axial support located within the same and nearer one end than it is to the other, and means for adjusting the same vertically and horizontally.

5. A conveyer comprising an endless track having a vertical axial support located within the same and nearer one end than it is to the other, pulley wheels arranged at the opposite ends of the track, means for adjusting vertically the axial end of the track, trolley wheels or carriers arranged on the track and an endless cable connecting all the trolleys and passing around the pulley wheels.

6. A conveyer comprising an endless track having near one end a vertical axis located within the circumference of the track and carriers supported on the track, and arranged to pass around the vertical axis, said endless track being formed of pipe sections arranged in alinement with each other and splice rods secured in the hollow abutting ends and breaking joints.

7. A conveyer comprising an endless track having near one end a vertical axis located within the circumference of the track and carriers supported on the track, and arranged to pass around the vertical axis, said track being supported at one end upon its vertical axis and at the other by movable stands made vertically adjustable.

8. A conveyer comprising an endless track having parallel sides and curved ends, a vertical axis arranged within one end of the track and supporting the same, and movable stands consisting each of a vertically

adjustable standard having a cross arm at the top with seats in its ends for the track.

9. A conveyer comprising an endless track having parallel sides and curved ends, a vertical axis arranged within one end of the track and supporting the same, and movable stands consisting each of a vertically adjustable standard having a cross arm at the top with seats in its ends for the track, said standard being also provided with notches along its side, a hollow post receiving said standard, a two-part clasp embracing the post, a shaft journaled in the ends of the clasp sections and bearing a rigidly attached pinion, detent wheel and crank, a detent for the wheel and a link embracing the ends of the clasp sections between the shaft and the post.

10. The supporting stand for the conveyer track, consisting of a base 1 with step seat 21, and inclined braces 20 carrying a collar at their upper ends, a hollow post 3 detachably seated in the said step seat and collar, a notched standard 4 extending into the hollow post and means for raising and lowering the same.

11. A conveyer comprising an endless track having a vertical axial support located within the same and nearer one end than it is to the other, trolley carriers arranged on said track, a branch track with curved switch tongue adapted to be juxtaposed to the endless track and a movable support for said branch track.

12. A conveyer comprising an endless elongated track having pulley wheels inside of its opposite ends, an axial support for the pulley wheel and track at one end, a receiving platform connected to said axial support and stands for supporting the other end of the track.

13. A conveyer comprising an endless elongated track having pulley wheels inside of its opposite ends, an axial support for the pulley wheel and track at one end, a receiving platform connected to said axial support and stands for supporting the other end of the track, said stands and platform being made vertically adjustable.

14. A conveyer comprising an endless track having near one end a vertical axis located within the circumference of the track and carriers supported on the track, and arranged to pass around the vertical axis, said track being elongated in the form of parallel sides having a reverse inclination.

In testimony whereof we affix our signatures in presence of two witnesses.

JOHN H. MAGDIEL.
DANIEL H. MAGDIEL.

Witnesses:
NEPHI L. MARUS,
LOUIS R. WELLS.