

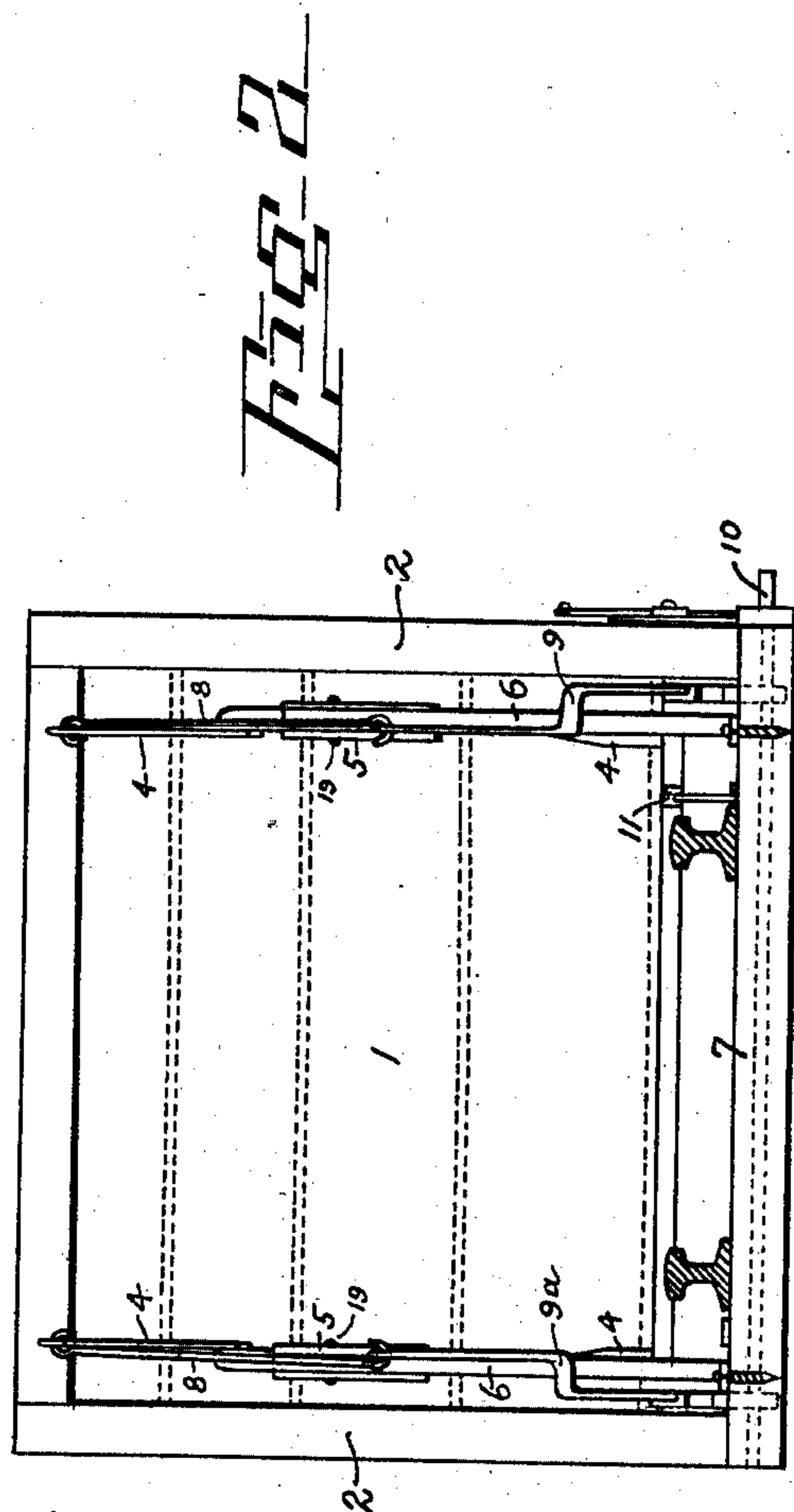
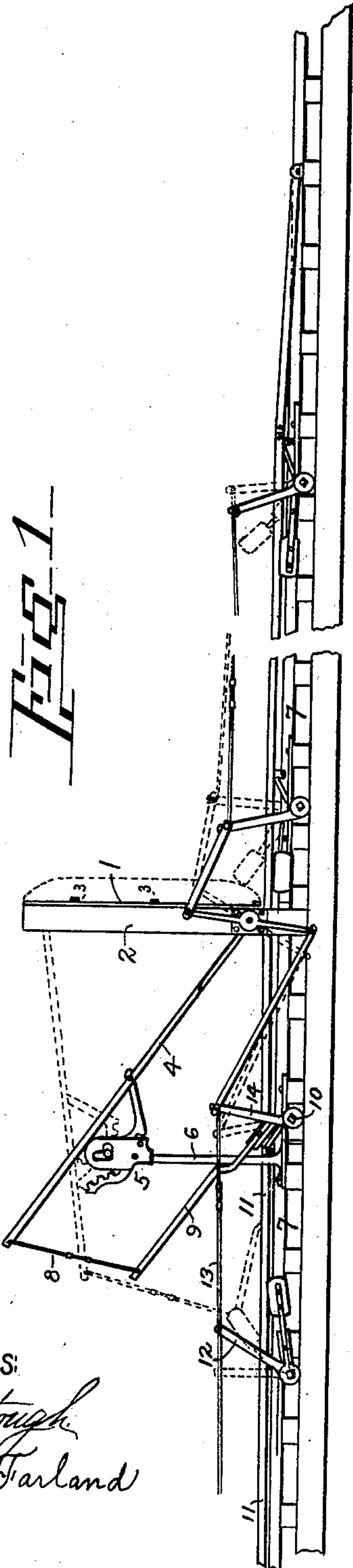
No. 756,598.

PATENTED APR. 5, 1904.

C. J. DIEBOLD.
MINE CURTAIN RAISER.
APPLICATION FILED SEPT. 30, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



WITNESSES:
C. H. Stough
A. B. M. Farland

INVENTOR
Charles J. Diebold
BY
Harry Freese
ATTORNEY

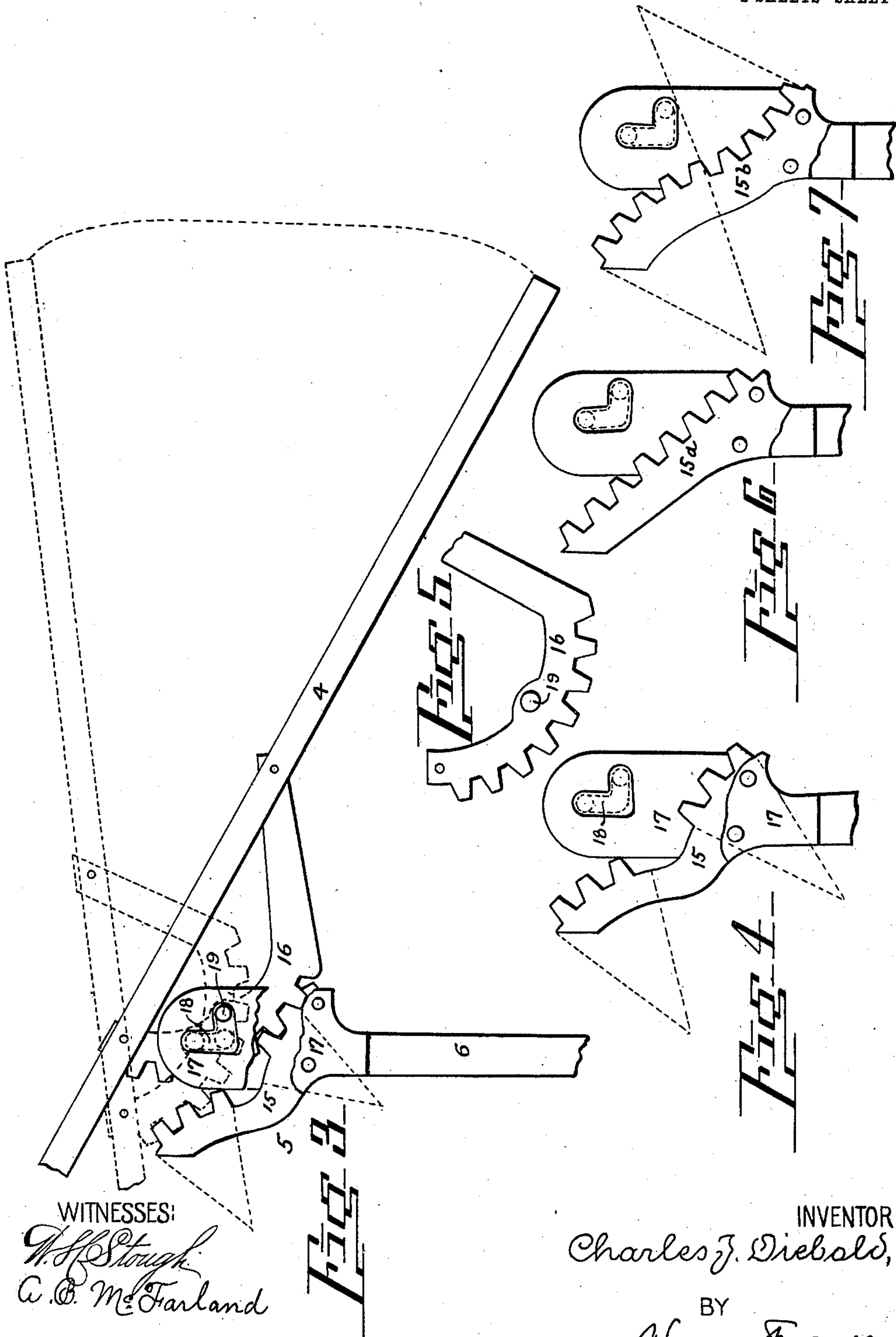
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UNITED STATES PATENT OFFICE.

CHARLES J. DIEBOLD, OF CLEVELAND, OHIO.

MINE-CURTAIN RAISER.

SPECIFICATION forming part of Letters Patent No. 756,598, dated April 5, 1904.

Application filed September 30, 1903. Serial No. 175,120. (No model.)

To all whom it may concern:

Be it known that I, CHARLES J. DIEBOLD, a citizen of the United States, and a resident of Cleveland, in the county of Cuyahoga and State of Ohio, have invented a new and useful Mine-Curtain Raiser, of which the following is a specification.

The invention relates to rocking arms for raising a mine-curtain by lifting its lower edge upward and gathering the curtain in folds; and the object of the invention is to provide such a movement of the lifting-arms as will handle the curtain to the best advantage, and especially to bring the same when raised close to the top of the frame, so that when an overhead trolley system of transportation is used the break in the trolley-wire will be minimized. A mine-curtain is usually held tightly against its frame by air-pressure, and it is difficult to lift its lower edge directly upward along the face of the frame; but by first carrying the edge of the curtain a short distance away from the frame and then lifting it directly upward the raising is more easily accomplished, because the curtain is in a manner peeled off from the frame, and afterward if when the curtain is lifted nearly to the top of the frame the edge is gradually drawn toward the frame the curtain is thereby folded or bunched closely to the top of the frame and occupies but little space lengthwise of the entry. This movement is accomplished by the construction and mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of a section of track, showing the curtain-frame and the raising mechanism; Fig. 2, an elevation of the curtain-frame and raising mechanism, showing the track in section; Fig. 3, an enlarged side view of the rocking bearing; Fig. 4, a detached view of the preferred form of the rack, and Fig. 5 a detached view of the pinion-segment; and Figs. 6 and 7 are detached views of other forms of the rack.

Similar numerals refer to similar parts throughout the drawings.

The curtain 1 is suspended on the ordinary frame 2 and is preferably provided with the stiffening cross-strips 3. The lifting-arms 4

on the rocking bearings 5, which are mounted on the posts 6 or in any other suitable manner on each side of the track 7. The near ends of the lifting-arms are attached to the lower free edge of the curtain on each side, and the opposite ends of the arms are connected by the adjustable links 8 to the operating-arms 9 and 9^a on the rock-shaft 10. The lifting-arms are operated in the usual manner by the depressible rails 11, which rotate the rock-shaft by means of weighted cranks, as 12, mounted on the side of the track, adjustable connecting-rods, as 13, and a rock-lever, as 14.

The rocking bearing is composed of the rack 15, on which rocks the pinion-segment 16, which is attached to the lifting-arm, and the parts are held in proper place by the side plates 17. For certain desired movements of the lifting-arms the racks may be formed as a straight incline, as at 15^a in Fig. 6, as a reverse curve, as at 15^b in Fig. 7; but for the movement more particularly desired for the lifting of the curtain, as above explained, the preferable form of the rack, as shown in Fig. 4, is with two convex segments endwise adjacent, each on a suitable center to give the desired movement to the end of the lifting-arm. The rack 15^a might be called a "simple" rack, and the racks 15 and 15^b can well be called "compound" racks.

It is apparent that by varying the inclination of a simple rack or by varying the curvature, the inclination, and the relation of the segments of a compound rack almost any desired movement can be given to the ends of the lifting-arms, and it has been found empirically that the rack formed with two endwise-adjacent convex sections, one having its center directed downward and slightly away from the curtain-frame and the other located above and on the farther side of the first one with reference to the curtain-frame and having its center at more of an angle from the vertical, will give the exact movement to the end of the lifting-arm which is necessary to carry the lower edge of the curtain first away from the frame, then directly upward adjacent to the frame, and then to draw it gradu-

ally toward the frame again, which is the desired movement to accomplish the purpose hereinabove mentioned.

The side plates 17 are provided with the 5 slots 18, which receive the pin 19, which projects on each side of the pinion-segment. The slot is shaped to follow the course taken by the pin in the rocking of the pinion-segment, and thereby the pinion-segment is prevented 10 from jumping off of the rack.

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

1. In combination, a suspended curtain, arms having their near ends attached to the 15 curtain's lower edge, racks adjacent to the curtain, pinion-segments on the arms meshing with the rack, and means for operating the arms to raise and lower the curtain.

2. In combination, a suspended curtain, 20 arms having their near ends attached to the curtain's lower edge, racks adjacent to the cur-

tain, and pinion-segments on the arms adapted to rock on the racks.

3. In combination, a suspended curtain, arms having their near ends attached to the 25 curtain's lower edge, compound racks adjacent to the curtain, and pinion-segments on the arms adapted to rock on the racks.

4. In combination, a rack, a pinion-segment adapted to rock on the rack, plates on the 30 rack extending alongside the pinion-segment, a transverse pin on the pinion-segment, and slots in the plates adapted to receive the pin in its movements.

In testimony whereof I have signed my name 35 to this specification in the presence of two subscribing witnesses.

CHARLES J. DIEBOLD.

Witnesses:

HARRY FREASE,

HERMAN BEHRINGER.