

No. 735,380.

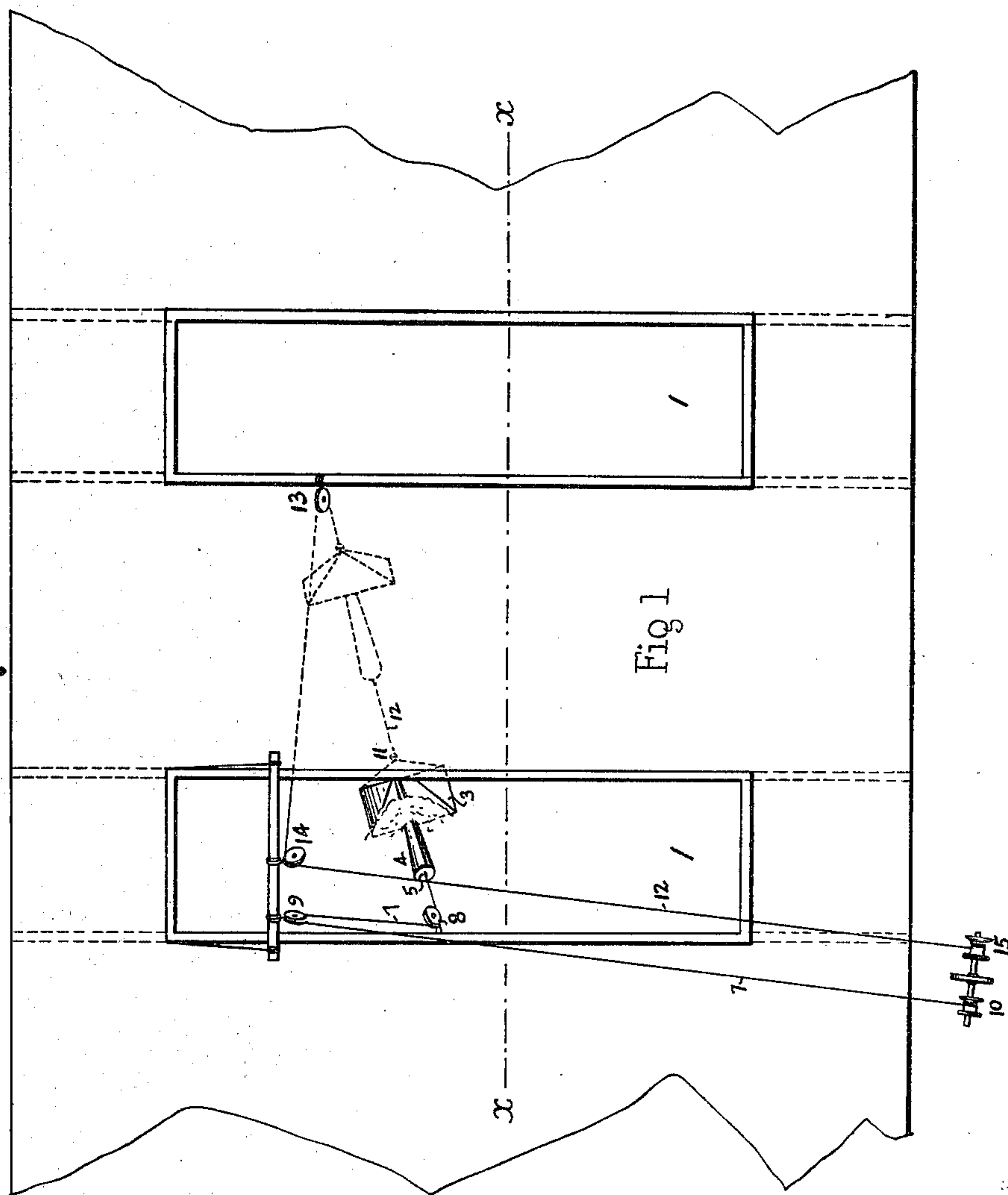
PATENTED AUG. 4, 1903.

F. K. HOOVER & A. J. MASON.
SCRAPER.

APPLICATION FILED OCT. 22, 1900.

NO MODEL.

2 SHEETS—SHEET 1.



WITNESSES:

David A. Miles.

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INVENTORS

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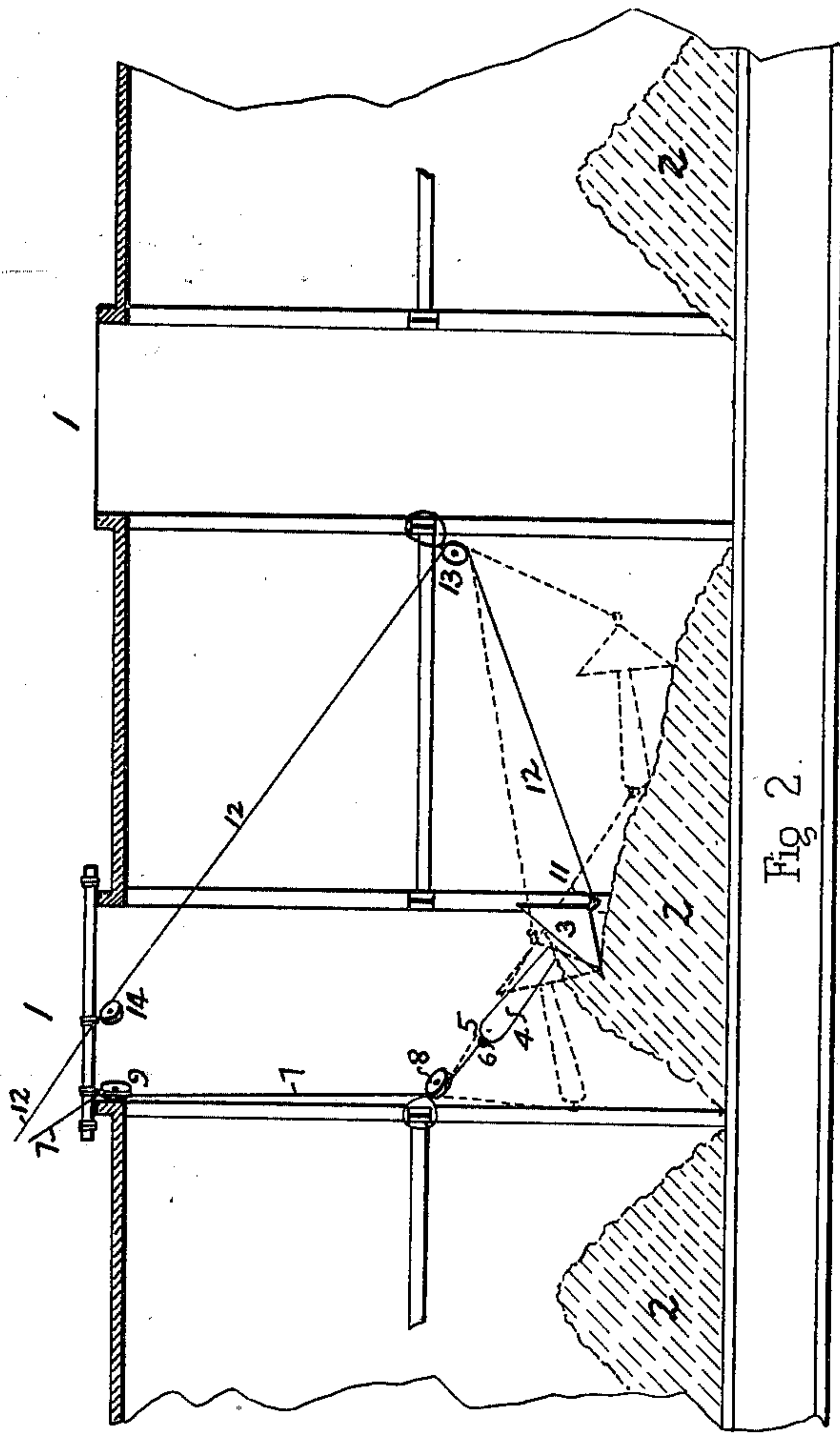
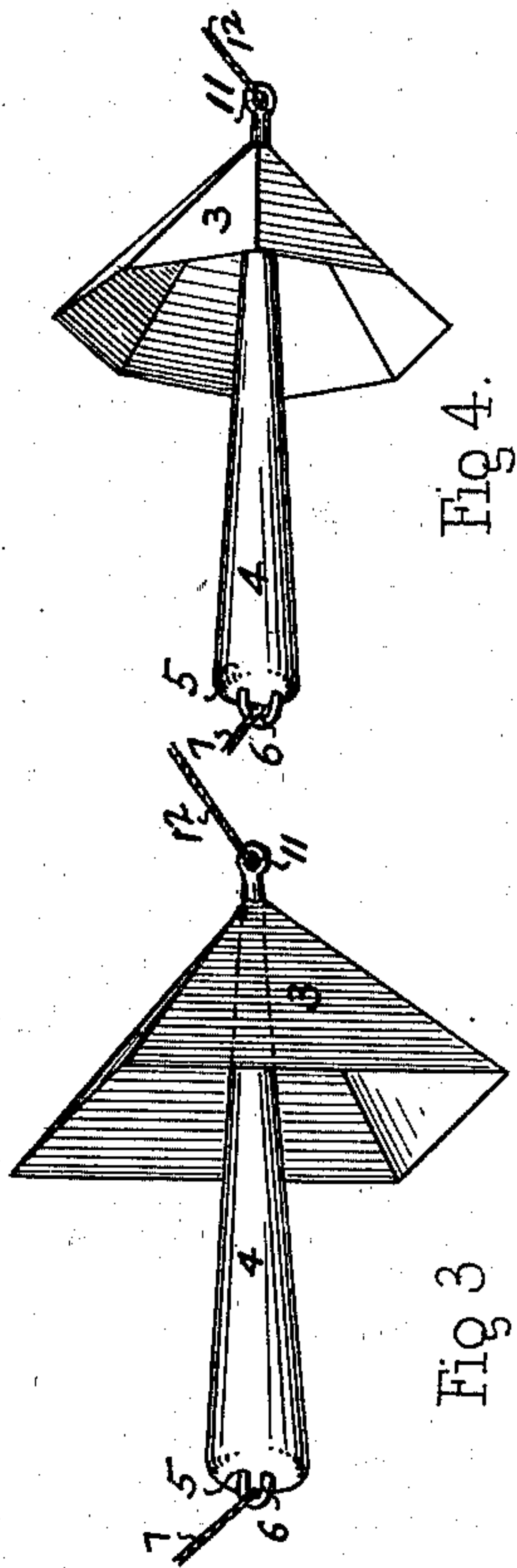
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UNITED STATES PATENT OFFICE.

FRANK K. HOOVER AND ARTHUR J. MASON, OF KANSAS CITY, MISSOURI.

SCRAPER.

SPECIFICATION forming part of Letters Patent No. 735,380, dated August 4, 1903.

Application filed October 22, 1900. Serial No. 33,866. (No model.)

To all whom it may concern:

Be it known that we, FRANK K. HOOVER and ARTHUR J. MASON, of Kansas City, in the county of Jackson and State of Missouri, have invented a certain new and useful Scraper, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form a part of this specification.

Our invention relates to a new and useful scraper, having reference more particularly to the provision of a scraper designed and adapted to move a load contained in the hold of a vessel to a point under the hatchway convenient for unloading. As is well known, in the loading of a vessel with ore, coal, and like material in bulk the cargo will pile up in cone shape immediately under the hatchways and will gradually fill up the space between the hatchways by gravity of the material as the loading operation proceeds. Such cargoes are now commonly unloaded by means of self-loading buckets operating through the hatchways, and, as is manifest, by such operation only that part of the cargo which is immediately under the hatchways can be directly removed, it being necessary by auxiliary means to transfer that portion of the cargo lying between the hatchways to positions directly under the latter, where it is brought within reach of the buckets. In such handling of cargoes of ore, coal, and the like the large blocks and lumps of which the material is composed frequently become very tightly packed and the surface of the pile extremely rough and irregular in form, insomuch that the use of an ordinary drag-scraper to move the same, by reason of the great weight of the scraper required and the uncertain footing of the operator, becomes impracticable. To provide a scraper that will under such conditions operate without requiring any direct manipulation thereof by an operator, taking up its load, conveying it to the required point, dumping, and returning to the loading-point, solely under the control of the engine by which it is operated, is one of the leading objects of our invention.

Our invention also contemplates the provision of a scraper that shall take a substantially uniform load whether moving up or down an incline or on a level, shall not dig too deep when moving up or too shallow when moving

down, shall cut equally well on both sides of its path through the material, and at the same time make a clean dump and not carry back any part of its load on its return.

To accomplish these and other desired results, our invention consists in a scraper embodying certain features of novelty, as hereinafter described and more particularly pointed out in the claims.

Our invention in a preferred form is illustrated in the accompanying drawings, in which—

Figure 1 represents in plan view two adjacent hatchways of a vessel, showing our improved scraper at work therein and illustrating its operative relation thereto. Fig. 2 illustrates the parts shown in Fig. 1 in a vertical longitudinal sectional view of the same on the line X X of Fig. 1. Fig. 3 is an isometric view of one form of our improved scraper, the form shown being that of a quadrangular pyramid; and Fig. 4 is a similar isometric view of our improved scraper in the form of an octagonal pyramid.

Referring to the drawings for a detailed description of our invention, the numeral 1 indicates a pair of adjacent hatchways of a vessel.

2 designates the piles of ore, coal, and like material lying in the hold of the vessel between the hatchways after the body of the cargo lying directly under the hatchways has been removed by the self-loading buckets. It is manifest that to remove this remaining part of the cargo by means of such buckets it must be transferred to points under the hatchways and within the vertical reach of the buckets. To do this, we have devised the implement constituting the subject of our present invention, one form of which is shown in detail in Fig. 3. This scraper consists of four triangular converging metal sides 3, which form a quadrangular pyramid. At the apex of this pyramid on the inner side thereof is mounted a beam 4, which extends through the hollow interior thereof and a considerable distance beyond or in advance of the open base of the same. This beam 4 is weighted at its advance or forward end, as shown at 5, a convenient form of beam to secure this weighted effect being that shown in the drawings, wherein the beam is gradually tapered from

its inner to its outer end, being formed of increasing diameter toward its outer end. The relation of the length and weight of said beam to the weight and dimensions of the scraper
 5 must be such as to insure the tilting forward of the scraper under the action of the return-line in whatever position it may be, as indicated in the dotted lines in Fig. 2. At the forward end of said beam is mounted an eye
 10 6, to which is secured a cable 7, which, passing around pulley 8, movably mounted on a cross-timber of the vessel, and around a fixed pulley 9 at the mouth of the hatchway, leads to and passes over the winding-drum 10, arranged to be operated by an engine. (Not
 15 shown.) At the apex of the scraper and on the outer side thereof is mounted an eye 11, to which is secured a cable 12, which, passing around a pulley 13, movably mounted on a
 20 cross-timber, and around a fixed pulley 14 at the mouth of the hatchway, leads to and under a winding-drum 15, mounted upon the same shaft as the drum 10, the relation between these cables and their connections being
 25 such that as the cable 7 is wound upon its drum 10 the cable 12 is paid out from its drum 15, and vice versa.

In operation as the scraper-operating engine winds up the loading-line 7 on its drum
 30 the scraper is drawn forward to take and convey its load, the weighted end of the beam 4 serving to so pitch or tilt the body of the scraper relatively to the surface of the material as to insure a proper depth of cut being
 35 made, in the same manner that a weight on the forward end of a plow-beam acts to insure a cut of the proper depth. The load being thus taken is drawn to the desired point directly under the hatchway. The engine being
 40 then reversed, the return-line 12 acts to withdraw the scraper from under or behind its load, thus effecting the dump. The loading-line 7 being at the same time relaxed, the weighted end of the beam 4 insures the tilt-
 45 ing of the scraper and its return to the point of loading in the position best adapted to take its load, under the action of the return-line, as shown in dotted lines in Fig. 2.

The guide-pulleys 8 and 13 are movably
 50 connected by a sling or in any convenient man-

ner with the cross-beam of the vessel, so as to afford a lateral travel to said pulleys, whereby a wide range of movement is afforded to the scrapers, and thus the material lying at all points in the hold of the vessel may be easily
 55 and conveniently moved directly under the hatchways.

In Fig. 4 of the drawings we have shown a similar pyramidal-shaped scraper, the same having eight sides instead of four. It will be
 60 obvious that the scraper may be formed with as many sides as desired and may be made round in cross-section, if desired, without departing from the spirit of our invention.

Having thus fully described our scraper and
 65 its mode of operation, what we claim as our invention, and desire to secure by Letters Patent, is—

1. A scraper consisting of a hollow body and a beam connected therewith weighted at its
 70 advance or forward end and arranged to be operated by alternately drawing the same in opposite directions, substantially as set forth.

2. A scraper consisting of a hollow pyramidal body, a weighted beam connected with
 75 and extending in advance of said body, a loading-line connected with the outer end of said beam, and a return-line directly connected to the body, whereby the dump is effected by
 80 the transfer of the strain from the loading to the return line, substantially as set forth.

3. A device for moving ore, coal and the like in the holds of vessels to points under the hatchways thereof, the same comprising in combination a scraper composed of a hollow
 85 body and a weighted beam connected with said body, a loading-line connected to the forward end of said beam, a return-line connected to the apex of said body, winding-drums upon which said lines are respectively
 90 wound, and guide-pulleys located intermediate said drums and the scraper over which said lines are trained, substantially as set forth.

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Witnesses:

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