

No. 885,920.

PATENTED APR. 28, 1908.

F. B. GOLDEY.
FURNACE CHARGING APPARATUS.

APPLICATION FILED AUG. 10, 1907.

3 SHEETS—SHEET 1.

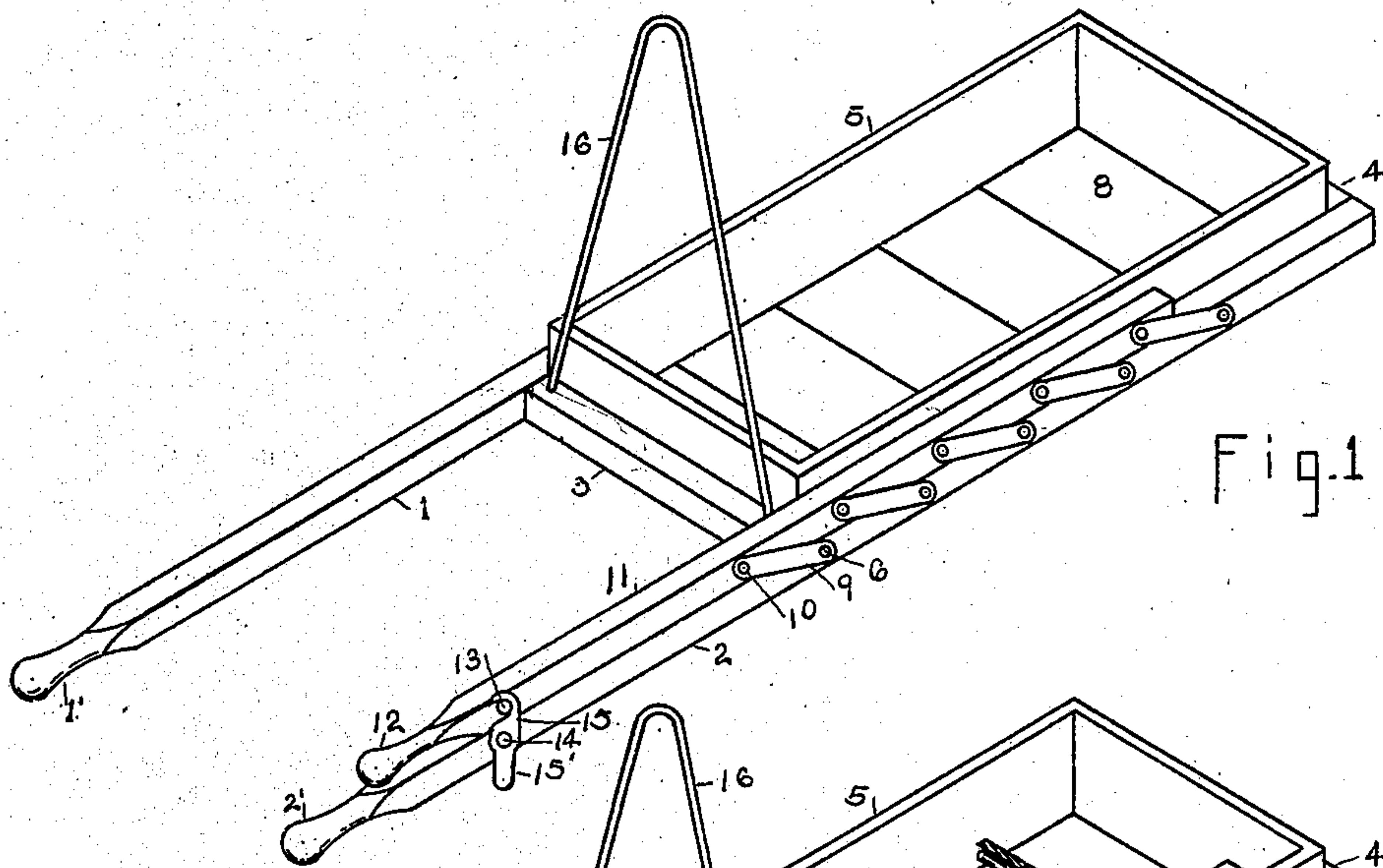


Fig. 1

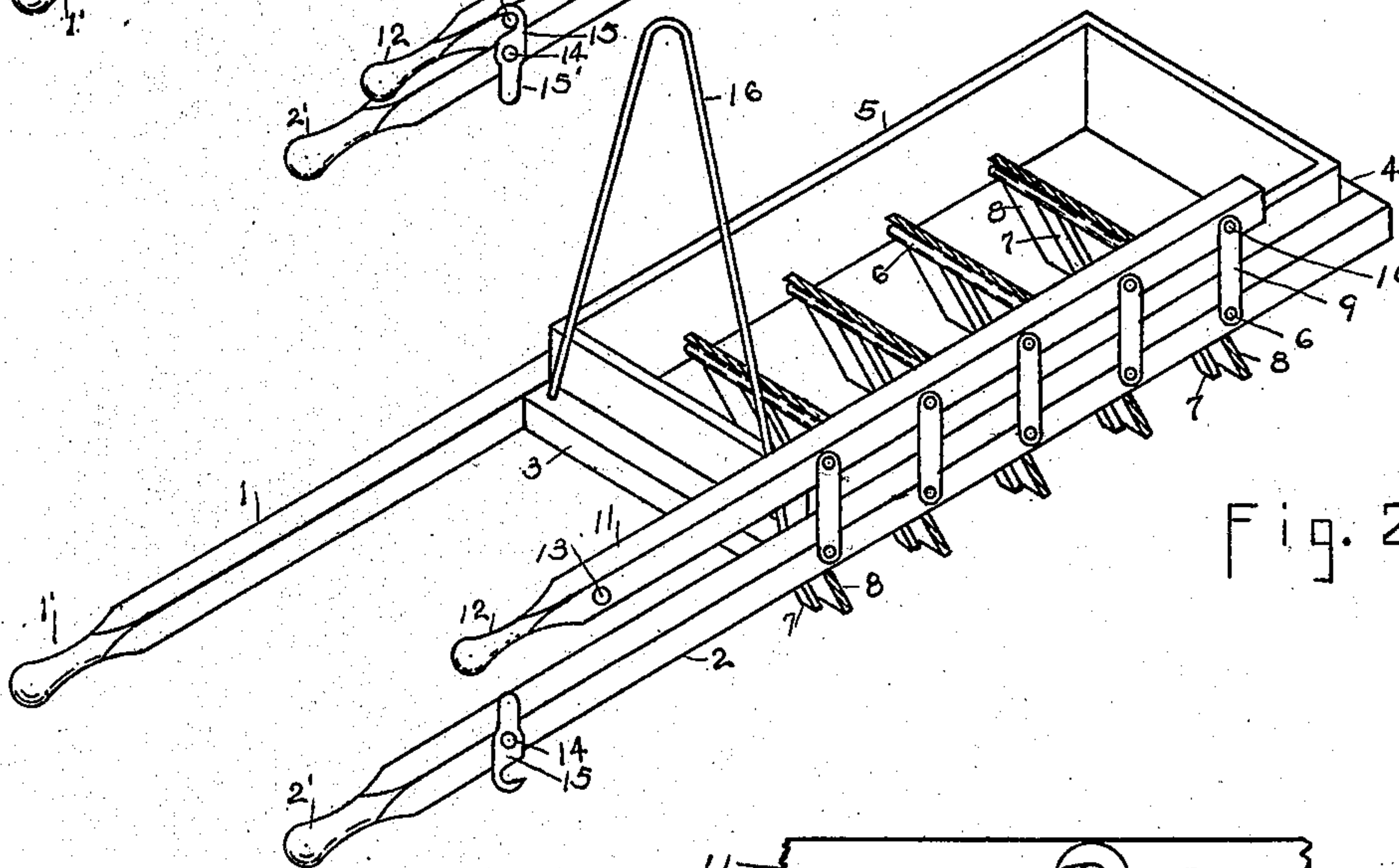


Fig. 2

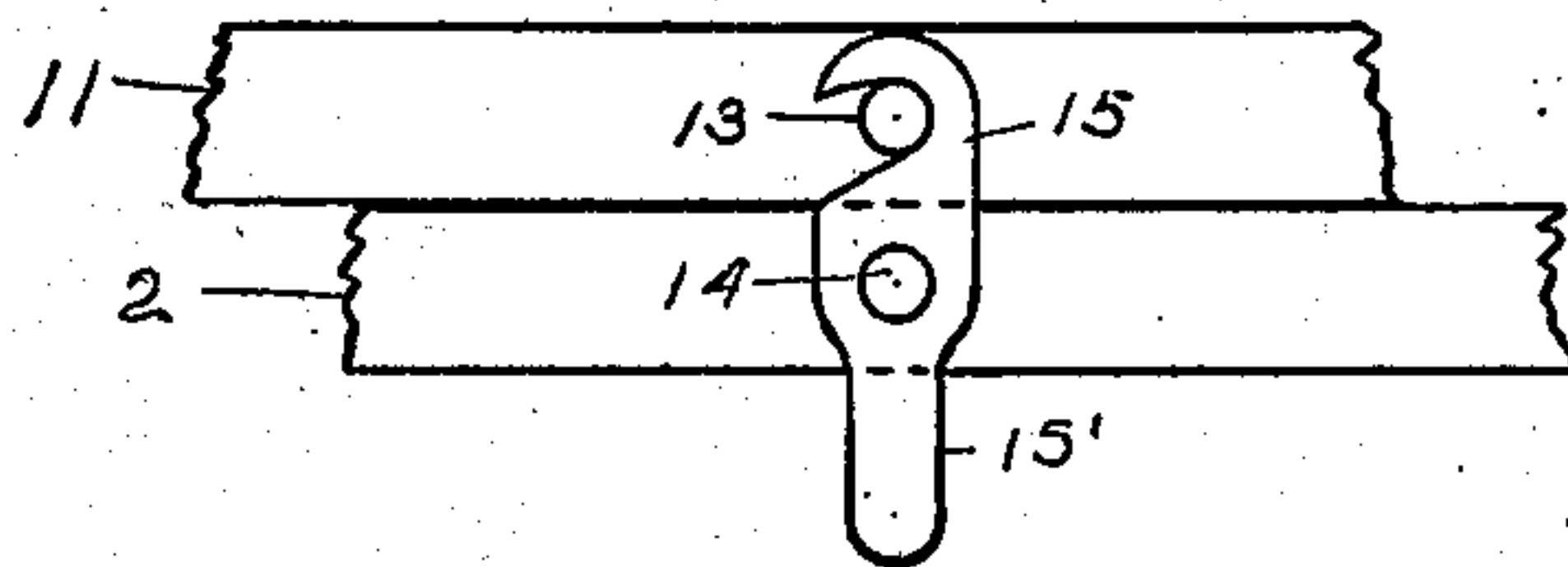


Fig. 3

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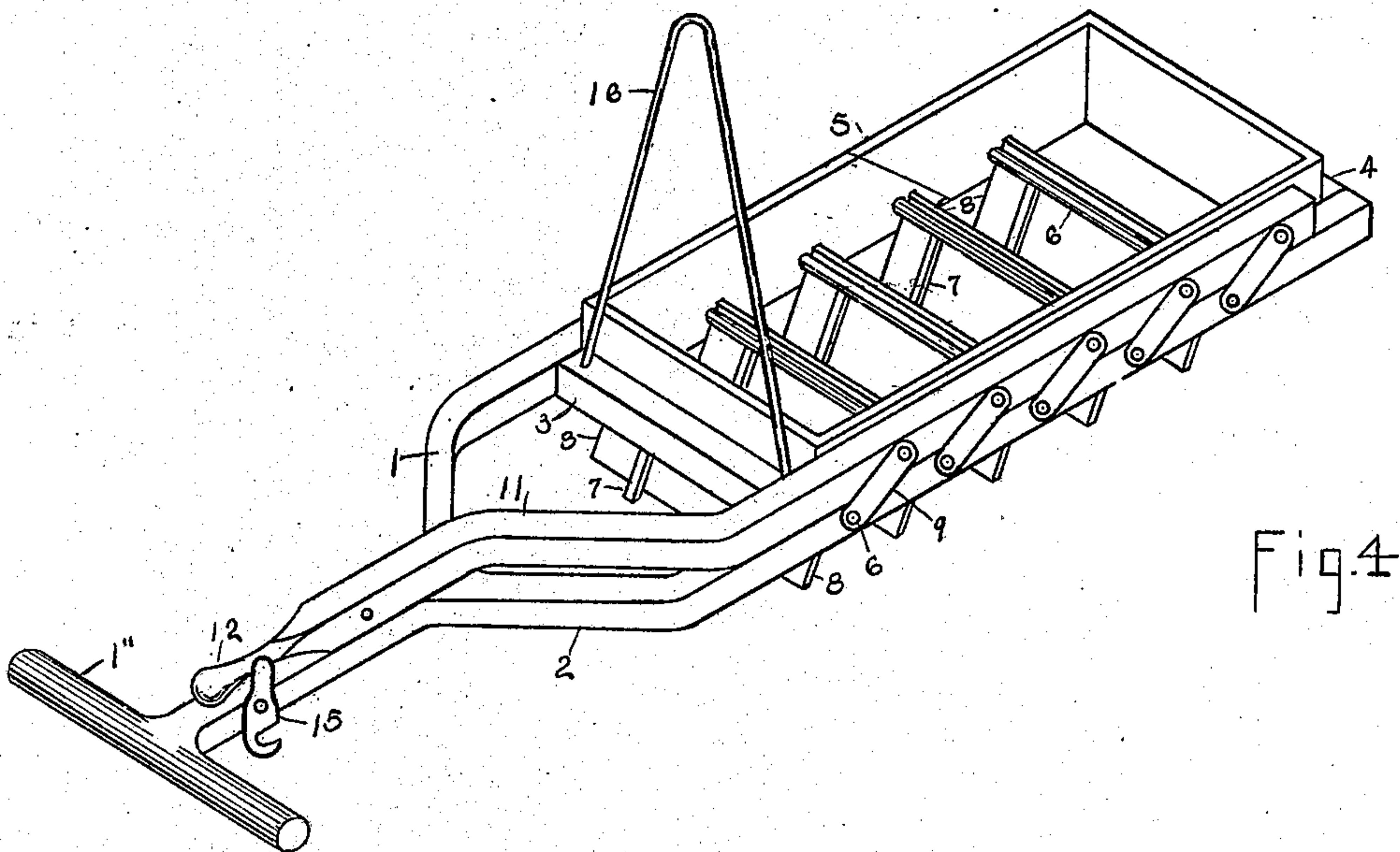


Fig. 4

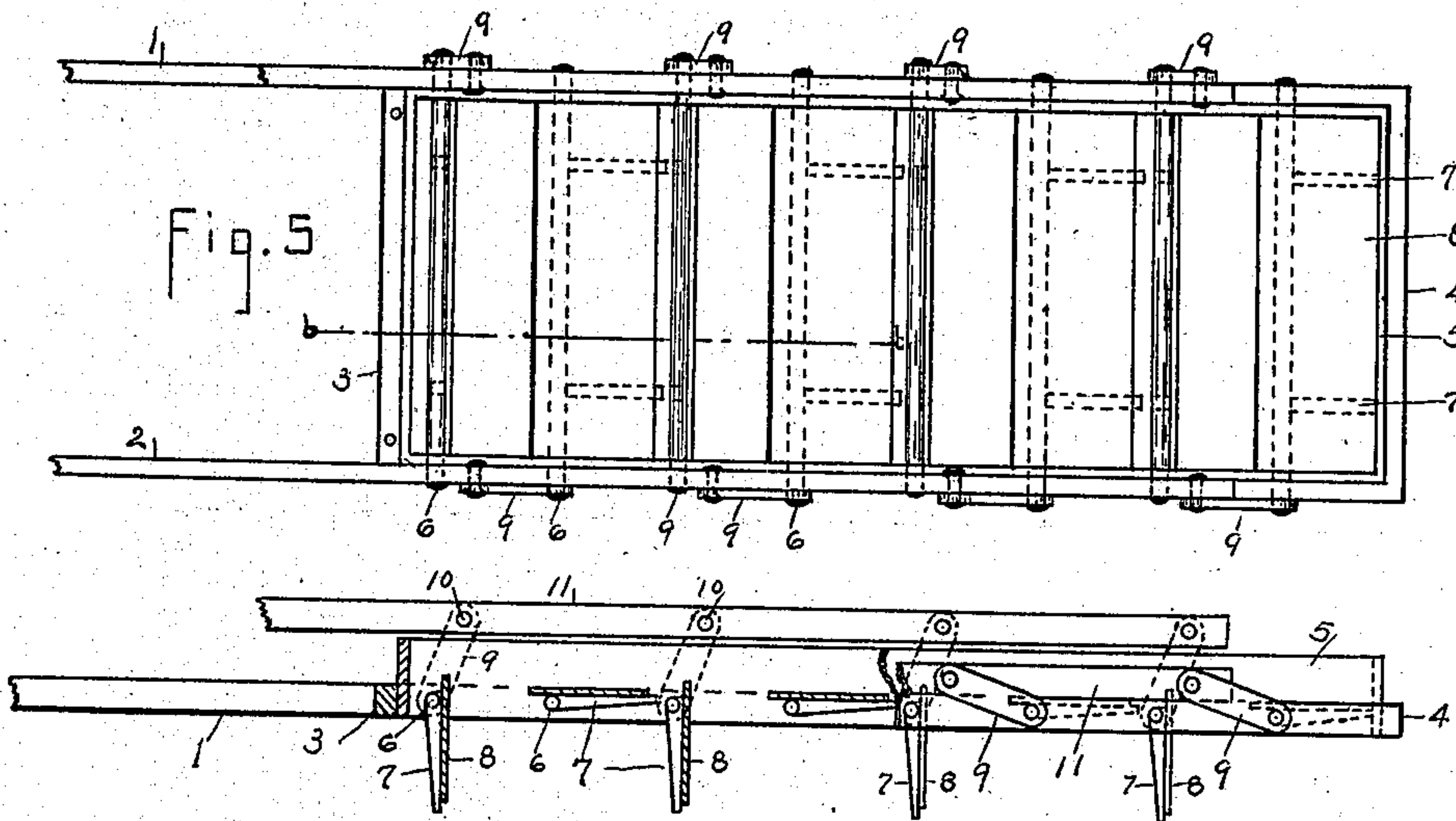


Fig. 5

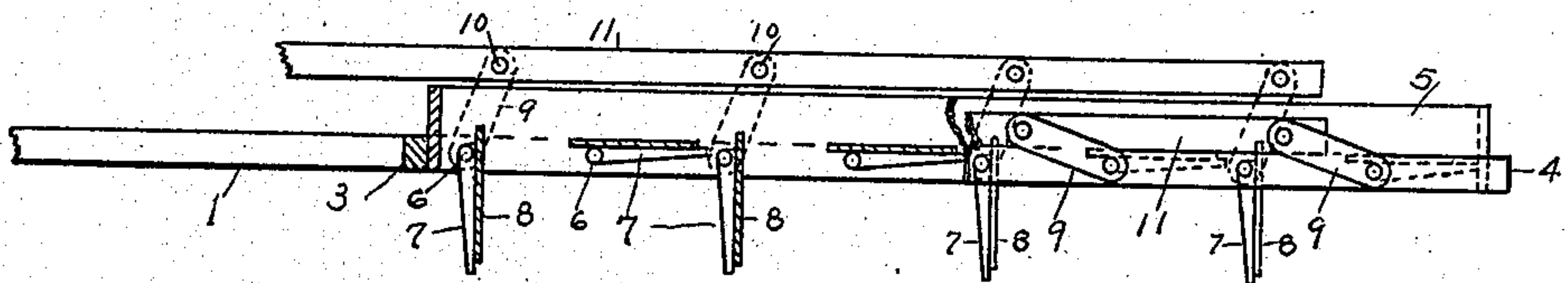


Fig. 6

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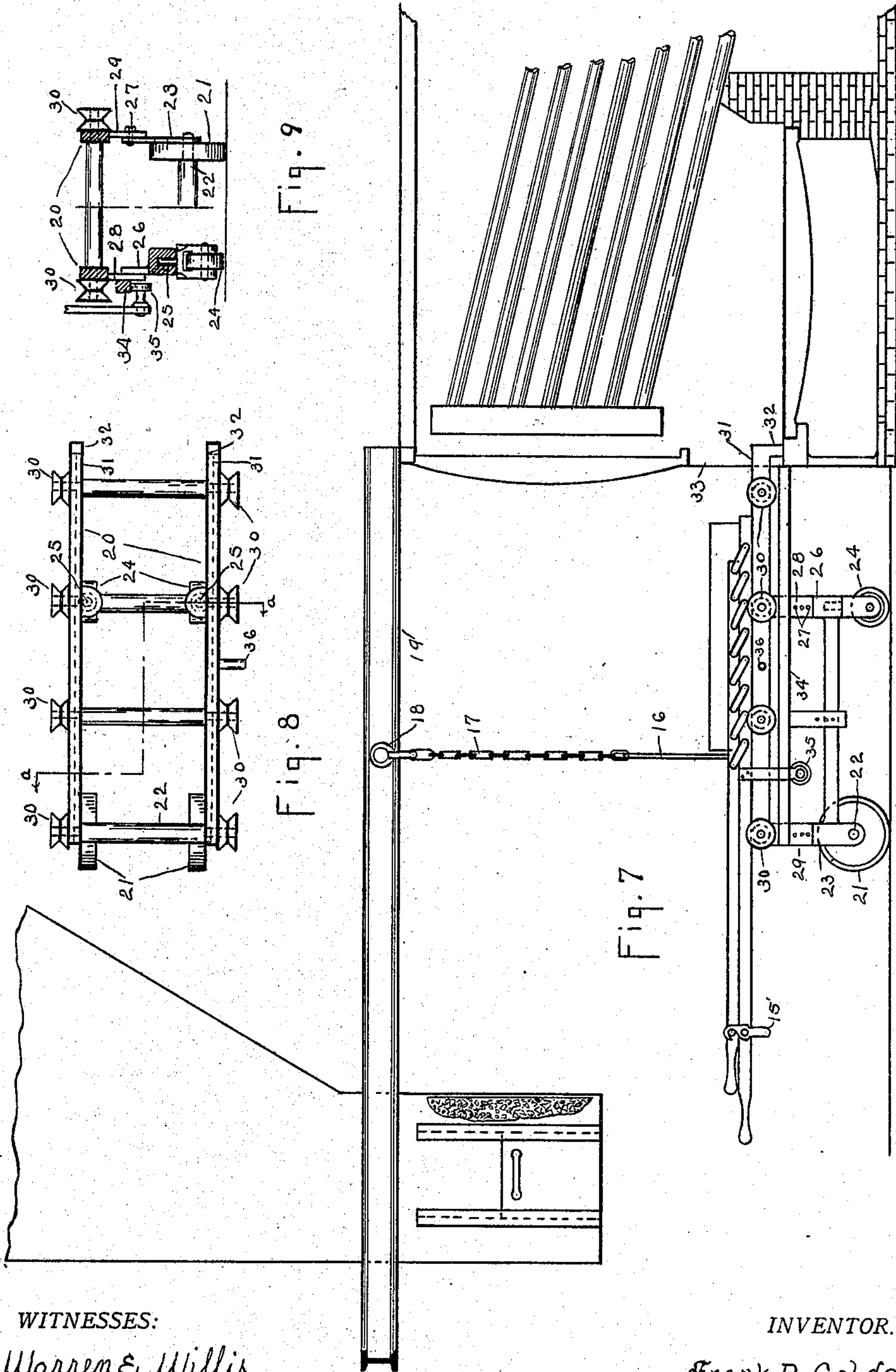
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3 SHEETS—SHEET 3.



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FURNACE-CHARGING APPARATUS.

No. 885,920.

Specification of Letters Patent.

Patented April 28, 1908.

Application filed August 10, 1907. Serial No. 387,968.

To all whom it may concern:

Be it known that I, FRANK B. GOLDEY, a citizen of the United States, residing at Collingdale, in the county of Delaware and State of Pennsylvania, have invented certain new and useful Improvements in Furnace-Charging Apparatus, of which the following is a specification.

This invention relates to stokers, or fuel feeding apparatus, for furnaces, and particularly to that class in which a charge may be delivered over the entire fire surface at one operation.

The objects of my invention are, first, to provide a fuel feeding device for use in connection with furnaces, so arranged as to introduce the fuel expeditiously and distribute the same uniformly in the fire box, thus assisting in securing proper combustion. Second, to provide such devices in forms readily constructed and applicable to existing furnace conditions without change therein. Third, to provide such means capable of being properly handled by unskilled labor, and which are not liable to become deranged or put out of order by the relatively rough handling such apparatus is likely to receive.

I attain these several objects by the combination of parts, and arrangement of the same, as fully described hereinafter, and shown in the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in all the views.

Figure 1, is a perspective view of my invention in position to receive a charge of fuel. Fig. 2, is a similar perspective view, but showing the apparatus in the position which it assumes at the time of discharge of its contents. Fig. 3, is a fragmental view, drawn to an enlarged scale, showing the latching means. Fig. 4, is a perspective view of the apparatus, arranged to be used as a rake in leveling the fire, and also showing a modification in construction. Fig. 5, is a top plan view of the device indicating another modification. Fig. 6, is a side elevation, partially in section, of the same. Fig. 7, is a side elevation of my apparatus illustrating its use in connection with the furnace of a boiler and a coal supply source. Fig. 8, is a plan view of a truck made in accordance with my improvements, and, Fig. 9, is a transverse section view of the same, taken on line *a—**a*, of Fig. 8.

The invention consists primarily of a frame

work, having the arms 1 and 2, arranged parallel to each other, provided with handles as at 1' and 2', and connected by the cross pieces 3 and 4, located respectively near the center, and at the end opposite the handles. This frame work is preferably constructed of steel or other suitable metal having the necessary strength, and heat resisting qualities.

On the frame is a shallow, rectangular metal box or casing 5; passing through the sides of the casing, and side members 1 and 2, are a plurality of shafts 6, journaled freely therein, and having attached stiffening ribs 7, to which are secured rectangular plates 8, in such manner that when they are extended, in the plane of the side frames, they will form a sectional bottom for the casing 5; each of the plates 8, are so arranged, with relation to the shafts 6, that approximately four fifths of their width are on one side, while the remainder is on the other, and when they are positioned, so as to form a bottom for the casing, the short portions will be measurably sustained by the ribs 7, which are adapted to extend beyond the long side of each bottom plate; also on the shafts 6, are secured links 9, connected, at their opposite end 10, with the oscillating bar 11, and in such manner that if the bar 11, be oscillated, or moved rearwardly from the handles, the bottom plates 8, are moved from a horizontal position, allowing whatever material that may be contained in the casing 5, to drop. The bar 11, is likewise provided with a handle 12, adjacent to the handles 1' and 2', for convenience in manipulating by the operator.

Immediately rearward of the handle portion 12 of the bar 11, is secured a stud, or pin 13, adapted to intersect with the opening in the link 15, which is freely pivoted at 14 on the bar 2. In the cross piece 3, I provide a bail or hoop handle 16, hinged or pivotally connected so that it may freely swing in relation to the cross piece; this handle is preferably placed as close as possible to the fuel carrier, in order that the center of gravity of the loaded apparatus may be as near the handle as possible, and so that the operator will have no difficulty in balancing a load, which may be suspended by the bail or handle 16, as from a chain 17 provided with a turn buckle or other common means for obtaining an adjustment in length, connected with a trolley 18, running on the rails 19, which may be supported in any convenient manner, and which may contain one or more

wyes, or switches, whereby the same apparatus may be used in serving a number of furnace openings, to which the rails or track-way connect. In some cases, I may use a truck 20, for conveying the loaded apparatus, adapted to run on a level flooring, or it may have guiding rails communicating directly between the furnace doors and coal supply source.

10 My apparatus may be charged by shoveling the contents from a heap into the carrier, or, more preferably, it may be delivered by gravity through a chute from a supply source, as indicated.

15 I may prefer to arrange the construction as indicated more particularly in Fig. 6, wherein the handles 1' and 2', are brought together and united into a single cross bar 1'', for convenience in directing and otherwise manipulating the apparatus. Besides being able to discharge a relatively large quantity of coal with a minimum of labor, the arrangement indicated in Fig. 6, furnishes a convenient method of leveling the coal, or fire, it being used, at that time, as a rake, the several plates, together with the extending ribs, acting admirably for this purpose.

I construct this apparatus with relation to the size of the furnace with which it is intended to be used, and, as is usually the case, the fire surface is of greater width than the door through which the apparatus may enter, I may construct the apparatus as more particularly indicated in Figs. 7 and 8, in such manner that a portion of the discharge takes place by operating the catch on one side at one time, whereby each alternate plate is released, the apparatus being then positioned closely over to one side of the fire box; then, by moving it to the opposite side, discharge the remainder of the contents by freeing the bar on the opposite side of the apparatus.

In operation, the apparatus having been filled, the furnace door is opened, that part of the apparatus containing the charge inserted, and the catch-hook displaced, whereupon the contents are evenly distributed within the fire box by gravity, either from each alternate bottom plate separately, or collectively and simultaneously as preferred, whereupon the apparatus may be withdrawn and recharged ready again for use.

My invention further consists of the truck 20, having rear wheels 21, freely revolving on the shaft 22, set in the lower frame members 23; at the front I use smaller wheels 24, each wheel being pivotally connected as at 25, to the front corners of the truck, after the manner of a caster. The front supports 26, and rear supports 23, terminate below the top of the truck and have in them a series of holes for bolts 27, for the purpose of adjusting the vertical height of the upper members of the truck 28 and 29; on the upper surface of the frame are mounted a series of grooved car-

riers or rollers 30, arranged to receive the lower edges of the fuel carrier and in such manner that the same may be moved laterally thereon, with the expenditure of a moderate amount of force.

At the front end of my truck, I provide an extension 31, having a downwardly turned portion 32, adapted to rest upon the sill or lower member of the fire door opening as at 33; also, on the side of the truck, I provide a ledge or lateral member 34, running its entire length and having its lower side adapted to contact with the pulley 35, which may be secured to the fuel carrier in such manner as to prevent the same from tipping up by reason of its load being placed at one end. I may also use a projection 15', on the lower end of the catch 15, and place a pin as at 36, on the side or sides of the truck in such relation to its length and to the aforesaid catch 15' that when the apparatus has been projected the proper distance into the fire box, that the depending portion of the catch 15' will strike against the pin 36 thereby freeing the bottom section and allowing it to drop without aid on the part of the operator.

The even firing resulting from the use of my apparatus, admits of maintaining a thin fire and a correspondingly more perfect combustion results; it is also noticeable that the fuel charge may be delivered almost instantly and that the arrangements for entering and removing the apparatus are such that the fire box door is kept open but momentarily, thus preventing the inlet of cold air and consequent loss of heat, besides which the fireman is protected from the outrush of heat, the box filling most of the opening, while the labor of shoveling and heaving is greatly reduced.

I do not wish to be understood as being confined to the exact forms indicated by the drawings, but manifestly may make changes therein with respect to proportions and the like without departing from the general spirit of my invention.

Having thus described my apparatus, what I claim as new, and desire to secure by Letters Patent is:

1. In a furnace charging apparatus, the combination with a fuel carrier, adapted to enter a furnace door, of a track-way therefor, and adjustable sustaining means between the carrier and track-way, means for controlling and guiding the carrier and automatically operated means combined therewith, whereby the contents of the carrier may be discharged by gravity.

2. In a furnace charging apparatus, the combination with a fuel carrier, adapted to enter a furnace, having means of support and means for manual guidance combined therewith, of shafts mounted in bearings formed in the carrier frame provided with sectional bottom members, the ends of said shafts ex-

tending out to one side of the carrier frame and oscillating bar parallel with and above one of the carrier frame members, means for securing said oscillating bar to the respective shafts, means for locking said bar together with means for tripping said locking means.

3. In a furnace charging apparatus, the combination with a fuel carrier, adapted to be used as a rake or leveler, of a sectional bottom transversely disposed within the frame, shafts supporting each of the bottom sections, journaled in the frame, stiffening ribs attached to the shafts and extending beyond the edges of the bottom sections, in such manner that the next succeeding bottom section may partially rest thereon, and means for sustaining said bottom sections, and automatically releasing the same.

4. In a furnace charging apparatus, the combination with a fuel carrier, comprising a frame adapted to enter a furnace door, and means for manual operation thereof, of a plurality of shafts transversely disposed in the frame, bottom plate sections connected to the shafts, an oscillating bar lateral with the frame, links rigidly connected to the shafts, and pivotally secured to the oscillating bar, and means for securing said bar, whereby the plate sections may be maintained horizontally together with means for releasing said bar automatically, so as to allow said plate sections to drop.

5. In a furnace charging apparatus, the combination with a fuel carrier, comprising a frame, and means combined therewith whereby it may be sustained and directed, of a plurality of shafts transversely mounted in the frame, each shaft extending outwardly beyond its bearing alternately on the sides thereof, bottom forming plate sections secured to the shafts, oscillating bars parallel with and above the side frames, links rigidly connected to the extending ends of the shafts and to the adjacent oscillating bar, and means for holding or releasing said bars whereby the plate sections may be maintained as a flooring to the carrier, together with means for automatically releasing said bar.

6. In a furnace charging apparatus, the

combination with a fuel carrier adapted to convey and distribute a complete charge of fuel, of a truck, having transversely journaled rear, and pivoted front wheels, a frame, adjustable in height, mounted thereon, projecting bars at the front connected thereto, adapted to rest upon the sill of a furnace door, and a double series of grooved rollers revolvably mounted on the frame, rails adapted to receive the said fuel carrier and afford means of conveyance to it, and means for automatically distributing fuel from said carrier.

7. In a furnace charging apparatus, the combination with a fuel carrier adapted to convey and distribute a complete charge of fuel, of a truck having transversely journaled rear, and pivoted front wheels, a frame, adjustable in height, mounted thereon, projecting bars at the front connected thereto, adapted to rest upon the sill of a furnace door, a double series of grooved rollers revolvably mounted on the frame rails adapted to receive the said fuel carrier, in the manner of a trackway, means combined whereby the carrier is prevented from displacement horizontally and means combined whereby the contents of the carrier may be discharged automatically by its advance laterally beyond a predetermined point on said truck.

8. The combination with a truck of a fuel carrier comprising parallel arms connected together by cross pieces forming a frame, a box arranged on said arms, a plurality of transverse shafts journaled in said arms, carrying rectangular plates forming a sectional bottom, links secured to said shafts, an oscillating bar pivotally connected to said links, provided with a pin, a locking link carried by one of the arms of the frame adapted to engage said pin, and means carried by the truck for tripping said locking link, for the purpose described.

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

FRANK B. GOLDEY.

Witnesses:

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EUGENE V. COGGEY.