

No. 706,755.

Patented Aug. 12, 1902.

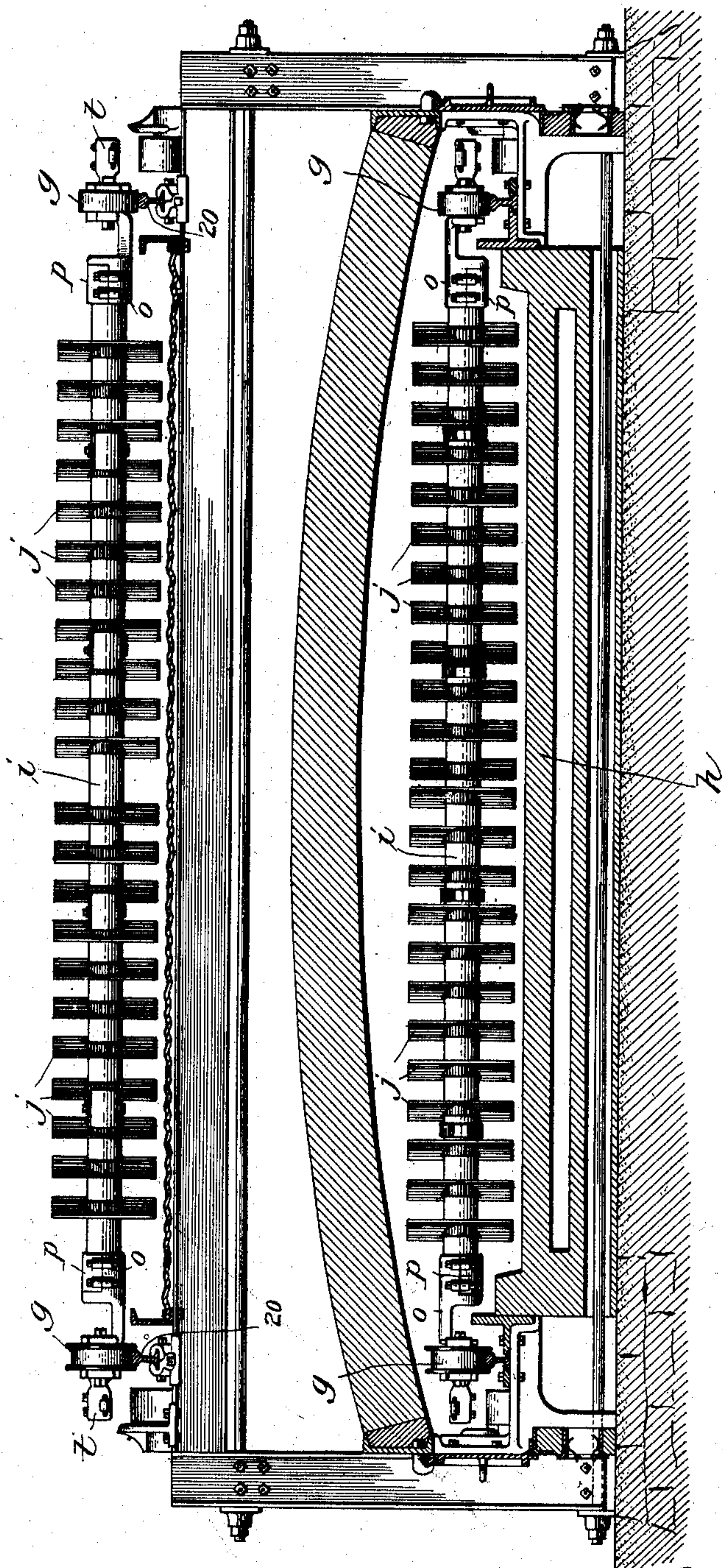
D. C. JACKLING.  
RABBLE CARRIAGE.

(Application filed Aug. 2, 1901.)

(No Model.)

4 Sheets—Sheet 1.

Fig. 1.



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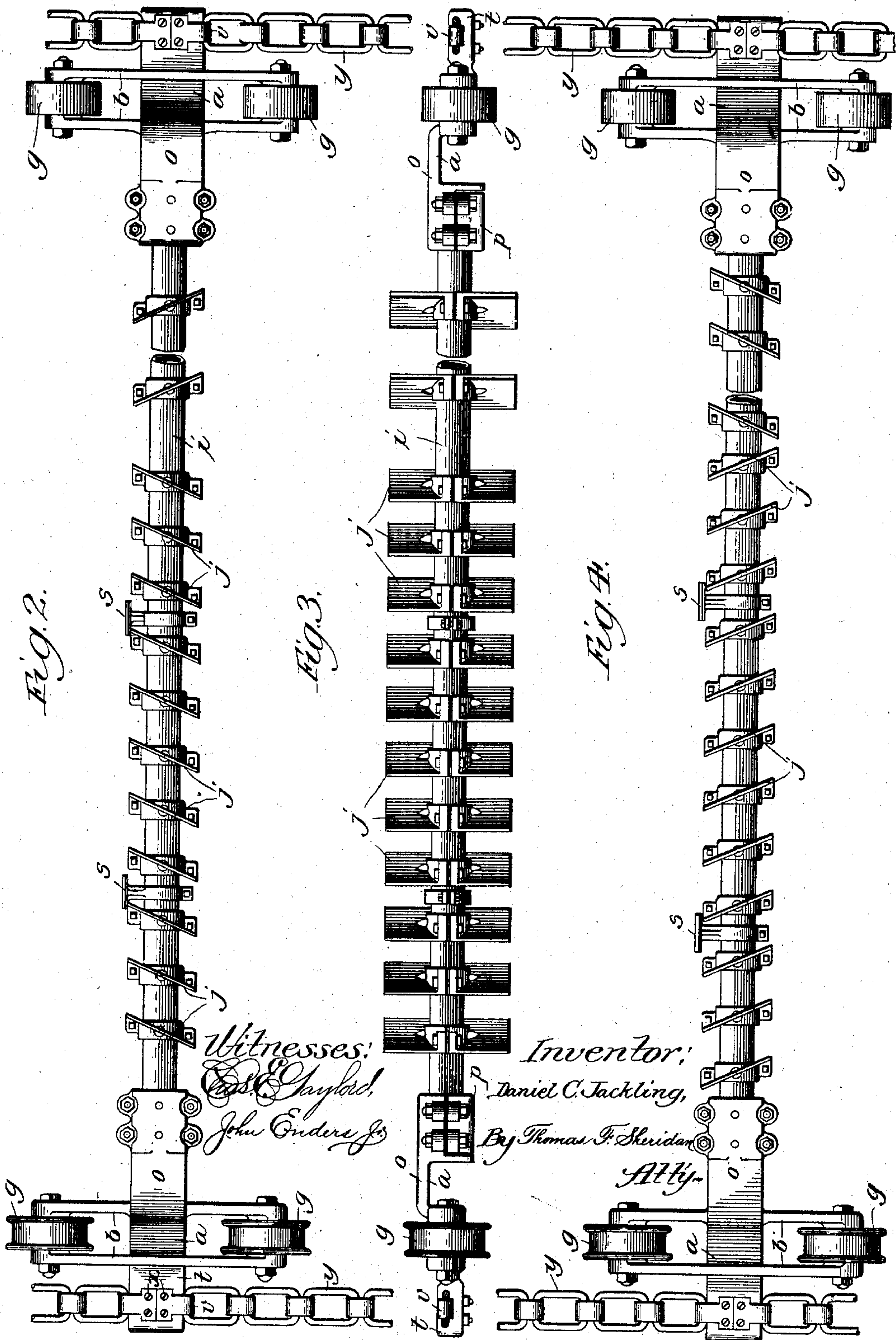
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(Application filed Aug. 2, 1901.)

(No Model.)

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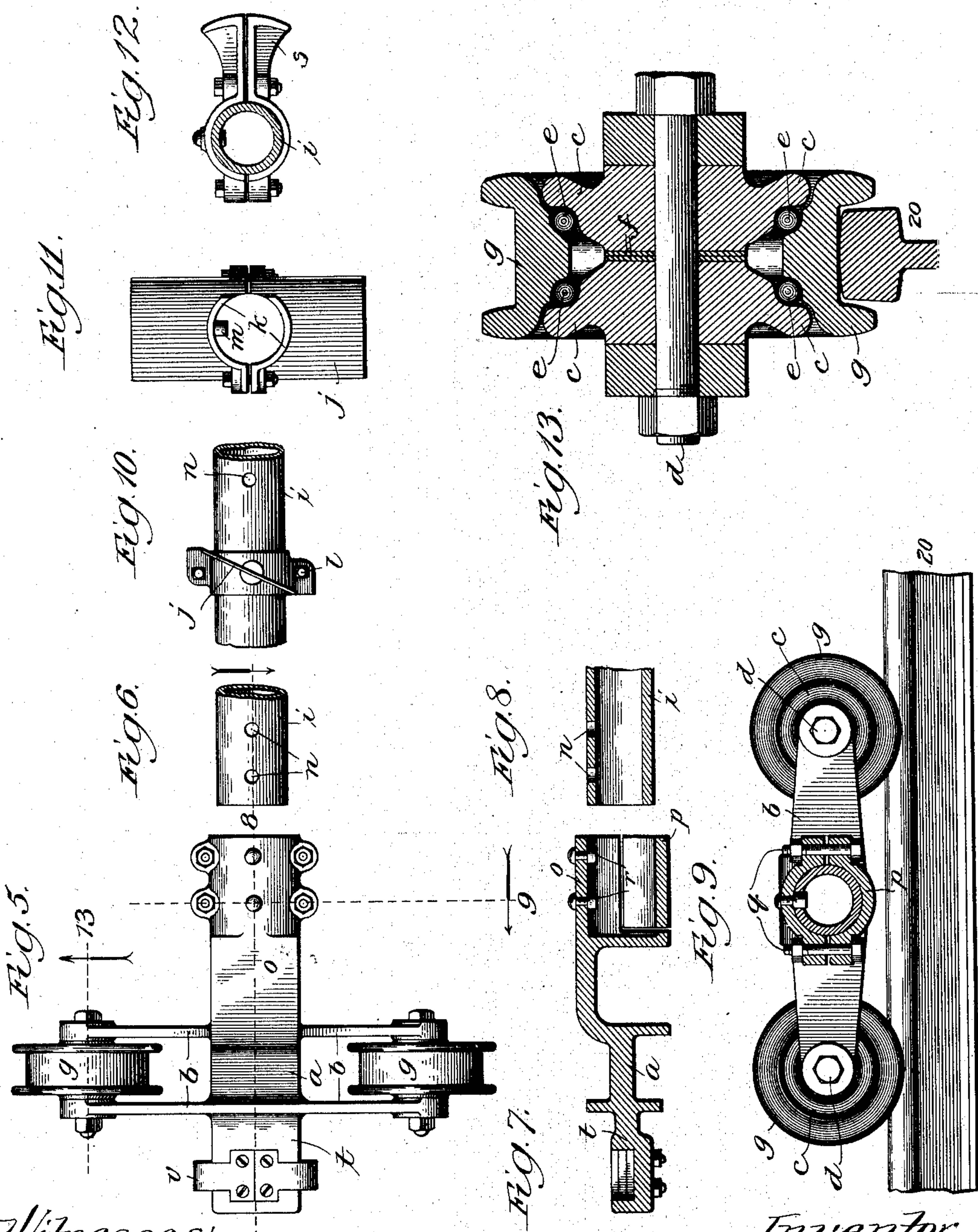


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(Application filed Aug. 2, 1901.)

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4 Sheets—Sheet 3.



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4 Sheets—Sheet 4.

Fig. 14.

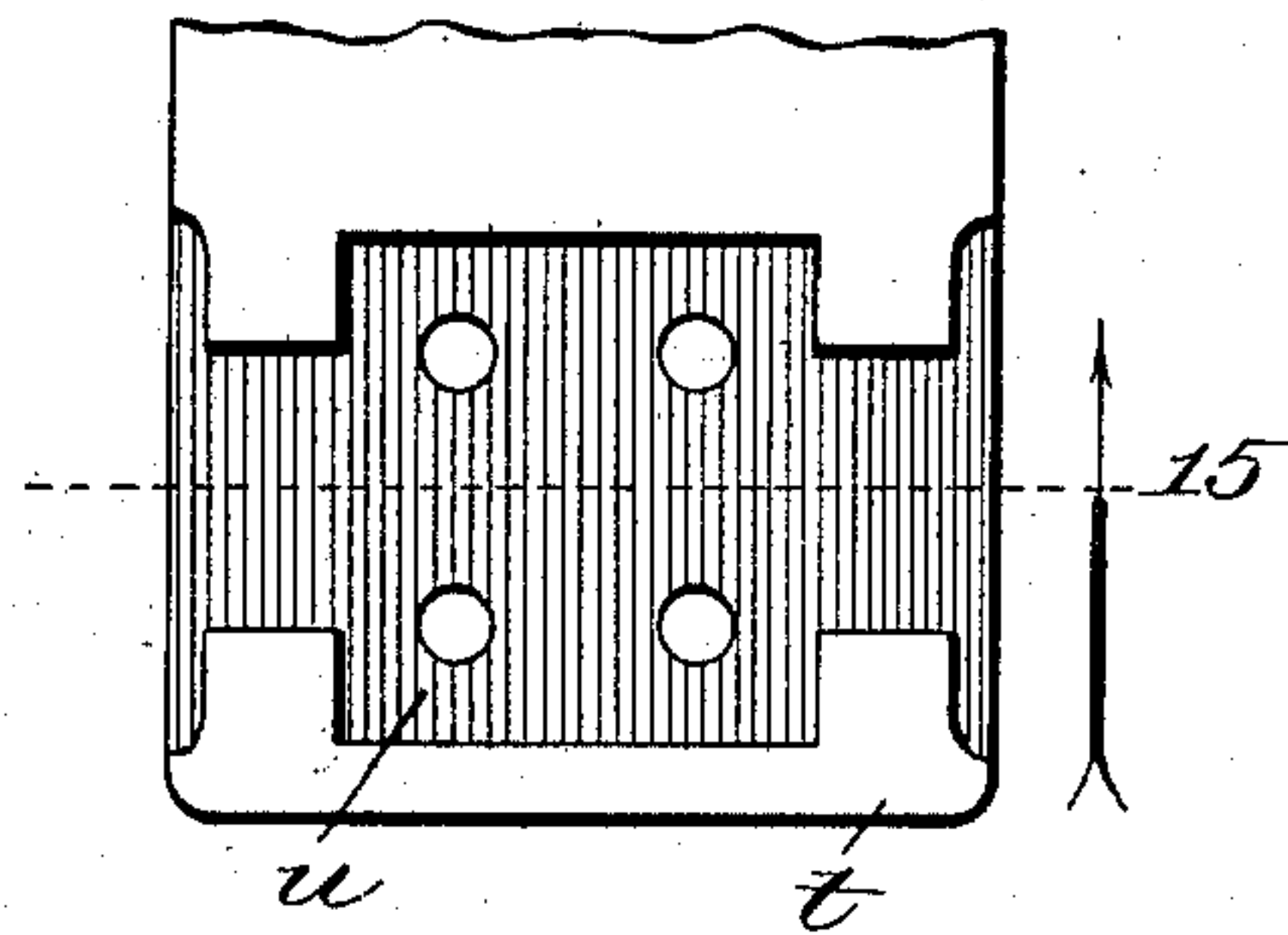


Fig. 15.

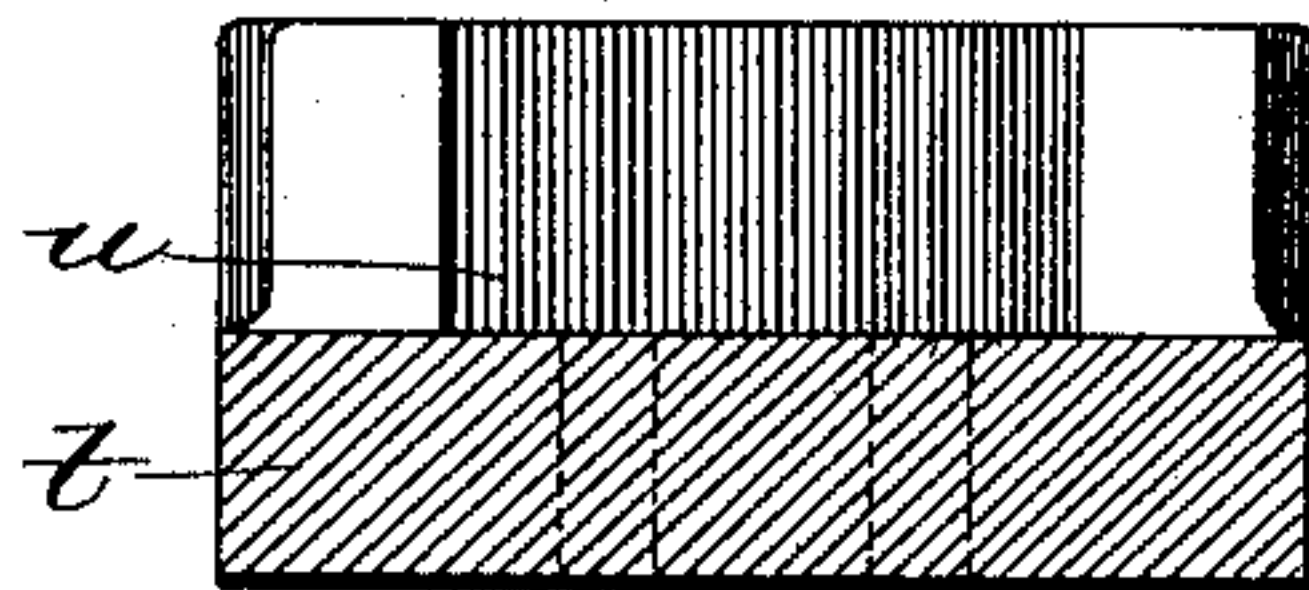


Fig. 16.

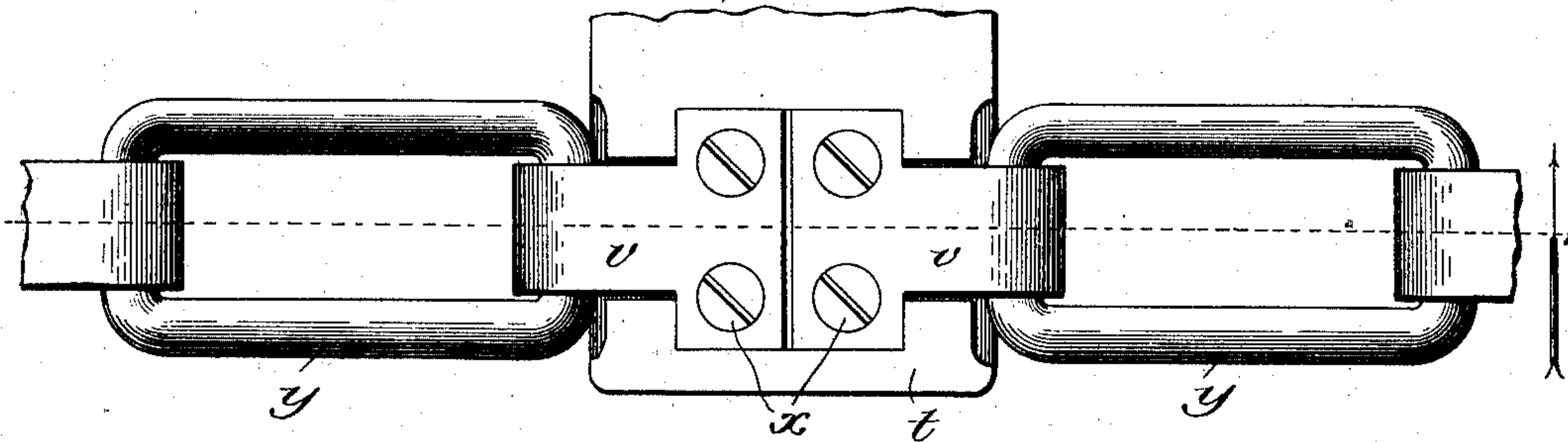
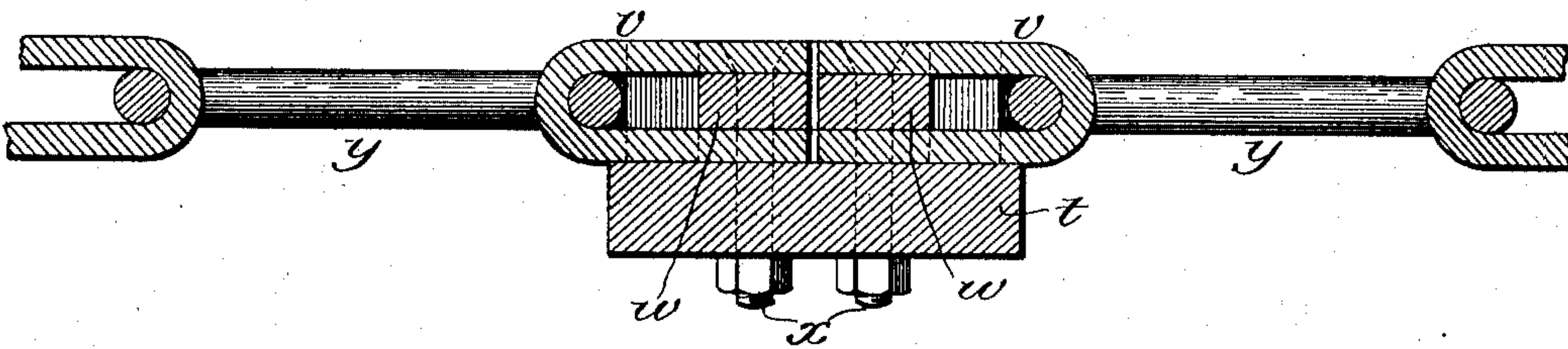


Fig. 17.



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# UNITED STATES PATENT OFFICE.

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## RABBLE-CARRIAGE.

SPECIFICATION forming part of Letters Patent No. 706,755, dated August 12, 1902.

Application filed August 2, 1901. Serial No. 70,643. (No model.)

*To all whom it may concern:*

Be it known that I, DANIEL C. JACKLING, a citizen of the United States, residing at Republic, in the county of Ferry and State of Washington, have invented certain new and useful Improvements in Rabble-Carriages, of which the following is a specification.

This invention relates to that class of rabble-carriages which are adapted to be used in connection with ore-roasting furnaces, particularly those of the straight-line type, and relates especially to the construction and arrangement of the rabble-carriage with its rabbles and to the means by which such carriage is secured to the link belt that transmits the power and motion thereto, all of which will more fully hereinafter appear.

The principal object of the invention is to provide a simple, economical, and efficient rabble-carriage.

A further object is to provide a rabble-carriage with means by which it may detachably support the rabble-blades in operative position.

A further object of the invention is to provide simple, economical, and efficient mechanism by which the operating link belt may be easily connected to or disconnected from the rabble-carriage.

The invention consists principally in the combination of a body portion provided with a pair of bars extending longitudinally at each end thereof, a trolley-wheel rotatably mounted between each pair of bars, and means for detachably securing the rabble mechanism to the carriage.

The invention consists, further, in the combination of a body portion provided with a pair of bars extending longitudinally thereof, a pair of wheel washers secured in position between the ends of the pair of bars to form a ball-raceway, an annular wheel-rim surrounding such washers and completing the raceway, and a plurality of antifriction-balls interposed between the washers and wheel-rim.

The invention consists, further, in the combination of a body portion provided with a pair of trolley-wheels, a laterally-projecting tubular portion, a rabble-bar, and means for detachably securing the rabble-bar to the tubular portion.

The invention consists, further, in the combination of a body portion provided with a pair of trolley-wheels, a laterally-extending arm provided with a recess, a sprocket-chain, and clip mechanism removably secured in such recess for attaching and detaching the sprocket-chain thereto.

The invention consists, further and finally, in the features, combinations, and details of construction hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a transverse sectional elevation through an ore-roasting furnace, showing my improved rabble-carriages and attached mechanism secured thereto in operative position; Fig. 2, a broken plan view of a rabble-carriage and attached mechanisms constructed in accordance with these improvements; Fig. 3, an elevation of the mechanism shown in Fig. 2; Fig. 4, a similar view to that shown in Fig. 2 with the rabbles secured in the opposite manner to the rabble-carrying bar; Fig. 5, an enlarged plan view of a rabble-carriage constructed in accordance with these improvements; Fig. 6, a detail view of one end of the rabble-supporting bar detached from the carriage; Fig. 7, a cross-sectional view taken through the rabble-carriage on line 7 of Fig. 5; Fig. 8, a longitudinal sectional view of the rabble-carrying bar, taken on line 8 of Fig. 6; Fig. 9, a side elevation of the inner side of the rabble-carriage, partly in section and taken on line 9 of Fig. 5; Fig. 10, a plan view of a portion of the rabble-carrying bar with one of the rabble-blades secured in position; Fig. 11, a side elevation of one of the rabble-blades detached from the rabble-carrying bar; Fig. 12, a side elevation of one of the pushers, which is attached to one of the rabble-carrying bars, showing the same in section, used for pushing a door at the end of the furnace open and holding it from contact with the rabbles; Fig. 13, an enlarged sectional elevation of one of the trolley-wheels, taken on line 13 of Fig. 5; Fig. 14, an enlarged plan view of one of the laterally-projecting arms on the rabble-carriage, showing the socket that receives the clips for attaching and detaching the sprocket-chain thereto and therefrom; Fig. 15, a sectional view taken on line 15 of Fig. 14; Fig. 16, a similar view



to that shown in Fig. 14, with the attaching-clips and a portion of the link belt; and Fig. 17, a longitudinal sectional view taken on line 17 of Fig. 16.

5 In the art to which this invention relates it is well known that it is highly desirable to have a rabble-carriage and attached mechanisms of such construction and arrangement that the elements which go to form the entire combination of mechanisms may be attached to or removed from position with the least time and expense. To accomplish this end, my invention is principally designed.

10 In illustrating and describing these inventions, I have only illustrated and described that which I consider to be new—so far as these inventions are concerned—taken in connection with so much of the other mechanisms that go to form an ore-roasting furnace as will enable those skilled in the art to practice the same, leaving out of consideration such other mechanisms as do not form any part or portion of this specific invention and which, if described or illustrated herein, 20 would only tend to prolixity, confusion, and ambiguity.

In describing these improvements I will first describe the rabble-carriage proper. In this particular art it is desirable that a rabble-carriage be constructed and arranged so that the wheels that go to form the antifric- 30 tion devices upon which the mechanisms are carried may be held in operative position in such manner that they can be removed, renewed, or repaired, as seems desirable, and which are adapted to run without the use of lubricant. To accomplish this result, I make a rabble-carriage having a body portion *a* and provide it with a pair of longitudinal bars *b*, 40 extending substantially parallel from each end thereof. Between the ends of each of these pair of parallel bars is inserted a pair of disk or wheel washers *c*, held in position and in engagement with the parallel bars by means of bolt-and-nut mechanism *d*. (Shown particularly in Fig. 13.) These washers are constructed as shown in Fig. 13 and provide a raceway in which a plurality of antifric- 50 tion-balls *e* are inserted. To obtain the desired width of the raceway, shims *f* are provided and may be used whenever desired—that, is, if the right width can be obtained by the washers alone the shims are not used; but if a wider raceway be desired the desired 55 number of shims are inserted. To complete the trolley-wheels, an annular wheel-rim *g* is provided, of the shape shown in Fig. 13, which completes the raceway and is mounted on the antifric-tion-balls, as shown, so that in operation the washers remain fixed, while the wheel-rim rotates on the antifric-tion-balls.

To provide for the rabble mechanism by which the ore or material to be roasted is agitated, stirred, and moved along upon the 65 hearth *h* of the furnace, a rabble-bar *i* is provided, composed, preferably, of a tube or pipe, as shown particularly in Figs. 6 and 10.

Mounted upon this supporting-bar are a plurality of rabble-blades *j*, which are preferably formed in two parts, having hub portions *k*, as shown particularly in Fig. 11, which are securely held in position by means of the bolts *l*. One portion of the tubular hub *k* is provided with a dowel-pin *m*, arranged to enter a perforation or opening *n* in the supporting-bar, by which the rabble-blade is prevented from turning or having any movement independent of the bar. To detachably hold these bars in position, the rabble-carriage is provided with a laterally-projecting arm *o*, tubular-shaped at the end thereof, the tubular portion being made in two parts, one part rigidly secured to the arm, and the other part, *p*, forming a cap, which may be removed or inserted in position at will. This cap is held in position by means of the bolts *q*. (Shown particularly in Fig. 9.) The rigid or immovable part of the tubular portion is provided with two dowels *r*, also arranged to enter the perforations *n* in the rabble-supporting bar and hold the bar from any movement independent of the rabble-carriage.

As shown in Figs. 2 and 3, the rabble-blades are inclined—in other words, are arranged at an angle to their line of motion—one half of the rabble-blades, those to the left-side of the center, (see Fig. 2,) being inclined in one direction, while the blades on the other half of the bar or to the right of the center are inclined in an opposite manner.

In Fig. 4 the blades are shown inclined in an opposite direction from the blades shown in plan view in Fig. 2, the arrangement being such that the material is agitated—that is, thrown alternately to the side of the furnace and to the center thereof—as it is being pushed along. The supporting-bar is also provided with a number of pushers *s*, which, however, form no particular part of this invention and need no further description here. It is also desirable that some mechanism be provided by which the sprocket-chain that transmits the power and motion to the rabble-carriage may be easily and quickly attached or detached from the rabble-carriage. To accomplish this result, the rabble-carriage is provided with a second laterally-projecting arm *t*, containing a pocket or socket *u* in the upper surface thereof. Arranged in this pocket is a pair of clips *v*, T-shaped in plan view, so that the T-heads thereof may contact the shoulders in the pockets *u*. Each clip has arranged between the free ends thereof a block *w*, and all of the parts are perforated, as shown in Figs. 14, 15, and 16, so that a pair of stove-bolts *x* may be passed therethrough to securely lock the clips in position. In Figs. 16 and 17 the clips are shown in position, each clip being connected to one end or link of the sprocket-chain *y*, so that when it is necessary to insert or remove a link in position or insert or remove a chain from the rabble-carriage all that is necessary to do is to remove



the bolts *x*, and thereby the chain, all of which can be done simply and economically.

In order to provide for the contraction and expansion of the bar, due to changes of temperature traveling in and out of the furnace, it will be seen that one set of wheel-rims—those shown to the left of Fig. 1—is provided with flanges where they are mounted upon the tracks 20, while the wheel-rims to the right of such figure are not so provided, but are left, so far as the periphery thereof is concerned, in smooth cylindrical surfaces. In this way the right-hand side of the rabble-supporting mechanism may move laterally, so far as the carriage is concerned, and yet in no way interfere with the operations of the mechanisms.

I claim—

1. In a rabble-carriage of the class described, the combination of a body portion provided with a pair of bars extending longitudinally thereof, a pair of wheel washers secured in position between the ends of the pair of bars to form a ball-raceway, an annular wheel-rim surrounding such washers and completing the raceway, and a plurality of antifriction-balls interposed between the washer and wheel-rim, substantially as described.

2. In a rabble-carriage of the class described, the combination of a body portion provided with a pair of longitudinal bars, a pair of trolley-wheels mounted between the ends of the longitudinal bars, a laterally-projecting tubular portion made in two parts, means for clamping such parts together, and a rabble-bar secured in such clamping tubular portion, substantially as described.

3. In a rabble-carriage of the class described, the combination of a body portion provided with a pair of longitudinal bars, a pair of trolley-wheels—one mounted between each end of the longitudinal bars, a laterally-projecting tubular portion made in two parts extending inwardly from such carriage, means for clamping such parts together, a tubular rabble-bar mounted in the clamping portions of the carriage, and rabble-blades secured to such tubular bar extending upwardly and downwardly therefrom and at an angle to their line of motion, substantially as described.

4. In a rabble-carriage of the class described, the combination of a body portion provided with a pair of longitudinal bars,

trolley-wheels composed of fixed washers and movable wheel-rims and antifriction-balls interposed between the same and secured between each end of the parallel bars, a laterally-projecting tubular portion on such body portion made in two clamping parts—one movable and one fixed, bolt-and-nut mechanism for securing such parts together, a tubular rabble-bar, rabble-blades on such tubular rabble-bar extending upwardly and downwardly therefrom and provided with a cylindrical hub portion, and dowel mechanism for securing the rabble-carriage and rabble-blades to the tubular bar so as to prevent their having independent motions, substantially as described.

5. In a rabble-carriage of the class described, the combination of a body portion provided with trolley-wheels, an outwardly and laterally extending arm provided with a recess, a sprocket-chain, and clip mechanism removably secured in such recess for attaching and detaching the sprocket-chain thereto and therefrom, substantially as described.

6. In a rabble-carriage of the class described, the combination of a body portion provided with trolley-wheels, laterally-extending arms forming a part thereof and extending outwardly therefrom provided with a shouldered recess in one surface thereof, a sprocket-chain, a pair of T-shaped clips removably secured in such recess, a block interposed between the ends of each clip, and bolt-and-nut mechanism for securing the clips and laterally-projecting arm of the rabble-carriage together, substantially as described.

7. In a rabble-carriage of the class described, the combination of a body portion provided with a pair of flanged trolley-wheels, a bar detachably secured thereto and provided with a plurality of rabble-blades, a second carriage provided with a pair of trolley-wheels having smooth peripheral cylindrical surfaces to permit expansion and contraction of the tubular bar, a laterally-projecting tubular portion on each of such body portions made in two clamping parts—one movable and one fixed—on which the rabble-bars are detachably secured, and bolt-and-nut mechanism for securing such parts together substantially as described.

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