

977,344.

F. THOMPSON.
RIVETING MACHINE.
APPLICATION FILED APR. 6, 1909.

Patented Nov. 29, 1910.

3 SHEETS—SHEET 1.

Fig. 1.

Witnesses:
W. P. Bond
Ben. H. Benning

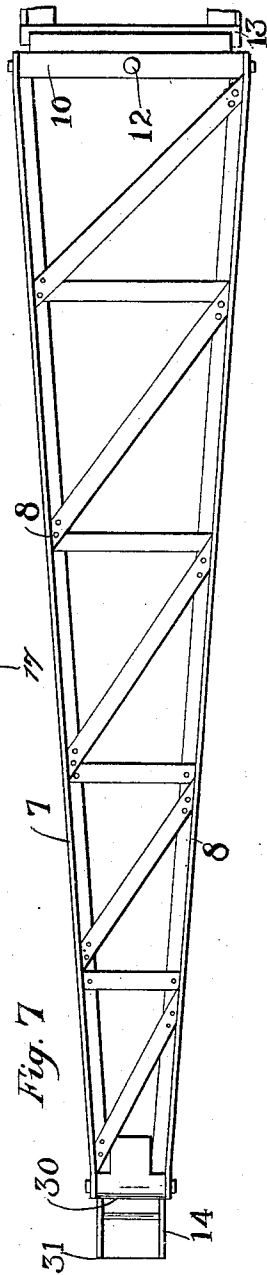
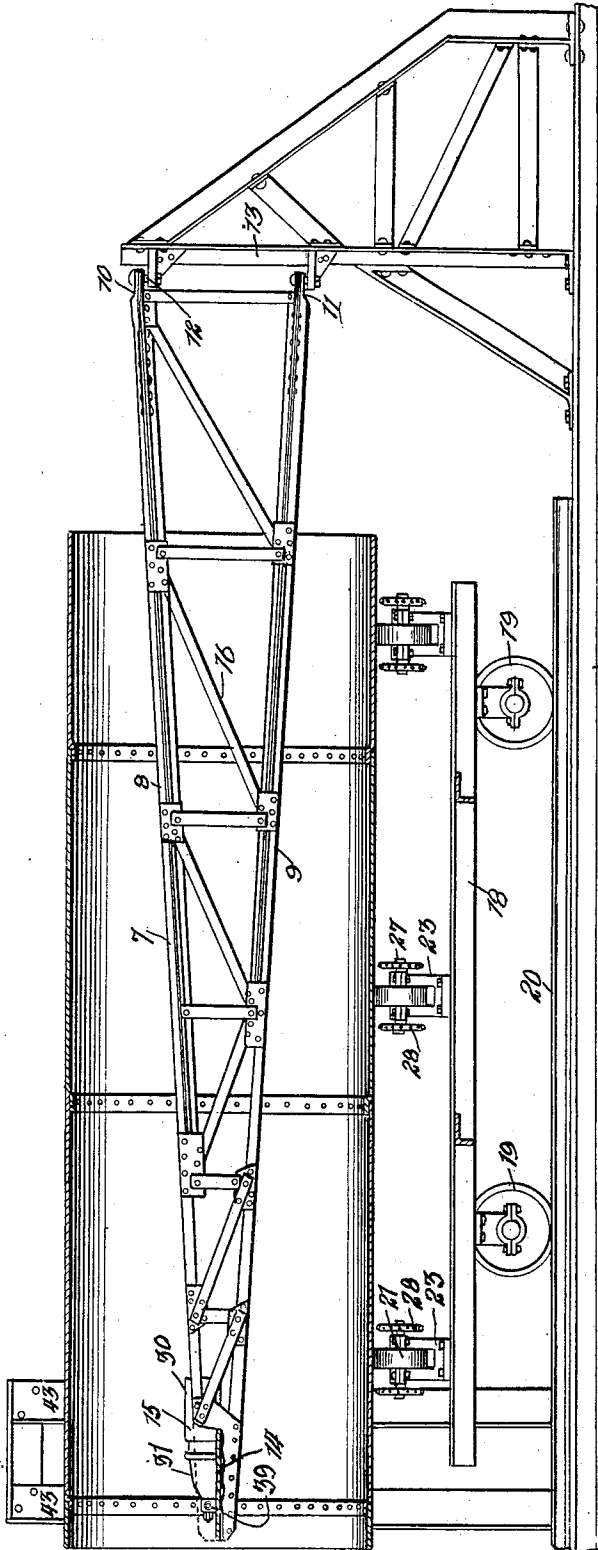


Fig. 7

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3 SHEETS—SHEET 2.

Fig. 2.

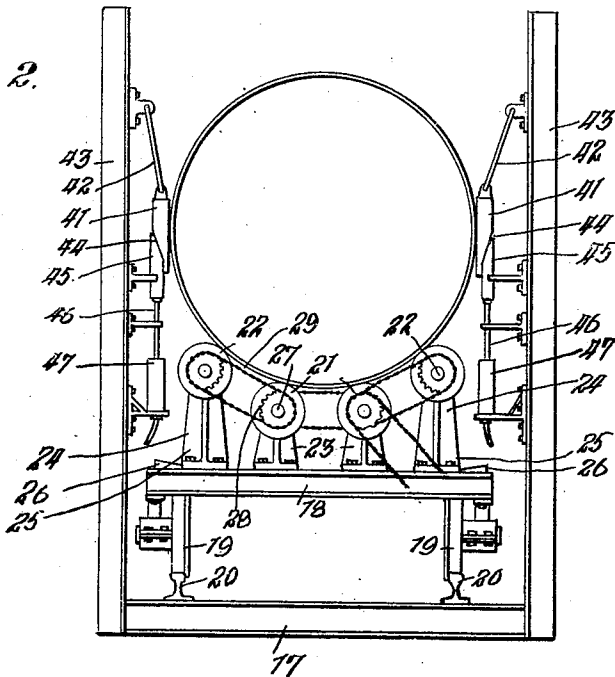
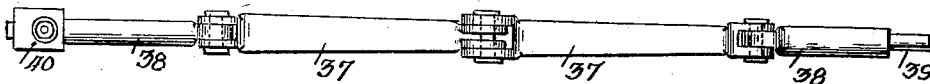


Fig. 6.



Witnesses:

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Curson W. Banning

Inventor:
Frank Thompson

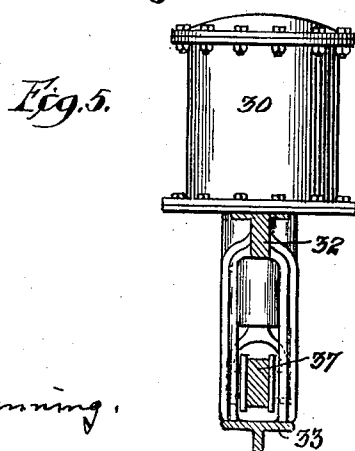
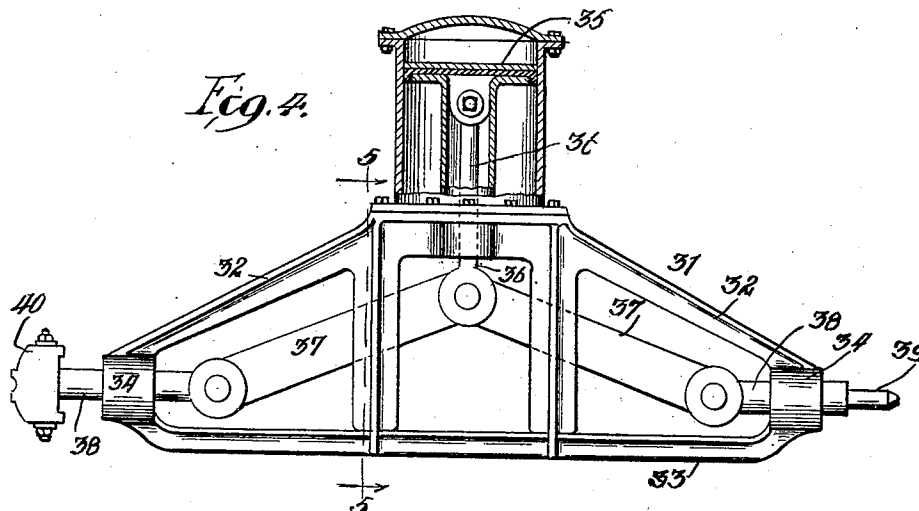
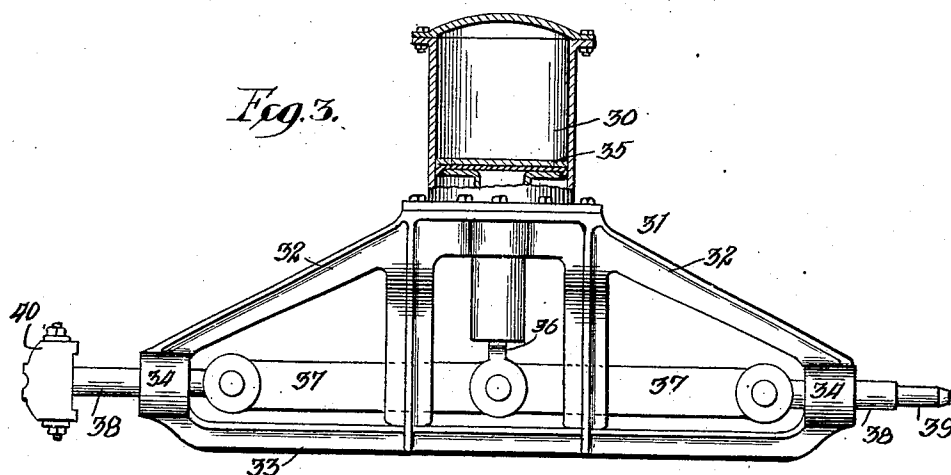
by [Signature] [Signature]
Attys.

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3 SHEETS—SHEET 3.



Witnesses:

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UNITED STATES PATENT OFFICE.

FRANK THOMPSON, OF CHICAGO, ILLINOIS.

RIVETING-MACHINE.

977,344.

Specification of Letters Patent.

Patented Nov. 29, 1910.

Application filed April 6, 1909. Serial No. 488,269.

To all whom it may concern:

Be it known that I, FRANK THOMPSON, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Riveting-Machines, of which the following is a specification.

The machine or structure of the present invention is intended and adapted more particularly for the riveting of large and unwieldy structures, such as tanks or boilers; and the object of the invention is to so construct, arrange and mount the riveting devices that they may act against the interior of the tank walls at a very considerable distance from the mouth of the tank, being supported and sustained from a position entirely outside of the tank, so that the tank can be moved longitudinally without difficulty or delay.

A further object of the invention is to so mount and support the tank that its position, with respect to the riveting devices, can be readily shifted from time to time as the riveting operation progresses.

The invention relates particularly to the supporting structure for the riveting mechanism; to the riveting mechanism itself; to the means provided for supporting and moving the tank; and to the structure as a whole and the individual parts thereof. And the invention finally consists in the features of construction and combination of parts hereinafter described and claimed.

In the drawings, Figure 1 is a side elevation of the entire structure, showing the tank in section; Fig. 2 an end elevation of the same; Figs. 3 and 4, details of the riveting mechanism in different positions of adjustment; Fig. 5 a cross sectional elevation of the riveting mechanism, taken on line 5-5 of Fig. 4; and Fig. 6 an edge elevation of the toggles controlling the movements of the riveter and dolly and Fig. 7, a plan view of the supporting framework.

Referring to Fig. 1, the riveting mechanism is supported and carried by a framework 7 which comprises companion top rails 8 and bottom rails 9. The rails are so arranged as to diverge vertically toward their outer or pivoted ends and converge horizontally in the same direction. The convergent ends of the upper and lower rails unite into pivotal tongues 10 and 11, respectively, provided with pintles 12 which are supported from an upright structure 13 of sufficient

size and rigidity to sustain the frame-work despite its great length and weight.

The rails composing the frame-work, at its inner and unsupported end, converge vertically and diverge horizontally to provide for the reception of a floor or platform 14 which carries a riveter 15. The rails of the frame-work are spaced and united into an integral structure by means of the necessary diagonal braces 16 which are located and arranged according to the requirements of engineering practice to withstand the strains to which the parts are intended to be subjected.

The upright structure 13 rests upon and is rigidly secured to a pair of sills or beams 17 which extend forwardly under the frame-work and are intended to anchor the upright or supporting structure 13 against forward tilting or tipping due to the weight supported. The tank or boiler is carried by a truck 18 mounted upon wheels 19 which run upon a track 20 so located as to permit the tank or boiler to be moved longitudinally with respect to the riveting mechanism carried at the end of the frame-work. The truck is provided with inner and outer supporting rollers 21 and 22, respectively. The inner rollers 21 are journaled upon a pair of rigidly mounted journal supports 23, and the outer rollers 22 are mounted upon a pair of outer journal supports 24 which are loosely connected by means of tie plates 25, with the frame of the truck in such manner as to permit wedges 26 to be driven under the base of each of the supports from the outer side thereof so as to tilt the supports inwardly and thereby adjust the rollers with respect to tanks or boilers of differing diameter.

Each of the rollers is mounted upon a shaft 27 which carries a sprocket wheel 28, and all or some of the sprocket wheels are rotated in unison by means of sprocket chains 29 driven from any source of power, not shown, which arrangement permits the tank or boiler to be rotated from time to time, as controlled by the operator, in order to rotate the boiler as the riveting progresses.

It will be understood that such of the rollers only as are required may be positively driven in order to accommodate the particular class of work desired to be riveted.

The riveting mechanism, which is mounted upon the platform, at the inner end of the

frame-work, comprises a cylinder 30 which is bolted or riveted to a laterally elongated frame 31 comprising inner and outer arms 32 and 33, respectively, which arms, at their 5 outer ends, unite in a pair of heads 34. The cylinder has located therein a trunk piston 35 which has pivoted thereto a piston rod 36, the outer end of which is pivoted to the connected inner ends of a pair of links 37, 10 the outer end of each of which links is pivoted to a shank 38 which is slidably mounted through one of the heads 34. One of the shanks carries, at its outer end, a riveting tool 39, and the other shank carries, at its 15 outer end, a dolly 40. The construction is such that when the piston is driven forward, as shown in Fig. 3, the riveting tool and the dolly will be outwardly projected in position to engage the inner walls of the 20 tank on opposite sides.

The riveting tool coöperates with a backing block 41 which, in the form shown, is hung from a link 42 carried by an upright 43 located alongside of the track upon which 25 the truck runs and immediately adjacent to the inner or forward end of the frame-work. The backing block, as shown, is provided, on its rear face, with a beveled or cam surface 44, which is engaged by a wedge 30 45 carried by a piston 46 adapted to be upwardly moved from a cylinder 47, the construction being such that an upward movement of the wedge will swing the backing block into close engagement with the outer 35 surface of the tank and in position to support the rivet from without when subjected to the pressure of the riveting tool from within. The mechanism previously described is duplicated, on each side of the 40 track, for purposes of convenience, and holding the boiler in place.

It will be understood that the cylinders 30 and 47 are both supplied with a suitable medium under pressure, as compressed air, 45 from any suitable source of supply under the control of the operator.

In use, the tank or boiler to be riveted is mounted upon the truck and rests upon the center rollers which are held in fixed position. 50 In order to firmly position the tank or boiler, the outer rollers can be swung inwardly by driving in the wedges 26, after which the tank or boiler is in condition to be riveted. After a rivet has been inserted, 55 the operator, who preferably occupies the platform 14 at the inner end of the frame-work, will admit pressure to the piston 47, which throws the backing block 44 into position to engage the head of the rivet, after 60 which the operator admits pressure to the cylinder 30, and, with the admission of pressure, the toggles will be spread, thereby simultaneously projecting the dolly and the riveting tool, the former of which engages 65 the off wall of the tank, while the riveting

tool exerts the necessary pressure on the projecting end of the rivet to spread or upset the rivet and complete the operation. By throwing the dolly into engagement with the off wall of the tank, the necessary backing 70 is given to the riveting tool, which permits the frame-work to be hung in the manner described, without the necessity for furnishing any reinforcement against lateral movement, which reinforcement would be 75 necessary if the riveting tool were unsupported by the dolly. In fact, it would be practically impossible, in the case of a long frame-work, to furnish sufficient external support to withstand the riveting pressure 80 exerted at a very considerable distance from the supported end of the arm. By providing the dolly and actuating it in unison with the riveting tool, a sufficiently rigid support for the frame-work can be furnished, and the tank can be easily revolved 85 after the completion of each riveting operation.

Furthermore, the construction is one which permits the frame-work to be swung 90 to a considerable degree out of parallelism with the axis of the tank, which is desirable under special conditions. By reason of the location of the riveting devices, it is possible to rivet to the extreme end of the 95 tank or boiler, which is necessary or desirable in riveting the head to the tank or boiler.

Although the invention has been described with considerable particularity as to detail, 100 it is obvious that many of the features described could be changed or modified, and the location and arrangement of the parts changed, without departing from the spirit 105 of the invention.

What I claim as new and desire to secure by Letters Patent is:

1. In a device of the class described, the combination of a supporting structure, a frame-work laterally extending therefrom, 110 riveting devices carried by the frame-work, a wedge-shaped backing block held against up and down movement and adapted to bear against the outside of the work adjacent to the riveting device, and a wedge-shaped block operably connected to mechanism to actuate it and force the backing 115 block into engagement with the work, substantially as described.

2. In a device of the class described, the 120 combination of a supporting structure, an arm laterally extending therefrom, riveting devices carried by the arm, a movable support for the work located below the arm, power driven rollers mounted upon said 125 support for rotating the work, and means for adjusting the rollers, substantially as described.

3. In a device of the class described, the combination of a supporting structure, an 130

arm laterally extending therefrom, riveting devices carried by the arm, a movable support for the work located below the arm, rollers mounted upon said support, said
5 rollers being located with respect to one another to form a semi-cylindrical seat for the work, means for revolving said rollers, whereby the work is rotated about its axis, and means for adjusting the rollers to vary the arc of the semi-cylindrical seat for the 10 work provided thereby, substantially as described.

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Witnesses:

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