

No. 750,644.

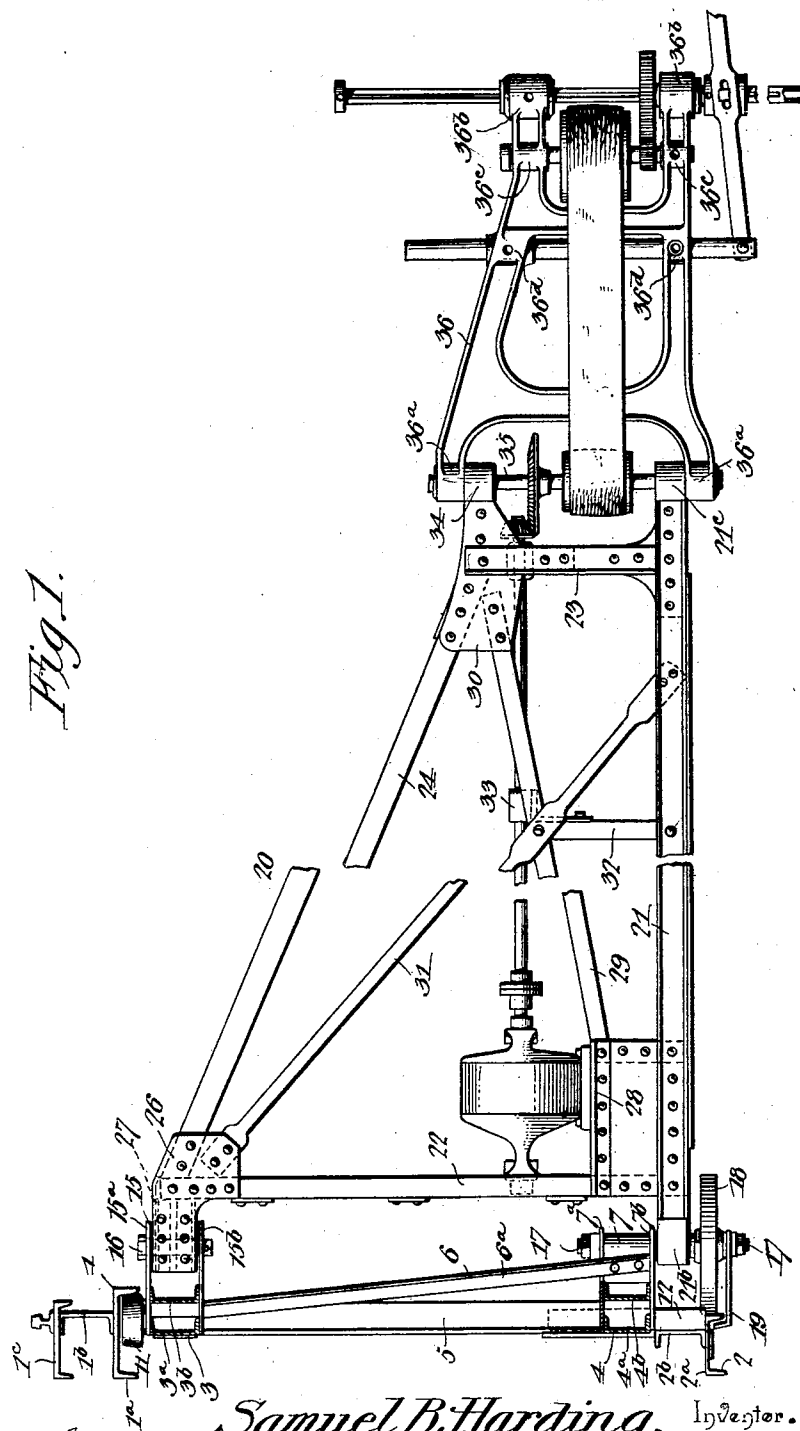
PATENTED JAN. 26, 1904.

S. B. HARDING.
TRAVELING CARRIER FOR METAL WORKING MACHINES.

APPLICATION FILED JUNE 9, 1903.

NO MODEL.

4 SHEETS—SHEET 1.



Witnesses
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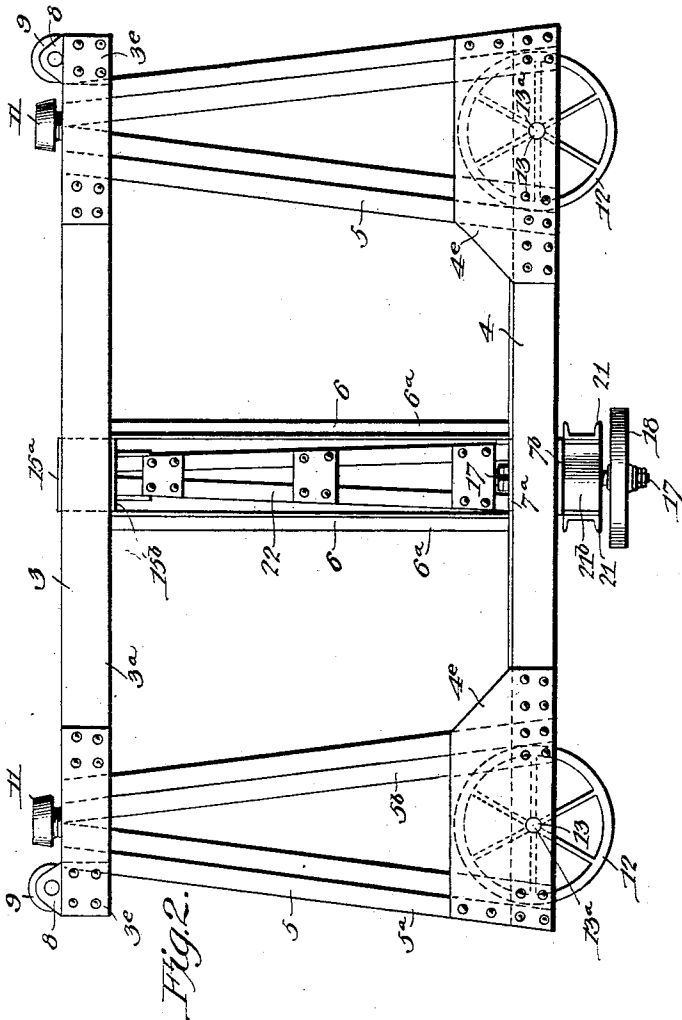


Fig. 2.

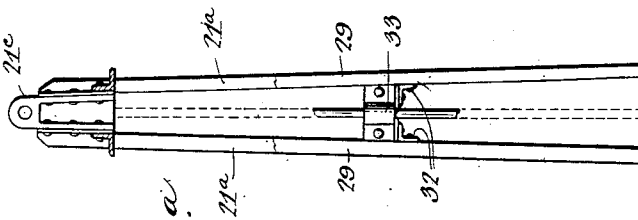


Fig. 3a.

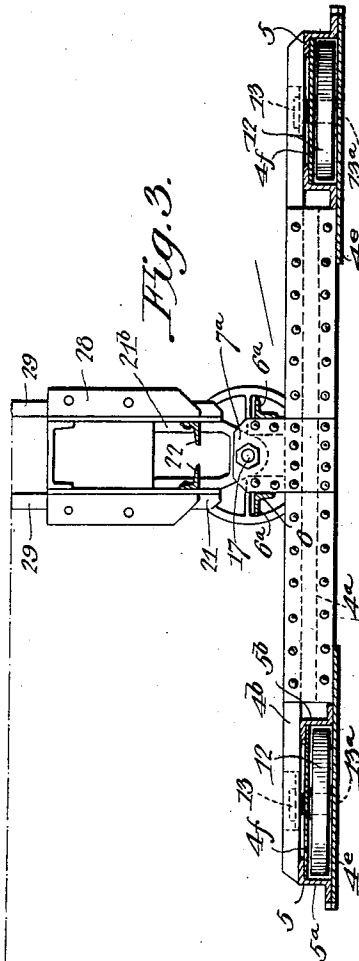


Fig. 3.

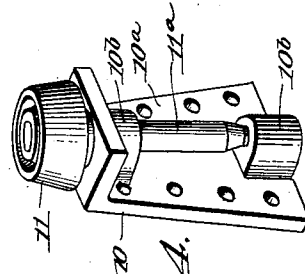


Fig. 4.

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4 SHEETS—SHEET 3.

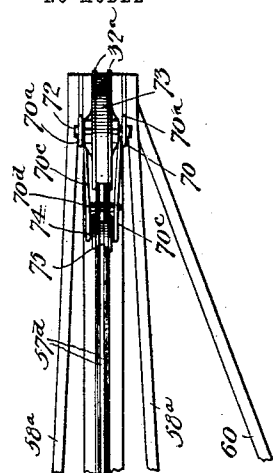


Fig. 6.

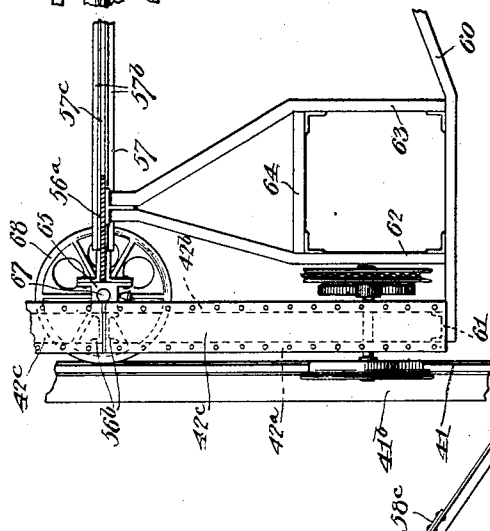
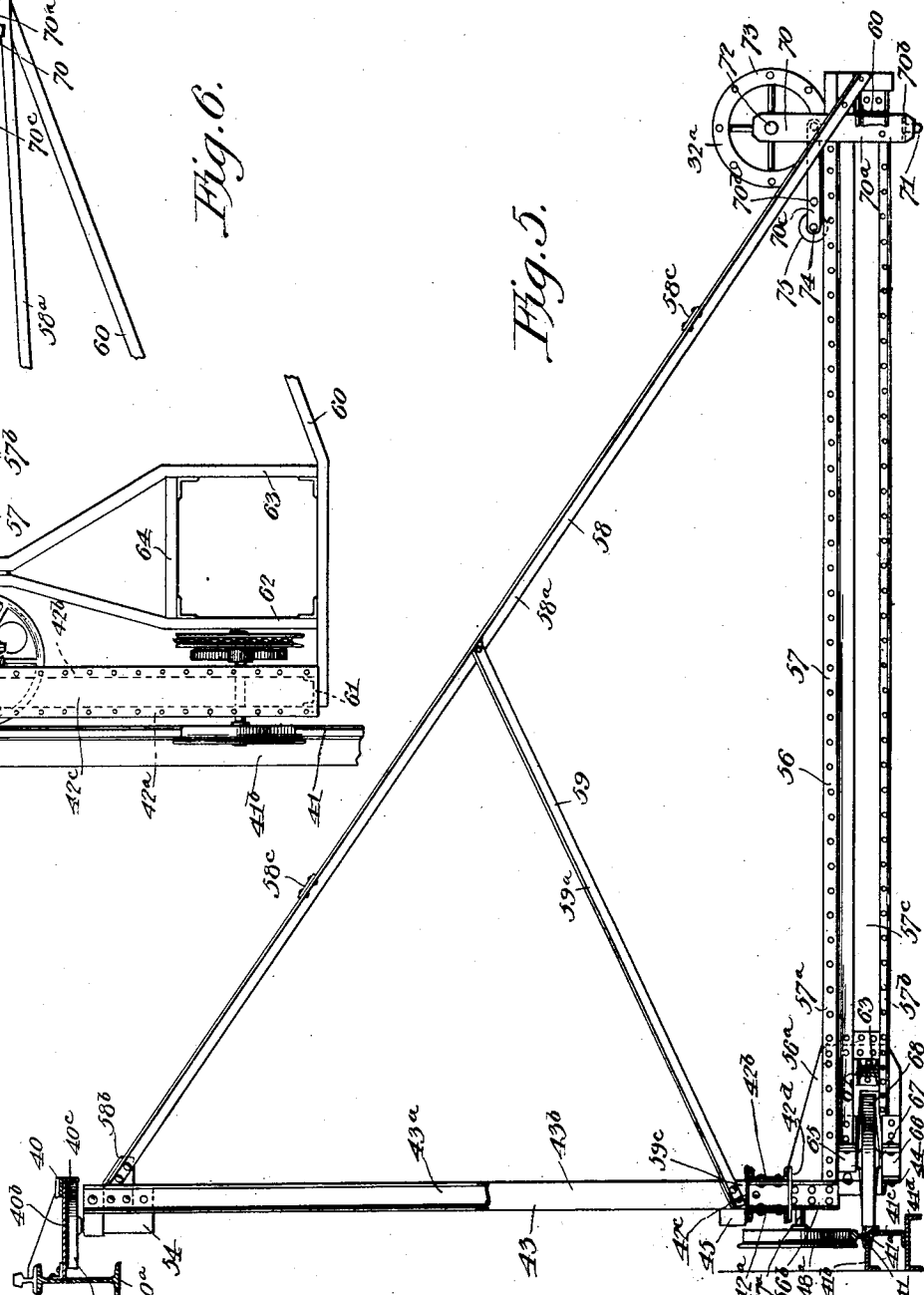


Fig. 5.



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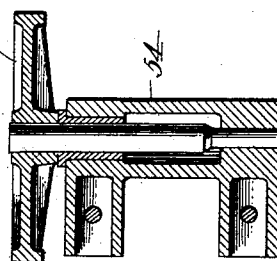
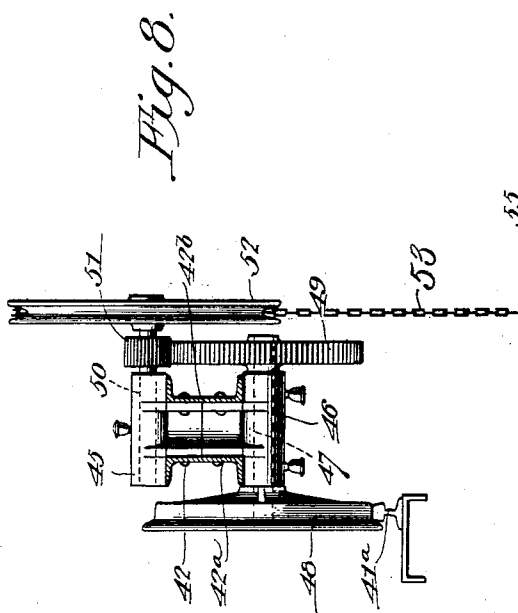
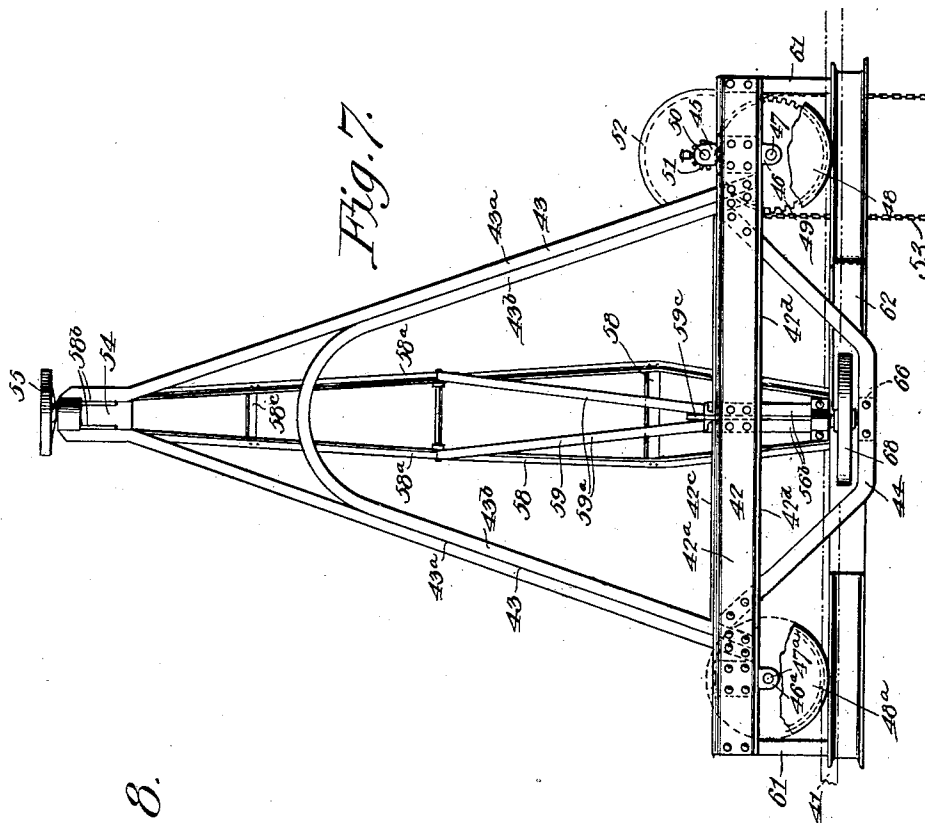
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TRAVELING CARRIER FOR METAL WORKING MACHINES.

APPLICATION FILED JUNE 9, 1903.

NO MODEL.

4 SHEETS—SHEET 4.



Witnesses
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UNITED STATES PATENT OFFICE.

SAMUEL B. HARDING, OF WAUKESHA, WISCONSIN.

TRAVELING CARRIER FOR METAL-WORKING MACHINES.

SPECIFICATION forming part of Letters Patent No. 750,644, dated January 26, 1904.

Application filed June 9, 1903. Serial No. 160,766. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL B. HARDING, a citizen of the United States, residing at Waukesha, in the county of Waukesha and State of Wisconsin, have invented a new and useful Traveling Carrier for Metal-Working Machines, of which the following is a specification.

This invention relates to traveling carriers for metal-working machines, and more especially to carriers adapted to travel along rails or tracks mounted on vertical walls or columns.

It is a desideratum of prime importance in iron and steel structural work involving the assemblage of a considerable number of elements of large size to have the reaming, riveting, and drilling machines employed in assembling the elements susceptible of easy movement, so as to bring the tools operated by machines into proper relation with the work without shifting the position of the work, which owing to the size of the elements and the fact that they are only partially secured in position is a matter of considerable difficulty.

The object of this invention, broadly stated, is to provide suitable carriages for such metal-working machines as reamers and riveters which are adapted to travel upon suitable tracks rigidly supported upon vertical walls or columns, the carriages being shifted in position by hand, electric, or steam power, as may be preferred.

In describing the invention reference will be had to the accompanying drawings, forming a part of this specification, in which are illustrated two different embodiments of my invention, one being specifically adapted for supporting a riveting-machine and the other being adapted to support a reaming-machine, it being understood that changes may be made in the form, proportions, and exact mode of assemblage of the elements exhibited in each form of embodiment of the invention without departing from the spirit of the invention or sacrificing any of its advantages.

In the drawings, Figure 1 is a view, chiefly in side elevation and partly in section, of a carrier for a reaming-machine, parts being broken away to save space. Fig. 2 is a rear

elevation of the carrier shown in Fig. 1, the carrier being detached from the tracks and the guard for retaining the carrier on the tracks being removed. Fig. 3 is a plan view of the lower horizontal member of the carrier-frame and the rear portion of the horizontal member of the supporting-arm. Fig. 3^a is a continuation of the horizontal member of the supporting-arm shown in Fig. 3. Fig. 4 is a detail view showing the casting for supporting one of the tapering thrust-rolls at the top of the carrier-frame. Fig. 5 is a view, partly in side elevation and partly in section, of a carrier for a riveting-machine. Fig. 6 is a plan view of one side of the carrier shown in Fig. 5, the members being broken through at places to save space and part of the machine having been detached to avoid duplication. Fig. 7 is a rear elevation of the carrier shown in Fig. 5, parts of the supporting-wheels having been broken away to show the gears in front of them. Fig. 8 is a detail view showing the way in which the supporting-wheels and chain-wheels are mounted in the carrier-frame. Fig. 9 is a detail view in section, showing the mode of mounting the upper thrust-receiving wheel in the carrier-frame.

Corresponding parts are designated by the same characters of reference throughout the several views.

Referring to the drawings by reference characters, 1 designates the upper track, upon which the reaming-machine is adapted to travel, said track comprising a channel-beam 1^a, associated, preferably, with beams 1^b and 1^c, arranged above it in the manner shown. The channel-beam 1^a is arranged with the lateral flanges disposed downward, as shown, and the upper track 1 is adapted for support upon a vertical wall. (Not shown.)

2 designates the lower track, comprising a beam 2^a of less width than the beam 1^a used in the upper track and arranged with its flanges disposed downward. Beam 2^a is rigidly associated with a beam 2^b, arranged at right angles thereto, as shown, and it is to be understood that the lower track also is supported upon a vertical wall. (Not shown.)

The carriage, which travels on tracks 1 and 2, comprises top and bottom horizontal mem-

bers 3 and 4, standards 5 5 at the ends, and a central standard 6. The top horizontal member 3 consists of channel-bars 3^a and 3^b, spaced apart and having their flanges disposed forwardly, the said channel-bars being rigidly connected by means of suitable plates at the top and bottom of said bars, secured thereto by rivets. The bottom member 4 of the carriage is similar in construction to the top member 3, consisting of channel-bars 4^a and 4^b, secured together by top and bottom plates riveted to said bars.

The channel-bar 3^a, lying at the rear of the top frame member 3, is shorter than the bar 3^b at the front of said top member, terminating at the outer margins of the upper connecting-plates. Similarly bar 4^a is shorter than bar 4^b, terminating at the outer margins of the upper connecting-plates. The bar 3^a has bolted thereto at each end a plate 3^c, which forms a continuation of said bar, which extends outward as far as the end of the bar 3^b. Bar 4^a is also continued by means of a plate (designated 4^c) at each end thereof, which extends somewhat farther outward than the bar 4^b. Plates 3^c are of the same width as bars 3^a; but plates 4^c are considerably wider than bar 4^a and project upward above said bar to form shields at the back of wheels hereinafter to be described.

The end standards 5 each consist of two inclined Z-bars 5^a and 5^b, having their lower ends spaced apart and their upper ends in contact, as shown. Both of said bars are riveted to plate 3^c and the bar 3^b at their upper ends and to plate 4^c and bar 4^b at their lower ends. The central standard 6 consists, preferably, of angle-bars 6^a, attached at the top to the horizontal member 3 in any suitable manner and extending downward and inclining forward toward their lower ends, where they are riveted to a bracket 7, consisting, preferably, of plates 7^a and 7^b, riveted to bars 4^a and 4^b, as shown, and projecting forward therefrom.

The upper horizontal member 3 of the carriage-frame is provided at either end with bearings 8, in which are journaled the shafts of rolls 9, which rotate in a vertical plane and are adapted to contact with the under surface of channel-beam 1^a, which forms the principal portion of the upper track. In the space between the upper ends of Z-bars 5^a and 5^b are mounted castings 10, each of which has a base-plate 10^a and journals 10^b for the spindle 11^a of a roll 11, having a slight taper vertically, as shown, and adapted to contact with the forward flange of the channel-beam 1^a. The base-plate of each of said castings 10 is riveted to portions of Z-bars 5^a and 5^b in order to hold the same in practically rigid association therewith.

In the space between plates 4^c and the end portions of bar 4^b wheels 12 are rotatably mounted upon axles 13, each of which extends through an opening in bar 4^b and terminates

in a reduced threaded portion 13^a, which engages with a threaded socket formed therefor in one of the plates 4^c. The wheels 12 are shielded at the rear, as already explained, by plates 4^c, and in front they are shielded by small plates 4^f, riveted to portions of the Z-bars 5^a and 5^b.

On the top horizontal member 3, midway between the ends thereof, is provided a bracket 15, consisting of plates 15^a and 15^b, riveted to portions 3^a and 3^b and projecting forward therefrom, as best seen in Fig. 1. The bracket 15 lies directly over bracket 7, attached to lower horizontal member 4 of the carriage-frame. The bracket 15 supports a pivot-pin 16, and the bracket 7 supports a pivot-pin 17, the end of which extends downward a considerable distance below plate 7^b to form an axle for a wheel 18, which rotates in a horizontal plane and is adapted to contact with the forward surface of the front flange of channel-beam 2^a. To prevent disengagement of the wheel 18 with beam 2^a, a guard-plate 19 is secured upon the pivot-pin 17 below wheel 18 and has the rearward end thereof upturned behind the flange of the beam 2^a, against which wheel 18 lies.

Mounted to swing on the pivots 16 and 17 is the rear section of a supporting-arm, (designated generally as 20.) The rear section of the supporting-arm comprises a horizontal member 21, consisting of two outwardly-converging channel-beams 21^a, a casting 21^b at the rear of said arm, to which the beams 21^a are riveted, and a casting 21^c at the forward end, to which said beams are also riveted. The casting 21^b at the rear end of arm 21 is vertically pierced to form a journal, through which passes pivot-pin 17, and casting 21^c at the forward end of arm 21 is provided with a vertical opening to form journals for a shaft to be hereinafter described. The casting 21^b at the rear end of arm 21 is disposed between the bracket 7 and wheel 18, this arrangement being adopted in order to provide effective support for both ends of the pivot-pin and prevent its yielding under the thrust imposed thereon by supporting-arm 20.

Rising from the rear end of arm 21 is a standard 22, composed, preferably, of angle-bars spaced apart and connected by means of plates riveted thereto, as shown. At the forward end of arm 21 is a shorter standard 23, also composed of angle-bars, and at the upper ends said standards 22 and 23 are connected by an oblique stay 24, made up of angle-bars spaced apart and connected by lacing. At the upper end of standard 22, where it is joined to oblique stay 24, there are provided vertical plates 26, secured one on either side of said standard and said stay and projecting rearwardly therefrom. Between the plates 26 are disposed horizontal plates 27, the whole of said structure being rigidly associated by means of rivets and forming a journal through

which passes the pivot-pin 16, supported in bracket 15 on the upper horizontal member 3 of the carriage-frame. Upon the arm 21, at the rearward end thereof, is provided a platform 28 for supporting a motor for driving a reaming-machine, diagrammatically illustrated in the drawings. Extending forward and obliquely upward from platform 28 is a brace 29, consisting, preferably, of spaced angle-bars attached at the forward end to plates 30, riveted to the standard 23 and stay 24.

Extending obliquely downward and forward from plates 26 to arm 21 is a stay 31, formed, preferably, of pipes of suitable diameter flattened at the ends and at a point intermediate thereof where said pipes cross the brace 29. To give added stability to the rear section of supporting-arm 20, uprights 32 are riveted to arm 21 and at their upper ends to brace 29 and stay 31 at their point of intersection. The uprights 32 also serve to support a bearing-bracket 33 for the shaft used in driving the reaming-machine.

Between the plates 30 at the forward end of stay 24 is mounted a casting 34, immediately above casting 21 at the forward end of arm 21, and extending through openings provided in these castings is a shaft 35, upon which is pivoted the forward section of arm 20, which is preferably cast integral and consists of the member 36, having journals 36^a at the rear for engagement with pivot-pin 35, journals 36^b at the front end for a reaming-shaft, journals 36^c for the shaft employed in driving the reaming-shaft, and guideways 36^d, in which is adjustably mounted a sliding member for supporting the controlling-lever of the machine.

As the parts of the reaming-machine proper do not enter into this invention, they have merely been shown diagrammatically to indicate the way in which said machine may be supported upon the traveling carrier described, and no detailed description thereof appears to be necessary or desirable.

In Figs. 5, 6, 7, 8, and 9 is illustrated a carrier adapted for use with a riveting-machine, in which there are certain constructive features common to the carrier for a reaming-machine already described and other features specifically adapted to a carrier for a riveting-machine, all of which will hereinafter appear.

The carrier for the riveting-machine travels upon tracks 40 and 41, the track 40 comprising, preferably, a supporting-beam 40^a, a horizontal plate 40^b, attached to the supporting-beam, and a dependent flange formed by securing an angle-bar 40^c to the forward edge of the plate 40^b. The lower track 41 comprises a double T-rail 41^a, supported upon a channel-bar 41^b, which has its lateral flanges turned downward, and supporting channel-bars 41^c and 41^d, placed below the bar 41^b, as shown. These tracks are both supported upon columns or on a vertical wall. (Not shown.)

The carriage-frame in this form of embodiment of the invention comprises a horizontal member 42, which consists, preferably, of two oppositely-disposed channel-bars 42^a and 42^b, spaced apart and covered at the top with plates 42^c throughout the greater portion of their length and connected by cross-plates 42^d on the lower surface thereof, as shown. Rising from the horizontal member 42, near each end thereof, is an inclined member 43, which leans toward the middle point of the horizontal member 42. The inclined members 43 each consist, preferably, of two oppositely-disposed channel-bars 43^a and 43^b. The bars 43^a are extended upward until they lie almost in contact, and between their upper ends, which are bent into vertical position, is supported a casting which affords bearings for the shaft of a wheel which travels on the track 40. The channel-bar 43 of each of the inclined members 43 is bent away from the bar 43^a, with which it is associated at a point somewhat above the middle of the inclined members 43, and is arched over, as shown. The two bars 43^b are connected at the middle of the arch or formed integral, the arch being made by bending. Beneath the horizontal member 42 of the carriage there is supported a bent angle-bar 44, attached to the horizontal member 42 by rivets or otherwise, which serves to support in part an arm, which will presently be described.

At one end of horizontal member 42 castings 45 and 46 are rigidly secured between the channel-bars 42^a and 42^b. Each of said castings is provided at the portion projecting beyond the bars 42^a and 42^b with a journal. In the journal provided at the bottom of casting 46 is rotatably mounted a spindle 47, to one end of which is rigidly fastened a wheel 48, adapted to travel upon double T-rails 41^a. At the other end of the spindle is rigidly fastened a gear-wheel 49 of nearly the same diameter as wheel 48. In the journal provided at the top of casting 45 there is rotatably mounted a spindle 50, which has rigidly attached thereto a small gear 51, which meshes with large gear 49, and a chain-wheel 52, over which travels a hand-chain 53, by means of which the carriage is caused to move along the tracks 40 and 41.

At the other end of the horizontal member 42 a casting 46^a, similar to casting 46, is rigidly mounted between the channel-bars 42^a and 42^b, and in the journal at the bottom of casting 46^a is rotatably mounted a spindle 47^a, having fixed thereon a wheel 48^a, exactly similar to wheel 48, already described, and adapted to travel upon double T-rails 41^a.

At the top of the carriage-frame between the inclined bars 43^a there is securely held a casting 54, which affords a journal for the spindle of a wheel 55, adapted to rotate in a horizontal plane and to travel along the flange provided therefor on the track 40.

Projecting forward at right angles with the carriage, the construction of which has already been described, is a supporting-arm, designated generally as 56 and comprising a horizontal portion 57, a main stay 58, a brace 59, and a lateral stay 60. The horizontal portion 57 of the arm is attached at its rearward end to the horizontal member 42 of the carriage-frame and to bent bar 44, which is disposed below member 42. In connecting the horizontal member 57 of the arm 56 to the carriage-frame there is preferably used an irregular plate 56^a, which is riveted to two channel-bars 56^b, supported vertically between the bars 42^a and 42^b at the middle thereof and securely riveted to said bars 42^a and 42^b, as best seen in Fig. 6. The irregular plate 56^a is attached by rivets to two Z-bars 57^a, which form the upper portion of the horizontal member 57 of the arm 56, and also to two angle-bars 57^b, which form the lower portion of the member 57. The irregular plate 56^a abuts at its forward end against a plate 57^c, to which Z-bars 57^a and angle-bars 57^b are riveted at short intervals throughout the remainder of their length. The Z-bars 57 do not lie immediately in contact with plate 57^c, however, but are preferably separated therefrom by strips 57^d in order to present at the upper edge of the Z-bars and the plate 57^c a surface sufficiently wide to form a suitable track for the trolley hereinafter to be described.

The main stay 58 of the arm 56 is composed of a pair of angle-bars 58^a, secured at their upper ends by suitable connection-plates 58^b to the inclined bars 43^a and riveted at their lower forward ends to the member 57. The angle-bars 58^a are spaced apart intermediate of their ends by cross-plates 58^c, riveted thereto, and about midway between their ends have bolted thereto the upper forward ends of angle-bars 59^a, forming the brace 59. The angle-bars 59^a are spread apart where they are joined to angle-bars 58^a, but converge toward their point of attachment to the carriage-frame, and are riveted at the lower rear end thereof to a plate 59^c, which projects upward from between the channel-bars 56^b, to which it is riveted.

The lateral brace 60 consists of a channel-bar attached at its rear end to a supporting-frame, presently to be described, and at its forward end to the end of member 57, to which it is riveted, as best seen in Fig. 6. The frame to which the rear end of lateral brace 60 is attached and of which, in fact, it forms a part is provided at one end of the carriage-frame, as seen in Figs. 6 and 7, and consists of a vertical channel-bar 61, riveted to the bars 42^a and 42^b, extending downward therefrom, a portion of the channel-bar 60, already mentioned, two channel-bars 62 and 63, attached at one end to channel-bar 60 and disposed at right angles thereto for a short distance, then bending toward each other, as

seen in Fig. 6, and being riveted at their inner ends to a projection provided on the arm 57. The channel-bars 62 and 63 are spaced apart at the points of bending by a channel-bar 64, and all of the parts of the frame are suitably connected by means of angle-plates at the corners.

At the rear end of member 57 there are provided castings 65 and 66, disposed one above the other and each provided with a journal for the spindle 67 of a wheel 68, which rotates in a horizontal plane and travels along the forward flange of the channel-bar 41^b, which forms a portion of the track 41. To the lower casting 66 is attached the bent angle-bar 44, which gives additional strength to the connection of member 57 with the carriage-frame.

As already stated in a preceding paragraph, the upper edges of Z-bars 57^a, the plate 57^c, and strips 57^d, placed between the Z-bars and the plate, form a track for the support of a trolley. The trolley comprises a frame 70, consisting of vertical plates 70^a, a transverse plate 70^b, riveted to the vertical plates at the lower ends thereof and supporting a shackle 71, and rearwardly-projecting arms 70^c, which are bolted to vertical plates 70^a, as shown. At the upper end of frame 70 is provided a spindle 72, which projects through suitable openings in the side plates 70^a and is secured therein by means of cotter-pins. Rotatably mounted upon the spindle 72 is a large trolley-wheel 73, having suitable lateral flanges 32^a to hold it in engagement with the track formed on member 57. Between the ends of the rearwardly-projecting arms 70^c, which are connected by a through-bolt 70^d, is a spindle 74, upon which is journaled a small trolley-wheel 75, with a central circumferential groove, which adapts it to engage with the track formed on the member 57.

The riveting-machine intended for use with the carriage described above is to be suspended from the shackle 71 at the lower end of the trolley-frame 70, and the frame 70, carrying the riveting mechanism, which may be of any suitable construction and operated by compressed air, steam, or electricity, will be moved along the track formed on the member 57 by hand or by any suitable means. (Not shown.)

It will be observed that in the form of carrier shown for supporting a reaming-machine in which the supporting-arm is pivoted upon a carriage, so as to swing laterally, the carriage is of substantially rectangular form and contacts with both the top and bottom rails at a plurality of points which are widely separated, thus preventing tilting of the carriage on the rails. It will also be noted that in order to prevent tilting on the rails of the carriage in the carrier for the reaming-machine vertically rotatable rolls are carried by the upper horizontal part of the carriage, as well as

the horizontally-rotatable rolls which contact with the downwardly-disposed flange of the upper track and hold the supporting-arm in suitable relation to the wall. In the form of carriage last described, however, the supporting-arm is held rigidly at right angles to the plane of the wall along which the carriage travels, and consequently there is no need for a frame of the form shown in the carriage for the reaming-machine. In the riveter-carriage only a single wheel is provided at the top thereof, which contacts with the flange on the upper track and holds the supporting-arm in horizontal position. The supporting-wheels 48 and 48^a and the single thrust-wheel 68 are all that are required at the bottom of the carriage to hold the arm in proper relation to the wall, as there is no tendency for the carriage to tilt laterally at any time.

In the construction of the two forms of carriers described steel bars of angular contour are used wherever possible in order to secure a maximum of strength with a minimum of weight; but it is to be understood that other materials may be used without departing from the spirit of the invention.

It is to be understood that in the construction of both forms of carriage for practical use suitable antifriction metal bushings or other devices for reducing friction at the bearing-surface will be employed and that all spindles will be provided with suitable lubricating devices. As these features of construction are mere mechanical details and do not enter into the invention, they have not been specifically described and have been illustrated diagrammatically only.

Having thus described the construction and operation of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination with upper and lower tracks, of a carrier comprising a frame, having an elongated base, supporting-wheels at the ends of said frame, a thrust-resisting wheel between said supporting-wheel, said wheels being adapted to travel upon the lower track, a wheel adapted to engage the upper track, and a supporting-arm projecting laterally from said carrier-frame.

2. The combination with upper and lower tracks, of a carrier comprising a frame, having an elongated base, supporting-wheels at the ends of said frame, a thrust-resisting wheel between and below said supporting-wheels, said wheels being adapted to engage the lower track, a wheel adapted to engage the upper

track, and a supporting-arm projecting laterally from said frame.

3. The combination in a traveling carrier, of a frame comprising top and bottom horizontal members, horizontal spindles carried by each of said members, wheels rotatably mounted on said spindles, vertical spindles carried by said frame at the bottom and top thereof, thrust-resisting wheels rotatably mounted upon said vertical spindles, and a supporting-arm pivotally connected with said frame and projecting laterally therefrom.

4. The combination in a traveling carrier, of a frame comprising top and bottom horizontal members, wheels mounted to rotate in a vertical plane provided at the ends of both of said members, thrust-resisting wheels mounted to rotate in horizontal planes carried by both of said members and disposed intermediate of the ends thereof, and a pivoted supporting-arm projecting laterally from said frame.

5. The combination in a traveling carrier, of a frame provided with wheels adapted to travel upon suitable tracks, said frame comprising top and bottom horizontal members, and a standard at each end thereof composed of inclined members spaced apart at their lower ends and converging toward their upper ends where they are secured to the horizontal members of the frame.

6. In a traveling carrier, a frame provided with wheels adapted to travel upon suitable tracks, said frame comprising top and bottom horizontal members, end standards, and a central standard composed of a pair of members converging upwardly and inclined rearwardly toward their upper ends.

7. The combination in a traveling carrier, of a frame, wheels rotatably mounted in said frame and adapted to support said frame upon suitable rails, brackets projecting laterally from said frame, said brackets being vertically aligned, pivots provided in said brackets, one of said pivots being extended downwardly, a laterally-projecting supporting-arm mounted upon said pivots below said brackets, and a thrust-resisting wheel provided on one of said pivots below the supporting-arm mounted thereon.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

SAMUEL B. HARDING.

Witnesses:

REGINALD DAILEY,
P. H. SIMPSON.