(No Model.)

J. ANNIN.

HAND TRUCK.

No. 421,649. Patented Feb. 18, 1890.

Fig. 1.

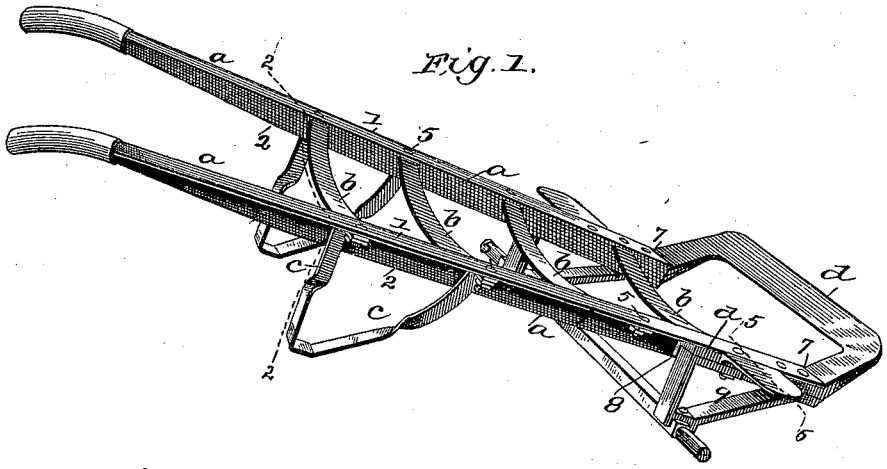


Fig. 2.

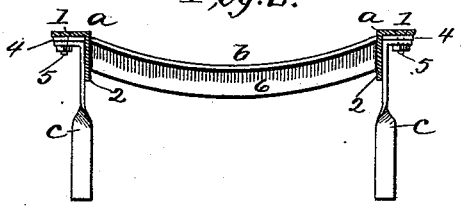


Fig. 3.

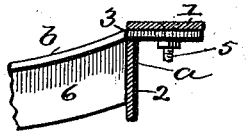


Fig. 4.

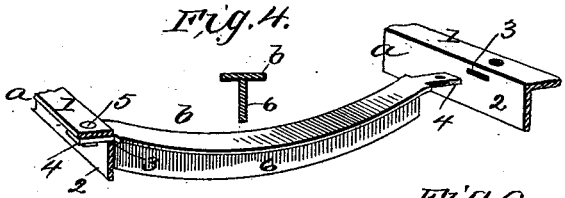


Fig. 5.

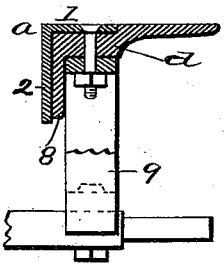
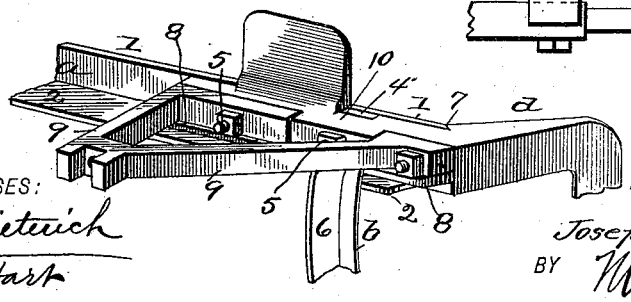


Fig. 6.



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JOSEPH ANNIN, OF BROOKLYN, NEW YORK.

HAND-TRUCK.

SPECIFICATION forming part of Letters Patent No. 421,649, dated February 18, 1890.

Application filed October 23, 1889. Serial No. 327,913. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH ANNIN, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Hand-Truck, of which the following is a specification.

My invention is an improvement in the class of hand-trucks whose frames are constructed of iron or steel, and which are designed for heavy work in warehouses, foundries, machine-shops, &c. It is particularly desirable that such trucks shall be constructed in such manner as to possess maximum lightness, strength, and durability without involving unusual expense in manufacture. To these ends I have devised the truck hereinafter described, and shown in accompanying drawings. It is especially distinguished by an improved joint-connection between the side and cross bars of the frame and in an improved form of such bars, whereby great strength and rigidity, with minimum weight of parts, are obtained.

There are also other important features of construction, as will be hereinafter pointed out.

In the drawings, Figure 1 is a perspective view of the truck, the wheels being omitted. Fig. 2 is an enlarged vertical cross-section of the entire truck-frame, taken on line 2 2, Fig. 1. Fig. 3 is also an enlarged cross-section of a portion of the frame. Fig. 4 is a perspective showing one of the cross-bars detached and its connection with the side bars. Fig. 5 is an enlarged cross-section on line 5 5 of Fig. 1. Fig. 6 is a perspective giving an under side view of a portion of the head or "bill" of the truck and its attachment to the side bars.

For convenience the larger or main parts of the truck-frame will be indicated by letters and details by figures.

The longitudinal or side bars *a* of the truck-frame are constructed of angle-iron, the same being arranged with their narrower sides or horizontal members 1 uppermost and the wider ones 2 vertical. It will be noted, also, that the angles of the said bars are outward, for a purpose hereinafter explained. The inner sides or vertical members 2 of said bars *a* are provided with slots 3, Fig. 4, to receive the tenoned ends 4 of the curved cross-bars *b*, which are T-shaped in transverse section, and said slots are located below the top sides 1 of the bars a distance just equal to the thickness of the angle-plate of which the bars *a* are made, so that the tenons 4 of the cross-bars *b* when inserted in the slots 3 will lie in contact with the under side of the upper members 1 of the side bars, as best shown in Figs. 2 and 3. Bolts 5 pass through the said members 1 and the tenons 4 of the cross-bars *b*, thereby securing the parts rigidly together. The heads of the said bolts are countersunk, as shown.

The tenons 4 are formed by notching or cutting away portions of the sides of the upper members of the cross-bars and also the end portions of the vertical or under side flange 6, (see Fig. 4,) thus leaving three shoulders—to wit, two lateral shoulders and one vertical shoulder—which when the cross-bars *b* are attached, as shown in Figs. 1, 2, and 3, abut and bear against the vertical sides of the side bars *a*. Thus the latter not only tie the side bars *a* together, but by means of the aforesaid shoulders serve as braces that hold the side bars rigidly apart. It will be further noted that the tenons 4 rest or bear on the under edges of the slots 3, so that the bolts 5 are relieved of the strain incident to support of weight on the cross-bars *b*, and thus what would otherwise be a weak and defective connection is one of the strongest possible. Adding to this that the vertical members 2 of the cross-bars *a* exceed the upper members 1 in width, it becomes apparent that the capacity of the truck-frame to resist the heaviest strain is carried to its maximum.

It is particularly important that the legs *e* shall be very light yet strong, and be so attached to the truck-frame as to involve the least expense. I make each leg of one piece of flat bar-iron, whose ends are bent laterally at a right angle, Fig. 2, to adapt them to lie flat against the vertical members of the side bars *a* and the under side of the tenons 4 of the front cross-bar *b*, so that they are not only braced laterally by the side bars *a* but are secured in place by the same bolts that pass through the tenons of said cross-bar. About midway of their length both members of the legs *c* are twisted axially to

bring their lower portions or feet into a plane parallel to the transverse axis of the truck-frame, so that when the feet rest on the floor they have a bearing as broad as the width of the legs.

The cast-steel bill or "nose" *d* of the truck is cast with notches or sockets at 7, (see Fig. 6,) to receive the ends of the upper members 1 of the side bars *a*, and also with a pendent flange 8, Fig. 5, extending along the inner sides of its horizontal portions. The axle pedestals or bearings 9 are secured in the angle of this flange 8 by the same bolts that secure the bill to the side bars *a*, and the bill has a downward projection 10, which intervenes the ends of the pedestals, Fig. 6. By this construction the pedestals are braced laterally by the flange 8 and endwise by said projection 10. Thus at every portion of the truck-frame provision is made for the strongest resistance to both vertical and lateral as well as torsional strain by means of parts whose construction is such that overweight is avoided.

I have described the preferred form of construction of the side bars; but under the general term "angle-iron" I wish to include variations that involve the same principle—as, for example, channel or T iron. Further, I wish to cover changes of arrangement of parts, such as would result from interchanging the side bars or transferring each to the place of the other, so that the angles of both bars shall be inward instead of outward, as in the present case, and bringing the vertical members 2 on the outer side of the bars *a*. While such arrangement is not expedient or advisable, yet it involves an advantage over certain others heretofore adopted.

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

1. In a truck-frame, the combination, with the angle side bars having slots in their vertical members, of cross-bars whose ends enter and have a bearing in said slots, and are bolted to the under side of the upper members of said side bars, substantially as shown and described.

2. In a truck-frame, the combination, with angle side bars having slots in their vertical members, of cross-bars whose reduced ends fit and bear in said slots and are bolted to the under side of the horizontal members of the side bars, and whose lateral shoulders abut the surface contiguous to the slots, as shown and described.

3. In a truck-frame, the combination, with the side bars having slots, as specified, of the T cross-bars whose ends enter and bear in said slots, the lower or under flange of the cross-bars being cut away, thus forming a vertical shoulder which abuts the side of the adjacent side bar, substantially as shown and described.

4. In a truck-frame, the combination, with the side bars having slots, as specified, of the T cross-bars, whose ends enter said slots and have both lateral and vertical shoulders, which abut the ends of the side bars, as shown and described.

5. In a truck-frame, the combination, with the angle side and cross bars of the legs *c*, made of flat bar-iron and having their upper ends bent at a right angle and arranged with the outer sides of the angle portions in contact with the vertical members of said side bars and with the tenons of the cross-bars, and secured by the same bolts that pass through the latter, as shown and described.

6. In a truck-frame, the combination, with the side and cross bars, of the legs *c*, whose upper ends are bent at a right angle and bolted in place, as specified, and whose middle portions are twisted axially, as shown and described, for the purpose set forth.

7. In a truck-frame, the combination, with the angle side bars and suitable connecting cross-bars, of the bill having sockets to receive the ends of said side bars, as specified.

8. In a truck-frame, the combination, with the side and cross bars, and the bill having the pendent inner flange and central projection, of the axle-pedestal whose ends are bolted in the angle of the said flange, as shown and described.

JOSEPH ANNIN.

Witnesses:
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