

No. 636,869.

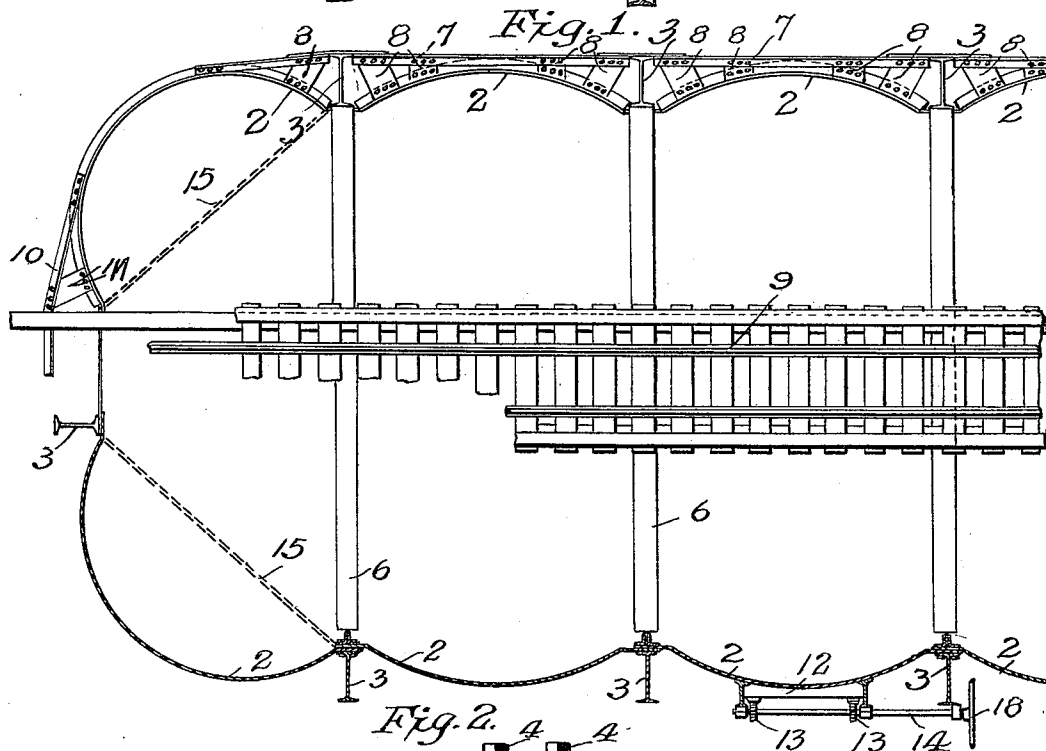
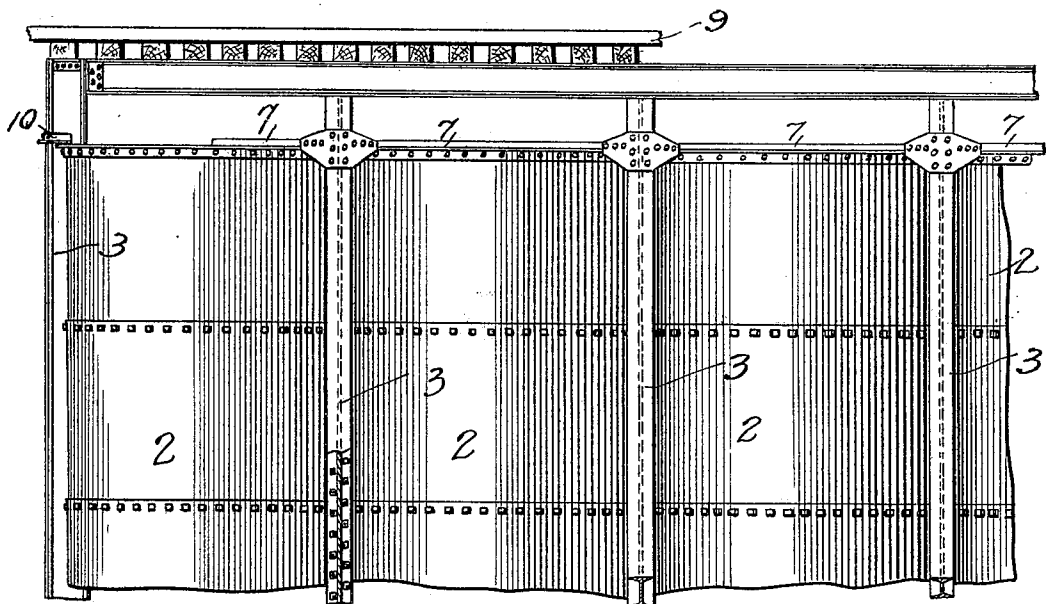
C. A. P. TURNER.
STEEL ORE BIN.

Patented Nov. 14, 1899.

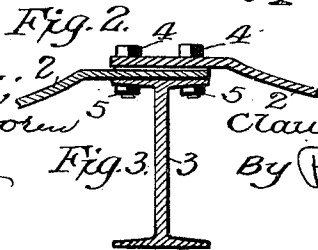
(Application filed Jan. 4, 1899.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses;
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M. C. Noonan



Inventor;
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By Paul Hawley,
his attorneys.

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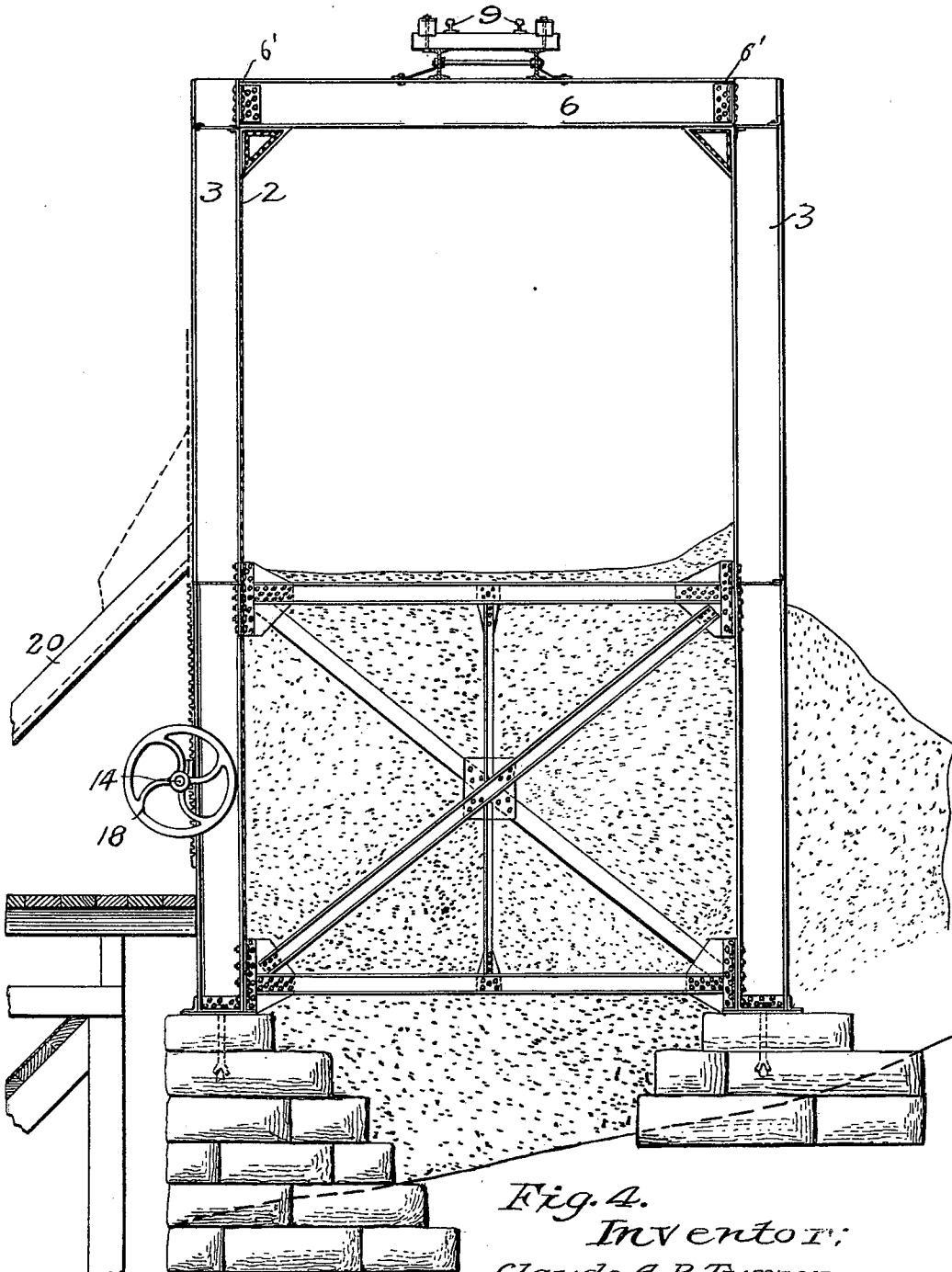


Fig. 4.

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UNITED STATES PATENT OFFICE.

CLAUDE A. P. TURNER, OF MINNEAPOLIS, MINNESOTA, ASSIGNOR TO THE
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STEEL ORE-BIN.

SPECIFICATION forming part of Letters Patent No. 636,869, dated November 14, 1899.

Application filed January 4, 1899. Serial No. 701,111. (No model.)

To all whom it may concern:

Be it known that I, CLAUDE A. P. TURNER, a resident of the city of Minneapolis, in Hennepin county, and in the State of Minnesota, have invented new and useful Improvements in Steel Ore-Bins, of which the following is a specification.

The objects of my invention are as follows: first, to construct a suitable steel bin of the form generally required at such moderate cost as to make it possible for the steel construction to compete with the wooden bin, and, second, to reduce to a minimum the wear on the plate siding by the grinding of the ore as it runs out of the bin.

The ore is usually brought to the milling plant by the train-load, and for convenience in storing and handling the bin is long and narrow, the ore being dumped in from the train on a trestle above the bin and drawn off by gravity by suitable gates at the bottom. The few steel bins of this type that have been built are constructed with flat-plate siding, with horizontal beam or channel iron girths at intervals of three or four feet, supported at every eight or ten feet by strong vertical posts properly braced or tied together to withstand the thrust of the ore. Such a bin is very expensive, requiring not only a large amount of material, but also a large amount of labor, since to properly secure these flat plates they require the rivets at their connections to be driven very close, center to center.

I attain the first object of my invention by using curved-plate siding, thereby dispensing with the I-beam and channel-girth supports between the main posts that are required in the usual construction. Further, the strain on the plate, and consequently that on the connections, is much reduced owing to the form used, allowing the use of thinner plate and fewer bolts and rivets in connecting the same to the frame than is the case with the usual construction. The projections of the posts into the bin prevent the moving ore from grinding on the plate siding as it is drawn off from below to the extent that it does in a bin with sides constructed in the usual manner, thus requiring a smaller allowance in thickness to provide for the wearing away in use.

In the accompanying drawings, forming part of this specification, Figure 1 is a side elevation of a portion of an ore-bin constructed in accordance with my invention. Fig. 2 is a plan view and partial section of a portion of the same bin, the right-hand end of the bin being omitted. Fig. 3 is a detail showing the manner of connecting the siding-plates to the upright beams or posts. Fig. 4 is a detail section showing the arrangement of the upright posts and showing also the manner of forming a bottom for the bin by a filling of gravel within the lower portion of the structure.

In the drawings, 2 2 represent the siding-plates for the bin. They are of curved form with the exception of their upright edges, which are flat for the purpose of permitting them to overlap and be secured to the vertical beams or posts, as shown in Figs. 2 and 3 of the drawings. The plates 2 are curved outwardly, as shown in Fig. 2, and they are made, preferably, of narrow lengths bolted or riveted together.

3 represents upright posts in the form of I-beams, and these posts are arranged outside of the overlapping edges of the plates, as shown in Figs. 1, 2, and 3 of the drawings. The overlapping edges of the plates are secured to the inner flange of the I-beams 3 by means of suitable bolts 4 and nuts 5. Where preferred, I may use the transverse beams 6, connecting the upper ends of the opposite vertical posts 3, being connected to said post by means of suitable lug-angles 6', as shown in Figs. 2 and 4 of the drawings. A similar arrangement of upright posts is used at the ends of the bin, and where preferred a longitudinal strut 7 may be employed, extending from the outer flange of one beam to the corresponding flange of the next, as shown in Fig. 1 of the drawings. Suitable braces 8 may be provided between the strut 7 and the curved plate 2. (See Fig. 2.) A railroad-track 9 may be arranged to pass directly over the top of the bin, so as to permit the ready filling thereof. Similar I-beams 3 may be arranged at the ends of the bins, and short struts 10 and brackets 11 may be used in connection with the end plates, as shown in Fig. 3 of the drawings. Struts similar to those shown at 7 in Fig. 2

may be, if preferred, arranged at the bottom of the bin for the purpose of taking the reaction of the curved-plate siding.

The bin will preferably be provided with a
5 suitable sliding gate 12, having one or more rack-bars thereon, pinions 13 upon shaft 14 engaging said rack-bars and an operating hand-wheel 18. Any suitable construction and arrangement of gate may be employed.
10 In some instances, as where the bin is to be erected upon the side of a hill, I may fill in the lower portion of the bin with gravel, as shown in Fig. 4, thereby creating a false bottom that is sufficiently elevated to discharge
15 the ore into the chute 20, from which it will pass to the apparatus used for crushing, stamping, or concentrating. Where preferred, diagonal brace-rods (indicated by dotted lines 15 in Fig. 2) may be arranged across
20 the corners of the bin. In this instance, however, such rods would be used only at or near the bottom of the bin.

By using curved plates for the sides of the bin I obviate the use of a large number of
25 rivets, as the thrust or pull on the rivets is much less than it is where the plates are flat, and it also makes it unnecessary to use girth-supports between the main vertical posts of the bin. The curved form of the plate sides
30 prevents the ore from grinding on the sides of the bin in running down toward the chutes, causing the channel which the ore follows to be removed somewhat from the side of the bin, so that the ore will clear the projection
35 of the siding at the points where the posts are located.

Where the bottom of the bin is formed by

filling in, as indicated in Fig 4 of the drawings, the plates at the front may extend down to form a retaining-wall for the filling, while
40 the back and ends of the bin are open to the height to which the filling is done.

Having thus described my invention, I claim as new and desire to secure by Letters
45 Patent—

1. The combination, in a steel ore-bin, with suitable posts held together by transverse bracing, of siding consisting of curved plates arranged with their convex surfaces outward, and means connecting said plates to
50 the flanges of said posts, substantially as described.

2. The combination in a bin, with a series of posts, held together by suitable bracing, of siding consisting of curved plates having flat
55 portions near their edges, said plates being arranged with their convex surfaces outward and with their flat portions arranged inside of and secured to said posts.

3. The combination in a bin, with vertical
60 posts connected by transverse beams, of the siding consisting of the curved plates having flat overlapping edges secured to the flanges of the posts and arranged inside thereof.

4. The combination, in a bin, with vertical
65 posts connected together by suitable bracing, of siding consisting of curved plates having flat edges secured to said posts and arranged inside thereof.

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