

B. PARKER.

PLANTS FOR MANUFACTURING IRON.

No. 175,741.

Patented April 4, 1876.

FIG. 1.

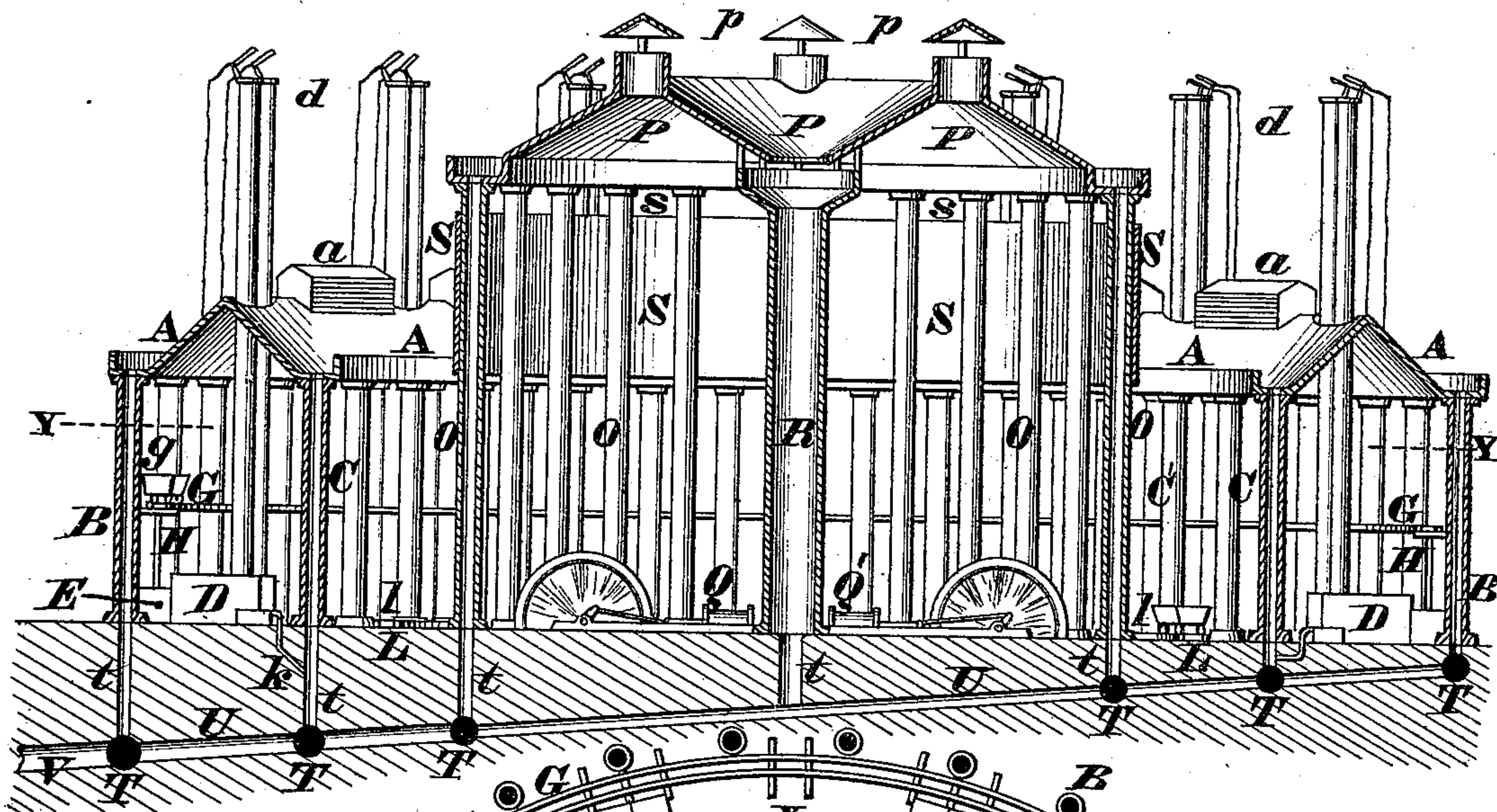
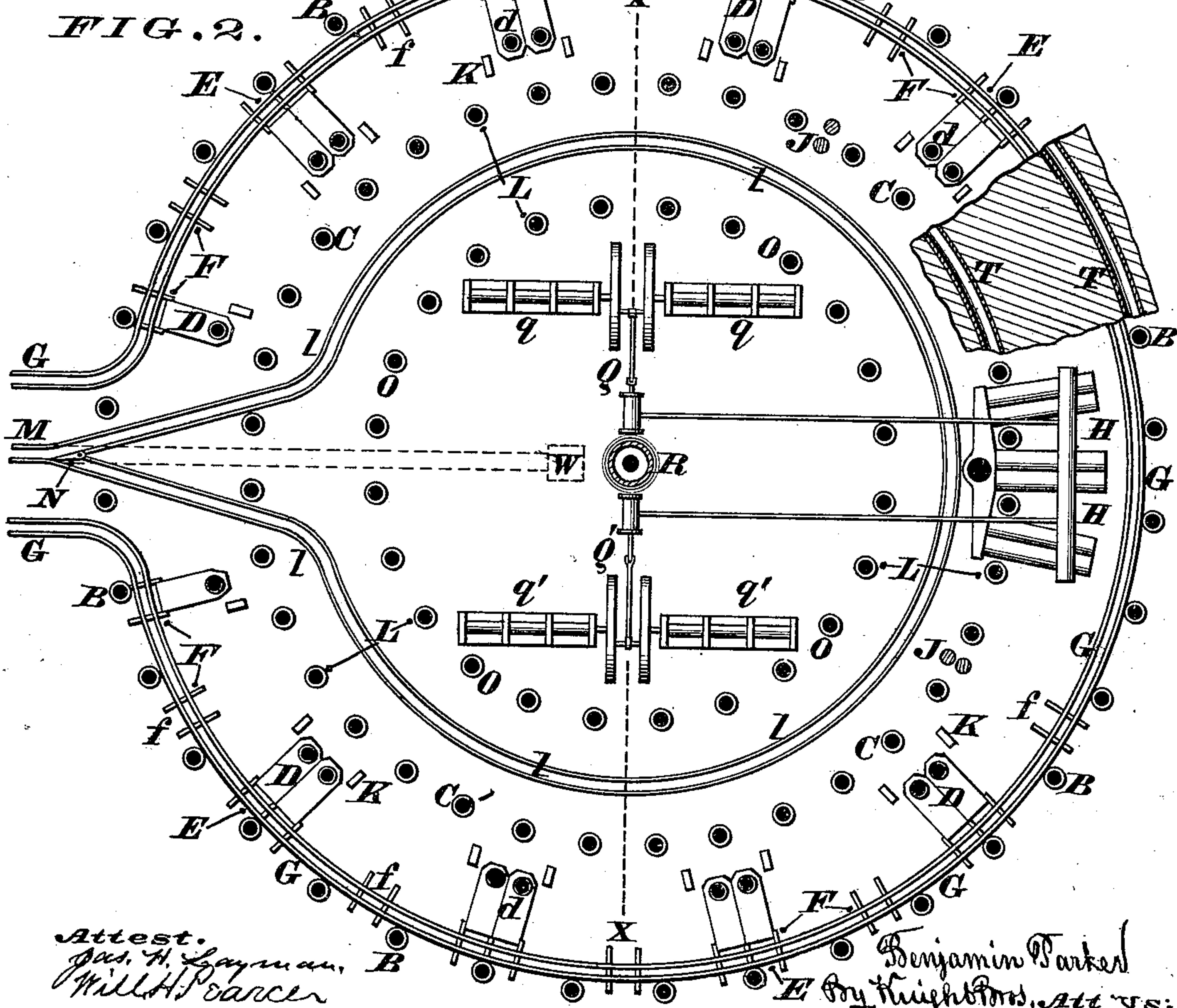


FIG. 2.



Attest.

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UNITED STATES PATENT OFFICE.

BENJAMIN PARKER, OF IRONTON, OHIO.

IMPROVEMENT IN PLANTS FOR MANUFACTURING IRON.

Specification forming part of Letters Patent No. 175,741, dated April 4, 1876; application filed October 6, 1875.

To all whom it may concern:

Be it known that I, BENJAMIN PARKER, of Ironton, in the county of Lawrence and State of Ohio, have invented a new and useful Plant or Edifice for Manufacturing Iron, of which the following is a specification:

My invention comprises a peculiar arrangement of buildings for containing the boiling or puddling furnaces, the trains of rolls, the driving-engines, the steam-generators, the shinglers, the hammers, and other machines and apparatus necessarily employed in establishments for the manufacture of wrought-iron—commonly called “rolling-mills.” Of these various appliances, the boiling or puddling furnaces and their immediate accessories are located within an annular shed, whose roof is upheld upon hollow iron columns, whose distance apart is such as not to interfere with the workmen. The ash-pits are situated at the outer end of each furnace, so as to give ample room for removal of the cinders, &c., and alongside these ash-pits are arranged the coal boxes or bunkers, of which a separate one is provided for each furnace. These coal-boxes are filled from cars which run upon an elevated railway, the latter being supported by brackets that project inwardly from the aforesaid iron columns. Furthermore, this elevated railway serves to conduct coal to the various steam-generators that furnish power to the mill, these generators being located at any suitable place within the annular structure, but preferably at a point diametrically opposite to the entrance of the railroad-tracks.

The inner side of the above-described edifice opens into an annular court or passage of any suitable width, upon the floor or pavement of which is laid a railroad-track, whose cars carry the pig metal, cinder, or other material from the mill. After crossing this annular court the central edifice is reached. The central edifice is of circular form in its horizontal section or plan, and is considerably higher than the annular shed. In the center of the central edifice is erected a large hollow cast or wrought iron column, which supports the inner portion of the roof, the outer portion of the roof being supported upon hollow iron columns, similar to those that support the

annular shed, and by making these columns tubular they are enabled to serve as conduits to lead the water from the several roofs down into suitable drains that communicate with a common sewer. The circular edifice contains the steam-engines, the trains of rolls, the shinglers, the hammers, and the machinery in general.

The described arrangement of roofs and tubular supporting-columns enables all the rain that falls upon the edifice to be collected in a basin or reservoir for future use, or it may be carried entirely away from the mill.

As the entire substructure is composed of comparatively light iron columns, it will be readily understood that ample room is afforded for the workmen, and an unobstructed passage is afforded throughout the mill for the circulation of air. This open form of substructure also permits abundant entrance of light to all parts of the edifice.

The described circular and concentric arrangement affords convenient access from every part to any other, and affords abundant room with a proportionately cheap structure.

In the accompanying drawing, Figure 1 is a vertical section through the mill at the line *x x*. Fig. 2 is a horizontal section of the same at the line *y y*, a portion of the floor of the mill being removed, so as to expose the drains.

A represents the roof of the outer or annular shed of the mill. This roof is supported upon two concentric circles of hollow iron columns, B and C. Located within the annular space inclosed by said columns and the aforesaid roof are the customary boiling or puddling furnaces D, having chimneys *d*, that project a suitable distance above the roof A. The outer end of each furnace is provided with an ash-pit, E, of any appropriate size. Adjoining these ash-pits are the coal boxes or bins F, one for each furnace, said bins being separated from one another by passages or gangways *f*. In order to supply these bunks with the proper quantity of coal without interfering with the workmen, I provide an elevated railway, G, secured to suitable supports H, that project inwardly from the external circle of columns B. This railway should be elevated sufficiently to be out of the way of the workmen. The cars *g*, that are to run upon

said track, may be propelled by any suitable power.

Situated within the annular inclosure A B C is a battery, H, of generators, for supplying the mill with steam, fuel being conveyed to said generators by means of the cars *g*. This annular shed may also contain one or more crushers, J, for pulverizing the fixing or fettling wherewith the furnaces A are usually lined. Each furnace is provided with its appropriate water box K, for cooling the tools that are employed in working the iron during the puddling process, and the waste-pipes *k* of said boxes communicate with the drains of the mill, in the manner shown in Fig. 1. The roof A is furnished with ventilators *a*. The inner row of columns, C, face an annular court or open space, L, of any suitable width, and this court has a circular railway, *l*, laid upon its floor, said railway being united to the main track M by a switch, N, so as to allow the cars to be run out or in upon said track in either direction. The object of this track is to facilitate the removal of iron and other material from and to the mill. The inner side of court L is bounded by a circular row of hollow iron columns, O, which row is concentric with the ones B and C. Said columns O, in conjunction with a central heavy iron column, R, serve to support a circular roof, P, which, with said columns, constitutes the central edifice of the mill. Like the columns before spoken of, the columns O and R are hollow, and serve as water-conduits. The central edifice, which is considerably higher than the annular shed, constitutes the rolling-mill proper, and contains the steam-engines Q Q', rolls *q q'*, and all the other machines usually employed in mills of this character, such as shinglers, hammers, trains of rolls, cropping-saws, punches, shears, &c. Placed beneath or near the columns B, C, and O, and at a suitable distance in the ground, are concentric drains T, that communicate with said columns by means of inlets *t*. U is a branch drain, that connects all the mains T with a common outlet or sewer, V. The dotted lines W show the position of the muck-bar scale, that may be connected with the track M, in the manner indicated. As the furnaces D are all arranged in a circle around the rolls *q q'*, the latter are equally accessible from either furnace, and to every operative in the mill, and consequently the labor and time consumed in passing the metal is reduced to a minimum.

Owing to the limited amount of space oc-

cupied by the supporting-columns B C O, a comparatively unobstructed space is afforded for the most thorough circulation of air, with sufficient protection from the sun and weather, and on this account the temperature will not be excessive even in summer time. During the winter time the mill may be closed, or partially closed, by suspending suitable screens from the columns. The circular shape of the building causes it to be braced in every direction, and therefore it will be better protected against storms and other disturbing agencies that ordinary mills are, and being wholly of iron it is exempt from liability to conflagration and needs no fire-insurance. A circular-shaped mill constructed as described in this specification, and having an extreme diameter of about three hundred and forty feet, will be found sufficiently commodious for forty-two boiling-furnaces, with twenty-six feet clearance between them. In this case the distance from the outer row of columns B to the inner row C would be forty feet, the annular court L being from fifty to sixty feet wide. The diameter of the central edifice or mill proper will, in that case, be from one hundred and forty to one hundred and sixty feet.

In the drawing, the position of the engines and one train of rolls are indicated; but these, as well as other machines, may be located anywhere within the mill that may be judged most convenient. An obvious but inferior modification of my mill may be produced by giving a polygonal instead of circular plan to the encircling shed and central edifice. The roof of the central edifice, instead of descending to the center, in the manner shown, may have a conical, domed, or hip form, and the large central column may then, in some cases, be dispensed with, and its place be occupied by a crane.

I claim as my invention and desire to secure by Letters Patent—

The within-described rolling-mill, consisting of a central circular edifice or mill proper, O P R, encircling annular structure A B C, and intermediate annular court L, substantially as set forth and illustrated.

In testimony of which invention I hereunto set my hand.

BENJAMIN PARKER.

Attest:

S. B. SPEAR,

JAMES H. LAYMAN.