

## RISDON IRON &amp; LOCOMOTIVE WORKS v. TRENT.

(Circuit Court, N. D. California. January 23, 1899.)

No. 12,293.

## 1. PATENTS—INFRINGEMENT—CONSTRUCTION OF CLAIMS.

Infringement cannot be avoided by reading into a broad claim specific devices claimed in narrower claims of the same patent.

## 2. SAME.

A change of form does not avoid infringement, unless the patentee has specified a particular form as the means by which the effect of the invention is produced, or otherwise confines himself to a particular form of what he describes. Even when a change of form somewhat modifies the construction, the action, or utility of the patented thing, noninfringement will seldom result from such a change.

## 3. SAME—INFRINGEMENT—PARTIES LIABLE.

Defendant was a member of a firm of architects which advertised by circulars, etc., to furnish ore-crushing mills; but, having no manufacturing plant of their own, on receiving orders, contracted with others to furnish the machinery, according to plans and specifications furnished by them. They thus furnished designs for an infringing machine, which was made mainly by the owner, at his own factory; and they erected and fitted it for operation at his mine, receiving therefor a commission. *Held*, that the firm was a contributory infringer, so as to make a member thereof liable.

## 4. SAME—ORE CRUSHERS.

The Schierholz patent, No. 538,884, for an ore-crushing mill, in which the principal feature is the combination of a fixed vertical central shaft with flexible intermediate mechanism between the gear and the crushing rolls, covers a pioneer invention, and is entitled to the application of the doctrine of equivalents to suppress later combinations of the same elements or of mechanical equivalents therefor. *Held*, therefore, that claim 4 was infringed by the Bingham or Trent and the Bradley machines.

This was a suit in equity by the Risdon Iron & Locomotive Works against L. C. Trent for alleged infringement of a patent for an ore crusher.

Wheaton & Kalloch, for complainant.  
N. A. Acker, for respondent.

MORROW, Circuit Judge. This is a suit for the infringement of letters patent No. 538,884, dated May 7, 1895, for an ore crusher. The inventor was August H. Schierholz, whose application for the patent was filed in the patent office February 5, 1895. By an assignment made after the application, and before the granting of the letters patent, Schierholz transferred all the property in the invention to the complainant.

The invention relates to improvements in ore-crushing machines, in which crushing rolls are caused to travel within the circumference of a pan, upon suitable dies arranged around the periphery, and which have a fixed central post, and consists of novel means for driving the rolls, and allowing for the irregularities of movement caused by the ore over which the rolls pass, without interfering with the vertical shaft or its gear and connections. The details of construction are explained by reference to the accompanying drawings:

(No Model.)

3 Sheets—Sheet 1.

A. H. SCHIERHOLZ.  
ORE CRUSHER.

No. 538,884.

Patented May 7, 1895.

Fig. 1.

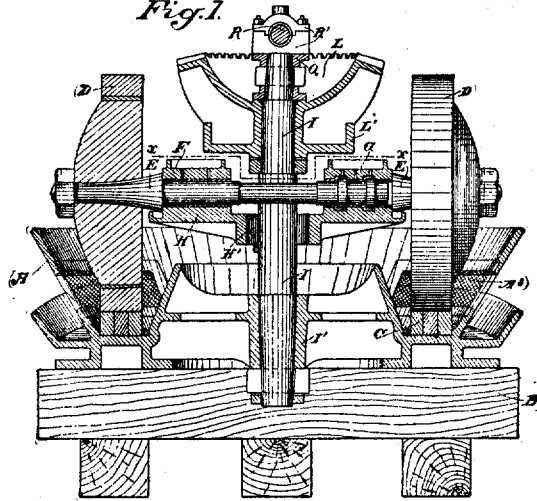
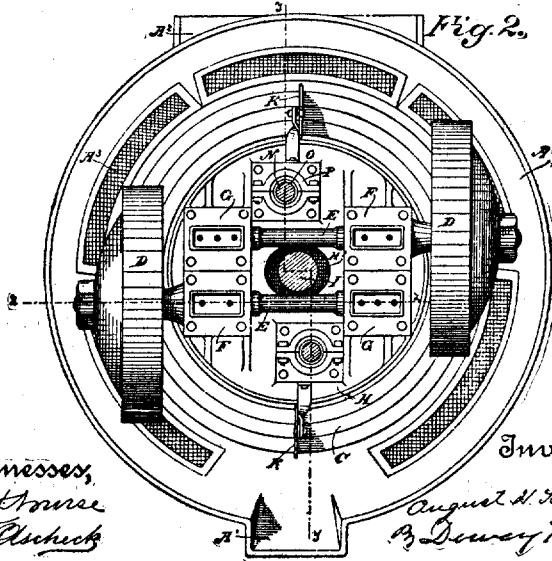


Fig. 2.



Witnesses,  
J. S. Moore  
J. F. Alschick

Inventor,  
August H. Schierholz  
By Dewey & Co., atty.

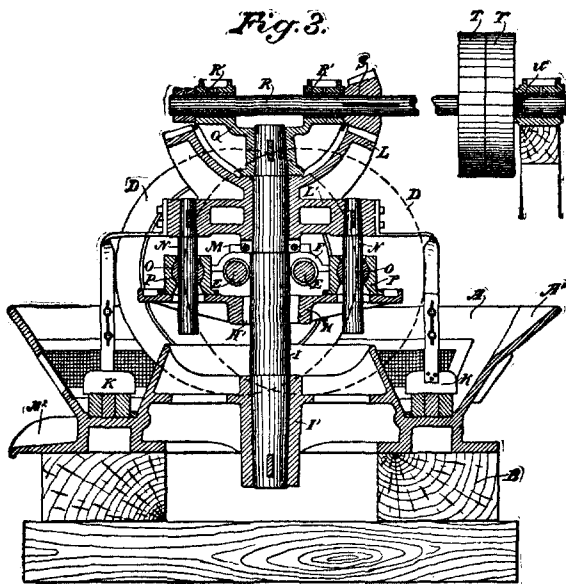
(No Model.)

3 Sheets—Sheet 2.

A. H. SCHIERHOLZ.  
ORE CRUSHER.

No. 538,884.

Patented May 7, 1896.



Witnesses,  
*W. H. Morse*  
*J. F. Black*

Inventor,  
*August H. Schierholz*  
*Per Dwyer & Co*  
*attys*

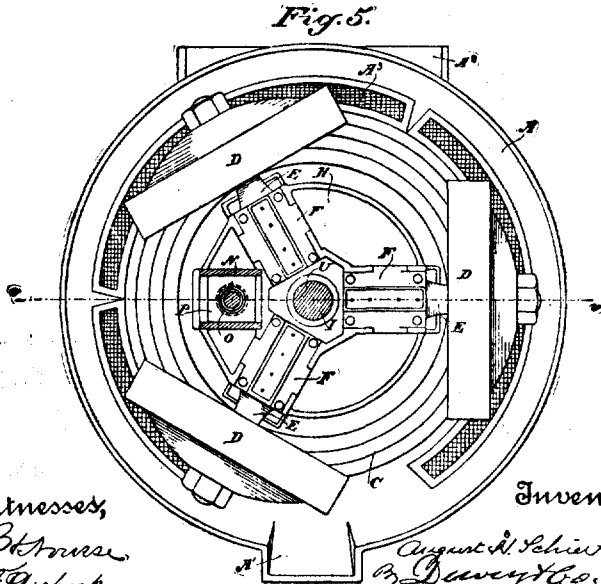
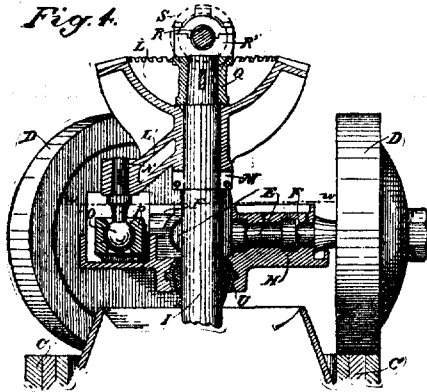
(No Model.)

3 Sheets—Sheet 3.

A. H. SCHIERHOLZ.  
ORE CRUSHER.

No. 538,884.

Patented May 7, 1895.



Witnesses,  
*J. A. ...*  
*J. P. ...*

Inventor,

*August H. Schierholz*  
*By Dewey & Co.*

The drawings are explained as follows:

"Figure 1 is a vertical section taken through the center of the pan, and showing, also, a section on the line, z z, of Fig. 2. Fig. 2 is a plan view of the pan and rollers, with horizontal section of the vertical shaft and driving pins, on line, x x, of Fig. 1. Fig. 3 is a vertical section taken through the line, y y, of Fig. 2. Fig. 4 is a vertical section taken through the line, v v, of Fig. 5, showing a modification of the drivers where three rolls are used. Fig. 5 is a horizontal section of the same on line, w w, of Fig. 4."

The inventor says in his specification:

"The object of my invention is to provide a means intermediate between the driving gear upon the fixed vertical shaft and the table or carrier upon which the horizontal roller shafts are journaled, by which the rollers are caused to travel upon the dies, this intermediate connection being of such a nature that it will compensate for all irregularities of movement and vertical rise and fall of the rollers as they pass over the material to be crushed, without in any way conveying these motions to the driving mechanism. This makes the mill self-containing, all parts being supported from the pan and vertical shaft, and resting upon one foundation, and it also equalizes the wear upon the dies."

That part of the specification which relates to the claim alleged to have been infringed is as follows:

"The driving mechanism consists of a gear wheel, L, turning loosely upon the vertical shaft, I, this shaft being stepped and fixed immovably in the hub or center, I<sup>1</sup>, at the bottom of the pan. R. is a horizontal driving shaft turning in journal boxes, R<sup>1</sup>, which are fixed upon a table or support, Q; this table being firmly keyed to the top of the shaft, I. A bevel pinion, S, upon this shaft, R, engages the gear, L, and causes it to rotate. The shaft, R, is driven by power from any suitable source, through fast and loose pulleys, T, T, or other suitable device, upon the shaft, R, by which the machine may be set in motion or stopped in the usual manner. If the shaft, R, is of considerable length, an outside journal or bearing box, u, may be employed to support its outer end, but if set close to the inner journal boxes, R<sup>1</sup>, this may be dispensed with. The gear, L, is made of any suitable shape, and the lower part of it is formed with a frame or carrier, L<sup>1</sup>, which projects outwardly from the gear, L, or its hub. This gear and disk, turning loosely, as previously described, upon the shaft, I, are supported by a collar, M, resting upon a shoulder turned upon the shaft, I, or otherwise supported, in such a manner that it may be adjusted to compensate for any wear of the parts. N, N, are two stout pins fixed to the carrier, L<sup>1</sup>, and projecting downwardly therefrom through openings made in the table, H. This table, H, has a central space or opening, H<sup>1</sup>, surrounding the shaft, I, and this opening is of sufficient size to allow the table, H, to tilt to either side whenever the rolls, B, pass over any material obstruction large enough to cause them to rise. This allows of all the movement of the rollers and table that may be necessary, without the table coming into contact with the permanent and stationary shaft, I. In order to allow of this movement of the table while at the same time maintaining the connection between the pins, N, and the table, I have shown universal joints, consisting of globular shaped attachments, O, loosely fitting the pins. These attachments, O, fit in correspondingly shaped boxes, P, so that they may turn within these boxes, and they fit loosely upon the pins, N, so that the latter may slide through them if the table, H, is tilted to either side by irregular masses of ore beneath the rollers, D. The pins, N, are of such a length as to allow for the wear of the rollers and dies, without affecting their connection with, and action upon, the ball joints which connect them with the table. It will be seen from this construction that, if either of the rollers should lift up, its shaft, E, would be correspondingly tilted, and as the shaft is journaled in boxes, F and G, fixed upon the table, H, the latter will also be tilted, the opening, H<sup>1</sup>, allowing it to

tilt without coming in contact with the shaft, I. When this tilting takes place, the driving pin, N, will slide through the ball, O, and the latter will turn correspondingly in its box, P, thus yielding to any irregular movement of the rollers, while at the same time continuing the application of power to rotate the table, H, and cause the rollers to travel around upon the dies."

The patent contains five claims. The claim charged to have been infringed by the respondent is claim 4, which reads as follows:

"In a rotary crusher having an annular pan and dies, and rollers propelled and traveling upon the dies, a fixed vertical central shaft, journal boxes fixed and supported thereon, a horizontal shaft turntable in said boxes and carrying a pinion through which power is transmitted, a gear wheel turning loosely upon the fixed shaft and engaging the pinion, and mechanism intermediate between the gear and the crushing rollers by which they are driven."

The particular elements in controversy in this case are: (1) The fixed vertical shaft; (2) the mechanism intermediate between the gear and crushing rollers adapted to the driving of the latter.

The defendant in his answer sets up the defenses of anticipation and want of invention, and denies the charge of infringement. He relies upon the following prior patents to support the first defense:

Number.	Date.	To Whom Issued.	For What Issued.
253,476	Feb. 7, 1882.	William E. Harris.	Ore-Grinding Mill.
296,096	April 1, 1884.	J. C. Wiswell.	Ore Crusher.
455,677	July 7, 1891.	J. H. Yeaton.	Crushing Mill.
459,657	Sept. 15, 1891.	A. H. Schierholz.	Ore Crusher.
531,068	Dec. 18, 1894.	A. H. Schierholz.	Ore Crusher.
551,560	Dec. 17, 1895.	A. H. Schierholz.	Ore Crusher.

The earliest form of rotary crusher was the Mexican arrastra, consisting of a circular bed of evenly-surfaced stones, upon which were dragged around other evenly-surfaced heavy stones, the ore being ground between these upper and nether millstones. Then came the Chilian mill, a single heavy roller of stone, like an immense grindstone, with a wooden pole passing through its center attaching at one end to a revolving shaft and at the other end to some motive power. The mill has been modified and improved upon until at the present time the type of rotary crusher commonly known as the "Chilian Mill" consists of a pan or mortar, crushing rolls, table or frame carrying them, and driving mechanism for the rollers. The particular style of Chilian mill in controversy here was originated by a man by the name of Bryan, since which time that class of mills manufactured by the complainant has been termed "Bryan Mills."

The patent issued to William E. Harris, February 7, 1882, No. 253,476, for an ore-grinding mill, is shown, sufficiently for the present purpose, by the following drawing:

(No Model.)

2 Sheets—Sheet 1.

W. E. HARRIS.  
ORE GRINDING MILL.

No. 253,476.

Patented Feb. 7, 1882.

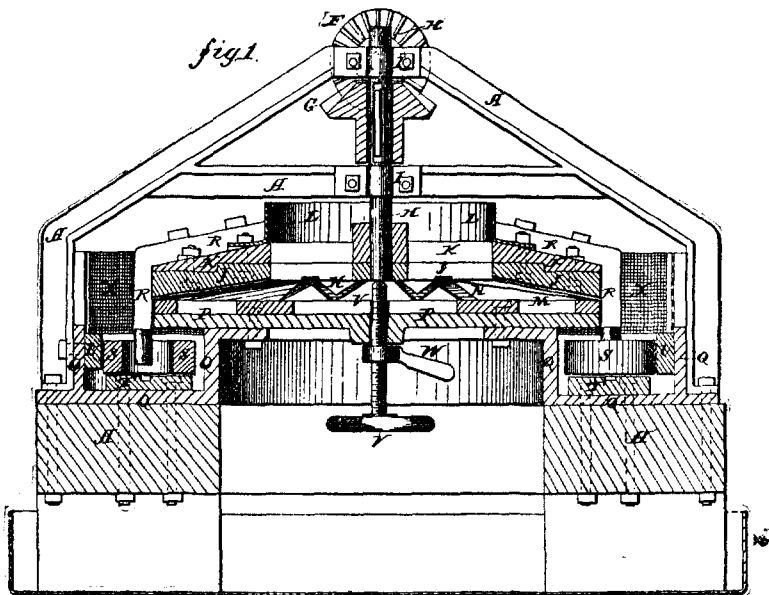
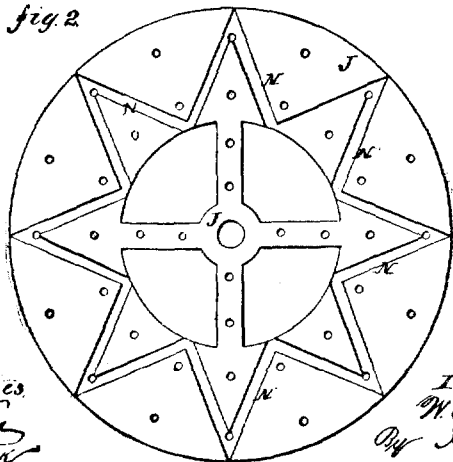


fig. 2



Witnesses  
Chas. H. ...  
A. Seagrove

Inventor  
W. E. Harris  
By ... & Co.  
Attorneys

(No Model.)

2 Sheets—Sheet 2.

W. E. HARRIS.  
ORE GRINDING MILL.

No. 253,476.

Patented Feb. 7, 1882.

Fig. 3.

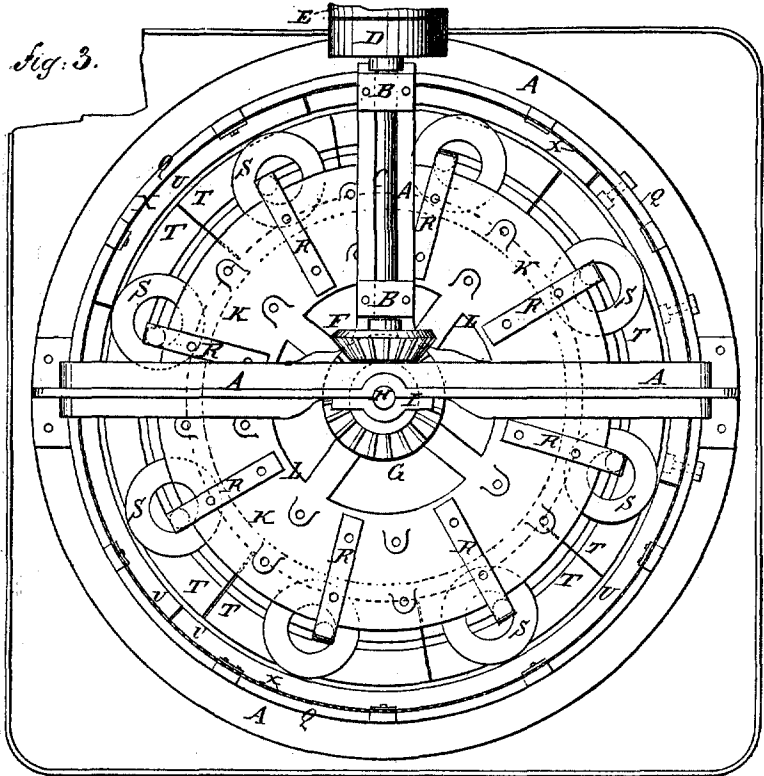
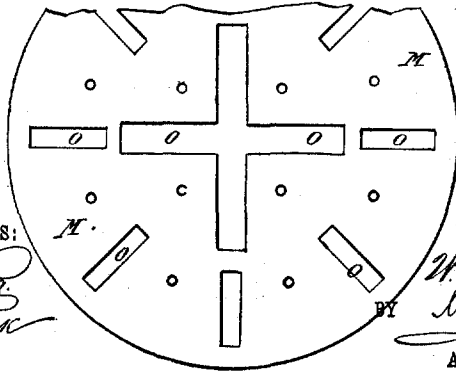


Fig. 4.



WITNESSES:

*Chas. M. ...*  
*Le Bedquich*

INVENTOR:

*W. E. Harris.*  
BY *Munn & Co.*

ATTORNEYS.



This mill is designed for the crushing or grinding of finely-broken ore. The massive crushing rollers contained in the subsequent roller crushers are not found in this mill, the work of crushing the ores being performed by two grinding plates, between which the ore is fed; and it is claimed by the respondent that the hand screw, V, and the rotary shaft, H, in this patent, are the same elements as the fixed vertical shaft, I, and the mechanism intermediate between the gear and crushing rollers in the complainant's patent. In the latter patent the vertical shaft, I, is fixed immovably in the hub or center at the bottom of the pan, and at the top there is firmly keyed to it a yoke or table, carrying journal boxes, in which turn the horizontal driving shaft. The driving mechanism consists of a gear or wheel turning loosely upon the vertical shaft. A bevel pinion upon the horizontal shaft engages the gear, and causes it to rotate, and between this gear and the crushing rollers is the intermediate mechanism which constitutes one of the elements of claim 4 of complainant's patent. In the Harris patent the hand screw, V, which is claimed to be the same element as the fixed vertical shaft of complainant's patent, is an adjustable spindle or shaft, upon which the central revolving shaft, H, rests or is supported. It is designed to raise or lower the rotating shaft which carries the upper grinding plate, so that this grinding plate can be adjusted at any desired distance from the lower grinding plate, as the character of the ore may require. Clearly, this is not the fixed vertical shaft of the complainant's patent. It is not the same mechanism, and does not perform the same function. The revolving shaft, H, in the Harris patent, is claimed to be the same element as the intermediate mechanism between the gear and crushing rollers in the complainant's patent. But the fact that the revolving shaft of the Harris patent carries the grinding plates adjusted by a hand screw, while complainant's mechanism carries self-adjusting crushing rollers, indicates such a difference of mechanism and function as to remove it from the field of anticipation.

The patent issued to Jacob C. Wiswell, April 1, 1884, No. 296,096, is next in sequence after the Harris patent, and consists in improvements in mills for crushing ores. The invention claimed is a combination of a series of crushing rollers having V-shaped peripheries, and horizontal shafts on which said rollers are mounted, with a carriage in which said shafts are journaled at their outer bearing points, a vertical shaft in which the inner ends of said horizontal shafts are journaled, springs which are interposed between said carriage and said horizontal shafts, and a stationary bed having a circular V-shaped groove, in which said rollers travel. The device contains an overhead drive mechanism consisting of a horizontal cross shaft, a pinion, and a gear, by means of which rotary motion is transmitted to the central shaft to drive or propel the crushing rollers. Each roller and its axle is permitted vertical movement by means of springs, while the vertical shaft is journaled in a bearing supported by a horizontal beam in such manner as to be capable of a certain amount of vertical slip. The fixed vertical shaft is not found in this patent.

In its place is a rotating shaft, and the mechanism between the driving gear and the crushing rollers consists in a carriage with axles or journals held down by springs which permit to each roller and its axle a vertical movement. It is difficult to understand how this mechanism, either in detail or in construction, can be said to anticipate complainant's patent.

The Yeaton patent, No. 455,677, discloses a mill designed for the crushing of quartz or other materials, having a mortar in which the crushing is performed by heavy, cast-iron, rotating wheels. These wheels rotate upon their own axles, and travel around upon a die. They are mounted upon journals, which in turn are each supported upon an independent sleeve, the sleeve being splined, by means of guides, to a tubular spindle, in order that each wheel may have vertical movement, in passing over a large piece of material, independent of the movement of the other wheel. The spindle is hollow, permitting ore to be fed through it into the mortar. Secured to the spindle is a gear wheel, to which motion is imparted through a bevel pinion upon a shaft, in connection with a band wheel for the attachment of any suitable power. The absence of the fixed central shaft in this invention, as in the Harris and Wiswell patents, places it in a separate and distinct class of ore crushers having revolving central shafts, which carry in their revolutions crushing rollers with operating mechanisms adjusted to such devices.

Schierholz, the inventor of the device in controversy, next entered the field, and on September 15, 1891, obtained letters patent No. 459,657, for an ore crusher, relating particularly to improvements upon what is known as the "Bryan Ore Crusher," consisting principally in so connecting the crushing rollers as to prevent binding thereof when thrown upward by unusually large pieces of ores. Respondent claims that the fixed vertical central shaft was used in this mill, but not claimed to be new, by Schierholz at that date. In describing his invention, it is stated:

"My invention has relation to certain new and useful improvements in rotary ore crushers, which consist in the details of construction and arrangement of parts as will be hereinafter more fully set forth in the drawings, described and pointed out in the specification and claims. The invention relates more specifically to certain improvements upon what is known as the 'Bryan Ore Crusher'; and it consists in so connecting the crushing rollers as to prevent binding thereof when thrown upward by unusually large pieces of ores, which has heretofore been the objection to crushers of this class. Referring to the drawings forming a part of this application, wherein similar letters of reference are used to denote corresponding parts throughout the entire specification, figure 1 is a side view in elevation, partly broken away, of the mill; and Fig. 2 a top plan view, with the weight-driving pan removed. The letter A is used to indicate the stationary ore-receiving pan, which is provided with the feed chute, B, through which the ore to be crushed is fed into the ore-receiving or grinding pan, and C is the discharge chute for the ground or pulverized ore. The vertical shaft, D, extends centrally through the grinding pan, and is securely fastened thereto by means of key, a. Upon this shaft works the sleeve, E, upon which works the laterally extending arms, e, e<sup>1</sup>, e<sup>2</sup>, which have secured therein and projecting therefrom axles, f, f<sup>1</sup>, f<sup>2</sup>, upon which work the grinding wheels or rollers, F, F<sup>1</sup>, F<sup>2</sup>. The driving pan is represented by the letter, E<sup>1</sup>, which is provided with the downwardly extending wall, E<sup>2</sup>, by means of which the driving pan is secured to

the laterally extending arms, e, e<sup>1</sup>, e<sup>2</sup>, through the medium of bolts, g. The pan, E<sup>1</sup>, is rotated by any suitable machinery,—as, for instance, by means of a power belt working thereover,—thus converting said pan into a hollow drive wheel. The connection between the laterally extending arms and sleeve, E, form a universal joint for the purpose of preventing binding on shaft, D, as hereinafter more fully set forth. In order to give the necessary crushing power to rollers, F, F<sup>1</sup>, F<sup>2</sup>, I fill the interior of drive pan, E<sup>1</sup>, with pieces of iron, large stones, or the like. Inasmuch as pan, E<sup>1</sup>, rests on, or is bolted to, arms, e, e<sup>1</sup>, e<sup>2</sup>, it is obvious that the full weight thereof is brought to bear upon the crushing rollers through the medium of axles, f, f<sup>1</sup>, f<sup>2</sup>. As the driving pan is caused to rotate, the laterally extending arms, connected thereto and working upon the sleeve secured upon the vertical shaft, are moved thereby, which carry therewith the grinding rollers, secured to axles, f, f<sup>1</sup>, f<sup>2</sup>, and causes the crushing of the ore. It is obvious that, in case the rollers contact with extra large pieces of ores, the same will uplift and roll thereover; but, by reason of the universal joint connection between the laterally extending arms and sleeve, E, no binding will take place upon the vertical shaft, D, as heretofore, thus allowing the roller to lift at an incline while passing over the extra-size pieces of ore. It will be seen that the periphery of sleeve, E, is convex, and engages the depending slightly concave portions of the arms, thus forming practically universal joints. The sleeve, E, is self-adjustable upon the vertical shaft.

“Having thus described my invention, what I claim as new, and desire to secure protection in by letters patent of the United States, is: (1) In an ore crusher, the combination of a receiving pan, a vertical stationary shaft extending therein, a sleeve working on said shaft and having a convex periphery, laterally extending arms provided with depending slightly concave portions engaging the convex surface of the sleeve, crushing rollers connected to the arms, and drive mechanism, substantially as set forth. (2) In an ore crusher, the combination of a receiving pan, a vertical stationary shaft extending therein, laterally extending arms secured to said shaft, so as to turn freely therearound, axles secured within the arms and carrying crushing rollers upon their outer ends, and a rotatable driving pan provided with a downwardly extending wall secured to the laterally extending arms, so as to cause said arms to rotate therewith, substantially as set forth.”

It will be sufficient to say, with respect to this patent, that the central vertical shaft in the mill here described is not fixed, but is revolved with the driving pan.

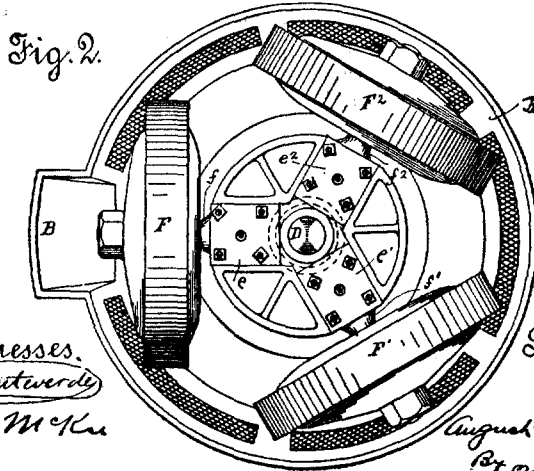
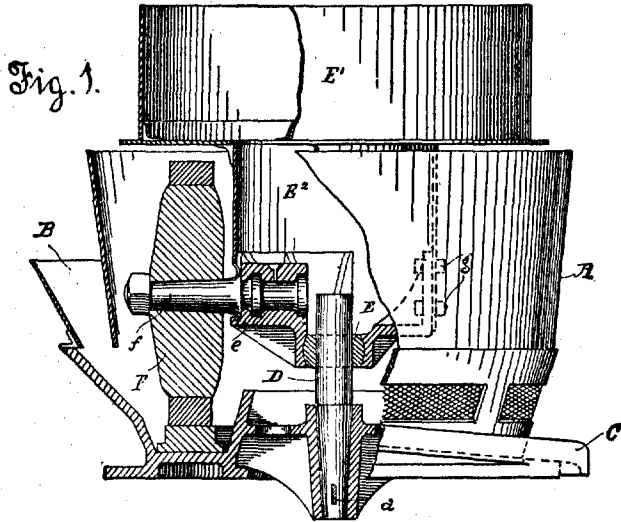
The drawings referred to in the foregoing specification are given on the next page.

(No Model.)

A. H. SCHIERHOLZ.  
ORE CRUSHER.

No. 459,657.

Patented Sept. 15, 1891.



Witnesses.  
*H. J. Fortenberry*  
*J. C. McKee*

Inventor  
*August H. Schierholz*  
*By [Signature]*

Schierholz later applied for and received three other patents for ore-crushing devices, the one in controversy in this suit being the last applied for, though granted at an earlier date than the letters patent on a previous application. Considering them in the order of application, we come to letters patent No. 551,560. The invention consists principally of a pan, crushing rollers adapted to travel in the said pan, a frame in which the rollers are journaled, and a driving arm engaging blocks held vertically adjustable on the said frame to permit the rollers to move up or down, according to the amount of material under treatment. No invention is here claimed for a fixed vertical shaft, the central vertical shaft being described merely as a driving shaft, and shown to be a rotating one.

The next invention of Schierholz is described in letters patent No. 531,068 as an improved ore crusher, in which a uniform wear of the grinding surfaces is obtained, and the centrifugal strain on the thrust bearings of the crushing rolls is greatly reduced, to permit of driving the machine with considerably less power and without decreasing the capacity of the machine. This mill has an under-drive mechanism, in contradistinction to the overhead drive mechanism illustrated in the former patents, using the horizontal shaft, which carries a pinion that meshes with the gear wheel upon the central shaft. The central shaft possesses rotary motion, as in the last patent mentioned, while the crushing rolls are given a flexibility of motion upward or downward by the axle or journal of each roll being fulcrumed to the horizontal table or head. This appears to be the first departure by Schierholz from a rigid connection between the crushing rollers and the horizontal head or table carrying the same.

We now come to the patent sued upon, No. 538,884, the specification and drawings of which have already been given.

It is clearly shown that the type of ore crusher involved in the patent in controversy was originated by Schierholz. The prior art does not disclose the combination of a fixed vertical central shaft with the flexible intermediate mechanism between the gear and the crushing rolls. Schierholz is therefore a pioneer, and is entitled to invoke the doctrine of equivalents to suppress a later combination of the same elements or of mechanical equivalents therefor. This feature of the patent having been determined, it follows that the decision of the court must depend upon the question of infringement, and particularly whether the ore crushers known as the "Bingham" or "Trent" and "Bradley" machines, respectively, infringe claim 4 of the letters patent sued upon.

Claim 4 specifies the following elements in combination in a rotary crusher: (1) An annular pan; (2) dies; (3) crushing rollers; (4) a fixed vertical shaft; (5) journal boxes fixed and supported on the vertical shaft; (6) a horizontal shaft turntable in said journal boxes; (7) a pinion carried by the horizontal shaft; (8) a gear wheel turning loosely on the fixed shaft and engaging the pinion; (9) mechanism intermediate between the gear and crushing rollers adapted to the driving of the latter. Every element of this claim, considered separately, is admitted to be old. The invention is found to be in the combination of the parts.

Examining, first, the so-called "Bingham" or "Trent" machine, represented by complainant's model Exhibit D, we find: (1) The annular pan; (2) the dies; (3) crushing rollers; (4) a fixed vertical shaft, in the sense that it does not revolve, and around which the rollers and driving mechanism revolve; (5) journal boxes supported on the fixed central shaft; (6) a horizontal shaft turntable in said boxes; (7) a pinion carried by the horizontal shaft; (8) a gear wheel turning loosely on the fixed shaft and engaging the pinion; (9) intermediate mechanism between the gear and rolls for driving the latter.

It is contended by respondent that, to infringe claim 4 of the patent sued upon, it is necessary that the alleged infringing device contain an absolutely fixed central shaft, and that a specific form of flexible or elastic connection be interposed between the gear and horizontal table. Infringement cannot be avoided by reading into a broad claim of a patent specific devices claimed in narrower claims of the patent.

In the case of Mast, Foos & Co. v. Dempster Mill Mfg. Co., 27 C. C. A. 191, 82 Fed. 327, infringement was claimed of a patent for improvements in windmills. The claim alleged to have been infringed was the combination, with a windmill driving shaft and a pinion thereon, of an internal toothed spur wheel, mounted adjacent to the said shaft, and meshing with said pinion, a pitman connected with the spur wheel, and an actuating rod connected with the pitman. In defense, the principle was invoked that there could be no infringement of a combination if any element of the combination was absent from the infringing device, and the absence from appellee's apparatus of the pivoted pitman and the pitman bar was insisted upon as fatal to appellant's claim of infringement. Upon this point the court, through Sanborn, Circuit Judge, says:

"This invention consists essentially, as the inventor declares at the beginning of his specification, in the combination, \* \* \* and that he has broadly claimed this combination in the first claim of his patent. There is not an element in this combination which is not found in the windmill of the appellee, and it cannot be permitted to read other elements into this claim, and then to defeat it, because it does not use the elements it interpolates."

In National Cash-Register Co. v. American Cash-Register Co., 3 C. C. A. 559, 53 Fed. 367, invention was claimed for a cash-registering apparatus having a series of keys to designate certain amounts in combination with the cash drawer and drawer holder, a mediate connection between said keys and the drawer holder, not specifically described, and a spring to throw the drawer open when released by the drawer holder. It was admitted that all the specific devices entering into this combination were old, but it was claimed that a patentable invention was disclosed of a new and useful combination. Dallas, Circuit Judge, in considering the claim involved, said:

"This claim, as we read it, is, distinctly, exclusively, and broadly, for a new combination; and we know of no authority or principle of law which, so reading it, would warrant us in converting it, by construction, into a claim for details merely."

And with reference to lack of infringement because of different "mechanism of mediate connection" in the two devices in controversy (one of respondent's claims in the case at bar), the court stated:

"The correct inquiry, from our point of view, is not whether this appellee uses, in its mechanism of mediate connection, the same devices which are used by the appellants, or equivalents thereof, but whether the mediate connection employed by the appellee is not itself an equivalent of the mediate connection of the Campbell (patentee) combination. \* \* \* Though some of the corresponding parts of the machinery are not the same, and, separately considered, could not be regarded as identical or conflicting, yet, having the same purpose in the combination, and effecting that purpose in substantially the same manner, they are the equivalents of each other in that regard."

As to the Bradley mill, the result accomplished, and intended to be accomplished, is precisely the same as in the Bingham machine. A few additions are made in the Bradley machine. The journal boxes carrying the horizontal shaft are supported on timber framework forming a part of the building, instead of being fixed and supported on the top of the vertical central shaft, but it is obvious that the power transmitted through the gear wheel and pinion causes the rotation of the crushing rollers, and the parts adjacent to the rollers, around a fixed vertical central shaft. In the Bradley mill the overhead stringer upon which the journal boxes rest, with the V bents or side pieces, and the timber upon which the entire mill stands, together serve to attach the journal boxes to the central vertical shaft as rigidly as the journal boxes are attached to the top of the shaft in the Bingham mill or the Bryan mill.

A change of form does not avoid an infringement of a patent, unless the patentee specifies a particular form as the means by which the effect of the invention is produced, or otherwise confines himself to a particular form of what he describes. Even where a change of form somewhat modifies the construction, the action, or the utility of a patented thing, noninfringement will seldom result from such a change. *Walk. Pat. § 363; Strobridge v. Lindsay, 6 Fed. 510; O'Reilly v. Morse, 15 How. 123.*

The case of *Winans v. Denmead, 15 How. 330*, involved a patent "for making the body of a car for the transportation of coal," etc., "in the form of a frustum of a cone." The infringement claimed was the construction by defendants of cars for the same purpose having rectilinear bodies. Mr. Justice Curtis delivered the opinion of the court, and, in passing upon the construction of plaintiff's claim, said:

"Patentable improvements in machinery are almost always made by changing some one or more forms of one or more parts, and thereby introducing some mechanical principle or mode of action not previously existing in the machine, and so securing a new or improved result; and, in the numerous cases in which it has been held that to copy the patentee's mode of operation was an infringement, the infringer had got forms and proportions not described, and not in terms claimed. If it were not so, no question of infringement could arise. If the machine complained of were a copy, in form, of the machine described in the specification, of course it would be at once seen to be an infringement. It could be nothing else. It is only ingenious diversities of form and proportion, presenting the appearance of something unlike the thing patented, which give rise to questions; and the property of inventors would be valueless if it were enough for the defendant to say: 'Your improvement consisted in a change of form; you describe and claim but one form; I have not taken that, and so have not infringed.' The answer is: 'My improvement did not consist in a change of form, but in the new employment of principle or powers; in a new mode of operation, embodied in a

form by means of which a new or better result is produced; it was this which constituted my invention; this you have copied, changing only the form.' \* \* \* Where form and substance are inseparable, it is enough to look at the form only. Where they are separable; where the whole substance of the invention may be copied in a different form, it is the duty of courts and juries to look through the form for the substance of the invention,—for that which entitled the inventor to his patent, and which the patent was designed to secure. Where that is found, there is an infringement; and it is not a defense that it is embodied in a form not described, and in terms claimed, by the patentee. \* \* \* The patentee, having described his invention, and shown its principles, and claimed it in that form which most perfectly embodies it, is, in contemplation of law, deemed to claim every form in which his invention may be copied, unless he manifests an intention to disclaim some of those forms."

Having determined that the so-called Bingham or Trent machine and the Bradley machine are infringements, the question arises: Is L. C. Trent, respondent herein, responsible, as the manufacturer, user, or seller thereof, as an infringer?

Respondent denies the making, using, or selling of any mill like the Bingham mill, claiming to have acted in the capacity only of an architect and contractor in erecting the Bingham mill for the owner, C. J. Hodge, of Houghton, Mich. The testimony shows that the firm of L. C. Trent & Co. furnished the plans for the mill; that the machinery was principally made by the owner at his manufactory in Michigan, substantially in accordance with the plans furnished by Trent & Co.; that the mill building was erected at the North Last Chance mine at Bingham, Utah, by L. C. Trent & Co., and the machinery placed therein by them and fitted for operation, they receiving for such services an added percentage to the cost of material and labor supplied. It is claimed by respondent that no charge was made for the plans, they being furnished as an act of courtesy between two firms having considerable business dealing with each other.

It is also shown that the firm of L. C. Trent & Co., of which respondent is and was a member, advertised, by means of circulars and otherwise, to furnish crushing mills of a design similar to the one erected at Bingham, and, later, of the Bradley design; that the firm has sold and erected Bradley mills; that, while never having had a foundry or machine shop or iron works of their own, they have advertised to furnish mills, and, when the orders were secured, have invited bids from various manufacturers for the making of the required machinery, in accordance with plans and specifications designed and furnished by themselves. Thus far has the respondent been a maker of the infringing machines.

With regard to the Bingham mill, respondent's position, in the most advantageous light in which his own statements place him, is that of an active contributor to the infringement. By reason of the long experience of 25 years in that line of business, he was fully aware of what he was doing, the selection of the form of the crushing mill and its designing was by respondent's firm, and he profited by the adoption of his plans at least to the extent of a commission received for services rendered as contractor and builder. The Bradley and Bryan mills are so similar as to be regarded as one and the same by