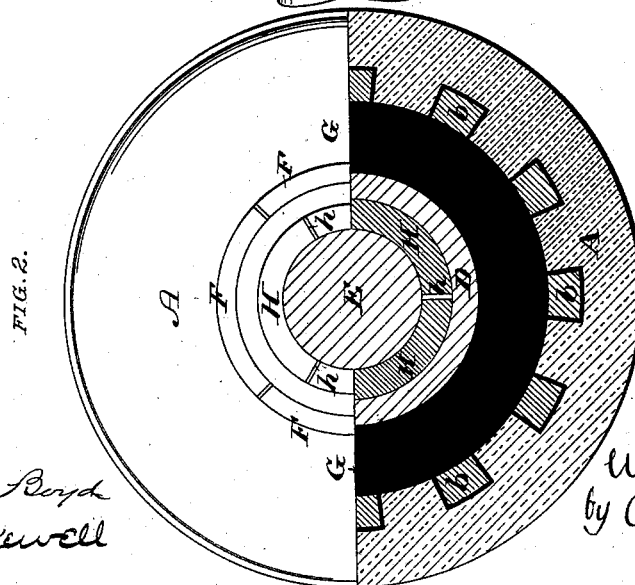
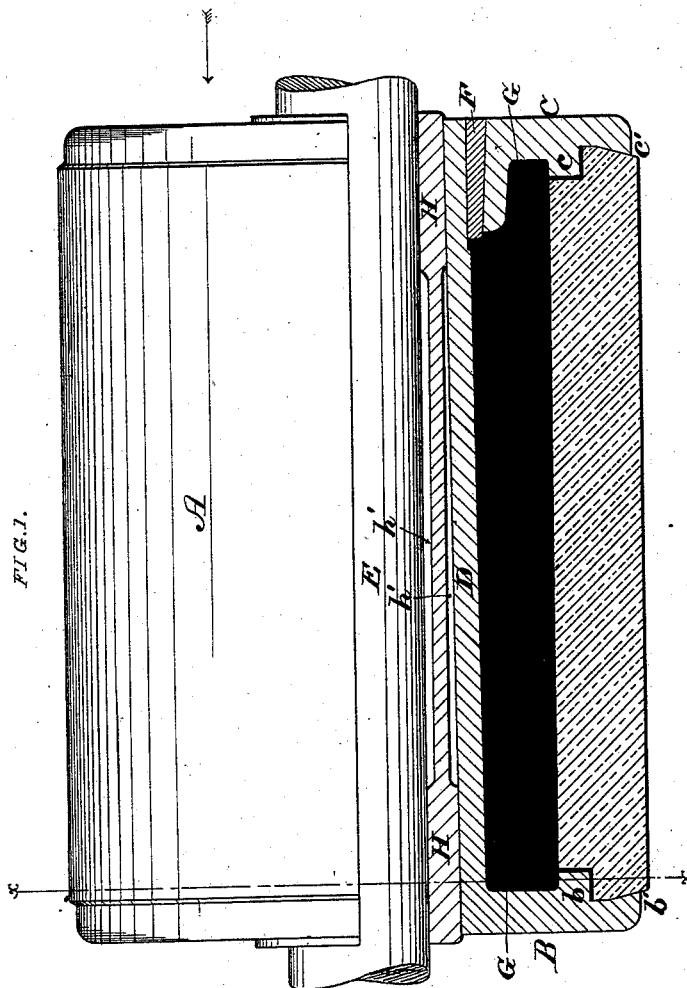


W. BRAUN.
 Porcelain-Rolls for Grain-Crushing Machine.
 No. 216,553. Patented June 17, 1879.



ATTEST:

Saml. S. Boyd
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INVENTOR:

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WILHELM BRAUN, OF CARLSBAD, AUSTRIA, ASSIGNOR TO JOHN WEBER,
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IMPROVEMENT IN PORCELAIN ROLLS FOR GRAIN-CRUSHING MACHINES.

Specification forming part of Letters Patent No. **216,553**, dated June 17, 1879; application filed
May 20, 1878.

To all whom it may concern:

Be it known that I, WILHELM BRAUN, a resident of Carlsbad, Austria, have made a new and useful Improvement in Porcelain Rolls for Machines for Crushing Grain, of which the following is a full, clear, and exact description, reference being had to the annexed drawings, making part of this specification, in which—

Figure 1 is a side elevation, partly in longitudinal section; and Fig. 2, an end elevation, partly in cross-section, the latter being taken on the line *x x* of Fig. 1, and the portion that is in elevation being in the direction indicated by the arrow, Fig. 1.

Similar letters of reference represent similar parts.

Two difficulties have been experienced in the use of porcelain cylinders or rolls as hitherto constructed—first, the liability of the cylinder to become loose upon its shaft, and, second, its liability to break in consequence of the heating and expansion of the axle.

It is the aim of the present invention to overcome the difficulties referred to, and to provide a strong, durable cylinder.

Referring to the annexed drawings, A represents a porcelain roll of suitable size, and in the form of a hollow cylinder. B and C represent heads or flanges that serve to inclose the cylinder and to connect it with the shaft. They are similarly and respectively furnished with a series of projections, *b* and *c*, that engage in corresponding recesses in the cylinder A. In this manner the flanges and cylinder are interlocked, and the latter prevented from turning around upon the former.

The flanges are also drawn in slightly at the peripheries *b' c'*, to bind the cylinder radially. The porcelain and flanges come in contact at *b' c'*, but do not come immediately together at *b c*.

The inner surface of the cylinder comes even with the inner side of the projections *b c*. One, B, of the flanges has a central tubular projection, D, that extends (around the shaft E) longitudinally through the cylinder and through the flange C, and is keyed to the latter by means of the circular keys F F F.

The annular space inclosed between the

flanges B and C and the tube D and cylinder A is filled with putty, G, which also extends between the projections *b c* and the cylinder.

The tube D does not fit directly to the shaft E; but I preferably fasten it thereto by means of an interposed tapering sleeve, H. The latter is, preferably, split at *h* longitudinally, and hollowed out at *h' h'*.

The inner surface of the tube D also, preferably, tapers. Thus made, all the various parts of the structure are securely locked together. The porcelain cannot come loose from the flanges, and the latter can be, and by means of the parts described are, tightly fastened together and to the shaft without straining the porcelain.

The flanges, keys, sleeve, and shaft are all preferably made of metal, and when united they form a rigid frame-work, but which, however, can be readily taken apart when desired; but by reason of the form of the cylinder A and the manner of connecting it with the flanges B C, any strain arising from the heating and consequent expansion of the axle cannot be imparted to the cylinder, for everywhere in a radial direction from the axle there is no opportunity for the metal to bear directly against the porcelain.

The strain is received by the interposed putty, which, from its nature, does not in practice transmit the strain to the porcelain. The latter is, therefore, protected from any inward strain. It is also, by reason of the putty, made to better withstand any shock from without.

The shell of the cylinder might be made thick enough to resist strains from without without using the backing of putty; but I prefer to insert the putty not only between the porcelain and the projections *b c*, but throughout the annular space between the porcelain and the tube D.

By giving the flanges B C the peculiar shape described at *b' c'*, the cylinder can be held in place without further aid. In such case no strain proceeding from the shaft can affect the cylinder, while on the other hand any strain upon the outside of the cylinder is taken up by the enlargement *b' c'* all around the flanges.

I claim—

1. The combination of the roll A, putty G,

flanges B C, tube D, sleeve H, keys F F F, and axle E, substantially as described.

2. The combination of the flanges B C, projections *b c*, porcelain cylinder A, and the putty G, arranged between the projections and the cylinder.

3. The sleeve H, hollowed out at *h' h'*, to less-

en the strain of the shaft upon the parts without the sleeve, in combination with the shaft E and roll A.

WILHELM BRAUN.

Witnesses:

FRANK WACH,
FRANK LANG.