

S. Falkenbury,

Repairing Broken Cast Iron Cylinders.

N^o 20,635.

Patented June 22, 1858.

Fig. 1.

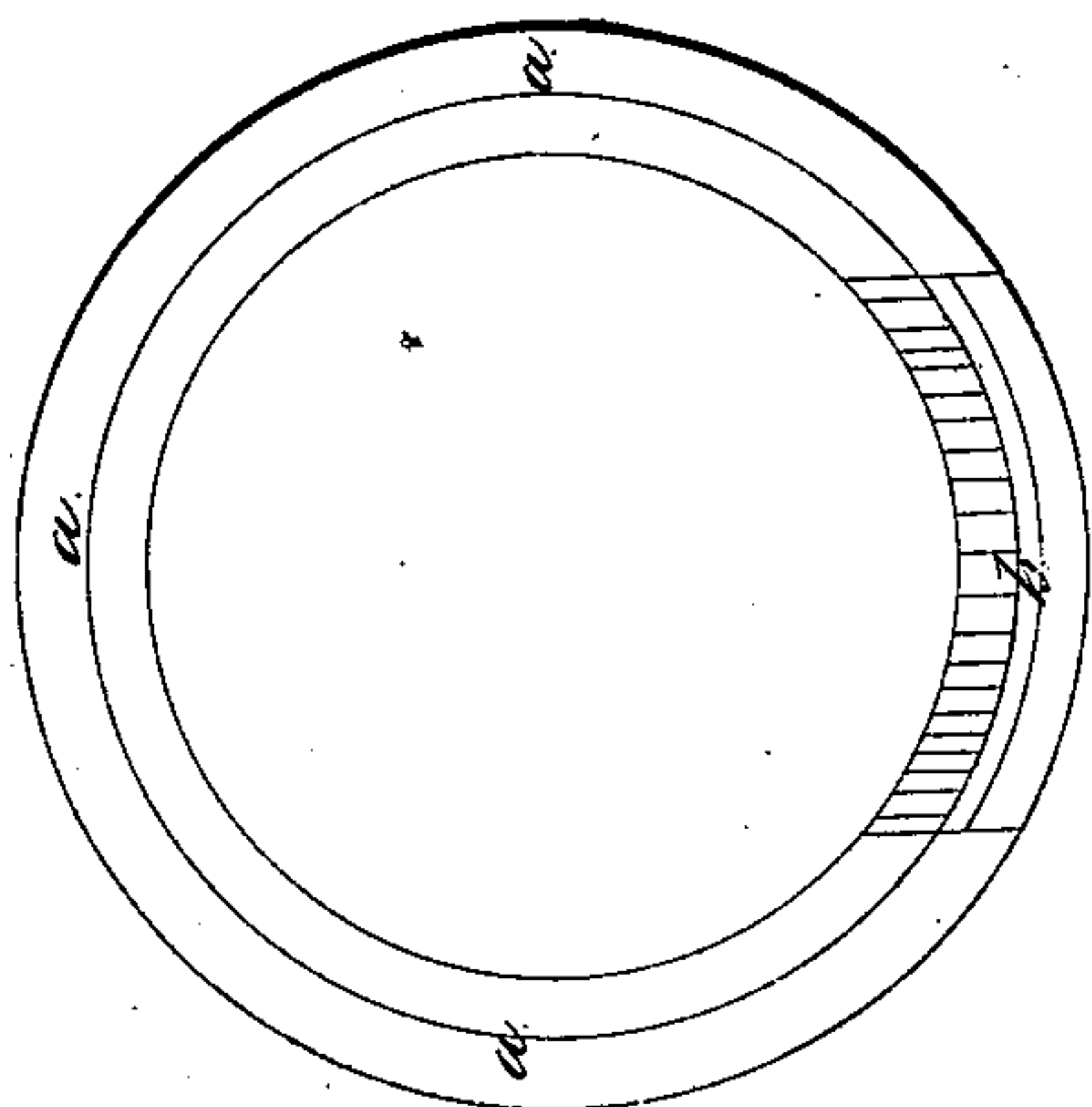


Fig. 2.

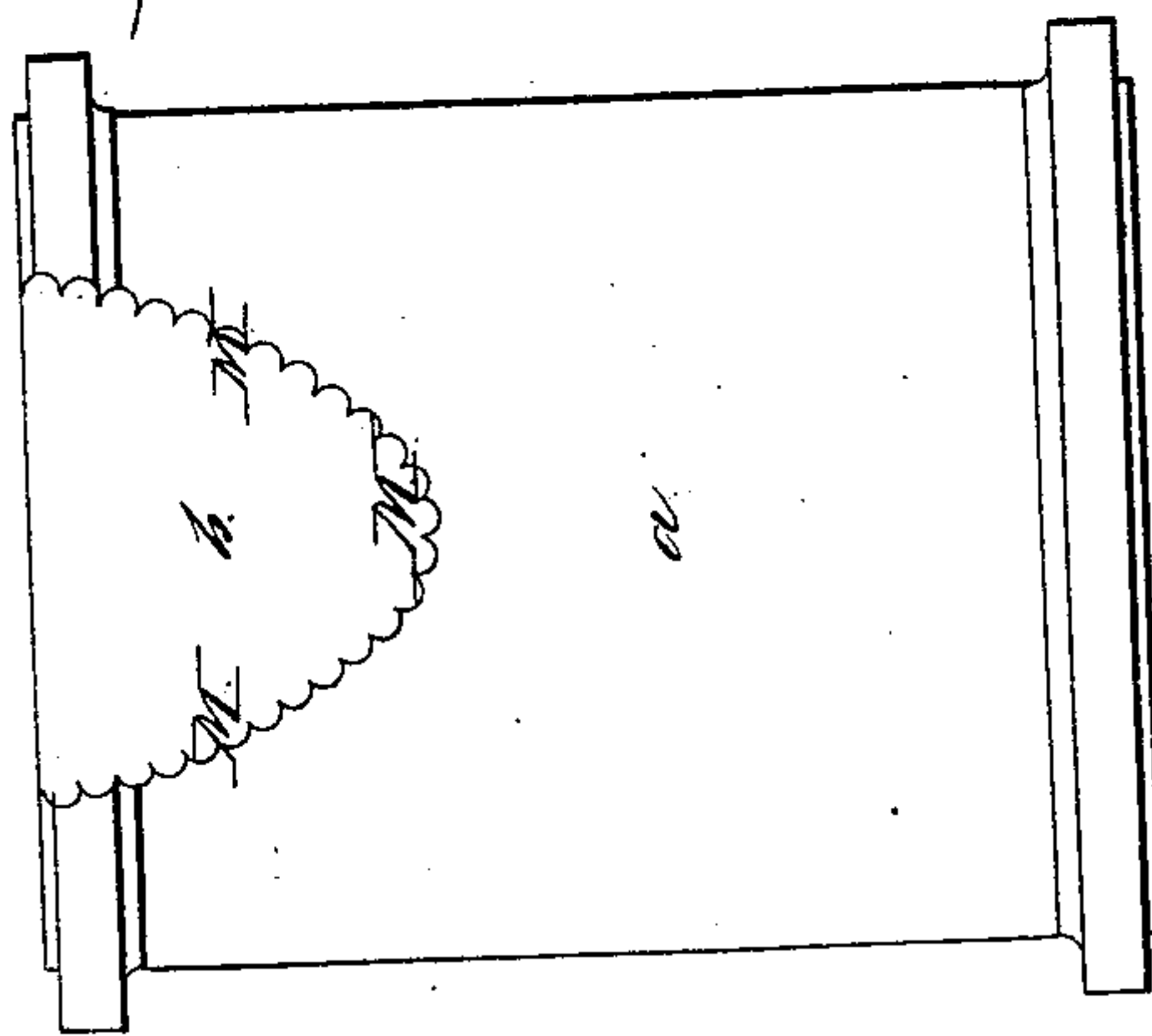
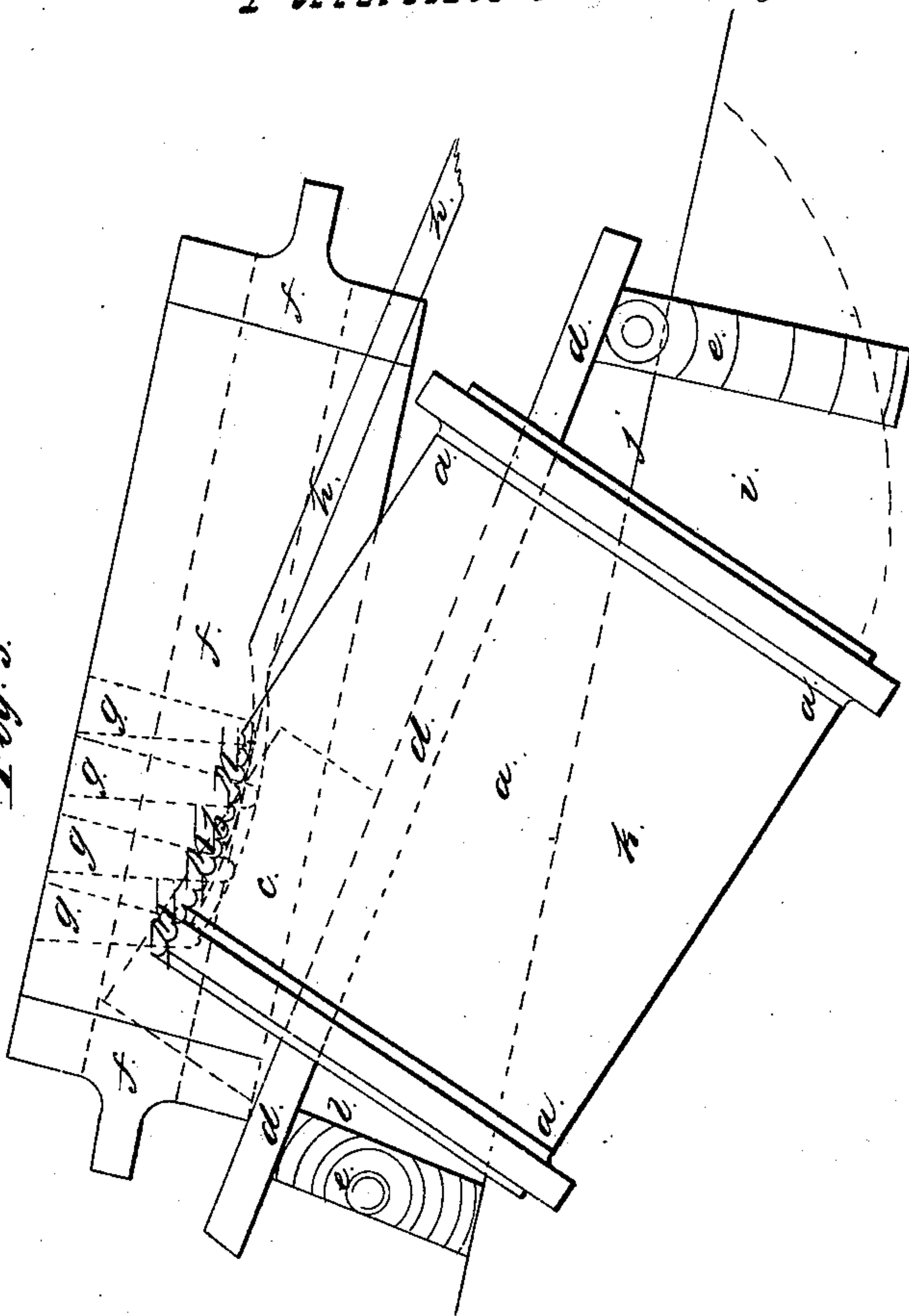


Fig. 3.



UNITED STATES PATENT OFFICE.

S. FALKENBURY, OF SUSQUEHANNA DEPOT, PENNSYLVANIA.

IMPROVEMENT IN REPAIRING CAST-IRON CYLINDERS.

Specification forming part of Letters Patent No. 20,635, dated June 22, 1858.

To all whom it may concern:

Be it known that I, SAMUEL FALKENBURY, of Susquehanna Depot, in the county of Susquehanna and State of Pennsylvania, have invented a new and Improved Mode of Repairing Broken Cast-Iron Cylinders, more particularly locomotive-cylinders; and I do hereby declare that the following is a full and exact description of the same.

The nature of my invention consists in mending the bore of a cylinder when one or more pieces are broken entirely out of the whole length of the cylinder, or over the steam-opening, and uniting the old and new bodies of metal in one solid piece, giving the same strength and equality of surface as when first manufactured.

To enable others skilled in the art to make and use my invention, I will proceed to describe my mode of operation, as follows, reference being had to the accompanying drawings, *a* representing the cylinder; *b*, the broken part; *c*, the core; *d*, iron bar supporting core; *e*, blocks upon which bar rests; *f*, flask or mold; *g*, gates or runners for pouring in the liquid metal; *h*, opening for carrying off the liquid or molten metal; *i*, pit in the floor; *j*, line of the floor; *k*, part of cylinder in the pit from *i* to *l*, showing that part of the cylinder where the charcoal-fire is introduced for expanding the same; *m*, showing drills for expanding-surface increase.

My mode of operation consists in the following: The cylinder to be repaired is laid in a pit or embedded in the sand, as represented in Figure 3 in the drawings, in a semi-horizontal position. Then a core, *c*, Fig. 3, is placed inside of the cylinder of sufficient length to extend past the broken part, this core being held up to its place by bars of iron *d*, Fig. 3, which at their terminal extremities rest upon blocks of iron *e* outside each end of the cylinder. The pattern is then fitted in the fractured part and a mold made over

it. The pattern is then withdrawn and an orifice made in the end of the mold at the smallest end of the fracture, the use of which is presently explained. The molten metal is then poured into the fracture *b*, and allowed to run through the drills *m*, flowing out at the orifice at *h*, Fig. 3', at the smallest end of the fracture, its heat melting the old sides of the fracture preparatory to assimilating with the old body of metal the original cylinder. Then the orifice is closed and the metal retained in the fracture, which, when filled, is allowed to cool as in ordinary castings, when, owing to the increased extent of surface brought about by the drills *m*, the old and new metals are found to be completely assimilated. Previous to pouring in the molten metal I heat the cylinder with a charcoal-fire placed inside of the cylinder, thereby baking the core *c* and expanding the old body of metal, the cylinder *a*, broken part *b*, and extended drilled surfaces *m*, so as to insure an equal contraction of the old and new bodies of metal, producing results which are very desirable and heretofore unknown by procuring a sound cylinder and equal surface, and saving the expense of making and fitting new locomotive-cylinders, which, when broken, have heretofore been considered useless, but the same after undergoing my operation are as perfect as when first manufactured.

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

The uniting the old and new cast-iron in the bore of steam-cylinders, which consists of drilling the broken parts for increase of expanding surface, and the application of a charcoal or other fire to equalize the expansion previous to pouring the metal, in the manner set forth in the above specification.

SAMUEL FALKENBURY.

Witnesses:

A. W. BRONSON,
A. W. ROWLEY.