

(No Model.)

S. A. FREEMAN.

DIE FOR UPSETTING CAST STEEL CAR WHEELS.

No. 430,121.

Patented June 17, 1890.

Fig. 1.

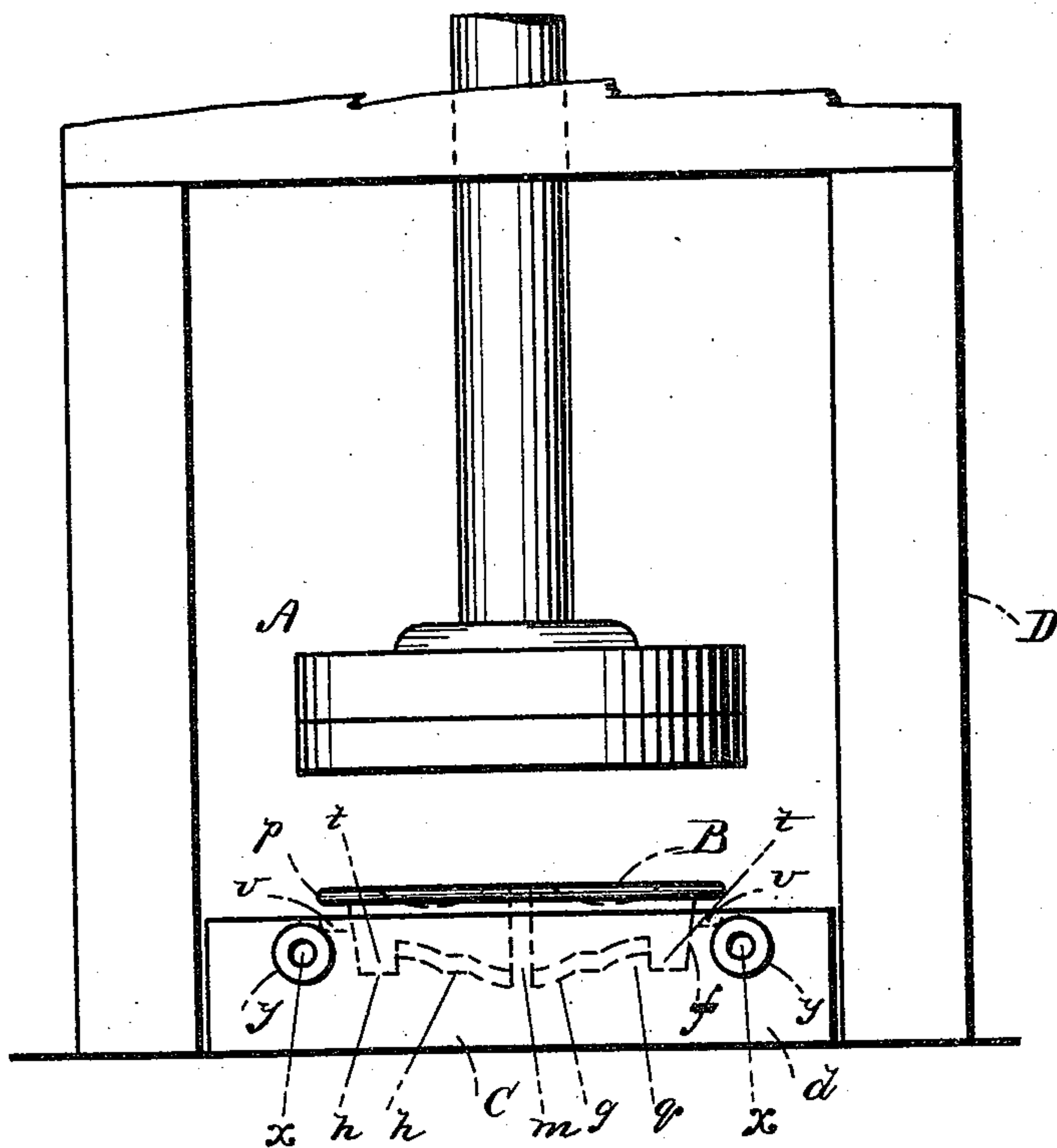


Fig. 2.

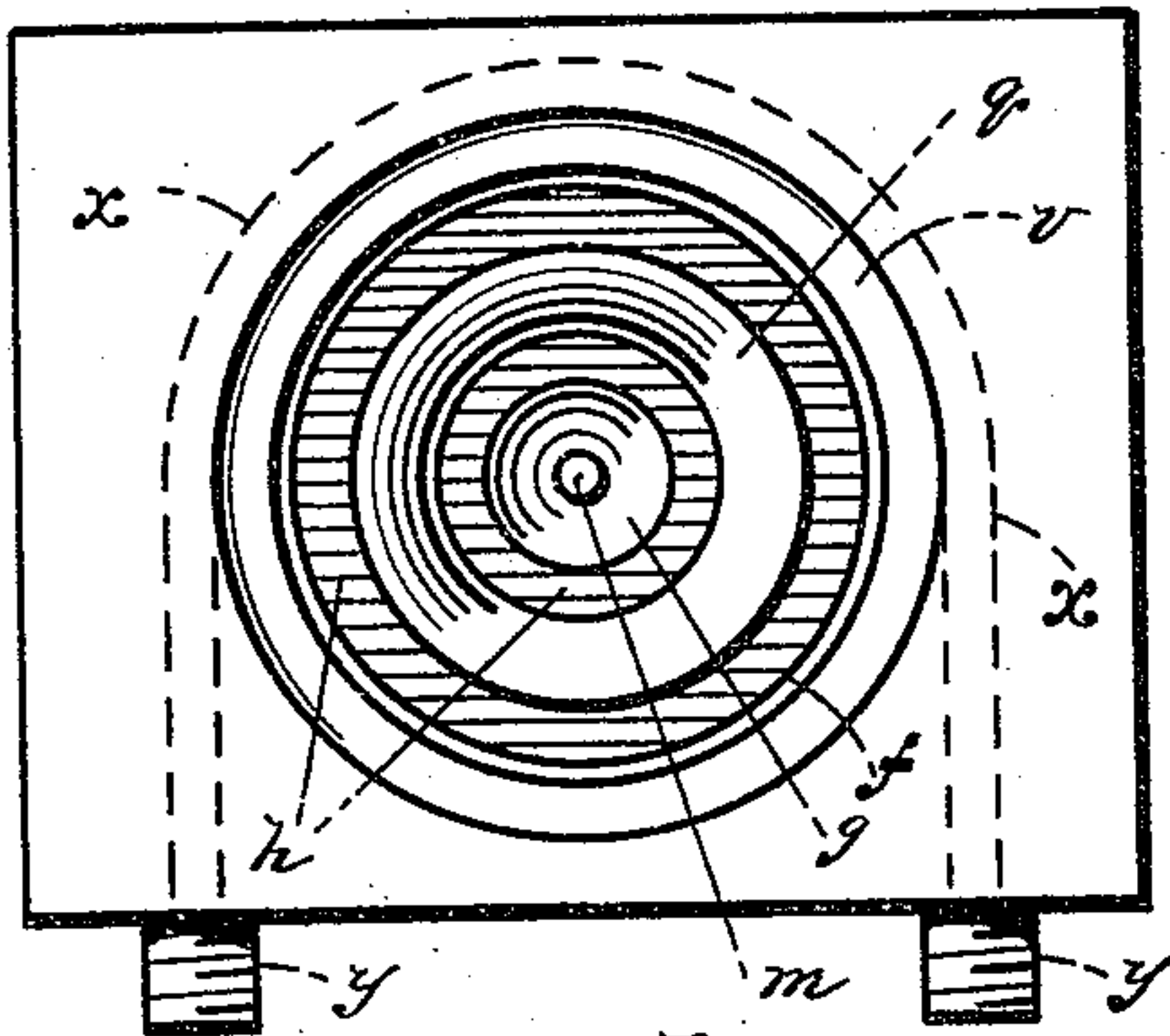
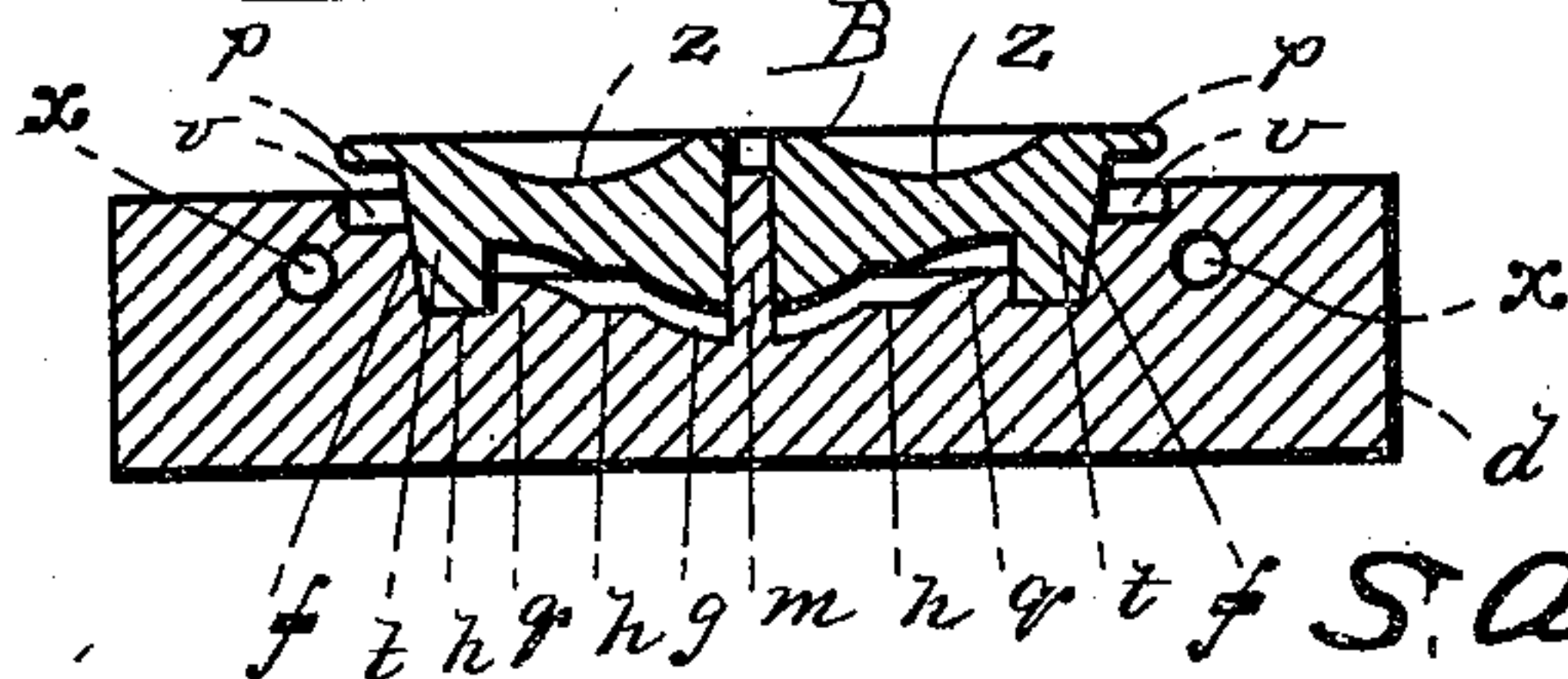


Fig. 3.



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# UNITED STATES PATENT OFFICE.

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THE AMERICAN STEEL CAR-WHEEL COMPANY, OF PORTLAND, MAINE.

## DIE FOR UPSETTING CAST-STEEL CAR-WHEELS.

SPECIFICATION forming part of Letters Patent No. 430,121, dated June 17, 1890.

Application filed April 22, 1889. Renewed May 12, 1890. Serial No. 351,399. (No model.)

*To all whom it may concern:*

Be it known that I, SULLIVAN ALBERT FREEMAN, of Boston, in the county of Suffolk, State of Massachusetts, have invented certain new and useful Improvements in Dies for Upsetting Cast-Steel Car-Wheels, of which the following is a description sufficiently full, clear, and exact to enable any person skilled in the art or science to which said invention appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is an elevation showing my improved die in use with a steam-hammer; Fig. 2, a top plan view of the die removed, and Fig. 3 a vertical transverse section of the die and wheel.

Like letters of reference indicate corresponding parts in the different figures of the drawings.

My invention relates especially to a die for holding and shaping cast-steel car-wheels while hammering them to upset or solidify the metal; and it consists in certain novel features, as hereinafter fully set forth and claimed, the object being to produce a simpler, cheaper, and more effective device of this character than is now in ordinary use.

The nature and operation of the improvement will be readily understood by all conversant with such matters from the following explanation.

In the drawings, A represents the steam-hammer; B, a car-wheel, and C the die considered as a whole.

The hammer is mounted in a frame D, in the usual manner, and as it is of the ordinary construction and operation it is not deemed essential to illustrate or describe its driving mechanism.

The die C consists of a bed-piece *d*, provided centrally in its upper face with a circular opening or die proper *f*, having inwardly-converging walls conforming to the incline of the tread of the car-wheel B, said opening being adapted to receive said wheel. Around the outer edge of the die proper *f* is formed an annular rabbet *v*, adapted to receive the flange *p* of the wheel when compressed in the die. The bottom *h* is sunken

slightly at *g*, and projecting centrally from said sunken portion there is a vertical spindle *m*, adapted to enter the axle-hole of the wheel when in position in the die. An annular flange *q* projects upward from the bottom *h* of the die around the depression *g* to fit into the web-groove of the wheel. A horizontally-arranged circular duct *x* is formed in the bed-piece *d* and extends around the die proper *f*, said duct being provided with a nipple *y* at each end to which pipes may be attached and water forced therein to prevent the die proper from becoming overheated and expanding.

In the use of improvement the wheel B is cast with its tread or tire slightly broader than the depth of the die proper, as shown at *t* in Fig. 3, and after being taken from the mold and while still hot is placed in the die with its flange *p* uppermost. The hammer being set in motion it strikes the wheel on its flange and hub, the web *z* being cast thinner than these parts to lighten the wheel and allow for contraction of the metal. The continued percussive blows of the hammer on the wheel drives it into the die and upsets or solidifies the grain of the metal in the bearing parts of the wheel, thereby changing its nature to an extent that the ordinary process of rolling and compression will not accomplish.

From continuous use the die C rapidly heats and frequently expands or becomes misshapen. By forcing a stream of water through the duct *x*, as described, the metal is prevented from becoming overheated in a manner that will be readily understood without a more explicit description.

I do not confine myself to constructing the bed-piece *d* of a single piece of metal, as it may be formed in sections, if desired, to facilitate removing the wheel therefrom.

As I have made the process described the subject-matter for another application for Letters Patent filed April 22, 1889, Serial No. 308,159, I do not herein claim the same, broadly, when in and of itself considered.

Having thus explained my invention, what I claim is—

1. A die for the purpose specified, comprising—

ing a bed-piece provided with an opening or die proper and a water-duct formed in the bed-piece around said opening, substantially as and for the purpose specified.

5 2. In a die for car-wheels, a bed-piece provided with a die proper, having an annular rabbet in its upper edge, a central depression in its bottom, a vertical spindle projecting therefrom, an annular flange thereon, and a  
10 water-duct formed in said bed-piece around said die proper, substantially as described.

3. In a die, a water-duct formed in the bed-

piece and extending around the die proper, substantially as and for the purpose set forth.

4. The die C, comprising the bed-piece *d*, 15 having the duct *x*, provided with nipples *y*, and the die proper *f*, provided with the depressions *g*, spindle *m*, flange *q*, and rabbet *v*, arranged substantially as described.

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Witnesses:

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