

(No Model.)

P. WILHELM & M. N. DEMMER.

CAR AXLE.

No. 335,003.

Patented Jan. 26, 1886.

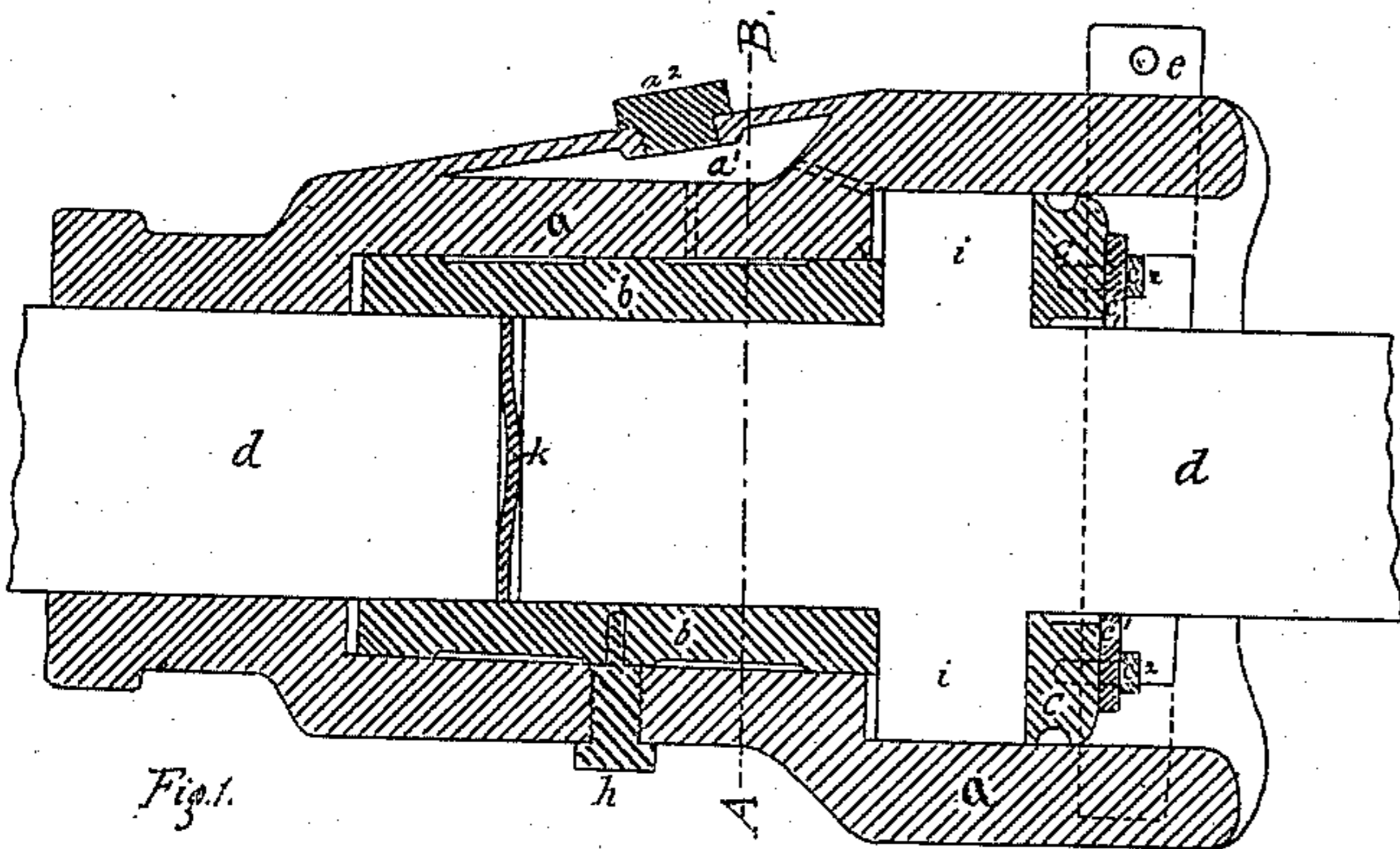


Fig. 1.

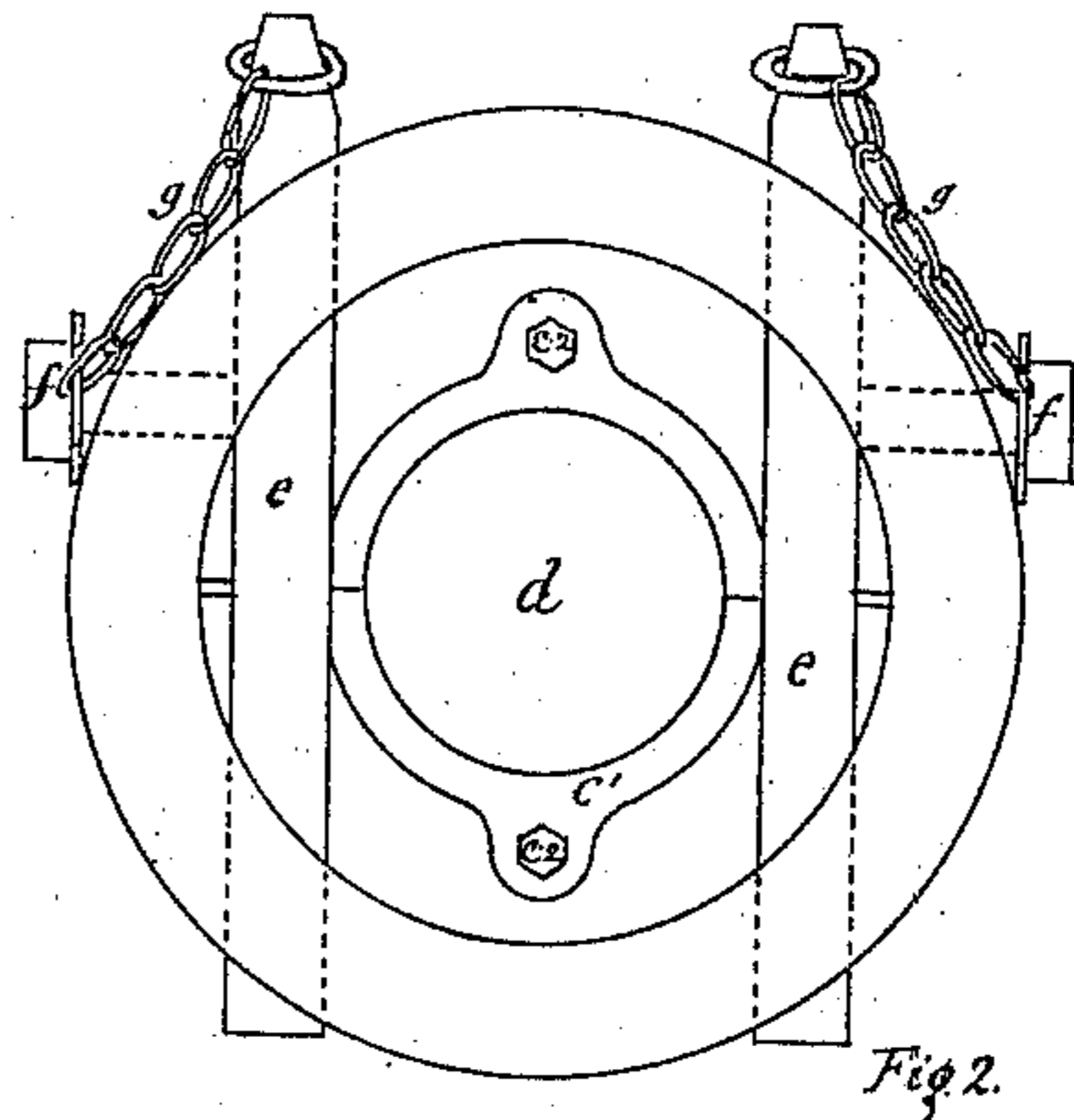


Fig. 2.

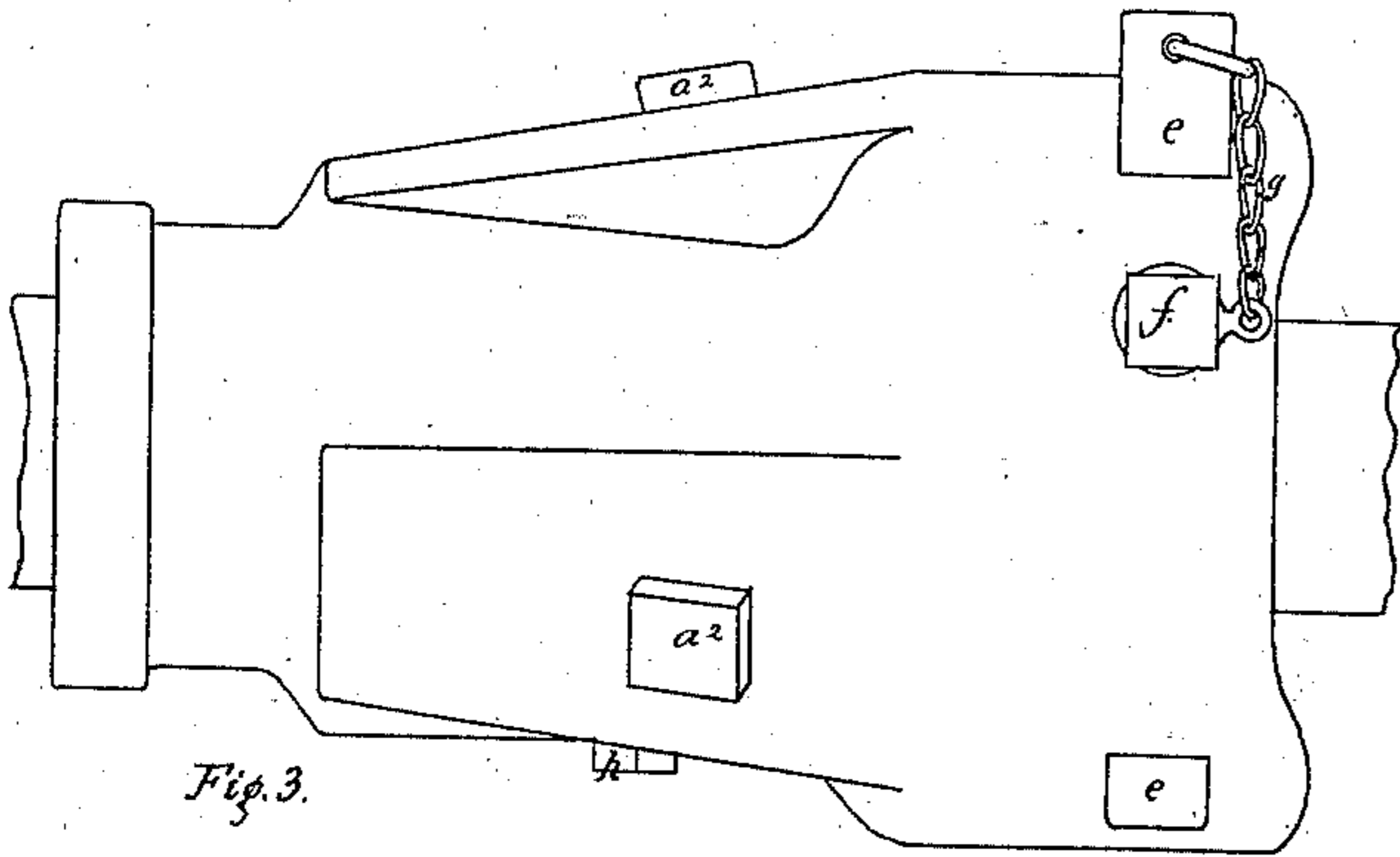


Fig. 3.

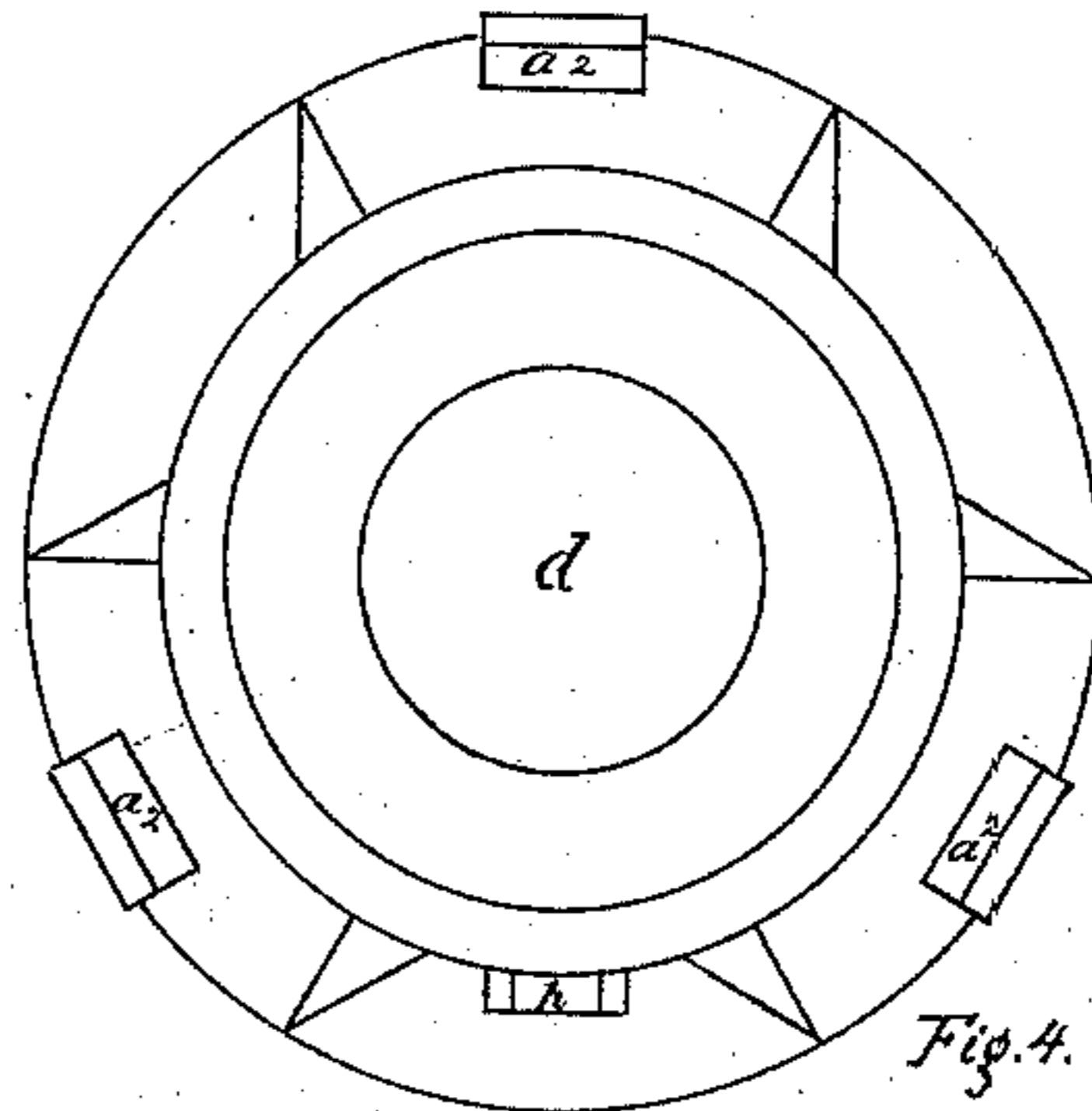


Fig. 4.

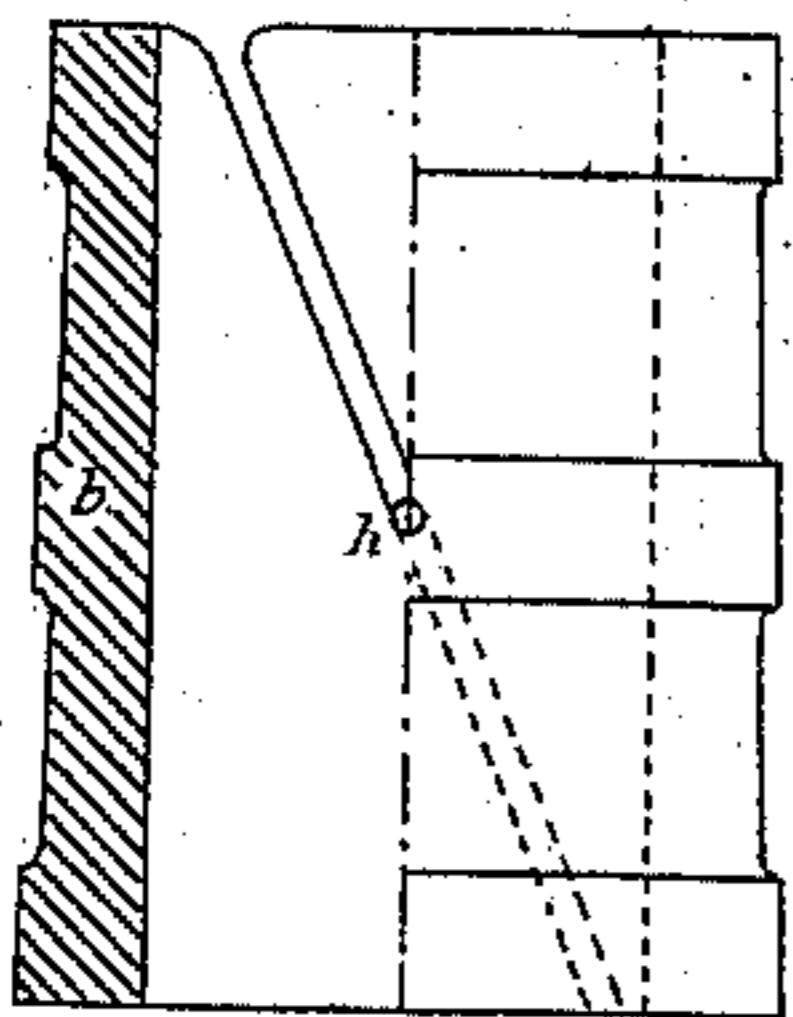


Fig. 5.

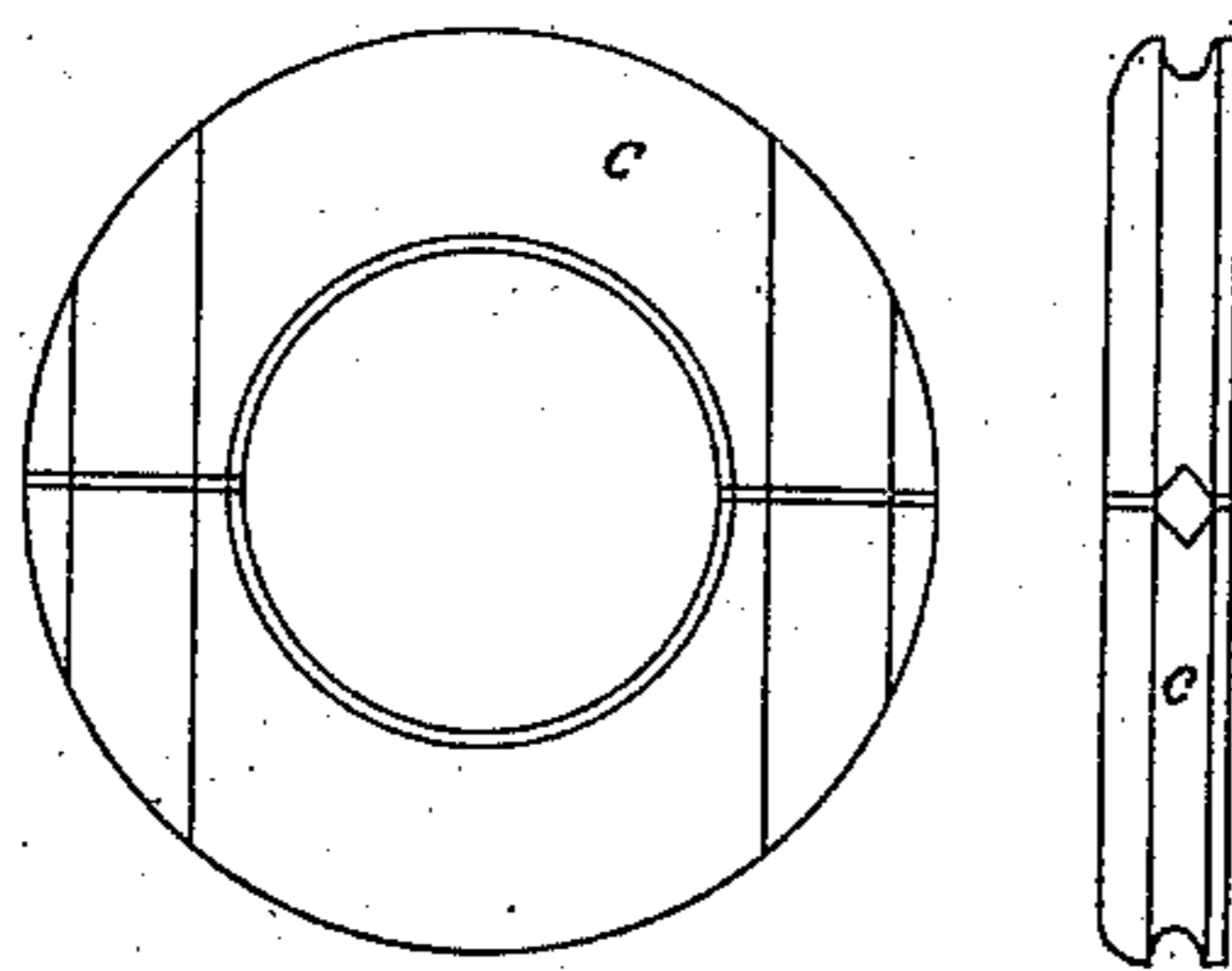


Fig. 6.

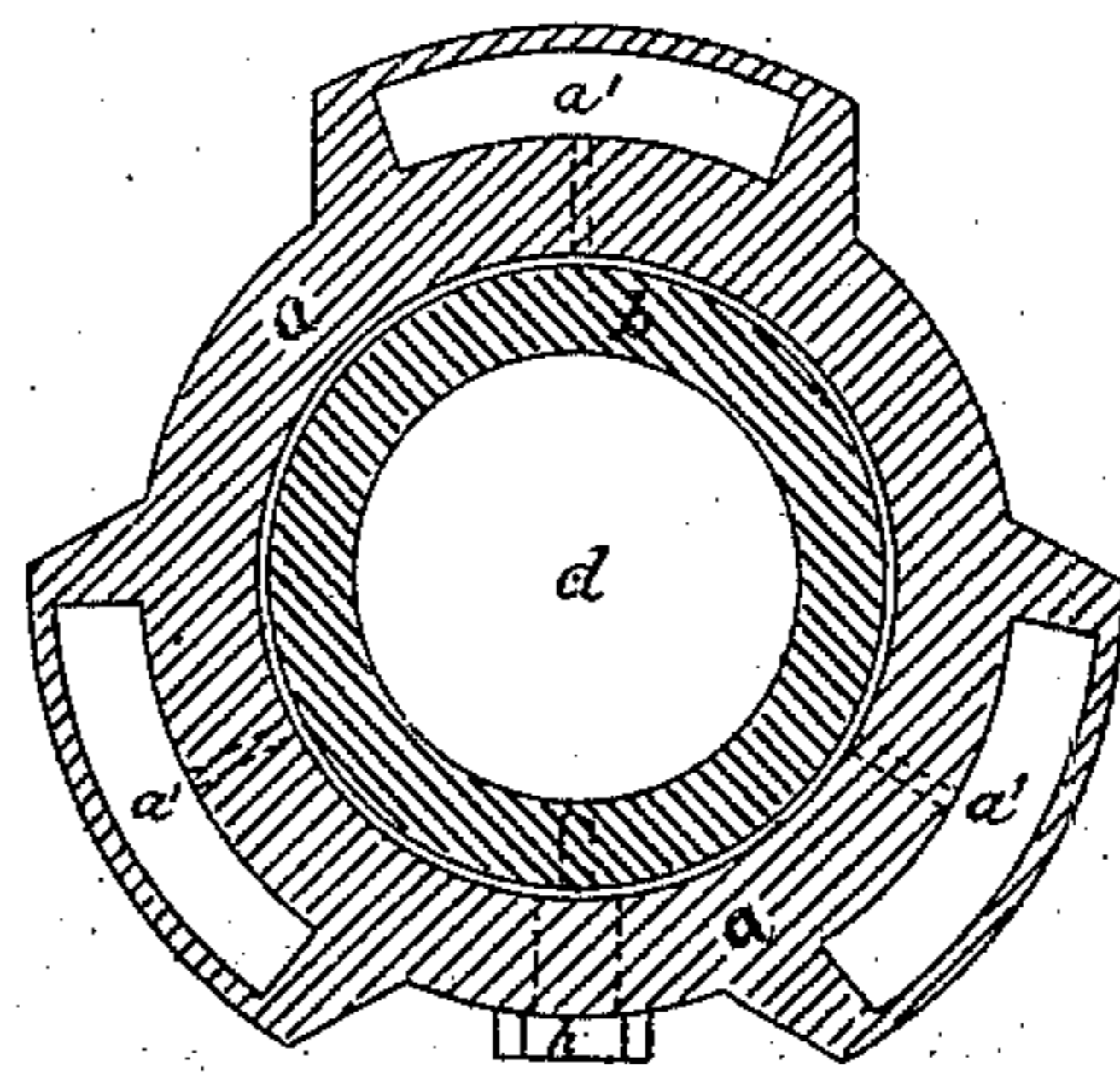


Fig. 7.

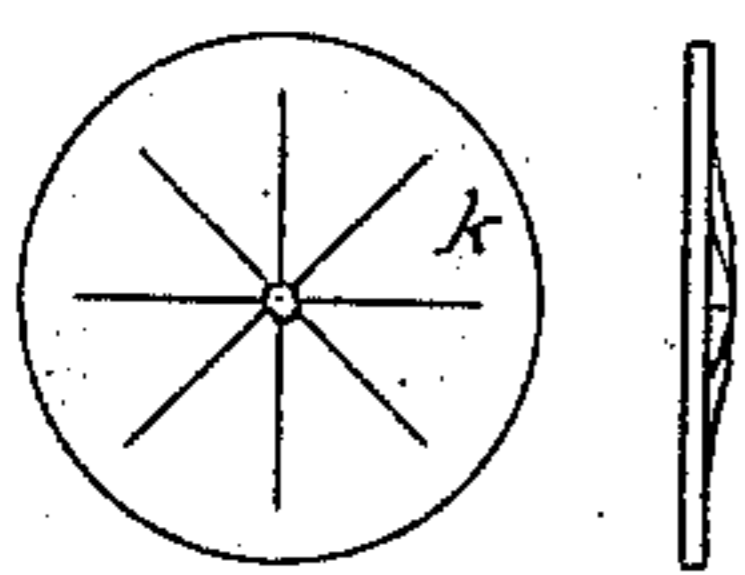


Fig. 8.

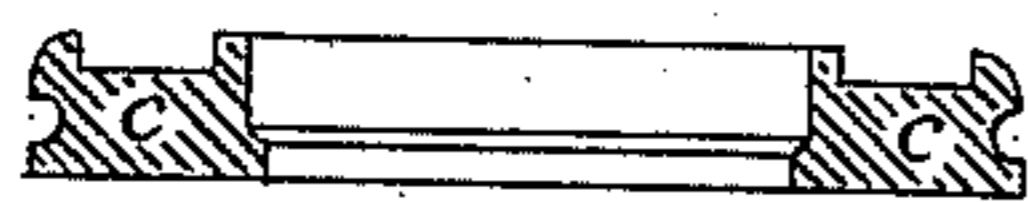


Fig. 9.

Witnesses:
Emil de Neuf.
Chas Ohle

Inventors:
Petro Wilhelm.
Mathew N. Demmer.

UNITED STATES PATENT OFFICE.

PETER WILHELM AND MATHEW N. DEMMER, OF PORTLAND, OREGON.

CAR-AXLE.

SPECIFICATION forming part of Letters Patent No. 335,003, dated January 26, 1886.

Application filed April 7, 1885. Serial No. 161,421. (No model.)

To all whom it may concern:

Be it known that we, PETER WILHELM and MATHEW N. DEMMER, citizens of the United States, residing at Portland, in the county of Multnomah, in the State of Oregon, have invented an Improved Divided Car-Axle for Railways, of which the following is a specification.

Our invention relates to lessening the friction on railway-curves, produced by solid axles where the wheels of such axles are drawn over the rails without rolling freely thereon, as in such wheels the outer one must travel over a longer distance than the other on the inside of such curves. To remedy this defect, we divide the axle and arrange it as hereinafter described in the drawings.

Figure 1 represents a longitudinal section. Fig. 2 is an end elevation of the wide end of the coupling. Fig. 3 is a side elevation; Fig. 4, end elevation of narrow end of coupling; Fig. 5, one-half section and one-half elevation of blind sleeve. Fig. 6 represents the dividable steel plate *c* in place, section and side elevation; Fig. 7, transverse section on line A B of Fig. 1; Fig. 8, star-spring *k* in plan and side view of same; Fig. 9, the collar *i* of axle in front and side elevation.

The divided combination car-axle consists of the following parts: first, the outer coupling or case, of cast-iron or cast-steel, *a*, with three oil-chambers, *a'*, and caps *a''*, to cover feeder thereto; second, the blind sleeve *b*, with steel set-screw or pin *h*, through coupling or case, holding the sleeve in place; third, the dividable steel plate *c*, with gland and set-screws *c'*, to hold down the packing; fourth, the two keys, *e*, for holding in place the said dividable steel plate *c*, together with set-screws *f*, in coupling or case, chains, rings, and washers *g* therefor; fifth, the collar *i* of the axle *d*, in combination with the foregoing parts, in the manner hereinafter described.

The cast iron or steel coupling or casing *a*, forming the outer coupling, is braced and strengthened by six ribs running from the outer collar to the end of shell. Each alternate section of these ribs is cored out in casting, so as to form three chambers, *a'*, for holding oil, (see Fig. 1,) with a capacity of carry-

ing about one-half pint each, thus enabling the journal to be lubricated for a long time with but little attention.

The coupling *a* is bored out on a taper five and three-eighths inches diameter at the wide end and five and one-fourth inches diameter at the narrow end. Into this socket is inserted the blind sleeve *b*, seven inches long, which is also tapered on the outside to fit said socket. The sleeve *b* is bored out to fit the ends of axles, and forms a journal in the coupling or case *a*. This sleeve is made of cast-steel, brass, bell or gun metal, as the case may be, and, as shown in the drawings, is cut diagonally, with an open space one-fourth of an inch wide from end to end, giving it facility for closing on the journal as it becomes worn by being forced down in the socket through the action of the collar *i* and the keys *e*.

The other half of the axle is provided with a steel collar, *i*, two inches wide and seven and one-fourth inches diameter, to be shrunk or forced on the axle, as the case may require. Said collar *i* sets against the larger end of the blind sleeve. At both ends of the blind sleeve is left a space of one-eighth of an inch, allowing the sleeve to be set in as it becomes worn. Where the two half-axles meet a star-formed spring, *k*, Figs. 1 and 8, is inserted, the diameter of which is the same as the axle. This spring is made out of three-sixteenths-inch flat spring-steel, the center to project one-eighth of an inch, making the space five-sixteenths of an inch between the ends of the axles. Said spring has six cuts running from center to within one-half inch of the outer edge. This spring will take up all end jar, and the blind sleeve being turned down smaller—one-eighth of an inch in two places—makes it more elastic, breaking all vibration, lessening crystallization and danger of breakage, and in this manner three rings are formed of the same diameter as the socket where the sleeve is inserted.

At the line of the center of the center ring on blind sleeve *b*, a five-eighths-inch steel set-screw, *h*, is placed and set in the outer coupling or case, *a*. This screw terminates in a pin of one-quarter inch diameter, which enters the diagonal cut in the blind sleeve, and thus keeps

the latter from turning in its bearing in case it should become dry for want of lubrication.

The three oil-chambers a' mentioned are provided with screw-caps a^2 . To feed the same, 5 remove the caps, fill chamber with oil, and replace the caps. Each oil-chamber is provided with two oil-holes, three-sixteenths-inch diameter, one through outer shell running vertically down into the blind sleeve the other 10 horizontally into the chamber of the collar of axle, thus allowing all working parts of coupling to lubricate themselves very readily, the oil entering to the axle through cut in blind sleeve, and the collar on the axle being provided 15 with diagonal grooves, as shown on drawings, Fig. 9, where it comes in contact with the dividable steel plate c . This steel plate c is designed to keep the loose half of axle in place in the coupling by means of the steel 20 keys e .

The plate c is the same diameter as the collar i on the axle, and is so constructed that it can be placed on the axle at any time in case breakage should occur, as it is cast with a core, 25 through which it may be easily broken and placed to its proper form again. A groove three-eighths of an inch wide and one-quarter of an inch deep runs around the outer edge of the steel plate, allowing a rubber ring to be 30 sprung over into the groove. The plate is also counterbored where it comes in contact with the axle, forming a packing-box, said box to be packed with hemp, cotton, rubber, or any other substance sufficient to hold lubricants. 35 This packing is held in place by a gland, c' , made in two halves, set down on steel plate by two set-screws, c^2 .

The steel plate c is provided with a diamond-shaped core, inserted when cast, in 40 which (in case it is necessary to break or divide it) is placed a square piece of rubber, which will come in contact with the outer packing around the plate C and with the axle-packing, making the joint perfectly tight and 45 proof against all sand, dust, or other substances likely to get into a journal exposed to such obstacles, as in this case. The steel plate c is also provided with two keyways one-fourth of an inch deep and one inch wide. 50 The outer coupling or case is also provided with keyways to correspond and fit the keyways on the plate c and the keys e , said keys being about one-fourth inch wider on one end than the other and one inch thick, and about 55 one inch by one and one-quarter inch at the smaller end, and one inch by one and a half inch at the larger end. Each key is held firmly in place by a five-eighths-inch steel set-

screw, f , in outer rim of coupling. These screws are provided with washers from which 60 a chain runs to a ring in the upper ends of keys, leaving the keys one-half inch play when in place, and thus preventing the loss of keys if a screw should become loose.

When the journal becomes loose by wear, 65 loose the screws, drive the keys down, which will close the blind-sleeve and force it farther into the conical or tapered socket, thus taking up all lost motion. The screws are then adjusted or tightened to hold the keys, when 70 the axle will run a long time without more attention than occasionally to oil it.

All coupling-sleeves and sockets must be bored and turned to the standard size.

In case a sleeve or bearing should become 75 so badly worn as to necessitate its removal, it will be necessary to remove the axle from the car, uncouple the same, draw out the old sleeve, which for this purpose is provided with a 80 three-quarter-inch hole, insert a new sleeve, and couple together again, when all will be ready for action, thus allowing the outside coupling or case to be used any length of time. The blind sleeve will last the lifetime of the 85 axle.

The outer coupling can be removed, placed on another axle, another new sleeve inserted, and it will last again for any length of time, making a cheap and durable coupling.

All old axles having one journal badly worn 90 may have their good ends used over again by cutting them off and applying this divided coupling, as hereinbefore described, and thus make a new axle of otherwise useless property. 95

We claim—

1. The conical or tapering coupling or casing a , provided with oil-chambers a' , in combination with a conical or tapering open cut sleeve, b , said sleeve being kept from rotating 100 by means of a screw or pin, h .

2. The dividable plate c , for retaining lubricants, and in combination with adjusting-keys e and collar i , whereby the sleeve b is adjusted and secured in its bearings in the 105 coupling or casing a .

3. The spring k , in combination with the axle ends and the several parts connected therewith, substantially as described, and for the purpose set forth.

PETER WILHELM.
MATHEW N. DEMMER.

Witnesses:

JNO. D. BILES,
WM. E. POPE.