

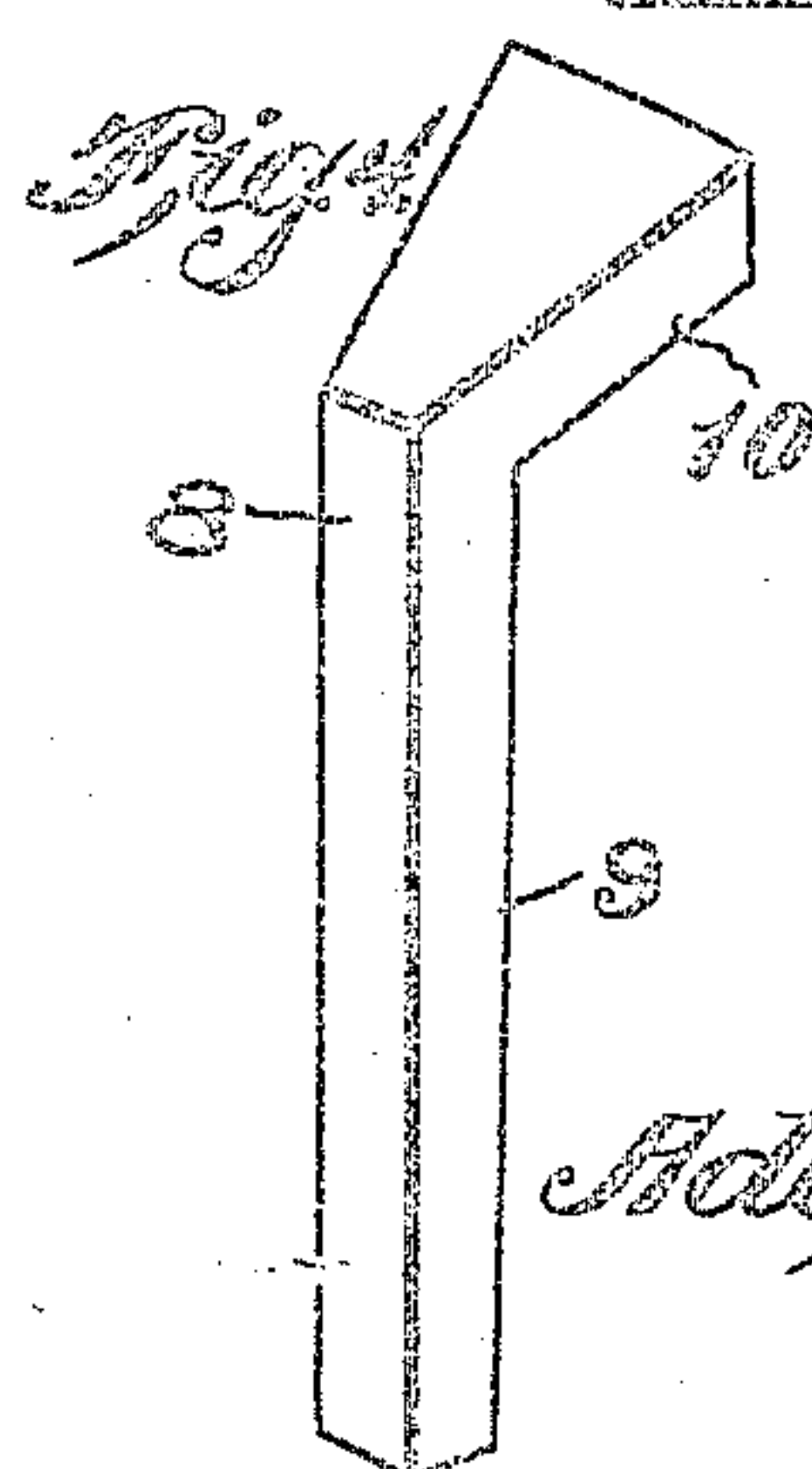
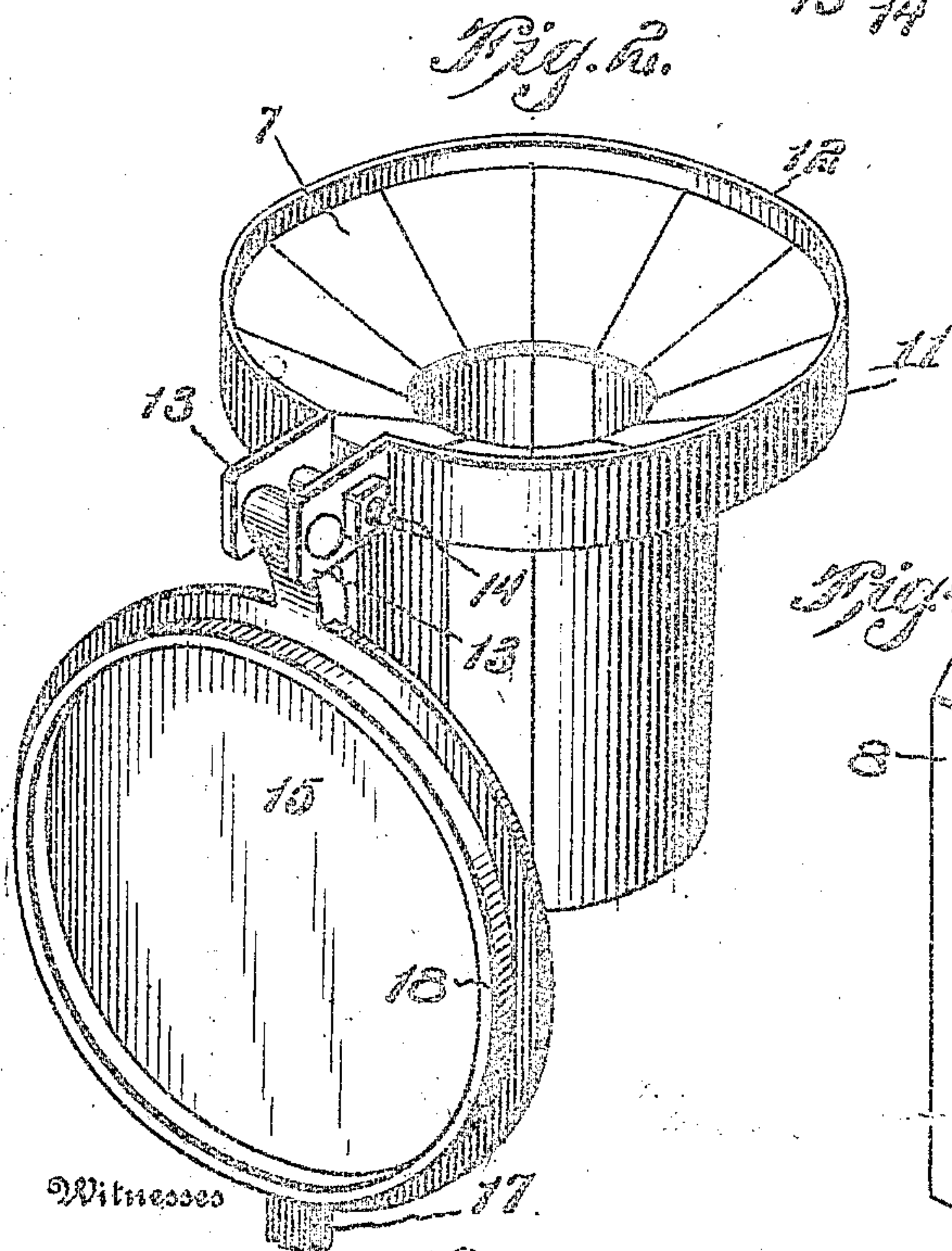
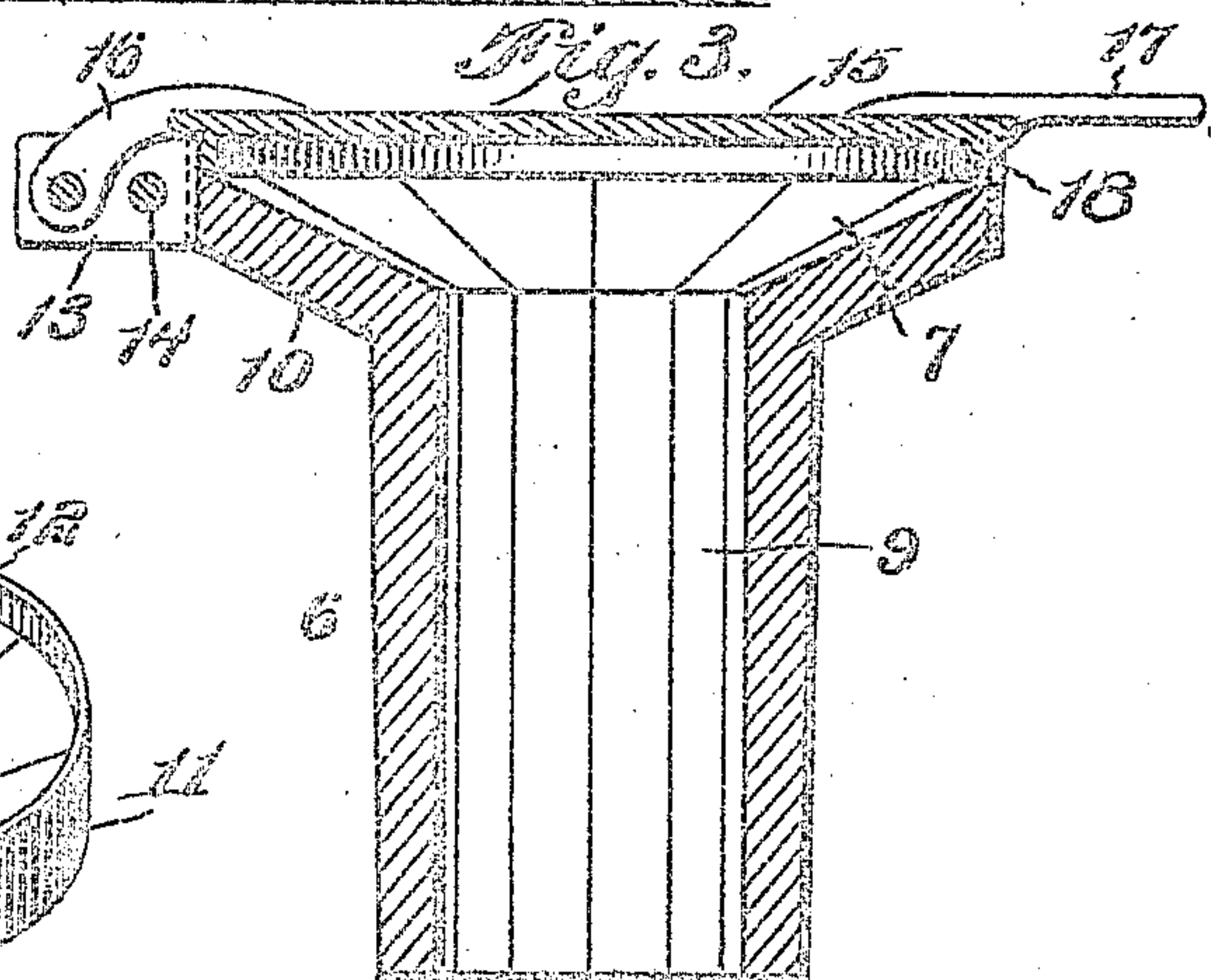
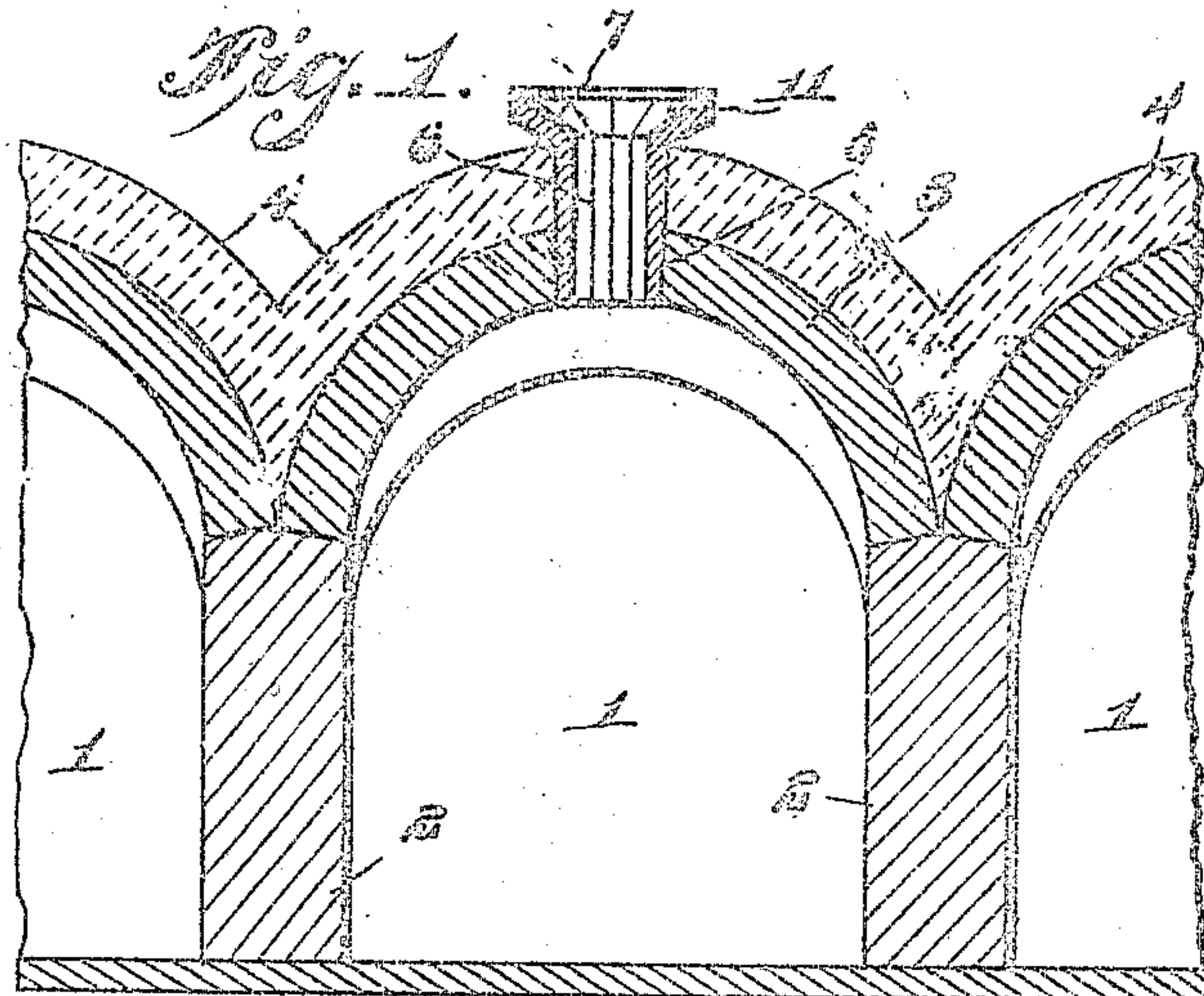
No. 862,793.

PATENTED AUG. 6, 1907.

A. B. BITTNER.

TUNNEL HEAD.

APPLICATION FILED JAN. 18, 1907.



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TUNNEL-HEAD.

No. 862,793.

Specification of Letters Patent.

Patented Aug. 6, 1907.

Application filed January 18, 1907. Serial No. 352,955.

To all whom it may concern:

Be it known that I, ADOLPH B. BITTNER, a citizen of the United States of America, residing at Uniontown, in the county of Fayette and State of Pennsylvania, have invented new and useful Improvements in Tunnel-Heads, of which the following is a specification.

This invention relates to an improved tunnel head or flue-ring for coke ovens of the bee-hive or arched-crown-wall type, the object of the invention being to provide a device of this character which may be economically manufactured and is not liable to be easily cracked under the heat of the oven, which may be readily set in position and repaired when occasion requires, which will not work in its receiving opening and fall down into the oven, which will, to a large extent, prevent entrance of rain water to the oven, and which may be varied in diameter for use in connection with different sizes of ovens.

A further object of the invention is to provide a removable strengthening band or rim for attachment to the crown or flange of the head to protect the same from chipping or breaking when the oven is filled with coal through the head and will also serve to form a projecting mouth or rim to facilitate the entrance of coal through the head and prevent the same from flowing over or falling from the head, as well as to provide a damper carried by the band for use in closing the head to retain the heat in the oven after the coke has been withdrawn and until the succeeding charge of coal is supplied.

In the accompanying drawing—Figure 1 is a vertical sectional view through a portion of a battery of ovens, showing the application of my invention to one of the oven chambers. Fig. 2 is a perspective view of the tunnel head and applied parts. Fig. 3 is a vertical transverse section of the same. Fig. 4 is a perspective view of one of the sections of the head.

Referring to the drawing, the numeral 1 represents a series of coke oven chambers of a battery of ovens, the chambers being arranged side by side in the usual manner and separated by division walls 2, each chamber being formed with an arched top wall 3, which is covered with a surface layer or filling 4 of earth or other suitable material extending to the level of the top of the body portion of each tunnel head and conforming in contour to the crown wall.

Each arch 3 is provided with a crown opening 5 for the reception of a tunnel-head or flue-ring 6, having a crown flange 7 extending outwardly and upwardly at an oblique angle and resting at its base upon the surface filling 4 to support the ring in position against downward movement in the opening 5, the outer surface of the body of the head being also preferably tapered to wedge into the opening and assist in such function. The body and flange of the head are longitudinally and radially divided to respectively form a series of seg-

mental sections 8, each comprising a vertical limb 9 having an out-turned upper projection 10, the projections of the several sections 8 forming the flange 7.

In practice the head may be made of any desired number of sections of this character which are adapted to be fitted together in the manner shown in Figs. 2 and 3 to form the complete head. The head may be varied in diameter to fit different sized openings in oven chambers of different capacities by simple increasing or decreasing the number of sections, as will be readily understood. The parts or sections of the head are preferably made of fire clay or some other suitable material.

Tunnel-heads of this character have heretofore been made in a single piece or of ring sections disposed horizontally one above the other. The sectional construction referred to has been heretofore employed to facilitate the handling and setting of the head in position, as these heads are heavy and comparatively difficult to handle. The objection to the ordinary form of head is that under the weight thereof it is liable to work its way gradually down into the opening 5 and drop in the course of time into the oven, thereby enlarging said opening and mutilating the wall 3 in such a manner as to render it difficult to repair it.

Another objection to the ordinary form of head resides in its inability to rise and fall with the wall 3 in its expansion and contraction without breaking. Therefore, heads of this character as heretofore constructed are a source of considerable expense, owing to the fact that they become easily chipped or broken and must be frequently removed and replaced. My improved construction obviates these objections, as, owing to the sectional type of the head, the parts are free to expand and contract with the wall 3 without shifting in the opening 5, and, if one section should be chipped or otherwise damaged, it may be removed by a simple upward sliding movement and another slid downward in its place. The head may also be conveniently set within the receiving opening 5, as the sections thereof may be independently inserted in position. The tapered form of the head prevents it from working down into the opening 5, while the weight of the head is supported by the flange 7 which rests upon the filling 4, thus preventing transfer of strain to the arch 3. In addition, the flange 7 projects above the surface-filling and forms a curb or barrier to prevent to a large extent the passage of rain water through the head into the oven chamber, the water being caused to flow therefrom down the inclined sides of the filling into the depressed portions between adjacent fillings.

In conjunction with the head I employ a protecting metal ring or band 11 to encircle and prevent chipping or breaking of the flange 7 in the operation of filling the oven chamber with coal. The ring bears against the edge of the flange and projects upwardly therefrom

to form a curb or rim 12 to retain the coal discharging from the chute and prevent it from falling off the head. A receiving pocket is thus formed to facilitate the inlet of the coal to the tunnel-head, and the band reinforces and protects the flange so that it will not be broken or chipped by particles of coal falling thereon. The band is preferably adjustable for application to tunnel-heads varying in size, and to this end is of the split type, its ends being laterally projected to form ears 13 adjustably connected by a bolt 14. A damper plate 15 is provided at one side with a lug 16 pivotally mounted between the ears in any preferred manner so that said plate may be swung over the top of the tunnel-head and rested upon the upper edge of the band to cut off the draft through the head, thus enabling the heat to be retained within the oven after the coke has been withdrawn and until the oven is to be refilled with coal. At the side opposite the lug 16 the damper plate is provided with a handle 17 by which it may be manipulated and preferably the plate is formed with a depending flange 18 to project downward on the inner side of the rim 12 and seat against the top surface of the flange 7 so as to form a tight closure and to enable the weight of the damper to be effectually supported.

25 The band and damper may form a permanent attachment of the tunnel-head, or removed or transferred from head to head for use, as occasion requires, in the operation of a plurality of ovens.

Having thus described the invention, what is claimed as new, is:—

1. A tunnel-head having a flange, and a protecting band about said flange. 30
2. A tunnel-head having a flange, and a protecting band about said flange, said band projecting above the flange to form a rim. 35
3. A tunnel-head having a flange, and an adjustable protecting band engaging the flange.
4. A tunnel-head having a flange, a split protecting band surrounding the flange, and means adjustably connecting the ends of the band. 40
5. A tunnel-head having a crown flange, said head being composed of a plurality of sections, and a protecting band inclosing the rim of the flange.
6. A tunnel-head having a crown flange, a protecting band surrounding the flange, and a damper carried by the band. 45
7. A tunnel-head having a crown flange, a protecting band surrounding the flange, and a hinged damper carried by the band.
8. A tunnel-head having a crown flange, a protecting band engaging the flange and projecting above the same to form a rim, and a damper hinged to the band to seat upon said rim and having a flange to fit down upon the interior thereof. 50

In testimony whereof, I affix my signature in presence of two witnesses. 55

ADOLPH B. BITTNER.

Witnesses:

O. P. MARKLE,
I. FRANK.