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R. L. MORGAN & J. N. HEALD.

DRILL GRINDING MACHINE.

APPLICATION FILED SEPT. 27, 1905.

Fig. 1.

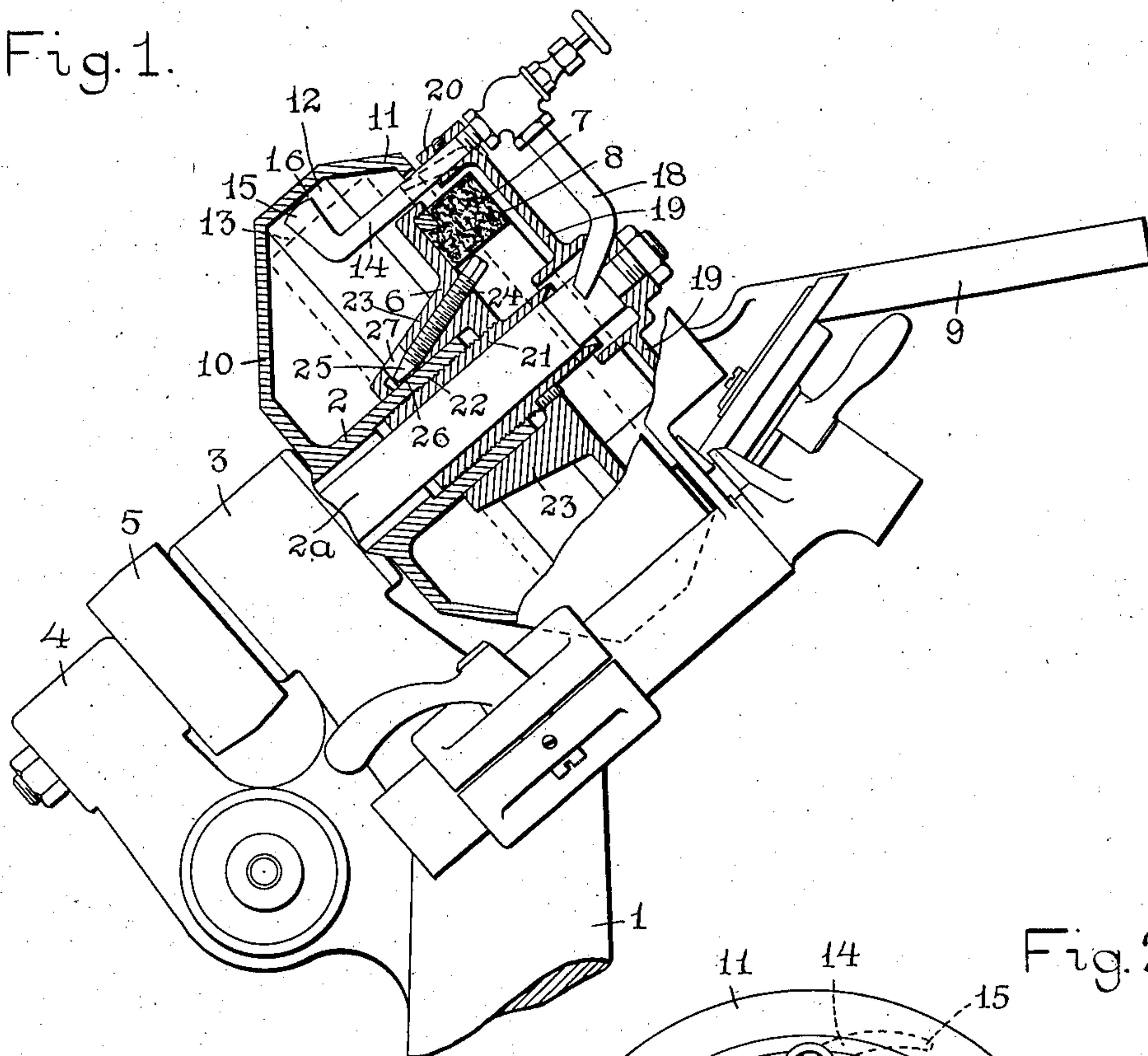


Fig. 3.

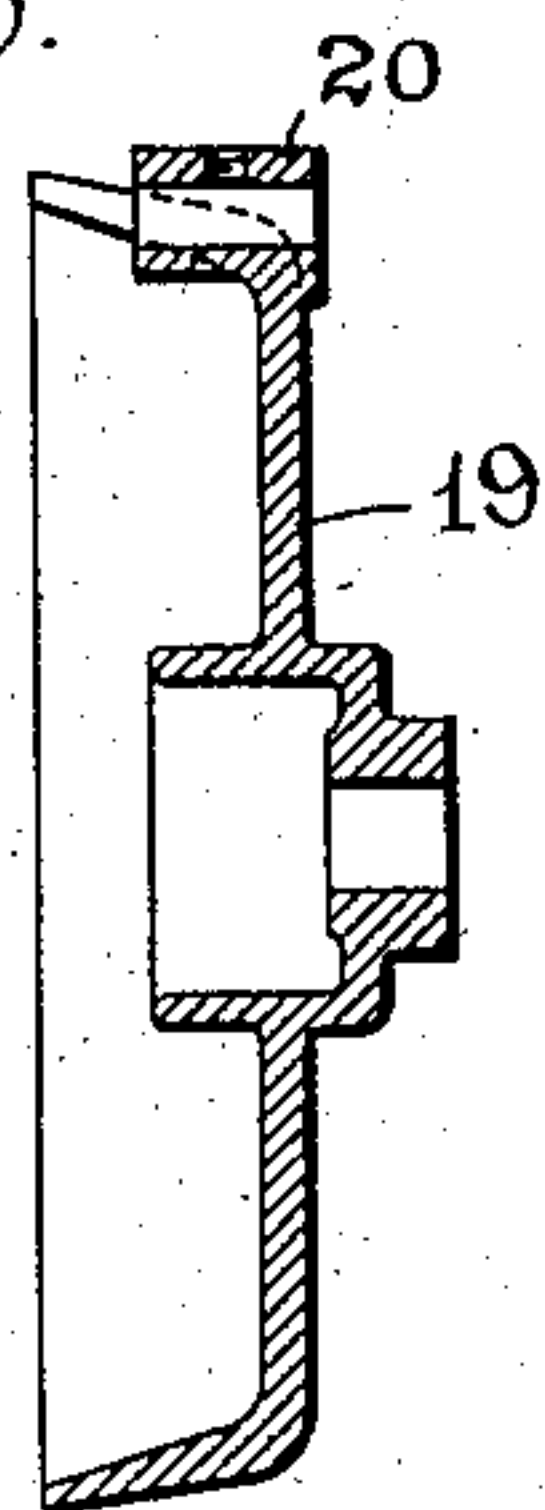
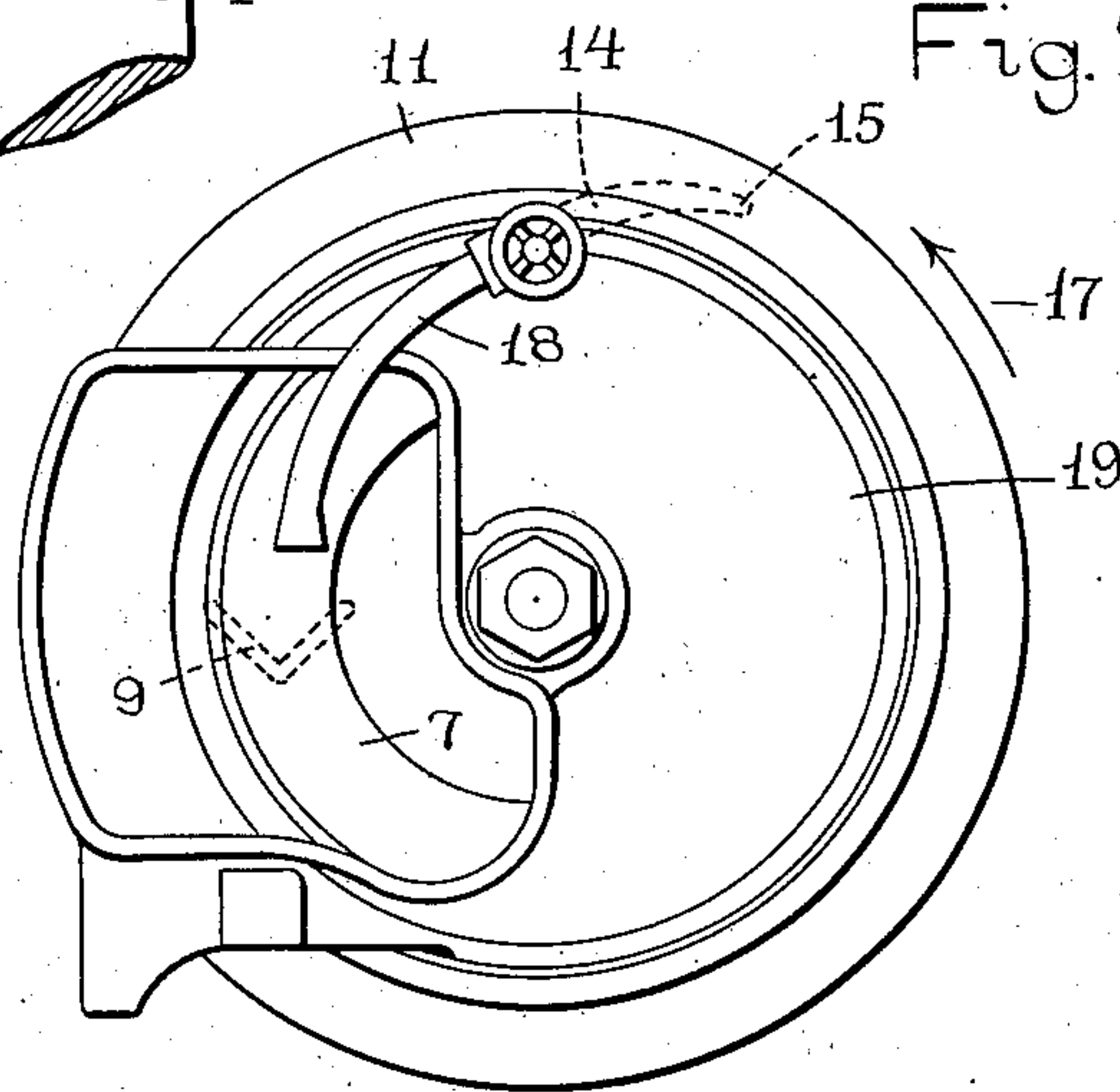


Fig. 2.



Witnesses

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DRILL-GRINDING MACHINE.

No. 827,459.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, RALPH L. MORGAN and JAMES N. HEALD, citizens of the United States, residing at Worcester, in the county of Worcester and Commonwealth of Massachusetts, have invented a new and useful Improvement in Drill-Grinding Machines, of which the following is a specification, accompanied by drawings forming a part of the same, in which—

Figure 1 represents a side elevation of a portion of a drill-grinding machine embodying our invention, partly shown in section. Fig. 2 is a front view of the grinding-wheel and inclosing hood, and Fig. 3 is a detached sectional view of the hood 19.

Similar reference-figures refer to similar parts in the different views.

Our invention has for its object to provide means for supplying water to the abrading-wheel of a grinding-machine, and in the present drawings and specification we have shown and described our invention as applied to the grinding-wheel of a twist-drill grinder.

We accomplish the object of our invention by providing a revolving cup-shaped water-receptacle concentric with the axis of the grinding-wheel, said cup-shaped water-receptacle having at its edge an inturned lip forming an annular recess in which a quantity of water placed in the receptacle is thrown by centrifugal force caused by the rapid revolution of the water-receptacle causing the water to lie in a thin sheet around the inner side of the periphery of the revolving water-receptacle. Interposed in the path of the revolving sheet of water is a flattened receiving-nozzle which communicates with a pipe leading to the grinding-surface of the wheel, upon which a stream of water is delivered, which, in leaving the grinding-wheel either by gravity or by centrifugal force is again caught within the revolving water-receptacle and thrown outward by centrifugal force into an annular sheet to be again caught by the flattened receiving-nozzle.

Referring to the accompanying drawings, 1 denotes a post upon which the operative parts of the grinding-machine are mounted.

2 denotes a rotating hollow spindle journaled in bearings 3 and 4, rotating around the fixed spindle 2^a and driven from any convenient counter-shaft through a belt connec-

tion with a pulley 5, carried by the rotating hollow spindle 2. Suitably attached to the rotating spindle is a collet 6, carrying a grinding-wheel 7 which, in the present instance is provided with a grinding-surface 8 upon the side of the wheel.

9 denotes a tool-holder by which a drill or other tool is presented to the side of the grinding-wheel.

Attached to the rotating spindle 2 is a cup-shaped water-receptacle 10, having an inturned lip 11, inclosing between the lip 11 and the sides of the cup a recess 12. A small quantity of water is placed in the cup-shaped receptacle 10, which by the rapid rotation of the receptacle is thrown against that portion of the inner wall of the receptacle having the greatest diameter, causing the water to revolve in an annular sheet, as indicated by the broken lines 13, Fig. 1. Into the path of this revolving sheet of water 13 we place the end of a pipe 14, having a flattened receiving-nozzle 15, with a space 16 between the end of the nozzle and the inner wall of the water-receptacle. The cup-shaped receptacle 10 is rotated in the direction of the arrow 17, Fig. 2, carrying the water 13 against the open end of the receiving-nozzle 15, which is forced through the pipe 14 and allowed to fall by gravity through the communicating pipe 18 upon the side of the grinding-wheel 7.

Supported upon the end of the fixed spindle 2^a is a hood 19, having a lip 20 overhanging the periphery of the grinding-wheel in position to catch any water thrown from the wheel by centrifugal force and deliver the same to the cup-shaped water-receptacle 10. By leaving a small space between the inner wall of the revolving cup-shaped water-receptacle 10 and the open end of the receiving-nozzle 15 we avoid feeding through the pipes 14 and 18 any grit or dirt which may have become lodged in the water from the grinding-wheel, as the particles of grit and dirt being heavier than the water are carried by centrifugal force against the inner wall of the cup-shaped-receptacle and beyond the open end of the receiving-nozzle 15.

The collet 6, carrying the grinding-wheel 7, is attached to a sleeve 21, inclosing the spindle 2^a and entering the hollow spindle 2, with which it has a screw-threaded connection 22. The collet 6 is provided with a hub 23, over-

lapping the hollow spindle 2 and carrying a screw 24, placed obliquely to the axis of the grinding-wheel. The screw 24 has a beveled tip 25, which bears against a clamping-plate 26, resting against the outer surface of the hollow spindle 2, a recess 27 being formed in the hub 23 to allow the plate 26 to be inserted. By advancing the screw 24 its beveled tip 25 will be crowded against the plate 26, thereby clamping the hub 23 to the hollow spindle 2 and securing the rotation of the collet 6 and wheel 7. By slightly withdrawing the screw 24 the plate 26 will be loosened, allowing the collet 6 to be rotated, while the spindle 2 is held stationary. The rotation of the screw-threaded sleeve 21 within the screw-threaded hollow spindle 2 will effect an adjustment of the grinding-wheel on the spindle 2, causing the side 8 of the wheel to be moved toward or away from the delivery end of the pipe 18 when the screw 24 is advanced and the grinding-wheel tightened in position.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. In a grinding-machine, the combination with a grinding-wheel, of a concentric revolving water-receptacle having its interior diameter greater than the diameter of said grinding-wheel, and a pipe provided at one end with a receiving end held contiguous to the inner annular surface of said water-receptacle, and having its opposite end arranged to deliver water to the grinding-surface of said wheel.

2. In a grinding-machine, the combination with a revolving grinding-wheel, of a revolving water-receptacle, concentric with said wheel, means for conducting the water thrown from said grinding-wheel by centrifugal force into said receptacle, and a water-pipe having a receiving end held contiguous to the inner annular surface of said water-receptacle.

3. In a grinding-machine, the combination with a revolving grinding-wheel, of a concentric revolving water-receptacle having its di-

ameter greater than the diameter of said grinding-wheel, a hood parallel with one side of the grinding-wheel, and having a lip overhanging the periphery of the grinding-wheel and entering within the edge of said water-receptacle, and means for conducting water from said water-receptacle to the grinding-surface of said grinding-wheel.

4. In a grinding-machine, the combination with a revolving grinding-wheel, of a concentric revolving water-receptacle inclosing the periphery of said grinding-wheel, a fixed hood parallel with the side of the grinding-wheel and having a lip entering the edge of said water-receptacle, a water-pipe held by said hood with one end arranged to receive water from the inner periphery of said water-receptacle, and its opposite end arranged to deliver water to the grinding-wheel.

5. In a grinding-machine, the combination with a revolving grinding-wheel, of a concentric revolving water-receptacle, a fixed water-pipe arranged to receive water at one end from the inner annular surface of said water-receptacle and deliver it at the opposite end to the grinding-wheel, and means for adjusting said grinding-wheel relatively to the delivery end of said water-pipe.

6. In a grinding-machine, the combination with a supporting-framework, of a fixed spindle held therein, a sleeve rotatable on said spindle, a concentric water-receptacle carried by said sleeve, a grinding-wheel carried by said sleeve, means for the adjustment of said grinding-wheel longitudinally on said sleeve and relatively to said water-receptacle, and means for conducting water from said water-receptacle to said grinding-wheel.

Dated this 23d day of September, 1905.

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