No. 861,905. PATENTED JULY 30, 1907.

L. G. ROSS.

DRILL FORGE.

APPLICATION FILED AUG. 20, 1906.

2 SHEETS—SHEET 1.

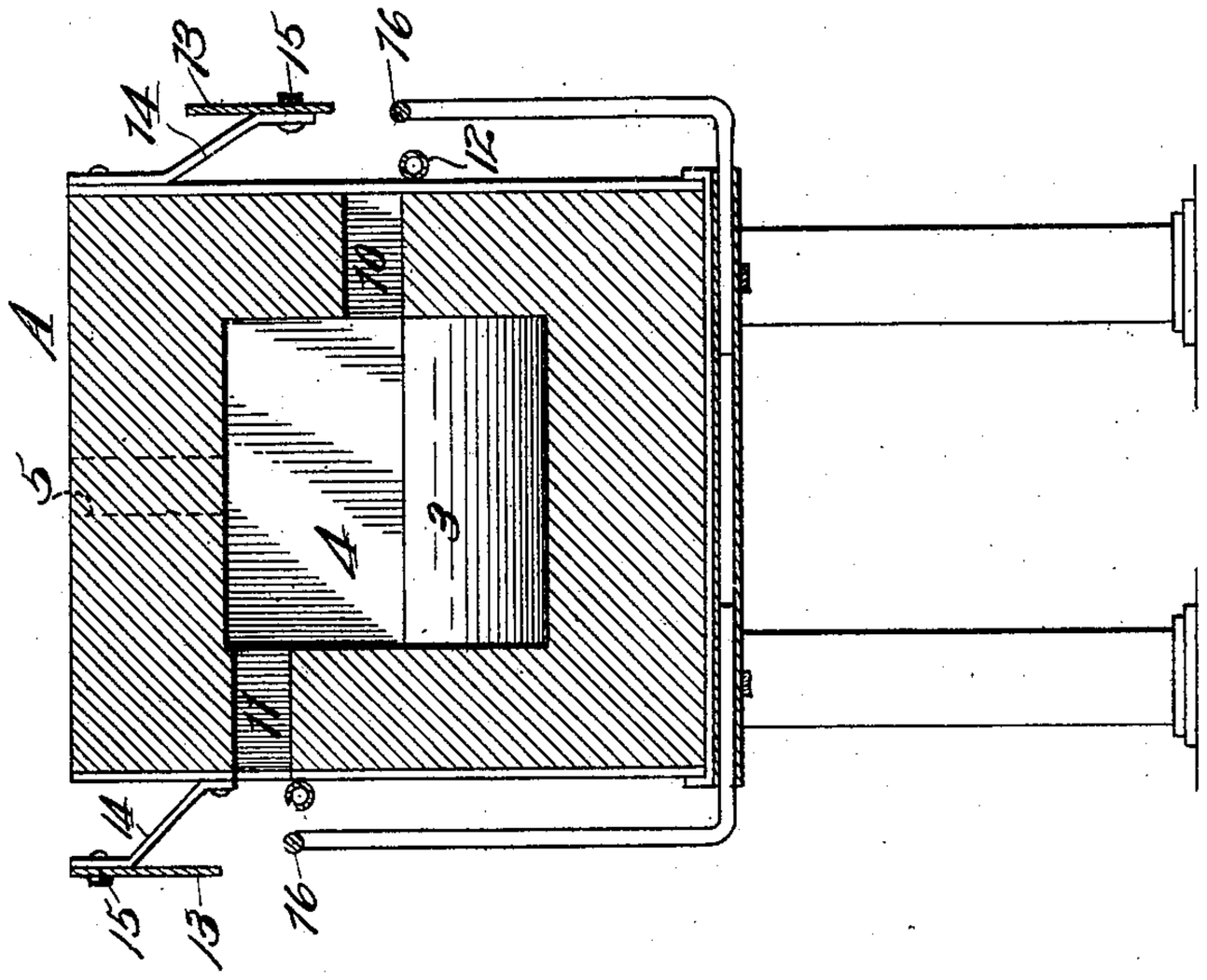

Fig. 2.

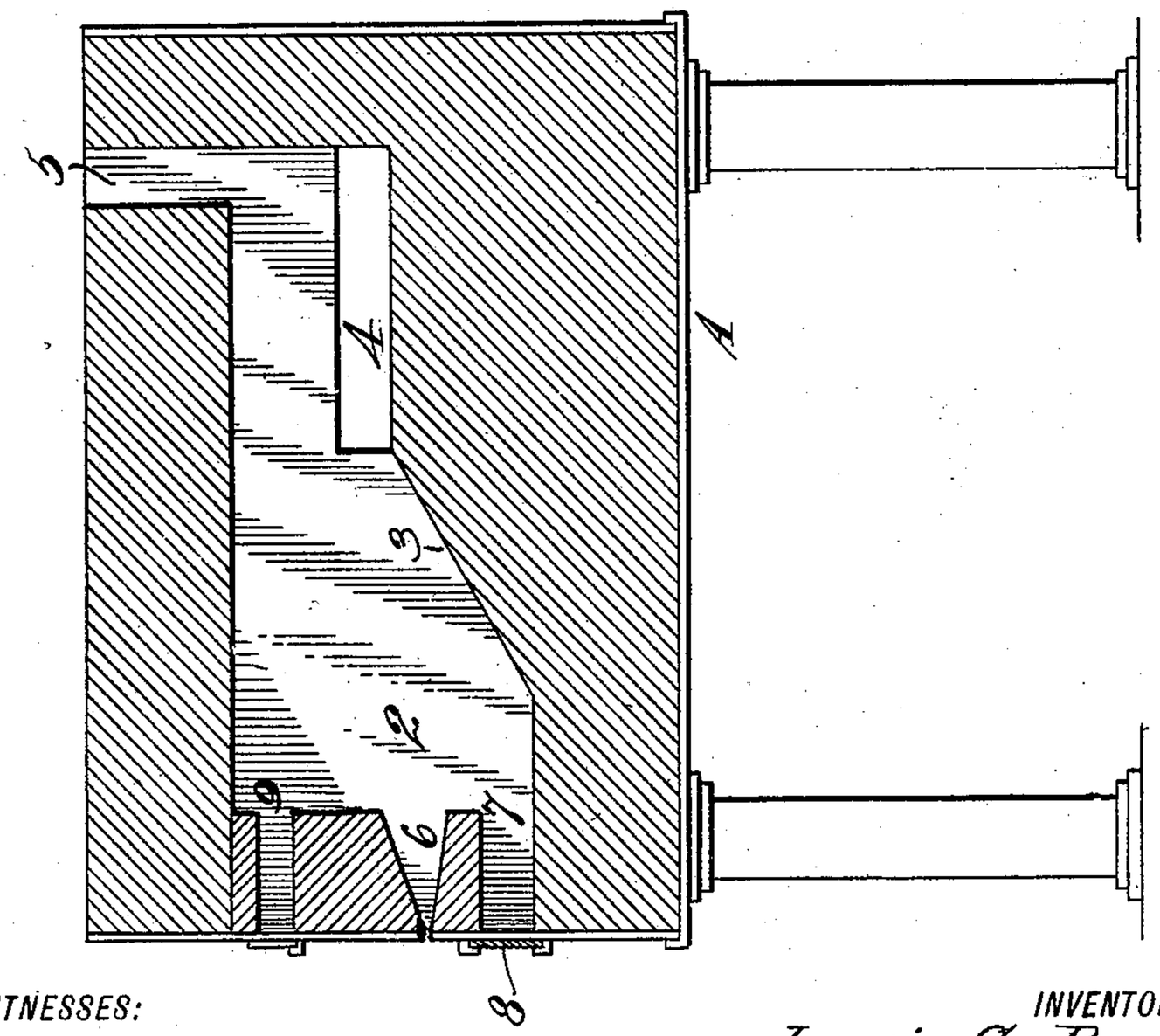

Fig. 1.

WITNESSES:

F. E. Maynard.

J. H. Sause

INVENTOR

Lewis G. Ross

BY

Geo. H. Strong

ATTORNEY

No. 861,905. PATENTED JULY 30, 1907.

L. G. ROSS.

DRILL FORGE.

APPLICATION FILED AUG. 20, 1906.

2 SHEETS—SHEET 2.

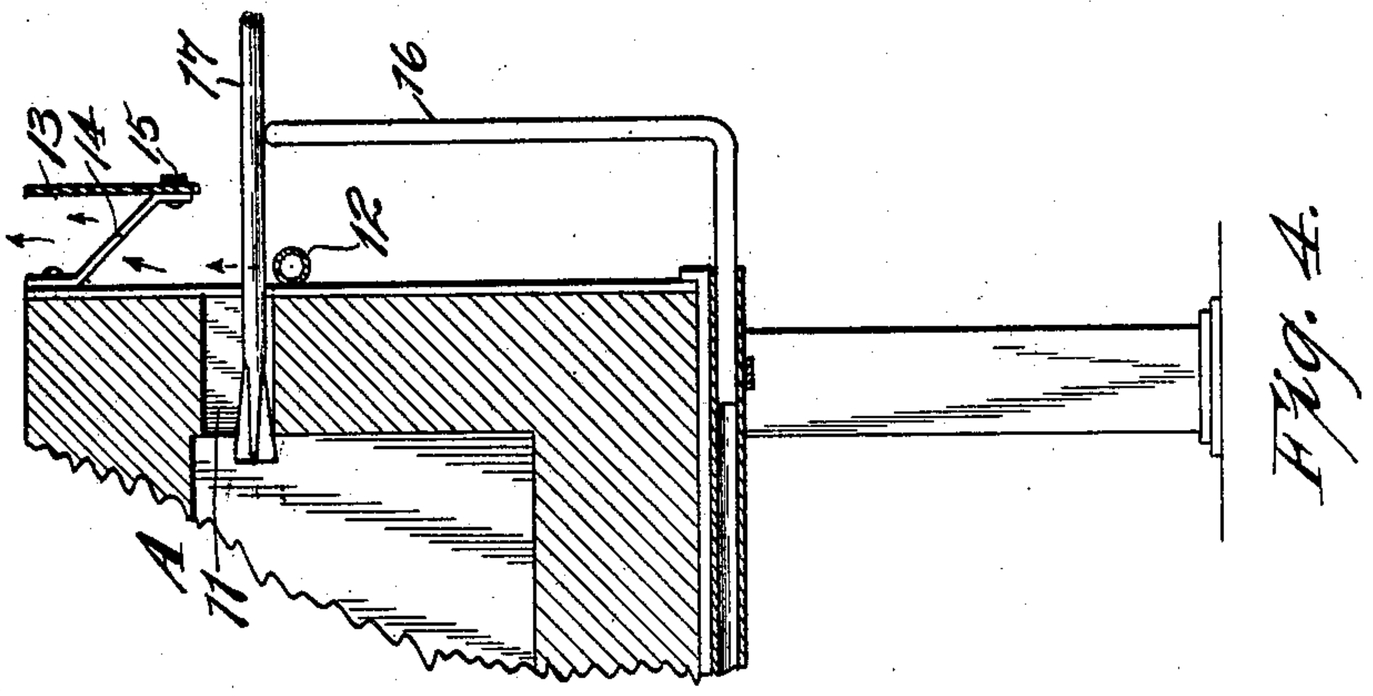

Fig. 4.

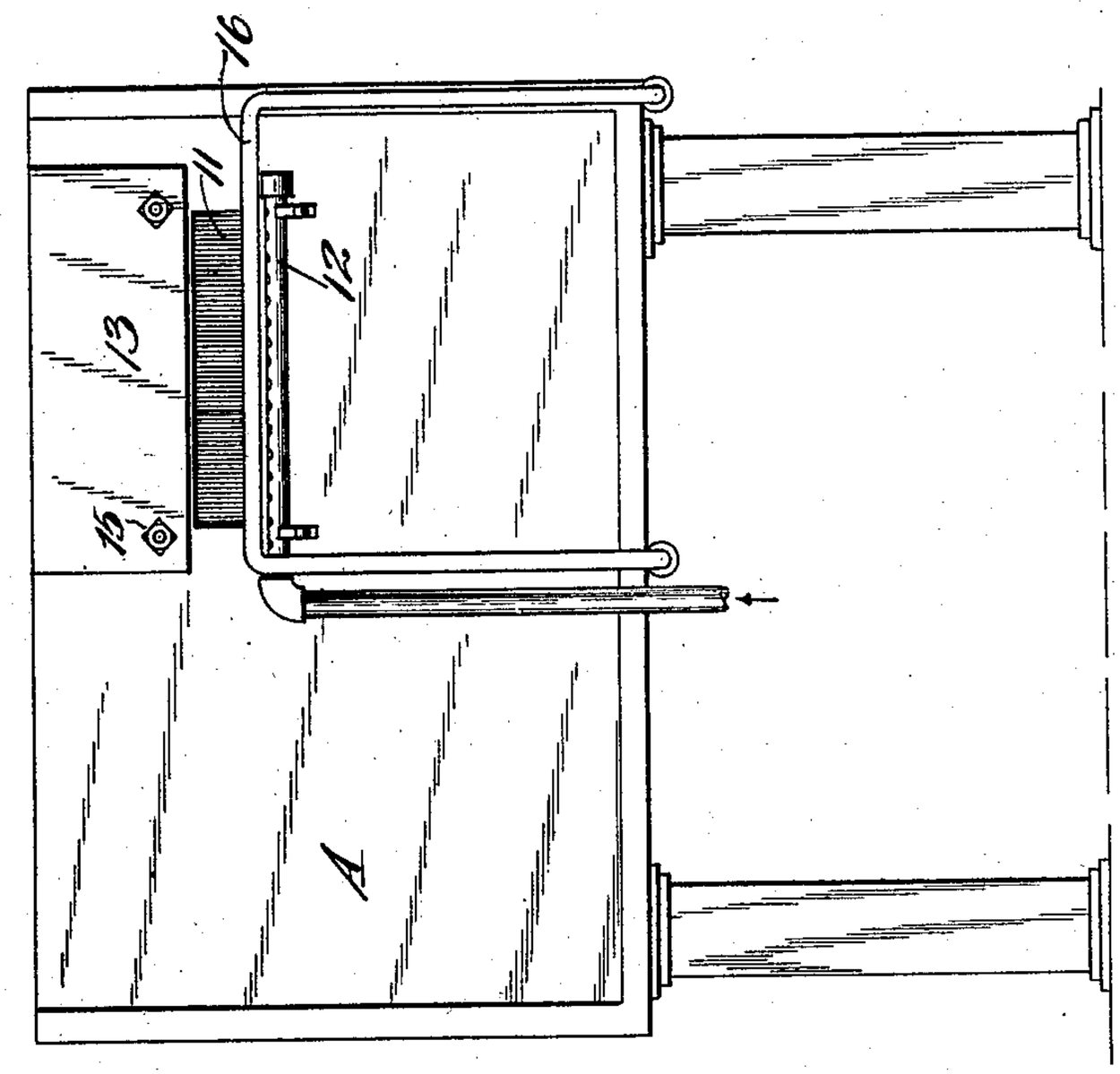

Fig. 3.

WITNESSES:

F. E. Maynard.

J. E. Krause

INVENTOR

Lewis G. Ross,

BY

Geo. H. Strong.

ATTORNEY

UNITED STATES PATENT OFFICE.

LEWIS G. ROSS, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR OF ONE-HALF TO PETER C. PETERSEN, OF SAN FRANCISCO, CALIFORNIA.

DRILL-FORGE.

No. 861,905. Specification of Letters Patent. Patented July 30, 1907.

Application filed August 20, 1906. Serial No. 331,265.

To all whom it may concern:

Be it known that I, LEWIS G. ROSS, a citizen of the United States, residing at the city and county of San Francisco and State of California, have invented new and useful Improvements in Drill-Forges, of which the following is a specification.

My invention relates to improvements in drill forges and tempering furnaces. Its object is to provide a compact practical oil burning forge or furnace for heating drills so that they can be shaped and sharpened, and for tempering the drills after they have been shaped and sharpened; to provide a forge or furnace which will heat no more of the drill than is actually essential; which will allow a man to work close to the furnace, and which will have means to keep a drill cool so he can handle the drill close up to the head without gloves; which will take any sort of a drill of any length; which will permit the insertion and removal of drills from two sides; and which will require a minimum amount of fuel.

The invention consists of the parts, and the construction and combination of parts as hereinafter more fully described and claimed, having reference to the accompanying drawings, in which—

Figure 1 is a longitudinal section of the invention. Fig. 2 is a cross section of same. Fig. 3 is a side elevation. Fig. 4 is a detail view corresponding to one side of Fig. 2, showing drill supports opened out for long drill.

A represents the forge which is of suitable size, shape and material. As actually constructed, a standard size forge for commercial use in the mines and elsewhere is usually about 36 inches length, 22 inches width, and 24 inches height, with walls of suitable refractory material incased in a sheet metal shell. These sizes may vary of course according to actual needs.

2 represents the combustion chamber having the inclined back wall 3, and 4 is a narrowed flue passage, or heating and tempering chamber, communicating with the uptake 5.

Oil fuel is preferably used; 6 representing the burner opening through which any suitable type of burner is inserted and arranged to discharge properly into the combustion chamber. The discharge from the burner takes place over the draft opening 7 thereby causing the proper amount of air to be mixed with the atomized oil. The size of the opening 7 may be regulated by the slides 8.

9 is an opening for the admission of a taper in starting the furnace; it also serves as a peep-hole when the furnace is in operation.

Drills from one or both sides of the forge are inserted into the heating chamber 4 through one or the other or both the elongated but narrow slots 10—11: the slots, where there is one on each side of the forge, being preferably arranged one above the other so that the smith working from one side of the forge will not interfere with the smith on the other side in putting in and taking drills out of the forge: one smith is supposed to heat up the drills ready for the shaper and sharpener, and the other smith to temper the shaped and sharpened drills. These slots will differ in width according to the size of drill to be heated. For instance if 1″ drills are to be heated the slots would have to be 1 1/2″ in height; if 1 1/4″ drills are to be heated the slots would have to be 2″ and 2 1/2″. If 1 1/2″ cruciform drills are to be heated the slot would have to be 3″ high and so on.

The reason for using a narrow slot is this: The drills must be heated a very short distance, the heat not to extend back over 3″; and in order to obtain this short heat it is necessary to have a slot, so that the drills will just pass into the furnace. If the slot is much larger than the diameter of the drills, I have found that the heat will run back on the drills, and if such is the case, while the blacksmith is making up these drills and even if they are only heated to a cherry red 6″ back from the bit, the bits will kink when placed in the drill sharpening machines or if sharpened by hand. The drills must not be heated over a distance of from 2 1/2″ to 3″ from point of bit, if same must be brought to a perfect forging heat. The length of the slot will vary according to the size of the furnace. By having the slots only slightly larger than bit it also retains the heat in the furnace and reduces the cost of operation.

12 is a cooling pipe consisting of a 1″ pipe and having 3/32″ holes every 1/4″ and used in front of the slots 10—11. It is placed under the drills in order to keep same cool as possible, so that the operator may be able to handle same. It also has a tendency to keep the heat in the furnace and all heat that may pass through this slot is driven up by the air pressure between the shield 13 and furnace. There is a cooling pipe and a shield arranged with respect to each slot.

The shield 13 preferably consists of a sheet of asbestos disposed just above a slot and about 3 inches from the furnace being suitably supported by the brackets 14 and bolts 15. The object of these shields is to protect the operator from the otherwise fierce heat of the furnace. By this arrangement the draft from the cooling pipes 12 carries the heat upward and away from the operator, and it is possible to work close up to the furnace without the least inconvenience..

16 is the drill rest which is used in conjunction with each slot to hold the drills and is so arranged that it may be slid out a suitable distance from the furnace

to support any length of drill. It is a great advantage to have this slide owing to the fact that the drills vary in length from 14″ to 12 feet. This rest is made of 1″ round iron. The slides which hold this rest are 1″ pipe and are bolted to bottom of furnace.

17 is a cruciform drill showing same supported on rest 16.

The furnace is equally adapted for tempering drills and for heating them to a forging heat; by having the two openings 10—11, one on each side of the furnace, and one above the other, both operations may go on simultaneously. By having the protecting shields and air-cooling appliances the operator is subjected to no discomforting heat.

Having thus described my invention, what I claim and desire to secure by Letters Patent is—

1. An oil burning drill forge inclosing a combustion chamber having a rear inclined wall, a burner discharging in to the chamber against said rear wall, said furnace having a heating chamber above the line of the oil burner and in continuation of the combustion chamber, said heating chamber having a lateral narrow slit opening for the introduction of the drills, said drills when so inserted being protected by said rear wall construction against contact with the oil fuel, and a slidable tool rest carried by the furnace movable toward and from said opening.

2. An oil burning drill forge inclosing a combustion chamber and a heating chamber, the heating chamber being arranged above the lower portion of the combustion chamber and in continuation of the latter, an oil burner discharging into the combustion chamber below the level of the heating chamber whereby the oil is prevented from coming in contact with the drills in the heating chamber, said heating chamber having narrow slit openings on each side for the introduction of the drills, said openings arranged out of line, a shield proximate to each opening and supported away from the outer walls of the furnace to permit a draft of air between the furnace and the shield, means for causing a draft of air to traverse said drill openings, and an adjustably mounted drill rest movable towards and from each opening and slidably mounted on the forge.

3. A drill forge inclosing a heating chamber, the walls of said chamber having contracted openings for the admission of the drills to be heated, adjustable drill rests supported on the forge and disposed one substantially in the plane of each of said openings, shields supported away from the outer walls of the forge and having their lower edges spaced from the drill rests to permit the drills to be passed between the rests and shields and into said openings, means for discharging a draft of air across said openings and against the drills and between the forge and the shield, and an oil burner for heating the furnace.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

LEWIS G. ROSS.

Witnesses:
S. H. NOURSE,
E. G. KNAPP.