

No. 774,590.

PATENTED NOV. 8, 1904.

J. LORD.
BLAST CHARGER.

APPLICATION FILED SEPT. 30, 1903.

NO MODEL.

FIG. 1.

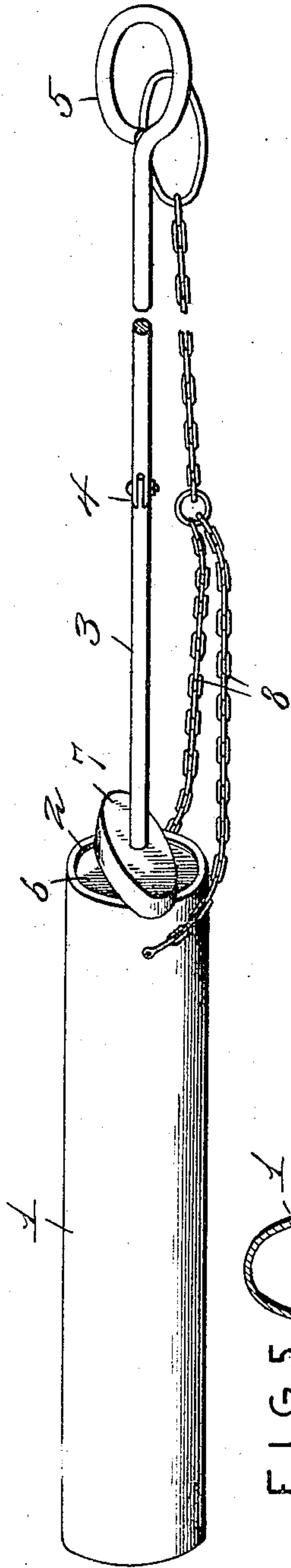


FIG. 2.

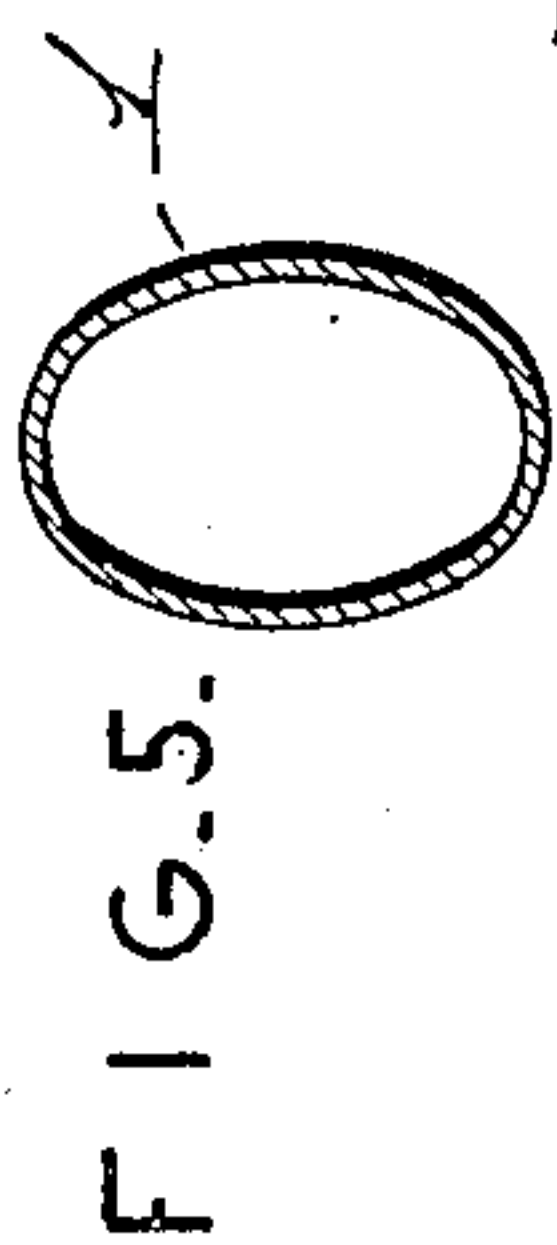
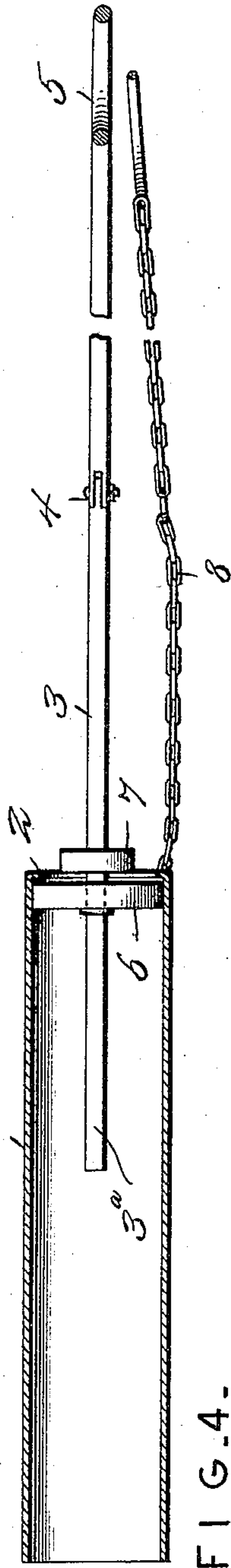
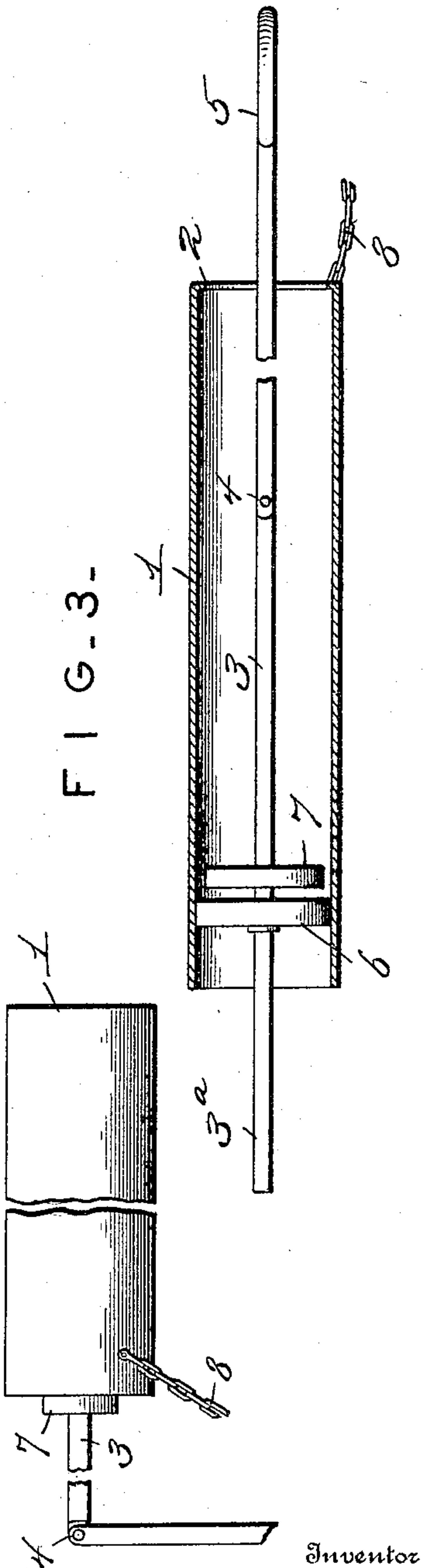


FIG. 3.

FIG. 4.



Witnesses

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BLAST-CHARGER.

SPECIFICATION forming part of Letters Patent No. 774,590, dated November 8, 1904.

Application filed September 30, 1903. Serial No. 175,230. (No model.)

To all whom it may concern:

Be it known that I, JAMES LORD, a citizen of the United States, residing at West Terre Haute, in the county of Vigo and State of Indiana, have invented new and useful Improvements in Blast-Chargers, of which the following is a specification.

My invention relates to improvements in ammunition and explosive devices, and particularly relates to the subclass blasting; and the object is to provide an improved and novel blast-charging implement for inserting the charge of powder into the holes made in the material to be blasted.

It will be stated prefatory to the description that coal in the mines, especially the bituminous variety, is impregnated with more or less sulfur and that when the vein is struck by the drill and the point encounters sulfur spots or streaks it will "strike fire," the same result sometimes occurring in the use of the common iron charging-tube, and in these instances the powder charged is ignited with more or less disaster. Ordinarily the blast-holes are charged with powder from a metal tube fixed at its closed end to a rod or stick. The charging-tube is filled with the powder and inserted in the blast-hole, and by vigorous reciprocation and shaking the powder is forced out of the tube into the blast-hole, and then by means of a scraper the powder is worked back to the end of the hole. Each movement of the charger or scraper is liable to and frequently does strike fire, and thus causes premature ignition of the blast. It is the design of my present invention to avoid all these defective and dangerous results and to provide a charging tool or implement which is simple in construction, effective and expeditious in the deposition of the charge, and safe in its uses.

In the drawings, Figure 1 is a side elevation of the complete implement. Fig. 2 is a similar view with the charging-tube in central vertical section, showing the plunger or piston disk in position for charging the tube. Fig. 3 is a vertical central section through the charging-tube, showing the piston-head in the position of having discharged the powder charge into the blast-hole. Fig. 4 is a detail

view showing the charging-tube in position for receiving a charge of powder preliminary to insertion in the blast-hole. Fig. 5 is a cross-section through the charging-tube.

It will be premised that the blast-holes are drilled horizontally into the wall or breast of the vein and are generally from two and a half to three inches in diameter and are extended in depth to such a distance as may be desired to accomplish the "knockdown" intended in the breast of the vein, and in the blast-holes the powder charges are placed.

To accomplish the charging, an elliptical shell 1 is provided of such length and capacity as may be required, into which the charge of powder is placed. This shell is elliptical in cross-section, as shown, and in its greatest diameter is approximately of the diameter of the blast-hole into which it is inserted and used. The upper or outer end of the tube or shell 1 is formed with an inwardly-turned annular flange 2 to prevent the withdrawal or escape of the piston or plunger head from that end of the charging tube or shell.

3 designates the operating or plunger rod which at a desired point is jointed, as at 4, so that it may be turned at the joint, as seen in Fig. 4 of the drawings, and rest on the joint while the shell is being charged. This function is essential, because the plunger or piston rod is necessarily longer than the height of the drift in which the device is used. Therefore it is made in two sections, so that the charging-tube may be held vertically while being filled. Mine-drifts are frequently of limited vertical extent or height, and the jointed rod or plunger is employed to accommodate a reduced space in which it may be required to use the charger. The plunger-rod is formed at its outer end with a hand-grasp 5 for conveniently operating the same. Loosely mounted on the rod is a plunger-disk 6, constituting a plunger which by any proper means is secured against sliding on the rod, but is so arranged that the rod may be turned freely on its bearings therein. The plunger 6 fits snugly in the tube and is positioned on the rod at a suitable distance from the end of the rod, as shown at 3^a in Figs. 2 and 3 of the drawings, so that when the shell

of the charging-tube reaches the end of the blast-hole the plunger can be pushed inward until the end portion of the rod lodges against the end of the blast-hole, and then by holding
 5 the rod in that position and pulling on the chain the tube is slid back and the whole charge in the tube is deposited in the blast-hole.

To lock the disk 6 and the rod 3 when drawn
 10 back to the position shown in Fig. 2, the rod has disposed thereon an elliptical-shaped button 7, which when the plunger-disk is pulled back to its limit in the charging-tube may be turned to bridge the mouth of the
 15 tube, as seen in Fig. 1, and hold the plunger-disk locked against the flange 2 of the tube.

8 designates a chain looped or forked at its lower end and having the ends of the loop secured to opposite sides of the charging-
 20 tube, as seen in the drawings, thus serving to pull the tube back on the rod and completely empty it into the blast-hole.

The whole device is preferably made of copper, because this metal is not liable to
 25 strike fire during the operation of the implement.

The utilization of the implement may be stated as follows: The shell or tube is placed in vertical position, as seen in Fig. 4 of the
 30 drawings, resting on the joint of the rod and the disk 7 across the tube and locking the plunger-disk in the flanged end of the tube. The powder is then filled in the tube to the extent desired. After the charge has been de-
 35 posited the tube is lifted and inserted in the blast-hole with the longest diameter in vertical direction. The tube containing the charge is then shoved into the blast-hole until the open end lodges against the end of the blast-hole.
 40 The plunger is then turned on its axis and the locking-piece turned therewith until it registers with the bore of the tube, when the plunger is shoved inward, carrying with it the powder. When the end of the plunger-rod reaches
 45 the end of the blast-hole, it is held in that position. The chain is then brought into use and drawn outward, carrying with it the charging-tube, the movement being continued until

the plunger head or disk reaches the inner end of the tube, when the charge is completely
 50 deposited. Subsequent charges to fill the blast-hole are deposited in the same manner.

It will be readily seen that the successive charges are placed together in the blast-hole and require no tamping except that applied by
 55 the action of the plunger.

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

1. An implement for charging blast-holes, comprising a tube, a plunger-disk in the tube,
 60 a plunger-rod in the plunger-disk, and a locking means on the rod to hold the plunger-disk at the outer end of the tube.

2. An implement for charging blast-holes, comprising a tube, elliptical in cross-section,
 65 a plunger-disk fitted within the tube, a plunger-rod pivotally secured in the disk, an elliptical locking-piece fixed on the plunger-rod to hold the plunger-disk in the outer end of the tube, and means independent of the plunger-
 70 rod to draw back the tube when inserted in the blast-hole.

3. An implement for charging blast-holes, comprising a tube, elliptical in cross-section and having an inturned flange at its outer end,
 75 a plunger-disk in the tube, a jointed plunger-rod pivotally mounted in the disk, a locking-piece fixed on the rod to hold the plunger-disk at the outer end of the tube, and a chain to draw back the tube in the blast-hole.
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4. An implement for charging blast-holes, comprising a tube, elliptical in cross-section and having an inturned flange at its outer end,
 85 a plunger-disk in the tube, a jointed plunger-rod pivotally secured in the disk with its inner end extending beyond the disk, an elliptical locking-piece fixed on the rod to lock the plunger-disk in the outer end of the tube, and a chain secured to the tube, substantially as described.
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In testimony whereof I affix my signature in presence of two witnesses.

JAMES LORD.

Witnesses:

JAMES DRUM,

MICHAEL DOYLE.