(No Model.) 2 Sheets—Sheet 1.

J. K. GUNN & T. G. BANFORD.

RAMMING SEAT.

No. 534,328. Patented Feb. 19, 1895.

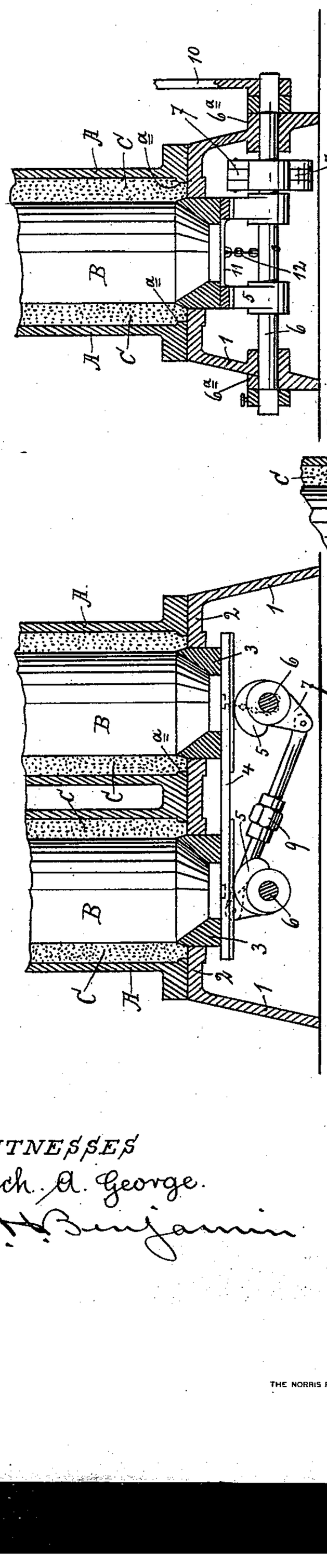

Fig. 3.

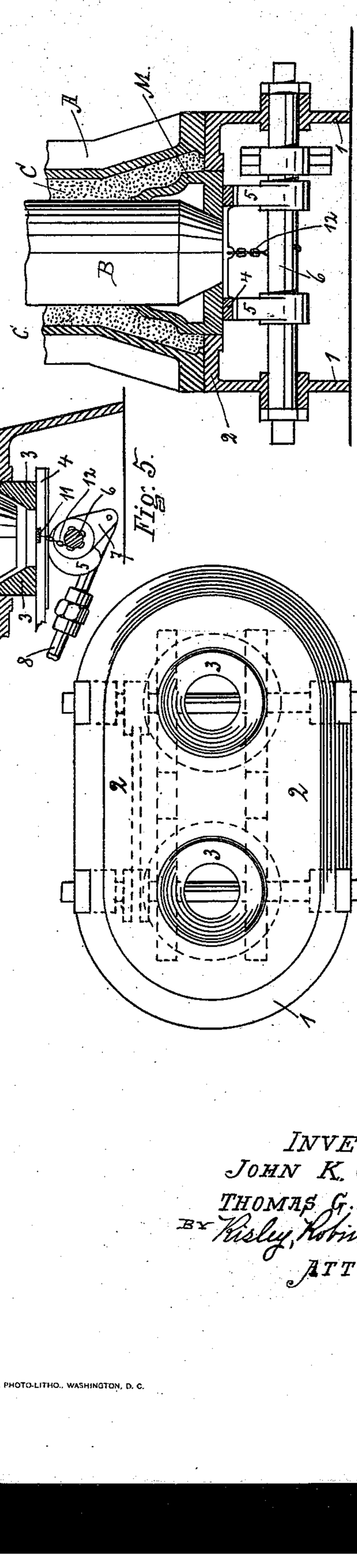

Fig. 4.

Fig. 5.

Fig. 1.

Fig. 2.

WITNESSES
Rich. A. George.
H. Benjamin

INVENTORS
JOHN K. GUNN
THOMAS G. BANFORD.
BY Risley, Robinson & Love
ATTORNEY'S.

(No Model.) 2 Sheets—Sheet 2.

J. K. GUNN & T. G. BANFORD.

RAMMING SEAT.

No. 534,328. Patented Feb. 19, 1895.

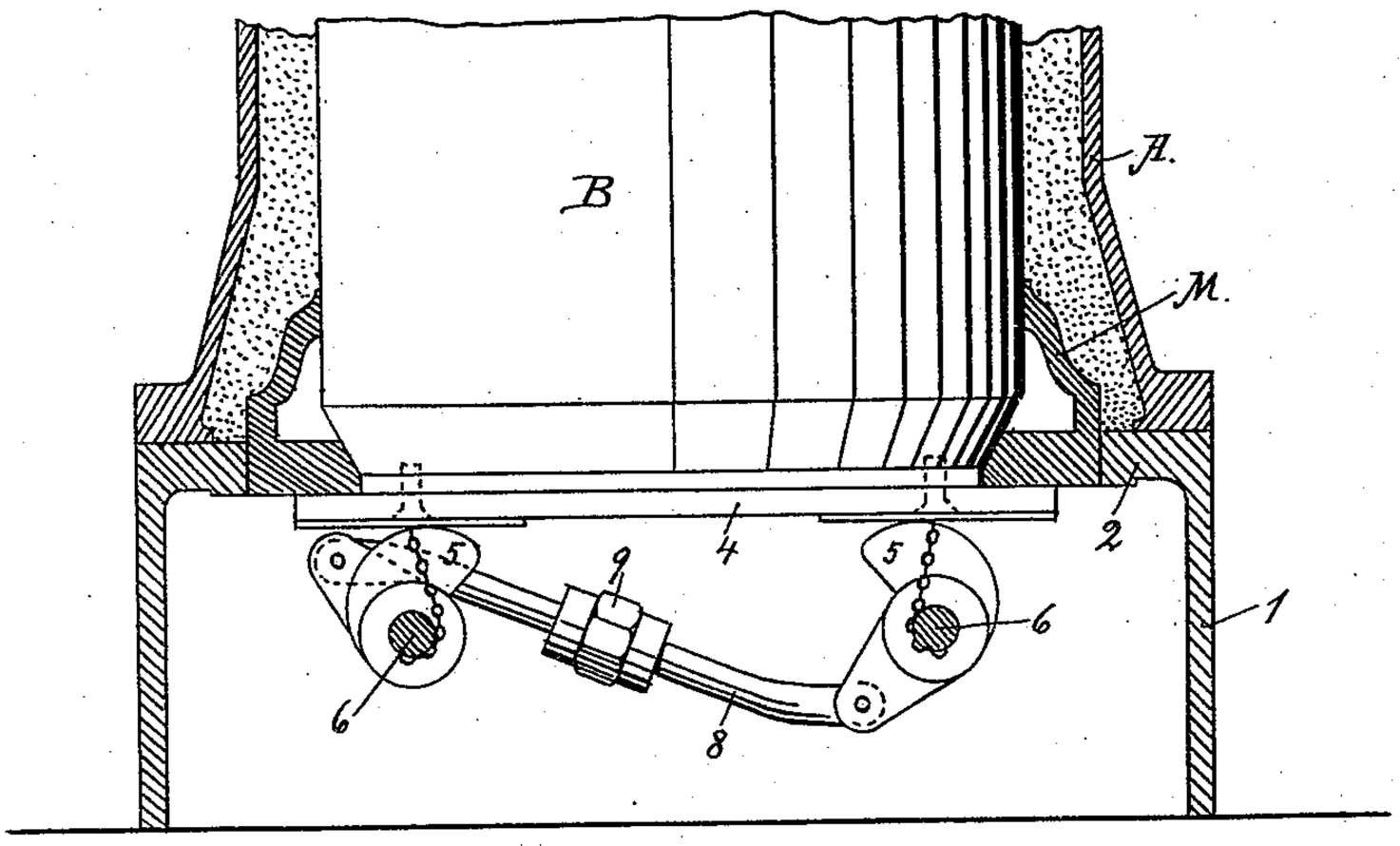

Fig. 6.

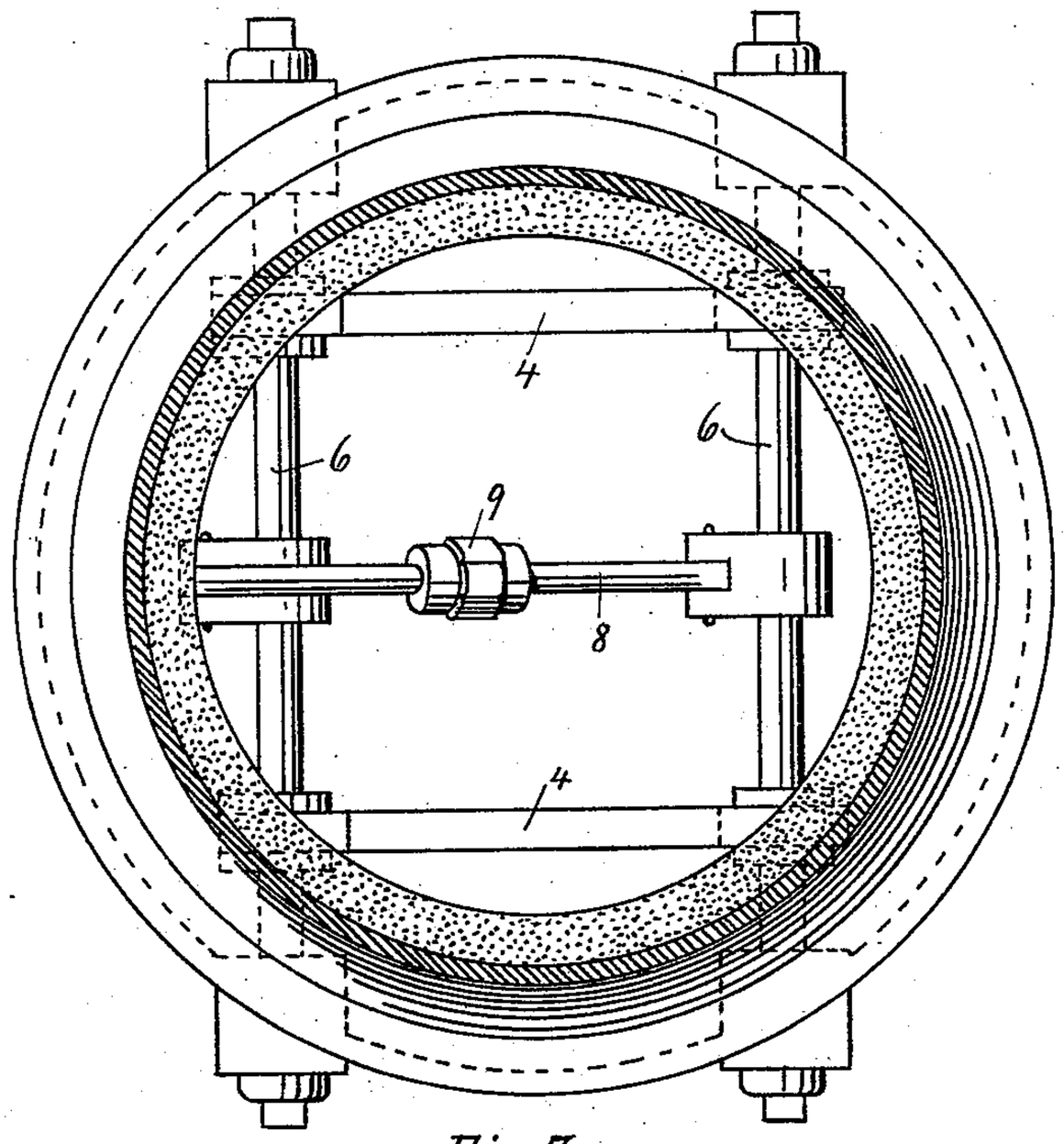

Fig. 7.

WITNESSES.
Rich. A. George.
D. N. Benjamin

INVENTORS
JOHN K. GUNN.
THOMAS G. BANFORD.
By Risley, Robinson & Love
ATTORNEY'S.

UNITED STATES PATENT OFFICE.

JOHN K. GUNN AND THOMAS G. BANFORD, OF UTICA, NEW YORK.

RAMMING-SEAT.

SPECIFICATION forming part of Letters Patent No. 534,328, dated February 19, 1895.

Application filed February 23, 1894. Serial No. 501,080. (No model.)

To all whom it may concern:

Be it known that we, JOHN K. GUNN and THOMAS G. BANFORD, of Utica, in the county of Oneida and State of New York, have invented certain new and useful Improvements in Ramming-Seats; and we do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form part of this specification.

Our invention relates to an improvement in ramming seats for forming molds for casting large pipes.

In the drawings which accompany and form a part of this specification and in which similar letters and figures of reference refer to corresponding parts in the several figures—Figure 1 shows a longitudinal section of a ramming seat, in connection with working parts of the mechanism connected therewith, and shows the base end of the flask resting upon the seat and the mold pattern. Fig. 2 shows a plan view of the ramming seat. Fig. 3 shows a horizontal section of the parts shown in Fig. 1 taken on the line of one of the transverse shafts. Fig. 4 shows in a similar manner to Fig. 3 the parts constructed to cast the larger or bell end of the pipe. Fig. 5 shows a detail view corresponding with Fig. 1, showing the forming or seat-ring withdrawn. Fig. 6 shows in cross section the construction for operating upon larger sized pipes. Fig. 7 shows a plan view of the construction shown in Fig. 6.

Referring more particularly to the reference numerals and letters in a more specific description of the device, 1 indicates a base preferably of cast metal, having a table-like top 2. In the form of construction shown in Figs. 1 to 5 inclusive, the table is provided with a pair of circular openings in which the bead ring patterns 3—3 are placed so as to have a vertical sliding motion. The bead ring patterns 3—3 are mounted on a pair of transverse bars 4 which are engaged and supported by a pair of cams as 5—5 on each of the rocking shafts 6. These rocking shafts 6 are each provided with an arm as 7; the arm of one of the shafts extending up and the other down, which are connected by a connecting-rod 8 adjustable in length by the right and left-hand threaded nut 9. The shafts 6 have bearings as shown at 6^a in opposite sides of the base and the ends of the shafts are preferably formed with a square head to receive an operating lever or wrench 10. Between the bars 4 are provided cross-bars 11 to which is attached a chain 12 which passes around the shaft 6 in opposition to the thrust of the cam 5 and operates to withdraw the bead ring patterns 3.

The flask A which in each case is provided with a suitable number of chambers to conform to the ramming seat is placed upon the seat or table 2 so that the openings in the flask will coincide with the bead ring patterns 3, and the bead ring patterns are raised to their highest position as shown in Figs. 1 to 3. There is then placed in position the mold pattern B which is provided with a conical lower end to adapt it to center itself in the bead ring pattern 3, which also has its inner surface shaped to conform to the taper of the end of the mold pattern. The sand is then rammed into the space between the mold pattern B and the shell of the flask, as shown at C, and when the sand has been brought to the desirable consistency or rammed hard enough, the bead-ring patterns are withdrawn by rocking the cams 5 and operating the connections 12 by means of the handle 10. In this operation the cams 5 acting from opposite directions on the pattern ring, no disturbance of the casting sand is had, but the rings are carefully withdrawn into the position shown in Fig. 5 without breaking off the corner of the sand. The casting flasks are then raised from the ramming seat and placed upon the casting seat and the pattern B is withdrawn and a core of the required diameter is substituted for the pattern B, when the casting can be done. The lower end of the flask is provided with an internal projecting rib as shown at *a*, which assists in sustaining the sand in the flask when the flask is raised from the ramming seat.

If it were not for withdrawing the bead ring pattern 3 before raising the flask the corners of the sand indicated at *x* in Fig. 5 would be broken off; but by withdrawing the bead ring pattern in the first instance these corners are preserved, which is a very desirable end to at-

tain, and the operating arrangement of the cams and connections withdraws the ring 3 so carefully as to preserve these edges.

The form of construction shown in Fig. 4 is adapted to cast the larger or bell end of the pipe downward, and the ring 3 is modified into the form shown at M for this purpose, the flask A being correspondingly modified in form at its lower end, and the ring M is constructed to receive the pattern B in the same manner as when the small end of the pipe is cast downward.

In the form of construction shown in Figs. 6 and 7, which is adapted to cast pipe of large diameter, the same arrangement of parts is carried out, except that the two rocking shafts with their cams are located entirely under the single chamber of the casting flask; and in casting the larger sizes of pipe it is preferable to cast them with the larger or bell ends downward, so that we do not show a construction corresponding to Figs. 1 to 3 inclusive, for casting the smaller end downward.

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

The combination with a ramming seat having a round opening of a retiring pattern ring adapted to form the mold for the end of a pipe and operating in the opening, oppositely acting supporting cams mounted on rocking shafts having bearings in the ramming seat base, one shaft having an upwardly projecting crank and the other a downwardly projecting crank, a connecting rod between the cranks and a flexible connection between the pattern ring and the shafts passing around the shaft in the opposite direction to the throw of the cam and adapted to withdraw the pattern, substantially as set forth.

In witness whereof we have affixed our signatures in presence of two witnesses.

JOHN K. GUNN.
THOS. G. BANFORD.

Witnesses:
GEORGE C. CARTER,
WILLIAM H. HACKETT.