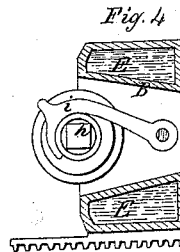
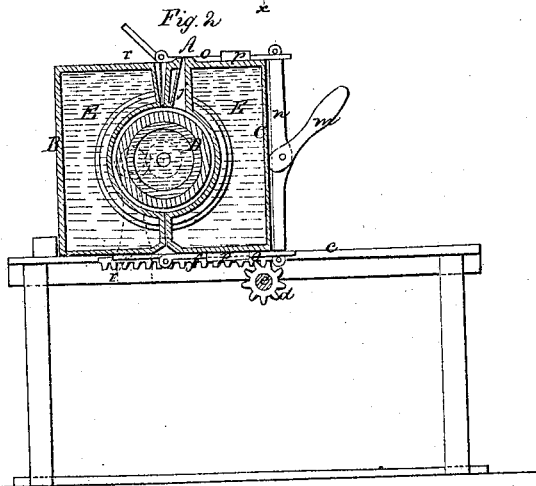
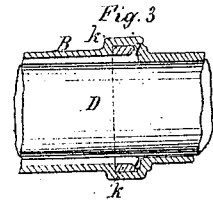
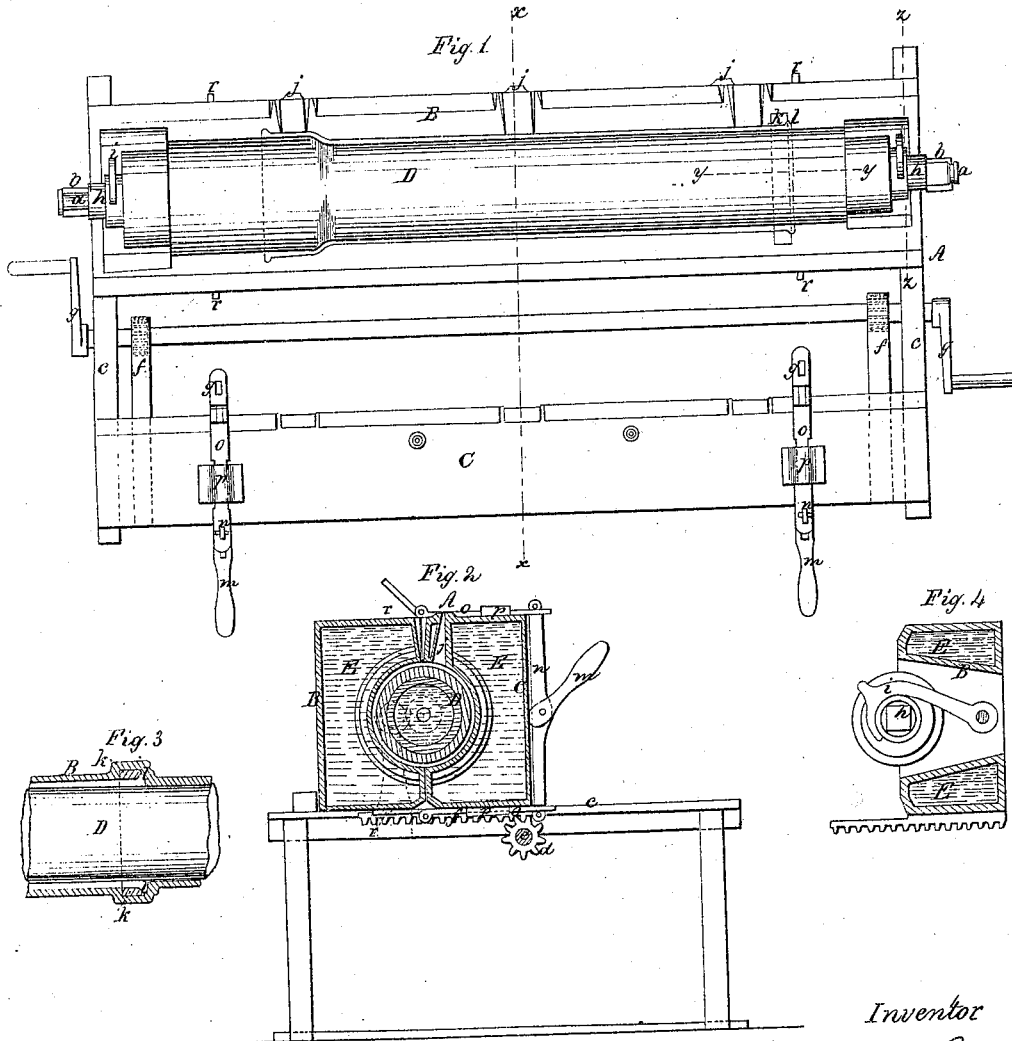


*Cornell & Quinn,
Mould for Casting Pipes,*

Patented Mar. 6, 1866.

No 52,971,



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UNITED STATES PATENT OFFICE.

GEORGE W. CORNELL AND BERNARD B. QUINN, OF NEW YORK, N. Y.

IMPROVED PIPE-MOLD.

Specification forming part of Letters Patent No. 52,971, dated March 6, 1866.

To all whom it may concern:

Be it known that we, GEORGE W. CORNELL and BERNARD B. QUINN, of the city, county, and State of New York, have invented a new and Improved Mold for Casting Pipes, &c.; and we do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 represents a plan or top view of this invention, the mold being opened and brought in position to receive the cone. Fig. 2 is a transverse vertical section of the same, the line *x x*, Fig. 2, indicating the plane of section. Fig. 3 is a partial longitudinal section of the same, taken in the plane indicated by the line *y y*, Fig. 1. Fig. 4 is a transverse section of one half of the mold, the plane of section being indicated by the line *z z*, Fig. 1.

Similar letters of reference indicate like parts.

This invention consists in the use of a dry-sand core or ring inserted into an annular cavity in an iron mold intended for casting iron pipes in such a manner that the pipe is prevented from breaking when it shrinks, while the mold expands, said ring being capable of giving way without injury to either the mold or pipe; also, in making the vent-holes tapering from the inside and rising above the outer surface of the flask in such a manner that the iron which may be spilled on the outside of the flask is prevented from stopping up said vent-holes, which it is liable to do when the vent-holes are flush with the surface of the flask, and, furthermore, the sand-plugs filling the vent-holes are not liable to be forced out; further, in providing the flasks with water-backs in such a manner that the flasks are prevented from being overheated when the melted iron is poured in; also, in the application of a double rack and pinion, in combination with one-half of the flask, and with suitable guideways, in such a manner that by turning the shaft on which the pinions are mounted that part of the flask to which the racks are attached can be made to move backward and forward on the guideways with little trouble or loss of time; further, in the use of hand-levers with eccentrics or knuckles, in combination with yokes and hinged clamping-

bars, and with suitable loops attached to one part of the flask, and hooks or noses projecting from the other part, in such a manner that by the combined action of said knuckle-levers and hinged clamping-bars the two parts of the flask can be readily clamped together or unclamped, and not much time or labor is needed to perform this part of the operation; finally, in the application of hinged hooks catching over the ends of the core, in combination with that part of the flask which is made to swivel on suitable trunnions in such a manner that by simply turning the hooks the core can be secured in its bearings or released therefrom, and the operation of the flask is greatly facilitated.

A represents a flask, made of iron or any other suitable material, and provided with an iron mold for casting pipes. Said flask is made in two parts, B C, which can be united or separated, as may be desired. The part B of the flask is provided with gudgeons *a*, which have their bearings in suitable standards *b*, so that said part can be turned down to the position shown in Fig. 1, or up to the position shown in Fig. 2. The standards *b* rise from the guideways *c*, which support the part C of the flask, and this part is made to move back and forth on said guideways by means of pinions *d*, which are mounted on a shaft, *e*, and which gear into toothed racks *f*, attached to the under surface of the flask C. The shaft *e* has its bearings in suitable boxes secured to the under edges of the guideways, and it is turned by cranks *g* or any other suitable means.

When the flask C has been moved out to the position shown in Fig. 1 of the drawings, the flask B can be turned in its bearings for the purpose of adjusting the core D. This core is made of a metal tube surrounded by a layer of sand or clay, as indicated in Fig. 2, and it is provided with gudgeons *h* in its ends, which rest in suitable bearings in the ends of the flask, and which serve to support the core in the desired central position in relation to the mold. In order to prevent the core from being displaced accidentally when the flask is turned back to the position shown in Fig. 2, we have applied hooks *i*, (best seen in Fig. 4,) which can be made to catch over the ends of the core, or which can be turned back, so as to release the core when it is desired to re-

move the same from the mold. The mold is made of iron, and it is surrounded by a water-jacket, E, through which a current of cold water can be passed, so as to prevent the same from becoming overheated during the process of casting. Said mold is provided with vent-holes *j*, which are tapering from the inside, so that the sand used in stopping them up is not liable to be forced out by the pressure of the melted iron. Said vent-holes rise above the outer surface of the flask, so that they are not liable of being stopped up by the metal which may be spilled during the operation of filling the flask.

Iron pipes generally are provided with beads at both ends, and if such pipes are cast in iron molds they are liable to crack, because the pipe contracts as soon as it begins to set, whereas the mold, which becomes gradually hotter and hotter, expands. This difficulty we have overcome by introducing into the mold a ring, *k*, of sand, just inside the bead *l*, as seen in Figs. 1 and 3. When the pipe begins to set and to shrink the said ring is capable of giving way, and the pipe is not injured.

For the purpose of clamping the two parts of the mold together, we use hand-levers *m*, which are hinged to yokes *n*, the ends of which pass through the clamping-bars *o*. The inner ends of the hand-lever form eccentrics or knuckles, which bear against the outer surface of the flask C, and this flask is provided with loops or staples *p* above and below, that form guides for the bar *o*. These bars are made in two parts, which are hinged together, and the hinged sections are provided with oblong holes *q*, which, when the two flasks are close together, can be made to catch over noses

r, projecting from the upper and lower surface of the flask B. After the clamping-bars have been turned down over these noses the two flasks are firmly forced together by pressing on the knuckle-levers *m*.

By this construction the operation of casting pipes in iron molds is rendered practicable and comparatively easy, the molds can be operated with little loss of time and labor, and the pipes, after having been cast, remain sound, and are not liable to crack in cooling.

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

1. The dry-sand ring *k*, inserted into an iron or other metal mold intended for casting articles of iron or other metal, substantially as and for the purpose described.

2. The water-jacket E, in combination with the metal mold, constructed and operating substantially as and for the purpose set forth.

3. The hinged hooks *i*, in combination with the flask B and core D, constructed and operating substantially as and for the purpose described.

4. The toothed-racks *f* and pinions *d*, in combination with the flask C and guideways *e*, constructed and operating substantially as and for the purpose set forth.

5. The knuckle-levers *m*, yokes *n*, and clamping-bars *o*, in combination with the noses *r* and flasks B C, constructed and operating substantially as and for the purpose described.

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Witnesses:

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