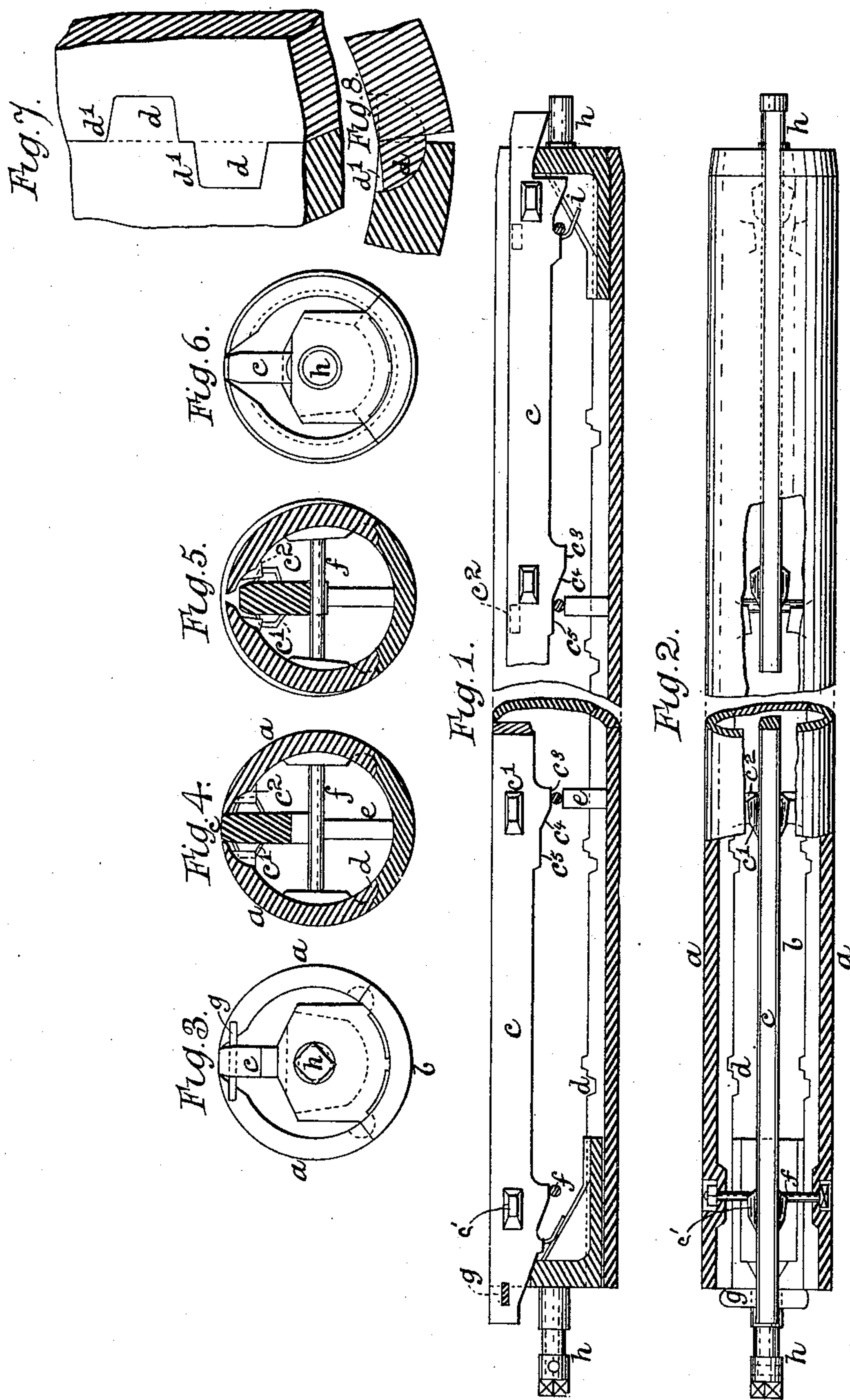


(No Model.)

F. CHAMBERS.
COLLAPSIBLE CORE BARREL.

No. 478,921.

Patented July 12, 1892.



Witnesses,

H. W. Young, C.E.
Att. Dickinson.

Inventor,

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UNITED STATES PATENT OFFICE.

FREDERICK CHAMBERS, OF DERBY, ENGLAND.

COLLAPSIBLE CORE-BARREL.

SPECIFICATION forming part of Letters Patent No. 478,921, dated July 12, 1892.

Application filed September 14, 1891. Serial No. 405,728. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK CHAMBERS, foundry-manager, a subject of the Queen of Great Britain, and a resident of Hallam Fields, Derby, England, have invented a certain new and useful Improved Collapsible Core-Barrel for Use in Casting Metal Pipes or Cylinders, of which the following is a specification, reference being had to the accompanying drawings.

Figure 1 is a longitudinal sectional view of a core-bar constructed according to my invention, showing a side view of a key-bar I employ; Fig. 2, a longitudinal view of the core-bar, partly in section, showing the outer edge of the key-bar. In both figures portions of the core-bar are broken away at the center of its length. Fig. 3 shows the top end of the core-bar. Fig. 4 shows a section of the core-bar when expanded for use. Fig. 5 shows a section of the core-bar when collapsed to enable it to be withdrawn from the pipe or cylinder cast on it. Fig. 6 is a view of the under side of the bottom end of the core-bar. Fig. 7 is an enlarged interior view of one of the hinges I prefer to use to keep the segments of the core-bar in correct relation to each other. Fig. 8 is an enlarged sectional view of one hinge.

The corresponding parts in each figure are indicated by the same letters where necessary. The shell of each core-bar consists of two segments *a a*, one segment *b*, and the outer edge of a key-bar *c*. The segments are kept in correct relative position to each other by a number of hinges formed by projecting pieces *d* on the edges of each segment, which fit into corresponding recesses *d'* of the next adjacent segment. I prefer hinges so constructed in the place of butt-hinges, as there is less friction and they allow the segment to be taken off and put on readily. Each side of the key-bar *c* is provided with a number of wedges *c'*, tapered longitudinally, which fit corresponding wedge-pieces *c²*, projecting from the inside of the segments *a*, keeping the key-bar perfectly rigid when the core-bar is being turned on its journals *h h* while the core is being formed upon it with loam or othersuitable material, and also when the pressure of molten iron is around the core during the casting of a pipe or cylinder. On the inside of the seg-

ment *b* a number of distance-pieces *e* project, which assist in supporting the key-bar *c* when the core-bar is being expanded. The segments *a a* are prevented from being expanded beyond their correct diameter by a number of stay-bolts *f*.

On the inner edge of the key-bar *c* is a number of projecting pieces *c³*, *c⁴*, and *c⁵*. The projection *c³* is to support the key-bar *c* on the bolt *f* when the core-bar is expanded. The projection *c⁵* is to support the key-bar *c* when the core-bar is collapsed. The inclined portion *c⁴* of the key-bar is to facilitate the longitudinal movements of the key-bar on the stay-bolts *f* when the core-bar is required to expand and collapse. The key-bar *c* is held in position when expanded by a cotter *g*. (Shown at Figs. 1, 2, and 3.)

To collapse the core-bar, the cotter *g* is taken out and the key-bar *c* moved longitudinally into the position shown in the right-hand portion of Figs. 1 and 2, where the projection *c⁵* of the key-bar *c* is resting on the stay-bolt *f*, the outer edge of the key-bar *c* being now brought inward from the outer circumference of the core-bar, thus leaving sufficient space to allow the segments *a a* to collapse, as shown at Fig. 5, the wedge *c'* on the key-bar being now moved away from the wedges *c²*. To expand the core-bar, the core-bar is fixed horizontally, with the segment *b* underneath, and the key-bar *c* moved into position shown at the left-hand portions of Figs. 1 and 2 and at Figs. 3, 4, and 6. The projection *c³* will then rest on the stay-bolt *f*, and the outer edge of the key-bar *c* will be level with the outer circumference of the core-bar, and the wedges *c'* on the key-bar will be opposite the wedge-pieces *c²* on the segments *a a*, and the core-bar will be expanded to a true circle and perfectly rigid, the stay-bolts *f* preventing the segments *a a* being expanded beyond their correct diameter. The wrought-iron hooks *i* are cast in the key-bar to keep the key-bar in its receded position after the core-bar is collapsed. The hinges or projecting pieces *D*, formed on the segments *a a* and *b*, are each one-fourth of a circle, so as to work quite smoothly and without friction when the core-bar is required to collapse.

Shackles of the usual construction (not shown in the drawings) are attached to the

top journal or to the top end of the segments *a a* of the core-bar to withdraw it from the pipe or cylinder cast on it. The core-bar is vented to allow the escape of gas in the usual manner by vent-holes. The journals *h h* are for the purpose of turning the core-bar on the stands, as usual in forming cores with loam or other material.

What I claim is—

10 1. The combination, with a core-bar composed of hinged segments *a a b*, said core-bar formed with journals and the segments *a a* provided at their upper edges with wedges, of a longitudinal key-bar located in said core-bar
15 and formed at its upper portion with wedges to engage the wedges of the core-bar and having projections *c³ c⁵* and incline *c⁴* formed on its under portion, and stay-bars *f*, engaging the segments *a a* and adapted in connection
20 with said projections and incline to throw said key-bar into engagement with the core-bar to expand the latter.

2. The combination, with a core-bar com-

posed of hinged segments *a a b*, said core-bar formed with journals and the segments *a a* 25 provided at their upper edges with wedges, of a key-bar located and longitudinally movable in said core-bar, provided at its upper portion with wedges to engage the wedges of the core-bar and having projections *c³ c⁵* and 30 incline *c⁴* formed on its under portion, stay-bars *f*, engaging the segments *a a* at intervals, stay-pieces *e*, projecting interiorly from the core-bar, the cotter *g*, engaging a slot in the key-bar for locking the core-bar in its ex- 35 panded position, and the hook *i*, formed on the key-bar to retain the same in its retracted position after the core-bar is collapsed, substantially as described.

In testimony whereof I have hereunto signed 40 my name in the presence of two subscribing witnesses.

FREDERICK CHAMBERS.

Witnesses:

H. W. GOUGH,

A. A. DICKINSON.