

(No Model.)

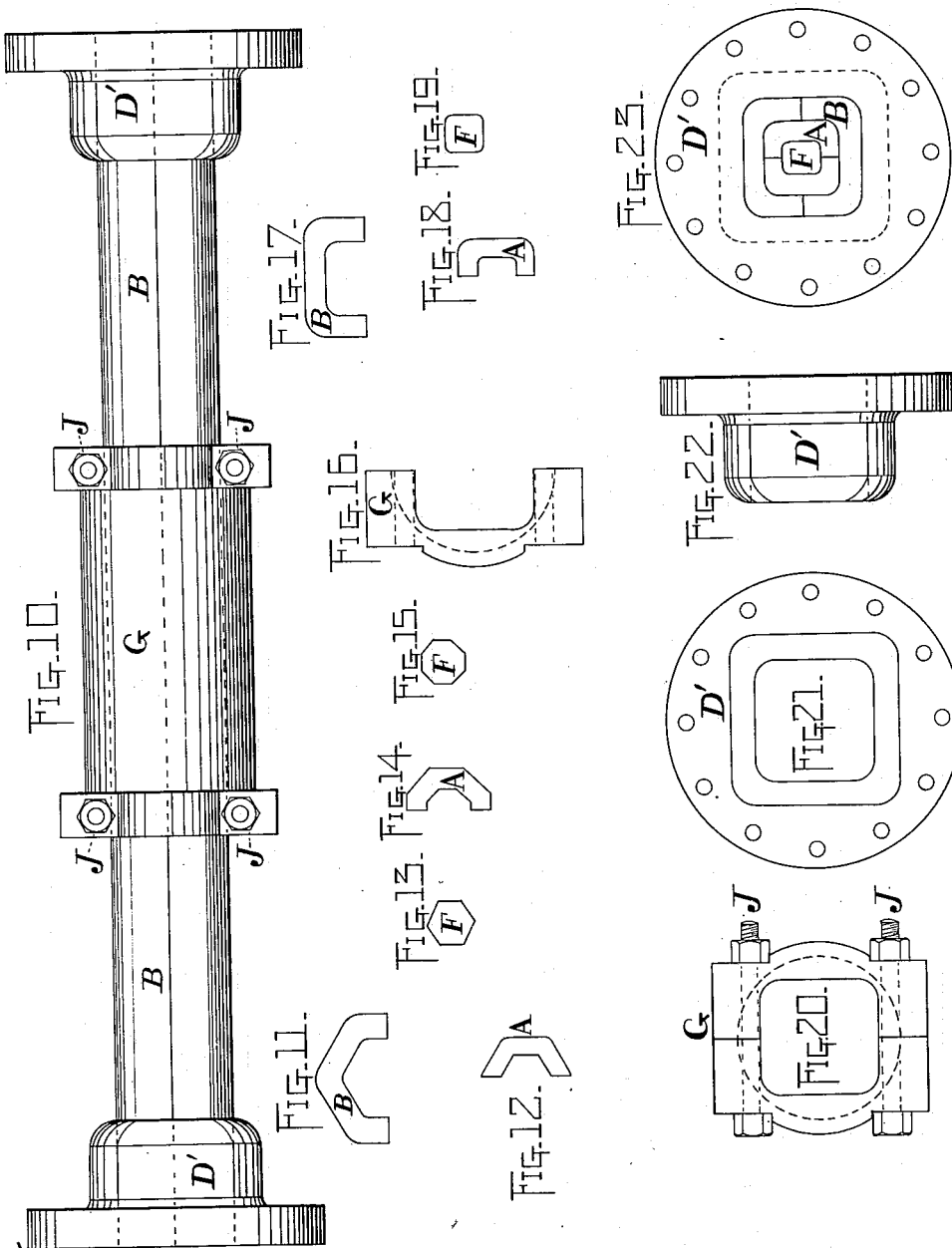
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MANUFACTURE OF HEAVY GUNS, SHAFTS, &c.

No. 397,029.

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WITNESSES.

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MANUFACTURE OF HEAVY GUNS, SHAFTS, &c.

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To all whom it may concern:

Be it known that I, JOHN SHINN, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in the Manufacture of Heavy Masses of Metal, of which the following is a specification.

My invention relates to improved methods of constructing large masses of steel, iron, or bronze built up of parts previously cast, rolled, or hammered, and such masses of metal are intended to be used in the manufacture of heavy guns and shaftings.

My invention consists in a combination of two or more jackets, each jacket made in two parts, and locking the jackets together around a solid bar or making the central jacket form a tube by leaving out the center bar, the whole being bound together by hoops or bands, as shown in the drawings, and as will be hereinafter described.

The object of my invention is to construct large guns or shafts without requiring a large mass of metal to be cast in one "ingot." The parts to build up a gun or shaft may be cast, rolled, or hammered, and in guns the tube may be put together with the hole finished or nearly finished, saving much material and labor, and shafts put together according to my invention will be more free from central flaws than when forged from one ingot. I accomplish these objects by the modes of construction illustrated in the accompanying drawings, in which—

Figure 1 is a longitudinal side view of a gun constructed according to my invention. Fig. 2 is a longitudinal section of Fig. 1. Fig. 3 is a view of the breech end. Figs. 4, 5, 6, and 7 are cross-sections taken on the dotted lines 4, 5, 6, and 7 of Figs. 1 and 2. Figs. 8 and 9 are views of the muzzle end. Fig. 10 is a longitudinal view of a shaft, couplings, and journal constructed according to my invention. Figs. 11, 12, 13, 14, 15, 17, 18, and 19 are detail parts of the shaft, core, and jackets, showing different shapes. Fig. 16 is an end view of one-half of the journal. Fig. 20 is an end view of the journal. Fig. 21 is a side view of one of the couplings. Fig. 22 is an edge view of Fig. 21. Fig. 23 is an end

view of the shaft and a face view of one of the couplings.

Similar letters refer to similar parts throughout the several views.

Referring to the drawings, it will be noticed that my improvement as applied to the construction of guns shows a gun built up of tube A, jackets B and C, and a series of hoops. The tube A and jackets B and C are each made in two parts and divided across the center of the hole. The jackets may be made of steel, iron, or bronze cast, rolled, or forged. The hole (bore) in the tube, it will be noticed, is of a hexagonal shape, having six equal sides, or it may be made with eight sides, as shown in Fig. 9. This hole is rolled, cast, or forged in each half of the tube when it is made. The outsides of the tube and jackets are formed to correspond with the shape of the hole. The rough parts of the tube and jackets, as they come from the mold, rolls, or forge, are placed on an iron planer, where it is planed up on all sides to a "templet," when the tube and jackets are all planed to standard templets. The jackets are forced on the tube by pressure, making lap or lock joints, as is shown in the drawings. After the tube A and jackets B and C are forced together, they are "clamped" and put in a turning-lathe, turned down at the muzzle for the hoop D, and to E, Fig. 2, for the hoops or bands, as represented in sections, Figs. 2, 4, and 5, which are shrunk on the jackets to build up a gun, as represented in Fig. 1.

Fig. 10 represents a shaft, journal, and couplings constructed according to my invention, and which is made in the following manner: F is a core, which may be rolled, cast, or forged to a shape shown in Figs. 13, 15, 19, and 23, which are end views. This core F is planed on all sides to a templet. The jacket A is made in two parts. It may be rolled, cast, or forged to shape, as shown in Figs. 12, 14, 18, and 23, which are end views. The two parts making the jacket A are put on a planing-machine and planed to a templet that will make the jacket A have a tight fit on the core F. The jacket A is also planed on the outside to a templet of shape to correspond to the inside shape. The two parts making the jacket B may be rolled, cast, or forged to

shape, as shown in Figs. 11, 17, and 23, which are end views. The parts of jacket B are planed to templets inside and outside. The jackets A and B are then forced by pressure together, as shown in Fig. 23.

D', Figs. 10, 21, 22, and 23, represents the "face" couplings. These couplings are cast or forged. They are bored out by a special tool to a shape and size as will give a "shrinking fit" on the end of the built-up shaft constructed of jackets A B, and core F, as shown in end view, Fig. 23. The couplings D' can be shrunk on or forced on the ends of the shaft by pressure.

The journal G is made in two parts and put together by bolts J J J J. (See Figs. 10 and 20.) This journal I prefer to cast. It is put together by bolts and then bored out to fit the body of the shaft by a special tool used to bore out the couplings. After the journal is bored, it is taken apart, clamped to the shaft, and turned up after clamping on the shaft. The bolts for clamping the journal should have "jam-nuts" or other fastenings to prevent the nuts from getting loose. In a line of shafting one or more of these journals can be used on each section, according to the length of the sections. At the time the shaft is in the lathe for turning the journal the couplings are turned and "faced." The bolt-holes in the couplings may be drilled before they are shrunk on the shaft.

It is obvious that a crank may be bored out by the same special tool that is used to bore the journals and couplings, and the crank may be shrunk or forced on the end of a shaft. It is also obvious that the hole in a gun built up

according to my invention may be bored round and rifled, and a gun may be made closed at the breech for a muzzle-loader.

If so desired, the core F, Figs. 13, 15, and 19, may be left out, making a lighter shaft, and the center hole may be made round.

I fully believe that the joints of the jackets or tubes can be welded or brazed by the new art of "electric welding."

In fitting up the parts for the tubes or jackets it may be desirable to rough out these parts on a planing-machine and finish on a milling-machine.

I fully believe that the parts forming the tube and jacket of the gun or body of the shaft may be hot-rolled down to near the finished size, then "pickled" and cold-rolled to a standard and finished size by specially-prepared rolls, such as are used in finishing "cold-rolled shafting." Such cold-rolling makes the fibers compact and almost equal to tempering.

Having, as above, fully described the manner of constructing large masses of metal to be used in the manufacture of heavy guns and shafts, what I claim as my invention is—

In the construction of large masses of metal to be used in the manufacture of heavy guns and shafts, tube A and one or more jackets, B, said tube and jackets made each in two parts and so put together that the tube and jacket will make lap and lock joints, in combination with hoops or bands, as shown and described.

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Witnesses:

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