April 11, 1933. H. S. DECK 1,903,504

APPARATUS FOR MELTING EXPLOSIVES

Filed Oct. 1, 1929 3 Sheets-Sheet 1

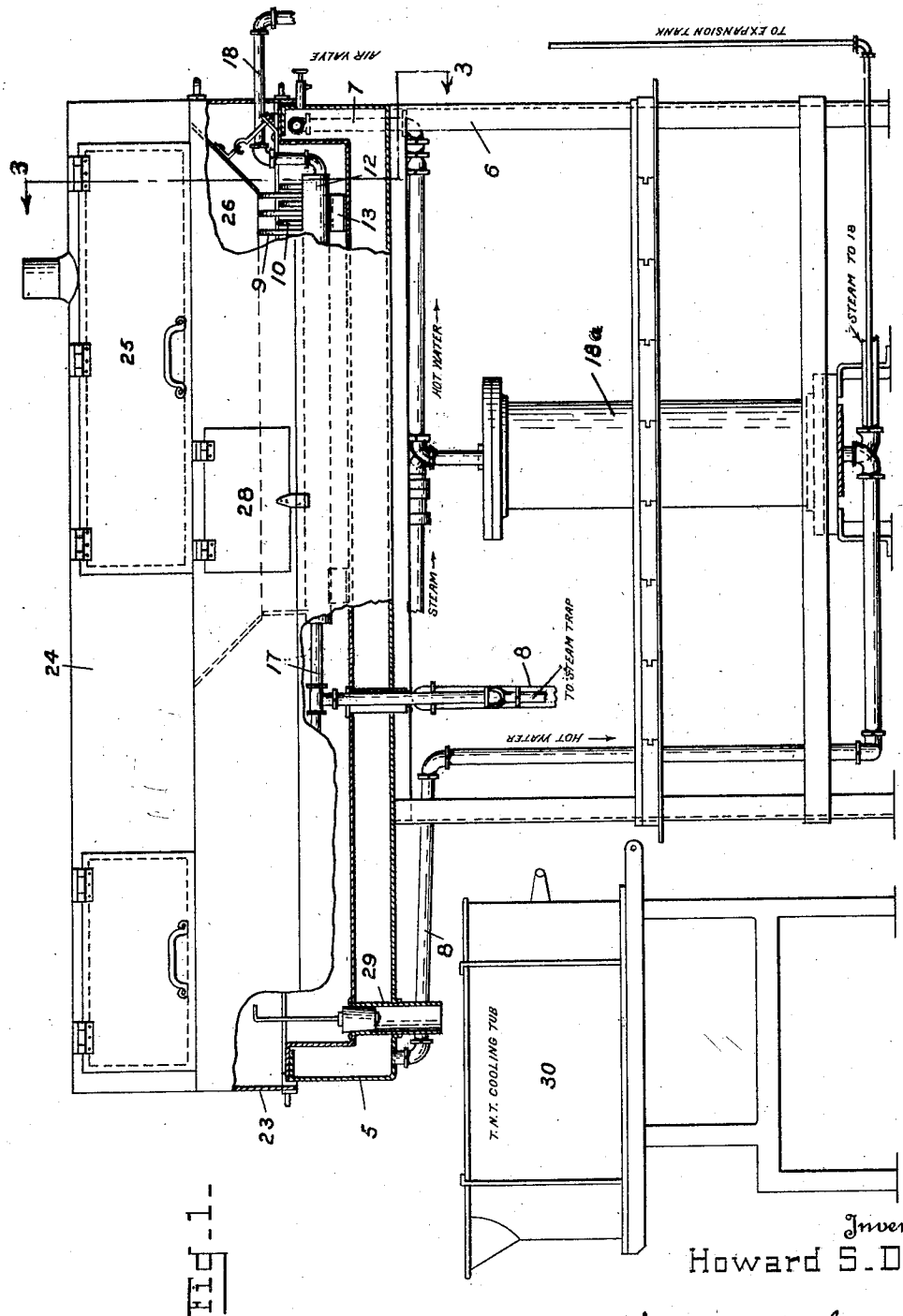


Fig. 1.

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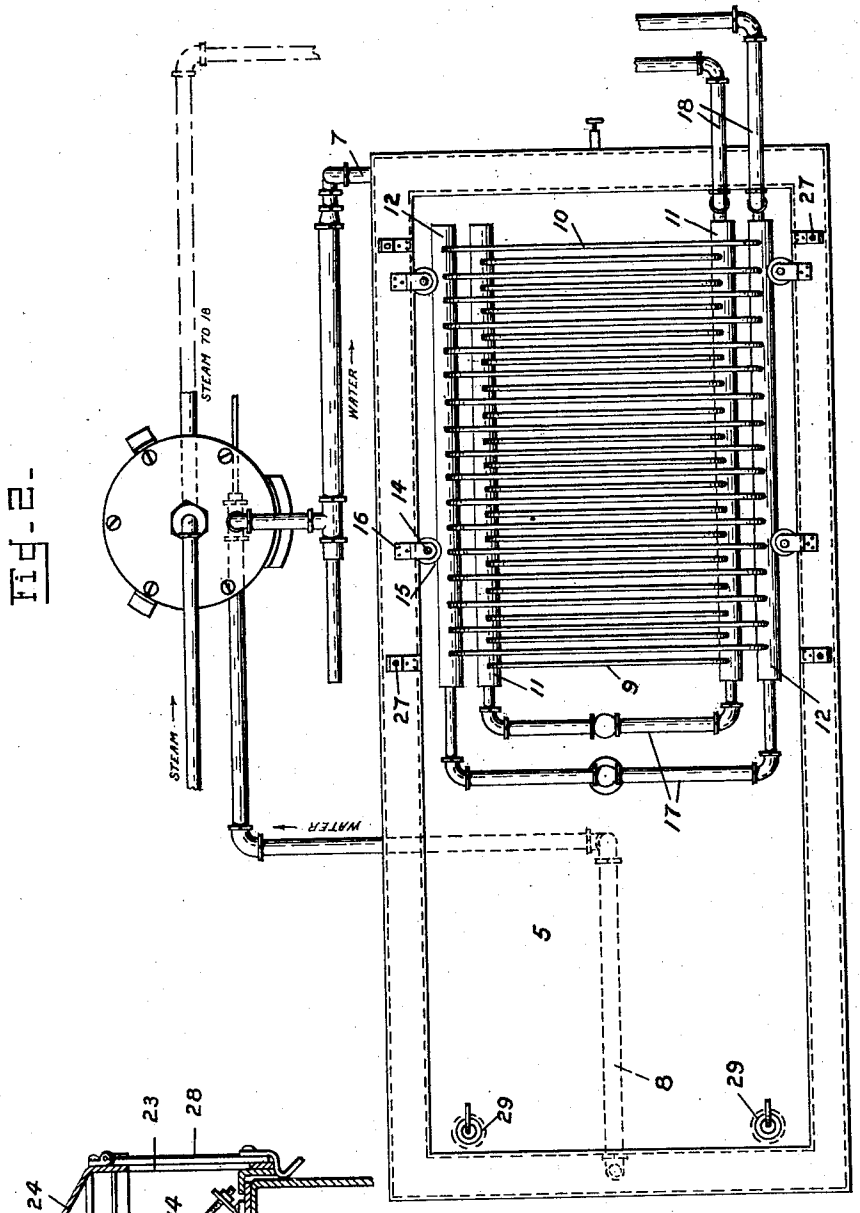


Fig. 2.

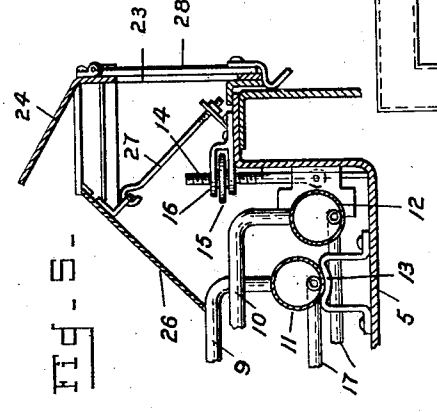


Fig. 5.

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Fig. 3.

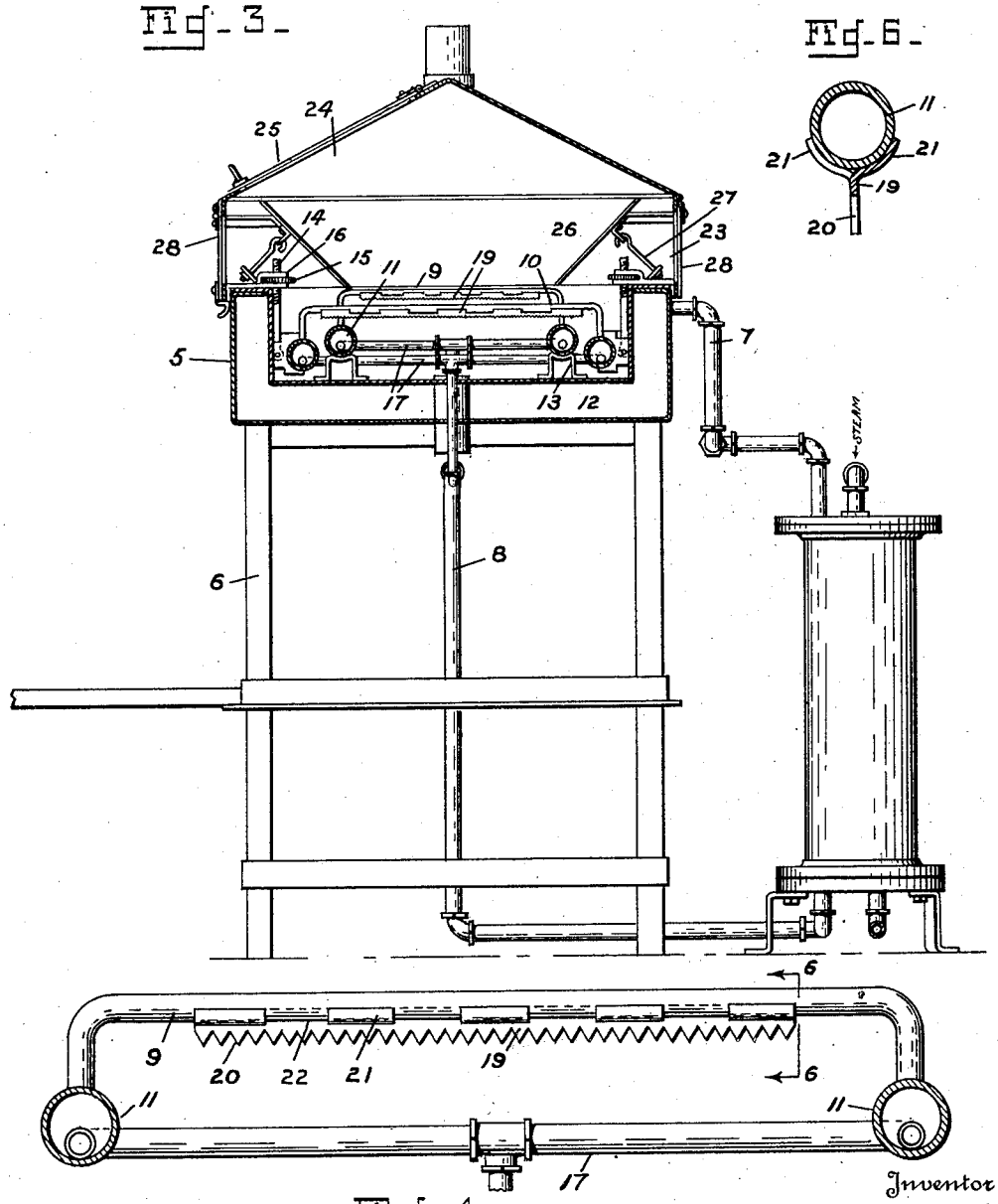


Fig. 6.

Fig. 4.

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UNITED STATES PATENT OFFICE

HOWARD S. DECK, OF DOVER, NEW JERSEY

APPARATUS FOR MELTING EXPLOSIVES

Application filed October 1, 1929. Serial No. 396,467.

(GRANTED UNDER THE ACT OF MARCH 3, 1883, AS AMENDED APRIL 30, 1928; 370 O. G. 757)

The invention described herein may be manufactured and used by or for the Government for governmental purposes without the payment to me of any royalty thereon.

This invention relates to an apparatus for melting explosives.

Where large quantities of shells or bombs are to be loaded with explosives by the pouring method, it is desirable that the melting apparatus be capable of continuous operation.

The object of this invention, therefore, is to provide an apparatus of this character in which the melting is performed by means of coils forming a grid capable of an adjustment favorable to the physical condition of the solid explosive and having attachments which will induce the liquid to quickly drop off into a container where, by tempering, it is in condition for pouring.

With the foregoing and other objects in view, the invention resides in the novel arrangement and combination of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed may be made within the scope of what is claimed without departing from the spirit of the invention.

A practical embodiment of the invention is illustrated in the accompanying drawings, wherein:

Fig. 1 is a view in side elevation, parts broken away, of the improved apparatus;

Fig. 2 is a plan view thereof with the hood removed;

Fig. 3 is a view in end elevation, parts being shown in section on the line 3—3 of Fig. 1;

Fig. 4 is a view in end elevation of one of the grids;

Fig. 5 is an enlarged detail view showing the mounting of the grids and method of securing the hood; and

Fig. 6 is a sectional view on the line 6—6 of Fig. 4.

Referring to the drawings by numerals of reference:

The apparatus comprises a jacketed pan 5 mounted on a support 6 and having an inlet line 7 and an outlet line 8 for a circulating fluid, conveniently hot water, controlling the temperature of the pan.

Mounted within the pan is a grid constituted by a system of nested coils, one being the fixed coil 9 and the other the movable coil 10, the latter being of greater width than the former. The headers 11 of the fixed coil rest on chairs 13 secured to the floor of the pan while the headers 12 of the movable coil are connected to an elevation and depression mechanism which may be conveniently formed by a screw 14 controlled by nut 15, both of these units confined and guided by a yoke 16 secured to the upper edge of the pan. The pipes of each of the two coils are sufficiently spaced to allow relative vertical movement of the coils to vary the size of the openings therebetween.

Steam from a heater 18*a* is admitted at one end of the headers through the inlet lines 18—18 and exhausted at the other end through the outlet lines 17—17, the lines connected to the movable coil being flexibly arranged to provide for the movement.

Secured to the underside of each pipe in the coils is a drip 19 having a depending serrated edge 20. The drip is formed from a single strip of metal equi-distantly cut to provide ears 21 which are alternately bent in opposite directions. When the ears are fixed to the pipes, as by welding, there are established inter-spaces 22 interrupting the continuity of the upper edge of the drip and thereby permitting uniform distribution of the liquefied explosive to the serrated conductors which by their formation induce the liquid to quickly drop off.

Mounted on the pan 5 is a frame 23 provided with a hood 24 in which is placed door 25 to permit introduction of the solid explosives onto the grid. A hopper 26 arranged within the frame and resting on the fixed coil is securely held by bolts 27. Doors 28 are hung in the side walls of the frame 23 to give access to the nuts 15 of the elevating and depressing mechanism.

The adjustment of the coils is determined by the physical condition of the solid explosive, being initially closed until melting

commences when the explosive is in granular form and being separated to present a larger surface area and increased capacity when the explosive is in lump or scrap form. The liquefied explosive which falls into the pan and is maintained therein at a controlled temperature is withdrawn through the outlet 29 and collected in a tub 30.

I claim:

1. Apparatus for melting explosives comprising a double walled pan, means for circulating a heating medium between the walls of the pan, a fixed coil in the pan, a movable coil nested with respect to the fixed coil and means for heating the coils.

2. Apparatus for melting explosives comprising a double walled pan, means for circulating a heating medium between the walls of the pan, a grid spaced from the floor of the pan, means for moving elements of the grid to vary its capacity, means for heating the grid and a hopper mounted above the grid.

3. Apparatus for melting explosives comprising a double walled pan, means for circulating a heating medium between the walls of the pan, a grid spaced from the floor of the pan, means for moving elements of the grid to vary its capacity and means for heating the grid.

HOWARD S. DECK.