

April 26, 1932.

C. A. WOOD

1,855,783

DIE CAST MACHINE

Filed April 7, 1930

2 Sheets-Sheet 1

FIG. 1

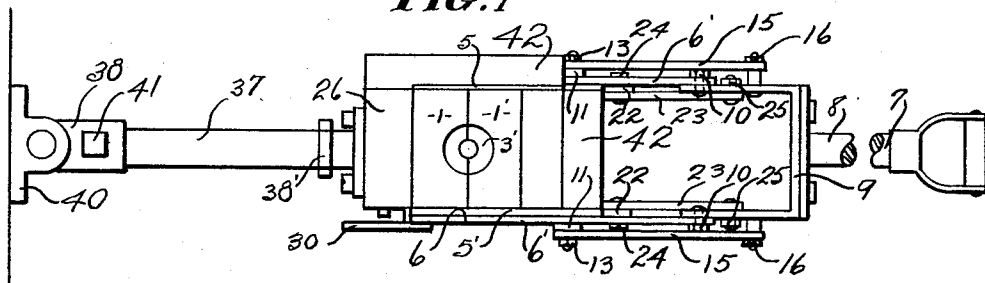


FIG. 2

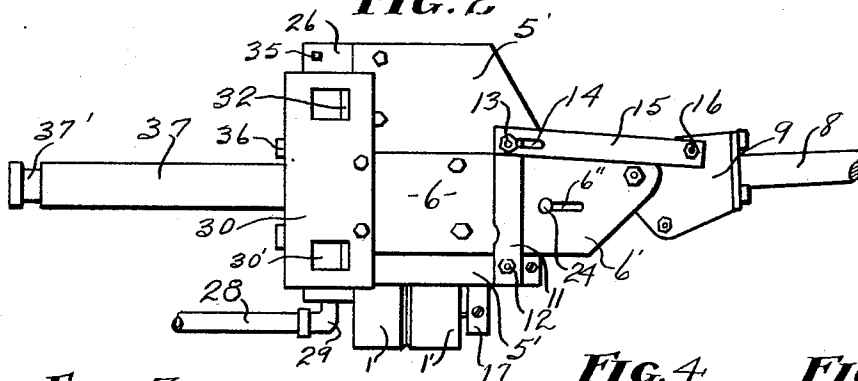


FIG. 3

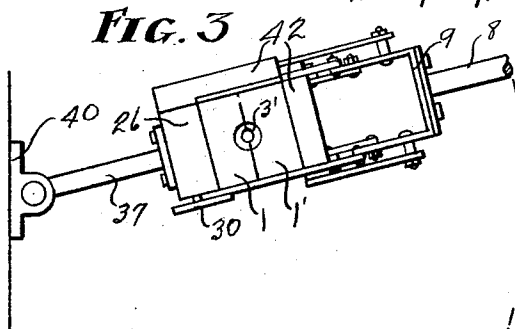


FIG. 4

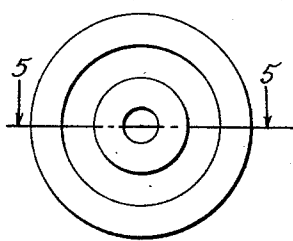


FIG. 5



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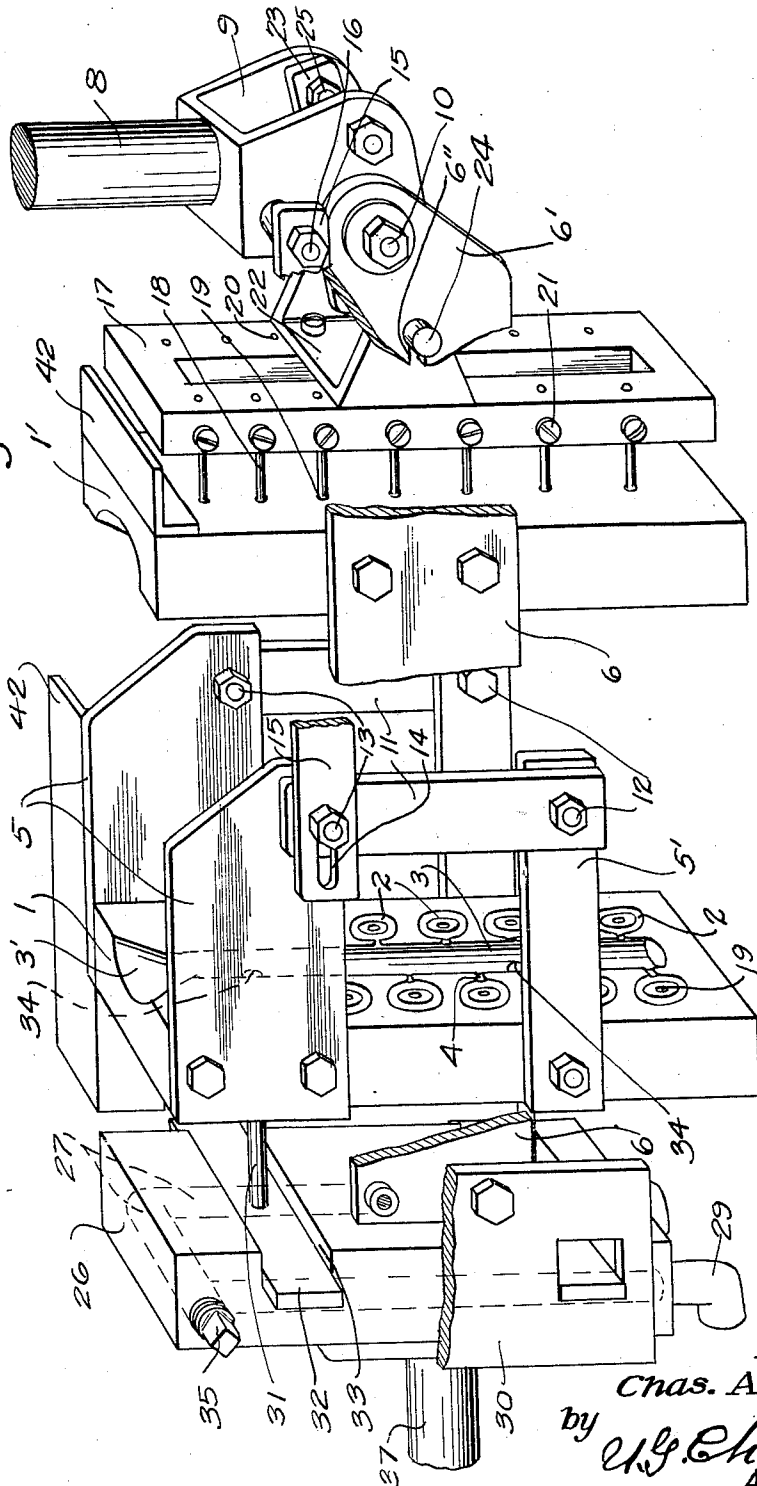
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Fig. 6



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DIE CAST MACHINE

Application filed April 7, 1930. Serial No. 442,328.

My invention relates to a die cast machine for casting miniature wheels as used on toys of the vehicle type.

The object of my invention is to provide a die cast machine positioned in working to the molten metal and adapted to rock horizontally to a point arranged to receive the wheels when ejected from the die and furthermore to revolve on the bearing supporting the same.

A further object of my invention is to provide a die cast machine that will mould a plurality of wheels simultaneously, the wheels being apertured to receive an axle and means to eject the wheels from the machine automatically.

A still further object of my invention is to provide a die cast machine having a liquid cooling system connected therewith.

A still further object of my invention is to provide a die cast machine carried by a bracket and adapted to rock therewith and revolve thereon, the machine having a handle element as opening means for the blocks of the die and the withdrawal of the core members that form the apertures in the wheels and to eject the moulded articles therefrom, the function of each being exercised in their consecutive order as the handle is rocked to its extremity.

These and other objects will hereinafter be more fully explained, reference being had to the accompanying drawings forming a part of my specification and in which like characters will apply to like parts in the different views of the machine.

Referring to the drawings.

Fig. 1 is a plan view of the die cast machine mounted on its bracket, the companion blocks together for casting the wheels.

Fig. 2 is a side view of the machine, showing the die blocks in contact, in which position the molten metal may be poured.

Fig. 3 is a top view of the device showing the sidewise movement about the supporting framework.

Fig. 4 is a side view elevation of one of the wheels as cast by the machine.

Fig. 5 is a sectional view of the wheel taken on line V—V in Fig. 4.

Fig. 6 is an exploded view of the casting machine showing the companion blocks and connecting members causing the various movements and operations of the device as hereinafter clearly described.

My invention consists of a pair of companion blocks 1 and 1', upon the faces of which are a plurality of depressions 2, each depression forming half a die or mould of the wheel to be cast, said dies being positioned on either side of a sprue 3, as shown, and connected thereto by channels 4. When the faces of the blocks 1 and 1' are in contact, and the half dies coincide, respectively, full dies are formed thereby, and may be cast by pouring molten metal into the funnelled mouth 3' of the sprue, said metal flowing thru the channels 4 and into the dies.

Positioned on the side of block 1 and integral therewith is a pair of guides 5 and 5' arranged to slidably engage with bar member 6 which is integral with block 1', as said block moves to contact with and away from block 1. At the outer end 6' of bar member 6 is handle element 7 connected by shaft 8 to U-member 9, said U-member pivotally engaging, by means of bolts 10, with the ends of bar 6'. At the outer extremities of guides 5 and 5' are connecting links 11 secured to said guides by bolts 12 and studs 13. Stud 13 slidably engage thru slots 14 in connecting member 15, said connecting member extending to U-member 9, and pivotally engaging therewith by means of bolts 16. Thus, movement of handle member 7 will cause rotation of U-frame 9 about bolts 16, and leverage caused by such movement will actuate bar member 6, and thereby block 1', to engage with, or away from block 1.

Located on the rear side of block 1' is a frame 17, said frame having a plurality of wire members 18 acting as cores for the dies, in axial alignment with the centers of the respective dies, and arranged to slidably engage in apertures 19 in block 1'. Said core members are removably or adjustably mounted in apertures 20 of frame 17, and are secured thereto by means of set screws 21. Rigidly affixed to frame 17 is a U-member 22, said U-member being connected by connecting

link 23 to the U-member 9, by means of stud 24 and bolts 25. Stud 24 extends outwardly from U-member 22 and engages slidably in slotted apertures 6'' in bar members 6. Now movement of the handle member about bolts

16 will be transferred by connecting link 23 to frame 17, and the cores will slidably engage in their respective apertures in block 1'. The slots 14 in connecting members 15 and slots 6'' in bar element 6 function as a means to remove cores 18 from their respective die centers before the companion die blocks disengage. Thus, when the handle member is down and the die blocks are in contact, a slight upward movement of the handle will cause rotation of U-member 9 about bolts 10, and result in the removal of cores 18. Further movement of the handle member will cause separation of the die blocks.

On the outside of block 1 is a second block 26 which acts as a cooling means for said die block, having an aperture therethru as shown by dotted lines 27 in Fig. 6. As a connecting means for a flexible conveyor 28, fittings 29 are threadedly engaged in block 26 at the openings of the apertures. Said conveying tubes are connected to a reservoir not shown in the drawings, thru which, as the machine is heated, a current of liquid may flow and cool the device. Plug 35 is threadedly arranged in the cooling block as a means of draining the system, if desired.

Rigidly connected with bar members 6 are slotted elements 30 which act as a manipulating means for the sprue ejector. Said ejector is composed of a pair of plunger members 31, integrally connected to bars 32 which slidably engage in a groove 33 in block 26. As bar member 6 is moved by the handle 7, slots 30' will cause the ejector plungers to slide inwardly and outwardly in their respective apertures 34 in block 1.

Secured to cooling block 26 is a shaft 37, bolts 36 threadedly engaging in block 1 and connecting shaft 37, block 26 and block 1 rigidly together. Shaft 37 acts as an axle on which the casting machine may revolve, the bearings 38 and 38' therefor being secured to a U-framework composed of a vertically disposed element 39, and a diagonal member 39' rotatably arranged in brackets 40 secured to a wall or other support. Shaft 37 is grooved on the end thereof, set screw 41 engaging loosely in said groove 37' as a means of preventing the machine from sliding out of the supporting frame, but permitting rotation of the shaft in bearing 38.

Operation of the die cast machine is accomplished as follows: The device is mounted in its supporting framework and turned in bearings 38 so that the die blocks are vertical. It is then rotated about element 39 until its position is over the melting metal to be cast. The handle is brought downward to close the companion blocks, to engage the core members 18

in their respective apertures, and to remove the ejector plungers 31 from the sprue aperture 3. The molten metal may then be poured. After this has cooled slightly, the device is rotated on shaft 37 to discharge surplus metal from the sprue. To prevent pourings from clogging on the sides of the block, plates 42 are arranged as lips around the upper working side of the machine. When the casting has set, the machine is rotated on member 39 away from the metal part, the handle is raised to remove cores 18, and to eject the sprue with the wheels connected thereto. After this, the device is ready for another identical system of movements.

Although I have described a cooling means attached to only one side of the companion blocks, I do not wish to be so confined, as this may be applied to either or both sides thereof, and such other modifications may be employed as lie within the scope of the appended claim, and having fully described my invention what I claim as new and desire to secure by Letters Patent is:

A die cast machine of the class described comprising a pair of vertically disposed companion blocks having a plurality of depressions in the abutting face of each of the blocks, the depressions being the form of wheels and registering in pairs, and a shaft and means to pivotally connect the same to each of the die blocks as means to move the blocks to and from each other, a block having a U-shaped aperture positioned therein and pipe connecting means for the circulation thru the U-shaped apertures, the block having a slot spaced from each end thereof and transversely positioned to the block and extending inward from the side adjacent the die block to which first said block is attached, a bar slidably arranged and positioned in each of the slots, each bar having a plunger laterally extending therefrom as an ejector for articles cast in the die machine, means to actuate the bars inward and outward as the companion blocks are moved to and from each other substantially as shown.

In testimony whereof I affix my signature.
CHARLES A. WOOD.