(No Model.)

F. O. MATTHIESSEN.

AUTOMATICALLY COOLING HOT JOURNALS.

No. 270,236. Patented Jan. 9, 1883.

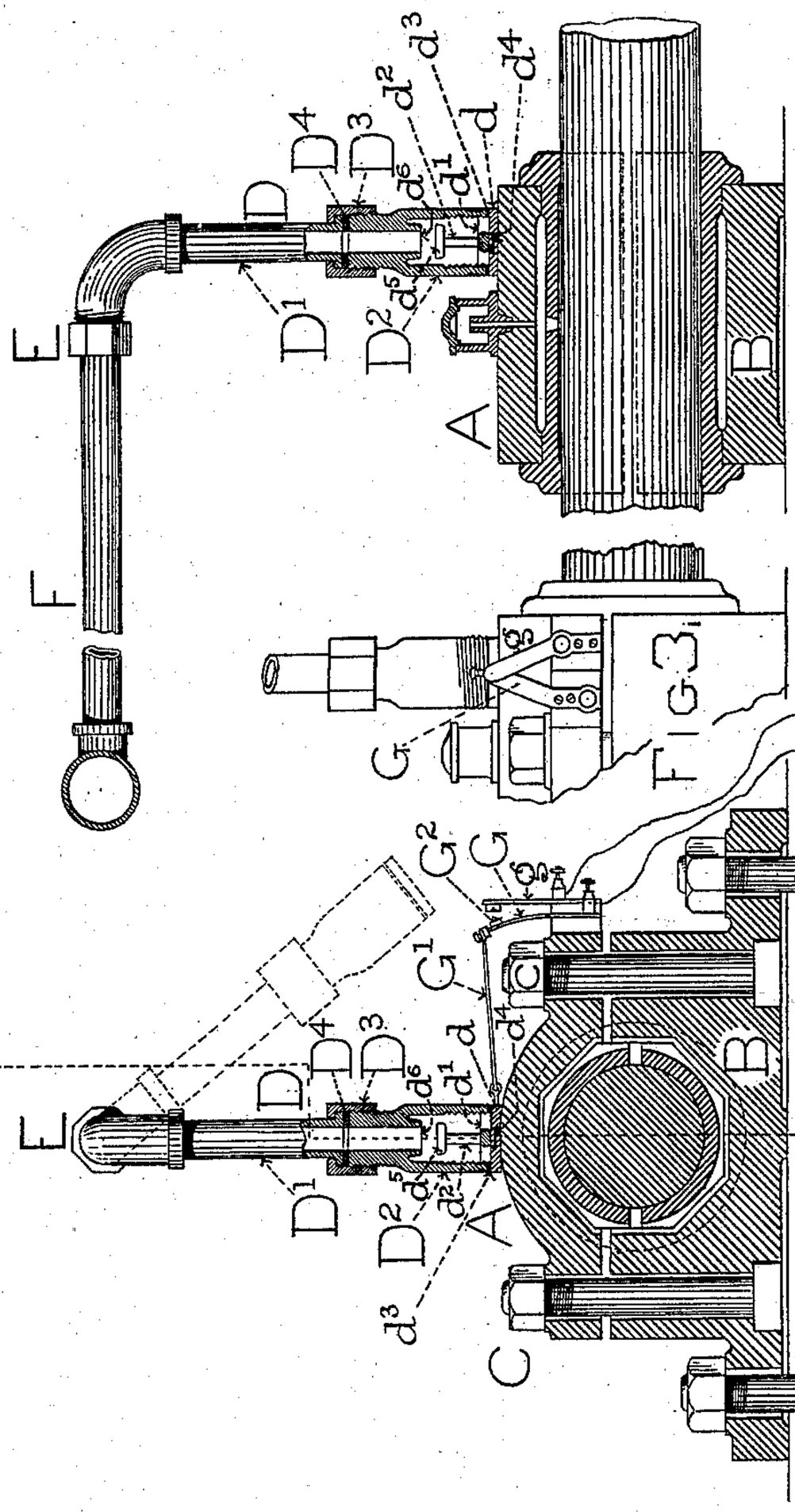

FIG 1.

FIG 3.

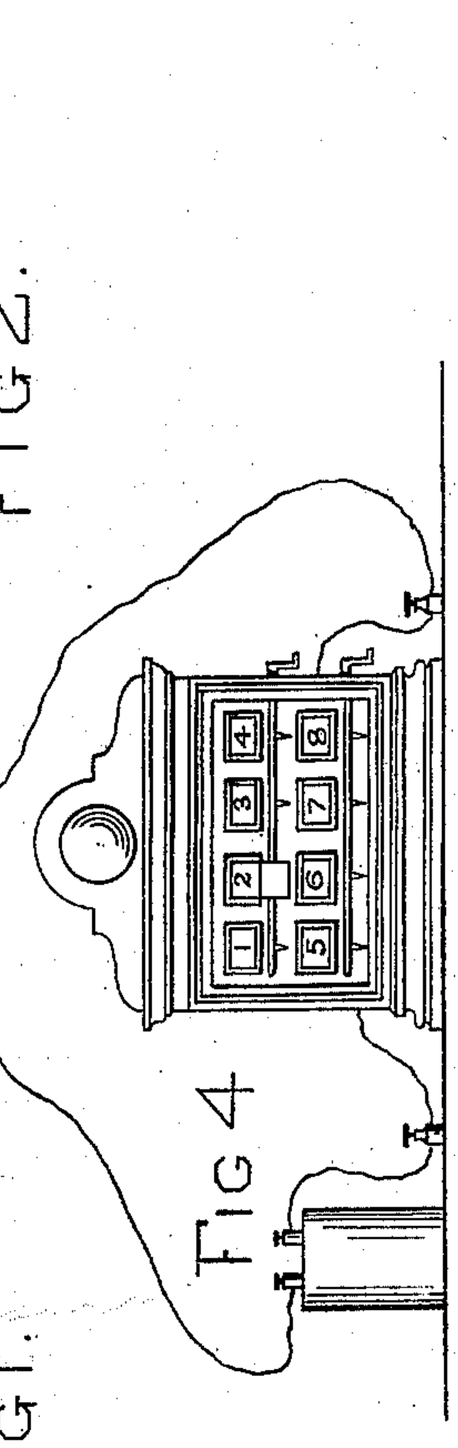

FIG 4.

FIG 2.

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AUTOMATICALLY COOLING HOT JOURNALS.

SPECIFICATION forming part of Letters Patent No. 270,236, dated January 9, 1883.

Application filed August 30, 1882. (No model.)

To all whom it may concern:

Be it known that I, FRANZ O. MATTHIESSEN, of Irvington, New York, have invented a certain Improvement in Devices for Automatically Cooling Hot Journals, of which the following is a specification.

My invention relates to that class of automatically-operating cooling devices in which a discharge-pipe for supplying a cooling-fluid has its mouth closed with a plug or disk of metal which is fusible at a comparatively low temperature.

It is the object of my invention to prevent shaft-journals in mills and factories from becoming hot enough to ignite contiguous inflammable materials. I accomplish this by means of apparatus which deluges such journals with water or other suitable fluid whenever they become overheated, and concurrently sounds an alarm at some prescribed part of the premises, which indicates the room or place where the overheating has occurred.

In order to provide for the removal of the cap of the journal, I make my discharge-pipe movable preferably by securing it to the service-pipe, or branch of the service-pipe, with a swivel-coupling. I apply my fusible disk to the lower end of the discharge-pipe, and so arrange the pipe with relation to the journal that it may be adjusted in such position as to bring the fusible disk on the end of the pipe into close contact with the top of the cap. I form my disk of either of the well-known alloys, preferably of an alloy of the class which melts at a temperature not exceeding that of boiling water. Inside the end of the discharge-pipe I provide a valve, to which the melting of the fusible disk gives access, so that it can be closed to stop the flow of water from the discharge-pipe when the disk has been melted off.

In carrying out my invention I arrange in suitable proximity to the shafting a service pipe or pipes, to which, or to branches of which, I attach my discharge-pipes, which, by means of swivel-couplings or by any form of loose joint, are made movable, so that they can be adjusted in position. In connection with the shaft-journals I provide an electric annunciator or alarm-bell, so arranged as to be operated either by the melting of the fusible disk or by a prescribed rise of temperature in any of the journals. I may of course provide a separate alarm for each journal, or I may include all the journals in one room or one story of the mill in a single electric-alarm circuit.

The accompanying drawings, illustrating my invention, are as follows:

Figure 1 is a section of a shaft-journal provided with my apparatus, and Fig. 2 is a transverse section of the same through the line *x x* on Fig. 1. Fig. 3 is a front elevation of the contact-maker for closing the electric circuit when the fusible disk melts, and Fig. 4 is an elevation of a distant annunciator in circuit with the contact-maker.

The drawings represent a shaft-journal of ordinary construction and a portion of a shaft deposited therein. The cap A, which constitutes the upper half of the bearing, is secured to the lower part, B, by the bolts C C, in the usual manner.

There is arranged in connection with the journal the discharge-pipe D, the lower end of which is closed by a plug or disk, *d*, composed of an alloy, preferably of such composition as to melt at a temperature not exceeding that of boiling water. The discharge-pipe D is connected by the swivel-coupling E with the service-pipe F, and is made of suitable length to enable the disk *d* upon its lower end to bear upon the top of the cap or upon some other convenient part of the journal. When occasion arises to remove the cap the discharge-pipe is swung outward into the position shown in dotted lines in Fig. 1.

The lower end of the discharge-pipe may have an outside screw-thread formed upon it to receive an ordinary screw-cap for application when the disk has been melted; or an inside valve may be employed, as shown in the drawings, in which, as will be seen, the pipe D is represented as being composed of the two sections D' and D^2, one screwing into the other.

The jam-nut D^3 serves to compress the packing-ring D^4 against the end of the lower section, D^2, and thus make a tight joint between the sections.

In practice, if a journal becomes overheated, the fusible disk melts and permits the discharge upon the cap of water or other cooling-fluid supplied by the service-pipe F.

It will be understood that the pipe for con-

ducting fluid from the service-pipe to the journal, which I have called the "discharge-pipe" D, instead of being jointed, may be made of any flexible material, so that it can be bent in and out of position.

It is desirable that the pipe D shall be arranged to swing in a vertical plane immediately over the journal, so that it will tend by its own gravity to hang in proper position, with the fusible disk at its lower end in contact with the top of the cap.

The fusible disk may have a thread formed upon its periphery, and may be screwed into the end of the discharge-pipe; or the fusible disk may be cast upon the perforated head d' of the valve-stem d^2, in which case the male screw-thread will be formed upon the periphery of the head d', and the disk will be of larger diameter than the head d', so that it may bear upon a packing-ring, d^3, applied to the end of the discharge-pipe for the purpose of making the joint water-tight.

Instead of the disk being cast into the perforations of the head d', the latter may have the flaring tongue d^4 formed upon its outer face, and the disk may be cast around this tongue. It will be seen that the construction in either case is such that when the fusible disk is melted and the pipe D is swung away from the journal access can be had to the head d' of the valve-stem d^2, which can then be screwed in, and thereby the valve d^5 can be forced up to its seat d^6, thus stopping the flow of water from the discharge-pipe. In its normal position the valve d^5 is away from its seat, and if the fusible disk d melts the cooling-water flows around the valve d^5, and is discharged through the perforations in the head d' of the valve-stem and falls upon the hot journal.

To prevent the damage which might ensue from a long-continued deluge of water, I provide each journal with a device for closing an electric circuit connected with an annunciator situated in the office of the factory or in the engine-room, or any appropriate part of the building where an alarm will attract prompt notice.

As electric annunciators and circuit-closers capable of being operated by changes of temperature are well known, no especial description of them is necessary. The drawings, however, show a simple contact-maker, which is in the form of a flat spring, G, held under tension by the link G′, which is fastened at one end to the fusible disk d. When the disk melts the link G is released, and the contact-point G^2 is thus permitted to be thrown by the spring G against its seat upon the insulated bar g, with which one end of the annunciator-circuit is connected, the other end of the circuit being connected with the spring G. The electric circuit being thus closed, an alarm is given, and the annunciator indicates the locality where there is an overheated journal. An attendant whose attention has been thus directed to the point where the mischief has occurred can then go to that point and swing the discharge-pipe from the journal and close the valve and take such other steps to remedy the difficulty as may be required.

I claim as my invention—

The combination of a shaft-journal the cap of which is removable, the discharge-pipe hinged to the service-pipe, its free end over said cap, and so that the discharge-pipe may be turned from its position for removal or introduction of the cap or shaft, a plug fusible at a low temperature, arranged in the discharge-pipe in close proximity to the cap to hold in suspense the fluid in the pipe, and so that the heat which may be generated in the journal will liberate the fluid and permit its discharge upon the journal, substantially as described.

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