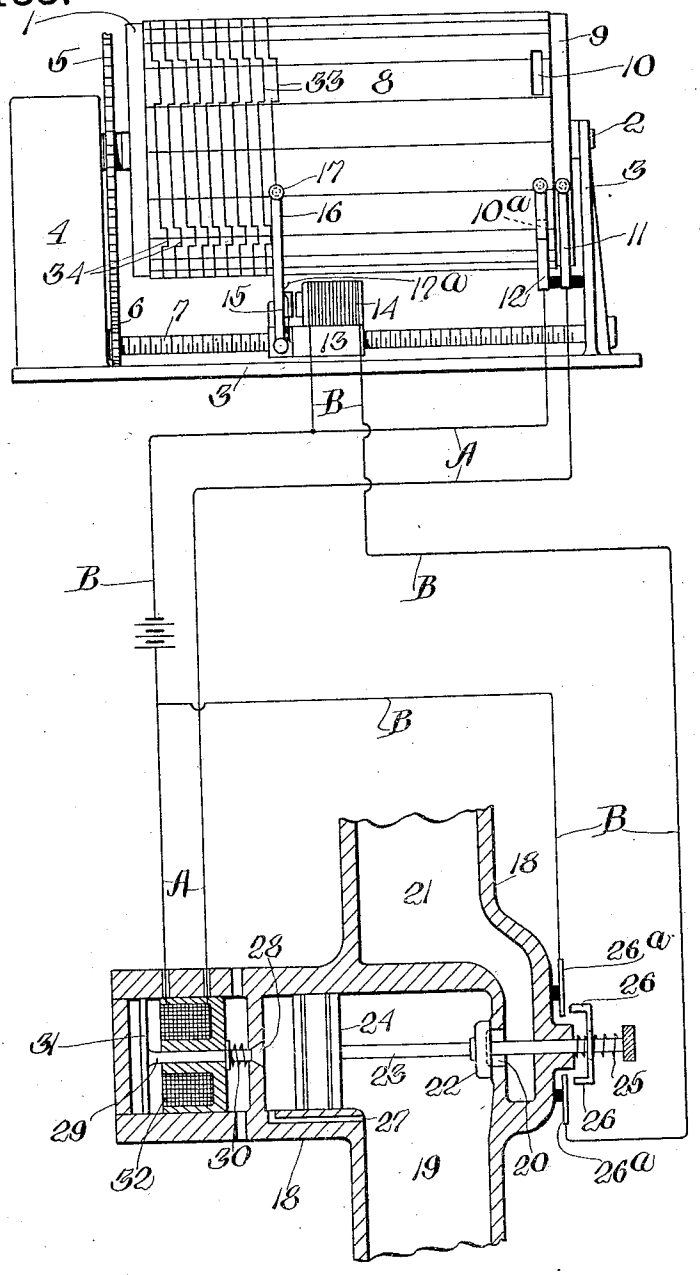
A. O. BENECKE.

TIME CONTROLLING AND RECORDING MECHANISM.

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1,182,133.

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Witnesses:

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UNITED STATES PATENT OFFICE.

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TIME CONTROLLING AND RECORDING MECHANISM.

1,182,133. Specification of Letters Patent. Patented May 9, 1916.

Application filed January 8, 1915. Serial No. 1,202.

To all whom it may concern:

Be it known that I, ADELBERT O. BENECKE, a citizen of the United States, and a resident of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Time Controlling and Recording Mechanism, of which the following is a specification.

This invention relates to time controlling and recording mechanism and its object is to provide effective mechanism of simple construction and adapted to secure accurate records.

The invention is illustrated by the accompanying drawing which shows the device electrically operatively connected with a steam whistle and adapted to sound the whistle at predetermined times and for predetermined periods and to simultaneously record the fact of such sounding of the whistle as well as the time and duration of such sounding.

The rotary drum 1 is fixedly mounted on the shaft 2, which has one end journaled in the standard 3 and the other end operatively connected with the gears of a clock 4, mounted on the standard 3, and furnished with gear 5 engaging gear 6 secured to one end of the screw 7 journaled in standard 3.

The surface of drum 1 is made of brass, or other conductive metal and the chart 8, made of non-conductive material, as for example paper, is mounted thereon in such manner as to leave one end section 9 of the surface of the drum exposed, the adjacent section of said chart being furnished with perforations 10, 10^a. The contacts 11 and 12 are mounted on the standard 3 and contact respectively with said exposed surface of the drum and with said perforated section of the chart. The screw 7 operatively engages the pencil carriage 13 mounted thereon and furnished with the electro-magnet 14 controlling the armature 15 attached to the resilient pencil arm 16 pivoted to said carriage and carrying the pencil 17 engaging said chart.

The whistle comprises the casing 18 and disposed therein the inlet chamber 19 communicating by passage 20 with outlet chamber 21, said passage 20 being controlled by the valve 22 seated in said inlet chamber and mounted centrally on the piston rod 23 furnished at one end with the piston 24, disposed in said inlet chamber, and at the other end with the controlling spring 25 and with the contacts 26 adapted to engage the contacts 26^a, mounted on and insulated from the whistle casing 18, but normally held out of such contact by said controlling spring 25. The by-pass 27 leads from that portion of the inlet chamber above the piston to that portion of said chamber below the piston, there being a passage from said last mentioned portion of the inlet chamber to the outer air normally closed by the valve 28 furnished with stem 29 slidingly mounted in the whistle casing and furnished on its inner end with the controlling spring 30 and on its outer end with the armature 31 controlled by the electro-magnet 32 disposed in said casing.

The electric circuit A includes the drum 1, contacts 11 and 12 and electro-magnet 32; while the electric circuit B includes the pairs of contacts 26 and 26^a and the electro-magnet 14. Normally, as shown in the drawing, when contact 12 engages the chart 8 (and not the drum 1) the circuits are open, contacts 26 and 26^a being held apart and valve 22 being held to its seat by spring 25 and valve 28 being held to its seat by spring 30. Steam being introduced into the inlet chamber 19 flows through the by-pass 27 to that portion of the inlet chamber below the piston 24 and assists in holding valves 22 and 28 to their respective seats. As the drum 1 rotates, being driven by clock 4, the perforation 10 in chart 8 travels beneath the contact 12 and said contact engages the drum surface 9 thereby closing circuit A, energizing electro-magnet 32, actuating armature 31, opening valve 28 and permitting the escape of steam from below the piston 24, thereby causing the pressure above said piston to open valve 22, thereby engaging contacts 26 with contacts 26^a, closing circuit B, energizing electro-magnet 14 and causing the pencil 17 (controlled by spring 17^a) to deviate and follow a new path, as indicated at 33, while the circuit remains closed. When the perforation 10 has passed from beneath contact 12 and the latter has again engaged the non-conductive chart, the circuit A is opened and the parts assume their normal position as shown in the drawing.

It will be observed that the pencil is disposed in the same horizontal plane with the contact 12 and that the deviations 33 and 34

are opposite and co-extensive with said perforations 10, 10^a. It will also be observed that under the arrangement shown and described, circuit B is closed only when valve 22 is opened permitting the steam to escape from the inlet chamber to the outlet chamber and blow the whistle, the result being that no record is made unless the whistle sounds. The perforations 10, 10^a are so proportioned and disposed on the chart as to secure any desired result both as to times of sounding the whistle and the duration of such sounding.

The mechanism has been shown and described as applied to a steam whistle, but is equally applicable to other machines, or devices, it merely being necessary in any case to include in circuits A and B the machine which is to operate at predetermined times and whose operations are to be recorded.

I have shown one form of the invention in which the chart is mounted on a rotary drum, but the invention is equally applicable to recording instruments in which the chart is mounted on a rotary disk, or is a strip of paper traveling over a chart support; the essence of the invention being the perforated chart adapted to make and break the circuit and to receive the record. It is obvious also that the pencil instead of being caused to deviate from its path, could be raised from the chart and held in its raised position during the time circuit B is closed.

I claim:

1. Time controlling and recording mechanism comprising, in combination, a chart support of conductive material; a perforated chart of non-conductive material; an electric circuit; a contact in said circuit engaging said chart support; a second contact in said circuit engaging said chart; means for actuating said chart, thereby alternately making and breaking said circuit; a second electric circuit disposed in operative relation to said first mentioned circuit and adapted through intermediate mechanism to be controlled thereby; and recording mechanism controlled by said second circuit for making records on said chart.

2. In a time controlling and recording mechanism of the character described, in combination, an electric circuit; a chart support of conductive material included in said circuit; a perforated chart of non-conductive material included in said circuit; means for actuating said chart and thereby alternately making and breaking said circuit; and recording means for making records on said chart adapted through intermediate mechanism to be controlled by said circuit.

In testimony whereof I have affixed my signature, in presence of two witnesses.

ADELBERT O. BENECKE.

Witnesses:
GEORGE G. CLARK,
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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."