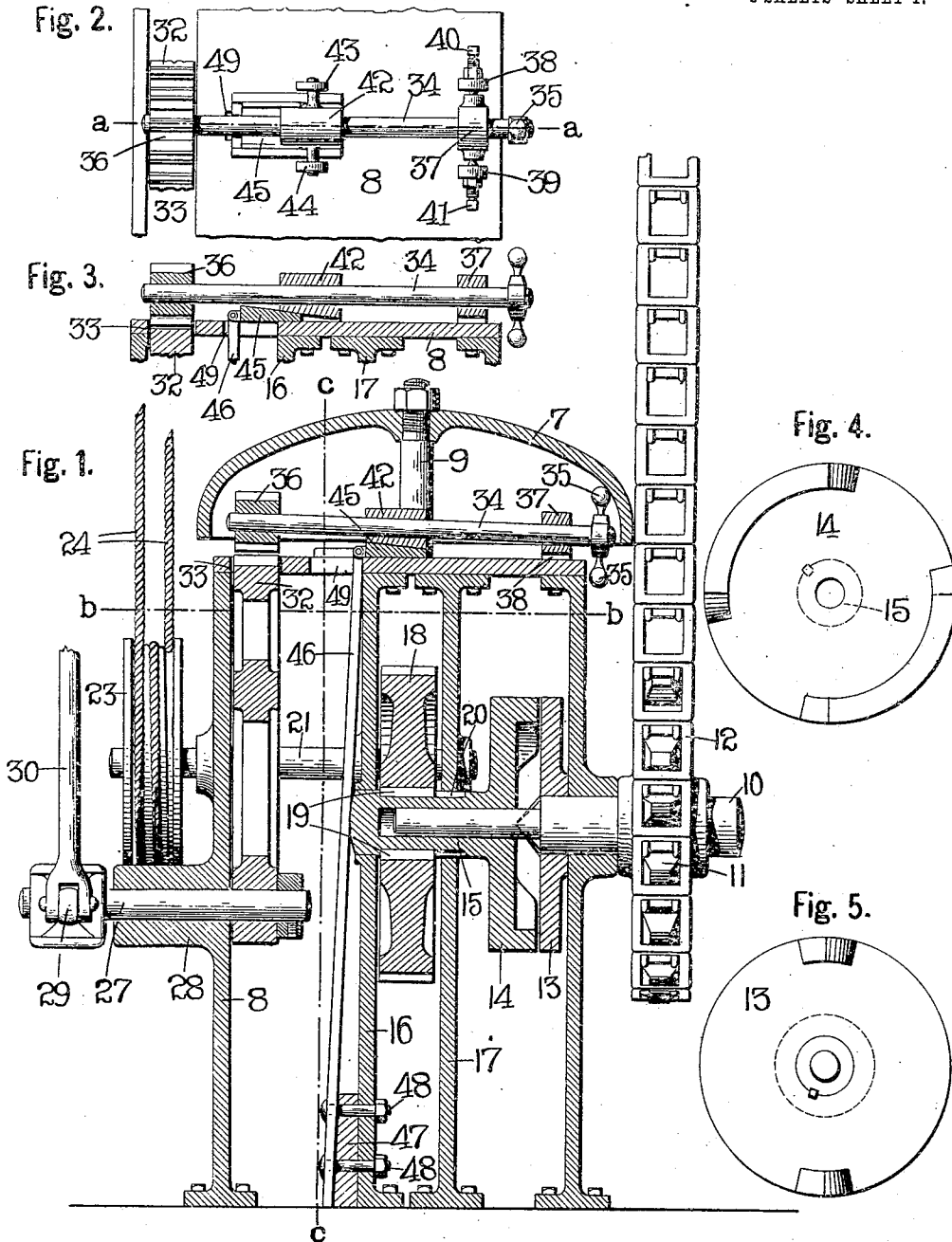


J. E. HALL.
ALARM APPARATUS.
APPLICATION FILED JAN. 21, 1909.

954,675.

Patented Apr. 12, 1910.

3 SHEETS—SHEET 1.



Witnesses.
L. M. Saenger.
George A. Neubauer.

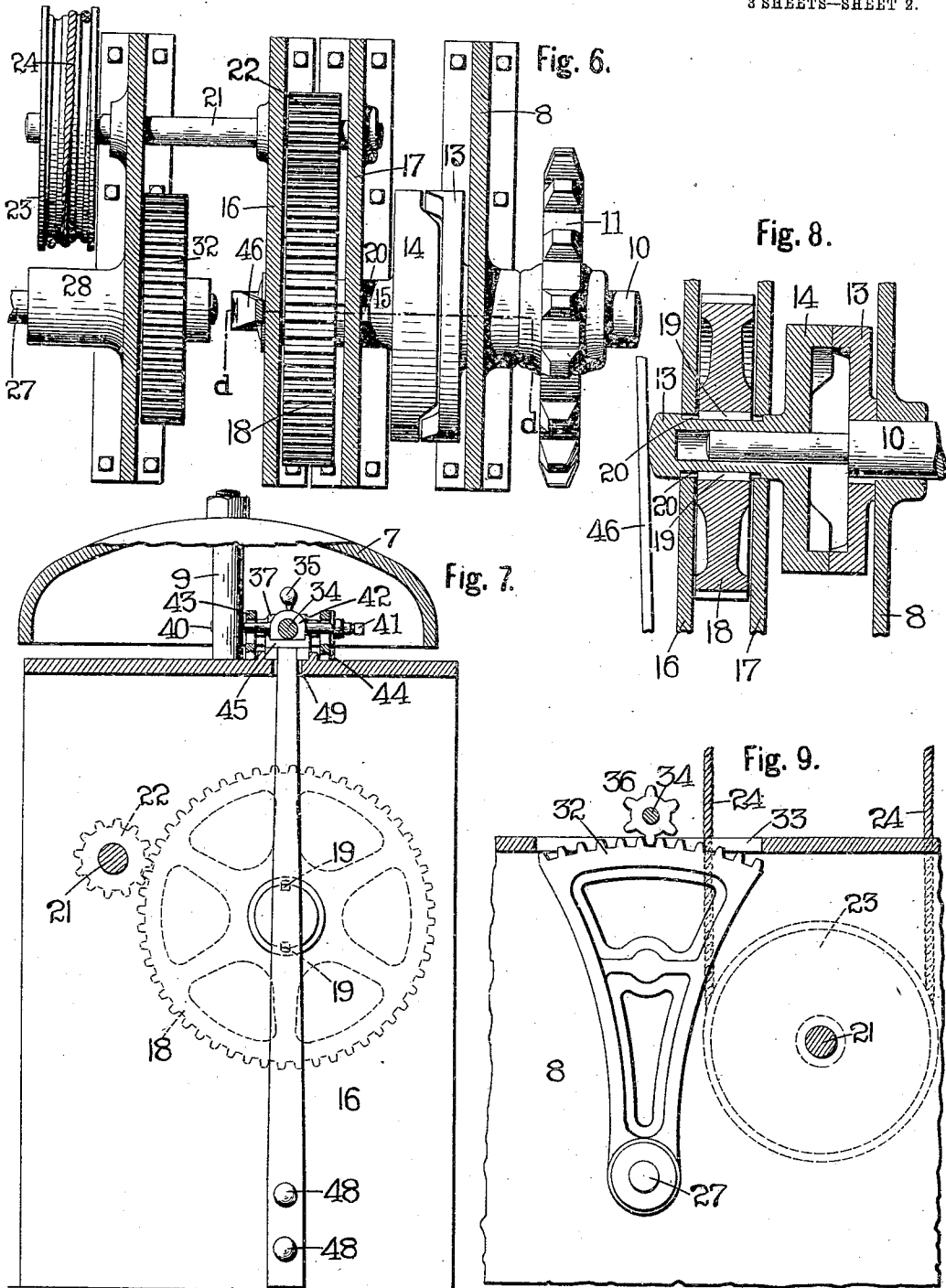
John E. Hall. Inventor.
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3 SHEETS—SHEET 2.



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L. M. Baugster.
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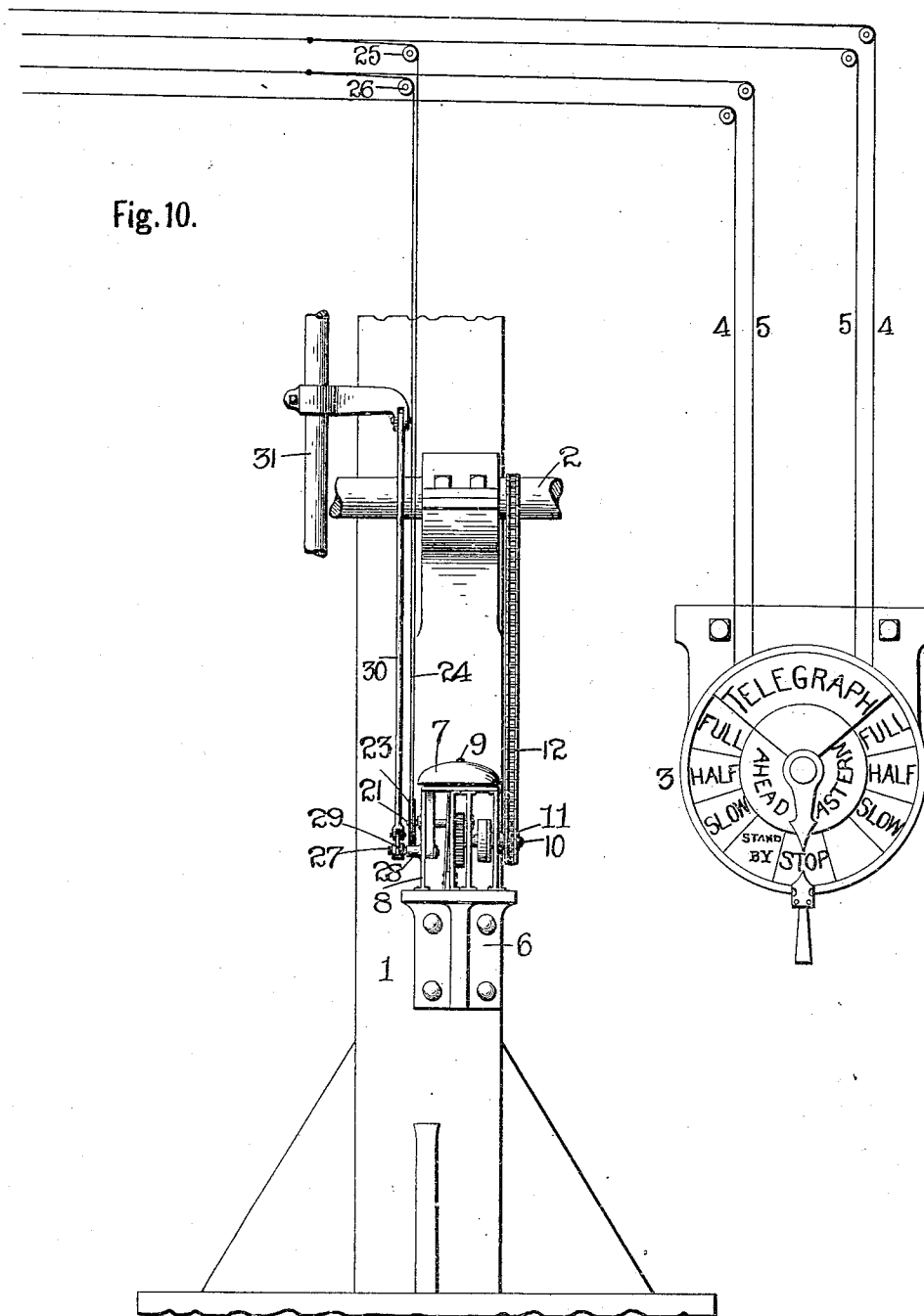
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3 SHEETS—SHEET 3.

Fig. 10.



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UNITED STATES PATENT OFFICE.

JOHN E. HALL, OF BUFFALO, NEW YORK.

ALARM APPARATUS.

954,675.

Specification of Letters Patent.

Patented Apr. 12, 1910.

Application filed January 21, 1909. Serial No. 473,446.

To all whom it may concern:

Be it known that I, JOHN E. HALL, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented a certain new and useful Improvement in Alarm Apparatus, of which the following is a specification.

This invention relates to an alarm apparatus which is chiefly adapted for use in connection with the signaling mechanism of marine vessels.

The object of the invention is to provide an apparatus that will be automatically operated from the engine while running, and which, when the engine is regulated contrary to the signal or marine telegraph through a misunderstanding of the signal or other cause, will sound an alarm, thereby forming a precautionary measure to prevent accidents from incorrect manipulation of the engine.

The invention also relates to certain details of construction of the alarm and its connections which will be hereinafter described and claimed reference being had to the accompanying drawings, in which:—

Figure 1 is a vertical central section through the alarm, the drum and sprocket together with fragments of the connecting cable and chain being shown in full lines. Fig. 2 is a fragment of the top of the inclosing box with the alarm striking mechanism mounted thereon. Fig. 3 is a fragmentary section on line *a a*, Fig. 2. Fig. 4 is an enlarged detached face view of one member of the clutch. Fig. 5 is an enlarged detached face view of the other member of the clutch. Fig. 6 is a horizontal section on line *b, b*, Fig. 1. Fig. 7 is a fragmentary section on line *c c*, Fig. 1 with the gear wheel and pinion shown in dotted lines. Fig. 8 is a fragmentary section on line *d d*, Fig. 6. Fig. 9 is a fragmentary section through the inclosing box to illustrate the segment and the pinion of the striker shaft which engages with the segment, the drive and a portion of its cable being also shown in dotted lines. Fig. 10 is a general view showing fragments of an engine, the dial and cable of a main telegraph and the apparatus connected thereto, to illustrate the manner of attaching the apparatus to these elements.

In referring to the drawings in detail like numerals designate like parts.

The alarm is mechanically operated from

the engine and only during the running of the engine.

The purpose of the alarm is to instantly indicate when the engine is running contrary to the signal transmitted.

While the alarm may be attached or connected to various parts to carry out the general purpose for which my invention is designed it is thought that the most feasible way is to connect portions to the cable of the marine telegraph and the reverse shaft and a reciprocating part of the engine.

Referring to Fig. 10 the numeral 1 indicates one of the columns of a marine engine, 2 a fragment of the reverse shaft, 3 the indicating dial of a marine telegraph, 4 and 5 the controlling cables of the marine telegraph which extend to within convenient reach of the pilot, captain or other directing officer of the vessel. A shelf 6 is riveted to the sides of the column 1 upon which the alarm is mounted.

The alarm has a bell 7 which is secured to the top of an inclosing box 8 by a central bar or bolt 9. A rock shaft 10 is journaled in one side of the inclosing box and has a sprocket wheel or similar element 11 mounted on its outer projecting portion which is connected to the reverse shaft 2 of the engine by a chain 12 or other operative connection. One member 13 of a cam clutch is rigidly mounted on an intermediate portion of the shaft 10 and the other member 14 of the cam clutch is slidably and rotatably mounted on the reduced inner portion of the rock shaft 10 having a deeply recessed lateral extension or sleeve 15 in which the reduced portion of the shaft extends as shown in Fig. 1.

The interior of the inclosing box 8 is divided into three compartments by two vertical partitions 16 and 17 and the sleeve 15 of the clutch member 14 is rotatably mounted in openings in both partitions 16 and 17 and is also slidable longitudinally in said openings. The partitions 16 and 17 are separated sufficiently to provide a chamber wide enough to receive a gear wheel 18 which is mounted on the sleeve 15 and provided with keys 19 which fit in longitudinal grooves or slideways 20 in the sleeve 15 see Fig. 1.

A shaft 21 is journaled in the partitions 16 and 17 and the side wall of the inclosing box 8 opposite to the side wall in which the rock shaft 10 is journaled and carries a pin-

ion 22 on its inner end which is located in the chamber between the partitions and meshes with the gear wheel 18, and a grooved drum 23 on its outer end around which a cable 24 is wound. The cable 24 extends from the drum up to and over pulleys 25 and 26 and connects at its ends to the cable 5 of the marine telegraph. A second rock shaft 27 is journaled in a long single bearing 28 on one side of the inclosing box and has an outer crank 29 which is operatively connected by a connecting rod 30 to a reciprocating part 31 of the engine so that the shaft is rocked back and forth from the engine. A toothed segment 32 is mounted on the inner portion of the shaft 27 within the inclosing box and has its toothed edge projecting through an opening 33 in the top of the inclosing box see Fig. 9.

A sounding or striking mechanism is arranged within the bell 7 which consists of a striker shaft 34 having a series of striking arms 35 at one end and a pinion 36 at the opposite end which is adapted to mesh with the segment 32 while the alarm is being sounded as shown in Figs. 2 and 3. The shaft 34 is journaled in movable bearings so that it may be moved to shift the pinion in and out of engagement with the segment 32. One of the bearings which is located near the striking arms consists of a block 37 in which the shaft is journaled and two opposite brackets 38 and 39 attached to the top of the inclosing box between which the block 37 is pivoted by cone pointed pivot screws 40 and 41. The other bearing is a block 42 mounted between supports 43 and 44 extending from the inclosing box so as to have an up or down movement. The lower surface of the block 42 is cut on an incline and a wedge 45 having a correspondingly inclined top surface is interposed between the block 42 and the top surface of the inclosing box. The wedge 45 is pivoted or hinged at its outer end to the upper extremity of a spring strip 46 which is fastened at its lower end to the lower end of one side of the partition 16, being bolted against an interposed block 47 by bolts 48 see Fig. 1 and extends upward and through an opening 49 into pivoting engagement with the wedge 45.

The operation of this apparatus is as follows:—The connections between the cable of the main telegraph and one member of the cam clutch and between the reverse shaft of the engine and the other member of the cam clutch are so arranged and timed that corresponding movements in the same direction will be imparted to both clutch members when the signal indicated by the dial of the telegraph is correctly understood and complied with by the engineer. A change in the

operation of the engine different from that indicated by the dial of the telegraph will cause the members of the clutch to move differently from each other and will owing to the cam projections cause the clutch member 14 to slide inwardly and impinge against the spring strip 46. This moves the upper portion of the spring strip 46 away from the partition 16 and shifts the wedge 45 sufficiently to permit the pinion end of the shaft 34 to drop and bring the pinion 36 in mesh with the segment 32. The constant reciprocation of the segment 32 in a curved path now imparts a series of rapid revolutions to the shaft 34 causing the striking arms 35 to successively strike the bell 7 and sound an audible alarm. This not only notifies the engineer that the signal was wrongly interpreted but also informs the various officers as the alarm sounds throughout the vessel of that fact and enables the taking of precautionary measures instantly.

As this alarm mechanism is mechanically operated from a reciprocating part of the engine, it can only be sounded while the engine is running and is not operated when the engine is stopped.

The chief advantage of the invention is that it serves as an automatic safety mechanism to insure the correct operation of the engine in accordance with the signals transmitted through the main telegraph.

I claim—

1. In an alarm apparatus, the combination with a marine telegraph and an engine having a reciprocating part and a reverse shaft, of an alarm having a sound producing element adapted to be operatively connected to the reciprocating part of the engine, a clutch member operatively connected to the reverse shaft of the engine, a companion clutch member operatively connected to the marine telegraph and means operated upon a relative movement of the clutch members for connecting the sound producing member and the reciprocating part of the engine.

2. In an alarm apparatus, the combination with a marine telegraph and a movable element of an engine, of an alarm having clutch members which are respectively connected to the marine telegraph and the movable element of the engine, sounding mechanism for the alarm adapted to be brought into operative position by movement of the clutch members and means driven from the engine for operating said sounding mechanism while in operative position.

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Witnesses:

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GEORGE A. NEUBAUER.