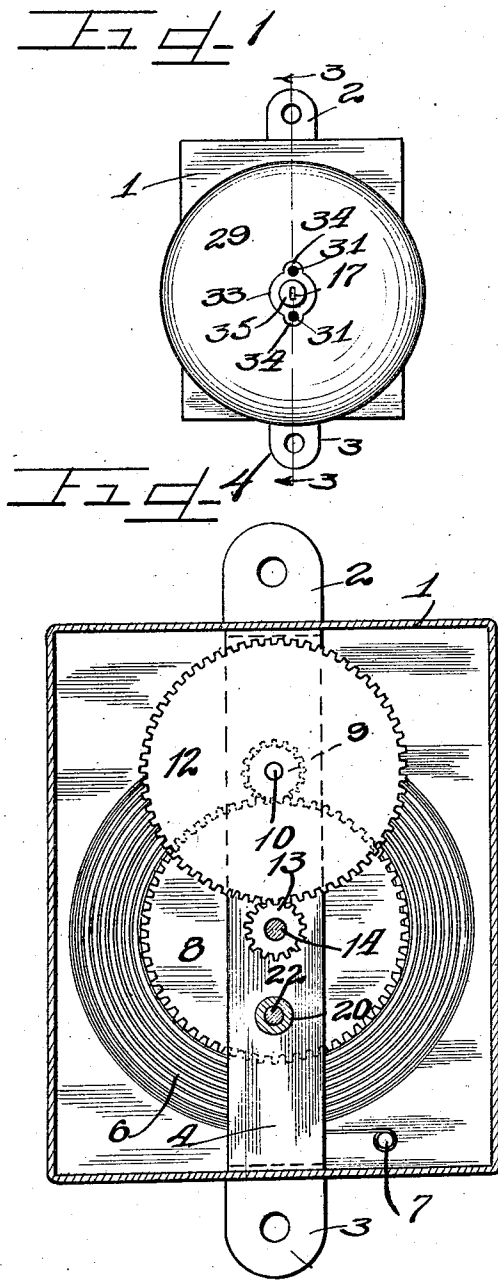
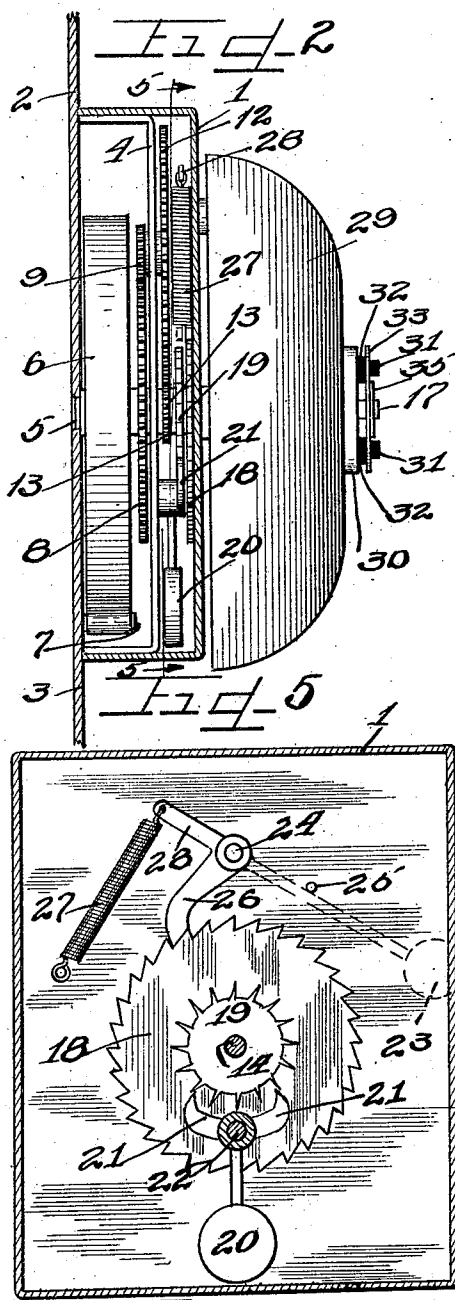


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 AUTOMATIC ALARM.
 APPLICATION FILED JAN. 13, 1919.

1,415,207.

Patented May 9, 1922.
 2 SHEETS—SHEET 1.



WITNESSES

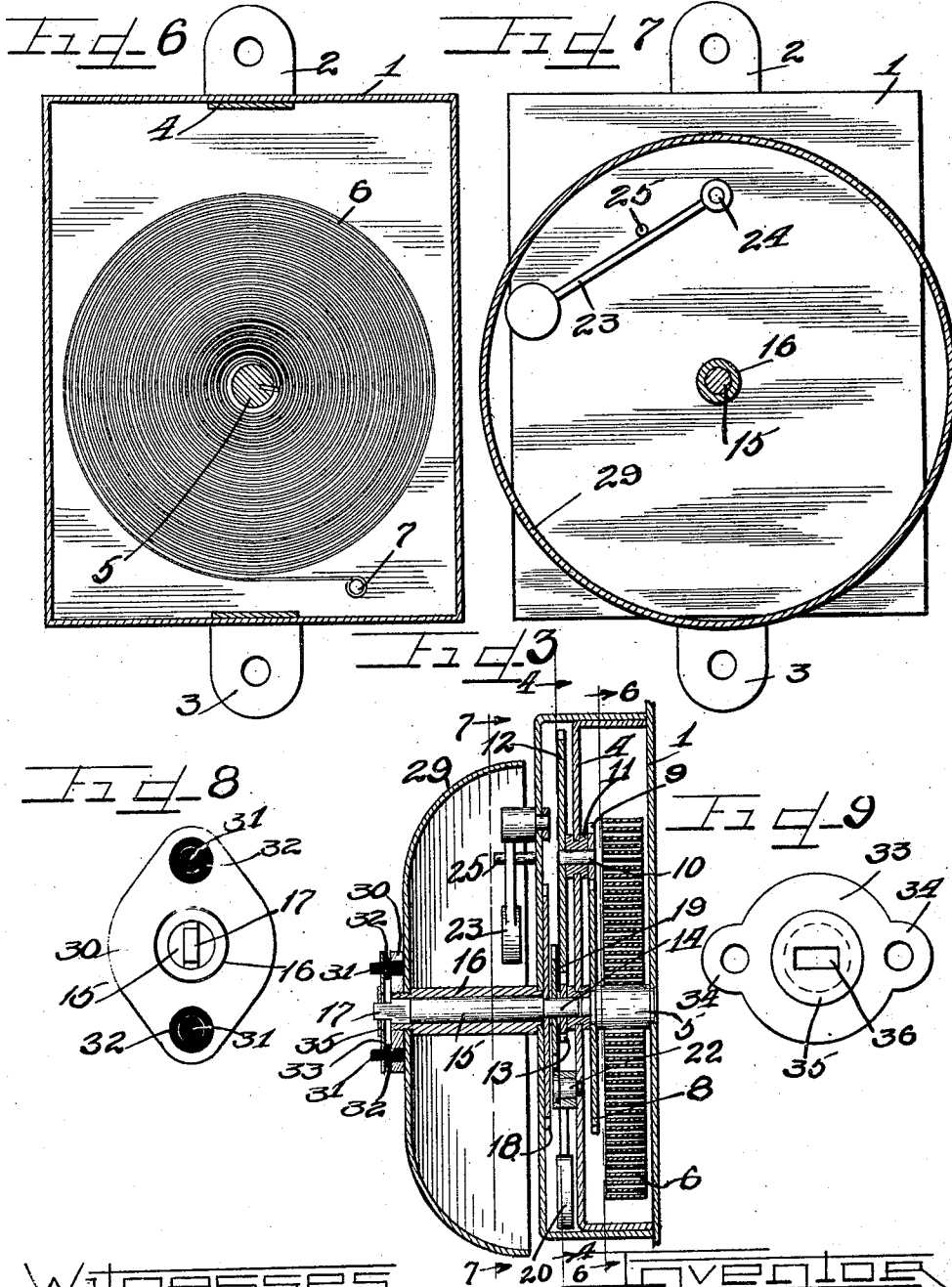
J. W. Angell
 Charles W. Mills, Jr.

JULIUS SWANBERG
 Charles W. Mills, Jr. Att'y

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WITNESSES
 J. W. Angell
 Charles Wells

INVENTOR
 Julius Swanberg
 BY Charles Wells ATTORNEY

UNITED STATES PATENT OFFICE.

JULIUS SWANBERG, OF CHICAGO, ILLINOIS, ASSIGNOR TO FABART INSTRUMENT COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

AUTOMATIC ALARM.

1,415,207.

Specification of Letters Patent.

Patented May 9, 1922.

Application filed January 13, 1919. Serial No. 270,798.

To all whom it may concern:

Be it known that I, JULIUS SWANBERG, a citizen of the United States, and a resident of the city of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in an Automatic Alarm; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the numerals of reference marked thereon, which form a part of this specification.

Alarm bells or gongs at present in use for the purpose of automatically giving an alarm in case of fire, are usually constructed of a number of separated devices which are placed in different locations and electrically connected. In such instruments the alarm bell is frequently mounted in a convenient place outside of the room or building wherein a thermostatically controlled mechanism is mounted, so that in case of fire in said room or building the thermostatic mechanism will operate the distant alarm bell. This type of alarm mechanism is intricate and expensive and the cost of installing the same is also considerable.

This invention relates to a self contained improved type of a fire alarm gong adapted to be conveniently mounted directly in the room or place to be protected against fires, and further adapted to be readily set so that the gong will be operated automatically when a predetermined temperature has been reached. It is an object of this invention to construct a self contained automatic fire alarm bell.

It is also an object of the invention to provide an alarm bell adapted to be readily mounted in a room or structure to be protected against fires, said alarm bell adapted to be manually set and automatically released when a predetermined temperature is reached.

Another object of the invention is the construction of a single automatic fire alarm adapted to be set to ring as soon as a thermostatic locking connection forming a part of the alarm has been broken.

A further object of the invention is the construction of an alarm bell having a locking plate soldered in position and adapted to be released to permit the bell to ring when a temperature has been reached which is suffi-

cient to melt the solder which locks the plate in position.

It is furthermore an object of this invention to provide a compact automatic alarm mechanism adapted to be installed directly in a place which is to be safeguarded against fires, said alarm mechanism having a locking means for holding the alarm spring against movement until a predetermined temperature has been reached which is sufficient to fuse the solder holding the locking means against movement.

It is an important object of this invention to provide an alarm bell with a fusible locking material adapted to normally hold the bell operating mechanism locked against operation until a predetermined temperature has been reached which is sufficient to melt the locking material to release the bell operating mechanisms, to permit ringing of the bell.

Other and further important objects of this invention will appear from the disclosures in the drawings and specification.

The invention (in a preferred form) is illustrated in the drawings and hereinafter more fully described.

On the drawings:

Figure 1 is a front elevation of an alarm bell embodying the principles of this invention.

Figure 2 is an enlarged side view thereof showing the casing in section to disclose the operating mechanisms.

Figure 3 is an enlarged section taken on line 3—3 of Figure 1.

Figure 4 is a sectional view taken on line 4—4, of Figure 3.

Figure 5 is a sectional view taken on line 5—5, of Figure 2.

Figure 6 is a sectional view taken on line 6—6, of Figure 3.

Figure 7 is a sectional view taken on line 7—7, of Figure 3.

Figure 8 is an enlarged front end view of the mounting for the locking plate mechanism which controls the alarm mechanism.

Figure 9 is a plan view of the locking plate mechanism removed from the device.

As shown on the drawings:—

The reference numeral 1, indicates a box or casing having integrally formed on the back thereof an upwardly projecting apertured lug 2, and a downwardly projecting

apertured lug 3, to permit the alarm mechanism to be rigidly mounted in position upon a wall or other suitable support by screws or other means. Secured within the casing 1, is a vertical bracket 4, and journaled in a bearing secured thereto is one end of a stub or spring shaft 5, the other end of which is journaled in the rear wall of the casing 1. The inner end of a coiled ribbon spring 6, is attached to the stub shaft 5. The power spring 6, has the outer end thereof connected to a pin 7, secured on the inner surface of the rear wall of the casing 1. Keyed or otherwise secured on the shaft 5, between the spring 6, and the bracket 4, is a winding gear 8, which meshes with a small gear 9, secured on the rear end of a pin shaft 10, journaled in a bearing 11, supported by the bracket 4. Secured on the front end of the pin shaft 10, and in front of the bracket 4, is another large gear 12, which meshes with a small gear 13, keyed upon the reduced inner end 14 of a shaft 15, journaled in a sleeve 16. The sleeve 16, has the rear end thereof supported in the front wall of the casing 1. As clearly shown in Figure 3, the front end of the shaft 15, is reduced to provide a flat tongue or tip 17. Secured upon the inner end 14, of the shaft, 15, between the front casing wall and the small gear 13, is an escapement mechanism embracing a ratchet wheel 18, and an escapement pinion 19, the operation of which is controlled by means of an oscillating mechanism comprising a pendulum 20, having two opposite and upwardly directed horns or arms 21, the ends of which are positioned to be alternately contacted by the teeth of the escapement pinion 19, as shown in Figure 5. The upper end of the pendulum is pivotally mounted on a pivot pin 22, secured to the lower portion of the bracket 4.

A bell hammer or striker 23, is pivotally mounted on the front surface of the casing 1, by means of a pivot pin 24. To limit the outward swing of the hammer 23, a stop pin 25, is secured on the front wall of the casing. Secured on the inner end of the first pin 24, and to the inside of the front casing wall, is a pawl 26, held in engagement with the teeth of the ratchet wheel 18, by means of a coiled spring 27, one end of which is secured to the front casing wall, while the other end of said spring is attached to the outer end of an arm 28, which is integrally connected to the pivot end of the pawl 26.

The front end of the sleeve 16, is reduced and threaded to receive a bell or a gong 29, removably threaded thereon. Rigidly secured on the front middle portion of the bell 29, is an elongated metal plate 30, having rigidly secured near the upper and lower ends of the front thereof, two insulating posts 31, each of which is provided with an integral flange 32. The posts 31, are non-conductors of heat.

The bell spring 6, is adapted to be wound up by means of a wrench or other suitable tool which fits on the extending tongue 17, of the shaft 15. When the spring is sufficiently wound, the tool is removed and a locking mechanism is slipped into place on the insulating posts 31, and over the tongue 17. The locking mechanism comprises a centrally apertured plate 33, having integral apertured lugs or extensions 34, thereon, through which the posts 31, project. A locking plate or disk 35, provided with a rectangular slot 36, is secured centrally on the outer surface of the plate 33, by means of solder adapted to fuse or melt at a predetermined temperature. The locking disk 35, covers the central opening in the plate 33, and permits the rectangular tongue 17, of the shaft 15, to project through the rectangular slot 36, to hold said shaft and the spring 6, locked against rotation, and thereby preventing ringing of the bell 29.

The operation is as follows:—

The plate 33 and the locking disk 35, of the locking mechanism are both made of thin metal adapted to readily absorb heat. With the alarm assembled as shown in Figure 1, the same may be readily mounted in a room, storage elevator, barn or any other desired place which is to be protected against fire. The apertured lugs 2 and 3, permit mounting screws to be engaged therethrough for securing the alarm in place.

By removing the locking mechanism from the posts 31, a tool may be engaged on the tongue 17, of the shaft 15. The bell spring 6, is wound by rotating the shaft 15, which in turn rotates the small gear 13, and the large gear 12. Rotation of the gear 12, acts to rotate the small gear 9, which being in mesh with the winding gear 8, rotates the same and the spring shaft 5, on which it is keyed. The power spring 6, is thus wound up to any desired amount to permit the bell 29, to ring for either a short or a long period.

When the spring 6, is sufficiently wound, the tool is removed from engagement with the shaft tongue 17, and the locking mechanism is slipped into place on the posts 31, with the tongue 17, projecting through the rectangular slot 36, to hold the bell ringing mechanisms locked. The plate 33, is separated from the bell plate 30, by means of the flanges 32, forming a part of said posts 31.

If a fire should break out in a place equipped with an automatic audible alarm signal as herein described, the heat resulting from the burning material will, when reaching a predetermined temperature, cause the solder holding the locking disk 35, secured to the plate 33, to fuse or melt, thereby permitting the stressed or wound spring 6, to exert its force and unwind. The gear mechanisms are thus set into operation, and drive the shaft 15. Rotation of the shaft 15, causes

the ratchet wheel 18, to rotate and actuate the pawl 26, which in turn operates the hammer 23, which intermittently strikes the bell 29, and rings the same to give the alarm. Rotation of the shaft 15, also rotates the escapement pinion 19, the operation of which is controlled by the pendulum 20, the arms 21, of which are alternately contacted by the teeth of the pinion 19. The escapement mechanism thus serves to prevent the spring 6, from exerting its force too rapidly and permits the hammer mechanism to intermittently strike the bell until the alarm is stopped or the spring has run down.

The alarm mechanism described is automatic and self-contained, and may readily be mounted and set by an inexperienced person. The solder used to hold the locking disk 35, secured to the plate 33, may be composed so that the same will melt at any temperature desired to permit release of the bell ringing mechanisms.

I am aware that various changes may be made, and numerous details of construction may be varied without departing from the principles of this invention, and I therefore do not purpose limiting the patent granted, otherwise than necessitated by the prior art.

I claim as my invention:

1. An automatic alarm comprising a bell, means for ringing the same, a spring for operating said ringing means, escapement means for controlling the operation of said spring, a shaft for supporting said bell and for winding said spring, a tongue formed on the outer end of said shaft, a plate secured on said bell, insulating posts in said plate, a

second plate supported on said posts having an opening therein through which said tongue projects, a disk having a rectangular slot therein for receiving said tongue, and solder for holding said disk secured to said second plate to hold said shaft and said spring locked against operation, said solder adapted to fuse when a predetermined temperature has been reached to automatically release said disk from said second plate to permit said spring to operate said ringing means to ring the bell.

2. A shaft, driving mechanism therefor, a disk mounted on the shaft to rotate therewith, an alarm operated by said shaft when driven by said mechanism, a thermally insulated plate free from said shaft, and temperature controlled means for securing said disk to said plate.

3. An alarm, a spring driven shaft for actuating said alarm, a disk mounted on said shaft near the end thereof to rotate therewith, the portion of the shaft between said disk and the main body of the shaft being of smaller cross-section than the main body of said shaft, a plate, means for supporting said plate, free from said shaft, a fusible means securing said disk to said plate, and thermal insulation between said plate and said supporting means.

In testimony whereof I have hereunto subscribed my name in the presence of two subscribing witnesses.

JULIUS SWANBERG.

Witnesses:

EARL M. HARDINE,
CHARLES W. HILLS, Jr.