

J. HALLER.
BURGLAR ALARM.

No. 30,141.

Patented Sept. 25, 1860.

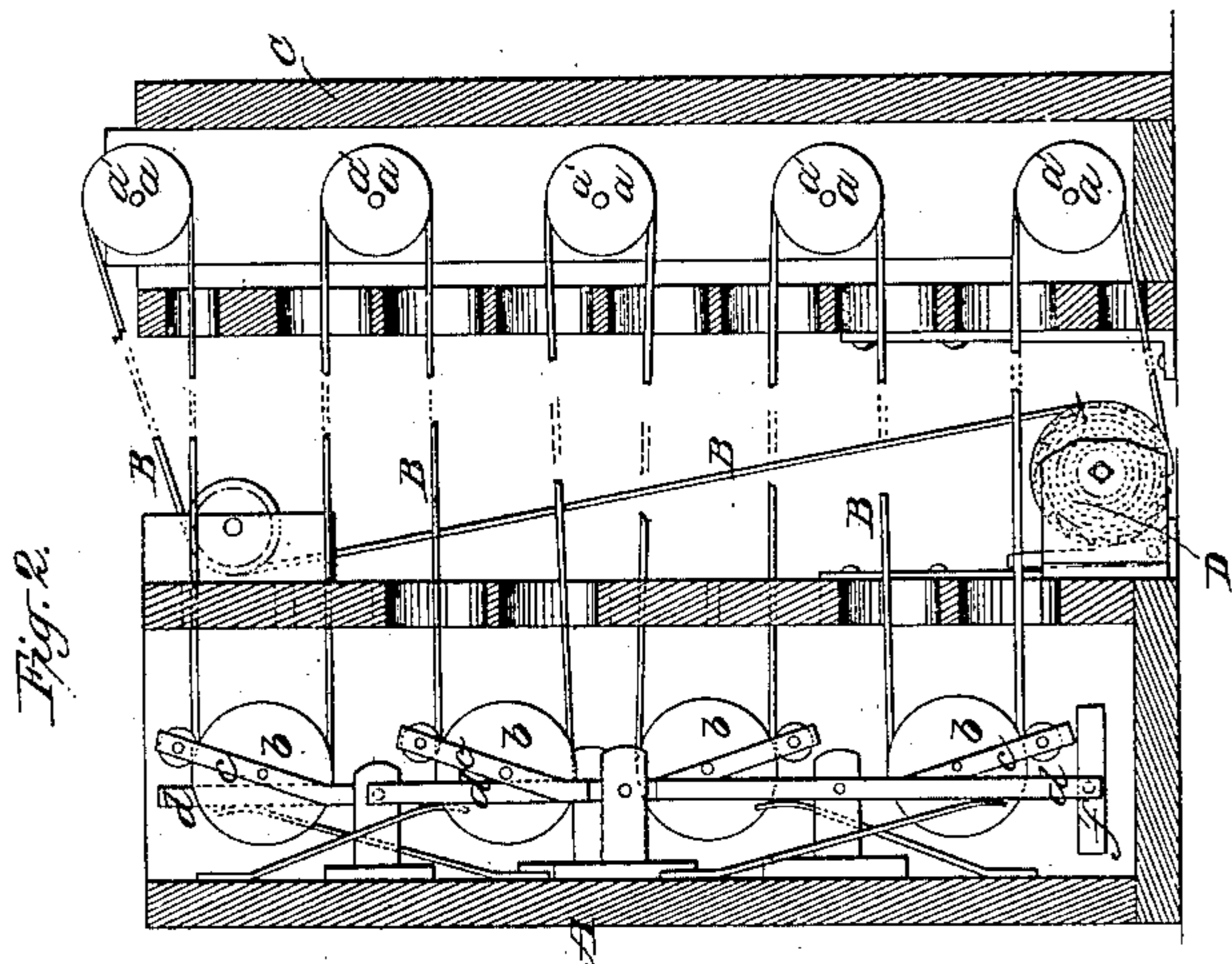


Fig. 2.

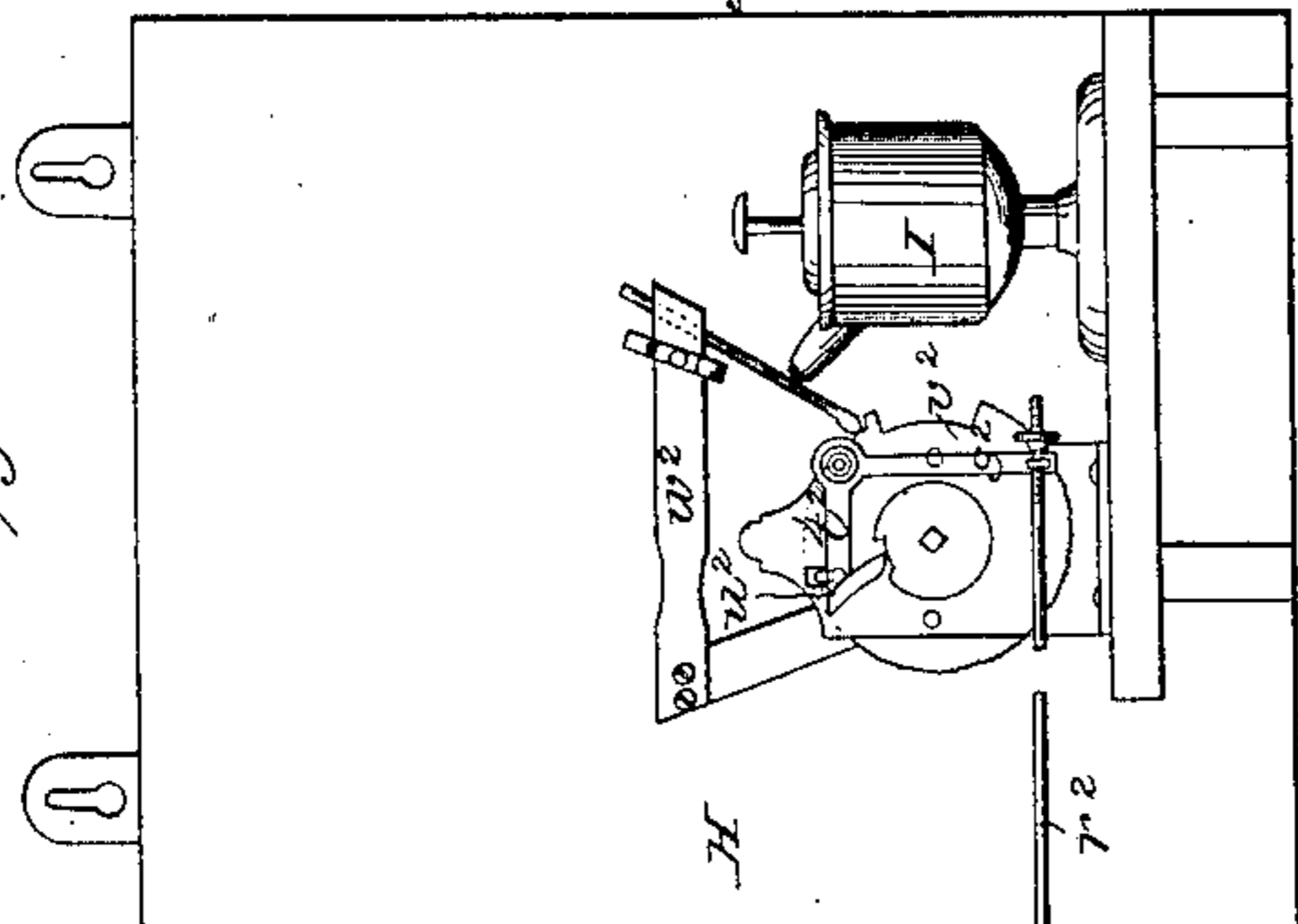


Fig. 3.

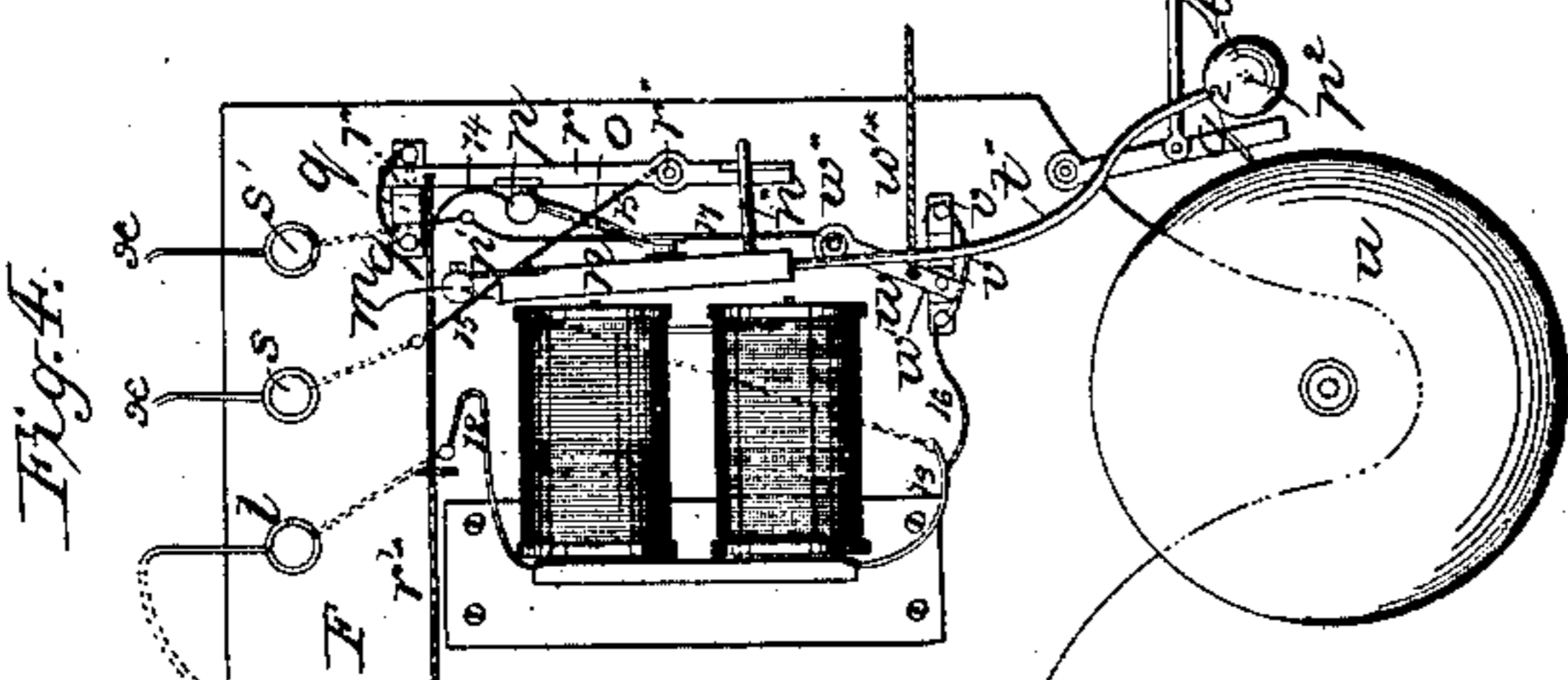


Fig. 4.

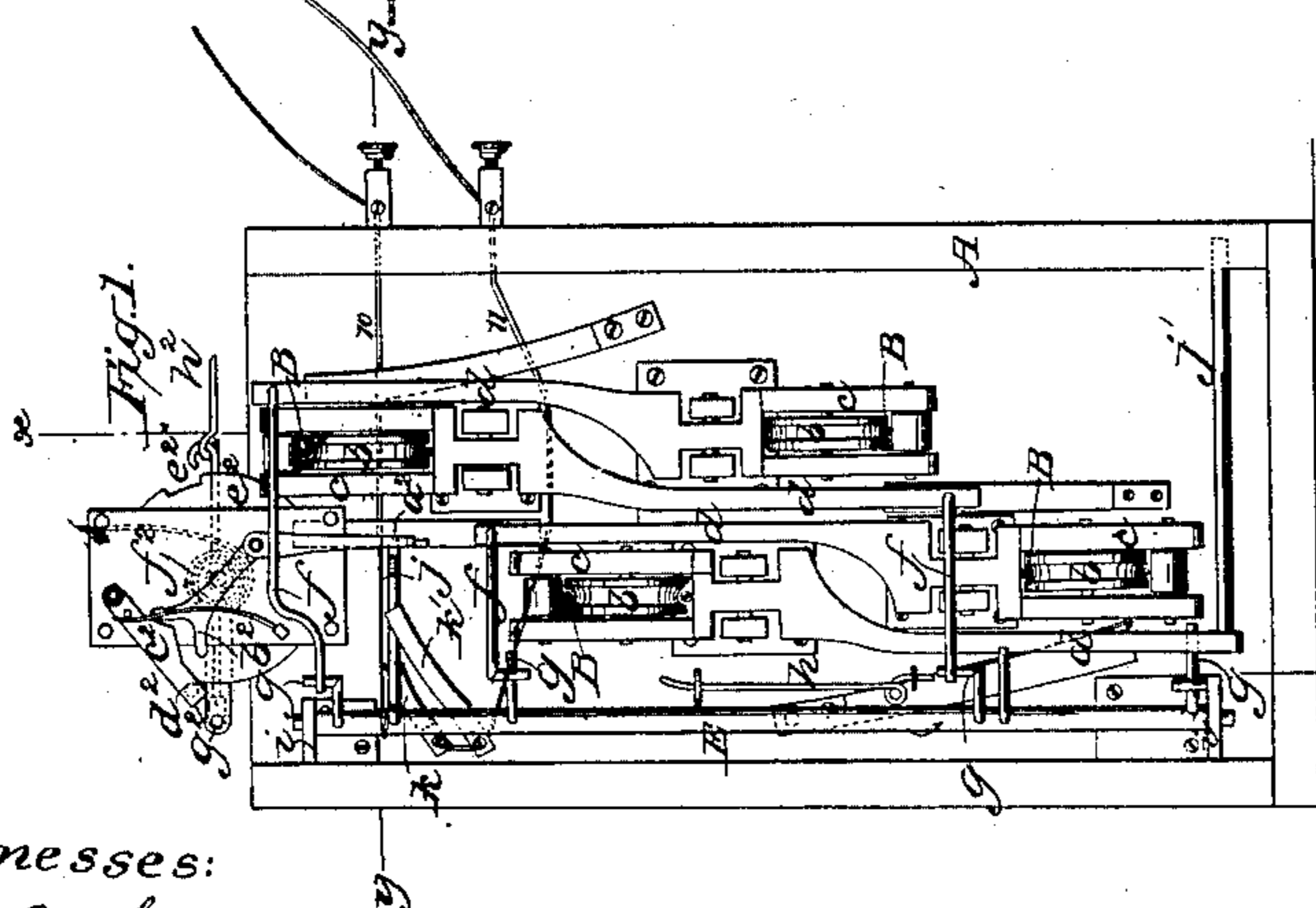


Fig. 1.

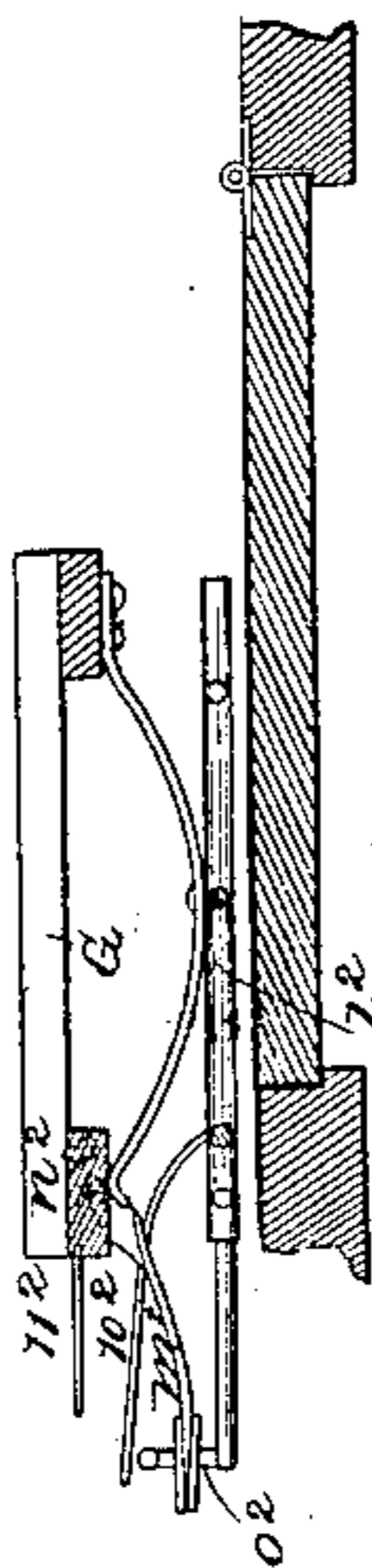


Fig. 5.

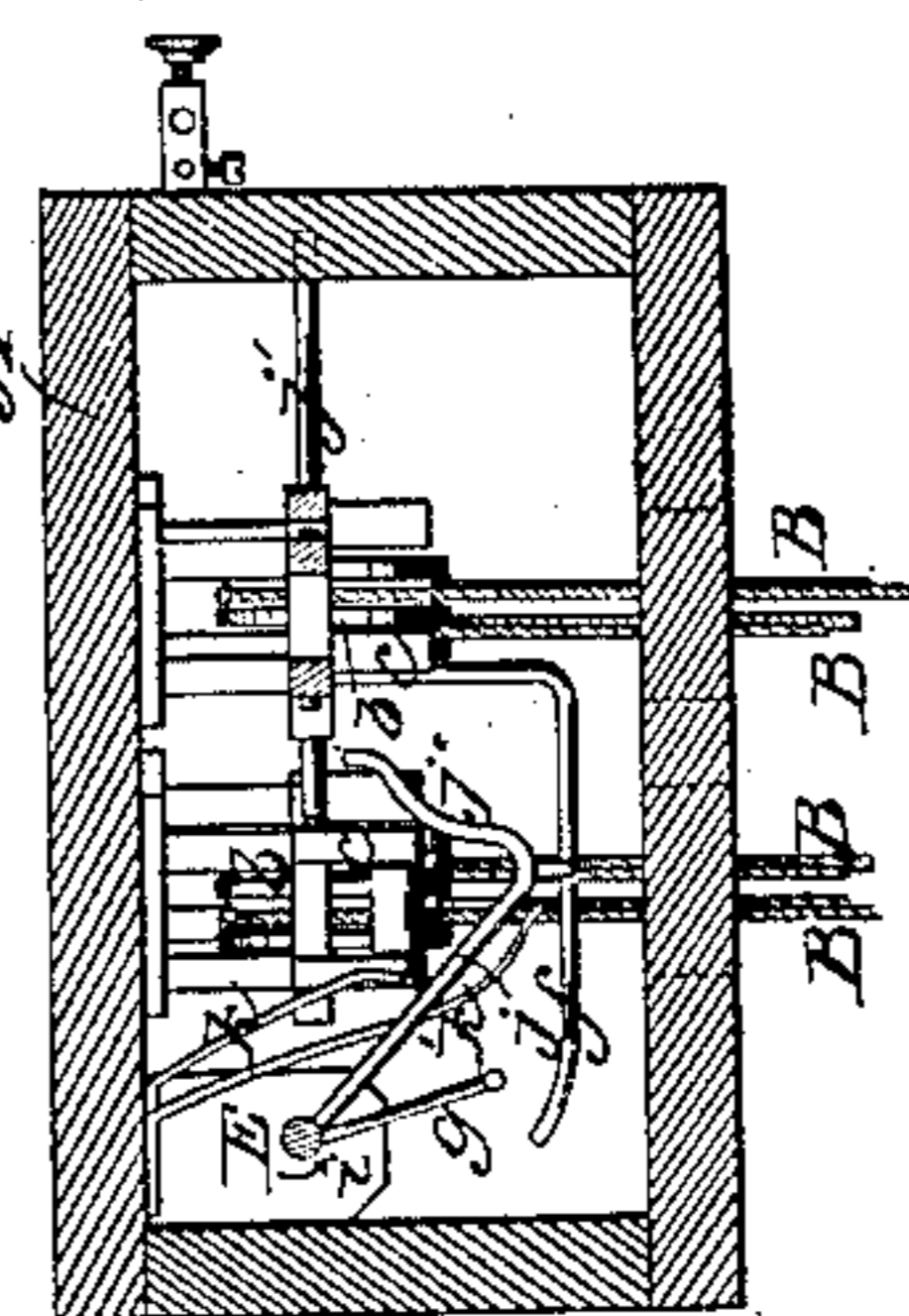


Fig. 6.

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JACOB HALLER, OF ANN ARBOR, MICHIGAN.

IMPROVED ELECTRO-MAGNETIC BURGLAR-ALARM.

Specification forming part of Letters Patent No. 30,141, dated September 25, 1860.

To all whom it may concern:

Be it known that I, JACOB HALLER, of Ann Arbor, in the county of Washtenaw and State of Michigan, have invented a new and Improved Burglar-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, making a part of this specification, in which—

Figure 1 represents a front elevation of my invention. Fig. 2 is a transverse vertical section of ditto, the line *x x*, Fig. 1, indicating the plane of section. Fig. 3 is a horizontal section of the same taken in the plane indicated by the line *y y*, Fig. 1. Fig. 4 is a plan or top view of the electro-magnetic alarm which I use in connection with the apparatus represented in the previous figures. Fig. 5 is a front elevation of the self-lighting apparatus connected with and operated by the alarm. Fig. 6 shows a horizontal section of a simple device arranged according to my invention for the purpose of protecting a door or window.

Similar letters of reference in all the figures indicate corresponding parts.

The principal object of this invention is to protect the entire front of the house against the stealthy entrance of burglars or other persons with evil designs; and the invention consists, first, in the arrangement of a series of wire ropes or chains extending all the way along the front or side of the house and passing over pulleys which are secured in the fulcrated ends of a series of double-armed levers, the long arms of which connect with a rock-shaft in such a manner that a slight alteration in the tension of one of the ropes or chains produces sufficient motion of the rock-shaft to bring an arm extending from the same in contact with a spring, thereby closing the circuit of an electro-magnetic alarm or releasing the stop of an ordinary spring-alarm and causing the hammer to sound the bell; second, in arranging the hammer of the alarm, in combination with a lever connecting with the stop of a self-lighter, in such a manner that on the first stroke of the hammer the friction-wheel of the self-lighter is set free, thereby producing a light without any further assistance; third, in combining two circuit-breakers, in combination with the armature of the electro-magnet and with a suitable arrangement of wires,

in such a manner that the electro-magnetic alarm can be stopped and started at pleasure; fourth, in the combination, with an electro-magnetic alarm, of a spring-frame, in such a manner that the slightest pressure on said frame closes the circuit and causes the alarm to sound, and that by properly arranging said spring-frame on the inside of a door or window an uncalled-for entrance of persons from the outside is brought to the attention of the occupants of the room or house.

To enable those skilled in the art to make and use my invention, I will proceed to describe its construction and operation with reference to the drawings.

A represents a box or case, which is firmly secured to the floor near to the wall and close up to the end of the front or side of the house which is to be protected by the apparatus, and a series of wire ropes or chains, B, extend from the box A to a case, C, (see Fig. 3,) which is also secured to the floor close to the other end of the front or side to be protected. The ropes are intended to be about 3 or 4 inches apart, and they are all connected so as to form one continuous rope passing around pulleys *b b* in the box A, its ends being connected to a windlass, D, which serves to regulate the tension of the rope and to hold that portion which is not needed. The pulleys *a* in the case C are fastened on arbors *a'*, the bearings of which are fixed in the sides of the case. The pulleys *b b* in the box A on the other hand are arranged in the forked ends of double-armed levers *c d*, and these levers are fulcrated on pivots *e*, passing through brackets D, that are rigidly attached to the inside of the box A. The long arms *d* of the levers *c d* are provided with dogs *f*, and if said arms are depressed the dogs *f* come in contact with pins *g*, which project from a vertical rock-shaft, E, and turn the latter in the direction marked near it in Fig. 3 against a spring, *h*, (see Fig. 1,) which has the tendency to turn said shaft in the opposite direction.

The rock-shaft E has its bearings in lugs *i*, attached to the side of the box A, and it connects by means of a wire, 10, with one—say the negative—pole of a galvanic battery, and an arm, *j*, extends from the rock-shaft between two springs, *k k'*, which connect by a wire, 11, with the other positive pole of the battery. This connection, however, is not di-

rect, but it passes through the electro-magnetic alarm F, which is represented in Fig. 4. The wire 11 connects through the stud *l* with one end, 12, of the helix of the electro-magnet. The other end, 13, of this helix connects, through the post *m*, the armature *n*, spring *o*, and post *p*, with a wire, 14, which leads to the plate *q*, and this plate connects, through the circuit-breaker *r* and wire 15, with the stud *s*, which is in direct communication with the positive pole of the battery. If the rock-shaft is now turned in one direction or in the other so as to bring the arm *j* in contact with one or the other of the springs *k k'* the current is closed and the armature *n* is attracted by the electro-magnet. By this motion of the armature the hammer *t*, which is connected to the armature, is brought in contact with the bell *u* and a sound is produced; but at the same time the connection between the spring *o* and armature *n* is interrupted, the current is broken, and the armature impelled by the spring *n'*, which forms the connection between it and the post *m*, is carried back to its original position. The current is again closed and a second stroke of the hammer against the bell is produced, and this operation will continue until the current is broken either by removing the arm *j* from the spring *k* or *k'*, with which it had been in contact, or by means of the circuit-breaker *r*. This circuit-breaker turns on a post, *r'*, and a metal pin, *r''*, connected to its under side, sweeps over the surface of the plate *q*. An insulating-plate, *q'*, is inserted in this surface, and if the circuit-breaker is turned so as to bring the pin *r''* on this insulating-plate the current is broken.

A cord, *r'''*, serves to turn the circuit-breaker *r* so as to bring the pin *r''* on the insulating-plate *q'* and to break the circuit.

In order to close the circuit again the wire 13 connects by a wire, 16, with the plate *v*, and a circuit-breaker, *w*, which turns on a post, *w'*, is brought in contact with the surface of the plate *v* by means of a pin, *w''*. An insulating-plate, *v'*, is inserted into this surface, and the post *w'* connects by a wire, 17, with the post *s'*, which is in direct communication with the positive pole of the battery. As long as the circuit-breaker *w* remains in contact with the insulating-plate *v'* the circuit through the wires 16 and 17 is broken; but if the circuit-breaker *w* is turned so as to bring the pin *w''* in contact with the metal surface of the plate *v* the circuit through the wires 16 and 17 is closed. A cord, *w'''*, serves to turn the circuit-breaker and to close the circuit through the wires 16 and 17. The armature is now attracted by the electro-magnet, and the hammer is brought up against the bell. Simultaneously with this motion a hook, *n''*, attached to the armature, turns the circuit-breaker *r* so as to bring the pin *r''* from the insulating-plate *q'* back into the metal surface of the plate *q*, and the wire *t''*, which connects the hammer with the armature by coming in contact with the upper portion of the pin *w''*, turns the circuit-breaker *w* back to its

original position. By these means the circuit is made to pass again through the helix of the electro-magnet to the wire 13; thence through the post *m*, armature *n*, spring *o*, post *p*, wire 14, plate *q*, circuit-breaker *r*, wire 15, and stud *s* back to the positive pole of the battery, and the hammer *t* will continue to strike against the bell until the current is again broken.

In order to arrange this apparatus in a house, the box A is fastened on one end of the side or front of the house, and the case C on the other end, as above described, and the chains or ropes B are stretched by means of the windlass D until the arms *d* of the levers *c d* turn the rock-shaft E to such a position that the arm *j* stands exactly between the two springs *k k'*. The correct position of this arm is determined by a pointer, *j*, that passes out through the side of the box A, and if, now, the connection of the wires with the battery and with the alarm F is made, as above described, the slightest change in the tension of the ropes causes the arm *j* to come in contact with one or the other of the springs *k k'*, and the alarm is sounded. Instead of using an electro-magnetic alarm, a common alarm, operated by a spring or weight, may be used; and in this case the arm *j* is bent, as shown in Fig. 3, forming a depression, *j''*, which, when the alarm is set, receives the end *a''* of a bell-crank lever, *a'' b''*, the forked arm *b''* of which works against a cam, *e''*, which connects with a stop, *d''*, that retains the wheel *e''* when the same is wound up against a spring, *f''*. An arm, *g''*, on the arbor of this wheel connects by means of a rod, *h''*, with the alarm. If the wheel is turned so as to bring the recess *e''* in its face opposite the stop *d''*, the latter is not allowed to drop into said recess until the depression *j''* of the arm *j* is brought exactly opposite the end *a''* of the bell-crank lever *a'' b''*; and if the wheel *e''* is set by bringing the stop *d''* into the recess *e''*, the slightest alteration in the position of the arm *j* causes the stop *d''* to release the wheel *e*, and to sound the alarm.

The arm *j* is set in the same manner, as above described, by stretching the ropes or chains B until the arms *d* of the levers *c d* turn the rock-shaft E far enough to bring the arm *j* in the proper position; and the slightest change in the tension of said ropes or chains causes the arm *j* to change its position and to release the wheel *e*.

Where it is desired to protect only one window or door against the intrusion of outsiders, a simple spring-frame, G, such as represented in Fig. 6, may be substituted for the cases A and B. One of the metal bars *l''* of this spring-frame connects by a wire, 10'', with the negative pole of the battery, and a spring, *m''*, which is attached to the non-conducting portion *n''* of the spring-frame, connects by a wire, 11'', with the electro-magnetic alarm F. The spring *m''* extends between the looped end of an arm, *o''*, which connects with the metal bar *l''*; and if properly set the spring stands ex-

actly in the center of the loop at the end of the arm o^2 without touching any portion of the same. This spring-frame is arranged on the inside of a door or window in such a position that in opening the door or window the bar l^2 , with the arm o^2 , is depressed, and the arm o^2 is brought in contact with the spring m^2 , thereby closing the circuit and causing the alarm to sound. The hammer t of the electro-magnetic alarm F, or, in case a common spring-alarm is used, its hammer, serves to operate a self-lighter, H. To effect this a pin, p^2 , is inserted into the hammer t , and a lever, q^2 , which is pivoted to the bed-plate of the alarm or to any other convenient spot, connects by a rod, r^2 , with the bell-crank lever $s^2 t^2$, which carries the stop u^2 to retain the friction-wheel v^2 . A clamp, w^2 , retains the match, which is placed on the face of the friction-wheel, as shown in red outlines in Fig. 5, the friction-wheel having been wound up against a suitable spring. As soon as the hammer t begins to strike, the pin p^2 , by coming in contact with the lever q^2 , releases the friction-wheel v^2 , and the match is lighted. A lamp, I, is placed in such a position that the same receives the light from the match. By these means the occupants of a house or room are not only roused, if some person undertakes to attempt an entrance, but they are also provided with a light, so that they can recognize the intruder or intruders,

or that they can take at once the proper steps to pursue them.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The arrangement of a series of ropes or chains, B, extending over pulleys $a b$, in combination with the double-armed lever $c d$, rock-shaft E, and alarm F, or its equivalent, constructed and operating substantially in the manner and for the purpose specified.

2. The arrangement of the pin p^2 on the hammer t of the alarm, in combination with a self-lighter, H, substantially as herein described, so that by the action of the hammer itself the light is struck.

3. The arrangement of the circuit-breakers r and w and their connecting-wires, in combination with the armature n of the electro-magnet, and with the hammer t and bell u , constructed and operating substantially in the manner and for the purpose herein set forth.

4. The arrangement of the spring-frame G, in combination with the electro-magnetic alarm F, constructed and operating substantially as and for the purpose specified.

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