

No. 759,201.

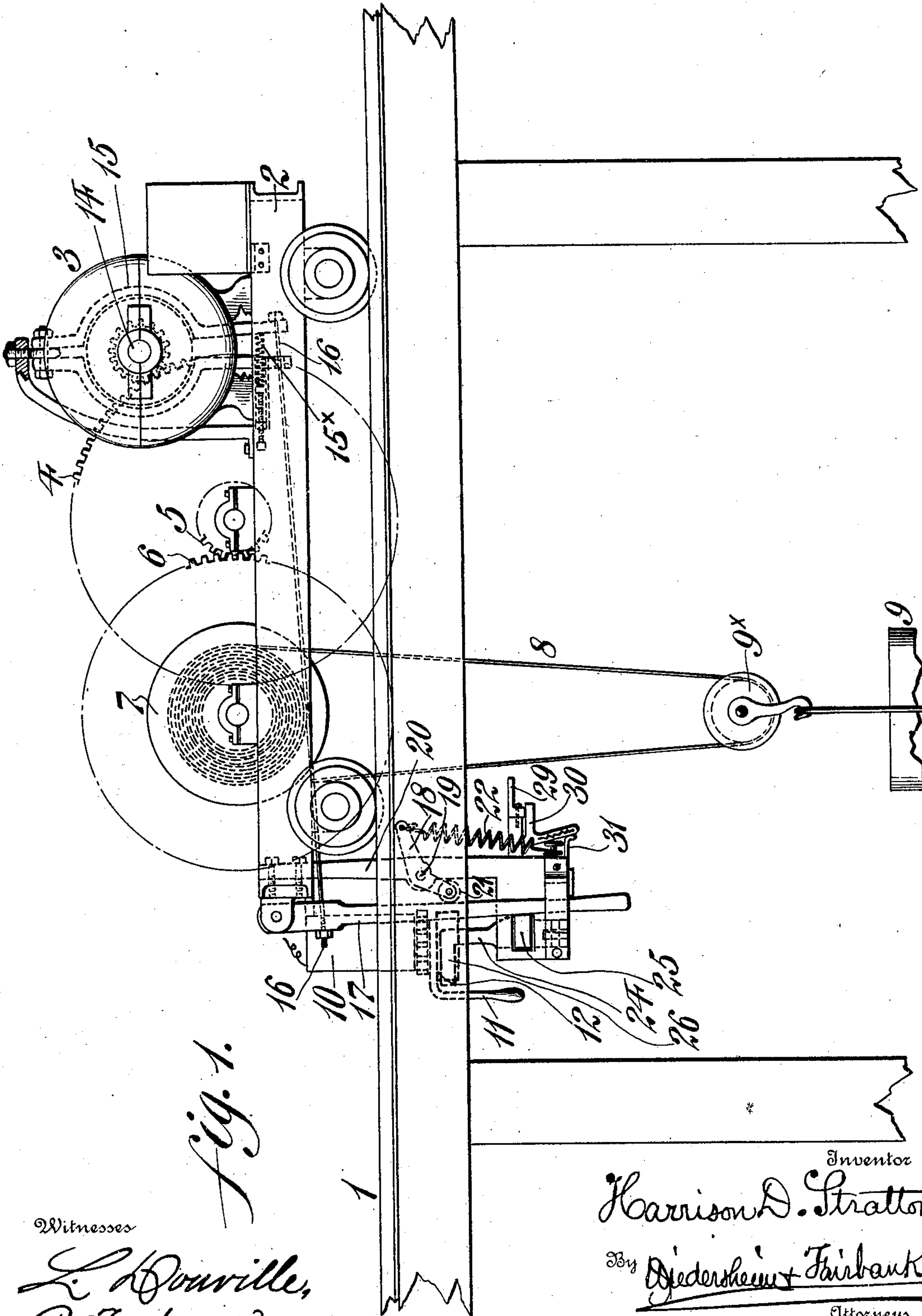
PATENTED MAY 3, 1904.

H. D. STRATTON.
HOISTING APPARATUS.

APPLICATION FILED OCT. 17, 1903.

NO MODEL.

2 SHEETS--SHEET 1.



Witnesses

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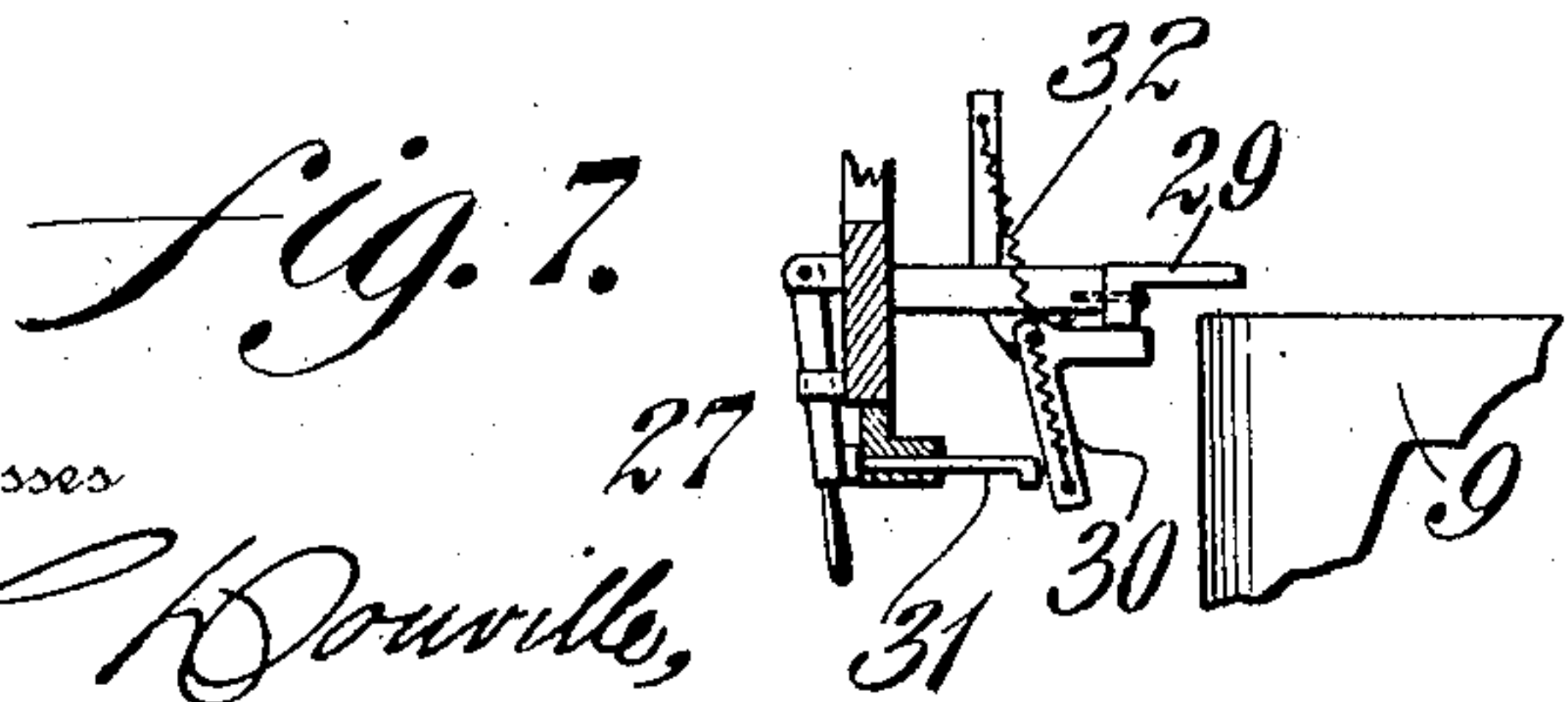
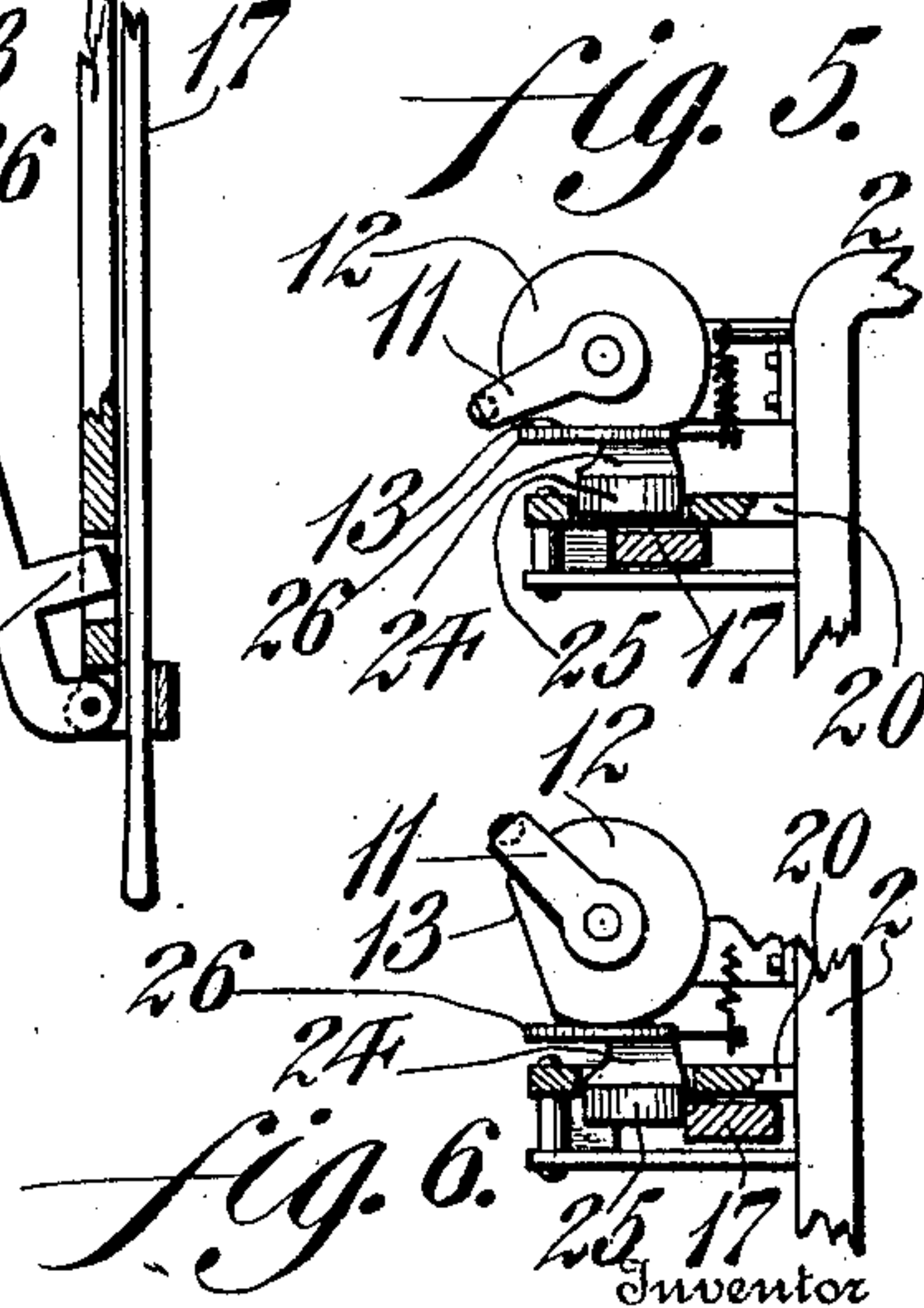
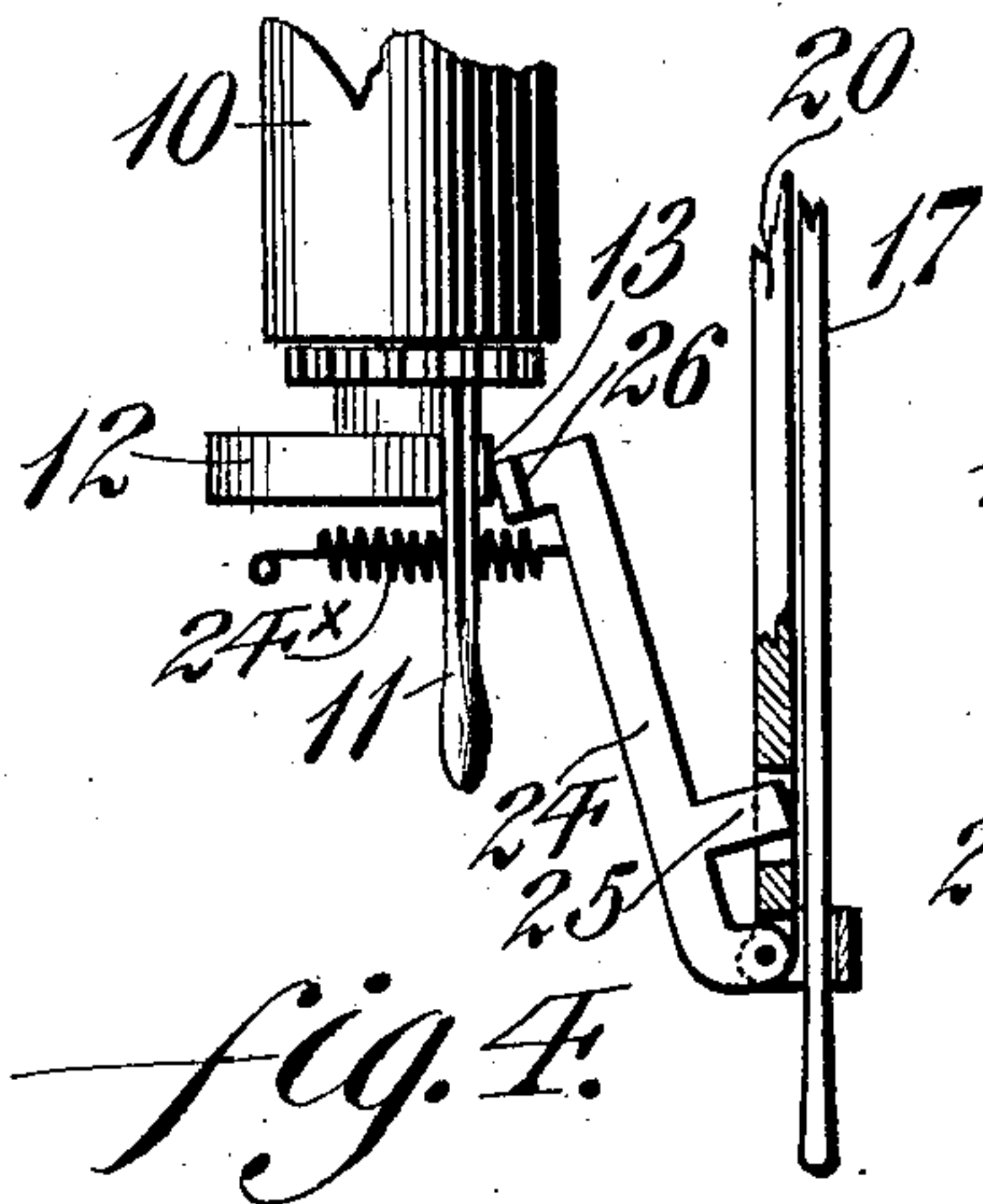
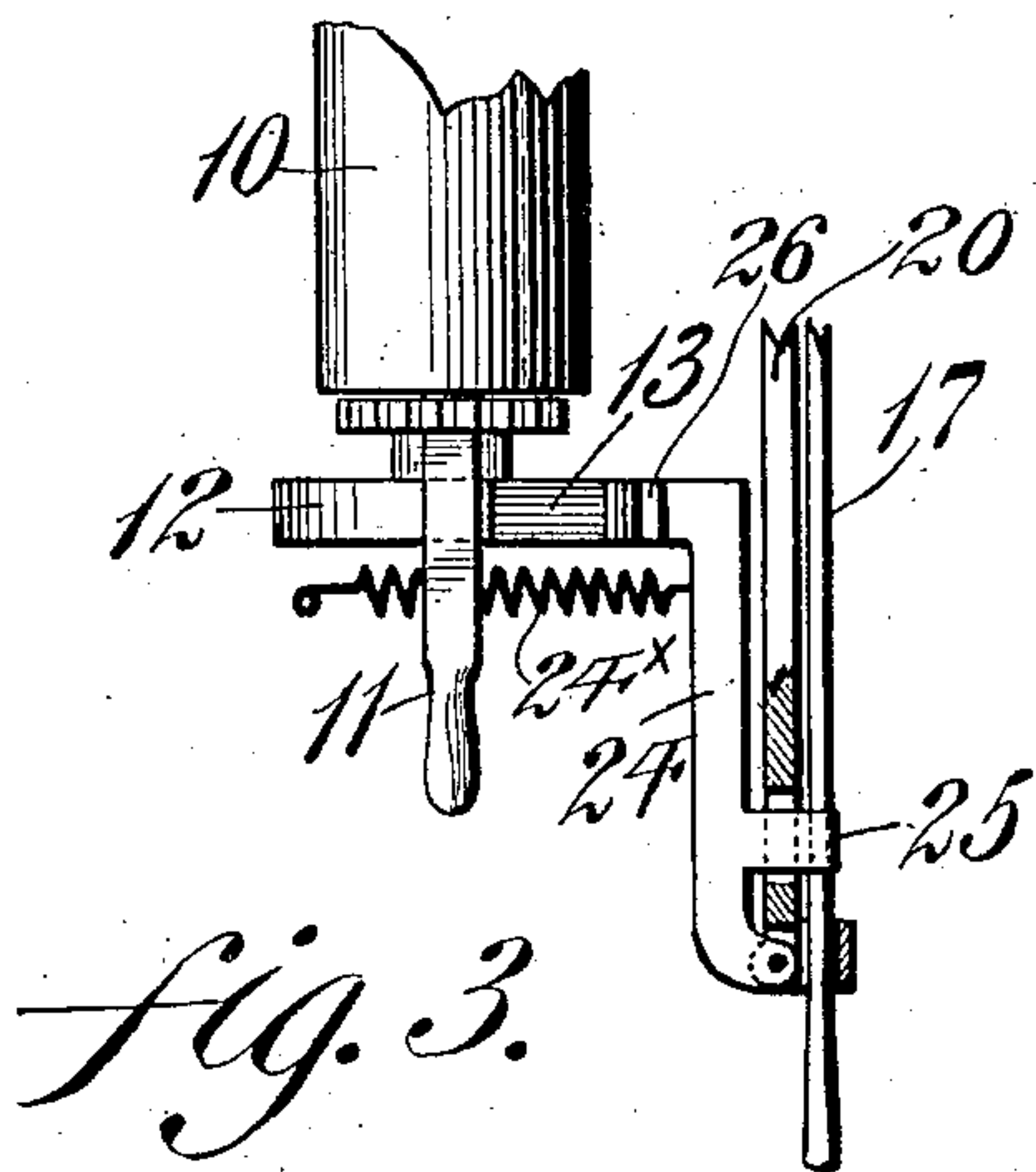
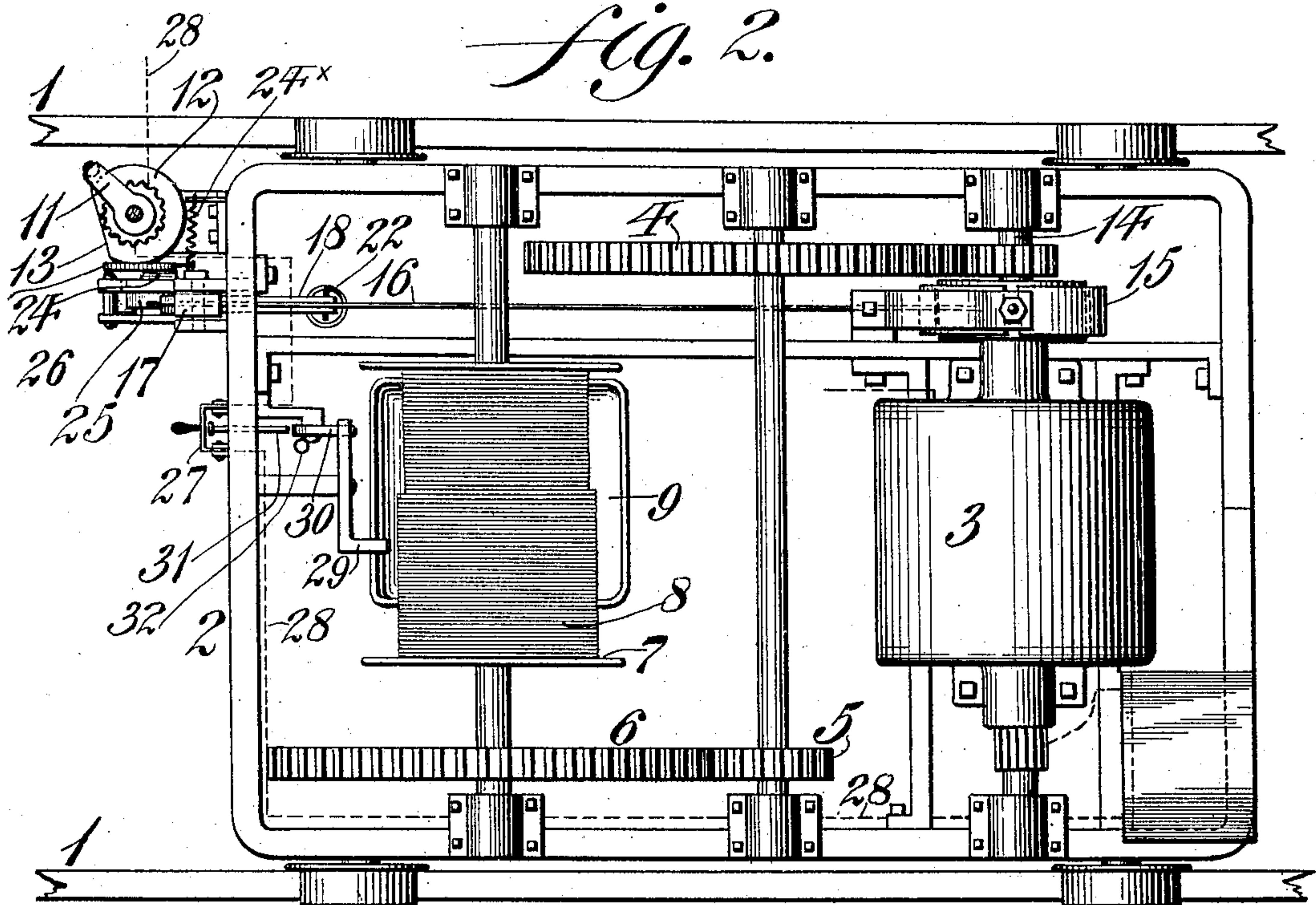
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UNITED STATES PATENT OFFICE.

HARRISON D. STRATTON, OF PHILADELPHIA, PENNSYLVANIA.

HOISTING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 759,201, dated May 3, 1904.

Application filed October 17, 1903. Serial No. 177,421. (No model.)

To all whom it may concern:

Be it known that I, HARRISON D. STRATTON, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in Hoisting Apparatus, of which the following is a specification.

My invention relates to electric hoisting apparatus, such as is used for raising coal, stone, and the like.

It consists of means for preventing the energizing of the motor without first releasing the brake from the moving portion of the device and of synchronous means for cutting off the current from the motor and applying the brake.

It further consists of a safety-stop for automatically cutting off the current from the motor by the action of the hoisted article.

It further consists of other novel features of construction, all as will be hereinafter fully set forth.

Figure 1 is a side elevation of a hoisting-machine embodying my invention. Fig. 2 is a top plan thereof. Figs. 3, 4, 5, and 6 show in different positions the rheostat and the brake-detent. Fig. 7 shows the safety-stop portion of the device.

Similar numerals of reference indicate corresponding parts in the figures.

Referring to the drawings, 1 designates a track which is traversed by my automatic device when it is used for carrying as well as hoisting coal, stone, or the like.

2 designates the frame of the device, on which is mounted a motor 3, connected by suitable gearing 4, 5, and 6 to a drum 7, on which is wound a cable 8 or the like, to which is attached a bucket 9 or other article to be hoisted. Mounted on the frame 2 is a switch or rheostat 10, to the lever 11 of which is attached a segmental cam-plate 12, having a flattened side 13.

On the arbor 14 of the motor or at any other convenient point on the shafting is mounted a brake 15, from which a rod 16 leads to a lever 17. The brake 15 is held in normal engagement on the arbor 14 by means of a lever 18, pivoted at 19 on a bracket 20, attached to the frame 2. The lever 18 carries an idler

21, bearing against the lever 17, and is actuated by a spring 22. I have shown the brake 15 as formed of two segments of an annulus with projecting ends. These may advantageously be separated when brake-pressure is removed by a spring 15^x, adjustably connected to one of the ends and bearing against the other, as shown in Fig. 1.

Secured to the bracket 20 is a pivoted lever 24, having a lug 25 normally lying in the path of the lever 17. The head 26 of the lever 24 bears against the periphery of the cam 12.

Suspended on a suitable bracket below the frame 2 is a cut-out or safety switch 27, interposed in the line 28, which connects the rheostat 10 and motor 3. A dog 29 is supported beneath the frame 2 in the upward path of the bucket 9 or other article to be hoisted. By means of a bell-crank lever 30 and bolt 31 the dog 29 is operatively connected to open the cut-out switch 27 when moved upwardly.

The operation is as follows: Assuming that the device is at rest, the parts will stand in the position shown in Figs. 4 and 5 of the drawings, in which the rheostat 10 is opened, so as to cut off the current from a dynamo (not shown) to the motor 3 and in which the lug 25 has been withdrawn from the path of the brake-lever 17, which has therefore been moved by the action of the lever 18, actuated by its spring 22, so as to bring the brake 15 to bear against the arbor 14 on the motor 3. To start the machine, it is of course necessary to turn the rheostat-handle 11, which in turn rotates the cam 12. This cannot, however, be done until the brake-lever 17 has been moved to the position shown in Figs. 1, 3, and 6, so that the lug 25 may engage therewith. When the brake-lever 17 has been moved to its operative position, as shown in Figs. 1, 3, and 6, the mere turning of the cam 12 through the handle 11 acts directly to force the lug 25 into its operative engagement with the brake-lever. To stop the machine, it is necessary to open the rheostat by rotating the handle 11 to the position shown in Figs. 4 and 5 of the drawings, where the flat face 13 of the cam 12 is adjacent the bracket 4. This permits the head 26 to move outward, as shown in Figs. 4 and 5, so that the spring 24^x removes the

lug 25 out of the path of the brake-lever 17. The brake 15 is then automatically forced against the arbor 14 by the action of the spring 22 and lever 18 acting on the brake-handle 17.

5 It will be understood that the rheostat or controller 10 is adapted to operate the motor 3 in either direction and that the circular portion of the periphery of the cam 12 engages with the head 26 whether the bucket is being
10 hoisted or lowered.

The brake-lever 17 is shown in Fig. 1 as provided with a handle extending below the bracket 20, so that in case of failure of the spring 22 or lever 18 the brake may be oper-
15 ated by hand in the ordinary manner.

It will be seen that it is impossible to start the machine without releasing the brake and that it is equally impossible to stop the machine without automatically throwing the
20 brake into operation.

As an additional safeguard against the carelessness of the operator I have provided the device shown in Figs. 1 and 7 of the drawings, where the dog 29 is interposed in the up-
25 ward path of the bucket 9 when it is raised beyond its proper height. It will be seen by reference to Fig. 7 that when the edge of the bucket 9 strikes the dog 29 the switch 27 will be opened and the current cut off from the
30 motor. It is evident that this prevents the bucket being drawn up against the drum 7.

If preferred, the block 9^x or a hoisting-hook may be made to strike the dog 29 with the same effect. It will also be seen that the
35 spring 32 by which the lever 30 is actuated is so positioned as to rapidly increase the throw of the bolt 31, whereby the switch 27 is opened without sparking.

It is evident that various changes may be
40 made by those skilled in the art which will come within the scope of my invention, and I do not, therefore, desire to be limited in every instance to the exact construction herein shown and described.

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

1. An electric hoist comprising a motor, a drum operatively connected to said motor, a
50 switch, a brake, mechanically-actuated means for forcing said brake into its operative position, means for preventing the operation of

said brake-forcing means and means connect-
ed with said switch for holding said prevent-
ing means in operative position. 55

2. An electric hoist comprising a motor, a drum operatively connected to said motor, a switch, a brake, mechanically-actuated means for forcing said brake into its operative posi-
60 tion and means interposed between said brake and said switch for preventing the opening of said switch when said brake is in its operative position.

3. An electric hoist comprising a motor, a drum operatively connected to said motor, a
65 switch, a brake, mechanically-actuated means for forcing said brake into its operative position and means interposed between said switch and said brake and operative alternatively to prevent the closing of said switch while said
70 brake is in its operative position and to release said brake-forcing means when said switch is opened.

4. An electric hoist comprising a motor, a drum operatively connected to said motor, a
75 switch, a cam on said switch, a spring-actuated brake and means engaging with said cam for preventing the closing of said switch while said brake is in its operative position.

5. An electric hoist comprising a motor, a
80 drum operatively connected to said motor, a switch, a cam on said switch, a spring-actuated brake and means engaging with said cam for holding said brake out of its operative position when said switch is closed. 85

6. An electric hoist comprising a motor, a drum operatively connected to said motor, a
switch, a cam on said switch, a spring-actuated brake, a lever connected to said brake, a
90 lug interposable in the path of said lever and means connected with said lug and engageable with said cam whereby the opening of said switch acts to bring said brake to its operative position.

7. In an electric hoist, a motor, a drum, a
95 brake, automatically-operated, mechanical means for forcing said brake into operative position and alternatively manual means for operating said brake.

HARRISON D. STRATTON.

Witnesses:

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