

No. 640,688.

Patented Jan. 2, 1900.

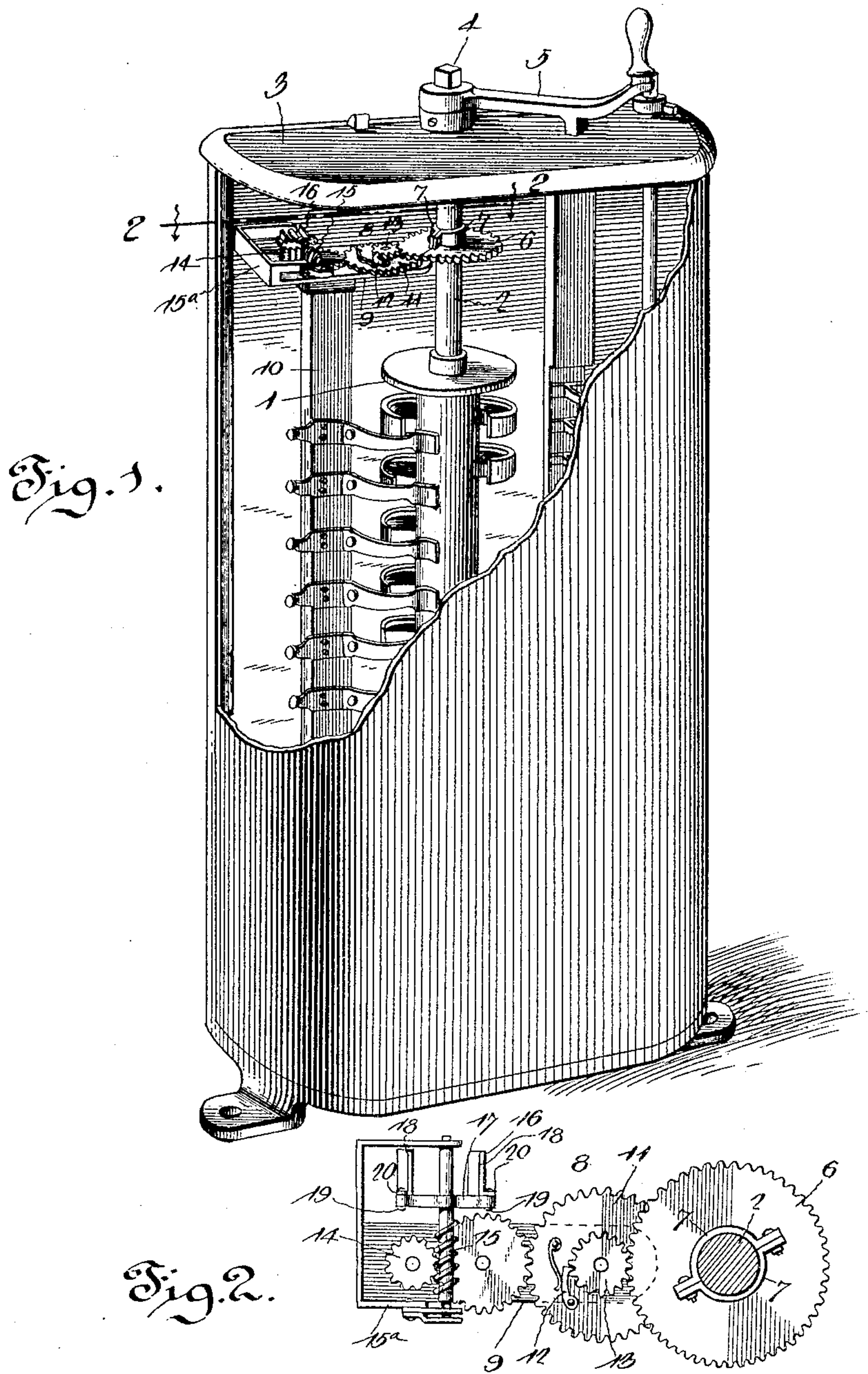
J. H. MCGURTY.

SPEED GOVERNOR ATTACHMENT FOR ELECTRICAL APPARATUS.

(Application filed Apr. 7, 1899.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses
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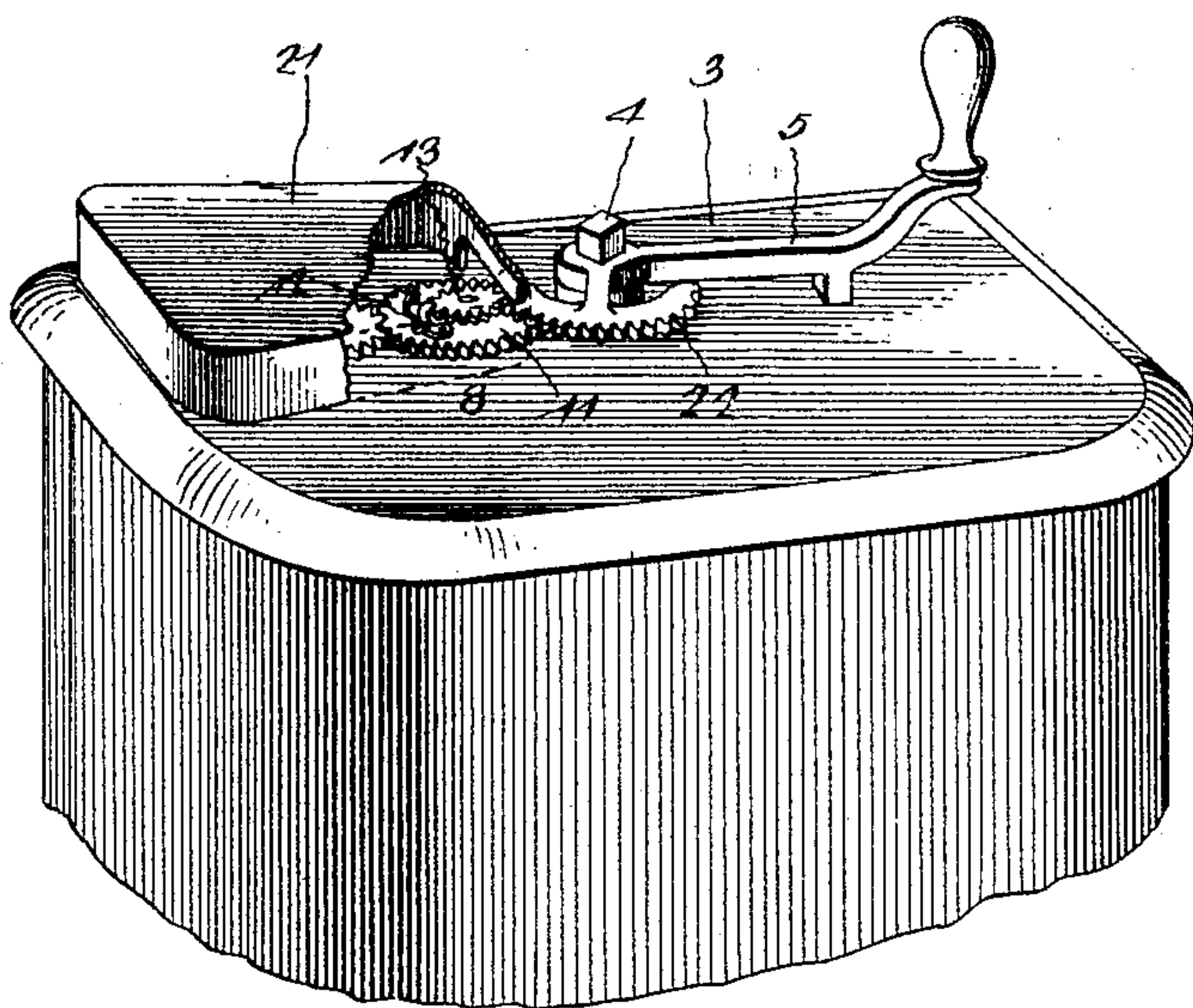


Fig. 3.

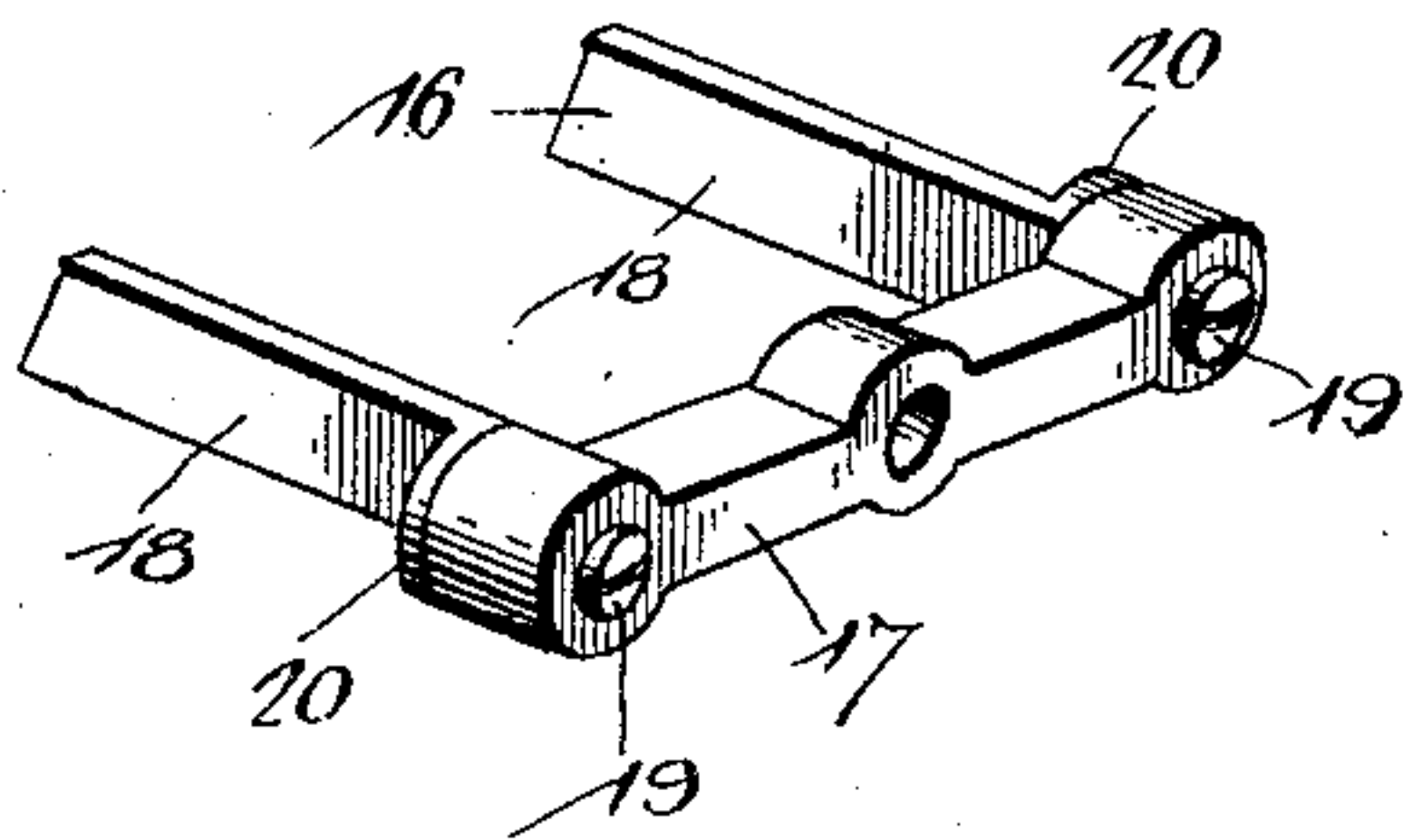


Fig. 4.

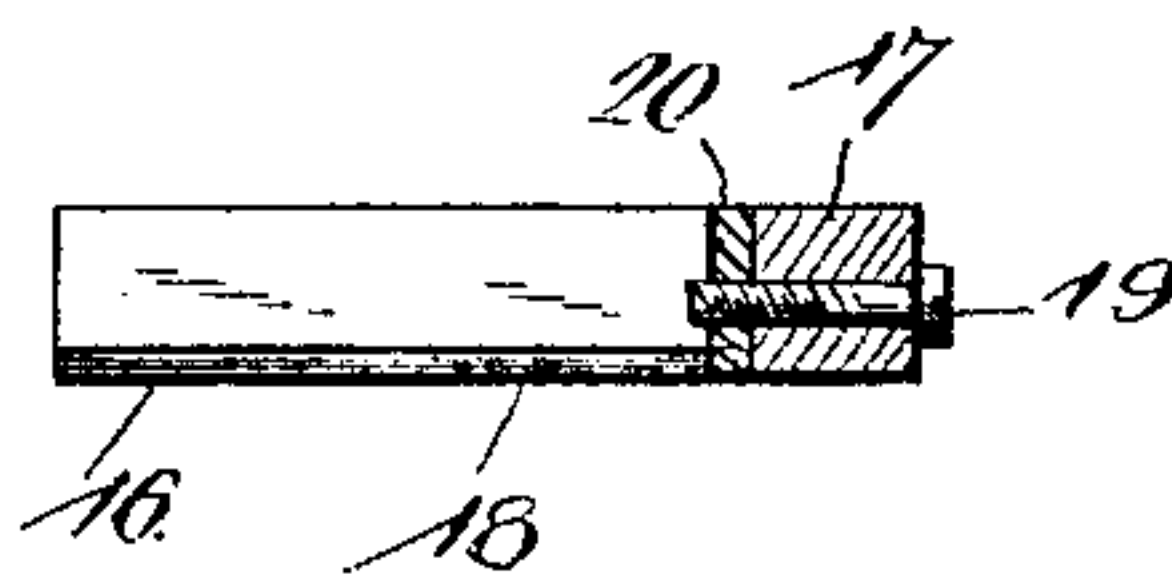


Fig. 5.

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UNITED STATES PATENT OFFICE

JAMES H. MCGURTY, OF JERSEY CITY, NEW JERSEY, ASSIGNOR OF FORTY-NINE ONE-HUNDREDTHS TO THOMAS McEWAN, JR., OF SAME PLACE.

SPEED-GOVERNOR ATTACHMENT FOR ELECTRICAL APPARATUS.

SPECIFICATION forming part of Letters Patent No. 640,688, dated January 2, 1900.

Application filed April 7, 1899. Serial No. 712,081. (No model.)

To all whom it may concern:

Be it known that I, JAMES H. MCGURTY, a citizen of the United States, residing at Jersey City, in the county of Hudson and State of New Jersey, have invented a new and useful Speed-Governor Attachment for Electrical Apparatus, of which the following is a specification.

This invention relates to means for regulating the speed of starting electrical or other power apparatus; and it has for its object to provide an improved mechanism or device for accomplishing this result which can be applied as an attachment to any electrical or other power apparatus or instrument which when manipulated too rapidly causes injury to the electrical machinery associated therewith.

To this end the invention contemplates an improved speed-governor device which is specially designed as an attachment to the ordinary electrical controller used on electrical motor-cars and operated manually by a motorman. In this application of the invention the same provides simple and efficient means for governing the movement of the controller-shaft at any required speed to prevent careless or indifferent motormen from overloading the motors and suddenly jerking the car and its passengers by a quick and unsteady turn of the controller-handle. This is a very serious objection to ordinary electrical controllers having no means to restrain the movements of the motormen, who frequently by reason of a quick turning of the controller-handle not only cause a disagreeable jerking of the car, but also cause a burning out of the motors.

The present invention obviates the objections referred to, and while positively preventing the controller-shaft being turned too quickly, at the same time does not interfere with the rapid shutting off of the current by swinging the controller-handle sharply back to its starting-point.

With these and other objects in view, which will readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination, and arrangement of parts, hereinafter more fully described, illustrated, and claimed.

While the essential features of the invention are necessarily susceptible to modification, still the preferred embodiment thereof is shown in the accompanying drawings, in which—

Figure 1 is a perspective view of an electrical controller fitted with a speed-governor attachment constructed in accordance with the present invention. Fig. 2 is a detail sectional view on the line 2 2 of Fig. 1. Fig. 3 is a perspective view showing a modification of the invention, in which the same is applied to the top of a controller-case and associated with the controller-handle. Fig. 4 is a detail in perspective of the governor-fan. Fig. 5 is a detail sectional view showing the adjustable connection between one end of a blade-strip and the cross-head carrying the same.

Referring to the accompanying drawings, the numeral 1 designates an ordinary electrical controller of the type which is commonly employed on trolley and other electrical motor-cars and is operated manually by the motorman. The controller 1 is provided with the usual shaft 2, cooperating with the contacts and extending through the top of the case 3 to detachably receive on its upper squared terminal 4 the usual controller-handle 5, which is grasped by the motorman and swung or turned in either direction to respectively turn on or shut off the current. Where it is possible to do so, it is preferable to arrange the speed-governor attachment inside of the controller-case, so as to be housed with the other working parts of the controller mechanism, and in Fig. 1 of drawings is shown a type of controller which permits of this arrangement of the attachment, whereby the same may be associated directly with the controller-shaft 2 to govern the movement thereof at any required speed.

In carrying out the invention in connection with the form of controller shown in Fig. 1 of the drawings a horizontal gear-wheel 6 is mounted fast on the controller-shaft above the plane of the contacts and contiguous to the top of the case. The said gear-wheel is preferably made in halves or sections and provided with duplicate hub members 7, which are bolted or otherwise suitably connected together on the controller-shaft 2 and pro-

viding means whereby the gear-wheel 6 may be readily attached to and removed from the shaft without disturbing the latter or any other part of the controller mechanism.

5 Associated with the gear-wheel 6, mounted on and carried by the controller-shaft 2, is a train of gears 8, supported upon a suitable base 9, mounted in a fixed position within the controller-case, preferably upon the fiber
10 base 10, so as to be out of metallic contact with any part of the mechanism. One of the train of gears (designated by the numeral 11) is a loose gear-wheel and carries a spring-actuated pawl 12, normally held in engage-
15 ment with the ratchet-pinion 13, mounted on the stub-shaft supporting the loose gear-wheel 11, and meshing in turn with the gear-wheel 6 on the controller-shaft, thereby providing a ratchet-gear connection between said gear 6
20 and the train of gears 8, so that all of said gears will be set in motion when the controller-handle 5 is turned in a direction to switch on the current and will remain idle when the controller-handle is turned in a re-
25 verse direction, as the ratchet-pinion 13 will then ride freely beneath the point of the pawl 12 without transmitting motion to the wheel 11. One of the train of gears is a worm-pinion 14, which meshes with the threads of
30 the worm governor-shaft 15 and provides for transmitting motion thereto. The worm governor-shaft 15 is journaled in a bearing bracket or yoke 15^a, mounted at one end of the base 9, supporting the train of gears, and
35 carries a horizontally-arranged governor-fan 16. The said governor-fan 16 essentially comprises a cross-head 17 and a pair of flat blade-strips 18, arranged parallel with the shaft 15, respectively at opposite sides thereof. The
40 cross-head 17 of the fan is rigidly connected between its ends to the shaft 15 and receives in its opposite extremities the fasteningscrews 19, which engage with the flanges 20, formed at one end with the blade-strips 18
45 and abutting flat against one side of the cross-head 17. The said screws 19 when tightened hold the blade-strips 18 rigid; but when loosened form axes on which the blade-strips may be turned to any desired angle or deflection,
50 thereby providing simple and efficient means for positively regulating the speed of travel of the controller-shaft in a direction for turning on the electric current.

By reason of the fact that the train of gears
55 is provided with a worm-pinion meshing with the threads of the worm governor-shaft 15 it is impossible to impart a sudden rapid rotation to this shaft by a sudden jerk on the controller-handle 5. In fact, only a steady
60 pull on the controller-handle will start up the train of gears and the governor-fan, and undue acceleration of the controller-handle is quite impossible, because the governor-shaft will only rotate at the speed at which it is
65 permitted to rotate by the adjustment of the fan blade-strips 18.

In some types of controllers it may not be

possible to arrange the attachment within the controller-case in the manner shown in Figs. 1 and 2 of the drawings; but as the same ef- 70
fect can be produced by having the gearing associated directly with the controller-handle 15 the modification shown in Fig. 3 of the drawings may be resorted to without depart- 75
ing from the scope of the invention. In this modification the train of gears and the governor-fan are mounted on top of the controller-case and inclosed within a suitable housing or gear-case 21; but to provide for a proper connection with the gearing the wheel 13, 80
forming a part of the ratchet-gear connection, projects out of the housing or case 21 sufficiently to mesh with a segment-gear 22, attached or fitted to the end of the controller-handle 5, which fits upon the upper exposed 85
end of the controller-shaft 2. By reason of the projection of the gear-wheel 13 outside of the housing or casing 21 the controller-handle can be readily applied to and removed from the controller-shaft in the usual manner. 90

While the invention has been described as specially designed for regulating the speed of starting electrical apparatus, such as an electrical controller, it is to be understood that the invention is capable of general applica- 95
tion to electrical, steam, compressed-air, or any other power apparatus requiring a greater application of power to start a motor or other machinery.

Other modifications of the invention will 100
readily suggest themselves to those skilled in the art, and it will be understood that changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any 105
of the advantages of this invention.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is—

1. In a speed-governor attachment for elec- 110
trical or other power apparatus, the combination with the operating-gears, of a revoluble governor-shaft, a pair of blade-strips arranged longitudinally of, and in parallel relation to, the shaft respectively at opposite sides there- 115
of, said blade-strips having a rigid connection with the shaft, and means for setting the blade-strips in variable fixed positions to govern the speed of movement of the parts, substantially as set forth. 120

2. In a speed-governor attachment for electrical or other power apparatus, the combination with the operating-gears, of a revoluble governor-shaft, a pair of blade-strips arranged longitudinally of, and in parallel relation to, 125
said shaft respectively at opposite sides thereof, said blade-strips having a rigid axial support at one end, and means for holding said strips rigid in variable axially-adjusted positions, substantially as set forth. 130

3. In a speed-governor attachment for electrical or other power apparatus, the combination with the operating-gears, of a governor-shaft carrying a cross-head rigid therewith, a

pair of flat blade-strips arranged longitudinally of the shaft respectively at opposite sides thereof, and having a pivotal connection at one end with the cross-head, and means
5 for holding the blade-strips rigid in their adjusted positions, substantially as set forth.

4. In a speed-governor attachment for electrical or other power apparatus, the combination with the operating-gears, of a governor-
10 shaft carrying a cross-head, a pair of flat blade-strips arranged parallel with the shaft, respectively at opposite sides thereof, and provided at one end with attaching-flanges abutting flat against one side of the cross-

head, and screws connecting the flanges of
the blade-strips with the terminals of the
cross-heads, said screws forming axes for the
strips to turn upon, and also providing fastening means for holding said strips rigid,
substantially as set forth. 20

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JAMES H. MCGURTY.

Witnesses:

ROBT. B. STRONG,
WALTER C. BLOOMER.