

(No Model.)

S. BERGMANN.
ELECTRIC ARC LAMP.

No. 501,757.

Patented July 18, 1893.

Fig. 1

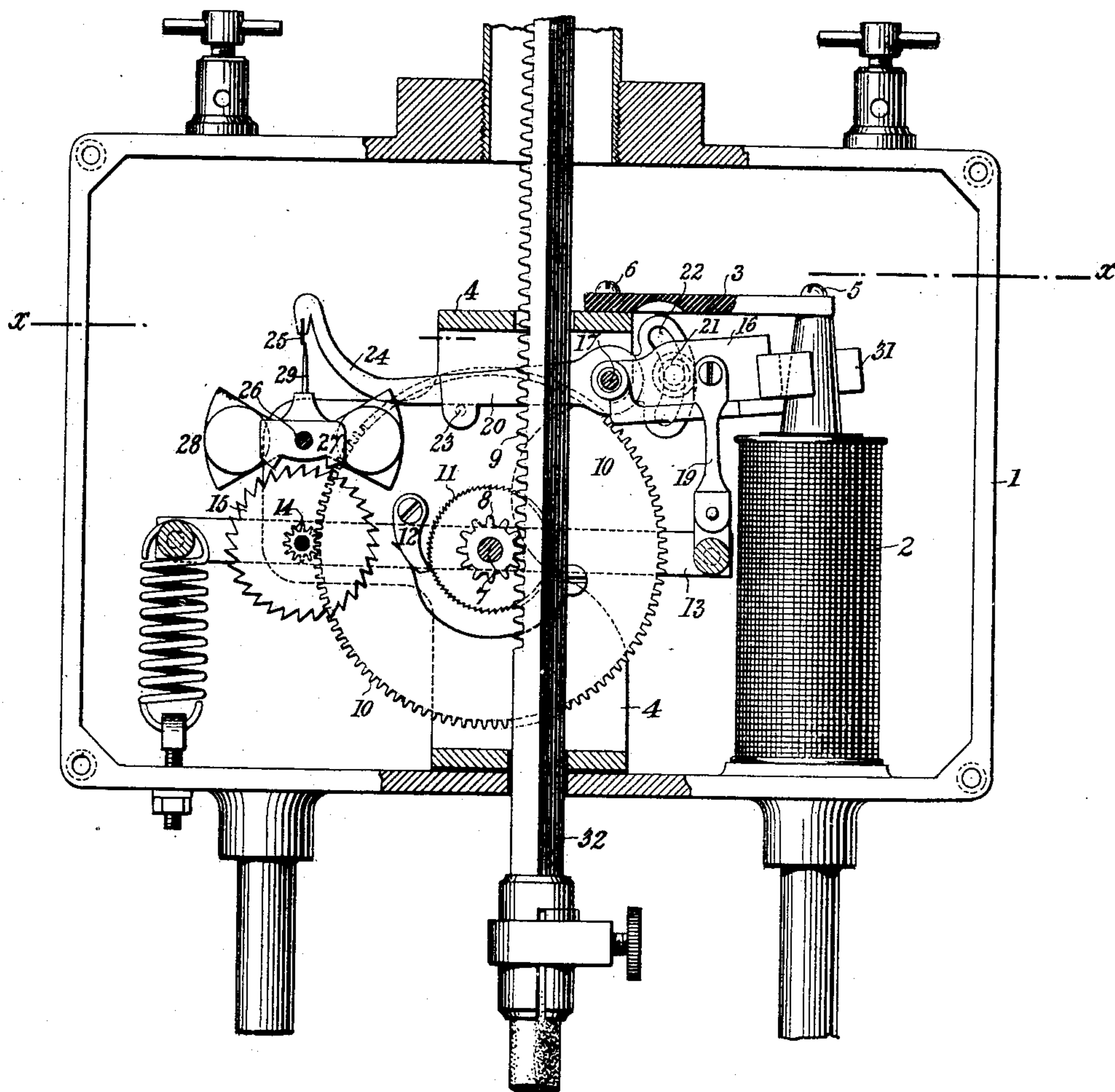
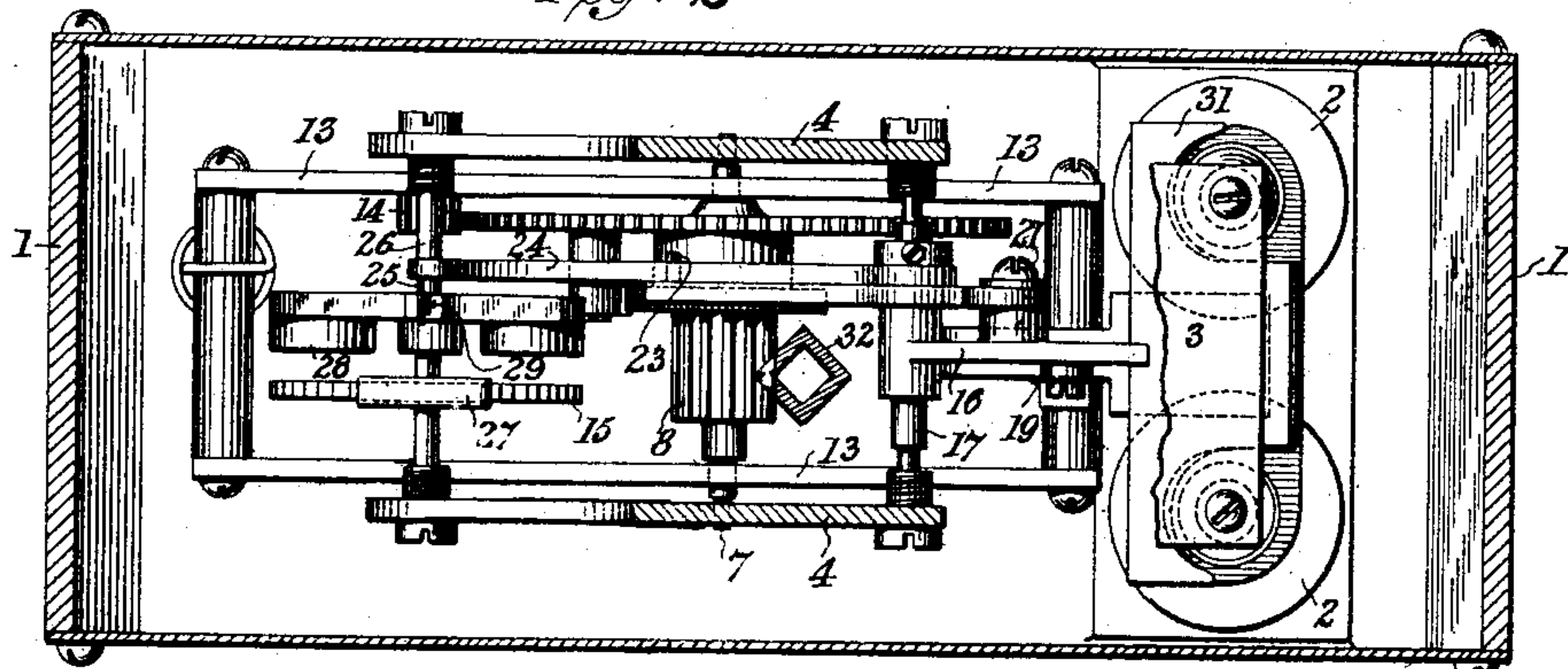


Fig. 2



Witnesses:

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UNITED STATES PATENT OFFICE.

SIGMUND BERGMANN, OF NEW YORK, N. Y.

ELECTRIC-ARC LAMP.

SPECIFICATION forming part of Letters Patent No. 501,757, dated July 18, 1893.

Application filed January 10, 1893. Serial No. 457,947. (No model.)

To all whom it may concern:

Be it known that I, SIGMUND BERGMANN, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Electric-Arc Lamps, of which the following is a specification.

My invention relates to electric arc lamps, and the objects of my invention are to produce first, a very sensitive lamp; second, a lamp that will keep in good order under trying circumstances; and third, one that can be cheaply manufactured. I accomplish these objects by the means hereinafter described and claimed.

In the accompanying drawings forming part of this specification Figure 1 represents a vertical longitudinal section of an electric arc lamp embodying my invention. Fig. 2 represents a horizontal section taken on line $x-x$ of Fig. 1.

Referring to the drawings 1 represents the casing inclosing the mechanism of the lamp. The electromagnets 2 are, as is usual arranged in a shunt circuit (not shown) around the lamp so that when the resistance of the main or lamp circuit becomes greater than desired the increased current then necessarily passing through the magnets 2 will operate their armature 31. The cores of these magnets are cone-shaped as illustrated. The magnets are braced by the insulating plate 3 which is secured to the cores of the magnets and the inner lamp frame 4 by screws 5, 6. In said inner lamp frame 4 is mounted the shaft 7 which carries the loose pinion 8 meshing with the rack bar 9 guided in openings in the frame as shown. Said pinion is rigidly connected to the ratchet wheel 11 which is prevented from moving in one direction by the spring pawl 12 mounted on the large gear wheel 10 which is rigidly connected to the shaft 7. Thus when the rack bar moves downward, the pinion, ratchet wheel and large gear wheel all turn together, whereas when the rack bar is moved upward only the pinion and ratchet wheel are set in motion. The said shaft 7 has mounted on it the swinging frame 13 carrying the small pinion 14 and escapement wheel 15 which are journaled in the side pieces of the frame.

The armature lever 16 for magnets 2 is pivoted to a shaft 17 mounted in the inner lamp

frame 4. The armature 18 carried by said lever is cut out as shown so as to surround the cone-shaped pole pieces of the magnet on practically three sides and is so arranged as to approach nearer to the pole pieces as the magnetic attraction becomes greater. This armature lever 16 is connected to the swinging frame 13 by a double link 19 so that any motion imparted to the armature by the magnets is transmitted by said link to the swinging frame.

On the shaft 17 is freely mounted the adjustable stop lever 20. This stop lever which may be termed the adjusting lever is provided with a curved slot 22 through which the shank of a screw 21 passes and screws into the armature lever 16. By means of this screw 21 the position of the adjusting lever with reference to the armature lever can be altered or changed as may be necessary. The adjusting lever is provided at its free end with a laterally projecting stop pin 23 the purpose of which will presently be explained. Also freely mounted on said shaft 17 is the arresting lever 24 which is limited in its downward movement by the stop pin 23 on the adjusting lever. It carries laterally at its free end the stop 25. In the inner frame 4 at the left is journaled the shaft 26 which carries the escapement lever which co-operates with the escapement wheel 15 mounted in the swinging frame 13. This escapement lever consists of the pawls 27 and the weighted escapement arms 28 carrying the arresting finger 29 both arms and pawls being rigidly mounted on the said shaft 26 so as to move as one. The adjustable spring 30 secured to the casing and to the swinging frame is so adjusted as to offer the appropriate resistance to the action of the magnets.

For operation the armature, the adjusting lever, and the arresting lever are relatively so adjusted as to occupy the positions shown in the drawings when the arc is in its normal condition. If now the distance between the carbon points increases by reason of the consumption of the carbon the current through the magnets is increased and the armature attracted. A very slight downward movement of the armature will be sufficient to lift the arresting lever so that its stop 25 is removed out of the path of the finger 29 thus allowing the rack 32 carrying the upper carbon to de-

scend. The normal condition of the circuits and the arc is, however, re-established almost instantly and the stop of the arresting lever descends again quickly into the path of the
 5 finger 29 and stops the further movement of the escapement and the descent of the carbon. If the stop 25 in descending should strike the top of the finger 29 it would not arrest the operation of the mechanism for the finger 29
 10 would quickly pass from under the same the weight of the freely pivoted arresting lever being the only obstacle to overcome. By this freely mounted arresting lever, the position of which is adjusted by the adjusting lever, I
 15 avoid all accidental binding or stoppage of the mechanism which never occurs. My mechanism is also very sensitive in operation the feeding of the carbon not being noticeable. It is also very simple in its construction and
 20 embraces no elements that have a tendency to get out of order.

Having thus described my invention, what I claim, and desire to secure by United States Letters Patent, is—

25 1. The combination with the electro-magnets of an electric arc lamp, of an armature and armature lever, an adjusting lever adjustably secured to said armature lever and a
 30 loosely mounted arresting lever cooperating with said adjusting lever, substantially as described.

2. In an electric arc lamp the combination with the escapement mechanism of a loosely mounted arresting lever connected with the armature of the electro magnets, substantially
 35 as described.

3. In an electric arc lamp the combination with the escapement mechanism of a loosely mounted arresting lever connected with the armature of the electro-magnets and means
 40 for adjusting the arresting lever, substantially as described.

4. In an electric arc lamp the combination of an armature lever, an adjusting lever, and an arresting lever all mounted on one and the
 45 same shaft, the adjusting lever being capable of adjustment on the armature lever and the arresting lever being loosely mounted on said shaft, substantially as described.

5. In an electric arc lamp the combination
 50 of an armature lever an adjusting lever provided with a laterally projecting stop and a loosely mounted arresting lever arranged to rest on said stop, substantially as described.

Signed at New York, in the county of New
 55 York and State of New York, this 3d day of January, A. D. 1893.

SIGMUND BERGMANN.

Witnesses:

P. M. MOWREY,
 J. WERTHEIMER.