

(No Model.)

3 Sheets—Sheet 1.

S. T. WELLMAN.
ELECTROMAGNET.

No. 551,020.

Patented Dec. 10, 1895.

FIG 1

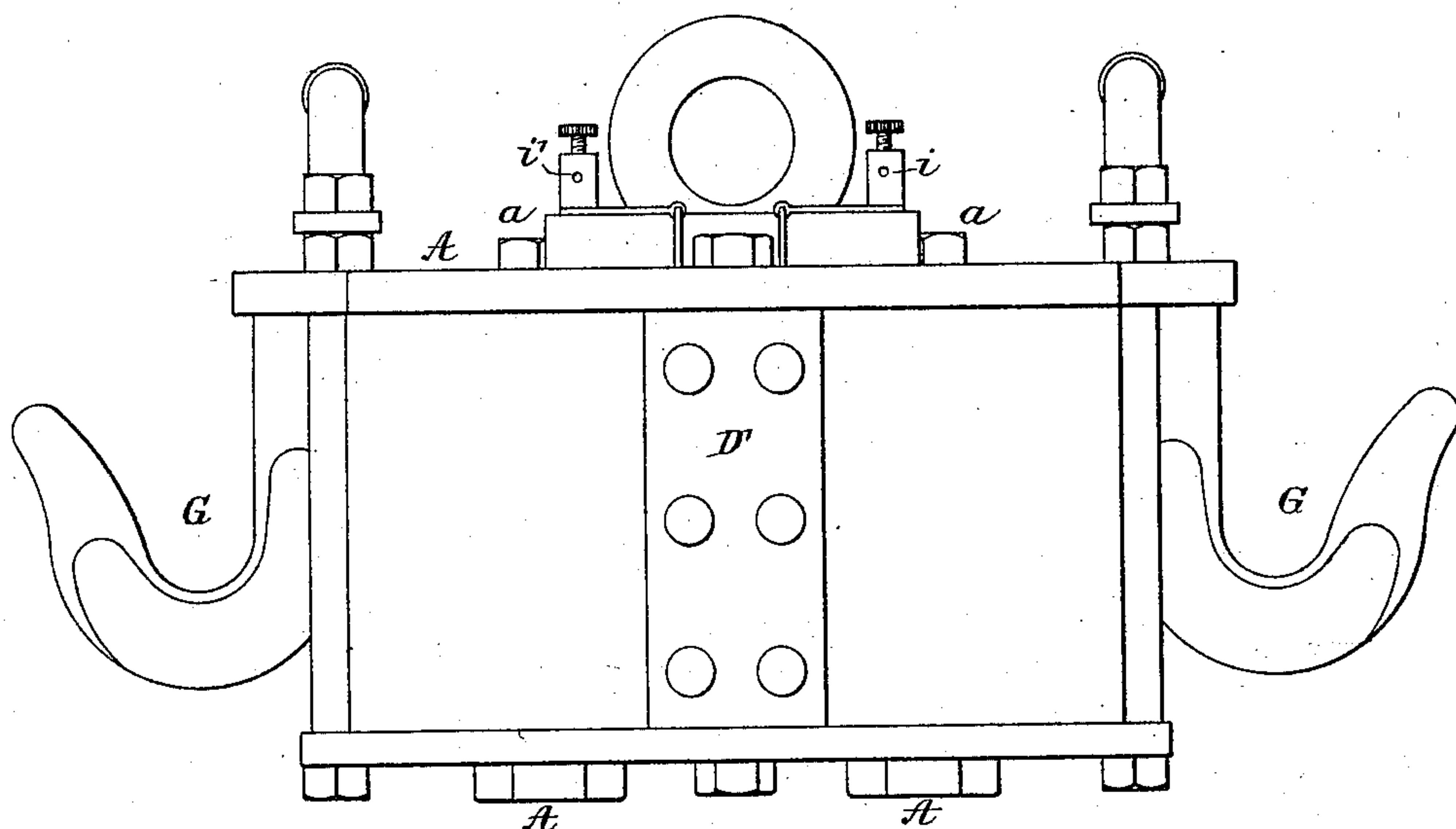
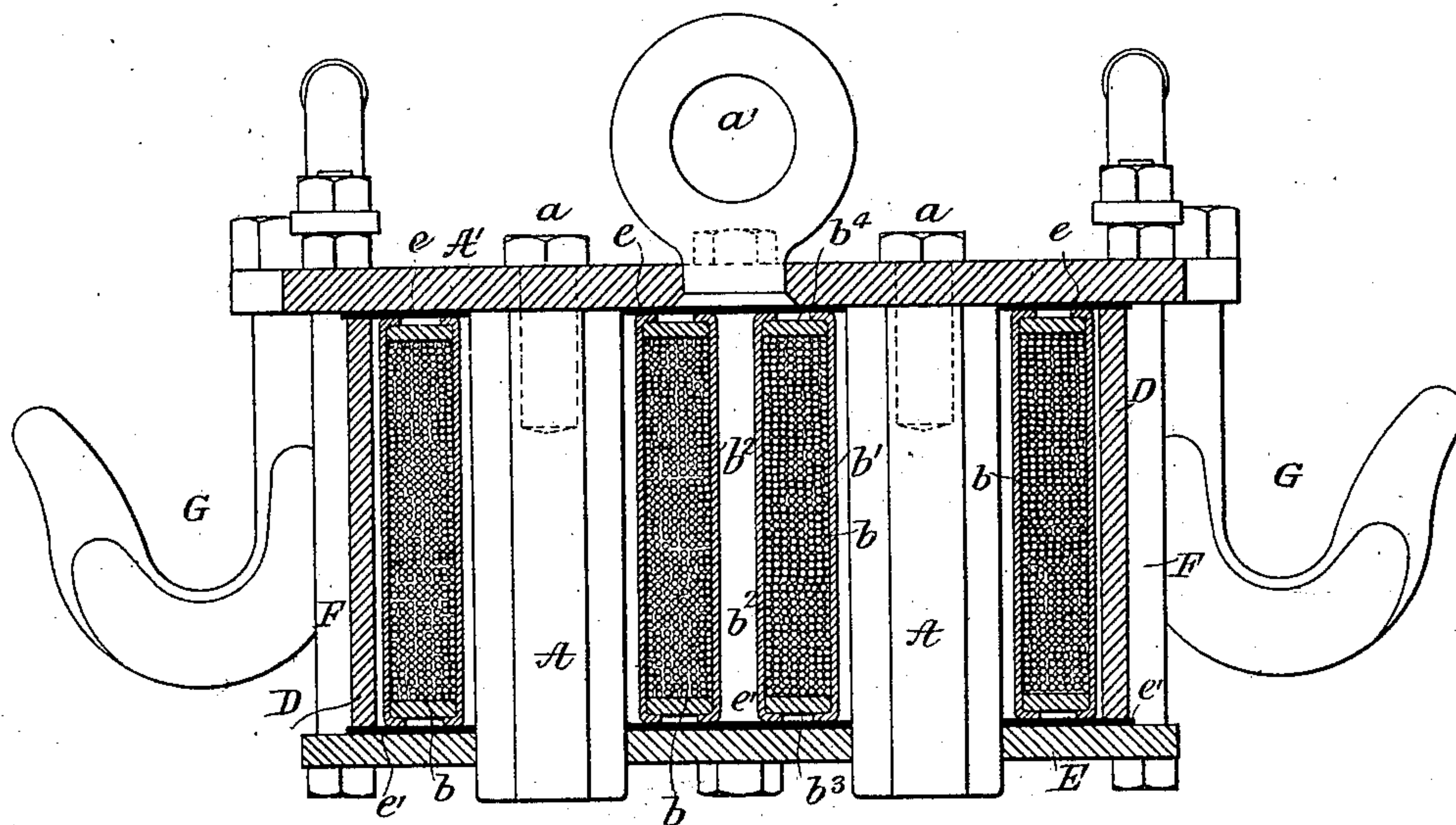


FIG 2



WITNESSES

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Will. H. Bass

INVENTOR

Samuel T. Wellman
By his Attorneys
Howson & Howson

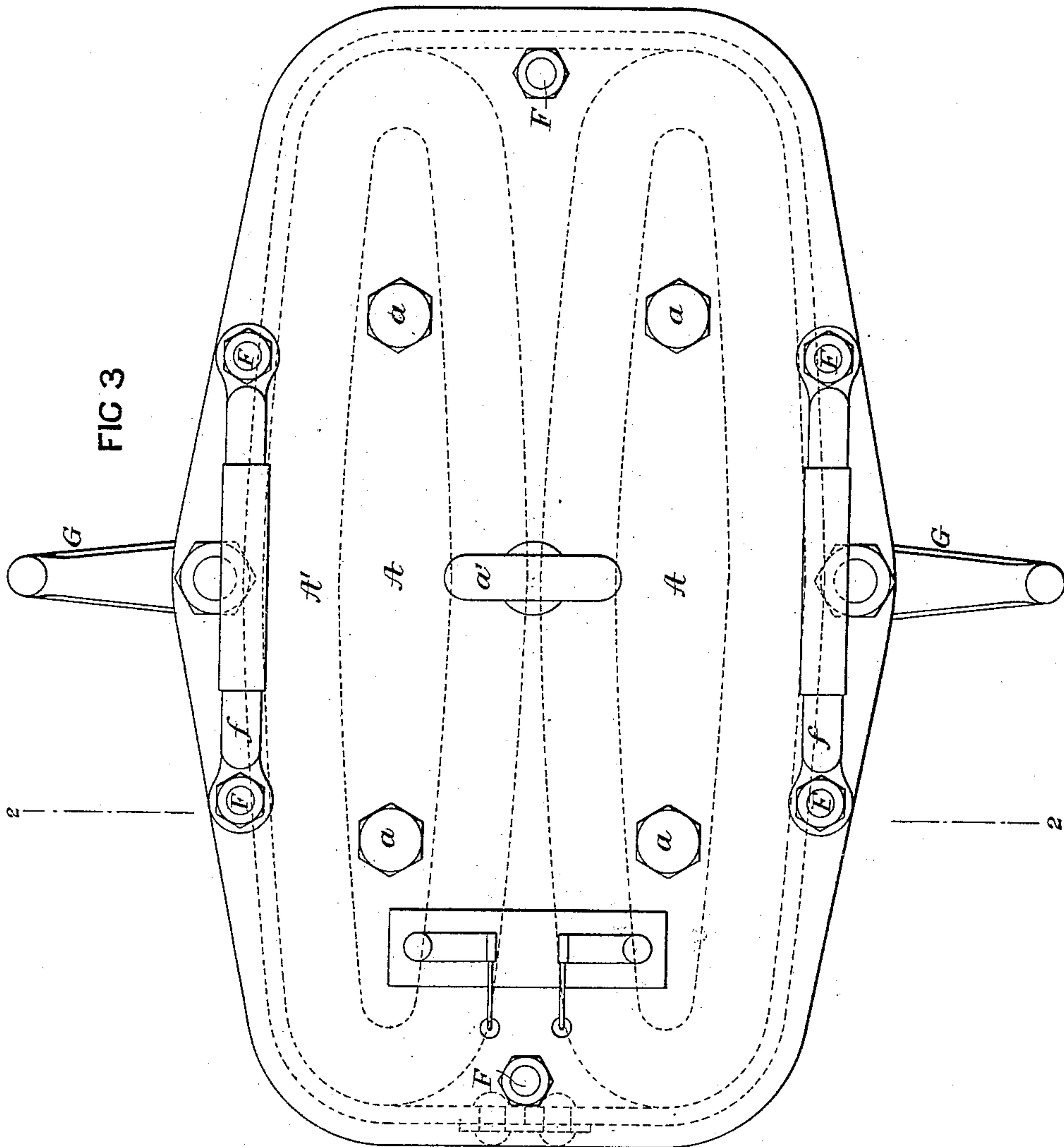
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FIG 4

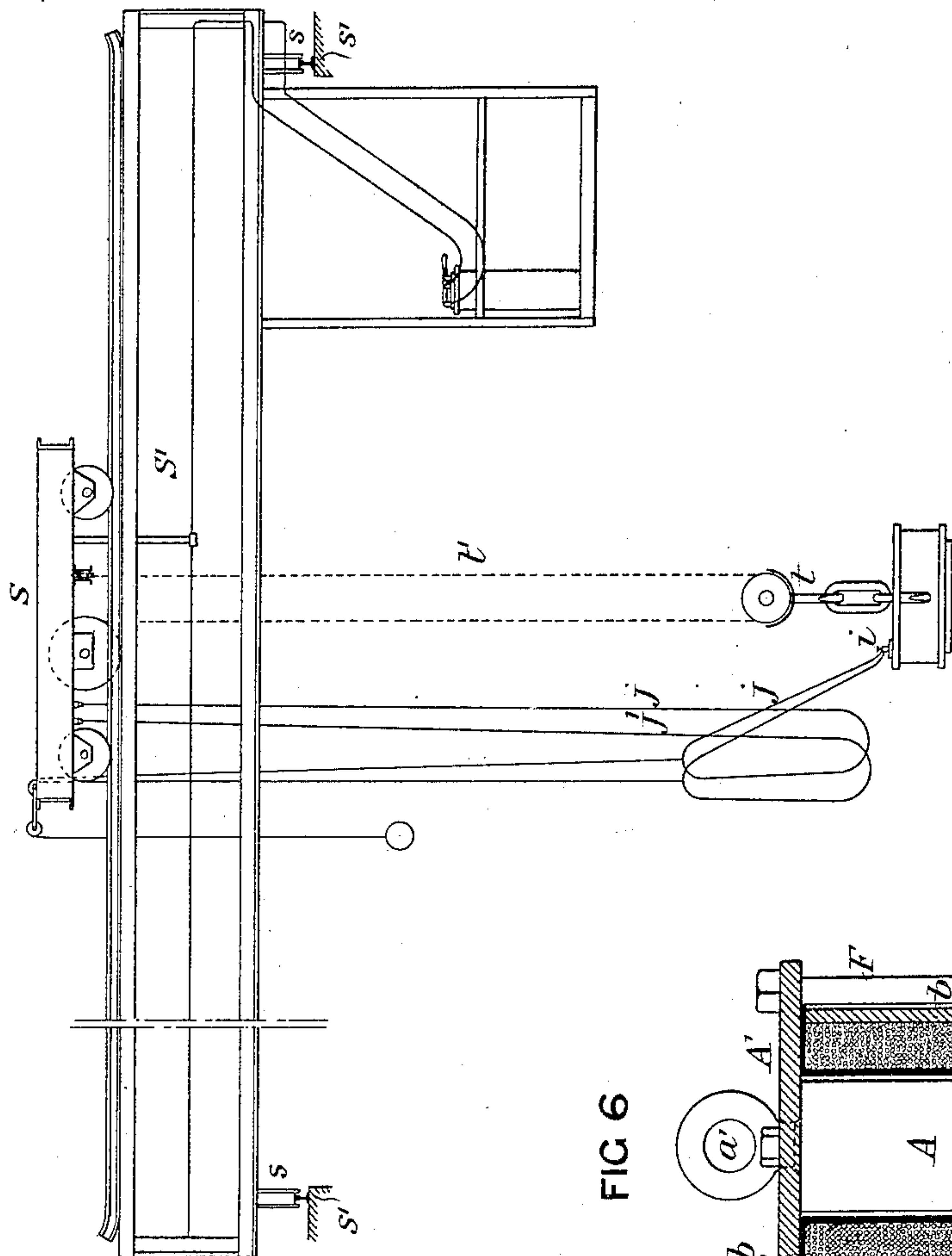


FIG 6

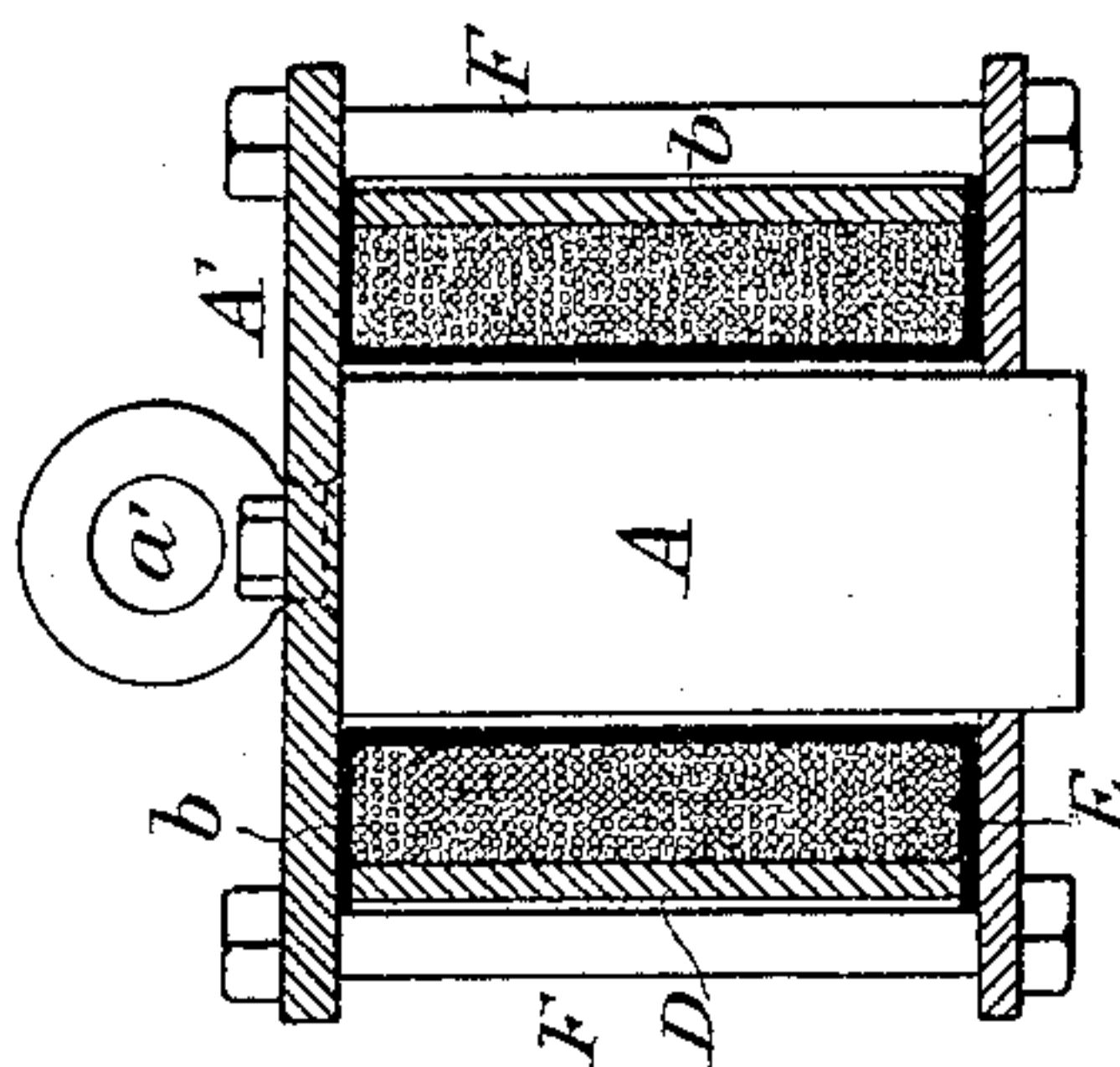
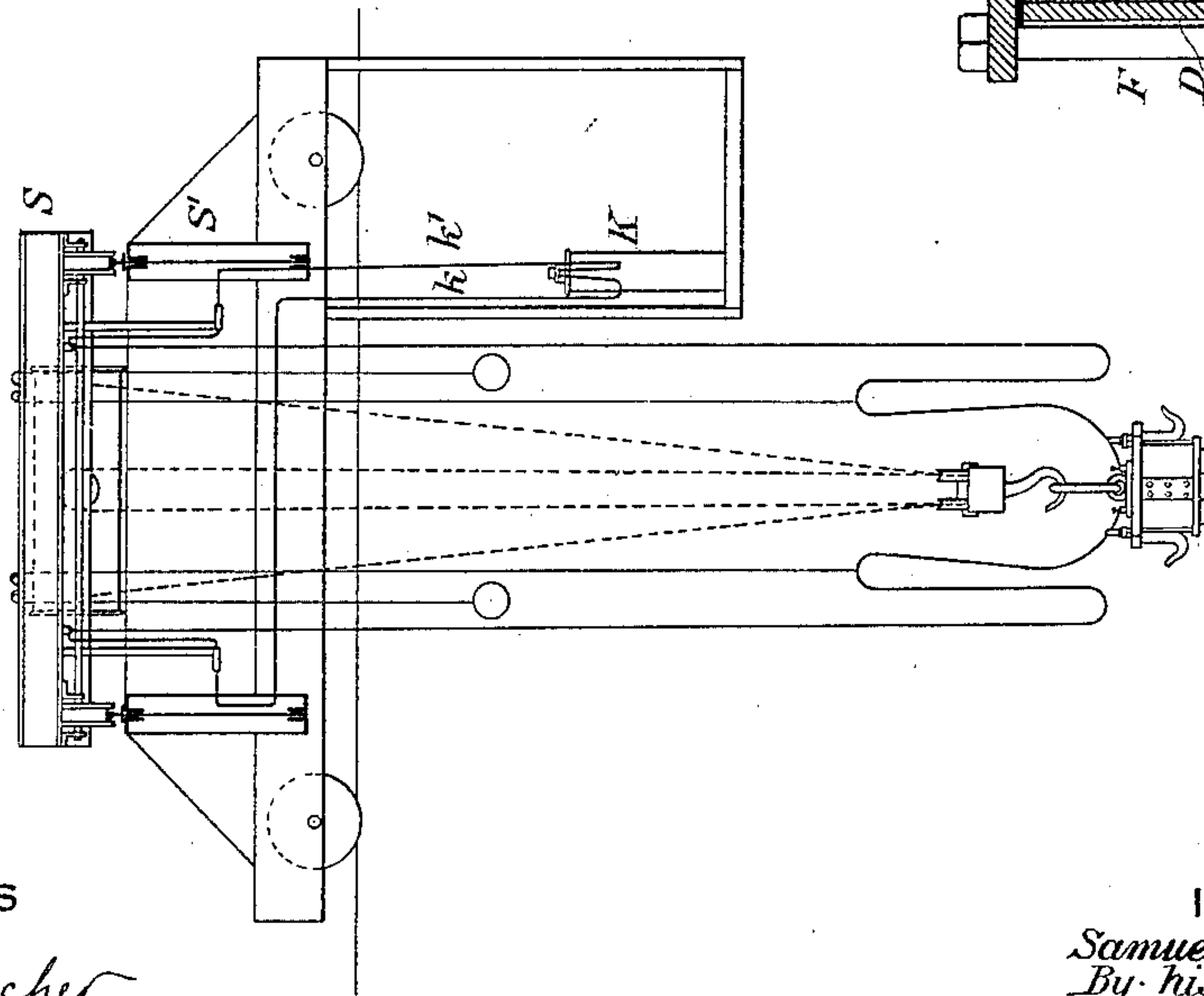


FIG 5



WITNESSES

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UNITED STATES PATENT OFFICE.

SAMUEL T. WELLMAN, OF UPLAND, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO CHARLES H. WELLMAN, OF SAME PLACE.

ELECTROMAGNET.

SPECIFICATION forming part of Letters Patent No. 551,020, dated December 10, 1895.

Application filed April 18, 1894. Serial No. 508,010. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL T. WELLMAN, a citizen of the United States, and a resident of Upland, Delaware county, Pennsylvania, have invented certain Improvements in Electromagnets for Lifting Iron, of which the following is a specification.

The object of my invention is to so construct an electromagnet that it can be utilized for lifting large pieces or sheets of metal, and when combined with a crane to dispense entirely with the claws or chains usually employed.

The main feature of my invention is to so construct the magnet that it can be used on outside work, it being thoroughly protected from the atmosphere.

In the accompanying drawings, Figure 1 is an end view of my improved magnet. Fig. 2 is a section on the line 2 2, Fig. 3. Fig. 3 is a plan view. Figs. 4 and 5 are views showing it applied to an overhead traveling crane. Fig. 6 is a view of a modification of my invention.

A A are the cores of the magnet, preferably of the shape shown in Figs. 2 and 3, and arranged side by side, being connected by the plate A', which is secured to the cores A by bolts a. Each core is wrapped by the wires b b. A shell b' is preferably arranged between each core and the wire, and a thin outer casing b² incases each coil. b³ are the bottom plates and b⁴ the top plates, so that it will be seen that in this instance each core is incased.

Surrounding the magnet is a shell D, extending from the top plate A' to a non-magnetic bottom plate E. This non-magnetic bottom plate has openings through which the cores of the magnet extend, as clearly shown in Fig. 2.

Mounted between the top plate A', the shell D, and the coils of wire are non-conducting packing-strips e, and between the bottom plate and the said parts are packing-strips e'. The top plate A' is united to the bottom plate E by bolts F, provided at one end with suitable nuts, so that when the nuts are applied the several parts of the magnet are fastened securely together, preventing moisture from gaining access to the interior of the magnet.

I preferably extend the packing e' directly

against the cores of the magnet, so as to protect as much as possible the core, the ends of the core being the only parts of the magnet exposed.

On each side of the magnet are handles f f, by which it can be moved from one point to another, and secured to the top plate A' in the present instance are hooks G G, to which can be attached chains when it is wished to move an article with which the magnet cannot properly engage.

The casing or shell D is preferably made in one piece, as shown in Fig. 3, and the ends united to a sheet of metal D' by rivets or screws, as shown in Fig. 1, and I prefer to make the shell of non-magnetic material.

The wires leading from the source of electric supply are connected to the binding-posts i i', and these binding-posts are suitably coupled to the wires of the magnet.

The eye a, by which the magnet is suspended, is fastened to the plate A'.

In Figs. 4 and 5 I have shown a magnet suspended from the carriage S of a traveling crane S', mounted on wheels s, adapted to rails s'. The wires j j' are secured to the binding-post i and extend to the carriage, which is provided with suitable brushes bearing against feed-wires k k'. These wires extend to the switch K on the carriage of the crane, the magnet being suspended from the hook t, hung from the hoisting-chain t'.

The magnet can be moved to any position desired and the electric current can be switched off or on at will, so that if a series of plates, for instance, have to be loaded onto a car the magnet can be adjusted over one of said plates, and when it is in contact therewith the current can be switched on, the magnet attaching itself to the plate, and when the hoisting mechanism of the crane is set in motion the plate will be picked up and carried to the car, and after it is adjusted to the proper place the current can be cut off and the magnet detached from the plate. By this means the plates, especially thin plates, can be picked up without bending and without loss of time in adjusting the claws or chains to the plate.

In many instances two or more plates can be picked up at the same time, depending al-

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together upon the weight and the magnetic force of the apparatus.

I claim as my invention—

1. The combination in a magnet for lifting
5 heavy loads, of the top plate having means
for attaching the lifting mechanism, a core A
secured to and depending from said top plate,
a spool inclosing the core, a bottom plate of
nonmagnetic material through which the core
10 extends, and a protecting casing for the mag-
net between the top and bottom plates, sub-
stantially as described.

2. The combination in a magnet for lifting
plates, &c., of the cores A A, the top plate A',
15 a non-magnetic bottom plate through which
the cores of the magnet pass, and a shell sur-
rounding the coils of the magnet, substantially
as described.

3. The combination of the top plate, two
20 poles of the magnet secured thereto, wrap-
pings of wire for each pole, a bottom plate

through which the cores extend, and a shell
mounted between the top and bottom plates
and surrounding the wrappings of the mag-
net, substantially as described.

4. The combination of the top plate, the eye
secured thereto by which the magnet is sus-
pended, cores A A, secured to the top plate
by bolts, incased wrappings for each core, a
bottom plate of non-magnetic material, a shell
30 mounted between the bottom and top plate,
and packing between said parts, with bolts
passing through the top and bottom plates,
substantially as described.

In testimony whereof I have signed my
name to this specification in the presence of
two subscribing witnesses.

SAMUEL T. WELLMAN.

Witnesses:

FRANK E. BECHTOLD,
JOSEPH H. KLEIN.