

C. M. STURGIS.

SCALE.

APPLICATION FILED MAY 18, 1909.

941,208.

Patented Nov. 23, 1909.

2 SHEETS—SHEET 1.

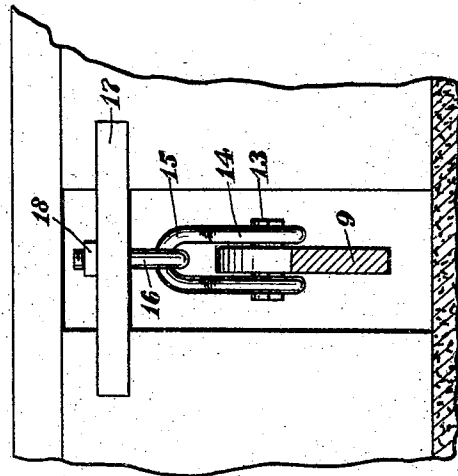
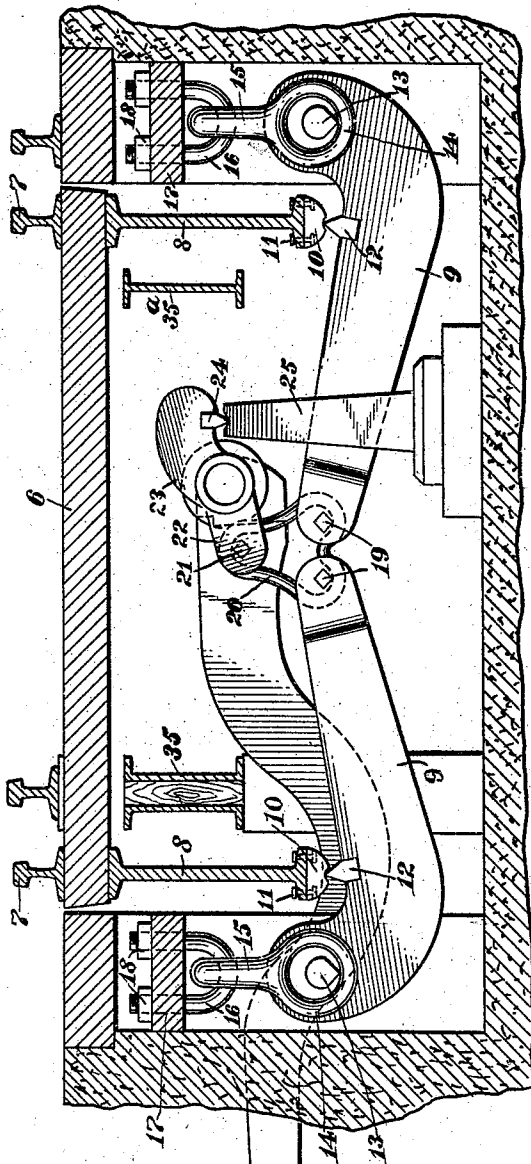


Fig. 2

Fig. 1
WITNESSES
J. A. Propoy
J. P. Davis

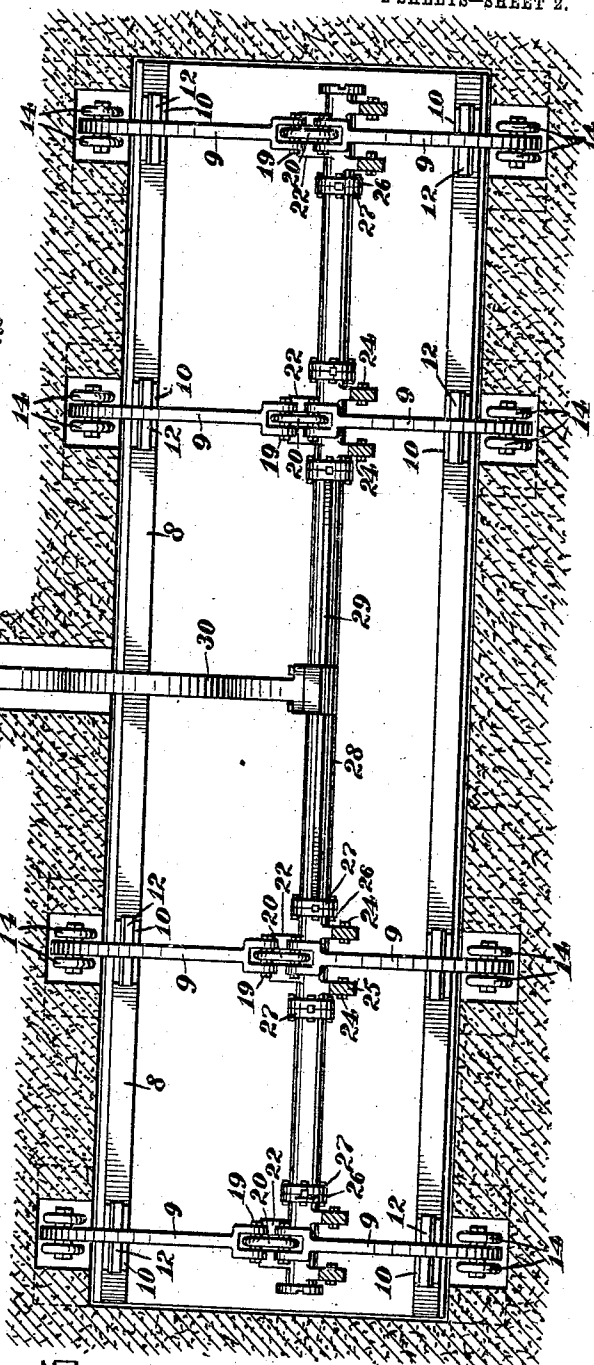
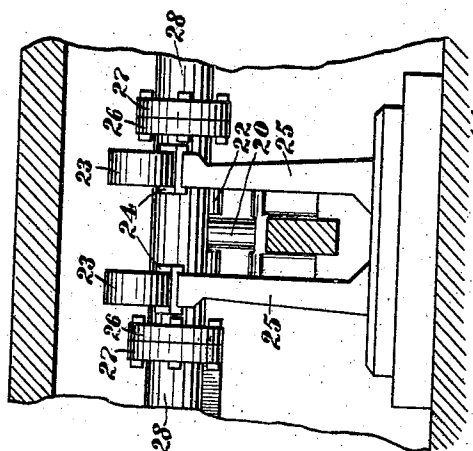
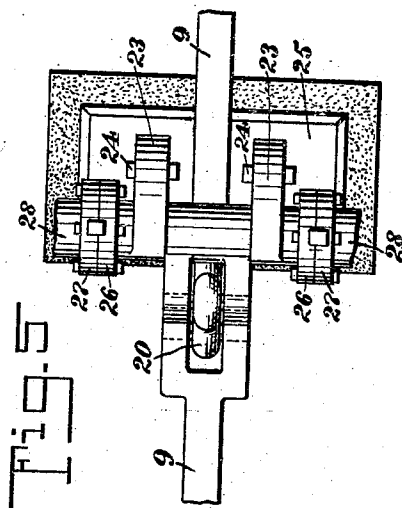
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ATTORNEYS

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WITNESSES
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UNITED STATES PATENT OFFICE.

CHARLES MERCER STURGIS, OF BIRMINGHAM, ALABAMA.

SCALE. *

941,208.

Specification of Letters Patent.

Patented Nov. 23, 1909.

Application filed May 18, 1909. Serial No. 496,801.

To all whom it may concern:

Be it known that I, CHARLES MERCER STURGIS, a citizen of the United States, and a resident of Birmingham, in the county of Jefferson and State of Alabama, have invented certain new and useful Improvements in Scales, of which the following is a full, clear, and exact description.

The principal objects which the present invention has in view are: to provide a structure which may be readily and simply extended; to provide a structure wherein the moving parts are securely and simply mounted; to provide a structure having a multiplicity of carrying beams with a single adjusting member; and to provide a structure wherein the platform may be supported upon end rails without interfering with the moving parts of the scale proper.

One embodiment of the present invention is disclosed in the structure illustrated in the accompanying drawings wherein like characters of reference indicate corresponding parts in all the views.

Figure 1 is a cross sectional view of a scales pit, showing mounted therein the operative members of the scales mechanism; Fig. 2 is a longitudinal view of a branch extension of the pit wherein is mounted the carrying lever arm directly supporting the scale platform, said arm being shown in section; Fig. 3 is a plan view of the scales pit from underneath the platform, and the operating members of the scales secured therein; Fig. 4 is a view in front elevation of the structural mounting of the pivot posts of the second compound levers, showing in connection therewith the arrangement and mounting of the said compound levers and transmission shaft; and Fig. 5 is a plan view of the construction shown in Fig. 4, the primary carrying levers being shown in connection therewith.

In the drawings, the invention is shown as applied to scales for railway cars. The platform 6 is provided with rail sections 7, 7, which are suitably placed to register with the tracks of the road bed. The platform 6 is securely mounted upon heavy I-beams 8, 8, which are suitably framed to be held rigidly in the upright position shown in Fig. 1 of the drawings. The I-beams 8 are extended longitudinally with the platform 6, and are preferably disposed directly beneath the rails 7, 7, to reinforce and prevent any spring of the platform at this point. These beams

are carried by lever arms 9, 9, of which there are a plurality, the number of arms 9, 9 depending upon the carrying weight for which the scales are calculated, and upon the length of the platform. They are designed to extend the full length of said platform, and as shown in the drawings there are eight of these carrying levers. The mounting for the said beams upon the said levers consists of grooved shoes 10, which are fixedly secured by means of bolts 11 to the flange of the I-beams 8. The shoes 10 are mounted upon the knife-like edges of upturned wedges 12, which are fixedly secured to the upper side of the levers 9 and are disposed on the levers close to the fulcrums of the same.

The levers 9 are of the second order, carrying the weight, which is the platform 6, between the fulcrum and the free or lifting end of the lever. The fulcrum is the knife edged pivot 13, which is fixedly mounted in the said lever 9, to extend to both sides thereof. The pivots 13 rest within the rings 14 of the loops 15, supported by hangers 16, which in turn are rigidly mounted in heavy plates 17, securely set in the masonry of the pit as shown in Fig. 2 of the drawings. By means of nuts 18, the hangers 16 may be raised and lowered to vertically adjust the levers 9 and through them the platform 6. In this manner the outer or fulcrumed ends of the levers 9 are immovably secured, compelling the said levers to depress the inner or free ends of the said levers when weight is applied through the platform 6. The free ends of these levers 9, 9 are bifurcated and their sides are provided with perforations to receive knife edged pivot members 19, 19, said members extending through and within a triangular link 20.

By means of the link 20, the free ends of the levers 9 are supported upon knife edged pivot members 21 mounted in extended arms 22 of a rocker 23, provided with a knife-shaped rocking member 24, which is suitably mounted in seats provided in the top of pivot posts 25, 25, constructed of required strength and rigidity, and optionally formed of metal or of masonry. The top of each post 25 is provided with a metal plate in which the seat to receive the knife shaped rocking member 24 is formed.

The rockers 23, 23 are provided with flanges 26, 26, extended to receive the flanges 27, 27 of connecting tubes 28, 28, which are

suitably united to the rockers. One of the said tubes 28 is provided with an extended flange 29, to reinforce the connection which is formed between the said tube and the scale beam 30.

The pivots 21 are usually placed directly over the center of the space between the free ends of the levers 9, this being usually the center of the load. Each rocking knife-shaped member 24 constitutes the pivotal point for the rockers 23, and is located a short distance to one side of the pivot 21 or the load center.

The scale beam 30 is extended from the tubes 28 across the pit and into a branch extension of the pit provided therefor. The beam 30 extends across the central or load line, in such a manner that when the outer end of the beam is raised it raises the end of the rocker carrying the pivot 21. The beam 30 is formed substantially as shown in Fig. 1 of the drawings, by depressing it to pass below the I-beams 8. At the outer end of the beam 30 there is provided a sliding link connector 31, having a set screw 32 by which the connector 31 is contracted rigidly upon the beam 30. To an eyelet 33 of this connector, by means of a suitable rod, is connected the usual scale yard of the standing scales. In adjusting the scale to balance, the connector 31 is moved to and from the pivot of the rockers 23, thereby lengthening and shortening the leverage of the beam 30.

By the construction and arrangement of the parts as shown in the drawings, there is provided room for the interposition of dead beams 35, 35^a, provided as safety members for the fall of the platform 6.

The operation of a device thus constructed is as follows: The cars moving upon the platform 6 pass onto the rails 7, 7, the platform being locked rigidly by the scale yard which is locked immovably. When the car is brought to a stand the lock is removed from the scale yard, allowing the same to rise at its long end as it is pulled down at the short end by the scale beam 30. The scale beam 30 in descending is forced to its depressed position by the rocking of the rockers 23 upon the pivot members 24, the rockers being impelled to this action by the free ends of the levers 9, which are depressed by the platform and the weight thereon, through the I-beams 8, 8. The compounding of the leverage in the present construction is very great, and by means thereof the small weight usually employed on standing scales is sufficient to counterbalance the weight of tons in the car upon the platform 6.

The beams 35, 35^a are introduced so that, should the car by accident be placed on the platform 6, without having previously locked the scale yard, the platform will not recede any great distance before being supported by the beams 35 35^a.

By means of the construction wherein the rockers and moving parts connected therewith are joined by an interposed tubular member, there is provided the possibility of readily and quickly adding to the length of a scale of this kind.

Wherever in this specification the construction of the various members is referred to as being joined by flanges having bolts extended therethrough, I wish to be understood as incorporating in this construction any form wherein the connection is made more rigidly. I have shown in the drawings, a system of keys which are driven between the flange faces. This is to prevent any lost motion such as might arise within the bolt holes provided in the flanges. Should I desire to substitute any other form of construction wherein the parts are held more rigidly, this may be done.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. A scale, comprising a platform mounted on vertically-extended members having in the lower edge thereof pivot seats, an expansible series of levers forming knife-edge supports for the said extended members, a series of rocking members suitably connected with the long arm of the said levers, a series of rigid connecting members extended between and rigidly secured to the said rocking members, a scale beam rigidly connected to one of said connecting members, and suitable stationary rests for the pivots of said levers and rocking members.

2. A scale, comprising a platform, a plurality of carrying levers arranged in pairs to approximate the ends of their long arms, a supporting mechanism for the long arms of said levers, embodying a series of rocking members connected by a series of short shaft sections connected to form a rigid member, and connecting members adapted to engage the ends of said levers and said rocking members.

3. A scale, comprising a platform, a series of carrying levers arranged in pairs to approximate the ends of their long arms and adapted to carry the said platform, a supporting mechanism for the long arms of said levers, embodying a plurality of rocking members separably connected by a series of short pipe sections and rigidly secured thereto, a scale beam rigidly mounted on one of said members, provided to carry a weight adjustably located on said beam, and a link-like connecting member for connecting the ends of the long arms of said levers and said rocking members.

4. A scale, comprising a pit, a platform, a plurality of carrying levers arranged in pairs the members whereof are oppositely disposed to approximate the ends of the long arm thereof and adapted to support the said

platform, said levers being supported at the fixed ends by the pit structure, a rocking shaft composed of a series of short pipe sections having annular end flanges, a series of
5 duplicate rocking members having pivot arms extended laterally therefrom to form a supporting pivot and hanger for said levers, said rocking member having annular flanges adapted to abut the said annular flanges on
10 said pipe sections, a series of fixed pivot standards mounted at desired intervals in said pit to support said rocking members, a beam scale rigidly connected to one of said
15 pipe sections, and link-like members for connecting the said rocking members and levers.

5. A scale, comprising a platform, a plurality of carrying levers arranged in pairs to approximate the ends of their long arms and adapted to carry the said platform, a
20 shaft-like member constructed of short sec-

tions of tubing having annular flanges and tubing of variable length having similar flanges adapted to be rigidly secured to the said short sections through said flanges, said
short sections having pivotal mountings and
25 arms extended to connect with the long arms of said levers, a link-like connecting member for said arms and said levers, a beam scale rigidly connected with said shaft-like member and adapted to carry a weight adjust-
30 ably secured thereon, and stationary rests to fulcrum the said shaft-like member and said levers.

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

CHARLES MERCER STURGIS.

Witnesses:

J. C. ABERNATHY,

E. B. HENRY.