

(No Model.)

2 Sheets—Sheet 1.

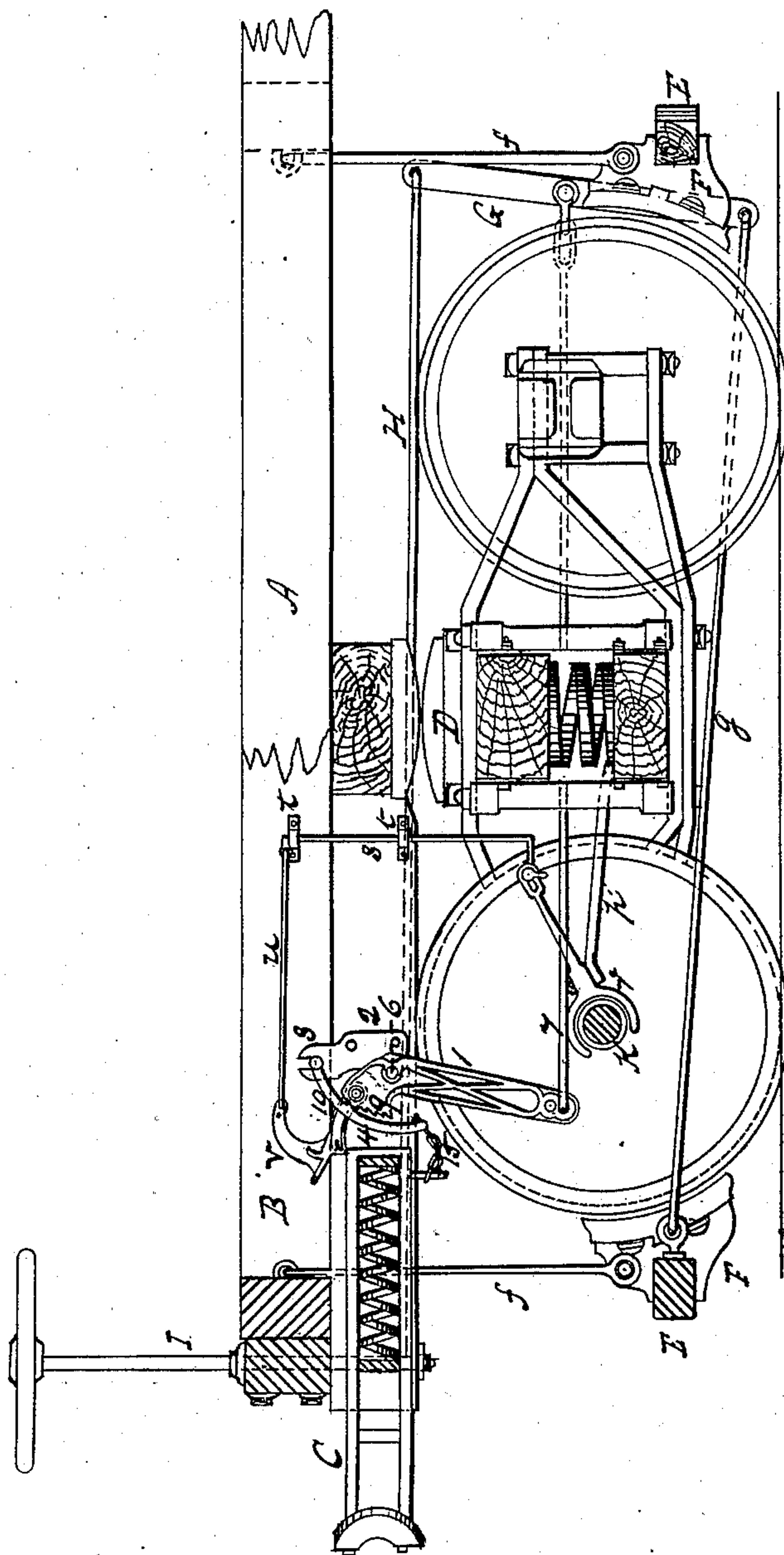
S. W. McMUNN, C. J. SCHILLER & E. B. LEIGH.

LOCKING MECHANISM FOR CAR BRAKES.

No. 300,101.

Patented June 10, 1884.

Fig. 1—



Witnesses

H. B. Moulton.

E. J. Shaffer

Inventors.

Samuel W. McMunn

Charles J. Schiller

Edward B. Leigh

by F. W. Ritter Jr. atty

(No Model.)

2 Sheets—Sheet 2.

S. W. McMUNN, C. J. SCHILLER & E. B. LEIGH.

LOCKING MECHANISM FOR CAR BRAKES.

No. 300,101.

Patented June 10, 1884.

Fig. 2-

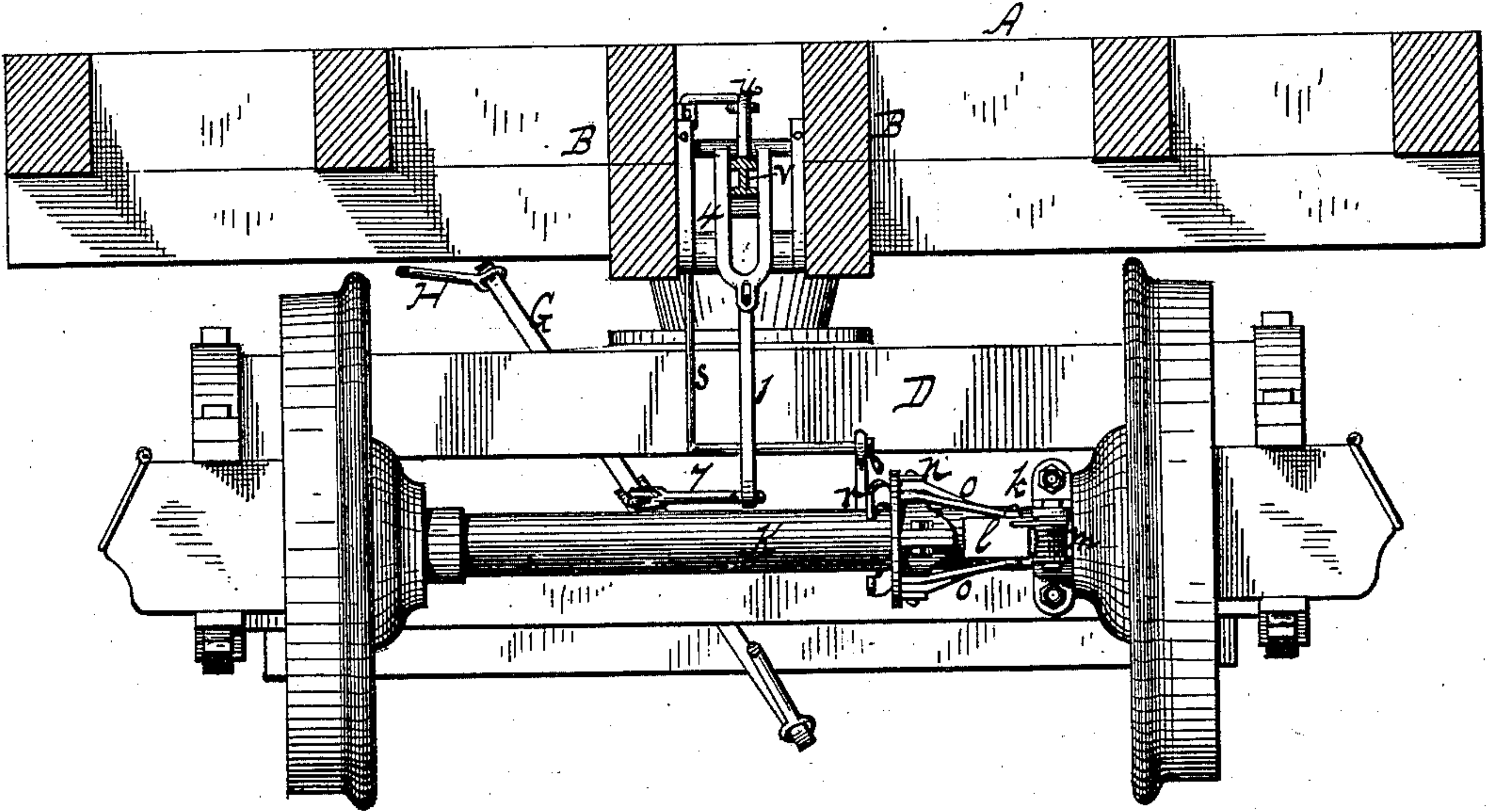


Fig. 3-

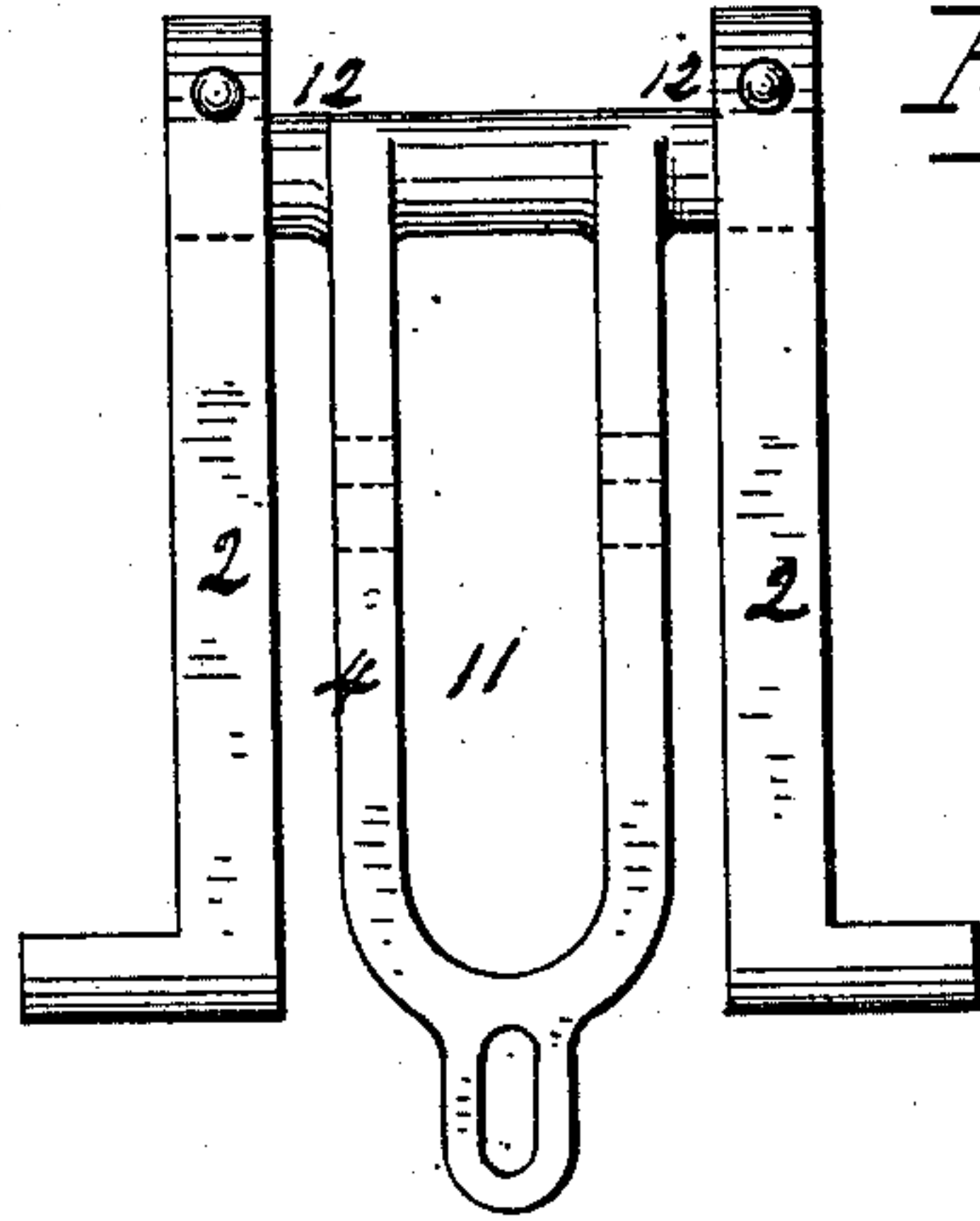
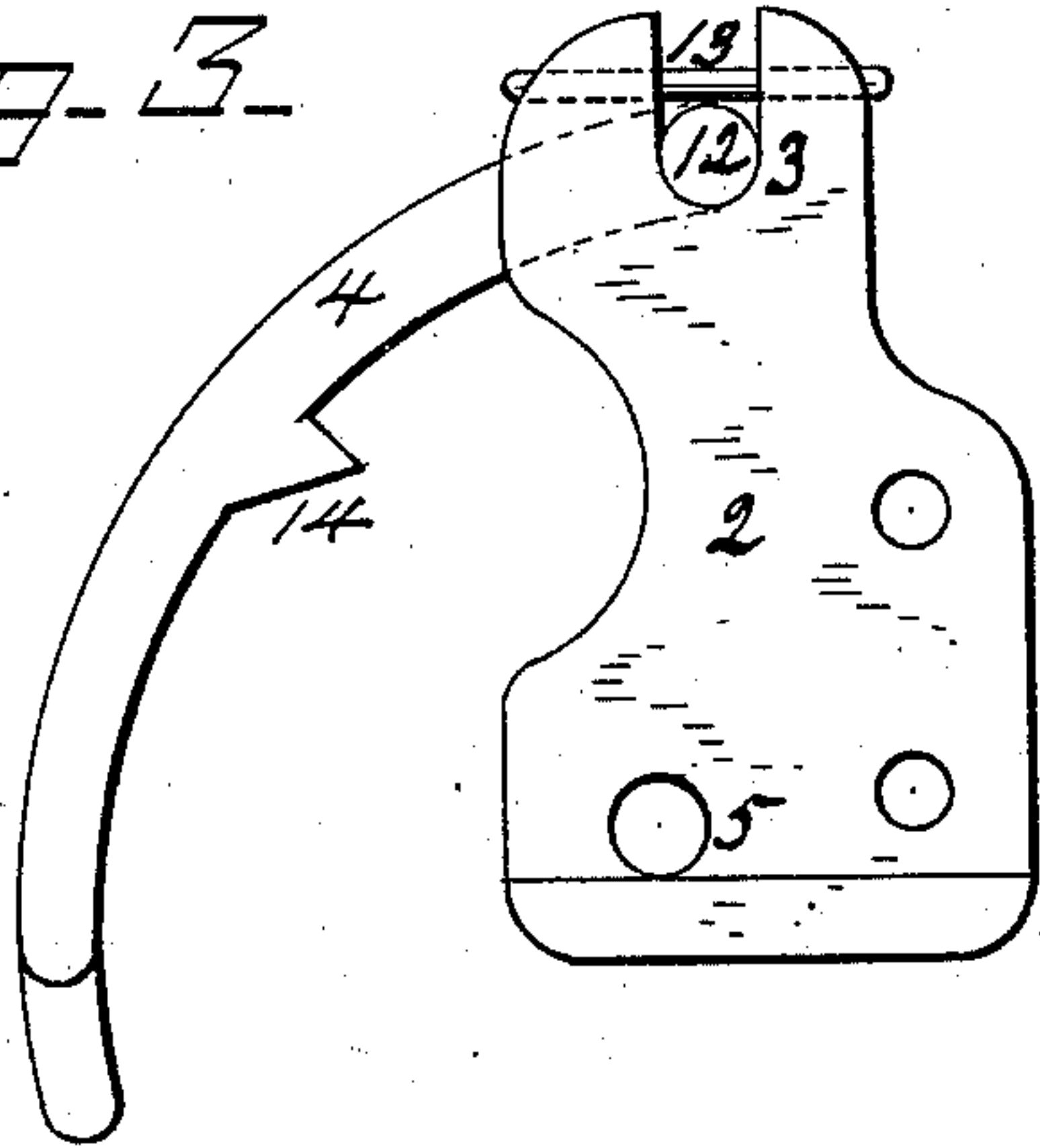


Fig. 4-

Fig. 5-

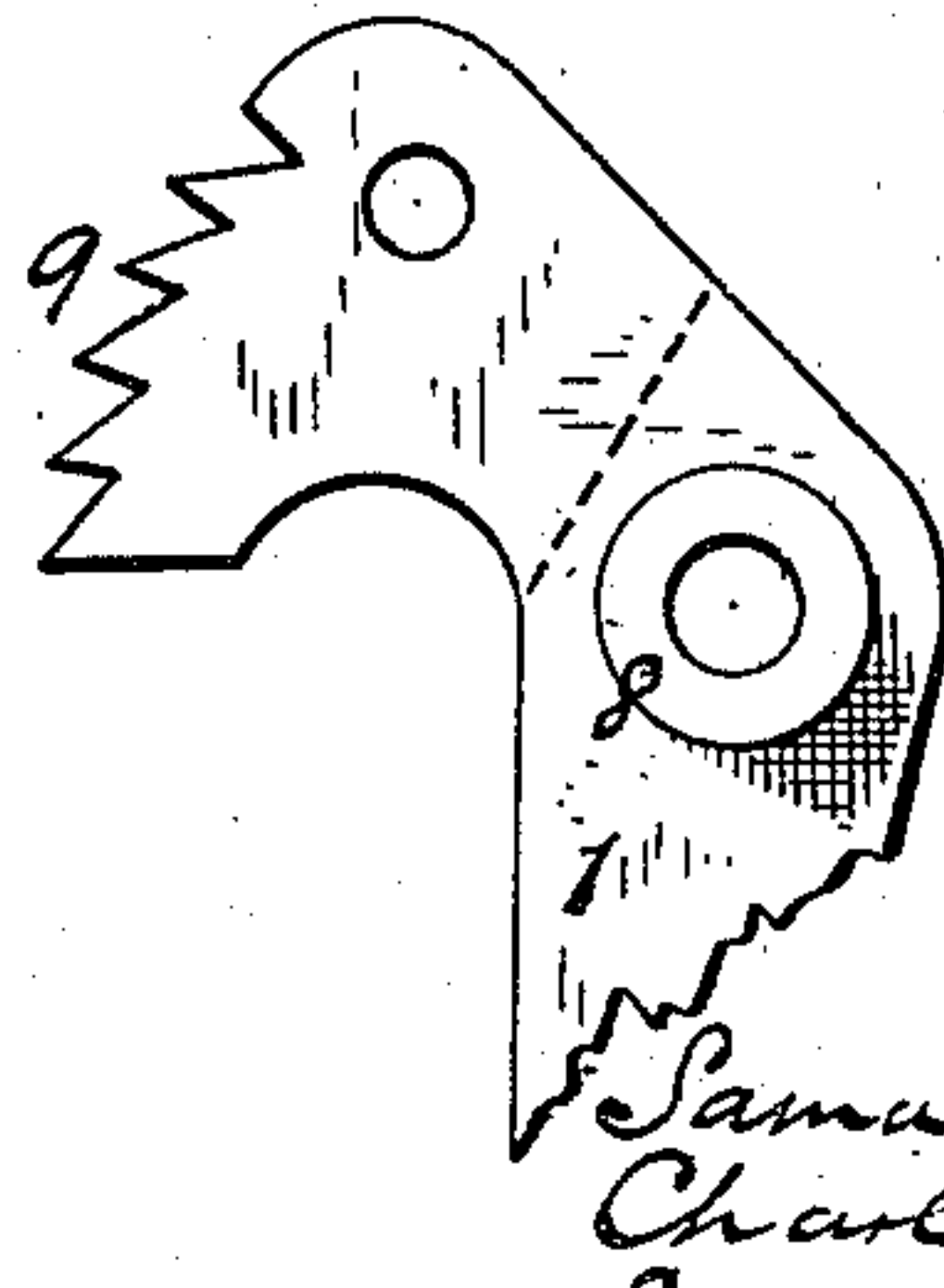
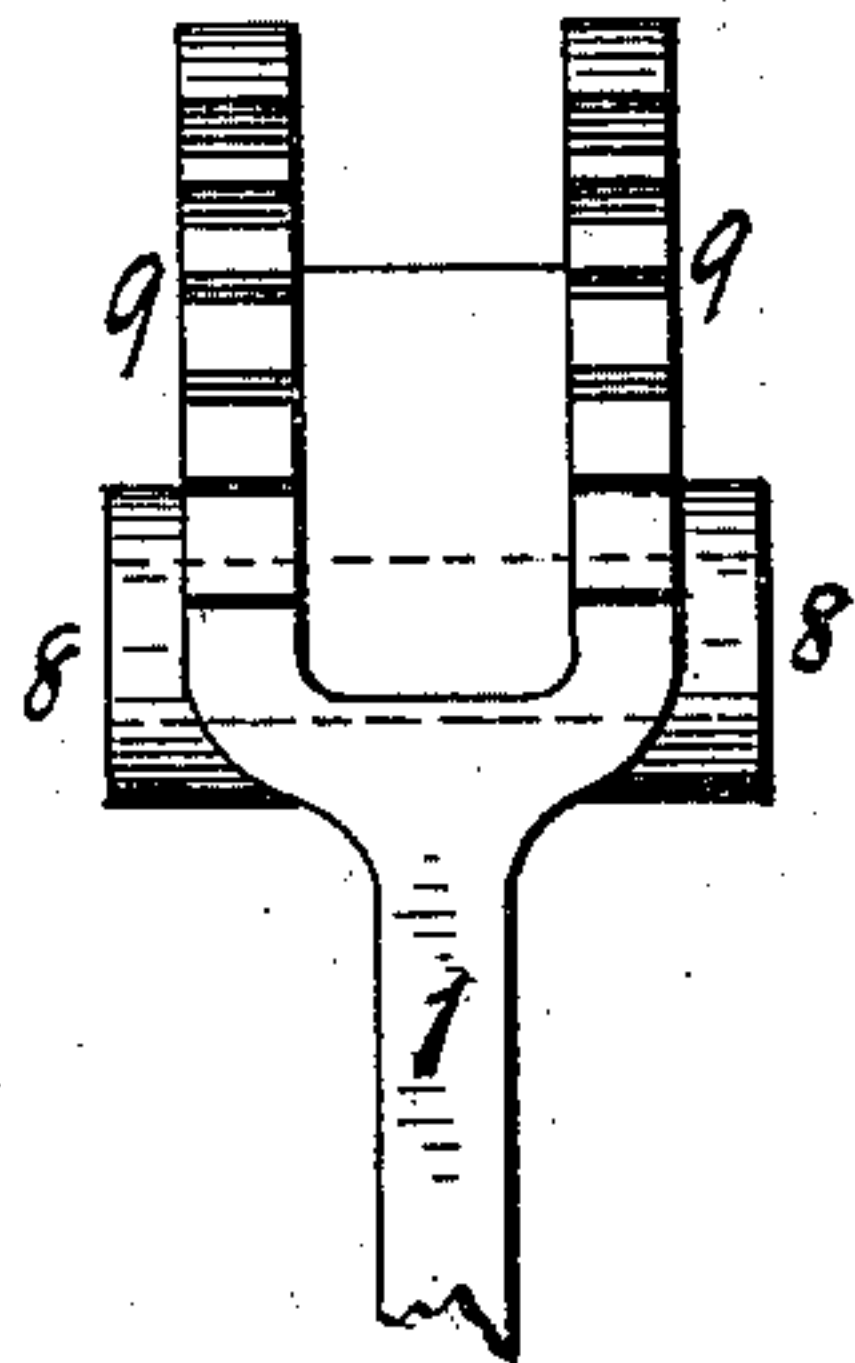


Fig. 6-

WITNESSES
F. L. Ourand,
H. B. Houton.

INVENTORS
Samuel W. McMunn,
Charles J. Schiller,
Edward B. Leigh
by F. W. Rutter, Attorney

UNITED STATES PATENT OFFICE.

SAMUEL WORTHINGTON McMUNN, CHARLES JOHN SCHILLER, AND EDWARD BAKER LEIGH, OF ST. LOUIS, MISSOURI, ASSIGNORS TO THE AMERICAN BRAKE COMPANY, OF SAME PLACE.

LOCKING MECHANISM FOR CAR-BRAKES.

SPECIFICATION forming part of Letters Patent No. 300,101, dated June 10, 1884.

Application filed September 14, 1883. (No model.)

To all whom it may concern:

Be it known that we, SAMUEL W. McMUNN, CHARLES J. SCHILLER, and EDWARD B. LEIGH, citizen of the United States, residing at St. Louis, in the State of Missouri, have invented certain new and useful Improvements in Locking Mechanism for Automatic Car-Brakes; and we do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation, partly in section, of a portion of a car and a truck having our invention applied. Fig. 2 is an enlarged transverse section of the same back of the draw-bar, showing a front view of the locking mechanism. Fig. 3 is an enlarged detail side view of the cheek plates and locking dog or pawl. Fig. 4 is a front view of the same. Fig. 5 is a front, and Fig. 6 a side view of the upper portion or arm of the jawed lever.

Like letters refer to like parts wherever they occur.

Our invention relates to mechanism for automatically locking and releasing the brakes of automatic car-brake mechanism.

A difficulty which has been found to exist in operating automatic car-brakes is that though when the motion of the train is first arrested the impact of the cars, due to the momentum of the train, will apply the brakes with full power, yet as the train slacks up the brakes are gradually released or the power decreased until finally the train will move through some distance comparatively uncontrolled by the brakes before it finally comes to a standstill, and when it is finally at rest the brakes are all automatically released. The first feature is objectionable, as it prevents short stops, which are sometimes necessary, and the second is objectionable in case the train is stopped on a downgrade. In most, if not all, automatic brake mechanism the brakes are operated from a movable draw-bar or equivalent device (movable buffers, for instance) through intermediate mechanism; and we propose, first, to lock said intermediate

mechanism by a locking device, so as to hold the brakes, when once set, by the movement of the draw-bar or like device, so as to obtain the full and continued power of the brakes as first applied; and, secondly, to automatically release said locking mechanism by the reverse motion of the draw-bar or its equivalent, so that the brakes will be automatically released, when so desired.

In describing the locking mechanism it will be necessary, first, to briefly describe mechanism for automatically applying the brakes; and in doing so we shall describe a simple mechanism which we have found very effective, and admirably adapted for use with our locking mechanism; but we do not intend to herein claim such brake mechanism; neither do we intend to limit our invention to use with such devices.

We will now proceed to describe our invention more fully, so that others skilled in the art to which it appertains may apply the same.

In the drawings, A indicates a car-body; B, the draft-timbers; C, a movable draw-bar; D, the truck; E, the brake-beams, having shoes F suspended by the usual hanger-links, f, from the car-body A; g, a rod attached at one end to one brake-beam, and at the opposite end to a lever, G, pivoted on the other brake-beam, the long arm of the lever G being connected by a rod, H, to the usual shaft and hand-wheel, I, so that the brakes can be operated by hand, if desired.

K indicates the car-axle, secured to which by a clamp-collar, k, is a centrifugal governor having the governor-balls l pivoted on the collar and held parallel with the axle by springs m.

n indicates a sliding collar, also arranged on the axle K, and connected to the governor-balls l by straps or toggle-links o, so that the sliding collar will be drawn toward the wheel, when the balls l are driven from the shaft by centrifugal force.

p indicates a bracket secured to the truck-timbers and projecting toward the axle K, having pivoted on its extremity a bifurcated or forked lever, r, the forks of which inclose

the axle K in the path of the sliding collar *n*, and the opposite end of said lever *r* being coupled by a link or rod with a bell-crank rod or rock-shaft, *s*, journaled on one of the draft-timbers B, as at *t*. The bell-crank rod or rock-shaft has two arms projecting at right angles to each other, one of which is connected to the long arm of the forked lever *r*, as before specified, while the other is connected by a rod or link, *u*, with a latch, *v*, pivoted in a jawed lever, 1.

2 indicates cheek-plates secured to the draft-timbers B B, just back of the movable draw-bars C. These cheek-plates have at their upper ends slots or bearings 3 for the journals of a dog or pawl, 4, and are perforated below, as at 5, for the passage of the pivot-bolt of lever 1.

1 indicates a bent lever of general L form, bifurcated or provided with jaws on the short arm, between which is pivoted the latch *v*, said jawed lever 1 being pivoted at its angle, as at 6, and connected by its long or pendent arm with the brake-lever G by a rod, 7. In order that the lever 1 may fit snugly between the cheek-plates 2, bosses 8 are cast on the lever, and in addition thereto washers may be employed, if found necessary. The face of the short arm of lever which stands back of the movable draw-bar is rounded and provided with ratchet-teeth, as at 9, upon one or both jaws, as preferred.

4 indicates a dog or pawl bifurcated, as at 11, to permit the passage of latch *v*, and provided with journals 12, which are received in the notches or open slots 3 of the cheek-plate, the dog being secured therein by pins 13 or equivalent means. The pawl 4 is curved to the arc of a circle, or to conform to the curved face of lever 1, and is provided on its concave surface with teeth 14, which engage with the ratchet 9 on the face of lever 1.

15 indicates a trip-chain, which is connected at one end to the pawl 4 and at the other to the movable draw-bar C, its length being such that though some movement of the draw-bar outward is permitted, yet the continued movement of the draw-bar will stretch the chain 15 and trip the pawl 4, thus releasing the lever 1.

The devices, being of the general character specified, will operate as follows: When the train is at rest, the several devices will occupy the positions shown in the drawings; but when the train has reached a sufficiently high rate of speed the centrifugal force will drive the governor-ball *l* away from the axle, which draws the sliding collar *n* toward the axle, permits the short arm of the forked lever *r* to follow, rotating the rock-shaft *s*, and permitting the latch *v* to drop back of the draw-bar C. If now the movement of the train is suddenly checked, the impact of the cars will force in the draw-bars, which, acting on lever 1, forces the short arm back and the long arm

forward, applying the brakes through rod 7, with a force proportionate to the momentum of the train. As the short arm of lever 1 is rocked back and up, the pawl 4 drops down and back, its teeth 14 engaging with the lowest ratchet-tooth which it reaches on ratchet 9, thus locking the lever 1, and consequently the brakes, with all the power acquired from the first impact of the cars. The train is consequently brought speedily to a full stop, and not gradually, as in cases where the brakes are relieved by the slacking up of the train.

So long as the draw-bars C remain in or are only slightly drawn out, the pawl 4 retains its hold and the brakes remain locked or applied with full power; but as soon as the draw-bar is extended it draws upon trip-chain 15, which trips the pawl 4 and releases the lever 1, thus automatically releasing or taking off the brakes.

It is evident from the foregoing description that by drawing out or stretching the train slightly, the brakes may be released at any moment; and, on the contrary, by forbearing to draw out the train after the brakes have once been locked, the full braking force may be kept on the train, where it is desirable to do so—as, for instance, when standing on a downgrade.

The advantages of our invention are, first, that the full braking-power acquired from the momentum of the train when the brakes are first applied can be retained as long as desirable; secondly, that after the motion of the train is arrested the brakes remain in operation until it is desired to release them; and, thirdly, a train can be brought to a full stop in a much shorter time and space than by automatic brakes not so supplied with locking mechanism.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

1. The combination, with automatic car-brake mechanism, of an automatic locking device consisting of a gravitating pawl pivoted to a fixed part of the car-frame, and adapted to engage and lock the brake-actuating mechanism when the brakes have been applied, substantially as and for the purposes specified.

2. The combination, with a movable draw-bar, of a lever for actuating the brakes, said lever provided with a ratchet, and an automatic pawl pivoted to a fixed part of the car-frame, and adapted to engage with the ratchet of the brake-lever, substantially as and for the purposes specified.

3. The combination, with automatic brake mechanism, of a movable draw-bar, an automatic pawl for locking the brake mechanism when the brakes are applied, and means for connecting the free end of the pawl directly to the draw-bar, substantially as and for the purpose specified.

4. The combination, with brake mechanism
for applying the brakes, of a ratchet-faced
lever pivoted in rear of the draw-bar and
actuated thereby, a gravitating dog or pawl
5 arranged to engage with the ratchet-faced
lever, a movable draw-bar, and a pawl-trip
actuated by the draw-bar, substantially as and
for the purposes specified.

In testimony whereof we affix our signa-

tures, in presence of two witnesses, this 11th 10
day of September, 1883.

SAMUEL WORTHINGTON McMUNN.
CHARLES JOHN SCHILLER.
EDWARD BAKER LEIGH.

Witnesses:

E. S. WARNER,
JOHN B. GRAY.