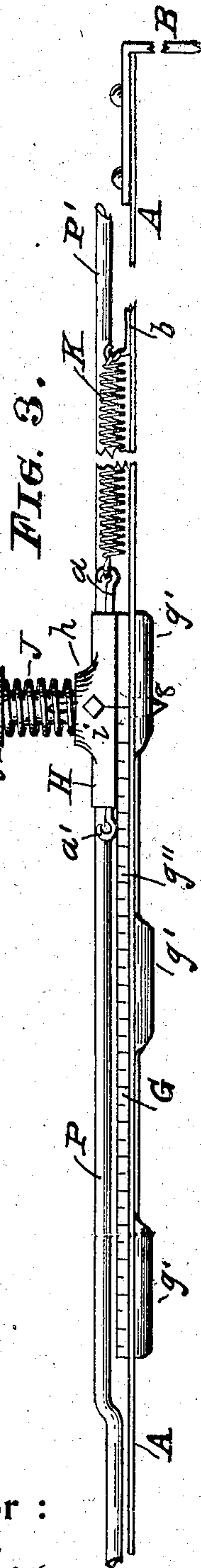
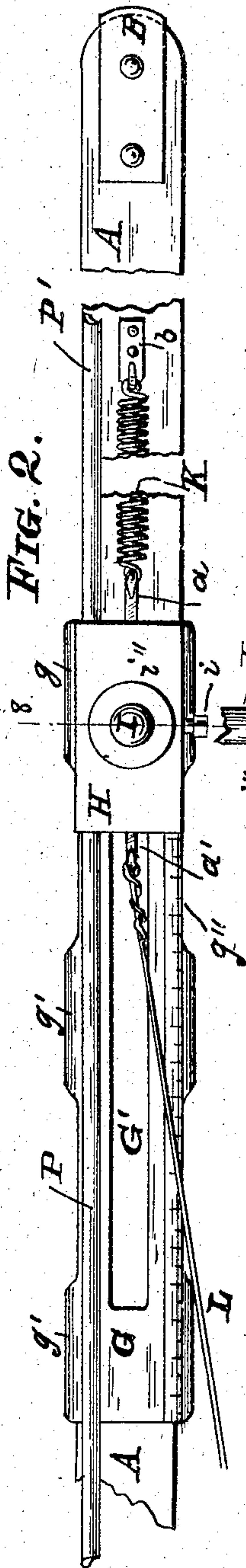
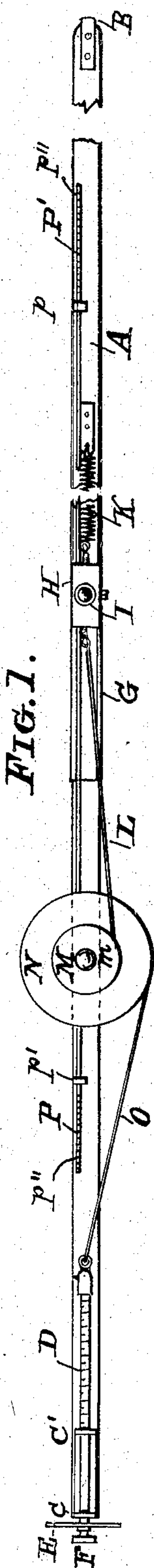
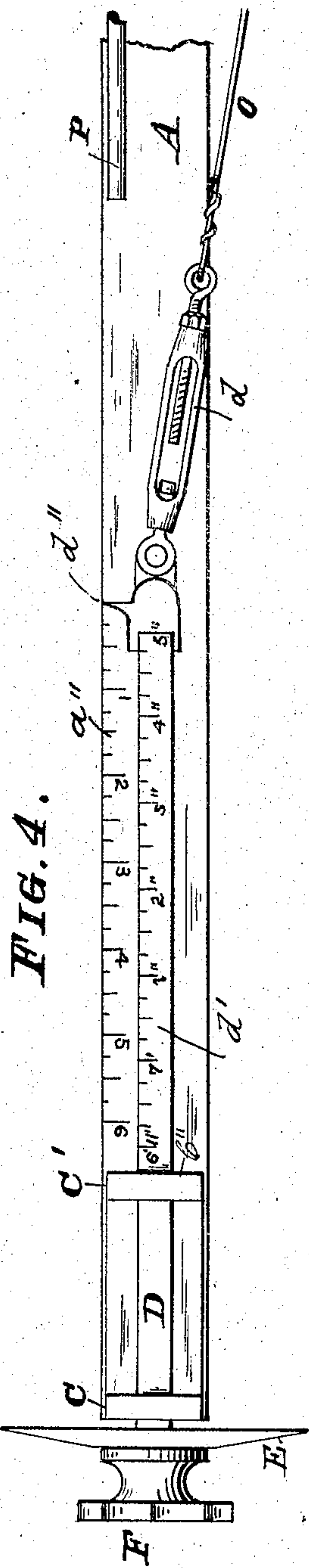


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CAR AXLE GAGE.

APPLICATION FILED NOV. 21, 1904.

3 SHEETS—SHEET 1.



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No. 791,576.

PATENTED JUNE 6, 1905.

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3 SHEETS—SHEET 2.

FIG. 5.

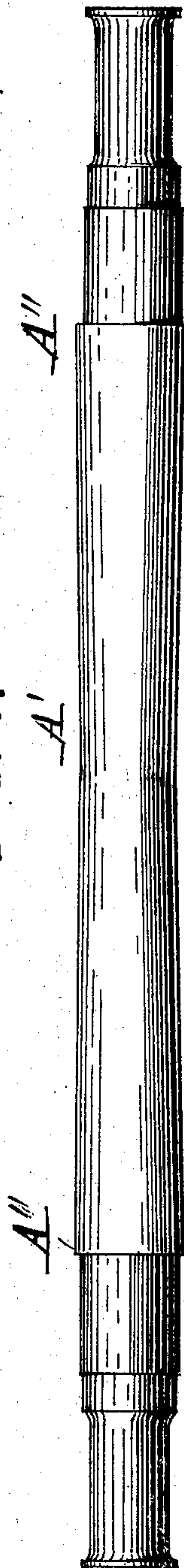


FIG. 6.

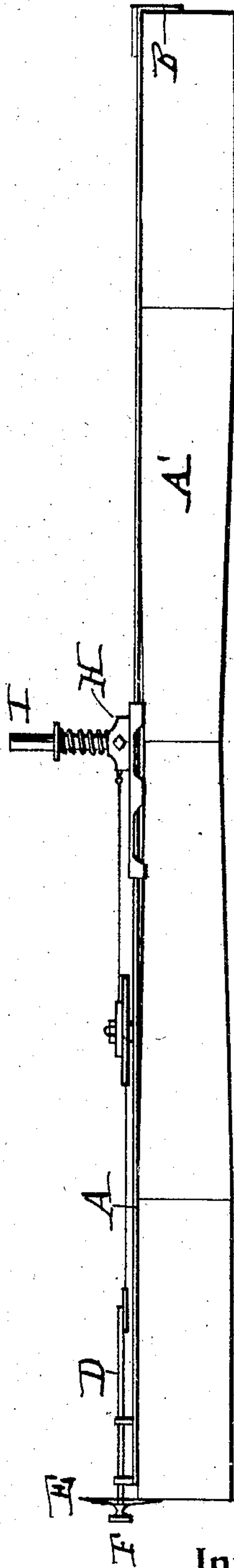
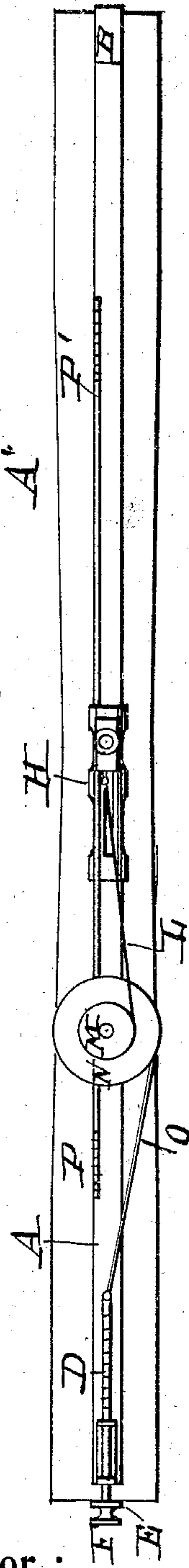


FIG. 7.



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3 SHEETS—SHEET 3.

FIG. 8.

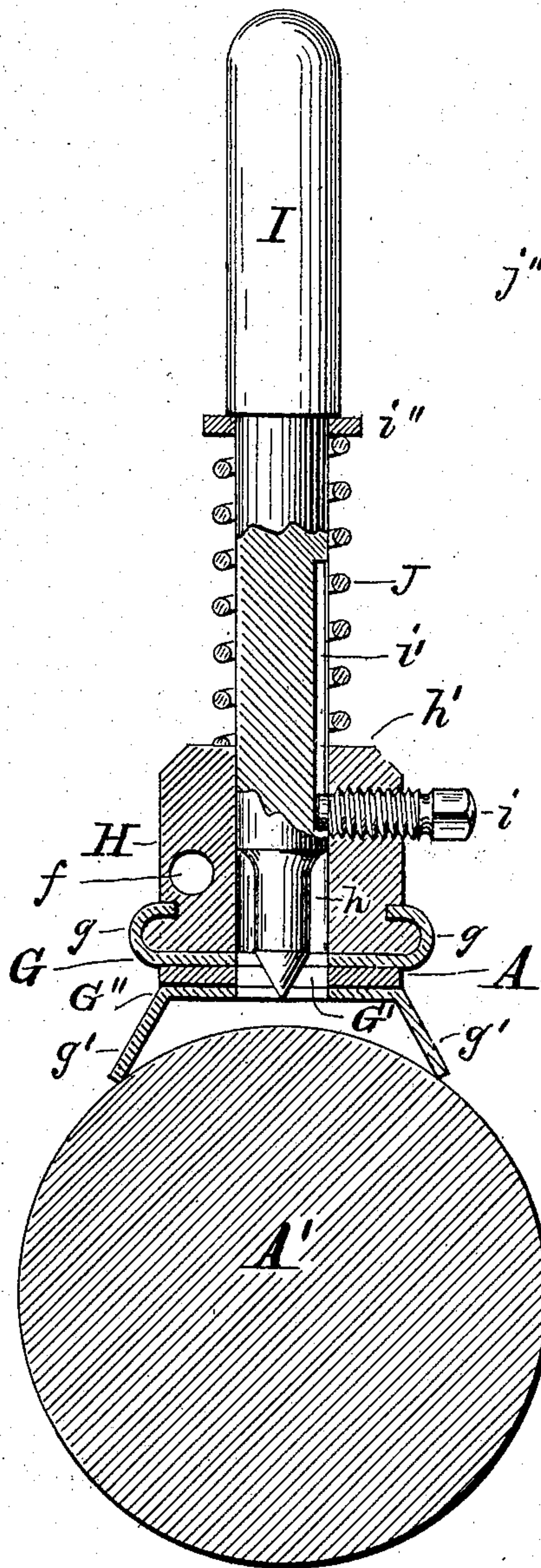
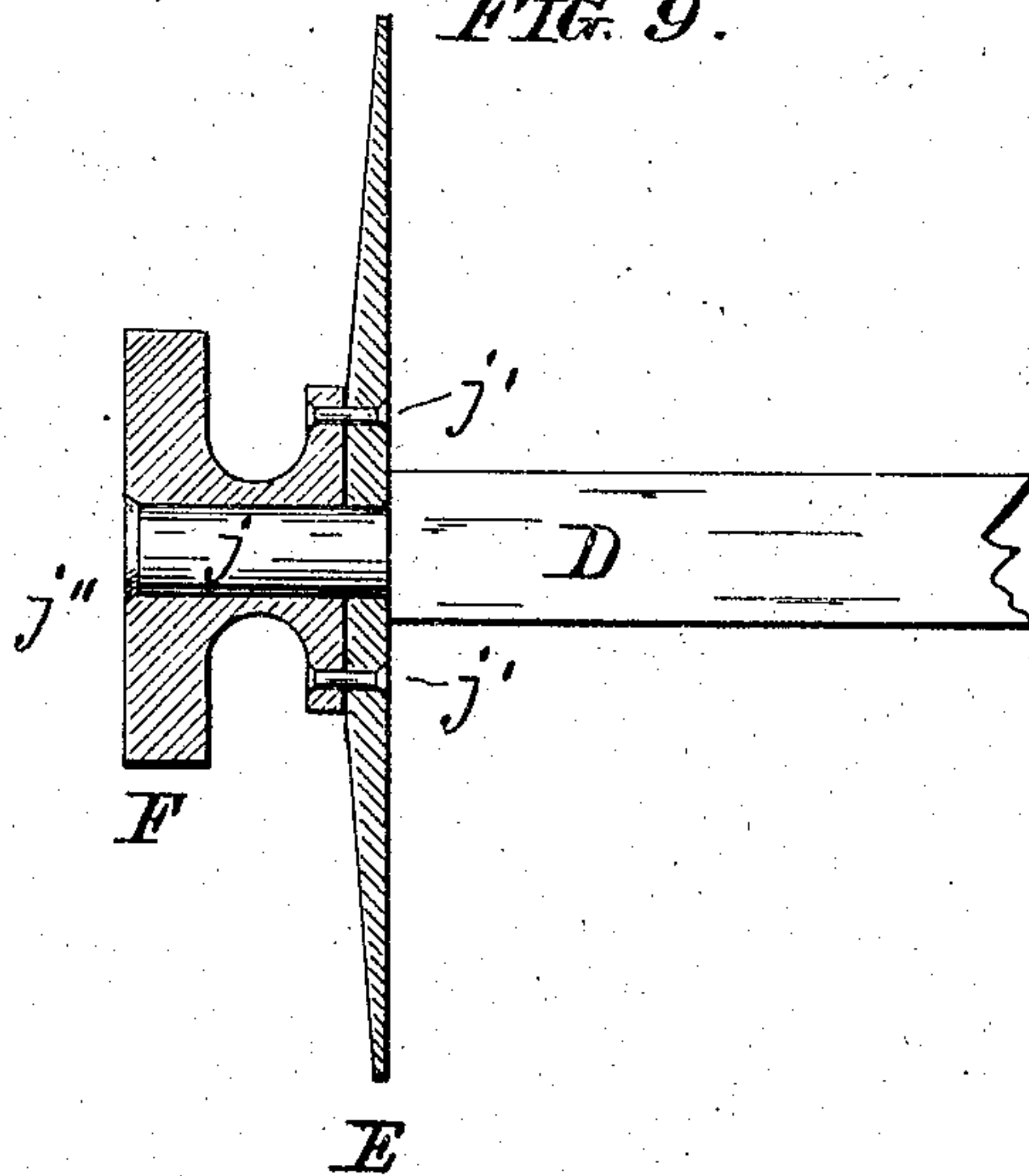


FIG. 9.



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UNITED STATES PATENT OFFICE.

GEORGE RIEKINGER, OF BUFFALO, NEW YORK.

CAR-AXLE GAGE.

SPECIFICATION forming part of Letters Patent No. 791,576, dated June 6, 1905.

Application filed November 21, 1904. Serial No. 233,686.

To all whom it may concern:

Be it known that I, GEORGE RIEKINGER, a citizen of the United States, and a resident of Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Car-Axle Gages; and I do hereby declare that the following description of my said invention, taken in connection with the accompanying sheet of drawings, forms a full, clear, and exact specification, which will enable others skilled in the art to which it appertains to make and use the same.

This invention has general reference to improvements in gages for laying out the wheel-seats and journal-bearings of railway-car axles; and it consists, essentially, in the novel and peculiar combination of parts and details of construction, as hereinafter first fully set forth and described and then pointed out in the claims.

In the drawings already referred to, Figure 1 is a plan of this improved gage. Fig. 2 is a plan of a portion of this gage drawn to an increased scale. Fig. 3 is a side elevation of the same. Fig. 4 is a plan of an end portion of the gage. Fig. 5 is a plan of a finished car-axle. Fig. 6 is an outline elevation of the same with the gage in position, the said gage being shown in a slightly-modified form with respect to the saddle and the carriage guide-plate. Fig. 7 is a plan of the same. Fig. 8 is a transverse sectional elevation of the carriage and the axle in line 8 8 of Figs. 2 and 3. Fig. 9 is a sectional view of a portion of the gage-bar and swiveling-blade and illustrating details of construction thereof.

Like parts are designated by corresponding letters of reference in all the figures.

The object of this invention is the production of an accurate and efficient gage for laying out railway-car axles prior to turning them from a forging or for returning the same. To attain these results, I construct this gage essentially of a strip of metal A, which I shall hereinafter term the "scale." It is made from a bar of steel of proper width and thickness and of a length approximately that of the shortest standard railway-car axle, or less than seven feet. One end of this gage A is provided with a fixed hook B, and on the

opposite end I arrange two guides C C', having apertures for the passage of a gage-bar D, movably arranged in these guides C C', and carrying at its end a blade E, fixed to a knob F, serving as a handle, said knob and blade being secured one to the other by means of rivets j' , Fig. 9, and constructed to revolve upon the end of the gage-bar D by forming a pin or journal j on the end of said gage-bar D and loosely fitting said knob and blade upon this journal j and preventing them from removal therefrom by slightly upsetting the end of this spindle j at j'' , as fully illustrated in said Fig. 9.

G is a guide-plate secured to the upper surface of the scale A in about its middle in any suitable manner and provided with a slot G', corresponding with a like slot in the scale A, for the object hereinafter to be referred to. This guide-plate G has upwardly and inwardly turned longitudinal-edged forming-guides g , within which is movably arranged a sliding carriage H, it having its lower lateral edges grooved to engage the guides g on the guide-plate. It has a central bore h for the reception of a center-punch I, which is retained in the bore of the carriage by a set-screw i engaging a groove i' in the said center-punch, the latter being normally kept in an elevated position by a coil-spring J, surrounding the center-punch and bearing with one end against a collar i'' on the center-punch I and with its other end upon the boss h' on the carriage H.

On the carriage H there are two hooks $a a'$, the former to engage one end of a coil-spring K, the other end of which engages a hook b on the scale A. This spring when contracted keeps the carriage normally at one end of the guide-plate G, where the lower end of the center-punch, bearing against the end of the slot G', prevents further retraction of the carriage H. The other hook, a' , engages a preferably steel-wire rope or cord L, which passes to a small cord sheave or pulley M and is suitably fastened thereto. This sheave M is fastened to or formed in one piece with a second sheave N of twice the diameter of the sheave M, both sheaves being mounted upon a stud or spindle m , upon which they

revolve. To the sheave N is secured a cord O, which leads and is secured to the end of the gage-bar D by a turnbuckle d of usual construction, and by means of which the two
 5 cords L and O are tensioned and the center-punch I, and with it the carriage H, located midway between the hook B and the blade E.

Upon the gage-bar D there is placed a scale of inches and fractions of inches d' , commencing with a graduating-mark "6' 11", which is the normal distance between the hook B and the blade E, and proceeding to a graduating-mark "7' 5", which is the extreme length of a standard car-axle, the scale being
 10 read along the outer edge C' of the guide C'. There is also upon the end of the scale A a graduation of inches d'' , Fig. 4, by which a pointer d'' on the gage-bar D indicates the distance in inches and fractions of inches between the said hook B and the blade E beyond the normal distance six feet and eleven inches. This latter graduation and the pointer are, however, auxiliary to the graduation on the scale-bar D and may be dispensed with, if desired.
 25

To the carriage H there are secured two rods P P', projecting in opposite directions from the carriage and passing through guides $p p'$, Fig. 1, said rods being either two pieces
 30 or one single bar passing through a hole f , Fig. 8, in the carriage H. These rods have their ends graduated in inches and fractions of inches p'' , as hereinafter to be referred to. The distance from end to end of the two rods P P' combined is four feet and six inches, or the standard distance between the flanges of the wheels of a railway-car axle when in position, and the scales p'' are read from the two ends toward one another, the object of which
 40 will hereinafter more fully appear.

One of the edges of the guide-plate is graduated at g'' into inches and fractions thereof, corresponding to the graduations d' on the gage-bar D and reading from "3' 5½" on,
 45 which dimension is the one-half of the distance between the hook B and blade E and is used to set the center-punch I exactly midway between said hook B and blade E by adjusting the turnbuckle d . (Shown in Fig. 4.)

G' is a saddle consisting of a plate secured to the under side of the scale A directly opposite the guide-plate G and provided with a slot corresponding to that in the said scale. This saddle has downwardly-projecting lugs g' , which are adapted to engage
 55 or straddle the axle-forging A' and to locate the scale in line with the center line of said axle-forging. In the present instance I have formed the guide-plate and the saddle of separate pieces; but when the guide-plate G is formed in the process of casting I may provide this casting with the lugs g' and dispense with a separate plate for the saddle, thereby simplifying the construction and reducing the cost of the apparatus.
 65

In the turning of a railway-car axle, as well as in the subsequent pressing on of the car-wheels, the dimensions are universally taken from a center-punch mark placed in the mid-length of the axle, and in laying out the journal-bearings, as well as the wheel-seats, the proper dimensions are taken from this center-punch mark. This has heretofore been done by scaling with a rule, and errors in measurements are of frequent occurrence. To avoid
 75 these errors is the object of this present invention, and I shall now proceed to describe the method employed in laying out an axle with this improved device.

An axle-forging A' being given and two
 80 wheels which are subsequently to be pressed upon the turned axle shown in Fig. 5, the workman takes my axle-gage, and, hooking one end, B, onto one end of the forging, he pulls out the gage-bar D by the knob F to
 85 hook the blade E onto the other end of the forging. Assuming this forging to be for a standard axle measuring seven feet and one-fourth of an inch over all and the forging to measure seven feet and one inch, or three-fourths of
 90 an inch oversize, the scale d' on the gage-bar D will indicate that length. At the same time the carriage H has been moved away from the hook end B of the scale A one-half of the distance to which the gage-bar D has been moved,
 95 thus locating the center-punch I exactly midway of the forging. The workman now strikes the center-punch with a hammer to place a distinct center-punch mark upon the forging. Assuming, further, that a dimensioned blue-print or drawing is furnished the workman giving all the essential dimensions of the axle to be produced, he next proceeds to locate the shoulders of the wheel-seats A'', Fig. 5. This
 100 dimension has to be ascertained from the car-wheels to be placed upon said axle, and it varies with different wheels, owing to the variations in the length of the projecting part of their hubs. Therefore the workman places a straight-edge across the wheel-flanges and
 105 measures the distance which the hubs project beyond these flanges. Further, assuming that this distance is one inch the workman counts one inch from the scale p'' on the ends of the rods P P' and marks the axle at these two
 115 points, which are the proper position of the wheel-seat shoulders, it being borne in mind that the rods P P' are of a length equal to the standard distance between the flanges of a standard car-axle and that the projecting
 120 portions of the two hubs of the particular wheels under consideration have been deducted from this length by counting off the projecting portions of the wheel-hubs in inches from the ends of the rods P P'. This device
 125 has now served its purpose and the workman removes it from the axle and commences to turn the same to the diameters required and up to the shoulders A'' of the wheel-seats. All other dimensions for the length of the jour-
 130

nal-bearings, &c., are measured from the wheel-seat shoulders, and thereby axles of correct dimensions readily obtained.

It will be observed that the relation on diameter of the two cord-pulleys M and N being as one is to two, the gage-bar D when pulled out one inch revolves the periphery of the larger pulley N also one inch, while the smaller pulley M revolves at the same time only one-half of that distance, and thereby moves the carriage H a like distance, so that whatever distance the gage-bar is moved the carriage will be moved only one-half of that distance, thereby always placing the center-punch I exactly midway between the hook B and the blade E.

Releasing the blade E after the gage-bar has been pulled out, the coil-spring K will return the bar D and carriage H to their normal positions.

In the diagrammatic drawing Fig. 6 I have shown the device in a slightly-modified form—that is to say, the saddle G' and the guide-plate G are shown to consist of a single piece provided with the lugs g' and the guides g for the carriage H. This modification cheapens the device somewhat without affecting its operation.

Having thus fully described this invention, I claim as new and desire to secure to me by Letters Patent of the United States—

1. An improved gage for laying out car-axles, consisting, essentially, of a scale; a hook on one end thereof; a carriage approximately central upon said scale; a movable center-punch in said carriage; a movable gage-bar on the other end of said scale; a hook or blade on said gage-bar, and means for moving the carriage by moving said gage-bar.

2. An improved gage for laying out car-axles, consisting, essentially, of a scale; a hook on one end of said scale; a movable hook on the other end of said scale; a carriage mechanism connected with the movable hook, and gage-rods projecting from said carriage in opposite directions, said rods having graduations at their ends.

3. In an improved gage for laying out car-axles, a scale of approximately the length of said axle; a hook on one end thereof; a movable hook at the other end; a carriage slidably arranged upon said scale about midway thereof; means actuated by said movable hook for moving the carriage one-half of the distance to which the movable hook is moved; a center-punch in said carriage, and means for returning the carriage to its normal position.

4. In an improved gage for laying out car-axles, a scale of approximately the length of said axle; a guide-plate approximately midway of said scale and provided with guides; a carriage upon said guide-plate engaging said guides; a movable center-punch in said carriage; means for moving the carriage in one

direction, and further means for returning the same to its normal position.

5. In an improved gage for laying out car-axles, a scale of approximately the length of a car-axle; a fixed hook on one end of said scale; a sliding gage-bar properly guided, at the other end of said scale; a swiveling hook or blade at the end of said gage-bar; a guide-plate approximately midway upon said scale and provided with guides; a carriage movable in said guides; a movable center-punch in said carriage; a coil-spring adapted to move said carriage in one direction; a pair of cord-sheaves journaled upon a stud on said scale and having relative diameters of one to two, and cords connecting said sheaves respectively with the carriage and the movable gage-bar.

6. In an improved gage for laying out car-axles, a scale; a saddle having lugs as described; a guide-plate approximately midway on said scale; a carriage adapted to slide upon said guide-plate; a center-punch in said carriage having a longitudinal groove; a screw in said carriage and engaging said groove; a coil-spring upon said center-punch and adapted to support said center-punch in an elevated position.

7. In an improved gage for laying out car-axles, a scale of approximately the length of a car-axle; a fixed hook on one end of said scale; a movable gage-bar at the other end of said scale; a blade on the end of said gage-bar; guides upon said scale adapted to engage said gage-bar, and means for returning said gage-bar to its normal position, said gage-bar being provided with graduations, as described.

8. In an improved gage for laying out car-axles, a scale of approximately the length of a car-axle; a guide-plate upon said scale; a carriage upon said guide-plate; a center-punch in said carriage; a coil-spring attached to the said carriage and adapted to return the same to its normal position; rods projecting from said carriage and parallel with said scale, and having end graduations as described; a fixed hook on one end of said scale; a movable hook on the other end thereof; a gage-bar to which said movable hook is secured and which is provided with graduations, and means for connecting the said gage-bar with said carriage and moving it over a space one-half of that over which said movable hook is moved.

9. In an improved gage for laying out car-axles, a scale of approximately the length of a car-axle; means on the said scale for engaging the ends of said axle; a movable carriage upon said scale; a center-punch in said carriage; two connected sheaves journaled upon a stud on said scale, one of said sheaves being twice the diameter of the other; means for connecting the larger sheave with one of said means for engaging one end of said axle, and means for connecting the smaller sheave with the carriage.

10. In a gage for laying out car-axles, a scale
of approximately the length of said axle, said
scale being made of a metallic bar having on
one end a fixed hook and on its other end a
5 movable hook; a saddle approximately mid-
way upon said bar and having lugs adapted
to straddle said axle and locating said scale
longitudinally thereupon; a guide-plate; a car-
riage upon said guide-plate and adapted to
10 slide thereon, and means for moving said car-
riage in one direction one-half of the distance
to which said movable hook is moved, said
means consisting, essentially, of two connected

sheaves one of which is twice the diameter of
the other; cords, one of which connects the 15
carriage with the smaller sheave and the other
connecting the movable hook with the larger
sheave, and means for varying the length of
one of said cords.

In testimony that I claim the foregoing as 20
my invention I have hereunto set my hand in
the presence of two subscribing witnesses.

GEORGE RIEKINGER.

Witnesses:

THOMAS RIEKINGER,
PETER KERL, Jr.