

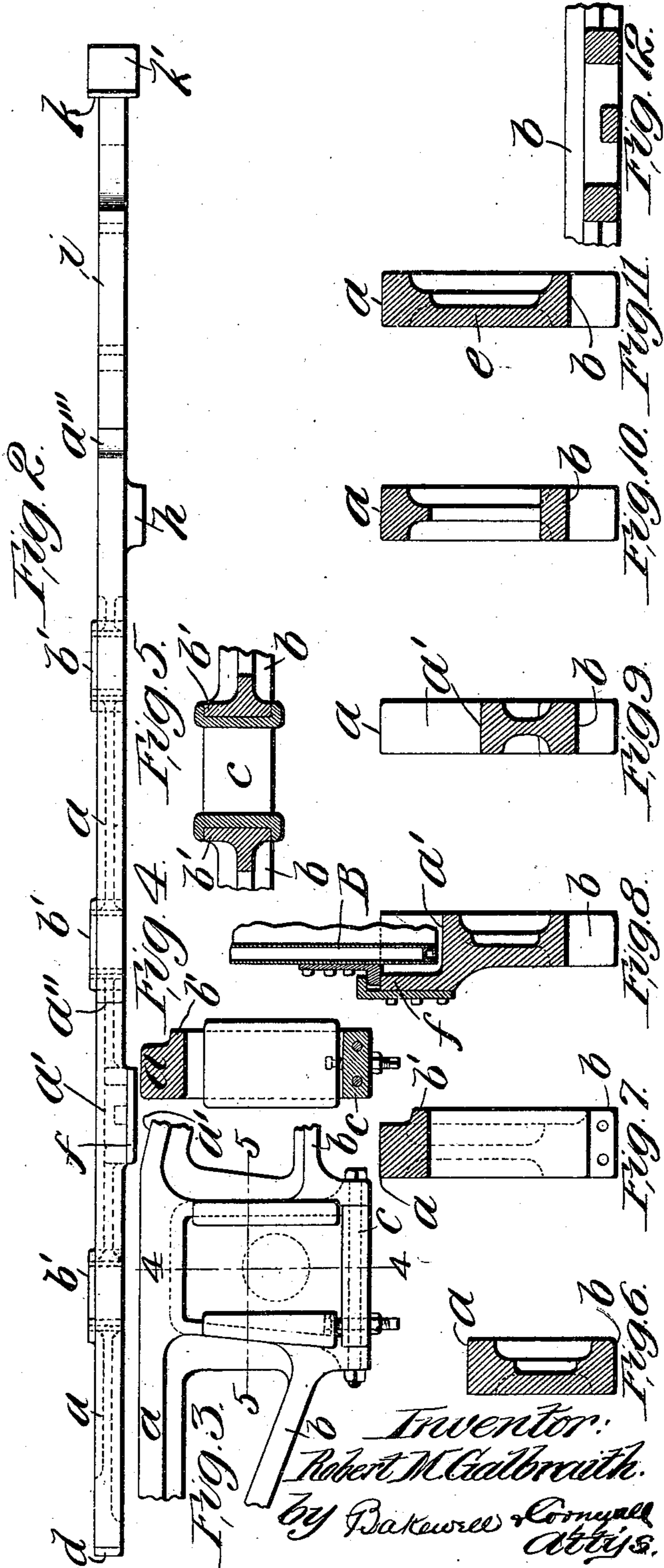
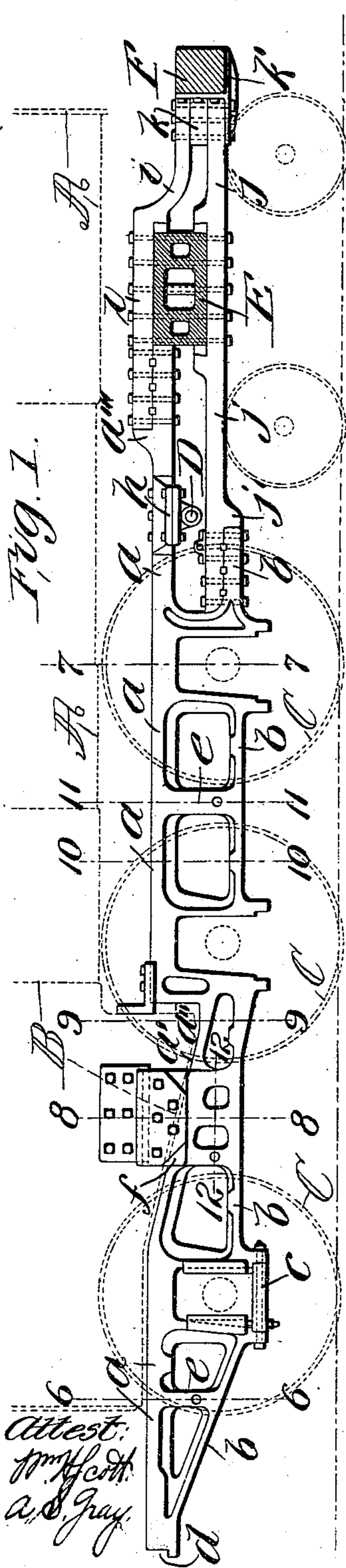
No. 647,958.

Patented Apr. 24, 1900.

R. M. GALBRAITH.  
LOCOMOTIVE FRAME.

(Application filed May 1, 1899.)

(No Model.)



Attest:  
J. M. Heath.  
A. C. Gray.

Inventor:  
Robert M. Galbraith.  
by Bakewell & Company  
Attys.

# UNITED STATES PATENT OFFICE.

ROBERT M. GALBRAITH, OF PINE BLUFF, ARKANSAS.

## LOCOMOTIVE-FRAME.

SPECIFICATION forming part of Letters Patent No. 647,958, dated April 24, 1900.

Application filed May 1, 1899. Serial No. 715,166. (No model.)

*To all whom it may concern:*

Be it known that I, ROBERT M. GALBRAITH, a citizen of the United States, residing at Pine Bluff, county of Jefferson, State of Arkansas, have invented a certain new and useful Improvement in Locomotive-Frames, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side elevational view of my improved locomotive-frame, said view also illustrating in dotted lines the wheels, boiler, ash-pan, &c., of a locomotive in their relative positions to said frame. Fig. 2 is a top plan view of my improved locomotive-frame detached from the locomotive. Fig. 3 is an enlarged detail side elevational view of one portion of my improved locomotive-frame, being that part which has formed thereon the columns for the journal-box. Fig. 4 is a vertical sectional view on the line 4 4 of Fig. 3. Fig. 5 is a horizontal sectional view on the line 5 5 of Fig. 3. Figs. 6, 7, 8, 9, 10, and 11 are vertical sectional views of my improved locomotive-frame, said views being taken on the indicated lines bearing the numerals corresponding to the several figures; and Fig. 12 is a horizontal sectional view on the line 12 12 of Fig. 1.

This invention relates to a new and useful improvement in locomotive-frames; and it consists, generally stated, of a homogeneous cast-metal body, preferably cast-steel, forming the main part of the frame, which portion is preferably of I-beam form in cross-section throughout, the web portion being omitted at various points for the purpose of lightening the same.

The balance of my improved locomotive-frame consists of separated metallic pieces, preferably cast, bolted and keyed to the main body of said frame, as will hereinafter be more fully explained.

The object of this present invention is to provide a frame for a locomotive which will be strong and light in proportion to its strength and one which by being homogeneously cast, preferably of steel, can be so shaped as to

conform to the various requirements of a frame of this character, or, in other words, by casting this frame in a mold I am enabled to form on said frame various lugs or projections and otherwise so shape the frame that braces and other separate pieces are dispensed with, as will be obvious.

The essential features of this invention reside, first, in forming the main body of the frame of an integral casting and providing thereon suitable inverted-U-shaped recesses rising from the bottom thereof for the reception of the usual journal-boxes; second, in providing means for supporting the fire-box, which consists in providing a suitable inclined face in the upper edge of the main body of the frame for receiving the inclined bottom of said fire-box and also in providing an upright lug or flange on said body for cooperating with means secured to said fire-box for permitting the longitudinal movement of said fire-box due to expansion and contraction, also in providing a shoulder at the juncture of the lower end of the incline in the frame before referred to for receiving the end thrust of said fire-box in its forward longitudinal movement, and also in providing a flat face just forward of and above the incline in said frame for supporting an angle-iron-shaped piece carried by the rear face of said fire-box, which also assists in supporting the same and at the same time permits of the aforesaid longitudinal movement of said fire-box due to expansion and contraction; third, in the novel means employed for forming the forward portion of the locomotive-frame, the same consisting of two independent pieces of metal, preferably cast, which are bolted and keyed to the front end of the integral casting forming the main body of the frame, so that they will firmly hold the cylinders in position, said cylinders being further strengthened by abutting against the main frame; fourth, in the novel construction of the means for supporting the buffer-beam, and, finally, the invention consists in the construction, arrangement, and combination of the several parts, all as will hereinafter be described and afterward pointed out in the claims.

In the drawings, *a* indicates what I will term the "upper" bar of the frame, which is

so shaped in cross-section as to accommodate itself to the various conditions it is to meet; but by preference a T-shaped cross-section is employed. This upper bar at  $a'$  is formed with an inclined portion for receiving the fire-box of the boiler, said inclined portion being deepest at its forward end, so as to form an abrupt shoulder  $a''$ , against which the fire-box abuts.

$b$  indicates what I will term the "lower" bar of the frame, whose cross-section is substantially an inverted-T shape. This lower bar is interrupted at desirable points by inverted-U-shaped openings, which form pedestal-jaws for the reception of the box of the driving-wheel axles. These pedestal-jaws extend inwardly at  $b'$  (see Figs. 2, 4, 5, and 7) to provide extended bearing-faces of the wedges and shoes. The lower ends of the pedestal-jaws are connected by thimbles  $c$ , which are received in seats on each side thereof, said thimbles being held in position by through-bolts and said thimbles also affording a support for the wedge-operating bolt. The rear end of bar  $b$  is inclined, as shown in Fig. 1, for the purpose of strengthening the frame at this point and also for adding rigidity to the support of a cross-bar seated in a recess  $d$  in the rear end of the frame, on which cross-bar are carried the cab-brackets. (Not shown.)

$e$  indicates connecting-bars of the frame, which are preferably vertically disposed and provided with suitable openings to afford means of adjustment for the brake-hangers. (Not shown.)

$f$  indicates a vertical projection preferably placed midway the length of the inclined portion  $a'$  and laterally displaced relative to the frame proper, which projection affords a support for an L-shaped bracket bolted to the fire-box, as shown in Fig. 4. A retaining-bracket of inverted-L shape is secured to the projection  $f$  and embraces the fire-box bracket, so as to hold the same against vertical movement, but to permit longitudinal movement in both directions to accommodate the expansion and contraction of the boiler and fire-box relative to the frame.

$h$  indicates a lateral projection extending from the frame, which offers an extended bearing for the rocker-shaft of the valve-motion.

$i$  indicates an extension secured to the forward end of the upper bar  $a$ , said extension abutting against a projection  $a'''$ , located near the end of said upper bar, said extension being keyed thereto and held in its keyed position by through-bolts, as shown in Fig. 1.

$j$  indicates a forward extension of the lower bar, which is keyed in position and secured by through-bolts, the rear end of this forward extension abutting against the forward pedestal-jaw, while a projection  $j'$  extends downwardly and abuts against the forward end of the lower bar  $b$ . By this arrangement the inwardly-projecting portion of the cylinder

is received between the bars  $i$  and  $j$ , said cylinder projection abutting directly against the upper bar  $a$  and being held in position by suitable through-bolts and keys, as is well understood. The extreme forward ends of the extensions  $i$  and  $j$  are spaced by a casting  $k$ , which casting is secured in position by suitable bolts and provided with a shelf  $k'$ , on which is received the buffer-beam, (see Fig. 1,) said buffer-beam resting against the forward ends of said extension. In order to illustrate the relative position of the parts of a locomotive with respect to my improved frame, I have shown part of the same in dotted lines in Fig. 1 and part in section, in which A indicates the boiler, B the fire-box, C the drive-wheels, D the rock-shaft, E the cylinder projection, and F the buffer-beam.

I am aware that minor changes in the arrangement, construction, and combination of the several parts of my device can be made and substituted for those herein shown and described without in the least departing from the nature and principle of my invention.

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

1. The herein-described locomotive-frame comprising upper and lower portions, which are arranged substantially parallel to each other, and connected by transversely-disposed members, some of which transversely-disposed members extend laterally beyond the frame proper to provide the pedestal-jaws with extended bearing-faces and to reinforce the frame, all of said parts being made in one piece; substantially as described.

2. The herein-described locomotive-frame comprising a casting having the following component parts; laterally-extended pedestal-jaws, pedestal thimble-seats, brake-hanger supports, a fire-box support, and a lateral projection forming an extended rocker-block bearing or support; substantially as described.

3. The herein-described locomotive-frame, comprising upper and lower portions which are arranged substantially parallel to each other, and integral transversely-disposed members which extend laterally beyond the frame proper to provide pedestal-jaws with extended bearing-surfaces which reinforce and give strength to the frame.

4. The herein-described locomotive-frame, comprising upper and lower portions which are arranged substantially parallel to each other, and integral transversely-disposed members which extend laterally beyond the frame proper to provide pedestal-jaws with extended bearing-surfaces which reinforce and give strength to the frame in combination with thimbles which connect the jaws and are received in seats on each side thereof, through-bolts for holding said thimbles in position, a wedge, and a wedge-operating bolt supported in the thimble for adjusting the wedge.

5. The herein-described locomotive-frame

comprising a casting having the following integral component parts; an upper bar formed with an inclined portion on its upper face near its rear end and an abrupt shoulder in  
 5 advance of said inclined portion; a lower bar substantially horizontal and interrupted at different points by the pedestal-jaws; cross connecting-pieces, and thimble-seats in the lower ends of the cross connecting-pieces  
 10 which form the pedestal-jaws; substantially as described.

6. The herein-described locomotive-frame comprising a casting having the following integral component parts; an upper bar formed  
 15 with an inclined portion on its upper face near its rear end and an abrupt shoulder in advance of said inclined portion; a lateral projection *f* arranged about midway the inclined portion; a lower bar diverging from the  
 20 rear end of the upper bar to the rear pedestal-jaw, and thence continuing forwardly in a substantially-horizontal line, except where interrupted by pedestal-openings; and cross connecting-bars; substantially as described.

25 7. The combination with an engine-frame, of forward extensions keyed and bolted thereto, a cylinder projection embraced by said extensions and abutting directly against said frame, and a spacing-block between the forward  
 30 ends of said projection, said spacing-block being formed with a shelf for sup-

porting the buffer-beam; substantially as described.

8. The combination with an engine-frame whose forward extremities are of unequal  
 35 length, the upper of which is provided with a shoulder *a'''*, extension-bars *i* and *j*, the former of which abuts against the shoulder *a'''*, the latter of which is provided with a shoulder *j'* abutting against the frame, both of said  
 40 extensions being keyed and bolted to the frame proper and embracing a cylinder projection which abuts directly against the longer extension of the frame, and a spacing-block introduced between the forward extremities  
 45 of said extensions and provided with a shelf for supporting the buffer-beam; substantially as described.

9. The combination with the upper and lower bars of an engine-frame, of a spacing-  
 50 block introduced therebetween, a shelf projecting forwardly from said spacing-block for supporting the buffer-beam, and bolts for securing said spacing-block in position; substantially as described.

55 In testimony whereof I hereunto affix my signature, in the presence of two witnesses, this 21st day of April, 1899.

ROBERT M. GALBRAITH.

Witnesses:

J. E. BOYCE,  
 B. H. BROWN.