

No. 685,714.

Patented Oct. 29, 1901.

J. L. CRANDALL.
MARINE RAILWAY.

(Application filed June 25, 1901.)

(No Model.)

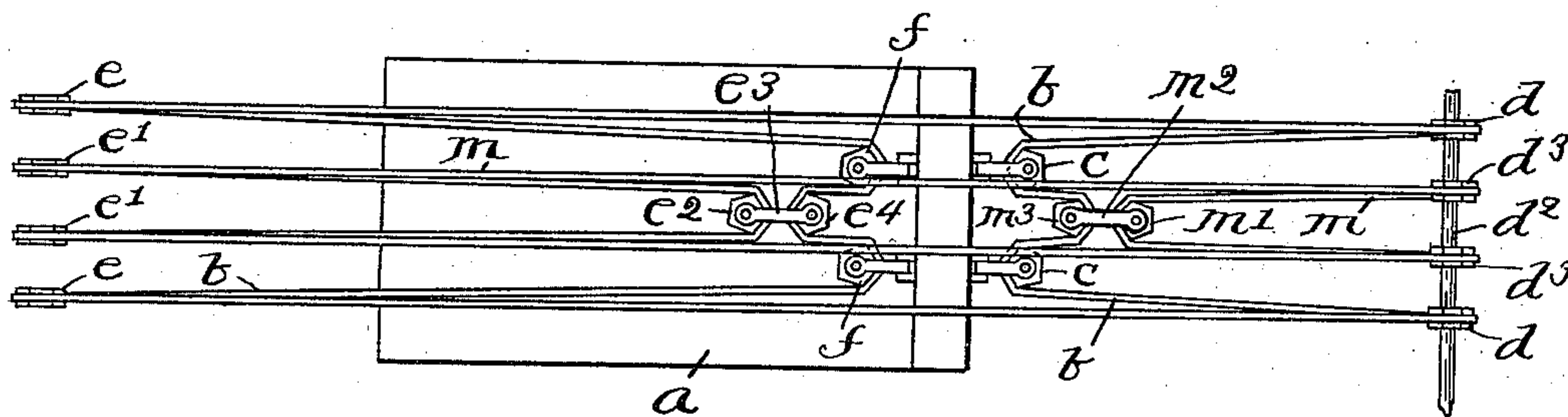


Fig. 1.

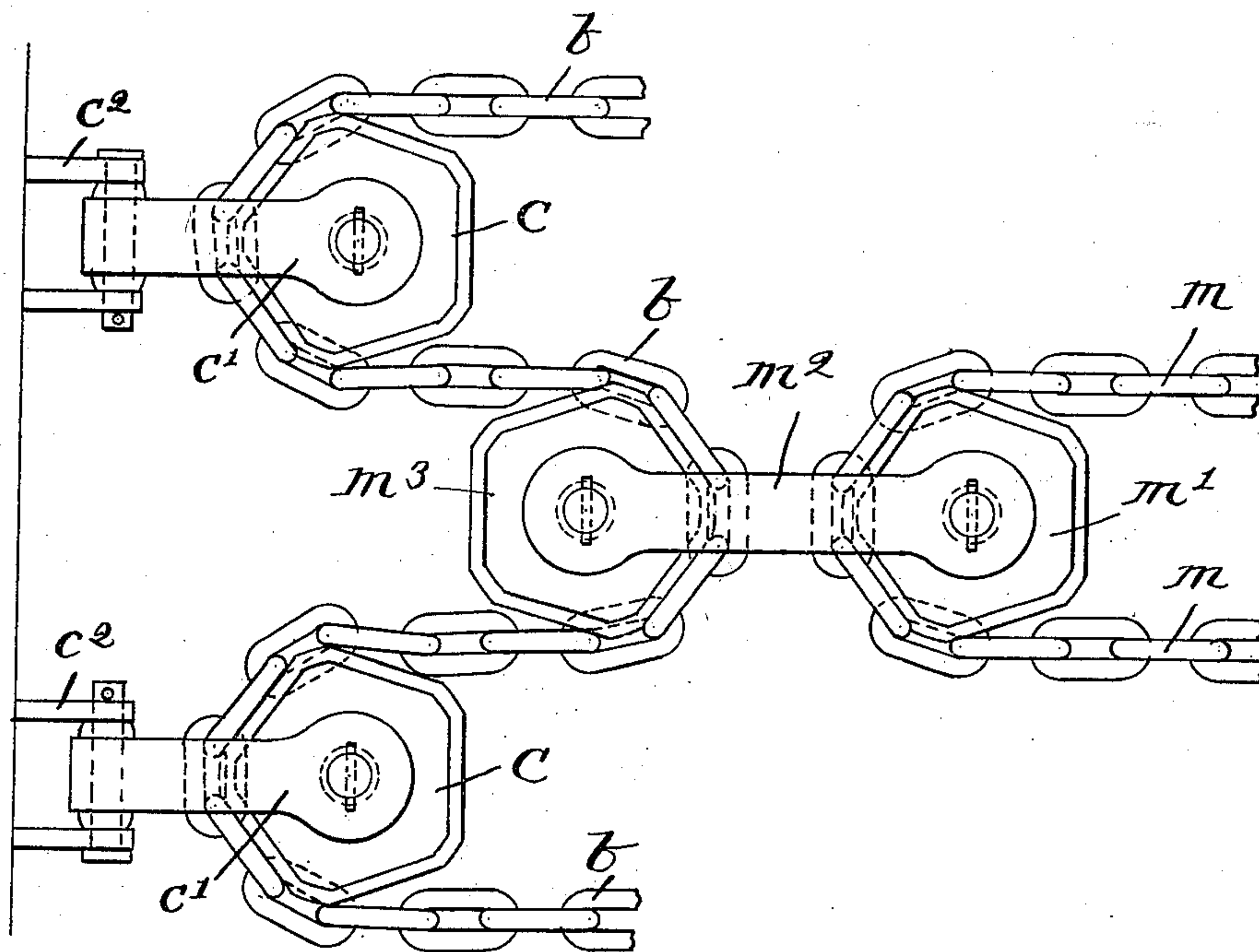


Fig. 2.

Witnesses:

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Inventor:

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UNITED STATES PATENT OFFICE.

JAMES L. CRANDALL, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO H. I. CRANDALL & SON COMPANY, OF BOSTON, MASSACHUSETTS, A CORPORATION OF MAINE.

MARINE RAILWAY.

SPECIFICATION forming part of Letters Patent No. 685,714, dated October 29, 1901.

Application filed June 25, 1901. Serial No. 65,944. (No model.)

To all whom it may concern:

Be it known that I, JAMES L. CRANDALL, of Boston, in the county of Suffolk and State of Massachusetts, have invented an Improvement in Marine Railways, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

10 This invention relates to marine railways, sometimes called "slipways" or "patent slips," and has for its object to improve the construction of the means employed for hauling along the cradle, to the end that the strain upon each chain of a number of chains may be equalized, even though the chains or the links thereof vary slightly in length. The invention is especially applicable in cases where three or more chains are employed as the means for hauling along the cradle.

Figure 1 shows in diagram a cradle and means embodying this invention for hauling it along, comprising a main chain having two active portions and a supplemental chain also having two active portions, comprehending, therefore, the equivalent of four chains. Fig. 2 is an enlarged detail showing a set of chain-wheels for the main and supplemental chains.

30 *a* represents in diagram a cradle, which may be of any usual or suitable construction. To one end of the cradle *a* a main chain *b* is attached, it being herein shown as passing around a pair of chain-wheels *c c*, the supports *c' c'* of which are attached by ears *c²* to the cradle, said chain-wheels being located side by side. The main chain *b* is also herein represented as passing over chain-wheels *d d*, rigidly secured to a main driving-shaft *d²*, so that as said shaft is rotated the active portions of said chain *b* between the chain-wheels *c* and *d* will be moved along. These active portions in practice serve as two chains. The main chain *b* is also herein shown as an endless chain, which after passing around the chain-wheels *c c* and *d d* thence passes over idle chain-wheels *e e* at the opposite end of the railway and thence over chain-wheels *f f*, the supports of which are attached to the cradle.

50 A supplemental chain *m* is connected to

the main chain *b*, so as to exert its pull upon said main chain, and, as herein shown, it passes around a chain-wheel *m'*, which is borne by a suitable support *m²*, made as a connecting-bar, to which another chain-wheel *m³* is journaled. The chain-wheel *m³* is located between the main chain-wheels *c c* and is in engagement with the main chain *b* at a point between said chain-wheels *c c*. The supplemental chain *m* passes from said chain-wheel *m'* over the chain-wheels *d³ d³*, which are rigidly secured to the main driving-shaft *d²*, so that as said shaft is rotated the supplemental chain will be moved along in unison with the main chain, all the chain-wheels *d d* and *d³ d³* being rigidly secured to the shaft *d²*. The active portions of the supplemental chain *m* are between the chain-wheel *m'* and the chain-wheels *d³ d³* and, as herein shown, really constitute two chains. The supplemental chain *m* is also made endless and from the chain-wheels *d³ d³* passes to and around the idle chain-wheels *e' e'* and thence around the chain-wheel *e²*, which is journaled to a support *e³*, made as a connecting-bar, to which a chain-wheel *e⁴* is journaled. The chain-wheel *e⁴* is located between the chain-wheels *f f* and is in engagement with the main chain *b* at a point between said chain-wheels *f f*.

It will be understood that although the active portions of the main chain *b* between the chain-wheels *c* and *d* will each comprise the same number of links and theoretically will be of the same length, yet in practice said links vary more or less in length, and consequently the chains will correspondingly vary in length, and so, also, the active portions of the supplemental chain *m* between the chain-wheel *m'* and the chain-wheels *d³ d³* will each comprise the same number of links, yet in practice they will also vary in length; but by constructing means for connecting the said chains with the cradle, substantially as herein shown, it will be seen that the strain upon each active portion of said chains, which, so far as this invention is concerned, may be understood to be separate chains, will be equalized, all variations in length being compensated for.

I do not desire to limit my invention to the

employment of endless chains nor to the particular number of chains employed.

I claim—

1. In an apparatus of the kind described, a
5 main chain connected with the cradle by passing around two chain-wheels, the supports of which are attached to the cradle, and a supplemental chain connected with said main chain by passing around a chain-wheel the
10 support of which bears another chain-wheel which is in engagement with the main chain and means for moving said main and supplemental chains, substantially as described.

2. In an apparatus of the kind described,
15 the combination of a main chain, two chain-wheels located side by side around which it passes, supports for said chain-wheels attached to the cradle, a supplemental chain, a chain-wheel around which it passes, a support
20 for said chain-wheel bearing another chain-wheel which is interposed between the chain-wheels around which the main chain passes and which receives upon it said main chain, and means, as a shaft having thereon a num-
25 ber of chain-wheels for moving said main and supplemental chains, substantially as described.

3. In an apparatus of the kind described, the combination of two chain-wheels located
30 side by side, supports therefor attached to the cradle, a main chain passing around both

of said chain-wheels, a chain-wheel, as m^3 , interposed between said chain-wheels around which said main chain also passes, another chain-wheel, as m' , located in front of said
35 chain-wheel m^3 , a support for said chain-wheels m^3 and m' which is independent of the cradle and which connects said chain-wheels m^3 and m' together, a supplemental
40 chain passing around said chain-wheel m' and a shaft bearing a number of chain-wheels around which said main and supplemental chains pass, substantially as described.

4. In an apparatus of the kind described, an endless main chain connected with the
45 cradle by passing around chain-wheels the supports of which are attached to said cradle and an endless supplemental chain connected with said endless main chain by passing
50 around chain-wheels the supports of which bear other chain-wheels which are in engagement with the main chain, and means for moving said main and supplemental chains, substantially as described.

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

JAMES L. CRANDALL.

Witnesses:

B. J. NOYES,
JOHN W. DECROW.