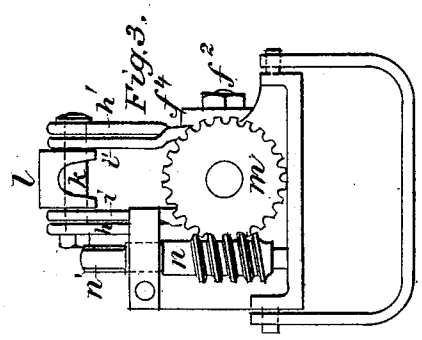
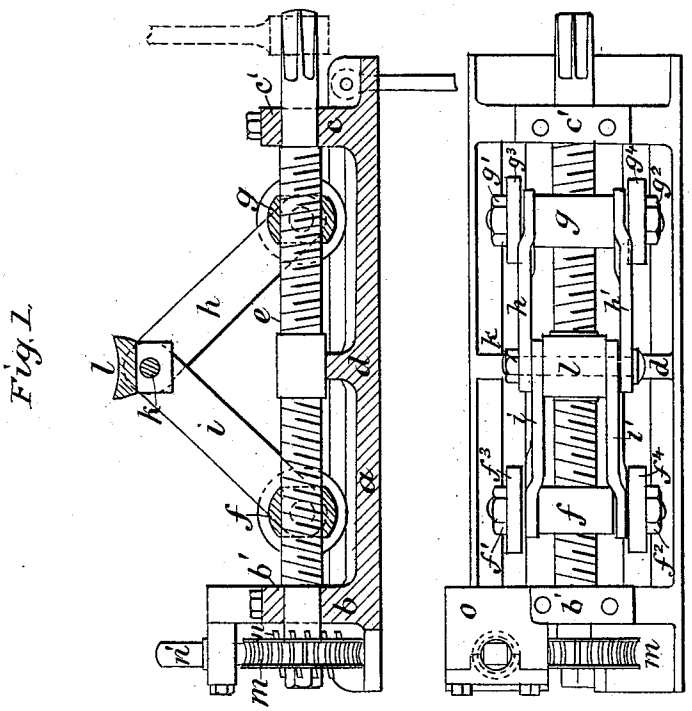
(No Model.) 2 Sheets—Sheet 1.

F. & J. K. GOLIGHTLY & F. GOLIGHTLY, Jr.

LIFTING MACHINE FOR RAILWAYS, &c.

No. 391,141. Patented Oct. 16, 1888.





Witnesses:
J. Mundle.
C. C. Goulds.

Inventors:
Francis Golightly
John K. Golightly
Francis Golightly Jun.
By James H. Lancaster
Attorney.

N. PETERS, Photo-Lithographer, Washington, D. C.

(No Model.) 2 Sheets—Sheet 2.

F. & J. K. GOLIGHTLY & F. GOLIGHTLY, Jr.

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Fig. 5.

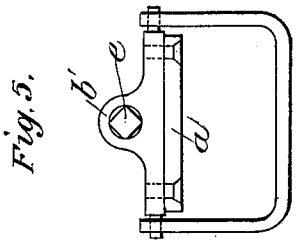
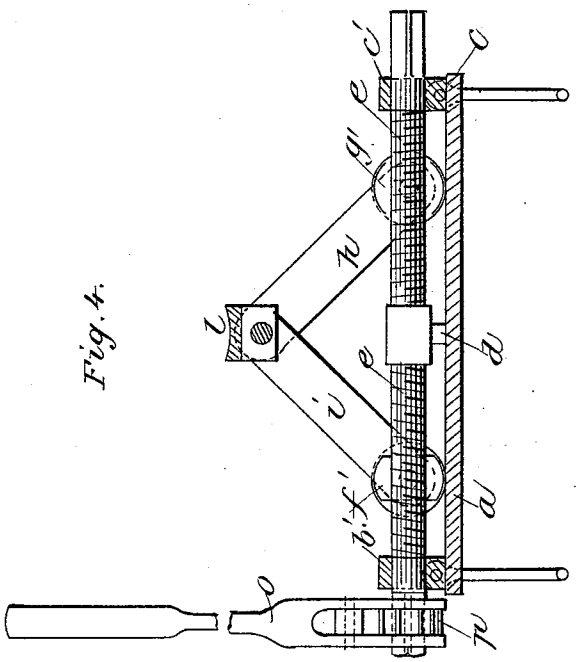


Fig. 4.



Witnesses,
J. H. Hurdle.
C. E. Foulds.

Inventors:
Francis Golightly.
John K. Golightly.
Francis Golightly Junr.
By James K. Lancaster.
Attorney.

N. PETERS. Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

FRANCIS GOLIGHTLY, JOHN KENT GOLIGHTLY, AND FRANCIS GOLIGHTLY, JR., OF HOOLEY HILL, COUNTY OF LANCASTER, ENGLAND.

LIFTING-MACHINE FOR RAILWAYS, &c.

SPECIFICATION forming part of Letters Patent No. 391,141, dated October 16, 1888.

Application filed August 9, 1888. Serial No. 282,377. (No model.) Patented in England January 17, 1887, No. 705.

To all whom it may concern:

Be it known that we, FRANCIS GOLIGHTLY, JOHN KENT GOLIGHTLY, and FRANCIS GOLIGHTLY, Jr., subjects of the Queen of Great Britain, and residents of Hooley Hill, in the county of Lancaster, England, have invented certain new and useful Improvements in Lifting-Machines for Railways, &c., (for which we have obtained a patent in Great Britain, No. 705, dated January 17, 1887,) of which the following is a full, clear, and exact specification.

Our invention relates to a novel lifting device, of which a full and clear description will be given hereinafter.

Our invention consists of a device for lifting rails and crossings for railways, for the purpose of packing sleepers and similar objects; and it consists in an improved construction of such apparatus or combination of mechanism or parts.

In the drawings, Figure 1 represents a longitudinal section. Fig. 2 represents a plan view. Fig. 3 represents an end view of our improved lifter. Fig. 4 represents our invention operated by ratchet and pawl. Fig. 5 represents an end view of the frame of Fig. 4.

The apparatus consists of a frame or bed-plate, *a*, preferably made of cast-steel, with three bearings, *b*, *c*, and *d*—one at each end, fitted with caps *b' c'*, and one in the center—which support a screw-spindle, *e*, having a right-hand thread on one side of the center and a left-hand thread on the other. The threads may be either triangular or square threads. Two nuts, *f* and *g*—one on each side of the center—are tapped with the thread corresponding to the end of the spindle *e* on which they are placed, and are each formed with two arms or bearings, f' f^2 and g' g^2, one on each side of the nuts. On these arms we place links *h*, *h'*, *i*, and *i'*, bored out for the pivots f' f^2 and g' g^2, respectively, and the other ends of said links we connect by a pin, *k*, passed through them and a suitable shoe, *l*, for lifting, the combination of links forming a toggle mechanism.

On each end of the pivots f', f^2, g', and g^2 we place a wheel or roller, f^3, f^4, g^3, and g^4, of such diameter that the wheels or rollers rest upon the bottom of the frame *a*, or on raised strips formed on the said bottom, in order to relieve the screw-spindle *e* from the load on the shoe *l* and to prevent it bending.

One or both ends of the screw-spindle *e* we make square, so that an ordinary spanner or a ratchet-brace spanner can be placed upon the square for turning the screw-spindle *e*. When required for lifting the weight upon the shoe, we in some cases fix upon one or each end of the said screw-spindle a suitable worm-wheel, and arrange a worm on a shaft in suitable bearings, the shaft being formed with a square for turning it with a box-key or equivalent tool.

In the drawings one end of the spindle *e* is shown fitted with the worm-wheel *m* and a worm formed on the vertical spindle *n* and supported in bearings on the bed-plate *a*, and the bracket *o*, cast upon it, is in gear with the worm-wheel and can be rotated by means of a box-key or its equivalent placed upon the square *n'* on the shaft *n*. The shaft *n* may be placed vertically, as shown, or horizontally or obliquely, as is most suitable for the special purpose for which the lifter is to be used. Two worm-wheels—one on each end of the screw-spindle *e*—may be used, and they may be arranged to fit on squares at the end of the spindle, so that they can be readily removed for turning the spindle by spanners or equivalent tools put upon the squares, as far as the power obtainable by this means suffices to lift the load, and that they can then be put upon the squares and the further lift be effected by means of a worm-wheel and worm or worm-wheels and worms, a specimen of another method being shown at Fig. 4, in which the ratchet *p* and the lever *o* are fitted on the squares at the end of the spindle *e* and used to actuate the said screw-spindle *e*.

All parts are preferably made of steel or wrought-iron.

In applying the apparatus to lifting rails and crossings for the purpose of packing sleepers the ballast is, as usual, dug out and the apparatus placed under the rail, so that the shoe *l* is under the rail, the nuts *f* and *g* having previously been moved to the ends of the spindle *e*, and the shoe thus brought into its lowest position. By turning the spindle the nuts are then moved toward the center, whereby the

shoe *l* is raised vertically, the lifting action becoming the more powerful the nearer the nuts approach to the center of the apparatus.

Obviously the apparatus may be used for lifting or raising other objects besides rails or crossings.

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

The combination, substantially as shown and described, consisting of the bed-plate provided with the bearings *b c d*, caps *b' c'*, the screw-spindle *e*, having a right and left hand screw-thread cut thereon, the screw-threaded nuts *f* and *g*, bearings *f' f²* *g' g²*, rollers *f³*, *f⁴*, *g³*, and *g⁴*, the arms or links *h*, *h'*, *i*, and *i'*, the shoe *l*, worm-wheel *m*, adapted to engage with the worm *n*, the bracket *o*, and the square *n'* of the worm *n*, the whole forming a complete device.

In testimony that we claim the foregoing we have hereunto set our hands this 13th day of January, 1888.

FRANCIS GOLIGHTLY.
JOHN KENT GOLIGHTLY.
FRANCIS GOLIGHTLY, JR.

Witnesses:
ARTHUR C. HALL,
ALBERT E. HALL,
Both of 9 Mount St., Manchester, England.