(No Model.)

O. GASSETT & I. FISHER.

Track Drilling Machine.

No. 243,544. Patented June 28, 1881.

Fig: 1.

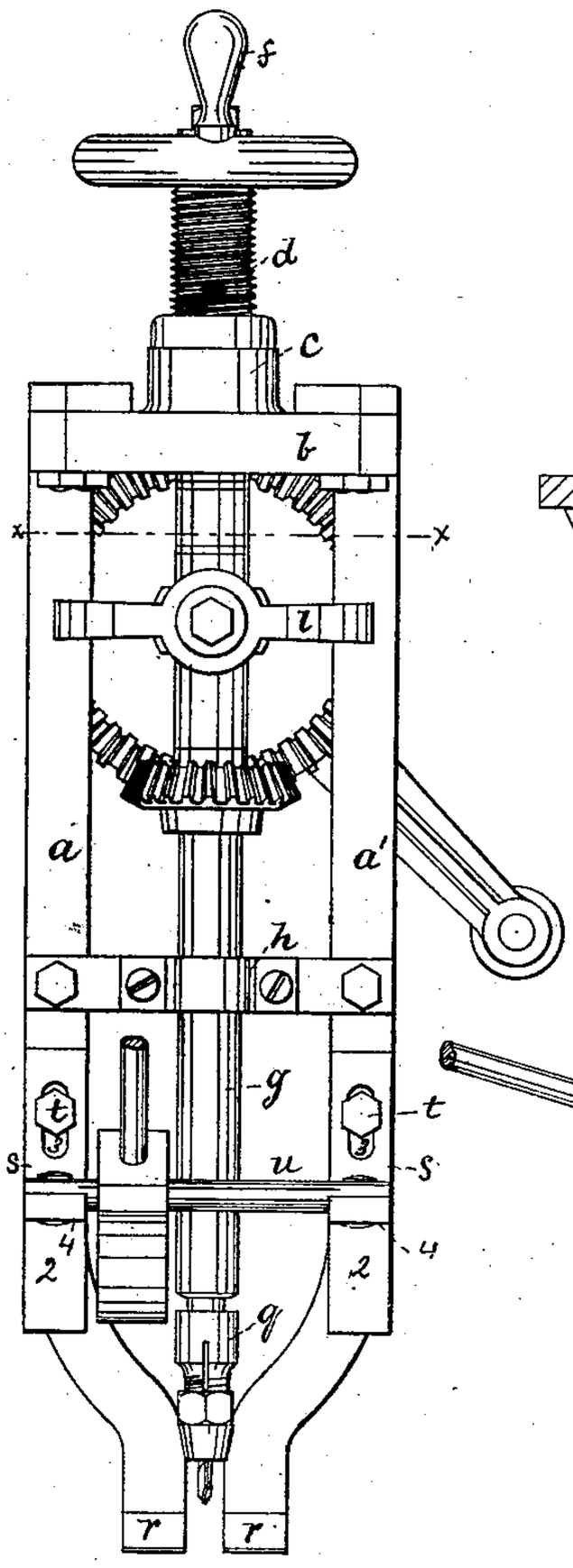


Fig: 3.

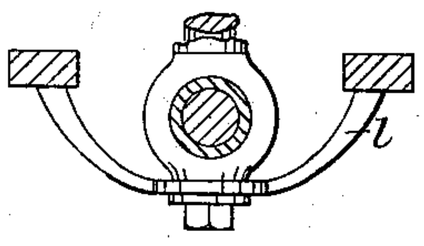
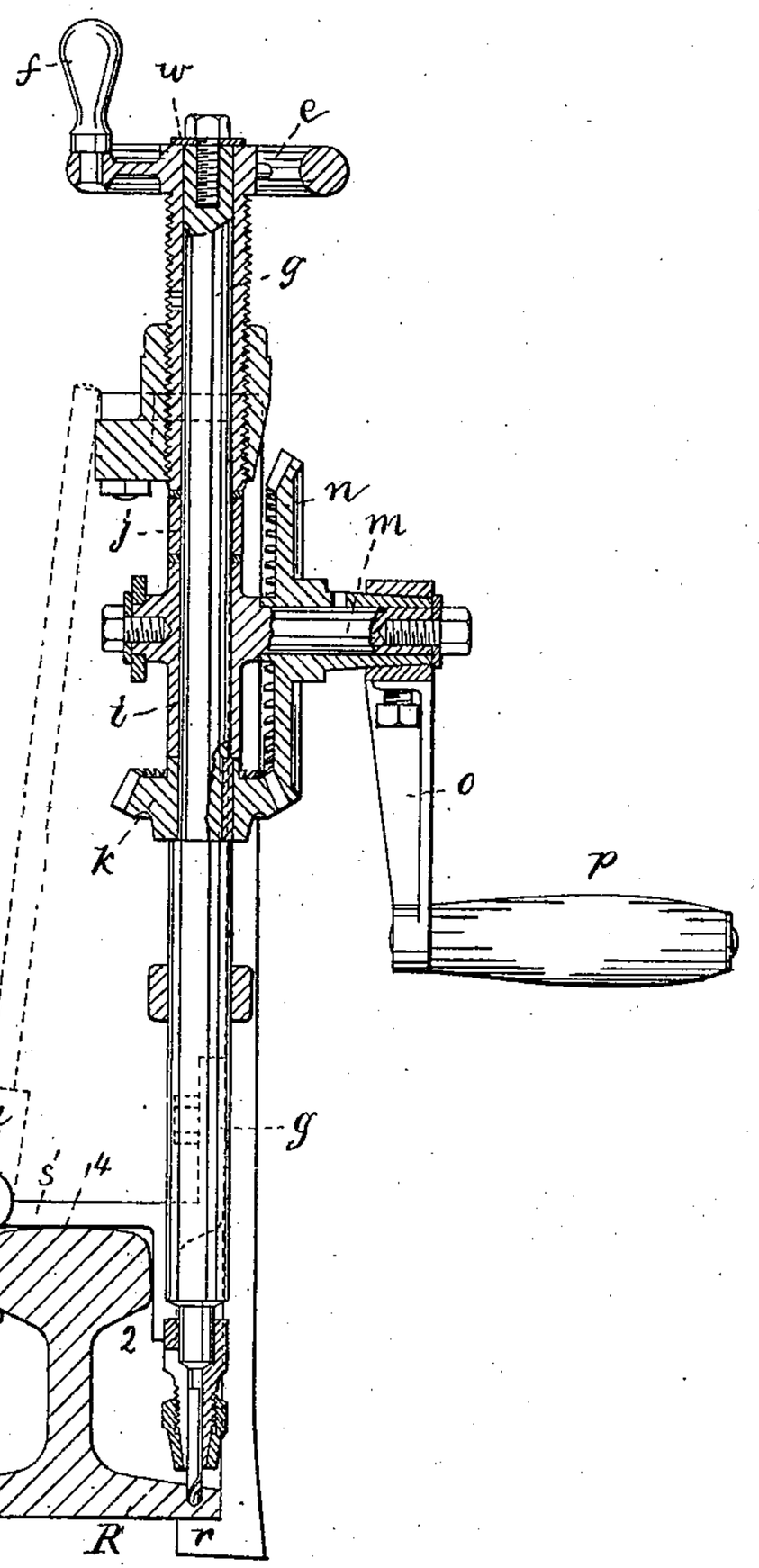


Fig: 2.



Witnesses—
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UNITED STATES PATENT OFFICE.

OSCAR GASSETT AND ISRAEL FISHER, OF BOSTON, MASS., ASSIGNORS TO THE UNION ELECTRIC SIGNAL COMPANY, OF HARTFORD, CONN.

TRACK-DRILLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 243,544, dated June 28, 1881.

Application filed April 11, 1881. (No model.)

To all whom it may concern:

Be it known that we, OSCAR GASSETT and ISRAEL FISHER, of Boston, county of Suffolk, State of Massachusetts, have invented a new and useful Improvement in Track-Drilling Machines, of which the following description, in connection with the accompanying drawings, is a specification.

Our invention relates to drilling-machines, and has for its object to produce a machine that can be readily applied to a railway-track, when in position on the road-bed, for the purpose of drilling a hole therein to receive the driving-stud of an electric track-connector, such as shown and described in Letters Patent No. 227,104, May 4, 1880, to Gassett and Fisher, to which reference may be had. In the said patent the driving-stud is shown as inserted in a hole at the edge of the flange of the rail, and the object of the present invention is to enable these holes to be quickly made on the road-bed.

The invention consists, mainly, in the combination, with an ordinary drill operating and feeding mechanism, of a suitable frame-work therefor, adapted to be quickly placed in proper position upon the rail and properly held there while the hole is drilled, without necessitating any clamping or bolting operation to enable the thrust or reaction of the drill bearing on the iron to be sustained.

The entire drilling apparatus is small and portable, and the working parts are mounted upon a frame-work consisting mainly of two bars connected by cross-pieces provided with suitable bearings for the drill-shaft and its operating gearing and feeding mechanism, the said main bars having at their end laterally-projecting thrust-sustaining fingers, which are shown as passing beneath the flange of the rail opposite to the surface engaged by the drill-point, the said projections thus receiving the thrust or reaction of the drill as it enters the iron. The said frame-bars are also provided with a suitable bracket at one side to rest upon the top of and against the side of the head of the rail when the said thrust-sustaining fingers at the bottom of the rail are in position beneath its flange. This bracket is made adjustable toward and from the said thrust-sustaining fingers, to enable the machine to be used with rails of different height, and it is provided with a pivoted holding-arm, which, after the bracket has been placed in position in contact with the top and one side of the head of the rail, is turned on its pivot and remains held by its own weight in contact with the other side of the head of the rail, thus keeping the instrument in proper position, it being placed upon the rail and the holding-arm dropped without any appreciable expenditure of time, and held as firmly as need be by the foot of the operator.

Figure 1 is a front elevation of a track-rail-drilling machine constructed in accordance with this invention; Fig. 2, a longitudinal section thereof, showing the instrument in position upon the rail; and Fig. 3, a sectional detail thereof on line *x x*, Fig. 1.

The frame-work consists, essentially, of two bars, *a a'*, connected at their upper ends with a cross-piece, *b*, provided with an internally screw-threaded socket, *c*, to receive the drill-feeding screw *d*, operated by the hand-wheel *e* or its handle *f*, the said screw being made tubular, as shown in Fig. 2, to serve as the upper bearing for the drill-shaft *g*, which has another bearing in a cross-bar, *h*, connecting the main pieces *a a'*, the said pieces *a a' b h* forming a rigid rectangular frame for the drill-shaft *g* and its operating mechanism. The upper portion of the drill-shaft *g*, having its bearing in the feed-screw *d*, is of smaller diameter than the lower portion having its bearing on the cross-bar *a*, and has mounted upon it a sleeve, *i*, below the feed-screw *d*, the said sleeve being pressed upon by the said feed-screw *d*, through the intervention of a suitable washer, *j*, and itself bearing upon the hub of a bevel-pinion, *k*, keyed upon the upper smaller portion of the shaft *g*, and resting upon the shoulder formed at the point where the diameter of the drill-shaft changes.

The sleeve *i* is prevented from rotating with the drill-shaft *g* by a yoke, *l*, resting against the frame-pieces *a a'*, and the said sleeve is provided with a pin, *m*, which serves as a bearing for the driving-gear *n*, meshing with the pinion *k* and operated by the crank *o* and its handle *p*. By this arrangement the drill-shaft

and its operating crank and gears are all fed downward together as the screw *d* is turned in its socket *c* in the cross-pieces *b*.

The lower ends of the frame-bars *a a'* are bent together, as shown in Fig. 1, to bring them close to the drill-chuck *q*, and its drill and the said frame-pieces are provided with lateral thrust-sustaining fingers *r*, adapted to pass beneath the flange of the rail R, as shown in Fig. 2, at either side of the line of action of the drill.

A holding-bracket, *s*, provided with a bearing-face, 2, parallel with the frame-pieces *a a'*, and in such position as to rest against the side of the head of the rail when the lower end of the said frame-piece rests against the side of the flange thereof, as shown in Fig. 2, is connected with the said frame-pieces by bolts *t*, passing through slots 3 in the said brackets, so that they may be properly adjusted upon the frame-pieces *a a'* to bring the bearing-face 4 of the arm *s'* perpendicular to the said frame-pieces upon the top of the head of the rail when the thrust-sustaining fingers *r* bear upon the under face of the flange of the said rail, the slots 3 enabling the instrument to be used with tracks constructed of rails of different height. The ends of the arms *s'* are connected by a cross-rod, *u*, which has pivoted upon it the holding-arm U, having a holding-projection, 5, that passes under the head of the rail, as shown in Fig. 2, and is held there by the weight of the handle portion *v'*, and the operator's foot thereon, if necessary, the said holding-arm retaining the instrument securely in position while the hole is being drilled. The handle *v'* and holding-arm *v* being turned up, as shown in dotted lines, and the drill being raised by its feeding-screw *d*, so that its point will be above the flange, the holding-points *r* are placed beneath the flange of the rail R and the instrument turned toward the rail until the faces 2 4 of the brackets *s* rest in contact with the head of the rail, when the holding-arm *v* is dropped and the operator rotates the drill by means of the handle *p*, feeding it downward in the usual manner by turning the feed-wheel *e*. The drill-point, in bearing downward upon the rail to cut it, exerts an upward pressure, which is transmitted through the shaft *g*, pinion *k*, sleeve *i*, and washer *j*, to the feed-screw *d* and cross-piece *b*, whence it is transmitted through the frame-piece *a a'* to the thrust-sustaining fingers *r* and the under side of the flange of the rail directly opposite the point of the drill. When the hole has been drilled through the drill is removed therefrom by rotating the wheel *e* in the reverse direction, thus raising the feed-screw *d*, which, by means of the washer *w*, raises the drill-shaft and connected parts, after which the arm *v'* is raised and the instrument at once removed from the rail.

We claim—

1. In a track-drilling machine, the frame-work consisting of the bars *a a'*, provided with thrust-sustaining projections, and the drill-shaft mounted between them and provided with a pinion fixed thereon, combined with the sleeve mounted upon the said shaft, and yoke connected therewith, to engage the frame-work and prevent the rotation of the said sleeve, and the driving-gear pivoted on the said sleeve and meshing with the said pinion, substantially as described.

2. The drill-supporting frame and its thrust-sustaining projections, combined with the bracket and its bearing-surfaces and holding-arm pivoted thereon, all arranged as described, whereby, when the said projections are placed beneath the flange of the rail, the said bracket engages the top and one side, and the holding-arm the other side of the head of the rail to hold the instrument in place, substantially as described.

3. The drill-operating mechanism and frame therefor, provided with thrust-sustaining projections to engage the flange of the rail, combined with the bracket and holding-arm adjustably connected with the said frame, whereby the instrument is enabled to be employed with rails of different size, substantially as described.

4. In a drilling apparatus, the frame-work and means to secure it to the metal to be drilled, as described, and the drill-shaft and sleeve thereon, and driving-wheel mounted on the said sleeve, combined with the tubular feeding-screw engaging a threaded socket in the said frame-work, and serving as a bearing for the said drill-shaft, substantially as described.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

OSCAR GASSETT.
ISRAEL FISHER.

Witnesses:
JOS. P. LIVERMORE,
ARTHUR REYNOLDS.