(No Model.)

J. A. POTTER.

COMBINED CRANE AND WEIGHING APPARATUS.

No. 432,072. Patented July 15, 1890.

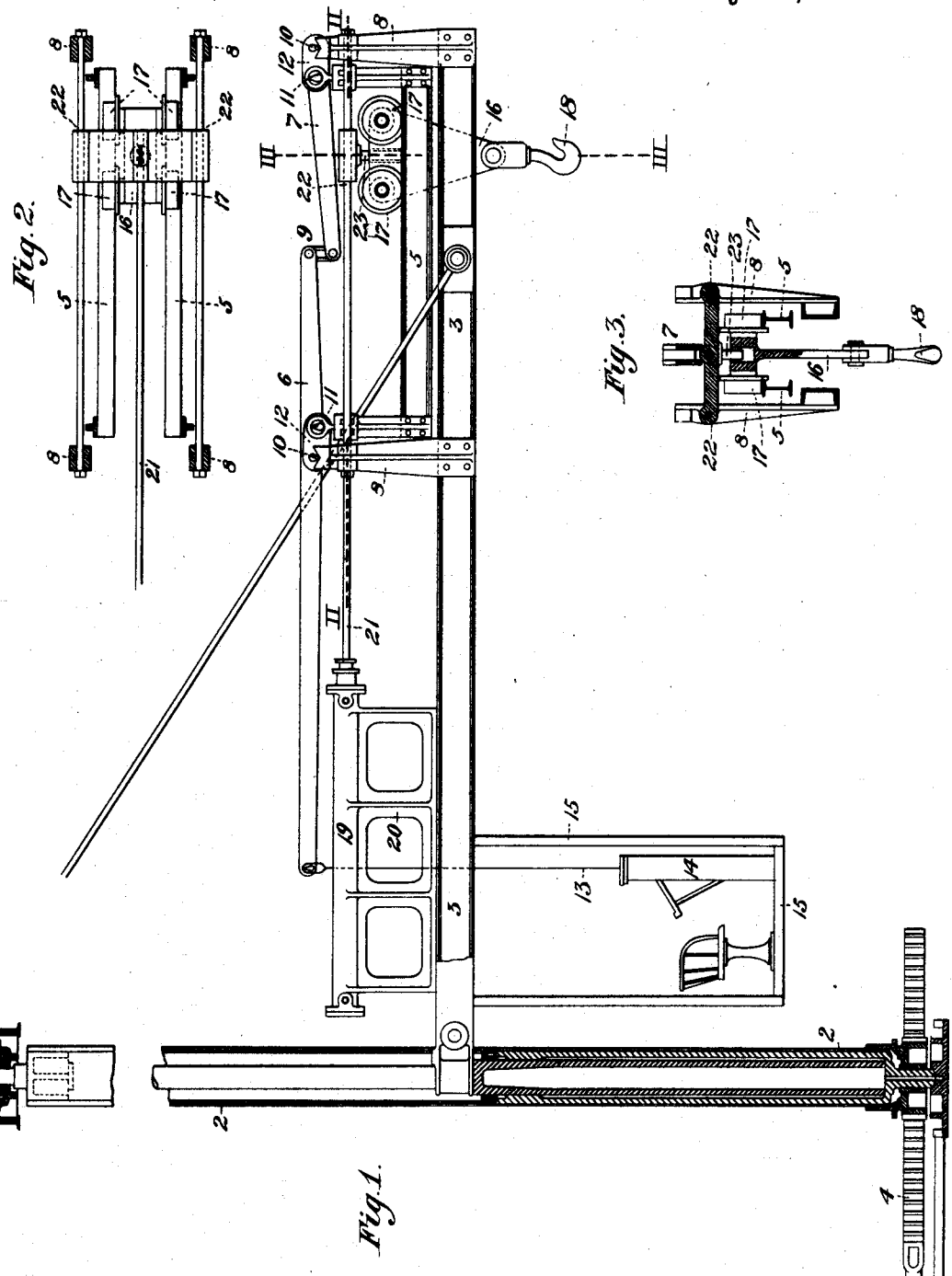


Fig. 2.

Fig. 3.

Fig. 1.

WITNESSES.

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JOHN A. POTTER, OF MUNHALL, PENNSYLVANIA.

COMBINED CRANE AND WEIGHING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 432,072, dated July 15, 1890.

Application filed April 7, 1890. Serial No. 346,861. (No model.)

To all whom it may concern:

Be it known that I, JOHN A. POTTER, of Munhall, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Mill Appliances, of which the following is a full, clear, and exact description.

My invention relates to an improvement in lifting devices or cranes intended especially for use in mills in which steel or iron is manufactured, and its purpose is to provide such crane or lifting device with weighing mechanism so constructed and arranged that the burden of the crane shall be weighed and the weight indicated on the lifting of the burden without necessity for separate handling thereof.

My invention consists, broadly, in such construction of the crane; and it also consists in certain details, as hereinafter described, and concisely pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation, partly in section, of a crane constructed according to my invention. Fig. 2 is a sectional plan view of the outer portion of the jib, the section being on line II II of Fig. 1. Fig. 3 is a vertical section on the line III III of Fig. 1.

As shown in the drawings, the crane, which may be of any suitable construction, is provided with a mast 2 and a projecting rotary and vertically-movable jib 3.

4 is a longitudinally-movable rack by which the mast may be rotated.

5 is a scale-platform, consisting, preferably, of parallel beams suitably suspended from scale-levers 6 7, which have bearings on standards 8 on the jib. The precise arrangement of the levers is not essential to my invention as embodied in the broad claim of this application. I prefer, however, to employ two levers coupled together at their ends 9 and having lateral knife-edge bearings 10 on the standards. The platform is suspended on bearings 11 on arms 12, which project from the levers. The end of the lever 6 is connected by a rod 13 to the scale-beam, (not shown,) arranged in a suitable scale-frame 14, which is mounted on a carriage or platform 15, supported by the crane-jib. The man who tends the scales may be seated on the platform 15, and is carried by the jib in its rotary motion.

16 is a trolley of usual form, which is mounted on the platform 5, (preferably on wheel 17,) and is movable lengthwise thereon. The trolley is provided with a suitable hook or link 18 for supporting and carrying its burden. To move the trolley on the scale-platform, I may employ a racking-cylinder 19, of usual construction, which is mounted on the jib, preferably on a somewhat elevated platform 20. The plunger 21 of the cylinder extends horizontally over the jib, and is supported by a cross-head 22′ on suitable slide-bearings 22, on which it is longitudinally movable. It is connected with the trolley 16, so that by projecting or retracting it the trolley may be moved along the platform, and in order to prevent the weight of the plunger from bearing on the trolley and disturbing the accuracy of the scales I provide the plunger with a projecting tongue 23, which fits in a socket in the trolley, so that although the plunger is in operative connection with the trolley it does not bear thereon with gravity.

The apparatus when thus constructed is employed in the manner usual with cranes. The article or burden to be lifted and moved by the crane having been suspended on the trolley, is lifted from the ground by raising the jib, and may be shifted by moving the jib radially on the axis of the mast. It may also be moved toward or from the mast by racking the trolley in or out on the scale-platform 5. As soon as the burden is suspended from the trolley and raised from the ground by lifting the jib, its weight is transmitted by the scale-levers to the scales on the carriage or platform 15, when the weight may be noted at once by the operator at that place. In this manner the work of weighing the load is performed at one operation with the act of lifting it by the crane for the purpose of moving it from one place to another, and the separate handling of the burden, which hitherto has been requisite for the purpose of weighing, is rendered unnecessary. In this regard the device is especially applicable to use in mills for weighing ingots after they are taken from the molds and before they are placed on the feed-tables of the reducing-rolls. Heretofore

the ingots have been first taken to the scales and weighed and then lifted by the crane and carried to the feed-table. The handling of the ingot at the scales is laborious and adds very considerably to the cost of manufacture. This labor and cost I dispense with, since the weighing is performed in the act of lifting the ingot from the heating-furnace and conveying it to the rolls.

My improvement is of course applicable to other uses than the handling of ingots; but this constitutes the special purpose for which I have designed it.

Its advantages will be appreciated by those skilled in the art.

The device is simple in construction, is but little more expensive than an ordinary crane, and constitutes an efficient means of saving labor and expense.

The apparatus shown in the drawings represents the form of the invention which I deem best suited to the purposes for which it is especially intended.

It should be understood, however, that I do not limit myself precisely to the construction shown, unless as expressly stated in the claims. For example, scales of many forms may be applied to the jib instead of scales of the construction shown by me in the drawings.

I claim—

1. The combination, with a lifting and conveying mechanism, such as a crane, of a scale carried thereby, and devices by which the burden may be suspended from the scale, substantially as and for the purposes described.

2. The combination, with a crane having a jib, of a scale-lever mounted on the jib, and lifting devices by which the burden may be suspended from the scale-lever, substantially as and for the purposes described.

3. The combination, with a crane having a jib, of a scale lever or levers mounted on the jib, a scale-platform supported thereby, and a trolley mounted on the scale-platform, substantially as and for the purposes described.

4. The combination, with a crane having a jib, of a scale lever or levers mounted on the jib, a scale-platform supported thereby, a trolley mounted on the scale-platform, and a racking-cylinder for the trolley, substantially as and for the purposes described.

5. The combination of a scale-platform, a trolley carried thereby, a racking-cylinder and plunger, bearings by which the plunger is supported from bearing on the trolley, and a connection between the plunger and trolley, substantially as and for the purposes described.

6. The combination, with a crane having a jib, of a scale-lever mounted on the jib, lifting devices by which the burden may be suspended from the scale-lever, a platform or carriage carried by the jib, and scales on the platform or carriage to which said scale-lever is connected, substantially as and for the purposes described.

In testimony whereof I have hereunto set my hand this 4th day of April, A. D. 1890.

JOHN A. POTTER.

Witnesses:

THOMAS W. BAKEWELL,

R. H. WHITTLESEY.