

F. C. BIGGERT, JR.
WALL CRANE.
APPLICATION FILED APR. 7, 1921.

Patented June 28, 1921.
2 SHEETS—SHEET 1.

1,383,065.

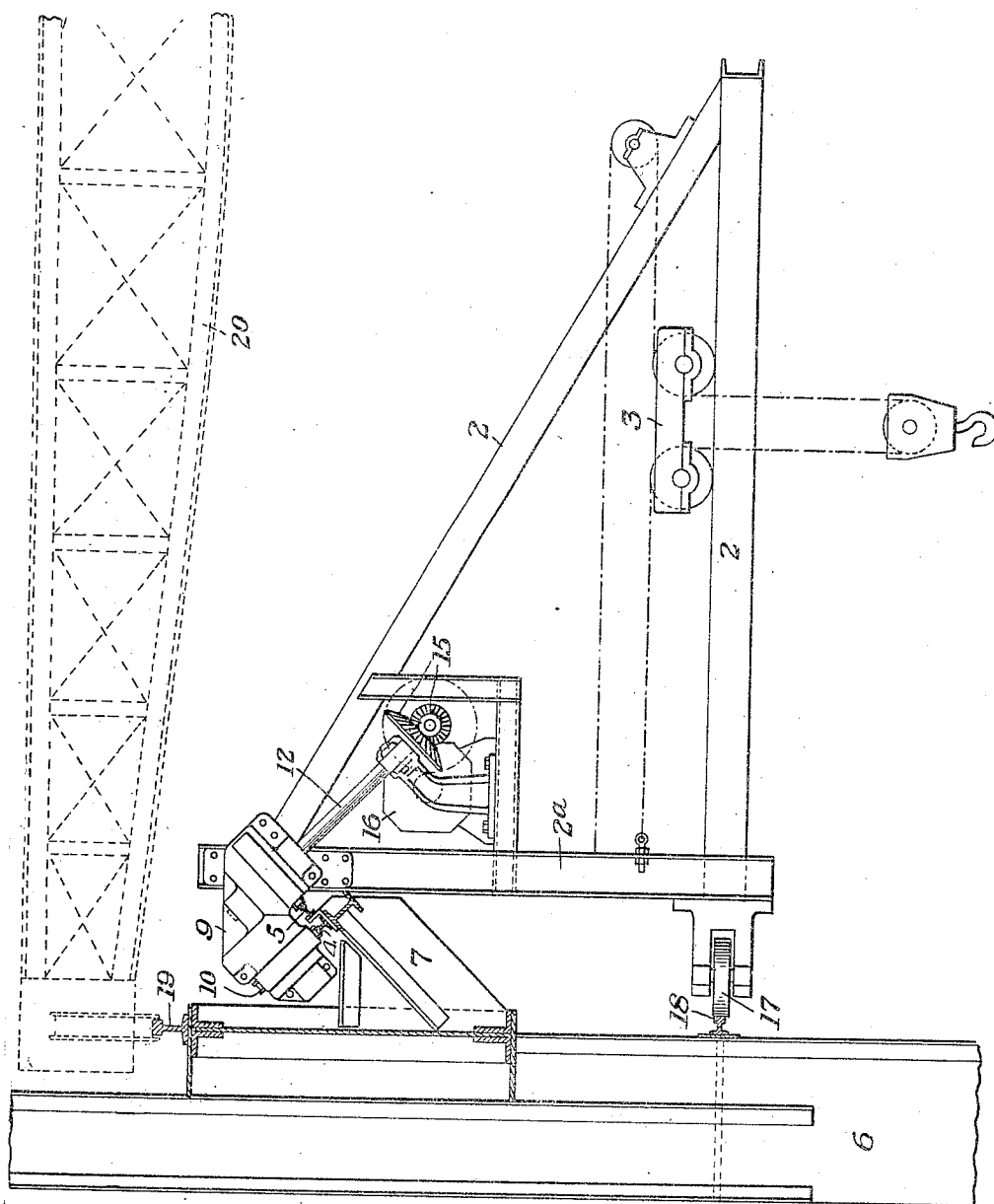


Fig. 1.

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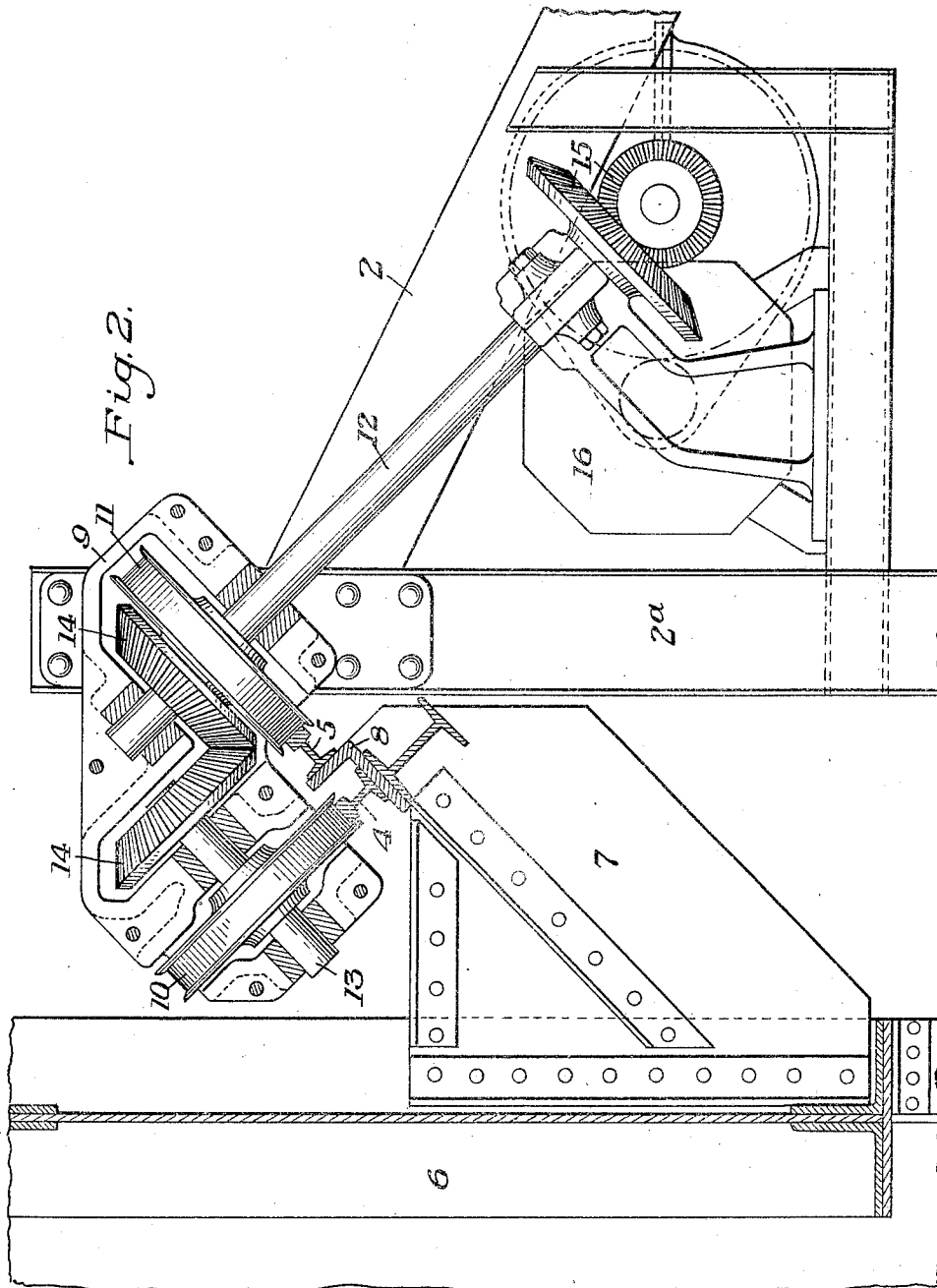
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UNITED STATES PATENT OFFICE.

FLORENCE C. BIGGERT, JR., OF PITTSBURGH, PENNSYLVANIA.

WALL-CRANE.

1,383,065.

Specification of Letters Patent. Patented June 28, 1921.

Application filed April 7, 1921. Serial No. 459,260.

To all whom it may concern:

Be it known that I, FLORENCE C. BIGGERT, Jr., a citizen of the United States, residing at Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Wall-Cranes, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which:

Figure 1 is a view partly in end elevation and partly in vertical section, of a wall crane embodying my invention.

Fig. 2 is a sectional elevation of a portion of the crane on a larger scale.

My invention has relation to improvements in wall cranes, and is designed to provide novel means for supporting and driving the crane, whereby the load is much more efficiently carried. The invention also provides a crane of this character in which the driving and supporting arrangement is such that the crane may be set closely against the wall or other lateral supporting structure. Other advantages of my invention will hereinafter appear.

Referring to the accompanying drawings in which I have shown a preferred embodiment of my invention, the numeral 2 designates the triangular frame of a wall crane, which may, in general, be of any usual and suitable construction. 3 designates the movable trolley or carriage of the wall crane.

In accordance with my invention, I provide supporting means for the crane whereby the weight of the load is directly carried at the upper inner portion of the crane structure. The load support comprises two rails 4 and 5, which are supported obliquely, preferably at 90° to each other and at opposite angles of 45° to a vertical plane passing between the two rails. These rails are supported in any suitable way from the vertical columns 6 of the building, as by means of the brackets 7 carrying an angle 8 to opposite flanges of which the rails 4 and 5 are secured.

9 designates a housing in which are journaled two sets of wheels 10 and 11, the wheel 10 traveling on the track rail 4 and the wheel 11 traveling on the track rail 5. Preferably both of these wheels are double-flanged wheels, as indicated. The axes of these wheels are, of course, at the same angle as the axis of the rails, the wheel 11 being carried directly on the driving shaft 12,

while the wheel 10 is carried by a shaft 13 which is connected to the shaft 12 through two bevel gear wheels 14. The shaft 12 has a bevel gear drive connection 15 with an electric motor 16.

At the lower corner or heel of the crane, I provide a horizontal thrust wheel 17, which bears against the head of horizontal rail 18 secured to the column 6.

It will be noted that by reason of the tracks 4 and 5 being placed at angles of approximately 90° to each other and in oblique planes which are 45° to a vertical plane, the two wheels 10 and 11 act effectively against each other to resist the load, it being impossible for the wheels to leave the track rails; and that the two rails will effectively receive the direct weight of the crane and its load. In this manner, the entire weight of the load is carried at the upper inner portion of the crane, the wheel 17 acting merely as a guide and thrust wheel and requiring only the provision of a light track and support therefor.

It will be further noted that the arrangement of the tracks 4 and 5, the wheels 10 and 11, and the driving gearing, is such that the vertical post 2^a of the crane frame can be set relatively close to the column 6. It will also be noted that the described supporting arrangement lends itself very readily to a positive driving of both sets of supporting wheels. The construction and arrangement also permits the electric motor 16 to be located in the upper angle of the crane adjacent to the support and not only out of the way but where its weight is carried on a short leverage from the points of support. Obviously, the crane may be provided with two or more sets of the wheels 10 and 11.

A further advantage of my invention is that the combined load on the driving wheels will increase as the carriage 3 moves outwardly from the support, thus increasing the traction effect of said wheels at the same time that the frictional resistance of the non-driving wheels 17 is increasing, and decreasing the traction effect as the resistance of the non-driving wheels decreases.

In the drawings, I have shown the wall crane as carried on the same supports as those which carry the track 19 for the overhead traveling crane 20, indicated in dotted lines in Fig. 1. It will be understood, however, that my invention is not limited in this

respect but that the track rails 4 and 5 may be carried in any suitable manner on the building frame. It will also be understood that I do not limit myself to the particular construction and arrangement of the parts which I have herein shown and described, as these may be widely changed in detail without departing from the spirit and scope of the appended claims. While I have specified the two track rails and the wheels as being in planes which are approximately 90° to each other, it will be understood that the degree of angularity may be considerably varied.

I claim:

1. A wall crane having a movable carriage mounted thereon, and having its load supporting and driving means carried at the upper inner portion of the crane structure, and having driving means including driving wheels arranged to cause the load, and consequently the traction, on said wheels to increase as the crane carriage is moved outwardly from the support, substantially as described.

2. A wall crane having a movable carriage mounted thereon, and having its load supporting and driving means carried at the upper inner portion of the crane structure and having a thrust bearing at its lower inner portion, together with driving means having driving wheels arranged to cause the load, and consequently the traction, on said wheels to increase as the crane carriage moves outwardly on its support, substantially as described.

3. A wall crane having its load supporting and driving means carried at the upper inner portion of the crane structure, said support comprising two sets of wheels and track rails therefor, said wheels being in oblique planes, substantially as described.

4. A wall crane having its load supporting and driving means carried at the upper inner portion of the crane structure, said support comprising two sets of wheels and track rails therefor, said wheels being in oblique planes at approximately 90° to each other and at opposite angles of approximately 45° to a vertical plane passing between the rails, substantially as described.

5. A wall crane having two sets of load

supporting rails arranged at an angle of approximately 90° to each other and at opposite angles of approximately 45° to a vertical plane passing between the rails, substantially as described.

6. A wall crane having two sets of load supporting rails arranged at approximately right angles to each other and at opposite angles to a vertical plane passing between the rails, together with flanged wheels engaging the rails, and means for positively driving the wheels, substantially as described.

7. In a wall crane, the combination with two supporting rails set obliquely at opposite angles to a vertical plane passing between them, of a crane having wheels engaging said rails, said wheels being carried on oblique shafts, and means for positively driving said shafts and wheels, substantially as described.

8. In a wall crane, the combination with two supporting rails at approximately right angles to each other and at opposite angles to a vertical plane passing between them, of a crane frame having a housing at its upper inner portion, a drive shaft journaled in said housing and having a flanged wheel engaging one of said rails, another shaft journaled in said housing at an angle to the drive shaft and carrying a flanged wheel engaging the other of said rails, and gearing connecting said shafts, substantially as described.

9. In a wall crane, the combination with two supporting rails at an angle of approximately 90° to each other and at opposite angles of approximately 45° to a vertical plane passing between them, of a crane frame having a housing at its upper inner portion, a drive shaft journaled in said housing and having a flanged wheel engaging one of said rails, another shaft journaled in said housing at an angle of approximately 90° to the drive shaft and carrying a flanged wheel engaging the other of said rails, and gearing connecting said shafts, together with a driving motor mounted at the upper inner portion of the crane and geared to said drive shaft, substantially as described.

In testimony whereof, I have hereunto set my hand.

FLORENCE C. BIGGERT, JR.