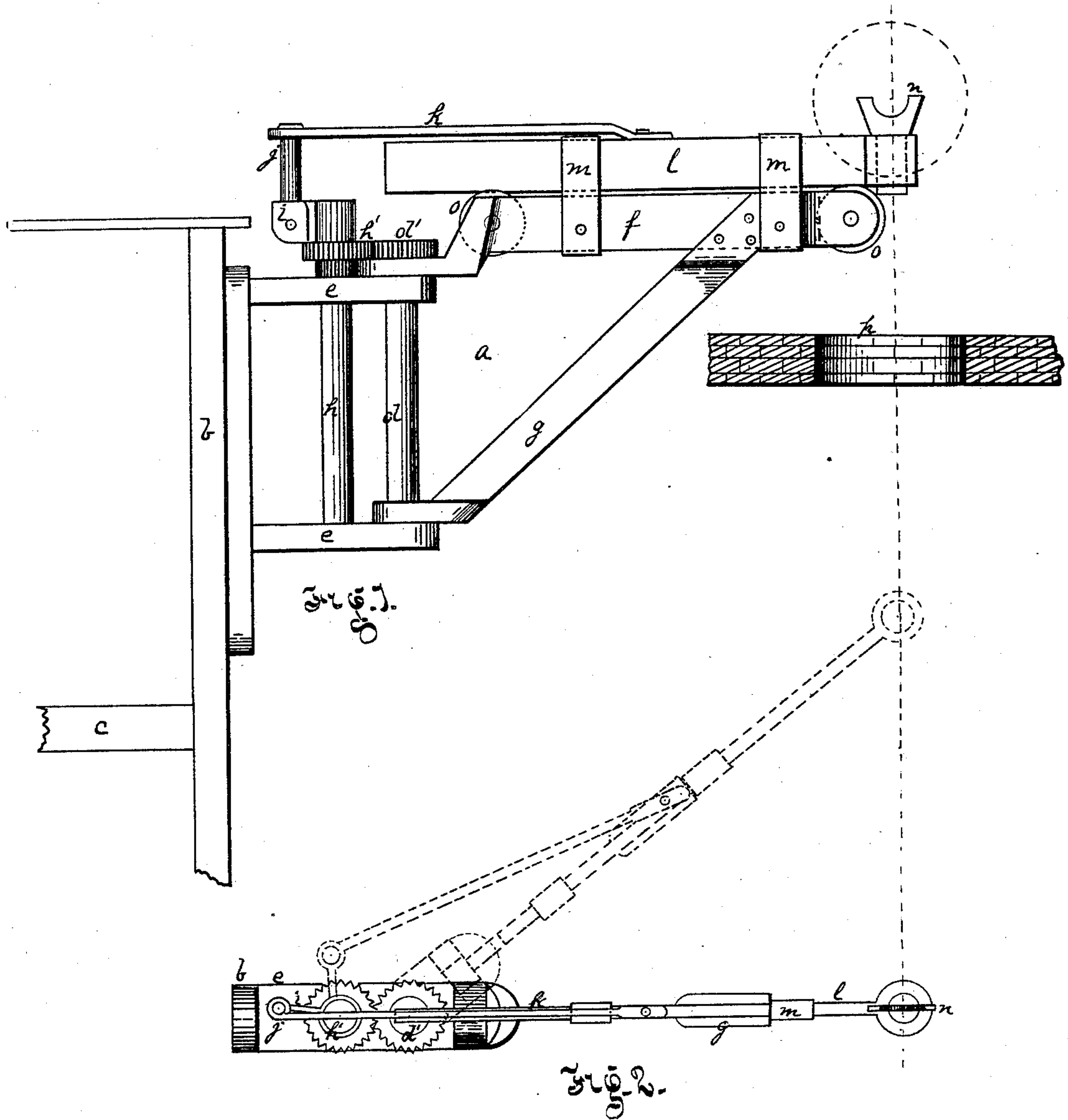


W. HIRT.
Glass-Makers' Crane.

No. 223,348.

Patented Jan. 6, 1880.



Witnesses.

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UNITED STATES PATENT OFFICE.

WILHELM HIRT, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR TO HIMSELF
AND CUNNINGHAMS & COMPANY.

GLASS-MAKER'S CRANE.

SPECIFICATION forming part of Letters Patent No. 223,348, dated January 6, 1880.

Application filed October 23, 1879.

To all whom it may concern:

Be it known that I, WILHELM HIRT, of
Pittsburg, in the county of Allegheny and
State of Pennsylvania, have invented a new
5 and useful Improvement in Glass-Makers'
Cranes; and I do hereby declare the follow-
ing to be a full, clear, and exact description
thereof, reference being had to the accompany-
ing drawings, forming a part of this specifica-
10 tion, in which—

Figure 1 is a side elevation of my improved
crane, and Fig. 2 is a plan view of the same.

Like letters of reference indicate like parts
in each.

15 In making window-glass the molten glass is
gathered on the blow-pipe and formed by
blowing and swinging into a long cylinder.
During this operation the glass-blower stands
on a platform in front of the glory-hole or
20 finishing-furnace, and swings the gradually-
expanding and heavy mass of glass in a pit
in which the platform stands. It is necessary
that the glass cylinder should be placed in the
glory-hole of the furnace to keep it soft and
25 plastic while being finished. During the oper-
ation the cylinder is rotated or twirled to pre-
vent it from drooping. As the cylinder is very
heavy the blower cannot, while finishing it,
support it in the horizontal position necessary
30 to its presentation to the finishing-furnace.

Two devices have heretofore been adopted
for this purpose. One of these is a forked iron
bar long enough to reach to the level of the
glory-hole from the bottom of the pit. It is
35 held by a boy, who stands in the pit, and when
the blower desires to use it he swings his pipe
up horizontally and rests it in the fork. The
other device is a swinging crane mounted in
front of the glory-hole and swinging into po-
40 sition when needed. This is a much preferable
device to the forked bar, but it is open to the
objection that the fulcrum of the pipe cannot
be kept in the right line with the glory-hole.

In finishing the cylinder of glass, which is
45 nearly as large in diameter as the glory-hole,
it is pushed in and out of the hole a number of
times, and is liable to come in contact with
the sides. As the glass is soft and the cylin-
der is in constant rotation this contact seams
50 the glass and gives it a distorted appearance,

which is very injurious to it and renders it un-
salable. With the swinging crane the angle
of presentation of the cylinder is constantly
changing, and this, owing to the narrowness
of the hole, is a source of constant trouble and 55
loss.

Another objection to the swinging crane is
that it occupies so much room that it cannot
be applied to many furnaces now in use, be-
cause the work-holes are placed near together. 60
Its use is therefore generally limited to the
outer holes, its advantages not compensating
for the enlargement of the furnace necessary
for its general use.

My invention consists of a swinging crane 65
having an extension-arm which is projected
by a crank operated by gearing from the shaft
of the crane, so that the angle of presentation
of the cylinder is always the same, or nearly
so, so that as the pipe is moved toward or from 70
the furnace it always travels in a right line.

To enable others skilled in the art to which
it appertains to make and use my invention, I
will proceed to explain its construction and
mode of operation. 75

The crane *a* is mounted on a post, *b*, extend-
ing up from the platform *c*. It is composed of
a shaft, *d*, mounted in bearings *e e*, and a
swinging arm, *f*, sustained by a brace, *g*, both
80 mounted on the shaft *d*. Back of the shaft *d*
is a counter-shaft, *h*, and on the upper ends of
the shaft *d* and *h* are the pinions *d'* and *h'*,
which mesh into each other.

The shaft *h* has an arm, *i*, at its upper end,
which extends back, and on this arm is a ver- 85
tical pin, *j*, from which a rod, *k*, runs forward
and is fastened to a slide or extension, *l*, placed
on top of the arm *f*, and sliding in the yokes
m. At the outer end of the slide *l* is a bear-
90 ing, *n*, for the blow-pipe.

I prefer to use friction-rollers *o* between the
arm *f* and slide *l*, but they may be dispensed
with. The glory-hole of the furnace is shown
by the dotted line in Fig. 1, and at *p* in Fig. 2.

The effect of this construction is that the 95
crane in its normal position stands as shown
by the full lines of the drawings; but when the
blower rests his pipe on the bearing *n* and
pushes the cylinder into the glory-hole, the
swing of the crane turns the shaft *h* by means 100

of the pinions $d' h'$, which throws the arm i forward, and thereby moves the slide l , lengthening the arm of the crane and keeping the bearing of the blow-pipe on a right line, or
5 nearly so, with the center of the glory-hole. This operation is illustrated by the broken lines in Fig. 2. The line of movement of the bearing n is tangential to the circle described by the end of the crane.
10 The advantages of my improvement are that by it there is much less danger of the glass striking the sides of the glory-hole, and, owing to its being shortest when standing across the pit, one can be used at each hole without
15 interfering with those at the adjoining holes.

What I claim as my invention, and desire to secure by Letters Patent, is—

A swinging crane having a slide or extension arm and a crank connected with the slide and operated by gearing from the shaft of the crane for causing the slide to be projected so that its end shall move at a tangent, or nearly so, to the circle described by the crane, substantially as and for the purposes set forth.

In testimony whereof I, the said WILHELM HIRT, have hereunto set my hand.

WILHELM HIRT.

Witnesses:

A. C. JOHNSTON,
T. B. KERR.