

No. 682,957.

Patented Sept. 17, 1901.

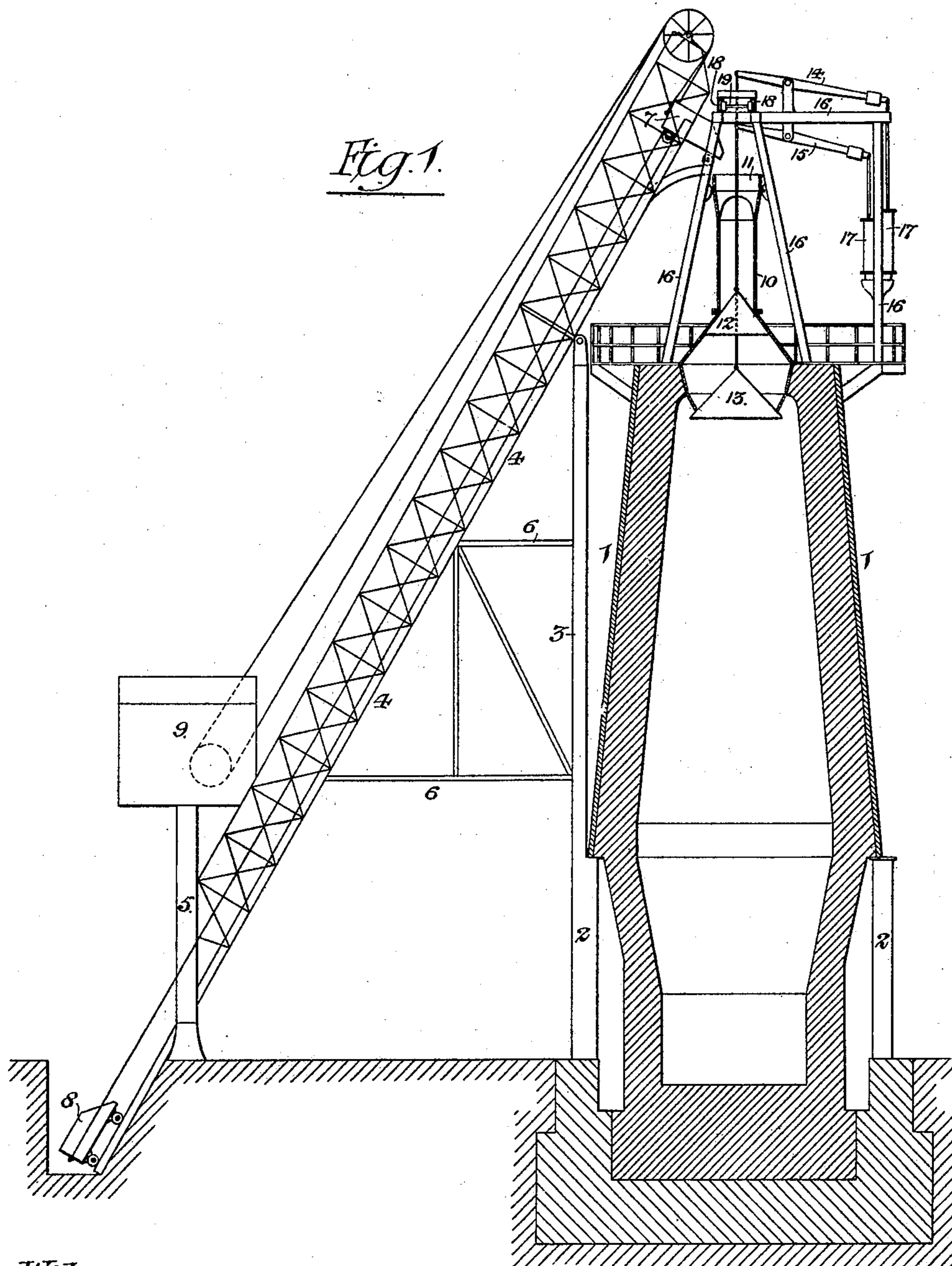
J. W. SEAVER.

FUEL FEEDING MECHANISM FOR BLAST FURNACES.

(Application filed Oct. 10, 1899.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses:-

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2 Sheets—Sheet 2.

Fig. 2.

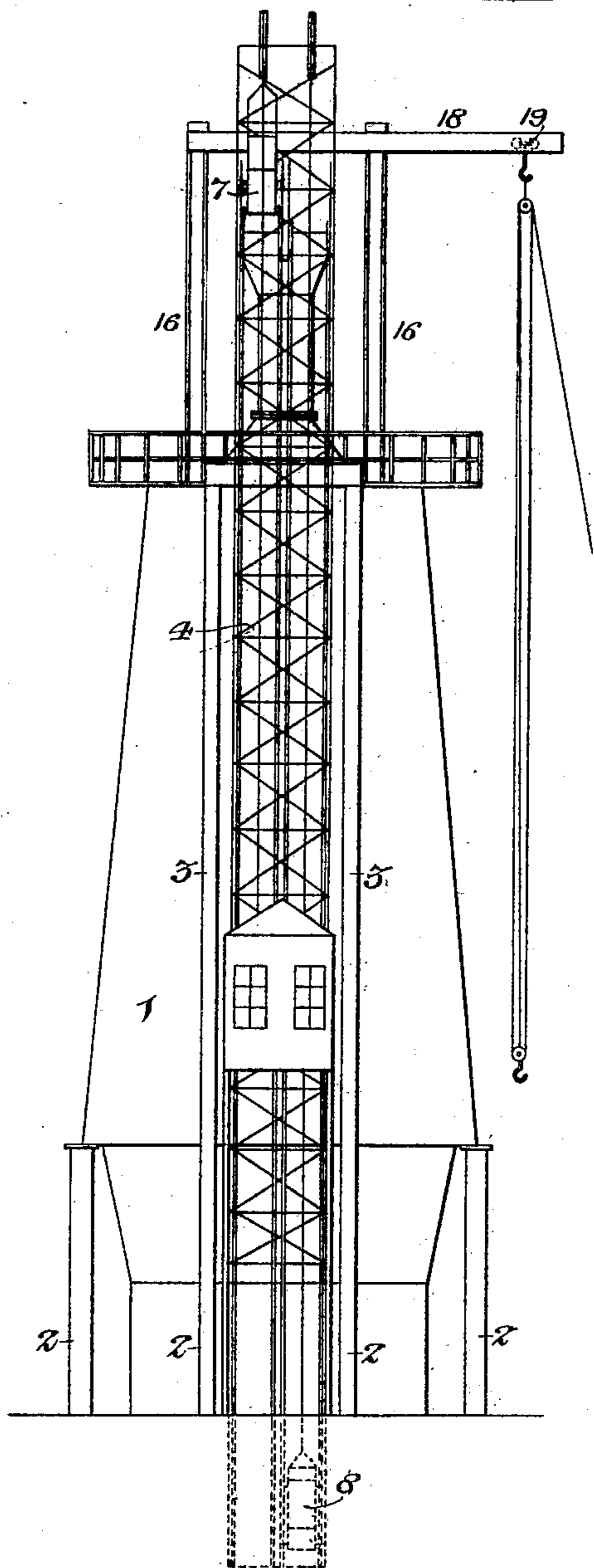


Fig. 3.

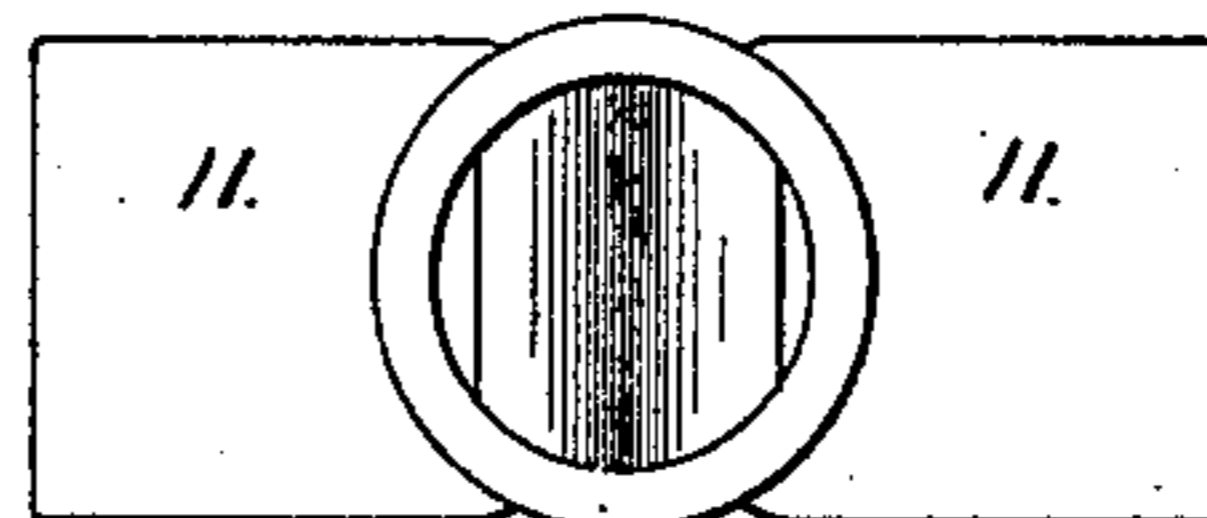
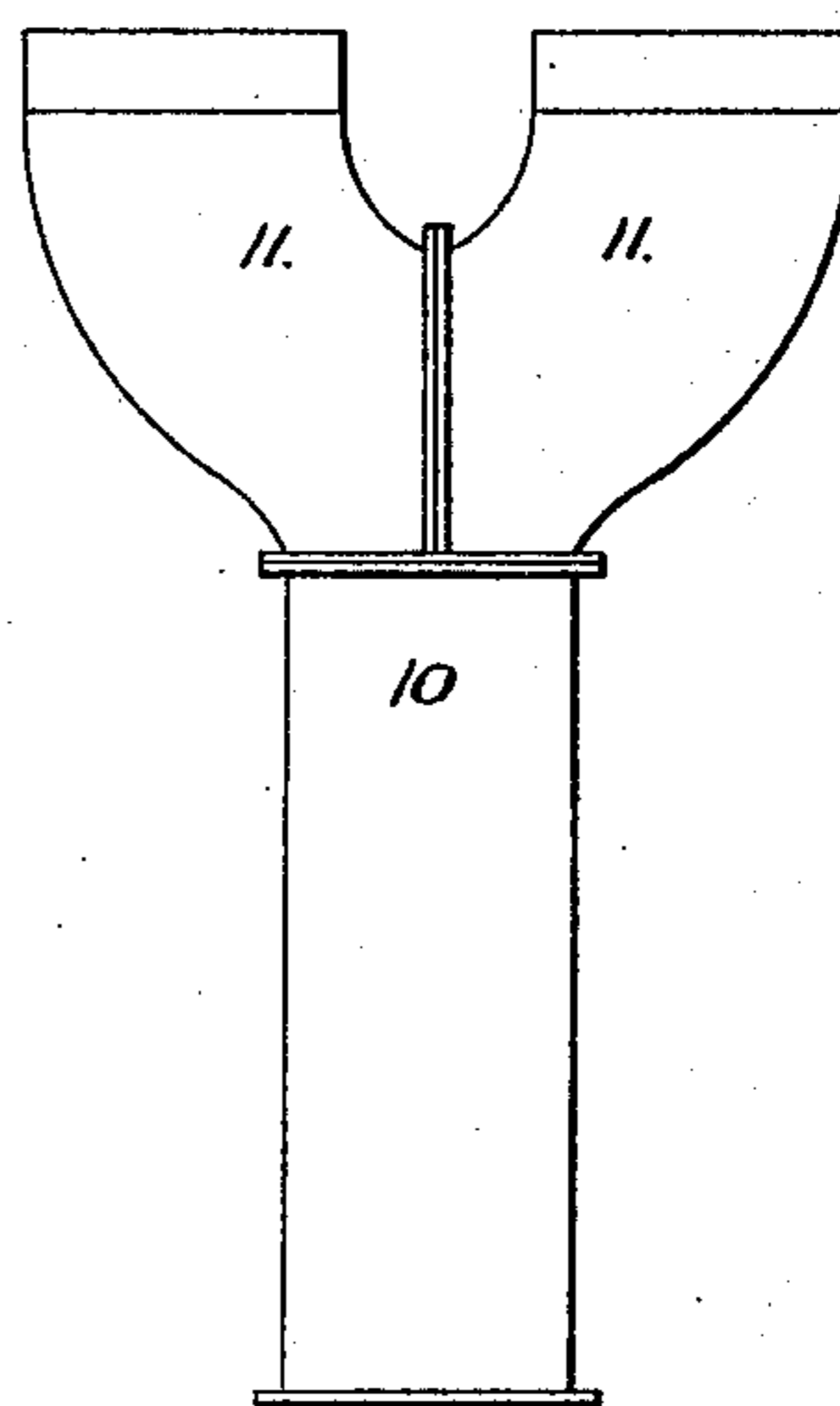


Fig. 4.

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UNITED STATES PATENT OFFICE.

JOHN W. SEAVER, OF CLEVELAND, OHIO, ASSIGNOR TO THE WELLMAN-SEAVER ENGINEERING COMPANY, OF SAME PLACE.

FUEL-FEEDING MECHANISM FOR BLAST-FURNACES.

SPECIFICATION forming part of Letters Patent No. 682,957, dated September 17, 1901.

Application filed October 10, 1899. Serial No. 733,198. (No model.)

To all whom it may concern:

Be it known that I, JOHN W. SEAVER, a citizen of the United States, and a resident of Cleveland, Ohio, have invented certain Improvements in Fuel-Feeding Mechanism for Blast-Furnaces, of which the following is a specification.

One object of my invention is to so construct a hoisting device or skip for handling the filling-buckets used in connection with a blast-furnace that the expansion or contraction of the shell of the furnace will not distort or otherwise injuriously affect said hoisting device, a further object being to provide for the use of two filling-buckets discharging side by side and yet effect the delivery of their contents centrally over the charging-bell.

Another object of my invention is to provide means whereby the bell and hopper or other top portions of the furnace can be raised to or lowered from the top of the furnace and readily adjusted to or removed from position when thus raised.

These objects I attain in the manner hereinafter set forth, reference being had to the accompanying drawings, in which—

Figure 1 is a side view, partly in section, of a blast-furnace with auxiliary mechanism in accordance with my invention. Fig. 2 is a front view of the same. Fig. 3 is an enlarged front view of the receiving and dumping hopper, and Fig. 4 is a bottom view of the same.

The blast-furnace may be constructed in any ordinary manner, 1 representing the shell of such furnace, which is supported upon columns 2. Certain of these columns, however, are extended upwardly, as shown at 3 in Figs. 1 and 2, and these upwardly-projecting columns serve as supports for the inclined framework 4 of the hoisting apparatus, whereby the filling-buckets are raised to the top of the furnace, the columns or girders 5 at the base of said framework being securely bolted to a proper foundation, and the framework being also connected to the columns 3 by interposed bracing 6, as shown in Fig. 1, so as to possess the proper rigidity. It will be noted that by this means the hoisting-framework is supported independently of the furnace-shell, so that no amount of expansion or contraction of said shell due to

the varying conditions of working of the furnace can affect said hoisting-frame, which is therefore free from liability to distortion or injury, which might otherwise result from such expansion and contraction of the furnace-shell.

The hoisting-framework has in the present instance runways side by side for two hoisting-buckets 7 and 8, which are operated by a hoisting mechanism contained in a cage 9, mounted upon the framework 4 some distance above the level of the bottom of the furnace, so that it is entirely out of the way of the workmen whose duties require their presence around said bottom portion of the furnace. The hoisting-buckets may be operated alternately, one rising as the other descends, so that they counterbalance each other, and thus relieve the hoisting mechanism of anything but the weight of the load, or where this is not an important object the hoisting-buckets may be raised and lowered together.

At the top of the furnace is a charging-hopper 10, having two laterally-branching necks 11, one adapted to receive a load dumped from the charging-bucket 7 and the other receiving the load dumped from the charging-bucket 8, both loads being united in the hopper 10, so that they may be deposited centrally upon the charging-bell. In the present instance the charging-bell is of duplex construction, comprising the upper bell 12 and lower bell 13, the bell 12 being suspended from a lever 14 and the bell 13 from a lever 15 and both of these levers being mounted upon a framework 16, erected upon the top of the furnace, each lever being under control of a hydraulic or other power cylinder 17, so that the bells 12 and 13 can be opened and closed as desired. By this means the charge can be deposited in the hopper 10 and the upper bell 12 can then be lowered so as to permit the charge to enter the chamber below said upper bell and fall onto the lower bell 13. The upper bell can then be closed and the lower bell opened, so as to permit the charge to enter the furnace, the upper bell preventing the escape of gas through the charging-hopper 10.

Also mounted upon the framework 16 at the top of the furnace are a pair of beams or

girders 18, which extend laterally beyond said framework 16 and overhang the furnace to such an extent that a trolley 19, running upon said beams, may be run out to such an extent that the hoisting mechanism carried thereby can be used for raising to or lowering from the top of the furnace the bell, hopper, or other top fittings of the furnace as well as for lifting them from or adjusting them to their proper positions at the top of the furnace, thus providing a convenient method of manipulating these parts and effecting a material saving of time and labor whenever repair or replacement of any of them becomes necessary.

Having thus described my invention, I claim and desire to secure by Letters Patent—

1. The combination of a blast-furnace with a hoisting-frame for the loading bucket or buckets, and supporting elements for said frame consisting of upward continuations of

the supporting-columns of the furnace, said upward continuations of the columns being disconnected from the shell of the furnace, substantially as specified.

2. The combination of a blast-furnace and the hoist for the charging-bucket, with a framework erected upon the top of the furnace and having mechanism for operating the charging-bells, beams or girders projecting laterally from said framework and extending beyond the furnace structure, and a laterally-traveling hoisting-trolley running on said beams or girders and independent of the hoisting devices for the charging-bucket, substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN W. SEAVER.

Witnesses:

C. W. COMSTOCK,
S. R. SAGUE.