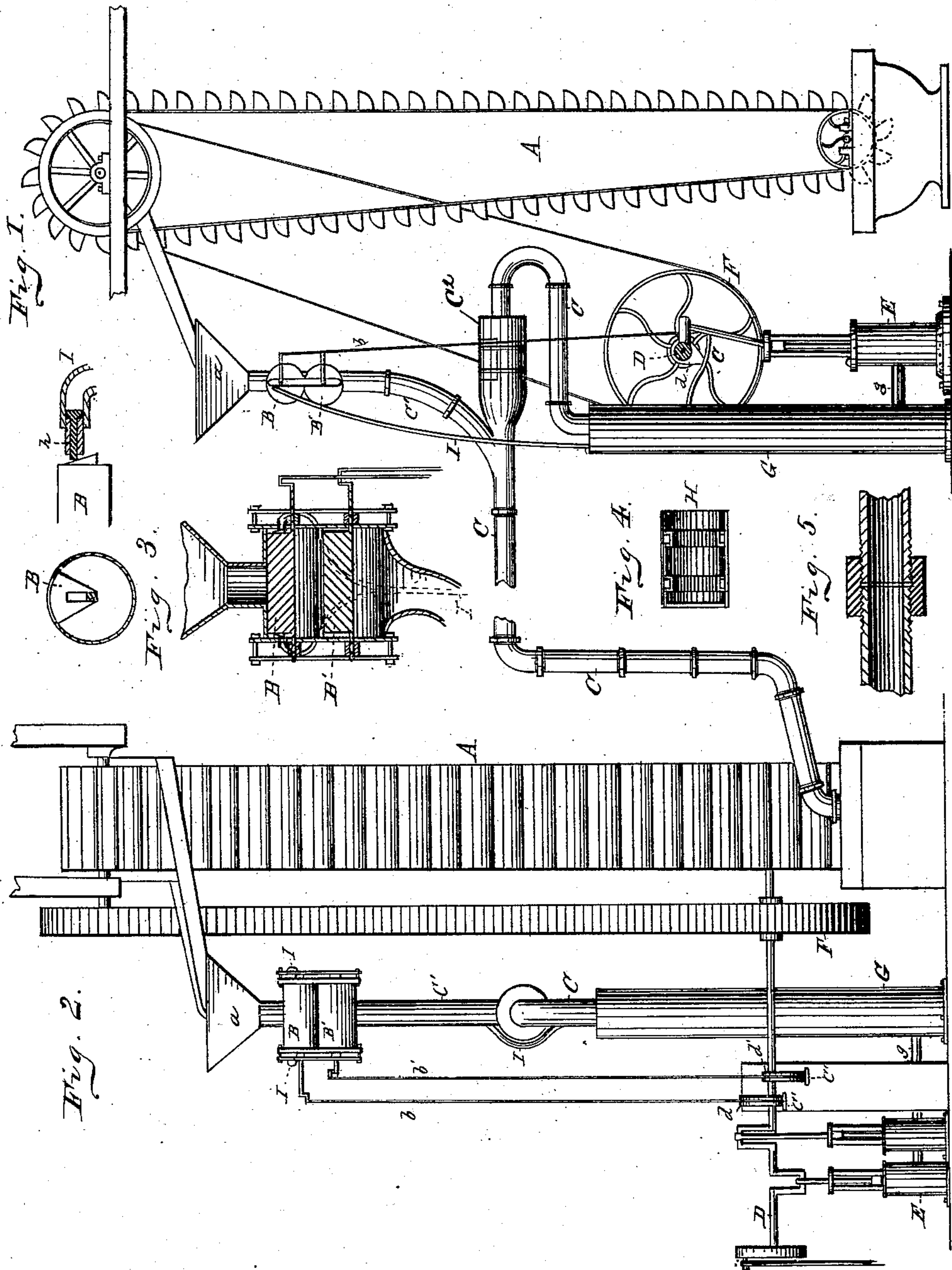


(No Model.)

T. F. HOREN.
GRAIN TRANSPORTING DEVICE.

No. 256,319.

Patented Apr. 11, 1882.



WITNESSES

W. Engel
Wm. C. Smith Jr.

Thos F. Horen INVENTOR

B. S. Sargent & Sargent

ATTORNEYS

UNITED STATES PATENT OFFICE.

THOMAS F. HOREN, OF CLEVELAND, OHIO.

GRAIN-TRANSPORTING DEVICE.

SPECIFICATION forming part of Letters Patent No. 256,319, dated April 11, 1882.

Application filed January 12, 1882. (No model.)

To all whom it may concern:

Be it known that I, THOMAS F. HOREN, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Grain-Transporting Devices; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

My invention relates to devices for transporting grain, &c., through a pipe by means of pneumatic pressure. A glass pipe is preferred, there being no friction, consequently no wear of the grain, which in traveling a great distance would be quite a loss, if allowed to come in contact with a rough surface. It is designed to place stations at intervals of about fifty miles and to force the grain from one station to the other, each station being provided with an elevator and pump, the operation of which will be more fully hereinafter described and claimed.

In the drawings, Figure 1 represents in side elevation an elevator and pump. Fig. 2 is a front elevation of the same. Fig. 3 represents a valve and parts thereof to be used in connection with my device. Fig. 4 represents a plug that may be used to force the grain through the pipe when it is blockaded. Fig. 5 shows the manner of connecting the glass pipe by the usual process of uniting them with a screw-collar.

A represents a grain-elevator preferably used in connection with my device. When in operation this empties the grain into the hopper *a*, from whence it passes through the valves B and B' into the pipe C'. These valves are operated by means of rods *b b'*, that are attached to the springs *c'* and *c'*. These springs are permanently secured to a pillar or any stationary object. They are operated upon by the cams *d* and *d'*, which are secured to the shaft D. To this shaft are connected the pumps E and the pulley F. The grain-elevator receives its motion by means of a belt or other suitable mechanism through this pulley F.

G is an air-tank, which is connected with the pump by means of the pipe *g*. The air is forced from this tank into the pipe C. In the

rear of where the grain enters the pipe is enlarged, as shown in C², so as to admit the passage of the plug H through an opening in the pipe. This opening must be closed so as to be air-tight.

I represents a small pipe that connects with the cylinder-heads of the valve B. It may receive its pneumatic pressure from the tank G, or from a separate pump. It is adapted to force the grain down the pipe C' into the pipe C, and is operated alternately with the valve B, which tapers at its ends, thus operating the valve *h*, as shown in Fig. 3.

My device is operated as follows: The pumps are set in motion by means of suitable power, transferring the air into the tank G, from whence the blast passes into the pipe C. The elevator now carries the grain to the hopper *a*, and it passes through the double valves B and B', which have a reciprocating movement and work alternately with each other. The valve B in closing comes in contact with the pin in valve *h*, thus allowing the air to pass through the valve B' as it opens and carries the grain before it into the main pipe C. It is then conveyed to the next station, where the grain empties itself into a bin, and is carried by means of the buckets into the hopper *a*, and again goes through the process as described above.

The size of pipe must be proportionate with the amount of air received from the pumps. If too large, the grain will lie in the bottom of the pipe and only the surface of it will be carried along, and it will ultimately block up the pipe.

When the pipe is blockaded the plug H is inserted into the pipe and forces the grain along until it reaches the next station.

What I claim is—

1. In an apparatus for transporting grain from place to place, the combination, with a suitable conducting-pipe having an enlarged end, of a plug or driver, and devices for feeding grain to the conveyer-pipe, and for forcing a blast of air through said pipe to move the grain, substantially as set forth.

2. In a grain-transporting device, the combination of a conveyer-pipe, an air-blast pump, and a grain-charging device, the latter being

provided with valves B B' and rods *b b'*, for operating the latter, substantially as set forth.

3. In a grain-transporting device, the combination, with the conveying pipe C and an
5 air-blast device, of a plug or driver, H, substantially as and for the purpose set forth.

4. In a grain-transporting device, the combination of a grain-receiving bin or hopper,
a, and the alternately-operating valves B B',
10 substantially as and for the purpose set forth.

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

THOMAS F. HOREN.

Witnesses:

W. ENGEL,

M. D. LEGGETT.