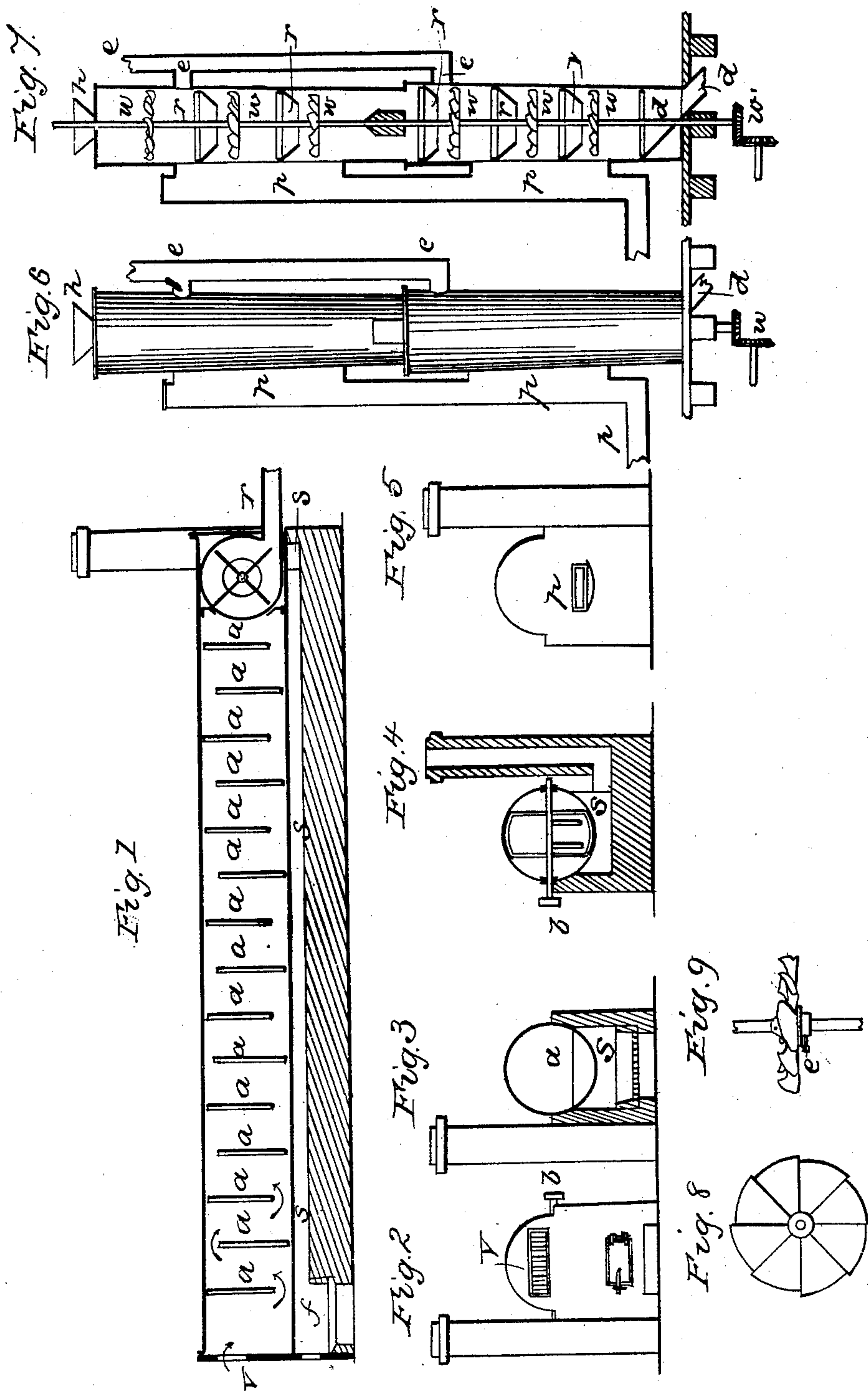


J. SOUTER.
Grain Drier.

No. 24,589.

Patented June 28, 1859.



UNITED STATES PATENT OFFICE.

JOSEPH SOUTER, OF CHICAGO, ILLINOIS.

APPARATUS FOR DRYING GRAIN.

Specification of Letters Patent No. 24,589, dated June 28, 1859.

To all whom it may concern:

Be it known that I, JOSEPH SOUTER, of Chicago, Cook County, Illinois, have invented a new and Improved Apparatus for Drying Grain; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings and to the letters of reference marked thereon.

Figure 1, represents a longitudinal section of a "heater" of iron set in brick with a fire box at one end, the flue for smoke passing beneath the heater throughout its length as marked (*s*.) The interior of this heater is divided into compartments by iron partitions (*a*) commencing alternately from the top and bottom of the heater at intervals throughout its length. These partitions are not to separate entirely one compartment from another, but to reach three quarters of the diameter of the heater from top and bottom respectively as shown at (*a*) in Fig. 1, and in cross section of heater at Fig. 3. The object of these partitions is to present more heating surface to the air which entering the heater at (*r*) is drawn through in the direction of the arrows. At the opposite end of the heater is placed a "fan" constructed after the usual manner of fans, firmly secured to the interior of heater, and to which motion is applied by the band wheel (*b*) shown in Figs. 2 and 4. The action of this fan draws the air through the heater in the direction of the arrows, when it becomes intensely heated by the large amount of heating surface afforded by the partitions and is forced through the blast pipe (*p*) into the cylinders shown in elevation Fig. 6, and section Fig. 7.

Fig. 2, represents an end view of heater showing air valve and furnace door; Fig. 3, a section through fire box and heater showing arrangements of partitions (*a*); Fig. 4, a section of heater through fan, showing the manner in which motion is applied to fan by hand wheel (*b*), also a section of smoke flue (*s*); Fig. 5, rear end view of heater showing the exit of blast pipe (*p*).

Fig. 6, represents a view of two cylinders of iron placed one above another in the different stories of a warehouse. The grain

entering at the top through the hopper (*h*) falls through these and passes out at discharge pipe (*d*) at bottom. The hot air from the heater enters these cylinders through the blast pipe (*p*), the opening from this pipe into the cylinders being about six feet in length and covered with a screen perforated with small holes to admit the air without allowing the grain to pass into the pipe (*p*). The air thus forced into the cylinders finds an exit through the escape pipe (*e*). Fig. 7, represents a section of these cylinders and their interior arrangement. (*p*) shows a section of blast pipe and its entrance into cylinder and (*e*) the escape pipe. Through the center of these cylinders runs a vertical shaft *y* of iron; at intervals to which are attached three wheels (*w*) in each cylinder, constructed of iron in segments as shown in Fig. 8, in plan and Fig. 9, in elevation. These iron segments are riveted to an iron hub which slips up and down the shaft *y* and is set at pleasure by means of the set screw (*c*). The outer edge or rim of these segments is turned up slightly and the segments inclined to the plane of their revolution, which is shown fully in the drawings. On the top of each of these wheels is a small cone (*o*) in Fig. 9, to spread the grain from the shaft toward the outside of wheel. Between each of the wheels in each cylinder is an inclined rim of iron marked (*v*) riveted to the cylinder. Motion is applied to the shaft and wheels by the wheels (*w'*) at bottom.

The action of this apparatus is as follows: The air after being heated in the heater is forced by the fan through the blast pipe (*p*) into the cylinders. The grain then entering through the hopper (*h*) at top drops on to the first wheel (*w*) which revolving scatters the grain through the interior space so that the hot air has full action to dry it. The grain then is gathered in its fall by the inclined rim (*v*) to the center of the second wheel (*w*) where the same process of scattering is passed through with and so on from rim to wheel through the whole length of the cylinders till it is gathered into the discharge pipe (*d*) at the bottom.

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

The drying of grain by means of heated air within a vertical cylindrical chamber 5 which is provided with a series of tapering rims *r*, and a central shaft *y*, which is armed with a series of winged scattering wheels *w*, when a fan, or some other equivalent means,

is employed for producing an upward current of heated air through the said chamber 10 in the manner herein set forth.

JOSEPH SOUTER.

Witnesses:

JACOB G. CONRAD,

GEO. E. CONRAD.