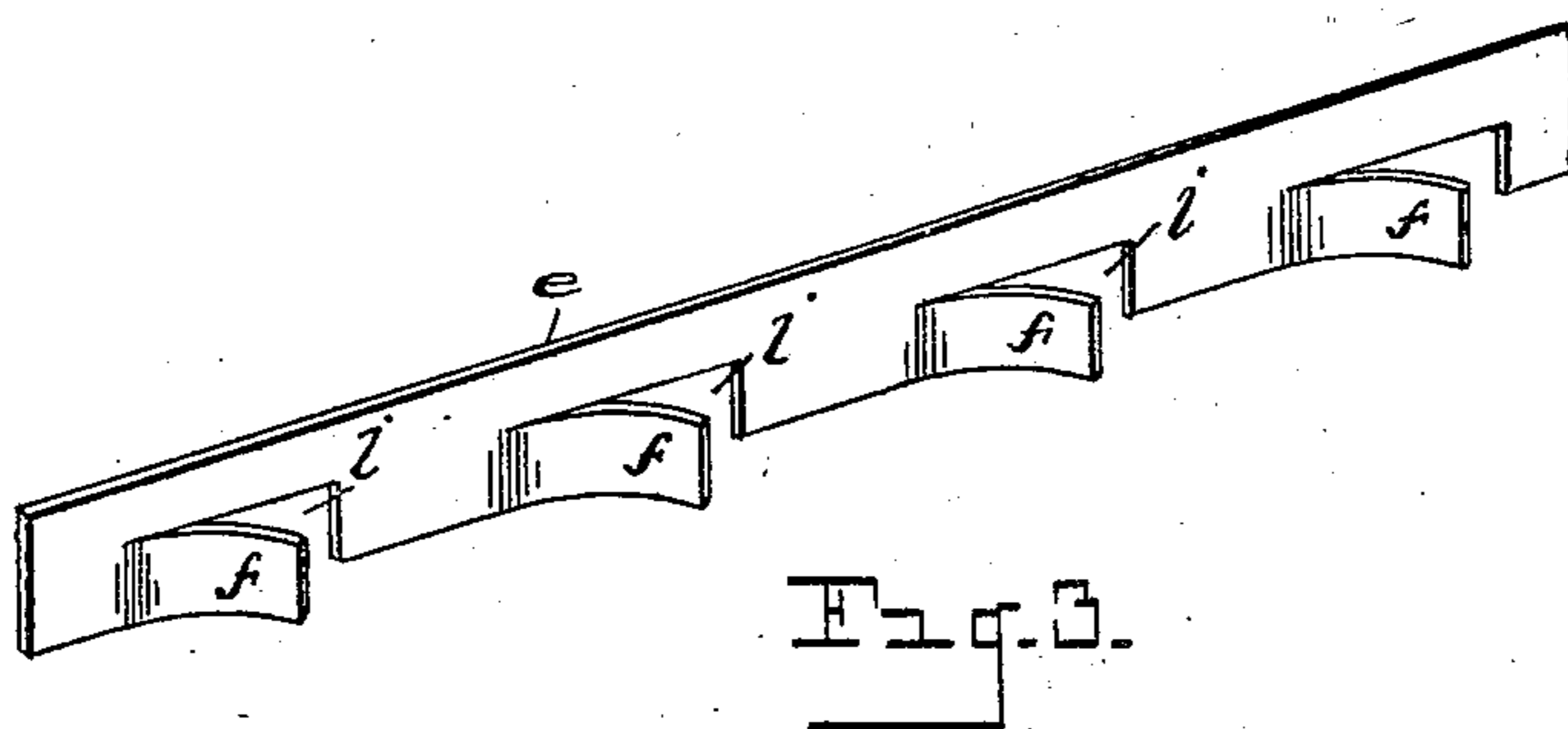
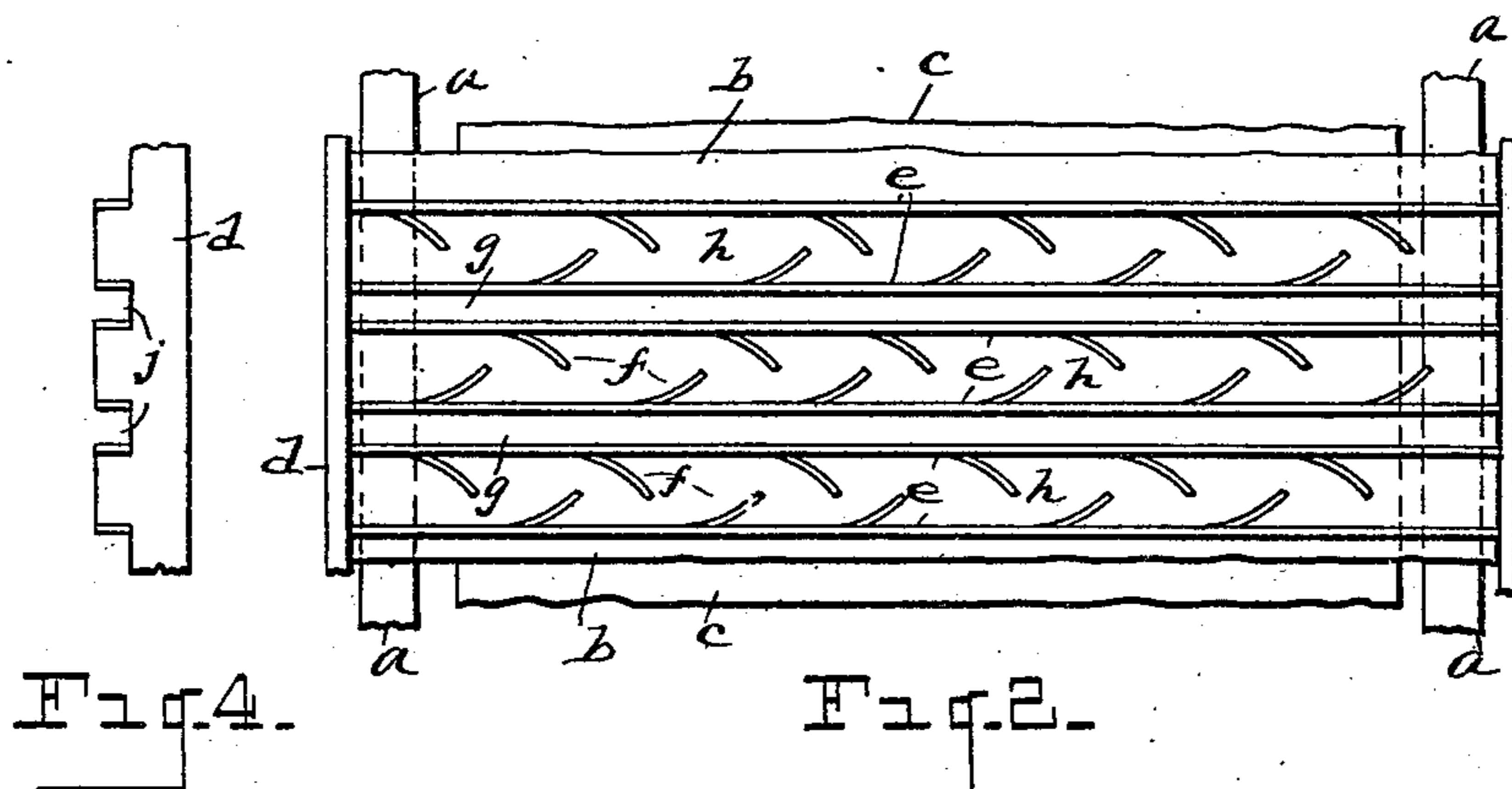
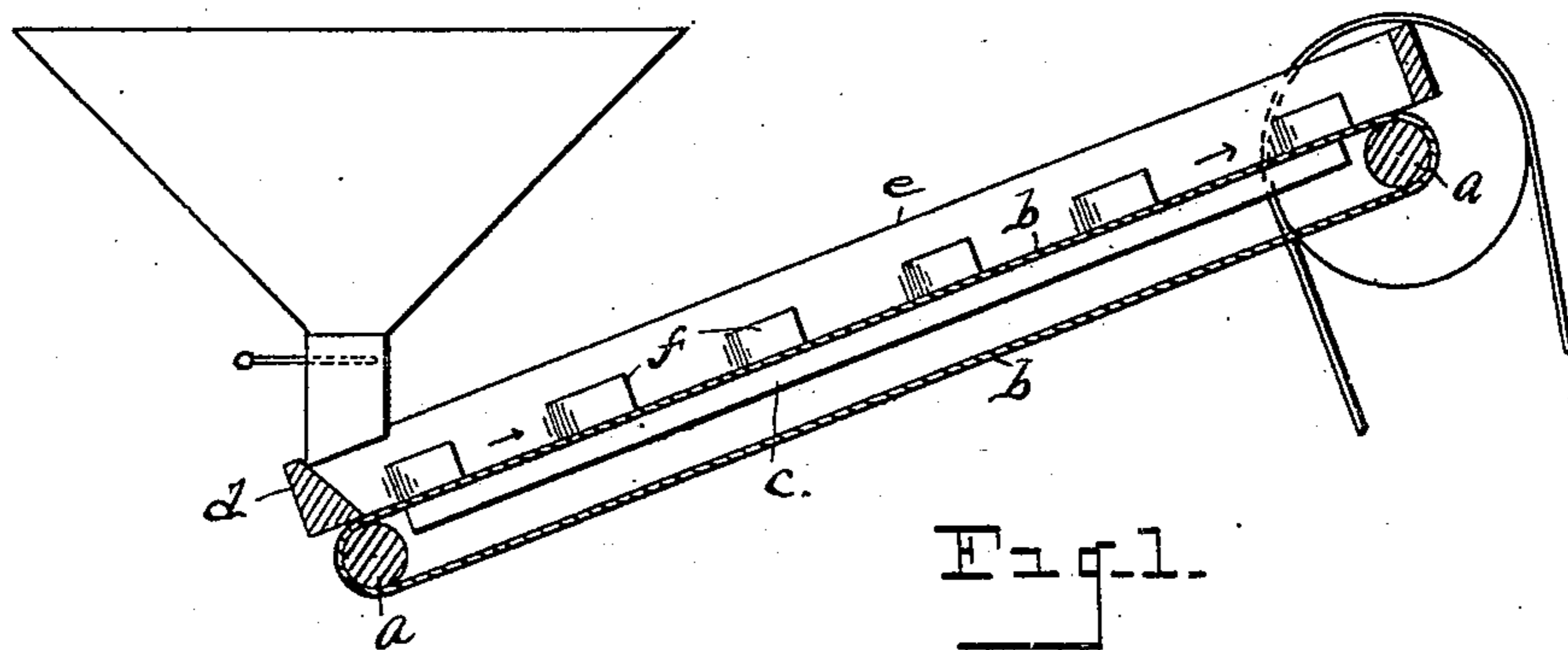


No. 868,412.

PATENTED OCT. 15, 1907.

W. CLEMENT.  
GRAIN SEPARATOR.  
APPLICATION FILED DEC. 24, 1906.



WITNESSES

O. R. Baenziger  
E. M. Spielburg

INVENTOR

Walter Clement  
By Newell S. Wright  
His Attorney

# UNITED STATES PATENT OFFICE.

WALTER CLEMENT, OF ADRIAN, MICHIGAN.

## GRAIN-SEPARATOR.

No. 868,412.

Specification of Letters Patent.

Patented Oct. 15, 1907.

Application filed December 24, 1906. Serial No. 349,260.

*To all whom it may concern:*

Be it known that I, WALTER CLEMENT, a citizen of the United States, residing at Adrian, county of Lenawee, State of Michigan, have a certain new and useful  
5 Improvement in a Grain-Separator, of which the following is a specification, reference being had to the accompanying drawings, which form a part of this specification.

My invention has for its object to provide a grain  
10 separator, the same being more especially designed for separating "sand vetch" from wheat, rye and analogous grain.

It is well understood that the seeds of the sand vetch are black and round and of varying sizes, and that owing  
15 to their color they may materially injure flour unless they are separated from the grain before it is ground. Moreover, the seeds of the sand vetch are deemed of special value commercially and for this reason also it is very desirable to provide means for separating the same from the grain. The specific gravity  
20 is practically the same as that of other grain, so that it has been found difficult or practically impossible to accomplish the separation by water, while also for the same reason it has been found quite impracticable to  
25 separate the sand vetch seed from other grain by an air blast. Hitherto, it is believed, no satisfactory means have been devised for screening the two kinds of seeds.

My present invention is therefore designed to overcome this difficulty and to provide efficient means  
30 whereby the sand vetch seed may be readily separated from other grains in a simple and ready manner.

I carry out my invention as more fully hereinafter described and claimed and illustrated in the accompanying drawings, in which,

35 Figure 1 is a view in longitudinally vertical section illustrating features of the invention. Fig. 2 is a plan view showing features of the invention. Fig. 3 is a detail view of one of the tongued bars in perspective. Fig. 4 is a detail view of the transverse bar at the foot of the  
40 apron.

In the accompanying drawings I have shown a couple of rotatable rollers indicated at *a, a*, over which travels an endless apron indicated at *b*, any desired mechanism being employed to move the apron. The apron is arranged to move on a suitable angle to the perpendicular,  
45 as illustrated in Fig. 1. A support *c* is located underneath the upper or working surface of the apron. Adjacent to the upper surface of the apron and at the foot thereof is a transverse bar indicated at *d*, a series of bars  
50 *e* extending at right angles to the bar *d* longitudinally of the travel of the apron, or in other words extending lengthwise of the movement of the apron.

The bars *e* are preferably made of metal and have a series of tongues *f* stamped out therefrom on the lower  
55 edge thereof, said tongues being pressed away from the

body of the bar preferably of a curved form, leaving corresponding orifices at the lower edge of the bar indicated at *i*. The bars *e* are preferably arranged in pairs forming a narrow channel between each pair as indicated at *g*, said channels extending lengthwise of the  
60 movement of the apron. The bars of each pair are also preferably separated more widely apart to form intermediate spaces between the pairs of tongued bars indicated at *h*.

The tongues of each pair of bars, as will be seen from  
65 the drawings, are turned outwardly or in opposite directions, the adjacent tongued bars of two corresponding pairs having their tongues projecting into the spaces *h*, the spaces *g* being free from the tongues and opening at their lower extremities preferably through the transverse bar *d*, the bar *d* being formed with openings indicated at *j* in alignment with the lower ends of the spaces  
70 *g*, so that any seed passing downward in the spaces *g* may be discharged through the openings *j*. The spaces *g* also, it will be observed, communicate through the openings *i* into the adjacent spaces *h*. Any suitable feeding mechanism may be employed to feed the mixed grain into the spaces or channels *h* at the lower ends thereof. The operation of the device will now be understood. The traveling apron tends to carry upward  
80 the grain fed into the lower ends of the channels *h*. The grain which is being carried upward thus is thrown from side to side in the channel *h* between the tongued bars, the tongues of said bars projecting into the spaces or channels *h* deflecting the grain. The openings *i* in  
85 the lower edges of the bars *e* are of a size to permit the vetch seed passing therethrough and into the adjacent channels *g*. The vetch seed being round and smooth, resembling common shot in form will readily fall back and find escape from the channels *h* through the openings *i* in the tongued bars and into the passage ways *g*.  
90 The passage ways *g* being without any deflecting tongues, the vetch seed readily falls back and down to the lower ends of said passage ways, finding their exit through the openings *j* in the transverse bar *d* at the  
95 foot of the apron.

The grains of wheat rye or oats with which the vetch seed is mixed average two or three times as long as they are thick, and when they start to roll down they are sure to swerve around enough to be carried up and out.  
100 In actual practice but a very small per cent of the kernels of grain find their way out with the vetch seed. The grains of wheat, etc., being of longer form are effectually prevented from dropping back, being caught against the tongues and carried forward and eventually  
105 over the upper end of the apron.

What I claim as my invention is:

1. A grain separator comprising a rotatable apron, a support under the working surface of the apron, tongued bars extending lengthwise of the travel of the apron  
110

formed with openings at the lower edge of the bars, the tongues of two adjacent bars being turned in opposite directions.

2. A grain separator comprising a rotatable apron, a support under the working surface of the apron, tongued bars extending lengthwise of the travel of the apron, said bars arranged in pairs forming channels and having the tongues of each pair turned outward in opposite directions, and additional channels between each pair of bars into which the tongues of the adjacent bars project.

3. A grain separator comprising a rotatable apron, a support under the working surface of the apron, tongued bars extending lengthwise of the travel of the apron, said bars arranged in pairs forming unobstructed channels and having the tongues of each pair turned outward in opposite directions, additional channels between each pair of bars into which the tongues of the adjacent bars project, and a transverse bar at the foot of the apron, said transverse

bar formed with openings registering with the unobstructed channels between the bars of each pair.

4. A grain separator comprising a rotatable apron, a support under the working surface of the apron, bars extending lengthwise of the travel of the apron having tongues turned away from the body of the bar at the lower edge thereof and forming openings at the lower edge of the bar, said bars arranged in pairs forming an unobstructed channel between the bars of each pair and adjacent unobstructed channels into which the tongues of said bars project, the obstructed channel and the obstructed channels communicating through the openings in said bars.

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

WALTER CLEMENT.

Witnesses:

J. J. AUCHAMPAUGH,

CHAS. HUMPHREY.