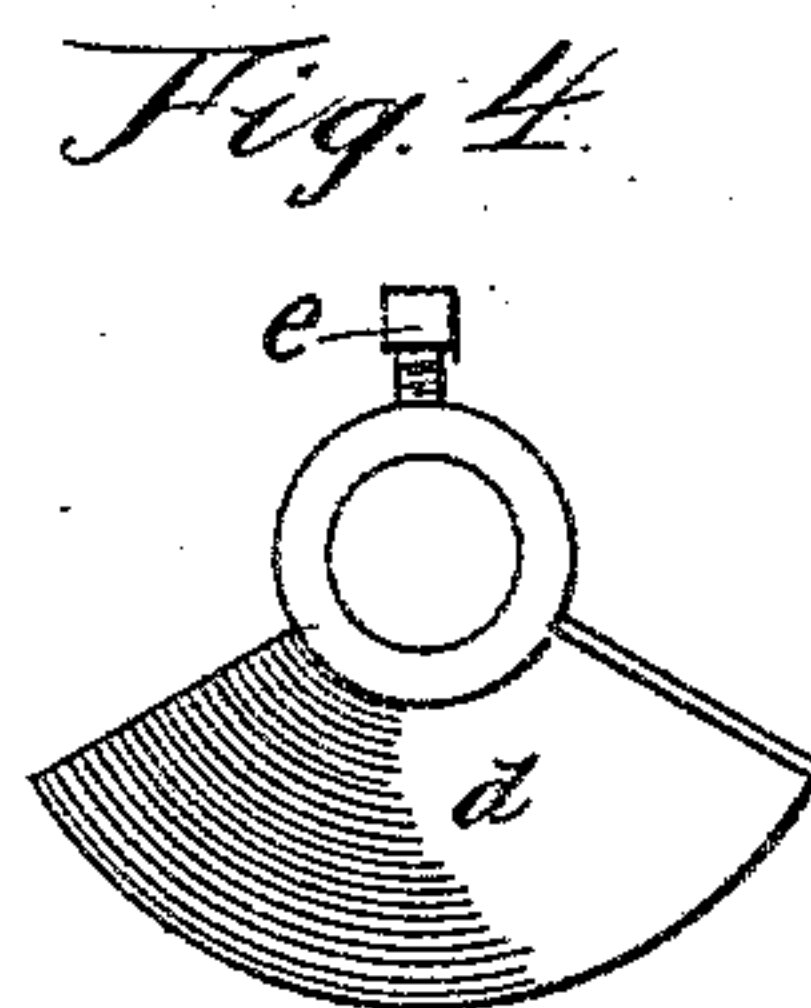
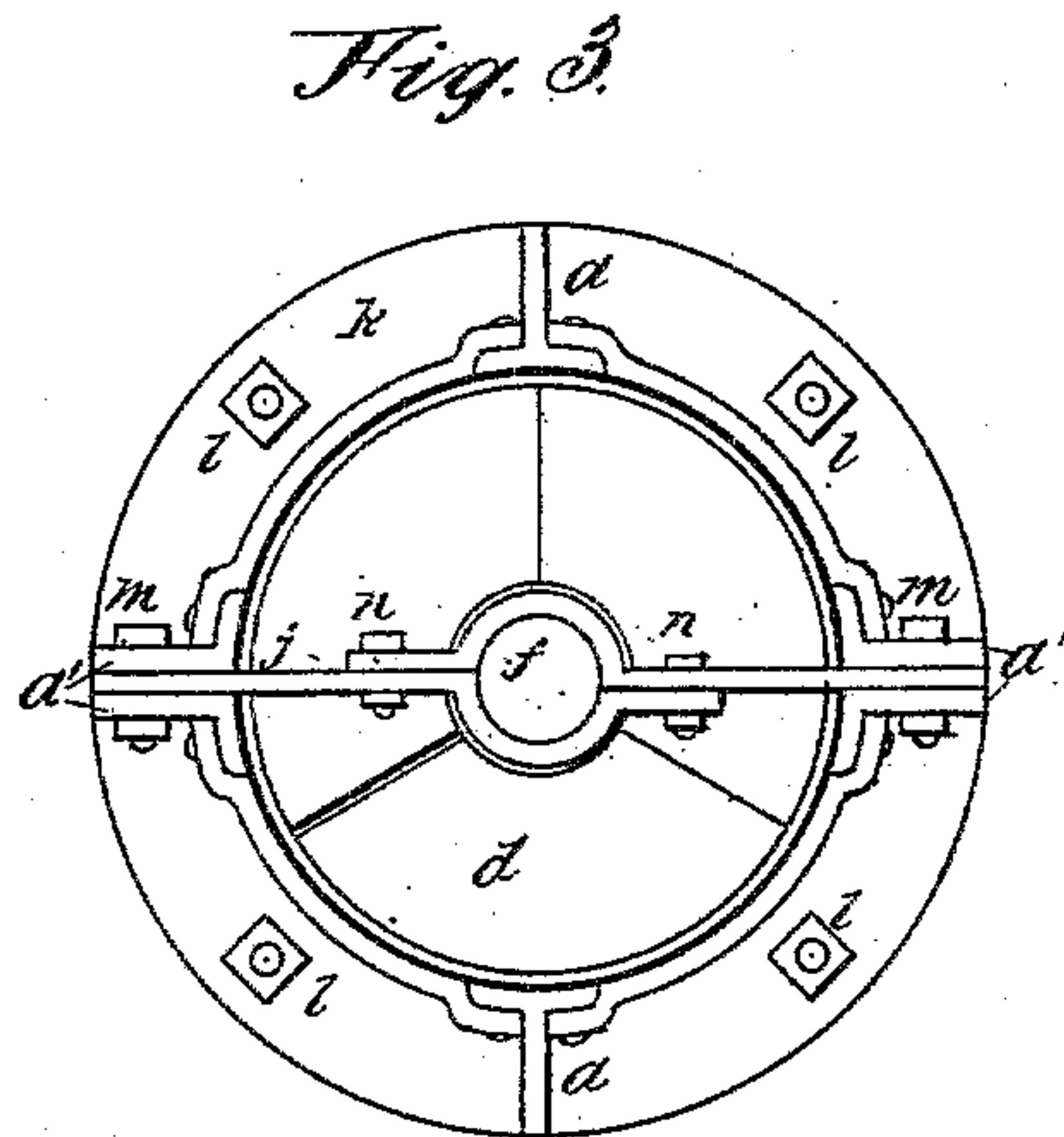
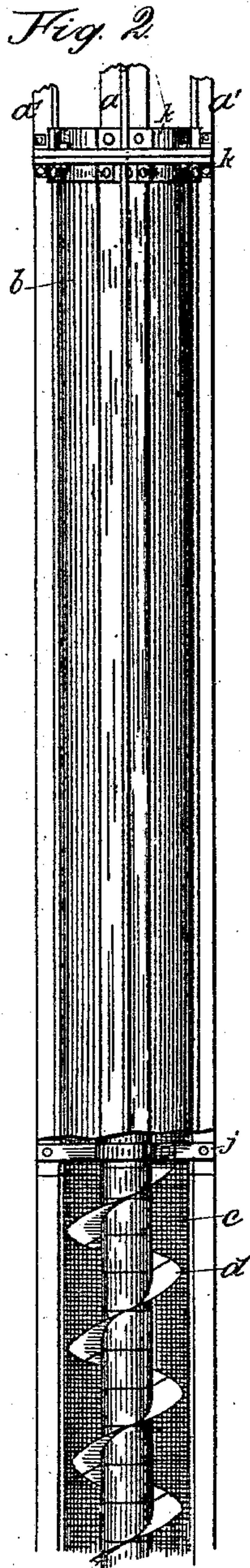
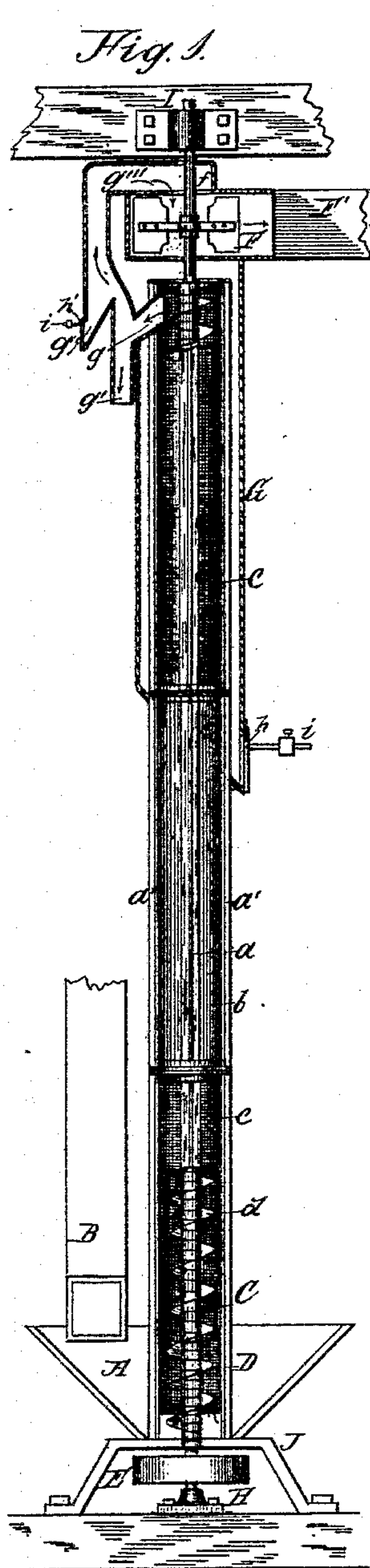


(No Model.)

A. FILIP.
GRAIN ELEVATOR AND CLEANER.

No. 411,799.

Patented Oct. 1, 1889.



Attest.
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UNITED STATES PATENT OFFICE.

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GRAIN ELEVATOR AND CLEANER.

SPECIFICATION forming part of Letters Patent No. 411,799, dated October 1, 1889.

Application filed May 7, 1889. Serial No. 309,920. (No model.)

To all whom it may concern:

Be it known that I, ANTON FILIP, a citizen of the United States, residing at Cedar Rapids, in the county of Linn and State of Iowa, have invented certain new and useful Improvements in Grain Elevators and Cleaners; 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 appertains to make and use the same.

The object of my invention is to so construct a grain-elevator as to secure a rapid and easy elevation of the grain and a thorough cleaning of the same in the same operation.

The invention consists in the construction, combination, and arrangement of parts, as hereinafter fully set forth and claimed.

In the accompanying drawings, forming a part of this specification, Figure 1 is a side-elevation of a machine embodying my invention, a portion of the upper and lower ends being in central vertical section. Fig. 2 is a fragmentary elevation, partly in the same section. Fig. 3 is a plan view of the elevator-column, and Fig. 4 a plan view of one of the sections of the elevator-worm.

Similar letters of reference indicate corresponding parts.

Referring to the drawings, A is a hopper receiving the grain from a suitable inlet-spout B.

C is the main column of the elevator, and with the hopper is mounted on a suitable base J. The elevator-column is hollow and cylindrical, and in practice is made with supporting-posts *a a'*, to which are secured sections of wire or other screen and sheet metal *c* and *b*, respectively. In the construction of the column the screen-sections are used only at the upper and lower portions thereof, the middle part being imperforate. The screen at the lower end admits air to the interior of the column, and that at the upper end allows dust and dirt to escape into an inclosing dust-chamber G, which will be more particularly described. Within the column is mounted a spiral conveyer or worm D on a vertical shaft *f*, revolving in a box I at the upper end and a step H at the bottom. Near the lower end is a pulley E, by which it is actuated. Near

the upper end is a fan F, having a suitable outlet-trunk F', and communicating by a limb *g'''* and the outlet *g* with the dust-chamber G. Another limb of this air-chamber has an outlet *g''* for sand and dust or dirt lodging therein, the grain itself escaping through the outlet *g'*. The lower end of the dust-chamber is provided with a trap-door *h*, closed by a depending weight *i*, and similar provision is made for the outlet *g''*. By this arrangement the trap-door opens and closes automatically, the weight being sufficient to hold in the dust-chamber a considerable quantity of refuse matter, which prevents the air being drawn through from the bottom of the dust-chamber as the door opens when there is an excess of such matter in said chamber. The weights are so constructed as to be adjustable to the requirements of the elevator.

The operation of the elevator will now be readily understood. Through an opening below the lower screen the grain in the hopper enters the lower end of the column, whence by the rapid revolution of the conveyer it is elevated to the outlet *g*, whence it escapes through the final outlet *g'*. In its passage upward the grain is subjected to the centrifugal action of the screw conveyer, which tends in a measure to throw outwardly any dirt therein, and this, as it reaches the screen at the upper end of the column, passes out into the dust-chamber. In addition to this, the grain is subjected to the action of a strong current of air drawn up through it by the fan at the upper end, and this serves to suck up the finer particles of dust and discharge them by way of the fan or through the auxiliary outlet *g''*. In this way the grain is thoroughly cleaned in the process of elevating.

In the construction of the column it is preferably made in sections, so that it may be built to any desired height as required. These sections are composed of the cylinders of screen or sheet metal, already described, and vertical supporting-posts, which in practice are made of angle-iron, of the form shown in Fig. 3. Preferably four of these are used, two of them being T-iron and the other four (which together constitute two posts) being of angle-iron, arranged in pairs and bolted together. All of these posts *a a* and *a' a'*, respectively,

are secured at the top and bottom to cast-iron rings *k*, and by means of these rings the respective sections are fastened together by bolts *l l*. At suitable intervals the conveyer-shaft 5 is steadied in boxes *j*, which are formed of two bars of iron suitably coupled by bolts *n n* and fastened between the angle-irons by bolts *m m*. These irons being set edgewise to the movement of the grain afford but little resistance 10 to it.

The conveyer itself is built up of sections of the form shown in Fig. 4. In practice I make the wing *d* to include about one-third of a circle in circumference. The wings match 15 together when mounted on the shaft, as shown in Fig. 2, and are held in position by set-screws *e*.

Having thus described my invention, what I claim as new, and desire to secure by Letters 20 Patent, is—

1. In a combined grain elevator and cleaner, the combination of a vertical spiral elevator, an inclosing cylinder perforated near the lower end for the admission of air and near the 25 upper end for the escape of dust, the middle portion being imperforate, a hopper at the lower end of said cylinder and elevator for the admission of grain thereto, and a suitable outlet at the top, substantially as described.
- 30 2. The combination, in a grain elevator and cleaner, of an elevator-column and worm, substantially as described, a hopper communicating with said elevator at the bottom, a dust-chamber surrounding the upper perforated 35 portion of the elevator-column, an outlet near the top thereof for the grain and an outlet for

dust near the bottom, and a suction-fan communicating with the upper portion of said dust-chamber, substantially as and for the purpose set forth. 40

3. In a grain elevator and cleaner, the combination of the hopper A, elevator-column C, composed of perforated sections at the top and bottom and intermediate imperforate sections, worm or conveyer D, fan F, and dust- 45 chamber G, having trap-doors *h h'*, outlets *g g' g''*, and air-passage *g'''*, all substantially as and for the purpose set forth.

4. In a grain elevator and cleaner, the herein-described column, composed of sections 50 suitably bolted together, the lower and upper sections being perforated for the admission of air, and the upper one also perforated for the escape of dust, and the middle ones imperforate, each section being composed of a 55 cylindrical drum secured to posts of angle-iron *a a* and *a' a'*, and these posts to terminal coupling-rings *k*, substantially as and for the purpose set forth.

5. The combination, in an elevator and 60 cleaner, substantially as described, of the cylindrical tube or drum *b c*, posts *a a'*, terminal rings *k k*, and transversely-mounted box *j*, all substantially as and for the purpose set forth. 65

In testimony whereof I affix my signature in presence of two witnesses.

ANTON FILIP.

Witnesses:

JOS. RENCHIN,
S. W. BRAINERD.