

(No Model.)

2 Sheets—Sheet 1.

J. J. SOUDER.

GRAIN SCOURER AND POLISHER.

No. 277,950.

Patented May 22, 1883.

Fig. 2.

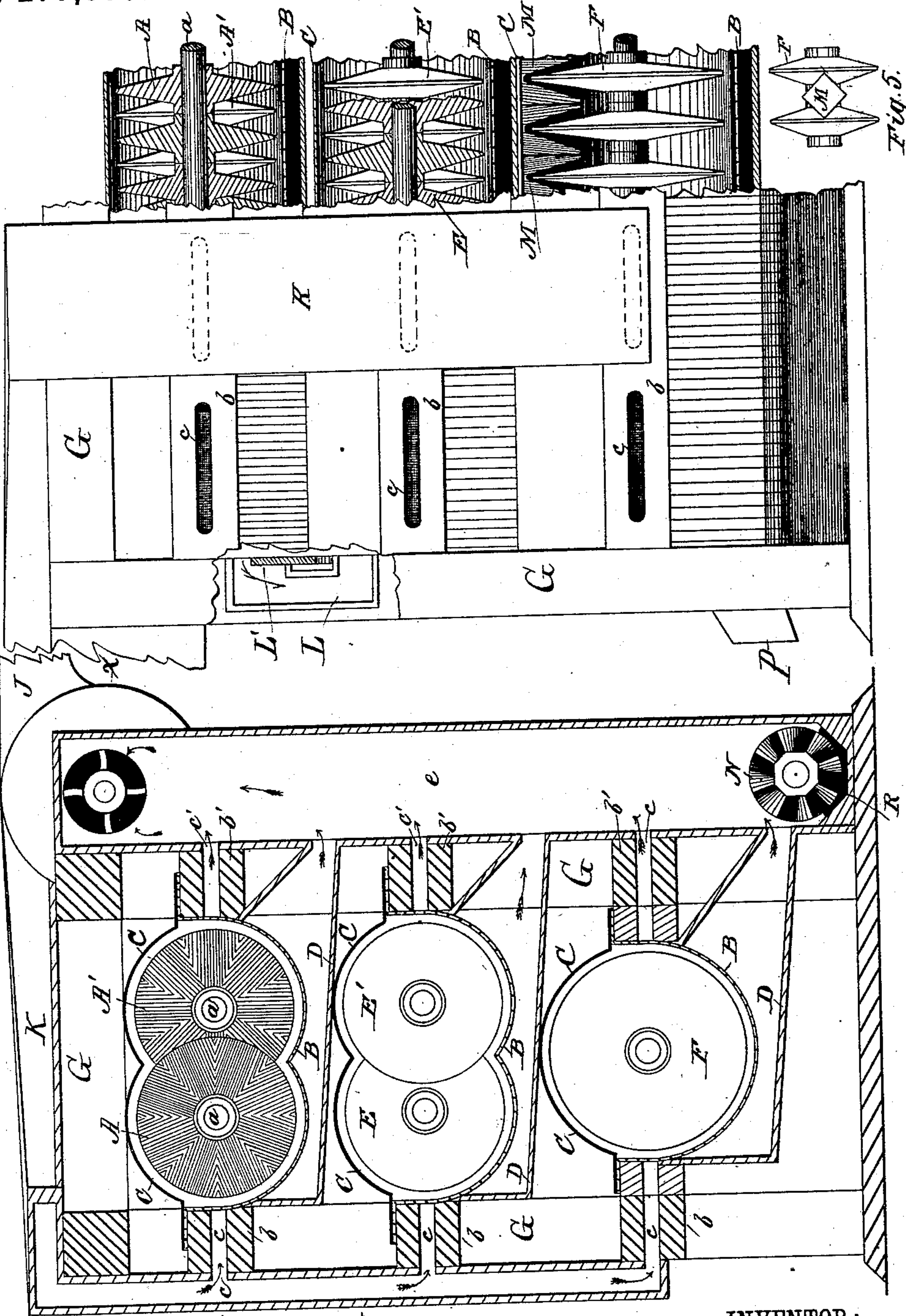


Fig. 1.

WITNESSES:

H. B. Brown
W. Stevens

INVENTOR:

J. J. Souder
BY *[Signature]*

ATTORNEYS.

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2 Sheets—Sheet 2.

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Fig. 4.

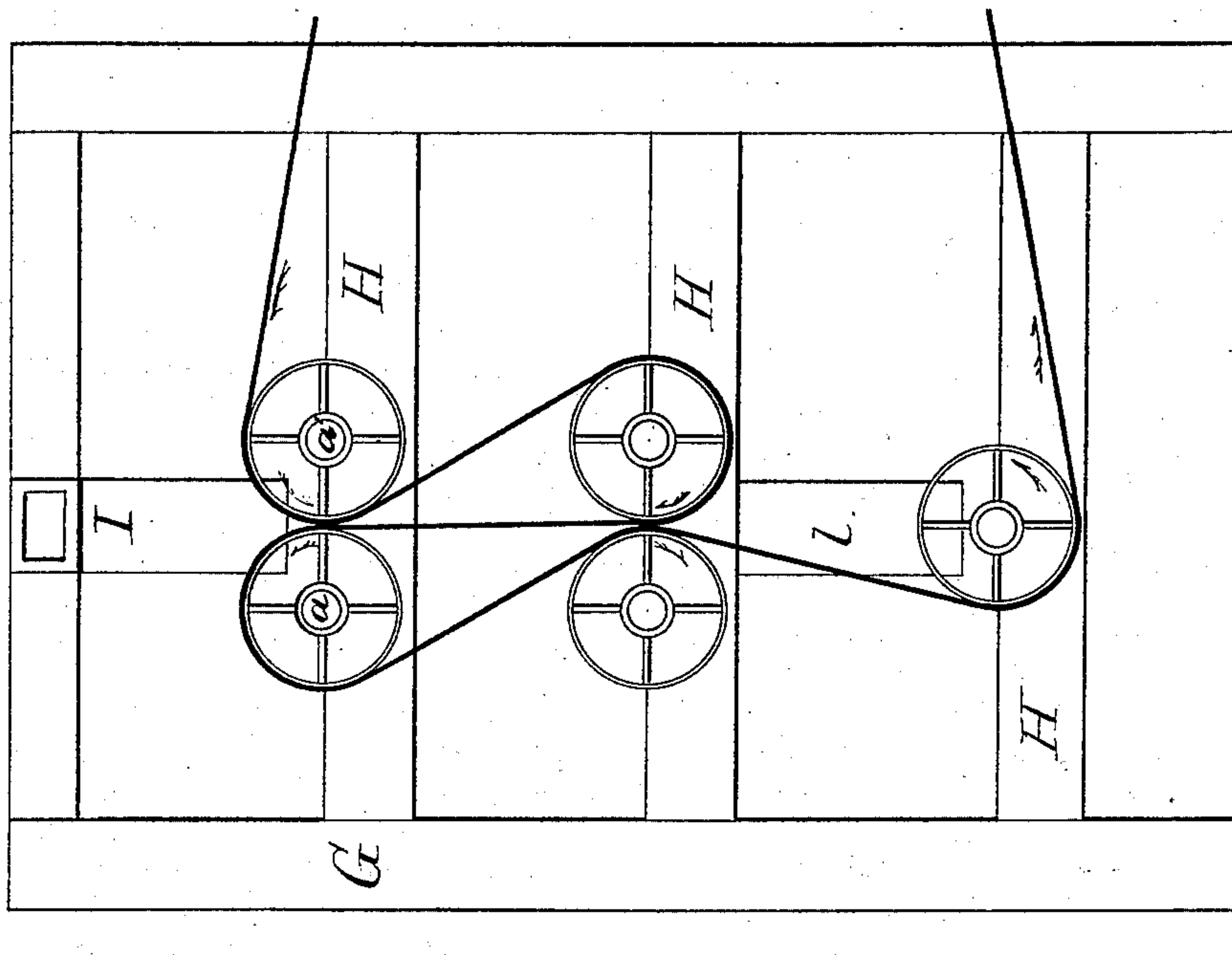
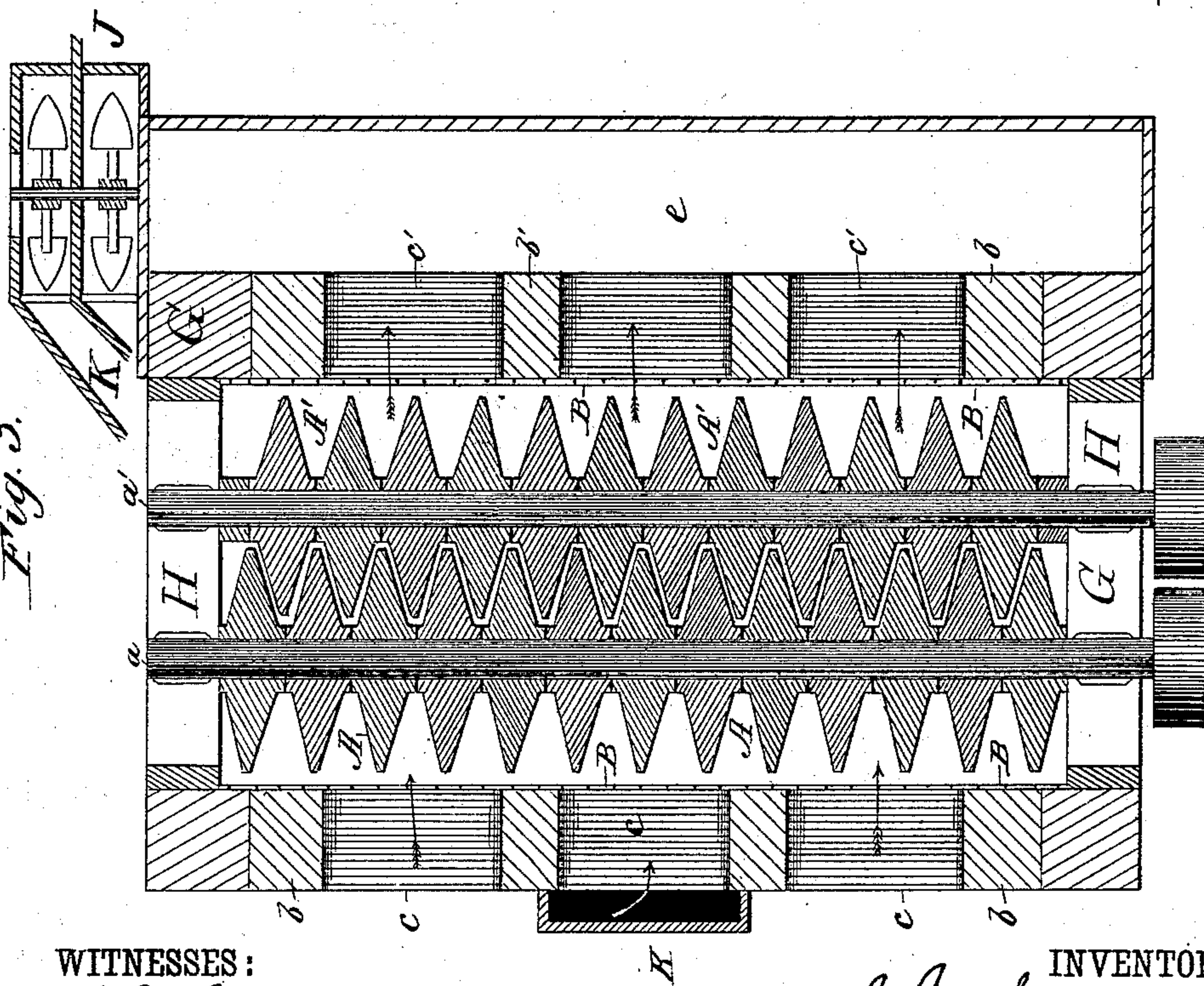


Fig. 3.



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H. B. Brown
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UNITED STATES PATENT OFFICE.

JACOB J. SOUDER, OF WASHINGTON, DISTRICT OF COLUMBIA.

GRAIN SCOURER AND POLISHER.

SPECIFICATION forming part of Letters Patent No. 277,950, dated May 22, 1883.

Application filed September 21, 1882. (No model.)

To all whom it may concern:

Be it known that I, JACOB JAMES SOUDER, a citizen of the United States, residing at Washington, in the District of Columbia, have invented a new and useful Grain Scourer and Polisher, of which the following is a specification.

My invention relates to that class of grain scourers and polishers which operate to scour the cuticle off, and to polish the hull or surface of each kernel, and to take away all dust and dirt from the grain, leaving it thoroughly clean to enter the flouring-mill.

To this end it consists in the peculiar construction and combination of parts hereinafter fully described, and set forth in the claims, reference being had to the accompanying drawings, on two sheets, in which—

Figure 1 is a transverse vertical sectional elevation of my device. Fig. 2 is a longitudinal elevation of a portion of the same, a part of the casing being broken away to show the inner works. Fig. 3 is a sectional plan at line *x x* of Fig. 1. Fig. 4 is an end view, showing the driving-pulleys. Fig. 5 is a detail view.

G represents the frame of my grain scourer and polisher, made partly of wood and partly of iron, as usual in such constructions. The cross-ties H, serving as bearings to the inner works, are iron, provided with composition bearings for the journals.

I represents the spout or trough, by which the grain runs into the scourer and polisher.

A A' are disks, of chilled iron, serrated in sectors upon both faces, the serrations being parallel to the central radius of each sector. Each disk has a broad base upon its axis and converges to a circumferential edge. The hubs of the disks touch each other along their shafts *a a'*, to which they are firmly secured, and by which they are made to revolve, both in one direction, in order that their adjacent faces which overlap each other, about a half-inch apart, may act in opposite directions upon the grain between them. The grain is kept in contact with these disks by means of a wire screen, B, formed into two troughs concentric with the two axes *a a'*, about a half-inch from the circumference of the disks, and secured at its sides to the top of beams *b b'*, and at its ends to boards curved at their edges to conform to the arcs B C. (Shown in Fig. 1.)

C represents a sheet-metal cap, similarly formed to screen B, and secured at its edges to the same beams, *b b'*, and at its ends to similar boards, completely incasing the two sets of disks A A' in a drum, which is air-tight except at the air-inlets *c* and exits *c'*, both of which are covered by the screen B, and the dust-exit through the whole bottom of said screen.

D is a trough extending beneath the whole screen B to receive droppings therefrom, and closely fitted at its upper edges to the beams *b b'*, and at its ends to the ends of the drum, and open at its lower end to discharge into the dust-flue *e*. At one side of the upper end of this dust-flue is located a rotary blower or fan to act by suction through the flue *e*, trough D, and small exit *c'* on the air and dust in the drum to discharge the same at J. Said fan is double; or two fans are placed on one axis in contiguous drums, the one arranged for suction, as stated, and the other for pressure of air through pipe K and opening *c* into the drum to counteract the heating effect of the disks while scouring the grain.

Below the scouring-disks and their accessories described are two other disks, E E', having in all respects similar accessories and operation, except that the latter disks are intended to be smoother than the first ones, and they may be of any suitable material, as hard maple wood, or they may be old disks A A' which have been worn smooth in use. The purpose of this second apparatus is to polish the surface of the grain, leaving it an opportunity to cool in its descent from the first scouring-machine to the second scouring or polishing machine directly below the first, through spout L, but more particularly to concentrate greater scouring and polishing capacity in a machine on a small floor-surface. From the middle drum the grain descends through a spout, *l*, to the lower drum in which a single shaft, carrying disks F, revolves. These disks and their accessories are similar to those above except that instead of being mated by other disks they are alternated by serrated inverted pyramidal posts M, depending from the cover, whose faces are diagonal to the planes of revolution of the disks, in order that the grain may be stripped from the disks with which it has a tendency to revolve, and at the same time diverge the grain in its

rotary motion, from the central spaces to the disks. Any convenient number of these drums may be placed one above another. There is some grit and dirt in grain too heavy to be drawn out by the suction-fan, and this in time gathers in the bottom of the trough. To discharge the same I furnish the lower portion of the dust-flue with a screw, N, common for such purposes in flouring-mills. This screw works the dirt to one end of its trough and discharges it from a suitable opening. It is thought best to run the disks about fifteen hundred revolutions a minute. To economize space and number of working parts, I drive the five shafts by means of a single belt, which may be taken onto the pulleys on said shafts from the side of the mill which is most convenient to the power.

Fig. 4 illustrates my method of belting, by which each set of disks is caused to revolve in the desired direction. The fans may be driven from a pulley on the opposite end of shaft *a* or *a'*.

P is the outlet-spout for discharging the cleaned and polished grain from the machine. The flow of grain into the machine is so regulated as to keep its top level a little below the shafts *a a'*. The exit-spout from each scourer and polisher is provided with a gate, L', sliding up from the bottom across the opening, by means of which the grain may be retained for a longer or shorter time in the machine and be more or less polished. The grain is first admitted into the upper drum through spout I from a hopper or from an upper floor. The action of the revolving disks rapidly levels it throughout the length of the drum, so that it discharges from one end at spout L as fast as it is received at the other end through spout I, the time it will remain in the drum being controlled by the height of the gate L'. While in the drum the grain is subject to constant attrition and becomes heated. In falling through the spout it has an opportunity to cool, and to aid this the spouts may be wire screens, to admit air more freely. The passage of the grain through each succeeding drum is similar to that in the first.

The principal advantages of my invention are that it cleans and polishes the grain thoroughly in little time and with little expenditure of power.

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

1. The combination, with a grain-scouring drum, consisting of a double-troughed wire-screen bottom, a double-arched top or cap, and the wooden ends shaped to conform thereto, of a grain-admitting spout at one end of the drum, an exit-spout at the other end, two sets of thin-edged thick-centered serrated disks fixed alternately upon two shafts to revolve therewith, both shafts revolving in the same direction, means for revolving the same, and a dust-discharging spout beneath the drum, substantially as specified.

2. The thin-edged thick-centered serrated disks A A', secured upon shafts *a a'*, to revolve therewith, both shafts revolving in the same direction in bearings nearer together than the diameter of said disks, in combination with the wire screen B, trough D, sheet-metal cap C, entrance-spout I, and exit-spout L, as shown and described.

3. The wire screen B, double-arched cap C, dust-trough D, flue *e*, and means for drawing air through said trough and flue, in combination with the scouring-disks A A', and means for admitting grain at one end of the drum occupied by said disks and discharging it at the other end, substantially as specified.

4. The combination, with the serrated disks A A', the screen B, cover C, and trough D, of an air-blast pipe, K, inlet *e*, and outlets *e'*, substantially as described.

5. The combination, with the revolving disks F, wire screen B, and sheet-metal cap C, of the inverted serrated pyramids M, secured to said cap with their planes diagonal to the planes of revolution of said disks for deflecting the grain against the disks in the final polishing, as shown and described.

6. The combination, with the disks A A', the screen B, the cover C, the trough D, and air-passages connected with said disks A A', as accessories to form one grain-scouring machine, of the disks E E' and their similar accessories, constituting a second machine below the first, and the spout L, connecting the same, the disks E E' being smoother than the disks A A', as and for the purpose specified.

JACOB JAMES SOUDER.

Witnesses:

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