

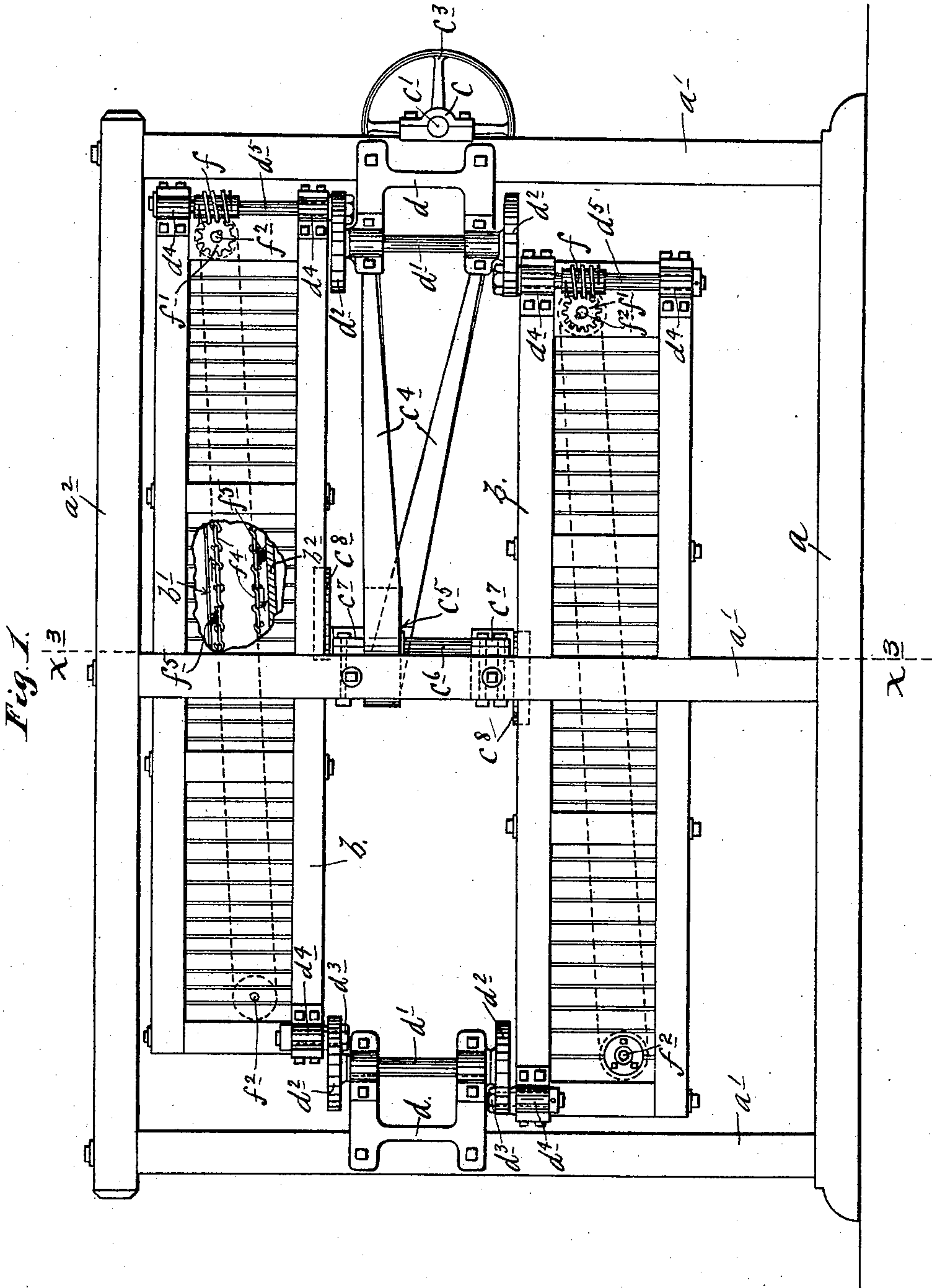
(No Model.)

3 Sheets—Sheet 1.

W. J. STEWART.
BRUSH MOTION FOR GYRATORY SIEVES.

No. 577,463.

Patented Feb. 23, 1897.



Witnesses:
C. F. Kilgore.
R. D. Merriam.

Inventor:
William J. Stewart
By his Attorney,
Jas. F. Williamson

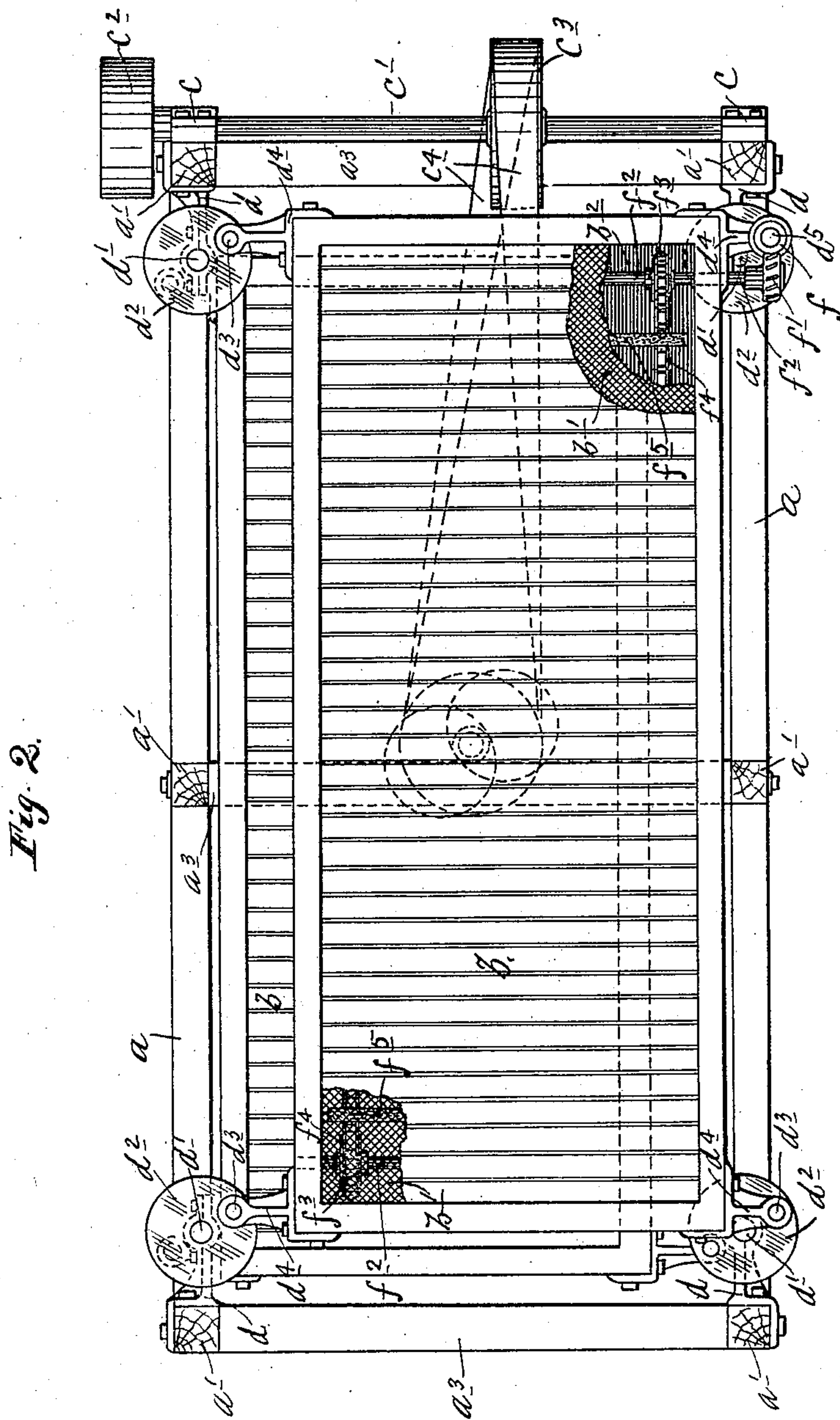
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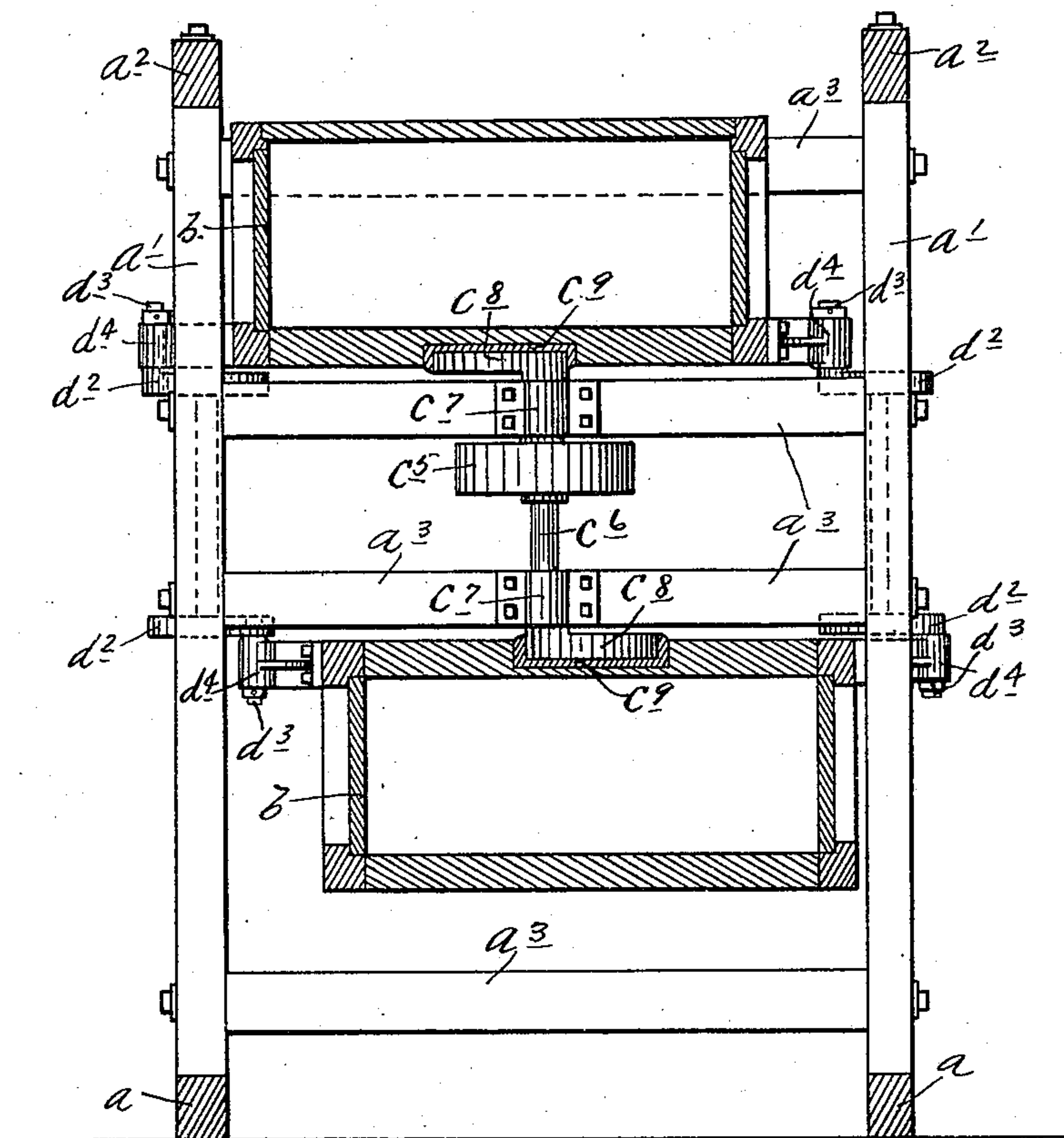
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Fig. 3.



Witnesses.

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UNITED STATES PATENT OFFICE.

WILLIAM J. STEWART, OF MINNEAPOLIS, MINNESOTA.

BRUSH-MOTION FOR GYRATORY SIEVES.

SPECIFICATION forming part of Letters Patent No. 577,463, dated February 23, 1897.

Application filed April 27, 1896. Serial No. 589,284. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM J. STEWART, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Brush-Motions for Gyrating Sieves, &c.; 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.

From a broad point of view my invention has for its object to provide a new mechanical motion by means of which a secondary body may be given motion with respect to a primary body by which it is carried.

My invention comprises, essentially, a primary body, a crank-shaft having its crank portion connected thereto, a secondary body carried by said primary body, but movable with respect thereto, and driving connections operated by said crank, whereby under the movement of the said crank a primary motion will be imparted to the primary body and said secondary body will be given a resultant or secondary motion, which will cause the same to move on or with respect to said primary body.

The uses to which this mechanical motion may be put are numerous and will naturally suggest themselves wherever a motion of the class described is desired. The immediate use to which I have applied this novel device is to produce a brush-movement for a gyrating sieve.

Gyrating sieves have gone into extensive use in the mills, but up to this time no practicable means have ever been found for applying a brush to such sieves for cleaning the sifting-surface. Attempts have been made with more or less success to keep the bolting-cloth or other sifting-surface clean by the use of various kinds of coarse cleaning materials, such as grain, peas, beans, locust-seeds, &c., which are made to pursue an endless circuit over the sifting-surface. By such means, however, it is not possible to keep the bolting-cloth or other sifting-surface perfectly clean. Otherwise stated, the cleaning action of a traveling brush such as has hitherto been used on ordinary scalpers and graders, bolt-

ing-reels, &c., has been much needed on the gyrating sieves, but has not been used simply because no means have been available for imparting the necessary independent motion to a traveling brush on a gyrating sieve. The gyrating motion is imparted to the sieve-box by the use of cranks or eccentrics, and the boxes must be hung so as to be capable of the gyrating motion under the crank or eccentric action. Hence it has not been thought practicable to transmit an independent motion to the brush so much needed. By my invention I overcome the said difficulty in an extremely simple manner, and thereby render the application of a traveling brush to the bolting-cloth or other sifting-surface entirely practicable upon a gyrating sieve.

My said invention for this purpose will be hereinafter fully described, and defined in the claims.

The accompanying drawings illustrate the invention as applied to a pair of gyrating sieve-boxes supported from a single frame, wherein like notations refer to like parts throughout the several views.

Figure 1 is a side elevation of a two-sieve-box chop grader or sifter embodying my invention. Fig. 2 is a plan view of the same with some parts broken away, and Fig. 3 is a vertical section on the line $x^3 x^3$ of Fig. 1 with some parts removed.

a , a' , a^2 , and a^3 represent the parts of a suitable skeleton frame for supporting the parts that carry and operate the sieve-boxes b . The sieve-boxes b may be of any suitable construction adapted for the purpose and are represented as equipped with single sieves b' and collecting-surfaces b^2 . The said parts b' and b^2 are represented as set on an incline, but might, of course, be set horizontal and be equipped with propelling-surfaces in any of the many well-known ways.

In suitable bearing-boxes c , fixed, as shown, to the uprights a' at the front end of the machine is mounted a horizontal shaft c' , provided with a pair of pulleys c^2 and c^3 . The pulley c^2 is for the application of power to the machine through a suitable belt from any available source. The pulley c^3 connects by a quarter-crossed belt c^4 with a pulley c^5 on a central vertical shaft c^6 , mounted in suitable

bearings c^7 on the center cross-ties a^3 of the frame and provided at its opposite ends with eccentrics c^8 . The said eccentrics c^8 work in suitable boxes c^9 , fixed to the sieve-boxes b , as best shown in Fig. 3.

In four bearing-brackets d , fixed to the corner-posts a' of the frame, are mounted four vertical shafts d' , having crank-disks d^2 on their opposite ends. The said pairs of crank-disks d^2 on three of said corner shafts d' have short pins d^3 , which work in suitable boxes d^4 , fixed to the corners of the sieve-boxes b , but the crank-disks d^2 on one of said corner shafts d' are provided with long or extended pins d^5 , which work through pairs of corresponding boxes d^4 , fixed to the upper and lower corners of said sieve-boxes b , as best shown in Fig. 1. These extended pins d^5 are provided, as shown, with worms f , which engage with worm-gears f' , fixed to the outer ends of the forward members of brush supporting and operating shafts f^2 , which are suitably journaled in the sieve-boxes b . The said shafts f^2 are provided with sprockets f^3 , on which are mounted the chains f^4 , having attached thereto the brushes f^5 . The said parts f^4 and f^5 constitute a traveling-brush device, the brushes of which are adapted to sweep the under surface of the bolting-cloth or other sifting-surface b' .

With the construction described it is obvious that under the coöperation of the central shaft c^6 , with its eccentrics c^8 , and the corner shafts d' , with their crank-disks and crank-pins, the sieve-boxes b will receive a gyrating motion. It must also be obvious that the extended crank-pins d^5 , through the worms f , carried thereon, and the worm-gears f' , fixed to the brush supporting and operating shafts f^2 , will impart rotary motion to said shafts f^2 and the sprocket-wheels f^3 and thereby operate the traveling-brush device f^4 f^5 . Hence the necessary independent motion is imparted to the traveling brush directly from the devices which coöperate in supporting and gyrating the sieve-boxes b . The gyrating motion on the sieve-boxes does not in any way interfere with the brush-motion, and the brush mechanism will operate with as little wear and tear as when employed on the stationary frame.

With the parts as shown in the drawings the corner shafts d' carry the sieve-boxes and hold the same to parallel gyrating motion in the horizontal plane, while the central shaft c^6 and its eccentrics c^8 are utilized simply to gyrate the sieve-boxes without taking any part of the weight of the same. I find this to be an advantageous way of mounting and gyrating the sieve-boxes.

By actual usage I have demonstrated the practicability of the brush-motion for gyrating sieves herein disclosed, and have found that by the use of the same the capacity of the sieves is very greatly increased.

Although especially designed for use in connection with gyrating sieve-boxes, it must be

understood that I do not limit myself to the said special use of the new mechanical movement herein disclosed, inasmuch as the same might be serviceable in other connections. It must be obvious that the said mechanical movement is capable of general application wherever it is desirable to impart an independent motion from the crank-pin to devices carried on the body receiving the gyrating or crank motion. It must be also understood that I do not limit myself to the worm and worm-gear as the means of utilizing the rotary motion of the crank-pin. Any actuating device carried by the crank-pin or operated by the rotary motion of the crank-pin for imparting the independent motion to the devices carried on the body, subject to the crank motion, would be within the principle of my invention in the broad point of view. Nevertheless, it must be understood that the specific form of the invention shown is highly important for the special purpose illustrated. It will also be understood that minor changes might be made in the details of the construction shown without departing from the spirit of my invention.

What I claim, and desire to secure by Letters Patent of the United States, is as follows:

1. The combination with a primary body, of a crank-shaft having its crank portion connected thereto, a secondary body carried by said primary body, but movable in respect thereto, and driving connections operated by said crank for causing said secondary body to move in respect to said primary body.

2. The combination with a primary body mounted for gyrating movement, of a crank-shaft having its crank portion connected thereto, a secondary body carried by said primary body but movable in respect thereto, and driving connections operated by said crank for causing said secondary body to move in respect to said primary body.

3. The combination with a supporting-frame for a gyrating sieve, of a crank-shaft having its crank portion connected to said frame, a traveling body carried by said frame, and driving connections from said crank to said traveling body for causing the same to move in respect to said frame.

4. The combination with a supporting-frame and a gyrating sieve-box, of crank-shafts on said frame having their pins connected to said box, for coöperation in supporting and gyrating the same, a traveling brush on said box, for cleaning the sifting-surface, and driving connections, on said box, for operating said brush from one of said crank-pins, substantially as described.

5. The combination with a supporting-frame and a gyrating sieve-box, of crank-shafts on said frame having crank-pins connected to said box, for coöperation in supporting and gyrating the same, a traveling brush, on said box, for cleaning the sifting-surface, and a drive for the same, including a worm on one of said crank-pins engaging a

worm-gear on one of the brush supporting and operating shafts, substantially as described.

5 6. The combination with a suitable supporting-frame, of the pair of sieve-boxes b , the central shaft c^6 , on said frame, having the eccentrics or cranks c^8 engaging said sieve-boxes, the corner crank-shafts d' d^2 having crank-pins engaging with the corners of said
10 sieve-boxes, the worms f on two of said crank-pins the traveling-brush devices f^4 f^5 , the

supporting and driving shafts f^2 , for the same, and the worm-gears f' on certain of said shafts f^2 , engaging with said worms f on said crank-pins, all for coöperation, substantially 15 as described.

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

WILLIAM J. STEWART.

Witnesses:

JAS. F. WILLIAMSON,
F. D. MERCHANT.