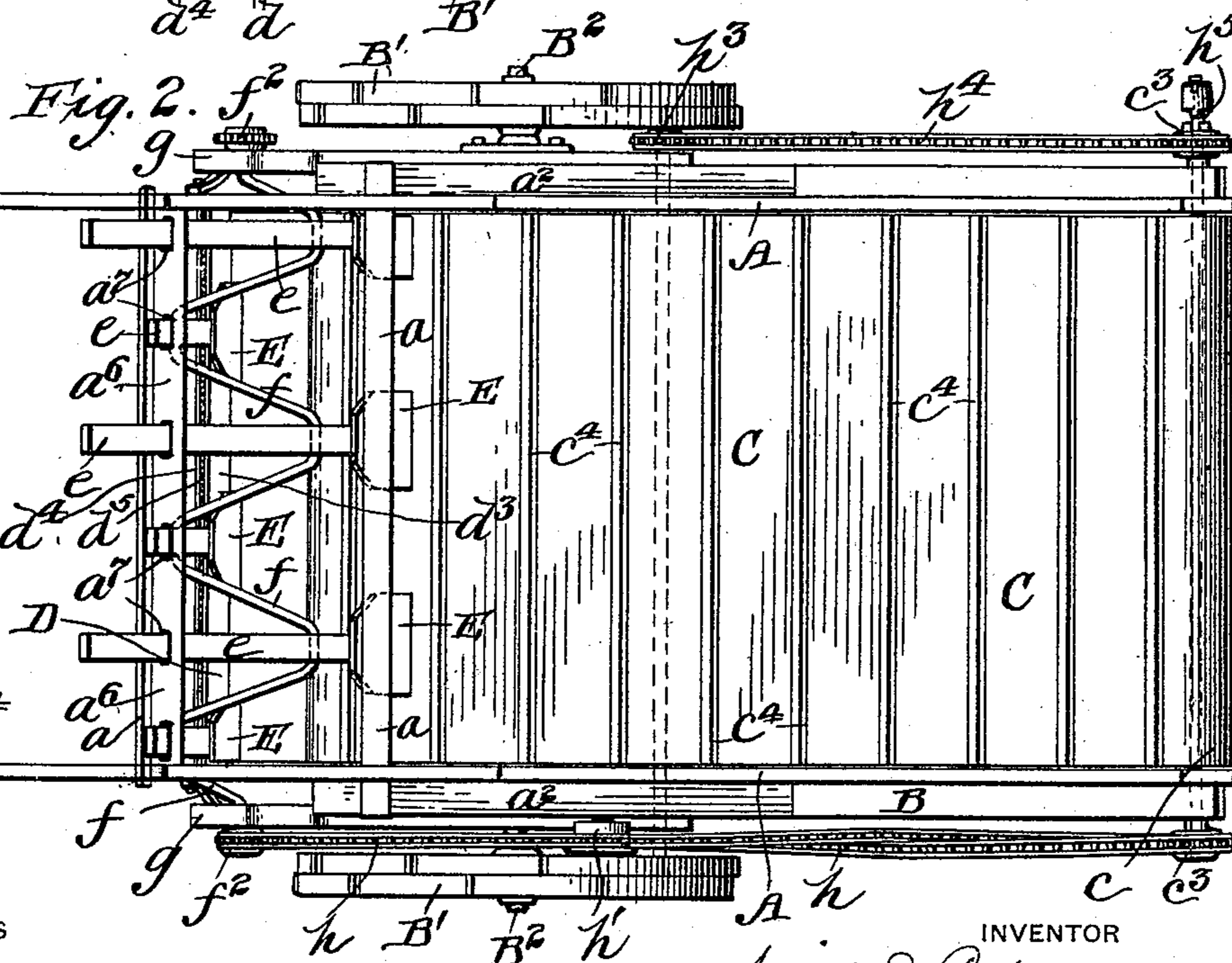


2 Sheets—Sheet 1.

No. 539,642.

Patented May 21, 1895.



WITNESSES

INVENTOR

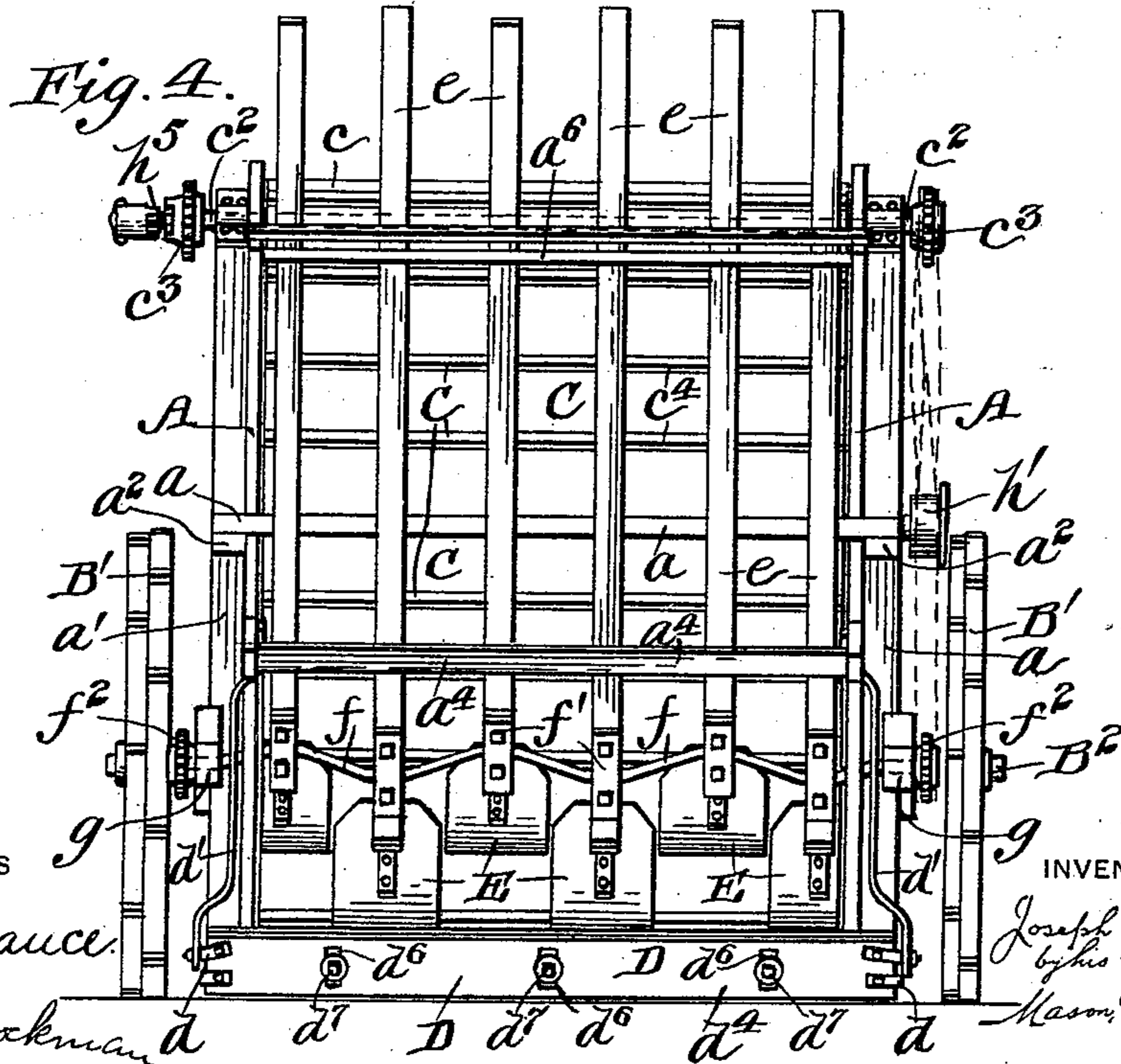
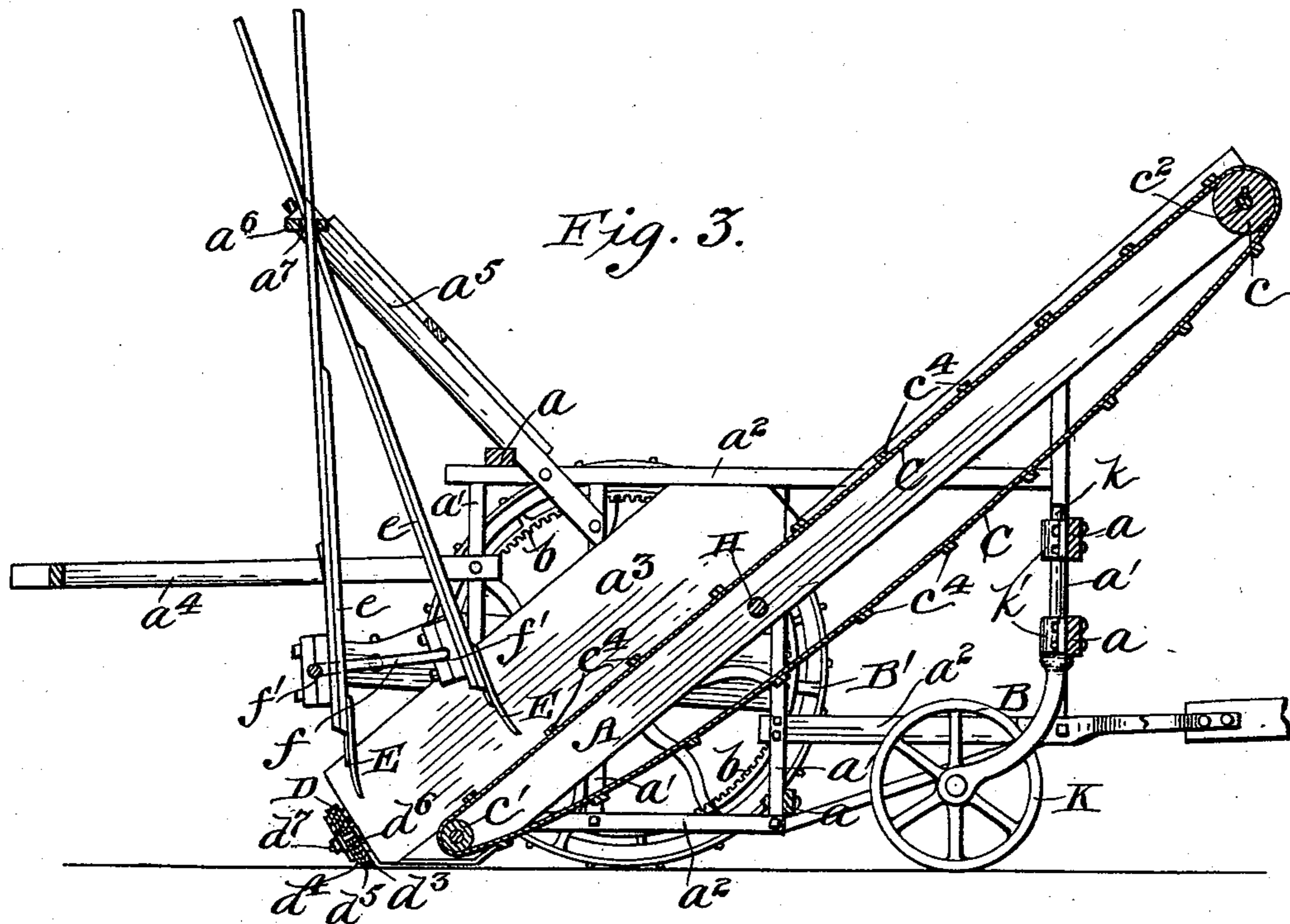
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WITNESSES

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UNITED STATES PATENT OFFICE.

JOSEPH E. PORTER, OF OTTAWA, ILLINOIS.

SCRAPING-MACHINE FOR STREETS, &c.

SPECIFICATION forming part of Letters Patent No. 539,642, dated May 21, 1895.

Application filed February 14, 1895. Serial No. 538,353. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH E. PORTER, a citizen of the United States, residing at Ottawa, in the county of La Salle and State of Illinois, have invented certain new and useful Improvements in Dirt-Scraping Machines for Streets and Roadways; 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.

My invention relates to improvements in street scraping and cleaning machines and the invention consists of certain novel constructions, combinations and arrangements of parts, all of which will be hereinafter particularly set forth and claimed.

It also consists of certain other novel constructions, combinations and arrangements of parts, all of which will be hereinafter set forth and claimed.

In the accompanying drawings, forming part of this specification, Figure 1 represents a side elevation of the machine embodying my invention. Fig. 2 represents a top plan view of the same. Fig. 3 represents a central vertical longitudinal section of said machine, and Fig. 4 represents an end elevation of the same.

A, in the drawings, represents the frame; B, the wheeled carriage upon which it is mounted; C, the endless conveyer or apron; D, the scraper, and E the reciprocating shovels or scoops.

The frame A is mounted upon the wheeled carriage in an inclined position with a greater portion of its length forward of the axle B² of the carriage. To brace the frame against the strain incidental to this unequal distribution of the weight of the same upon the two sides of the axle, I provide said frame with transverse brace bars *a*, vertical brace bars *a'*, and longitudinal brace bars *a''*; said brace bars forming as a whole an auxiliary bracing and supporting frame which distributes the strain evenly upon both sides of the axle. As an additional means of support for the forward overhanging end of the frame A, I provide a wheel K which has its swivel pin *k* mounted loosely in journal boxes *k'*, *k'* attached to two of the cross bars *a*, *a*, so as to be capable of a swivel action.

Apron supporting rollers *c*, *c'* are journaled

at the upper and lower ends, respectively, of the frame A, between the side bars thereof, the roller *c* being keyed upon a shaft *c''* whose ends pass through the said side bars and are respectively provided with a sprocket wheel *c''*. The endless conveyer or apron C, which is preferably made of canvas, is mounted upon said rollers, and is provided upon its outer surface with lateral spaced bars *c'* which prevent the dirt thrown upon said apron from sliding down its inclined surface, as it revolves; said bars also taking hold of the accumulated dirt in front of the scraper. The lower ends of the side bars are each provided upon their upper edges with vertical extensions *a''* which prevent the dirt thrown by the shovels E from passing over the tops of said side bars and thus escaping from the machine.

The scraper D is movably mounted at the lower end of the side bars so as to normally rest upon the ground, by means of supporting bars *d* which are attached to each end of said scraper and are pivoted, on their respective sides of the machine, to one of the vertical brace bars *a'*. The scraper is made up of three members, or strips; the two outer ones *d''*, *d''* being of metal and the third member *d'''*, which is between said outer members, being of rubber or some such flexible material. All of the members are slotted laterally and vertically as at *d''*. These vertical slots correspond in position and receive securing bolts *d'''* by means of which the said three members are secured rigidly together in any adjusted position. By this construction of the scraper I am enabled to bring either a stiff metal edge or a flexible edge in contact with the ground, by simply loosening the bolts *d'''* and raising or lowering the flexible strip until it either projects below or is withdrawn above the lower edges of the metal strips. This construction is necessary for the varying conditions of the ground to be scraped. If the ground is dry the metal scraper will be sufficient to collect the dirt, but if the street is covered with mud and water a more water tight contact between the scraper and the ground is necessary, and this I provide for in the adjustable, flexible, intermediate portion of the scraper.

A hand operated frame *a''* has its ends pivotally mounted on two of the vertical brace

rods a' and is connected to the scraper D on each side by means of connecting rods d' .

It will be seen from the foregoing that when the frame a^4 is raised by the attendant, the scraper D will also be raised and thus cease to operate to scrape up the dirt, as is necessary when the machine is being taken to and from the point of operation. Suitable latching means such a chain and hook are provided for holding the frame a^4 in its elevated position.

A frame a^5 is attached to frame A and extends upward diagonally, resting against the brace bars of the auxiliary frame, and is provided at its upper end with a transverse guide bar a^6 provided with vertical guiding passages a^7 . The shovels E are preferably made of flat sheet metal slightly curved vertically so as to form a scoop shaped blade and are each mounted on a vertical rod or bar e ; said bars being adapted to work vertically in the guiding passages a^7 as the shovels are reciprocated. This reciprocation of the shovel is caused by a crank shaft f , the crank bends of which are connected to the bars e by journal boxes f' attached to said bars and through which said crank bends pass. The crank shaft is journaled in side bars g attached to frame A and each end of said crank shaft is provided with a sprocket wheel f^2 . One of said sprocket wheels f^2 is connected to the sprocket wheel c^3 on its respective side of the machine by a crossed sprocket chain h ; said chain, because of its length, being supported and guided near its middle portion by a grooved sheave h' which is journaled on a pin attached to one of the brace bars of the auxiliary frame.

One of the wheels B' of the carriage B is provided with an annular rack b whose cogs are arranged upon its inner face. A shaft H is journaled in frame A and is provided at one end with a gear wheel h^2 which meshes with the rack b and thus said shaft H is revolved as the wheel B' revolves. The opposite end of the said shaft H is provided with a sprocket wheel h^3 which is connected to the sprocket wheel c^3 on that side of the machine by a sprocket chain h^4 ; clutch mechanism h^5 being arranged between the said sprocket wheel c^3 and the shaft c^2 upon which it is mounted. It will thus be seen that when the shaft H is revolved, the shaft c^2 is also revolved, if the clutch h^5 is set to operate, and thus the apron will be revolved and the crank shaft operated to reciprocate the shovels.

The peripheries of the wheels of the carriage are roughened in any suitable manner so that they will not slip upon the ground when the machine is in operation.

The operation of the machine is as follows: The machine is first attached to any suitable dirt hauling cart or wagon so that the upper end of the endless apron is directly above the body of the wagon. Now when the wagon is moved forward the dirt collects in front of the scraper D until it reaches a sufficient height to

be struck by the reciprocating shovels E which are being moved by the crank shaft with a step by step motion being alternately thrust downward and forward and upward and backward, but at no time touching either the ground or the endless conveyer or apron. The shovels throw the dirt up upon the endless conveyer or apron as fast as it accumulates in front of the scraper and as the apron is continually moving upward and forward the dirt is carried with it and as the apron turns about the upper roller c , the dirt falls from it into the receiving cart. In this operation of the machine the attendant walks behind it and manipulates the scraper by means of the frame a^4 so as to keep it down to its work or to lift it over obstructions, and to carry the machine from place to place the scraper is elevated and retained in this position by the beforementioned chain.

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

1. In a street cleaner or scraper, the combination of a suitable wheeled carriage, a traveling conveyer mounted upon the same, a scraper arranged at the rear end of the conveyer, reciprocating shovels for shoveling the dirt accumulated by the scraper forward onto the traveling conveyer, means for operating said shovels, and means for operating the traveling conveyer, substantially as described.

2. In a street scraper, the combination of a suitable wheeled carriage, an endless conveying apron mounted upon the same in an inclined position, a scraper arranged at the rear end of the conveyer, reciprocating shovels, a crank shaft for reciprocating said shovels so that they will shovel the dirt accumulated by the scraper forward onto the endless apron, means for operating the crank shaft, and means for operating the endless apron, substantially as described.

3. In a street cleaner or scraper, the combination of a suitable wheeled carriage, a traveling conveyer mounted upon the same, a scraper composed of alternate strips of flexible and rigid material, so arranged that the flexible strips can be brought into contact with the ground at will; reciprocating shovels for shoveling the dirt accumulated by the scraper forward onto the traveling conveyer, means for operating said shovels, and means for operating the traveling conveyer, substantially as described.

4. In a street scraper, the combination of a suitable wheeled carriage, an endless conveying apron mounted upon the same in an inclined position, a scraper arranged at the rear end of the conveyer, means for lifting and lowering said scraper by hand, reciprocating shovels mounted in guides, and adapted for shoveling the dirt accumulated by the scraper forward onto the traveling apron, a crank shaft for reciprocating said shovels, gearing connecting said shaft and the endless apron with the moving parts of the ma-

chine, and a clutch for throwing said gearing in and out of operation, substantially as described.

5 In a street cleaner, the combination of a suitable wheeled carriage, an endless traveling apron, a scraper arranged at the rear end of the conveyer attached to the carriage, and composed of alternate strips of flexible and rigid material, so arranged that the flexible strips can be brought into contact with the ground at will; reciprocating shovels for shoveling the dirt accumulated by the scraper onto the endless traveling apron, means for operating said shovels and the endless apron, 15 and means for lifting or lowering said scraper, substantially as described.

6. In a street scraper, the combination of a suitable wheeled carriage, an endless conveying apron mounted upon the same in an inclined position, a scraper arranged at the rear end of the conveyer, means for lifting and lowering said scraper forward by hand, reciprocating shovels provided with handles, guides for said handles; said shovels being 25 adapted for shoveling the dirt accumulated

by the scraper onto the traveling apron, a crank shaft for reciprocating said shovels, gearing connecting said shaft and the endless apron with the moving parts of the machine, and a clutch for throwing said gearing in and out of operation, substantially as described. 30

7. In a street cleaner or scraper, the combination of a suitable frame supporting truck wheels for the same, a swiveled wheel or caster wheel for supporting the forward end of the frame, a traveling conveyer mounted upon the same, a scraper, reciprocating shovels for shoveling the dirt accumulated by the scraper forward onto the traveling conveyer, means 40 for operating said shovels, and means for operating the traveling conveyer, substantially as described.

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

JOSEPH E. PORTER.

Witnesses:

J. O. HARRIS,
L. H. WOOD.