

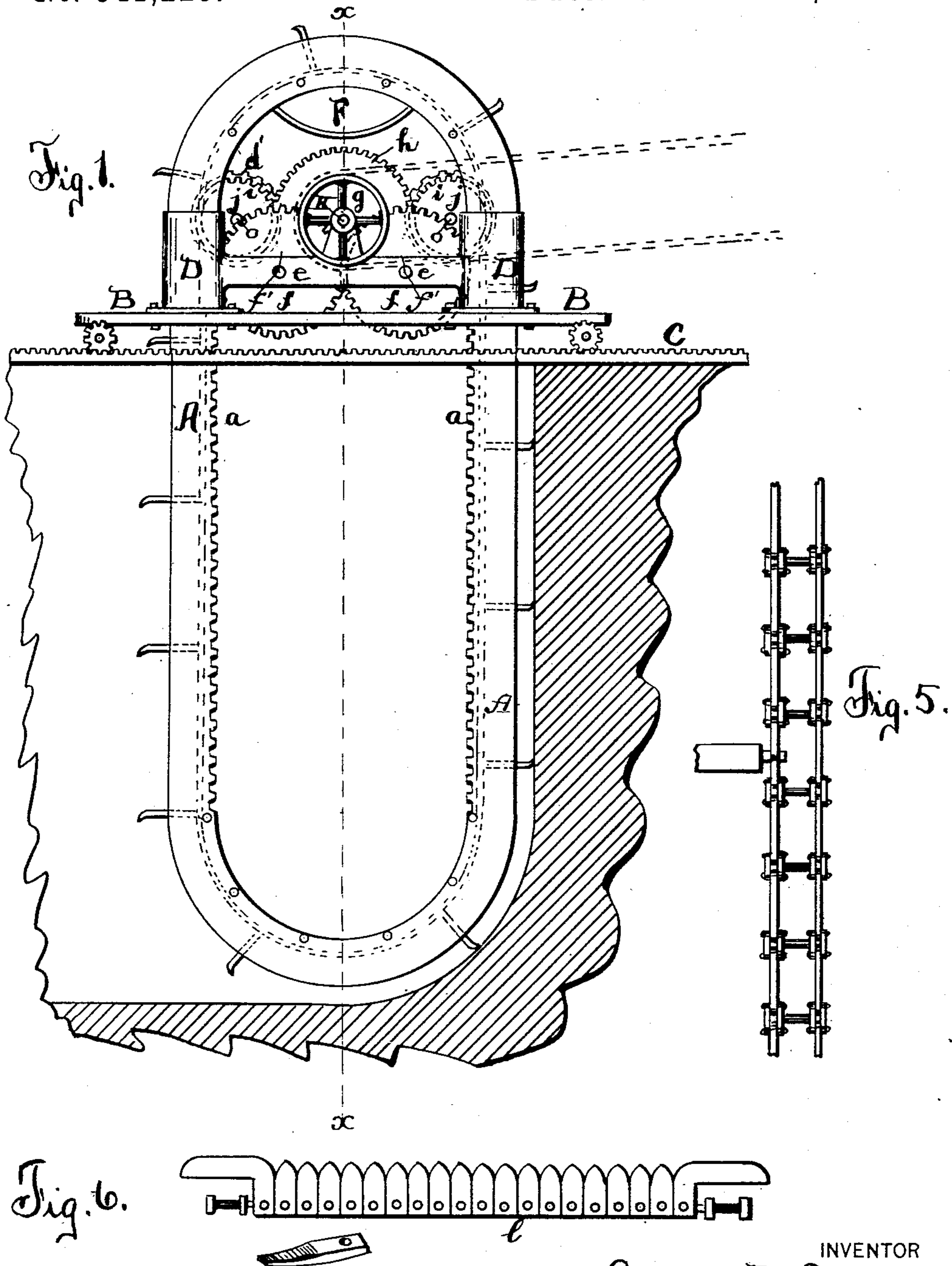
(No Model.)

3 Sheets—Sheet 1.

G. D. GUNN.
TRENCH DIGGING MACHINE.

No. 541,229.

Patented June 18, 1895.



WITNESSES:

Chas. W. Mawin.
M. M. Borst.

INVENTOR
George D. Gunn.

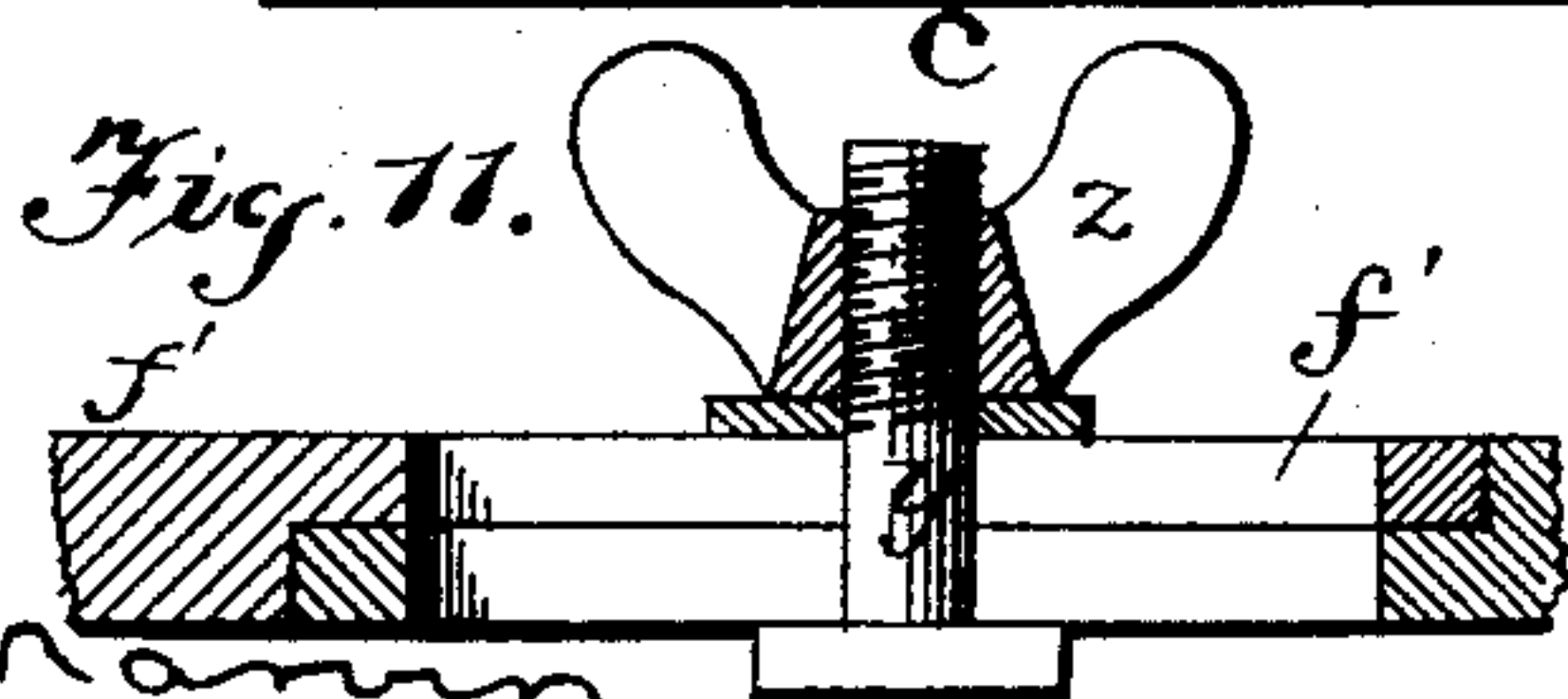
BY

Smith & Benson

ATTORNEYS.

3 Sheets—Sheet 2.

Patented June 18, 1895.



Chas. W. Marvin
M. M. Bost.

BY
Smith & Benson

ATTORNEYS.

(No Model.)

3 Sheets—Sheet 3.

G. D. GUNN.
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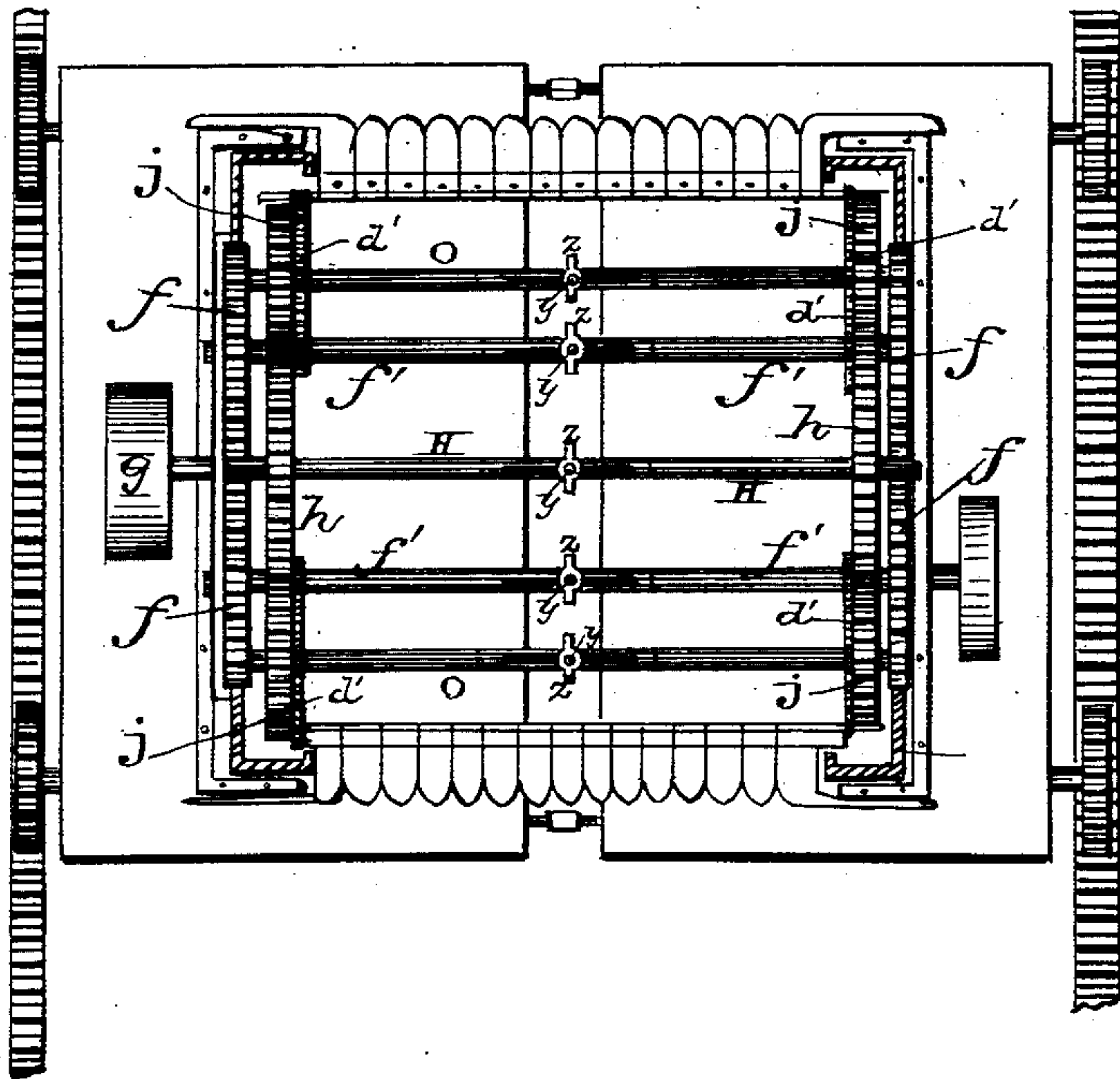


Fig. 4.

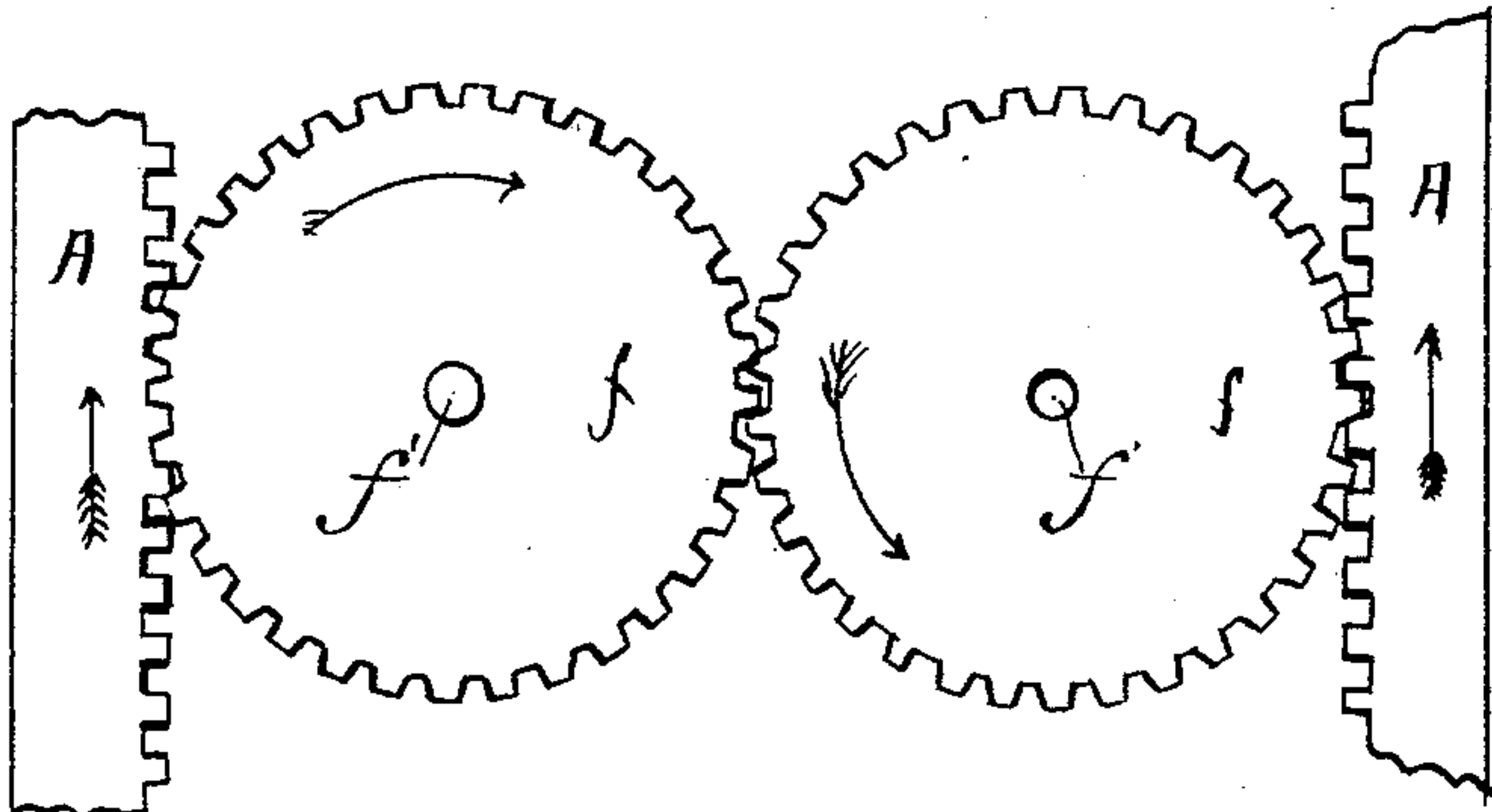


Fig. 8.

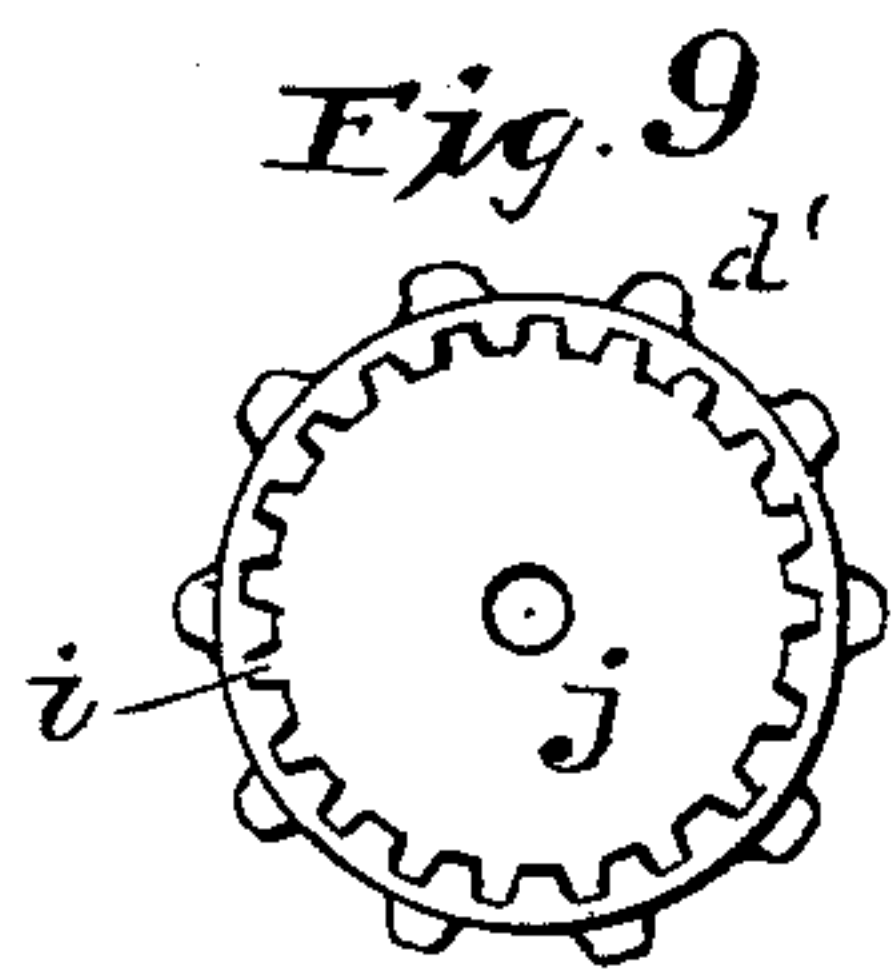


Fig. 10.

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ATTORNEYS.

UNITED STATES PATENT OFFICE.

GEORGE D. GUNN, OF HORSEHEADS, NEW YORK.

TRENCH-DIGGING MACHINE.

SPECIFICATION forming part of Letters Patent No. 541,229, dated June 18, 1895.

Application filed May 28, 1894. Serial No. 512,615. (No model.)

To all whom it may concern:

Be it known that I, GEORGE D. GUNN, of Horseheads, in the county of Chemung, in the State of New York, have invented new and useful Improvements in Trench-Digging Machines, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to devices and apparatus for digging trenches, in which sewers, water mains and the like may be laid.

My object is to produce an apparatus for digging trenches, in which the cost of laying sewers, water mains, &c., may be reduced to a minimum, thereby constructing a machine cheap and durable in its construction and of great utility; and to that end my invention consists in the several new and novel features and combination of parts hereinafter described and which are specifically set forth in the claims hereunto annexed. It is constructed as follows, reference being had to the accompanying drawings, in which—

Figure 1 shows a side view of the apparatus complete as it appears at work constructing a trench. Fig. 2 is a front view thereof. Fig. 3 is a vertical section on line *xx* in Fig. 1. Fig. 4 is a top plan view of the machine. Fig. 5 is an enlarged view of the sprocket-chain as shown in Fig. 3. Fig. 6 is a top plan view of the knife, showing one of the knife-fingers detached. Fig. 7 is a section of the right and left hand nut. Fig. 8 is a view of the wheels engaging with the rack-bar for the purpose of lowering and raising the frame. Fig. 9 is a side view of the sprocket-wheel which operates the sprocket-chain. Fig. 10 is a cross-section thereof. Fig. 11 is an enlarged detail view in section, showing the adjustable connection between the shafts upon which the operating-wheels are placed.

Similar letters of reference indicate corresponding parts.

—A— is the frame, constructed oblong, substantially as shown in the drawings, and is provided on its inner vertical face with ratchet teeth —*a*—, and —B— is a carriage mounted upon the axles —*b*— having a right and left-hand nut —*c*— by which the frame may be contracted or expanded, and —*d*— shows cog wheels mounted upon the ends of

the axles —*b*—, and adapted to travel upon the track-way —C—, as shown in Fig. 1.

Upon the carriage —B— is a bracket —D—, upon the cross-bars —*e*— of which are journaled the shafts *f*', to which are secured the cog wheels —*f*—, which are adapted to engage with the teeth —*a*— upon the inner face of the frame —A— for the purpose of raising and lowering said frame. The fly wheel or pulley *g*, is secured to one end of the shaft H, to which the cog wheel *h*, is rigidly connected, and is adapted to engage with cogs —*i*— on the wheel —*j*— for the purpose of rotating them, and —*d'*— shows sprockets concentric with said wheel —*j*— and also secured to the shafts *o*, and which wheels or sprockets are for the purpose of rotating the endless chain, or sprocket, —E—, which is adapted to travel around the frame —A—, as shown, there being anti-frictional rollers both at the top and bottom, as shown. As shown, the shafts are all made in two parts and with the exception of the shafts *b*, have their inner ends slotted and made to overlap each other, and through the slots are passed clamping bolts *y*, to which the nuts *z*, are applied. When the frame is to be widened, the nuts on the bolts are loosened, and then the nuts *c*, are operated, and the two sides of the frame are moved nearer together or farther apart, as may be desired. The knife —*l*—, constructed substantially as shown, is secured to the endless sprocket chains, as shown, the end knives being constructed L-shaped, as shown in Fig. 6, for the purpose of extending laterally sufficiently to cut the opening wide enough for the frame —A— to travel in. Whenever the frame is narrowed or widened, a new set of knives or cutters *l*, corresponding to the new width, must be used.

It will be observed that, as the knives having their outer edges upturned, come in contact with the earth, they scrape off a certain amount each time, carry it upward, and when it gets to the top of the frame —A— drops off on to a shed —F—, whence it passes off to the side of the trench. This shed may be made in either one or two parts, as may be desired. If made in two parts, their inner ends will be forced together each time the frame is widened, but if made in one part, the frame will be expanded and contracted

under it. It will also be observed that as fast as the knives cut the way out, any ordinary means may be applied to the cog wheels —*d*— so as to move the frame longitudinally and keep the knives always in engagement with the earth.

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

1. In a digging machine, the frame composed of two oblong parts or castings, combined with divided axles upon which the frame is mounted, and expanding and contracting nuts by which the width of gage upon which the frame travels is adjusted, substantially as shown.

2. The frame, combined with the endless chains, mechanism for operating them, and cutters secured to the chains; each cutter be-

ing composed of a series of separate knives, the end ones of which are made L-shaped so as to extend out beyond the edge of the frame, substantially as described.

3. In a digging machine, the frame composed of two vertical oblong parts, the carriage secured to the frame and also made in two parts, the divided axles upon which the carriage is mounted, and adjusting nuts for regulating the width of the trench to be dug, substantially as set forth.

In witness whereof I have hereunto set my hand this 27th day of April, 1894.

GEORGE D. GUNN.

In presence of—

C. W. SMITH,

HOWARD P. DENISON.