

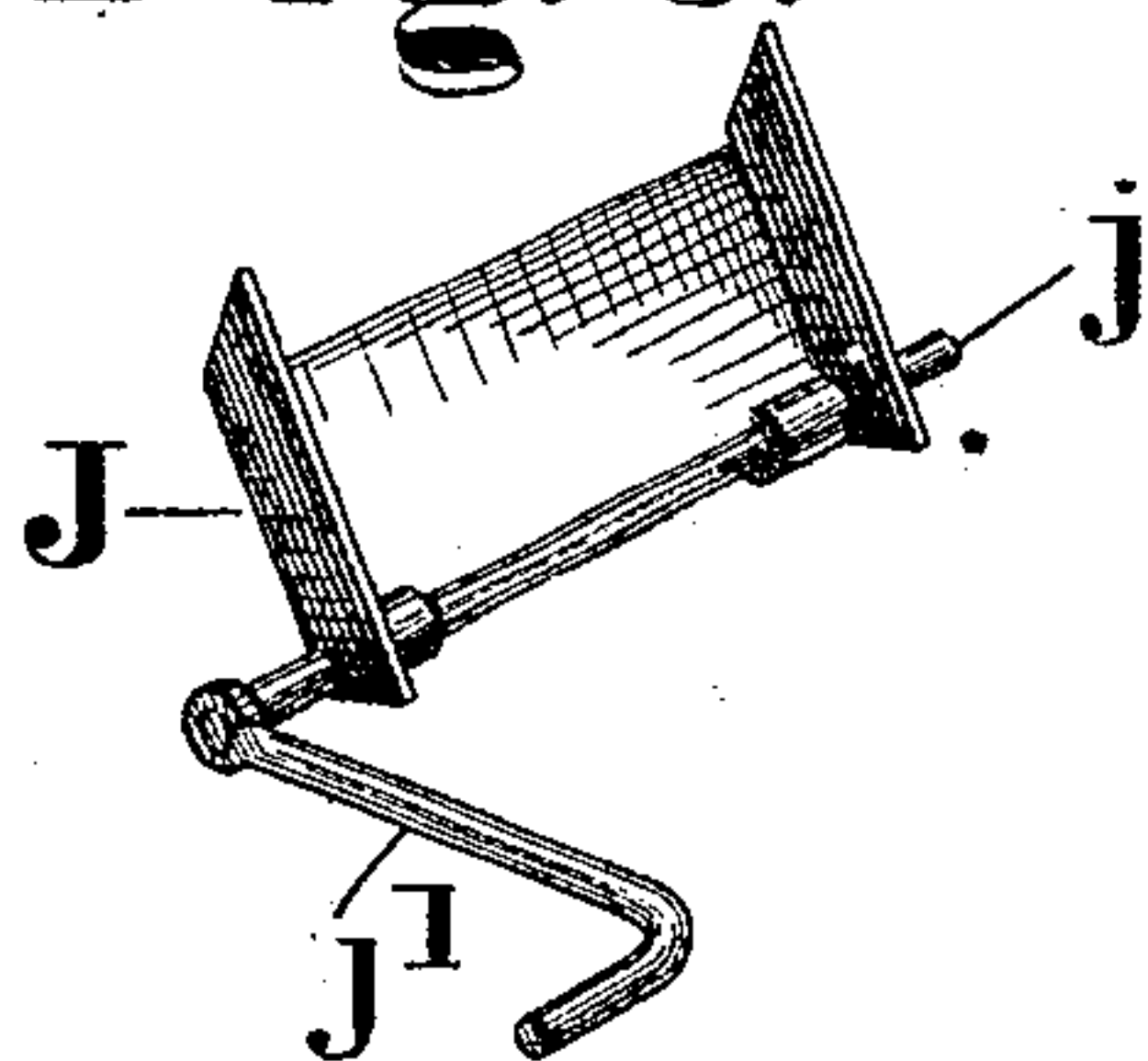
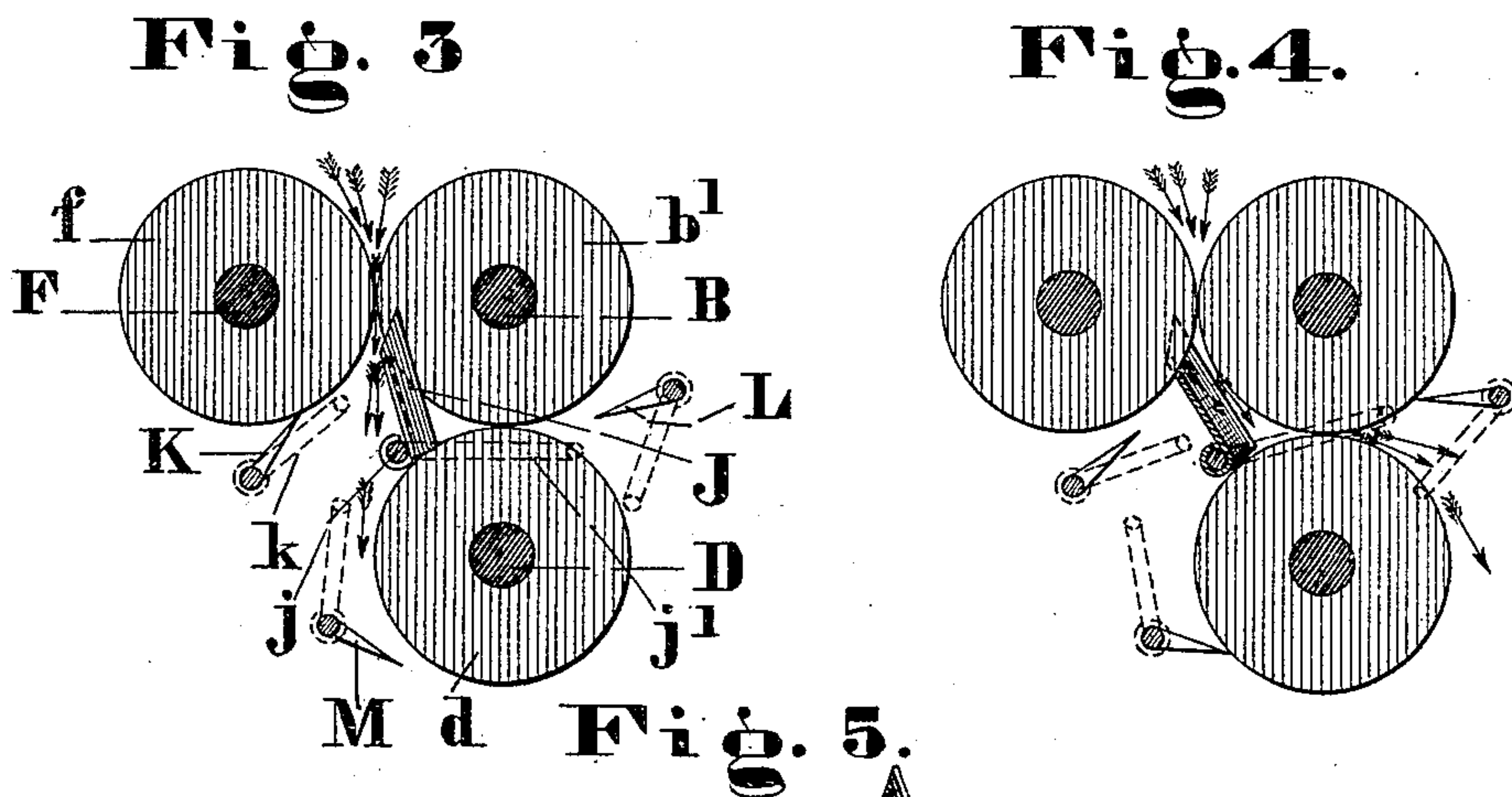
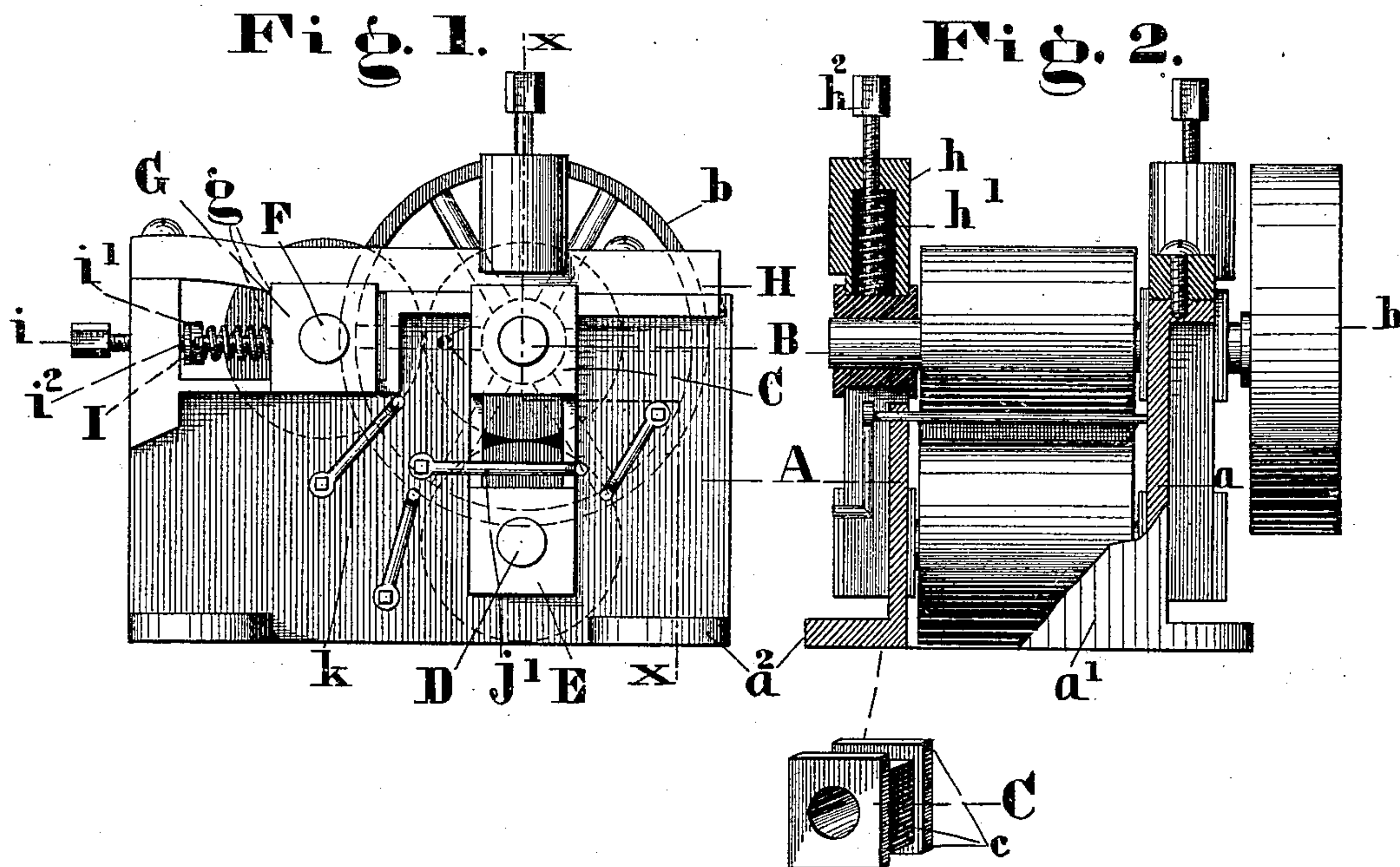
(No Model.)

2 Sheets—Sheet 1.

L. C. SPRINGER.
PULVERIZING MACHINE.

No. 262,327.

Patented Aug. 8, 1882.



WITNESSES:
J. S. West,
Wm. J. Emerson.

INVENTOR:
L. C. SPRINGER,
BY *H. W. Beadle & Co.*
ATTYS.

(No Model.)

2 Sheets—Sheet 2.

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Fig. 6.

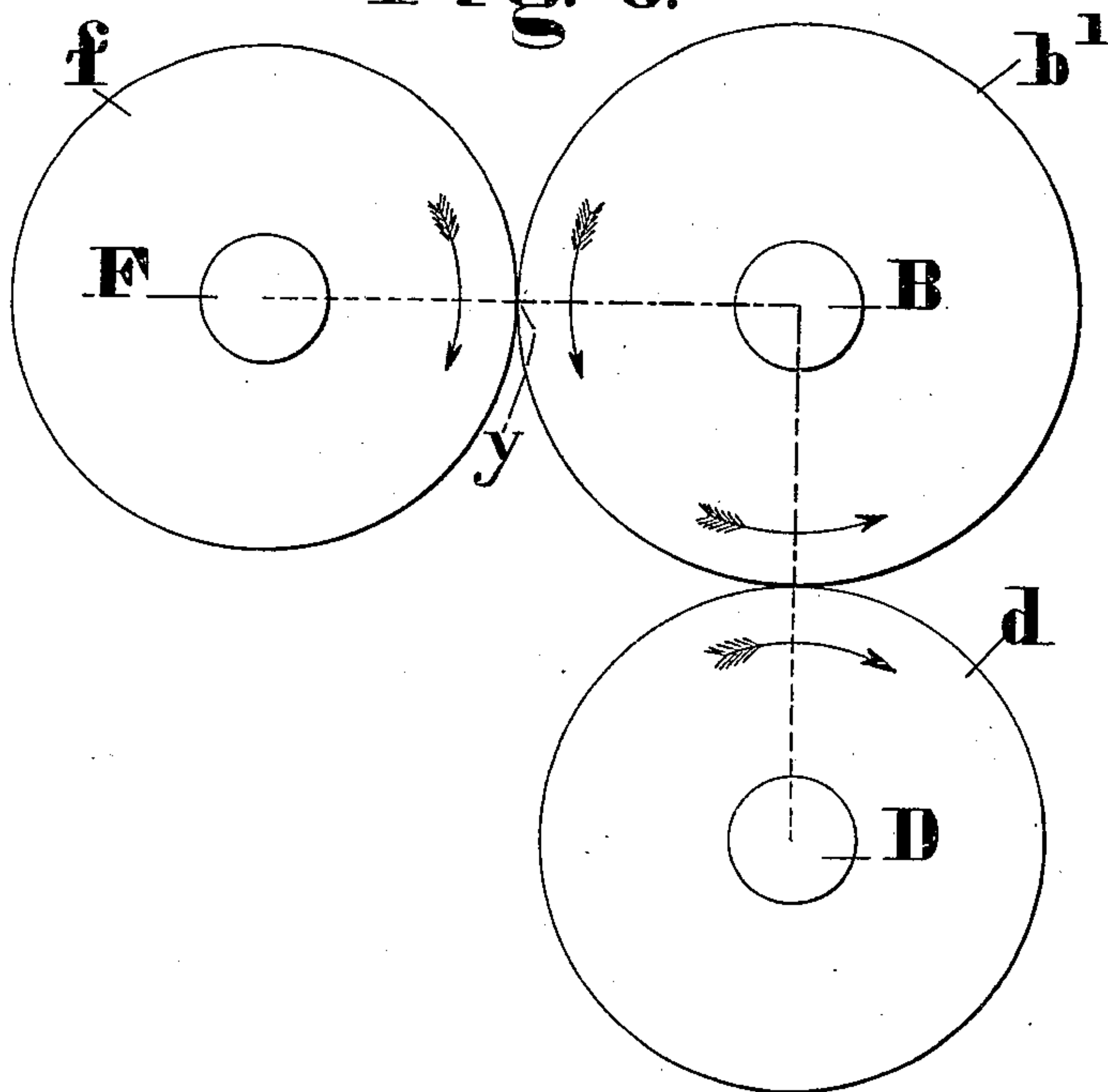
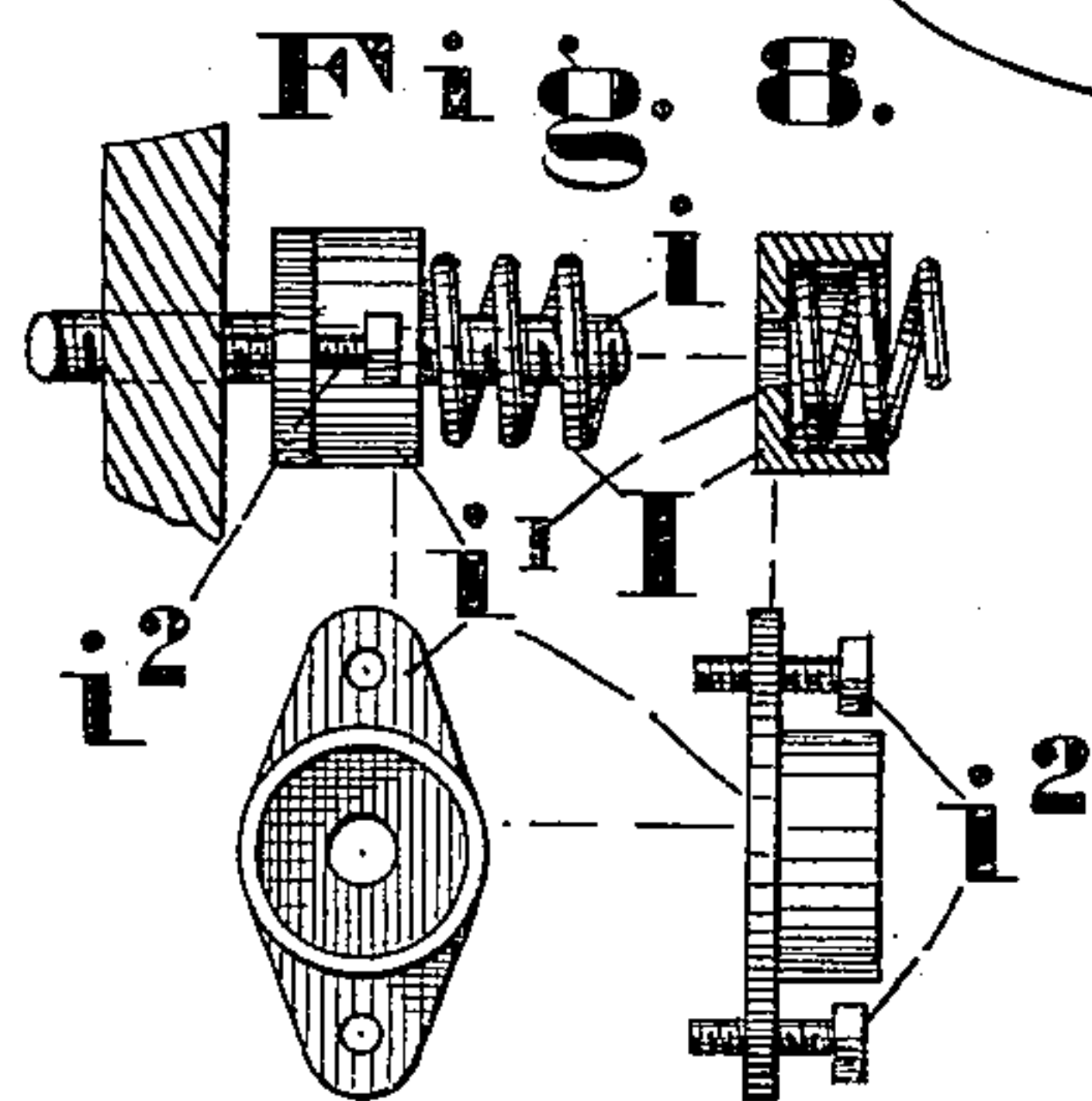
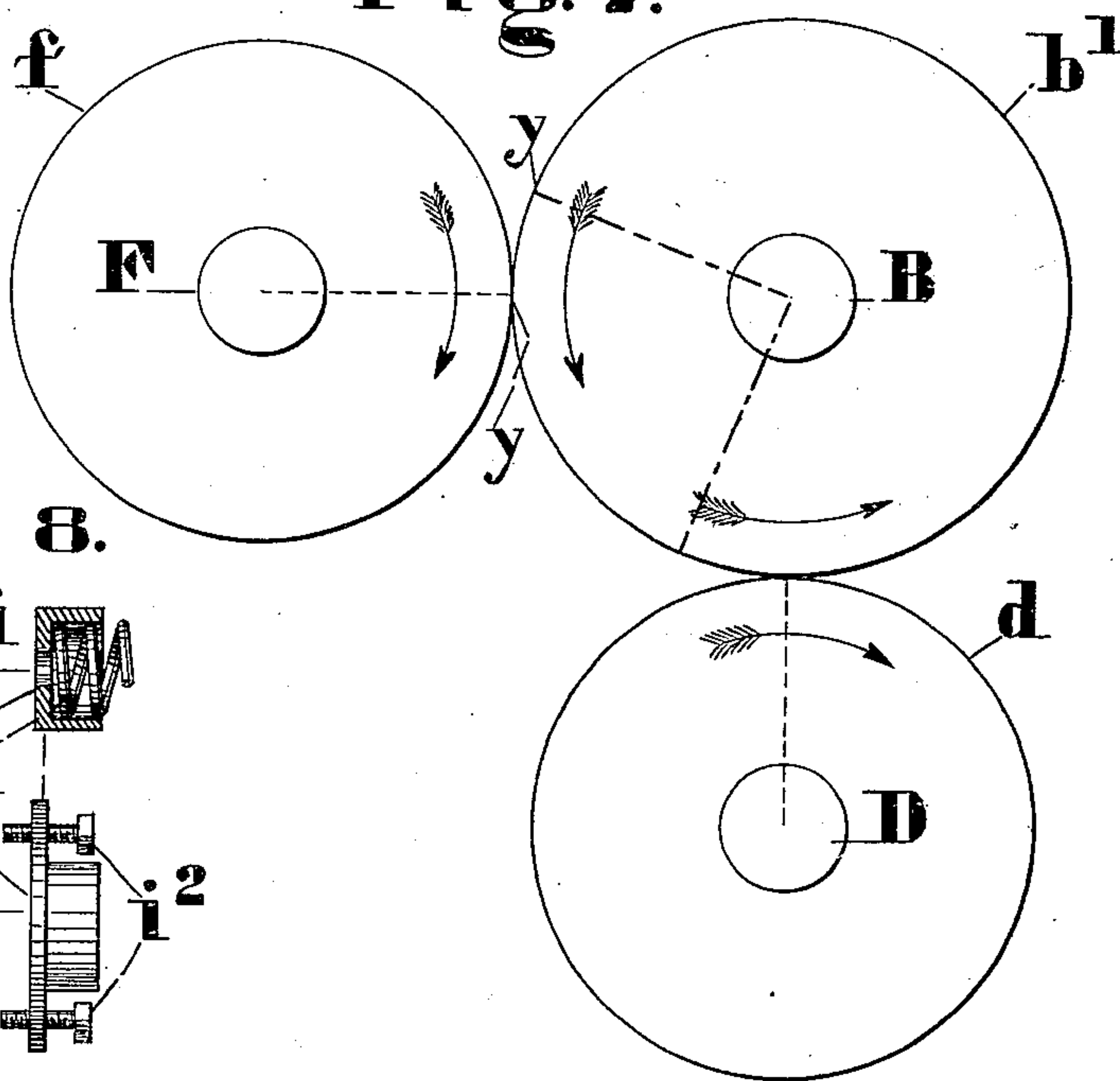


Fig. 7.



WITNESSES:

T. S. West,
John J. Emerson.

INVENTOR:
L. C. SPRINGER.
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ATTYS.

UNITED STATES PATENT OFFICE.

LEWIS C. SPRINGER, OF WILMINGTON, DELAWARE, ASSIGNOR OF ONE-HALF
TO V. C. WALKER AND R. T. ELLIOTT, BOTH OF SAME PLACE.

PULVERIZING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 262,327, dated August 8, 1882.

Application filed April 22, 1882. (No model.)

To all whom it may concern:

Be it known that I, LEWIS C. SPRINGER, of
Wilmington, county of New Castle, and State
of Delaware, have invented new and useful
5 Improvements in Pulverizing-Machines; and
I do hereby declare that the following is a full
and exact description of the same, reference
being had to the accompanying drawings, and
to the letters of reference marked thereon.

10 This invention consists mainly in the com-
bination, with three rolls specially arranged,
of an adjustable directing or guiding plate, by
means of which the material under treatment,
15 after having been passed through one pair of
rolls, may, if desired, be caused to pass again
through the rolls before it leaves the machine,
as will be fully described hereinafter.

In the drawings, Figure 1 represents a side
view of my improved machine; Fig. 2, a section
20 of the same on the line $x x$, Fig. 1; Fig. 3, a
transverse sectional view of the rolls with the
directing-plate in one position; Fig. 4, a simi-
lar view with the directing-plate in the other
position; Fig. 5, a perspective view of the di-
25 recting-plate detached; Figs. 6 and 7, views
illustrating the difference in the diameter be-
tween the roll b' and the rolls f and d , and
Fig. 8 detail views of the mechanism for ad-
justing the pressure of the rolls.

30 To enable others skilled in the art to make
my improved machine and properly use the
same, I will proceed to describe fully its con-
struction and manner of operation.

$A a$ represent the side plates of the machine,
35 and a' one of the end plates.

$a^2 a^2$ represent base-flanges, by means of
which the machine is permanently secured to
any proper foundation.

40 B represents the main shaft, which is pro-
vided at one end with the pulley b for receiv-
ing motion from any proper source of power,
and near its center with the hard-metal roll b' ,
Fig. 3, as shown.

45 $C C$ represent boxes held in vertical recesses
in the side plates of the machine, by means of
which the journals of the main shaft are prop-
erly supported.

$c c$ represent flanges on the boxes, by means
of which they are held against lateral move-

ment without interference with their freedom 50
of movement in a vertical direction.

D also represents a shaft having the hard-
metal roll d , Fig. 3, as shown.

$E E$ represent boxes held in the same re-
cesses of the side plates as are the boxes $D D$, 55
but below the same, as shown, by means of
which the journals of shaft D are properly
supported.

F also represents a shaft having the hard-
metal roll f , Fig. 3, as shown. 60

$G G$ represent boxes held in horizontal re-
cesses in the side plates of the machine, by
means of which the journals of the shaft F
are properly supported.

$g g$ represent flanges on the boxes, by means 65
of which they are held against movement in a
lateral direction without interference with their
freedom of movement in a horizontal direction.

The diameter of the roll b' , it will be ob-
served in Figs. 6 and 7, exceeds the diameter 70
of the rolls f and d , and consequently it does
not revolve in unison with them.

$H H$ represent bars located on the top edges
of the side plates, which are adapted to hold
the boxes properly in place, as shown. 75

$h h$ represent cylindrical cases rising from
the bars H over the journal-boxes $C C$; and h'
 h' are coiled springs located therein. $h^2 h^2$ rep-
resent set-screws extending through the tops
of the cases, as shown. 80

I represents a coiled spring upon each side of
the machine, which is located between the jour-
nal-box G and the wall of the recess, and is a set-
screw extending through the end of the casing
and through the springs I , as shown, by means 85
of which the extreme movement of the journal-
box is determined.

i' , Fig. 8, represents a cap-plate having ad-
justing-screws i^2 , by means of which the amount
of pressure exerted by the springs may be de- 90
termined.

J , Fig. 5, represents a directing-plate hav-
ing the shaft j , by means of which it is prop-
erly supported on the side walls of case, and j'
the crank-handle, by means of which the shaft 95
and attached directing-plate are actuated
when desired. This directing-plate is so lo-
cated relatively to the rolls b' and f that it

may occupy either the position shown in Fig. 3 or that shown in Fig. 4.

K represents a scraper adapted to clean the roller *f*. *k* represents the crank-arm by means of which the scraper is thrown into and out of action, as may be desired.

L and M represent similar scrapers applied to the other rolls.

The operation is substantially as follows; 10 The directing-plate having been set in the position shown in Fig. 3, it will result, when the machine is in operation, that the material delivered to it will pass through between the rolls *b' f*, and then leave the machine. When, however, the directing-plate is set in the position 15 shown in Fig. 4, the material, after passing through between the rollers *b' f*, is guided through between the rollers *b' d* before it leaves the machine, so that it is subjected to a double grinding action. 20

By means of this construction the material under treatment may be subjected either to a single or double grinding action, as may be desired.

25 The rollers, in consequence of the loose journal-boxes and the springs, are capable of yielding when occasion requires that they should do so.

By making the diameter of the roll *b'* ex-

ceed the diameter of the other rolls it follows 30 that a different point of contact occurs at each revolution, this being illustrated in Figs. 6 and 7, the dotted line *y*, Fig. 6, representing the contact-point at one revolution and the same line *y*, Fig. 7, the position of that point at the 35 next revolution.

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

1. In combination with three rolls arranged 40 as described, a movable directing-plate, as described, the construction being such that the material under treatment may be subjected to a single or double grinding action, according to the position of the plate.

2. In combination with the rolls *b', f*, and *d*, 45 the movable directing-plate *J*, as described.

3. The mill described, having the rolls *b' d f*, the intermediate roll, *b'*, having the greater diameter, the adjustable journal-boxes, and the 50 movable directing-plate, combined and arranged as and for the purpose described.

This specification signed and witnessed this 14th day of April, 1882.

LEWIS C. SPRINGER.

Witnesses:

R. T. ELLIOTT,
V. C. WALKER.