

No. 646,210.

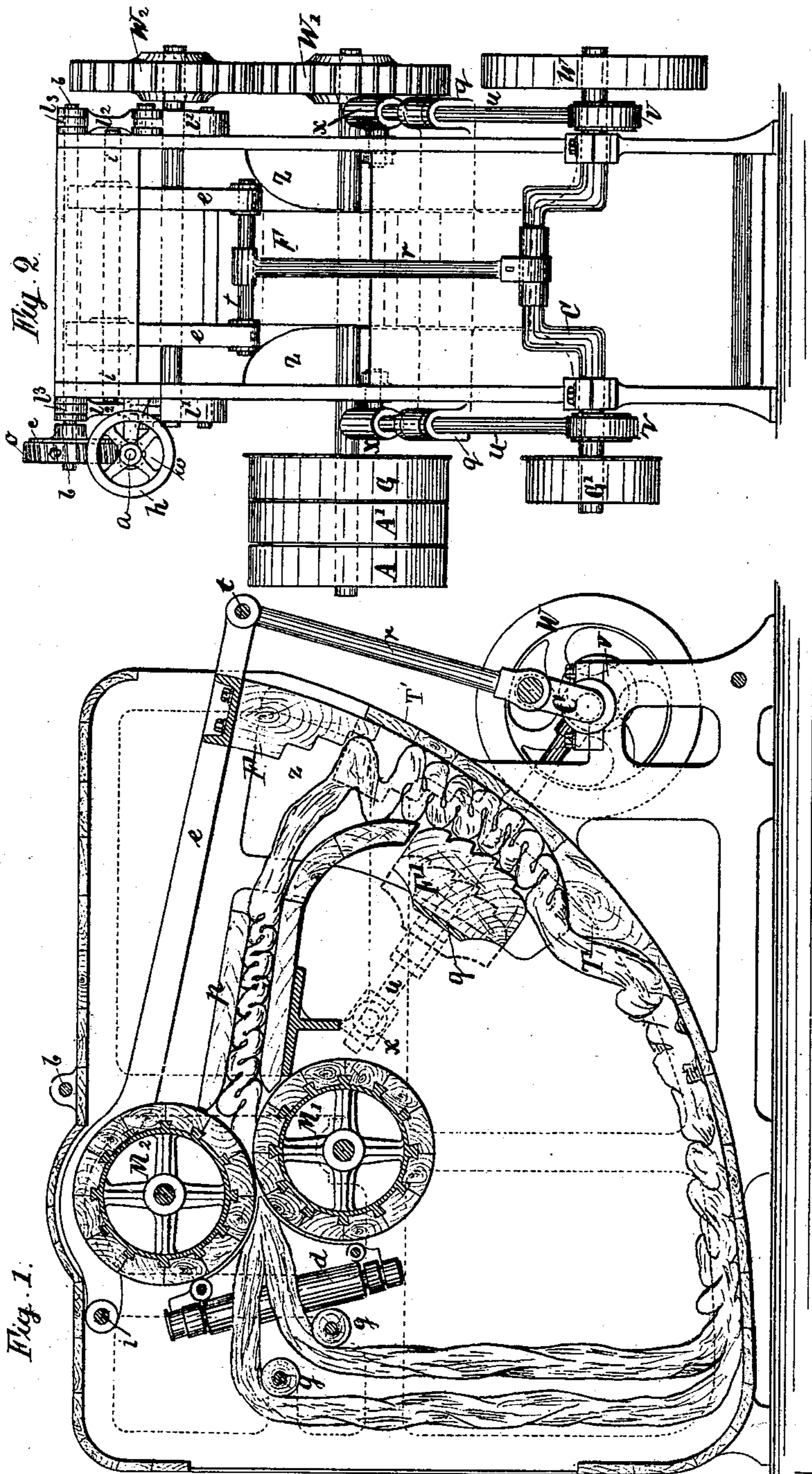
Patented Mar. 27, 1900.

E. GESSNER, JR.  
MILLING AND FULLING MACHINE.

(Application filed Nov. 12, 1898.)

(No Model.)

3 Sheets—Sheet 1.



Witnesses:

Friedrich Kumpfer

Charles J. Rathjen

Inventor:

Ernst Gessner Junior  
by Efford & Bull  
Atty.

No. 646,210.

Patented Mar. 27, 1900.

E. GESSNER, JR.  
MILLING AND FULLING MACHINE.

(Application filed Nov. 12, 1898.)

(No Model.)

3 Sheets—Sheet 2.

Fig. 3.

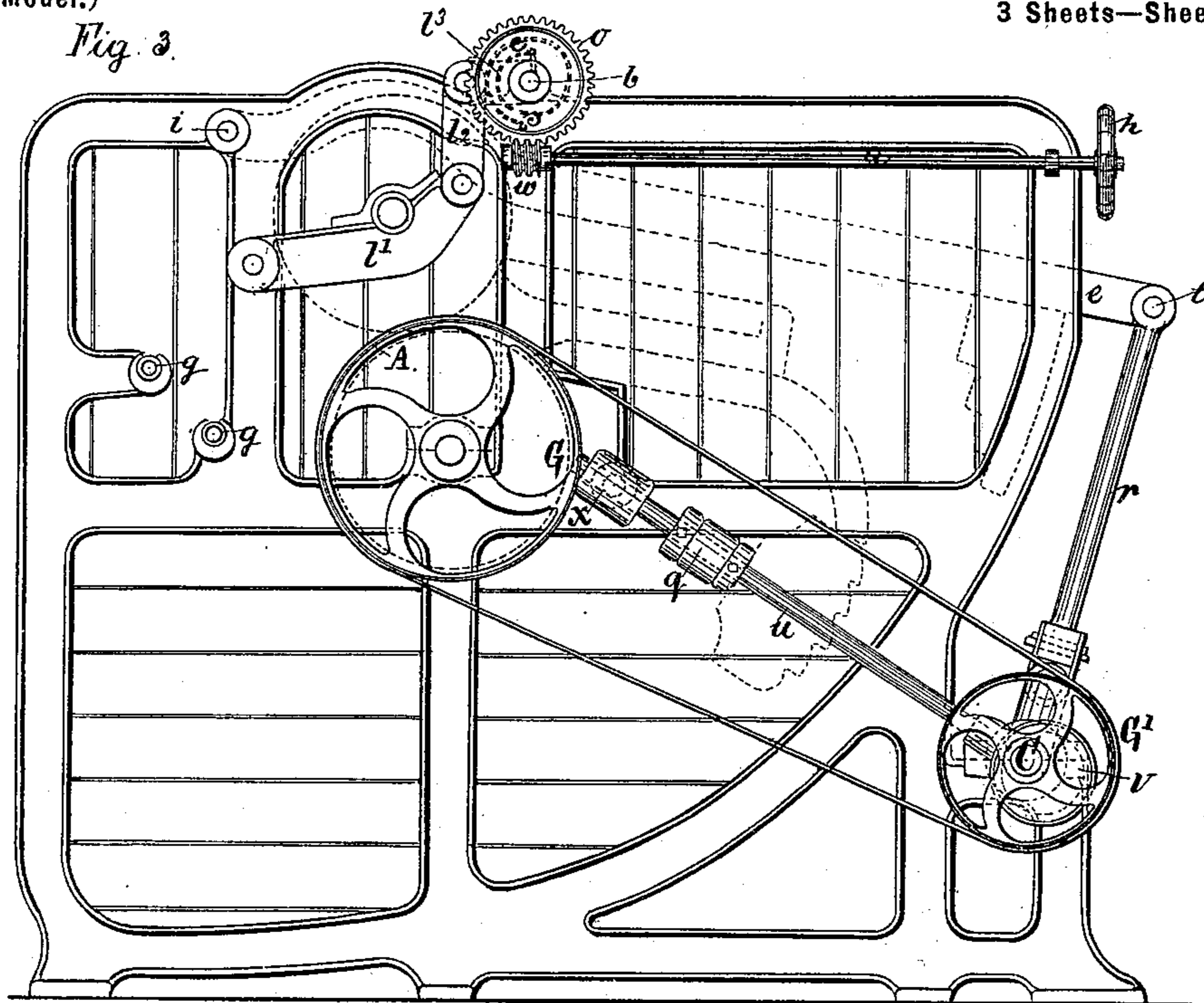
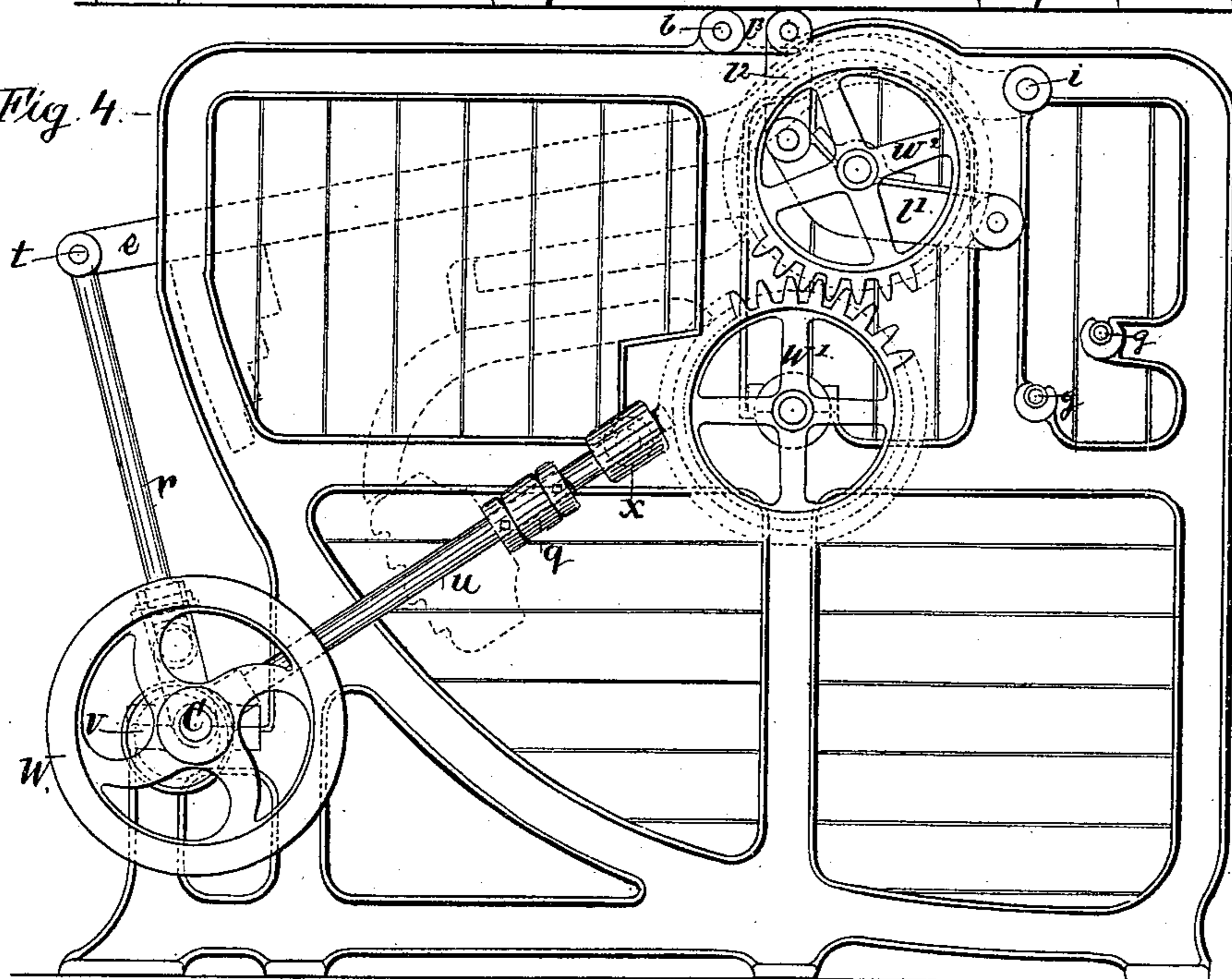


Fig. 4.



Witnesses:

Friedrichsen

Charles J. Rathjen

Inventor:

Ernst Gessner Junior  
by Lyford & Bull  
Attys

**No. 646,210.**

**Patented Mar. 27, 1900.**

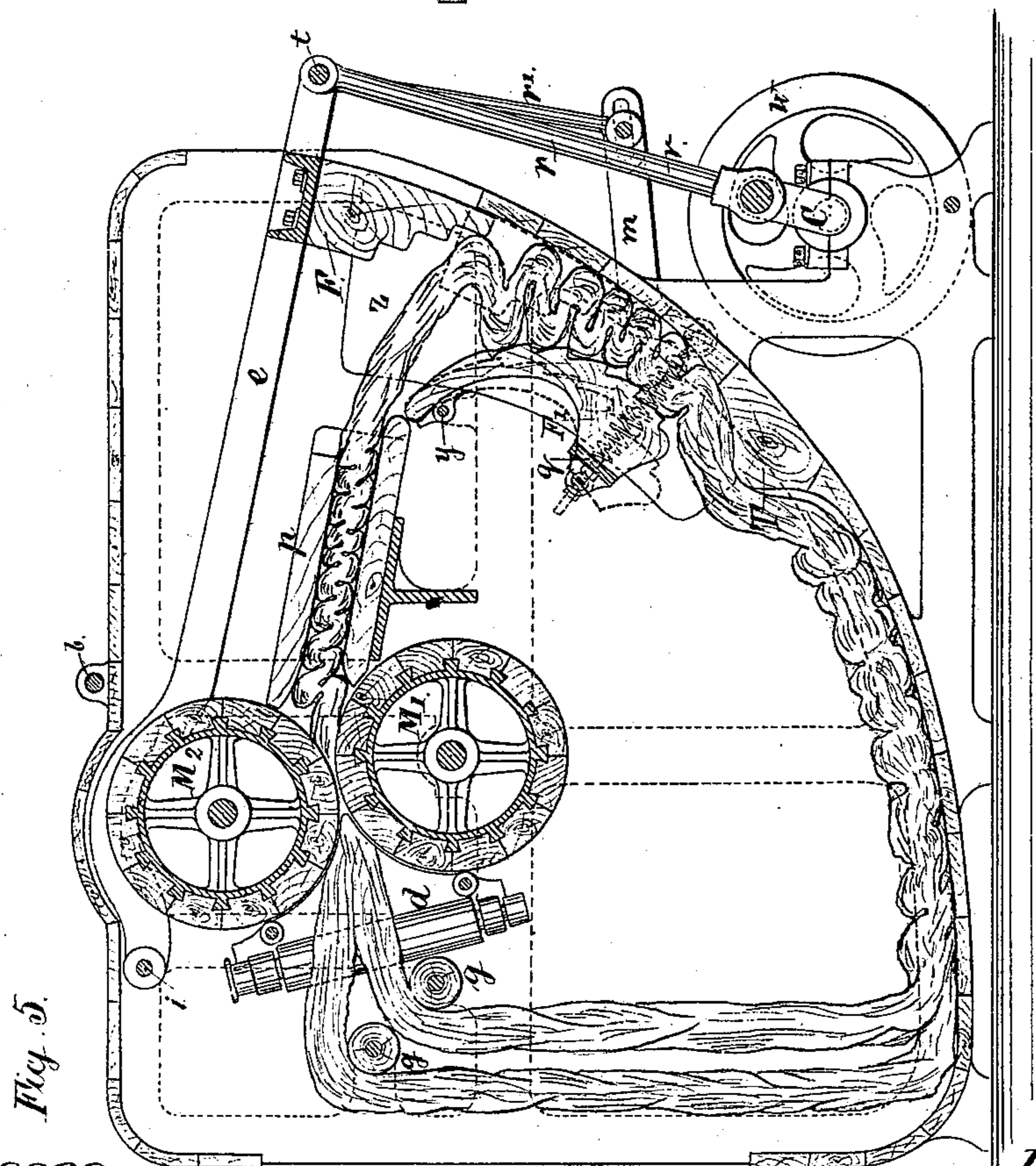
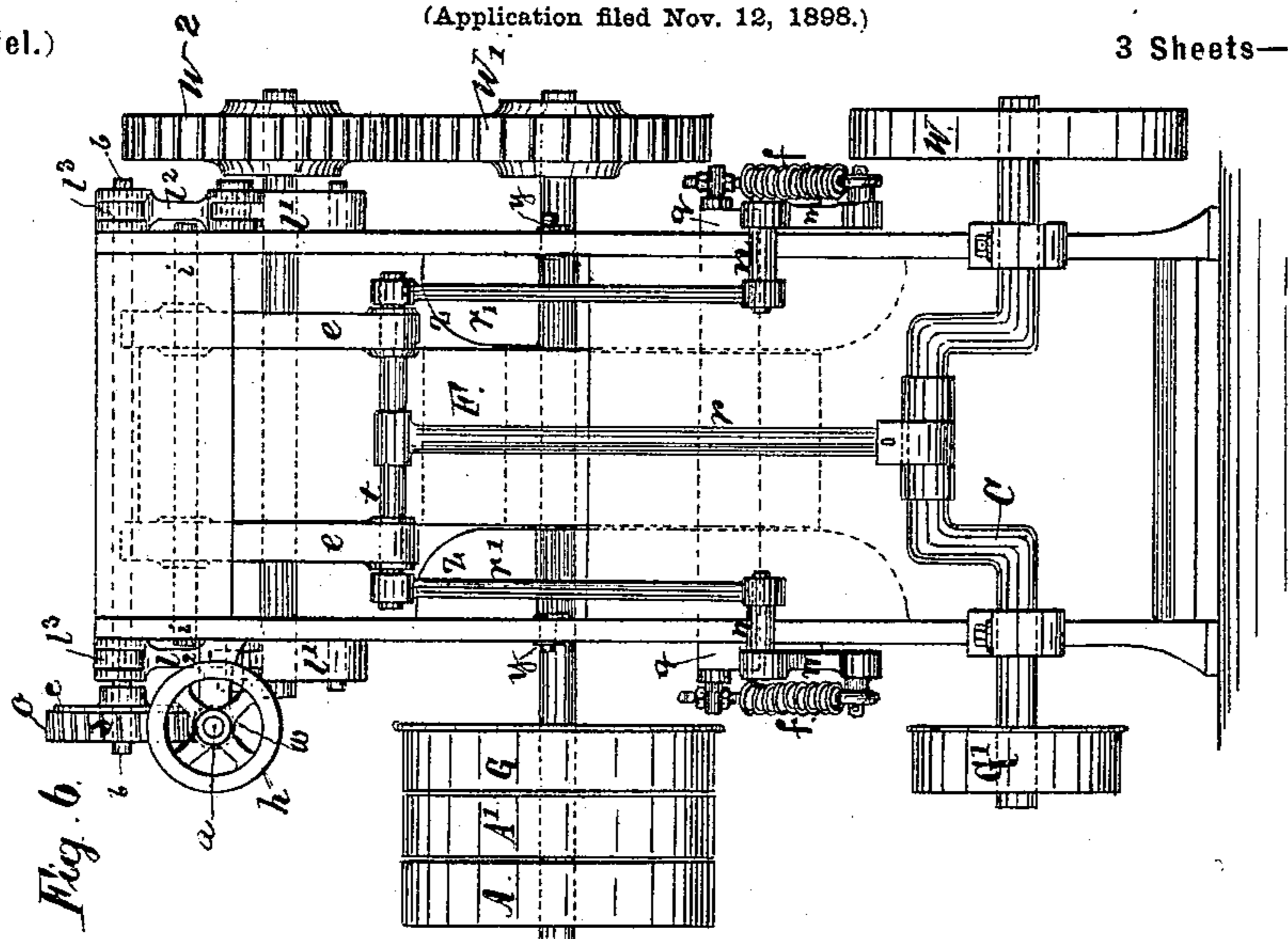
**E. GESSNER, JR.**

**MILLING AND FULLING MACHINE.**

(Application filed Nov. 12, 1898.)

(No Model.)

**3 Sheets—Sheet 3.**



*Witnesses:*

Freda Kemper

Charles J. Rathjén

*Inventor:*

Ernst Gessner Junior  
by Gifford & Bell  
Atty.

# UNITED STATES PATENT OFFICE.

ERNST GESSNER, JR., OF AUX, GERMANY.

## MILLING AND FULLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 646,210, dated March 27, 1900.

Application filed November 12, 1898. Serial No. 696,216. (No model.)

*To all whom it may concern:*

Be it known that I, ERNST GESSNER, Jr., a subject of the German Emperor, and a resident of Aux, Saxony, Germany, have invented certain new and useful Improvements in Milling and Fulling Machines, of which the following is a specification.

This invention relates to improvements in milling and fulling machines which are generally made with two fulling-stocks vertically arranged and working in a downward direction at the end and within the casing of an ordinary milling-machine. Instead of the usual two I use only one fulling-stock acting in a downward direction, and in addition to the same I use a stationary bottom foot-stock and a second reciprocating fulling-stock acting upon the fabric in the direction toward the end or back board of the machine and operated so as to act upon the fabric while the upper fulling-stock is being lifted and to be withdrawn while the latter is going down. By this arrangement the fabric is treated in two different directions, and the advantage thus obtained is that the creases or mill-wrinkles in the skein caused by the action of the milling-cylinders will be removed and buffed out more effectively, while, on the other hand, an increase of production and a better and more even effect on the cloth is insured as compared with the ordinary milling and fulling machines having their fulling-stocks acting only in one direction.

In the accompanying drawings, Figure 1 is a longitudinal section. Fig. 2 is an end elevation of a combined milling and fulling machine, showing my invention; and Figs. 3 and 4 are side elevations of the same machine. Figs. 5 and 6 are a longitudinal section and an end elevation, respectively, of a machine, showing a modification of the invention.

The two sectional cuts, Figs. 1 and 5, show parts of an ordinary milling-machine, the milling-cylinders  $M'$   $M^2$ , drag-rolls  $d$ , guide-rolls  $g$ , and the spout  $p$ . As usual, the journal of the lower milling-cylinder  $M'$  carries the fast and loose pulleys  $A$   $A'$ , and motion is imparted from the lower to the upper milling-cylinder by means of wheels  $w'$   $w^2$ , Figs. 2, 4, and 6.

The upper cylinder  $M^2$  is mounted upon lever-arms  $l'$ , which are connected with links  $l^3$  through suspension-links  $l^2$  at each side of

the machine, the links  $l^3$  being secured to the ends of a shaft  $b$ , extending across and mounted upon the two side frames, thus connecting the lever-arms  $l'$  of both sides, Figs. 3 and 4. The said shaft carries on one end a wheel  $o$ , which is loose and can be operated by a worm  $w$  and handle  $h$  through the rod  $a$ . The said wheel is formed with a casing  $c$ , carrying inside a spiral spring  $s$ , connected with both the shaft  $b$  and the casing  $c$ , as indicated by dotted lines, so that by the operation of worm  $w$  and wheel  $o$  through the mediation of said spring, acting upon the shaft  $b$ , an elastic pressure can be exerted upon the upper milling-cylinder  $M^2$  to press against the lower cylinder  $M'$ , Figs. 2, 3, and 6. The two arms  $e$ , suspended to pins or pivots  $i$  inside the casing, carry the upper fulling-stock  $F$  and through a cross-bar  $t$  and drawing-rods  $r$  are connected with the crank-shaft  $C$ , by which the fulling-stock  $F$  is actuated. The said crank-shaft carries on one end a balancing-wheel  $w$  and at its other end a pulley  $G'$  to receive motion from a pulley  $G$ , fixed to the shaft of the lower milling-cylinder  $M'$ .

$g$   $g$  and  $d$  are guide-rolls to assist in guiding the rope of material to the milling-cylinders.

The various parts above described are known and already used in practice.

I will now describe those parts as shown in the drawings which I consider to be new in combination with a milling-machine.

$T$  is the stationary bottom foot-stock.

In Figs. 1 to 4,  $F'$  is the second reciprocating fulling-stock, which by means of a cross-piece  $q$  is secured to slide-bars  $u$ , arranged outside the casing at both sides of the machine. The said slide-bars pass with their upper ends through movable slide-bearings  $x$ , which at their lower ends are connected with eccentrics  $v$ , secured to the crank-shaft  $C$ , by which the fulling-stock  $F$  is actuated so as to act upon the cloth in the direction toward the end or backboard  $T'$  of the machine while the upper fulling-stock is being lifted, and, vice versa, to be withdrawn while the latter is going down, as indicated by dotted lines.

While being hammered alternately in two directions by the fulling-stocks  $F$  and  $F'$ , the space occupied by the cloth is bounded above by the fulling-stock  $F$ , below by the foot-stock

T, and on either side by the backboard T' and the fulling-stock F'. The fulling-stock F drives the cloth into the channel between the backboard T' and the fulling-stock F', where the cloth is held back by the foot-stock T while it is being hammered against the backboard T' by the fulling-stock F' until the combined action of the two fulling-stocks from different directions effectually removes all creases and mill-wrinkles from the cloth.

In Figs. 5 and 6 the second fulling-stock F' is suspended to pivots *y*, its reciprocating motion being caused by the following parts: the double-armed lever *m*, which is made to reciprocate by being connected with the cross-bar *t* through drawing-rods *r'* and bolts *n*, the spiral springs *f* being attached with their lower ends to levers *m* and with their upper ends to the ends of the cross-piece *q*, secured to the fulling-stock F', which is thus caused to reciprocate, whereby the pressure exerted upon the fabric is rendered elastic. The fulling-stocks are narrower than the inside width of the casing, the space between the stocks and the side boards being filled up by wooden jaws Z.

I would have it understood that the means for reciprocating the second fulling-stock F' may be varied without in any way altering the principle of my invention.

Having now particularly described and ascertained the nature of the said invention, I declare that what I claim, and wish to secure by Letters Patent, is—

1. In a milling and fulling machine, in combination, the milling-rollers M' M<sup>2</sup>, the backboard T', the foot-stock T, the fulling-stock F facing said foot-stock, the fulling-stock F' facing said backboard and mechanism whereby said fulling-stocks F and F', respectively, are actuated against the cloth, substantially as described.

2. In a milling and fulling machine, in combination, the milling-rollers M', M<sup>2</sup>, a backboard T', a fulling-stock F' facing said backboard, mechanism whereby said fulling-stock F' is actuated to hammer the cloth against said backboard, a foot-stock T, a fulling-stock F and mechanism whereby said fulling-stock F is actuated substantially parallel with said backboard T, substantially as described.

3. In a fulling-machine, in combination, a receptacle adapted for the passage of a rope of material, means whereby said rope is caused to travel round and round through said receptacle, two fulling-stocks F and F' and mechanism whereby the same are actuated to hammer the rope respectively in a longitudinal and transverse direction, substantially as described.

Signed at Chemnitz, in the county of Zwickau, Saxony, and Empire of Germany, this 14th day of October, A. D. 1898.

ERNST GESSNER, JR.

Witnesses:

T. BOTZONG,  
F. EMIL FALKE.