No. 754,077. PATENTED MAR. 8, 1904.

P. KÜHNE.

MACHINE FOR MAKING METALLIC LATHING.

APPLICATION FILED APR. 8, 1903.

NO MODEL. 4 SHEETS—SHEET 1.

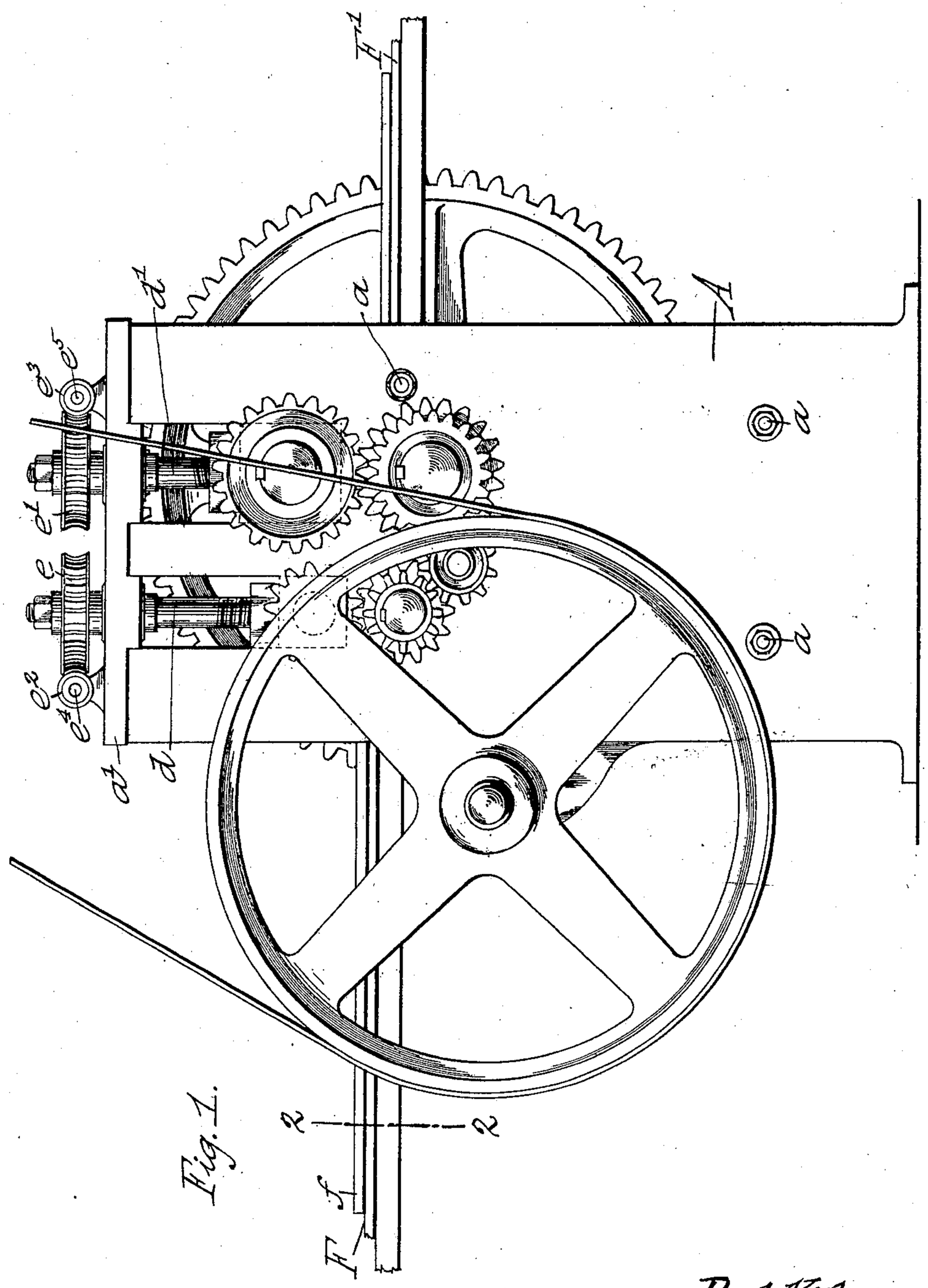

Fig. 1.

Witnesses
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J. J. Little

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NO MODEL. 4 SHEETS—SHEET 2.

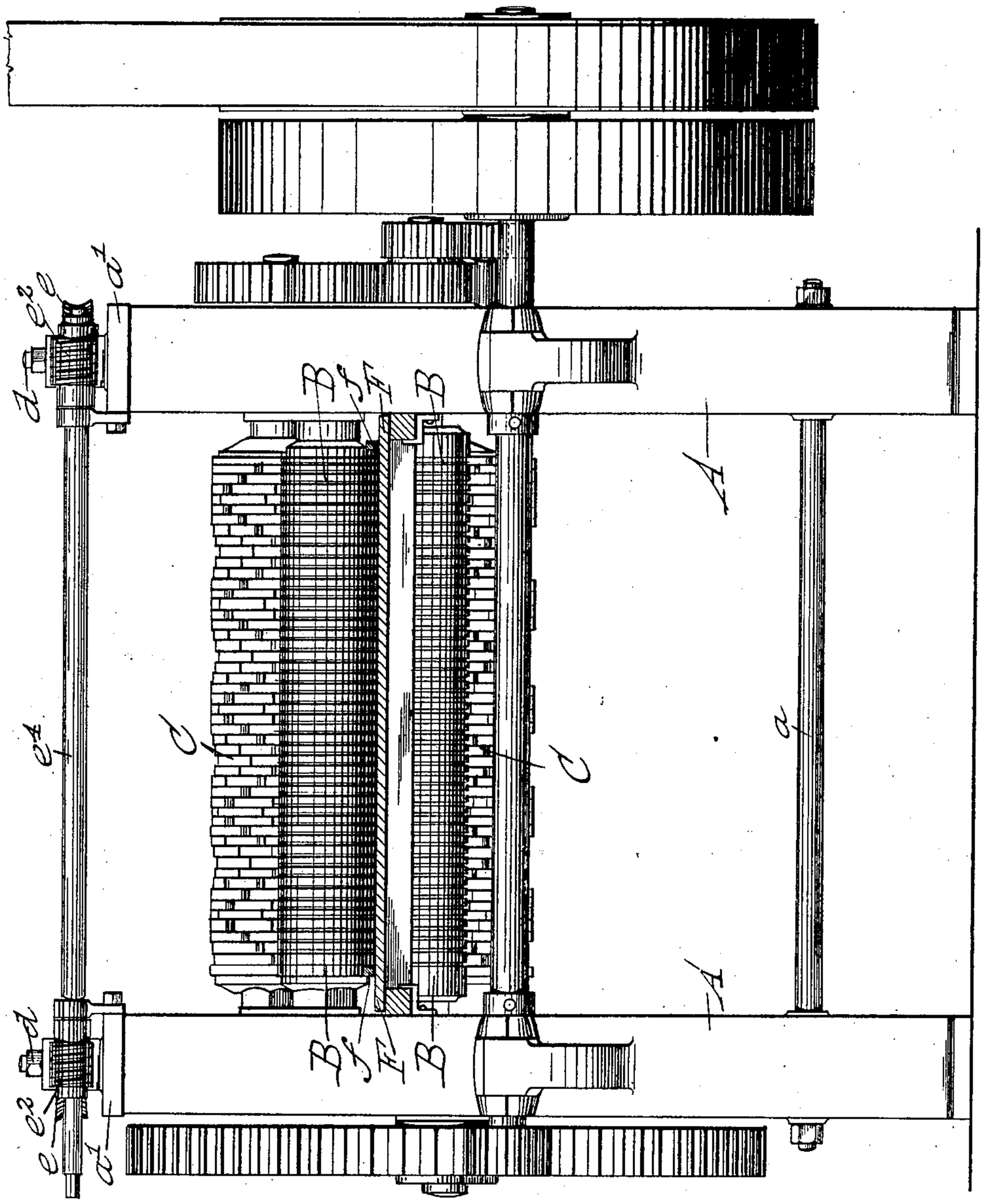

Fig. 2.

Witnesses
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NO MODEL. 4 SHEETS—SHEET 3.

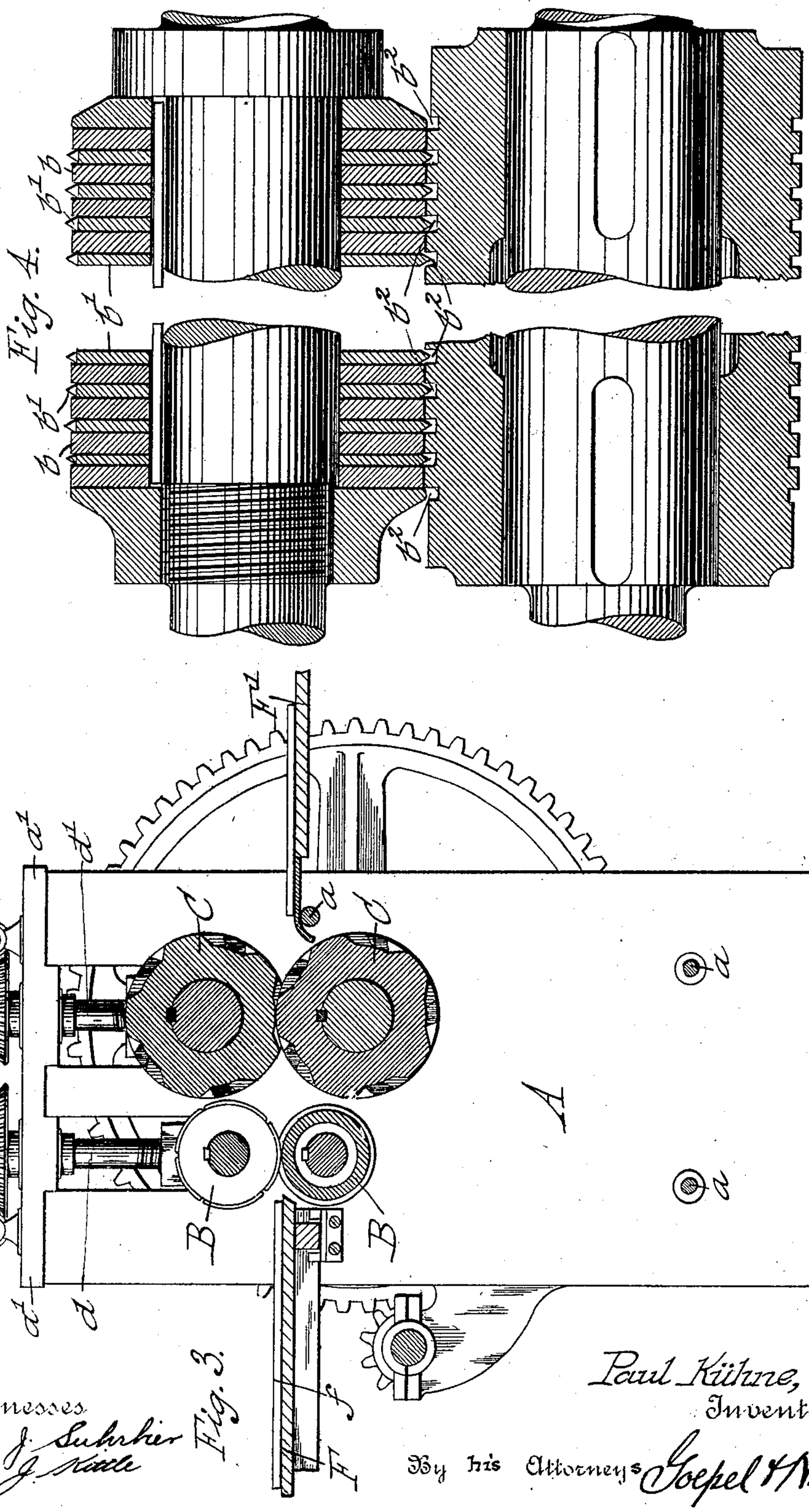

Fig. 4.

Fig. 3.

Witnesses
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P. KÜHNE.

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NO MODEL. 4 SHEETS—SHEET 4.

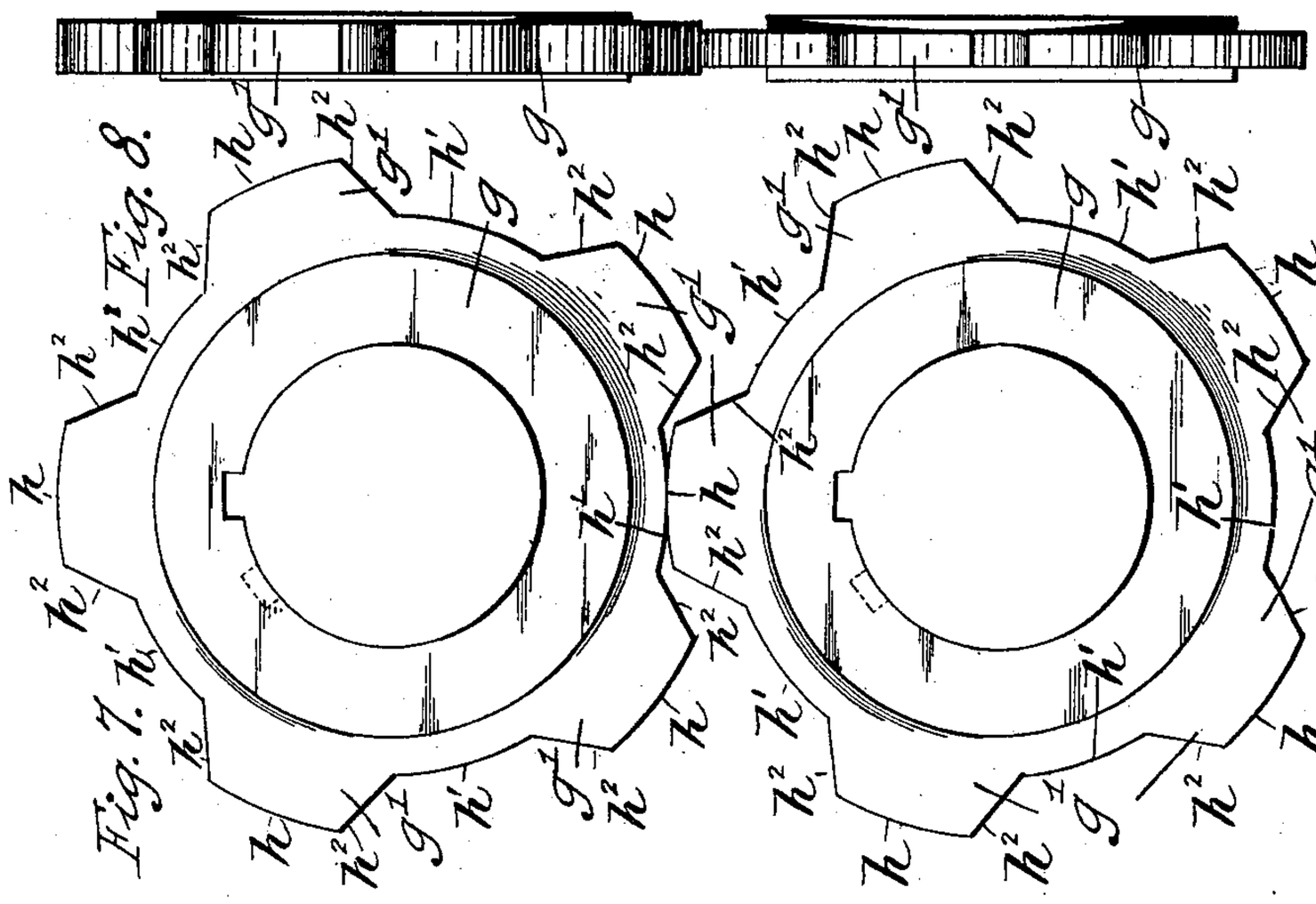

Fig. 8.

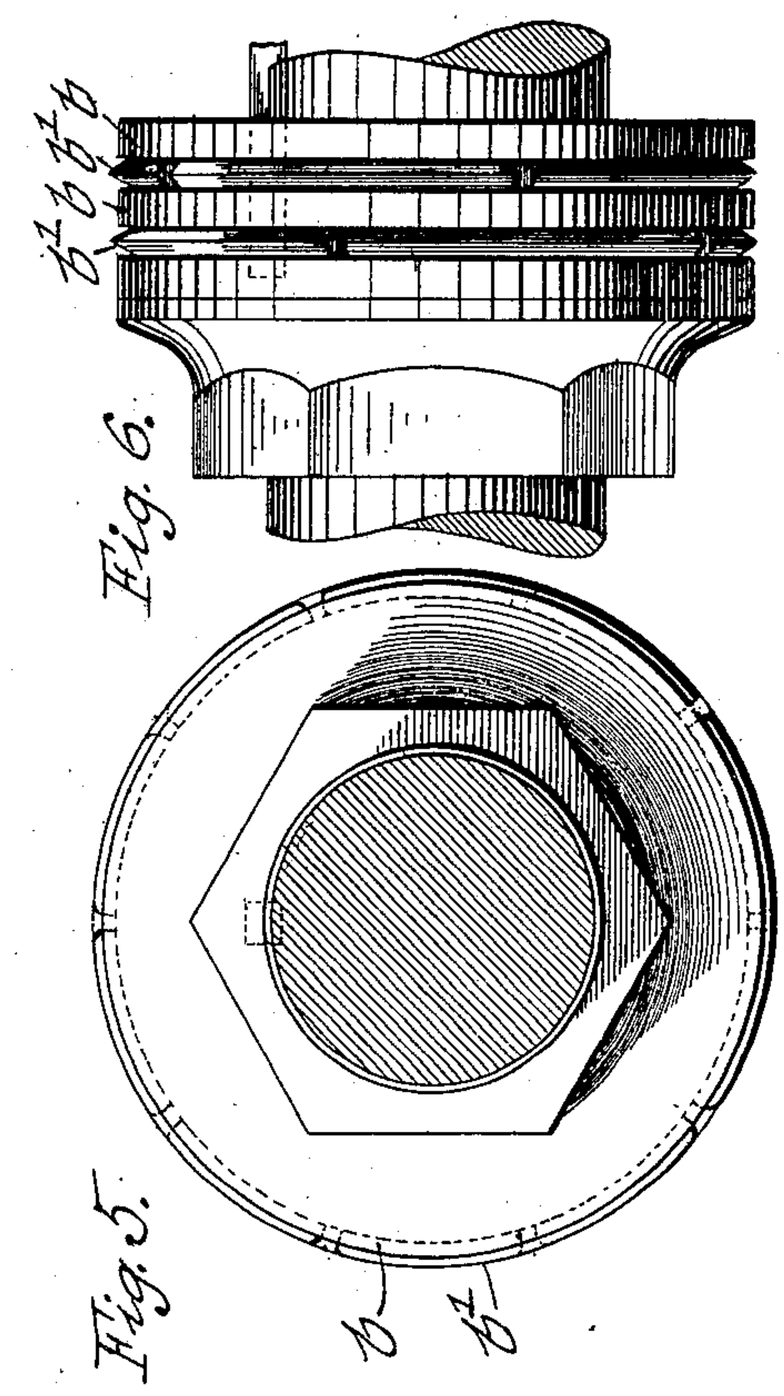

Fig. 6.

Fig. 5.

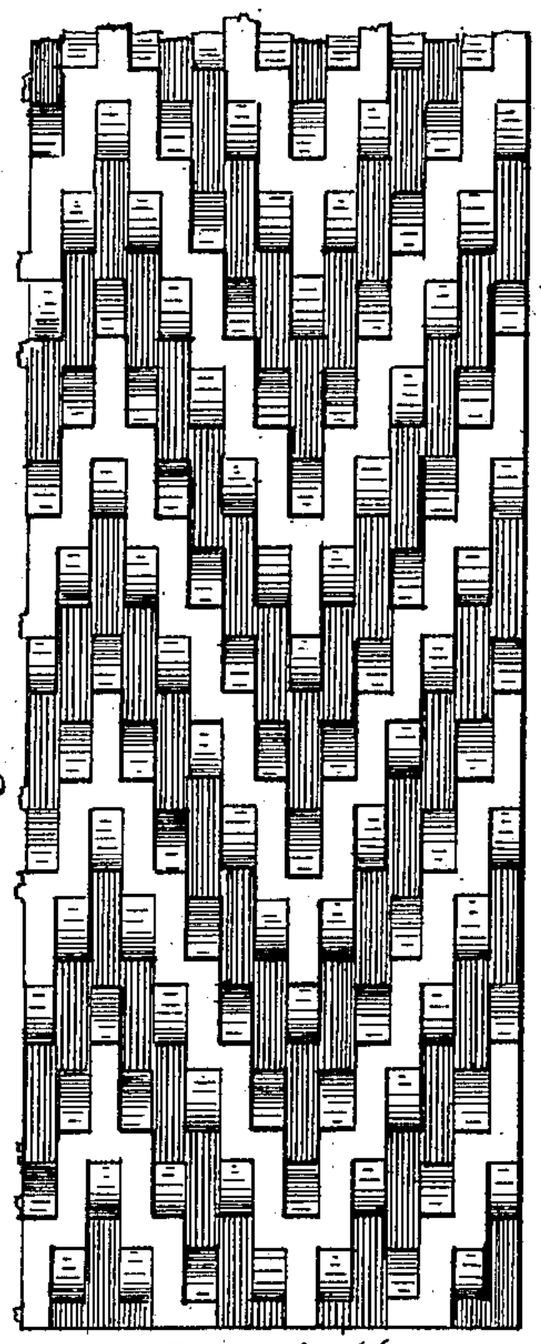

Fig. 9.

Fig. 10.

Witnesses
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By his Attorneys, Popel & Niles.

No. 754,077. Patented March 8, 1904.

UNITED STATES PATENT OFFICE.

PAUL KÜHNE, OF NEW YORK, N. Y.

MACHINE FOR MAKING METALLIC LATHING.

SPECIFICATION forming part of Letters Patent No. 754,077, dated March 8, 1904.

Application filed April 8, 1903. Serial No. 151,580. (No model.)

To all whom it may concern:

Be it known that I, PAUL KÜHNE, a citizen of the United States, residing in New York, borough of Manhattan, in the State of New York, have invented certain new and useful Improvements in Machines for Making Metallic Lathing, of which the following is a specification.

This invention relates to an improved machine for making metallic lathing of that type for which Letters Patent were heretofore granted to me, No. 665,117, dated January 1, 1901, under the title of "Sheet-metal structural element or metallic lathing," so that the same can be made from blank sheet metal in a quick, uniform, and effective manner; and for this purpose the invention consists of a machine for making metallic lathing, which comprises a pair of rotary slitting-rolls and a pair of rotary forming-rolls, which latter are provided on their circumference with a helically-arranged series of forming-dies which are spaced at suitable distances apart, so that the forming-dies of one roll enter the spaces between the dies on the other roll, so as to bend or form by a continuous operation the slitted metallic plate into a lathing-plate having a plurality of spaced truss portions connecting pairs of strips at the opposite faces of the plate.

The invention consists, further, of the combination of a pair of rotary slitting-rolls and the pair of rotary forming-rolls with feed and delivery tables at opposite sides of the same, the feed-table being provided with a gage at one side for guiding the plate; and the invention consists, further, of certain details of construction and combinations of parts, which will be fully described hereinafter and finally pointed out in the claims.

In the accompanying drawings, Figure 1 represents a side elevation of my improved machine for making metallic lathing. Fig. 2 is an end elevation, partly in section, on line 2 2, Fig. 1. Fig. 3 is a vertical longitudinal section through the machine. Fig. 4 is a detail sectional view of the slitting-rolls, drawn on a larger scale. Fig. 5 is a vertical transverse section through one of the slitting-rolls. Fig. 6 is a side elevation of one end of one of the slitting-rolls, also drawn on a larger scale. Figs. 7 and 8 are a side view and an elevation at right angles thereto of the individual dies of the forming-rolls, and Figs. 9 and 10 are a plan view and side elevation of the metallic lathing made by my improved machine.

Similar letters of reference indicate corresponding parts.

Referring to the drawings, A represents the supporting-standards of my improved machine for making metallic lathing. The standards A are connected by cross-bolts a and a top plate a'. In recesses of the standards A are supported the bearings of two pairs of rolls—a pair of slitting-rolls B and a pair of forming-rolls C. The pressure of each pair of rolls is regulated by means of screw-spindles d d', which turn in the top plate a' and which are provided with worm-gears e^2 e^3 on worm-shafts e^4 e^5, supported in bearings of the top plate of the machine. The worm-shafts are made square at one end, so as to apply a key thereto to adjust thereby the worm-gear mechanism for regulating the pressure between the pairs of slitting and forming rolls.

The contact between the pairs of slitting-rolls and forming-rolls is approximately in a horizontal line with each other. A feed-table F is arranged at the ingoing end of the machine and provided with a gage f, along which the sheet-metal plate is fed, so as to be taken up by the slitting-rolls and then be acted upon by the forming-rolls. Adjacent to the forming-rolls C is arranged a table F', over which the finished sheet of lathing after it has been formed in the machine is delivered. The tables F F' are supported in any suitable manner, both the feed-table as well as the delivery-table being made of a length corresponding to the sheet-metal plate fed to the machine and to the lathing delivered at the opposite end of the same.

Rotary motion is imparted to the slitting and forming rolls by belt-and-pulley transmission from any suitable power-shaft and intermediate transmission-gearing between the power-shaft and the shafts of the individual rolls, as shown in Figs. 1 and 2. The turning of the slitting and forming rolls is timed in such a manner that after the slitting of the

plate is accomplished the forming-rolls produce the spreading of the slitted portion in the required shape.

The slitting-rolls B are formed of a series of disks b, that are keyed to the shaft of the roll, and intermediate cutter-disks b', which are provided at their circumference with equidistant and rounded-off recesses, so as to form individual cutters which in connection with the grooved lower roll B produce slits in the sheet-metal plate of the length required. The sheet-metal slitting-disks and the intermediate rings are tightly retained on the shaft by keys engaging the inner edges of the slitting disks and rings, the entire series being held between a stationary collar at one end of the slitting-roll and an adjustable screw-collar at the opposite end of the same, as shown clearly in Fig. 4. The lower slitting-roll is provided with circumferential grooves b^2, into which the cutting-dies of the knife project, said grooves being produced in the surface of the lower roll, which is keyed to its shaft, as shown in Fig. 4.

The forming-rolls are composed of a shaft and a number of steel rings g, provided with equidistant projections g', said rings corresponding to the shape into which the strips cut in the sheet-metal plate are to be formed, so as to form the raised strips into parallel plates. The forming-dies are offset or staggered one to the other in such a manner that the slitted strips are raised in the lathing in a zigzag manner, as shown in Fig. 9. The lower forming-roll is provided with forming-dies, the projecting portions of which take into the spaces between the projecting portions of the upper forming-dies, as shown in Figs. 7 and 8. Each ring g is provided with working faces arranged in two circumferential or substantially circumferential lines and with intermediate tangential faces. The circumferential faces form the zigzag-shaped strips mentioned in the patent hereinbefore referred to, which strips lie in two planes and are connected by intermediate truss portions which are formed by the tangential portions of the rolls C. In the drawings, h indicates the outer circumferential faces. h' indicates the inner circumferential faces. The inner circumferential faces of one ring coact with the outer circumferential faces of the opposite ring, as indicated in Fig. 7, when the rolls are operated, and the tangential faces h^2 of one ring coact with the tangential faces h^2 of the opposite ring to form the truss portions between the plane portions of the lath.

When the slitted metallic plate passes through the dies of the forming-rolls, the slitted strips are taken up by the intermeshing dies of the forming-rolls and are raised alternately longitudinally alongside of each other, as shown in Fig. 10, so that a truss structure is obtained. In the patent referred to the zigzag strips are shown as "diagonally extending." This diagonal arrangement of the zigzag-shaped strips continuously of the sheet is in some instances apt to distort the sheet out of true plane condition. I therefore construct the new machine herein described so as to produce the strips referred to (which are in themselves of zigzag shape) in zigzag or rib arrangement across the sheet instead of in the diagonal arrangement described. This is accomplished by arranging the disks of the rolls so that a plurality of adjoining inner faces, constituting a series, extend in one direction and then a plurality or series of similar faces in another direction, and thus in different directions in zigzag arrangement on the roll, a corresponding arrangement being made of the coacting outer faces of the opposite roll.

When the machine is operated, the sheet-metal plate is fed over the table F to the slitting-rolls, which cut the slits of the required length and at suitable intervals into the sheet-metal plate. The slit plate is then fed through between the dies of the forming-rolls, which produce the bending up of the slitted strips into the required truss-like lathing, the size of the projections of the forming-dies defining the height of the finished lathing-plate, which is composed of approximately diagonal strips that are joined by a plurality of truss portions, the spaces at one side being inclined in one direction and those at the other side in the opposite direction.

By means of my improved machine for making metallic lathing a finished lathing-plate of considerable length and width can be quickly turned out in any quantity. The slitting-cutters and forming-dies are arranged so that a uniform stress in the plate is produced, owing to the zigzag arrangement in the lathing, which produces the uniform reduction in length or shrinkage and improves the appearance of the finished lathing. As all the finishing as well as the forming rolls are so arranged that they can be taken apart in case of injury to any one of them, the machine can be readily kept in effective working condition, the unshipping of the rolls and removing of the disks and forming-dies being accomplished without difficulty.

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

1. In a machine for making metallic lathing, a pair of forming-rolls, each roll provided with inner and outer faces adapted to form the metallic sheet into a lath having zigzag-shaped strips arranged in two parallel planes; and tangential faces between said inner and outer faces and adapted to form inclined connecting or truss portions between said strips, substantially as set forth.

2. In a machine for making metallic lathing, a pair of forming-rolls, each roll provided with inner and outer faces adapted to form the me-

tallic sheet into a lath having zigzag-shaped strips arranged in two parallel planes; and tangential faces between said inner and outer faces and adapted to form inclined connecting or truss portions between said strips, said inner and outer faces of the rolls being arranged in series extending first in one and then in another direction on the roll in zigzag arrangement, whereby said zigzag-shaped strips are produced in their respective planes in zigzag arrangement in a lath, substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

PAUL KÜHNE.

Witnesses:
PAUL GOEPEL,
HENRY J. SUHRBIER.