(No Model.) 2 Sheets—Sheet 1.

H. A. STONE.

MACHINE FOR PRODUCING METAL LATHING.

No. 459,726. Patented Sept. 15, 1891.

Fig. 1.

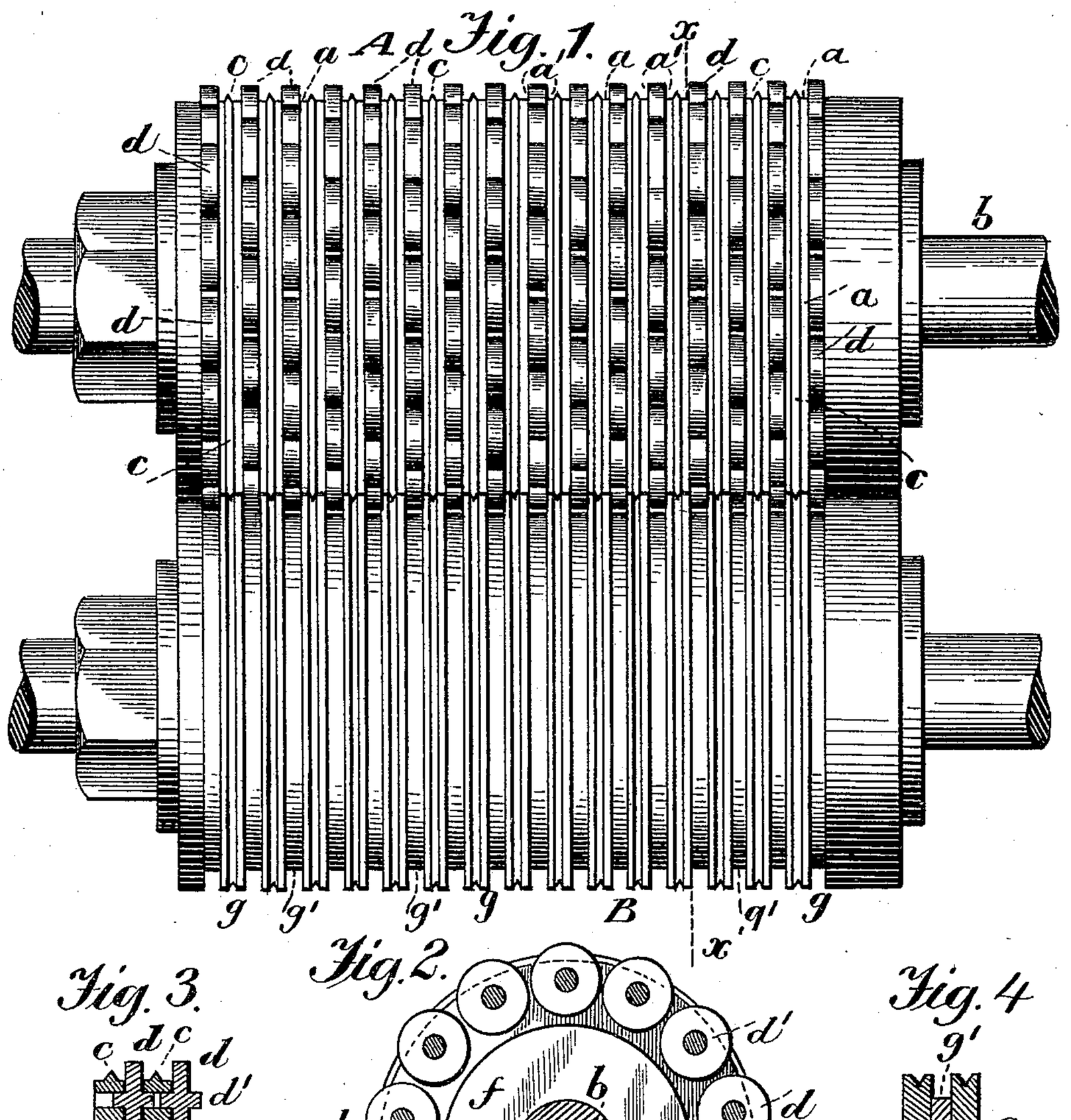


Fig. 3.

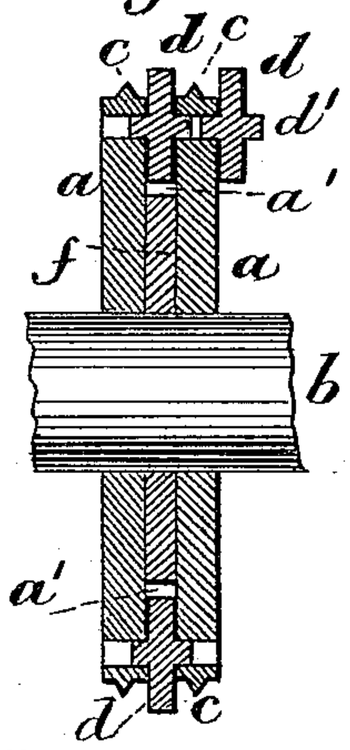


Fig. 2.

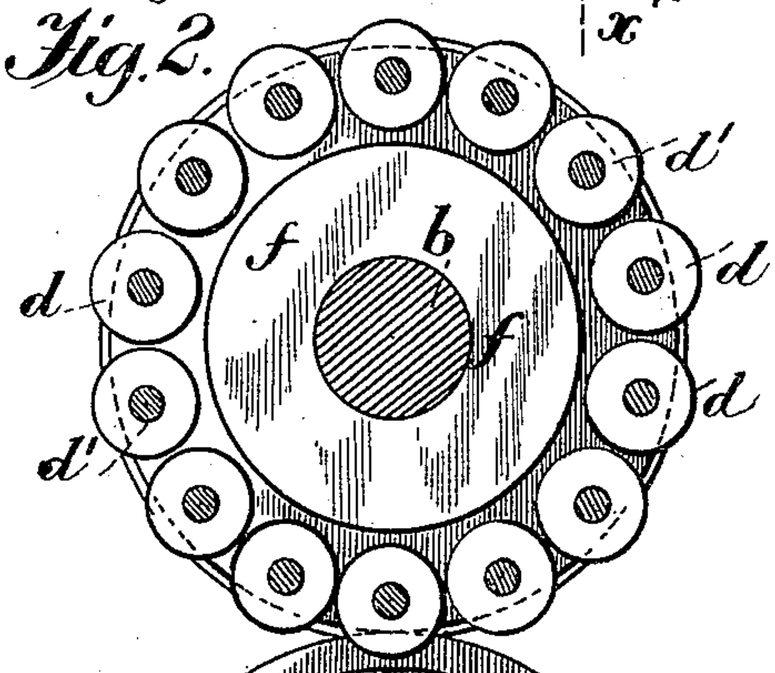
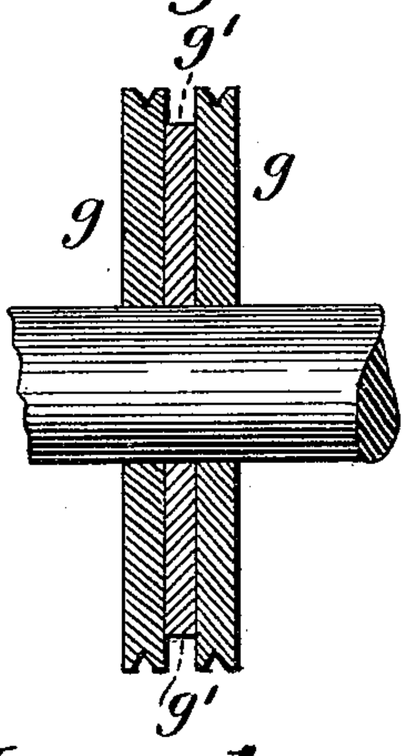


Fig. 4.



Witnesses:
A. Ruppert.
E. Luse.

Inventor:
Harley Alphens Stone,
by Howard & Howard
attys.

(No Model.) 2 Sheets—Sheet 2.

H. A. STONE.

MACHINE FOR PRODUCING METAL LATHING.

No. 459,726. Patented Sept. 15, 1891.

Fig. 5.

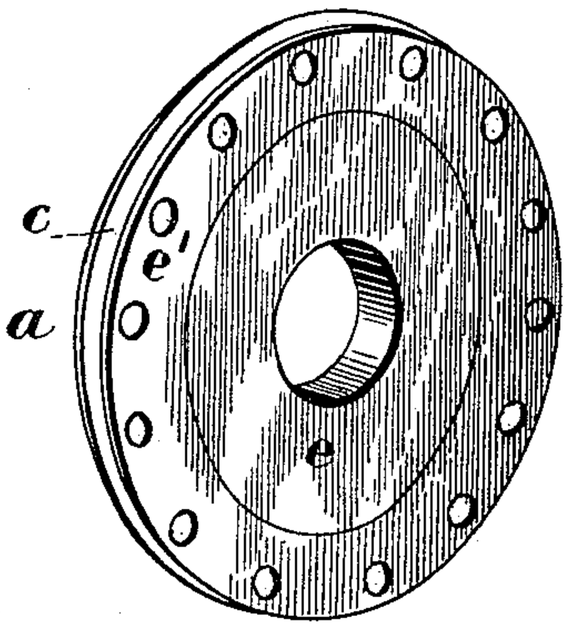


Fig. 6.

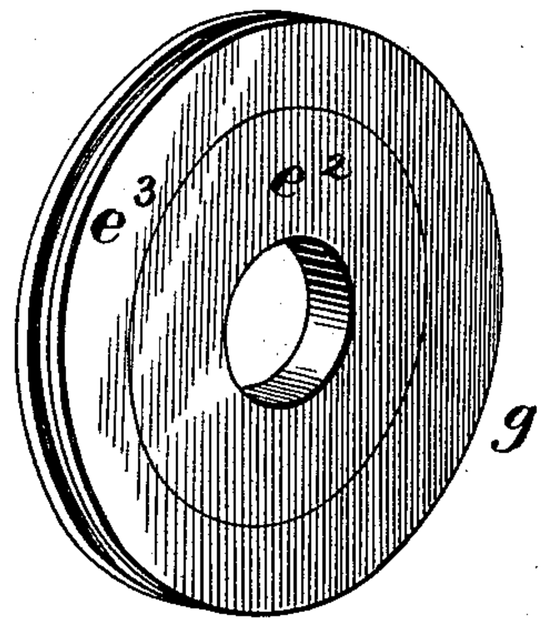


Fig. 7.

Fig. 8.

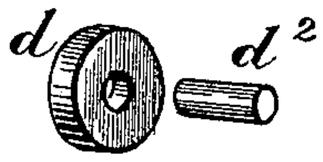


Fig. 9.

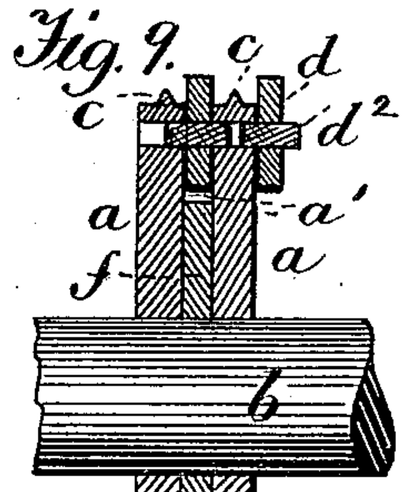


Fig. 10.

Fig. 11.

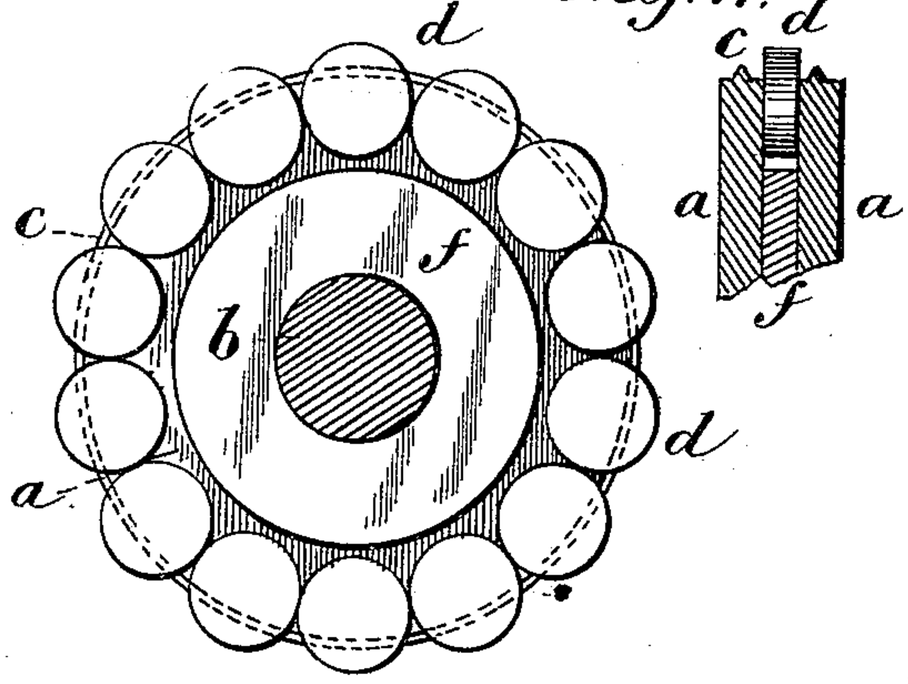


Fig. 12.

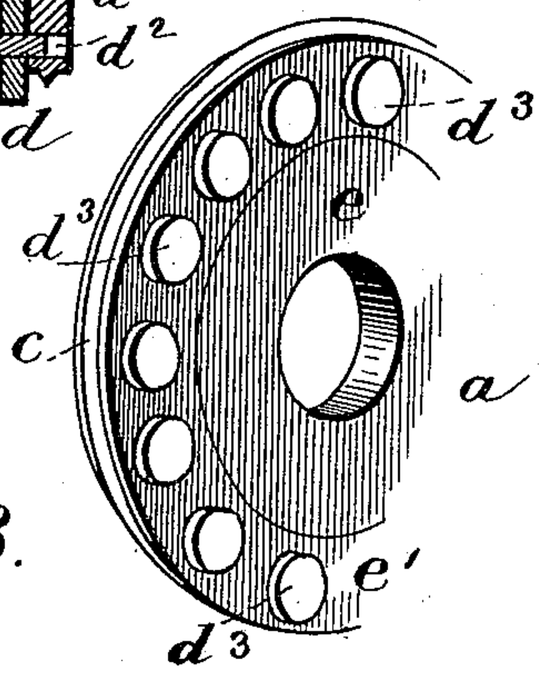
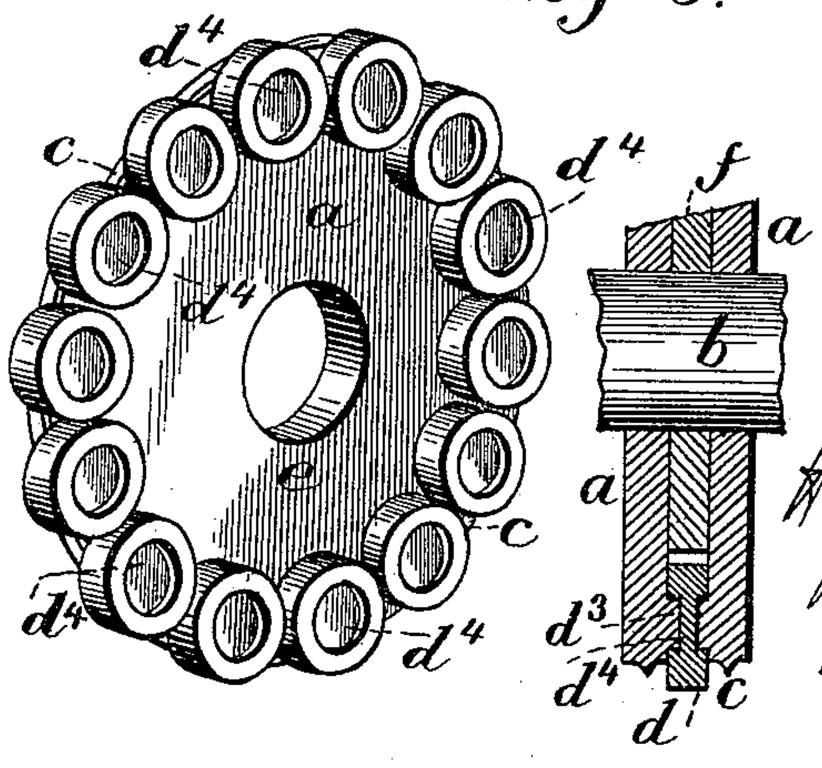


Fig. 13.



Witnesses:
A. Ruppert A.
E. Cruse.

Inventor:
Harley Alphens Stone,
by Wm. W. T. Howard,
Attys.

UNITED STATES PATENT OFFICE.

HARLEY ALPHEUS STONE, OF NEW YORK, N. Y., ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE BOSTWICK METAL LATH COMPANY, OF NEW YORK.

MACHINE FOR PRODUCING METAL LATHING.

SPECIFICATION forming part of Letters Patent No. 459,726, dated September 15, 1891.

Application filed April 28, 1891. Serial No. 390,809. (No model.)

To all whom it may concern:

Be it known that I, HARLEY ALPHEUS STONE, of the city, county, and State of New York, have invented certain new and useful Improvements in Machines for Producing Metal Lathing, of which the following is a specification, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

My invention relates, generally, to that class of machines in which rotary male and female dies are employed, through or between which the sheet metal to be operated upon is passed, and more especially to a machine by means of which in such passage the sheet is slitted and given a series of loops projecting from one side of the sheet and corrugated or ribbed; and it consists in constructions and combinations of parts by means of which the operation of the machine is improved and the structure made more durable and less liable to become unfit to do good work, and whereby, further, certain of its operative parts when worn may be readily removed for the substitution of new parts, all as hereinafter specified.

In the accompanying drawings, Figure 1 is a front elevation of a pair of rolls, each formed of a series of dies and other parts constituting my invention. Fig. 2 is a vertical transverse section through the line $x\,x$ of Fig. 1. Figs. 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, and 13 are details, as hereinafter described.

Similar letters of reference indicate similar parts in the respective figures.

The rolls are represented by A and B, respectively. The roll A comprises a series of disks a, centrally bored so as to fit mandrel b, each disk being provided with a circumferential projection or ribber c. The disks a are placed so as to leave a space a' between each adjacent pair, this space being occupied by a series of small circular cutters d, which may be journaled in the disk a in either of the ways illustrated in Figs. 3 and 9, Fig. 7 showing the cutter employed, in Fig. 3 and Fig. 8 that seen adjusted in Fig. 9.

In Fig. 7 the pin d' is solid with the cutter, while in Fig. 8 the cutter is perforated so as to be mounted on a pin d^2, carried by two of the disks a. The construction is such (see Fig. 3) that the pins do not extend through the disks a, in which they have their bearing, but only about half-way through, so that one disk shall serve to support one end of two pins. The cutters d can be made of steel, suitably hardened and tempered, to make them effective and durable.

In Figs. 12 and 13 a further modification is shown. Here each disk Fig. 12 is provided on one of its sides with a series of cylindrical projections d^3, while the cutter is given, Fig. 13, a cylindrical recess d^4 on each side.

Fig. 13 shows the adjustment, a cutter being supported by two disks. Each of the disks a is preferably made with its inner portion e, Fig. 5, of wrought-iron, with the outer portion e', of steel, welded thereto and hardened, so that the bearings in which the pins d' or d^2 rest and the ribber c shall be less liable to wear and the latter maintain its sharpened edge so as to produce a rib of proper form in the metal operated upon. It is of great importance that the ribber shall not be subject to wear and shall possess great durability, and heretofore much difficulty has been found in constructing a disk the ribber of which has possessed the qualities named. By constructing the disk in the manner described—that is to say, with the portion e immediately surrounding the mandrel—of wrought-iron, and the outer or operative portion e' of hardened tool steel I have found that the best results are obtained, and, further, that the rim can be readily hardened without danger of its becoming cracked or warped. It is also important that the pin bearings of the cutters, whether the latter are stationary or revoluble in the disks a, shall be in hardened steel, so as not to be subject to wear, it being necessary to maintain the cutters in their normal plane to allow them freedom to draw out of the metal after it has been slit and looped. It has been found, furthermore, that the advantageous results obtained by the use of a composite disk—that is to say, one having its inner portion of wrought-iron or softer metal—and the outer portion of hardened steel cannot be realized by the use of a disk made entirely of hardened steel.

Surrounding the mandrel b and placed between each pair of disks a is a washer f, having an extended superficial area, so that when

the series of disks are clamped together upon the mandrel the parallelism of the disks so clamped may be accurately preserved and the cutters relieved from strain, so that should it be considered desirable that they should have rotation upon or around their pins they may be free to rotate.

The roll B comprises a series of disks *g*, Figs. 4 and 6, separated by washer *g'*. The disks *g* are each provided with a circumferential groove of a shape corresponding to that of the ribber *c*, which works within it. The space between any pair of disks *g* is such as to allow the free entrances of the cutters *d*, the depth of the space determined by the diameter of the washers *g'* being sufficient to allow the loops formed by the metal cut out by the cutters to have the requisite clearance as the sheet is moved along between the rollers A and B. The disks *g*, like those *a* of the roller A, are formed with their inner portions e^2 of wrought-iron and with steel rims e^2 welded to the wrought-iron central parts, the rims being suitably hardened, so as to reduce their liability to wear. The advantages attending this composite construction are the same as have been alluded to with reference to the co-operating disk of the roll A.

The cutters *d* may or may not be provided with pins, whether the pins are solid with them or not, for as about three-fourths of each cutter is below the peripheries of the disks *a* and the circumferences of the cutters may be brought in contact they may as the disks are firmly clamped together, be held in place without any axial support, it being, as has been previously stated, within the scope of my invention that the rollers need not be made capable of rotation around their axes, but may be stationary so far as such rotation is concerned.

Fig. 10 shows a cutter adapted to have no axial support, its adjustment being seen in Fig. 11.

Heretofore it has been found that the cutters, however constructed in machines of this class, have been liable to become dull or distorted, and a principal object of my invention is to provide a cutter by the use of which such disadvantages may be avoided, and which may be kept in stock and easily replaced when worn or broken, or readily removed for grinding or sharpening. This advantage and that derived from forming the respective disks *a* and *g* in the composite manner described, so that the rims may be hardened without danger of cracking or warping, give greatly increased value to a machine in which the constructions herein described are embodied. Heretofore no machine for this purpose, so far as I am aware, has been provided with cutters and ribbers of such quality as to perform good results, but by my invention these important elements of the machine can readily be given the necessary hardness and temper, the value of which consideration cannot be overestimated.

Having described my invention I claim—

1. In a machine for making metal lath, a roll comprising a series of disks having ribbers upon their peripheries and cutters arranged in spaces between the disks near the circumferences thereof, substantially as set forth.

2. In a machine for making metal lath, a roll comprising a mandrel, a series of disks having ribbers upon their peripheries, circular cutters arranged in spaces between the disks near the circumferences thereof, and washers also in said spaces, substantially as set forth.

3. In a machine for making metal lath, a roll comprising a series of disks having ribbers upon their peripheries and cutters supported on pins in each pair of adjacent disks in the space between them and near the circumferences thereof, substantially as set forth.

4. In a machine for making metal lath, a roll comprising a mandrel, a series of disks having ribbers upon their peripheries, cutters supported on pins in each pair of adjacent disks in the space between them and near the circumferences thereof, and a washer in said space, substantially as set forth.

5. In a machine for making metal lath, a roll comprising a mandrel, a series of disks having grooved peripheries, and a washer in the space between each adjacent pair of disks, said disks being composite, as described—that is to say, the parts immediately surrounding the mandrel being of wrought-iron and the outer parts or rims of steel welded thereto and suitably hardened, substantially as set forth.

6. In a machine for making metal lath, a composite disk the inner part of whose area is of wrought-iron and the outer part of hardened steel, substantially as set forth.

7. In a machine for making metal lath, a pair of rolls each comprising a series of disks clamped on mandrels and constituting together male and female dies, combined with spacing-washers and cutters supported by one roll and adapted to enter the spaces existing between the disks of the other roll, substantially as set forth.

In testimony whereof I have hereto set my hand and seal.

HARLEY ALPHEUS STONE. [L. S.]

Witnesses:
E. J. GRANGER,
W. J. MORGAN.