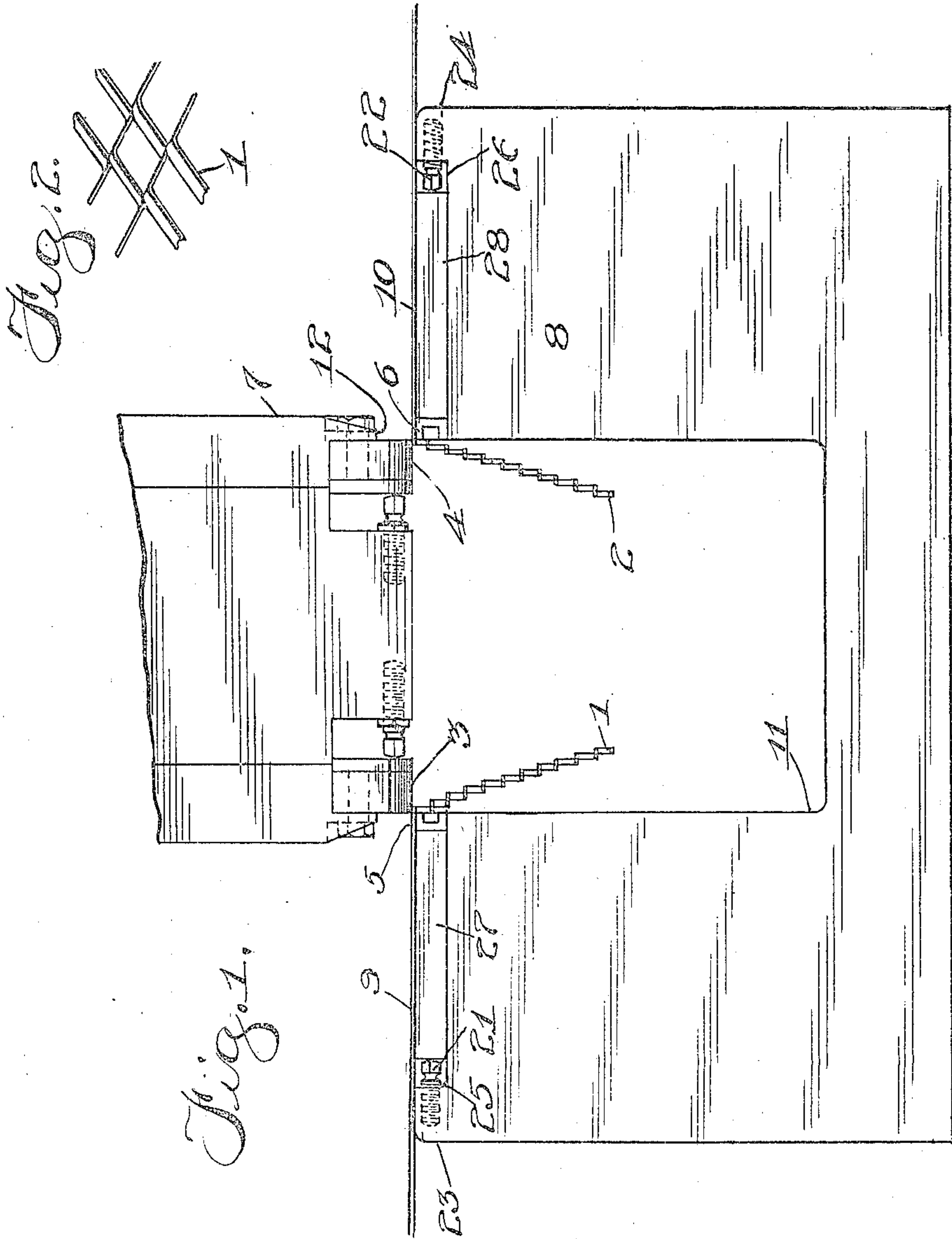


R. HOLDING.
EXPANDED METAL MACHINE.
APPLICATION FILED FEB. 19, 1909.

952,524.

Patented Mar. 22, 1910.

3 SHEETS—SHEET 1.



Witnesses:
J. B. Weir
G. V. Domarus.

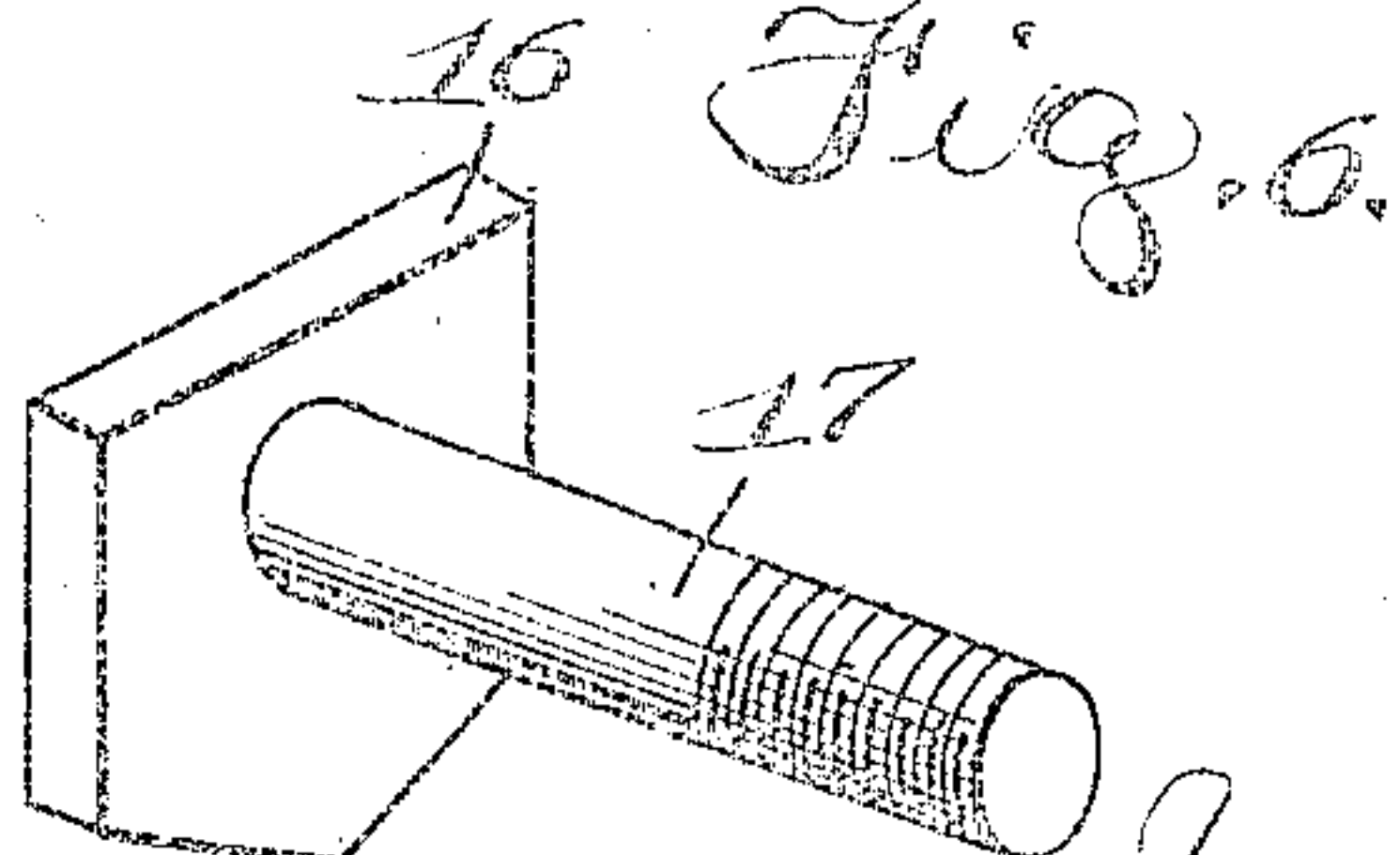
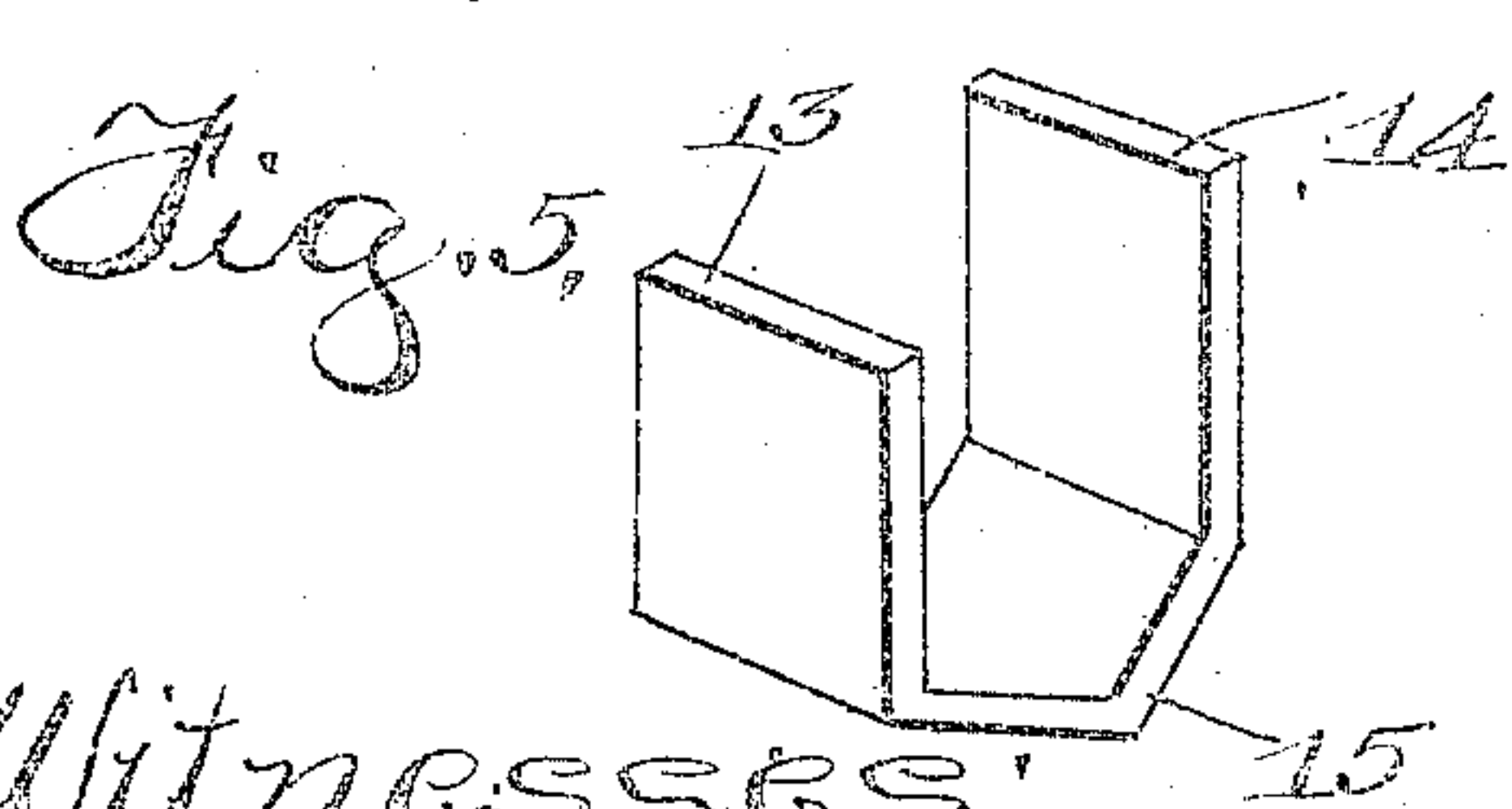
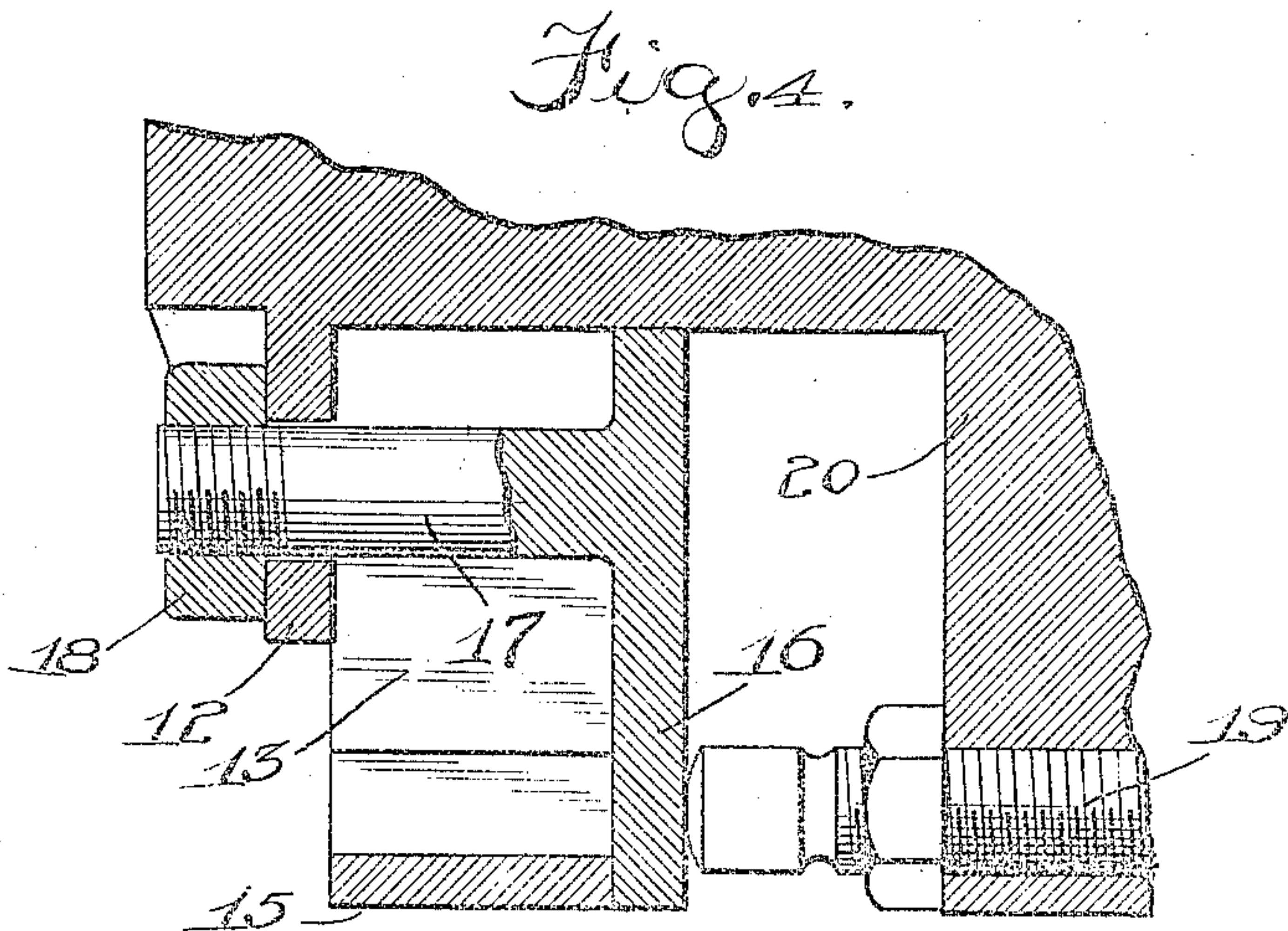
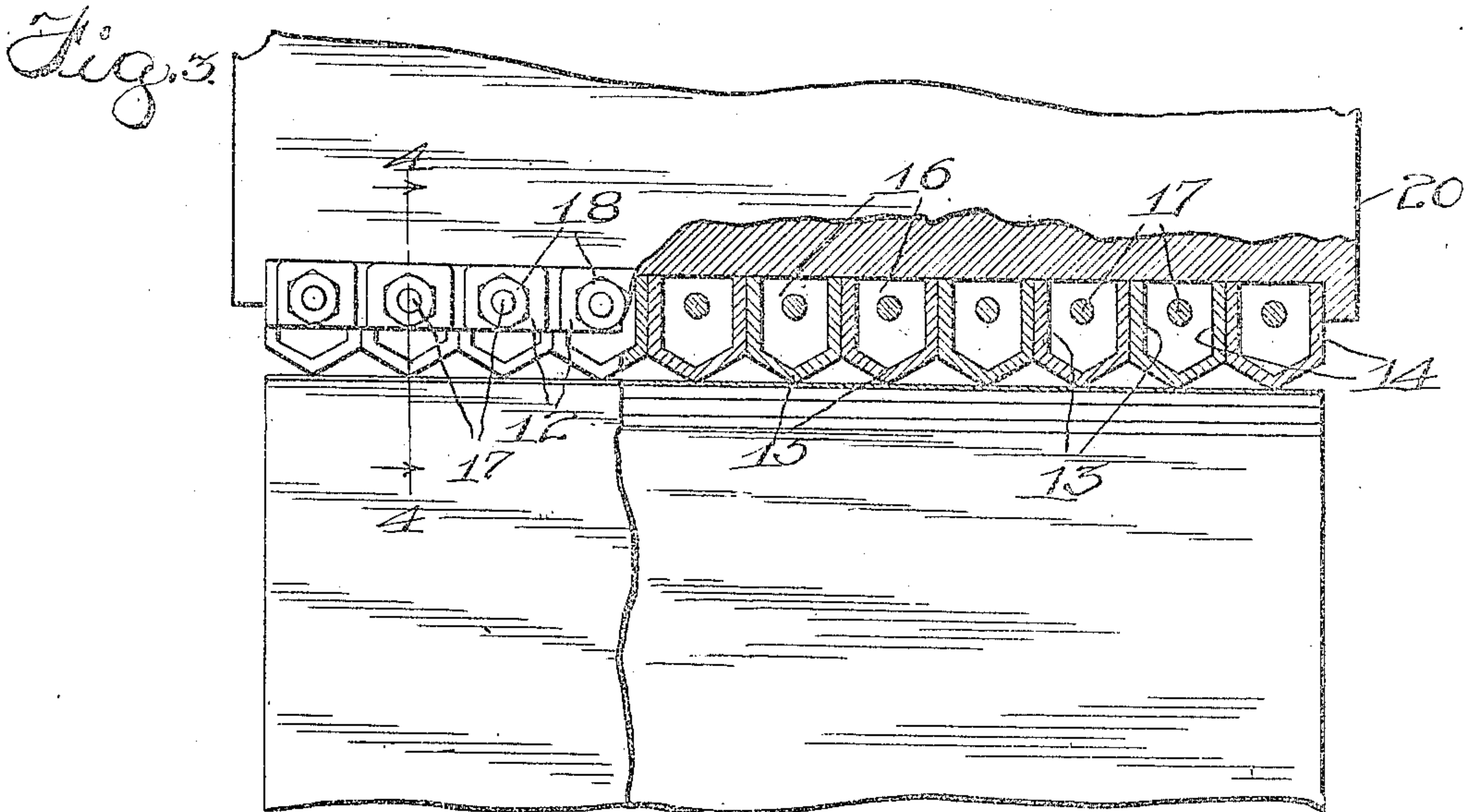
Inventor:
Robert Holding
by Brown Wesley Hopwood
attorney

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2 SHEETS—SHEET 2.



WITNESSES:
J. B. Weir
G. W. Dumas.

Inventor:
Robert Holding
by Brown & Sons
Attys

UNITED STATES PATENT OFFICE.

ROBERT HOLDING, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF TO JOSIAH THOMPSON, OF CHICAGO, ILLINOIS.

EXPANDED-METAL MACHINE.

952,524.

Specification of Letters Patent.

Patented Mar. 22, 1910.

Application filed February 19, 1906. Serial No. 301,767.

To all whom it may concern:

Be it known that I, ROBERT HOLDING, a citizen of the United States, residing at Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Expanded-Metal Machines, of which the following is a full, clear, and exact specification.

This invention relates to machines for slitting and expanding sheet-metal, principally for the purpose of producing a trellis-like structure, commonly employed as a substitute for laths, and other uses, and the invention is especially designed as an improvement upon the character of machine for accomplishing this work, in which the metal is slitted and the strands expanded or spread apart by a plurality of knives or shearing members, cooperating with a companion member usually arranged at the edge of the table which supports the sheet during the operation, as, for example, the machine shown in the patent to J. F. Golding, No. 581,713, granted May 4, 1897; and the invention has for its primary object to provide an improved machine of this character, in which the tendency of the shearing blade or cutter to spring away from its companion member, due to the resistance of the metal, will be neutralized or overcome by such resistance.

Another object of the invention is to provide an improved expanded metal machine in which the cutters may be readily replaced in their proper positions after being ground, without the necessity of the fine adjustment heretofore required.

With these ends in view, the invention consists in the features of novelty in the construction, combination, and arrangement of parts by which said objects, and certain other objects hereinafter appearing, are attained, all as fully described with reference to the accompanying drawings, and more particularly pointed out in the claims.

In the said drawings—Figure 1 is a front elevation of a portion of an expanded metal machine embodying this invention. Fig. 2 is a detail view of a portion of the expanded metal produced by the machine. Fig. 3 is a side elevation, partly in vertical section, of the cutters, the supporting table, and the sheet of metal therein-between. Fig. 4 is an enlarged detail vertical section taken on the line 4-4 of Fig. 3. Fig. 5 is a perspective

view of one of the cutters. And Fig. 6 is a detail perspective view of the cutter lug or clamp.

In the aforesaid Golding machine, a single sheet of metal at a time is acted upon by the knives or cutters, which are carried on a rising and falling cross-head or cutter-bar, and are operatively related to a companion shear arranged along the edge of the table which supports the sheet, and in practice it is found that the resistance of the sheet causes the movable cutters, or those carried by the cross-head, to spring away from the companion shear or member on the edge of the table, especially after they become slightly worn or dulled from use. In order to overcome this objectionable yielding movement of the cooperating members of the cutters, I operate upon two sheets 1, 2, simultaneously, by means of two sets of movable cutters 3, 4, which are situated between their companion cutters or members 5, 6, respectively, so that the resistance of one sheet will neutralize or overcome the resistance of the other sheet, thereby also neutralizing any tendency of the cutter-head 7, which carries the cutters 3, 4, to move in either direction. The companion cutters 5, 6, are mounted rigidly upon the main frame or table 8, which supports the sheets 9, 10, and consequently said cutters 5, 6, are held firmly in position during the cutting operation. As better shown in Fig. 1, the main frame or table is formed with a recess 11 for the accommodation of the sheets after they have been cut and expanded, and below this recess the side portions of the frame or table are firmly connected together.

The movable cross-head, or cutter-head, 7, which carries the cutters 3, 4, is provided on each side with a depending flange or shoulder 12, and these have their inner or opposed faces accurately machined or formed in line with the operative faces of the lower cutters or shears 5, 6, so that the inner faces of said flanges and shears will lie in the same perpendicular plane, and the cutters 3, 4, are composed of movable blocks or sections, as shown in Fig. 5, which are of box-like formation, each having two legs or branches 13, 14, and a V-shaped cutting end 15, which engages the metal and produces the necessary expansion as it forms the slit which produces the strand. The outer faces of these box-like cutting members 3, 4, are

of course the surfaces which engage against the inner faces of the lower cutter members 5, 6, and it is evident, therefore, that by fitting these outer edges squarely against the inner dressed faces of the flanges or shoulders 12, they will always be in accurate alinement with the lower cutter members 5, 6, and may be ground at will without disturbing this relation, it only being necessary to exercise care in grinding the outer edges or faces of the cutter members 3, 4, so that they will lie in the same plane, and consequently, when placed against the shoulders 12, they will be in the same perpendicular plane as the inner face of the lower cutter member. In order that these cutter members 3, 4, may be rigidly clamped and held in place, they are supported at their upper edges directly against the lower side of the cutter-head 7, which of course holds them against upward movement relative to the cutter-head, and they are supported against one another as shown in Fig. 3, which holds them against lateral motion, while they are held snugly against the flange or shoulder 12 by any suitable clamp, such as shown in Fig. 6, comprising a head or flange 16, which fits against their inner sides, and a stud or bolt 17 which passes through the shoulder 12 and is provided with a nut 18 arranged against the outer face of the shoulder, these heads 16 being of a shape complementary to the cutter members 3, 4, so that they will hold each other against rotation. Each of the cutter members 3, 4, is rigidly held against movement in a direction away from their companion members 5, 6, by any suitable abutment, such as a set-screw 19 screw-threaded in a depending portion 20, of substantial proportions, formed on the lower side of the cutter-head 7, the set-screws 19 being preferably situated near the lower ends or points of the cutters 3, 4, where the strain is greatest.

The lower cutter members 5, 6, are preferably separate from the table, so that they may be taken out for grinding, and in order to minimize the surface thereof to be ground, they are preferably made in the form of channel-bars, thus reducing their operative faces while affording the requisite strength. These are held up to their work and accurately adjusted by set-screws 21, 22, or any other suitable means, screw-threaded in shoulders 23, 24, constituted by recesses 25, 26, in the surface of the table, and in which recesses are situated abutment blocks 27, 28, arranged against the cutters 5, 6, and forming a substantial backing therefor, and also receiving the pressure of the set-screws 21, 22.

With a machine thus described, it will be seen that two sheets of expanded metal are produced simultaneously, one series of the strands on each sheet being formed at every

stroke of the cutter-head 7, which may be provided with the usual or any suitable means for giving it the desired rising and falling movement, as, for example, the means shown and described in the said Gold- 70 ing patent.

What I claim is:

1. In a machine of the character described, the combination of two spaced stationary cutters adjustable toward and away from each other, a cutter head movable between said spaced cutters, said cutter head being provided with spaced abutment shoulders and with a rigid projecting portion intermediate to said shoulders, and cutters rigidly mounted between said shoulders and rigid projection, said cutters being coöperatively arranged with respect to the stationary cutters. 75

2. In a machine of the character described, the combination of two spaced stationary cutters parallelly arranged and adjustable toward and away from each other, a cutter head movable between said spaced cutters, said cutter head being provided with spaced abutment shoulders and with a rigid projecting portion intermediate to said shoulders, cutters removably mounted on said shoulders, and a rigid abutment between each of said cutters and rigid projecting portion, said cutters being coöperatively arranged with respect to the stationary cutters. 85 90 95

3. In a machine of the character described, the combination of two spaced stationary cutters parallelly arranged and adjustable laterally toward and away from each other, a cutter head movable between said spaced cutters, said cutter head being provided with spaced abutment shoulders and with a rigid projecting portion intermediate to said shoulders, and cutters removably mounted on said cutter head, said cutters being in abutment with said abutment shoulders respectively whereby the cutting edges of the movable cutters are maintained in substantially the same planes with the cutting edges of the stationary cutters. 100 105 110

4. In an expanded metal machine, the combination of a cutter-head, a cutter of a box-like formation, an abutment-shoulder carried by the cutter-head, and against which a plurality of the edges of said box-like formation bear, a companion cutter alined with said edges and the contiguous face of said shoulder, and means for clamping said box-like cutter in place. 115 120

5. In an expanded metal machine, the combination of a cutter-head having an abutment-shoulder, a cutter of box-like formation having a plurality of its edges fitted against said shoulder, a bolt passing through said shoulder and cutter and provided with a flange or head resting against the opposite edges of the cutter for holding the cutter in 125 130

place, and a companion cutter alined with the edge of said shoulder and the contiguous edges of the first said cutter.

6. In an expanded metal machine, the combination of a cutter-head provided with an abutment-shoulder, a U-shaped cutter having its branches bearing under and against said head and the edges of its branches bearing against said shoulder, means for clamping said cutter in place, and a companion cutter alined with the faces of the shoulder and first said cutter that are in contact.

7. In an expanded metal machine, the combination of a cutter-head, a plurality of separate U-shaped cutters arranged in a line on said head in contact with each other, separate means for clamping said cutters in position, and a companion cutter arranged to cooperate with said cutters.

8. In an expanded metal machine, the combination of a cutter-head, a box-like cutter supported thereon, a bolt passing through said cutter and having a head overlapping the edges thereof, a shoulder carried by the cutter-head for the attachment of the other end of the bolt and against which shoulder the cutters bear, and a companion cutter alined with said shoulder and cooperatively related to the first said cutter.

9. In a machine of the character described, the combination of a pair of spaced stationary cutters, a movable cutter head provided with oppositely disposed abutment shoulders and a rigid projecting portion intermediate to and spaced from the said shoulders, cutters rigidly mounted on said shoulders, and an abutment interposed between said projecting portion and each of said cutters.

10. In a machine of the character described, the combination of two spaced stationary cutters parallelly arranged and adjustable toward and away from each other, a cutter head movable between said spaced cutters, said cutter head being provided with spaced abutment shoulders and with a rigid projecting portion intermediate to said shoulders, cutters rigidly mounted on said shoulders, an adjustable abutment adapted to provide a rigid support between each cutter and said rigid projecting portion of the movable cutter head, said cutters being cooperatively arranged with respect to the stationary cutters.

11. In a machine of the character described, the combination of a pair of spaced stationary cutters having inwardly presented faces in parallel planes, a movable cutter head intermediate to said stationary cutters, said cutter head being provided with shoulder abutments arranged respectively in substantially the same planes as the respective inner faces of the stationary cutters, and cutters mounted on said shoulders with outwardly presented faces in the planes of the respective inner faces of the stationary cutters.

12. In a machine of the character described, the combination of a pair of spaced stationary cutters having inwardly presented faces in parallel planes, a movable cutter head intermediate to said stationary cutters, said cutter head being provided with shoulder abutments arranged respectively in substantially the same planes as the respective inner faces of the stationary cutters, and with an integral projecting portion intermediate of said shoulders, cutters mounted on said shoulders with outwardly presented faces in the planes of the respective inner faces of the stationary cutters, and means adjustably mounted in said projecting portion for forming an abutment between each cutter and said portion.

13. In a machine of the character described, the combination of a pair of spaced stationary cutters having parallel inwardly presented faces, a movable cutter head intermediate to said cutters, a pair of removable cutters mounted on the cutter head to cooperate with the stationary cutters, and means interengaging between the cutter head and the outwardly presented faces of the cutters mounted thereon whereby these cutters are adapted to be mounted on the cutter head with said outwardly presented faces in substantially the same planes as the respective inwardly presented faces of the stationary cutters.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 16th day of February A. D. 1906.

ROBERT HOLDING.

Witnesses:

FRANCIS A. HOPKINS,
CHAS. H. SEEM.