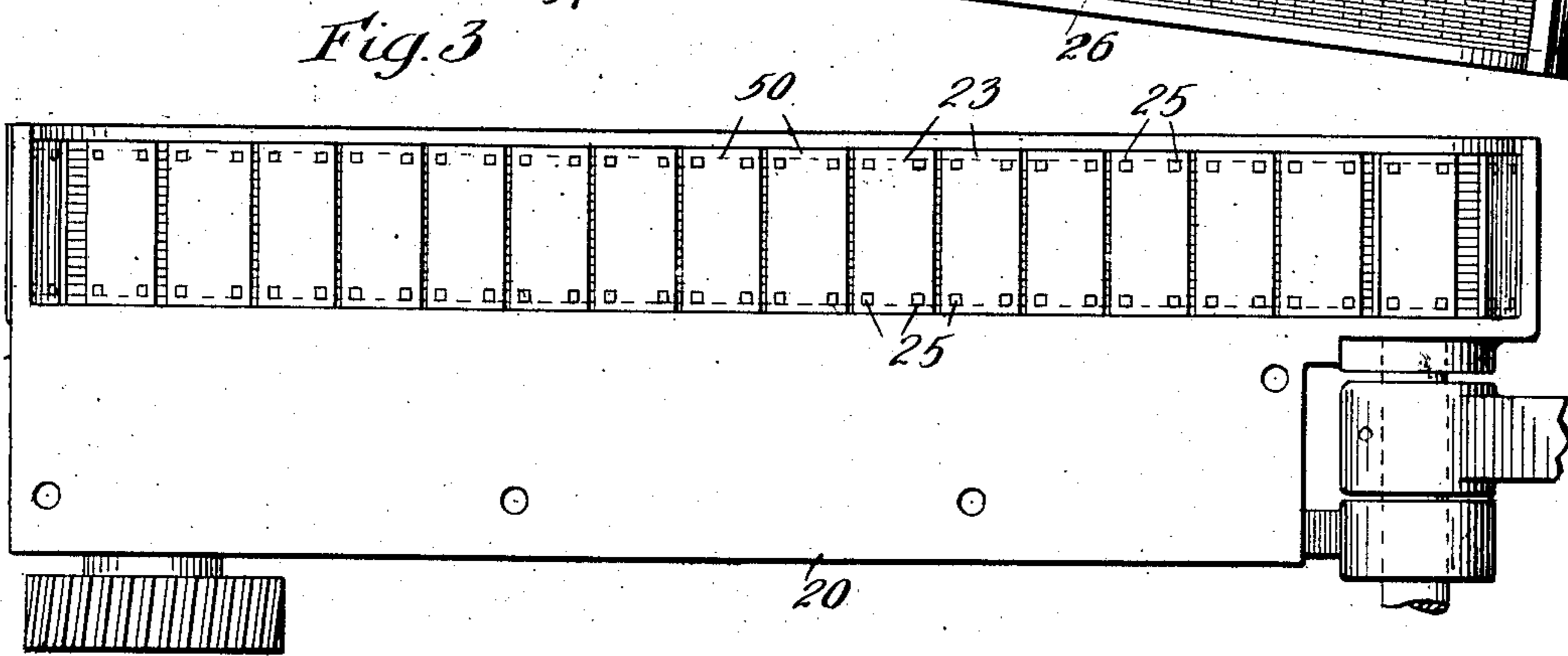
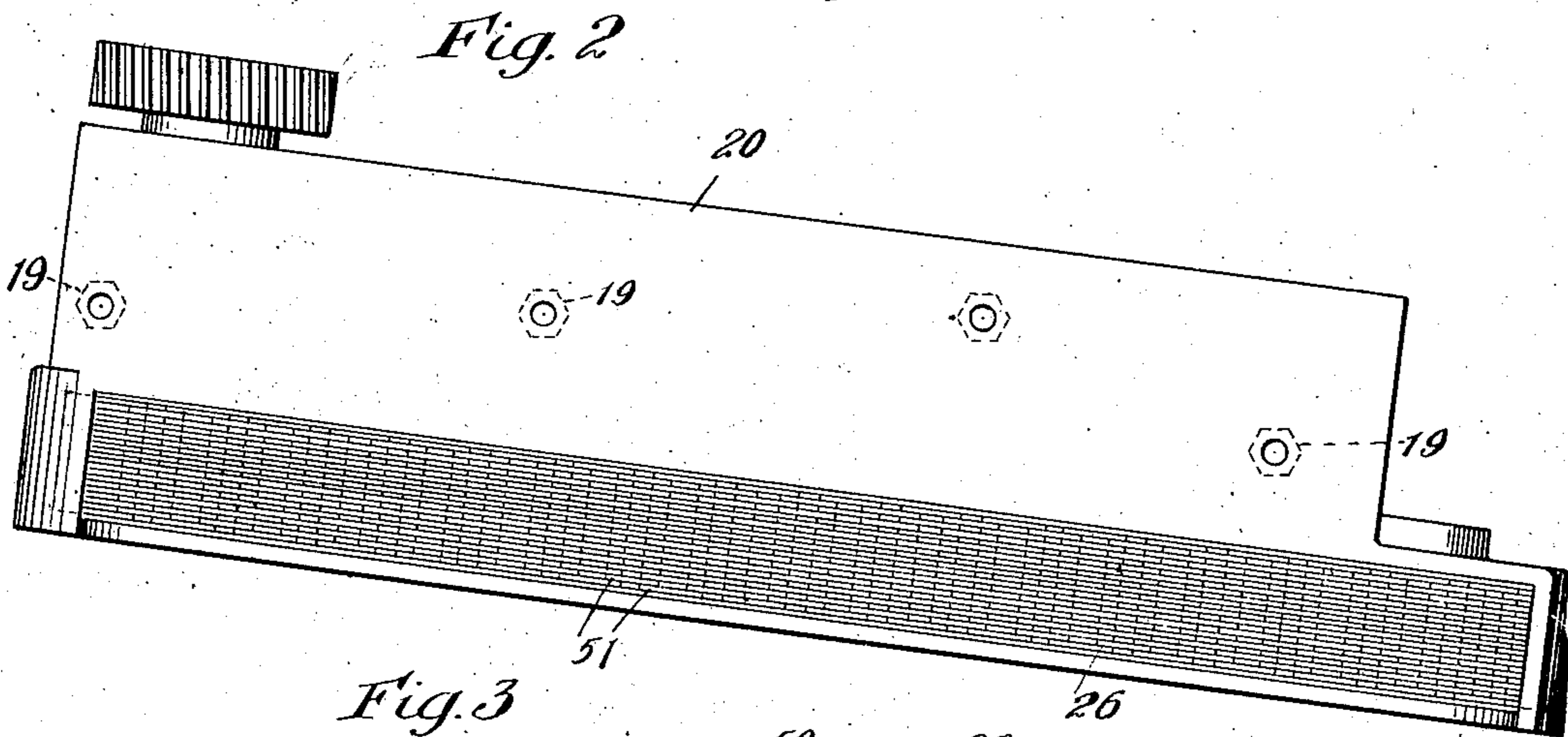
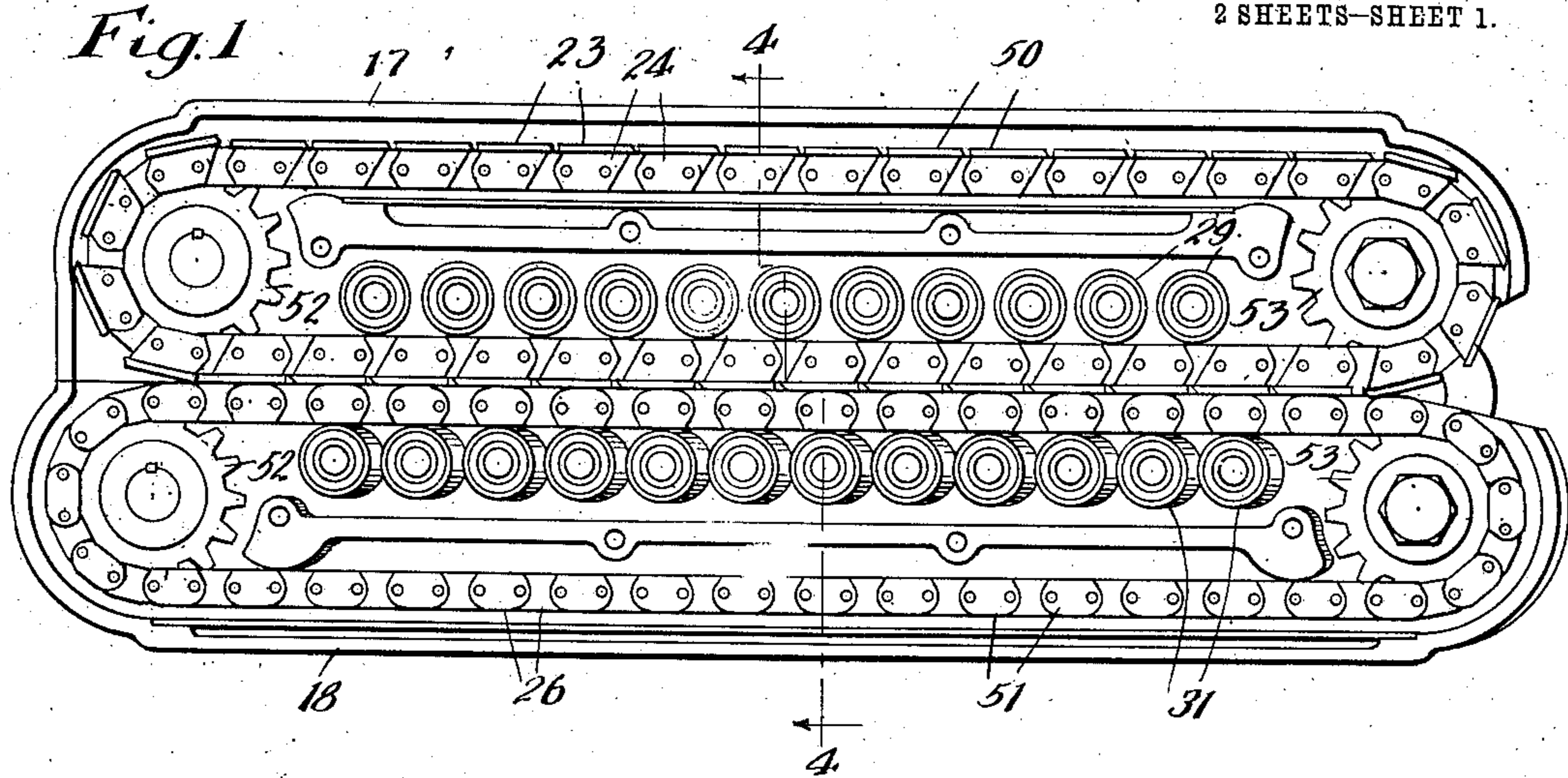


L. E. CURTIS.  
 FEED DEVICE FOR SHEET METAL EXPANDING MACHINES.  
 APPLICATION FILED FEB. 18, 1911.

1,011,589.

Patented Dec. 12, 1911.

2 SHEETS—SHEET 1.



Witnesses:

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2 SHEETS—SHEET 2.

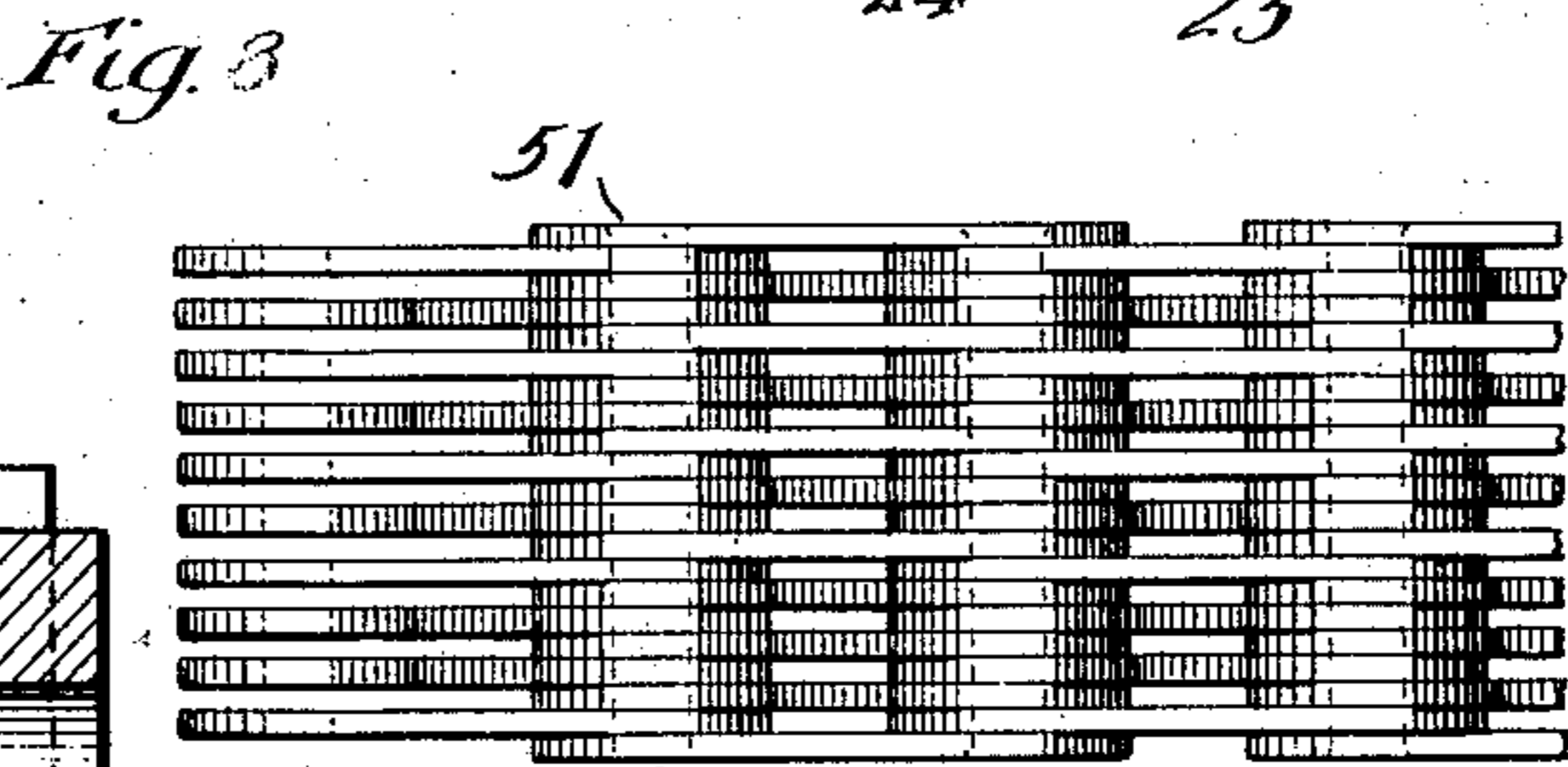
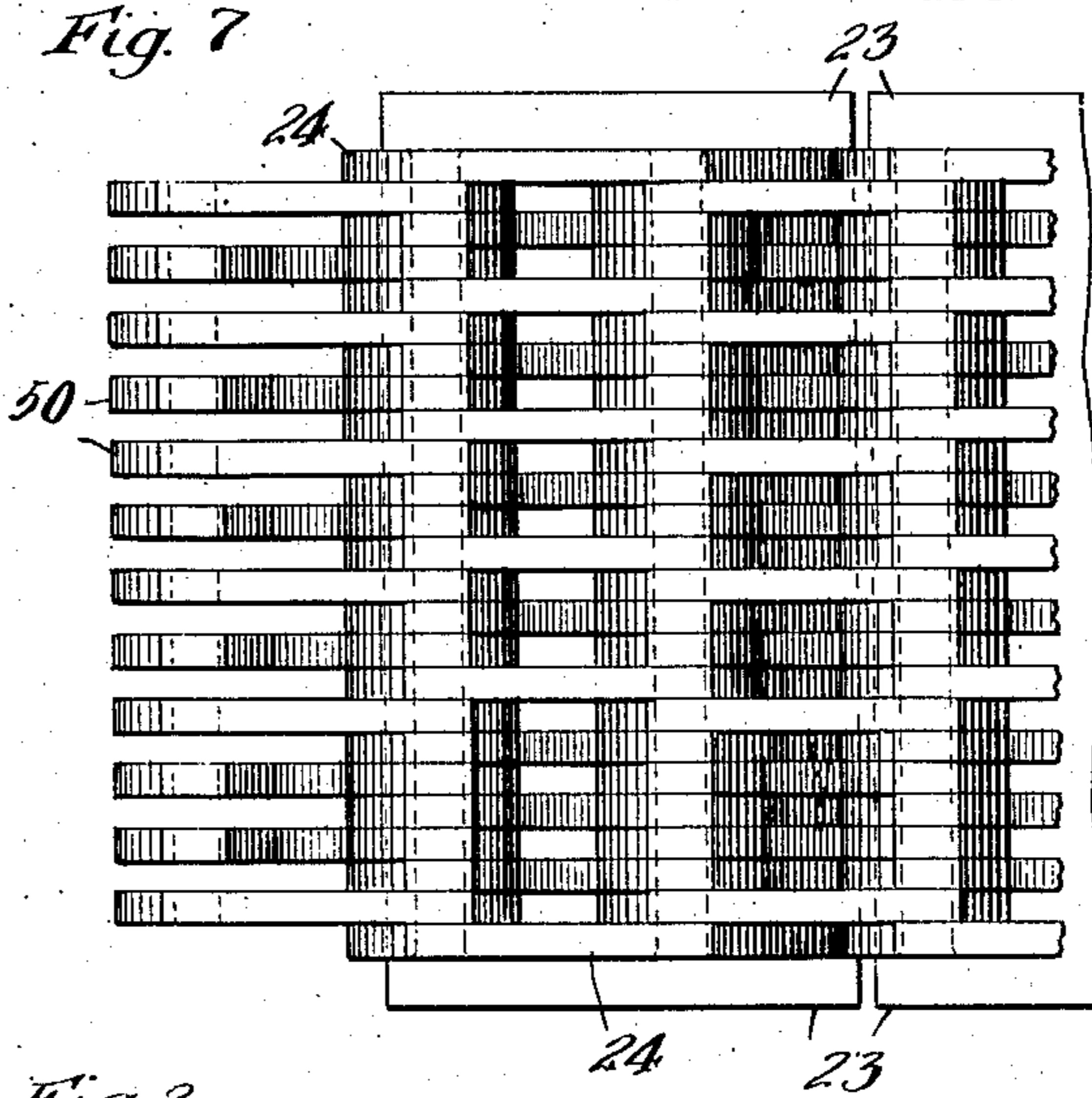
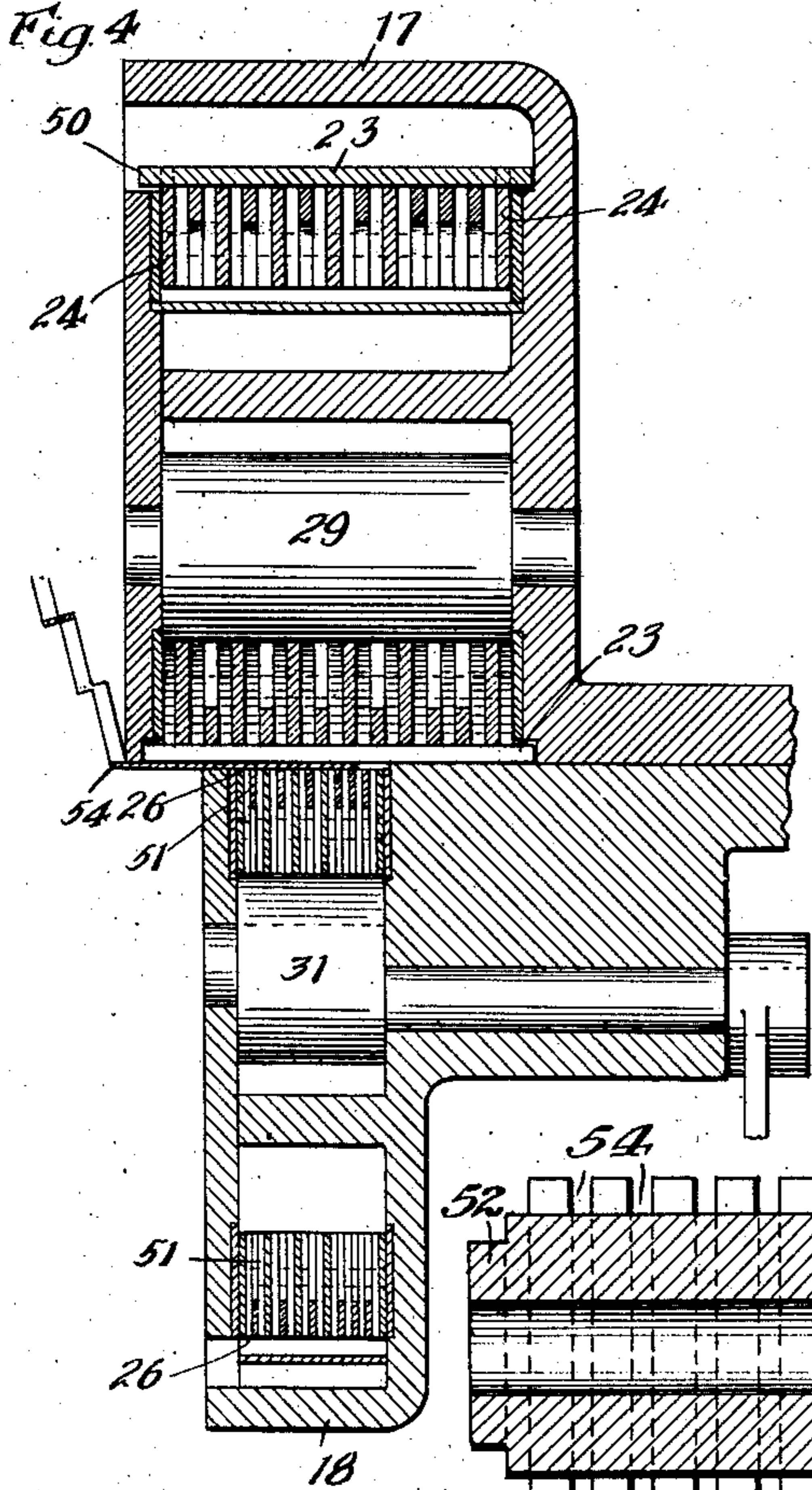
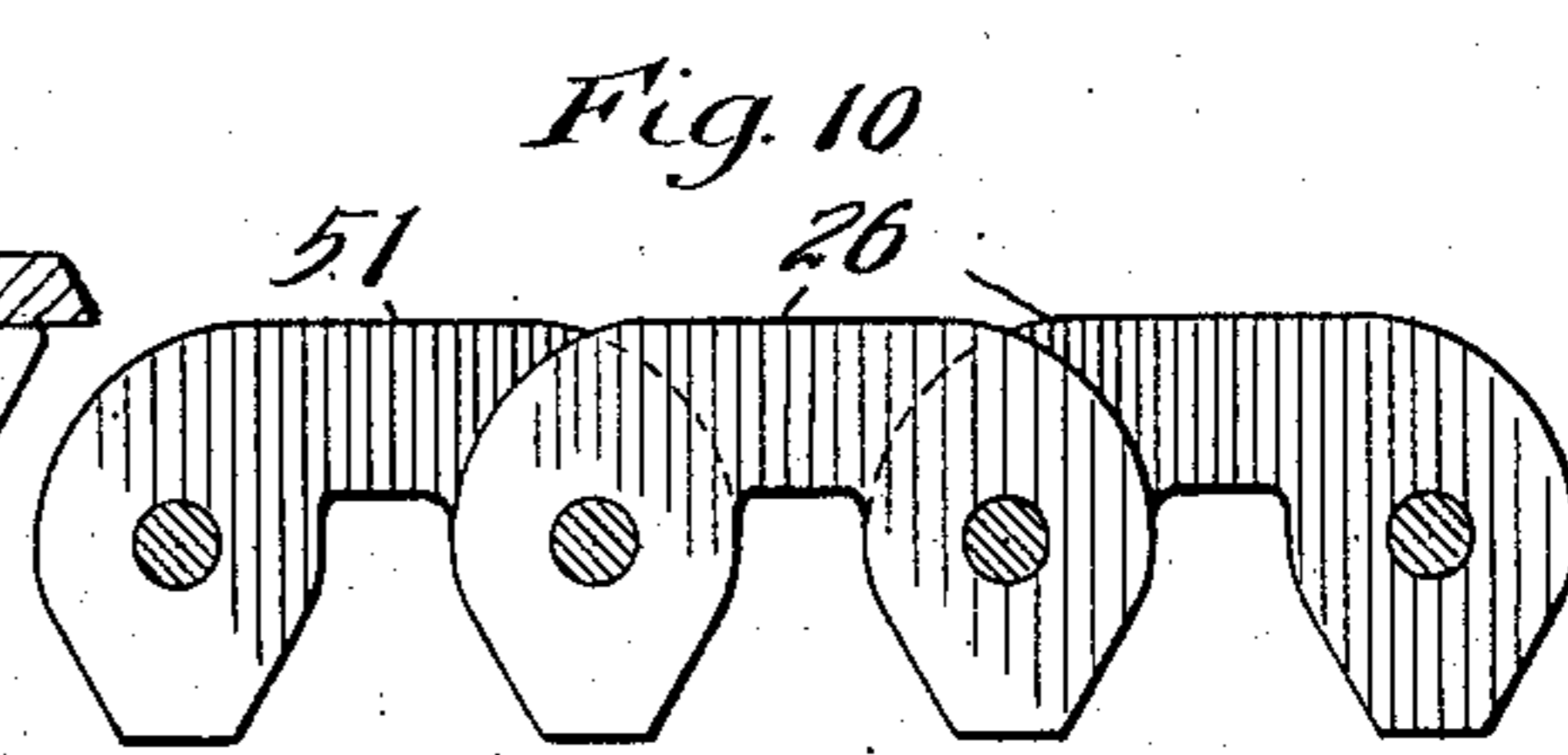
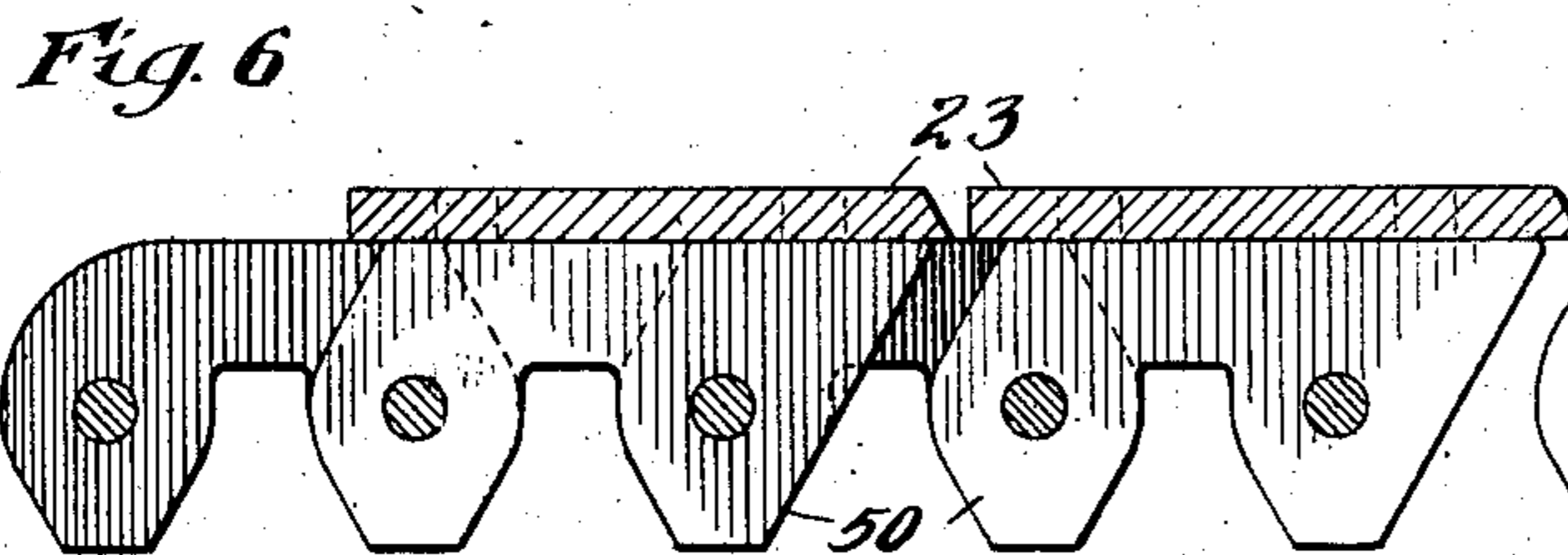
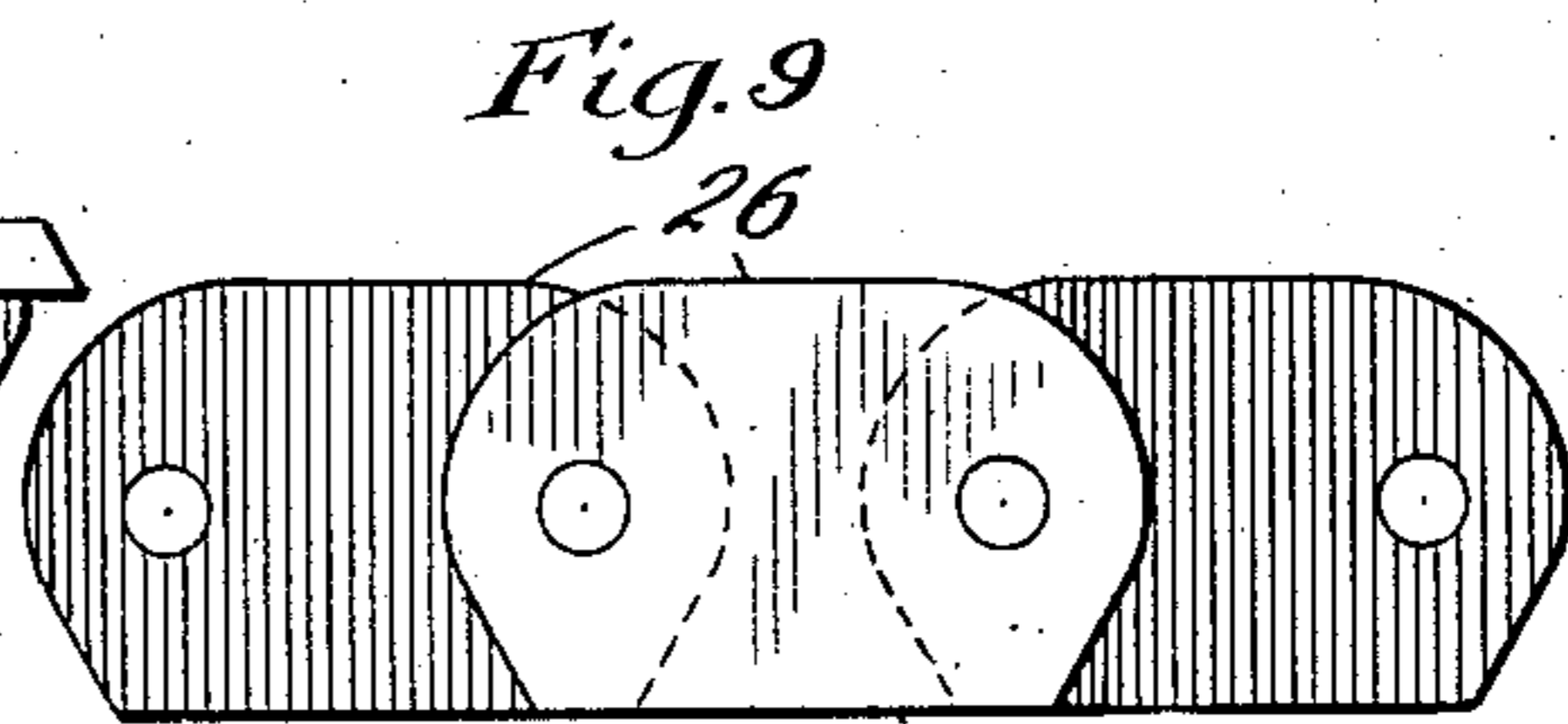
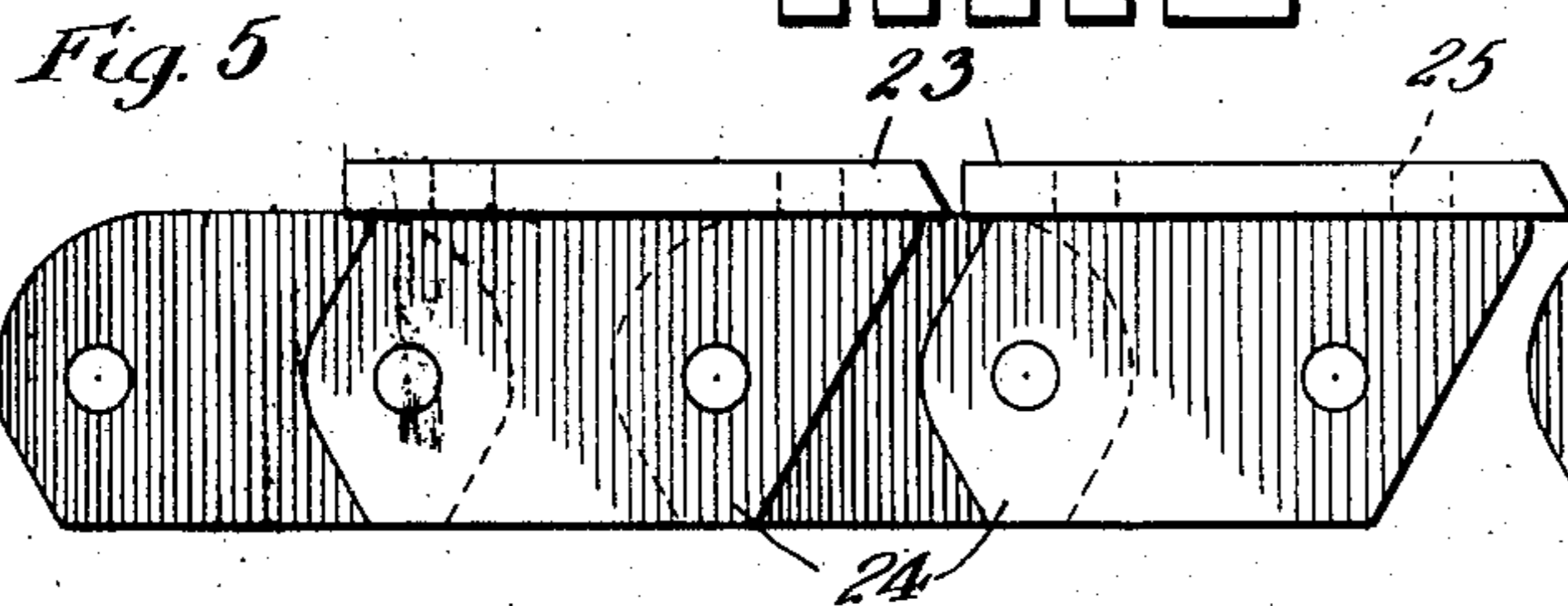


Fig. 11.



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# UNITED STATES PATENT OFFICE.

LEWIS E. CURTIS, OF KENILWORTH, ILLINOIS, ASSIGNOR TO AMES STEEL LATH COMPANY, OF ST. LOUIS, MISSOURI, A CORPORATION OF MISSOURI.

FEED DEVICE FOR SHEET-METAL-EXPANDING MACHINES.

1,011,589.

Specification of Letters Patent.

Patented Dec. 12, 1911.

Application filed February 18, 1911. Serial No. 609,487.

*To all whom it may concern:*

Be it known that I, LEWIS E. CURTIS, a citizen of the United States, residing in Kenilworth, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Feed Devices for Sheet-Metal-Expanding Machines, of which the following is a specification.

In the use of the machine for expanding slitted sheet metal patented to me April 9, 1909, in Patent No. 917715, I have found it necessary to operate the machine at a slow speed much below that to be desired because when operated rapidly the feed chains shown in the patent created a loud and very objectionable noise, caused a serious pounding or hammering by the different links as they came in contact with the sprocket wheels and a jerky movement by the chains.

My aim in this invention has been to remove this objection so as to enable the machines to be operated at a much higher speed than heretofore, and to this end the invention consists in the novel combinations and novel construction of parts and devices hereinafter set forth.

In the drawing accompanying this specification, Figure 1 is a longitudinal vertical section of one of the expander arms of my said machine showing the opposing sheet feeding chains therein. Fig. 2 is a plan of the lower feed chain of Fig. 1. Fig. 3 is a bottom plan of the upper feed chain. Fig. 4 is a section on the line 4-4 of Fig. 1. Fig. 5 is a side elevation. Fig. 6 is a longitudinal section and Fig. 7 a bottom plan of the upper chain shown in Fig. 1; Fig. 8 is a plan, Fig. 9 a side elevation and Fig. 10 a longitudinal section of the lower chain shown in Fig. 1. Fig. 11 is a partial section of the sprocket wheels used with the feed chains.

In the drawing I show one of the expander arms. They each consist of two castings 17 and 18 substantially alike and united by bolts 19 passing through flanges 20 formed on the castings. In assembling, the casting 17 is arranged above casting 18 in one arm, and in the other arm the casting 18 is above casting 17. The castings are all pro-

vided with longitudinal recesses in which the chains 50 and 51 which feed the sheets to be expanded and their supporting sprockets are located, the chains 50 being arranged in the castings 17, and the chains 51 in the castings 18. This brings the chain 50 in one arm above the stock, and the chain 50 of the other arm below the stock. It also brings the chain 51 of one arm below the stock and the chain 51 of the other arm above the stock.

The chains 50 and 51 are of the kind known as Morse silent chains, each link of which is composed of a plurality of edgewise disposed plates. These links are joined to one another by pivots of the rocker joint form. By employing the plurality of plates in the links, a chain of great strength is obtained and the shearing stress is distributed along the whole length of the pivot, but the plates must be cut away on one edge so that they may arch over the teeth of the sprocket wheels over which the chain passes. In this form of chain the engagement with the sprocket wheels is against the side of the tooth, and in operation the chain automatically finds its own position upon the teeth. It is this feature that allows the chain to be run at a high speed and automatically take up any wear. In my use of the chains I have modified the usual construction as follows:—I have placed on the operating side of the chain 50 a series of flat plates 23, one plate for each transverse series or row of links, such plates giving the chains 50 a perfectly flat bearing surface continuous for the whole length of the chain. The plates are attached to the outside links of each row by means of nibs or projections integral with said links and extending upward through the plates and against the top of which they are upset, so that the plates are securely held and adapted to feed the stock.

While some of the plates of each link are cut away upon their lower edges as shown at Fig. 6 to adapt them to arch over the sprocket teeth, other plates are left straight upon their lower edge as shown at Fig. 5 so as to adapt them to support the chain

against any pressure put upon it through the plates 23.

In case of chains 51, the edges of those of the links which ride upon the sprockets are cut away as seen at Fig. 10, and other links of the same chain have the corresponding edges made straight as seen at Fig. 9 and adapted to ride on the rollers 31 hereinafter mentioned and thus cause pressure by the chain coming from said rollers upon the stock. The edges 26 of the links are adapted to contact with the stock. Thus the chains are allowed to come close together upon opposite faces of the sheets being expanded, as in Figs. 1 and 4, so that they may grip the margin of the sheet firmly and feed it forward notwithstanding the resistance caused by the expanding operation. To this end, the chains must exert considerable pressure upon the sheets, and consequently, I provide in the case of each chain devices adapted to act on the portion of the chain which is in contact with the sheet and cause the pressure necessary. These devices in the case of chains 50 consist of the series of stationarily supported rollers 29 adapted to support the chains against the pressure received by them from the opposing chains 51. And in the case of chains 51 the pressure devices are adapted to create an active pressure by the chains on the stock, and they consist of eccentrically pivoted rollers 31 provided with springs adapted to keep in active position, a desirable construction thereof being shown in my said patent.

Each chain is carried and actuated by a sprocket 52 at one end of the arm in which it is located, and at the other end of the arm it is supported by an idler sprocket 53. A portion of the sheet being expanded is shown at 54 in Fig. 4.

The chains described are not only required to exert pressure upon the stock, but they are also obliged to withstand considerable pressure from one another, and hence the links of each chain are uniform in height so that all receive from the pressure devices the same amount of pressure, and so that the pressure which comes upon either chain from its opposing chain may be transmitted uniformly to the pressure devices of the first mentioned chain.

The chains thus constructed permit the operating of the machine in which they are used at much higher speed than was heretofore possible, are not liable to injure the sheets in any way by catching the strands or in the slits, and they cooperate in feeding the sheets uniformly and at a satisfactory speed without the noise, hammering or jerking heretofore experienced when running at high speed.

The sectional view of the sprocket wheels shown in Fig. 11 shows that the teeth of such wheels are cut transversely as at 54 to accommodate the plates of the links which are not arched to enable them to set over the teeth.

I claim:—

1. In a machine for expanding sheet metal, the combination with diverging expander arms between which the slitted sheets are fed, of feed chains 50 and 51 gripping the margins of the sheets upon opposite sides, said chains 50 being provided with plates 23 upon the acting faces and the chains 51 having acting faces of their links made straight and arranged at a uniform level so as to bear upon the stock, the links of both said chains consisting of edgewise disposed plates some of which are cut away on one edge to enable them to arch over the sprocket teeth, and others of which are left straight on the corresponding edge to adapt them to support pressure.

2. In a machine for expanding sheet metal, the combination with diverging expander arms between which the slitted sheets are fed, of feed chains bearing directly upon one side of the sheets and provided with flat plates on their acting faces, the links of the chains being uniform in height and adapted to support the plates at all points, and feeding devices on the opposite side of the sheets between which and said chains the sheet is firmly gripped, the links of both said chains consisting of edgewise disposed plates some of which are cut away on one edge to enable them to arch over the sprocket teeth, and others of which are left straight on the corresponding edge to adapt them to support pressure.

3. In a machine for expanding sheet metal, the combination with diverging expander arms between which the slitted sheets are fed, of feed chains bearing directly upon one side of the sheets, and other feeding chains bearing directly on the other side of the sheets and having their acting faces arranged at a uniform level adapting them to bear on the stock, said chains gripping the margins of the sheets firmly between them, the links of both said chains consisting of edgewise disposed plates some of which are cut away on one edge to enable them to arch over the sprocket teeth, and others of which are left straight on the corresponding edge to adapt them to support pressure.

4. In a machine for expanding sheet metal, the combination with diverging expander arms between which the slitted sheets are fed, of feed chains 50 and 51 gripping the margins of the sheets upon opposite sides, said chains 50 being provided

with plates 23 upon the acting faces and the  
chains 51 having acting faces of their links  
made straight and arranged at a uniform  
level so as to bear upon the stock, the links  
5 of both said chains consisting of edgewise  
disposed plates some of which are cut away  
on one edge to enable them to arch over the  
sprocket teeth, and others of which are left

straight on the corresponding edge to adapt  
them to support pressure and pressure cre- 10  
ating devices acting on the portions of said  
chains which are in contact with the sheets.

LEWIS E. CURTIS.

Witnesses:

H. M. MUNDAY,  
EDW. S. EVARTS.