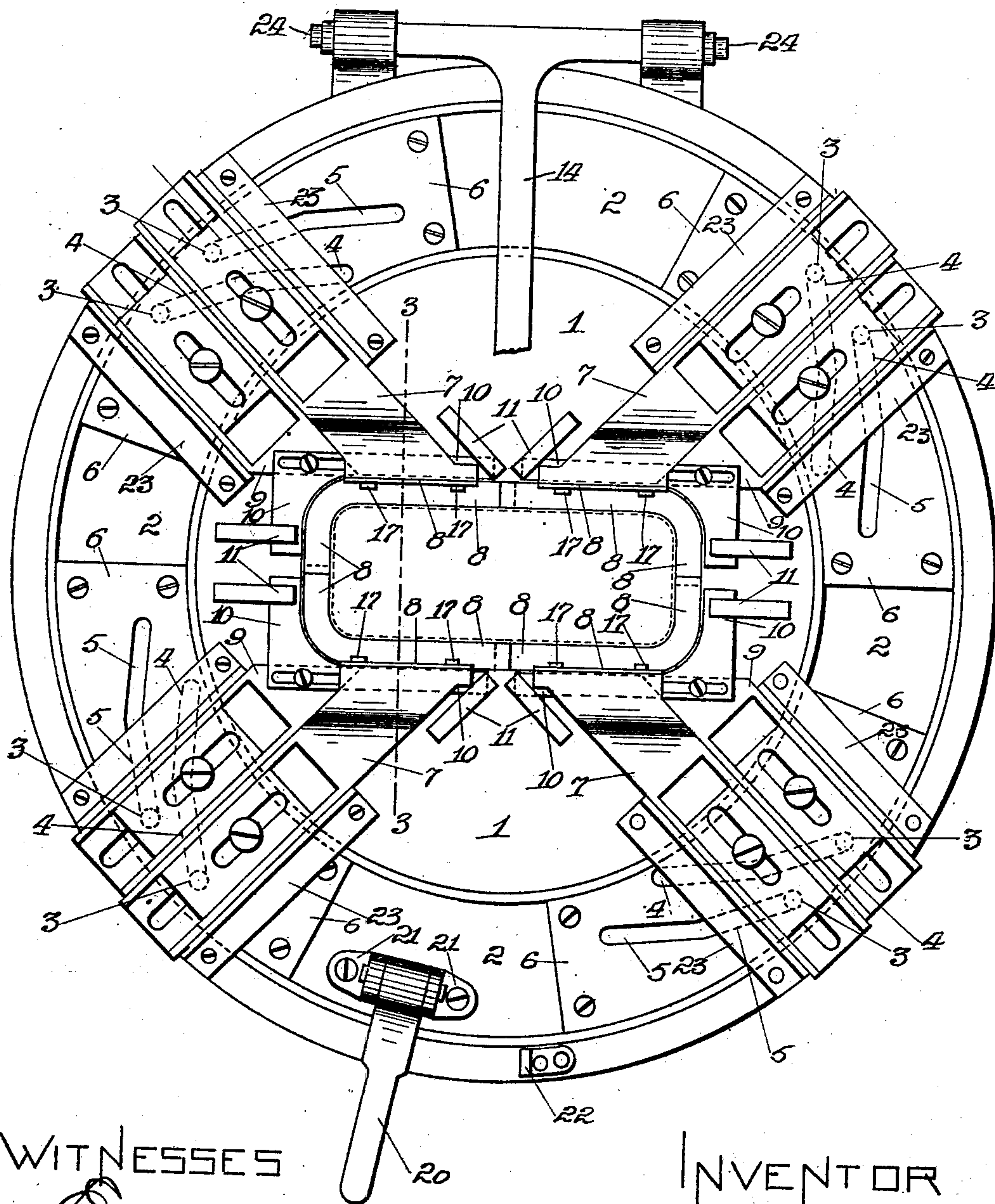


904,516.

Patented Nov. 24, 1908.

3 SHEETS—SHEET 1.

FIG. 1.



WITNESSES

Emtchell
J. C. Sanders

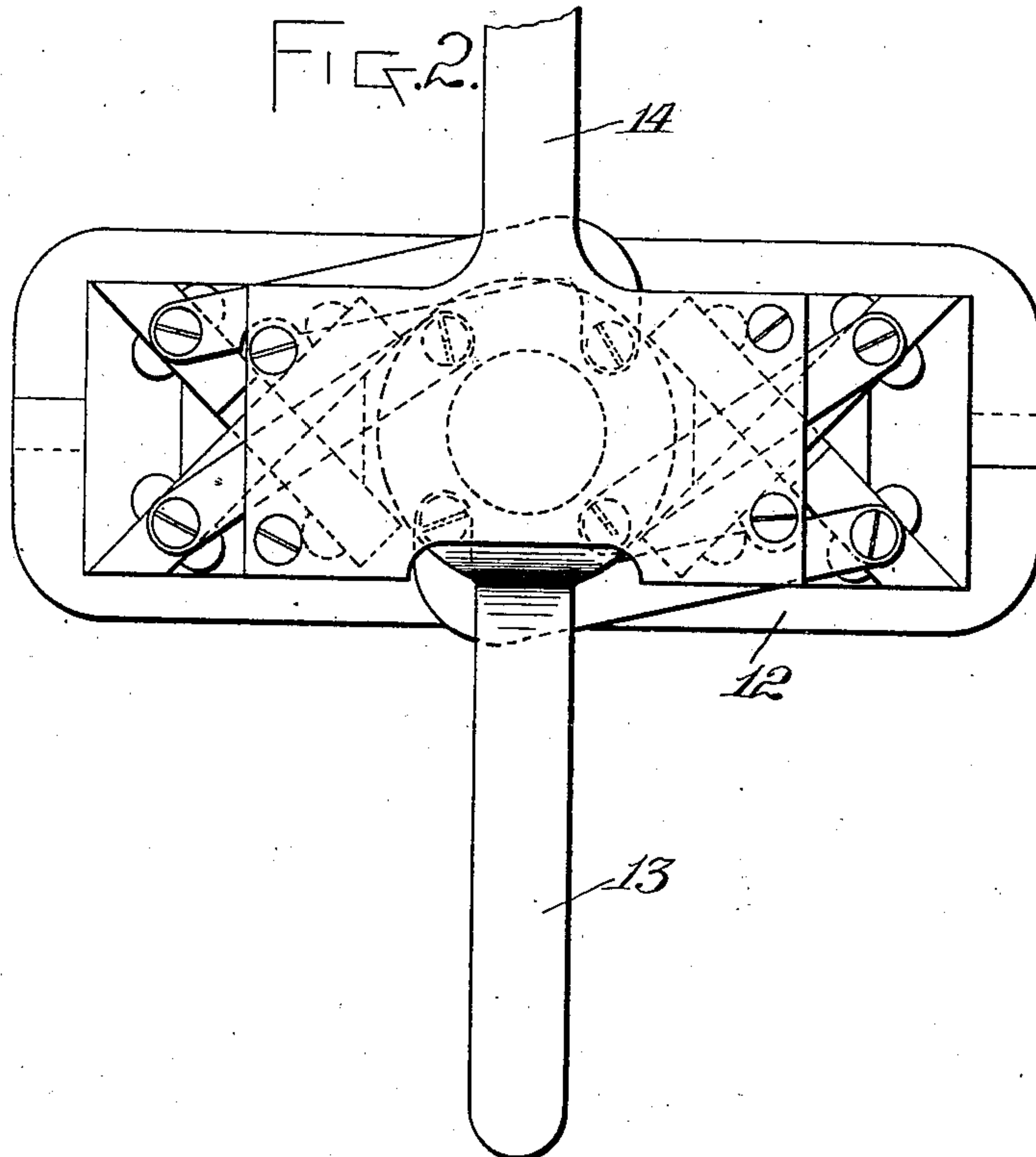
INVENTOR
Garry J. Dormandy
by Messinger & Campbell
his attorneys.

G. J. DORMANDY.
MACHINE FOR FOLDING BLANKS FOR CUFFS AND THE LIKE.
APPLICATION FILED MAR. 2, 1906.

904,516.

Patented Nov. 24, 1908.

3 SHEETS—SHEET 2.



WITNESSES
Ed Mitchell,
J. C. Sands.

INVENTOR
Garry J. Dormandy
by Messimer & Campbell
his attorneys

G. J. DORMANDY.
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904,516.

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3 SHEETS—SHEET 3.

FIG. 3.

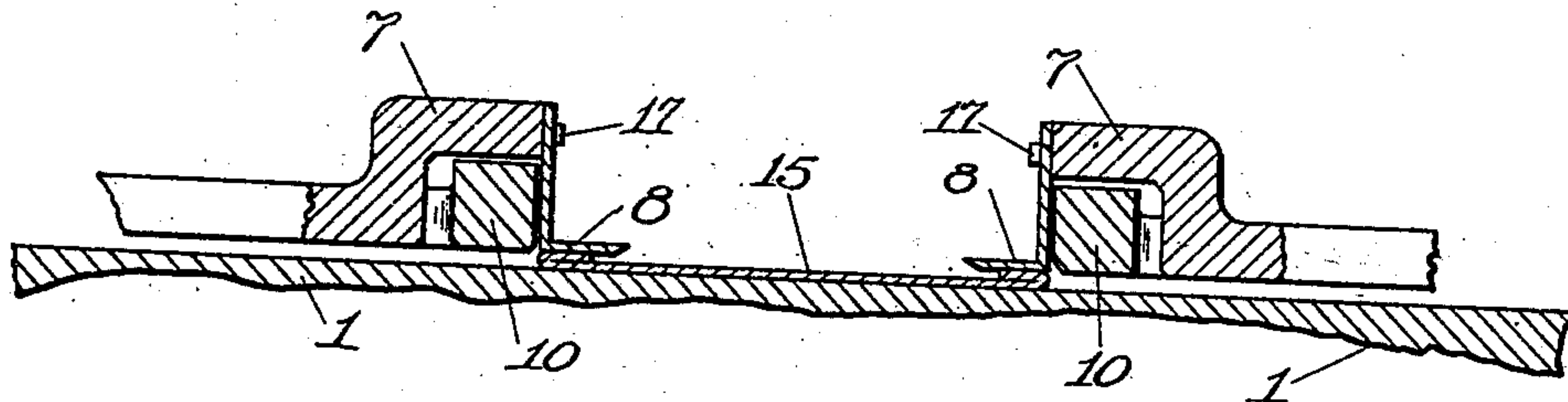


FIG. 4.

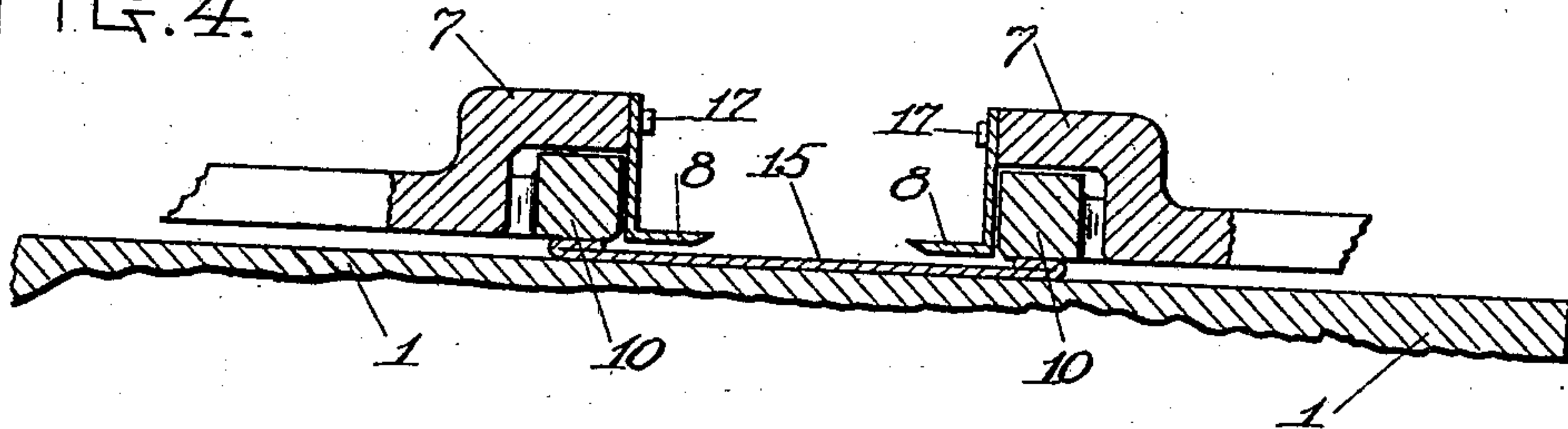


FIG. 5.

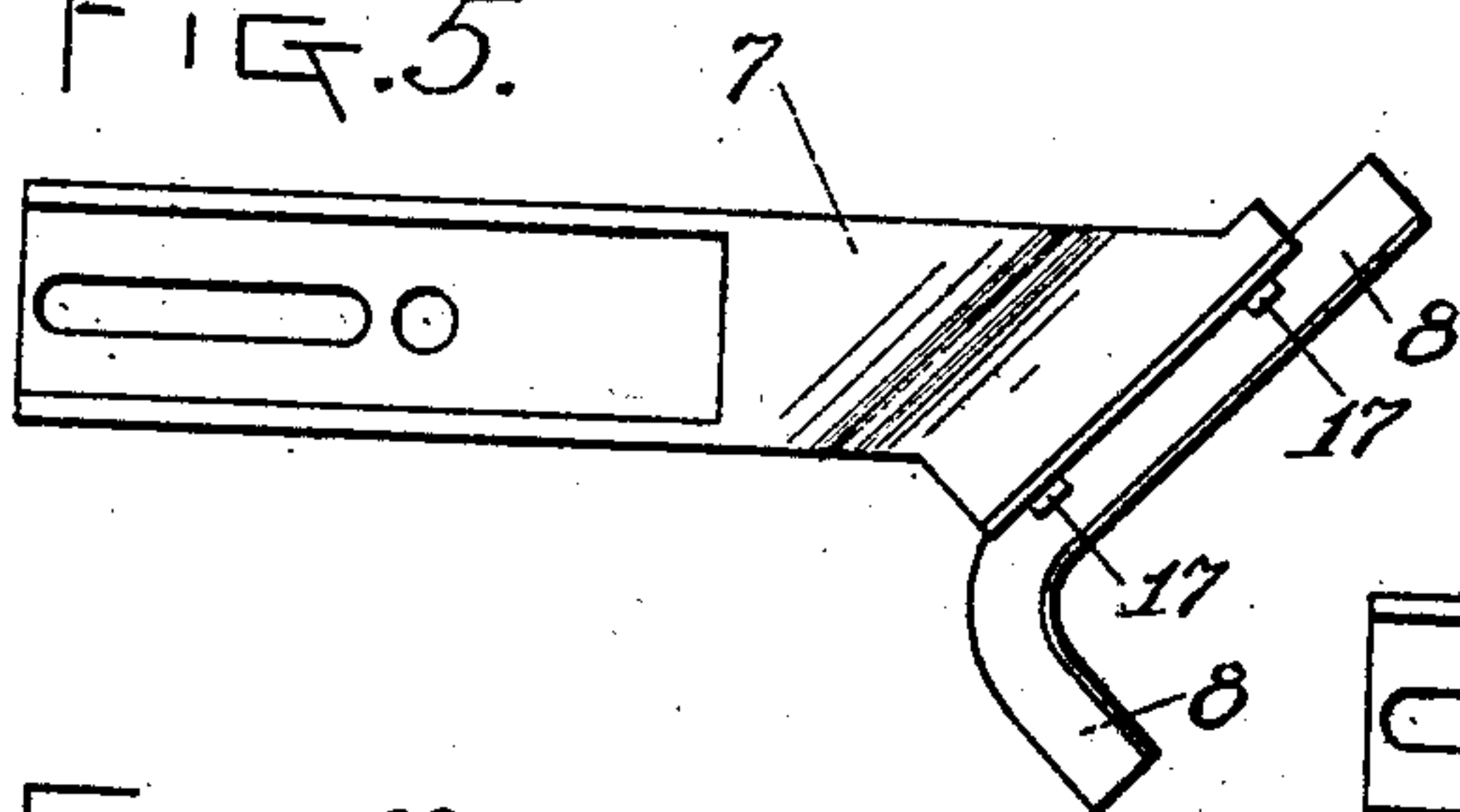


FIG. 6.

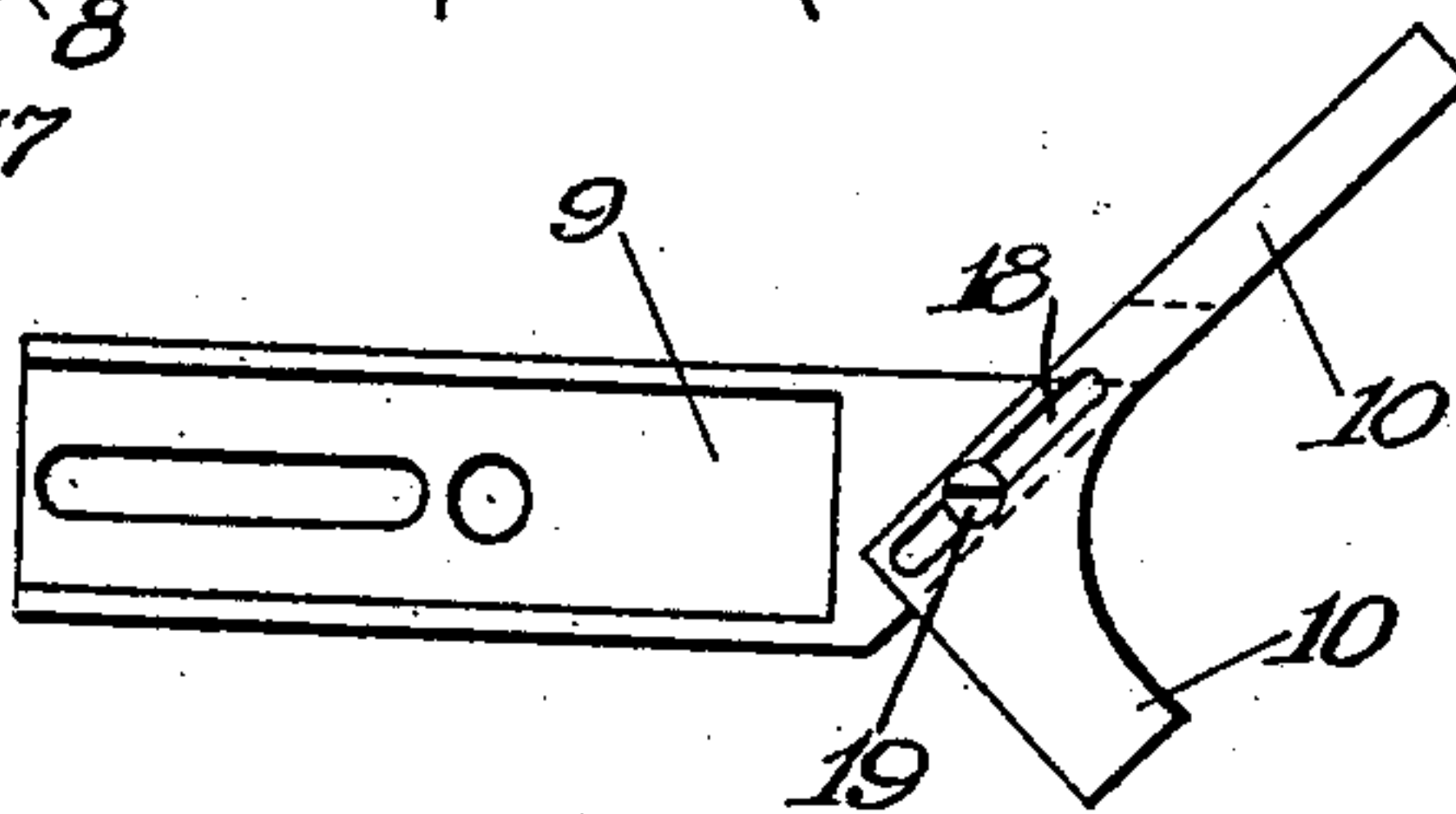


FIG. 7.

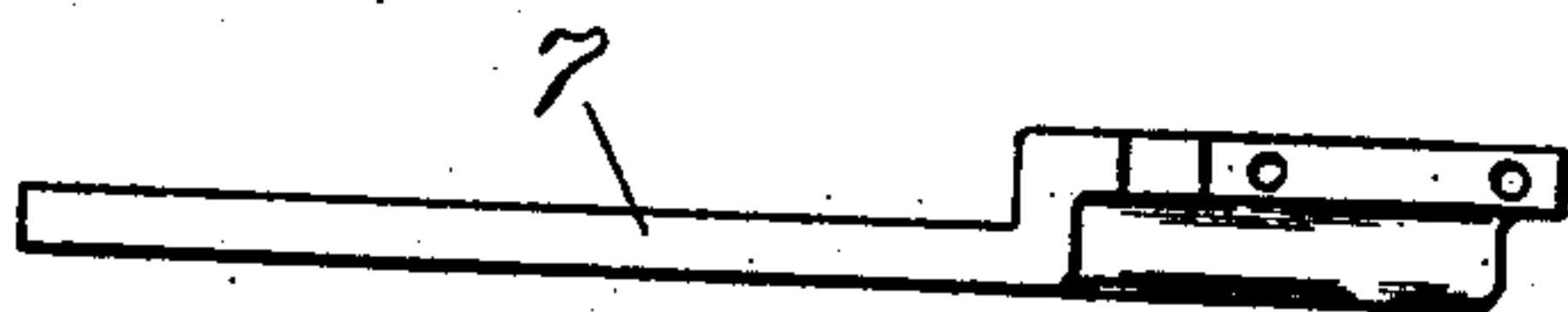
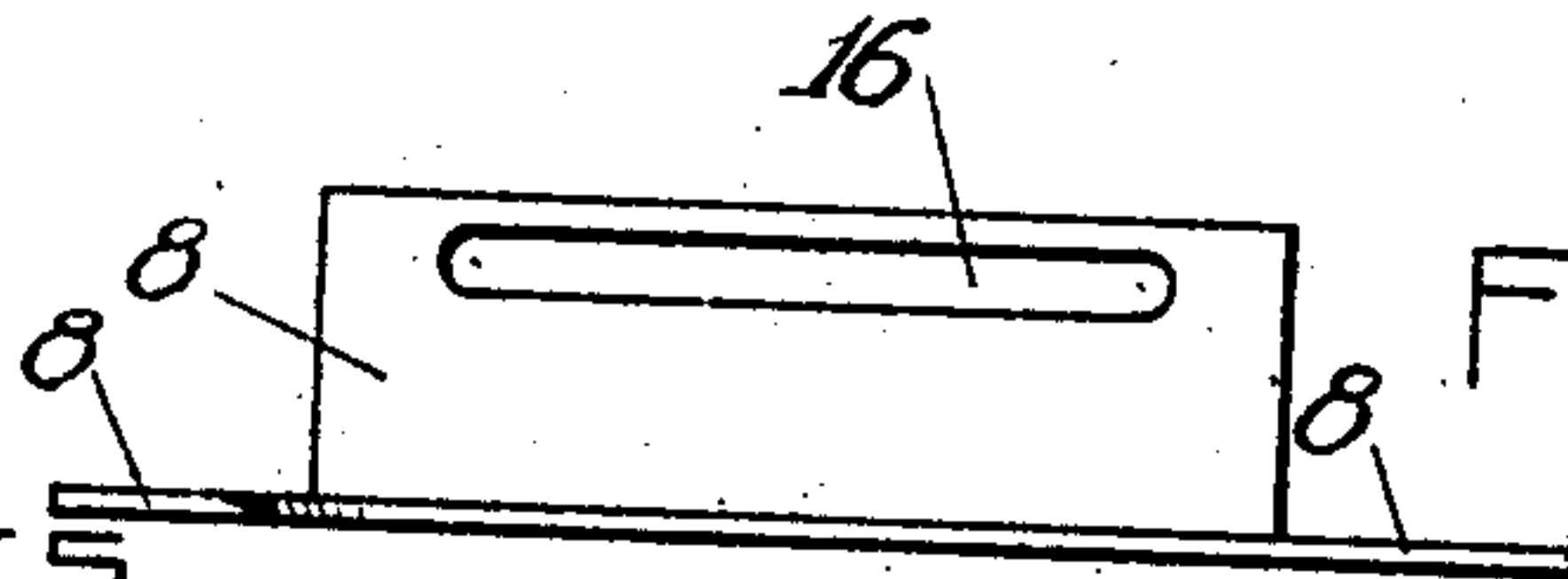


FIG. 8.



WITNESSES

C. Mitchell
J. L. Gando

INVENTOR
Garry J. Dormandy
by Messrs. & Campbell
his Attorneys.

UNITED STATES PATENT OFFICE.

GARRY J. DORMANDY, OF TROY, NEW YORK, ASSIGNOR TO UNITED SHIRT AND COLLAR COMPANY, OF TROY, NEW YORK, A CORPORATION OF NEW YORK.

MACHINE FOR FOLDING BLANKS FOR CUFFS AND THE LIKE.

No. 904,516.

Specification of Letters Patent.

Patented Nov. 24, 1908.

Application filed March 2, 1906. Serial No. 303,760.

To all whom it may concern:

Be it known that I, GARRY J. DORMANDY, a citizen of the United States, residing at Troy, in the county of Rensselaer, State of New York, have invented a new and useful Machine for Folding Blanks for Cuffs and the Like, of which the following is a specification.

My invention relates to machines for folding blanks for cuffs and like articles, such as collars, shirt bosoms, etc.; such articles usually composed of layers of fabric suitably secured together to form the garment.

In the manufacture of such articles it has become common to prepare the separate layers of fabric by taking pieces of fabric, each of sufficiently larger size than the completed article that its edges may be folded over the edges of a die or templet which is properly constructed for defining the shape or contour of the finished article. These folded "blanks," which are then of the exact proportions of the finished article, are usually placed together in pairs with the folded edges concealed between the blanks, and stitches of thread are run around the periphery, usually with a sewing machine, to permanently secure the blanks together, and thus constitute the cuff, collar, shirt bosom, or similar article. In this art many difficulties have been recognized, and the folding of fabric blanks to accurate proportions for the purposes mentioned has long been recognized as one which has required constantly increasing refinements in order to secure suitably accurate folding so that the finished article may be perfect and uniform in outline and of such quality of workmanship that the sewing together of the blanks may be done with the greatest possible expediency and efficiency. It is very essential for this kind of work that the folded edges of the blanks be pressed or squeezed so as to produce a sharp crease, whereby the folds are rendered unlikely to become disturbed, distorted or unfolded, all of which would materially interfere with the attainment of such accuracy as commercial needs require.

My invention relates more particularly to improvements upon that type of machine which comprises, in combination with

a bed for supporting the blanks, a templet for defining the blanks and inwardly and outwardly moving infolders for folding the edges of the blanks over the edges of the templet, a means or mechanism for producing a suitably powerful creasing pressure upon the folded edges of the blanks before the latter have been taken from the position occupied by them during the folding operation.

I will first describe a form of machine embodying my invention, and will then point out the novel features thereof in the claims.

In the accompanying drawings, Figure 1 represents a top or plan view of a form of machine embodying my invention. For convenience I have shown the invention as applied to a machine containing a slide of generally circular form which gives the machine the shape of a circle, as a means for actuating the infolders. This circular infolder actuating mechanism is not of itself claimed to be new with this application, as it was illustrated in my prior patent No. 714,788, of December 2, 1902, where it is fully described, by reason of which an extended description will be omitted from the present application. Fig. 2 is a plan view of a suitable die or templet which may be used for defining the outline of the cuff or analogous article to be folded in the machine shown in Fig. 1. This templet is omitted from Fig. 1 to better illustrate the construction of other parts. Fig. 3 is a vertical cross section taken on the line 3—3, Fig. 1, showing the infolders and pressers in their relation to the blank and the blank supporting bed at that stage of the operation when the folding itself is complete after the templet has been withdrawn from the folds and before the infolders have been removed from the position occupied at the instant of the completion of the actual infolding. Fig. 4 shows a view similar to Fig. 3, but with the parts in an advanced stage of operation; the infolders have been moved further inwards and the pressers have been brought to a position directly above the folds of the blanks preparatory to the application of a powerful creasing pressure to squeeze the folds between the pressers and the bed. Fig. 5 is a detailed view showing in plan an infolder

and its connecting slide. Fig. 6 is a similar detailed view showing a presser, or pressing bar, and its connecting slide. Fig. 7 is a side view of the infolder slide shown in Fig. 5. Fig. 8 is a side view of the infolder shown in Fig. 5.

Similar numerals of reference are employed to designate corresponding parts in the several figures of the drawings.

The main portion, or bed, of the machine, as shown in Figs. 1, 3 and 4, is marked with the numeral 1. This bed is for the purpose of supporting the blanks, and also in this particular illustration of my invention is further employed as the part to which the operating mechanisms are connected. It may, of course, be of any desired external form. For convenience I have adopted a circular form such as that shown in my prior patent No. 714,788 already referred to.

Combined with the bed 1 is an operating device for actuating infolders. This device I have also shown for convenience of the same type as that illustrated in my said prior patent. It consists in an operating ring 2 which is fitted to slide or oscillate in a corresponding groove formed in the bed; and has for operating it a handle 20, which will be hereinafter referred to.

Connected with the ring are a number of operating contrivances such as cam-blocks, a purpose of which is to effect inward and outward movements of infolders. These cam blocks are marked with the numeral 6. They are connected with the ring or slide 2 in suitable fashion, such as by means of screws, and they may be adjustable if desired.

A cam and slot arrangement intermediate the blocks 6 and the infolders serves to transmit motion to the latter when the actuating ring is oscillated. 5 represents a cam slot which engages with a roller pin 3, the latter being connected to the inwardly and outwardly moving infolder slide 7. The infolder slide may be guided in its inward and outward movements in the manner which I fully described in my said prior patent, viz., by means of slide-ways 23 secured upon the bed and arranged substantially radially.

As is clear from Figs. 3, 4, 5 and 7, the infolder slide 7 is, in this particular illustration of my invention, formed with an arch or offset for a purpose that will hereinafter appear, and at its inner extremity this slide 7 has connected to it the infolder 8. The means for connecting the infolder and slide may be bolts or screws 17, which pass through a slot, or slots, 16 in the vertical portion of the infolder; by this means permitting a lateral adjustment between the two parts whereby a single machine may be adapted for the manufacture of cuffs or like articles of varying sizes.

From the above description it will now be understood that when the handle 20 is oper-

ated to oscillate the actuating ring 2, the cam and pin connection intermediate the slide and each infolder, will effect inward and outward movements of the infolders for the purpose of carrying or turning the edge portions of blanks inwardly; and these movements may be simultaneous or otherwise, as experience or conditions may dictate. I have also provided an additional feature in the foregoing mechanism, which may be described as an extension of the cam 5 whereby the infolder may be given a further movement than that which is necessary for the folding operation itself. Thus, it will be seen, that there is a bend in the cam slot 5. When the handle 20 is moved to the right, it will contact with a stop 22. At this point the pin 3 connected with the infolder slide 7 will be engaged near the bend or the middle of the cam slot 5. However, the handle 20 is pivotally connected to the actuating ring by means of two castings 21, 21, so that it may be slightly elevated and passed over the stop 22 for producing the further movement mentioned. Then the portion of the cam slot beyond the bend will come into play, and the infolder will be moved to a position materially inwards of that which it occupies at the completion of the folding itself.

The purpose of the above arrangement whereby, in addition to the folding movements, further movements may be brought about in the infolders, will appear hereinafter.

I will now describe a suitable form of fold-defining mechanism, which is usually termed a templet.

In Fig. 1 is shown at the rear of the machine a couple of bearings or centers 24, on which hinges an arm 14, which forms a very convenient means for securing the accurate positioning to the templet when it is lowered upon the blanks. The templet is shown in Fig. 2 and is connected at the forward end of the positioning arm 14.

Without describing in detail the construction of the templet, which in and of itself is not herein claimed as new, it may be briefly described as consisting of the usual body portion, to which are fitted a series of fold-defining plates 12, which are so fitted that they may be moved inwardly and outwardly, whereby the templet as a whole may be contracted and expanded at will; although sometimes a single plate will be sufficient. A handle 13, which may be used for elevating and lowering the templet, is also connected to the body portion of the templet so as to oscillate. Intermediate connecting links extend from the oscillating handle to the plates 12, so that by operating the handle the movements of the plates may be effected to contract and expand the templet at will.

I will now describe a specific form of pressing mechanism which embodies my invention.

Generally speaking, such pressing mechanism may be said to consist of a number of pressing bars, or pressers, 10, which as elements of the machine are distinct from the infolders 8, but which are so related to the infolders that after the latter have accomplished the folding of the blank edges and have been given a further movement to carry them beyond such position, the pressers may then be brought, without any appreciable loss of time and without disturbing or removing the folded blanks, directly above the folds of the latter. The pressers are further constructed to receive a powerful creasing pressure for the purpose of squeezing the folds of the blanks after the folding operation and independently of the infolders.

Not necessarily, but preferably, each of the pressers will correspond with an infolder, as will be clear from Figs. 5 and 6 showing the form of an infolder and presser respectively; and the pressers will be located normally outwardly of the infolders, to permit which arrangement the infolder slides 7 are given the arched or offset shape already referred to.

The pressers, as shown, are fitted to be moved inwardly and outwardly, and this may be done by any convenient form of actuating mechanism, although I prefer one which is located outwardly of the pressers and which consists in a presser slide 9 analogous to the infolder slide 7 and which, like the latter, engages in the fixed slide-ways 23 which serve to guide the presser in its inward and outward movements.

For causing the movements of the presser inwardly and outwardly, I preferably employ a cam slot similar to the cam slot which actuates the infolder slide; and this cam slot, which is marked 4, is also conveniently formed in the same cam block 6 in which the infolder actuating cam 5, already described, is formed. The cam 4 should be so formed that after the infolder has accomplished its infolding function and moved a further distance, the presser will then quickly come into substantially the position just previously occupied by the infolder, that is, directly above the folds of the blanks.

It will be understood that when an expanding and contracting templet is employed, the templet will be contracted and elevated off from the bed after the folds have been formed, and this permits the infolders and pressers to move from the positions shown in Fig. 3 to the positions shown in Fig. 4 without the necessity of disturbing the blanks or even moving or removing them from their original position on the bed.

Pressure will now be brought to bear

downwardly upon the pressers, and for this purpose treadle mechanism capable of affording a high pressure, perhaps in the neighborhood of one ton, should be employed, such, for example, as that shown in my prior Patent No. 714,788. This form of pressure producing mechanism being old, will not be more fully described, but it should be pointed out that my preferred arrangement for the pressing hooks is as shown in Fig. 1, where the pressure hooks are indicated by the numeral 11. A pressure of the foot upon the treadle will cause the lowering of the hooks 11, which bear directly upon the pressers 10, which in turn transmit the creasing pressure to the folds of the blank.

The pressers may be made adjustable upon the presser slides 9, as by means of a set screw 19 passing through a slot 18 in the presser 10.

The operation of the parts thus described will preferably be substantially as follows: An operator will take one or more layers of fabric cut to form a "blank" similar to and slightly larger than the form of the ultimate product, and will lay the same upon the bed of the machine with its edges above the inner edges of the infolders. The operator will then swing the templet downwardly so that its expanded plates will bear directly upon the blanks upon the bed, the edges of the templet of course being within the edges of the blanks. He will then move the handle 20 to the right, which moves the actuating ring and operates the cam and slot connections to force the infolders inwardly, which folds the edges of the blanks over the edges of the templet. The templet will then be contracted and elevated, as its function is then completed. Then the handle 20 will be jumped over the stop 22 and continued in its movement. This carries the infolders inwardly beyond the edges of the blanks and brings the pressers above the edges of the blanks as shown in Fig. 4. Pressure will then be applied to the treadle to squeeze the folds between the pressers and bed, which can obviously be done without danger of injuring the infolders because the latter are not employed in the pressing operation. Heating means may be employed to keep the bed in a hot condition in order to insure a better pressing operation, but this is well known in the art and is not described. The handle 20 will now be returned to its original position, and after the blank now completed is removed, the machine is ready for another operation.

What I claim as my invention is:

1. In a folding machine, the combination of a series of infolders, means for pressing folds independently of the infolders, and mechanism whereby the infolders may be given lateral inward infolding movements

followed by further inward movements to remove them from the folds, said mechanism also having connections for bringing the pressing means into position for pressing at the same time as the further inward movements of said infolders, whereby the folds may be pressed independently of the infolders.

2. In a folding machine, the combination of a series of infolders and a series of corresponding pressers, together with mechanism whereby the infolders may be given lateral inward infolding movements and then further inward movements, said mechanism having connections whereby the pressers may be brought into operative position at the same time the infolders are undergoing said further inward movements, and means cooperating with said pressers for causing the latter to press the infolds whereby the pressing may be accomplished independently of the infolders.

3. In a folding machine, the combination of a series of infolders, and a series of corresponding pressers, together with mechanism whereby the infolders may be given lateral inward movements more than sufficient to infold the blanks, whereby such inward movements may carry the infolders to a position removed from the folds, and mechanism whereby the pressers are moved inwardly so as to occupy a position over the folds while the infolders are in such extreme inward positions and then caused to partake in the pressing of the folds whereby the pressing may be accomplished independently of the infolders.

4. In a folding machine, a series of infolders and a series of corresponding pressers for pressing folds independently of infolders, the infolders provided with mechanism for causing lateral infolding movements and further lateral movements, the pressers adapted to receive and provided with mechanism for causing inward movements to bring them above the folds when the infolders are given said further lateral movements, and pressure applying mechanism, whereby the pressing and creasing of the folds may be effected independently of the folders.

5. In a machine for folding blanks for cuffs or analogous articles, the combination of a bed for supporting the blanks to be infolded, a templet for defining the folds of the blanks, infolders, mechanism for causing inward movements of said infolders sufficient for folding edge portions of said blanks over edge portions of said templet, and further inward movements thereof sufficient to carry said folders off the folds, pressers located outwardly of said infolders and fitted to receive inward movements whereby the pressers may be brought to positions above the folds of the blanks after said further movement of infolders, and

pressure producing mechanism for causing a creasing pressure between the pressers and bed whereby the blanks may be creased with a sharp fold, and without coöperation of the folders.

6. In a machine for folding blanks for cuffs or analogous articles, the combination of a bed for supporting the blanks to be infolded, an expanding and contracting templet fitted to move to and from the bed, and having plates whose edge portions are adapted to define the blanks upon the bed, a series of infolders, mechanism for causing inward movements of said infolders for folding edge portions of the blanks over edge portions of said templet, and further inward movements after the said templet is contracted out of such folds, whereby said folders may be removed from the folded edges, a series of pressers located outwardly of said infolders and fitted to receive inward movements whereby the pressers may be brought to a position above the folds of the blanks after said further movement of said infolders, and pressure producing mechanism for causing a creasing pressure between the pressers and bed, whereby the blanks may be creased with a sharp fold and independently of the folders.

7. In a machine for infolding blanks for cuffs, or analogous articles, the combination of a bed for supporting the blanks to be infolded, a connected templet constructed to expand and contract adapted to define the folds in the blanks, a series of inwardly and outwardly movable infolders, mechanism for effecting movements of said infolders suitable for folding edges of blanks over edges of the templet, and after contraction of the templet a further movement thereof sufficient to carry said folders away from the folds, a series of pressing blocks fitted with mechanism for causing inward movement thereof to bring the same over the folded blank edges after the withdrawal of the templet and after the further movement of the infolders, and pressing mechanism for causing a creasing pressure between said pressing blocks and bed, independently of the folders.

8. In a machine for infolding blanks for cuffs, or analogous articles, the combination of a bed for supporting the blanks to be infolded, a connected templet constructed to expand and contract adapted to define the folds in the blanks, a series of inwardly and outwardly movable infolders, mechanism for effecting movements of said infolders for folding edges of blanks over edges of the templet, and after contraction of the templet a further movement of said infolders, whereby the folders are carried away from the folds, a series of pressing blocks fitted with mechanism for causing inward movement thereof to bring the same over the folded blank edges after the withdrawal of the tem-

plet and after the further movement of the
infolers, and pressing mechanism for caus-
ing a creasing pressure between said press-
ing blocks and bed, whereby the folds may
5 be creased independently of the folders, and
a common actuator for moving the folders
and pressers.

In witness whereof, I have signed my

name to this specification in the presence of
two subscribing witnesses, on this first day 10
of March A. D., 1906.

GARRY J. DORMANDY.

In presence of—
E. O. HOUSE,
GEO. L. WHEELLOCK.