

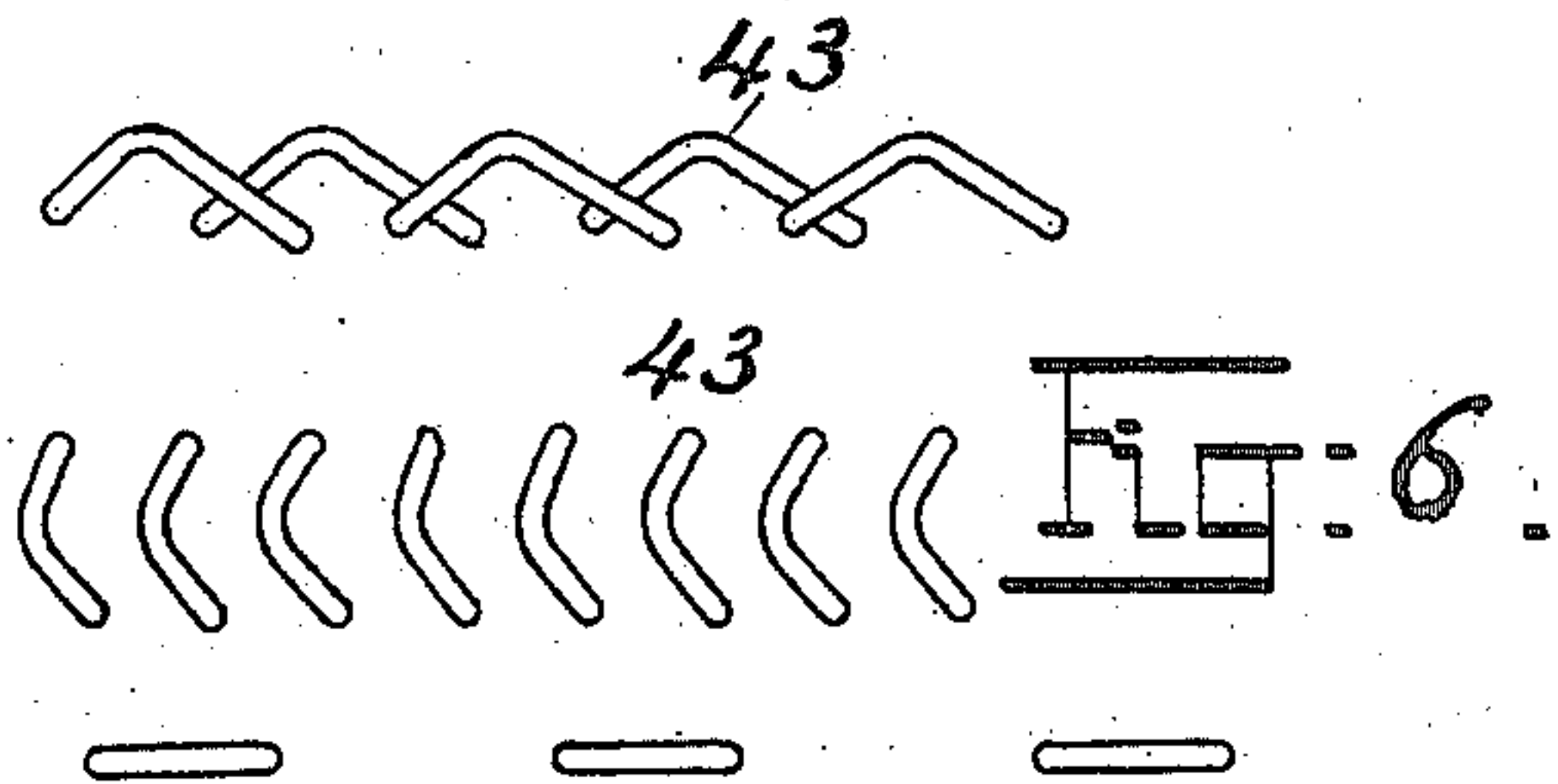
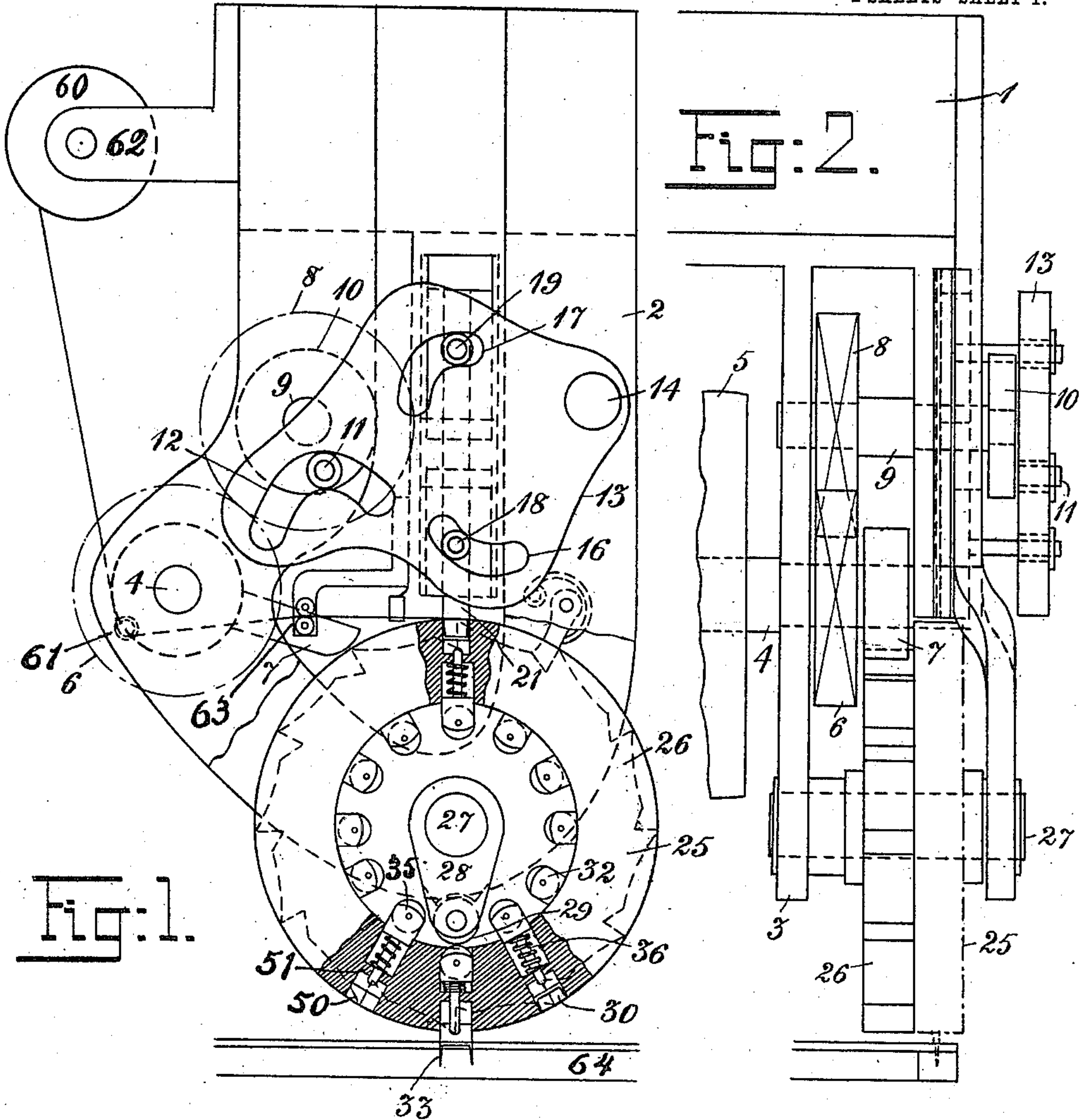
F. BONNESEN & G. A. ENGBLOM.
MECHANISM FOR FORMING WIRE ORAMPS AND DRIVING THEM INTO PASTEBOARD AND OTHER
MATERIAL.

APPLICATION FILED JUNE 9, 1909.

Patented July 12, 1910.

2 SHEETS—SHEET 1.

964,202.



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F. BONNESEN & G. A. ENGBLOM.
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Fig. 3.

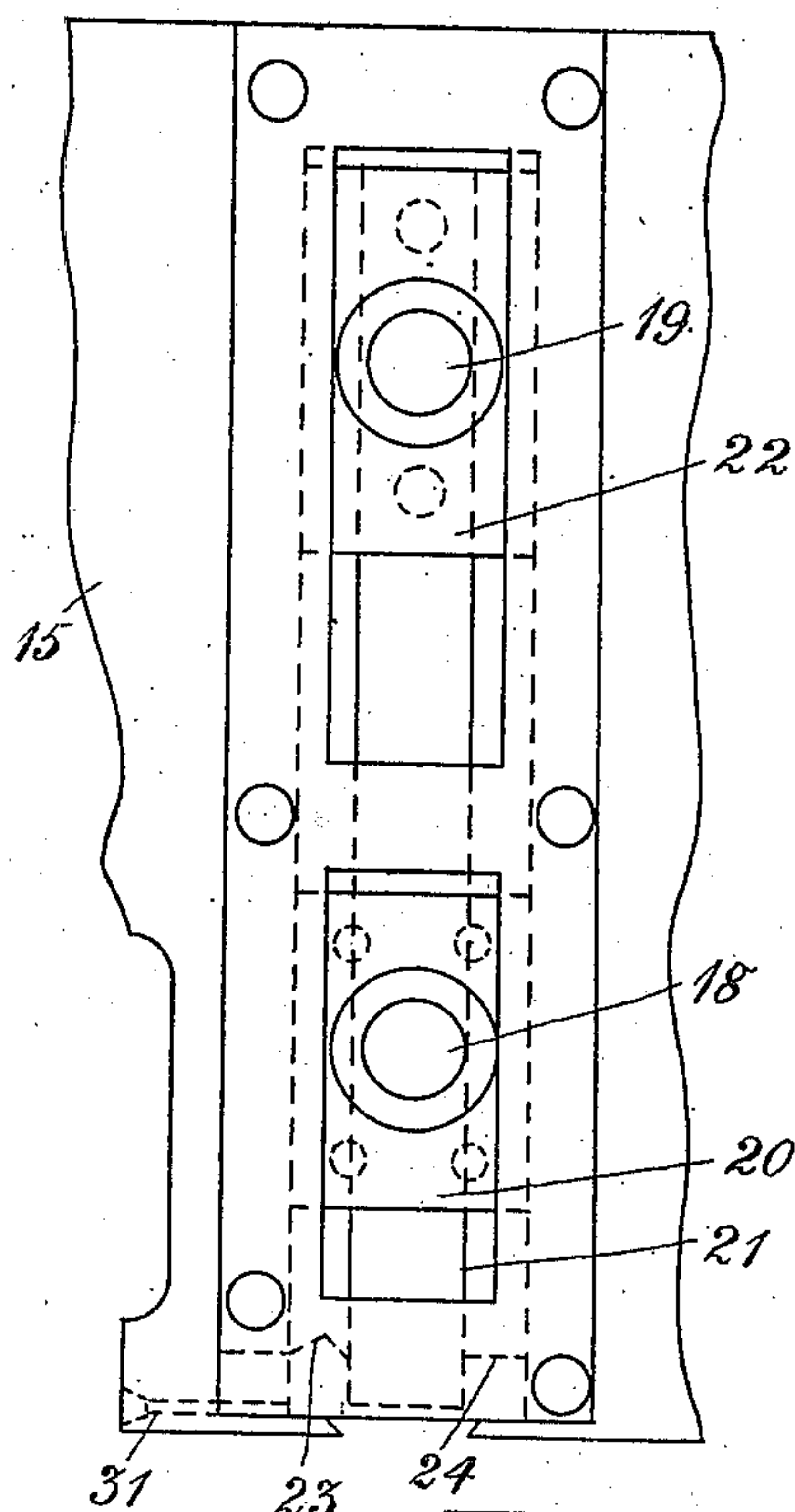


Fig. 4.

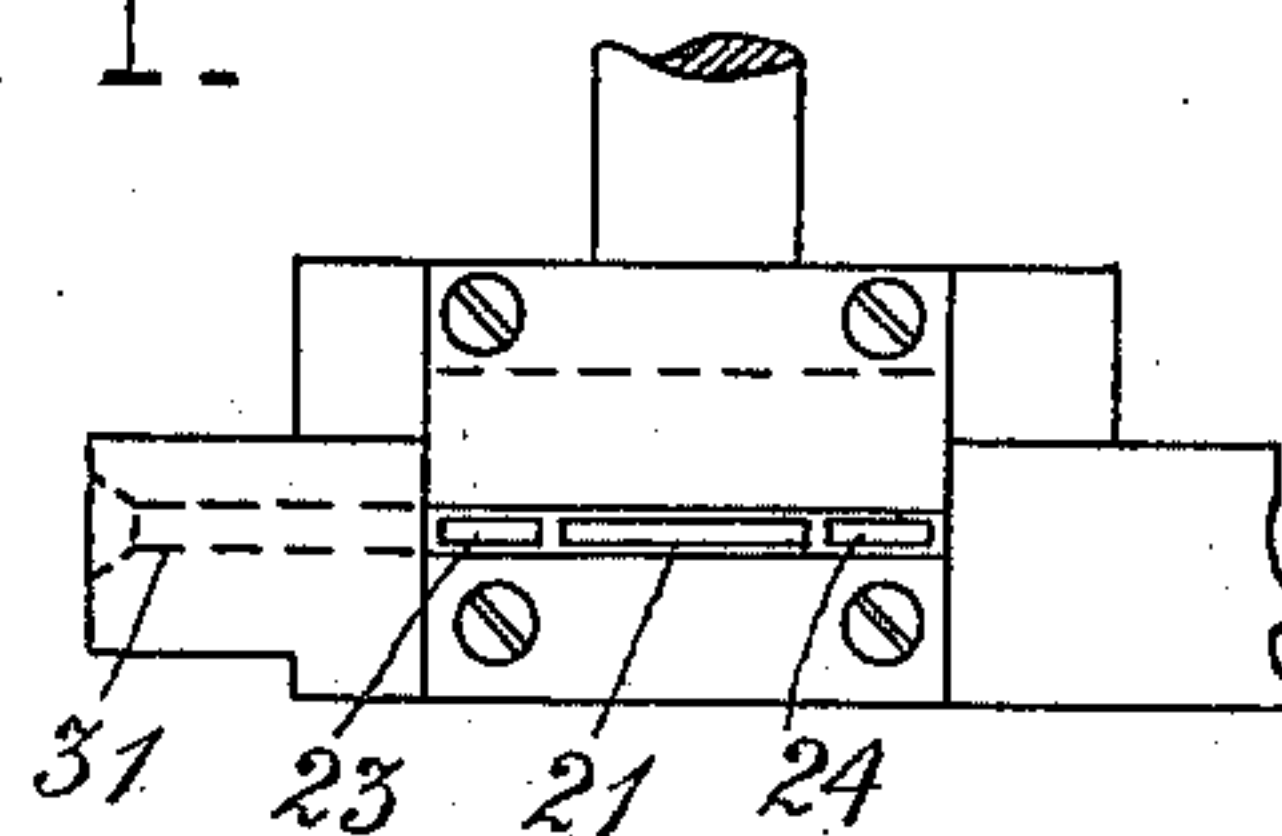
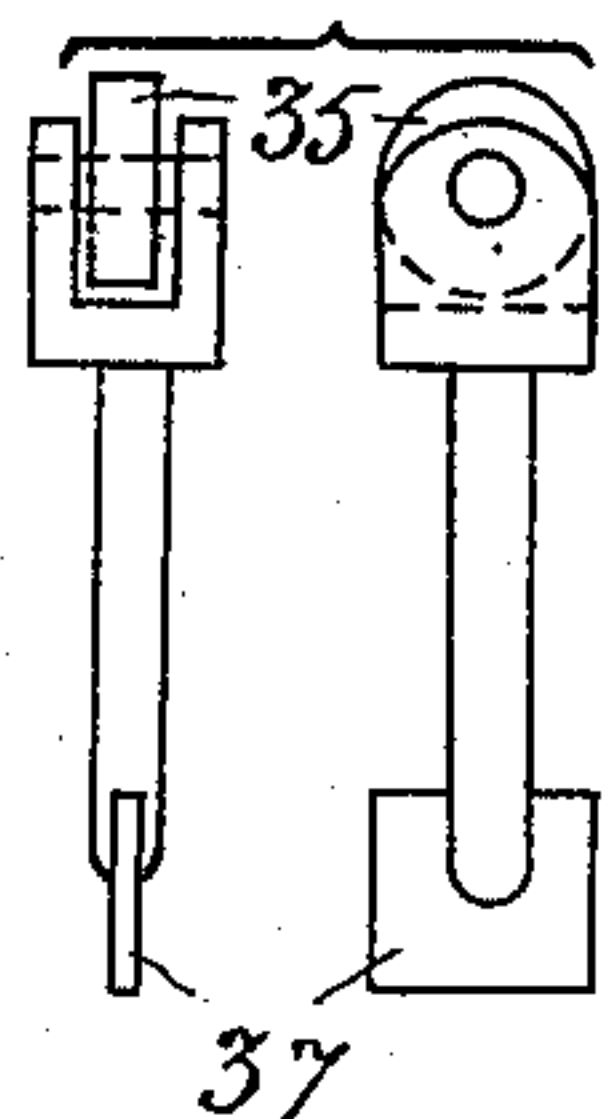


Fig. 5.



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UNITED STATES PATENT OFFICE.

FRITHIOF BONNESEN AND GUSTAF ADOLF ENGBLOM, OF MALMÖ, SWEDEN.

MECHANISM FOR FORMING WIRE CRAMPS AND DRIVING THEM INTO PASTEBOARD AND OTHER MATERIAL.

964,202.

Specification of Letters Patent. Patented July 12, 1910.

Application filed June 9, 1909. Serial No. 501,062.

To all whom it may concern:

Be it known that we, FRITHIOF BONNESEN and GUSTAF ADOLF ENGBLOM, subjects of the King of Sweden, residing at Malmö, Sweden, have invented new and useful Improvements in Mechanism for Forming Wire Cramps and Driving Them into Pasteboard and other Material, of which the following is a specification.

The chief object of this invention is to provide a satisfactory machine for making a substitute for corrugated pasteboard, this substitute consisting of straw, paper and a pasteboard backing all united by means of staples set in the same by said machine. Of course this machine is also available for use with other material. To this end we employ the construction and combination of devices hereinafter more particularly set forth and claimed, whereby, wire cramps or crimping and bracing pieces are cut off and pressed into the pasteboard, thus adding their rigidity and elasticity to the latter.

In the accompanying drawings, Figure 1 represents a front elevation of a machine embodying our invention; Fig. 2, a side elevation of the same; Fig. 3, an enlarged detail view of a part of the same; Fig. 4, an enlarged bottom view of the same; Fig. 5, an enlarged detail view of one of the sliding hammers for driving the cramps or crimping pieces into the pasteboard; Fig. 6 represents in detail series of modified cramps or crimping pieces.

The main frame 1 of the machine is provided with rigid depending supplemental frames 2 and 3, in which a shaft 4 is journaled. This shaft receives power through a pulley 5 mounted thereon and carries a driving wheel 6 and dog or pawl 7. This wheel 6 engages and drives a similar wheel 8 on a shaft 9, also journaled in said frames 2 and 3. This shaft 9 carries a crank disk 10, provided with an eccentric wrist pin 11, on which is an antifriction roller that runs in a curved or cam slot 12 of a plate 13 eccentrically pivoted on a pin 14 of frame 2. The plate 13 has two other cam slots 16 and 17, respectively receiving pins 18 and 19, on sliding blocks 20 and 22, which are caused by the aforesaid devices to reciprocate in straight vertical lines between guides on frames 2 and 3.

Block 20 carries a single wire shaping bar or die 21. Block 22 carries a wire cutting

bar 23 and a wire holding bar 24 these two bars being arranged one on each side of bar 21, as shown in Fig. 4.

The annular hammer wheel 25 and a ratchet wheel 26 arranged beside it turn together on a shaft 27 journaled in the frames 2 and 3, near the lower ends of the latter. From this shaft depends a fixed vertical arm 28, arranged within the central opening of said annular hammer wheel 25 and having on its lower end a roller 29. At every rotation of shaft 4 the pawl 7 turns ratchet wheel 26 and hammer wheel 25 with step by step motion, presenting successively under shaping bar 21 each one of a peripheral series of recesses 30, arranged regularly in the latter wheel. Another recess 50 is arranged in radial line with each recess 30 aforesaid and opens through the inner face of said wheel 25, said recesses being separated by a centrally bored partition 51. A sliding hammer 39 has a slender stem passing the hole in said partition and is surrounded by a replacing spring 36 located between said partition and the bifurcated hammer head, which is guided by said recess and provided with a roller 35 (Fig. 6) arranged to be acted on by roller 29 of a fixed arm 28 aforesaid when brought under the latter by the step by step turning of said hammer wheel. The operating face 37 of the hammer may be varied in form to suit the shape of the cramps.

A transverse guideway 31 (Fig. 3) in a fixed part 15 of the main frame 1 directs the wire to the space under the reciprocating, holding, cutting and shaping bars 23, 24 and 21. The said wire is drawn from a spool 60 (Fig. 1) mounted in a bracket 62 of the main frame, and passes around a tension roller 61 to a pair of feed rolls 63, which may be actuated in any convenient way, preferably by wheels 6.

The operation is as follows: The pivoted plate 13 being turned upward on its pivot by the action of disk 10 and pin 11, acts on pins 18 and 19, to raise bars 21, 23 and 24 out of the way of the wire leaving a passage for the end of the wire issuing through guideway 31. As soon as a sufficient length of wire to form a cramp or crimping device has passed under said bars the cutting bar 23 and holding bar 24 descend, and the latter holds the end of the wire while the former cuts it off thus forming a cramp

blank; their action being caused by the combined motion of the plate 13 and the calculated form of the cam slot 17 acting on pin 19. Simultaneously a recess 30 of hammer wheel 25 is brought under the said cramp blank by the described step by step motion of said wheel and the bar 21 descends, under the action of pivoted plate 13 and its cam slot 16 on pin 18, and forces the said cramp blank down into said recess, the latter and the end of shaping bar 21 being formed for coöperation in shaping the cramp, which, thus completed, remains in the said recess and is carried around by the wheel in the step by step motion of the latter as the other recesses 30 are successively presented under bar 21 and similarly supplied. When each recess and its sliding hammer come under the fixed arm 28 the contact of the rollers 29 and 35 forces the operating face of the hammer strongly against the cramp 33 (Fig. 1) and drives the latter into the pasteboard 64. The latter being fed along under the hammer wheel by hand or by any convenient regularly acting mechanism, these cramps or crimping pieces will be driven into it at short intervals. The springs 36 respectively replace the hammers successively in their original position after passing the lowest point of the hammer wheel. It will be observed that said wheel is supplied with a cramp at the top for every cramp hammered out of it into the pasteboard at the bottom, and that one half of the periphery of said wheel, between these points and to the rear of the hammering point in the direction of rotation is kept supplied with cramps.

The staple form cramp 33 shown in Fig. 1 may be modified in various ways, for example by giving it only a single bend as in the bow-form cramp 43 shown in Fig. 6.

The same mechanism and operation may of course be used with wood leather or other materials adapted to receive metallic cramps, as described. In some cases there is an advantage in using two or more machines on the same sheet of material, preferably timing them to drive the cramps in alternating or break-joint arrangement.

Having thus described our invention, what we claim as new and desire to secure by Letters Patent is:

1. A rotating annular wheel provided with a series of recesses and a series of hammers sliding in said recesses and radially set close to each other, practically filling the circumference, in combination with means coöperating with said recesses successively

to shape and set pieces of metal therein and a stationary arm within the central opening of said wheel arranged to act positively on said hammers in succession, one hammer being always in position to be acted on, whatever the position of said wheel.

2. A rotating annular wheel provided with a series of recesses, carrying metallic cramps in combination with a series of free hammers radially sliding in said recesses, a fixed device within said wheel, said hammers and device being arranged to insure the action of the latter on one of the former whatever the position of the wheel and said device acting on each hammer to force out radially the corresponding cramp from its recess into the material to be operated on substantially as set forth.

3. An annular rotating wheel provided in its outer face with a circular series of recesses for receiving metallic cramps, in combination with a corresponding series of longitudinally and radially sliding hammers, having their heads within the central opening of said wheel and their operating ends extended outward into said recesses and arranged to insure the operation of a hammer whatever be the position of the wheel, and a fixed arm within said central opening arranged and adapted to act on said hammers as they are successively brought against it by the rotation of said wheel and to cause them to drive the cramps out of the wheel into the material acted on substantially as set forth.

4. A rotating wheel having recesses for holding metallic cramps in combination with a circular series of radially sliding hammers carried by said wheel for automatically ejecting said cramps, a stationary part arranged to operate each hammer as it is brought by the wheel into contact therewith, a pair of reciprocating parts provided with lateral studs and adapted to cut off the blanks for cramps, to shape them and to force them into said recesses, as the latter are successively presented under said reciprocating parts, a pivoted plate provided with cam slots engaging said studs for operating said parts and mechanism for oscillating said plate substantially as set forth.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

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