

T. R. MORGAN.
SHEET-METAL PAN MACHINES.

No. 195,035.

Patented Sept. 11, 1877.

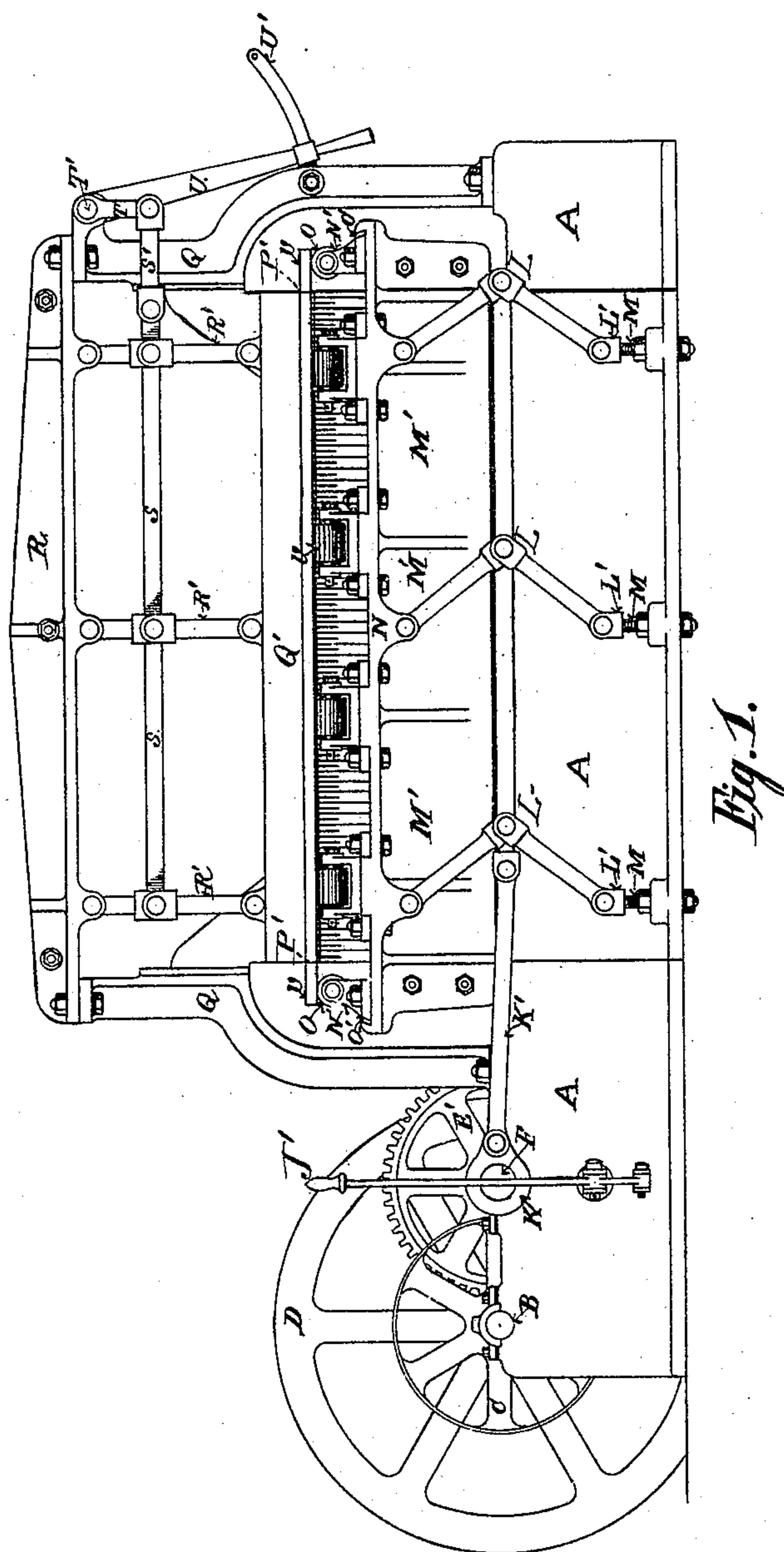


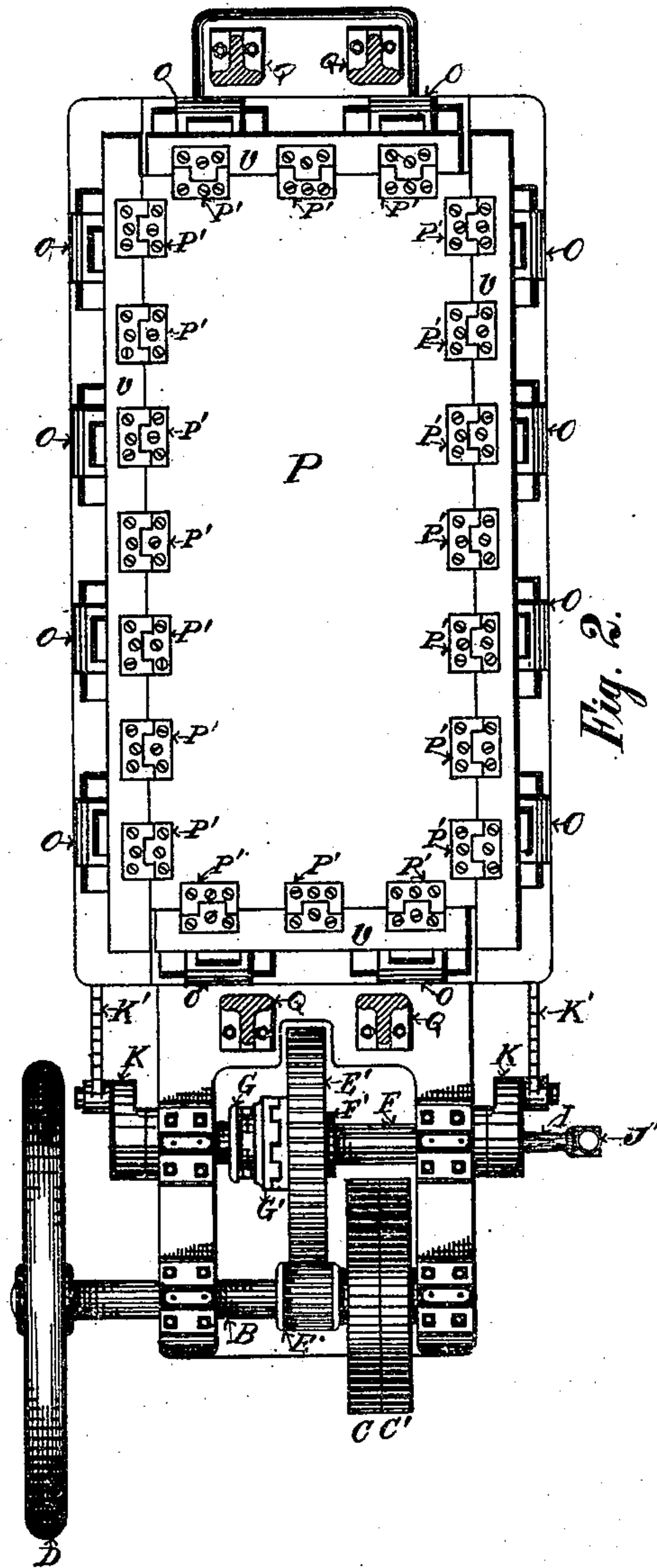
Fig. 1.

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By S. Eggett & S. Eggett, attys.

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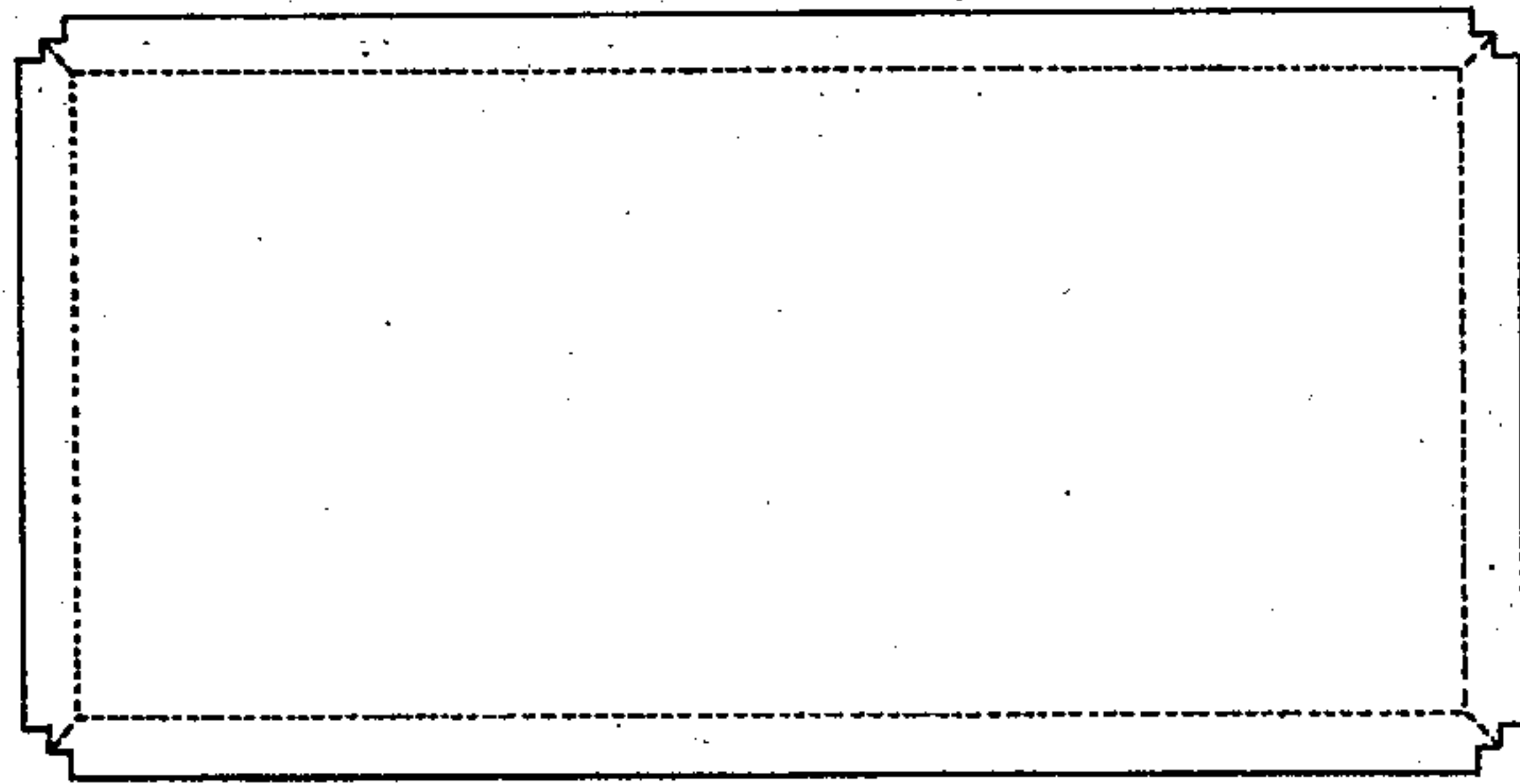


Fig. 6.

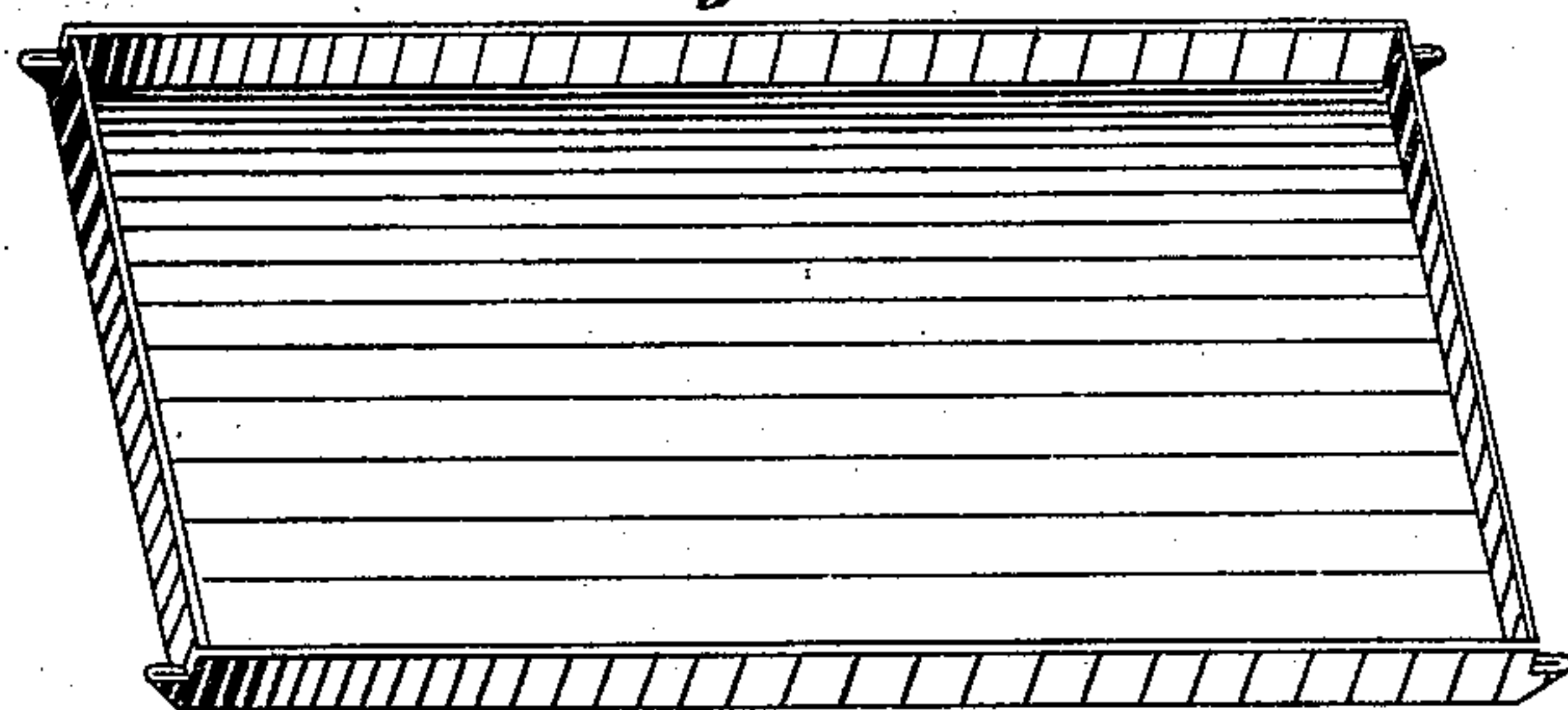


Fig. 5.

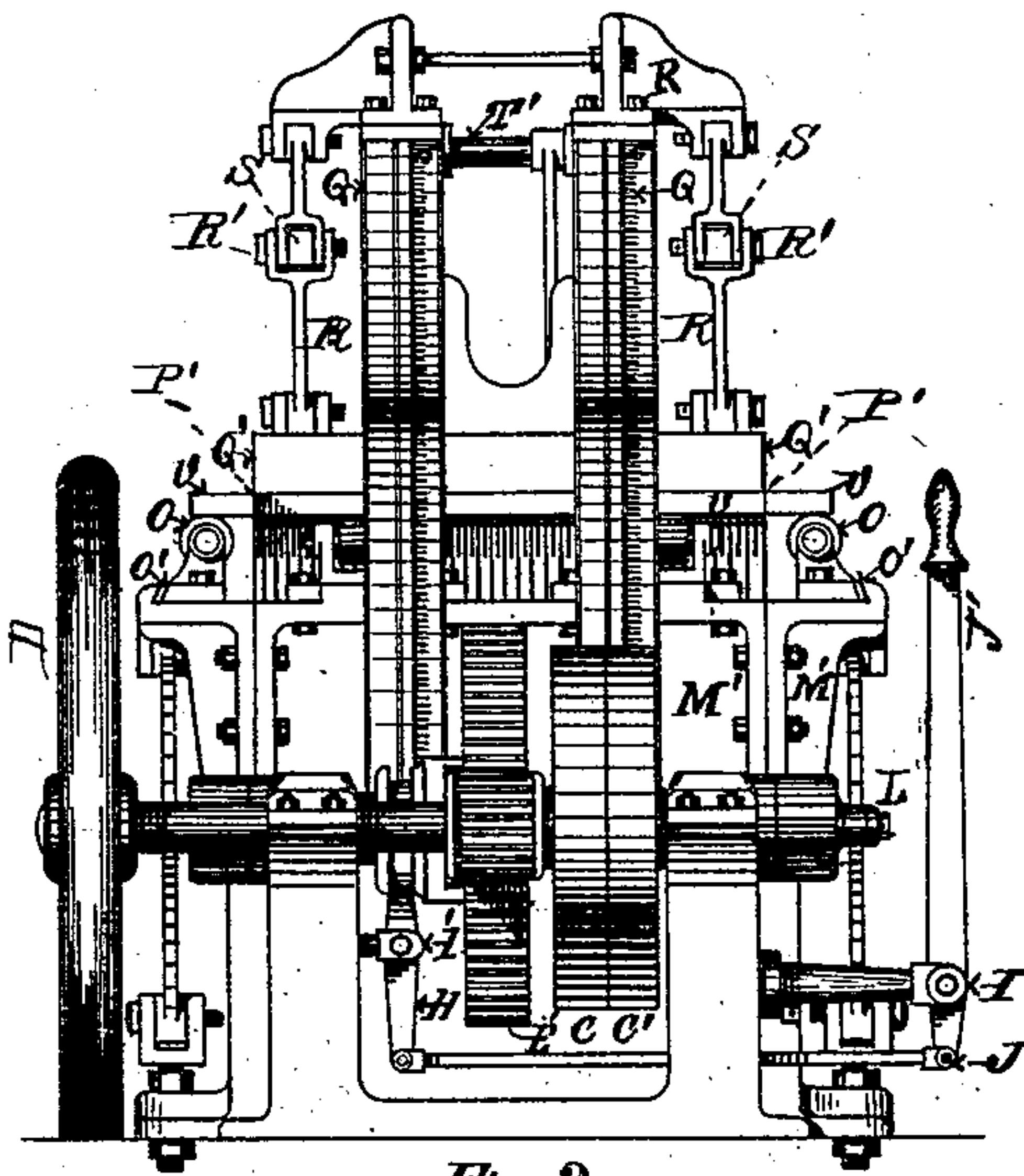


Fig. 3.

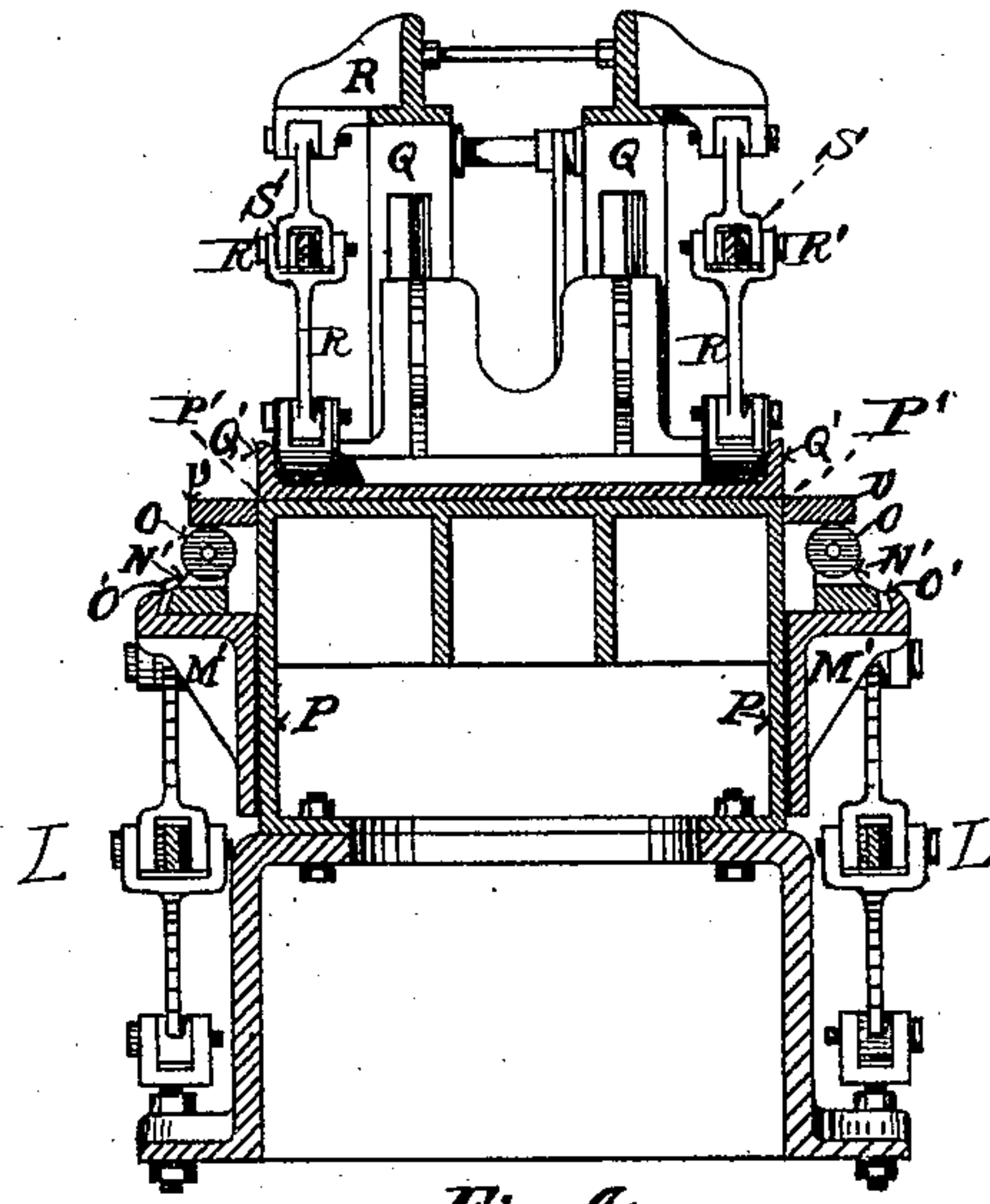


Fig. 4.

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UNITED STATES PATENT OFFICE.

THOMAS R. MORGAN, OF ALLIANCE, OHIO, ASSIGNOR TO W. D. WOOD & CO.,
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IMPROVEMENT IN SHEET-METAL-PAN MACHINES.

Specification forming part of Letters Patent No. 195,035, dated September 11, 1877; application filed
June 21, 1877.

To all whom it may concern:

Be it known that I, THOMAS R. MORGAN, of Alliance, in the county of Stark and State of Ohio, have invented certain new and useful Improvements in Machines for Making Sheet-Metal Pans; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

Figure 1 is a side elevation of my improved machine. Fig. 2 is a sectional plan of the machine in a line with top of hinges when open. Fig. 3 is an end elevation of machine, showing the operating mechanism. Fig. 4 is a section across the machine and its details through middle toggles. Fig. 5 shows the pan with edges turned up and ready to turn the corners over. Fig. 6 shows a plan of the blank cut to shape for making a pan.

The prime object of my invention is to meet a want in the manufacture of sheet-metal pans and the body portion of packing-cases of the form and construction illustrated in the patent of M. D. Wood, No. 183,356, dated October 17, 1876, which are used for inclosing and protecting, during exportation and while in storage, fine sheet-irons, including what is known as "American Russia sheet-irons," and any other sheet metals of like character.

My invention relates to that class of machines adapted for folding up the sides of a metallic blank in the manufacture of sheet-metal pans.

A is the base-frame of machine, supporting the driving-shaft B, to which are secured tight and loose pulleys C C', fly-wheel D, cog-wheel E, which meshes with a large gear-wheel, E', on a counter-shaft, F, journaled on bearings on the base-frame, and arranged parallel to driving-shaft B. This gear-wheel is made to revolve loosely on its shaft. On each side of this wheel collars F' F' are fastened on shaft, to prevent the wheel moving lengthwise on shaft. Along-side of this wheel is a clutch, G, which is allowed to move back and forth on a spline placed in shaft lengthwise, so that it can be made to engage or disengage in a similar

clutch made in hub G' of gear-wheel E'. Connections to the clutch are made through levers H, fulcrum I I', connecting-rod J, and hand-lever J', which are also supported by base-frame A.

On each end of counter-shaft F cranks K K are keyed, connections to which are made through rods K' K', and to which the centers of toggles L are connected. The toggles L are also connected at their lower ends to joints L'. These joints are also supported in base-frame A, and are made adjustable, by means of screws M, in their vertical height. The upper ends of toggles L are connected to sliding frame M' by means of jaws placed underneath a flanged projection surrounding top of frame.

On top of flange N a number of brackets, N', are bolted, each bracket supporting a roller, O, which is allowed to revolve when necessary. These brackets are adjustable, to increase or decrease their distances from center of slide-frames M', by means of wedges O'.

Inside of sliding frame M' a former, P, is placed. This former is bolted down to the base-frame A, and to fit neatly in sliding frame M', so that it can move freely up and down. Around the top edge of this former are recesses to fasten the one side of joints of a number of hinges, P'. To the other side of these hinges are fastened leaves or forming-bars v, which are so connected to the former and hinges that when closed they will give the desired shape to the sides and ends of the pan being made.

Surrounding the sliding frame M', and bolted at their base to base-frame A, are standards Q. These standards have grooves planed in them vertically above and in the sides next to the former, to allow the blank-holder Q' to slide.

The standards Q are braced by means of girders R, which are bolted on top of same. Underneath these girders, and between the standards, are brackets to receive the upper end of toggles R'. The lower joints of toggles R' are connected by bolts passing through recesses made in the upper part of the blank-holder Q'. The toggles R' are all connected together by means of rods S S', levers T, and

rock-shaft T'. The rock-shaft T' is journaled to top of standards Q, and levers T are keyed on each end of same.

Between the journals on the rock-shaft T' a hand-lever, U, is keyed. This lever in its movements is made to traverse over a guard, U', which receives its fulcrum on standard Q. This guard may have teeth cut on one edge, and near the handle a spring-catch may be placed, so as to enable the lever to be made secure at any point in the guard by releasing the spring-catch, and allowing the catch to enter teeth in guard.

The operation of machine described is briefly as follows: The belting is made to run on the tight pulley C, and the clutch G is disengaged from the clutch G' in gear-wheel E' when the sliding frame M' is at the bottom of its stroke, the forming-bars v also resting in an open or horizontal position on the rollers O and the toggles L and other power-operating mechanism, as shown on drawings, Fig. 1. The hand-lever U is moved to the top of guard U', and there secured by a spring-catch; and when in this position the toggles R' hold a similar position to the toggles L in Fig. 1, and it will be seen that the blank-holder Q' has been lifted in a vertical position, guided by the planed grooves in standards Q. A sheet-metal blank is placed on top of former or table P, against gages arranged in any suitable manner, to guide the blank to its proper place. The hand-lever U is now released from its catch, and the blank-holder Q' is depressed on the blank, which holds it firmly, when the toggles R' are straightened. The hand-lever J' is now taken hold of, a movement given it, bringing the clutch G in gear with clutch G' of gear-wheel E', thereby putting the counter-shaft F and its cranks K K in motion, until one complete revolution is made, and then the clutch G is disengaged, as before. When the sliding frame is at bottom of stroke, while the machine is in operation, and up to one-half of revolution of cranks, the toggles L are being straightened, causing the sliding frame M' to move in an upward direction with rollers O, which press against the forming-bars v. They swing on their hinges, carrying with them the sides and ends of the sheet-metal blank, until brought up close to the blank-holder Q', which has its outsides and ends made to the exact shape required of inside of pan. The rollers O are adjusted so that they will stop at any upward movement, and press hard enough against the back of the forming-bars to give the desired pressure to any thickness of metal and any desired angle in the pan. In the latter half of stroke of the machine the sliding frame M' and the rollers O move downward, and the forming-bars v follow them by their own gravity. The corners of pan may now be turned over in any manner desired before removing the blank-holder. Stationary pieces or stops, of metal, are fastened underneath the planed guides in standards Q, and are adjusted close to ends of blank-holder Q'

and top of pan, so that when the blank-holder Q' is moved upward these stops prevent the pan from following it. After the machine has made a complete revolution the hand-lever U is again brought up and secured to top of guard U'. In its upward movement it lifts up the blank-holder Q' clear above the edge of the pan, which has been released by the stops, and rests on top of former P. The finished pan is now taken out, and another blank put in its place. The blank-holder is again depressed by means of hand-lever U, and the same operation repeated.

I have shown my machine for turning up one kind of pan, or the body portion of packing-cases only, the corner of whose blanks, as shown in Fig. 6, are made to show a peculiar kind of pan or packing-case body for inclosing fine sheet-irons.

In designing this machine I have had in view the folding of the sides of pans of like character for housenold and other purposes that come within the scope of my invention, and that take a square, rectangular, or polygonal shape, as my sliding frame M' and former P can be made of any shape desired.

My sliding frame M' may also be made of one piece, and not as shown on drawings; but it may be also made, for convenience of finishing its internal sliding parts, of more than one piece, if desired.

The former P may also be made in one piece with base-frame A.

The method of adjusting the roller-brackets O may be by set-screws instead of wedges, as shown and hereinbefore described.

The rollers themselves may also be done away with, and the hinges may be pushed by the sliding frame or some other adjustable attachment.

The sliding frame M' may also be moved vertically by cranks and connecting-rods placed on a shaft or shafts underneath the sliding frames; but any simple change of this character does not alter the spirit of my invention.

I am aware that other machines have been made for making sheet-metal pans, and do not broadly claim such.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a machine for making sheet-metal pans, the combination of a former, P, with sliding frame M' moving vertically on same, constructed so as to carry the friction-rollers to close up hinges for folding up the sides and ends of pan, substantially as and for the purpose specified.

2. In a machine for making sheet-metal pans, the combination, with the sliding frame M', of the adjustable rollers O, for closing up the hinges for folding sides and ends of pan, as and for the purpose specified.

3. In a machine for making sheet-metal pans, the combination, with the vertically-sliding frame M' and base-plate A, of the adjusta-

ble toggles L, for giving motion to the sliding frame M' for actuating the folding hinges, as and for the purpose specified.

4. The combination, with the hinged forming-bars and sliding frame M', carrying-rollers O, of the toggles L, connecting-links K', and cranks K, substantially as described.

5. The combination, with the hinged forming-bars, of the frames Q, girders R, toggles R', and blank-holder Q', substantially as described.

6. In a machine for making sheet-metal pans, the combination of the handles U, rock-

shaft T', levers T, rods S S', toggles R', blank-holder frames Q, and guide planed to same, all for engaging and disengaging the blank-holder and suspending and guiding it in position, substantially as and for the purpose specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

THOMAS R. MORGAN.

Witnesses:

S. V. ESSICK,

J. R. MORGAN.