

No. 868,289.

PATENTED OCT. 15, 1907.

E. E. OVERHOLT.
INTERLOCKING DEVICE FOR TRAIN ORDER SIGNALS.

APPLICATION FILED SEPT. 20, 1901.

3 SHEETS—SHEET 1.

Fig. 1.

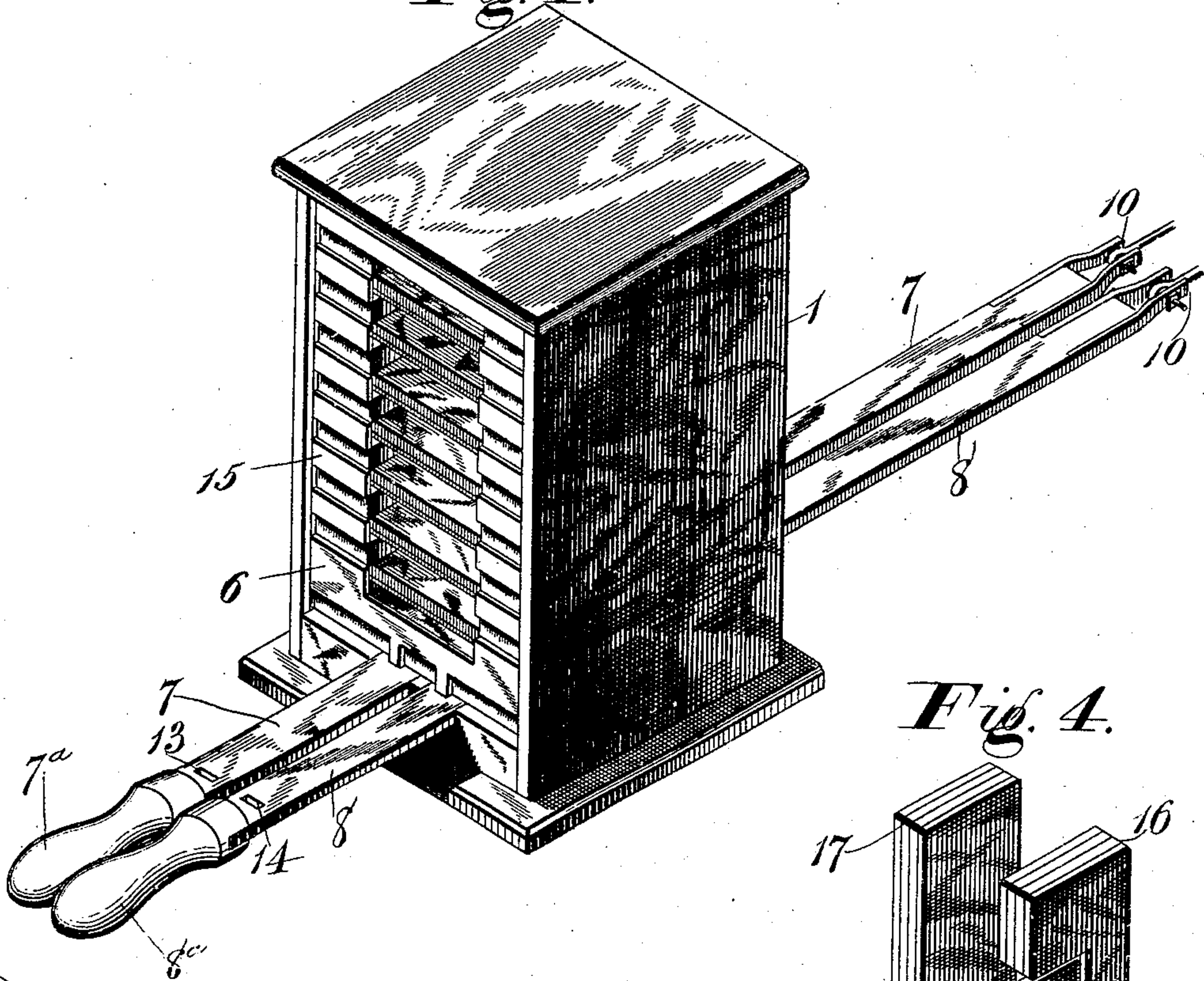


Fig. 4.

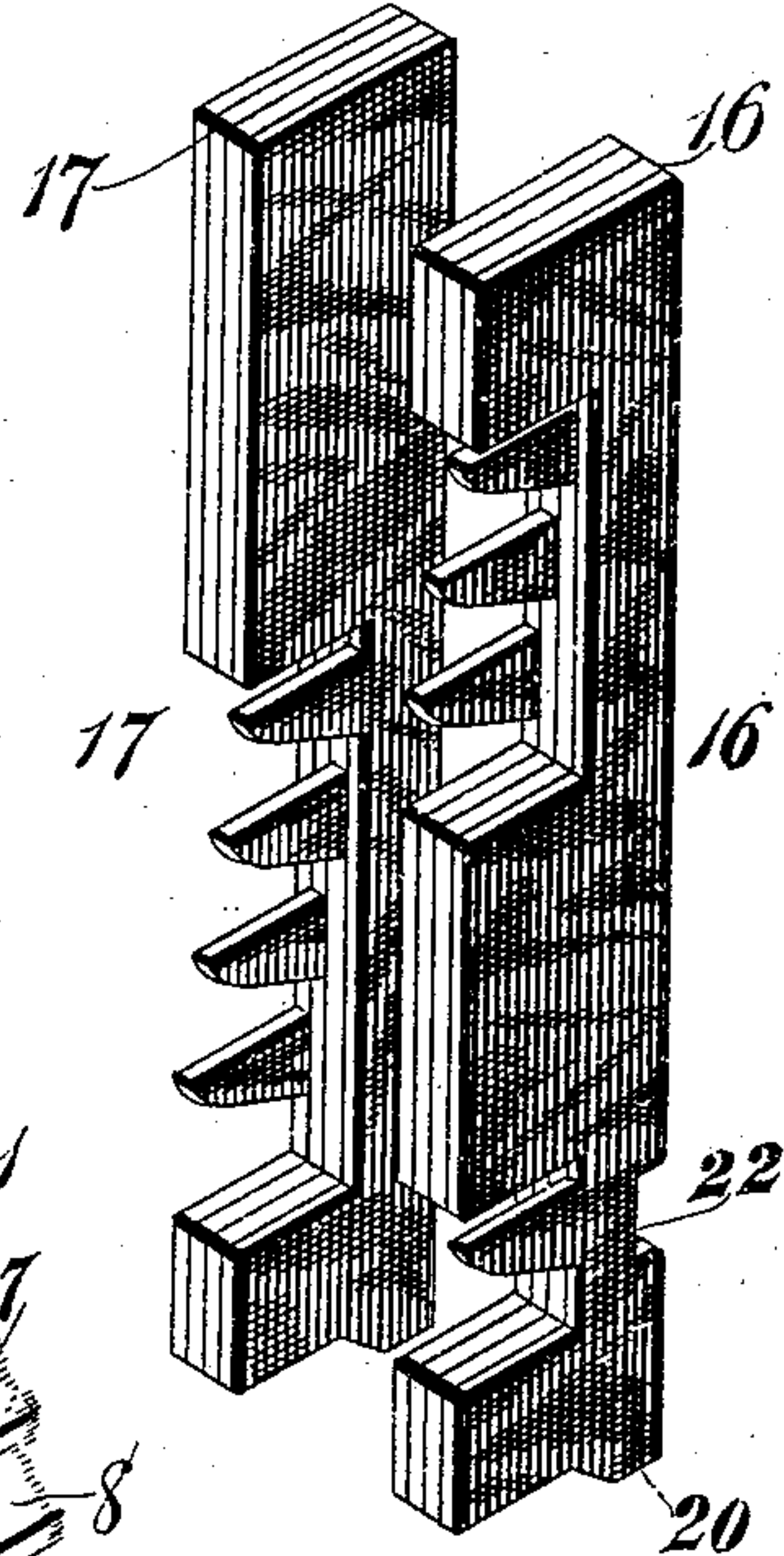


Fig. 3.

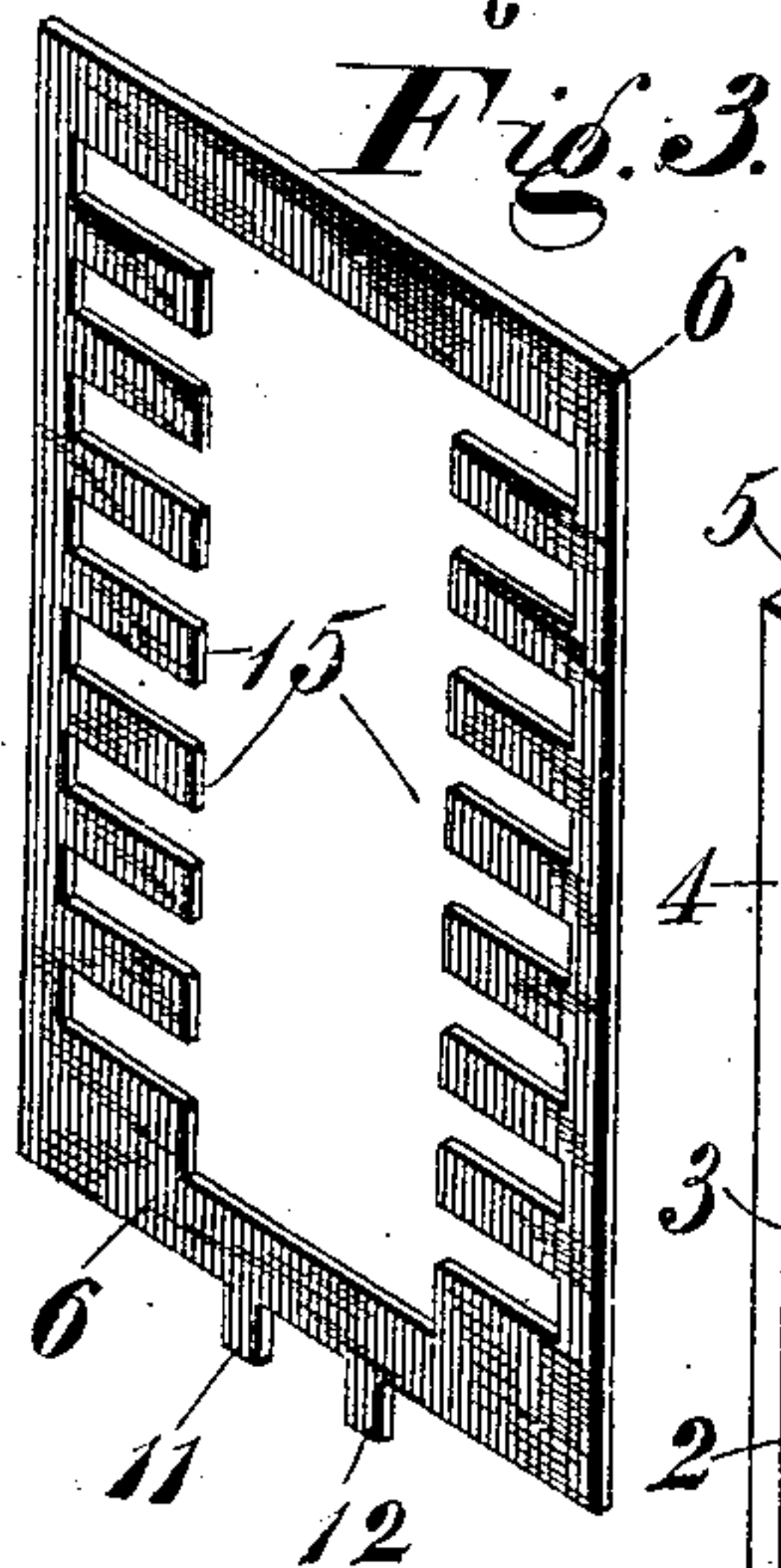
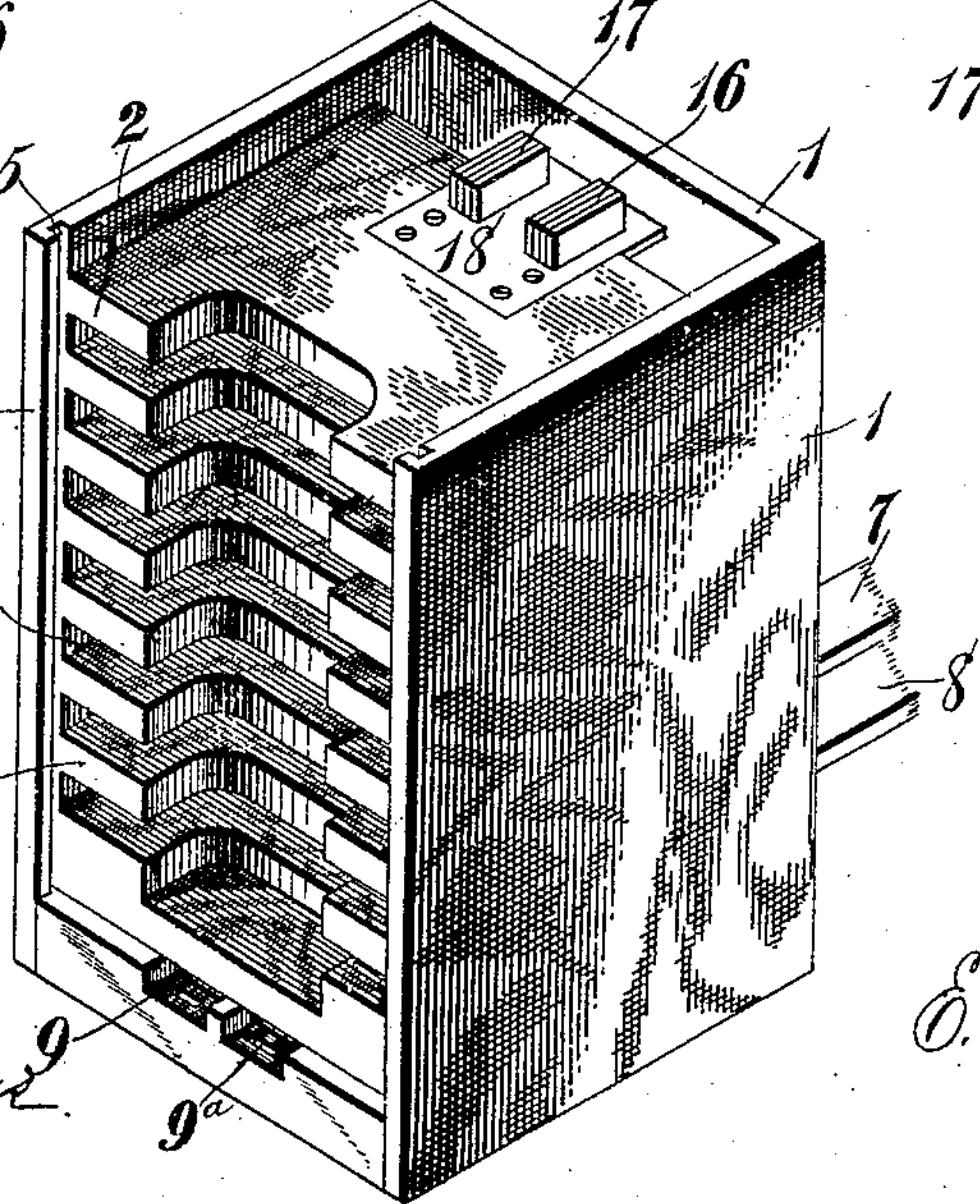


Fig. 2.



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Fig. 5.

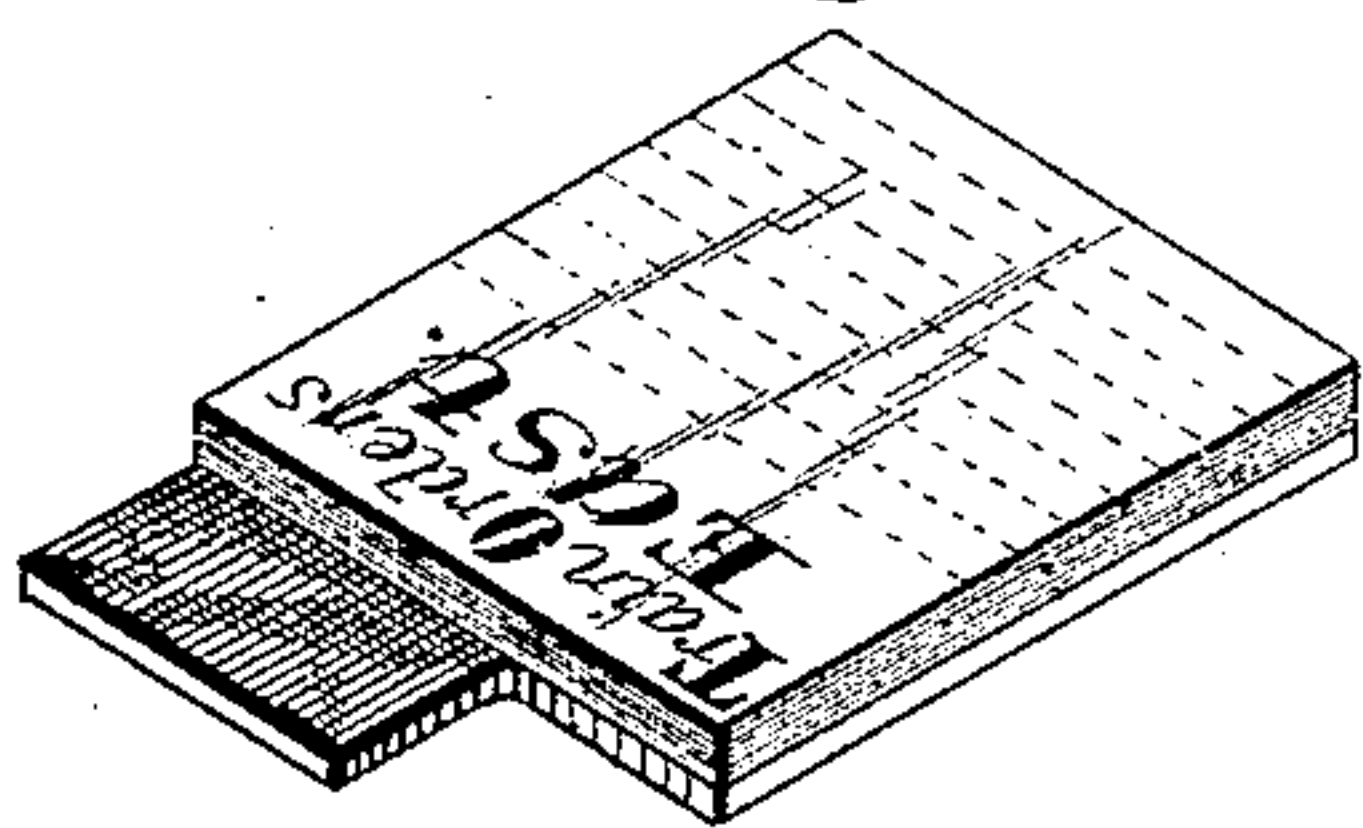


Fig. 6.

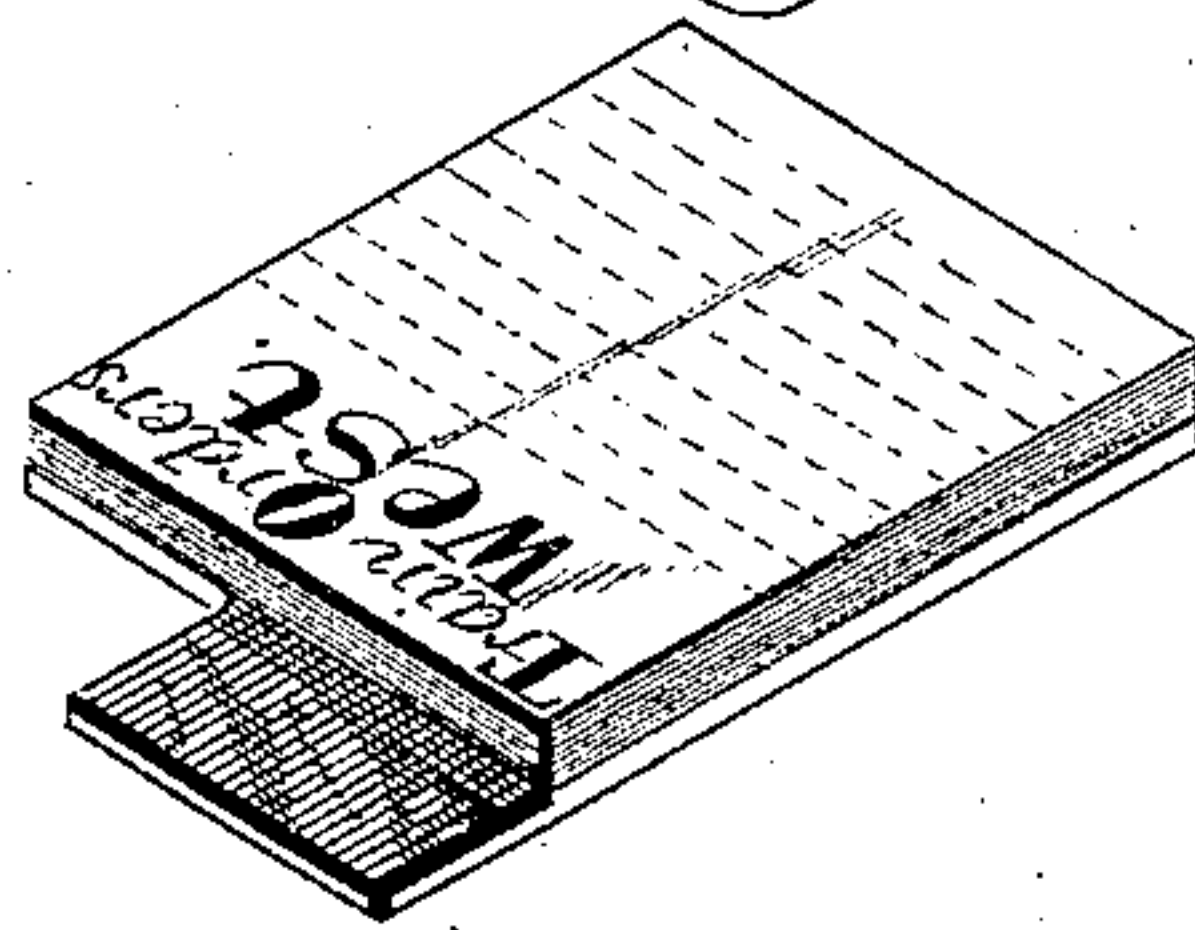


Fig. 7.

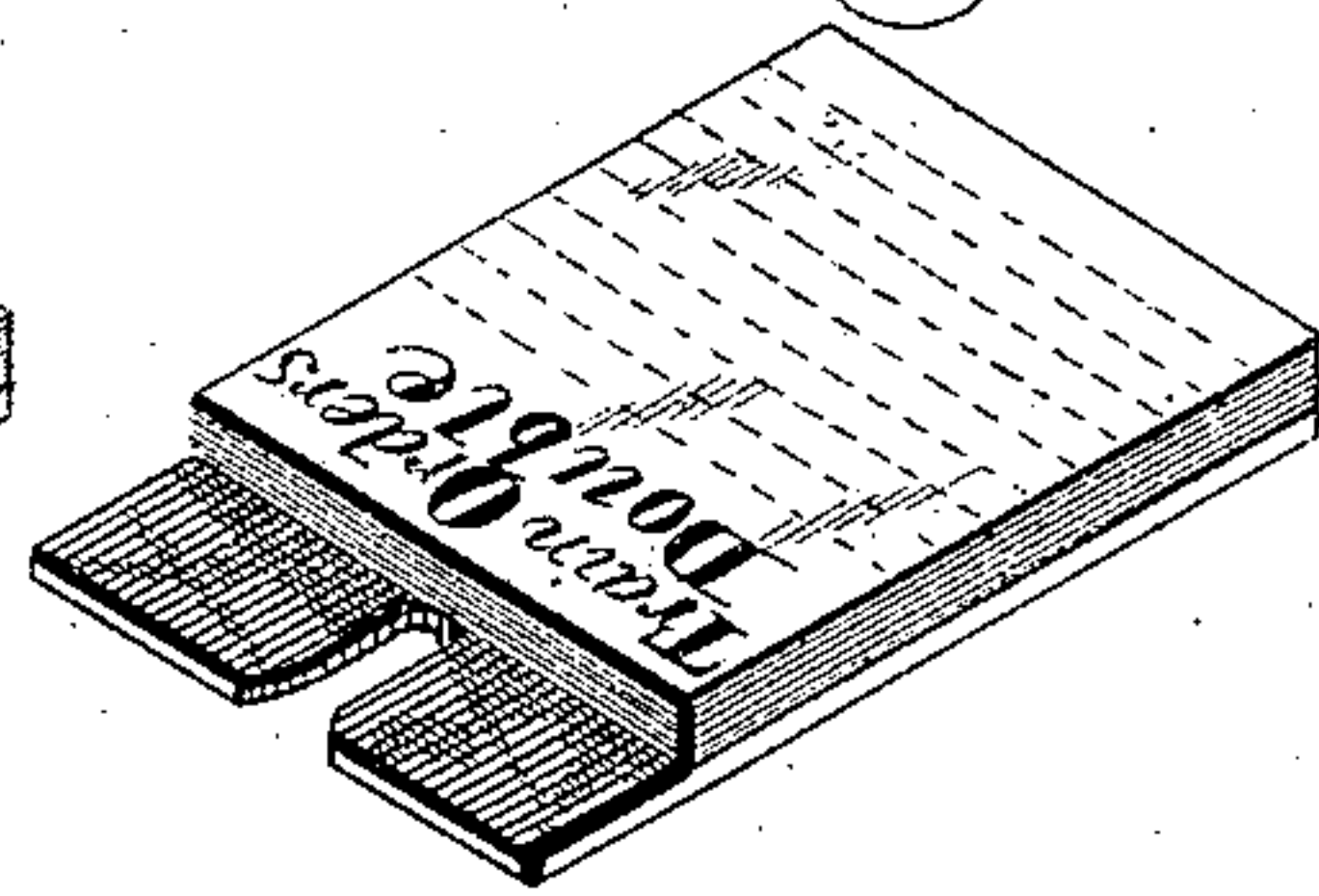


Fig. 8.

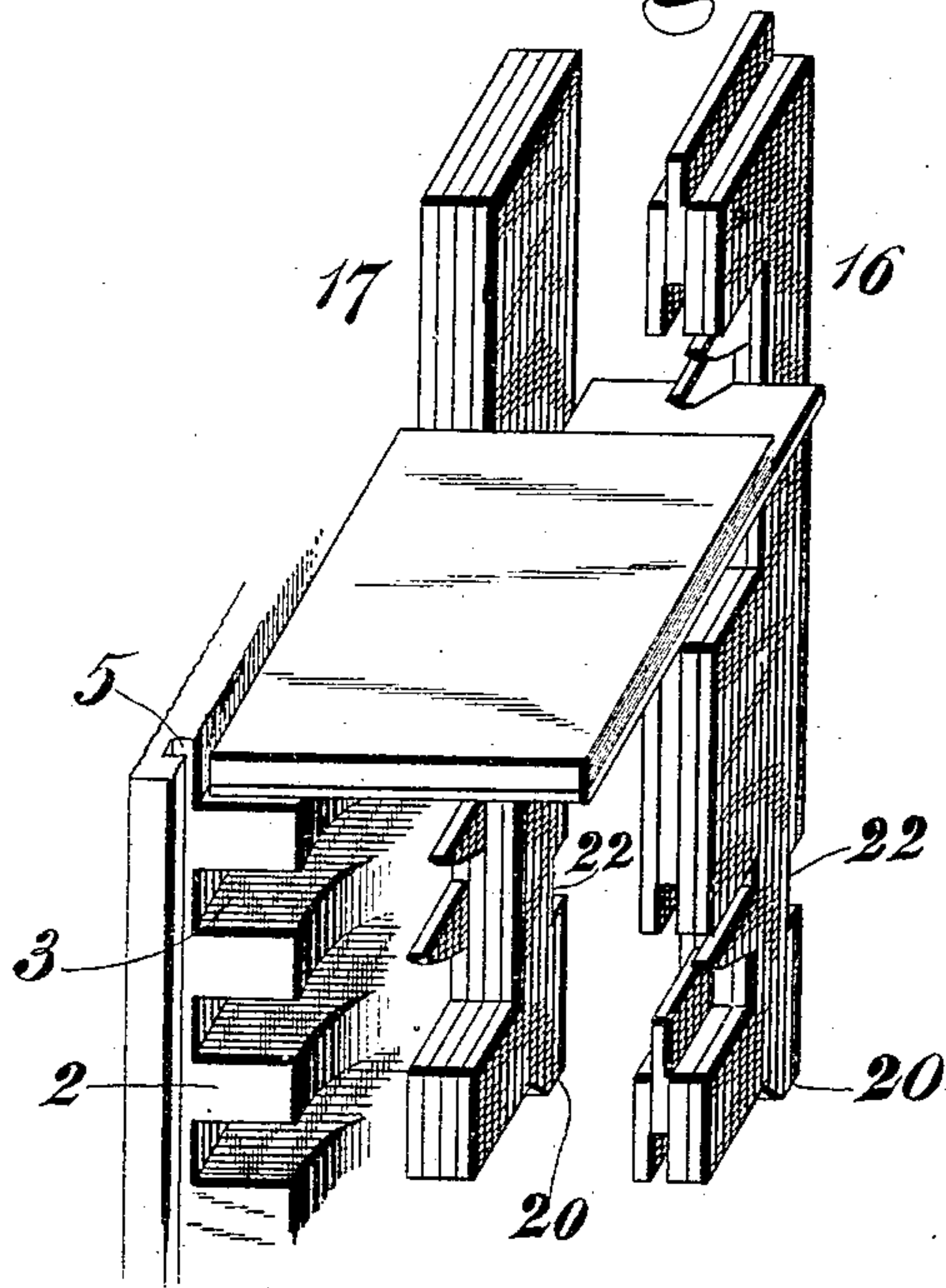


Fig. 9.

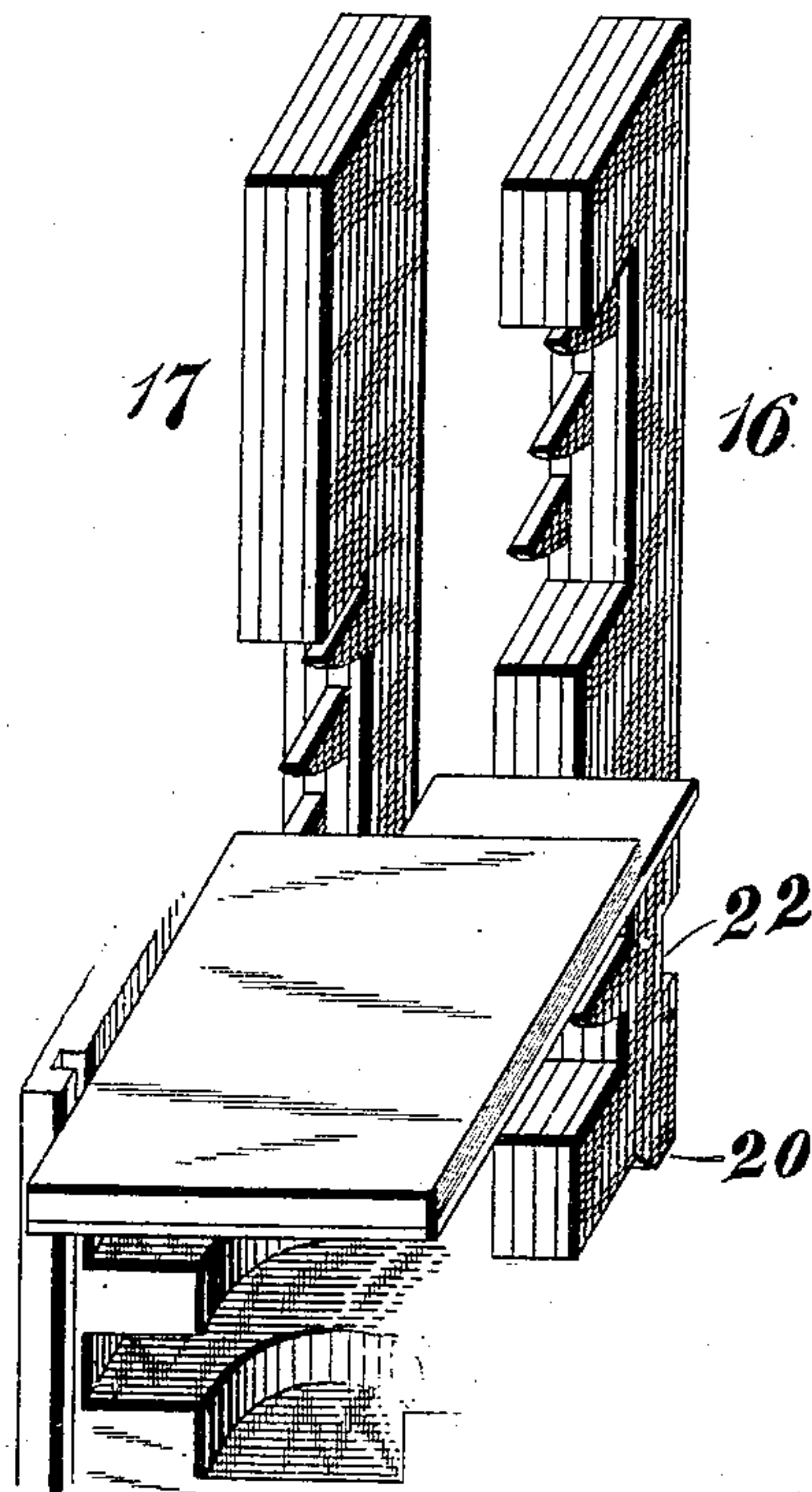
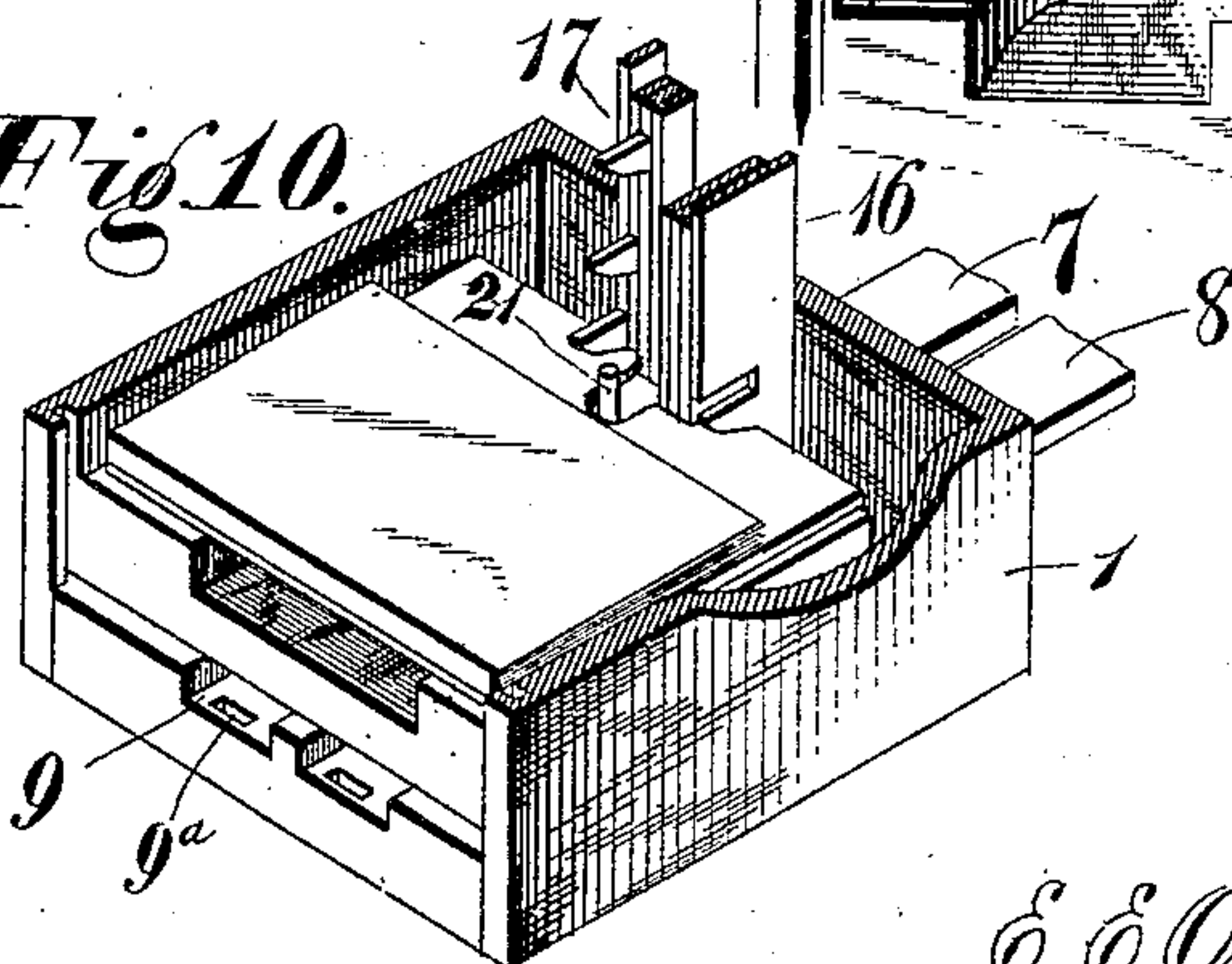


Fig. 10.



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3 SHEETS—SHEET 3.

Fig. 11

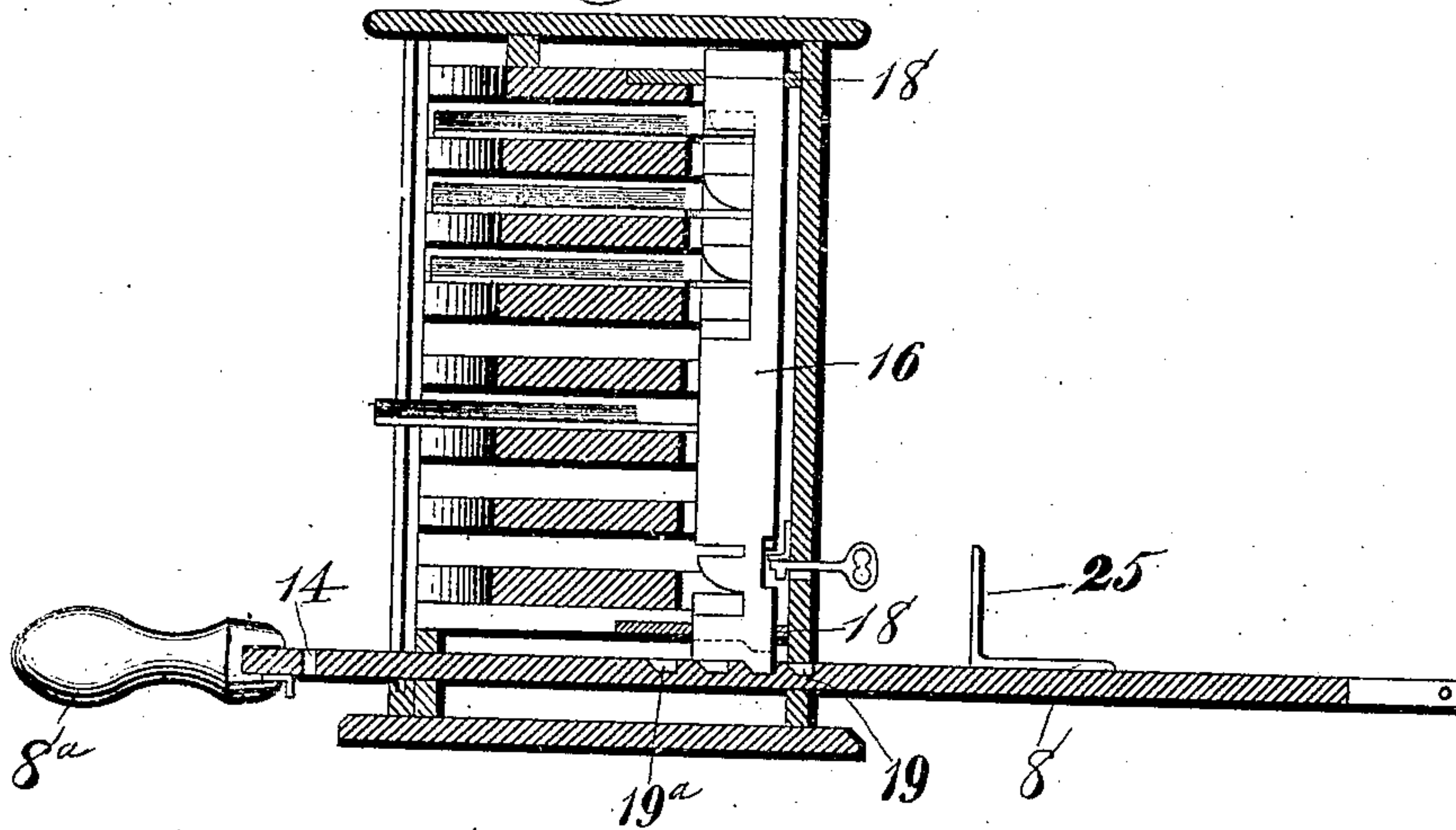


Fig. 12

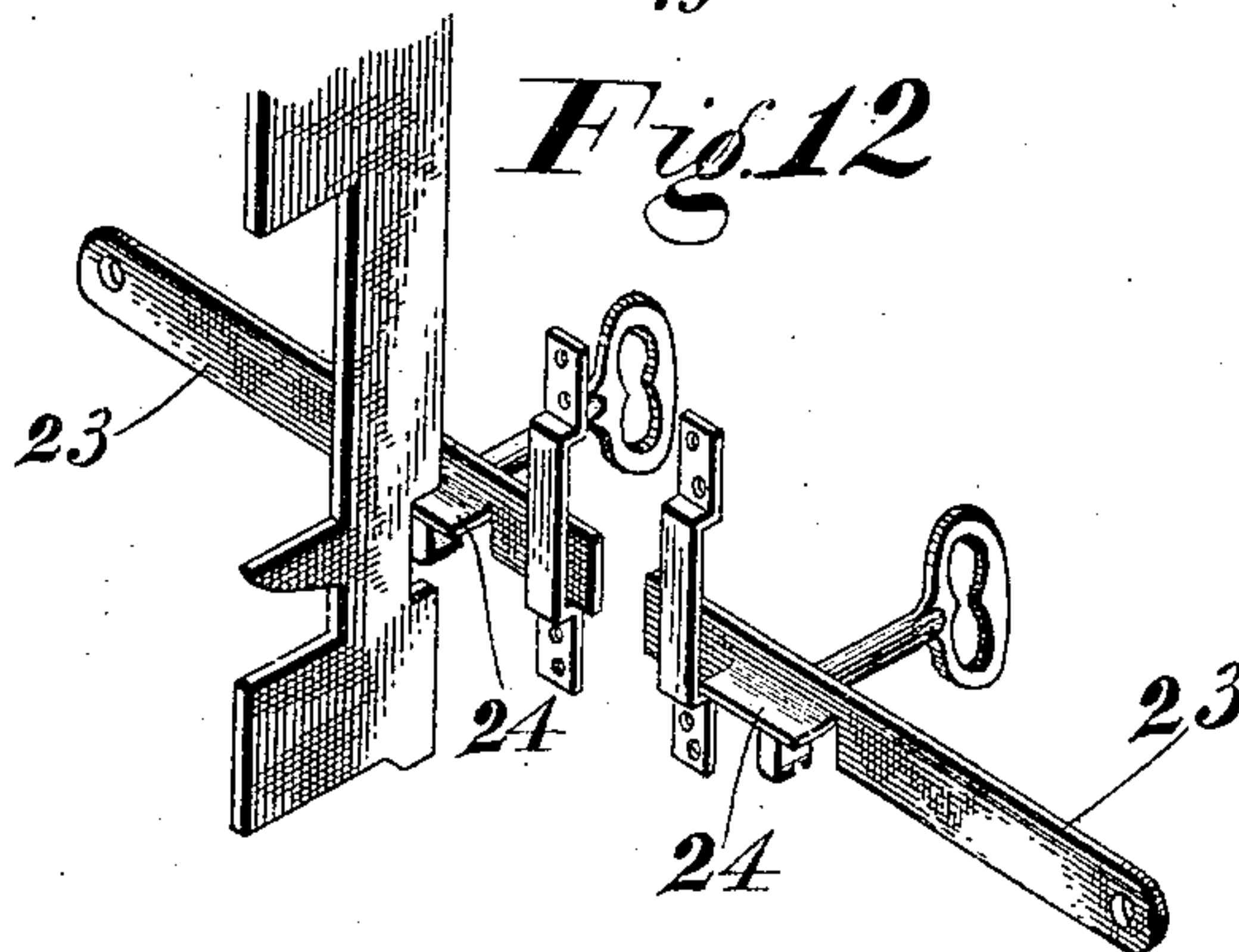
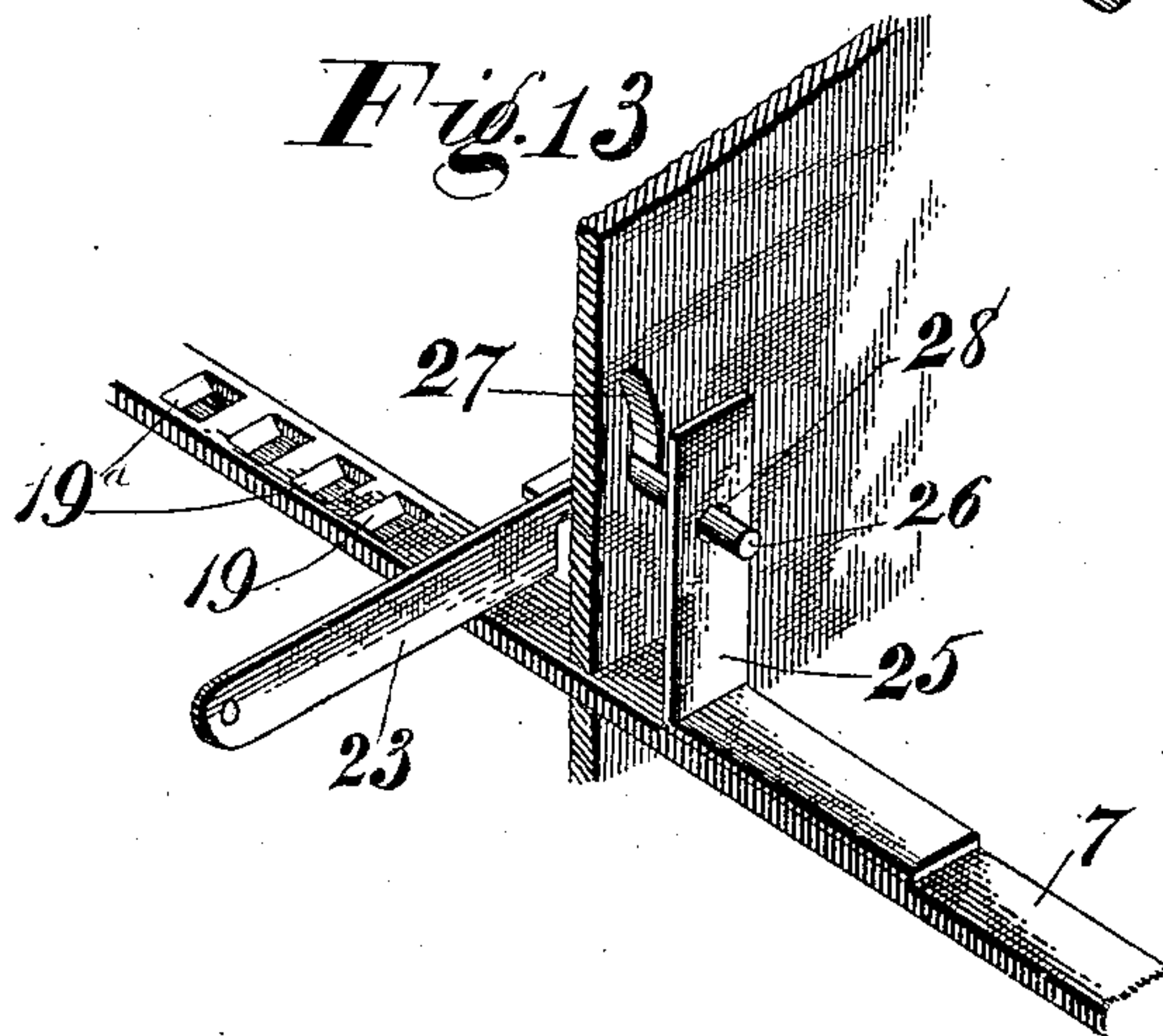


Fig. 13



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UNITED STATES PATENT OFFICE.

EDWIN E. OVERHOLT, OF WASHINGTON, DISTRICT OF COLUMBIA.

INTERLOCKING DEVICE FOR TRAIN-ORDER SIGNALS.

No. 868,289.

Specification of Letters Patent.

Patented Oct. 15, 1907.

Application filed September 20, 1901. Serial No. 76,000.

To all whom it may concern:

Be it known that I, EDWIN E. OVERHOLT, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and
5 useful Improvements in Interlocking Devices for Train-Order Signals; 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 appertains to make and use the same.

10 My invention relates to devices for the safe operation of train order signals; and especially to that class of devices in which the signal is locked at "danger", whenever the operator has undelivered train orders on hand.

15 The construction herein set forth is supplementary to that set forth in my patent for safety device for display of train order signals, No. 683,861, patented Oct. 1, 1901.

20 The object of my present invention is to provide means adapting the invention just referred to, to the requirements of the service on double track roads; and also to provide means simple, reliable, and safe, for permitting the operator to give a "clear" signal to a
25 train for which he has no orders while he has orders on hand for another train not yet arrived.

Other objects will appear in the subjoined description.

30 In referring to signals controlling trains running in opposite directions I will, in order to render such reference more simple and tangible, refer to all such trains as running east and west; the terms "east" and "west" being used with the broad signification of denoting any given direction and its opposite.

35 It is apparent that on double-track roads, two signals—one for east bound and the other for west bound trains—might be successfully controlled by having two cabinets—one for each signal. But this would render the cost of installation on these roads, about double that required for single-track roads. Further-
40 more, in most instances, it is desirable that the train-order blanks for east bound and west bound trains should be exactly alike in size and shape. This being the case there would always be the possibility of getting the tablets mixed in restoring them to their normal places in the cabinets: *i. e.* there would be danger
45 of getting the tablets for east bound orders, into the cabinet controlling the west bound signal, and vice versa. The evil that might result from such a mistake is apparent. Hence in the present application, I have
50 provided a single cabinet with means for controlling two signals; the upper part of the cabinet containing tablets for trains running in one direction, and the lower part containing those for trains running in the opposite direction. With this arrangement there

would still be the danger of getting the tablets mixed, 55
but for the special means which I provide which renders it impossible to put the tablets for east bound orders, into the compartment of the cabinet intended for west bound orders, or to put the tablets for west bound orders into the compartment intended for east bound orders. 60
Furthermore, on some roads they have what may be termed double orders, that is; a single order for two trains running towards each other—the order to be delivered at their meeting point. Now the first thing that would suggest itself in a case like this, would be to take 65
two copies of the order, one on an east bound tablet, and the other on a west bound tablet. Hence, unless special provision were made to meet such a case, it would be necessary to remove two tablets—one from the east bound compartment of the cabinet and one 70
from the west bound—in order to lock both signals at "danger". This would require double work upon the part of the operator; but what is of far greater consequence, there would also be the possibility of his making a mistake in copying the order onto the sec- 75
ond tablet. Some roads consider the danger of making a mistake in copying so great that when it becomes absolutely necessary to take a copy of an order the operator is required to trace it from the original. In view of these facts I have deemed it desirable, in ad- 80
dition to the separate compartments for east bound and west bound orders, to also provide one compartment for these double orders, having the tablet, normally housed therein, so related to the mechanism with which it coöperates, that when this tablet is removed from the 85
cabinet, both signals are locked at "danger". This tablet is usually of a different size and shape from the other tablets, so that it is a comparatively easy matter to provide means for preventing it from getting replaced in the wrong compartment, after it has been withdrawn 90
from the cabinet along with tablets from the other compartments. However in order to meet the most difficult condition that could possibly arise, I have supposed in the present instance that it is of the same size and shape as the other tablets; and have provided 95
means such that it cannot be entered in the compartments for either the east or the west bound tablets; nor can they be entered in its compartment; and if through mistake the operator should attempt to enter any one of the three kinds of tablets in the wrong compartment 100
of the cabinet, the inevitable result would be that the device would not operate and the signals would both be locked at "danger". We therefore have here a single cabinet controlling both signals, and carrying three kinds of train order tablets—east bound tablets, 105
west bound tablets, and double tablets—with the construction of the operative parts of the cabinet such that if an east bound tablet be withdrawn, the signal

controlling east bound trains will be locked at "danger"; and if a west bound tablet be withdrawn, the signal controlling west bound trains will be locked at "danger"; and if the tablet for double orders be withdrawn, both signals will be simultaneously locked at "danger": further means also being provided which compel that each kind of tablet be entered in its own proper compartment whenever the tablets are put in the cabinet, so that there can be no mixing or confusion there.

To insure safety in the movement of trains, the cabinet is so constructed that whenever an operator desires a tablet upon which to receive an order, he is compelled to set both signals at "danger", and when he withdraws a tablet to receive an order for a train running in a given direction, the signal controlling trains running in that direction will be locked at "danger", the tablet virtually acting as a key. The other signal will also be secured against casual or accidental displacement, by one of two downward projections of the sliding door, which projections take, one into each operating bar as the door is lowered to open the cabinet. If however it should be desired to clear the signal for which there are no orders the operator has only to elevate the door, which leaves the bar of the unlocked signal free to be moved at will inasmuch as it was only engaged by the door. The other bar, however will still remain locked, by the means broadly stated above, which means will be more fully referred to hereafter.

As a means of extreme precaution, some R. R. officials prefer to have each individual tablet control two locks—a lock for each signal—as does our double order tablet in the present instance. Thus by the removal of a tablet from the cabinet the operator locks both signals at "danger", and is consequently sure to get the right one. This method also relieves his mind of the necessity of any discrimination, as to which tablet he shall withdraw from the cabinet, when he is called to receive a train order.

My invention as set forth in my former patent compels that the act of unlocking the cabinet sets the signal at "danger", the act of opening the door locks the signal in that position, while the act of withdrawing one or more tablets from the cabinet, still further locks the signal, to remain locked till all the tablets are restored to their normal position in the cabinet, and the door closed upon them. It however frequently occurs after orders have been received for a train; and the signal consequently locked against trains moving in that direction, that before that order has been delivered, another train moving in the same direction, and for which there are no orders, approaches the station, and the operator has no means of unlocking the signal to let it by except by replacing the tablet, containing the order, in the cabinet. This would be a risky thing to do, for reasons most apparent; and consequently, in the present application, I have shown means independent of the tablets for unlocking the tablet locks when it is desired to permit a train to pass without returning the tablet to the cabinet.

The means of accomplishing all these results will now be definitely pointed out, in the following specification, and illustrated in the accompanying drawings, which form a part of this application, reference being made to the different parts by means of numerals; the

same numerals referring to the same parts throughout the various figures of the drawings in which,

Figure 1. is a perspective view of my invention complete. Fig. 2. is a perspective with certain parts removed. Fig. 3. is a perspective view of the door. Fig. 4. is a perspective view of the tablet locks shown in their operative relation to each other. Fig. 5. is a view of the train order tablets, designed to cooperate with the inner three of the right hand group of tablet locks; supposed in the present instance to control the east bound signal. Fig. 6. is a view of the tablet designed to cooperate with the inner three of the left hand group of tablet locks, supposed to control the west bound signal. Fig. 7. is a view of the form of tablet, designed to operate the outer member of each group of tablet locks, and through them to control both signals. Fig. 8. is a perspective view of the tablet locks in their operative relation to each other, with one of the east bound tablets entered in its normal position, and operating one of said locks: a fragment of the box being also shown, to illustrate the position of the tablet, with relation to the front edge of the shelves, when entered in its proper place. Fig. 9. is a view of the tablet locks similar to that shown in Fig. 8, and illustrates the result of attempting to enter a tablet in the wrong compartment of the cabinet: a fragment of the cabinet being again shown to illustrate the relation of the front edge of the shelves to a tablet thus entered. Fig. 10. is a perspective showing the tablet for double orders in its normal position in the cabinet; also the stop used to prevent the other tablets from being entered in this compartment. Fig. 11. is a vertical section of the cabinet with the door removed: the section being taken sufficiently near one side of the cabinet to leave the tablet locks undisturbed. Fig. 12. illustrates mechanism that may be used to unlock the cabinet and give a clear signal, while there are undelivered train orders on hand. Fig. 13. illustrates means for accomplishing the same result without the use of a key.

The cabinet 1 made of any suitable material is provided with the shelves 2 and the intervening spaces 3; the width of the shelves and spaces being equal. The sides 4 of the cabinet project slightly in front of the shelves, and these projections are each provided on the inner side thereof, with a groove 5, adapted to easily receive the door 6 of the cabinet. This door is provided with a series of transverse cut-away and uncut-away portions corresponding in number and in width to the shelves and intervening spaces of the cabinet, and designed to register therewith.

The cabinet is designed to receive and house a series of tablets, supported by the shelves; and in order that these tablets may be more easily grasped, the central front portion of the shelves is cut away. For the same reason the central portion of the door is also cut away, the opening thus formed coinciding with the recess formed by the cutting away of the shelves.

The cabinet near the bottom thereof, carries the two horizontally disposed operating bars 7 and 8, slightly separated from each other, to prevent any friction or binding of one against the other; and is provided in its front and rear sides with apertures 9 designed to receive said bars, which have free longitudinal movement therein.

The bars are provided with the handles 7^a and 8^a,

and at their farther end with suitable means 10, for engaging the signal operating mechanism.

The door at its under side has the two downwardly extending projections 11 and 12, and the operating bars have the two apertures 13 and 14, adapted to co-operate respectively with said projections.

When the bars are withdrawn wholly or in part, as illustrated in Fig. 1, with the lower ends of said projections resting upon them, the fingers 15 of the door will overlap the spaces 3 intervening between the shelves of the cabinet; and will prevent the removal from the cabinet of any of the tablets: hence when the door is in this position, the cabinet is said to be locked. The bars 8 and 9 are so connected to the signaling mechanism, that when their apertures 13 and 14, are brought into registration with the projections 11 and 12, the signals will be set at "danger": or to speak more accurately, they will be permitted to assume the "danger" position, towards which they always tend, by reason of the counterbalance with which they are each invariably provided. When the bars are in the position just referred to, with their apertures in registration with the projections of the door, the door will drop downwardly by gravity, with its projections received into said apertures. The fingers 15 of the door will then register with the shelves of the cabinet, leaving the intervening spaces 3, between the shelves, in registration with the cutaway portions of the door, and consequently all the tablets will then be accessible: hence when the door is in this position, the cabinet is said to be unlocked.

To increase the power of the downward projections of the door, to resist an outward pull upon the operating bars, the thickness of the bars is made less than the vertical travel of the door, and the apertures 9, in the front of the cabinet, are each provided in the bottom thereof, with a small aperture 9^a, into which the lower end of the projections of the door extends, after having passed downwardly through the apertures 13 and 14 in the bars.

When the operating bars have been moved forward till the signal is at "danger", and the cabinet unlocked, it will be noticed that the door, by the same movement that unlocks the cabinet, locks the signal operating bars in the "danger" position; thus securing the signal against casual or accidental displacement.

The cabinet carries a number of tablet locks located at the rear of the shelves, and in the present instance, divided into two groups of four each, the right hand group being designated by the numeral 16; and the left group by the numeral 17. These locks are supported by a suitable number of plates 18, in the present instance two being shown, one near the top and the other near the bottom of the cabinet (Figs. 2, and 11). These plates have apertures sufficiently large to snugly receive the ends of the groups of locks therein as shown. It will be observed that each of these locks has, at some point within its length, a forward projection with an inclined under side. From Fig. 11 it will be seen that each one of these projections, is located immediately opposite one of the spaces between the shelves of the cabinet, so that when a tablet is properly entered within one of said spaces, the projecting portion of its base piece will extend underneath the inclined projection of one of the tablet locks, and will, slightly elevate the

lock, and will support it in that elevated position as clearly illustrated in Figs. 8 and 11. Hence when the tablets are all entered in their proper places in the cabinet, the locks are all elevated and supported thereby; and but for this support the locks would all drop downwardly, till their lower ends rested on the operating bars. It is therefore apparent that whenever this support is removed from one of the locks by the withdrawal of a tablet from the cabinet, its lock will drop downwardly by gravity into engagement with the forward one 19^a, of the series of apertures 19, with which each bar is provided, since said aperture is always immediately beneath the downwardly extending projection 20 of the locks when the bar is in position to unlock the cabinet, and thereby render the tablets accessible. A tablet cannot be withdrawn from the cabinet as illustrated in Fig. 11, when the operating bar is in the position there shown, unless the door be first removed.

The object of providing a whole series of apertures 19 will be explained further on.

From the foregoing it is manifest that the tablets can only be rendered accessible by bringing the bar into position to display the "danger" signal and locking it in that position and that the removal of one or more tablets from the cabinet further locks the bar, and that in order to change the bar—and through it the signals—the most convenient way is to restore all the tablets to their normal places in the cabinet and lock them there.

In operating two signals, as for instance, an east bound and west bound from a single cabinet, it becomes necessary to have one portion of the cabinet for east bound orders and another for west bound; the east bound tablets coöperating with the group of locks controlling the east bound signal, and the west bound controlling the group coöperating with the west bound signal. With this arrangement it is necessary that the two kinds of tablets should be easily distinguished, the one from the other; and for this reason I print plainly on one group of tablets the word "East" and on the other the word "West". Of course the two kinds of tablets could be made to differ from each other in size, shape, color, printed form thereupon etc.; but desiring to meet the problem in its most difficult form, I have, in the present instance, provided for the use of blanks alike in all these respects. If the tablets were not readily distinguishable, an operator called upon to receive an order, might withdraw and use the wrong tablet, which would lock the wrong signal, and leave the other still free, the evil results of which are readily perceived. Hence it is of the utmost importance that every precaution be taken to prevent any confusion of the tablets, and therefore in the present application I have provided means which prevents any mixing or confusion of the tablets, and compels that when placed in the cabinet, they be placed in their proper compartments, and that if a single one of the three kinds be entered in the wrong place, the cabinet will thereby be locked throughout, with both the signals at "danger" and the cabinet rendered inoperative. These results are accomplished by the means illustrated in Figs. 5—10.

From Figs. 4, 8, and 9 it will be seen that the outer one of each group of tablet locks, has its inclined projection near its lower end, in position to be engaged by the tablet carried by the lower shelf, and that both

groups of locks are suitably cut away to permit this; but in regard to the other three tablets of each group it will be noticed that the inner three of the right hand group, have their inclined projections opposite the three upper shelves, with that portion of the said group of locks opposite these shelves suitably cut away, to permit the tablets to enter underneath the projections; while the corresponding portion of the left hand group is not cut away. Again it will be noticed that the three inner members of the left hand group of locks, have their inclined projections in a position to be opposite the fourth, fifth and sixth shelves of the cabinet, and that the lower part of this group of tablets is also suitably cut away to permit the tablets carried by these shelves to enter underneath the projections, but that the portion of the right hand group of locks opposite these three shelves (fourth, fifth and sixth) is not cut away.

The tablet illustrated in Figs. 5 and 8, has the left side of its projecting base piece cut away, which permits the remaining portion of said base piece to enter underneath the inclined projections of the right hand group of locks; said projections being opposite the upper shelves. If however, through mistake, it were attempted to enter this form of tablet in the fourth, fifth or sixth shelves of the cabinet, the uncutaway projection of the base piece would abut against the uncutaway portion of the right hand group of tablet locks, and would prevent the tablet from further entering any one of said shelves, as clearly illustrated in Figs. 9 and 11. It will be readily seen that the form of tablet illustrated in Fig. 6, having the right hand side of its projecting base piece cut away, will cooperate with the locks having their projections opposite the fourth, fifth and sixth shelves of the cabinet, that is, the three inner locks of the left hand group, but that it will not cooperate with the locks operated from the three upper shelves, as its projecting portion would abut against the uncutaway portion of the left group of tablet locks.

The form of tablet illustrated in Fig. 7, when entered in the lower shelf of the cabinet as illustrated in Fig. 10, will engage the outer member of each group of locks, but cannot be entered in any other shelf of the cabinet; for if it be attempted to enter it in any one of the three upper shelves, its projecting base piece will abut against the uncutaway portion of the left group of locks: and if it be attempted to enter it in the fourth, fifth or sixth shelves, its base piece will abut against the uncutaway portion of the right hand group of locks. If it be attempted to enter one of the tablets from either of the upper compartments of the cabinet, in the lower shelf—designed only for this form of tablet—it cannot be done, for the lower shelf has the stop 21, centrally located in front of the tablet locks, and since the central portion of the projecting base piece of the tablets used in these compartments is not cut away, this stop will constitute an effectual bar to their entrance into this shelf. The form of tablet designed for this shelf is permitted to pass this stop, by having the central portion of its projecting base piece cut away, as clearly illustrated.

The right and left groups of locks cooperate respectively, with the right and left operating bars; and as in the present instance the right hand bar is supposed to control the east bound signal and the left hand bar the west bound, and the inner three of the right hand

group of locks, are operated by the tablets carried in the three top shelves of the cabinet; and the inner three of the left group of locks are controlled by the tablets carried in the fourth, fifth and sixth shelves; and the outer member of each group of locks is controlled by the tablet carried in the bottom shelf, therefore I have called the tablets designed for the first three shelves, the east bound tablets; those for the fourth, fifth and sixth shelves, the west bound tablets; and that carried by the seventh shelf, the "double" tablet. The locks operated by these tablets may be designated in the same way that the tablets are; *i. e.* they may be called east bound locks, west bound locks, and "double" locks.

When there is an attempt to enter a tablet in the wrong compartment, the portion of the tablet projecting in front of the cabinet will prevent the door from being elevated out of engagement with the operating bars, and hence both signals will be locked at "danger" by the door of the cabinet, whenever such an attempt is made.

In Figs. 11, 12, and 13 I have illustrated means, independent of the tablets for controlling the tablet locks. It frequently happens that an order for a train, is given long before the time for the arrival of said train, and in the mean time other trains going in the same direction, and for which there are no orders, arrive and should be given the clear signal. Now with the apparatus as thus far explained, the signal will be locked when these latter trains arrive, and can only be unlocked by returning the tablet to the cabinet; but as the tablet contains upon it an undelivered train order, it must not be returned to the cabinet, lest it be forgotten and left there, and a collision ensue. Hence the problem arises as to how to give a clear signal to a train for which there are no orders, while there are orders on hand for another train not yet arrived. This result is accomplished by the following means. In the rear part of the two groups of tablet locks, I provide the notches 22; and on the inside of the back of the cabinet, I attach in any suitable way, the two small bars 23—one for each group of locks. Each of these bars is provided with an inwardly extending portion 24, so located with reference to its group of tablet locks, that it extends into the notches 22 of the same, and is normally barely out of engagement with the upper side of said notch, when the tablets are withdrawn from the cabinet and the locks in their downward position with the portion 20 received into one of the apertures 19 of the operating bar.

In the back of the cabinet is a keyhole permitting the insertion of a suitable key, immediately underneath the projection 24, and by a proper turn of this key, the said projection 24 will be elevated, and will carry up with it, out of engagement with the operating bar, whatever locks of its group that have been caused to drop downwardly by the removal of one or more tablets from the cabinet. It is manifest that this will free the operating bar and permit it to be withdrawn. However there is one point that must be carefully guarded, and that is that the key shall not be left in the cabinet in a position to hold a group of locks elevated out of engagement with its operating bar; for though the counterbalance of the signal would again bring it to "danger" it would not be locked in that position through its operating bar, and the purpose of the invention would thereby be

defeated. Hence to effectually guard against danger at this point I have provided means compelling the removal of the key from the cabinet, every time the signal is set "clear" so that the lock shall be permitted to unfailingly drop again into engagement with the operating bar, whenever the counterbalance of the signal brings it back into its normal position. This is effected by means of an angle 25, one of which is carried by each operating bar, and is so located thereupon that it must come up against the rear side of the cabinet before the signal is fully at safety; and since the key is in the path of the angle as it moves inwardly, this compels the removal of the key before the operation of clearing the signal is completed, as a means of finishing the operation.

Fig. 13 illustrates means for operating the mechanism shown in Fig. 12, without a key. Instead of the key I provide a small rod 26, rigidly attached to the bar 23, and extending outwardly through a suitable slot 27. By simply elevating the rod 26, the same result will be accomplished as is accomplished in the other case by a proper turn of the key. But if the rod 26 be secured in its elevated position, the same evil result will follow that makes it necessary to compel the removal of the key from the cabinet in the construction above. Hence it becomes necessary in this case to provide means compelling that the rod 26 be lowered to its normal position before the operation of clearing the signal can be completed. To this end I have provided the angle 25 with the aperture 28 so located as to register with the rod 26 only when the said rod is in its downward position, the result of which is apparent without further specification. The key and the rod may both be made quite long if desired, so that the freeing of the tablet locks may take place at an early stage in the operation of clearing the signal.

One more contingency needs to be provided for. It might sometimes happen that an operator after having given a clear signal would fail to carefully set his signal back to "danger", when he had undelivered train orders on hand; and due to sleet, snow or other cause, the counter balance of the signal might not bring it entirely back to "danger"; or the signal might be slightly out of order: and if under these circumstances an operator were to forget that he had undelivered train orders on hand, and were to seize the operating bar upon the approach of a train, there would be nothing to prevent him from pulling the signal to "clear". To prevent this I have provided the series of ratchet notches 19, in each of the operating bars, so that when the signal has moved only half way to danger, these notches will begin to engage the downwardly extending projection 20 of the tablet locks, and thereby lock the operating bar so that it cannot be carelessly or thoughtlessly withdrawn. Of course this operation only takes place when one or more tablets have been removed from the cabinet, as the presence of the tablets in the cabinet holds the locks entirely out of engagement with the operating bar. The series of ratchet notches 19 may extend throughout more than one half of the travel of the operating bars, but it is thought that that much will always be sufficient, as the signal would not be used if it did not go automatically at least half way to "danger". Hence it will be seen that the locking mechanism is rendered automatic in its action by the removal of one

or more tablets from the cabinet; so that while there are undelivered train orders on hand, the signal even if left to itself, will assume the "danger" position, and be automatically locked in that position. Of course the last contingency above referred to is so improbable with my device as to scarcely merit attention, since the failure of either signal to return to its proper position, would leave its operating bar projecting in front of the cabinet, so that ordinarily the operator could scarcely fail to notice it and thereby be warned of the condition of the signal.

In the use of my invention, I recommend the following points as worthy of consideration: Let each of the three different kinds of tablets used, be printed on paper of a different color, in addition to having its proper name plainly printed upon it; as for instance, let the tablets for east bound orders be made of white paper, and let the word "East" be plainly printed upon the tablet or upon each blank thereof. Let the tablet for west bound orders be made of blue paper with the word "West" plainly printed upon each blank thereof; and let the tablet for "double" orders, be made of pink paper with the word "Double" on each blank. It would perhaps be well to make this latter tablet a different size or shape, to render it still different from the others. In selecting colors for these tablets, always avoid those colors not readily distinguishable from each other under all conditions. For instance, if white be selected for the color of the east bound orders, avoid the use of yellow for west bound tablets, as yellow is not easily distinguished from white by artificial light. Next, let the proper official issue an order that no train order shall be accepted or honored by conductors or enginemen, unless it be upon a blank of the prescribed form and color, required for trains running in that direction. Let the same principle be also applied to "double" orders as occasion may require.

At present train despatchers proceed somewhat as follows: Let us suppose that a despatcher desires an operator to take five copies of an order about to be given. After having called the operator to his telegraph instrument he would say "cy. 5" or "cpy. 5", which would indicate to the operator that he was to take five copies—one original and four carbons—of the order about to be given. Of course the operator would not know till the order was received whether it was for an east bound or a west bound train. In the use of my invention however, as herein set forth, it is necessary that the operator know at once, what kind of an order is to be received, whether an east bound, a west bound, or a "double" order, so that he can withdraw the proper tablet upon which to receive it. In order that this may always be immediately known, I suggest that in giving orders the despatcher substitute for "cy" or "cpy", the letters "E", "W", or "D", according as the order about to be given is to be received on an east bound, a west bound, or a "double" order tablet. Thus "E 5" would mean "Take five copies of an east bound order" and the operator would instantly know to take a tablet from the compartment of the cabinet, designed to house the east bound tablets: and he would have five distinct ways to know that he had the proper tablet and no other. First, the despatcher has told him to take an east bound tablet. This appeals to his ear. Secondly, the tablet has "East" printed upon it. This appeals to his eye.

Thirdly, it is made of white paper, and this appeals again to his eye. Fourthly, he would from force of habit always reach to the same place in the cabinet for any given kind of orders. Finally, he would know from the contents of the order, whether or not the despatcher had made a mistake in naming the kind of tablet the order was to be received upon. If the right tablet be withdrawn from the cabinet, the proper signal will be locked at "danger" without the necessity of so much as ever thinking about the signal at all.

Having thus fully set forth the principles of my invention, and shown means of applying the same to practice, I yet do not wish to limit myself to the exact showing made; but desire protection on all that comes clearly within the spirit and scope of my invention.

What I claim as new and desire to secure by Letters Patent is:

1. In interlocking devices for train order signals, a cabinet having compartments; a definite kind of tablets in each compartment; and means coöperating with said tablets to permit them to be entered only in their proper compartments in said cabinet.
2. In interlocking devices for train order signals, a cabinet carrying a series of tablets; and having stops, whereby said tablets are prevented from entering any but the proper compartments of said cabinet.
3. In interlocking devices for train order signals, a cabinet having compartments each carrying tablets for trains running in a given direction or directions; and means designed to prevent the indiscriminate entering of said tablets within said compartments.
4. In interlocking devices for train order signals, a cabinet having a compartment for east bound order blanks and another for west bound order blanks; said blanks being made different from each other for purposes of discrimination; each of said compartments being designed to receive and house only the form of tablet designed therefor.
5. In interlocking devices for train order signals, a cabinet having separate compartments designed for east bound orders, west bound orders, and "double" orders respectively; each compartment being formed to receive and house only the kind of orders intended therefor.
6. In interlocking devices for train order signals, a cabinet having a compartment for east bound train order tablets and another for west bound order tablets; each of said kinds of tablets differing from the other, and each of said compartments designed to receive only the special kind of tablets intended therefor.
7. In interlocking devices for train order signals, a cabinet having a compartment for east bound train order blanks, another for west bound order blanks, and another for "double" order blanks; each of said kinds of blanks being different from the other, and each of said compartments designed to receive only the special kind of blanks intended therefor.
8. In interlocking devices for train order signals, a cabinet having train order tablets normally housed therein; signal actuating connections; and interlocking devices coöperating with said mechanism, whereby the device is rendered inoperative, with the signals locked at "danger," whenever it is attempted to enter one of the tablets in a wrong compartment.
9. In interlocking devices for train order signals, a cabinet carrying tablets for east bound orders, west bound orders, and "double" orders; and signal actuating mechanism in coöperative relation to said tablets, whereby each east bound tablet controls the east bound signal; each west bound tablet controls the west bound signal; and the "double" order tablet controls both signals.
10. In interlocking devices for train order signals, a cabinet carrying east bound orders, west bound orders, and "double" orders; and signal actuating mechanism in coöperative relation to said tablets, whereby the withdrawal from the cabinet of an east bound order, will lock

the east bound signal at "danger;" the withdrawal of a west bound tablet will lock the west bound signal at "danger;" and the withdrawal of a "double" order tablet, will lock both signals at "danger."

11. In interlocking devices for train order signals, a cabinet having a series of tablets normally housed therein; signal actuating connections, and a series of locks in operative relation thereto, controlled by the tablets; and means independent of the tablets for unlocking the signal connections.

12. In interlocking devices for train order signals, a cabinet having a series of tablets normally housed therein; signal actuating connections, and a series of tablet locks in coöperative relation thereto, the signaling mechanism unlocked and locked by the insertion or withdrawal respectively, of a tablet; and independent means for unlocking said signaling mechanism while a tablet is withdrawn from the cabinet.

13. In interlocking devices for train order signals, a cabinet having a series of tablets normally housed therein; signal actuating mechanism; tablet locks for locking and unlocking the same; means independent of the tablets for unlocking the signaling mechanism to give a "clear" signal; and means for compelling the release of the tablet locks from the control of said independent means, and the bringing of them again into operative relation to the signaling mechanism, every time the signal is "cleared" by said independent means.

14. In interlocking devices for train order signals, a cabinet having a series of tablets normally housed therein; signal actuating connections; a series of tablet locks in operative relation thereto, locked and unlocked by the tablets, and converted into gravity locks by the removal of their tablets from the cabinet; means independent of the tablets for unlocking the signaling mechanism; and further means carried by said signaling mechanism and designed to be engaged by said locks as the signal returns to "danger" after having been set to "clear" by said independent mechanism, whereby a signal having been set to "clear" and only partially returned to "danger" will nevertheless be locked in whatever position it assumes, if there be undelivered train orders on hand.

15. In interlocking devices for train order signals, a cabinet for train order blanks; stops within said cabinet; and train order tablets having cut-away portions to prevent them from contacting with said stops.

16. In interlocking devices for train order signals, the combination with signals for trains running in opposite directions, of a cabinet having blank train order tablets for trains running in each of said directions; actuating connections between each of the signals and the cabinet; said connections between either signal and the cabinet being controlled by the tablets intended for trains controlled by that signal.

17. A cabinet having separate compartments designed to respectively receive tablets of train order blanks for trains running in different directions, each of said compartments being formed to receive and house only the kind of tablets for which it is designed.

18. A cabinet having separate compartments designed to respectively receive tablets of train order blanks for trains running in different directions; and locks for each compartment, to lock and unlock the signal controlling trains running in the direction for which the tablets to be carried in that compartment are designed; the locks of each compartment being adapted to be controlled only by the tablets designed for that compartment.

19. A cabinet having separate compartments for containing respectively, tablets of train order blanks for trains running in different directions; and means connected with each compartment of the cabinet for locking the signal controlling the trains to which the tablets to be carried in that compartment relate; said means, in each compartment, being adapted to be operated only by the individual tablets designed for that compartment.

20. In interlocking devices for train order signals, a cabinet having separate compartments designed for east bound orders, west bound orders, and "double" orders, respectively; tablets of train order blanks for each of

said compartments, said tablets being formed to fit only the compartments for which they are respectively designed.

21. In interlocking devices for train order signals, the combination with signal actuating mechanism, of an automatic lock therefor; means for moving the lock into inoperative position, to permit a partial operation of said mechanism; and additional means requiring the restoration of the lock to its normal automatic condition, in order to permit the completion of said operation.

22. The combination with signal actuating mechanism of a lock therefor; cooperating means between said lock and said actuating mechanism for necessitating the movement of the lock to different positions to permit a complete operation of said actuating mechanism; and means for imparting to the lock the necessary movements.

23. The combination with signal actuating mechanism of an automatic lock therefor; cooperating means between said lock and said actuating mechanism, for necessitating the movement of the lock to different positions to permit a complete operation of said actuating mechanism; means for imparting to the lock the necessary movements with the final movement of the lock leaving it in position to automatically engage said actuating mechanism when the same is moved to locking position.

24. The combination with signal actuating mechanism, of a lock therefor; a tablet cooperating with said lock and adapted when in one position to render the lock inoperative, and in another position to render it automatic in its action; independent means for controlling the lock when in its automatic condition, to permit a partial operation of the actuating mechanism; and additional means compelling the restoration of the lock to its automatic condition during the latter part of each operation of the actuating mechanism, in order to complete said operation.

25. The combination with signal actuating mechanism, of a lock therefor; means for moving the lock into inoperative position to permit the operation of said mechanism, said lock when in inoperative position having a part connected therewith disposed in the path of a part of the signal actuating mechanism, and adapted to arrest the movement of said mechanism before a complete operation of the same has been effected thereby, said lock being movable to a different position to permit the completion of the operation of said actuating mechanism.

26. The combination with signal operating mechanism, and a cooperating automatic lock, of means for compelling the bringing of the lock and said signal operating mechanism, into normal operative relation to each other during the movement of said mechanism necessary to set the signal clear.

27. The combination with a tablet and a support therefor, of signal-operating mechanism: a signal lock cooperating with said mechanism and said tablet and rendered automatic by the removal of the tablet from its support: and independent means for operating said lock when said tablet is removed from its normal position.

28. The combination with a tablet support and a tablet: of signal operating mechanism: a lock controlled by the tablet and cooperating with said mechanism to lock the signal at "danger" and adapted to be rendered automatic by the removal of the tablet from its normal position: independent means for operating the lock to permit changing the signal to "safety" while the tablet is thus removed: and additional means compelling the restoration of said lock and said operating mechanism into normal operative relation to each other before the completion of the movement of said mechanism necessary to set the signal clear.

29. The combination with a tablet support and a tablet: of signal operating mechanism: a lock controlled by the tablet and cooperating with said mechanism and adapted to be rendered automatic by the removal of the tablet from its normal position: independent means for operating the lock: and a stop preventing the complete movement of said mechanism necessary to clear the signal, when said lock is held in inoperative position by said independent means.

30. In interlocking devices for train order signals, a cabinet having a compartment for train order tablets for

trains running in a given direction and another compartment for tablets for trains running in a different direction; and operative connections between each compartment and the signal controlling the trains to which the tablets in that compartment relate.

31. In interlocking devices for train order signals, a cabinet adapted to carry train order tablets for trains running in different directions; said cabinet having actuating connections adapted to operate the signals controlling trains running in said directions, the actuating connections between either signal and the cabinet being controlled by the tablets intended for trains controlled by that signal.

32. The combination with signal-operating mechanism of a lock adapted to automatically lock the signal at "danger"; means for manually operating the lock to release the signal when it is desired to set the same at "safety"; and means compelling the freeing of the lock from manual control and the restoration thereof to its automatic condition as a prerequisite to the complete operation of said mechanism necessary to set the signal at "safety".

33. The combination with a lock adapted to automatically lock a signal at "danger", of independent means for releasing the signal when it is desired to set the same at "safety"; and means compelling the restoration of the signal and lock to their normal relation to each other in order to complete the operation of changing the signal from "danger" to "safety".

34. A cabinet having separate compartments for containing respectively, tablets of train order blanks for trains running in different directions; and means connected with each compartment of the cabinet for locking the signal controlling the trains to which the tablets to be carried in that compartment relate; the locks controlled from each compartment of the cabinet being independent of those controlled from any other compartment thereof.

35. In a device of the character described, a lock for each signal to be controlled, each lock having a cut-away and an uncut-away portion, the cutaway portion of each lock being opposite the uncutaway portion of the other.

36. In a device of the character described, a lock for each signal to be controlled, each lock having a cutaway and an uncutaway portion, the cutaway portion of each lock being opposite the uncutaway portion of the other; and each lock also having a second cutaway portion, the two latter cutaway portions being opposite each other.

37. In locking devices for signals on double track roads, a lock for each signal to be controlled, each lock having a cutaway and an uncutaway portion, the cutaway portion of each lock being opposite the uncutaway portion of the other and provided with means adapted to be engaged for operating the lock.

38. In locking devices for signals on double track roads, locks for each signal to be controlled, each lock having a cutaway and an uncutaway portion, the cutaway portion of the locks for each signal being opposite the uncutaway portion of the locks for the other signal; and each lock also having a second cutaway portion, the latter cutaway portions being opposite each other, one of the cutaway portions of each lock being provided with means adapted to be engaged for operating the lock.

39. In locking devices for signals on double track roads, locks for each signal to be controlled, each lock having a cutaway and an uncutaway portion, the cutaway portion of the locks for each signal being opposite the uncutaway portion of the locks for the other signal, and each lock also having a second cutaway portion, the latter cutaway portions being opposite each other, each lock being provided at one of its cutaway portions with means adapted to be engaged for operating the lock, the lock operating means in the latter cutaway portions being opposite each other.

40. In signal controlling mechanism, a cabinet having compartments designed to receive tablets of train order blanks for trains controlled by different signals; a lock for each signal, said lock being adapted to be engaged and operated by a tablet relating to that signal, each lock extending across the different compartments of the cabinet

and being cutaway where it is adapted to be engaged and operated by a tablet, and uncutaway where it is not intended to be thus engaged and operated.

41. In interlocking devices for signals, a cabinet having
5 compartments designed to receive tablets of train order
blanks for trains running in different directions and controlled by different signals; a group of locks for each signal to be controlled, the group relating to any given signal, being adapted to be engaged and operated by the tablets
10 relating to that signal, each group of locks extending

across the different compartments of the cabinet and being cutaway where they are adapted to be engaged and operated.

In testimony whereof I affix my signature, in presence of two witnesses.

EDWIN E. OVERHOLT.

Witnesses:

W. B. MATTHEWS,

M. V. MATTHEWS.