

E. B. CARPENTER & E. N. MERRIAM.  
MELODEON.

No. 18,676.

Patented Nov. 24, 1857.

Fig. 3

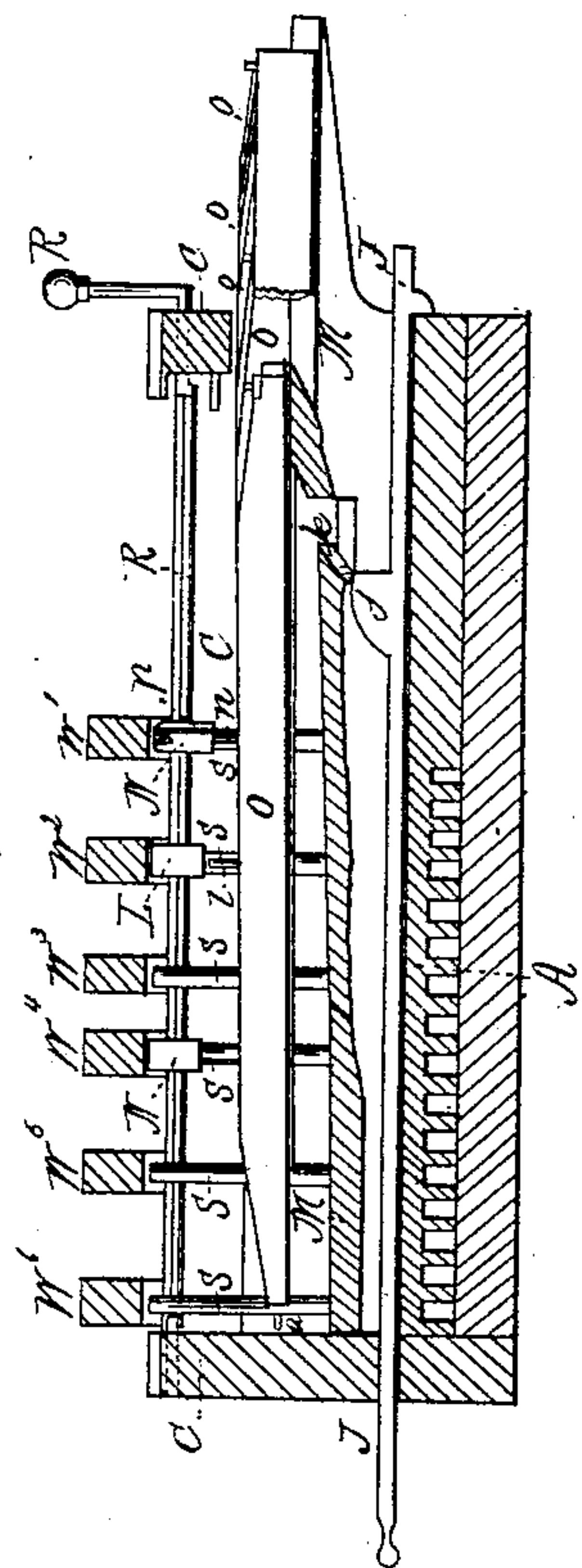


Fig. 2

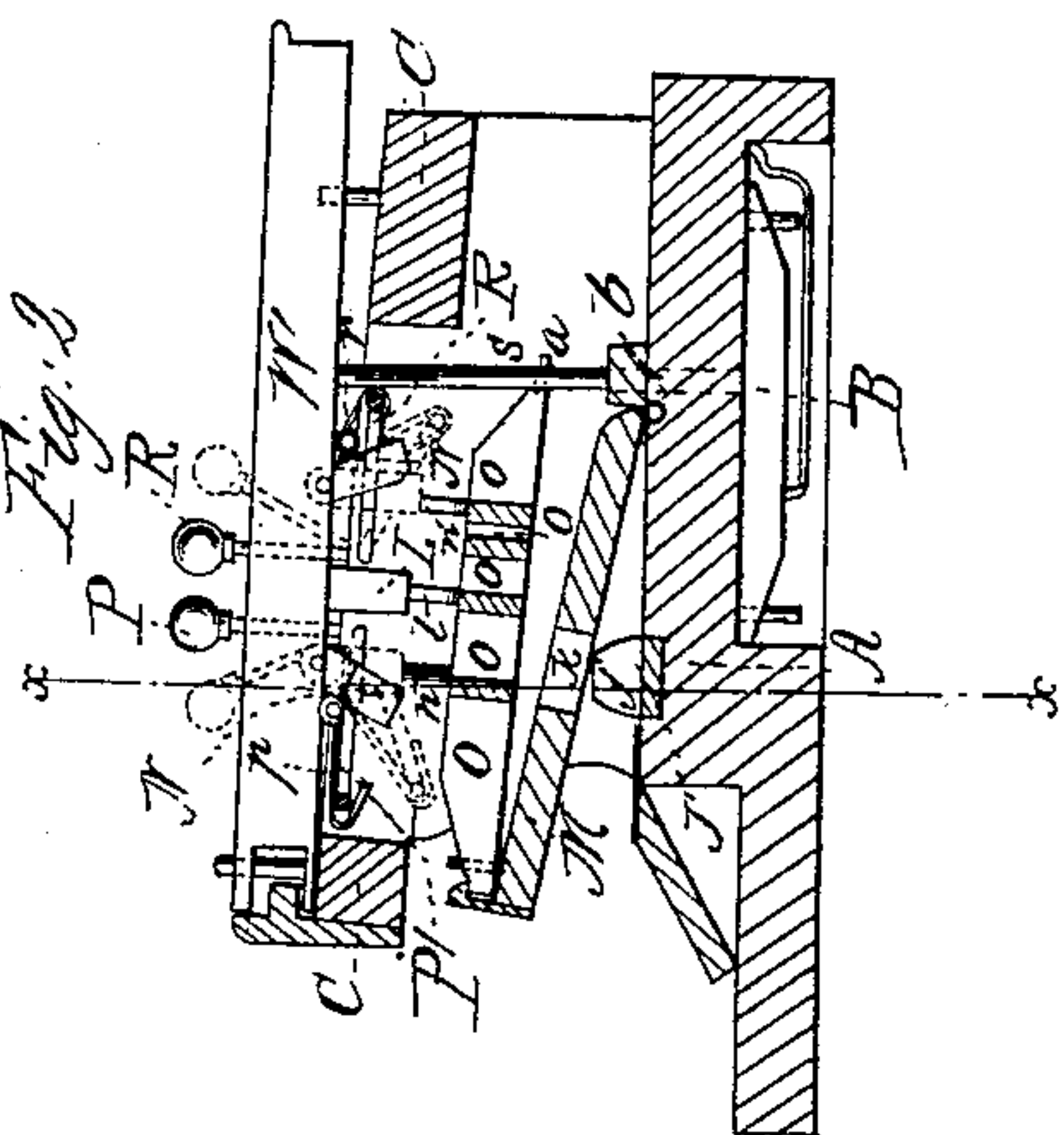
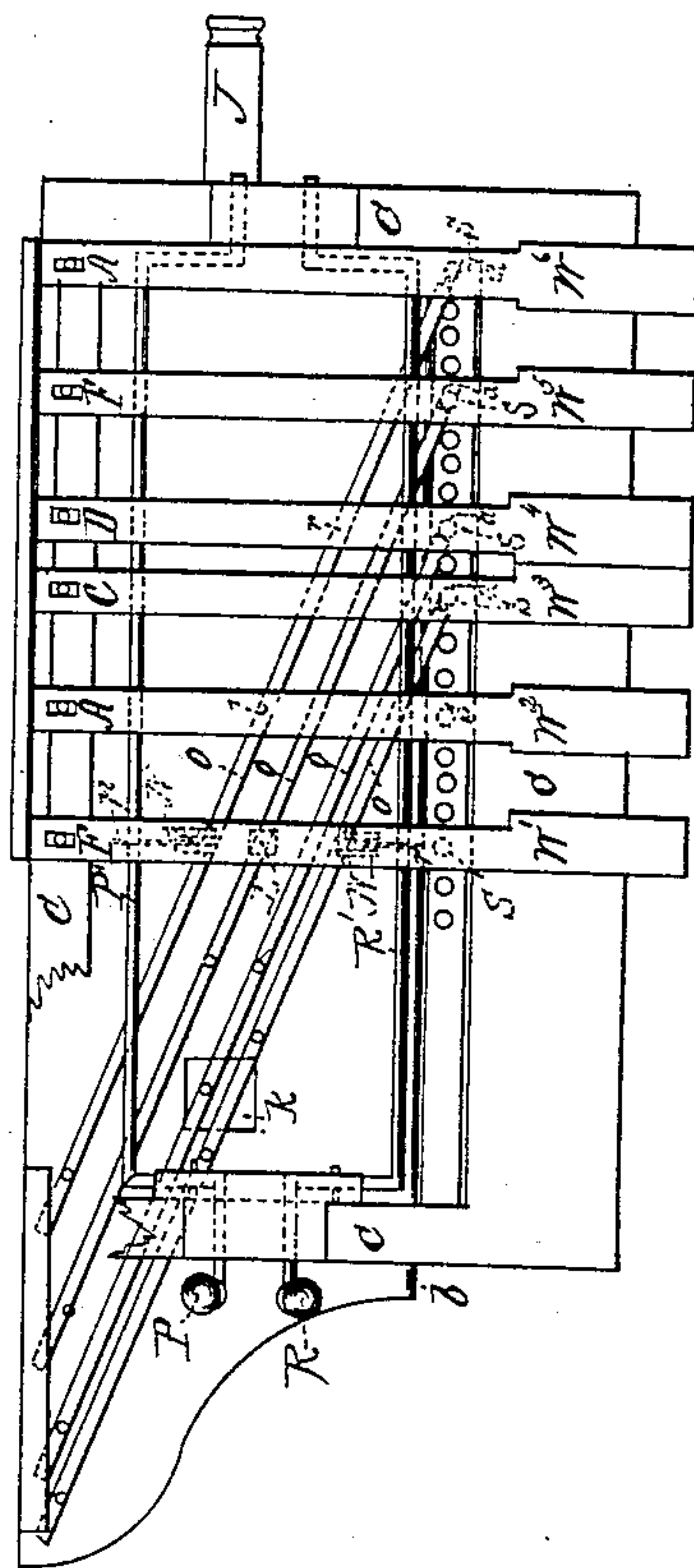


Fig. 1





# UNITED STATES PATENT OFFICE.

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## COUPLING FOR MELODEONS, &c.

Specification of Letters Patent No. 18,676, dated November 24, 1857.

*To all whom it may concern:*

Be it known that we, E. B. CARPENTER, of Brattleboro, in the county of Windham and State of Vermont, and E. N. MERRIAM, of East Poultny, in the county of Rutland and State of Vermont, have invented certain new and useful Improvements Applicable to Melodeons and Organs and other Wind Musical Instruments of Similar Character; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a plan of part of the key-board and playing mechanism of a melodeon illustrating our invention. Fig. 2 is a transverse vertical section of the same. Fig. 3 is a longitudinal vertical section of the same, taken in the line  $x, x$ , in Fig. 1, and seen looking from the back.

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates to certain mechanism which is employed to combine the valves with the keys in such a manner that any given tone and its octave, with the fifth or tenth or both of these combined, or any other intervals that may be desired, on the same key-board, may be played at one and the same time by pressing a single key.

To enable those skilled in the art to make and use our invention, we will proceed to describe its construction and operation.

A, is the reed board of the instrument.

B, is one of the valves.

C, is the key-frame.

$W^1, W^2, W^3, W^4, W^5, W^6$ , are the keys, representing one and a quarter octaves, (from "F" to "A"), except that such keys only are shown as are necessary to show the invention, and these have their respective denominations marked upon them in Fig. 1.

S, S, are the trackers or push-down pins, connecting the keys with the valves in the usual manner.

O, O, are a series of coupling levers arranged below and diagonally to the keys, and having their rear ends connected with what we term the fulcrum-board M, and having each a pin  $a$ , in its front end, passing through a hole in one of the trackers S, S. The fulcrum-board extends the whole or any portion of the length of the instrument and is hinged at its front edge  $b$ , to the reed

board or other stationary part of the instrument.

J, is a sliding bar working in a guide on the top of the reed board below the fulcrum board and having one or more wedges or inclined projections  $j$ , on its upper side for the purpose of raising up the fulcrum board by sliding each against the inclined face of a cavity  $k$ , in the fulcrum board.

L, L, are blocks secured rigidly to the undersides of the keys for the purpose of playing the octave of the note played by each key through its tracker, said blocks acting upon the heads of screws  $l$ , which are adjusted at proper elevations in the tops of the coupling levers O, O.

N, N, are jacks hinged to the bottoms of the keys, one in front of and one behind each block L, for the purpose of playing a fifth and a tenth or other desirable interval, said jacks acting upon the heads of screws  $n, n$ , which are adjusted at proper elevations in the levers O, O. The relative distances of the three screws  $l, n, n$ , in each coupling lever, and of the tracker with which said lever is connected, from the fulcrum of the lever, must be the same as the relative distances of the block L, and jacks N, N, and tracker of each key from the fulcrum of the key, in order that the trackers may receive the same amount of motion whether operated by the levers or by the keys, and it is preferable that the length of the coupling levers should be not less than twice the length of an octave of keys.

$R^1$ , is a bar running the whole length of the instrument or as great a portion of the length as is necessary, in front of the front jacks N, said bar being cranked near its ends and having journals formed to turn in suitable bearings in the key-frame or case, and having a stop-like knob R, at one end. The front jacks N, which are arranged for playing the fifths of the notes played directly by their respective keys, are connected with the bar  $R^1$ , by springs  $r, r$ , which are forked, slotted, or hooked at their ends, so as to connect the jacks with the bar, but yet leave room for the bar and jacks to move without straining the springs.

$P^1$ , is a bar like  $R^1$ , arranged beneath the rear jacks N, said bar having a stop-like knob P, at one end. The rear jacks N, which are arranged for playing the tenths of the notes played directly by their respec-



tive keys, are connected with the bar  $P^1$ , by springs  $p$ ,  $p$ , like the springs  $r$ , which connect the front jacks with the bar  $R^1$ .

The operation of the keys is as follows:—

- 5 When the slide  $J$ , is pushed in, the fulcrum-board falls down so low that the blocks  $L$ , and jacks  $N$ ,  $N$ , will not reach the pins  $l$ ,  $n$ ,  $n$ , and each key operates only means of its own trackers  $S$ , to open the valve below it.
- 10 But if the slide  $J$ , is drawn out, the fulcrum-board is raised up high enough for the blocks  $L$ , and jacks  $N$ ,  $N$ , to act upon the pins  $l$ ,  $n$ ,  $n$ . For the sake of example, we will describe the action of the key  $W^1$ ,
- 15 first supposing the knob  $R$ , to be pushed back and the knob  $P$ , to be drawn forward, (as shown in black outline in Fig. 2,) which moves the jacks  $N$ ,  $N$ , out of operation. The fulcrum-board being now raised
- 20 up, the key  $W^1$ , acting through its block  $L$ , on the pin  $l$ , below it, depresses the lever in which is the said pin, and at the same time opens the valve under the key  $W^5$ , which it will be seen by reference to the mark "F"
- 25 upon said key, in Fig. 1, is its octave. If the stop  $R$  be then drawn forward to bring the front set of jacks  $N$ , over the front pins  $n$ , the key  $W^1$ , will open the valve below  $W^3$ , or "C" in the scale, which is a
- 30 fifth above  $W^1$ ; and by pushing back the stop  $P$ , to throw the rear jacks  $N$ , over their respective pins  $l$ , the same key will also open the valve below  $W^6$ , or "A" in the scale, which is a tenth above  $W^1$ , or a major third
- 35 above  $W^5$ , and thus we obtain the common chord by pressing a single key. By pushing back the stop  $R$ , the fifth is disconnected and the note octave and tenth or major third are played. By pushing in the slide  $J$ ,
- 40 again, the keys are made to play only the valves immediately below them. If the player, after having had either set of jacks coupled, moves either knob  $R$ , or  $P$ , to uncouple them while he holds a key depressed,
- 45 the bar  $R'$ , or  $P'$ , moves the spring connection  $r$ , or  $p$ , of the jack of that key while the jack is retained on its respective pin  $n$ , by the friction between them, but as soon as the finger is raised from the key and the
- 50 key allowed to rise, the spring draws the jack forward or back out of the way of the pin. Or if after having had either set of jacks uncoupled, the player moves the knob  $R$ , or  $P$ , to couple them while he holds a
- 55 key depressed, the bar  $R$ , or  $P'$ , acting through the spring connection  $r$ , or  $p$ , of the jack of that key, draws said jack against the side of the head of its respective pin, when the jack is arrested and the spring is
- 60 bent by the further movement of the bar; but as soon as the pressure of the finger is

removed from the key, the spring will throw the jack into its operative position. If the connections between the jacks and uncoupling bars  $R'$ ,  $P'$ , were inflexible, the jacks 65 could not be coupled while a key was depressed, and in uncoupling them during the depression of a key, the jacks would drag on the pins  $n$ ,  $n$ , and their bottoms or faces would soon wear out. 70

The levers  $O$ ,  $O$ ,  $O$ , may, by proper arrangement of the jacks  $N$ ,  $N$ , and pins  $n$ ,  $n$ , be employed to connect any other notes than the fifths and tenths as described, as for example the fourth and sixth. 75

The advantage of this invention over other "octave couplers" and attachments of similar character are: 1st, extreme simplicity of construction and compactness; 2nd, in the provision afforded for coupling or un- 80 coupling with equal facility when any of the keys are pressed down, or while the keys are in motion or at rest.

The fulcrum-board may be divided transversely at any desirable point in the scale 85 and employing a slide at each end, this attachment can be used for either portion of the key-board to strengthen the bass or treble at pleasure.

What we claim as our invention, and de- 90 sire to secure by Letters-Patent, is:

1. The employment of a single series of diagonal levers  $O$ ,  $O$ , arranged relatively to and combined with the keys by blocks  $L$ , and jacks  $N$ ,  $N$ , substantially as described, 95 whereby a single lever serves not only to couple a key with another to which it stands in the relation of octave, but with other keys to which it stands in different relations, as fifths, tenths, &c. 100

2. Supporting the diagonal levers upon a fulcrum-board that is arranged between the keys and valves and applied so as to be capable of rising toward and falling from the keys with the whole series of levers, 105 substantially as set forth.

3. Combining the jacks  $N$ ,  $N$ , with the uncoupling bars  $R^1$ ,  $P^1$ , by means of the elastic connections  $r$ ,  $p$ , operating substantially in the manner and for the purpose set 110 forth.

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