J. HACK.

APPARATUS FOR TURNING CIGAR BUNCHES IN THE MOLDS.

APPLICATION FILED SEPT. 16, 1912.

1,104,794.

Patented July 28, 1914.

4 SHEETS—SHEET 1.

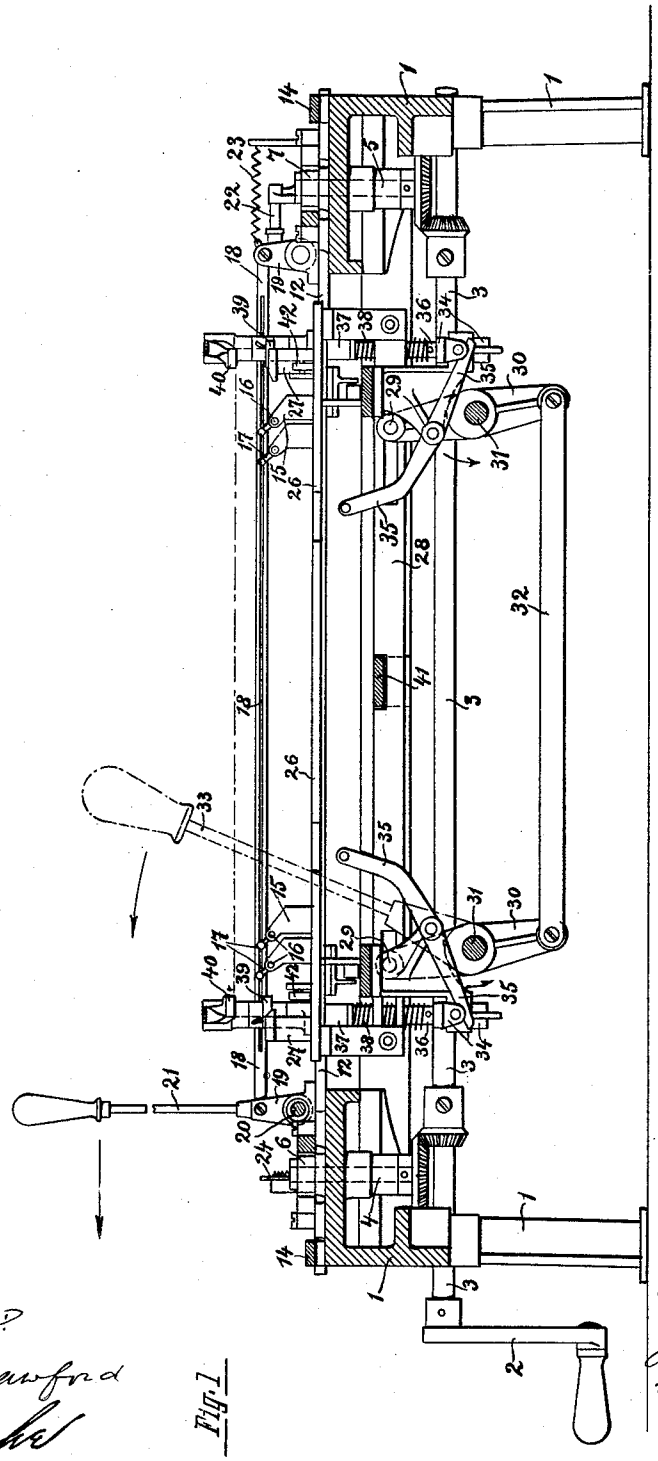

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Fig. 1

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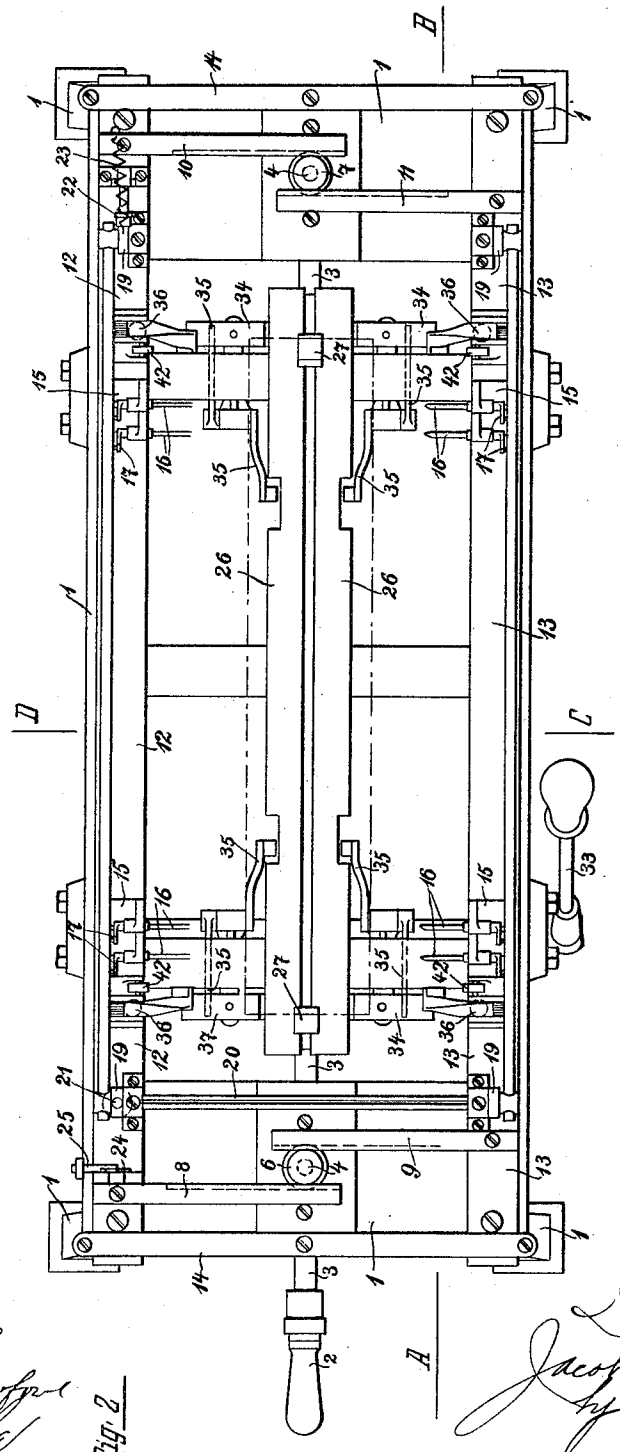

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Fig. 2

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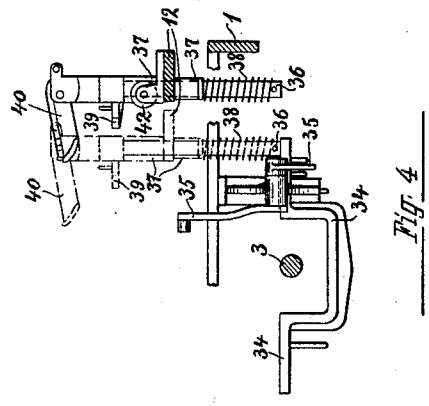

Fig. 4

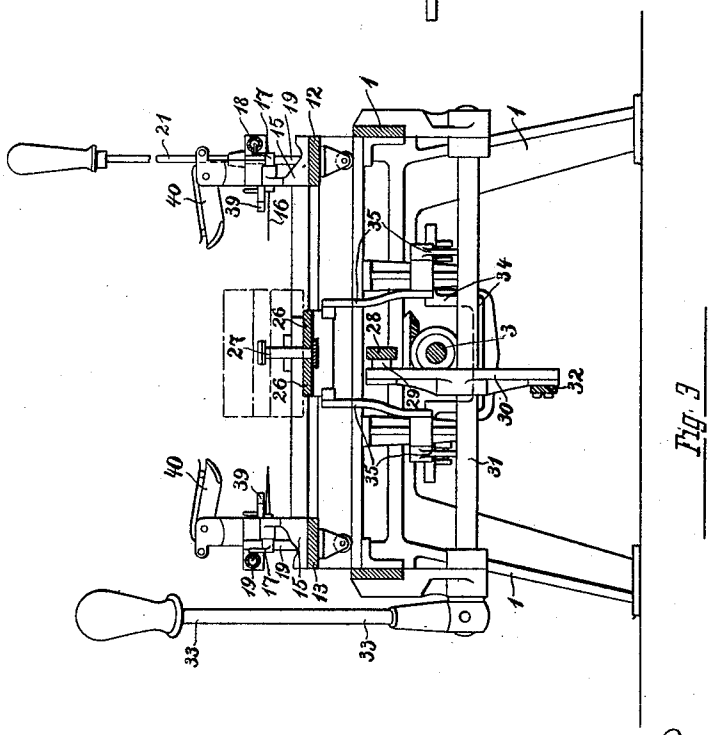

Fig. 3

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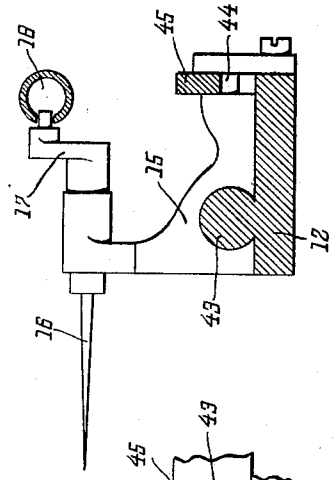

Fig. 6

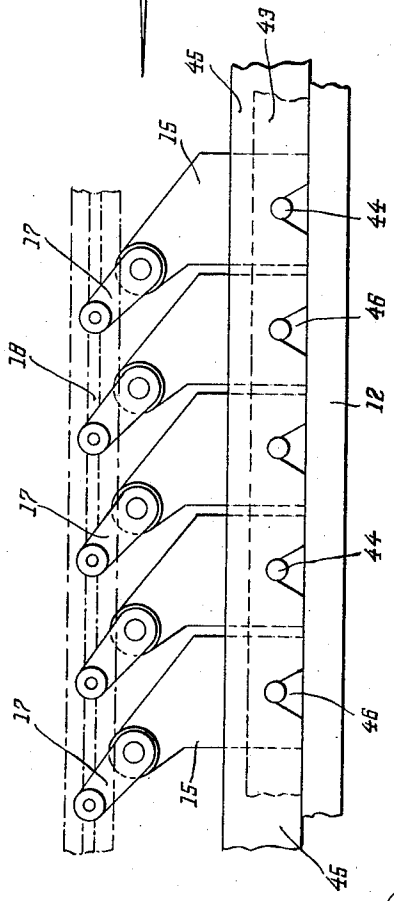

Fig. 5

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UNITED STATES PATENT OFFICE.

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APPARATUS FOR TURNING CIGAR-BUNCHES IN THE MOLDS.

1,104,794. Specification of Letters Patent. Patented July 28, 1914.

Application filed September 16, 1912. Serial No. 720,666.

To all whom it may concern:

Be it known that I, JACOB HACK, architect, a subject of the King of Prussia, and a resident of Hanau a. M., in the Kingdom of Prussia, German Empire, have invented new and useful Improvements in Apparatus for Turning Cigar-Bunches in the Molds, of which the following is a specification.

This invention relates to machines for pressing and molding the rolled bunches used in making cigars.

It is the object of the invention to provide an improved arrangement for turning the bunches during the molding operation while using molds made in two parts neither of which is subdivided or separable. The molds employed are arranged to have the lower part moved down and the upper part or cover raised, so that the cigar bunches remain suspended in the air by means of prongs and are thus free to be turned. The device according to the present invention differs from known devices for this purpose in that the cigar bunches are not lifted out of the molds but that the mold bodies and covers are moved away from the cigar bunches. Hitherto the attempt was made to release the cigar bunches from the molds either by lifting them out, or by the use of expensive composite molds the parts of which were arranged to open out automatically or by some special mechanism. The known devices in which the cigar bunches had to be lifted out of the lower parts of the mold in order that they might be turned, failed in their object and in the expectations on which they were founded, because the prongs cut through the bunches in an upward direction and thus damaged them in many cases without lifting them out at all.

In the arrangement according to the present invention the cigar bunches remain in their original position when the lower parts of the molds are depressed, while the mold covers remain in position and protect the bunches from the tearing through of the prongs until the bunches have been completely removed from the lower mold parts. After this the mold covers are raised sufficiently to leave the bunches free so that they can be turned. When this has been done the mold covers are lowered again until they rest firmly on the cigar bunches and prevent the prongs from tearing through the bunches when the lower parts of the molds are moved upward again toward the covers and fit themselves over the bunches.

In the accompanying drawings one form of the apparatus in accordance with the invention is shown by way of example.

Figure 1 is a longitudinal section of the machine taken on the line A—B of Fig. 2. Fig. 2 is a plan view, and Fig. 3 is a cross section of the machine taken on the line C—D of Fig. 2. Fig. 4 is a partial side view of the mechanism for effecting the raising and lowering of the mold covers, the full lines showing the outer position, and the dotted lines the inner position of the parts. Figs. 5 and 6 are a face view and cross section respectively of the mechanism for turning the cigar bunches, and the means for fixing in position the turning devices.

The machine frame 1 has a shaft 3 extending longitudinally in the center thereof and arranged to be turned by a crank 2. The shaft 3 serves to turn two vertical shafts 4 and 5 by means of bevel gears, the said shafts 4 and 5 being arranged one at each end of the machine, and being provided with toothed wheels 6 and 7 respectively at their upper ends. These toothed wheels gear respectively with pairs of rack bars 8 and 9, 10 and 11, which are guided by means of studs or the like so that they move in a straight line across the frame. The rack bers 8 and 10 are connected to the ends of a rail 12, and the rack bars 9 and 11 are similarly connected to a rail 13 at the other side of the frame. The rails 12 and 13 can thus be moved inwardly and outwardly by means of the gearing above described, so as to approach and recede from the center line of the machine simultaneously. The ends of the rails 12 and 13 work beneath cross bars 14 and over the table plate of the machine frame, which latter is interrupted at the middle; the bars 12 and 13 preferably work on rollers, balls or the like in order to make them run freely, and two tie members of the machine frame may serve as rails on which the rollers supporting the rails 12 and 13 will work as seen in Fig. 3.

The rails 12 and 13 carry the supports 15 with the prongs 16 which serve for turning the cigar bunches, the number of these parts corresponding with the number of mold sockets. The turning members in the middle part of

of the frame are omitted in Figs 1 and 2. The prongs 16 are provided with crank arms 17 as usual, and these crank arms have pins at their ends which work in longitudinally slotted bars 18. The bars 18 are mounted at their ends on crank arms 19 which are pivotally supported on the rails 12 and 13. In order to enable both the bars 18 and all the prongs 16 to be turned simultaneously while permitting also of the to and fro movement of the rails 12 and 13, a cross shaft 20 is provided and is held in the frame so that it cannot move longitudinally, this shaft being grooved and made to pass through the bosses of two of the crank arms 19 which have keys or projections engaging in the groove of the shaft 20. The crank arms 19 can thus slide over the shaft 20 during the to and fro movements of the rails 12 and 13. On one of the crank arms 19 which are thus connected together so as to turn simultaneously, a hand lever 21 is fixed; by turning this lever the two bars 18 are moved simultaneously and all the prongs 16 are turned. For the purpose of holding the parts above mentioned, operated by the handle 21, in their two principal positions, a fixed stop 22 is provided on the one hand against which one of the cranks 19 is pulled by means of a spring 23, and a spring catch arm 24 is provided on the other hand for engaging with and holding the lever 21 in its depressed position. The catch arm 24 is adapted to be automatically released when the rails 12 and 13 are approaching their outermost position, by the action of a releasing stud 25 fixed on the frame.

In the middle open part of the machine frame two supporting rails 26 are provided for carrying the lower mold parts. At each end of the rails 26 clamp members 27 formed with hooked shaped heads are provided, one or both of which may be arranged to turn on their supporting pins to facilitate the insertion of the molds which are clamped or held fast on the supporting rails 26 by means of members 27. In order to allow for the use of lower mold parts of different strengths the clamp members 27 may be held in the vertical direction by means of springs so that they can adjust themselves automatically to the required height. The supporting rails 26 with the clamp members 27 are carried on a central rail 28 which rises and falls, and which is engaged for this purpose by means of pins 29 on the upper ends of double armed levers 30 carried on transverse shafts 31 in the machine frame. The pins 29 work in slots in the rail 28, and the said rail is guided so as to move vertically up and down in the frame. The lower ends of the two levers 30 are coupled by means of a rod 32, and one of the shafts 31 carries at its end a hand lever 33 by means of which the rails 26 with the lower mold parts can be raised and lowered, with a parallel motion owing to the use of the two levers 30.

The supporting arrangement for the mold tops or covers is independent of the device above described for carrying the mold bottoms, and is shown in Figs. 1, 2 and 4. It is also duplicated at the two ends of the machine so as to raise and lower the two ends of the mold covers simultaneously. The device consists of the following parts. Two bridge pieces or bows 34 extend to each side of the shaft 3 and are suitably guided in the machine frame. They are arranged to be moved vertically by means of the lower arms of levers 35 which are pivotally supported in the frame. The upper arms of the levers 35 terminate a little below the supporting rails 26 for the mold bottoms, and are preferably provided with small rollers. Near each end of each of the rails 12 and 13, vertically movable pins 36 are arranged their position being such that their lower ends are brought over the bridge pieces 34 by the inward movement of the rails 12 as shown in dotted lines, Fig. 4. The pins 36 are guided in sockets 37 in the rails 12 and 13 and are held down by means of springs 38 surrounding the pins between the lower ends of the sockets 37 and suitable projections at the bottoms of the pins. Two projections 39 and 40 on the upper parts of the pins 36 serve respectively to engage the mold covers from beneath and to press down the latter on to the mold bottoms with spring pressure. The form and arrangement of the holding and pressing projections 39 and 40 should preferably be such that they will allow for small variations in length of the molds, while on the other hand the molds themselves should be provided on their side faces with grooves in the plane of separation in which the engaging members for the mold bottoms and tops can enter or hold.

A cross bar 41 seen in Fig. 1 serves as a tie connecting together the two longitudinal members of the machine frame.

On the two rails 12 and 13 rollers 42 are provided which serve for adjusting the molds in position on the supporting rails 26.

In order to allow for the variations in the spacing of the mold grooves in cigar bunch molds as now made, the supports 15 of the turning members for the bunches can be mounted so as to be adjustable longitudinally on the rails 12 and 13, by means of guiding projections 43 thereon as shown in Figs. 5 and 6. In this case the members 15 are provided with rearwardly projecting pins 44 which are adapted to be engaged by means of tapering notches 46 in a setting bar 45 in order to set the turning members quickly in the right positions corresponding with the spacing of the mold grooves. The positions of the notches 46

in the various bars 45 which are used correspond with the positions of the grooves in the various molds which are used. All the members 15 are adjusted simultaneously by pressing down one of the bars 45. The vertical adjustment to bring the prongs 16 to the correct position for engaging with the cigar bunches is effected by vertical adjustment of the mold raising and lowering device or of the mold block itself.

The apparatus works in the following way. The two rails 12 and 13 carrying the turning devices are separated by turning the crank 2 which actuates the gearing 3 to 11, and the mold block with the cigar bunches therein and with the cover pressed down, is so placed on the carrying rails 26 that the two clamp members 27 engage over the two ends of the mold block. The two side rails 12 and 13 are then caused to move toward one another again, so that the prongs 16 are forced from opposite sides into the ends of the cigar bunches which lie in the grooves of the mold block. If this block is not correctly placed the rollers 42 force it into position. The projections 40 are forced over the mold cover and the projections 39 engage under the cover thus holding it firmly. The lever 33 is now moved in the direction shown by the arrow in Fig. 1 thus causing the central rail 28 with the carrying rails 26 and the clamp members 27, together with the mold block clamped between them to be moved downward. During this time the mold cover remains pressed down on the cigar bunches which are held at both ends on the prongs 16, thus protecting them in the surest manner against risk of tearing through, because it is only when the bunches are left loose at the top over the prongs that the latter are liable to tear through the tobacco. As the lever 33 is turned farther in the same direction, the bottom of the mold block presses down on the upper ends of the levers 35 so that the bridge pieces 34 are raised, lifting the vertical pins 36 whose lower ends have been brought over the bridge pieces 34 by the movement of the rails 12 and 13. As the pins 36 are raised, the springs 38 are compressed and the projections 39 and 40 lift the top part or mold cover with which they engage. The cigar bunches are now entirely free and are only supported by the prongs 16 engaging with them from opposite ends. The handle 21 is now turned in the direction of the arrow in Fig. 1 until it is engaged by the catch 24, by which means the longitudinally slotted bars 18 are moved downward and the cranked arms 17 of the bunch turning members are all turned simultaneously through 90°. After this has been done the lever 33 is moved back. In the first part of this movement, while the mold block is being raised slightly the levers 35 are released so that the bridge pieces 34 can move back and the springs 38 then cause the pins 36 to move down again. In this way the mold cover member which is held between the projections 39 and 40 is again pressed down on to the cigar bunches the position of which has not been altered except by the turning of the bunches through 90°. As the lever 33 is moved back farther the supporting rails 26 with the mold block are raised again to the normal position and the mold parts fit again into the cover, the molds being thus pressed together again around the cigar bunches. The rails 12 and 13 are now separated again by turning the crank 2, and by the gearing 3 to 11, and the prongs 16 are thus drawn out from the ends of the cigar bunches. The lever 21 is freed by the releasing projection 25 pressing back the catch 24, and the bunch turning devices with the rods 18 and the lever 21 are moved back again to their normal position under the action of the spring 23. The apparatus, after taking out the mold block in which the bunches have been turned, is now ready to receive another mold block the bunches in which are to be turned.

With the apparatus above described it is possible with very slight alterations to arrange for the cigar bunches to be turned either toward the right or toward the left, or those in one half of the machine to the right, and in the other half to the left. All that is necessary for this purpose is to remove the two slotted rods 18, to turn the small cranks 17 to an angle of 45° all to the right or left of the vertical, or half to the right and the other half to the left, and then to put on the slotted rods 18 again. The device above described makes it possible to turn the cigar bunches in either direction which may be desired and involves no unusual construction of the molds. Any of the two-part compression molds now in use can be employed in the machine, and it is rendered unnecessary to use further any expensive molds with parts which separate out.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. A cigar bunch turning device of the character described comprising in combination, a bi-partite mold, means supporting the two parts of said mold for holding them in their mutual positions, rails carried by said supporting means, rollers upon said rails for adjusting the molds in position upon their supports, means for withdrawing both parts of the mold from the bunches and for returning them into their original positions, prongs supporting the cigar bunches adapted to be rotated for 90 degrees upon the withdrawal of both parts of

said mold from said bunches, and crank arms carrying said prongs, longitudinally slotted bars for the reception of bars at the ends of said crank arms, crank arms pivotally supported on said rails, and a hand lever on one of said last-named crank arms for effecting the rotation of said prongs and the cigar bunches held thereby.

2. A cigar bunch turning device of the character described comprising in combination, a bi-partite mold, a spring controlled adjustable frame supporting both parts of said mold for holding them in their mutual position, rails carried by said supporting frame, rollers upon said rails for adjusting the molds in position upon their supports, means for withdrawing both parts of the mold from the bunches and for returning them into their original positions, prongs supporting the cigar bunches adapted to be rotated for 90 degrees upon the withdrawal of both parts of said mold from said bunches and crank arms carrying said prongs and pins at their ends, longitudinally slotted bars for the reception of the pins at the ends of said crank arms, longitudinally adjustable crank arms pivotally supported on said rails, and a hand lever on one of said last-named crank arms for effecting the rotation of said prongs and the cigar bunches held thereby.

3. A cigar bunch turning device of the character described comprising in combination, a bi-partite mold, means supporting the two parts of said mold for holding them in their mutual position, rails carried by said supporting means, means for withdrawing both parts of the mold from the bunches and for returning the same into their original position, prongs supporting the cigar bunches and adapted to be rotated for 90 degrees upon the withdrawal of both parts of said mold from said bunches, and crank arms carrying said prongs pivotally supported on said rails, half of their number turned to the left and the other half to the right for allowing the turning of one-half of the said prongs in one, and of the other half in the opposite direction, substantially as described and for the purpose set forth.

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

JACOB HACK.

Witnesses:
JEAN GRUND,
CARL GRUND.