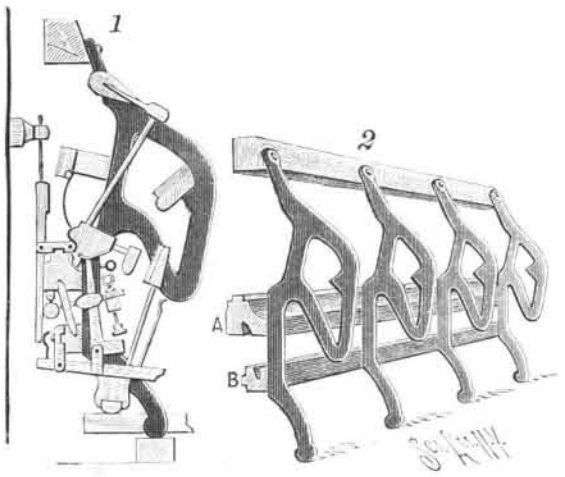
AN IMPROVED PIANO ACTION FRAME.

This is a frame of simple and durable construction, arranged to firmly hold the actions in position and prevent loosening of the arms carrying the pivots for the hammers, dampers, and other parts of the action. It has been patented by Mr. Frederick W. Bothmer, of No. 803 Tenth Street, Long Island City, N. Y. A number of metal brackets are secured in the usual manner to the piano frame, at equal distances apart, and on the rear of the brackets are secured, by machine screws, the rails, A, B, as shown in Fig. 2, a sectional view through the entire action being represented in Fig. 1. The rails are connected with each other by short arms

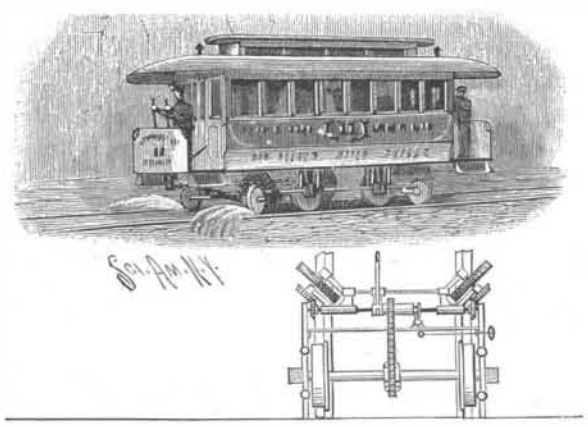


BOTHMER'S PIANO ACTION FRAME.

whose upper ends engage a longitudinal groove in the under side of rail, A, their lower ends being seated in a similar groove in the top of rail, B. In the top of rail, A, is also a ridge adapted to enter a groove in the under side of an arm which forms at its inner end the pivot for the hammer, and at its outer end the pivot for the damper, of the particular action for a single string. On the under side of rail, A, are also lugs engaged by pivot arms of the damper bar, adapted to be actuated in the usual manner from the pedal, and on the rear of rail, B, is a ridge engaging a recess in an arm which carries a lever actuated from the piano key, the two rails, which are made of metal, thus forming firm supports for the pivoted arms, so that a displacement of the hammers and dampers and other parts of the action is not likely to take place.

A STREET CAR RAIL SWEEPER.

It is quite necessary for the wheels of electrically propelled cars to continuously make good contact with the track rails, and to insure this, as well as to facilitate the cleaning of street railway tracks generally, is the object of the improvement represented in the accompanying illustration. It has been patented by Mr. Thomas Waite, of Cramer Hill, N. J. A transverse shaft journaled in the outer end portions of the car, and adapted to be rotated by a chain belt from the car axle, carries near each outer end a loosely mounted sleeve, and integral with each sleeve is a hanger in which a brush is journaled diagonally over the rails, as shown in the small view. On the inner end of each brush spindle is a beveled gear meshing with similar gears on the ends of the transverse shaft, and the hub of the pinion on this shaft, over which passes the chain belt, has a clutch face adapted to engage with a clutch connected with a shifting lever operated by means of a rod terminating in a handle at



WAITE'S RAILWAY RAIL SWEEPER.

one side of the car, whereby the driver or motor man may readily throw the clutch into or out of gear. The two hangers carrying the brushes are connected by a rod, and an elbow lever loosely mounted on the drive shaft has one of its members connected to this rod, while the other member is pivotally connected with a link from which a hand lever extends up through the car platform. By means of this lever the brushes may be elevated to be carried along above the track or thrown down to engage the rails, the clutch on the drive shaft being correspondingly moved into or out of engagement with the pinion driven by a chain belt from the gear on the car axle.

The Use of Quebracho in Tanning.

According to a recent German trade report, the German tanners are now adopting the use of quebracho and other tanning materials, such as divi-divi, myrobalanus, japonica, mimosa, valonia, alogobilla, etc., in place of oak bark. The leather industry in Germany has shown great progress in recent years, and the new tanning material of quebracho has produced a revolution in tanning upper and sole leather. Quebracho is now used all over Germany and in other countries on the Continent. Quebracho wood is imported principally in logs and on sailing vessels. It came originally from the province of Santiago, in Chile, but this source of supply is gradually becoming exhausted. In recent years, in the Argentine Republic, extensive forests of quebracho have been opened. Of quebracho, two varieties are known, the red and the white. Red quebracho is richer in tannin than the white, the average contents being from 18 to 20 per cent. Considering the intrinsic value of this tanning material, it is cheaper than oak bark, and nearly as cheap as hemlock. Owing to its very high percentage of tanning qualities, quebracho contains relatively a small proportion of so-called non-tanning substances, and in this respect it has much resemblance to gambier.

These non-tanning substances are an important factor in the manufacture of leather, as they fill and nourish the leather, and also impart the necessary acidity to liquors, although not assimilating in a direct manner with the fiber of the hide. Quebracho, it is stated, does not possess a sufficiency of these non-tanning properties to yield well nourished leathers, and its use, therefore, is only to be recommended in combination with other agents stronger in non-tanning substances. The supply of quebracho may be considered inexhaustible. Nearing the thirty-first degree of longitude in the Argentine Republic, the Pampas, the largest grazing lands known to the world, gradually develop into immense forests known as chaco. The chaco is wonderful for its luxuriant and varied vegetation; within its limits are found all kinds of tropical trees—among these in abundance the red and white quebracho. The red quebracho, like all other trees found in these regions, with the exception of the palm, does not attain a great height, although the trunk is well developed. Of a reddish brown, this wood is heavy and hard, and has tanning qualities which of late years have become highly appreciated in Europe. Formerly quebracho wood was obtained only from the forests bordering on the Parana River, but now transportation by rail is possible, and gigantic saw milling enterprises have been started which develop the untold wealth of the chaco and send their products to market.

It is stated that the tract of country can furnish a fabulous amount of quebracho wood, practically an inexhaustible amount, while the present yearly consumption is but one million tons. Ten years ago the exports of wood from the Argentine Republic aggregated in value £15,000; during 1892 this value had increased to £300,000. Very recently a saw mill has been erected at each of the ten railway stations between Rosario and Beurequiste. The government allows the privilege of cutting timber within its boundaries, but makes no grants for more than 13 leagues. One league of forest in the vicinity of the railway is considered worth from £1,500 to about £2,000. On the value of the woods arriving at the sea a tax of 3 to 7 per cent is levied. The unlimited supply and low cost of production make quebracho wood one of the cheapest vegetable tanning materials known. About one hundred blows with an ax and a few hours' labor spent in peeling the bark and sawing the logs suffice to secure a ton of wood, whereas it is estimated that about 150 working hours are required to supply a ton of oak bark. The grinding and cutting of quebracho wood is naturally a more difficult operation than getting out hemlock or oak bark, but considering the original cost, this is relatively an unimportant item.

Transportation from the Argentine Republic to Europe can be effected so cheaply that many firms ship their rough lumber to Europe to be worked into extract there. The red quebracho contains in considerable quantity a red coloring matter, which is hardly soluble in cold water, but will dissolve readily in warm water. For this reason quebracho extracts, if not properly treated, will impart a reddish tint to leather. Used alone quebracho extract will only yield a leather of poor color, but when combined with alum and salt it yields finer results even than gambier. Leather tanned with quebracho, alum, and salt has a pale straw yellow appearance, the flesh side being almost white. In first using quebracho extract it is important to use much weaker liquors than those needed with other tanning agents. There are large extract works in Reuners and Benrath, near Hamburg; also in Oberlahnstein on the Rhine, and Frankfort-on-Main. In these factories the wood is cut by machines specially built for that purpose. It is cut from the log in two different ways—side and head cut. The side cut is of fine, thin, small chips, up to about one inch long, and the head cut consists of smaller and coarser pieces. Quebracho extract is manufactured in crystal and soft paste. The crystal is put up in cases of 150 kilogrammes (330 pounds avoirdupois) and costs about £2 15s. It contains about 65 to 70 per cent of tannin. The paste is put up in barrels of from 230 to 250 kilogrammes (506 to 550 pounds avoirdupois) and contains about 45 per cent of tannin.

BRINER'S ASH SIFTER.

This is a sifter of very simple and inexpensive construction, which may be readily attached to or detached from an ordinary ash can or barrel, altogether preventing the escape of dust or other fine particles while sifting the ashes. As shown in the illustration, applied to an ash can of moderate size, the sifting may be done at the side of the stove or range from which the ashes are removed, rendering the device of especial convenience in flats or apartment houses. The improvement has been patented by Mr. Emil Briner, of 54 Rutgers Street, New York City. An open-ended bag of sail duck or other suitable canvas is attached by means of a draw string to the mouth of the can, a second draw string drawing the bag closely over and in from the edges of the can, to absolutely prevent the escape of any dust, and cause the ashes to readily fall into the can. The upper end of the bag is attached by means of another draw string to a circular head in which is a sieve, and a cover is adapted to be set on the head during the sifting operation, as shown in one of the views.

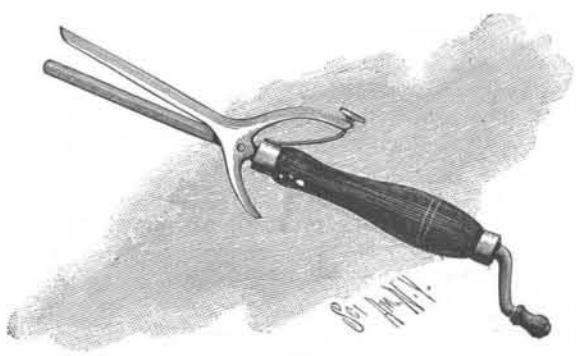
The Lead Wort.

The lead wort, or Amorpha canescens, with its tall, lavender spikes of flowers is found in the dry regions of the Rocky Mountains. It is said to prefer localities where lead exists, whence its name. The effect of the beautiful purplish hue of the blossoms is enhanced by the golden spangles of the yellow anthers among them. The anther cores become bleached after the pollen has been shed and still further add to the beauty of the plant. The anthers mature one after another, the first one out being a little larger than the rest, and not until the last stamen has been fully formed does the small vexillum finish its growth. This is thought to account for its amorphous character.

The lateral growth remains stationary until the axial growth is complete. It then commences, beginning at the apex and continuing downward. Thus the spiral growth uncoils backward, and axial development ceases when the vexillum has been reached.

A SIMPLE HAIR CURLING DEVICE.

This is an inexpensive implement affording a guard for the hair as it is wrapped on the hot iron and obviating liability to burn the fingers. It has been patented by Mr. Edward J. Brand, of No. 61 Fulton Street, Columbus, Ohio. It has two pivoted limbs, one of which is adapted to close upon the other, and a diminished shank of one limb extends through a central recess in the handle piece, at the outer end of which it terminates in a crank handle. One of the limbs is furnished with curved guard wings, and a spring attached to one wing bears at its other end on



BRAND'S CURLING IRON.

a ferrule of the handle, the spring normally holding the limbs closed. On the outer end of the wing to which the spring is attached is a button to protect the hand in manipulating the device when heated. As will be seen, the implement may be readily heated by being hung in the chimney of a lighted lamp, or such other manner as desired.

IN an article in the June number of the Astrophysical Journal, by H. Ebert, he concludes that the temperature of the interior regions of the sun is in round numbers 40,000° C. This is in good agreement with values previously determined by others.