

A. H. Emery,

Cotton Press.

N^o 29,960.

Patented Sep. 11, 1860.

Fig. 2.

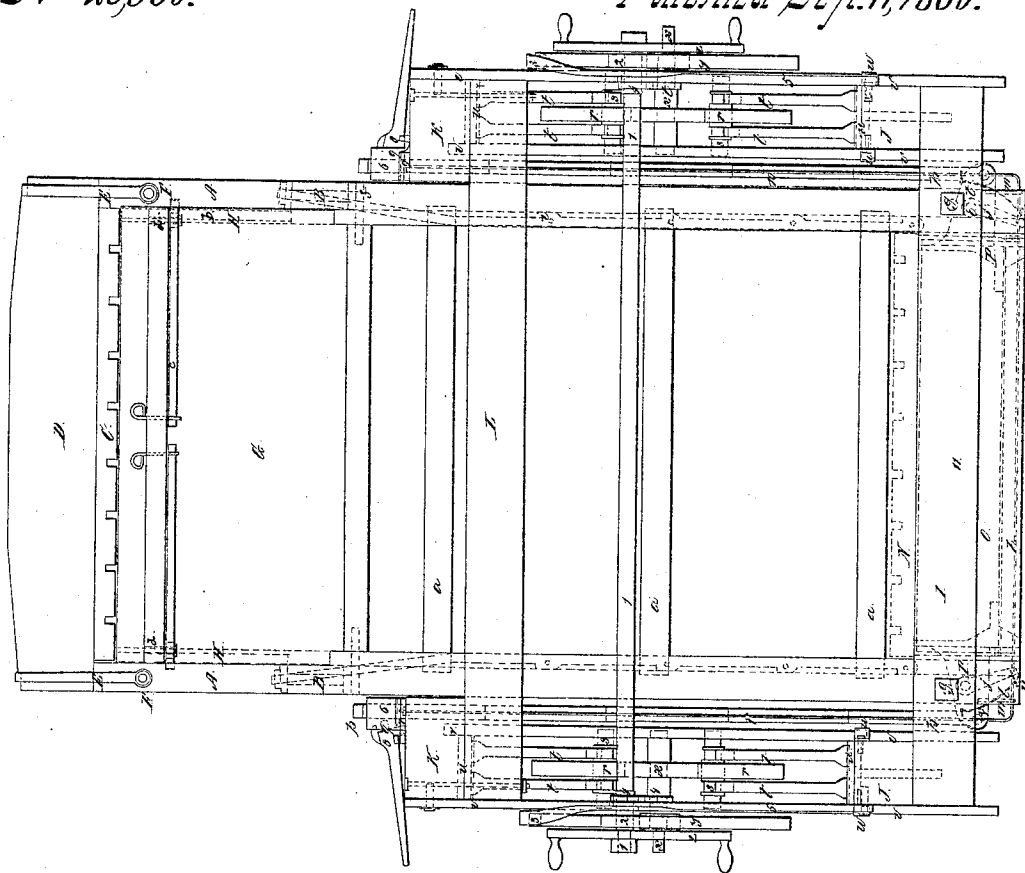
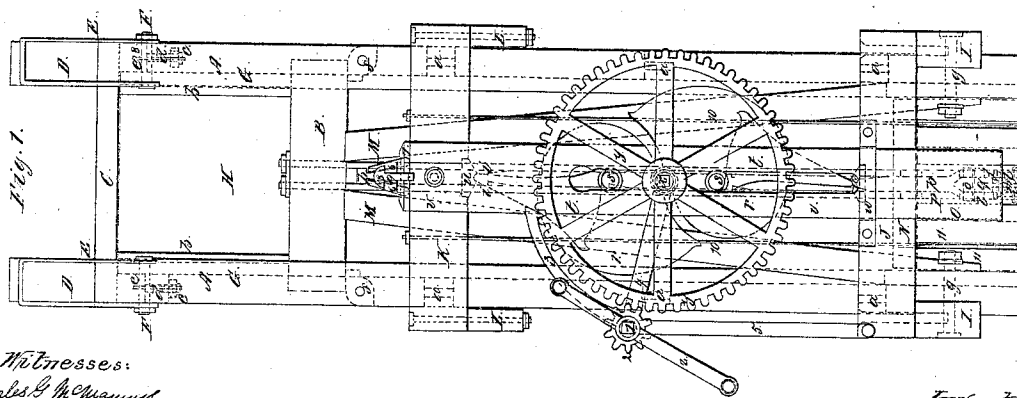


Fig. 1.



Witnesses:
Charles G. McManus
W. H. Lumsden

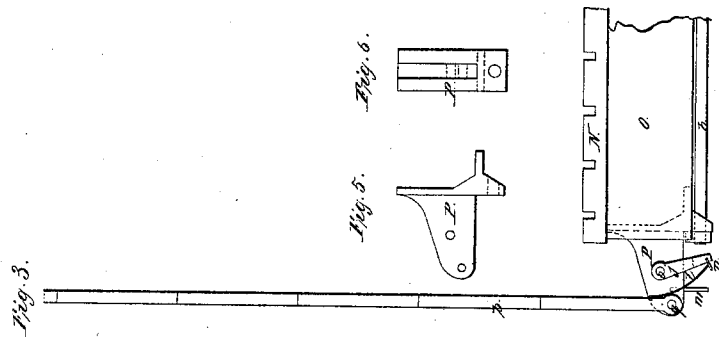
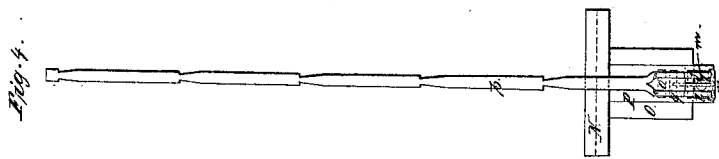
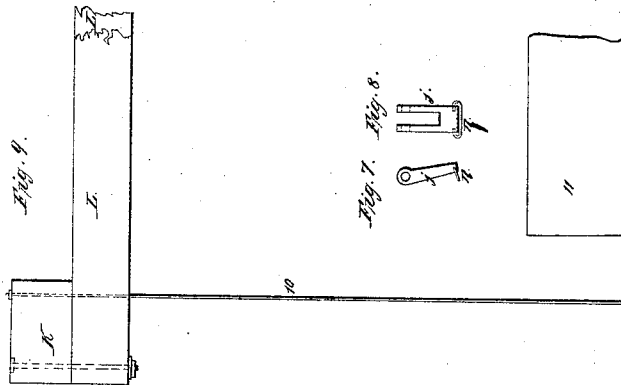
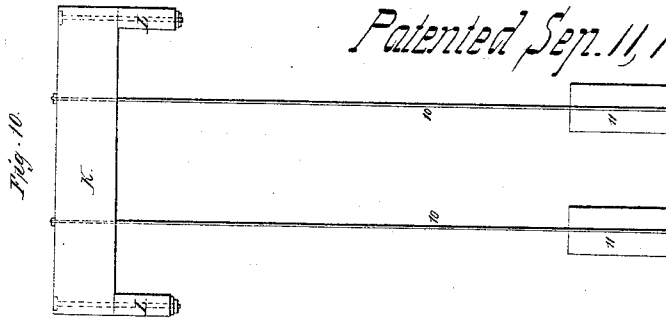
Inventor:
A. H. Emery

A. H. Emery

Cotton Press.

N^o 29960.

Patented Sep. 11, 1860.



Witnesses:
Wm. F. Fildes
Wm. Lawbury

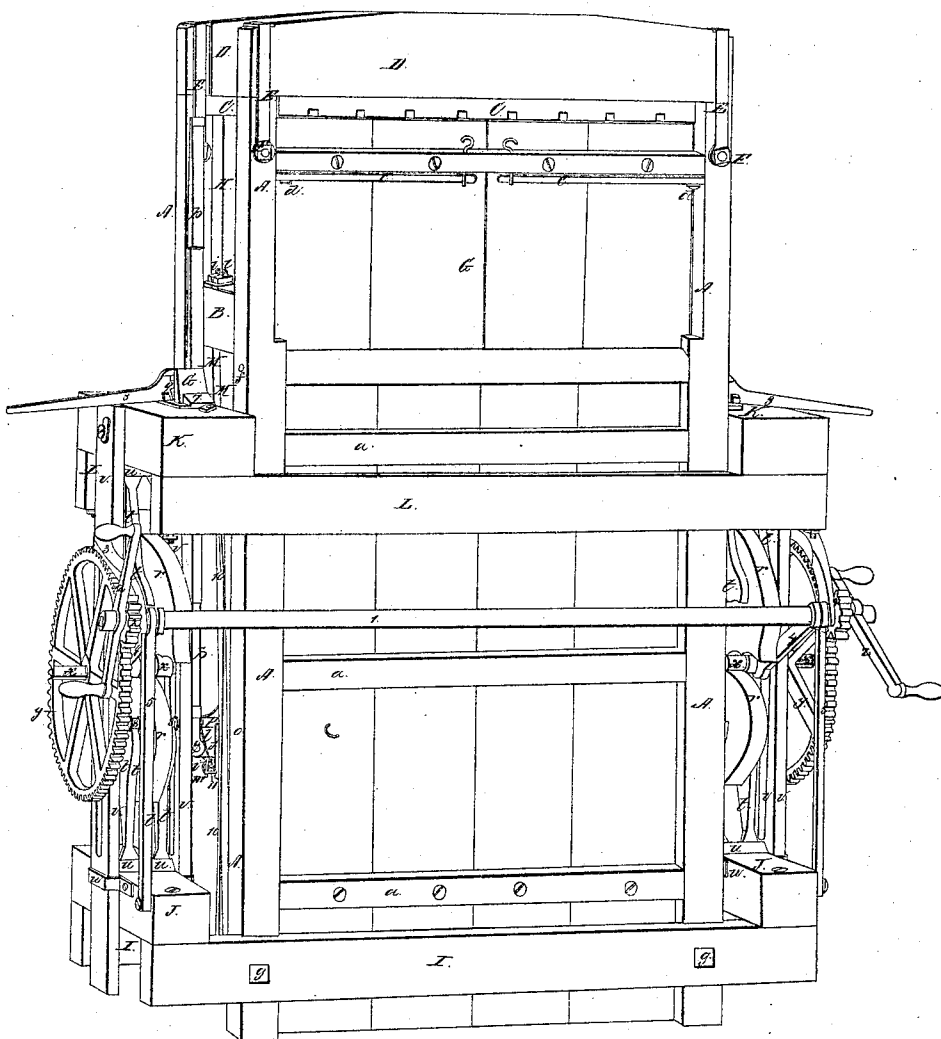
Inventor:
A. H. Emery

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Witnesses:
Eliya Emery
Edwin Emery.

Inventor:
A. H. Emery.

UNITED STATES PATENT OFFICE.

A. H. EMERY, OF NEW YORK, N. Y.

IMPROVEMENT IN ANTI-FRICTION PRESSES.

Specification forming part of Letters Patent No. 29,960, dated September 11, 1860.

To all whom it may concern:

Be it known that I, A. H. EMERY, a civil engineer of the city, county, and State of New York, have invented a new and useful Improved Anti-Friction Press; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, and making a part of this specification.

Like figures represent like parts.

The nature of my invention consists in constructing a very cheap, strong, compact, and durable press for packing cotton, hay, wool, rags, hemp, goods, or any other purpose where it can be advantageously used, by means of an arrangement of cams or eccentrics in combination with lifting-rods, pawls, wheels, axles, platens, and other parts, as hereinafter described and set forth, the whole being operated by any power which it may be found desirable to apply.

I construct my press of wood, iron, (cast, wrought, and chilled,) and steel, either separately or in combination, or of any other materials, as may be found desirable. I usually make the frame of wood and iron, as hereinafter described, but varying this form of frame to suit any particular case that may arise.

In the accompanying drawings, Figure 1, Plate 1, shows a side elevation of the press complete; and Fig. 2, Plate 1, shows a front elevation of the same, in both of which figures lines seen are made full, and those not seen are dotted. On Plate 2 are several figures showing side and front elevation of a part of the details of the press, which will be described in their regular order. Plate 3 represents a perspective drawing of the press complete, in which like parts bear the same letters as in Plates 1 and 2.

In Plate 1, A A A A show four posts, which make the main posts of the upright frame, and are framed together with the pieces B B and a a a a a, which, with the others mentioned, make up the entire upright frame of the box in which the material is to be placed to be pressed. On the pieces B B and a a a a a are fastened the planks which complete the box of the press. The cover to this box, which is called the "upper platen," is made of planks C, fastened to the two beams D D.

This cover or platen is fastened to the box-posts by the wrought-iron straps E E E E, which pass over the ends of the beams D D, and are fastened to the posts A A A A by the bolts F F F F.

G G are two doors on the front and back side of the press, made of planks and scantlings. These doors turn upon the bolts f f f f as hinges, these bolts passing through the posts A A A A into the doors G G, the doors turning outward about these when it is necessary to open them preparatory to tying the ropes on the bale. The doors G G are securely held in their places and kept from turning or opening outward by the four levers c c c c, which have bolts d d d d, passing through them, by which they are fastened to the doors, and about which they turn as upon fulcrums. The short end of these levers play into mortises in the posts A A A A, the levers being fastened from turning whenever desired by the bolts e e e e, passing through the scantlings on the doors G G.

To the front and back doors G G are fastened the flanges b b b b, which hold the side doors H H in their places whenever the doors G G are up, but allow them to fall outward whenever the doors G G are opened.

I I are beams fastened to the posts A A A A by the bolts g g g g. On the beams I I rest the cross-beams J J.

The four beams L L K K are bolted together, forming a loose frame, which is free to move up and down outside of the box-frame, being guided in its motion by the posts A A A A of the box-frame. A front elevation of one-half of this frame is shown in Fig. 9, Plate 2, and a side elevation of the frame is shown in Fig. 10, Plate 2.

M M M M are braces which sustain the cross-beams B B under any heavy pressure that may come upon them from the rods i i i i. The lower ends of these braces M M M M are fastened to the posts A A A A by the bolts g g g g.

N are planks, which are fastened to the upper side of the beam O, this beam, together with the planks N, forming the lower platen. These are shown in Figs. 1 and 2, Plate 1, and the platen, with its connections, is shown again in Figs. 3 and 4, Plate 2, Fig. 3 being a front elevation of one-half of the platen, and Fig. 4 a side elevation of the same. The di-

mensions of the upper part of the platen formed by the planks N are a little less than the inner dimensions of the box, so that it can play up and down freely in it.

On the ends of the beam O are fastened the cast-iron shoes P P. (Shown in Figs. 1, 2, Plate 1, and Figs. 3, 4, 5, and 6, Plate 2.) The rod *h* serves as a tie-rod to hold the shoes P P to the beam O and at the same time to strengthen it. This rod is shown in Figs. 1, 2, 3, and 4. The shoes P P pass through slots in the sides of the press-box, and play up and down freely along them as the platen is moved up and down.

iiii are straps or rods fastened to the cross-beams B B, and passing down along the sides of the slots in the sides of the press.

jj are pawls fastened to the shoes P P by the bolts *oo*. These pawls are shown in Figs. 1, 2, 3, 4, 7, and 8, Plates 1 and 2. These pawls serve to retain the platen in any place from moving backward by falling into notches in the rods *iiii*, being pressed into these notches as the platen is raised by the springs *llll*. (Shown in Figs. 1, 2, 3, and 4, Plates 1 and 2.) These springs *llll* are fastened to the lift-rods *pp*. (Shown in the same Figs. 1, 2, 3, and 4, Plates 1 and 2.)

mm are small pins screwed into the shoes P P, and shown in Figs. 1, 2, 3, and 4. *nn* are wire loops fastened to the pawls *jj*, and shown in Figs. 1, 2, 3, and 4. When these loops are placed over the pins *m*, the pawls *jj* cannot catch into the notches in the rods *iiii*, so that the lower platen will not then be sustained by them. The rods *pp*, by which the lower platen N is raised and lowered, are fastened to the shoes P P by the pins *qq*. (Shown in Figs. 1, 2, 3, and 4.)

rrrr are eccentrics, which are held in their positions (see Figs. 1 and 2) by their axes *ss*, the latter being supported by sectors *tttt*, *tttt*, either circular, as here shown, or, if preferred, eccentric sectors. These sectors have their bearings in metallic sockets *uuuu*, the latter resting in the beams J J and K K.

vvvv are pieces of plank fastened to the moving frame K K, and moving up and down with the frame K K L L, being guided in their motion at the bottom by caps *wwww*, the latter being fastened to the beams J J. In the pieces *vvvv* are slots in which play the axes *ssss* and the rollers *xx*.

xx are rollers, by the revolution of which the eccentrics *rrrr* are turned or revolved from their lesser to their greater diameters, thus raising the loose or movable frame K K L L, and vice versa. The rollers *xx* are revolved by the cranks *zz* being placed upon the ends of them, and operating them directly when the load upon the platen is small, and by placing the cranks *zz* upon the ends of the axis 1 of pinions 2 2, causing the pinions to drive the wheels *yy*, and hence the rollers *xx* when the pressure or load on the platen is large.

3 3 are pawls that are fastened to the axis

1 of the pinions 2 2, and drop into the gear of the wheels *yy*, when it is desired to hold them from rotating backwards.

4 4 are connecting-rods connecting the axis 1 with the rollers *xx*, for the purpose of keeping the pinions 2 2 in gear with the wheels *yy*.

5 5 are rolls attached to the axis of the wheels or pinions 2 2, and also to the beams J J. These rods, together with 4 4, keep the axis 1 of the pinions 2 2 in its proper place.

6 6 6 6 are pawls sitting loosely in cast-iron chairs 7 7, and falling into notches in the rods *pp*, thus holding the rods *pp* and carrying them up whenever the pawls are carried up by the frame K K L L, but not causing these rods to move back with the frame when it moves downward. The chairs 7 7 are fastened to the beams K K. On each of the chairs 7 7 sits a lever, 8 8, having knobs on the under side, which project into the holes in the chairs 7 7, which prevents them from slipping from the rods *pp*. On the upper side of these levers is a wedge-shaped piece, which passes between the pawls 6 6 6 6 whenever the outer ends of the levers are raised, thus throwing the pawls out of the notches in the rods *pp*. On the ends of the levers are projections 9 9, which press against the lift-rods *pp* when the long ends of the levers are raised, thereby causing friction on the lift-rods *pp*, to prevent their too rapid downward movement when the pawls 6 6 6 6 are not in the notches in *pp*, these being then carried downward by their own weight, increased by that of the lower platen, N, &c.

10 10 10 10 are rods fastened to the beams K K, and by which are suspended the weights 11 11. These weights, with the rods 10, by which they are suspended, are shown in front and side elevation in Figs. 9 and 10, Plate 2. The use of these weights is to cause the friction of the rollers *xx* on the eccentrics *rrrr* to be increased over what the weight of the frame K K L L alone would give, and also to cause the rapid backward movement of the frame when the pawls 3 3 are raised, and the rollers *xx* and eccentrics *rrrr* are left free to move under the weight of the frame K K L L and the weights 11 11, which cause the eccentrics to revolve from their greater to their lesser diameters.

Having thus given the description of the construction of the press, I will next give a description of its action.

In using the press, the lower platen, N, is at the bottom of the press prior to filling, while the upper platen or cover, C, is raised out of the way. The box is then filled with the substance to be pressed or packed, when the upper platen or cover, C, is placed in its proper position on the box, and fastened there firmly by throwing the straps E E E E over the ends of the beams D D. The cranks *zz* are then placed upon the ends of the rollers *xx* and turned toward the front of the press, when the eccentrics *rrrr* will be gradually

turned round from having their least radii between their axes *ss* and the rollers *xx*, to having their greatest radii between their axes *ss* and the rollers *xx*. When this has been done, the frame *KKLL* will have raised until the lift-rods *pp*, &c., with the platen *N*, have been carried up until the pawls *jj* are thrown into the notch at the bottom of the straps *iiii* by the action of the springs *llll*. The pawls *33* are now thrown back, and the eccentrics *rrrr* allowed freely to revolve backward under the weight of the frame *KKLL* (assisted, if necessary, by the weight of the parts *1111*) until they are brought back to their first position. Owing to the pawls *jj*, the platen *N* will have remained up where it was raised. The cranks *zz* are then turned, as before, until the pawls *jj* catch in the next upper notch of the straps *iiii*, when the frame is let down as before; and this operation is continued until the cranks *zz* turn too hard, when they are placed upon the ends of the axis *1* of the pinions *22* and turned in the opposite direction from what they were before raising the frame and platen, as before, the pressure on the platen being much more with the same driving-force when the cranks are on the axis *1* than when they are on the ends of the rollers *xx*. The operation of raising and lowering the frame *KKLL* in this manner is repeated, the platen *N* being carried up one notch at each rise of the frame *KKLL* until the platen is raised once above the upper notch on the straps *iiii*, when it is fastened in this position by the pawls *33*, holding the wheels *yy* from revolving backward. The substance is now sufficiently packed, and the bolts *eeee* are removed, when the levers *eeee* turn outward about their fulcrum *dd*, the short end of the levers turning out of the mortises in the posts *AAAA*, allowing the doors *GG* to swing outward about the bolts *ffff*. As the doors *GG* open, the flanges *bbbb* will be removed from the side doors, *HH*, allowing them to fall outward. The bale is now open on the four sides, ready to have the canvas sewed on and the ropes put on and tied. The loops *nn* are now put over the ends of the pins *mm*, so that the

pawls *jj* cannot catch in the downward movement of the platen *N*. The pawls *33* are now raised and the frame *KKLL* allowed to move backward until the eccentrics *rrrr* are brought back to their lesser diameters, when the bale is removed and the lower platen, *N*, lowered to the bottom of the press by the levers *SS*, which is done by raising the outer and long ends of the levers until the wedge-shaped piece on the top of it presses the pawls *6666* out of the notches in the lift-rods *pp*, leaving them to move freely down along with the platen *N* under the action of their own weight. To prevent the too rapid motion of the platen downward, the levers are raised still farther, pressing the projections on their ends hard against the lift-rods *pp*, thereby causing sufficient friction to make them run down slowly.

I do not claim that an anti-friction press with either eccentrics or cams is new or of my invention.

I do not here claim the arrangement of the pinions *22*, the wheel *yy*, together with the pawls *33*, the connecting arms or rods *44* and *55*, with the rollers *xx*, having made substantially the same claim in Letters Patent granted to me by the United States June 21, 1858, for an improvement in cheese-presses.

I do not here claim the backward movement of the frame *KKLL*, together with the eccentrics *rrrr*, with the rollers *xx*, the wheels *yy*, and the pinions *22*, with their axis *1* and its cranks *zz*, or their equivalents, by the use of the weights *HH* and the weight of the frame *KKLL*, having previously claimed the use of a weight for substantially the same purpose in the patent just mentioned; but

What I do claim, and desire to secure by Letters Patent, is—

The combination and arrangement of the described press, constructed and operating substantially as described.

A. H. EMERY.

Witnesses:

CHARLES G. McMANNUS,
WM. H. STANSBURY.