$$\mathcal{F} \xrightarrow{\theta} \mathcal{F}^+$$

Injectiveness of θ is clear.
We need to show θ is surjective.

Given $\tau \in \mathcal{F}^+(U)$, $\tau : U \longrightarrow \bigcup_{p \in U} \mathcal{F}_p$.

$\Rightarrow$ For each $p \in U$, $\exists\ p \in V_p$ s.t $V_p \subset U$.
and $\sigma(p) \in \mathcal{F}(V_p)$. $\cdot\ \sigma(p)_q = \tau(q)$.

$\Rightarrow$ Obviously, $\sigma(p)|_{V_p \cap V_{p'}} = \sigma(p')|_{V_p \cap V_{p'}}$ if $V_p \cap V_{p'} \neq \phi$.
$\Rightarrow$ $\exists\ \sigma \in \mathcal{F}(U)$ s.t $\sigma|_{V_p} = \sigma(p)$.

$\Rightarrow$ $\sigma_p = \sigma(p)_p$. $\sigma_q = \sigma(p)_q$. for $q \in V_p$.
$\Rightarrow$ $\sigma_p = \tau(p)$. for all p. $\Rightarrow$ $\theta(\sigma) = \tau$.

Def: A subsheaf of a sheaf $\mathcal{F}$ is a sheaf $\mathcal{F}'$ s.t for every open set $U \subseteq X$, $\mathcal{F}'(U)$ is a subgr of $\mathcal{F}(U)$, and the restriction maps of the sheaf $\mathcal{F}'$ are induced by those of $\mathcal{F}$.
It follows that for any point p, the stalk $\mathcal{F}_p'$ is a subgroup of $\mathcal{F}$.

If $\varphi : \mathcal{F} \longrightarrow \mathcal{G}$ is a morphism of sheaves, we define the kernel of φ, denoted by $\ker \varphi$, to be the presheaf kernel of φ (which is a sheaf). Thus $\ker \varphi$ is a subsheaf of $\mathcal{F}$.

We say that a morphism of sheaves $\varphi : \mathcal{F} \to \mathcal{G}$ is injective if $\ker \varphi = 0$.
Thus φ is injective $\Leftrightarrow$ the induced map $\varphi(U) : \mathcal{F}(U) \to \mathcal{G}(U)$ is injective for every open set U of X.